# Notification and the NMOC Map System

Introducing the NMOC mapping system.
This guide will familiarize you with how this system uses information to create notifications on a onecall ticket. Utility notification is based on two major components: the streets network and the individual member layers. Contained within the streets network are the streets geometry with names and a range of addresses on each segment from one intersection to another. The more detailed and complete the streets network, the more accurate the notification area of the dig site will be. The member layer is a representation of the member's underground utilities in the service area provided by the member. The member layers need to go through a process to size the information to overlap with the streets network as closely as possible so that the correct member is properly notified. Let's examine the streets network.

Street Segments

The streets network is made up of segments. What do we mean when we refer to a street segment? A street segment is defined as a part of a street that exists from one intersection to an adjacent intersection within the map. In the figure below, we show a segment of Lomas Blvd NW from 2nd St to 3rd St in purple.
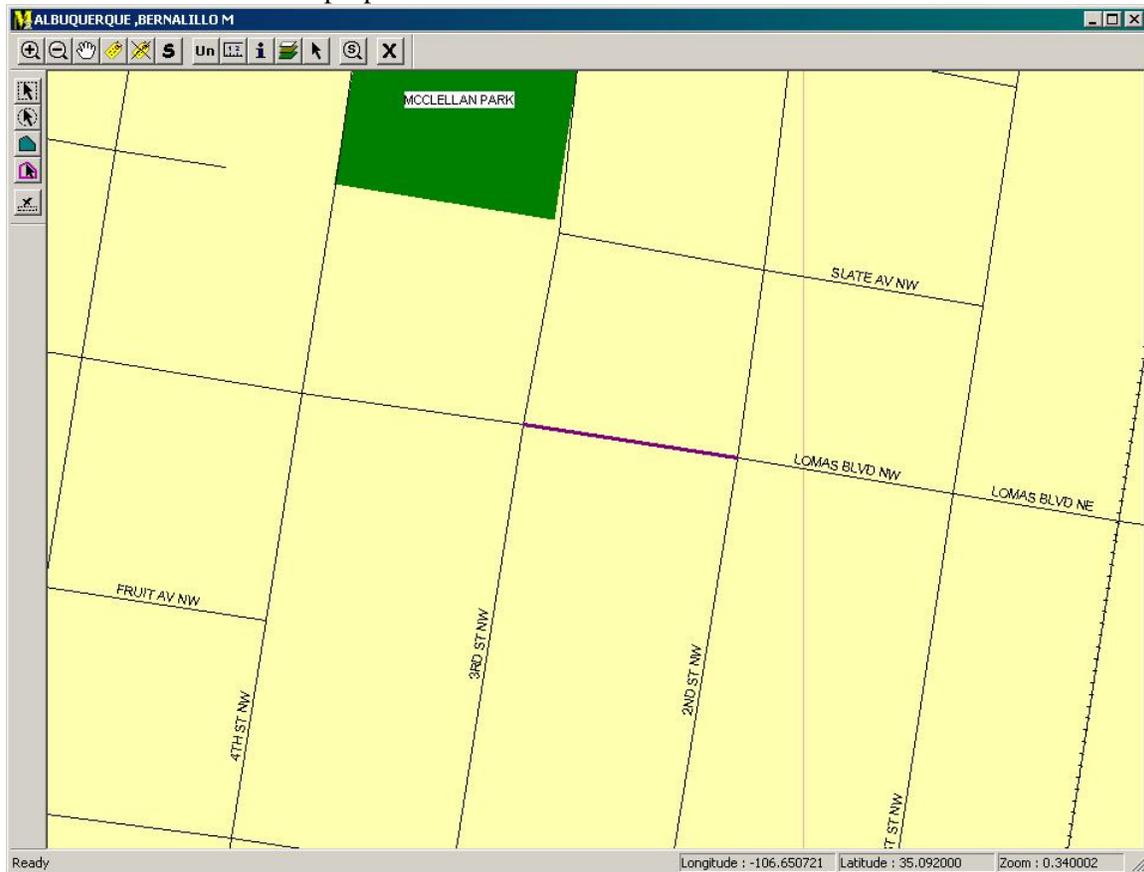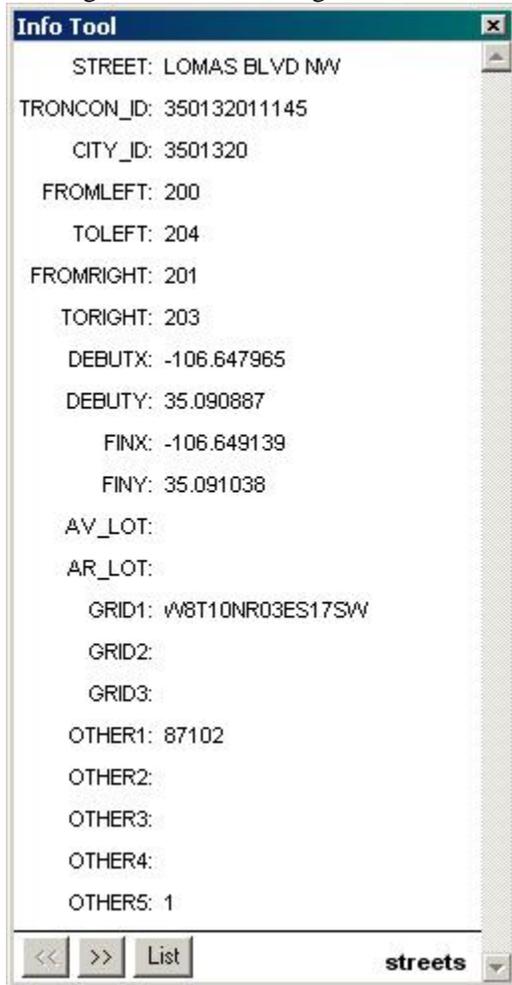

