



To: Robert Armijo, City Engineer, City of Tracy

From: Alison Bouley, Harris and Associates

Subject: City of Tracy's Northeast Industrial Area Future Phases Water and Wastewater Development Impact Fee Technical Memorandum

Date: September 4, 2019

Introduction

The Northeast Industrial Area (NEI) is comprised of approximately 61 properties totaling 870 acres and is located in the northeast part of Tracy. Generally speaking, the area is bounded by Interstate 205 to the north, by the Southern Pacific Railroad tracks to the south, by the City limit to the east and the Industrial Specific Plan area to the west. Properties within the NEI area are owned by various individuals and range in size from half acre lots currently occupied by single family residential homes to large lots occupied by agricultural and industrial enterprises. The area is zoned for Light Industrial use.

Purpose of Memorandum

Development of the infrastructure required to support the parcels in the NEI area is the responsibility of all landowners and has historically been outlined in detailed finance and implementation plans. In December of 1999 the Northeast Industrial Area – Phase 1 Finance and Implementation Plan was adopted that outlined the improvements necessary to serve this area and the associated development impact fees. The improvements were identified in supporting technical studies that analyzed the improvements necessary to serve the entire area. The plan has been updated several times since, with the last update being in April of 2008.

The Northeast industrial Area – Phase 2 Finance and Implementation Plan was adopted in January 2006 and outlined the specific improvements and fees that were to be completed by the Phase 2 properties to serve their infrastructure needs. The plan was last updated in January of 2008.

There are approximately 323 net acres of land that were not included in the Phase 1 and 2 Finance and Implementation Plans. These properties were identified as future phases or as anticipated to not develop in the future. It was anticipated that a FIP would be completed at the time that these properties were ready to develop.

In 2012, the City completed Citywide Master Plans to plan for the infrastructure required to serve future development and Master Plan Fees to fund the infrastructure were adopted. The Master Plan Fees established the water, sewer, storm drainage, traffic, public facilities, public safety and park fees that all new development was to pay. As part of these master plans, all land that was not otherwise covered under an adopted Finance and Implementation Plan was subject to the Master Plan fees. It was anticipated that specific plan area fees would be developed for each specific plan to determine cost sharing of more localized improvements that were not part of the Master Plan Fees. These localized improvements include sewer collection lines and water distribution lines.



NEI future phases, since they did not have an established Finance and Implementation Plan in 2012, were included in the Master Plans and are subject to Master Plan Fees. In addition to the Master Plan Fees, the developers are required to fund their fair share of the localized water and wastewater infrastructure.

This memo provides the basis for the water and wastewater fees for local facilities that are above and beyond the Master Plan Fees. The developer will receive a credit against these fees for construction of any of the identified improvements, up to the construction cost plus 35% markups as identified in this memo. A summary fee schedule is provided in Table 1 and is discussed on a fee by fee basis in the following sections.

Table 1: Summary Fee Schedule

| Fee Category | Fee per Acre |
|-----------------------------|-------------------|
| Water Conveyance | \$284.95 |
| Wastewater Conveyance | \$8,362.40 |
| Program Administration (5%) | \$432.37 |
| Total Fee | \$9,079.72 |

The fees and associated costs will be updated each year utilizing the Engineering News Record (ENR) Construction Cost Index.

Water

The Northeast Industrial Area (NEI) water improvements were identified as recommended infrastructure in the City of Tracy Water System Master Plan adopted by Resolution 2013-008 on January 15, 2013. Since the adoption of the City of Tracy Water System Master Plan, the City has made improvements to the potable water system in the NEI area and a number of developments have been completed. West Yost conducted an evaluation of the remaining infrastructure required to serve the NEI area at buildout and summarized the remaining infrastructure in their September 2018 *Hydraulic Evaluation of Northeast Industrial Area (NEI) Specific Plan* that is included in Appendix A. NEI development phases 1 and 2 constructed a significant portion of the localized infrastructure prior to the Master Plan development and the 12 inch water line east of Paradise road connecting Grant Line to Pescadero is part of the Master Plan. As such, NEI future phases is only responsible for the upsizing from 8 inches to 12 inches of 320 linear feet of pipe.

Table 2 identifies the remaining infrastructure and estimated cost and allocates the cost on a net acreage basis to NEI Future Phase. Since all land in NEI is zoned light industrial, utilizing net acreage is an equitable way to spread the costs. These improvements are shown highlighted on Figure 1. If the developer builds any of these facilities, the developer will be entitled to either a fee credit or a fee reimbursement up to the estimated construction cost plus the 35% markup as shown in this technical memorandum.

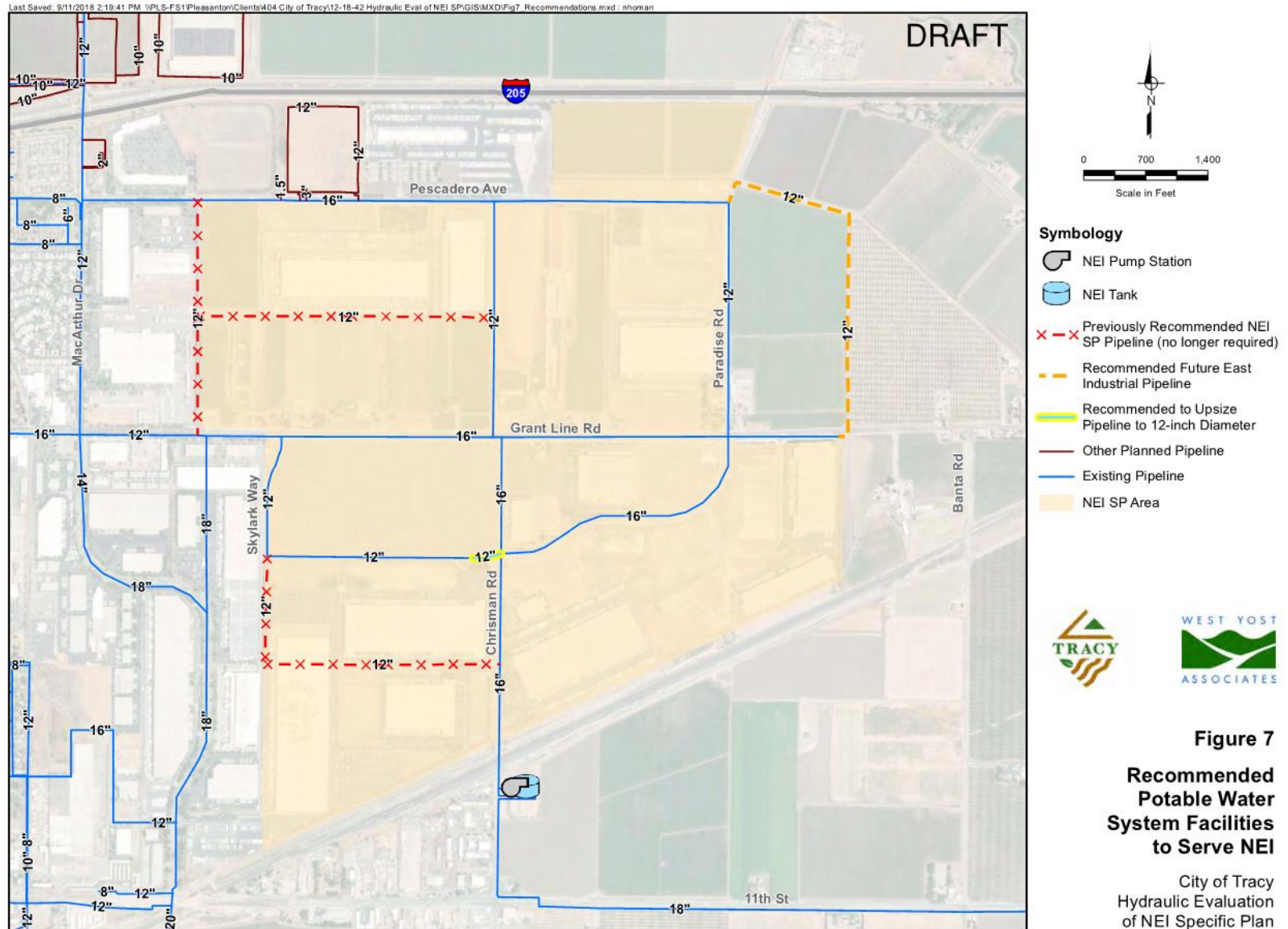
Table 2: Water Distribution Facilities in Addition to City of Tracy Master Plans

| Size | Location | Length (LF) | Construction Unit Cost ¹ | Soft Costs (35%) | Total Cost |
|-------------------------------|--|-------------|-------------------------------------|------------------|---------------------|
| 12" | Upsize a 8" line between Skylark and Chrisman Road to a 12" Line | 320 | 212.96 | 74.54 | \$ 92,000.85 |
| Total: | | | | | \$ 92,000.85 |
| NEI Future Phases Acres: | | | | | 322.87 |
| Water Conveyance Fee Per Acre | | | | | \$ 284.95 |

Notes:

¹ Unit Costs have been updated by ENR to June 2019.

Figure 1: Required Water Distribution Capital Improvement Projects





Findings Related to Water

Requirement #1: Identify the purpose of the fee.

New development creates the need for additional water distribution infrastructure in order to provide water to all parcels in the NEI Area. The purpose of the water impact fee is to ensure that each development shares equally in the cost of the localized water distribution lines that are needed to serve the NEI Specific Plan Area. These facilities are summarized in Table 2.

Requirement #2: Identify the use to which the fee will be put.

The water portion of the impact fee will be used to upsize a small portion of water line per the *Hydraulic Evaluation of Northeast Industrial Area (NEI) Specific Plan* prepared by West Yost. The water facility is summarized in Table 2 and shown in Figure 1.

Requirement #3: Determine how there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed.

New development within the NEI area increases water usage within the NEI Specific Plan Area. In order to provide water to new development, new distribution lines are required. The cost of the required facility is divided by the net acreage, since all properties in NEI are zoned light industrial and have the same water demand. This method ensures that each development project is funding only their fair share of the required improvements.

Requirement #4: Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed.

Each new development will add incremental usage of water in the NEI Area. In order to ensure access to water and to maintain adequate water pressure through the buildout of the NEI area, the distribution pipeline summarized in Table 2 must be constructed. Each new development will pay for their fair share of the required system based on the parcel's net acreage, since all of the parcels are zoned light industrial and have the same water demand.

Requirement #5: Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.

The cost of the needed water distribution facility is spread to each land use within the NEI area based on net acreage since each parcel is zoned light industrial and has the same water demand. This calculation is shown in Table 2. Prior developments were required to fund their fair share of the water distribution lines already constructed.



Wastewater

The Wastewater Master Plan completed in 2012 and adopted by Resolution 2013-008 identified the development impact fees for the major trunk lines, pump stations and treatment plant expansion but did not include wastewater collection facilities. The Northeast Industrial Area (NEI) wastewater collection system was identified in the April 2008 update of the Northeast industrial Area – Phase I Finance and Implementation Plan. NEI development phases 1 and 2 constructed their fair share of the localized infrastructure prior to the Master Plan development. In November 2018 CH2M prepared the *Wastewater System Analysis for the Northeast Industrial Area* which identified the wastewater conveyance system required to serve the NEI Future Phase property. The report is included in Appendix B.

Table 3 identifies the remaining infrastructure to be constructed and allocates the total cost on a net acreage basis. Since all land in NEI is zoned light industrial, utilizing net acreage is an equitable way to spread the costs. If the developer builds any of these facilities, the developer will be entitled to either a fee credit or a fee reimbursement up to the estimated construction cost plus the 35% markup as shown in this technical memorandum. The facilities are shown in Figure 2.

Table 3: Wastewater Conveyance Facilities in Addition to City of Tracy Master Plans

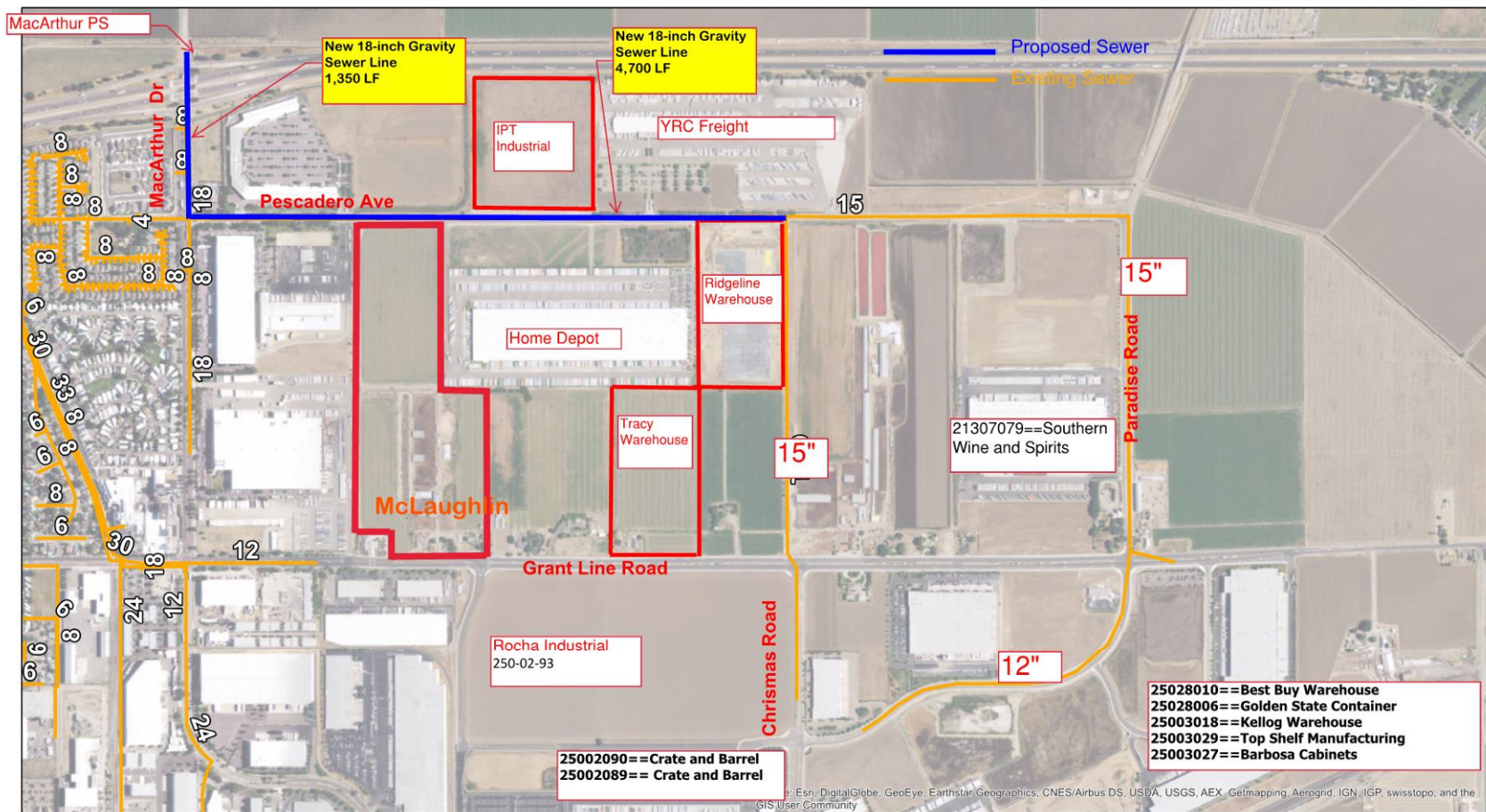
| Size | Location | Length (LF) | Construction Unit Cost ¹ | Soft Costs (35%) | Total Cost |
|------------------------------|----------------------------------|-------------|-------------------------------------|------------------|------------------------|
| 18" | Ridgeline Warehouse to MacArthur | 4,700 | 330.57 | 115.70 | \$ 2,097,483.32 |
| 18" | Pescadero to MacArthur WWPS | 1,350 | 330.57 | 115.70 | \$ 602,468.61 |
| Total: | | | | | \$ 2,699,951.93 |
| NEI Future Phase Acres: | | | | | 322.87 |
| Wastewater Conveyance Fee/Ac | | | | | \$ 8,362.40 |

Notes:

¹Unit costs have been updated by ENR to June 2019.



