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728 Dugdale Avenue
Worthington, MN 56187-3067

FEASIBILITY REPORT

for

EAST AVENUE
from C.S.A.H. 5 TO 500 feet northwest
SANITARY SEWER EXTENSION

June 4, 2019

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Larye J. Mick, P.E.

June 4, 2019

Minnesota Registration Number 15542

INTRODUCTION

The purpose of this report is to determine the feasibility of improving East Avenue from the intersection with CSAH 5 to 500 feet toward the northwest by extension of the municipal wastewater collection system. The terms "wastewater collection system" and "sanitary sewer" will be used interchangeably in this report.

The improvement has been petitioned for by the abutting property owner on the south side of East Avenue. The property represented on the petition does abut on more than 35% of the frontage of the petitioned improvement; however, the project recommended to serve the property will abut on additional property. The additional property will exceed 65% of that abutting the recommended improvement and therefore the recommended project should be considered as having been Council initiated in all future proceedings.

This report has been prepared pursuant to a Council resolution of May 13, 2019.

PROJECT NEED

Refer to the attached MAP 1. The City has received a petition for an extension of the wastewater collection system from the owner of a parcel of land located on the south side of East Avenue and directly west of the CSAH 5 intersection. This land was at one time railroad right-of-way. The owner is proposing to develop the parcel by platting it into approximately seven lots for single family housing.

The proposed development extends from CSAH 5 westward to the east line of the city's South East Side Park. It is bordered on the south by several multifamily housing units which utilize Nobles Street for access. East Avenue directly borders the property on the north side and will provide access for the individual lots of the development.

The former railroad property on which the new development will be located is not currently served by sanitary sewer. Existing homes lying north of East Avenue and south of Circle Drive are adequately served by a sanitary sewer generally running east to west within the alley area between those streets. Multifamily housing to the south along Nobles Street is adequately served by a sanitary sewer on Nobles Street. Parcels of land and housing east of CSAH 5 are served by a sanitary sewer, and its future extensions, located on the east side of CSAH 5 and eastward on East Avenue.

The parcel proposed to be improved by the installation of sanitary sewer is within the city limits. The additional steps of preliminary and final platting along with any needed zoning changes still need to be accomplished by the developer.

SOUTH EAST SIDE CITY PARK

Refer to attached MAP 1. There are existing sanitary sewer lines located at the westerly area of the park. The main sanitary sewer flow goes south along Spring Avenue and its southerly extension to Spruce Avenue, then to the west on Spruce Avenue. A branch sanitary sewer extends across the park on the Spruce Avenue alignment. The existing park building (Frosty Riders) is served by this system.

A future park restroom building is anticipated and is included in the city's capital improvements planning. The exact location of the restroom has not been determined but it will likely be north of the playground and west of the parking lot. Since the park parcel is immediately adjacent to the proposed housing development, the future sanitary sewer needs of the park were also examined in this report.

RECOMMENDED PROJECT DESIGN

Refer to the attached MAP 2. The sanitary sewer extension that is recommended by this report would begin at the existing manhole located ninety feet south of the East Avenue and Spring Avenue intersection. This manhole is near the northwest corner of the city park. An 8 inch sanitary sewer at minimum slope should then be constructed in an easterly direction until it intersects with a line twenty feet southwest of, and parallel to, the south right-of-way line of East Avenue. The 8 inch sanitary sewer would then continue along this line parallel to the south right-of-way line of East Avenue across the park area and through the north frontage area of the proposed housing development.

The alignment of the sanitary sewer was selected to be located at twenty feet south of the right-of-way line of East Avenue. This was due to the location of electrical, communication and gas utilities within and adjacent to the south boulevard area of East Avenue. As part of the platting process an easement will be needed from the developer for that portion of the sanitary sewer within the proposed housing development.

In accordance with city policy the portion of the work to bring the sanitary sewer to the proposed housing development boundary would be an assessable city project. The sanitary sewer work within the housing development would be constructed by the developer at his expense and then turned over to the city as a municipal sewer upon proper completion and acceptance.