The street is broken or segmented at every intersection. Additionally, each segment has its own identification number. Tied to that segment identification is a table which has the appropriate range of addresses for that segment.

There may be no addresses, a few addresses, or many addresses on the segment of road. In many locations, it depends on the length of the block or segment, or it can depend on the size of each property which is given one address by the municipality or the county The more dense the area, the greater the number of addresses contained in the street segment table. The streets network is loaded with that information for each road on each segment, so that when we refer to an address for a business or a homeowner, the correct road segment is found.

In the table below, the 200th block of Lomas Blvd NW which spans from 2nd to 3rd, is shown to have an address range of 200 ó 204.
The address range on the right side of the street is 201 to 203 and on the left side of the street is 200 to 204. The Debut X and Y and Fin X and Y refer to the GPS points where the segment ends and begins. Where this segment ends, the next one begins.

Info Tool	
STREET:	LOMAS BLVD NW
TRONCON_ID:	350132011145
CITY_ID:	3501320
FROMLEFT:	200
TOLEFT:	204
FROMRIGHT:	201
TORIGHT:	203
DEBUTX:	-106.647965
DEBUTY:	35.090887
FINX:	-106.649139
FINY:	35.091038
AV_LOT:	
AR_LOT:	
GRID1:	W8T10NR03ES17SW
GRID2:	
GRID3:	
OTHER1:	87102
OTHER2:	
OTHER3:	
OTHER4:	
OTHER5:	1

