Appendix I:
Water Supply Analysis

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ZACHARIAS WATER SUPPLY ASSESSMENT

Final Report

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1. INTRODUCTION

Senate Bill (SB) 221, along with Senate Bill 610, amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties (DWR, 2003). Specifically, both statutes require detailed information regarding water availability be provided to the city and county decision-makers prior to approving large development projects to ensure that, once built, a sufficient long-term supply of water would be available for these developments. This Water Supply Assessment (WSA) is intended to fulfill the legislative requirements of SB 221 and SB610 for the Zacharias Development (Project) in the City of Patterson, California.

The purpose of this WSA is to evaluate whether the City of Patterson (City) is capable of meeting demands associated with the proposed project to be developed across approximately 1,296 acres, including residential, mixed use, commercial, industrial, school, parks, and open space in the Zacharias Ranch and Baldwin Ranch Master Planning Areas.

1.1 Senate Bill 610/Senate Bill 221

Passed into law in 2001, Senate Bill No. 221 (and its companion bill SB 610) was intended to address the sufficiency of water supply sources for future developments. Both bills require preparation of a Water Supply Assessment (WSA) for approval of a project subject to CEQA and meeting the description of a "project" as defined in the California Water Code §10912. A project is defined in the California Water Code (CWC) as any proposed development of more than 500 dwelling units or industrial uses of more than 650,000 square feet. Additionally, for a water utility with fewer than 5,000 connections, any development requiring an increase in the number of connections by more than 10 percent must also comply with this portion of the CWC.

The primary difference between SB 610 and SB 221 is that the Verification of Water Supply for SB 221 must also consider: (1) a historical record of at least 20 years, (2) an urban water shortage contingency analysis, (3) supply reduction for "specific water use sector" per Water Supplier's resolution, ordinance, or contract and (4) the amount of water that can be reasonably relied upon from specified supply projects. It is intended as a 'fail safe' mechanism to ensure that collaboration on finding needed water supplies occurs before construction on a new large subdivision begins. However, both SB 610 and SB 221 include the following requirements:

- Documentation of wholesale water suppliers.
- Documentation of supply sources, including quantities received and expected.
- If groundwater is a source, this must also include a description of the groundwater basin from which the proposed project will be supplied, including information regarding overdraft conditions.
- Discussion of existing and expected water demands.
- Discussion of whether the water provider's total projected water supplies available during normal, single dry, and multiple dry years will satisfy demands during a 20-year projection.
- A project-specific assessment of the demands associated with the proposed project and a discussion of the water provider's ability to meet those demands during a 20-year projection.

1.2 Project Description

The Zacharias Development project site is located just outside the Patterson city limits in unincorporated Stanislaus County, California. The main portion of the project site, the Zacharias Master Plan Area, encompasses approximately 1,227 acres and is bounded by Rogers Road on the west, Zacharias Road on the north, the California Northern Railroad tracks and Ward Avenue on the east, and existing residential and business park uses on the south as shown in Figure

1. A non-contiguous 69-acre portion of the project site, the Baldwin Master Planning Area, is located at the southern terminus of Baldwin Road and is bounded by the Delta-Mendota Canal on the west, the City of Patterson Corporation Yard on the north, and agricultural uses to the east and south (also shown in Figure 1). The development plan includes the proposal that the City would provide potable water service to the Project. Additionally, property owners would be required to use non-potable groundwater for irrigation purposes. For the purposes of this WSA, the Project, or Project area, will refer to the combined development planned for the Zacharias and Baldwin areas.

The Project consists of the annexation of the project site into the City of Patterson and the development of residential, mixed use, commercial, industrial, school, parks, and open space uses guided by the Master Plan. The buildout potential of the Master Plan is 5,481 dwelling units and 7,765,000 square feet of non-residential uses. The Master Plan process is being led by five property ownership groups: Zacharias Ranch, TFP Development, Lakeside Hills, Keystone Ranch, and Baldwin Ranch. Land use plans for the Zacharias Master Plan and Baldwin Master Plan Areas are shown in Figure 2 and Figure 3, respectively. Additional Project plans and details are included in **Appendix A**.

The area east of Baldwin Road includes two "lakes" that would provide drainage, recharge, and recreational opportunities for the Project. The Project would also construct an offsite flood control basin on the north side of Zacharias Road between Rogers Road and Baldwin Road. The basin would provide flood protection for the proposed project by capturing 100-year flood flows from Del Puerto Creek upstream of the project area and providing 200 AF of storage. The basin would be 'dual use' and contain recreational facilities such as soccer fields. Flows captured in the basin would percolate into the soil, be released downstream in a metered fashion to the lakes constructed as part of the Project, or be pumped up to an offsite groundwater recharge basin to be constructed as part of the Project at an old quarry adjacent to Del Puerto Creek near the Delta-Mendota Canal.