REASONING FOR RECOMMENDED IMPROVEMENT

Determination of the recommended improvement design was based upon a combination of the following factors.

The recommended improvement would adequately serve both the proposed housing development, the existing park building (Frosty Riders) and the future park restroom.

The sanitary sewer will be at a proper depth for houses with a basement within the proposed development. Since the ground elevations generally increase from west to east along East Avenue, the sewer will be constructed following the surface elevations resulting in a more uniform depth.

Using the recommended sanitary sewer route will allow for future elimination of 312 feet of deficient sanitary sewer and two manholes located within South East Side Park along Spruce Avenue extended. Refer to Map 2. This sanitary sewer was originally installed in 1948. Other similar adjacent segments have undergone rehabilitation but this segment has not been upgraded due to its limited use. A possible alternate route across the park utilizing this Spruce Avenue sanitary sewer was rejected due to the existing pipe and manhole condition. It is recommended that a new sanitary sewer be installed on the more appropriate alignment as indicated and just abandon this line in the future. This will free up the park land for any future use by moving the sanitary sewer closer to East Avenue. Maintenance access to the manholes will be improved by utilizing the recommended route near East Avenue.

The recommended improvement could be constructed across grass turf areas with limited utility conflicts. The only minor pavement and traffic disruption would be when crossing the South East Side Park driveway.

Another possible alternate route for the sanitary sewer was to connect to the existing manhole located at the center of East Avenue just east of the CSAH 5 intersection. This plan was rejected due to the cost of the necessary cased boring under the county road. Also since this segment of East Avenue is scheduled for major pavement reconstruction during 2019 there would be a conflict with contractor coordination. Even with a boring under the county road there would be the need for an open excavation on East Avenue at the manhole connection. If the proposed sanitary sewer could not be completed before the street construction there would be added costs of removing and replacing new pavement. Even if the sanitary sewer was completed before the East Avenue street work, the resulting excavation just before the pavement installation will result in future pavement settling and repairs. Being able to just stay out of this new street construction area was an added benefit of using the recommended sanitary route from the west.

The existing sanitary sewer at the East Avenue and CSAH 5 intersection was four feet higher in elevation than the sanitary sewer on Spring Avenue. This would have resulted in a workable but not desirable depth for some of the sanitary sewer services when considering the basement elevations within the proposed housing development. Also extending the East Avenue/CSAH 5 sanitary sewer to the future park restroom was not possible due to the higher starting elevation at the manhole.

Connections to the Nobles Street sanitary sewer was not feasible due to the increased length and costs of the construction. No readily available route or easement seemed possible to obtain for use.

Connection to any of the existing sanitary sewers in the alley generally between East Avenue and Circle Drive was not feasible due to increased cost of street pavement repairs and disruption.

OTHER PUBLIC IMPROVEMENTS

Other common public improvements such as street, water distribution, and storm water management are already in place to serve the proposed development or will need to be constructed by the developers at their cost.

The proposed housing development is served by East Avenue which provides for a hard surfaced street access with curb and gutter. Driveways to each individual lot will be constructed as each individual house is built.

A water main is in place along the north side of East Avenue which can be used to serve the development. Water service lines will be directional bored under East Avenue to serve each individual lot. Street pavement disruption should be minimal.

It is anticipated that the newly created impervious surfaces of the development will total less than one acre. In this case on-site storm water management will not be needed. Individual lots will be graded to utilize the existing storm sewer system on East Avenue to the extent possible.

COSTS AND FINANCING

The total estimated improvement project cost, including engineering and contingencies, is \$80,163. Of the total cost for a sanitary sewer project, that portion which would be incurred in constructing a sewer main of the size and depth adequate for only providing service to abutting properties is to be considered lateral sewer costs. Such lateral costs are based on the installation of an 8 inch main at up to 10 feet in depth. The remaining costs would be defined as trunk costs or those additional costs associated with providing service to an area larger than that which abuts on the project. These costs for the proposed improvement are estimated as follows:

Lateral Costs: \$71,982.

Trunk Costs: \$8,181.

Total Project: \$80,163.

Special assessments for wastewater collection projects are levied in two components, trunk assessments and lateral assessments.