<< >> List   streets

Intersections

An intersection, or a cross-street, is a point where two roads cross each other. When an intersection is selected, the system will only use those street segments that comprise the intersection going out from the center along both streets and stopping at the next intersecting roads in all directions as the notification area.   For example at the corner of Lomas Blvd and University Blvd in the map below, all the member utilities located along the four street segments would be notified when the ticket refers to that intersection where the excavation will take place. In less urban and rural areas the street segments may be rather lengthy.
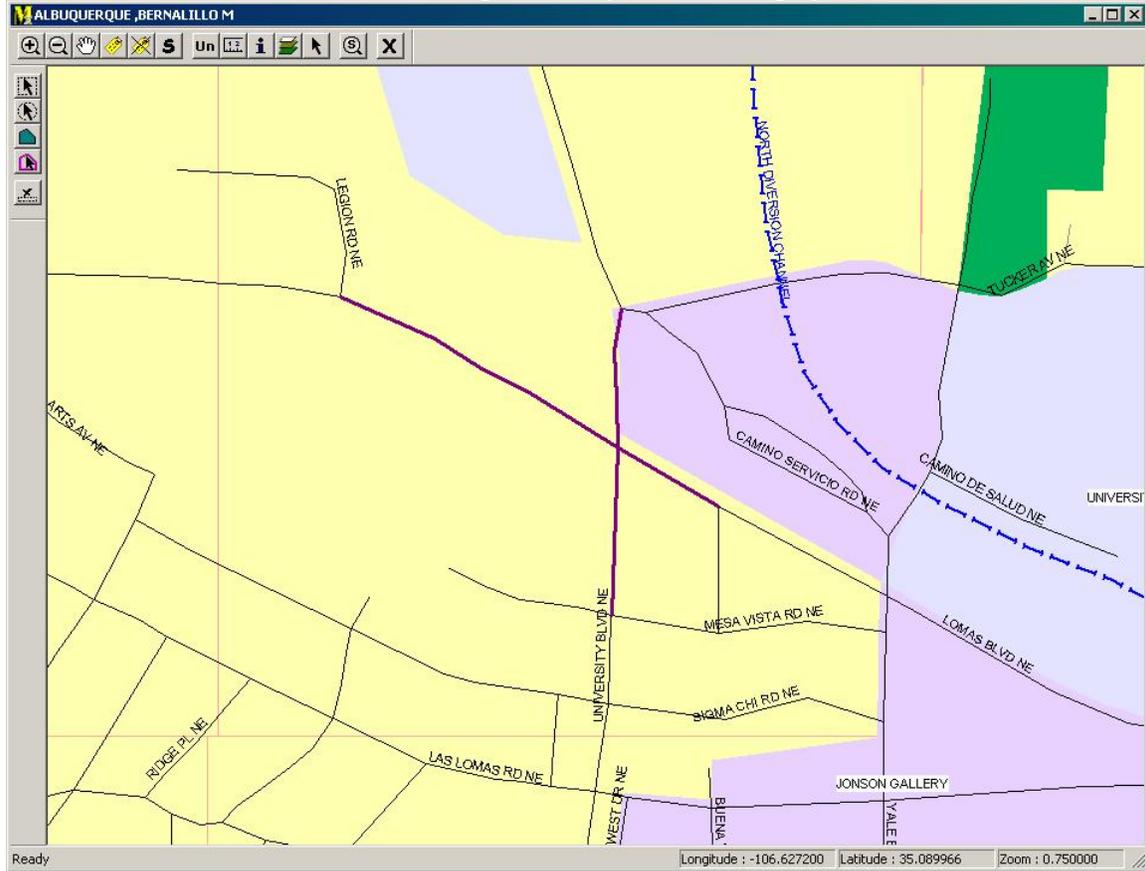
Sometimes there are more than two streets which make up one intersection. In the example below we see three roads crossing each other at one point. They extend outward to the next intersecting street along each segment. So at this intersection, there are five street segments and any underground facility owners within the purple coverage get notified.
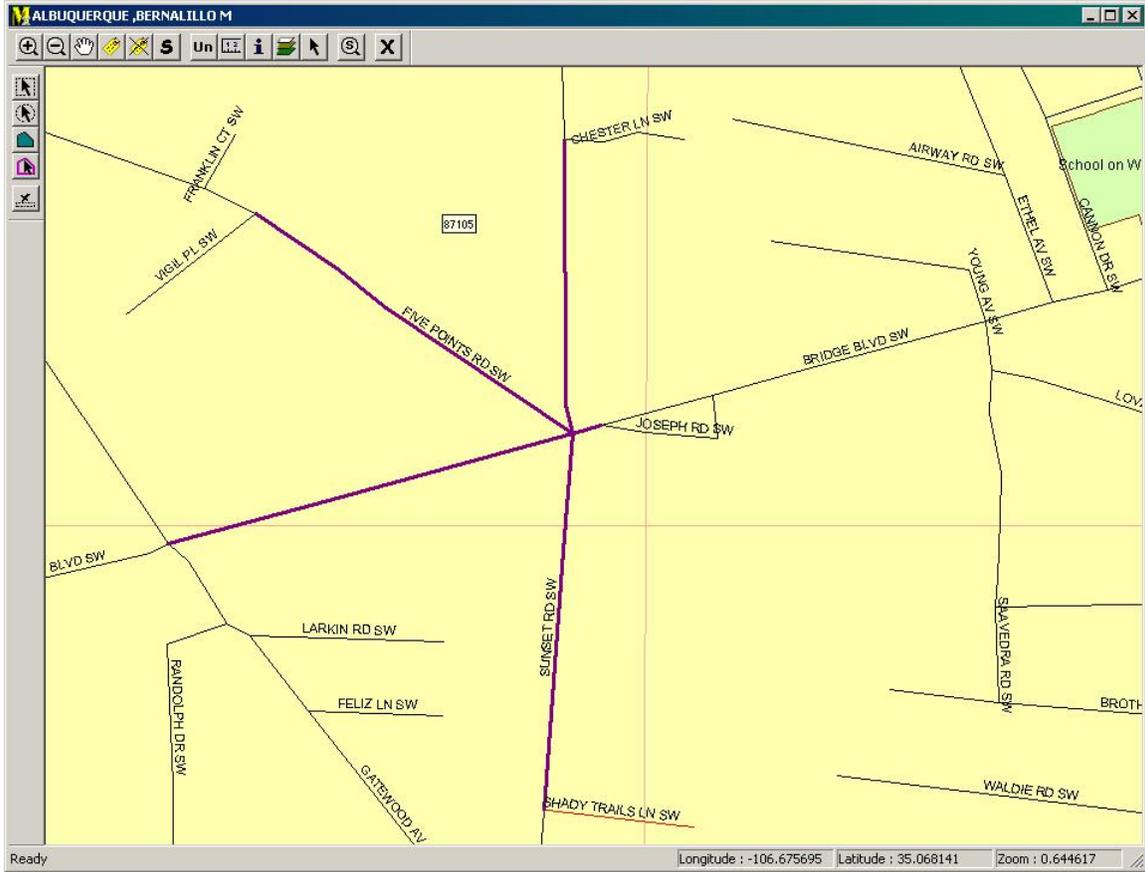
Address Searches