Figure 1: Zacharias and Baldwin Ranch Master Planning Areas - Location

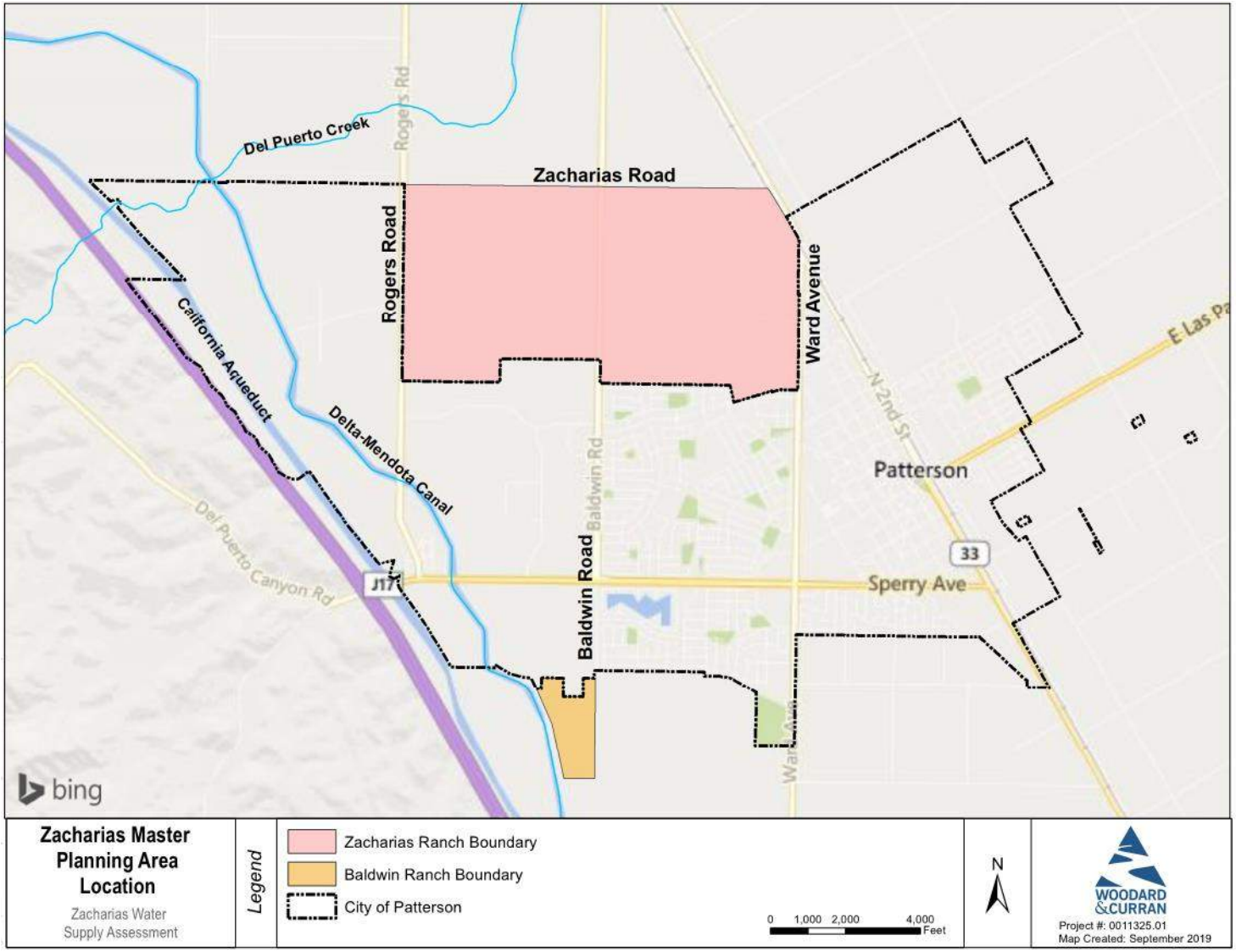