Figure 2: Required Wastewater System Capital Improvement Projects



Notes:
1. Area of interest subject to change.

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Technical Memorandum

Findings Related to Wastewater

Requirement #1: Identify the purpose of the fee.

New development creates the need for additional wastewater conveyance infrastructure in order to provide adequate capacity for all parcels in the NEI Area. The purpose of the wastewater impact fee is to ensure that each development equally shares in the cost of the localized wastewater conveyance lines that were identified in the November 2018 *Wastewater System Analysis for the Northeast Industrial Area prepared by CH2M*. These facilities are summarized in Table 3.

Requirement #2: Identify the use to which the fee will be put.

The wastewater portion of the impact fee will be used to construct new wastewater conveyance facilities per the November 2018 *Wastewater System Analysis for the Northeast Industrial Area prepared by CH2M*. These facilities are summarized in Table 3 and shown in Figure 3.

Requirement #3: Determine how there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed.

New development within the NEI area will generate increased wastewater discharge. In order to provide new development with adequate sanitary sewer services, new conveyance lines are required. The cost of the facilities is divided to each land use based on net acreage, since all properties in the NEI Future Phase area are zoned light industrial and are assumed to have equal wastewater discharge. This method ensures that each development is funding their fair share of the required improvements.

Requirement #4: Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed.

Each new development will produce additional wastewater flows in the NEI area and require an incremental increase in capacity. In order to ensure there is enough capacity to support development through the buildout of the NEI area, the conveyance pipelines summarized in Table 3 must be constructed. Each new development will pay for their fair share of the required system based on the parcel's net acreage, since all of the parcels are zoned light industrial and are assumed to have the same wastewater discharge.

Requirement #5: Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.

The cost of the needed wastewater conveyance facilities is spread to each land use within the NEI Future Phase area based on net acreage since each parcel is zoned light industrial and has the same wastewater discharge. This calculation is shown in Table 3. Prior phases of NEI funded their fair share of the facilities.



Technical Memorandum

Program Administration

The Program Administration Fee provides the funding necessary to administer the impact fee program. This fee is calculated as a five percent mark-up on the other fees. The fee will be collected into the City’s program administration fund. The fee is 5% of the fee as shown in Table 4.

Table 4: Program Administration

| Fee Category | Fee per Acre |
|-----------------------------|-------------------|
| Water Conveyance | \$284.95 |
| Wastewater Conveyance | \$8,362.40 |
| Program Administration (5%) | \$432.37 |
| Total Fee | \$9,079.72 |

Findings Related to Program Administration

Requirement #1: Identify the purpose of the fee.

The purpose of the Program Administration Fee is to provide the funding necessary to administer the NEI Future Phases Water and Wastewater Fee. This includes consultant and City staff time related to services such as providing fee quotes, updating the fee program, tracking revenue and expenditures, and preparing annual reports.

Requirement #2: Identify the use to which the fee will be put.

The Program Administration Fee will be used to fund the management and administration of the NEI Future Phases Water and Wastewater Fee. This includes City staff and consultant time for activities related to fee collection, tracking, and reporting.

Requirement #3: Determine how there is a reasonable relationship between the fee’s use and the type of development project on which the fee is imposed.

New development results in the need for additional water and wastewater facilities. These facilities will be funded through the NEI Future Phases Water and Wastewater Fee. Fee programs require City and Consultant staff time to manage and administer. These activities will be funded through the Program Administration Fee. The Program Administration Fee is a five percent mark-up of the NEI Future Phases Water and Wastewater Fee. This calculation is shown in Table 4.

Requirement #4: Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed.

Each new development in the NEI area increases the need for water and wastewater facilities. These facilities will be funded by the NEI Future Phases Water and Wastewater Fee. To ensure these fees for new development are administered according to state law, regular updates, tracking and reporting are required. In addition, City staff must provide fee quotes to new development. To create the funding for these resulting activities, the Public Administration Fee calculated based on a five percent mark-up of the NEI Future Phases Water and Wastewater Fee as summarized in Table 4.



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Requirement #5: Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.

The Program Administration Fee provides the funding to administer NEI Future Phases Water and Wastewater Fee. The City has adopted a policy of collecting a five percent mark-up on the other fees in order to administer their fee programs. This fee is calculated based on a five percent mark-up of the NEI Future Phases Water and Wastewater Fee as summarized in Table 4.



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Reporting Requirements

The Government Code requires the City to report every year and every fifth year certain financial information regarding the fees. The City must make available within 180 days after the last day of each fiscal year the following information from the prior fiscal year:

1. A brief description of the type of fee in the account or fund
2. The amount of the fee
3. The beginning and ending balance in the account or fund
4. The amount of the fee collected and the interest earned
5. An identification of each public improvement for which fees were expended and the amount of expenditures
6. An identification of an approximate date by which time construction on the improvement will commence if it is determined that sufficient funds exist to complete the project
7. A description of each interfund transfer or loan made from the account and when it will be repaid
8. Identification of any refunds made once it is determined that sufficient monies have been collected to fund all fee related projects

The City must make this information available for public review and must also present it at the next regularly scheduled public meeting not less than 15 days after this information is made available to the public.

For the fifth fiscal year following the first deposit into the account or fund, and every five years thereafter, the City must make the following findings with respect to any remaining funds in the fee account, regardless of whether those funds are committed or uncommitted:

1. Identify the purpose to which the fee is to be put
2. Demonstrate a reasonable relationship between the fee and the purpose for which it is charged
3. Identify all sources and amounts of funding anticipated to complete financing any incomplete improvements
4. Designate the approximate dates on which funding in item (3) above is expected to be deposited into the fee account

As with the annual disclosure, the five year report must be made public within 180 days after the end of the City's fiscal year and must be reviewed at the next regularly scheduled public meeting. The City must make these findings; otherwise, the law requires that the City refund the money on a prorated basis to the then current record owners of the development project.



Technical Memorandum

Annual Updates

The fees and associated costs will be updated on July 1st of each year utilizing the Engineering News Record (ENR) Construction Cost Index for San Francisco. The fees will also be subject to periodic review and update based on a review of project costs and industry trends, subject to City Council approval.



Appendix A

Hydraulic Evaluation of Northeast Industrial Area (NEI Specific Plan)

West Yost

TECHNICAL MEMORANDUM I

DATE: September 11, 2018 Project No: 404-12-18-42
SENT VIA: EMAIL

TO: Al Gali, City of Tracy

CC: Robert Armijo, City of Tracy
Nanda Gottiparthi, SNG & Associates, Inc.

FROM: Nathaniel Homan, EIT #155070
Amy Kwong, PE, RCE #73213

REVIEWED BY: Elizabeth Drayer, PE, RCE #46872

SUBJECT: Hydraulic Evaluation of Northeast Industrial Area (NEI) Specific Plan

This Technical Memorandum (TM) summarizes the findings and conclusions of West Yost Associates' (West Yost) technical evaluation of the ability of the City of Tracy's (City) water distribution system to meet the required minimum pressures and flows for the proposed buildout of the Northeast Industrial Area (NEI) Specific Plan located in the northeast corner of the existing City limits. Projected demands and required infrastructure for the remaining NEI Specific Plan undeveloped parcels were included in the 2012 Water System Master Plan (2012 WSMP) buildout system hydraulic evaluations, but the City has made improvements to the potable water system in this area since 2012. As some of the building sizes and layouts have now been determined, some of the previously recommended pipeline alignments from the 2012 WSMP may no longer be feasible. Therefore, the City has requested West Yost to re-evaluate the NEI Specific Plan area under current existing and buildout system conditions to determine if the un-constructed future pipelines recommended from the 2012 WSMP are still required to provide adequate flows and pressures. Figure 1 illustrates the location of the remaining undeveloped parcels in the NEI Specific Plan (Project). Attachment 1 provides the locations of the recommended buildout potable water system pipelines from the 2012 WSMP.

This TM is submitted in accordance with West Yost's March 2018 Scope of Services. The following sections summarize our findings and conclusions:

- Project Description
- Estimated Water Demand for the Project
- Storage Capacity Evaluation
- Evaluation Findings and Conclusions

Because it is not part of this scope, this evaluation does not include review of water supply availability, booster pumping capacity, or water treatment plant capacity for the Project.

PROJECT DESCRIPTION

The NEI Specific Plan area consists of approximately 870 acres in the northeast corner of the City and is bounded by East Pescadero Avenue and I-205 to the north, Paradise Road and Banta Road to the east, the Southern Pacific Railroad to the south, and MacArthur Drive to the west. The Project area is designated for Industrial use. While many of the parcels in the Project area have been developed, as of March 2018, 38 parcels (approximately 463 acres) in the Project area remain undeveloped.

In the 2012 WSMP, the Project area was planned to be served by a combination of existing and future large diameter (12-inch and greater) pipelines. Since the completion of the 2012 WSMP, the City has constructed improvements to the potable water system within the Project area, including:

- Installation of a new 16-inch diameter pipeline segment in Paradise Road, just south of the intersection of Paradise Road and Grant Line Road, to connect the 12-inch diameter pipeline north of the intersection to the 16-inch diameter pipeline south of the intersection;
- Installation of a new 12-inch diameter pipeline in Skylark Way just south of Grant Line Road; and
- Installation of a new 12-inch diameter pipeline in Paradise Road west of Chrisman Road.

The City has requested that West Yost re-evaluate the Project area to determine if the remaining future buildout pipelines recommended from the 2012 WSMP are required to provide adequate flows and pressures to the Project area. Figure 2 shows the existing, recently constructed, and planned future pipelines within and in the vicinity of the Project area.

This hydraulic evaluation does not include the on-site pipelines for any future developments in the Project area, and only determines if the City's potable water system is adequate to serve the proposed Project. It should be noted that any on-site private domestic, irrigation, and fire service connections should have at least two connection points to the City's potable water system for reliability.

ESTIMATED WATER DEMAND FOR THE PROJECT

The Project area contains both developed parcels with existing water demands and undeveloped parcels, which will increase water demands on the City's potable water system once developed. Demands for existing parcels were included in the 2012 WSMP and are based on metered water use from 2007. Projected water demands for undeveloped parcels in the Project area were also included in the 2012 WSMP for the evaluation of the City's buildout potable water distribution system. Future demands in the 2012 WSMP were calculated by multiplying 468 undeveloped acres within the Project area by the adopted Industrial water use factor of 1.5 af/ac/yr. Because the undeveloped area within the Project area has decreased by only five (5) acres since the 2012 WSMP was completed, West Yost used the buildout demands as calculated in the 2012 WSMP for this

evaluation. Table 1 summarizes the Project’s undeveloped area, water use factor, and projected annual potable water use.

| Table 1. Estimated Annual Water Demand for the Project | | | |
|---|--|--|---------------------------------|
| Land Use Designation | Undeveloped Area, acres ^(a) | Unit Potable Water Use Factor, af/ac/yr ^(b) | Annual Potable Water Use, af/yr |
| Industrial | 468 | 1.5 | 702 |
| UAFW ^(c) | | | 57 |
| Total | 468 | 1.5 | 759 |

(a) Undeveloped acres from Appendix D of 2012 Citywide Water System Master Plan. West Yost confirmed that this total is similar to the remaining acreage from the undeveloped parcels provided in March 2018.
 (b) Based on 2012 Citywide Water System Master Plan, Table 4-14. Based on existing buildings, it was assumed that irrigation demand would be very limited; this is consistent with the assumptions in the 2012 Citywide Water System Master Plan.
 (c) Unaccounted-for water (UAFW) is assumed to equal to 7.5 percent of total water use.

Table 2 tabulates the projected average day, maximum day, and peak hour water demands for the Project. As shown in Table 2, the projected average day demand for the Project is approximately 470 gallons per minute (gpm). Maximum day demand and peak hour demand were calculated using the City’s adopted peaking factors (from the 2012 WSMP) of 2.0 and 3.4 times the average day demand, respectively, resulting in a maximum day demand of about 940 gpm and a peak hour demand of about 1,598 gpm.

| Table 2. Estimated Average Day, Maximum Day, and Peak Hour Water Demands for the Project^(a) | | | | | |
|---|------|-----------------------------------|------|---------------------------------|------|
| Average Day Demand | | Maximum Day Demand ^(b) | | Peak Hour Demand ^(c) | |
| gpm | mgd | gpm | Mgd | Gpm | mgd |
| 470 | 0.68 | 940 | 1.35 | 1,598 | 2.30 |

(a) Based on estimated annual water demands presented in Table 1.
 (b) Maximum day demand is 2.0 times the average day demand, per the 2012 Citywide Water System Master Plan.
 (c) Peak hour demand is 3.4 times the average day demand, per the 2012 Citywide Water System Master Plan.

STORAGE CAPACITY EVALUATION

The storage requirement for the City’s potable water system consists of three storage components as listed below:

- **Operational Storage:** 30 percent of a maximum day demand;
- **Emergency Storage:** Two times an average day demand; and
- **Fire Flow Storage:** The required fire flow rate multiplied by the associated fire flow duration period, as required by the City’s Fire Department.

The required fire flow component for this Project would be shared with other existing and proposed developments served by Pressure Zones 1 and 2. Based on the criteria listed above, the required operational and emergency storage components for the Project are 0.41 MG and 1.36 MG, respectively. Based on the City's available storage capacity and emergency storage credit¹ in Pressure Zones 1 and 2, there is currently sufficient storage capacity to adequately serve the entire Project. However, the City's current storage capacity surplus in Pressure Zones 1 and 2 is only 0.2 MG². Consistent with previous recommendations for development projects located in Pressure Zone 1, the design and construction of the new Catellus Tank and Booster Pump Station located in Pressure Zone 1 are recommended. The City is currently in the process of updating the 2012 WSMP, and an updated storage capacity evaluation will be developed to confirm potable water system improvement recommendations.

It is anticipated that potable water demands will decrease once the City's recycled water system is developed and operational. The conversion of the City's potable irrigation water demands to recycled water demands will increase the amount of storage capacity available to meet additional potable water demands.

EVALUATION FINDINGS AND CONCLUSIONS

Planning and modeling criteria used to evaluate the Project are based on the system performance and operational criteria developed in the 2012 WSMP and are provided in Attachment 2 for reference. The City's existing hydraulic model was modified to include the proposed water demands from the Project, and the future pipelines previously recommended in the 2012 WSMP were removed from the hydraulic model to determine if system performance and operational criteria could be met without those recommended pipelines. The hydraulic model was then used to simulate peak hour demand and maximum day demand plus fire flow conditions to determine the impacts to the City's potable water system from the proposed Project. Results from this hydraulic evaluation are discussed below.