Lateral Assessments

Lateral assessments are based on the lateral costs as previously defined and the rate determining frontage or Residential Equivalent Connections (RECs) applicable to the project. The lateral costs divided by the rate determining units establishes the assessment rate. The amount of assessments is equal to the assessment rate multiplied by assessable units. Assessable units may be less than rate determining units when a portion or portions of the project abut property that is not benefitted by the project.

The properties on the north side of East Avenue are not found to be benefitted nor proposed to be assessed because they are fully served by the alley sanitary sewer.

The selection of REC or frontage units tends to be based on the status of the abutting property. Frontage is generally used when assessments are to be levied to undeveloped property or properties that may be subdivided or rearranged. The use of frontage units yields a uniformly distributed rate which is beneficial in equitably reapportioning assessments at the time development or a change in property lines occurs. REC units are typically used

where the number of individual connections or lots is able to be identified at the time the project is undertaken. In the case of this project the subdivision of the property is not yet determined. It is therefore proposed to utilize frontage units.

The lateral assessment rate would be calculated as the \$71,982 in lateral costs divided by the 1804.8 feet of rate determining frontage or \$39.88/ foot.

Trunk Assessments

Trunk assessments are levied on the basis of area benefitted by a sanitary sewer extension and the current trunk assessment rate which is independent of a particular project's cost. The trunk rate is defined by ordinance and originates from a July 1975 determination of estimated costs for all trunk improvements needed at that time and the total area to be served by those improvements. An adjustment using a construction cost index maintains current value of the trunk rate. A trunk fund receives all trunk assessments and is utilized to retire those debt costs attributable to trunk project costs. The trunk fund may receive more or less assessments than trunk costs for each project undertaken. Only the area shown on MAP 1 is subject to trunk sanitary sewer assessments as a result of the proposed improvement. All other properties abutting on the proposed improvement are currently served by sanitary sewer and are not subject to trunk sewer assessments at this time. The trunk sewer assessment rate projected to be in effect for the project is \$4,016.43/acre.

Estimated Assessments

Estimated assessments, trunk fund obligations, and "City Share" costs of the project are as follows:

	<u>LATERAL</u>	<u>TRUNK</u>	<u>TOTAL</u>
Assessments	\$4,343.37	\$6,506.62	\$10,849.99 (13.53%)
Trunk Fund from		\$1,674.38	\$1,674.38
City Share	<u>\$67,638.63</u>	<u>0.00</u>	<u>\$67,638.63</u>
TOTAL	\$71,982.00	\$8,181.00	\$80,163.00

Provided that this project is combined with other assessable improvement projects as a single improvement project having more than 20% of its costs assessed, initial financing of the project costs should be through issuance of a PIR general obligation bond with possible use of 401 construction fund reserves until such a bond is issued. The bond debt would be recovered by special assessments and by special tax levy for the remaining costs not to be assessed.

Should no other assessable improvements be ordered that result in 20% of the costs of a combined improvement project being assessed, it will be necessary for the city share of the lateral costs of the improvement to be permanently funded from 401 Construction Fund reserves. The assessable lateral costs would be initially financed from the 401 Construction Fund and ultimately financed by the lateral special assessments received. The Sanitary Trunk Fund will be used to finance the trunk costs of the improvement. The Trunk Fund will receive all trunk assessments for the project.