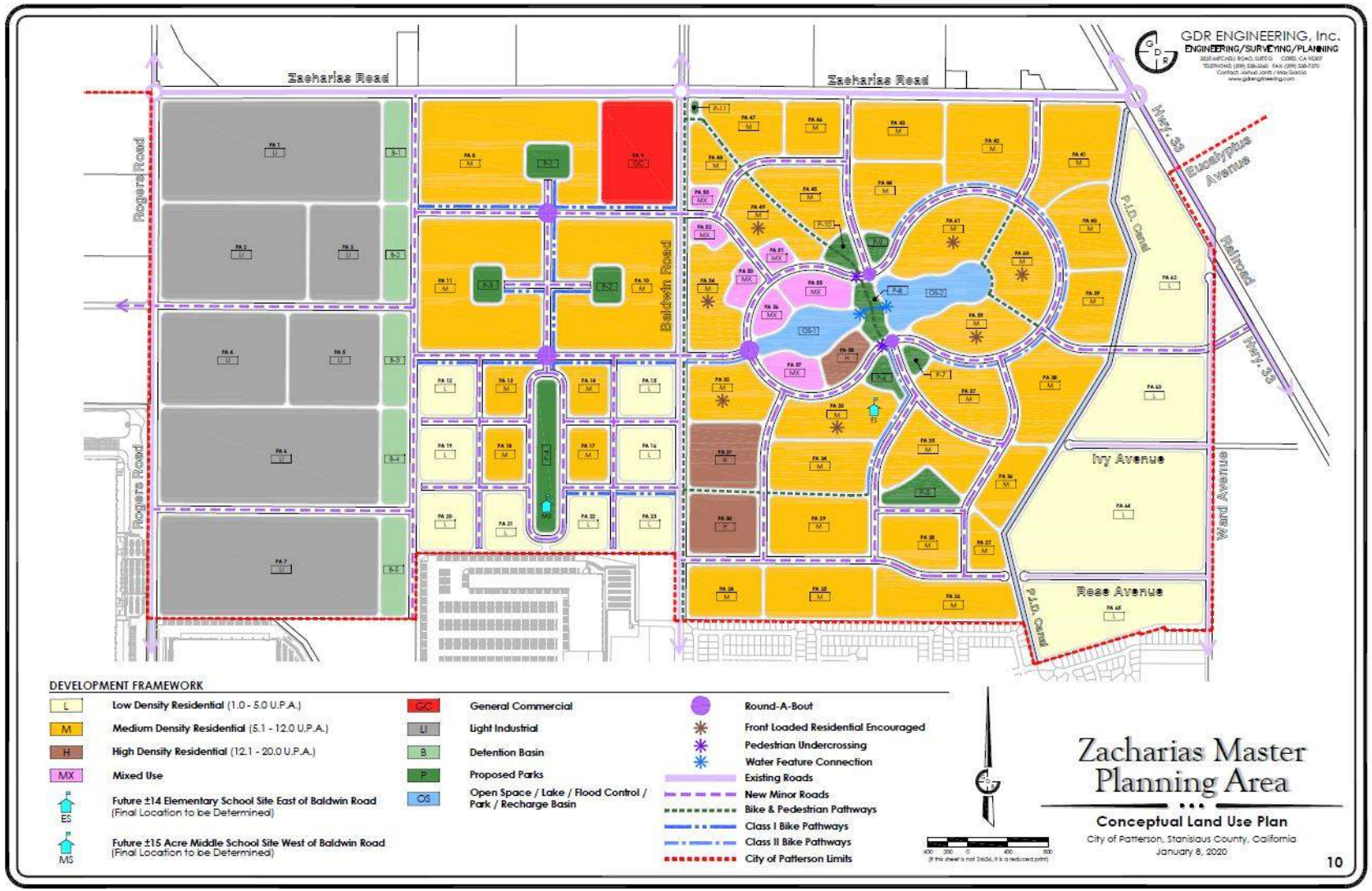
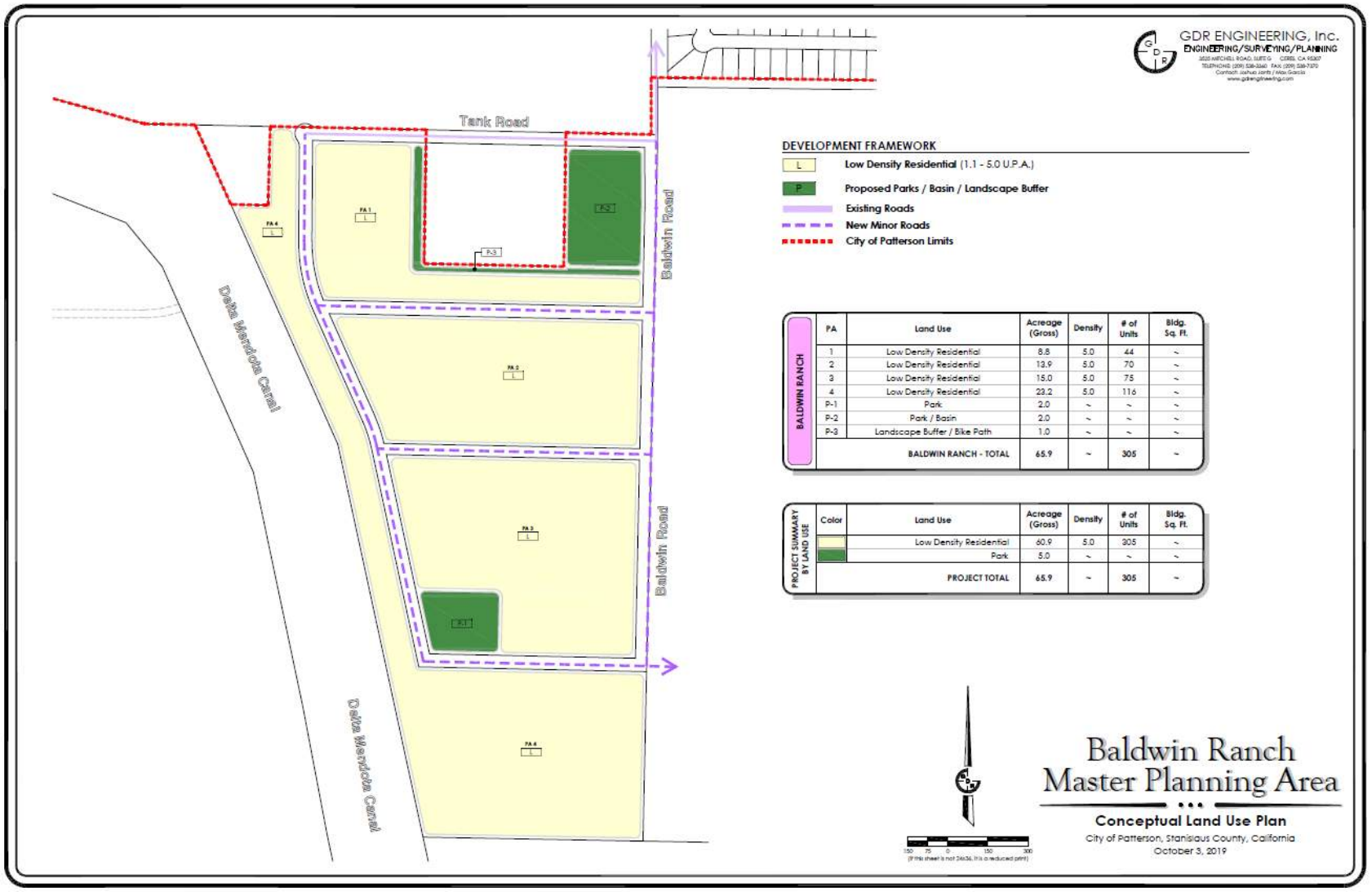