Findings from Peak Hour Demand Evaluation

Based on West Yost's analysis, the existing pipelines serving the Project are adequate to meet the required minimum pressure and maximum pipeline velocity during peak hour demand for the City's existing and buildout system conditions, without the pipelines previously recommended in the 2012 WSMP.

¹ Refer to Section 7.4.2.2 *Water Storage Capacity* of the 2012 WSMP for additional details.

² Assumes that the storage capacity deficit in City-side Zone 3 is supplied by the emergency storage surplus available in Pressure Zones 1 and 2 (*Hydraulic Evaluation of IPC Buildings 9, 10, and 14 Memorandum, prepared by West Yost and dated May 3, 2018*).

Existing System

Figure 3 shows that system pressures during a peak hour demand for the City's existing system are above the required minimum pressure of 40 pounds per square inch (psi) and all pipelines within the Project area have maximum pipeline velocities less than 8 feet per second (fps). During an existing system peak hour demand condition, the pressures within the Project area are estimated to range from approximately 64 psi to 68 psi.

Buildout System

Figure 4 shows that system pressures during a peak hour demand for the City's buildout system are above the required minimum pressure of 40 psi and all pipelines within the Project area have maximum pipeline velocities less than 8 fps. During a buildout system peak hour demand condition, the pressures within the Project area are estimated to range from approximately 56 psi to 60 psi.

Findings from Maximum Day Demand plus Fire Flow Evaluation

The existing pipelines serving the Project were evaluated during maximum day plus fire flow demand for existing and buildout system conditions to determine if they could provide the minimum required fire flow of 4,500 gpm at all evaluated locations within the Project area while maintaining residual pressures greater than 30 psi (primary criterion) and pipeline velocities less than 12 fps (secondary criterion).

Existing System

As shown on Figure 5, the majority of locations within the Project area meet or exceed the fire flow requirements under the evaluated condition for the City's existing system. However, three evaluated locations within the Project area do not meet the 4,500 gpm minimum fire flow requirement in the existing water system. However, these locations can meet the 4,500 gpm requirement while maintaining a residual of 30 psi if the pipeline velocity criterion is disregarded. Detailed results for the locations of the deficient fire flows are described below.

- The evaluated location on Paradise Road between Chrisman Road and Skylark Way has deficient available fire flow due to a 320-foot-long, 8-inch diameter pipeline segment located to the west of the intersection of Chrisman Road and Paradise Road. Due to the maximum pipeline velocity criterion, this length of 8-inch diameter pipeline limits the available flow to the deficient fire flow location. Because the velocity criterion is a secondary performance criterion and the length of pipeline which would experience velocities in excess of 12 fps is relatively short, upsizing this length of pipeline is not considered a critical improvement. However, the City may want to consider upsizing this length of pipe to a 12-inch diameter pipeline in the future to avoid high pipeline velocities during fire flow conditions at this location.

- The locations on the dead-end pipeline in Grant Line Road to the east of the intersection of Grant Line Road and Paradise Road also have deficient available fire flows due to the maximum pipeline velocity criterion, which limits the available flow through a single 12-inch diameter pipeline. The 2012 WSMP included a future 12-inch diameter pipeline loop to the east of the Project area from Pescadero Avenue to Grant Line Road as part of the Eastside Industrial Future Service Area (see orange dashed line on Figure 5). Once constructed, this 12-inch diameter loop will eliminate the fire flow deficiencies at these two evaluated locations by allowing supply from multiple directions. Because the fire flow deficiencies are minor (less than 400 gpm below the requirement), construction of this improvement does not need to take place before the development of the Eastside Industrial Future Service Area.

Buildout System

As shown on Figure 6, all but one of the evaluated locations within the Project area meet or exceed the fire flow requirements under the evaluated condition for the City's buildout system. The evaluated location on Paradise Road between Chrisman Road and Skylark Way remains deficient at buildout due to the maximum pipeline velocity criterion on the 320-foot-long, 8-inch diameter pipeline located to the west of the intersection of Chrisman Road and Paradise Road. Because the pipeline velocity criterion is a secondary performance criterion and the length of pipeline which would experience velocities in excess of 12 fps is relatively short, upsizing this length of pipeline is not considered a critical improvement. Consistent with the results from the existing system, the City may want to consider upsizing this length of pipe to a 12-inch diameter pipeline in the future to avoid high pipeline velocities during fire flow conditions at this location.

Summary of Analysis

Based on the results from the hydraulic evaluation discussed above, the existing pipelines in the Project area meet all recommended system performance criteria during a peak hour demand condition and meet the primary system performance criterion (pressure) during a maximum day plus fire flow condition at all evaluated locations.

As shown on Figure 7, in place of constructing the future NEI Specific Plan pipelines recommended from the 2012 WSMP, the following improvements are recommended to meet the secondary pipeline velocity criterion during a maximum day plus fire flow condition, but are not critical due to the minor deficiencies that were identified:

- Construct the 12-inch diameter pipeline loop to the east of the Project area from Pescadero Avenue to Grant Line Road.
- Upsize the 320-foot long, 8-inch diameter pipeline located to the west of the intersection of Chrisman Road and Paradise Road to a 12-inch diameter pipeline.

West Yost continues to recommend the pipeline and storage improvement recommendations for Pressure Zone 1 that were identified in the 2012 WSMP and also in the more recent hydraulic evaluations for Marriott TownePlace Suites³ and the Larch Clover Interim Annexation Project⁴ (which are also located in Pressure Zone 1) to address previously identified deficiencies in Pressure Zone 1. The following water system improvements are recommended to serve Pressure Zone 1:

- Design and construction of a new Catellus Tank and Booster Pump Station, as identified in the 2012 WSMP and shown in Attachment 1, to support additional water demands from new developments (including this proposed Project) located in Pressure Zone 1.⁵
- Existing water system pipeline improvements as identified in the 2012 WSMP (Improvement #1 on Figure 7-10 of the 2012 WSMP).

It should be noted that the system pressures and hydraulic capacity of Pressure Zone 1 have been improved with the installation of PRS #6. The installation of PRS #6 improved supply to the Kimball High School area and addressed existing pressure deficiencies in that area, which were previously identified in the 2012 WSMP. However, the recommendations listed above are still needed to address high pipeline velocities in the Tracy Boulevard pipelines and the need for additional storage in Pressure Zone 1.

As discussed above, the on-site pipelines for any future developments in the Project area were not provided for this hydraulic evaluation. Any on-site private domestic, irrigation, and fire service connections should have at least two connection points to the City's potable water system for reliability.

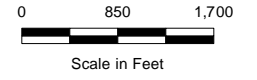
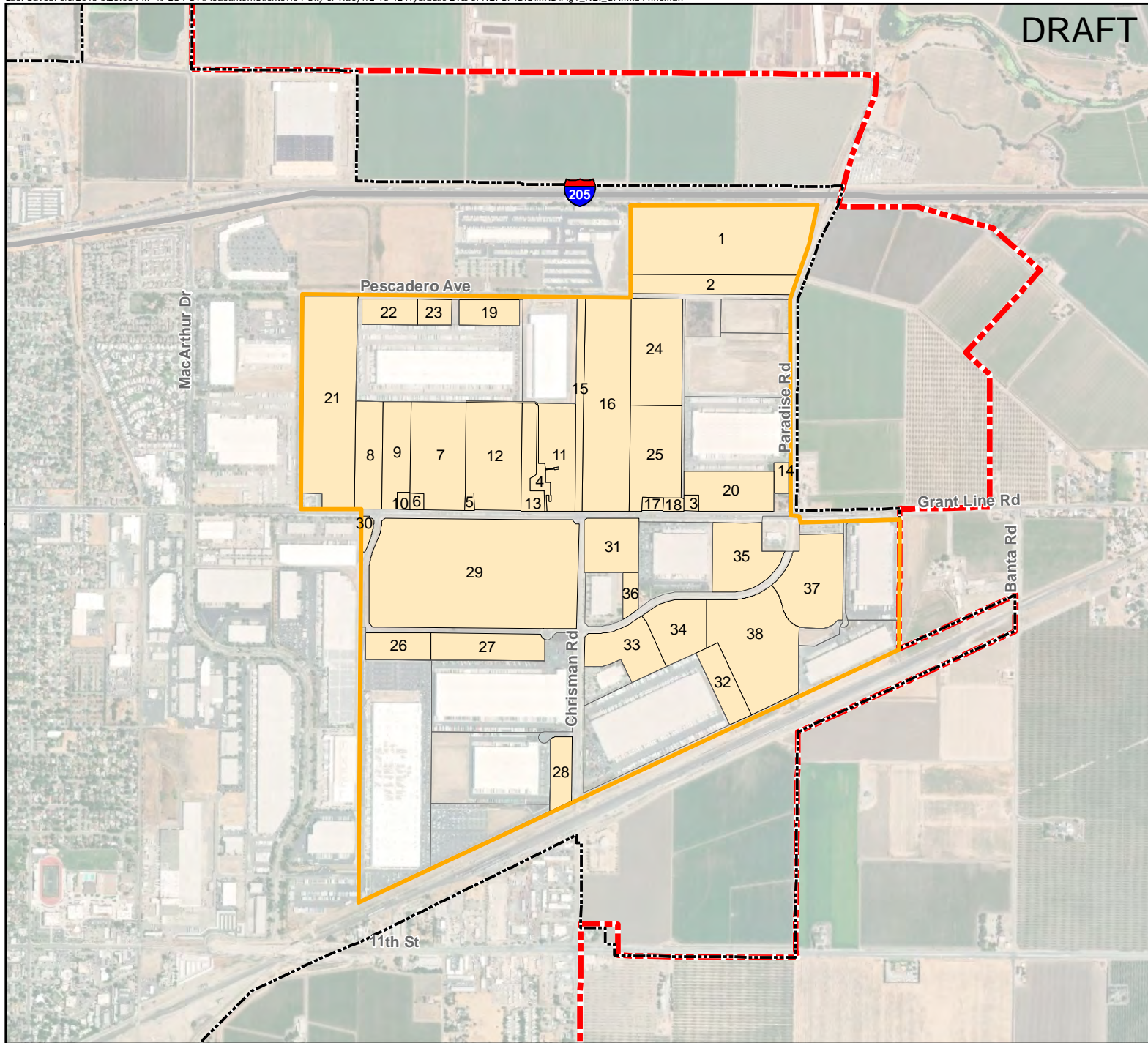
The hydraulic evaluation performed for the Project is based on the various assumptions stated above. If any of these items are changed or modified in any way, other than as described in this TM, additional hydraulic evaluation will be required.

³ Hydraulic Evaluation of Marriott TownePlace Suites Development, West Yost Associates, October 18, 2016.

⁴ Hydraulic Evaluation of Larch Clover Interim Annexation Project, West Yost Associates, November 11, 2016.

⁵ Although this improvement is not immediately required because existing system pressures in Pressure Zone 1 have improved with the installation of PRS#6, it is still recommended as a future improvement to improve future storage and hydraulic capacity in the west side of Pressure Zone 1. The timing of this improvement will most likely be triggered by a larger development located in Pressure Zone 1.

DRAFT



Symbology

- Undeveloped Parcel
- Developed Parcel
- NEI SP Boundary
- City Limit
- Sphere of Influence

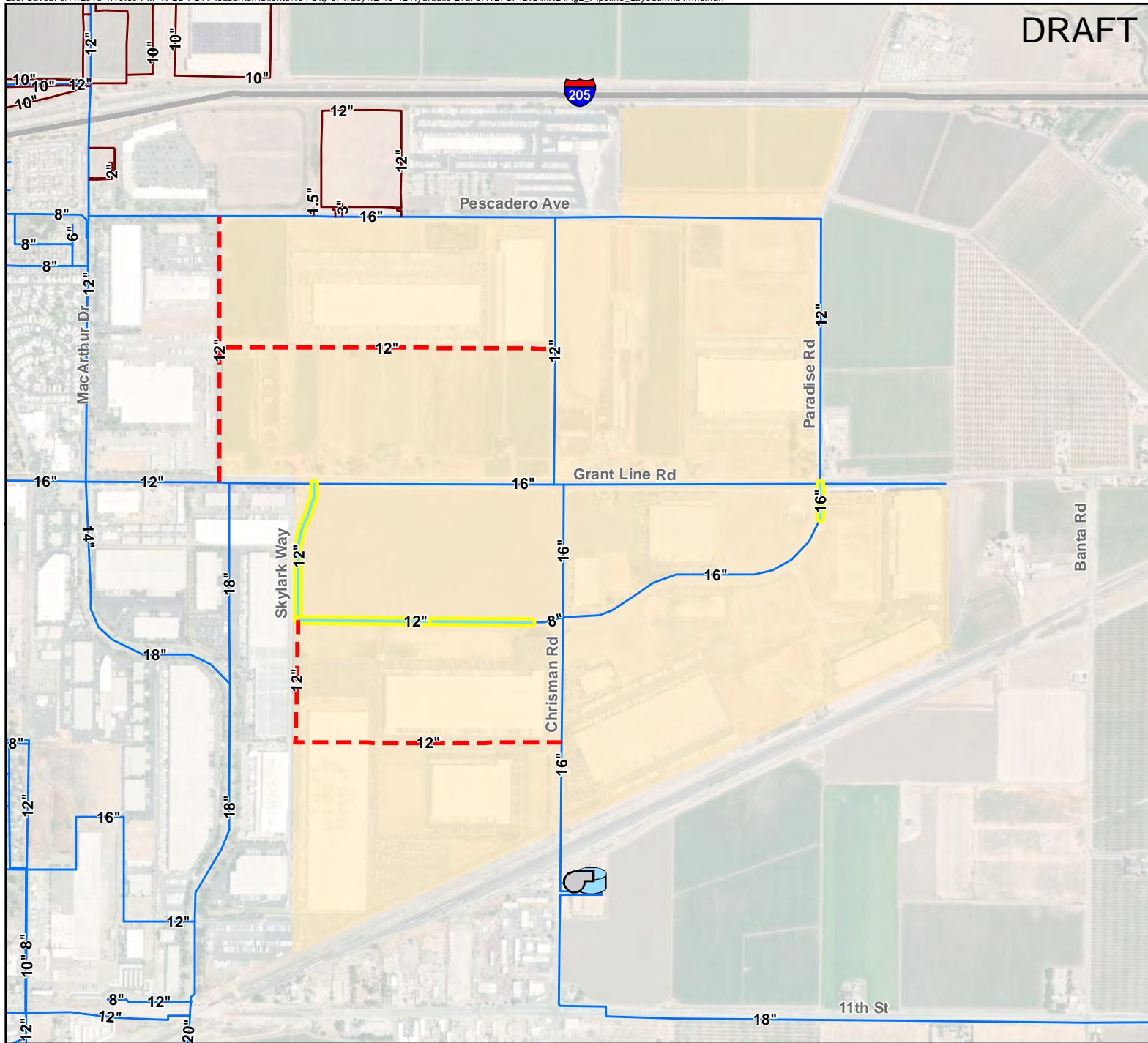
Notes:

1. Locations of undeveloped parcels provided by Harris and Associates on March 9, 2018.

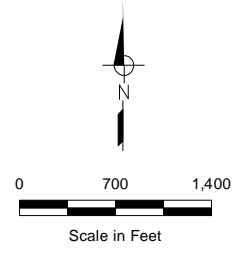


Figure 1
Northeast Industrial Area Specific Plan

City of Tracy
 Hydraulic Evaluation
 of NEI Specific Plan



DRAFT



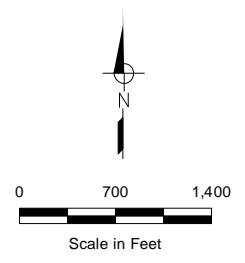
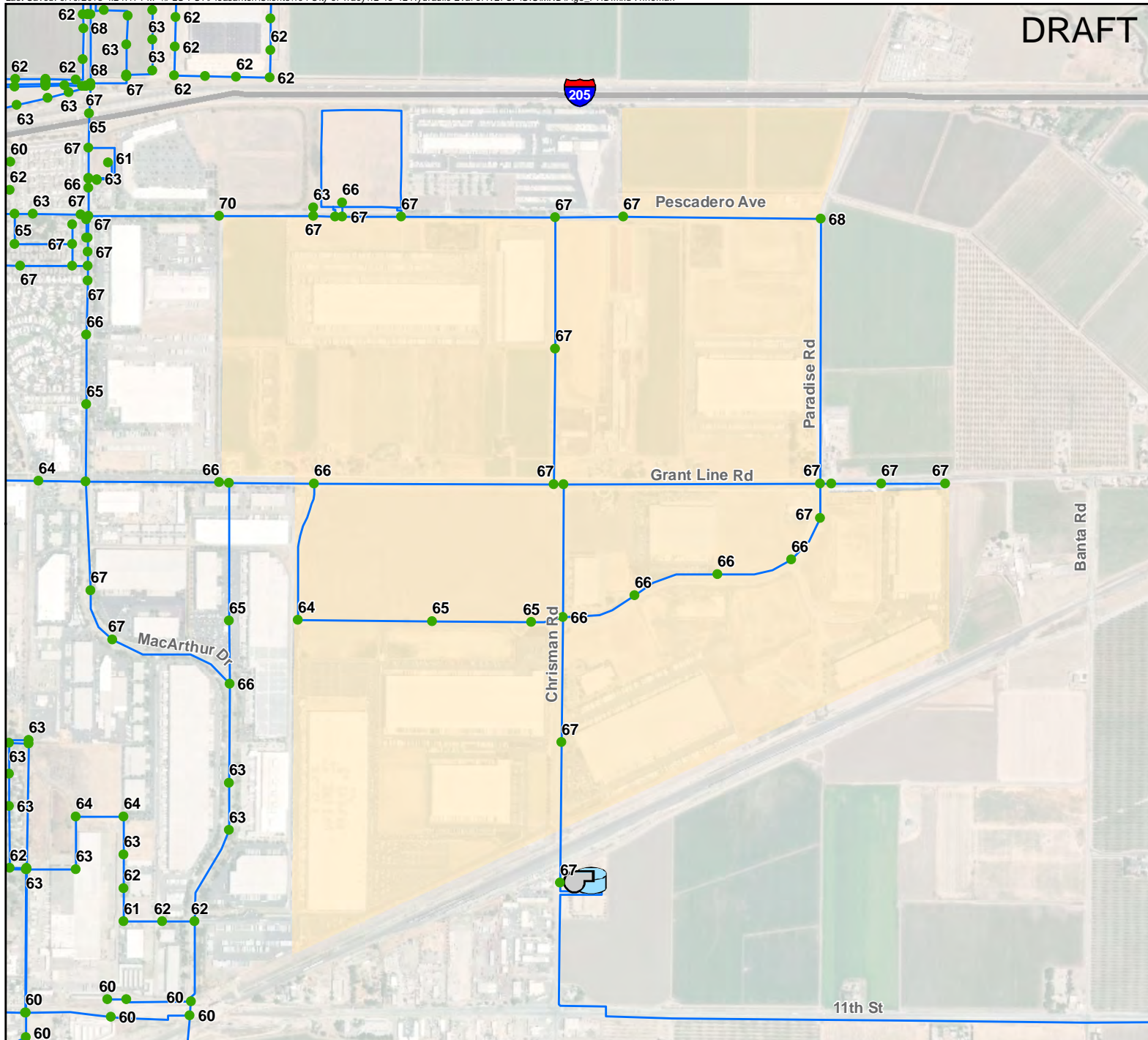
- Symbology**
- NEI Pump Station
 - NEI Tank
 - Future NEI SP Pipeline (recommended in 2012 WSMP)
 - Other Planned Pipeline
 - Recently Constructed Pipeline
 - Existing Pipeline
 - NEI SP Area



Figure 2
Existing and Planned Potable Water System Facilities to Serve NEI

City of Tracy
Hydraulic Evaluation
of NEI Specific Plan

DRAFT

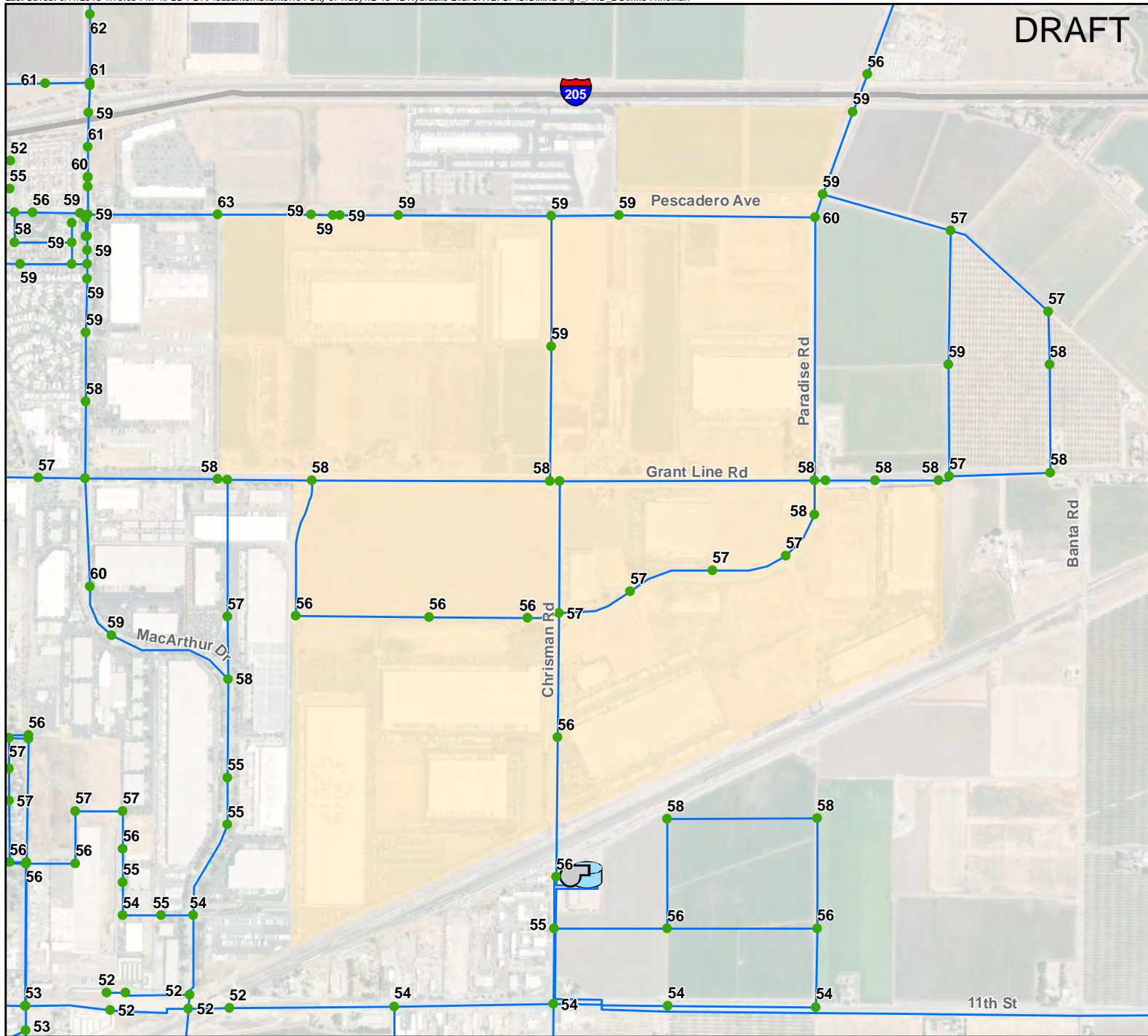


- Symbology**
- Peak Hour Pressure**
 - Less than 40 psi (Red dot)
 - Greater than or equal to 40 psi (Green dot)
 - Pipeline Velocity**
 - Less than 8 fps (Blue line)
 - Greater than or equal to 8 fps (Red line)
 - NEI Pump Station (Pump icon)
 - NEI Tank (Tank icon)
 - NEI SP Area (Yellow shaded area)

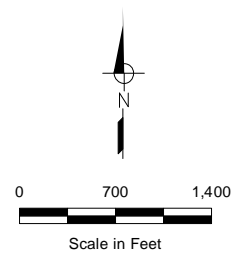


Figure 3
Existing System
Peak Hour Results

City of Tracy
Hydraulic Evaluation
of NEI Specific Plan



DRAFT



- Symbology**
- Peak Hour Pressure**
 - Less than 40 psi
 - Greater than or equal to 40 psi
 - Pipeline Velocity**
 - Less than 8 fps
 - Greater than or equal to 8 fps
 - NEI Pump Station
 - NEI Tank
 - NEI SP Area

Note: Includes future buildout pipelines as recommended in the 2012 WSMP.

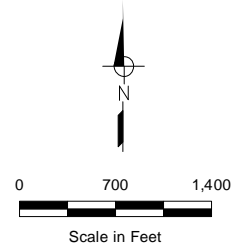


Figure 4
Buildout System
Peak Hour Results

City of Tracy
Hydraulic Evaluation
of NEI Specific Plan

DRAFT

Note: The available fire flow shown is the maximum flow available while maintaining 30 psi residual system pressure. Available fire flows in NEI SP area had a maximum pipeline velocity criterion of 12 fps. All flows shown are in gpm.



Symbology

Available Fire Flow

- Less than 4,500 gpm
- Greater than or equal to 4,500 gpm
- NEI Pump Station
- NEI Tank
- Future East Industrial Pipeline
- Other Planned Pipeline
- Existing Pipeline
- NEI SP Area

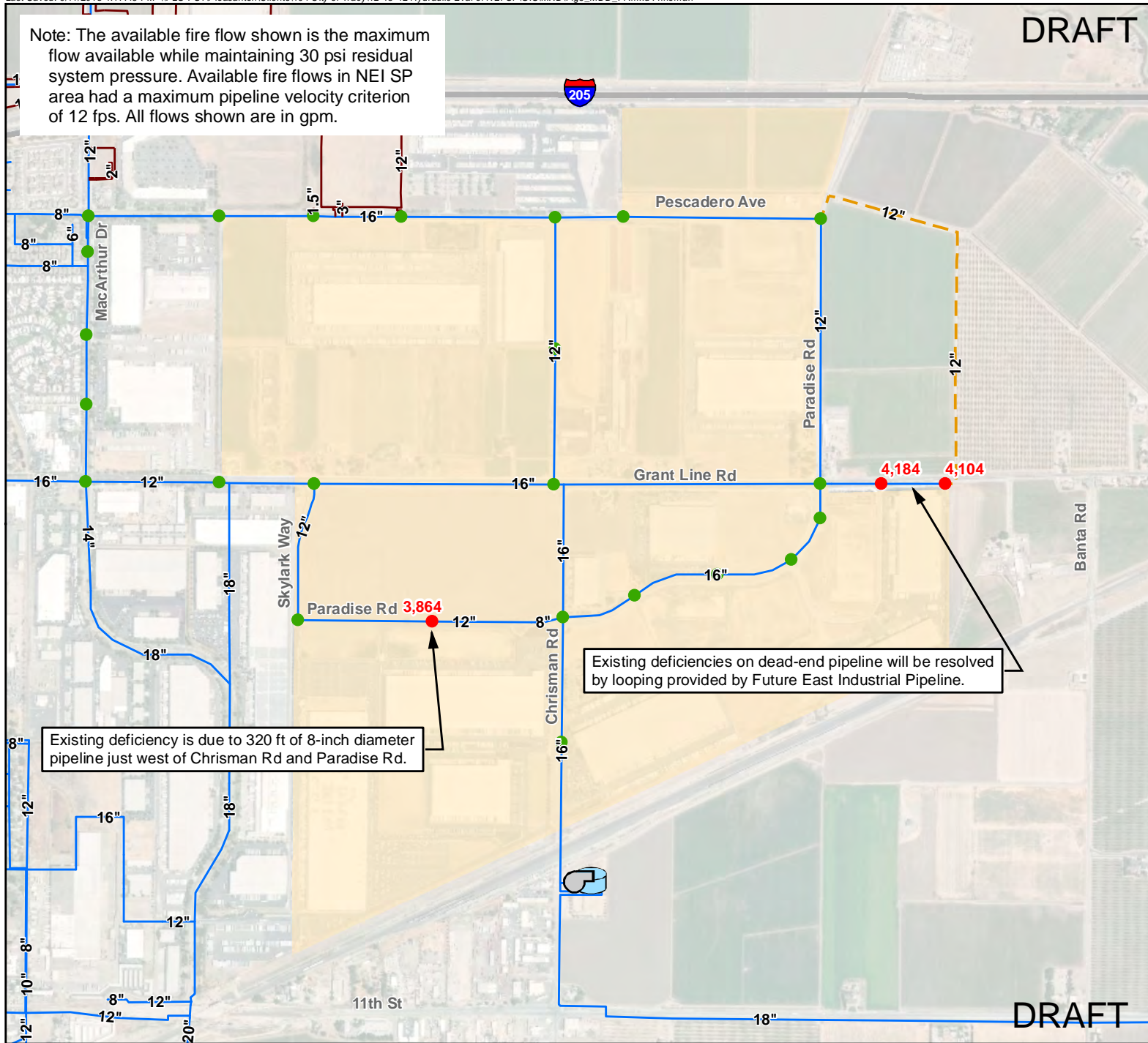


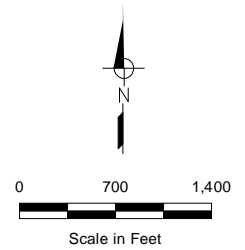
Figure 5
Existing System Available Fire Flow

City of Tracy
Hydraulic Evaluation
of NEI Specific Plan

DRAFT

DRAFT

Note: The available fire flow shown is the maximum flow available while maintaining 30 psi residual system pressure. Available fire flows in NEI SP area had a maximum pipeline velocity criterion of 12 fps. All flows shown are in gpm.

