



Storm Water Commission
6801 Delmar Boulevard, University City, Missouri 63130,
Phone: (314) 505-8560, Fax: (314) 862-0694

MINUTES OF THE STORMWATER COMMISSION May 16, 2023

Call to Order. The thirty-fifth meeting of the Stormwater Commission (Commission) was called to order at 3:30 PM by Chair Todd Thompson.

- 1. Attendance-Roll Call.** The following Commission members were present at the Community Center: Garry Aronberg, Robert Criss, Mark Holly, Eric Karch, Eric Stein, Todd Thompson. Also in attendance were Darin Girdler, Director of Public Works; Mirela Celaj, Assistant Director of Public Works; and John Mulligan, City Attorney.

The meeting was a special meeting to consider stormwater management report development. The May 2 meeting was cancelled.

Visitors: Tom Sullivan - resident, Monica Obradovic – journalist (River Front Times)

- 2. Agenda.** The following modified agenda was approved by voice vote (Messrs. Aronberg, Criss):
Attendance-Roll Call; Approval of Agenda; New Business: stormwater report development.

3. New Business

- Master plan progress - Projects for detailed study.
 - Garry Aronberg and Eric Karch, of HR Green and Reitz & Jens, City's stormwater master plan consultants, presented an updated list of projects to be studied in detail. The updated list is attached to these minutes. A wide-ranging discussion occurred:
 - The updated list of projects includes seven typed of projects:
 - creek bank erosion
 - basement flooding from street drainage,
 - backyard and basement flooding from overland stormwater runoff flow,
 - floodplain buyouts,
 - bridge constrictions in floodplain,
 - impact of upland detention,
 - impact of change of imperviousness,
 - basement backup prevention.
 - Commission agreed that the updated list of projects is appropriate and considers the most important stormwater problems. The Commission encourages Public Works Director Girdler to use the updated list as the basis for his instructions to the consultants.
 - Other discussion:
 - Two property owners have agreed to give the Commission information about the extent of damage during the July 2022 flood. The data would be used to evaluate the weighting of benefits.
 - Commission renewed suggestion to City to obtain elevations of all the first floors in the floodplain to augment assessments of buyouts.
 - "Detention" discussed by MSD at recent Council Study Session is for sanitary wastewater overflowing from combined sewers, not stormwater runoff.



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4. **Council Liaison Comments.** Councilman Fuller reported that a recording of the MSD comments made at a Council Work Session will be distributed to the Commissioners.
5. **Adjournment.** Motion to adjourn passed at 5:06 PM (Messrs. Holly and Thompson).

Minutes Preparation. The minutes were prepared by Garry Aronberg.

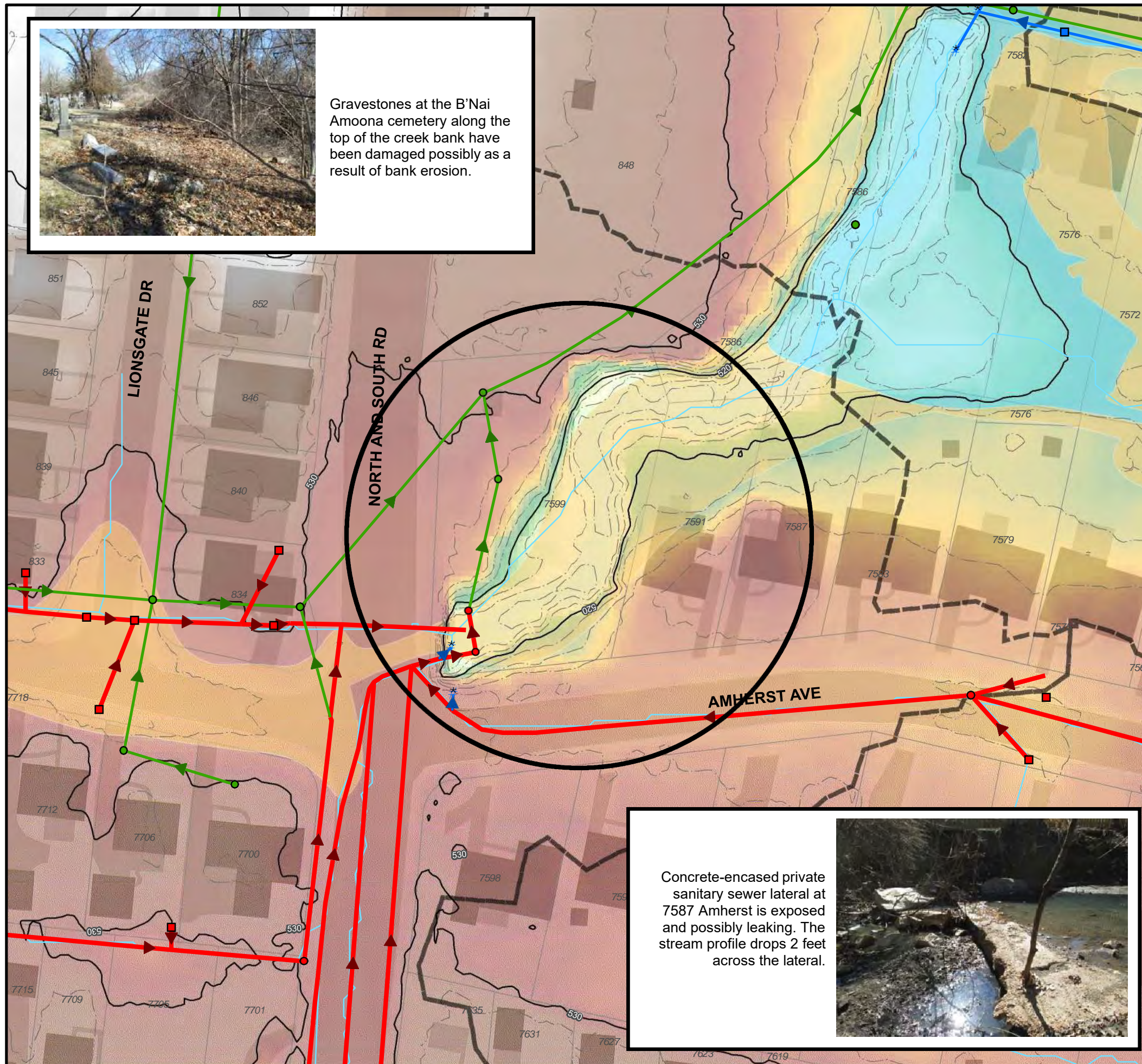
University City Stormwater Master Plan
Suggested Problems for Detailed Study

5/1/2023

Number	Name	Category Rank	Description	Recommended	Ward
Category: Erosion					
1	Amherst Ave and Blackberry Ave tributary to River Des Peres Between	1	The bank is 13' high and 20' from the house. Erosion of a tributary to the River Des Peres threatens a house.	*	2
2	River Des Peres at Mona Dr	2	Erosion of the River Des Peres threatens the street (Mona Dr). The bank is 16' high and 5' from the curb.	*	2
	River Des Peres at 7401 Balson Ave (University City High School)	4	Creek erosion is threatening the University City High school track and field.		2
	River Des Peres at 7425 Shaftesbury Ave	5	A tall stone and wood tie wall near a residential structure is at risk of collapse.		2
Category: Street					
3	Amherst Ave	1	Several basement garages along Amherst Ave flood from street drainage. Combined sewer inlets exist on the street.	*	2
	Old Bonhomme Rd	2	Flow from Ruth Park and Old Bonhomme Rd flows down driveways and floods two basement garages at houses on Old Bonhomme Rd.		1
	Midland Blvd and Balson Ave	3	Inlets backup and flood the commercial building. Owner marked frequency as 'Often'.		2
	W Point Ct	4	Constant ponding in street at low point. Three residents have complained.		4
Category: Backyard					
	Balson Ave	1	All flooding types marked - yard, street, nonhab, hab, and first floor. Drainage area is 1.3 acres.		2
4	Milan Ave	2	About 3 acres of drainage through the yard at 7353 Milan Ave. There is already public storm sewer at 7353; may need to be upsized or make inlet more efficient.	*	3
5	Grenville Subdivision	3	Commercial property to north releases drainage to backyards of homes that are close together. There is no overland flow path to the front yard.	*	3
	Wellington Ave	4	Four houses on Wellington Ave receive runoff from behind and there is no overland path to the street. About 2 acres of drainage comes to these backyards.		3
	Clayton Gardens Subdivision	5	About 2.3 ac of drainage flows to the backyards of 3-4 houses, causing flooding to yards and basements. There is no flow path out to street. Note there are also basement garages.		1
	Forsyth Place Subdivision	6	Homes on Forsyth Blvd drain to backyards of Lindell Blvd. Houses are close together so there is no easy path for runoff past Lindell Blvd houses. Overall DA is about 2.3 acres.		1
	Cornell Ct	7	1.8 ac of drainage reaches backyard with no outlet point. Basement and yard flooding at 8128 Cornell Ct.		1
	Northmoor Park Subdivision	8	Yard and basement flooding from drainage area behind houses reaching backyards. 1 to 1.5 acres reaching backyards in a couple of places.		1
Category: Common Problems throughout City					
6	Buyouts in RdP floodplain		Estimate number of homes in 10-yr, 50-yr, 100-yr floodplain. Estimate typical buyout cost. Develop typical B:C ratio. (Modified from USACE report and models.)	*	2,3
7	Bridge constrictions		Examine Groby Rd bridge: B:C for three alternatives (1) wider, taller, approach profile, houses impacted; (2) No change in bridge + house buyout; (3) no change in bridge, road, housing.	*	
8	Upland detention volume needed to lower RDP 100-yr elevation 1 ft		Give guidance to planners for updating the comprehensive plan. -Determine Q to lower WSE 1 ft and estimate upland detention to accomplish. Complements Corps report regarding near stream dtn.	*	2,3
9	Impact of change in imperviousness		Planners discussed impervious reduction. Residents interested.	*	1,2,3
10	Basement backup prevention		Very common problem during July 2023 flood. City officials should have guidance and policy regarding this type of floodproofing - does City Code allow disconnection of plumbing from basement floor drain and sanitary grinder pumps? What is typical cost or range of cost. Licensed plumbers or homeowner?	*	1,2,3



Gravestones at the B'Nai Amoona cemetery along the top of the creek bank have been damaged possibly as a result of bank erosion.



Problem Description:

An un-named tributary to the River des Peres flows from a closed storm sewer outfall at Amherst and North & South. A 500-foot reach of the creekbank is over-steepened and actively eroding. MSD and the City initially identified this bank erosion in 1988, and MSD confirmed the issue and developed a conceptual solution and cost estimate in 2007.

The 13-foot high eroding bank at 7591 Amherst is 20 feet from the home (measured from the toe of bank), and has not advanced significantly since 2006, but is considered severe by MSD's bank erosion rating (V/H=1.46). The July 26, 2022 flood was above the basement floor of 7591 Amherst and collapsed their fence.



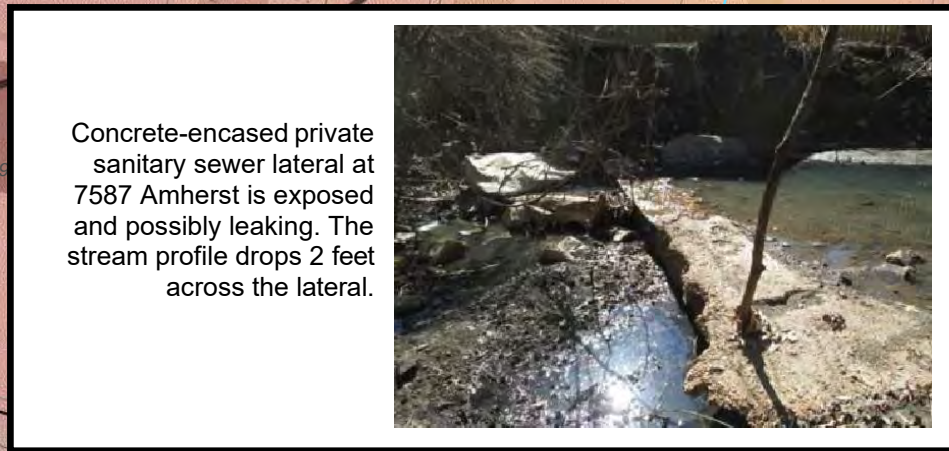
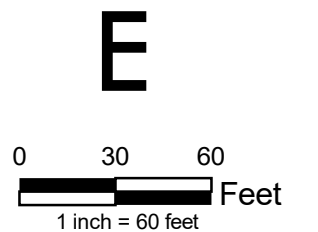
The 13-foot high eroding bank at 7591 Amherst is 9 feet from the home (measured from the top of bank).