If the dig site is at an address along a road segment *and the address is contained in the segment table*, then the system will look up the area and automatically find the adjacent intersecting streets on either side of that address.
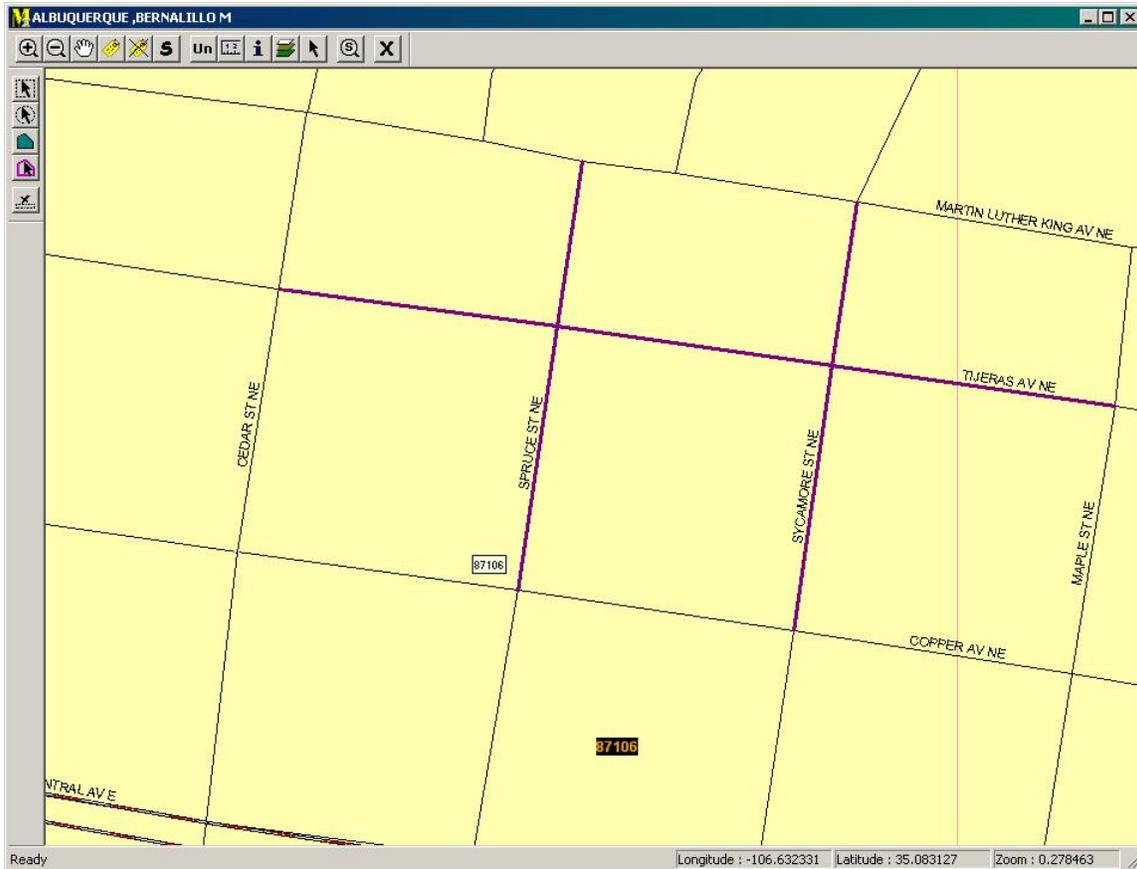