Figure 2: Zacharias Master Planning Area - Planned Development



Source: GDR Engineering, 2020

Figure 3: Baldwin Master Planning Area – Planned Development



Source: GDR Engineering, 2019

2. WATER DEMAND

This section discusses the water demands for the City and the proposed Project area, including the assumptions and methodology used to estimate the existing and projected water demand. Existing and projected demand information for the City is based on information presented in the 2015 UWMP (RMC 2016) and 2018 WMP (Woodard & Curran 2018). The preparation of these two documents was conducted in parallel with the demand projection methodology remaining consistent between the two. For the preparation of this WSA, references to previous demand projections are to the 2018 WMP as that document was more recently finalized and includes additional documentation related to the development of the demands.

2.1 Existing Water Demands

2.1.1 Zacharias and Baldwin Master Plan Area Existing Demands

Existing water demands in the Project area are almost entirely non-potable, agricultural demands which are supplied by shallow (above-Corcoran) groundwater wells. Existing demands are not metered so they were estimated based on the approximate number of dwelling units and available crop and evapotranspiration information for the area. A summary of existing demands in the Project area are summarized in Table 1 (potable demands) and Table 2 (non-potable demands).

Table 1: Existing Potable Water Demand

Land Use	Total Acreage (acres)	Number of Units (EDU)[1]	Water Demand Factors (Residential gpcd)[2]	2018 Demand (AFY)[3]
Very Low Density Residential	n/a	34	102.9	14

Notes:
1) Estimated based on aerial image of Zacharias project area.
2) Average residential gallons per capita per day based on 2018 demand provided by City of Patterson.
3) Assumes average household size of 3.46 per current City population and household count.
Demand = 34 [EDU] * 3.46 [person/EDU] * 102.9 [gal/day/person] *10^-6 [MG/gal] * 1120 [AFY/MGD]

Table 2: Existing Non-Potable Water Demand

Land Use / Crop Type[1]	ET_o (in/yr)[2]	Irrigated Area (acre)	Irrigation Efficiency[2]	Total Demand (AFY)[3]
Alfalfa and Alfalfa Mixtures	47.3	268.5	65%	1,630
Almonds	37.6	363.1	75%	1,516
Beans	26.7	64.7	65%	222
Cherries	41.1	38.6	75%	176
Idle	n/a	19.4	0%	0
Miscellaneous Truck Crops	26.7	75.6	65%	259
Plums, Prunes, Apricots	41.1	61.9	75%	283
Tomatoes	26.1	384.2	65%	1,285
			Landscape Water Demand Total	**5,370**

Notes:
1) DWR Land Use data (2014) downloaded from https://gis.water.ca.gov/arcgis/rest/services/Planning/CropMapping2014/MapServer.
2) ITRC Data downloaded from http://www.itrc.org/etdata/index.html, for a typical year (1997) in Zone 14.
3) Demand [AFY] = ET_c [in./yr.] * (1/12) [ft./in.] * Irrigated Area [acre] / Irrigation Efficiency [-]

2.1.2 City of Patterson Existing Demands

The 2018 WMP and the 2018 Annual Report were provided for analysis of the existing water system demands within City limits. Based on the 2018 Annual Report, the City currently has approximately 6,600 active water meter accounts. Of the potable water meters, roughly 6,170 are associated with residential users (single family and multi-family meters, including both indoor and outdoor demands), 275 are associated with non-residential indoor water use, and 155 are associated with non-residential irrigation. Based on the City's latest billing records for a full calendar year (2018), the City has a potable water demand of 3,102 AFY. This demand is about 16 percent lower than the existing demand reported in the WMP, which was based on 2013 billing records. The 2018 demand is slightly higher (5 percent) than the demand from 2015 presented in the 2015 UWMP. The City's existing non-potable demand is approximately 216 AFY, as recorded in the 2015 UWMP.

Aside from the effects of the drought, the reason water use has decreased since the WMP was developed—the increase from 2015 to 2018 due to 2015 occurring in the middle of the drought which suppressed demands—is that the City has implemented an effective water conservation program. The City meters all of its services and has an increasing tiered rate schedule to encourage efficient water use. The City has ordinances in place to discourage water waste, including odd-even watering and penalties for irrigation "run-off." In 2008, the City started a program to replace its oldest water pipes with the highest frequency of leaks and repairs in order to reduce water loss. In general, the City has decreased its per capita water usage year after year as part of ongoing conservation efforts to both comply with SB X7-7 requirements and to more sustainably manage its groundwater supply. Demands in 2013, during a dry water year, are higher than demands recorded in 2018, a below average water year, which could indicate that users are becoming accustomed to water-saving habits implemented during the extended drought period recorded from 2014-2017. Based on the most recent demand data for the City, it is reasonable to assume that the projections developed as part of the WMP and UWMP may be conservative. However, given that it has not yet been a full two years since the end of the drought, it cannot yet be determined what the long-term impacts of the conservation actions implemented during the drought will be on City demands. Therefore, the demand factors and projected City demands from the WMP will be used for the purposes of this WSA, recognizing that they may overpredict actual future demand but will provide a conservative analysis for determination of available water supplies.

2.2 Future Water Demands

2.2.1 Zacharias and Baldwin Master Plan Area Future Water Demands

The buildout potential of the development is 5,391 dwelling units and 7,765,000 square feet of non-residential uses (GDR Engineering 2019). This development will replace existing land uses (agricultural and low-density residential) and generate a new water demand from indoor and outdoor uses. Projected potable water demand at buildout was developed based on the demand factors developed for the WMP and the planned land use. In the WMP, existing water demand (water consumption billing data) and land use data (City's GIS) was used to develop water demand factors. Based on the total water usage by parcel and the total acreage by land use, the demand factors were determined for each of the six existing land use categories. These demand factors were then adjusted based on new development standards (such as units per acre). Demand projections developed for the WMP were used in the 2015 UWMP and incorporated conservation in order to meet the required SB X7-7 target of 164 gallons per capita per day (gpcd).

Non-potable demand projections were developed based on assumed irrigated acreage for the development areas and the required water based on evapotranspiration data. Non-potable demands for the proposed lakes within the Project area were calculated based on the approximate loss to evaporation (provide by GDR). It is assumed that any losses to recharge would be immediately recaptured by the shallow wells refilling the lakes. The projected demands calculated for the development are an update to those included in the 2018 WMP which relied on less specific land use information from the 2040 General Plan.

For comparison, the demand projection for the Project area was calculated based on the estimated residential population for Project and the per capita demand factor included in the 2018 WMP (158 gpcd) and calculated from the

2018 billing data (103 gpcd). The land use-based projection fell between the two population-based projections. The land use-based demands were not as high as the maximum population-based projection as the Project area includes a lower percentage of non-residential development (about 25 percent) compared to the City as a whole (about 50 percent). The estimated future per capita demand factor included in the WMP was developed based on the complete buildout of the City's General Plan so it is expected that future developments will include a higher percentage of non-residential development to balance out this primarily residential project.

The total projected water demand for the Project area is estimated to be 2,159 AFY at buildout for an average water year, which compares to an existing water demand of 5,384 AFY and the previously projected demand of 2,457 AFY from the WMP. The demands projected for the Project area in the 2018 WMP are presented in Table 3. Table 4 summarizes the proposed development by land use, and the projected demands are presented in Table 5 (potable demands) and Table 6 (non-potable demands). A comparison of the demand projection for the Project from the WMP and for this WSA are presented in Table 7. As shown in Table 7, the updated projections indicate a net demand reduction, with reduced potable demand and an increased non-potable demand for the area. Project demands broken out by planning areas within the Project area are included in **Appendix B**.