Creek erosion along 7587 Amherst is undermining their fence. The erosion rating at 7587 Amherst is considered a threat to the home (V/H=0.25).

Legend

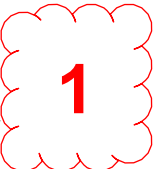
- Stormwater Problem Point
- Problem Location
- Flow Path Line
- ⬮ Watershed Boundary
- Existing MSD System
 - Combined Inlet
 - Storm Inlet
 - ⚡ Storm Intake-Outfall
 - Combined Manhole
 - Sanitary Manhole
 - Storm Manhole
 - ➔ Combined Sewer
 - ➔ Sanitary Sewer
 - ➔ Storm Sewer
- ▭ Flood Hazard Zone
 - ▭ 1.0% Annual Chance Flood Hazard
 - ▭ 0.2% Annual Chance Flood Hazard
- ▭ Regulatory Floodway

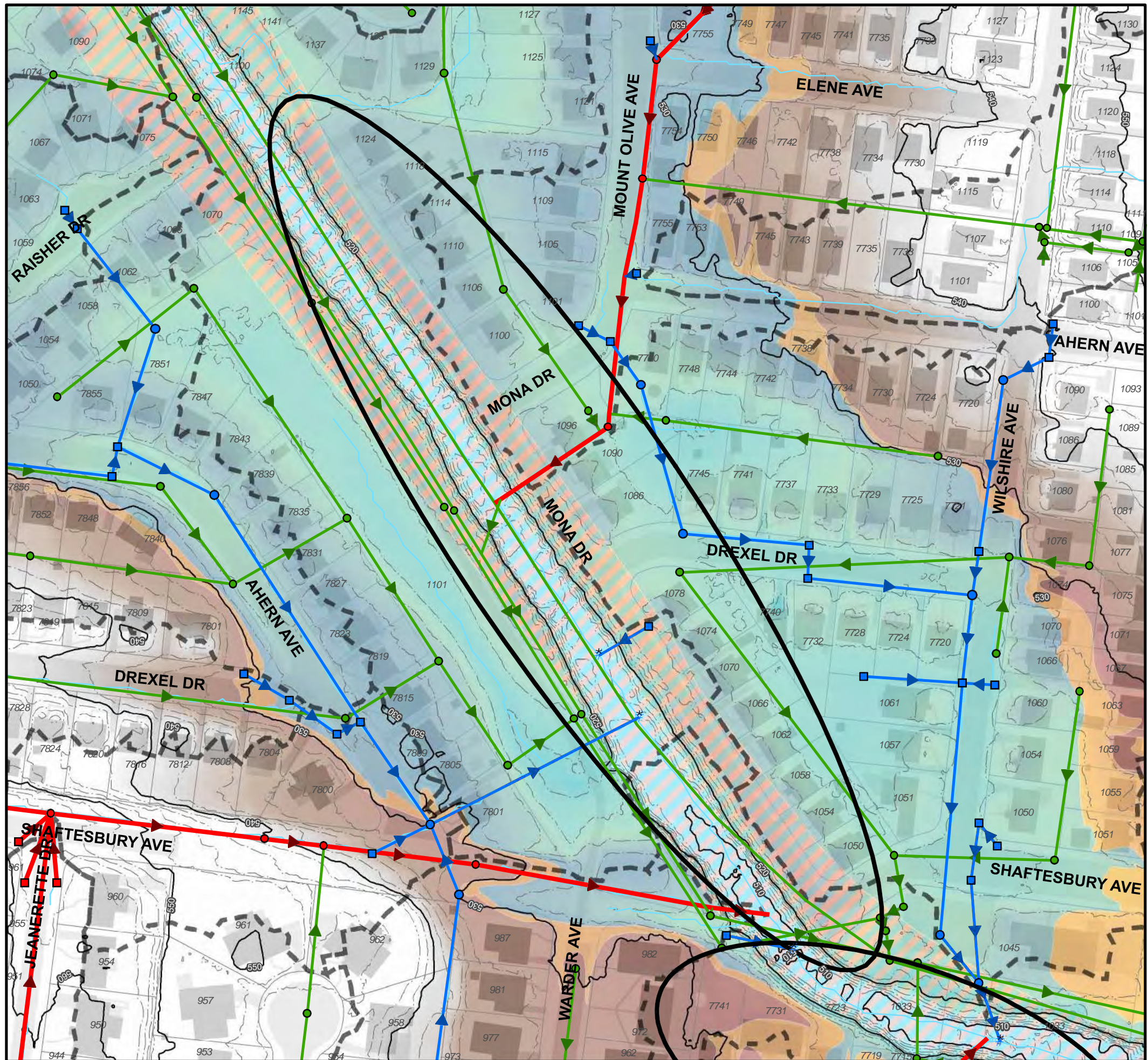


Concrete-encased private sanitary sewer lateral at 7587 Amherst is exposed and possibly leaking. The stream profile drops 2 feet across the lateral.

**Tributary to River Des Peres
Between Amherst Ave and
Blackberry Ave**

Ranked #1 in the Erosion Category





Problem Description:

A 700-foot reach of the River des Peres is over-steepened and actively eroding. The top of bank is 16-feet high and has eroded to within 5 feet of the curb line of Mona Drive. The north end of Mona Drive is the only road access/egress for six homes. Using MSD's erosion rating, the street is more severely threatened (V/H=0.44) than the homes (V/H=0.18). MSD installed riprap along portions of Mona Drive in approximately 2017, but most of this riprap has since eroded and slid off the bank. An additional 600-foot reach of bank along the downstream end of Mona Drive is somewhat more stable. The homes along Mona Drive flooded on July 26, 2022.

Over-steepened channel banks threaten Mona Drive which provides the only access to 6 houses.



Over-steepened channel banks, and the remains of riprap placed by MSD that has since eroded and slid off the bank.

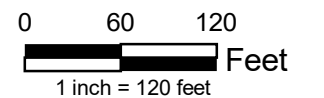


Channel bottom contains riprap, some of which slid off the bank from a previously installed MSD project.



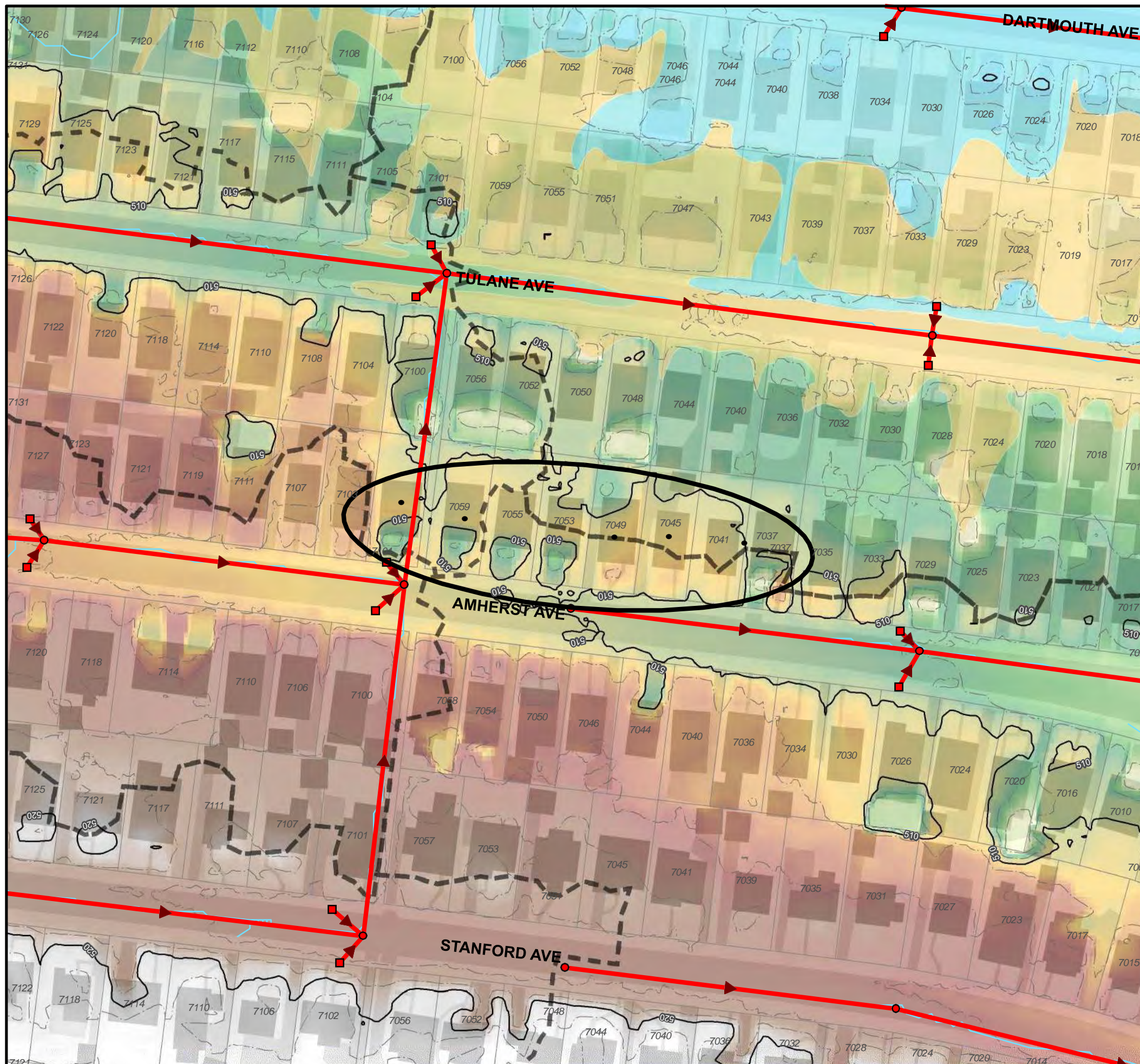
Legend

- Stormwater Problem Point
- ▭ Problem Location
- Flow Path Line
- Watershed Boundary
- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- ▨ Regulatory Floodway
- Existing MSD System
- Combined Inlet
- Storm Inlet
- ⚡ Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- ➔ Combined Sewer
- ➔ Sanitary Sewer
- ➔ Storm Sewer



River Des Peres at Mona Dr
Ranked #2 in the Erosion Category





Problem Description:

Several basement garages along Amherst Avenue flood from street drainage. Combined sewers with street inlets exist on the street. Amherst Ave is very flat, which reduces inlet capacity.

Although not all of these residents responded, it is likely that 7101, 7059, 7055, 7053, and 7037 Amherst Ave have frequent basement flooding due to water escaping the street and flowing down the driveway.

Grated drains were observed near each garage door. It is likely that each of these are connected into the nearby combined sewer. Therefore, it is possible the flooding is due to backup from the combined sewer main.

The driveway at 7101 Amherst Ave.



The driveway at 7037 Amherst Ave.

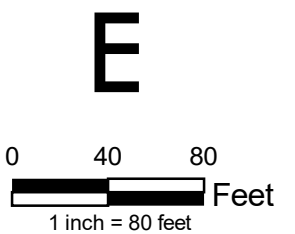


Looking east along Amherst Ave towards the inlets between 7033/7029 Amherst Ave.