In this example, 1305 Tijeras Av NE is located somewhere along the middle purple segment. The six other segments selected are the street segments on either side of the street segment containing the address. These seven segments comprise the notification area. This is commonly referred to as the *seven segment rule* and is used by our mapping system. The seven segment rule ensures every member near the address is notified.

This sort of notification is necessary because the system does not know exactly where the address physically is along the segment. It may be at either end of the segment or it may be somewhere in between. If the address is at one of the ends of the segment, which is a corner, then it is logical to also select the adjacent street segments so that the entire corner is notified. This is necessary because the street segment ends at the intersection where the break in the road segment occurs. Additionally, since the system does not know which corner to use, *both* intersections on either side of the street segment are used. This ensures a complete notification of the area and is not only the safest procedure, but an industry practice.

Map Selections

Finally, in very rural areas and sometimes even in cities there may not be any streets that have names and/or addressing. Or, the area of the work is such that a street selection will not capture the right kind of notification.

In these cases a polygon can be created on the map that represents the physical area of the work to be done. This polygon will define the area that will be searched on each of the member layers and notify only those members whose facilities are within the polygon.
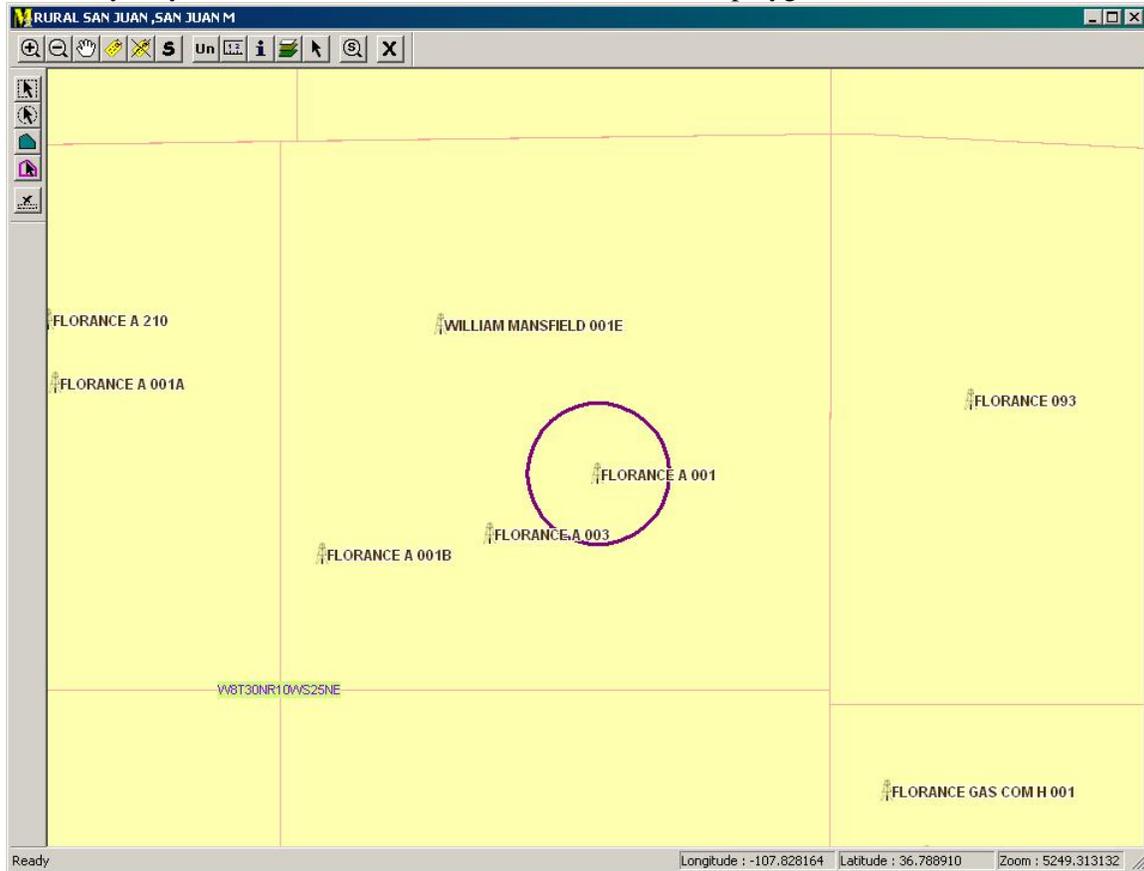
For example, the above map selection is a 300ft buffer around the well. There are no named roads in this area. There may be unmapped roads, or vehicle tracks or paths that look somewhat like a crude road, but they are not shown on the streets network layer, therefore, the map system does not know they exist. Thus, the system will notify every member who has indicated on their map layer any portion of their coverage area that coincides with the 300ft buffered area.

