Public Works Committee **5. 1.**

Meeting Date: 03/31/2015

Submitted For: Len Linton, Engineering/Public Works

By: Len Linton, Engineering/Public Works

Title:

Consider Options for Addressing Stormwater Drainage Issues in Low Lying, Land Locked Areas

Purpose/Background:

The City received several reports of high water on properties in 2014. The residents came to the September 16, 2014 and October 21, 2014 Public Works Committee meetings. The motion was made by the committee and ratified by City Council to direct staff to update the comprehensive stormwater model and prepare a feasibility study for addressing the concerns.

Staff analyzed the drainage areas for three areas that reported flooding in 2014. The areas are listed with the highest priority first:

1. Gibbon Street north of 173rd Avenue
2. 162nd Lane West of Ramsey Boulevard
3. 156th Lane East of TH 47

There were several other property owners that contacted the City about standing water on their property during the 2014 spring snow melt. The three areas studied continued to experience high water long after the snow melt was finished. The other properties did not contact the City again.

The attachments to this case include a City map showing the location of all three (3) areas studied, a neighborhood map for each area with the properties that contacted the City highlighted and plan and profile maps for each area showing the drainage routes considered and the elevation changes along the maps. Large scale colored maps of each neighborhood will be available at the meeting. They are too large to include in the agenda. The attachments also include emails from the residents, a neighborhood survey from Gibbon Street prepared by a resident and the list of property owners that contacted the City in 2014.

The same process was used to analyze each area. Autocad Civil3D 2014 was used to create a surface model using the 2003 bare earth aerial topo points. The points were a product of the aerial mapping of the City completed in 2003. The vertical accuracy of the aerial mapping is adequate for preliminary analysis, it is not adequate for detailed design of projects. The surface was placed on the City base map. The drainage and utility easements were digitized and merged to show contiguous areas covered by easements. Alignments were created along easements down side lot lines and across the wetlands in the rear yards to evaluate drainage paths. Profiles were cut from the surface model along the alignments. A plan view and profile view sheets were created for each area.

A summary of each area is presented below:

Gibbon Street north of 173rd Avenue

The area was platted in 1974. Drainage and utility easements were recorded over some of the wetlands in the plat and over the County Ditch that runs across the north side of the plat. The ditch runs through wetlands that were not encumbered with drainage and utility easements. Gibbon Street is in the Deerwood Plat. The area to the west was platted in 1991 as Wildwood Acres. This plat provided drainage and utility easements over the wetlands in the plat. There are also drainage and utility easements along the lot lines from the ROW to the wetlands.

This area is relatively flat with minimum elevation change. The residents at 17421 Gibbon Street NW contacted the city about high water around their home and water coming into the basement. The home is a split level style with a 4 foot basement. The nearest wetland and easement recorded on the plat are on the north side of the next lot to the

north and extend onto the 2nd lot to the north. The address of the parcel with the majority of the wetland is 17511 Gibbon Street. There is a drainage and utility easement on the west side of Gibbon Street that connects to the easements on the Wildwood Acres plat. West of the Wildwood acres plat is an un-platted parcel. A County Ditch runs through this parcel. There is a drainage and utility easement on the west side of Gibbon Street across from the wetland at 17511 Gibbon Street. This easement also connects with the easements on Wildwood Acres.

Staff selected 2 alignments to evaluate, the first starts at 17421 Gibbon Street and runs west through drainage and utility easements, through Wildwood Acres, crossing Iguana Street and ending at the County Ditch. There is a stretch of approximately 500 feet at Iguana Street that is up to 10 feet higher than 17421 Gibbon Street. The grade slopes down to the west from the high point into the ditch. The grade drops below the beginning elevation 950 feet from the origin.

The second alignment starts at 17540 Gibbon Street, runs west then north across Wildwood Acres then crosses un-platted property before turning east and running across Deerwood along another County Ditch then runs south and east across more un-platted property following the ditch to the intersection with County Road 5, Nowthen Boulevard. This is a distance of 2.6 miles. The grade along the profile rises for approximately 500 feet then is level for another 1300 feet. The elevation drops below the beginning elevation 3500 feet from the origin.

162nd Lane West of Ramsey Blvd.
This area is un-platted and does not have drainage and utility easements. The residents at 6855 162nd Lane NW contacted the City about the high water elevation in the adjacent wetland. There are a series of wetlands in the back yards north of this parcel. All of the surrounding area is higher than these wetlands.

Staff selected 3 alignments to evaluate. The first starts at the property, runs northwest along 162nd Lane, turns south on Jasper Street to 161st Lane then runs west to Olivine Street then runs southwest to County Ditch 66. The County ditch is slightly higher than the starting elevation. The remainder of the profile is up to 20 feet higher than the starting elevation. This alignment is 3700 feet long,

The second alignment starts at the property, runs southeast along 162nd Lane, turns south on Ramsey Boulevard and stays on Ramsey Boulevard to the Ditch 66 crossing. The County Ditch is approximately the same elevation as the starting point. This profile is up to 20 feet higher than the starting point.

The third alignment runs along the second alignment to Ramsey Boulevard, crosses Ramsey Boulevard then runs southeast along common lot lines towards County Ditch 66. The profile drops below the starting elevation approximately 1800 feet from the origin. This profile is up to 30 feet higher than the starting point.

156th Lane East of TH 47/St Francis Blvd.
This area is platted and has some drainage and utility easements. The residents at 5220 156th Lane NW contacted the City about the level of the pond in their back yard. The ponding area did not have an outlet when the plat was recorded in 1973. A pipe was installed under TH 47 in 2003 to provide a stormwater outlet from a new subdivision. A pipe was also installed along 155th Lane and along lot lines from the wetland east of TH 47 to this pond. An outlet for this pond was installed with the Highlands at River Park Project in 2003. This pipe outlet is lower than the pipe installed with the Reilley Estates plat in 1978. The pond at 5220 156th Lane NW does drain; however, the water level has to be higher than the invert of the pipe downstream
The previous owners of the property came before the City Council in 2011 concerned about the proximity of the standing water to their drainfield. The City paid to have the drainfield relocated outside of the drainage easement. The water was contained in the drainage and utility easement in 2014.

Staff evaluated 2 alignments for lowering the invert of the existing pipe. The first would involve removing and replacing approximately 1100 feet of existing storm sewer pipe. The pipe is up to 15 feet deep, it is in easements across back yards; however, these yards are wooded and in some cases landscaped.

The second alignment considered starting where the pipe crosses 156th Lane, running east along 156th Lane to Juniper Woods drive then following Juniper Woods Drive to the intersection with the existing pipe. This would require 900 feet of pipe with up to 20 feet of cover. Open cutting for pipe installation would require reconstruction

of the street and would require closing the road for an extended period of time.

Timeframe:
Staff is presenting an overview of the concerns and potential solutions at this meeting. Detailed analysis will be undertaken as directed by City Council.