COMBINATION WITH OTHER PROJECTS

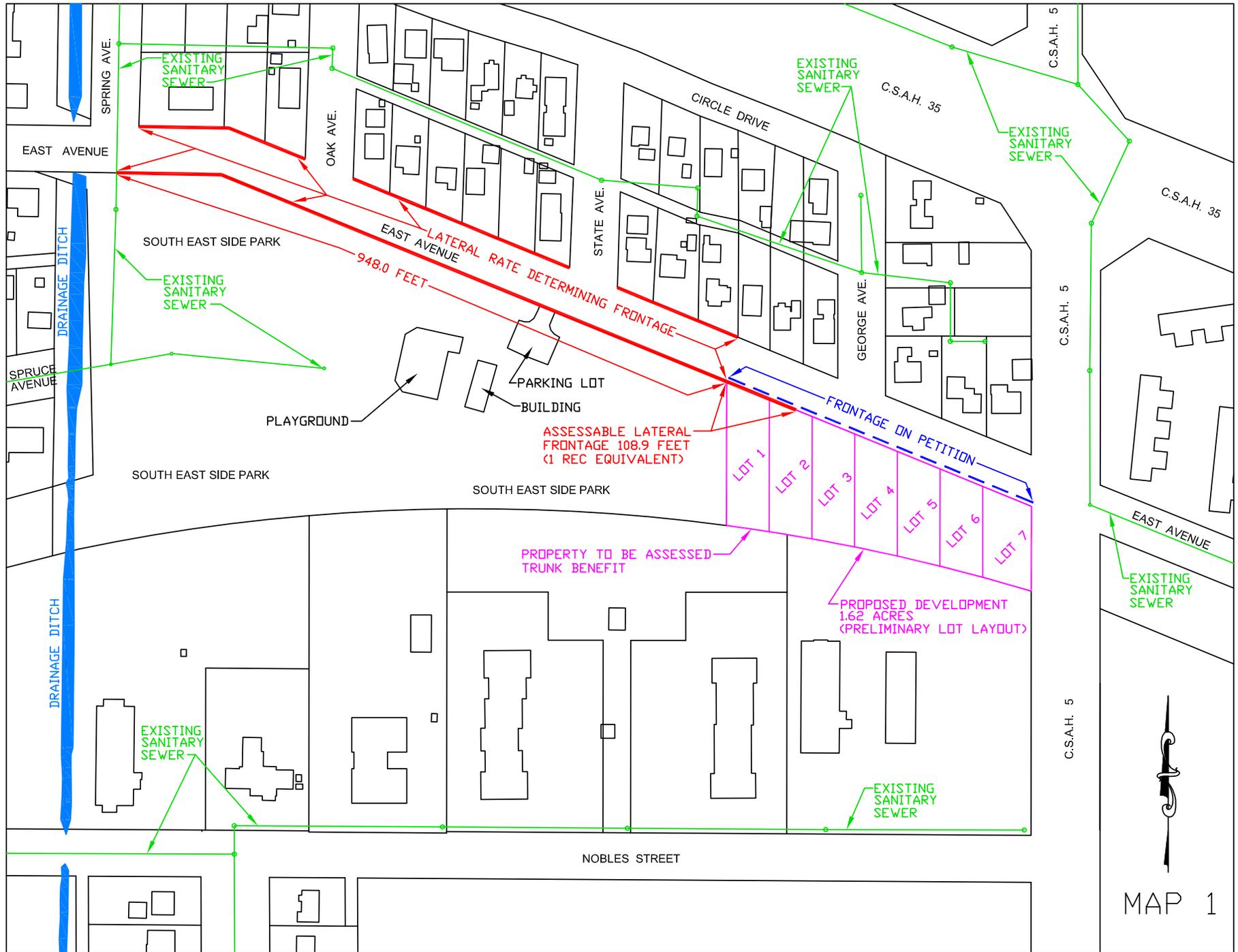
The proposed improvement could be combined with any sanitary sewer, storm sewer or water main extension projects ordered to be completed in 2019. The housing developers have indicated that they intend to start construction yet during 2019 and will need sanitary sewer service later this year.

CONCLUSION

The public improvements project as proposed in this report, combined with the developer installed improvements, is a feasible and cost effective manner in which to provide wastewater collection service to East Avenue from CSAH 5 to 500 feet northwest, along with existing and future uses within South East Side Park.

The project description to be used in all subsequent assessment proceedings is:

Improvement of East Avenue from Spring Avenue to 950 feet southeast by extension of the municipal wastewater collection system.