In the example below, the excavator has a complex excavation where a streets lookup would not be appropriate.
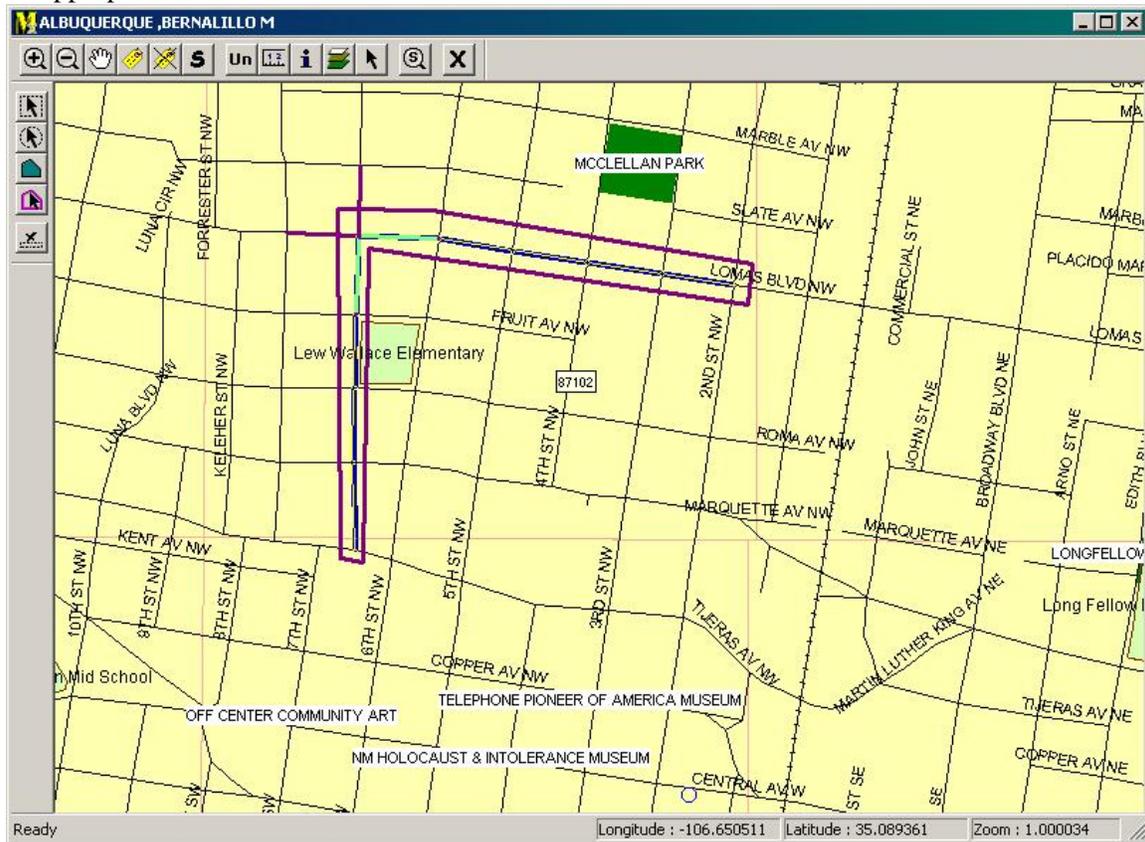
Here, the work starts at 2nd and Lomas, going west to 7th Street, then south on 7th to Tijeras. If we give the system only 2 roads to refer to, Lomas and 7th Street, the system takes it to mean the intersection and no more. We would have to give it 2nd St, Lomas Blvd, 7th St and Tijeras Ave. and have some way for the system to know what the relationship of each street is to the other. This is what makes it complex. Because the system is not designed to work this way, a map selection has to be used to encompass the streets involved from beginning to end.

Member layers

We mentioned before that each member layer works in concert with the streets network. The whole point of making the system work in this way, either by streets search or by map selection is to notify facility owners of impending excavations. If a facility owner does not get the ticket, they cannot go out and mark even though they may have something in the area. So the facility owners provide NMOC with information about where they have underground facilities. Sometimes these can be broad coverage areas, or they may be very small and discrete. The amount of tickets a member receives is based upon two factors, the coverage area and the activity in the area covered. Broad coverage areas will generally generate more notifications and discrete coverage areas will generate fewer notifications. Activity is a function of how much construction and maintenance work is going on in the area at any point in time.