Observations/Alternatives:
Staff offers the following observations on each area:

Gibbon Street north of 173rd Avenue

This area is relatively flat. The affected area is lower than the potential overland drainage route. The northern route is a county ditch that was excavated through the wetlands prior to the Wetland Conservation Act being passed. Lowering the grade of the ditch to provide drainage to the Gibbon Street Properties would most likely result in draining the wetland which is not permitted.

The southerly route would require placing a pipe through an area that is up to 10 feet higher than the affected properties. The existing easements are not wide enough to support open trenching of a pipe. This route may also involve ditching through a wetland which is not permitted.

The Wetland Conservation Act may preclude acting on either of these alternatives. The City cleaned County Ditch 66 as part of a sanitary sewer extension project in 2007. Sheet piling weirs were required to be installed at regular intervals in the cleaned ditch. The tops of the weirs were set to maintain the existing wetland elevations. If the existing wetland levels are higher than the area to receive relief then the project is not feasible and other alternatives will need to be studied.

162nd Lane west of Ramsey Boulevard.

The affected property is in a natural depression and is surrounded by areas that are up to 20 or more feet higher. This area is un-platted. The westerly route and southerly routes are along road right of way. Open trenching of the pipe would require significant road reconstruction and would also require easements at the end of the routes across private property to discharge to the ditch. The initial review indicates the ditch elevation may be higher that the starting elevation for both of these routes.

The easterly route follows road right of way to Ramsey Boulevard then would require easements across private property and would include ditching of a wetland. The wetland rules would also apply any ditching required.

156th Lane east of TH 47

There is an existing storm sewer system that provides drainage for this area. The older part of the system was installed first, adjacent to the Rum River. The pond on the subject property was land-locked when the development was platted. A storm sewer outlet was installed when the property to the east was developed. The end of the new pipe had to be installed lower than the end of the existing pipe. This results in water standing in Woodland Green park and in the adjacent drainage and utility easements until the water rises to a point where it can flow through the system.

In all three instances it my be possible to directionally bore a pipe to provide drainage; however, the vertical difference between the starting point and ending point is very small and is close to the vertical tolerance available from directional bored pipe. Direction boring is best suited for pressure pipe situations or where there is adequate vertical relief between the start and the end of the pipe.

The father of the resident at 5220 156th Lane came forward with a proposal for installing an infiltration pit in the back yard to alleviate the flooding problem. The pond is normally wet every year. There are years such as 2011 and 2014 where the water level rises above the normal level. The presence of water every year indicates that the

groundwater level is close to the surface. It is staff's opinion that an infiltration pit will not work on this site because there is not any storage volume between the bottom of the pit and the top of the ground water.

The solution for any of these areas will be extensive and will set precedent for the City to follow in future years.

Staff contacted several of our neighboring cities and was informed that none of them have experienced such issues to the order of magnitude that Ramsey has, and that if they have they have usually been able to address the issue with minimal expense using gravity sewers or by pumping the water to a nearby location where the water can then be removed via storm sewer or culverts and ditches.

The only options that staff is aware of to effectively address such issues include installing gravity storm sewer to pipe the water to a lower elevation, installing storm sewer lift stations to pump the water to higher elevations where it can then flow by gravity via sewers or ditches to lower elevations, pumping the water using a portable pump and flexible hosing to another location where it can then flow by gravity via sewers or ditches to lower elevations, or promoting infiltration by constructing infiltration basins, ponds or trenches.

Attached is a copy of the drawing provided to staff by Mr. Full. While the use of such infiltration basins could be one of the more cost-effective means of removing standing surface water, not to mention the benefits that would be realized by helping to replenish our aquifers, this is not a viable option in most low-lying areas as the ground water is typically high and will not allow infiltration to occur. That said, such basins may be useful in other areas so staff will keep this as a tool in our tool box as they would be relatively inexpensive to construct and would assist in removing standing water in the spring when the ground is frozen as noted by Mr. Full. Staff estimates the cost to construct such a basin to be in the neighborhood of $3,000, but this cost will depend on the amount of turf restoration that is needed due to the damage caused by the construction equipment, whether any clearing and grubbing is needed, and whether any soil borings are needed to determine the elevation of the groundwater, which is typically variable throughout the year.

Unfortunately, it is typically not an option to use a portable pump and hose to pump water elsewhere in Ramsey due to the relatively flat terrain and extensive distance between grade breaks. The other options typically require installing thousands of feet of sewer and purchasing numerous easement areas, and/or installing lift stations, all of which would cost well into the hundreds of thousands of dollars (or more) to complete per area.

Staff is not aware of any government sponsored programs aimed at assisting homeowners with enhancing their private sump pump/drain tile systems. Numerous property owners who have contacted staff in years past did not have back-up sump pumps in the event their primary pump failed, which resulted in their home being flooded. Private systems can also be enhanced by adding battery back-up in the event their power fails for an extended duration. Staff will continue to explore whether programs exist for assisting property owners with such system enhancements.

Funding Source:

Staff review of the the alternatives has been part of the routine assignments.

Recommendation:

Staff recommends bringing the information forward to the City Council for discussion at a future work session to discuss the precedent setting implications of moving forward with any of these projects.

Action:

No action is required, but staff would appreciate any feedback or direction on this matter that the Committee can offer.