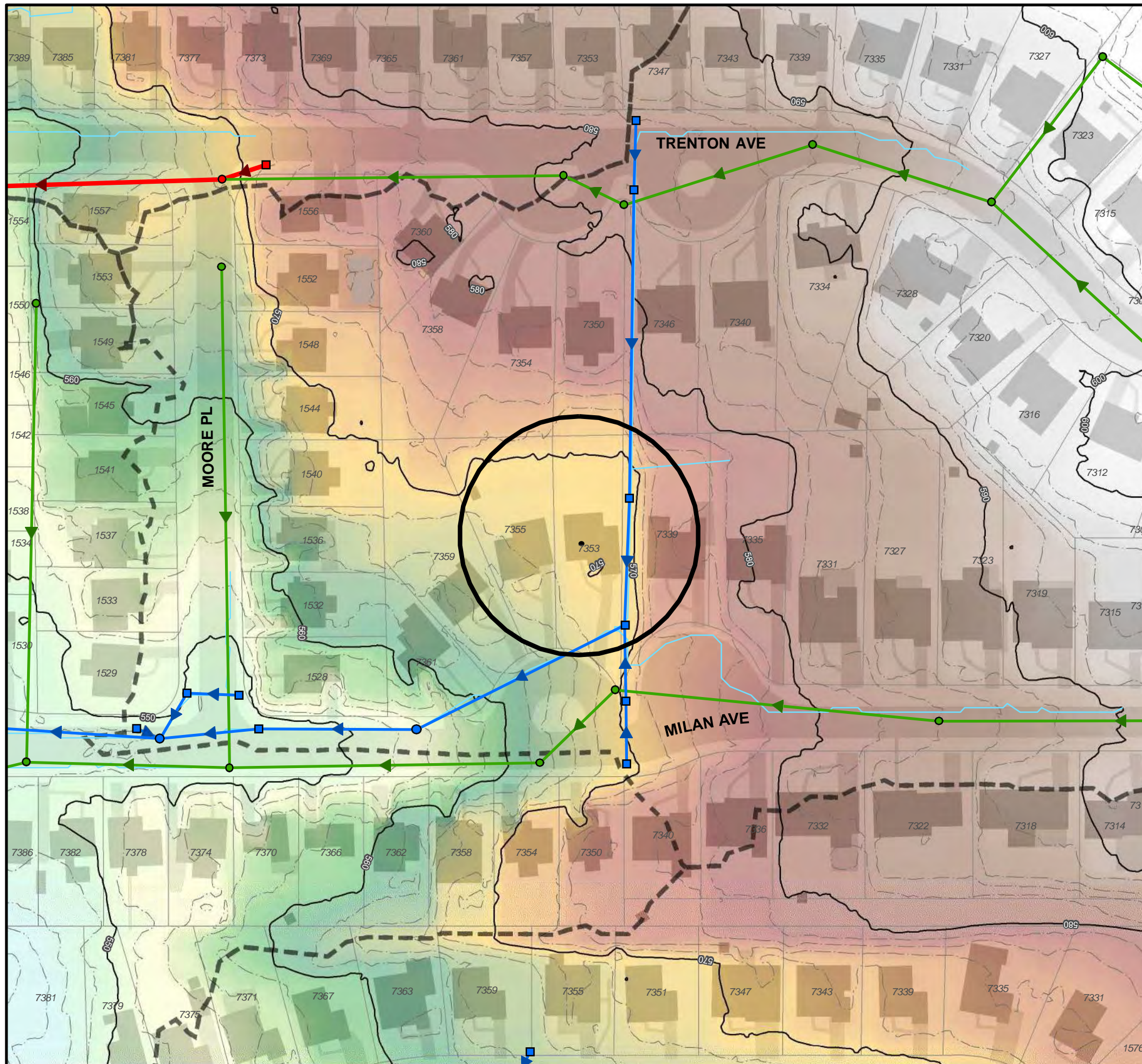
Legend

- | | |
|---------------------------------|------------------------|
| ● Stormwater Problem Point | Existing MSD System |
| □ Problem Location | ■ Combined Inlet |
| — Flow Path Line | ■ Storm Inlet |
| - - - Watershed Boundary | # Storm Intake-Outfall |
| Flood Hazard Zone | |
| Light Blue Box | ● Combined Manhole |
| Light Orange Box | ● Sanitary Manhole |
| Light Blue Box with Dashed Line | ● Storm Manhole |
| Light Blue Box with Dotted Line | → Combined Sewer |
| Light Blue Box with Dotted Line | → Sanitary Sewer |
| Light Blue Box with Dotted Line | → Storm Sewer |



Amherst Ave
Ranked #1 in the Street Category





Problem Description:
 About 3 acres of drainage flows to the backyard at 7353 Milan Ave. An area inlet just east of the backyard clogs easily and may also have inadequate capacity. Water backs up, flooding the entire yard until it can flow east. Water has nearly reached the threshold of the back door to the house. The basement has flooded from both seepage and overland flow in 2014, 2015, and 2022.

Looking south along the property line between #7353 and 7339.



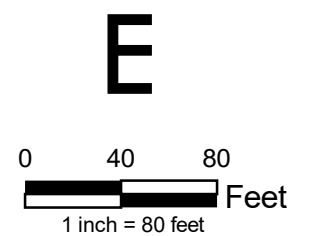
Looking towards the back patio at #7353. Ponded water has nearly reached the threshold of the door into the house (not the door to the screened in patio).

Looking north towards the area inlet in the backyards. #7353's backyard is on the left.



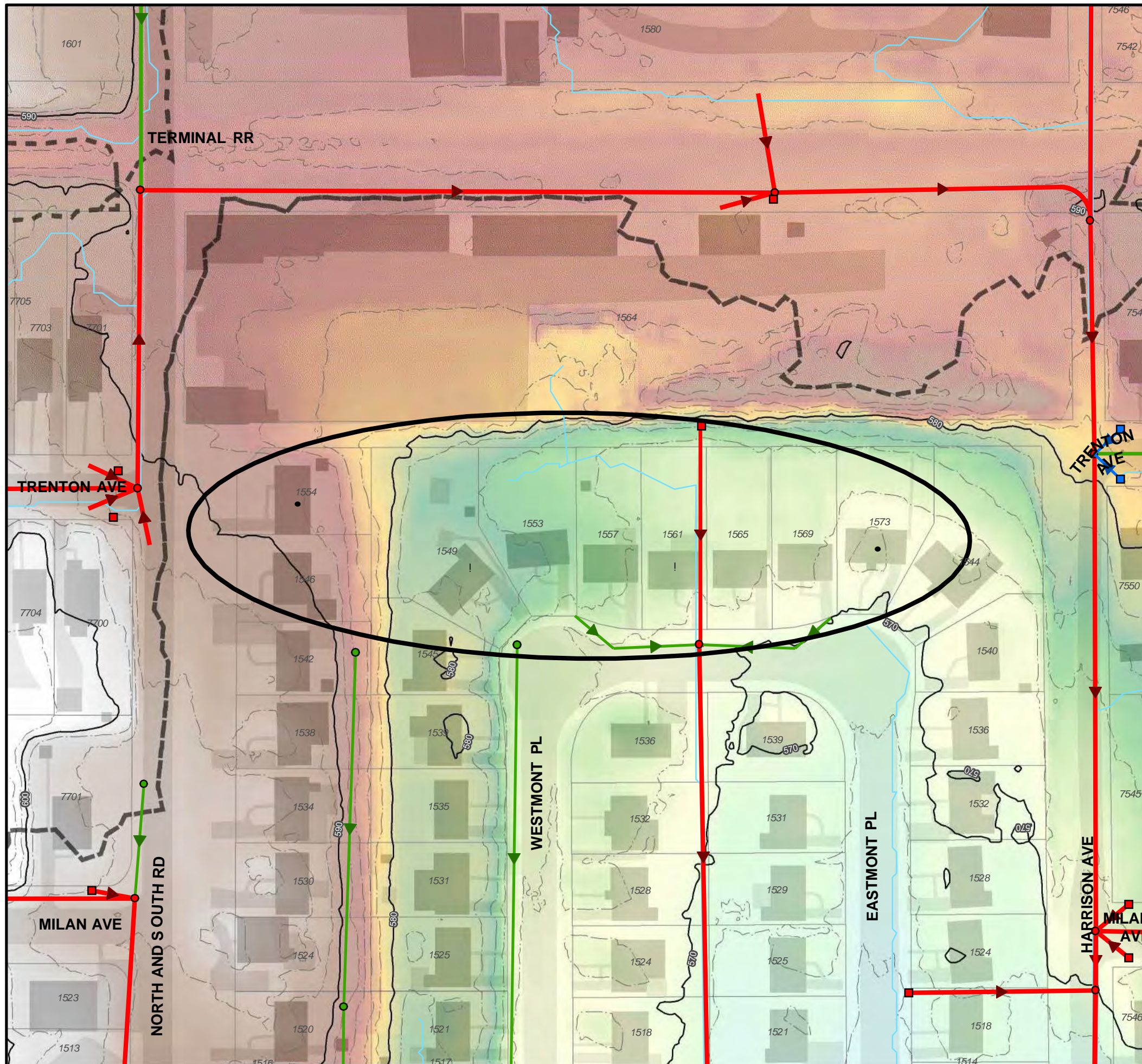
Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- ▨ Regulatory Floodway
- Existing MSD System
- Combined Inlet
- Storm Inlet
- ≠ Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer



Milan Ave
 Ranked #2 in the Backyard Category





Problem Description:

The property north of the Grenville Subdivision sits about 6-10 feet above the backyards of several houses. About 3.3 acres of drainage reaches the backyards of 1561 to 1573 Westmont Place.

The backyards are relatively flat; there is no adequate conveyance which carries water from the backyards to the street, so the yards flood frequently. Seepage occurs into the basements of some of the homes.

There is an inlet behind 1561, but only about half of a side is able to accept water due to grading issues. Note the inlet appears to be in a strip of ROW between the houses and business.

Looking northwest towards the strip of ROW between homes (on the left) and the business to the north (on the right).



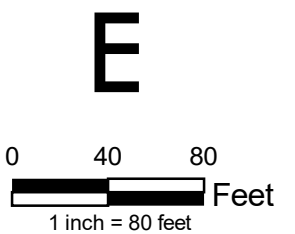
Looking towards the inlet north of #1561. Due to grading, the inlet does not appear to collect much runoff.



Looking south towards the backyard at #1561.

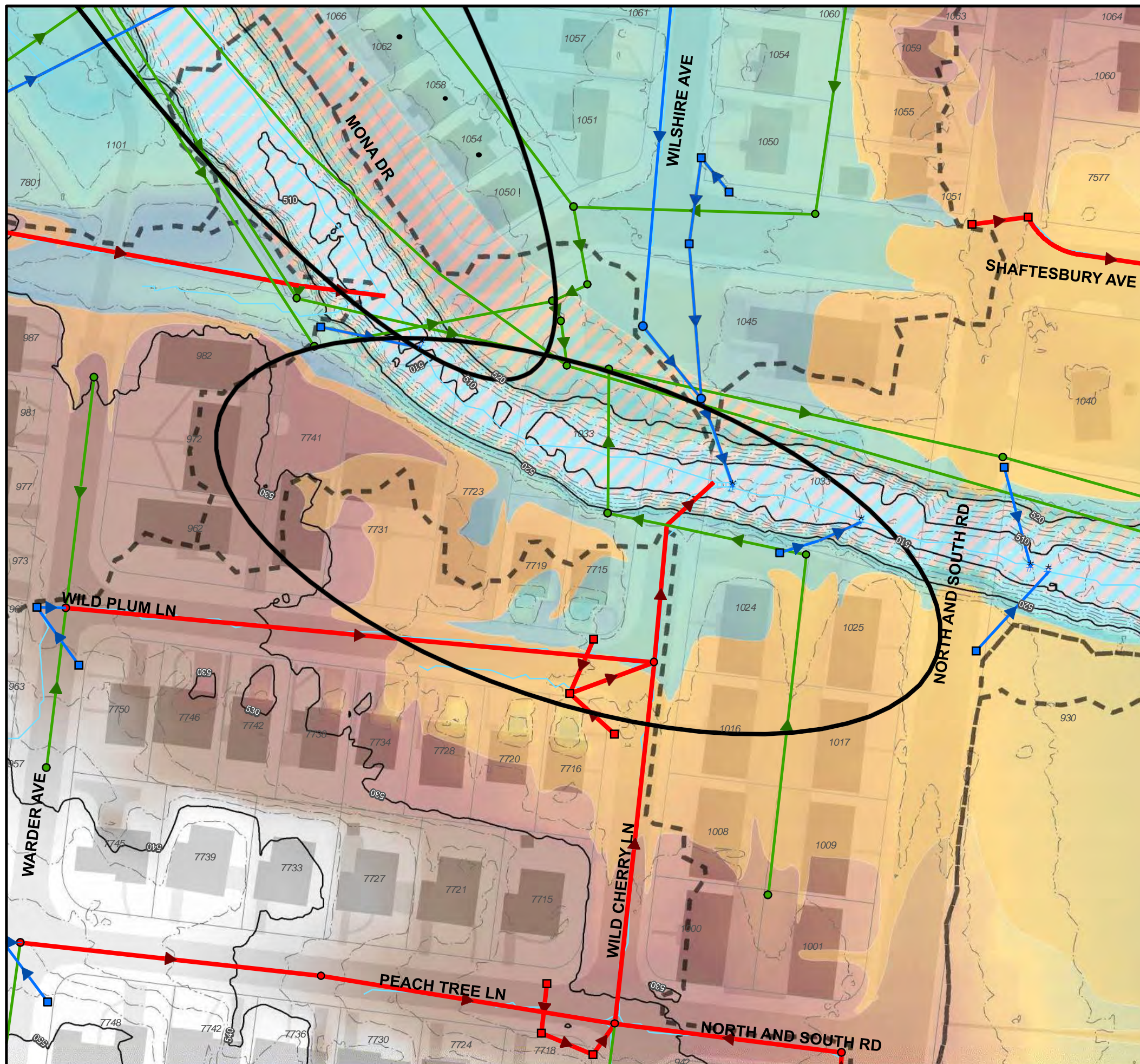
Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- Watershed Boundary
- Flood Hazard Zone**
- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway
- Existing MSD System
- Combined Inlet
- Storm Inlet
- Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer



Grenville Subdivision
Ranked #3 in the Backyard Category





Problem Description:

A 500-foot reach of the River des Peres is actively eroding. The top of bank is 18-feet high is threatening residential buildings and parking lots located along Wild Cherry and Wild Plum Lanes. Using MSD's erosion rating, the parking lot is more severely threatened (V/H=0.56) than the apartment buildings (V/H=0.2 to 0.4).