Table 3: 2018 WMP Potable Water Demand Projection for the Zacharias and Baldwin Area

Land Use	Acreage	Dwelling Units	Water Demand Factors (AFY/acre)[2]	Projected Potable Demand (AFY)
Low Density Residential	1,293	n/a[1]	1.9	2,457
Total	**1,293**	**-**	-	**2,457**

Notes:
1) An exact unit count was not available for the Project area during the development of the WMP.
2) Water demand factors were developed for the WMP demand projection based on billing data and land use.

Table 4: Zacharias and Baldwin Master Plan Area Development by Land Use Category

Land Use Categories	Acreage (Gross)	Dwelling Units	Square Footage
Low Density Residential	263	1,114	--
Medium Density Residential	524	3,454	--
High Density Residential	31	538	--
Mixed Use	28	285	505,000
Commercial	22	--	350,000
Light Industrial	318	--	6,910,000
Park / Bike & Pedestrian Pathways	65	--	--
Open Space (Lakes)	13	--	--
Public / Institutional[1]	29	--	--
Total	**1,293**	**5,391**	**7,765,000**

Source: Zacharias Master Planning Area (GDR Engineering, 2020), Baldwin Master Planning Area (GDR Engineering, 2019)

Note:
1) The acreage for the Public / Institutional was not broken out in the plans provided by GDR included in Appendix A. Per GDR direction, 14 acres were extracted from the Low Density Residential category and 15 acres were extracted from the Medium Density Residential category.

Table 5: Zacharias and Baldwin Master Plan Area Potable Water Demand Projection by Land Use

Land Use	Acreage	Dwelling Units	Water Demand Factors (AFY/acre)[2]	Projected Potable Demand (AFY)
Low Density Residential	263	1,114	1.9	500
Medium Density Residential	524	3,454	1.1	577
High Density Residential	31	538	2.5	77
Mixed Use	28	285	2.2	62
Community Commercial	22	-	0.8	18
Light Industrial	318	-	0.4	127
Park / Bike & Pedestrian Pathways	65	-	2.6	168
Open Space (Lakes)	13	-	0[1]	0
Public / Institutional	29	1,400 students	1.1	32
Total	**1,293**	**5,391**	-	**1,560**

Notes:
1) Water demand factors were developed for the WMP demand projection based on billing data and land use.
2) The demand factor for Open Space was set to zero for this projection as the lakes included in the Project plans do not have a potable demand associated with them.

Table 6: Zacharias and Baldwin Master Plan Area Non-Potable Water Demand Projection by Land Use

Land Use Categories	Acreage (Gross)	Irrigated Acreage Factor[1]	Irrigated Acreage	ET_c (in)[2]	Projected Non-Potable Demand (AFY)[3]
Low Density Residential	393		0	56.2	0
Medium Density Residential	393		0	56.2	0
High Density Residential	31		0	56.2	0
Mixed Use	28	0.1	2.8	56.2	13
Community Commercial	22	0.1	2.2	56.2	10
Light Industrial	318	0.1	31.8	56.2	149
Park / Bike & Pedestrian Pathways	63	0.8	51.8	56.2	243
Open Space (Lakes)	9				116[4]
Public / Institutional	38	0.5	14.5	56.2	68
Total	**1,293**		**103**		**599**

Notes:
1) Based on assumptions for the development area. Irrigation demand for residential land use is not separated from potable demands as residential units are unlikely to be dual-plumbed.
2) ITRC Data downloaded from http://www.itrc.org/etdata/index.html, for a typical year (1997) in Zone 14. Assumed ET_c for grass.
3) Assumed Irrigation Efficiency equals 1 and that it was a normal water year (average rainfall): Demand [AFY] = ET_c [in./yr.] * (1/12) [ft./in.] * Irrigated Area [acre]
4) The non-potable demand for the lakes was calculated based on the approximate loss by evaporation. This value was provided by GDR.

Table 7: Water Demand Projection Comparison for the Zacharias Project

	Projected Demand for WSA	2018 WMP Projected Zacharias/Baldwin Demand[1]	Net Water Demand (Change from WMP)
Potable (AFY)	1,560	2,021	-461
Non-Potable (Irrigation) (AFY)	599	436	163
Total (AFY)	**2,159**	**2,457**	**-298**

Notes:

1) The 2018 WMP projected demands based on General Plan land use and a land use demand factor. The assumption from the WMP is that around 82% of demands will be met with a potable supply and 18% would be met with non-potable supply. That split between potable and non-potable was applied to the projection for the Zacharias and Baldwin Plan areas.

2.2.1.1 Zacharias Area Development Phasing

Plans for the phasing of the Project are not currently available however a two-phase approach is under consideration. For the purposes of this WSA, it has been assumed that the Project will be developed in two evenly split phases spanning five years each, beginning in 2020. A breakdown of the development phasing and projected demands with this assumption is presented in Table 8 through Table 10.

Table 8: Development Phasing by Land Use Category for the Zacharias Project

Land Use Categories	2020-2025	2025-2030	2030-2035	2035-2040	Total
Low Density Residential	131.7 acres	131.7 acres	0.0 acres	0.0 acres	263.3 acres
	557 DUs	557 DUs	0 DUs	0 DUs	1114 DUs
Medium Density Residential	262.1 acres	262.1 acres	0.0 acres	0.0 acres	524.1 acres
	1,727 DUs	1,727 DUs	0 DUs	0 DUs	3,454 DUs
High Density Residential	15.3 acres	15.3 acres	0.0 acres	0.0 acres	30.6 acres
	269 DUs	269 DUs	0 DUs	0 DUs	538 DUs
Mixed Use	14.1 acres	14.1 acres	0.0 acres	0.0 acres	28.2 acres
	143 DUs	143 DUs	0 DUs	0 DUs	285 DUs
Community Commercial	11.1 acres	11.1 acres	0.0 acres	0.0 acres	22.2 acres
Light Industrial	158.8 acres	158.8 acres	0.0 acres	0.0 acres	317.5 acres
Park/ Bike & Pedestrian Pathways	32.4 acres	32.4 acres	0.0 acres	0.0 acres	64.7 acres
Open Space (Lakes)	6.7 acres	6.7 acres	0.0 acres	0.0 acres	13.4 acres
Public/ Institutional	14.5 acres	14.5 acres	0.0 acres	0.0 acres	29.0 acres
Total	**646.5 acres**	**646.5 acres**	**0.0 acres**	**0.0 acres**	**1293.0 acres**
	2,696 DUs	**2,696 DUs**	**0 DUs**	**0 DUs**	**5,391 DUs**