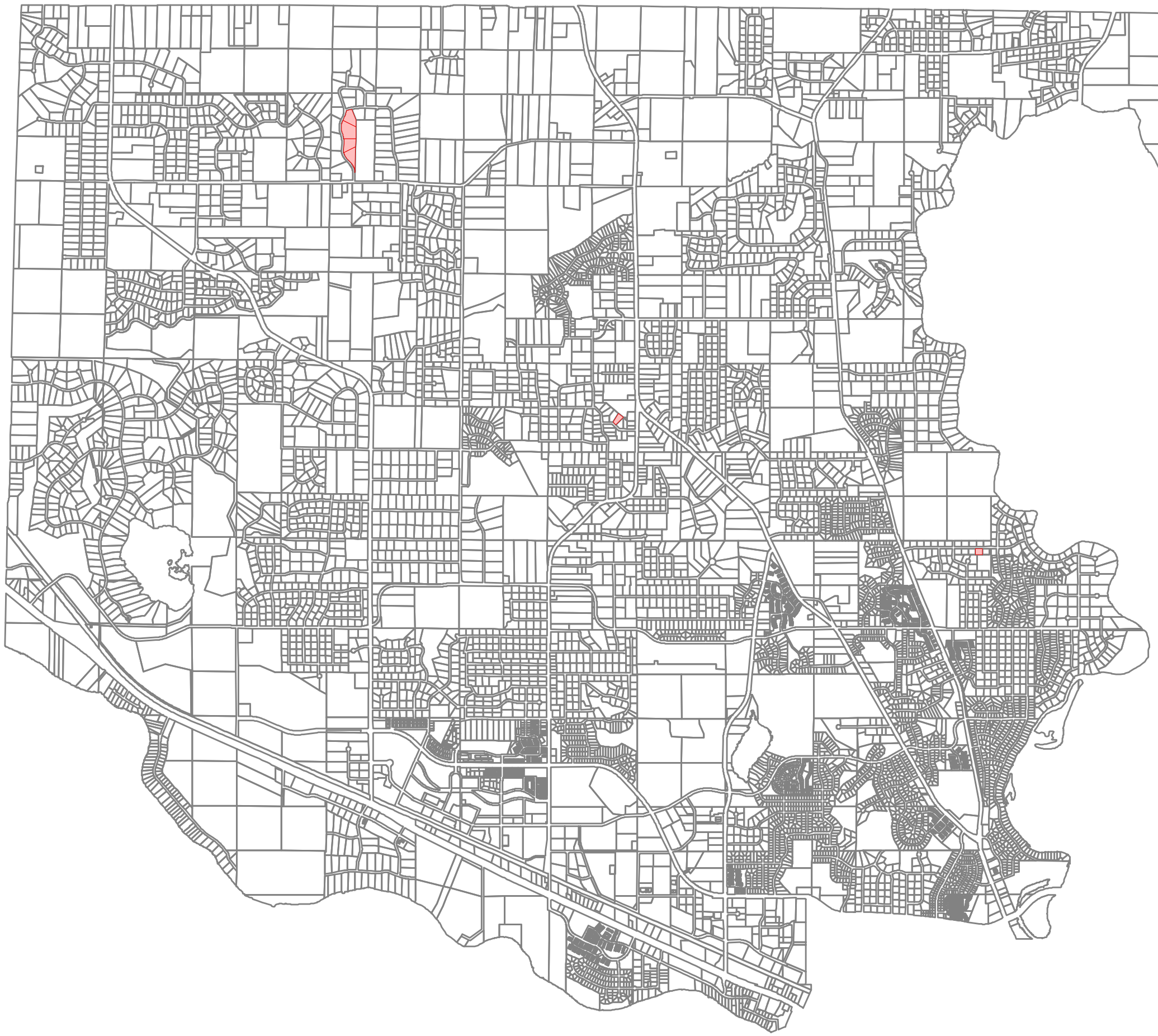
Attachments

Overall Map

Gibbon St
162nd Lane
156th Lane
Gibbon St Plan and Profile
162nd Lane Plan and Profile
156th Lane Plan and Profile
Miske Letter 102114
Resident Surveys

Form Review

Inbox	Reviewed By	Date
Bruce Westby	Bruce Westby	03/26/2015 03:04 PM
Grant Riemer	Grant Riemer	03/26/2015 03:43 PM
Kurt Ulrich	Kurt Ulrich	03/26/2015 04:24 PM
Form Started By: Len Linton		Started On: 03/25/2015 03:19 PM
Final Approval Date: 03/26/2015		