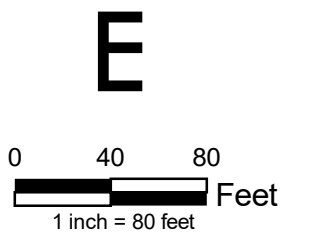
An approximately 175-foot reach of the right-descending river bank is lined with a concrete slab, but the integrity of the concrete is compromised by a 3-foot deep scour pool along the toe of bank. Failure of slab will likely cause failure in the parking lot.



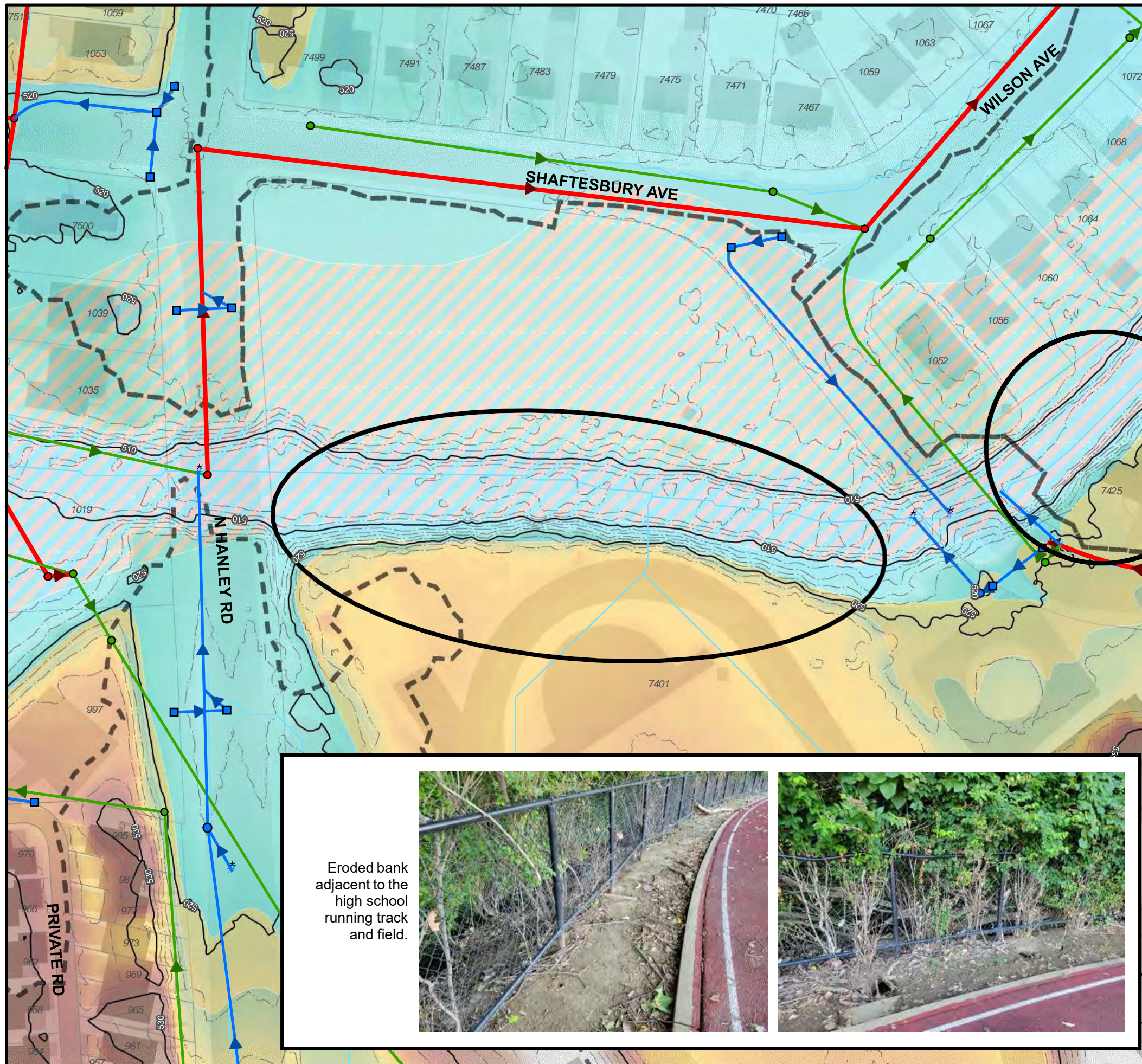
MSD infrastructure along the right-descending river bank is threatened by bank erosion including a combined sewer manhole, a combined sewer overflow (CSO) structure, and a storm sewer outflow structure.

Legend

- Stormwater Problem Point
- ▭ Problem Location
- Flow Path Line
- ⋯ Watershed Boundary
- Flood Hazard Zone**
- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway
- Existing MSD System
- Combined Inlet
- Storm Inlet
- ⚡ Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer



River Des Peres at Wild Plum Ln
Ranked #3 in the Erosion Category



Problem Description:

Erosion on the South bank of the River des Peres has destabilized the bank leading up to the University City High School track and field. These features are located immediately adjacent to a 3.5-foot high fence along the top of the eroding bank, and are at risk.

The foundation of a 6-foot high mid-slope fence is eroded and the fence is collapsing. It appears that riprap was added from the top of slope to address an area of gulley erosion, but this riprap is sliding down the bank. The weight of this riprap is contributing to the fence failure.



On the right descending bank are the eroding bank, collapsing fence, and sliding riprap.



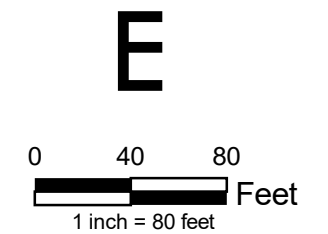
On the right descending bank are the eroding bank, collapsing fence, and sliding riprap.



Eroded bank adjacent to the high school running track and field.

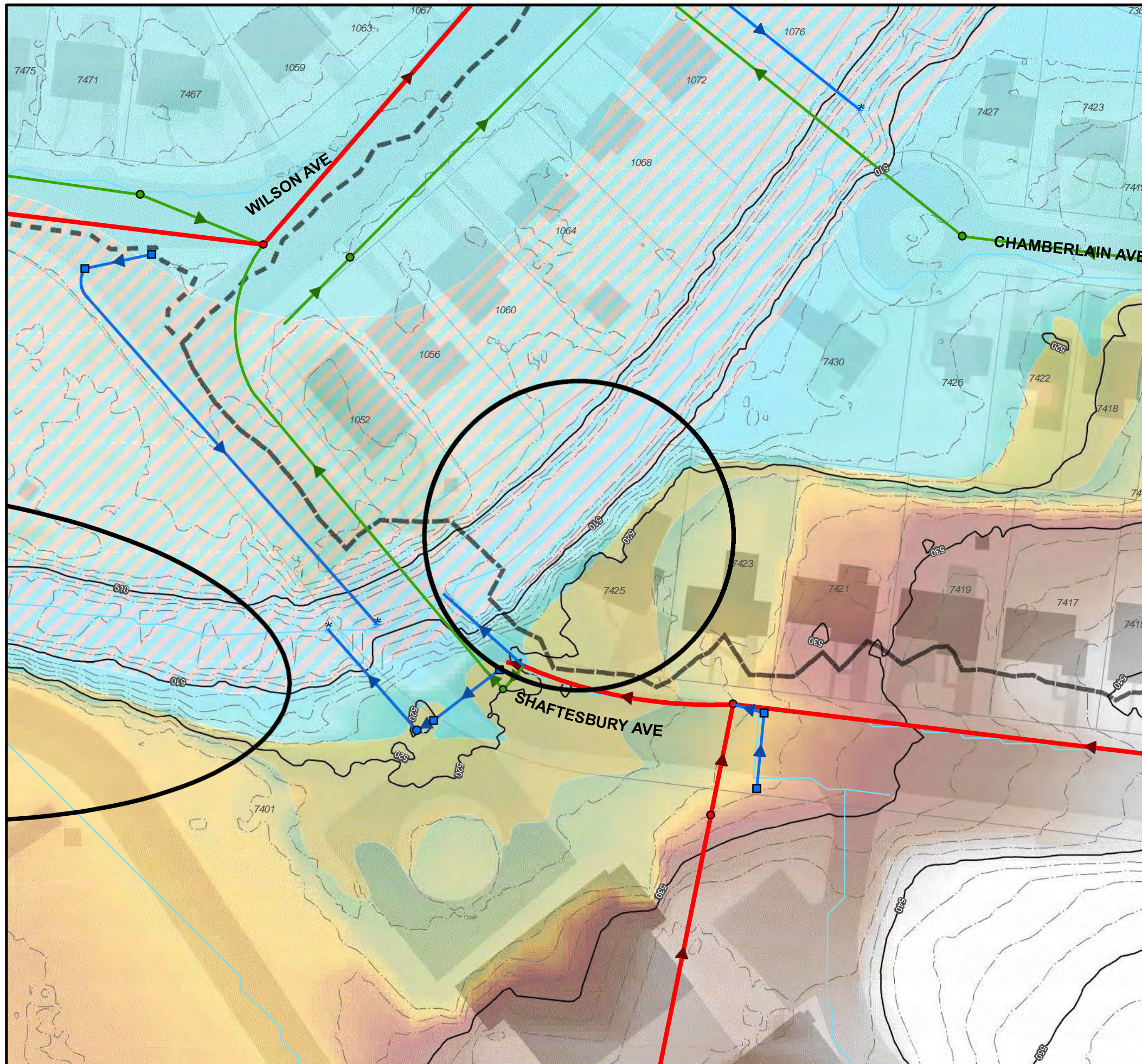
Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- Watershed Boundary
- Flood Hazard Zone**
- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway
- Existing MSD System**
- Combined Inlet
- Storm Inlet
- Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer



River Des Peres at 7401 Balson Ave (University City High School)

Ranked #4 in the Erosion Category



Problem Description:
 A 16-foot high bank with a combination of public and private walls is compromised and a house located only 7 feet from the top of wall is at risk. The wood tie wall is compromised, but the lower 6-feet of the bank of the Rider des Peres at this location is a WPA hand-placed stone wall, which appears stable.



Wood tie wall and WPA block wall. 7425 Shaftesbury Ave is the house behind the wall in the photo.