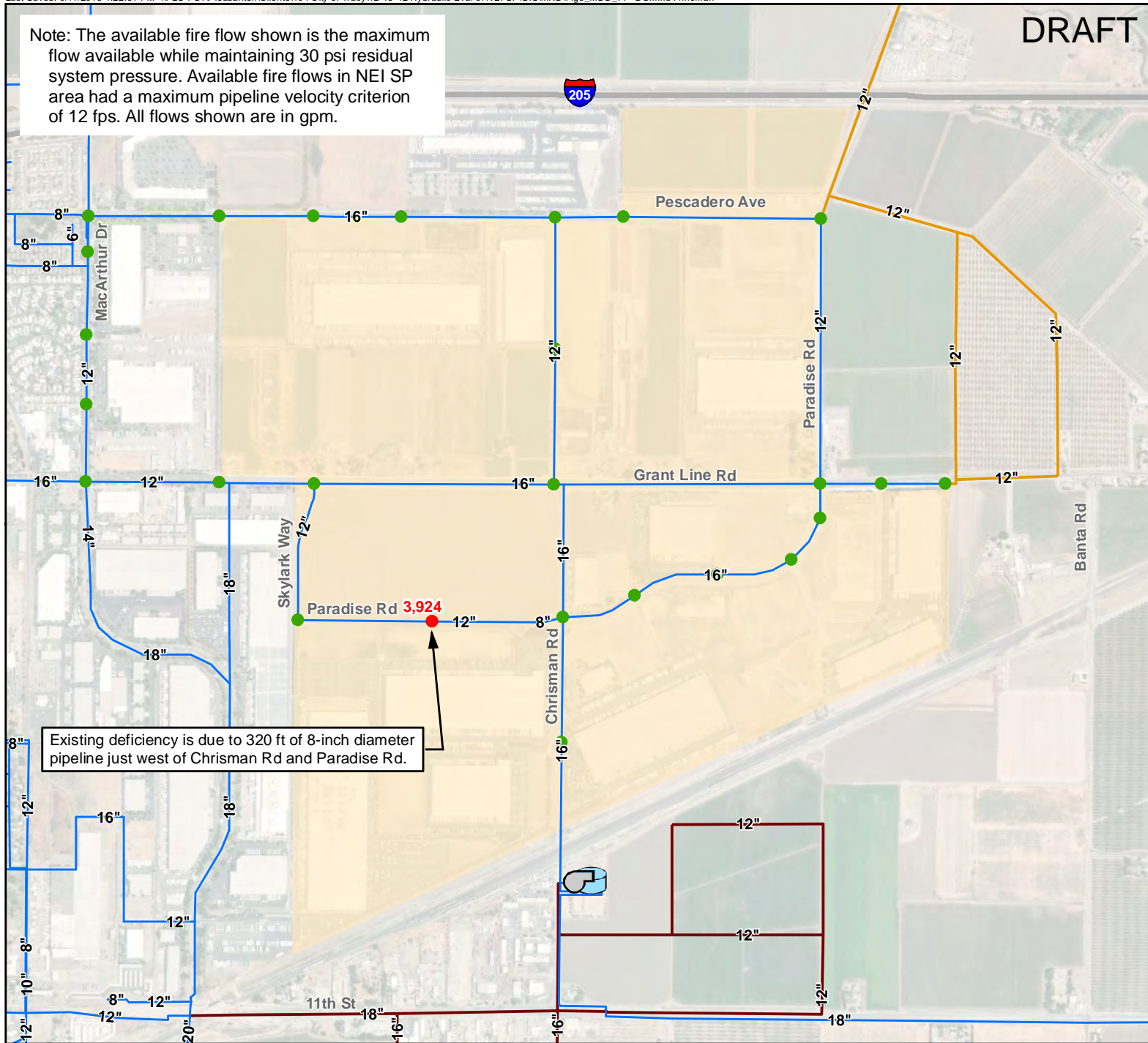


Symbology

Available Fire Flow

- Less than 4,500 gpm
- Greater than or equal to 4,500 gpm
- NEI Pump Station
- NEI Tank
- Future East Industrial Pipeline
- Other Buildout Pipeline
- Existing Pipeline
- NEI SP Area

Note: Includes future buildout pipelines as recommended in the 2012 WSMP.

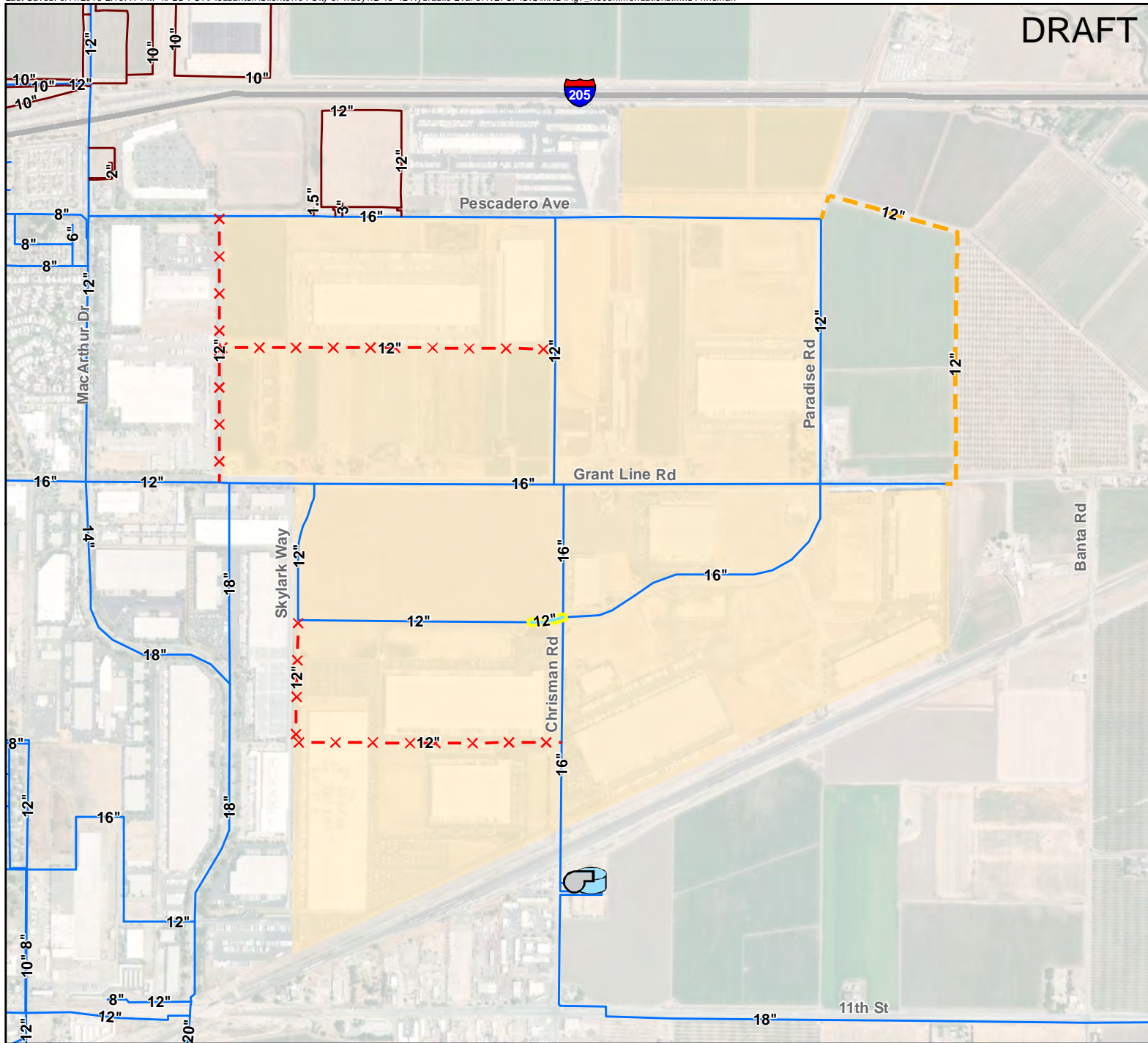


Existing deficiency is due to 320 ft of 8-inch diameter pipeline just west of Chrisman Rd and Paradise Rd.

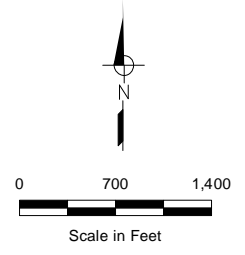


Figure 6
Buildout System Available Fire Flow

City of Tracy
Hydraulic Evaluation
of NEI Specific Plan



DRAFT



- Symbology**
- NEI Pump Station
 - NEI Tank
 - Previously Recommended NEI SP Pipeline (no longer required)
 - Recommended Future East Industrial Pipeline
 - Recommended to Upsize Pipeline to 12-inch Diameter
 - Other Planned Pipeline
 - Existing Pipeline
 - NEI SP Area



Figure 7
Recommended Potable Water System Facilities to Serve NEI

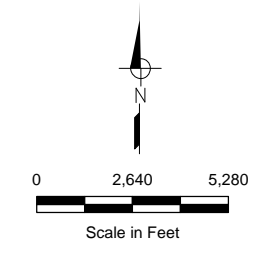
City of Tracy
Hydraulic Evaluation
of NEI Specific Plan

ATTACHMENT 1

Recommended Buildout Potable Water System Improvements
(2012 Citywide Water System Master Plan)

FIGURE 1
City of Tracy
Water System Master Plan

RECOMMENDED
BUILDOUT POTABLE
WATER SYSTEM CIP

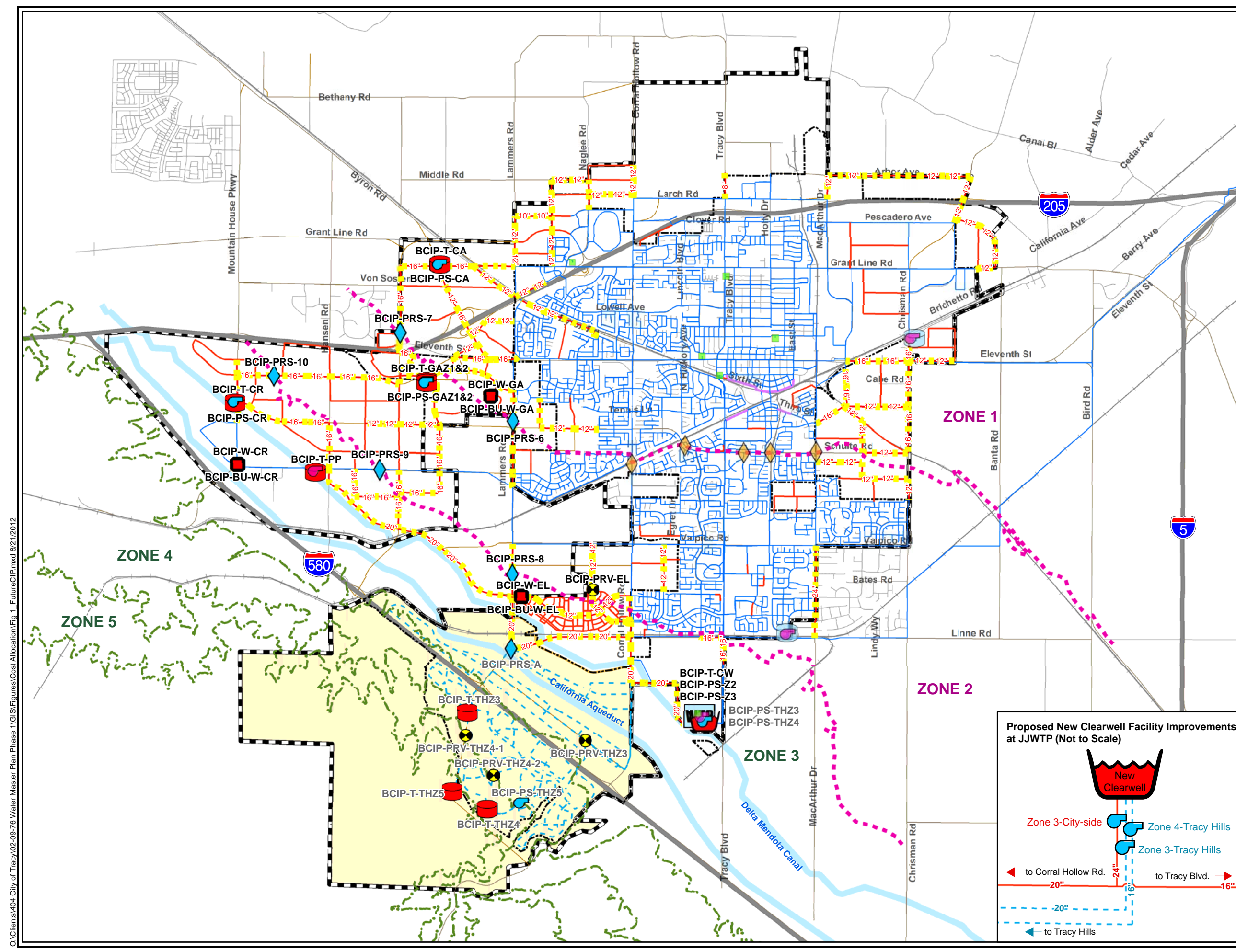
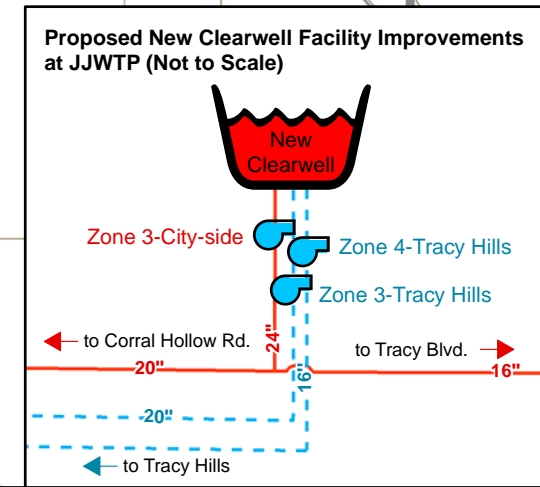


NOTES

1. The City's existing hydraulic model is not an all pipes model. Therefore, not all existing pipes are shown.
2. Bore and jack pipeline projects are not shown, but is required for canal, railroad, or major highway crossings.
3. Individual PRVs on water service connections with static pressures exceeding 80 psi will be the responsibility of individual developer(s) to install.

LEGEND

- Proposed Pipeline Included in Fee Analysis
- Proposed Pipeline
- Proposed Existing Pipeline Upsize
- Existing Pipeline
- Proposed Tracy Hills Pipeline
- Proposed Backup Power Generator
- Proposed Emergency PRV Connection
- Proposed Pressure Regulating Station
- Proposed ASR Groundwater Well
- Proposed Booster Pump Station
- Proposed Storage Tank
- Proposed Clearwell
- Existing Pressure Regulating Station
- Existing Groundwater Well
- Existing Booster Pump Station
- Existing Storage Tank
- Tracy Hills
- SOI
- City Limits
- Proposed Street
- Existing Street



C:\Clients\404 City of Tracy\02-09-76 Water Master Plan Phase 1\GIS\Figures\Cost Allocation\Fig 1_FutureCIP.mxd 8/21/2012

ATTACHMENT 2

Planning and Modeling Criteria
(2012 Citywide Water System Master Plan)

Planning and modeling criteria used to evaluate the proposed Project are based on the system performance and operational criteria developed in the 2012 Citywide Water System Master Plan. The criteria used to evaluate the existing water system and the proposed pipelines for the Project are listed as follows:

- Residual pressure at the flowing hydrant (during an assumed maximum day demand plus fire flow condition) and throughout the water system must be equal to or greater than 30 pounds per square inch (psi) during the simulated fire condition.
- Minimum allowable service pressure is 40 psi during all other non-fire demand conditions.
- Maximum allowable service pressure is 80 psi. A pressure reducing valve (PRV) will be required on all water services with a static pressure greater than 80 psi and should conform with the requirements from the Uniform Plumbing Code.
- Maximum allowable distribution pipeline velocity is 12 feet per second (fps) during the simulated fire flow demand condition.
- Maximum allowable transmission and distribution pipeline velocity is 6 fps and 8 fps, respectively, during a non-fire demand condition.
- Maximum allowable head loss rate is 10 feet per 1,000 feet (ft/kft) during the simulated fire demand condition.
- Maximum head losses in distribution system pipelines should be limited to 7 ft/kft during a non-fire demand condition.
- Any new, required pipelines, will be modeled with a roughness coefficient (C-factor) of 130.
- Available fire flow demand must meet a minimum flow of 4,500 gpm (Industrial land use, assuming fully sprinklered buildings) during a maximum day demand condition.
- The 2012 Master Plan hydraulic model of the City's water distribution system was used as the basis for evaluation.¹ However, the hydraulic model was updated to include the following major existing system improvements:
 - Improvements that have been recently constructed on South Lammers Road (20-inch diameter pipeline and pressure regulating station (PRS #6)); and
 - Proposed improvements on South MacArthur Drive (24-inch diameter pipeline).