City of Ramsey

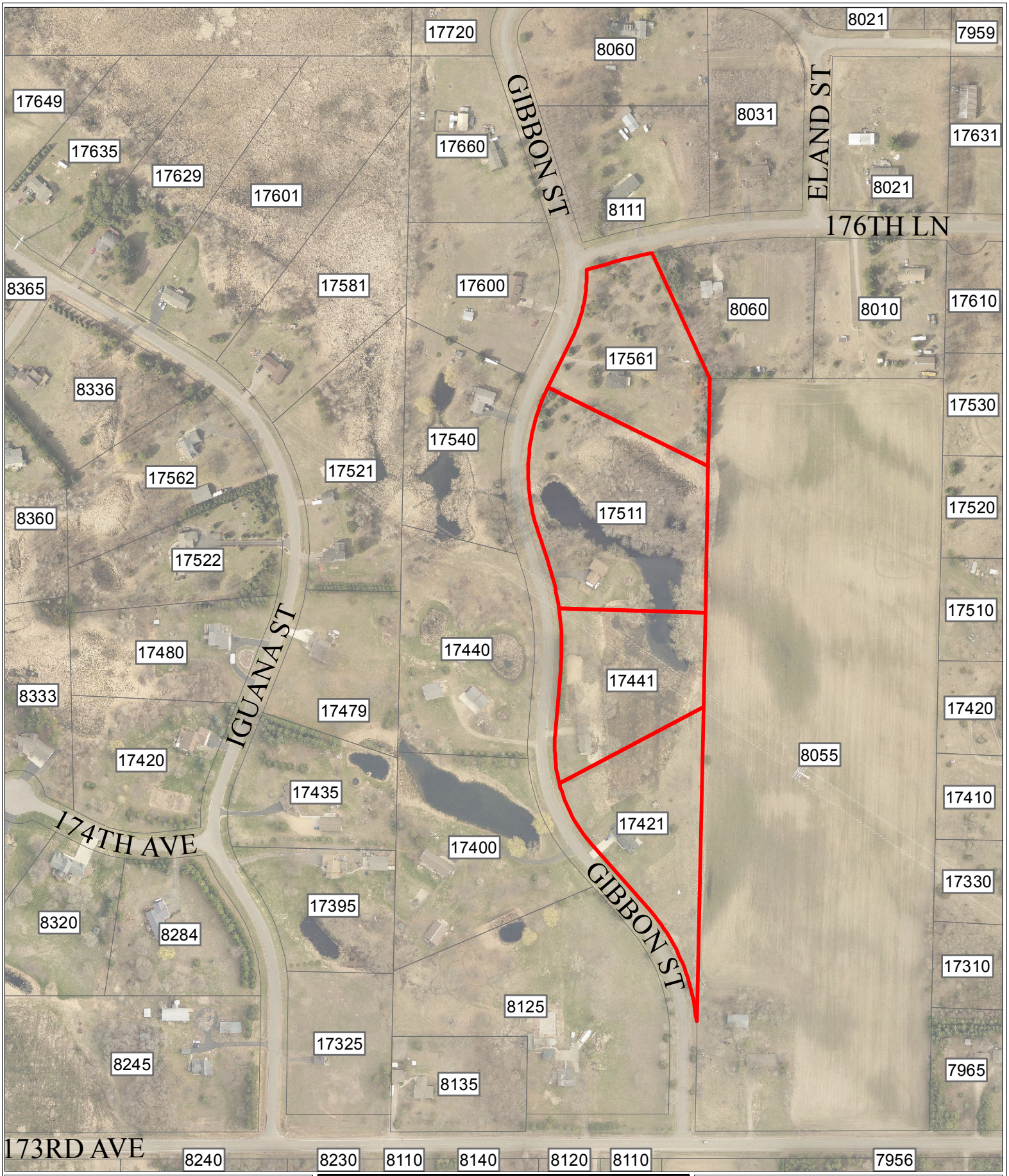
2014 Flooding Concerns

Legend

Identified Properties

N

0 0.5 1 Miles

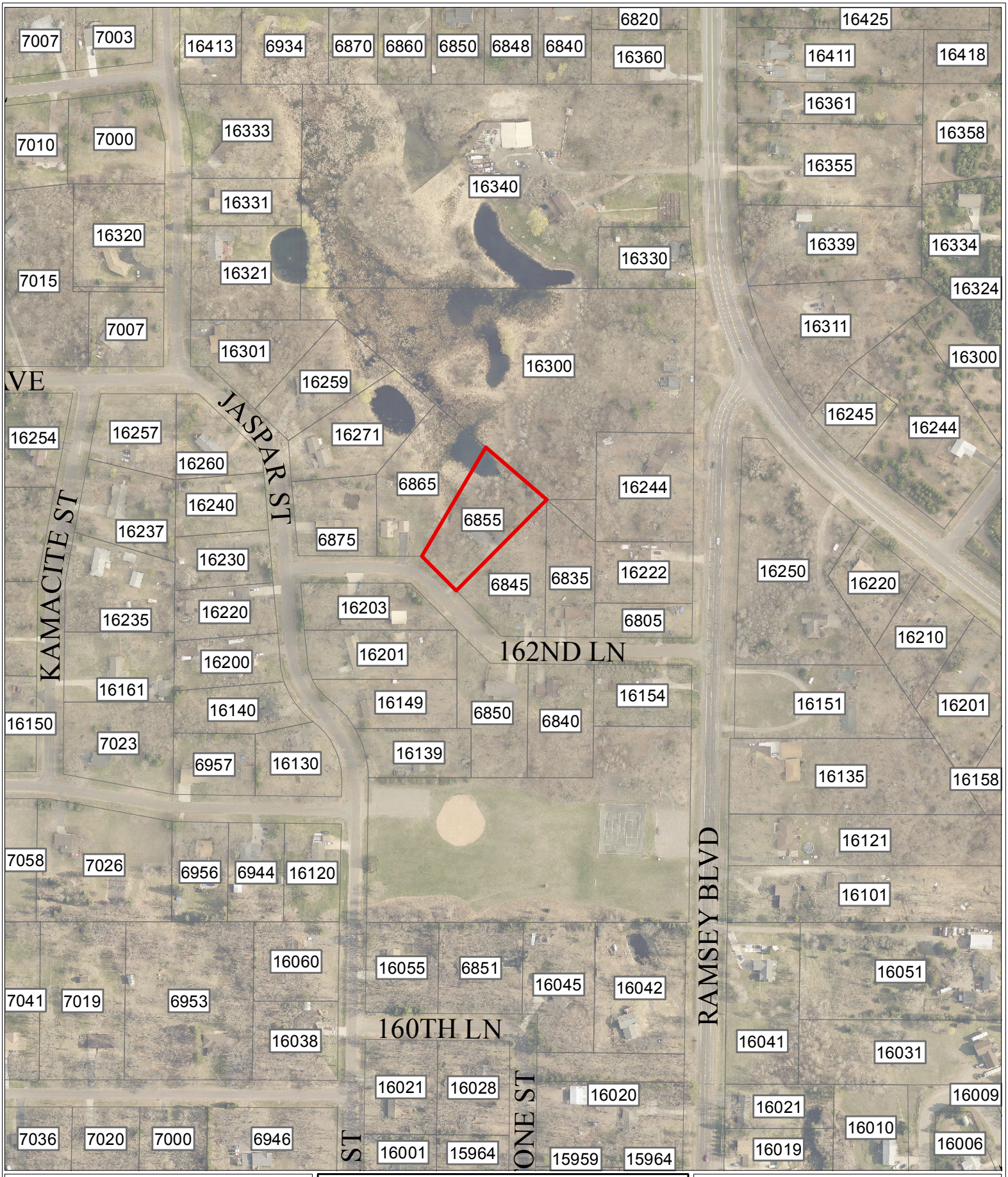


City of RAMSEY

Gibbon Street
2014 Flooding Reports

Identified Properties

Parcels



City of RAMSEY

162nd Lane
2014 Flooding Reports

Identified Properties

Parcels

City of RAMSEY

156th Lane
2014 Flooding Reports

Identified Properties

Parcels

GIBBON STREET

EAST ALIGNMENT

CONTINUED FROM LOWER RIGHT

EAST ALIGNMENT

CONTINUES ABOVE LEFT

WEST ALIGNMENT

SUBJECT PROPERTIES

EASEMENTS

25+00 30+00 35+00 40+00 45+00 50+00 55+00 60+00 65+00 70+00 75+00 80+00 85+00 90+00 95+00 100+00 105+00 110+00 115+00 120+00 135+00