Below is the same complex map selection as before, but this time 4 facility owners are being shown each with a different coverage method.
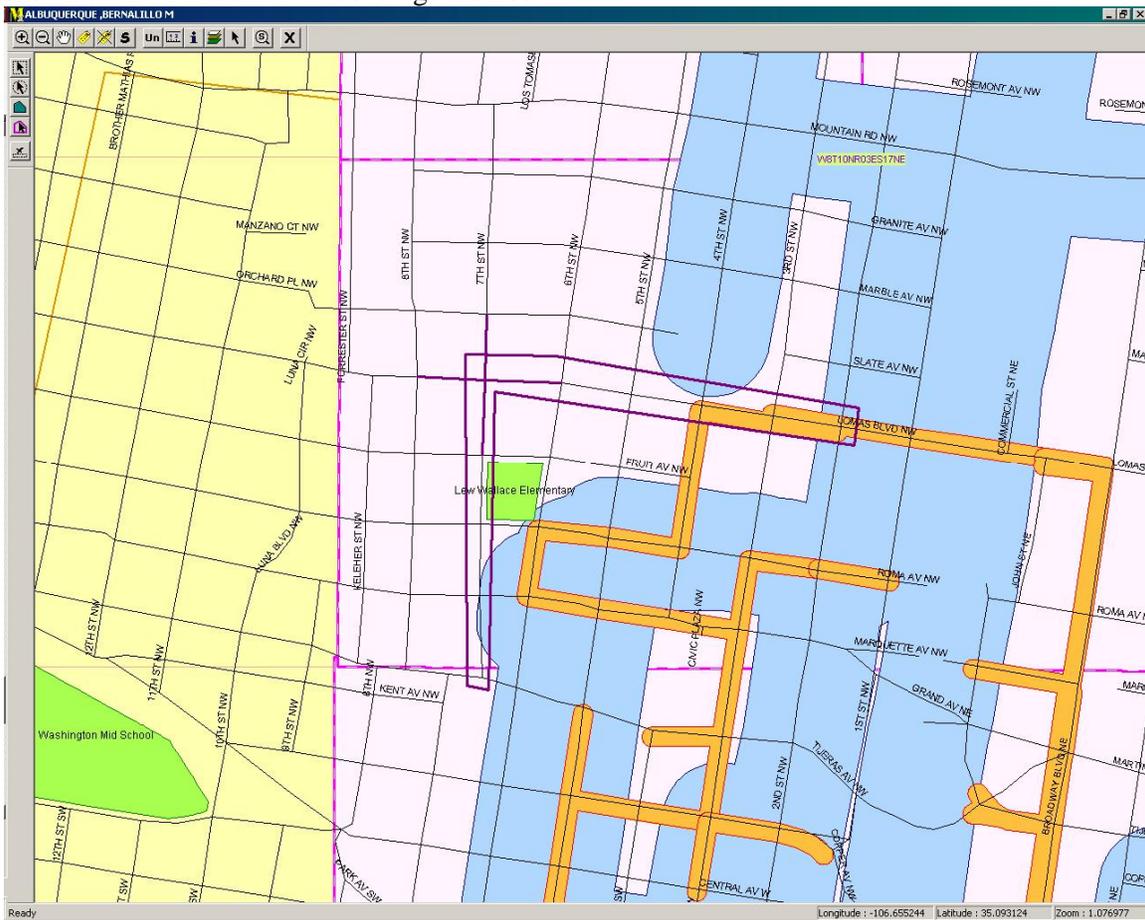
The light pink area shows a member with broad coverage. They use a grid system, an entire ½ mile x ½ mile grid, and several of them, as the area for which they should be notified. The orange is a member with a small and discrete buffer. They have very selective coverage. The blue is member with a mid-range size as they have somewhat large buffers around a centerline. The buffer spans several streets in some areas or just one street in other areas. Finally, the green is a member with a unique and selective area as it's coverage area is simply the property which does not include the streets, in this case a school.

The purple polygon that shows the excavation site will notify these 4 facility owners because each facility owner's coverage area touches or is included within the polygon area.

Think of the polygon as a three dimensional object going through various layers stacked or overlaid on top of each other. Every layer is a different underground facility owner that has identified certain areas where their underground facility or buffers exist. As the polygon shape penetrates each member layer, if it intersects any portion of the member's layer that has identified facilities or buffers, then that individual member will receive a notification.

A member selects the size of the polygon or buffer. Below is a list of facility types and the buffer area that a member may choose. These are based on industry standards and best practices and are recommended by NMOC so that the members' buffer intersects the appropriate street segments near the area of the proposed excavation.

HIGH PRESSURE GAS	5000 feet
FIBER	1500 feet
CO-AXIAL CABLE	400 feet
COPPER	300 feet
ELECTRIC	400 feet
WATER/SEWER	300 feet
OIL/GAS WELL/TRANSMISSION LINE	500 feet

These recommendations are made in support of damage prevention, processing a ticket efficiently and keeping costs low.

We hope this information helps you to understand how NMOC's mapping system provides notifications to our various members. If you have questions or need additional information please call Justin Hannemann at 505-254-7306 for additional support.