¹ This hydraulic model was updated to include projected water demands from new developments such as Valpico and MacDonald Apartments, Sierra Hills (Aspire I) Apartments, Tiburon Village, Middlefield Drive Apartments and Self-Storage Facility, I-205 Parcels M1 and M2 and Infill Parcels 7 and 13, Grant Line Road Apartments, South Lammers Road Development, Aspire II Development, Pescadero IPT Development, first three buildings at Cordes Ranch, Ellis Specific Plan Phase 1A and Phase 1A Extension, Marriott TownePlace Suites, Larch Clover Interim Annexation, Ellis Specific Plan Phase 2 - The Gardens, IPC Buildings 3, 4, and 12, IPC Building 25, IPC Buildings 22, 23, and Thermo Fisher, Tracy Village Specific Plan, Avenues Specific Plan, and IPC Buildings 9, 10, and 14. City staff also requested West Yost to incorporate the following developments, which were evaluated by Black Water Consulting Engineers, Inc. into the City's hydraulic model: Barcelona Infill, Berg Road Properties, Harvest Apartments, 321 E. Grant Line Apartments, and Project Hawk/IPC.



Appendix B

Wastewater System Analysis for the Northeast Industrial Area

CH2M



City of Tracy

Wastewater System Analysis for Northeast Industrial Area



Prepared for

City of Tracy

July 2018

Updated November 2018



2485 Natomas Park Drive, Suite 600
Sacramento, CA 95833
Phone: 916-920-0300

Table of Contents

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| 3.0 Future Wastewater Collection System..... | 11 |
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Figure 1 – City of Tracy NEI Area Vicinity Map

Figure 2 – NEI Undeveloped Parcels (Map provided by Harris Associates)

Figure 3 – Existing NEI Wastewater Collection System

Figure 4 – Existing Hydraulic Capacities and Future Peak Flows

Figure 5 -- Proposed NEI Wastewater System Upgrade

Appendix A

NEI Collection System Hydraulic Model

Appendix B

Cost Estimate for future Gravity Sewer (Program Cost)

Executive Summary

The purpose of this technical analysis is to determine whether the existing wastewater collection system has sufficient capacity to receive and transmit wastewater flows from the undeveloped (currently vacant) parcels within the North East Industrial (NEI) area.

Based on the information provided by City, there are approximately 38 parcels that are currently vacant within the exiting NEI boundary. The total area is approximately 463 acres.

A hydraulic model was developed to determine future peak wastewater flows from NEI area and compare it to the hydraulic capacity of the existing collection system.

Based on the analysis presented in Appendix A and a review of the hydraulic capacity of the existing wastewater collection system, there is sufficient capacity in the existing collection to convey wastewater flows from remaining vacant parcels of NEI area except the following sections:

1. Gravity sewer line from the intersection of Pescadero Ave and MacArthur Drive to MacArthur Wastewater Pump Station.
2. Gravity sewer line along Pescadero Ave from Ridge Line Warehouse to the Intersection of Pescadero Ave and MacArthur Drive.

Based on the existing and future peak wet weather flows, there is a need to construct the following Improvements:

1. New 18-inch sewer line parallel to the existing sewer line along Pescadero Ave from Ridge Line Warehouse to the Intersection of Pescadero Ave and MacArthur Drive. The length of this new sewer line is approximately 4,700 feet.
2. New 18-inch sewer line parallel to the existing sewer line along MacArthur Drive from the Intersection of Pescadero Ave and MacArthur Drive to MacArthur Wastewater Pump Station located north of I-205 Freeway. The length of this sewer line is approximately 1,350 feet.

Estimated Cost: The estimated Cost of the proposed sewer line improvement is \$2.7M as shown in Section 4 of this report.

Acronyms and Abbreviations

| | |
|-----------------|---|
| ADWF | average dry weather flow |
| CC | Construction Cost |
| DU | dwelling unit |
| ECU | equivalent customer unit |
| ft ² | square foot |
| gal | gallon(s) |
| gal/ac-day | gallon(s) per acre per day |
| gpcd | gallon(s) per capita per day |
| gpd | gallon(s) per day |
| HD | high density |
| lbs | pounds |
| lbs/cap-day | pounds per capita per day |
| LD | low density |
| MD | medium density |
| mgd | million gallon(s) per day |
| mg/L | milligrams per liter |
| NEI | Northeast Industrial |
| NPDES | National Pollutant Discharge Elimination System |
| PDWF | peak dry weather flow |
| PF | Peaking Factor |
| PWWF | peak wet weather flow |
| SSO | sanitary sewer overflow |
| SWRCB | State Water Resources Control Board |
| TDS | total dissolved solids |
| TSS | total suspended solids |
| Water Board | Regional Water Quality Control Board |
| WRF | water recycling facility |
| WWTP | Wastewater Treatment Plant |
| VLD | very low density |

1.0 Introduction

The existing Northeast Industrial Area (NEI) is located at the Northeast portion of the City of Tracy as shown in Figure 1. Majority of the development within this area consists of light industrial projects. NEI area has been developed in several phases.

City of Tracy completed a wastewater analysis in 2004 and established wastewater connection fees in 2005. The above fee was intended to fund the construction of NEI wastewater collection system.

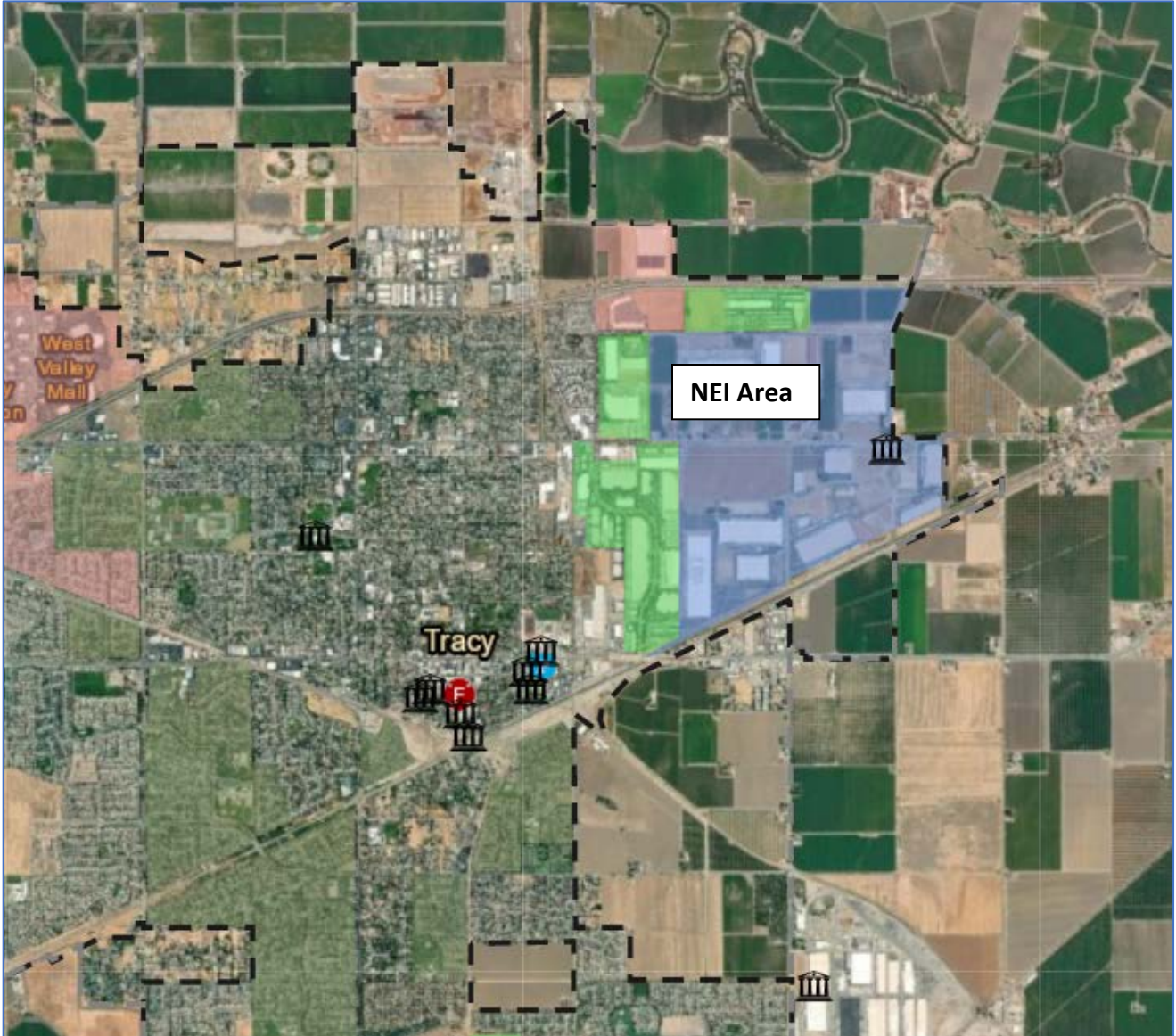
The purpose of this technical analysis is to determine whether the existing wastewater collection system has sufficient capacity to receive and transmit wastewater flows from the undeveloped (currently vacant) parcels within NEI area.

Based on the information provided by the City of Tracy, there are approximately 38 parcels that are vacant within the exiting North East Industrial area. The total area is approximately 463 acres.

There is a need to reanalyze the existing and proposed wastewater systems to determine whether any changes are needed to the proposed wastewater collection system based on recent development within NEI area.

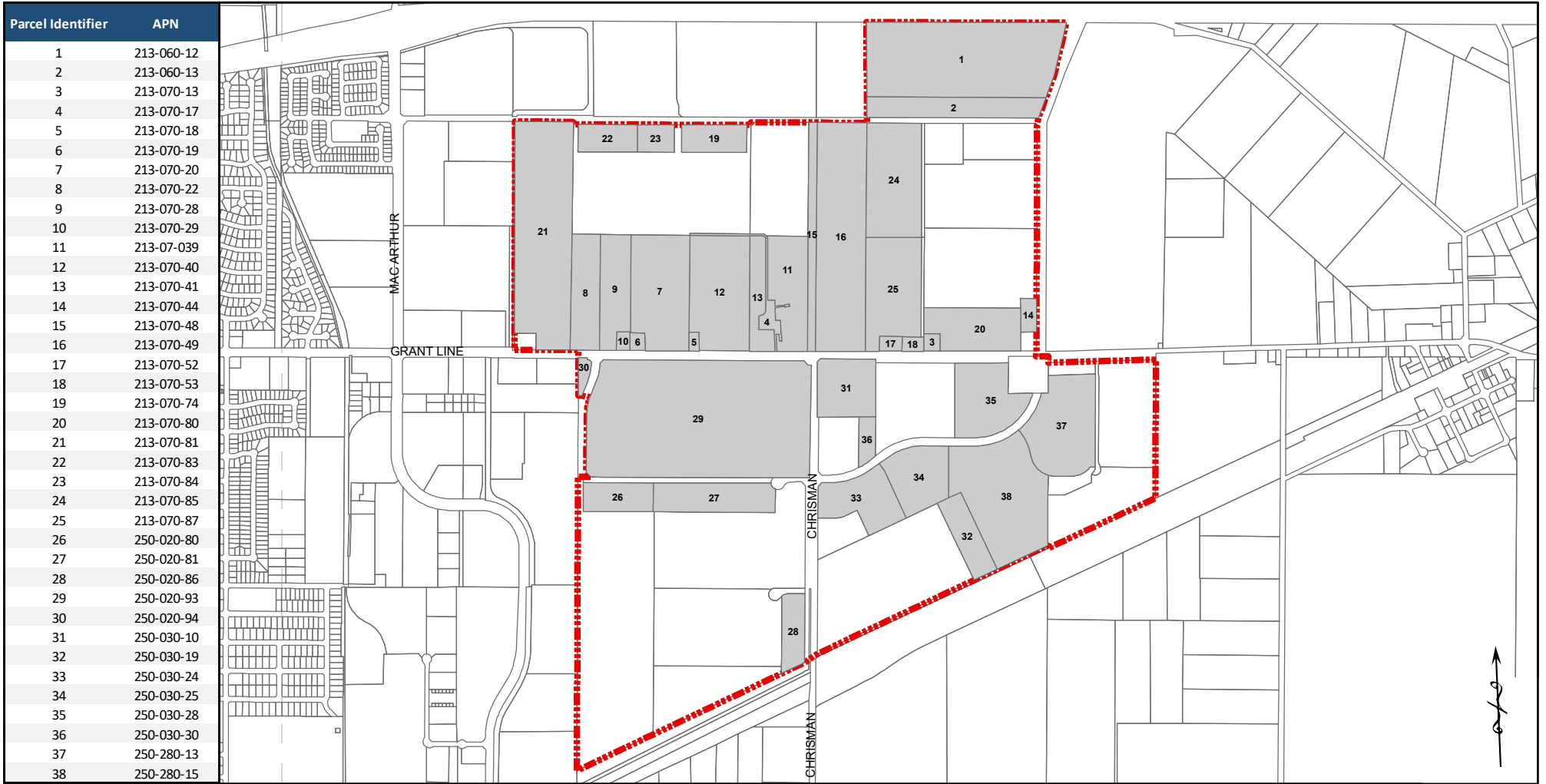
In summary, this technical analysis determines whether the existing system can handle wastewater flows from future undeveloped parcels within NEI area. If the analysis indicates there is insufficient capacity in the existing system, then improvements to the existing system will be recommended.

Figure 2 shows NEI undeveloped parcels as of January 2018 (exhibit provided by Harris and Associates). Table 1 shows the parcel number and area of each undeveloped parcel located within NEI area. Area information shown in Table 1 will be used to develop wastewater flows from each undeveloped parcel. (Source: Data provided by Harris and Associates, 2018).



**Figure 1. Northeast Industrial Area
Vicinity Map**

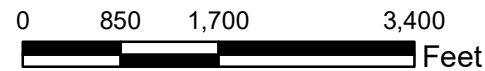
NEI "UNDEVELOPED" PARCELS CITY OF TRACY (AS OF 1-10-18)



LEGEND:

- NEI Undeveloped Parcels
- NEI Boundaries
- Tracy Parcels

GRAPHIC SCALE:



NOTES:

REFERENCE IS HEREBY MADE TO THE MAPS OF RECORD IN THE OFFICE OF THE ASSESSOR OF THE COUNTY OF SAN JOAQUIN FOR A DETAILED DESCRIPTION OF THE LINES AND DIMENSIONS OF ANY PARCELS SHOWN HEREIN, WHICH MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH PARCELS.