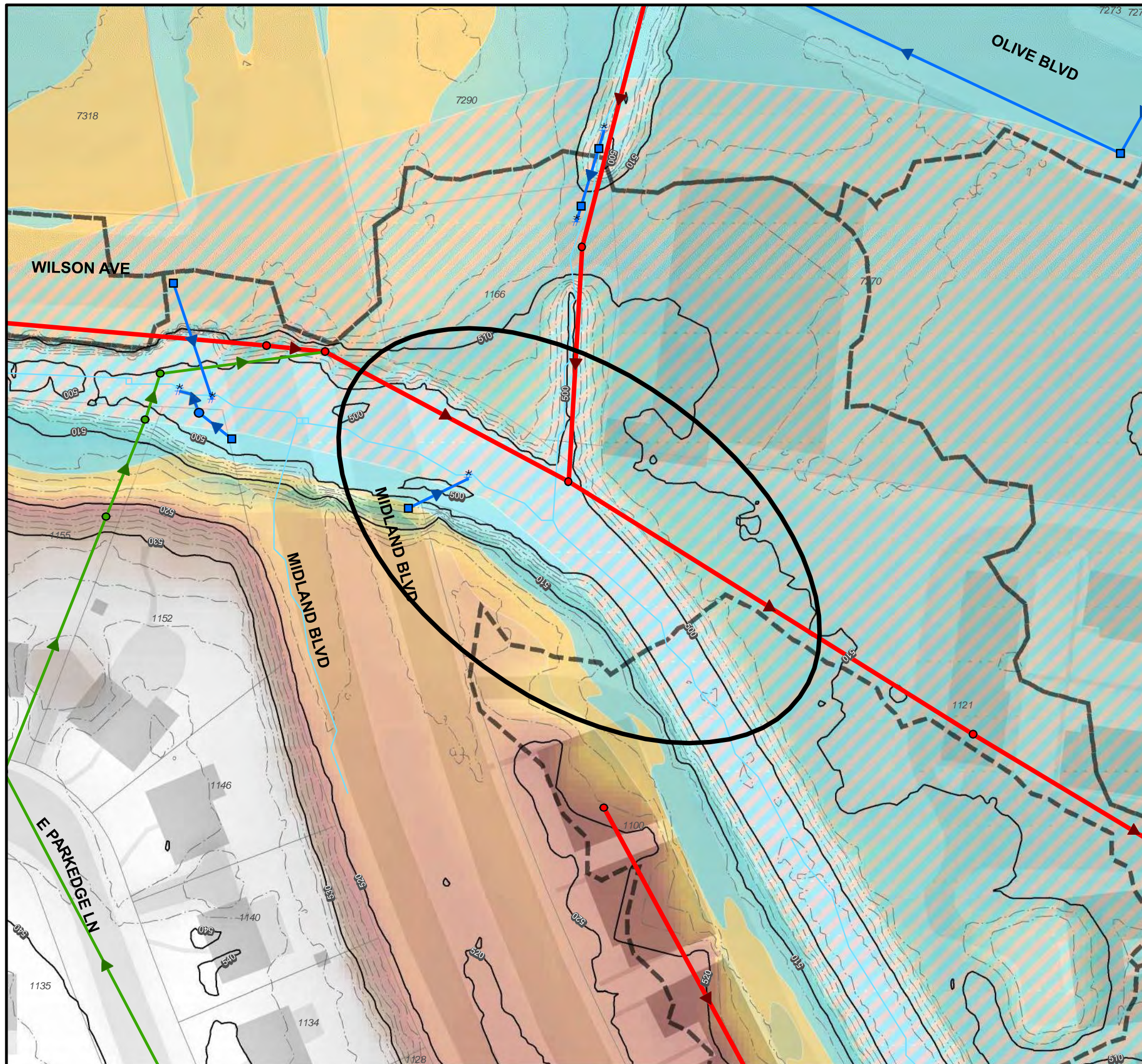
Wood tie wall and WPA block wall, looking downstream.

Legend

● Stormwater Problem Point	<u>Existing MSD System</u>
□ Problem Location	■ Combined Inlet
— Flow Path Line	■ Storm Inlet
--- Watershed Boundary	≠ Storm Intake-Outfall
<u>Flood Hazard Zone</u>	● Combined Manhole
Light Blue 1.0% Annual Chance Flood Hazard	● Sanitary Manhole
Yellow 0.2% Annual Chance Flood Hazard	● Storm Manhole
Light Blue Regulatory Floodway	→ Combined Sewer
	→ Sanitary Sewer
	→ Storm Sewer

0 30 60 Feet
 1 inch = 60 feet

River Des Peres at 7425 Shaftesbury Ave
Ranked #5 in the Erosion Category



Problem Description:

Concrete slabs lining a tributary to the River des Peres are undermined and have failed, looking upstream. The foundation of the concrete-curb adjacent U-Haul parking lot is exposed on the east side of the channel. At-risk infrastructure includes the commercial parking lot, an inlet manhole, and a pipe outfall.



Undermined concrete slabs with adjacent at-risk infrastructure, looking upstream. The concrete box culvert under Olive Boulevard (background) appears stable.



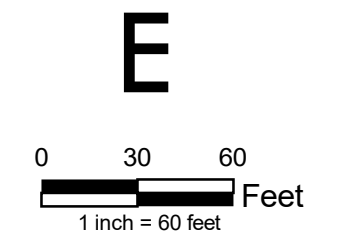
Exposed foundation of the adjacent parking lot.

Legend

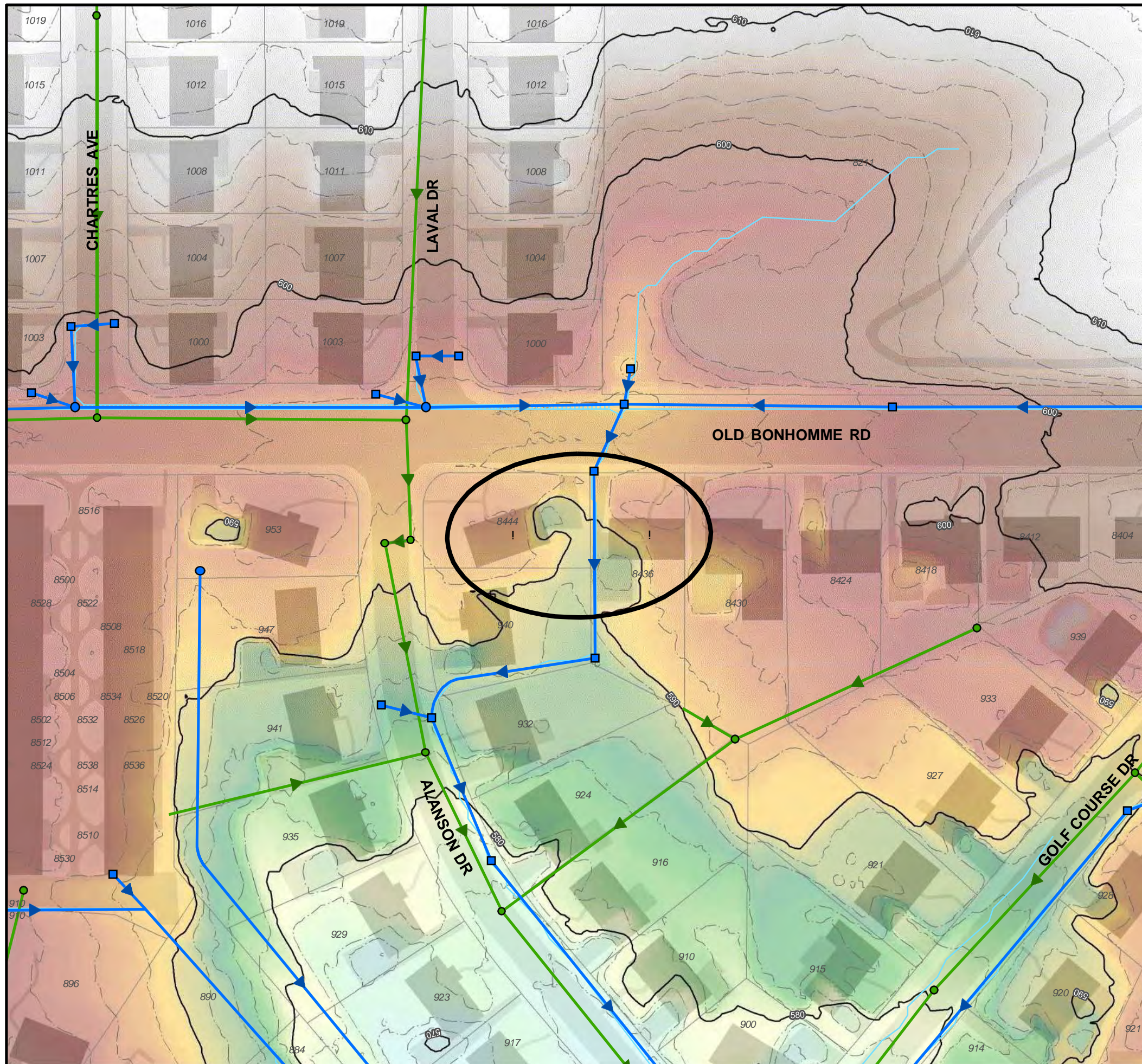
- Stormwater Problem Point
- ▭ Problem Location
- Flow Path Line
- - - Watershed Boundary
- Existing MSD System
- Combined Inlet
- Storm Inlet
- ⚡ Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer

- Flood Hazard Zone**
- 1.0% Annual Chance Flood Hazard
 - 0.2% Annual Chance Flood Hazard

- Regulatory Floodway



Tributary to River Des Peres at Olive Blvd
Ranked #6 in the Erosion Category



Problem Description:

Basement garages at 8444 and 8436 Old Bonhomme Rd flood frequently from water which comes down the driveway at 8436 from the street. There is a triple curb inlet in front of 8436 Old Bonhomme Rd which accepts water from about 1,200 feet of Old Bonhomme Rd. The downstream pipe is 24" in diameter.

MSD has studied the problem and identified storm sewer upsizing as a solution. It may also be beneficial to investigate other opportunities for improvement, such as: A) increase inlet capacity at the street by adding inlets east of the triple inlet, B) raise a portion of the driveway at 8436 to keep water in the street, or C) provide a conveyance path down driveway and towards the at the property corner between #8436 and 940/932 Alanson Dr.



Looking south across Old Bonhomme Rd. #8436 is on the left and #8444 is on the right.

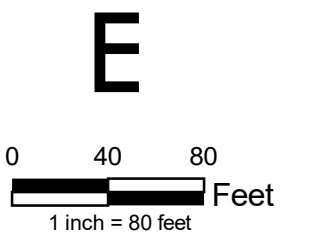
Looking at the ground in front of the driveway at 8436 Old Bonhomme Rd.

Legend

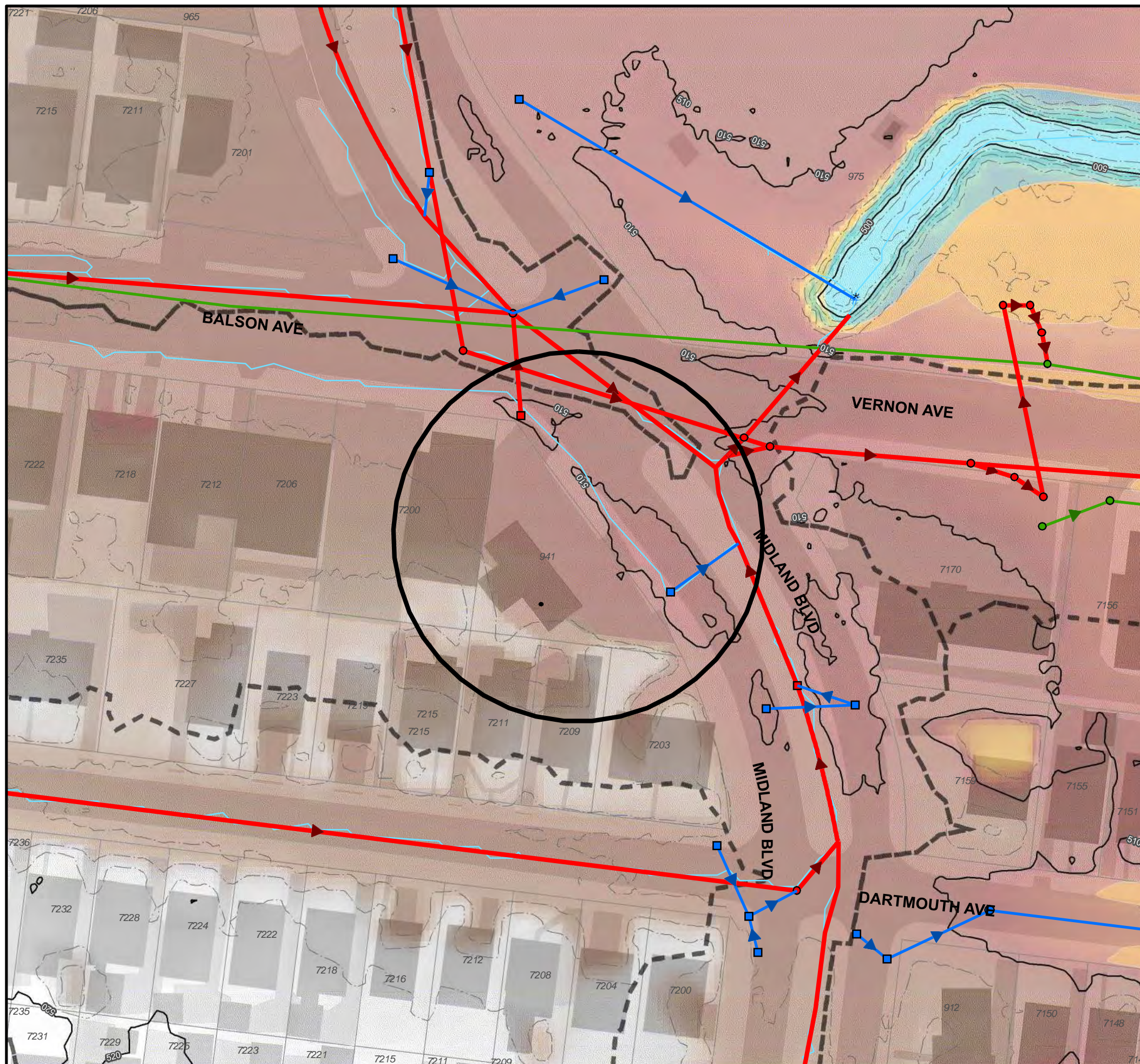
- Stormwater Problem Point
- Problem Location
- Flow Path Line
- ▭ Watershed Boundary
- Existing MSD System
- Combined Inlet
- Storm Inlet
- ≠ Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer

Flood Hazard Zone

- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway



Old Bonhomme Rd
Ranked #2 in the Street Category



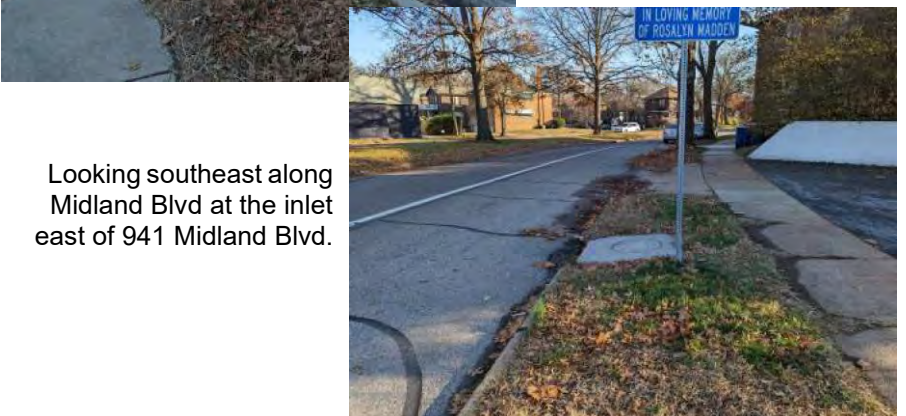
Problem Description:

The commercial building at 941 Midland Blvd has been flooded by ponded water in the street. The owner indicated that when this happens, the inlets won't drain. Investigation is necessary to determine if the flooding issue is due to inlet capacity, pipe capacity, or high tailwater from the River Des Peres, or a combination of these issues.

The parking lot in front of 941 Midland Blvd.



Looking north towards the inlet at the southwest corner of Midland Blvd and Balson Ave.



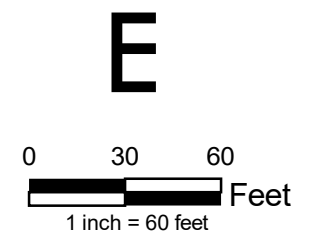
Looking southeast along Midland Blvd at the inlet east of 941 Midland Blvd.

Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- Existing MSD System
- Combined Inlet
- Storm Inlet
- # Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer

Flood Hazard Zone

- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway



Midland Blvd and Balson Ave

Ranked #3 in the Street Category



Problem Description:

Residents say that the low point on W Point Ct floods constantly. The street does not have a distinct crown. Asphalt patching has made the street uneven in some places. There are 4 inlets near the low point, but non appear very efficient. There is not a well-defined sag and inlets appear to clog easily with leaves.



Looking towards the grated curb inlet with side intake between #416 and 414. The side intake is rather narrow and the grate is clogged with leaves.



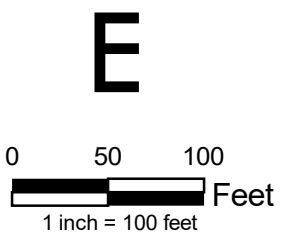
Looking south towards the inlets in front of #414 and 415. Both of these inlets are grated with a side intake.



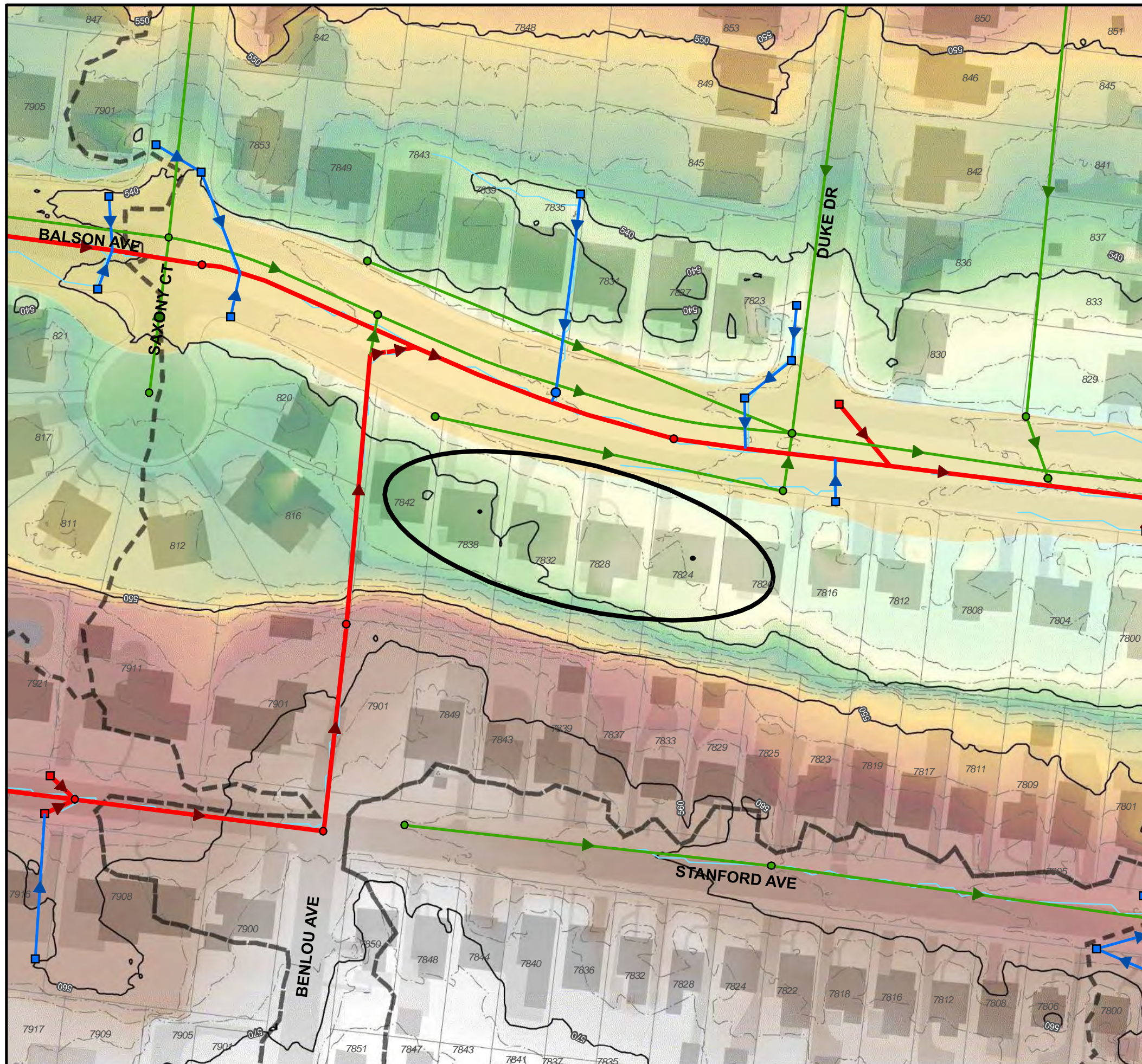
Looking north towards the northern two inlets on W Point Ct. Both are grated inlets with side intakes.

Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- Existing MSD System
 - Combined Inlet
 - Storm Inlet
 - ≠ Storm Intake-Outfall
 - Combined Manhole
 - Sanitary Manhole
 - Storm Manhole
 - Combined Sewer
 - Sanitary Sewer
 - Storm Sewer
- Flood Hazard Zone
 - 1.0% Annual Chance Flood Hazard
 - 0.2% Annual Chance Flood Hazard
 - Regulatory Floodway



W Point Ct
Ranked #4 in the Street Category



Problem Description:

The homes on Stanford Avenue sit about 18 feet higher than the homes on Balson Ave. Between the houses is at a 3:1 slope. The flow path from the backyards to the front yards on Balson Ave is inadequate, causing frequent flooding to at least two of the homes on Balson Ave. The drainage area to the back of the homes is about 1.3 acres.

The basement stairwell at 7838 Balson Ave. Sand bags and sump pumps have been added to try to keep the basement from flooding.



Looking west in the backyard of 7838 Balson Ave. The house is on the right.



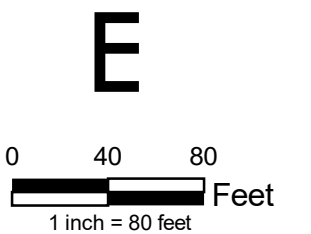
Looking east towards the backyards of two homes; 7832 Balson Ave is the house with the fence and 7828 Balson Ave is the house with the retaining wall.

Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- Combined Inlet
- Storm Inlet
- # Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer

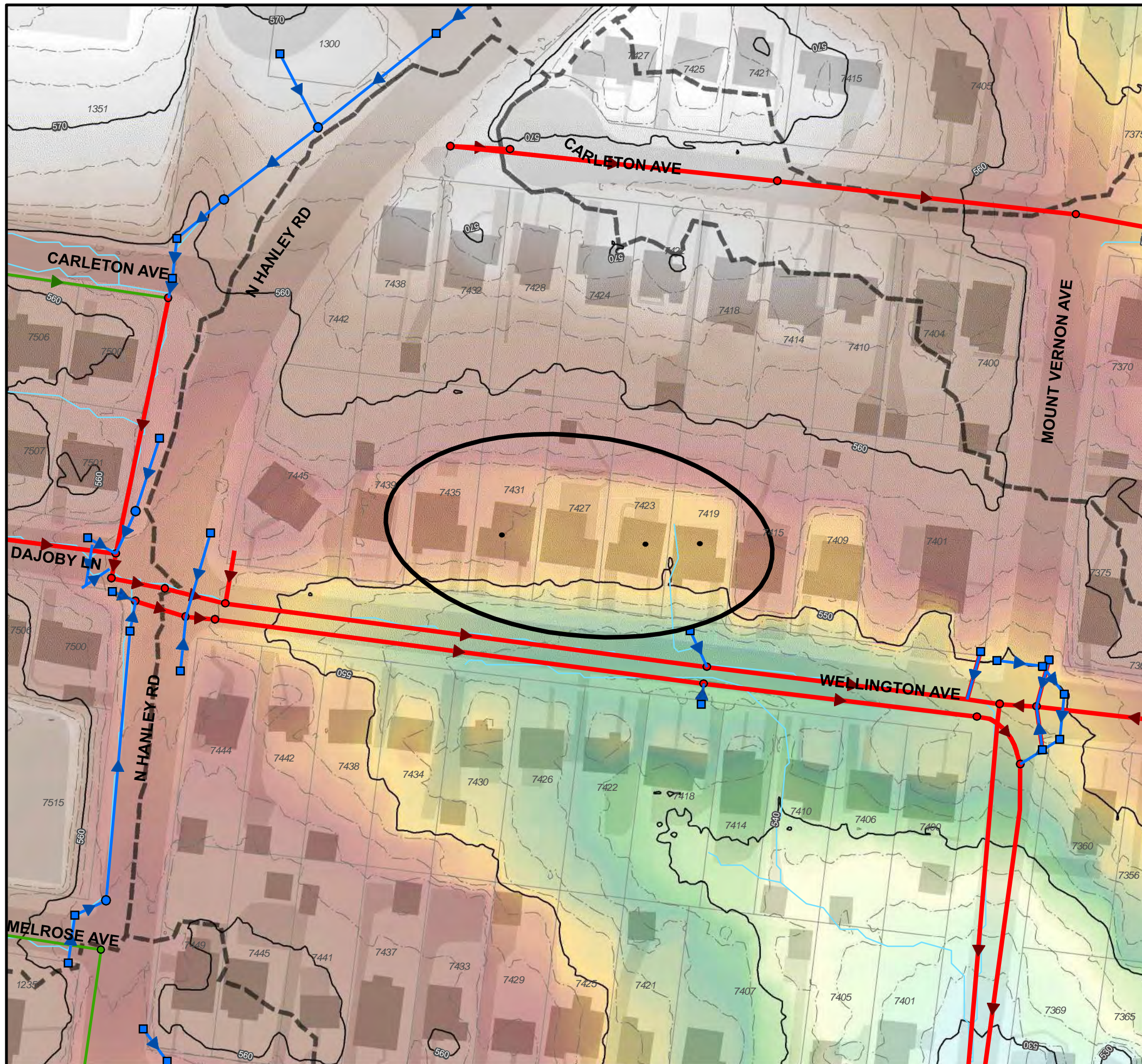
Flood Hazard Zone

- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway



Balson Ave

Ranked #1 in the Backyard Category

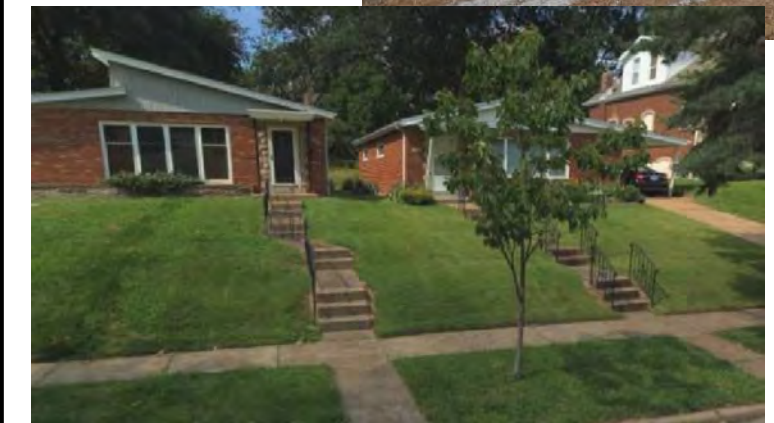


Problem Description:

About 2 acres of drainage reach the backyards between 7427-7419 Wellington Ave. There is not an adequate route for runoff to get past the houses and to the street, which is about 6 feet lower than the homes. As a result, the yards and basements of homes flood frequently.