0+00 5+00 10+00 15+00 20+00

DITCH COUNTY NO 27

DEERWOOD PARK

GIBBON ST NW

177TH AVE NW

176TH LANE NW

175TH AVE NW

174TH AVE NW

173RD AVE NW

5TH LANE NW

MARMOSET ST NW

IGUANA ST NW

CHAMELEON ST NW

ELAND ST NW

WILDWOOD ACRES

DEERWOOD ACRES

SHAWN ACRES

THORN LAKE

PINE COVE

DAMCREST DR

GARNET ST

OUTLOT A

OUTLOT C

OUTLOT E

OUTLOT F

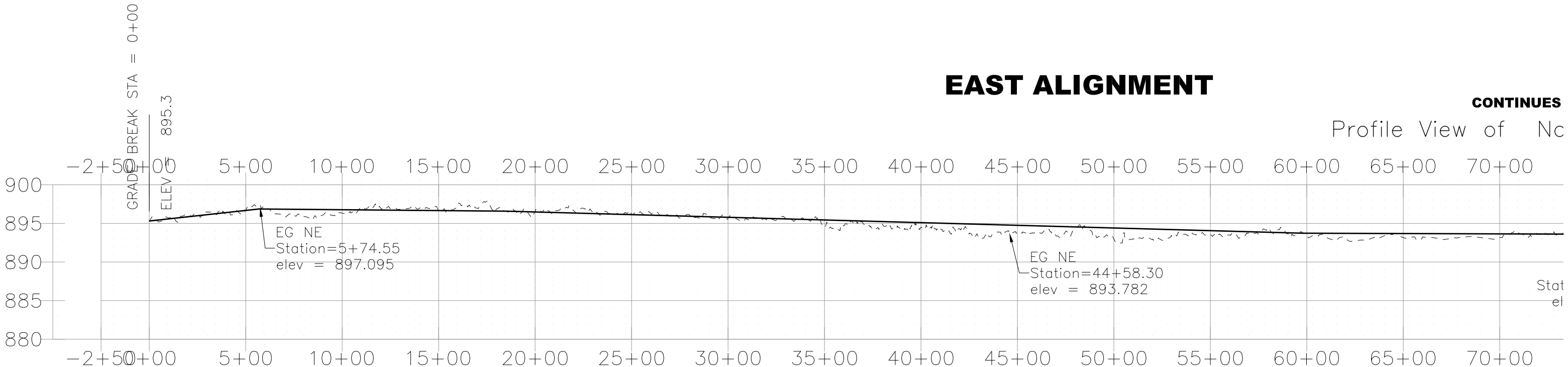
PARK

COUNTY DITCH NO 27

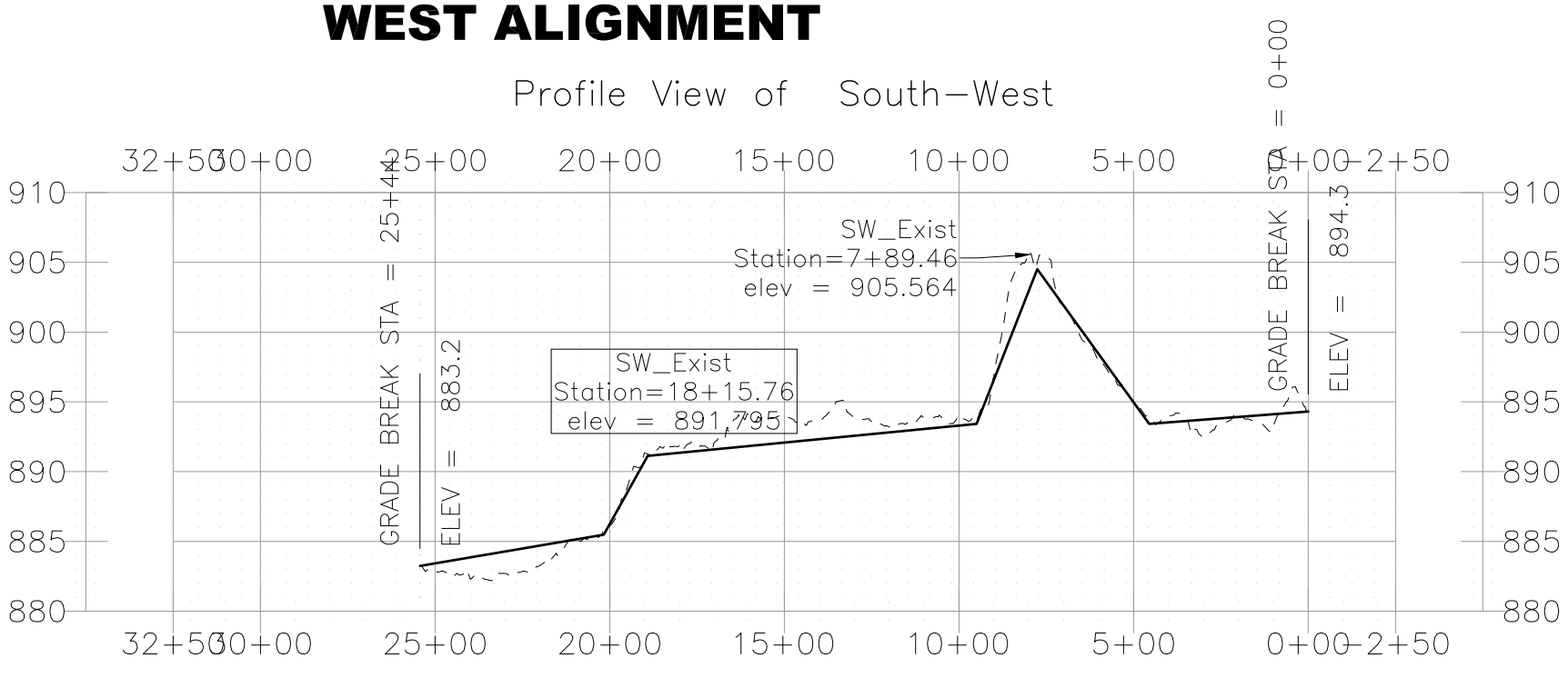
0 250 500 1000 1500

GIBBON STREET

EAST ALIGNMENT

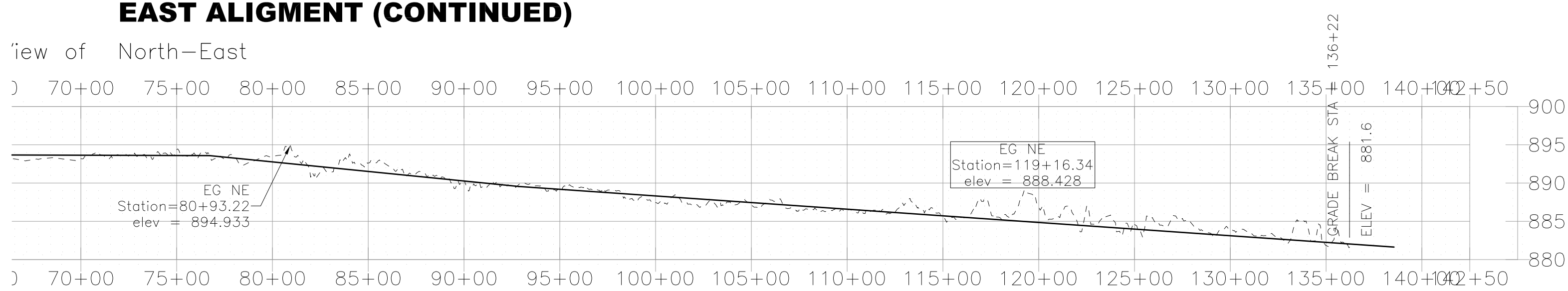


WEST ALIGNMENT



GIBBON STREET

EAST ALIGMENT (CONTINUED)



162nd Lane

SUBJECT PROPERTY

NO EASEMENTS

WEST ALIGNMENT

SOUTH ALIGNMENT

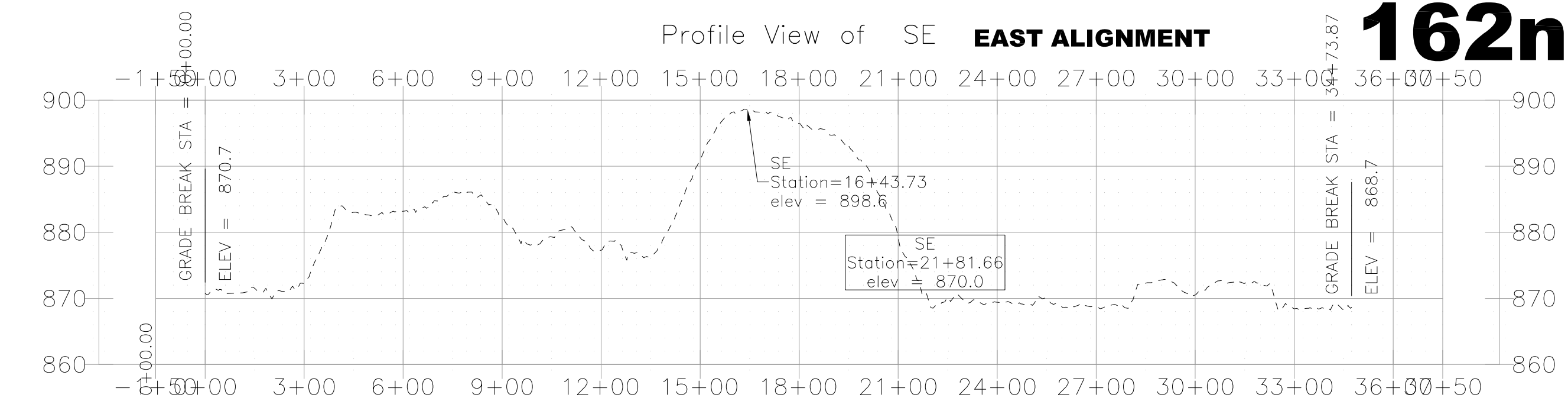
EAST ALIGNMENT

0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
39+58
47+44
45+00
40+00
34+74