Harris & Associates

22 EXECUTIVE PARK, SUITE 200
IRVINE, CA 92614
949.655.3900 | WeAreHarris.com

DATE: MARCH 2018

Figure 2. NEI Undeveloped Parcels

Table 1: NEI Parcel Number and Area Data

| Parcel Identifier | APN | Area (Acres) |
|--------------------------|----------------------|---------------------|
| 1 | 213-06-12 | 42.42 |
| 2 | 213-06-13 | 9.78 |
| 3 | 213-07-13 | 0.84 |
| 4 | 213-07-17 | 2.27 |
| 5 | 213-07-18 | 0.53 |
| 6 | 213-07-19 | 0.72 |
| 7 | 213-07-20 | 18.88 |
| 8 | 213-07-22 | 9.74 |
| 9 | 213-07-28 | 9.07 |
| 10 | 213-07-29 | 0.66 |
| 11 | 213-07-39 | 11.41 |
| 12 | 213-07-40 | 18.90 |
| 13 | 213-07-41 | 6.32 |
| 14 | 213-07-44 | 1.62 |
| 15 | 213-07-48 | 5.34 |
| 16 | 213-07-49 | 33.86 |
| 17 | 213-07-52 | 1.01 |
| 18 | 213-07-53 | 1.00 |
| 19 | 213-07-74 | 5.35 |
| 20 | 213-07-80 | 11.30 |
| 21 | 213-07-81 | 35.89 |
| 22 | 213-07-83 | 4.73 |
| 23 | 213-07-84 | 2.94 |
| 24 | 213-07-85 | 18.59 |
| 25 | 213-07-87 | 16.72 |
| 26 | 250-02-80 | 5.80 |
| 27 | 250-02-81 | 10.08 |
| 28 | 250-02-86 | 5.00 |
| 29 | 250-02-93 | 75.14 |
| 30 | 250-02-94 | 0.98 |
| 31 | 250-03-10 | 9.28 |
| 32 | 250-03-19 | 6.35 |
| 33 | 250-03-24 | 10.48 |
| 34 | 250-03-25 | 10.51 |
| 35 | 250-03-28 | 12.59 |
| 36 | 250-03-30 | 2.17 |
| 37 | 250-28-13 | 17.62 |
| 38 | 250-28-15 | 27.19 |
| | Total Acreage | 463.08 |

2.0 Existing and Future Wastewater Flows

The existing and future wastewater flows were projected based on the most current land use planning data available and wastewater generation factors. The following wastewater generation factors are taken from the Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013 approved by the City Council in 2013.

Table 2. Wastewater Generation Factors

| Flow Parameter | Wastewater Master Plan Values |
|----------------------------|-------------------------------|
| Industrial Flow | 1,056 gal/acre/day |
| Retail and Commercial Flow | 1,140 gal/acre/day |
| Office Flow | 1,140 gal/acre/day |

Source: Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013.

The above wastewater generation factors are used to develop average dry weather flows (ADWF) from the undeveloped parcels within NEI area.

Previously completed 2012 Wastewater Master Plan recommended the following peak wet weather flow (PWWF) factors.

PWWF is the most important criteria used for hydraulic considerations (for example, collection systems, pumping stations, and treatment processes dependent upon hydraulic loading). The objective of this portion of the study is to estimate maximum quantity of wastewater generated at buildout. The PWWF used in this planning effort is based Peak Dry Weather Flow (PDWF) plus groundwater infiltration, plus rainfall induced inflow/infiltration.

PDWF rates were computed using the following criteria:

Industrial PDWF: ADWF Peaking Factor (PF) = 3.0

Office PDWF: ADWF PF = 3.0

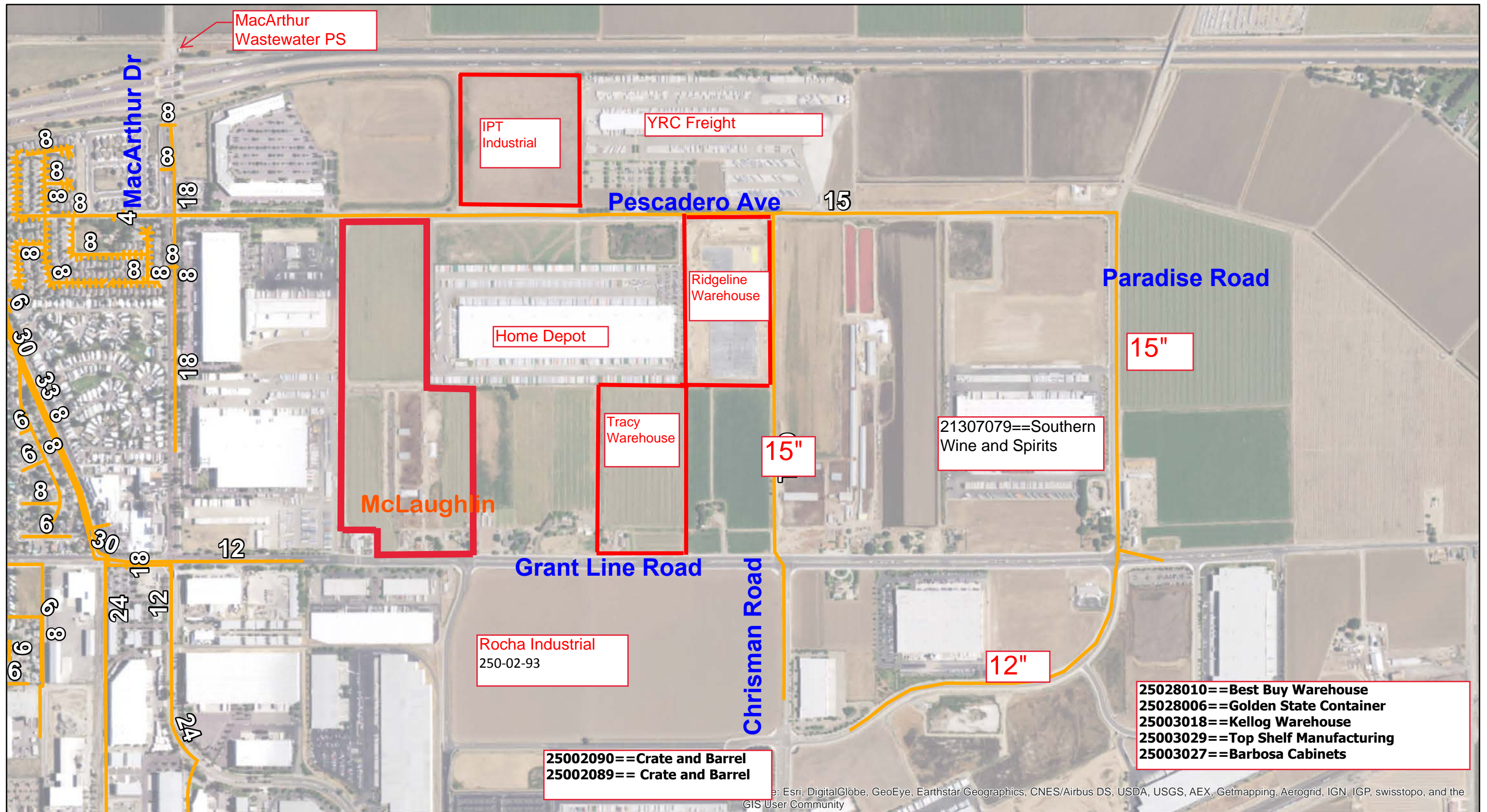
Retail PDWF: ADWF PF = 2.5

Commercial PDWF: ADWF PF = 3.0

Residential PDWF: ADWF PF = 2.5 (Population/1000)^{-0.11275}

Appendix A shows the hydraulic model of the NEI Area. It shows average and peak wet weather flows from both existing and undeveloped properties within NEI area. This hydraulic model also shows the discharge location of peak wet weather flows from various parcels.

Figure 3 shows the existing wastewater collection system as of 2018.



LEGEND
 — Wastewater Line

Figure 3
Existing NEI Wastewater
Collection System

Notes:
 1. Area of interest subject to change.

3.0 Future Wastewater Collection System

Hydraulic capacity of the existing collection system and future peak wet weather flows are shown in Figure 4. Based on the analysis presented in Appendix A and a review of the hydraulic capacity of the existing wastewater collection system, there is sufficient capacity in the existing collection to convey wastewater flows from NEI area except the following:

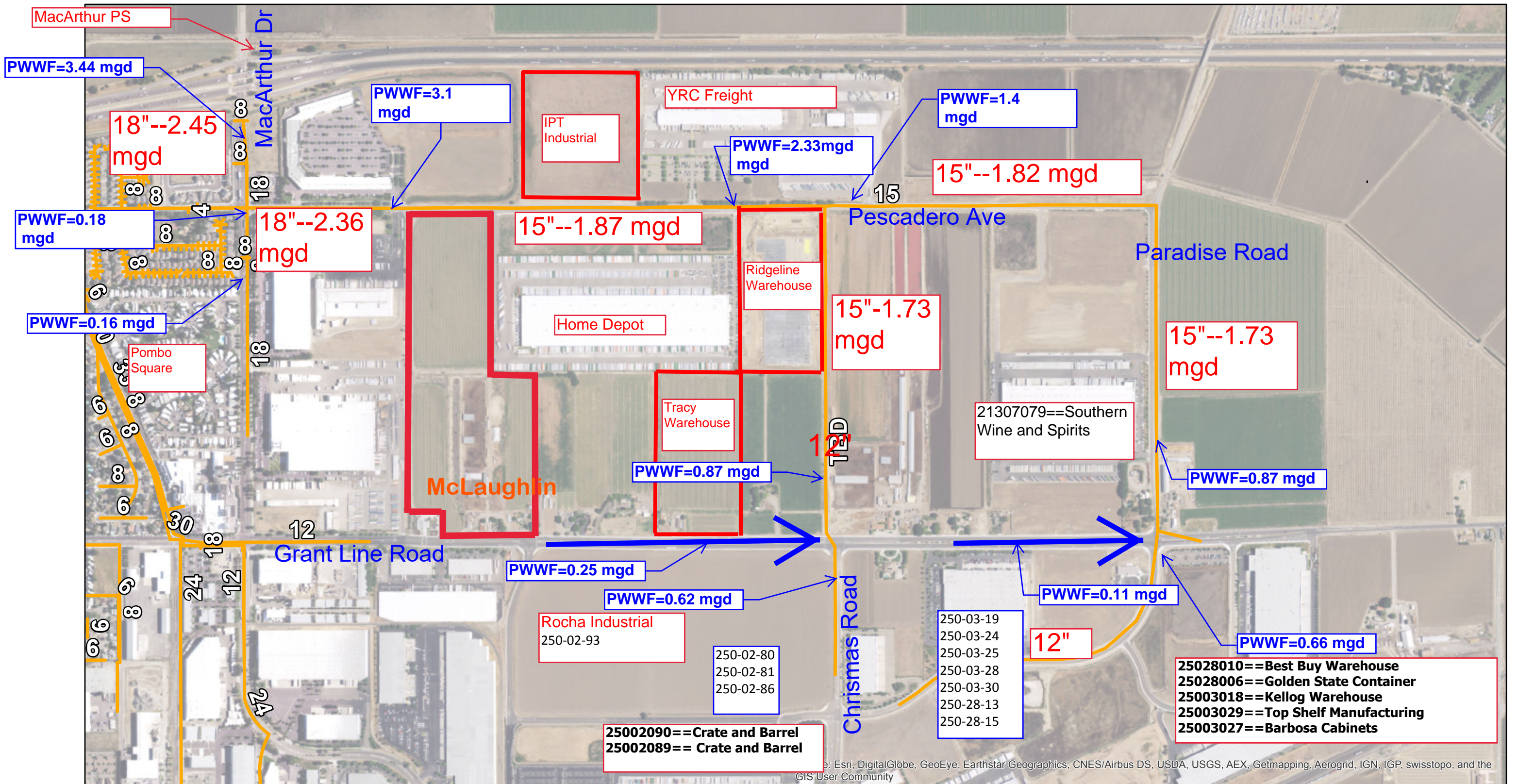
1. Gravity sewer line from the intersection of Pescadero Ave and MacArthur Drive to MacArthur Wastewater Pump Station.
2. Gravity sewer line along Pescadero Ave from Ridge Line Warehouse to the Intersection of Pescadero Ave and MacArthur Drive.

Based on the existing and future peak wet weather flows, there is a need to construct the following Improvements:

1. New 18-inch sewer line parallel to the existing sewer line along Pescadero Ave from Ridge Line Warehouse to the Intersection of Pescadero Ave and MacArthur Drive. The length of this new sewer line is approximately 4,700 feet.
2. New 18-inch sewer line parallel to the existing sewer line along MacArthur Drive from the Intersection of Pescadero Ave and MacArthur Drive to MacArthur Wastewater Pump Station located north of I-205 Freeway. The length of this sewer line is approximately 1,350 feet.

Figure 5 shows the location of the proposed NEI Program sewer lines. Similar to previous NEI infrastructure methodology, only trunk sewer lines are considered as part of the NEI Infrastructure Program. Any additional lines needed to connect to the program sewer or trunk lines from individual parcels are considered part of each project's off-site improvement. Each parcel is responsible for connecting to the designated program sewer line shown on Figure 4.

It should be noted that the scope of this analysis is limited to NEI area only and does not include other areas outside the NEI boundary.



LEGEND

Wastewater Line

15" -- 1.82 mgd - Exist. Pipe Size and Hydraulic Capacity

PWWF=0.87 mgd -- Future Peak Weather Flow

Figure 4
Existing Hydraulic Capacities and Future Peak Flows

Notes:
1. Area of interest subject to change.