It should be noted that there is a low point on the south end of the cul-de-sac for Carleton Ave which contributes to the drainage area; however, this area is not as significant as the contributing drainage area which includes the yards and homes of the surrounding properties.

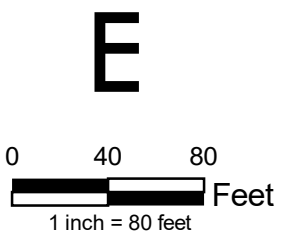
Looking southwest towards the low point on Carleton Ave. The low point is near the red car; this area ponds until it overflows towards the backyards of the houses on Wellington.



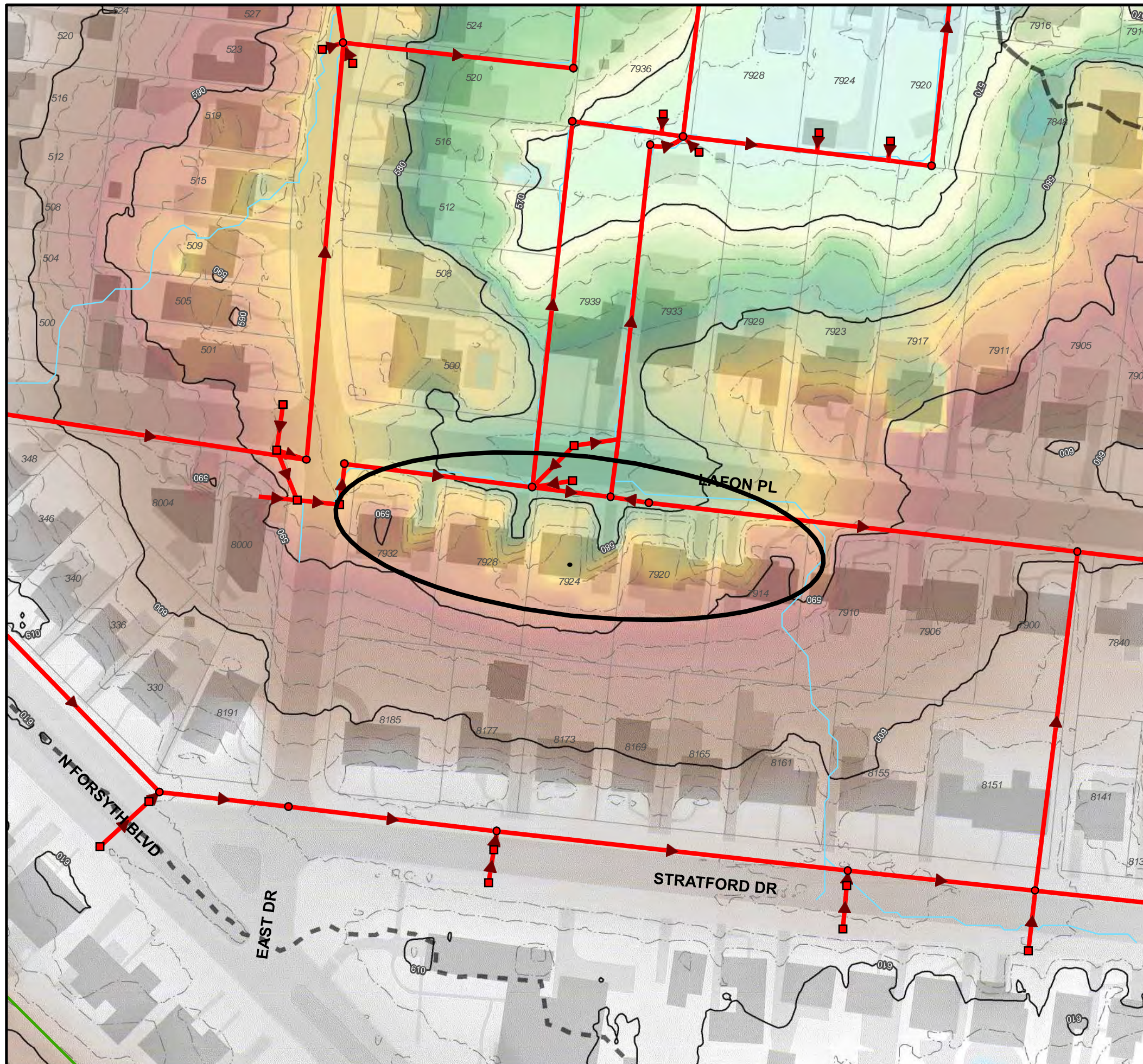
Looking north between #7423 (on the left) and #7419 (on the right). The space between houses may convey some of the runoff from the backyards, but the grading and available space is insufficient.

Legend

- | | |
|--|----------------------------|
| ● Stormwater Problem Point | Existing MSD System |
| □ Problem Location | ■ Combined Inlet |
| — Flow Path Line | ■ Storm Inlet |
| - - - Watershed Boundary | # Storm Intake-Outfall |
| Flood Hazard Zone | ● Combined Manhole |
| Light Blue 1.0% Annual Chance Flood Hazard | ● Sanitary Manhole |
| Orange 0.2% Annual Chance Flood Hazard | ● Storm Manhole |
| Light Blue Regulatory Floodway | → Combined Sewer |
| | → Sanitary Sewer |
| | → Storm Sewer |



Wellington Ave
Ranked #4 in the Backyard Category

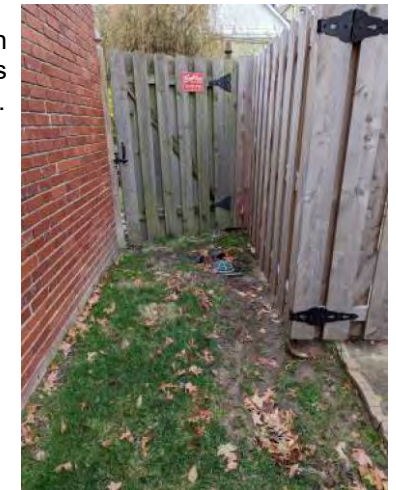


Problem Description:

About 2.3 acres of drainage flows to the backyards of three houses, causing flooding to yards and basements. There is no flow path to carry runoff past the houses and to the inlets in the street.

The houses in this area have basement tuck-under garages. The street and sidewalk flood but the basement garages have not flooded.

Looking north between #7924 and 7928 towards erosion and a yard drain.



Looking west in the backyard of 7924 Lafon Pl. The house is out of frame on the right. The yard slopes towards the back of the house.



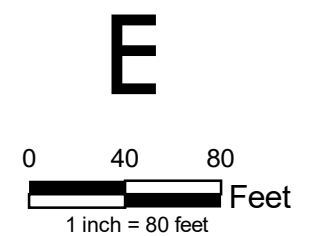
Looking east along the back of 7924 Lafon Pl. A yard drain was installed in an attempt to reduce ponding near the house.

Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- Existing MSD System
- Combined Inlet
- Storm Inlet
- # Storm Intake-Outfall
- Combined Manhole
- Sanitary Manhole
- Storm Manhole
- Combined Sewer
- Sanitary Sewer
- Storm Sewer

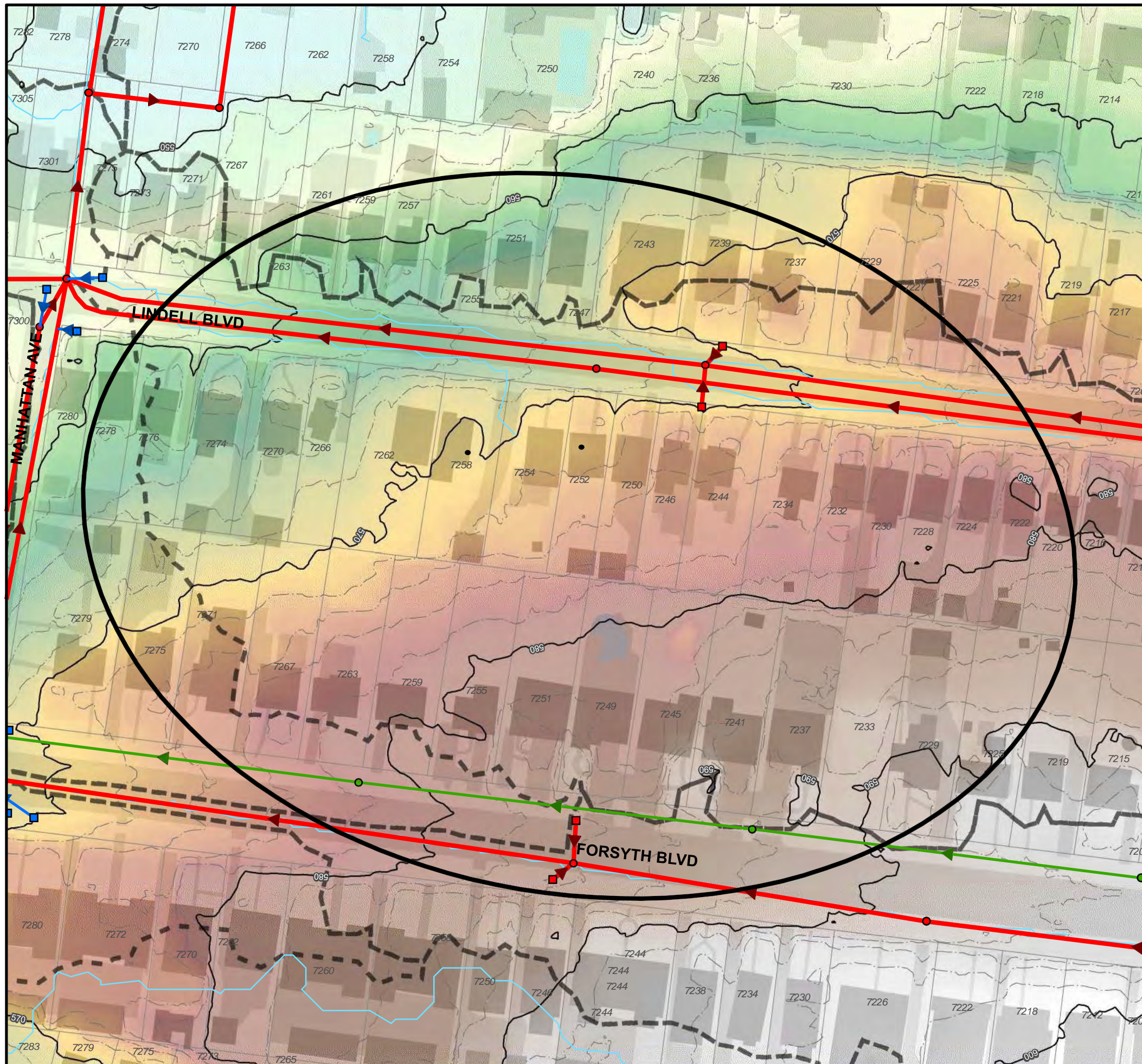
Flood Hazard Zone

- 1.0% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway



Clayton Gardens Subdivision

Ranked #5 in the Backyard Category



Problem Description:

The homes on Forsyth Blvd drain to the backyards of Lindell Blvd. There is no defined path for runoff to continue flowing to the street, so the yards, detached garages, and basements have frequent flooding. The drainage area to the back of the homes is about 2.3 acres.