0 250 500 1000 1500

162nd Lane

EAST ALIGNMENT



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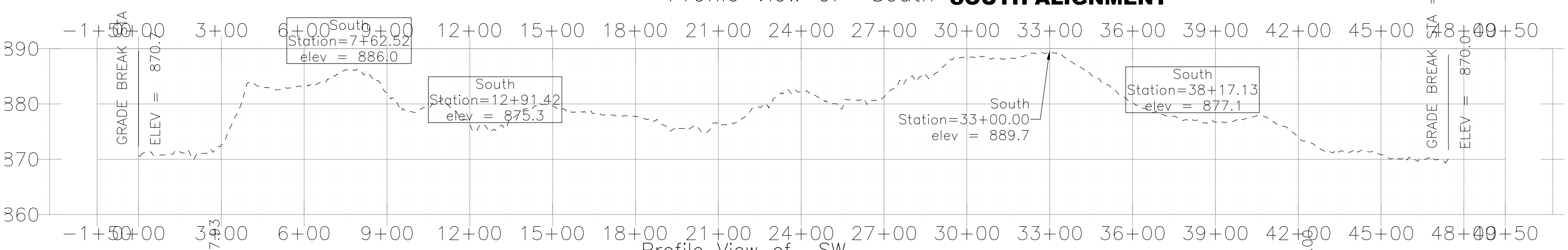

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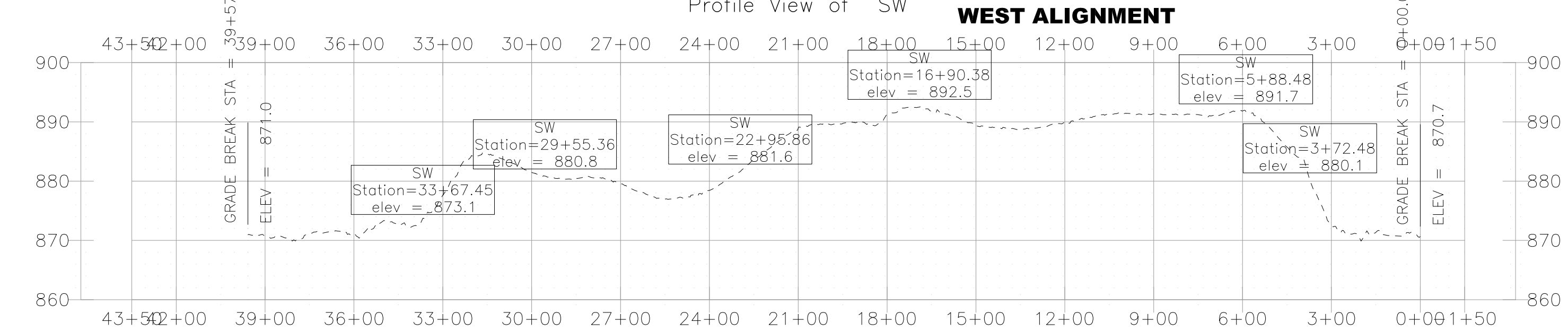