Table 9: Phased Potable Demand Projections for the Zacharias Project

Land Use Categories	2020	2025	2030	2035	2040
Low Density Residential	0	250	500	500	500
Medium Density Residential	0	288	577	577	577
High Density Residential	0	38	77	77	77
Mixed Use	0	31	62	62	62
Community Commercial	0	9	18	18	18
Light Industrial	0	64	127	127	127
Park/ Bike & Pedestrian Pathways	0	84	168	168	168
Open Space (Lakes)	0	0	0	0	0
Public/ Institutional	0	16	32	32	32
Total (AFY)	**0**	**780**	**1,560**	**1,560**	**1,560**

Table 10: Phased Non-Potable Demand Projections for the Zacharias Project

Land Use Categories	2020	2025	2030	2035	2040
Low Density Residential	0	0	0	0	0
Medium Density Residential	0	0	0	0	0
High Density Residential	0	0	0	0	0
Mixed Use	0	7	13	13	13
Community Commercial	0	5	10	10	10
Light Industrial	0	74	149	149	149
Park/ Bike & Pedestrian Pathways	0	121	242	242	242
Open Space (Lakes)	0	58	116	116	116
Public/ Institutional	0	34	68	68	68
Total (AFY)	**0**	**299**	**599**	**599**	**599**

2.2.2 City of Patterson Future Demands

Using a land use-based demand projection discussed in the City's 2018 WMP, the City's total projected water demand in 2040, as presented in the 2015 UWMP, is 11,801 AFY. This demand accounts for the City's planned conservation efforts at the time the WMP and UWMP were developed. Based on the selected supply portfolio, the City plans to meet about 82 percent of demands with potable supplies (about 9,642 AFY) and about 18 percent of demands with non-potable supplies (about 2,159 AFY). Table 11 summarizes the City's projected demand from the WMP. A discussion of the impact of the Project on this projection is included in Section 4.1.

Table 11: Citywide Projected 2040 Demands

Demand Type	2018 WMP Projected 2040 City Demand (AFY)
Potable	9,642
Non-Potable (Irrigation)	2,159
Total	**11,801**

Source: 2018 City of Patterson Water Master Plan (Woodard & Curran, 2018) and 2015 City of Patterson UWMP (RMC, 2016)

3. WATER SUPPLY

As stated in Section 1.2, the Project is proposed to be supplied water by the City. The City's current water supply source is local groundwater from the Delta-Mendota Groundwater Subbasin. The following subsections describe the current water supply sources and planned expansion of these supplies. The information presented in this section has been excerpted from the City's 2018 WMP and 2015 UWMP.

3.1 Water Supplies by Source

3.1.1 Purchased or Imported Water

The City does not currently purchase or import water nor does it have any current plans to do so. The use of purchased or imported water was assessed during the recent Water Master Plan efforts but it was not pursued due to many factors, including institutional complexity.

3.1.2 Groundwater

Local groundwater from the Delta-Mendota Subbasin (a subbasin of the San Joaquin Valley Groundwater Basin) is the sole source of the City's current production supply. The City operates 10 water production wells, eight of which dedicated to potable supply and two for non-potable supply. One of the potable wells (Well 6) is currently on standby and its capacity is not being considered as part of the City's supply. The City's existing potable well field is located in the eastern portion of the City between East Las Palmas Avenue, South 2nd Street and the Patterson Irrigation District Canal. The City supplies potable groundwater for residential, industrial, and commercial uses through a combination of these wells, storage tanks, and a network of piping. The City's existing groundwater capacity is 6,620 AFY of potable supply (7,500 gpm instantaneous capacity) and 930 AFY of non-potable supply (1,600 gpm instantaneous capacity), as presented in Table 12.

Table 12: City Existing Groundwater Well Capacity

Well No.	Potable/Non-Potable	Instantaneous Capacity (gpm)
2	Potable	800
4	Non-Potable	900
5	Potable	1,400
6	Potable	600[1]
7	Potable	1,500
8	Potable	1,000
9	Potable	800
11	Potable	1,200
Keystone	Non-Potable	700
14[2]	Potable	800
Total Non-Potable	**Annual Capacity: 930 AFY[3]**	**Instantaneous Capacity: 1,600 gpm**
Total Potable	**Annual Capacity: 6,620 AFY[3]**	**Instantaneous Capacity: 7,500 gpm**

Notes:
1) Well 6 is currently on standby and its capacity is not included in the City's supply.
2) Well 14 is planned and will be online within the next year.
3) Annual yield includes well downtime for maintenance and other operational considerations. The wells do not run continuously.

3.1.2.1 Groundwater Basin

The Delta-Mendota Subbasin (Subbasin) is approximately bounded on the west by the Coast Range, on the north by the Stanislaus/San Joaquin County line, on the east by the San Joaquin River and follows the boundary of the Tranquillity Irrigation District at its southernmost reach. Groundwater studies of the local basin from 2002 through 2010, conducted by Kenneth D. Schmidt and Associates Groundwater Consultants (KSA) based in Fresno, California, concluded that there are essentially two aquifers underlying the City; a lower confined zone, and an upper unconfined zone. The two aquifers are separated by the thick, semi-impermeable Corcoran Clay layer. The Corcoran Clay formation is a regional aquitard which underlies the subbasin at depths of about 100 to 500 feet and acts as a confining bed. The upper (semi-confined) and lower (confined) aquifers of the Subbasin are generally quite thick, with groundwater wells commonly extending to depths of up to 800 feet to extract from the sub-Corcoran lower aquifer.