Looking west towards the backyard at 7258 Lindell Blvd. The stairwell to the basement is under the porch.



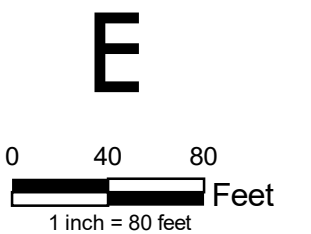
Looking north between #7252 (on the left) and #7250 (on the right). Basement windows are within 1-3 inches of the driveway - a potential source of flooding to the basements.



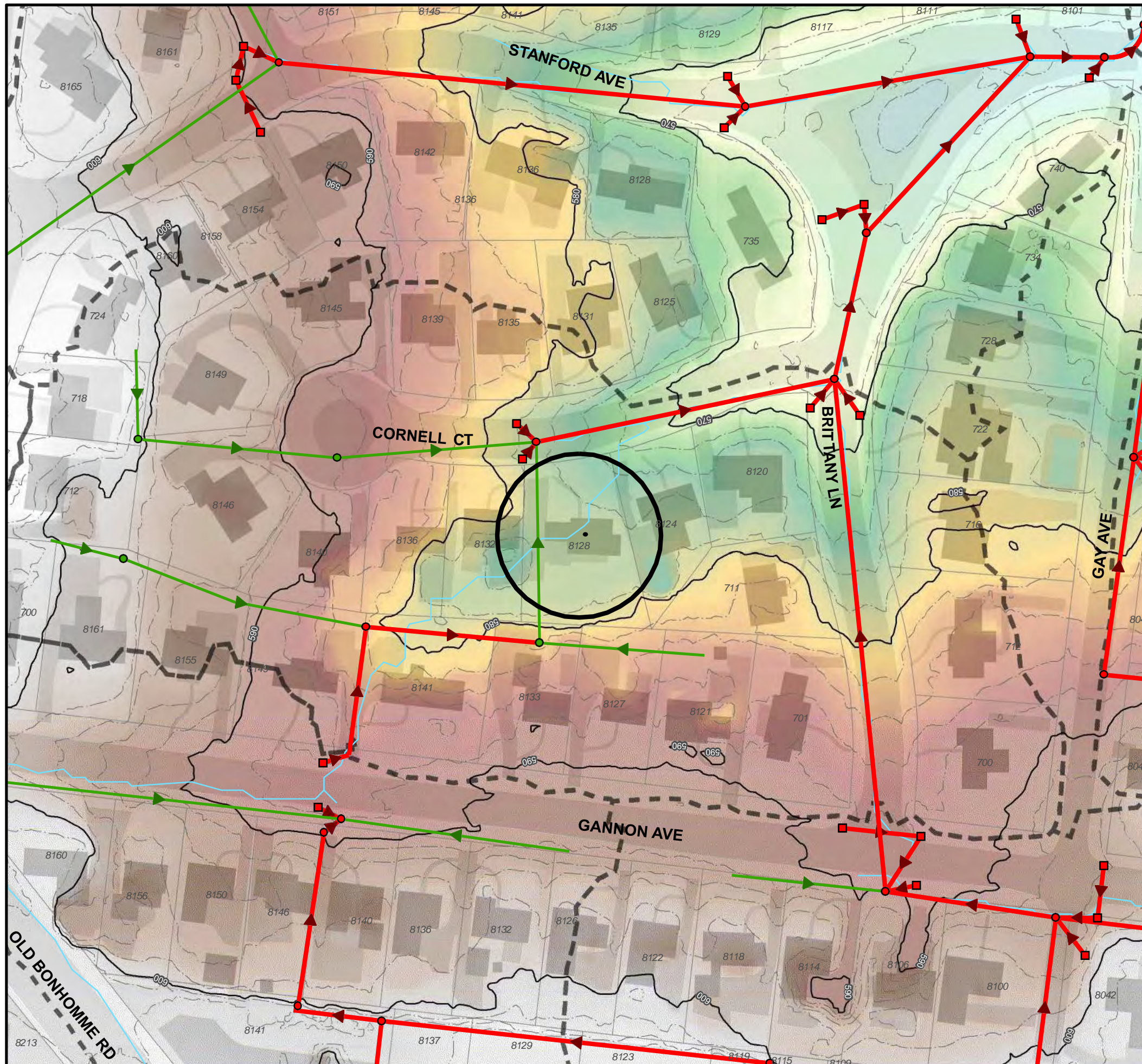
Looking west towards the backyard at 7252 Lindell Blvd. Ponding occurs near the steps to the patio. There is a stairwell to the basement under the porch.

Legend

- | | |
|-----------------------------------|------------------------|
| ● Stormwater Problem Point | Existing MSD System |
| □ Problem Location | ■ Combined Inlet |
| — Flow Path Line | ■ Storm Inlet |
| --- Watershed Boundary | # Storm Intake-Outfall |
| Flood Hazard Zone | |
| ■ 1.0% Annual Chance Flood Hazard | ● Combined Manhole |
| ■ 0.2% Annual Chance Flood Hazard | ● Sanitary Manhole |
| ■ Regulatory Floodway | ● Storm Manhole |
| | → Combined Sewer |
| | → Sanitary Sewer |
| | → Storm Sewer |



Forsyth Place Subdivision
Ranked #6 in the Backyard Category



Problem Description:

About 1.8 acres of drainage reaches the backyards of 8132 and 8128 Cornell Ct. #8132 has a basement garage which flooded significantly in the July 2022 events. #8128 has frequent yard flooding as well as basement seepage.

Looking towards the backyard of 8132 Cornell Ct; the basement garage has flooded since it is the low point of about 1.8 acres.



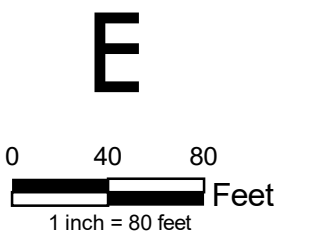
Looking west towards the backyard of #8132.

Looking southeast towards the backyard of 8128. The yard is sloped towards the house.

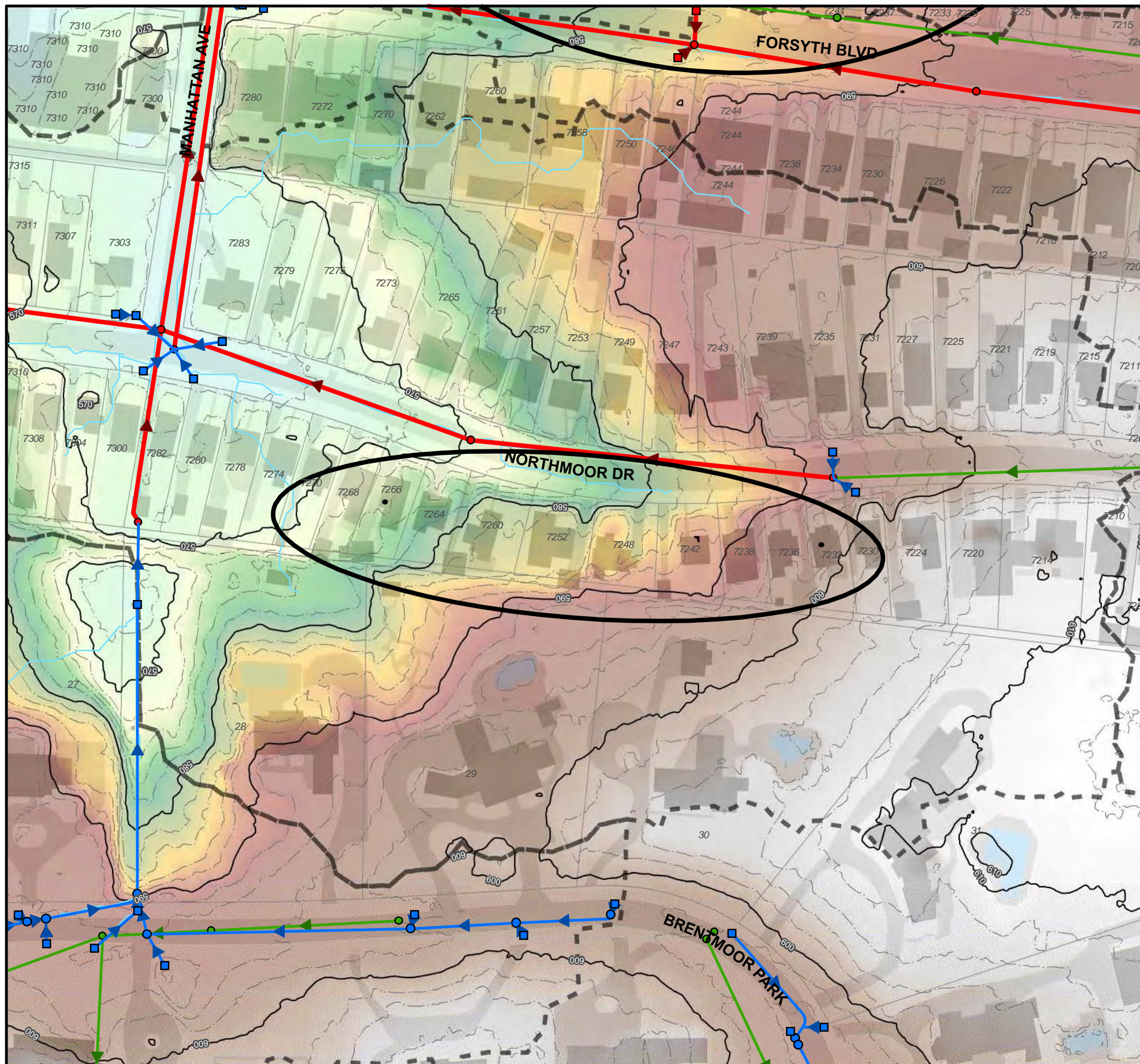


Legend

- | | |
|---------------------------------|------------------------------------|
| ● Stormwater Problem Point | Existing MSD System Combined Inlet |
| Problem Location | Storm Inlet |
| Flow Path Line | Storm Intake-Outfall |
| Watershed Boundary | Combined Manhole |
| Flood Hazard Zone | Sanitary Manhole |
| 1.0% Annual Chance Flood Hazard | Storm Manhole |
| 0.2% Annual Chance Flood Hazard | Combined Sewer |
| Regulatory Floodway | Sanitary Sewer |
| | Storm Sewer |



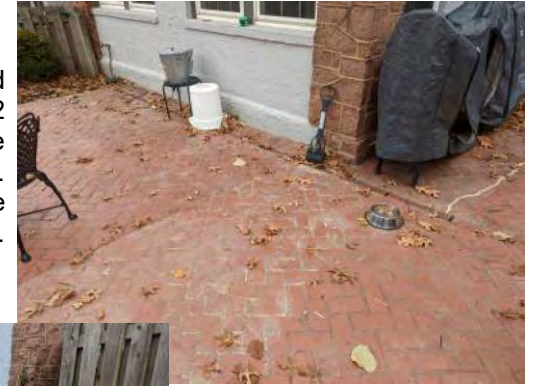
Cornell Ct
Ranked #7 in the Backyard Category



Problem Description:

The homes on Brentmoor Park drain to the backyards on Northmoor Dr. The backyards of some homes receive about 1 to 1.5 acres of drainage. The drainage path past the houses varies; some homes have ineffective conveyance past the house, causing yard and basement flooding.

A slotted drain was installed by the homeowner at 7232 Northmoor Dr to reduce ponding against the house. This type of private drainage is common in the area.



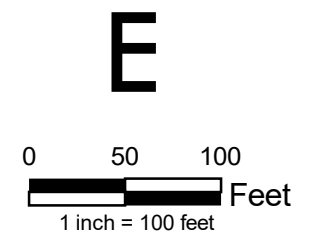
Looking north between #7236 (on the left) and #7232 (on the right). The tuck-under garage is at risk of flooding since the main flow path for water in the backyards is to flow down this driveway.



Looking east towards the backyard of 7236. The yard slopes towards the house; this is typical of the backyards in this area.

Legend

- Stormwater Problem Point
- Problem Location
- Flow Path Line
- - - Watershed Boundary
- Existing MSD System
 - Combined Inlet
 - Storm Inlet
 - # Storm Intake-Outfall
 - Combined Manhole
 - Sanitary Manhole
 - Storm Manhole
 - Combined Sewer
 - Sanitary Sewer
 - Storm Sewer
- Flood Hazard Zone
 - 1.0% Annual Chance Flood Hazard
 - 0.2% Annual Chance Flood Hazard
 - Regulatory Floodway



Northmoor Park Subdivision

Ranked #8 in the Backyard Category