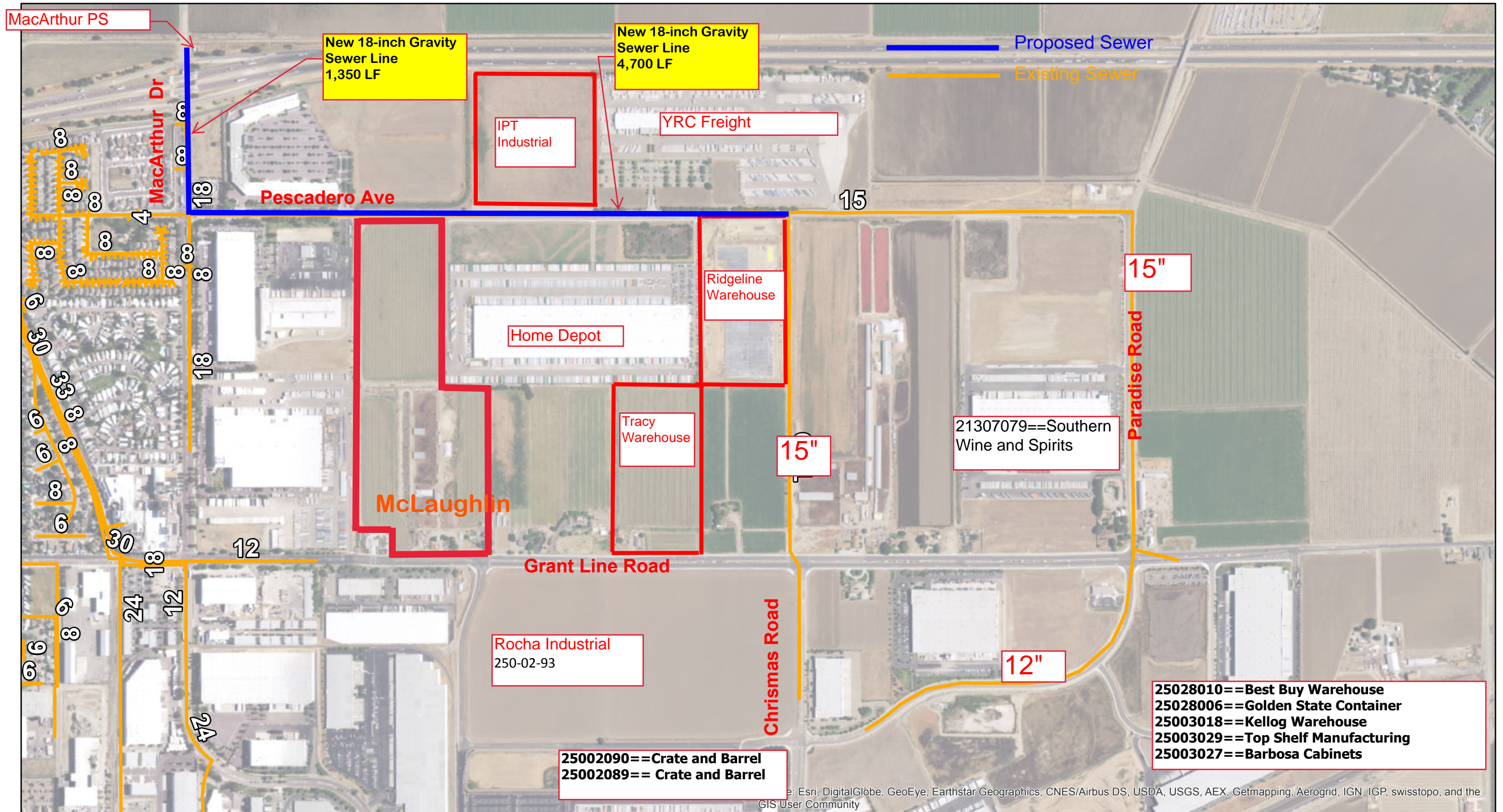


Figure 5
Proposed NEI Sewer Lines

Notes:
 1. Area of interest subject to change.

4.0 Cost Estimate

Based on the proposed program sewer lines shown on Exhibit 5, the estimated construction cost (based on 2018 cost) is \$2.7M as shown on Appendix B.

5.0 Reference Documents Used in Analysis

The documents used in the analysis include the following:

1. City of Tracy Wastewater Master Plan, CH2MHILL, 2012
2. Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013.
3. City of Tracy Wastewater System Analysis for Rocha Industrial Project, CH2MHILL, May 2017
4. City of Tracy Wastewater System Analysis for McLaughlin Industrial Project, CH2MHILL, August 2017
5. Exhibit and Table provided by Harris and Associates, 2018

APPENDIX A

Hydraulic Model of NEI Wastewater Collection System

NEI Existing and UNDEVELOPED Wastewater Flows

| Appendix A. NEI Existing and UNDEVELOPED Wastewater Flows | | | | | | | |
|---|-----------------------------------|---------------------|-----------------|---------------------------|--|----------------------|--------------------------------------|
| Flow Data | | | | | | | |
| Industrial Avg flow (gpd per gross acre) | | | | 1056 | Source: Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013. | | |
| Commercial Avg flow (gpd per gross acre) | | | | 1140 | Source: Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013. | | |
| No of EDUs for Industrial (per gross acre) | | | | 4 | Source: Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013. | | |
| No of EDUs for Commercial (per gross acre) | | | | 4.32 | Source: Tracy Wastewater Conveyance and Treatment Development Impact Fee Study, City of Tracy, January 2013. | | |
| ADWF to PDWF Peaking factor | | | | 3 | from 2012 Wastewater master plan | | |
| Infiltration | | | | 6% | from 2012 WW | 6% of ADWF | |
| Inflow | | | | 400 | from 2012 WW | 400 gallons/acre/day | |
| APN | Harris Map Parcel No.(see bottom) | Parcel/Project Name | Exist or future | Gross Area (acres) | ADWF (gpd) | PDWF (gpd) | Wastewater Discharge Location |
| Intersection of GrantLine Road and Paradise Road (near Animal Shelter) | | | | | | | |
| 25028010 | | | Exist | 17.80 | 18,797 | 56,390 | = |
| 25028006 | | | Exist | 14.14 | 14,932 | 44,796 | |
| 25003018 | | | Exist | 37.96 | 40,086 | 120,257 | |
| 25003029 | | | Exist | 6.56 | 6,927 | 20,782 | |
| 25003027 | | | Exist | 17.73 | 18,723 | 56,169 | |
| 250-03-19 | 32 | Building 17 | Future | 6.35 | 6,706 | 20,117 | |
| 250-03-24 | 33 | | Future | 10.48 | 11,067 | 33,201 | |

NEI Existing and UNDEVELOPED Wastewater Flows

| APN | Harris Map Parcel No.(see bottom) | Parcel/Project Name | Exist or future | Gross Area (acres) | ADWF (gpd) | PDWF (gpd) | Wastewater Discharge Location |
|--|-----------------------------------|--------------------------|-----------------|--------------------|-------------|----------------|--|
| 250-03-25 | 34 | Building 17 | Future | 10.51 | 11,099 | 33,296 | |
| 250-03-28 | 35 | | Future | 12.59 | 13,295 | 39,885 | |
| 250-03-30 | 36 | Existing Retention Basin | Future | 2.17 | 2,292 | 6,875 | |
| 250-28-13 | 37 | Building 18 | Future | 17.62 | 18,607 | 55,820 | |
| 250-28-15 | 38 | Building 17 | Future | 27.19 | 28,713 | 86,138 | |
| | | | | Infiltration | | 11,474 | |
| | | | | Inflow | | 72,440 | |
| | | | | | PWWF | 657,639 | to Intersection of Grantline and Paradise |
| To Southside of Intersection of Grantline and Chrisman Road | | | | | | | |
| 25002090==Crate and Barrel | | | Exist | 36.18 | 38,206 | 114,618 | |
| 25002089==Crate and Barrel | | | Exist | 28.40 | 29,990 | 89,971 | |
| 25002093==Rocha Industrial | | | Exist | 75.14 | 79,348 | 238,044 | |
| 250-02-80 | 26 | Existing Retention Basin | Future | 5.80 | 6,125 | 18,374 | |
| 250-02-81 | 27 | Existing Retention Basin | Future | 10.08 | 10,644 | 31,933 | |
| 250-02-86 | 28 | Existing Retention Basin | Future | 5.00 | 5,280 | 15,840 | |
| 250-03-10 | 31 | | Future | 9.28 | 9,800 | 29,399 | |
| | | | | Infiltration | | 10,763.60 | |
| | | | | Inflow | | 67,952 | |
| | | | | | PWWF | 616,895 | To Intersection of Grantline and Chrisman Road |

NEI Existing and UNDEVELOPED Wastewater Flows

| APN | Harris Map Parcel No.(see bottom) | Parcel/Project Name | Exist or future | Gross Area (acres) | ADWF (gpd) | PDWF (gpd) | Wastewater Discharge Location |
|--|-----------------------------------|---------------------|-----------------|--------------------|-------------|----------------|-------------------------------|
| Along Grantline (from Parcel 30 to Chrisman Road) | | | | | | | |
| 21307040==Tracy Warehouse | | | Exist | 18.90 | 19,958 | 59,875 | |
| 213-07-17 | 4 | | Future | 2.27 | 2,397 | 7,191 | |
| 213-07-18 | 5 | | Future | 0.53 | 560 | 1,679 | |
| 213-07-19 | 6 | | Future | 0.72 | 760 | 2,281 | |
| 213-07-20 | 7 | | Future | 18.88 | 19,937 | 59,812 | |
| 213-07-28 | 9 | | Future | 9.07 | 9,578 | 28,734 | |
| 213-07-29 | 10 | | Future | 0.66 | 697 | 2,091 | |
| 213-07-39 | 11 | | Future | 11.41 | 12,049 | 36,147 | |
| 213-07-41 | 13 | | Future | 6.32 | 6,674 | 20,022 | |
| | | | | Infiltration | | 4,357 | |
| | | | | Inflow | | 27,504 | |
| | | | | | PWWF | 249,692 | |
| To Northside of Intersection of Grantline and Chrisman Road | | | | | | | |
| add 0.62 and 0.25 | | | | | | 866,588 | |
| Along Grantline (from Chrisman Road to Paradise Road) | | | | | | | |
| 213-07-13 | 3 | | Future | 0.84 | 887 | 2,661 | |
| 213-07-52 | 17 | | Future | 1.01 | 1,067 | 3,200 | |
| 213-07-53 | 18 | | Future | 1.00 | 1,056 | 3,168 | |
| 213-07-80 | 20 | | Future | 11.30 | 11,933 | 35,798 | |
| 213-07-87 | 25 | | Future | 16.72 | 17,656 | 52,969 | |
| | | | | Infiltration | | 1,955.92 | |
| | | | | Inflow | | 12,348 | |
| | | | | | PWWF | 112,100 | (from Chrisman to Paradise) |

NEI Existing and UNDEVELOPED Wastewater Flows

| APN | Harris Map Parcel No.(see bottom) | Parcel/Project Name | Exist or future | Gross Area (acres) | ADWF (gpd) | PDWF (gpd) | Wastewater Discharge Location |
|--|-----------------------------------|---------------------|-----------------|--------------------|--|------------------|-------------------------------|
| To Northside of Intersection of Grantline and Paradise Road | | | | | | | |
| 21307079 = Southern Wine and Spirits | | | | 25.15 | 26,558 | 79,675 | |
| 213-07-44 | 14 | | Exist | 1.62 | 1,711 | 5,132 | |
| | | | | Infiltration | | 1,696 | |
| | | | | Inflow | | 10,708 | |
| | | | | | from Intersection of Grantline and Paradise | 657,639 | |
| | | | | | (from Christmas to Paradise) | 112,100 | |
| | | | | | PWWF | 866,951 | to Paradise Road 15" Sewer |
| Along West Pescadero Road (in front of RidgeLine) | | | | | | | |
| 213-06-12 | 1 | | Future | 42.42 | 44,796 | 134,387 | |
| 213-06-13 | 2 | | Future | 9.78 | 10,328 | 30,983 | |
| 213-07-48 | 15 | | Future | 5.34 | 5,639 | 16,917 | |
| 213-07-49 | 16 | | Future | 33.86 | 35,756 | 107,268 | |
| 213-07-85 | 24 | | Future | 18.59 | 19,631 | 58,893 | |
| 21307078 | | | Future | 22.08 | 23,316 | 69,949 | |
| 21307077 | | | Future | 8.19 | 8,649 | 25,946 | |
| 21307076 | | | Future | 4.8 | 5,069 | 15,206 | |
| | | | | Infiltration | | 9,191 | |
| | | | | Inflow | | 58,024 | |
| | | | | | Northside of Intersection of Grantline and Paradise Road | 866,951 | |
| | | | | | PWWF | 2,260,667 | |

NEI Existing and UNDEVELOPED Wastewater Flows

| APN | Harris Map Parcel No.(see bottom) | Parcel/Project Name | Exist or future | Gross Area (acres) | ADWF (gpd) | PDWF (gpd) | Wastewater Discharge Location |
|---|-----------------------------------|---------------------|-----------------|---|-------------|------------------|-------------------------------|
| | | | | | | | |
| Along West Pescadero Road (in front of Outlet Mall/MacLaughlin) | | | | | | | |
| 21307006==Ridgeline Warehouse | | | Exist | 19.46 | 20,550 | 61,649 | |
| 21306026--YRC Freight | | | Exist | 39.06 | 41,247 | 123,742 | |
| 21306026--IPT Industrial | | | Exist | 22.8 | 24,077 | 72,230 | |
| 21307073==Home Depot Dist Center | | | Exist | 44 | 46,464 | 139,392 | |
| 213-07-74 | 19 | | Future | 5.32 | 5,618 | 16,854 | |
| 213-07-83 | 22 | | Future | 4.73 | 4,995 | 14,985 | |
| 213-07-84 | 23 | | Future | 2.94 | 3,105 | 9,314 | |
| 21307081 & 21307022==McLaughlin Project | | | Future | 46.4 | 48,998 | 146,995 | |
| Outlet mall--21306040 | | | Exist | 20.45 | 21,595 | 64,786 | |
| Future outlet mall--21306043 | | | Future | 18.03 | 19,040 | 57,119 | |
| | | | | Infiltration | | 14,141 | |
| | | | | Inflow | | 89,276 | |
| | | | | Along West Pescadero Road (in front of RidgeLine) | | 2,260,667 | |
| | | | | | PWWF | 3,071,150 | to 18" sewer Along MacArthur |
| Near I-205 Freeway | | | | | | | |
| Pombo square (215 SF homes) | | | | | 56,760 | 170,280 | |
| Green Oak Mobile home park (160 spots) | | | | | 28,160 | 84,480 | |
| MacLane Food 21307067, | | | | 33.17 | 28,160 | 84,480 | |
| | | | | Infiltration | | 1,690 | |
| | | | | Inflow | | 15,392 | |
| | | | | From Pescadero | | 3,071,150 | |
| | | | | | PWWF | 3,427,472 | |

APPENDIX B

Cost Estimate for NEI Future Wastewater Collection System

Appendix B

Parallel Gravity Sewer Line from Ridgeline Warehouse along Pescadero Ave to MacArthur PS

| Description | Quantity | Unit | Unit Price (\$) | Amount (\$) |
|--|----------|---------|-----------------|---------------|
| Mobilization (6 month construction duration) | | L.S. | | 90,000 |
| Proposed project work plans | | L.S. | | 20,000 |
| Final cleanup and demobilization | | L.S. | | 30,000 |
| Construction documentation and record drawings | | L.S. | | 10,000 |
| Surveying and construction staking | | L.S. | | 15,000 |
| 15-inch gravity sewer line, 12-15 feet deep, below groundwater | 6050 | L.F. | 200 | 1,210,000 |
| Manholes | 12 | each | 12000 | 144,000 |
| Break into existing manhole | 2 | each | 6000 | 12,000 |
| saw cut pavement and curb | 1200 | sq. ft. | 12 | 14,400 |
| Repair curb and gutter | 550 | L.F. | 40 | 22,000 |
| Remove and replace irrigation system | | L.S. | | 10,000 |
| Replace signal wiring loop | | L.S. | | 12,000 |
| Pavement replacement including fabric and deep lift A.C. | 1500 | tons | 140 | 210,000 |
| Shoring | | L.S. | | 50,000 |
| Dewatering | | L.S. | | 50,000 |
| Pavement striping | | L.S. | | 10,000 |
| Traffic control along MacArthur and Pescadero Ave | | L.S. | | 50,000 |
| Subtotal | | | | 1,959,400 |
| Contingencies (15%) | | | | 293,910 |
| Engineering and Construction Management (20%) | | | | 391,880 |
| Program Management by City (5%) | | | | 97,970 |
| | | | Total Estimate | 2,743,160 |
| | | | Use | \$2.7M |

These cost estimates are order-of-magnitude estimates as defined by the American Association of Cost Engineers. They are approximate estimates made without detailed engineering data. Estimates of this type are usually accurate within +50 % and -30 %.