KSA estimated that natural inflows to the two underlying aquifers are approximately 3,500 AFY (upper) and 8,900 AFY (lower), respectively, based on hydraulic conductivity, transmissivity, and gradients. Additional recharge to the upper aquifer is expected from canal seepage, percolation of applied irrigation water, and stream flow seepage. Hence, total inflow to the local basin underlying the City is upwards of 12,500 AFY (KSA 2010). Water quality in the shallower portion of the upper aquifer (reachable within about 25 feet of the land surface) is suitable for non-potable use, though recent monitoring suggests that total dissolved solids (TDS) and nitrate concentrations are on the rise.

Water quality below the Corcoran Clay is generally suitable for potable use, however there are some instances of high TDS and Chrome 6 levels. Chrome 6 concentrations in the Subbasin have generally been compliant with State and Federal regulations. The California Department of Public Health (now the Division of Drinking Water) implemented a stricter standard in 2014 (reducing the acceptable limit from 50 micrograms per liter to 10 micrograms per liter) however the standard was rescinded. A new standard has not yet been established; however, the Chrome 6 levels would not be in compliance if the 2014 standard was re-imposed.

In 2014, the Sustainability Groundwater Management Act (SGMA) was passed requiring the formation of Groundwater Sustainability Agencies (GSAs) and preparation of Groundwater Sustainability Plans (GSPs) to sustainably manage groundwater supplies. The City formed its own GSA (City of Patterson GSA) to partner with seven other GSAs to develop the GSP for the Northern and Central Regions of the Delta-Mendota Subbasin. As the Delta-Mendota Subbasin is considered a critically overdrafted high-priority groundwater basin by the California Department of Water Resources, the Northern & Central Delta-Mendota Region GSP must be submitted by January 31, 2020. At the time this WSA was prepared, the public draft version GSP has been completed and was out for review. Based on the information provided in the GSP (additional information can be found on the GSP website[1]), it is expected that the following groundwater management measures will be implemented in the basin:

- Increased conservation and efficiency
- Increased groundwater recharge
- Increased water recycling and reuse, and
- Integrated groundwater management with other water resources (such as stormwater)
- Lower aquifer pumping limitations to minimize inelastic land subsidence.

In anticipation of the requirements of SGMA and the preparation of the GSP, the City conducted an Operational Yield Study as part of the WMP. The goal of that exercise was to determine the approximate volume of groundwater that the City could extract without impacting its infrastructure or use of groundwater resources outside of its sphere of influence.

[1] http://deltamendota.org/learn-more/northern-central-delta-mendota-gsp/

Results of that study were incorporated into the development of the future water supply portfolio (discussed in the next section). Additional details from the Operational Yield Study can be found in the 2018 WMP.

3.2 Future Water Supply Summary

As part of the City's 2018 WMP, the City evaluated supply options and selected a supply portfolio that allowed the City independent control of its water supply and easier implementation of water supply projects. The complete supply portfolio includes groundwater pumping for potable and non-potable use, recycled water, stormwater capture, and conservation. The four supply projects selected to enhance the City's existing supply portfolio are discussed below as is the new supply offered by the Project.

Results of the WMP and Operational Yield Study conducted by the City were considered during development of the GSP. Per the draft GSP, it was assumed that at buildout the City would pump 11,776 AFY of potable water from the deep aquifer and 1,302 AFY of non-potable water from the shallow aquifer. These supplies were determined to be acceptable under the basin management plan and are in line with the future water supply presented in this section. The City's planned supply portfolio, updated since the WMP to include the supply provided by the Project, is summarized in Table 13 with a breakdown of planned supplies in 2040 and at buildout.

Table 13: Planned City Water Supplies with the Project

Supply	Planned Yield in 2040	Planned Yield at Buildout (2050)
Potable Groundwater (AFY)	8,388	10,115
Non-Potable Groundwater (AFY)	856	1,032
Recycled Water (AFY)	857	1,512
Stormwater Capture (to potable) (AFY)	1,700	1,700
Stormwater Capture (to non-potable) (AFY)[1]	1,185	1,185
Total (AFY)	**12,986**	**15,544**
Potable (AFY)	**10,088**	**11,815**
Non-Potable (AFY	**2,898**	**3,729**

Notes:

1. Stormwater capture (to non-potable) represents the onsite stormwater capture included in the Project. This supply was not included in the 2018 WMP.

3.2.1 Conservation

The City will implement a variety of conservation measures with estimated water savings ranging from 700 AFY to 1,800 AFY. The supply portfolio assumes approximately 1,000 AFY of water savings due to conservation at buildout. Examples of conservation programs that have been or could be implemented include:

- Existing conservation program
    - Toilet, washing machine, dishwater, etc. replacement rebates
    - Cash for Grass rebates
    - Free water conserving fixtures
    - Updated plumbing codes
    - Residential water surveys to identify possible areas of waste
- Potential conservation program
    - Future plumbing codes updates

- Require hot water on demand

Conservation is not included in the future supply summary but it was considered and planned in order to reduce projected future demands.

3.2.2 Treat Wastewater for Non-Potable Reuse with Percolation Ponds

The City's Water Quality Control Facility (WQCF) will be retrofitted to treat water to non-potable Title 22 standards after which the effluent will be pumped to infiltration ponds (to be constructed) near the existing non-potable wells. In addition to pumping from the existing wells, new shallow wells will be constructed for additional non-potable water supplies.

3.2.3 Del Puerto Creek Stormwater Capture

Seasonal stormwater flows from Del Puerto Creek can be captured and diverted to percolation ponds. Pending a groundwater study, these ponds would recharge the shallow aquifer (for non-potable use) and/or the deep aquifer (for potable use). Water could then be pumped from the aquifers through existing and/or new wells.

Beneficial use of stormwater is a part of the Northern & Central Delta-Mendota Region GSP and capture and recharge of Del Puerto Creek flows are included as a project in the draft GSP. The City will work with neighboring agencies to maximize beneficial use of the available stormwater in the region.

As part of the WMP effort, it was estimated that the annual yield of Del Puerto Creek stormwater capture would be approximately 1,700 AFY. Initial field work indicates that the a properly sited recharge basin would recharge to the deep aquifer to replenish potable supply. For the purposes of the WMP and this WSA, it is assumed that the stormwater would provide a potable water supply, though additional work is planned to investigate and determine the optimal project site.