156th Lane

SUBJECT PROPERTY

STREET ALIGNMENT

PIPE ALIGNMENT

EASEMENTS

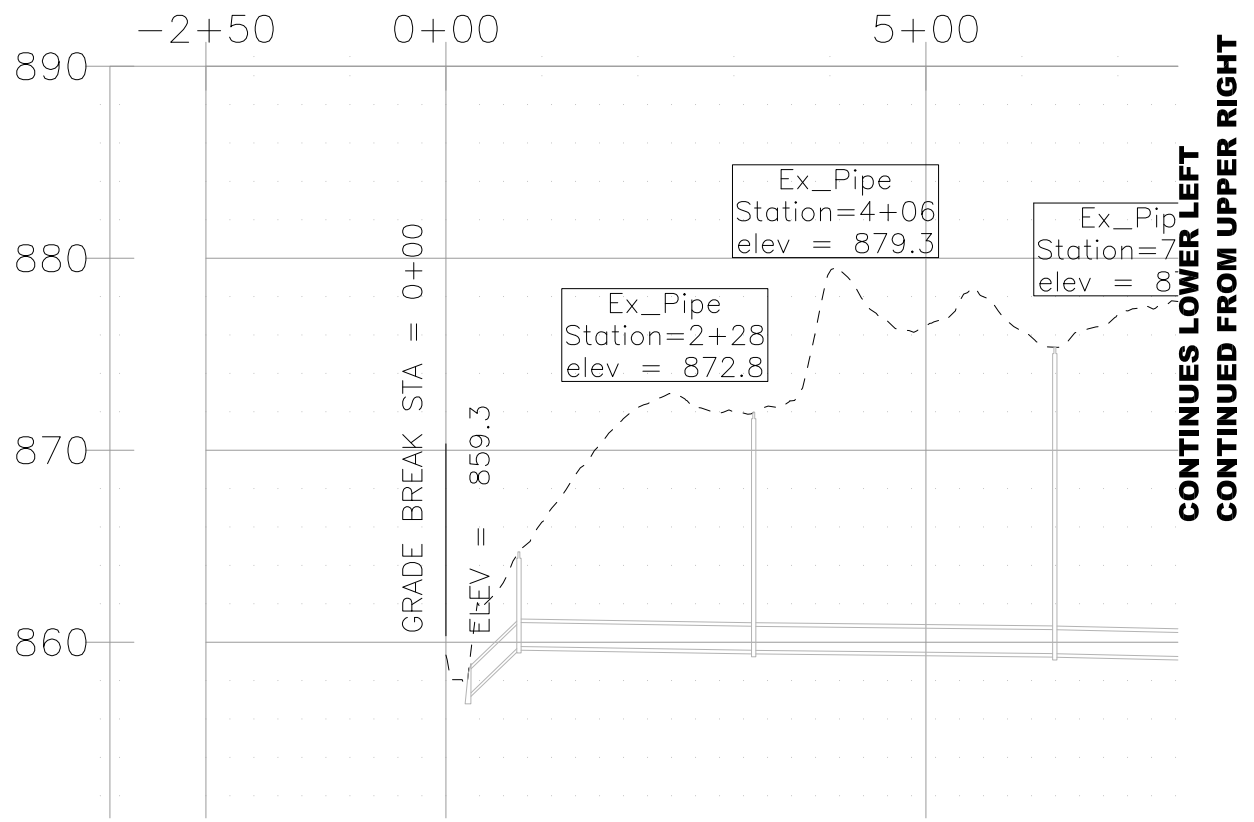
0+00
5+00
10+00
15+00
20+00
25+00

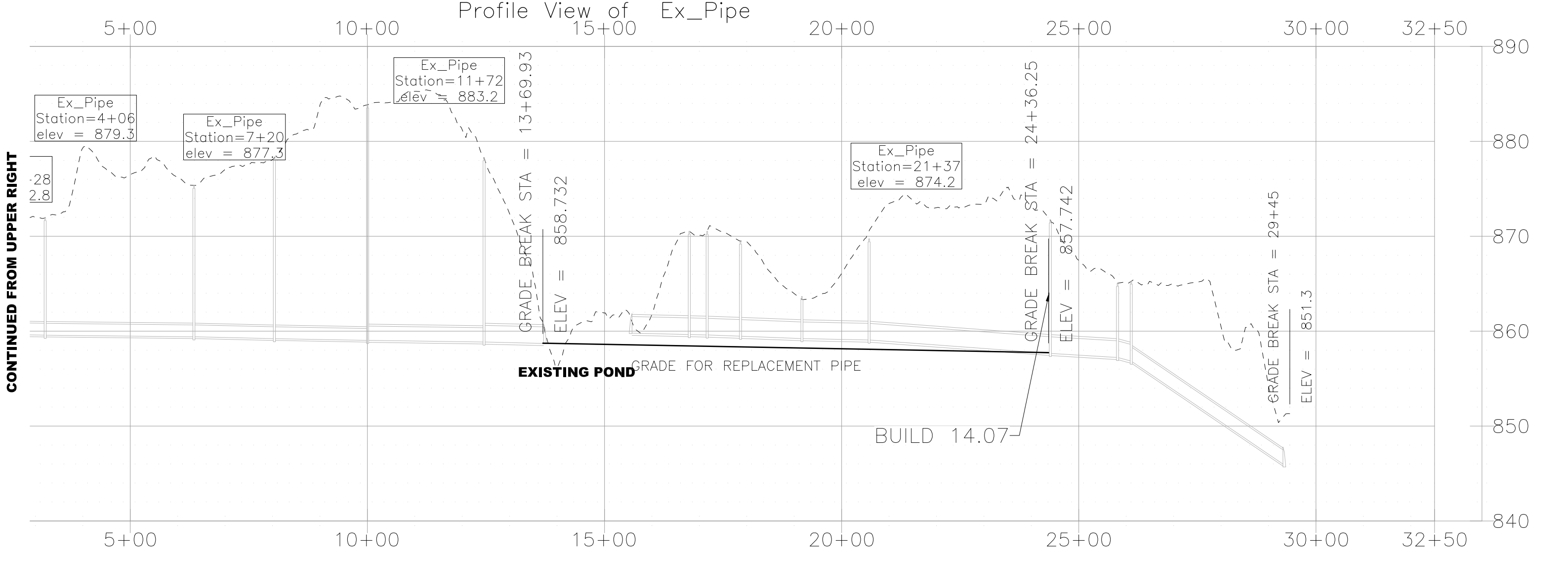
0 100 200 400 600

N

156th Lane

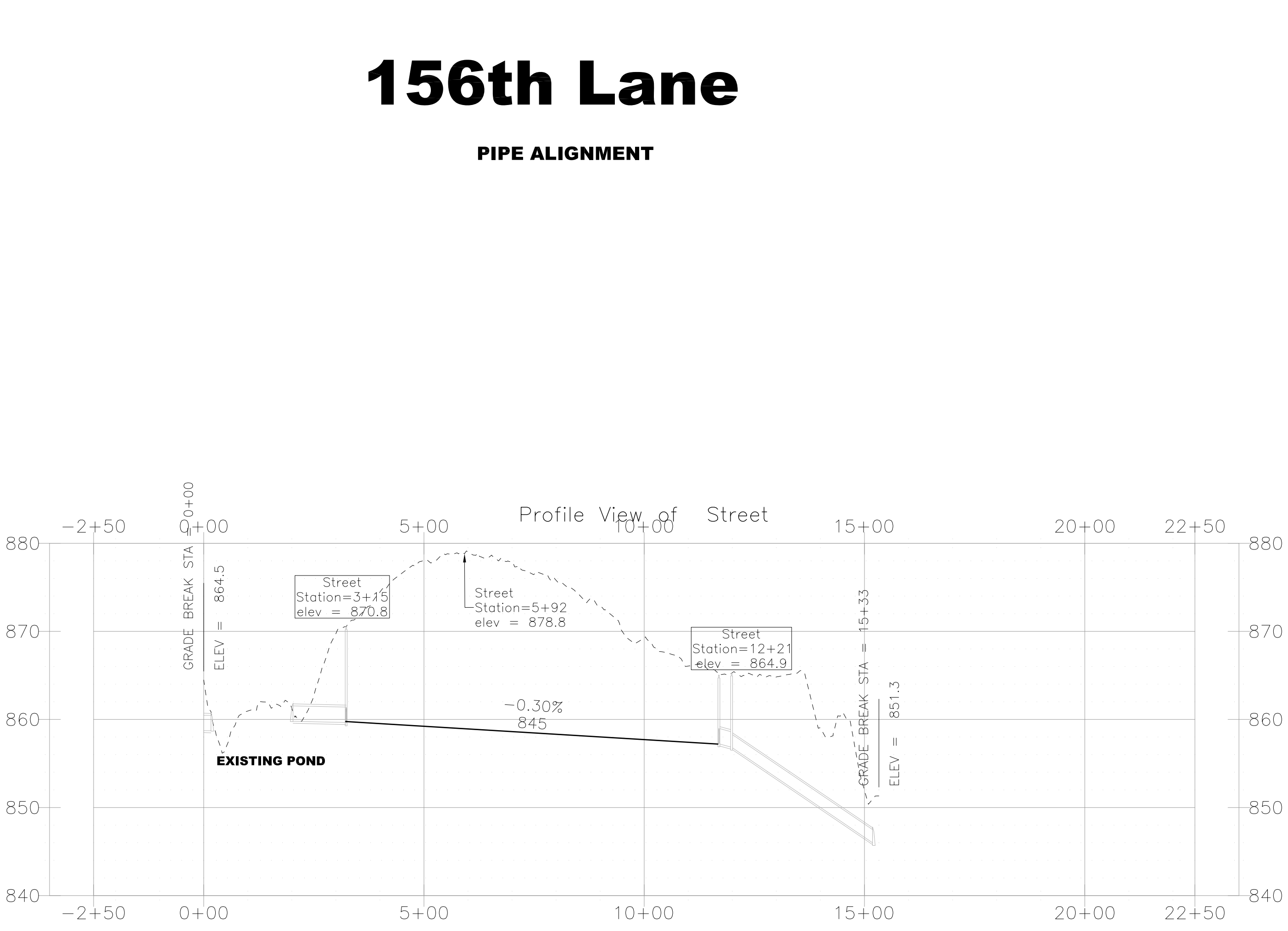
PIPE ALIGNMENT





156th Lane

PIPE ALIGNMENT



October 21, 2014

Members of the Public Works Committee,

In July of 2014, the residential area of Gibbon St experienced a large amount of flooding that continued relentlessly for a three week period. During this flooding, at least three homes were drastically affected, causing tens of thousands of dollars in damage to each home. One such home, residents of which were retired mid to late 70's couple, decided to since allow their home to enter into foreclosure. The other home was that of a couple who moved in just months prior, spending all of their income on their first home, and was simply devastated by their loss. For my personal home, in which I have resided for ten years, the basement in which my husband has been refinishing for years, alone by hand, during what little time he has off from work and his military duties, was destroyed. Approximately three years ago, we had a negligible amount of water enter the basement that did not result in any damage, again during a wetter than usual year. Additionally, as I was removing material from my home this year, it was apparent that this was not the first time our home had been affected by a flood. Insulation was trimmed up several inches off the floor, wood was covered with other pieces of wood to cover the water damage and mold was found behind certain areas of drywall. This was never disclosed to us prior to purchase. My neighbors found similar evidence in their home, which had also not been disclosed to them.

After the 2014 flooding, I asked my husband to contact the city engineers to seek their advice on what could be done regarding the storm water accumulating on our property. A city engineer came out to review the property a few weeks later, in which we were grateful. This engineer informed us, that the neighborhood to the parallel to ours is essentially designed to drain directly into our neighborhood and that the houses that experienced the flooding this year are affected with the runoff storm water from these neighborhoods. The engineer also stated that the city should be responsible for the correction of this drainage. We have paid our city taxes for years despite the fact that Gibbon St. benefits very little from the amenities offered from these taxes.

We, the affected residents are not naïve in thinking that that we are the only area affected by the amount of precipitation that fell this spring and summer and we do understand the financial planning and implementation difficulties associated with this type of project. However, we strongly request that the residential neighborhood of Gibbon St. be prioritized in this undertaking and that we remain informed of all developments. We only wish to never pass along the heartaches and troubles that we have experienced to the future residents of Gibbon St. We would love to stay and have Gibbon St. remain a great neighborhood and city in which to reside.