ASSESSABLE LATERAL FRONTAGE 108.9 FEET (1 REC EQUIVALENT)

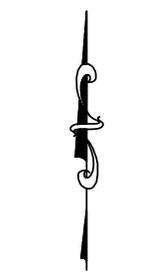
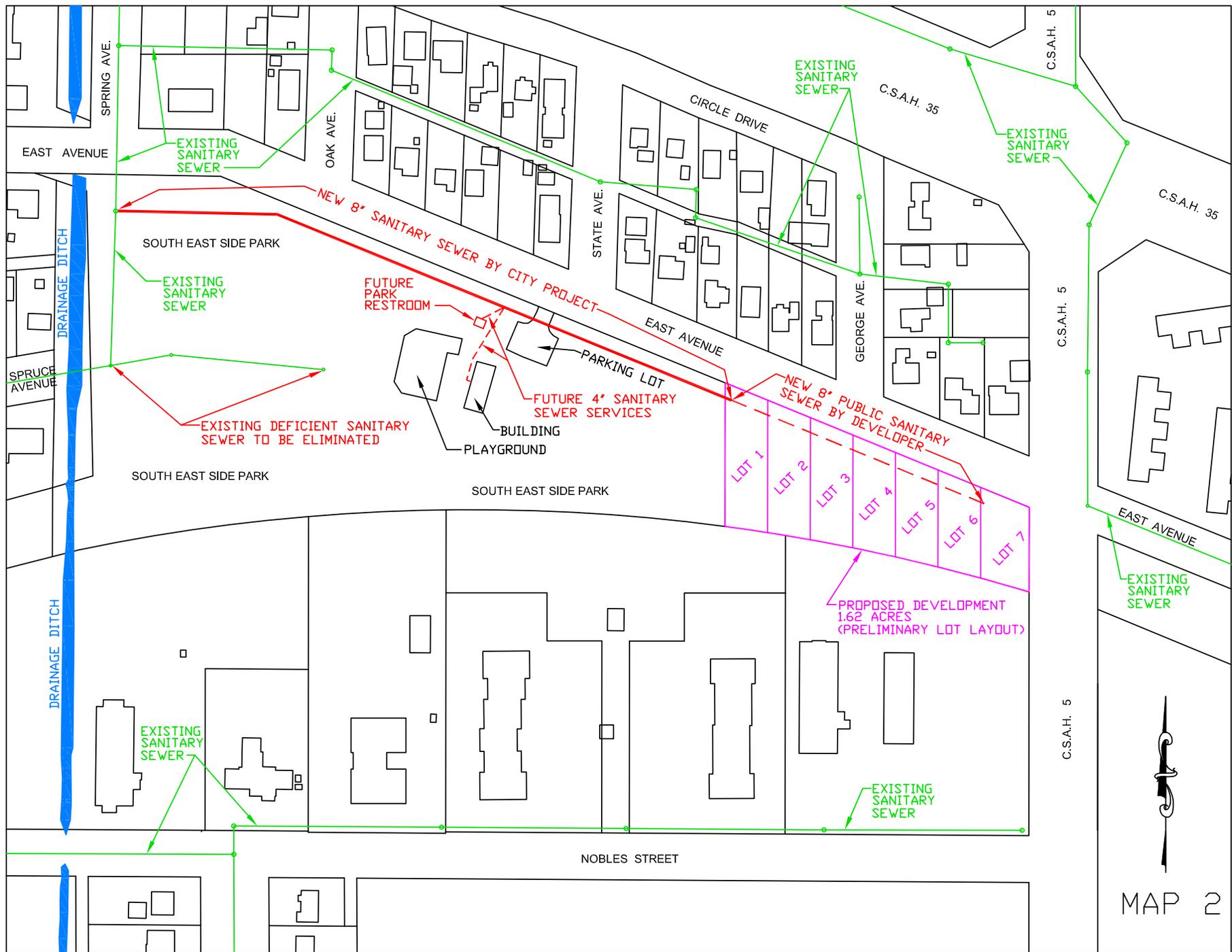
FRONTAGE ON PETITION

- LOT 1
- LOT 2
- LOT 3
- LOT 4
- LOT 5
- LOT 6
- LOT 7

PROPERTY TO BE ASSESSED TRUNK BENEFIT

PROPOSED DEVELOPMENT 1.62 ACRES (PRELIMINARY LOT LAYOUT)

MAP 1



MAP 2