Thank you,

The Miske's

RECEIVED
MAR 2 4 2015
BY:

Surface Water Survey – Gibbon Street 2015

Name(s): MARK & AMBER PEDERSON

Email Address: Mark.pederson@alumni.augsburg.edu

Phone Number: 763-226-8721

Address: 17441 GIBBON STREET NW

RAMSEY, MN 55303

☒ Check box if the city may contact you regarding the information on this survey.

1. Approximately how many years have you resided on Gibbon Street? 1.5

2. How many times have you experienced excessive surface water/flooding anywhere on your property? 1

3. Has surface water or flooding caused any damage to your property (i.e. to the interior/exterior home, landscaping, sheds, etc.)? If yes, please describe the damage and estimated cost.

INTERIOR: CARPET HAD TO BE TAKEN OUT, SHEET ROCK NEEDS TO BE REPLACED DUE TO WATER ABSORPTION. ALL DOORS & FRAMES HAVE TO BE REPLACED DUE TO WARPING CAUSED BY WATER ABSORPTION. MOLDINGS HAD TO BE TAKEN OUT DUE TO WATER ABSORPTION.

ESTIMATED COST: $ 10,500.00

Please leave any additional observations or comments regarding surface water on Gibbon St. below:

*This survey will be provided to the City of Ramsey Engineering Department and discussed at the March 17th Public Works Committee Meeting.

RECEIVED
MAR 2 4 2015
BY: 2015

Surface Water Survey – Gibbon Street

Name(s): Douglas Prives

Email Address: dcprives@yahoo.com

Phone Number: 763-226-6096

Address: 17511 Gibbon St Ramsey MN

☑ Check box if the city may contact you regarding the information on this survey.

1. Approximately how many years have you resided on Gibbon Street? 30 yrs

2. How many times have you experienced excessive surface water/flooding anywhere on your property? 17 yrs

3. Has surface water or flooding caused any damage to your property (i.e. to the interior/exterior home, landscaping, sheds, etc.)? If yes, please describe the damage and estimated cost.

surrounds house on 3 sides when
bad so I put in drain tile to mitigate damage
I own the water easement for this
development

Please leave any additional observations or comments regarding surface water on Gibbon St. below:

*This survey will be provided to the City of Ramsey Engineering Department and discussed at the March 17th Public Works Committee Meeting.

RECEIVED
MAR 2 4 2015
BY: 2015

Surface Water Survey – Gibbon Street

Name(s): Don Olson

Email Address:

Phone Number: 612-616-4607

Address: 17561 Gibbon St NW
Ramsey MN 55303

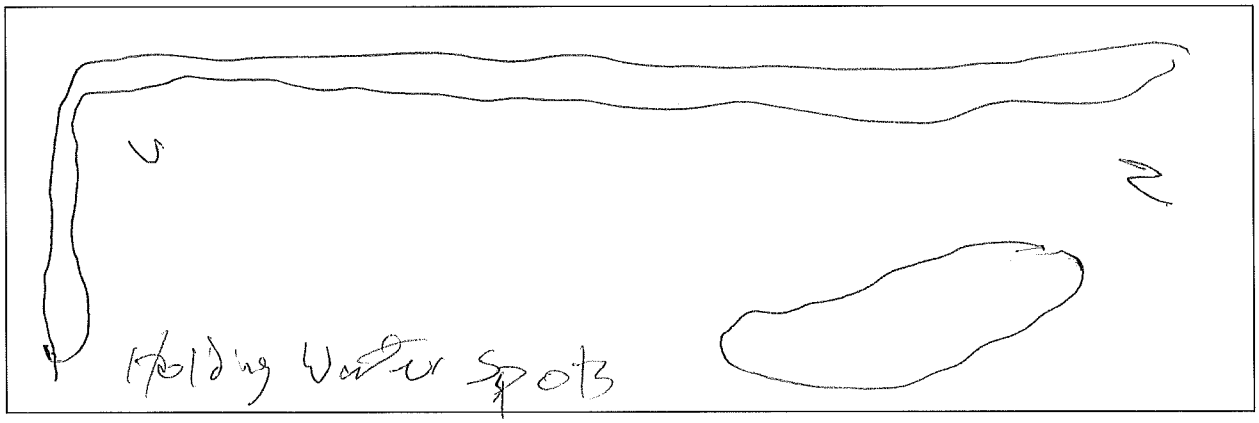
☒ Check box if the city may contact you regarding the information on this survey.

1. Approximately how many years have you resided on Gibbon Street? 6

2. How many times have you experienced excessive surface water/flooding anywhere on your property? 5

3. Has surface water or flooding caused any damage to your property (i.e. to the interior/exterior home, landscaping, sheds, etc.)? If yes, please describe the damage and estimated cost.
Sheds wet floors

Please leave any additional observations or comments regarding surface water on Gibbon St. below:



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