3.2.4 Additional Groundwater Pumping

The existing groundwater pumping capacity of the City of Patterson is 7,500 AFY, though only about 4,500 AFY is currently being utilized. As discussed in Section 3.1.2.1, an Operational Yield Study was conducted as part of the 2018 WMP to estimate the volume of groundwater that the City could extract from the underlying Delta-Mendota Groundwater Subbasin without impacting their current groundwater pumping infrastructure and without significantly impacting the use of groundwater resources in the area surrounding the City's Sphere of Influence. Based upon the results of the Operational Yield Study, which indicated that the City could pump in the range of 10,000 – 12,000 AFY, the City could construct additional groundwater wells to increase its pumping capacity. Under the future supply portfolio, it is assumed that the City will construct enough potable wells to produce up to 10,115 AFY at buildout.

3.2.5 Onsite Stormwater Capture and Recharge

While not included in the supply portfolio presented in the 2018 WMP, the City has included a requirement that all new development, including the Project, include stormwater retention and percolation onsite. This requirement means that any rainfall on the development area would be captured and recharged, with no water lost to the San Joaquin River. Though the yield of the Project's stormwater basin and groundwater recharge basin has not been calculated at this time, a simplified calculation can be conducted based on the Project area and the City's annual average rainfall. If it is assumed that all rainfall falling on the site is captured, then the additional supply provided by the Project is 1,185 AFY, as shown:

Estimated Onsite Stormwater Capture = 1,293 acres * 11 inches of rain/ year[1] * 1 foot / 12 inches = 1,185 AFY

Depending on the presence or thickness of the Corcoran clay at the final recharge site, some water may recharge to the deep aquifer however it is likely that most capture stormwater for this Project would recharge the shallow aquifer.

For the purposes of this WSA, it is assumed that all onsite stormwater capture will provide an additional non-potable supply.

3.3 Water Supply Reliability

Estimates of the City's supply during single and multiple dry years is based on the information provided in the City's 2015 UWMP. Onsite stormwater capture provided by the Project is not included in the dry year supply estimates as a more detailed analysis of onsite capture in dry years has not been conducted. Table 14 summarizes the City's supply availability by water year type. These UWMP numbers reflect that the available water supply was assumed to be equal to the demand projections for each potential water year type through 2040 with the understanding that the City should be able to draw on the groundwater basin to fulfill its demands.

With the development of the GSP for the Delta-Mendota Subbasin, there will be some limits on groundwater pumping during dry years. Pumping restrictions in the GSP area are based on 2015 water elevations in the groundwater basin. As stated in the draft GSP, the City should be able to continue extractions to the point where lower aquifer groundwater elevations are no deeper than 95% of 2015 water elevations. For the upper aquifer, 2015 groundwater elevations are the lowest they can go. As discussed previously, the City has implemented an effective conservation program to reduce demands and is continuing to expand their conservation efforts. For the purposes of this WSA, the supplies under dry year conditions presented in the UWMP will be used. While those supplies may be slightly conservative as they do not include the onsite stormwater capture provided by the Project, it is recommended that the Project implement conservation initiatives to reduce demands, especially during dry years.

Table 14: Available Supply Under Normal and Dry Year Conditions

Year Type	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)	2040 (AFY)
Normal Year[1]	6,969	9,457	10,633	11,810	12,986
Single-Dry Year[2]	6,376	8,272	9,448	10,625	11,801
Multiple Dry Year[2]					
First Year	6,376	8,272	9,448	10,625	11,801
Second Year	6,376	8,272	9,448	10,625	11,801
Third Year	6,376	8,272	9,448	10,625	11,801

Notes:
1) This supply projection has been updated to include stormwater capture (to non-potable) from onsite stormwater capture included in the Project. This supply was not included in the 2015 UWMP.
2) Source: 2015 City of Patterson UWMP (RMC, 2016)

4. PROJECT SPECIFIC ASSESSMENT

4.1 Supply and Demand Comparison

4.1.1 Supply and Demand Comparison with Existing Supplies

To determine if the City currently has sufficient supply to meet the Project demands the City's existing supply and demands with the Project were compared. As discussed in Section 2.1.2, the City's total existing demand (for the entire 2018 calendar year) is 3,318 AFY. With the addition of the projected Project demand at buildout, the City's total demand would be 5,477 AFY (broken out in Table 15).

Table 15: Existing City Demand with Project

	Existing City Demand	Zacharias Demand	Existing City Demand + Project Demand
Potable (AFY)	3,102	1,560	4,662
Non-Potable (Irrigation) (AFY)	216	599	815
Total (AFY)	**3,318**	**2,159**	**5,477**

Once the Project is implemented, the City's existing supplies will be supplemented by the estimated 1,185 AFY onsite stormwater capture and recharge included in the Zacharias development. This brings the City's total existing supplies to around 8,735 AFY. Based on this supply and the projected demand with the Project, the City has adequate supply to meet its existing demands plus the Zacharias development (as presented in Table 16). This assessment does assume that the City's demands remain constant aside from the implementation of the Project, however there is adequate supply to support additional development throughout the City's service area.

Table 16: Existing City Demand with Project versus Existing Supply with Project

	After Project Implementation
Total City Existing Supply (AFY)[1]	8,735
Total City Demand with Zacharias Development (AFY)	5,477
Sufficient Supply?	**Yes**

Notes:

1) This supply projection has been updated to include stormwater capture (to non-potable) from onsite stormwater capture included in the Project. This supply was not included in the 2015 UWMP.

4.1.2 Supply and Demand Comparison at Buildout (2040)

To more fully determine the City's ability to meet its planned demands as well as the Project demands, the phased supply and demand through 2040 was assessed. The total water demand for the Project is 2,240 AFY at buildout in 2040. The projected water use in 2040 of 2,159 AFY is comprised of 1,560 AFY for potable demands and 599 AFY for irrigation. The Project would reduce the projected potable demands and increase the projected non-potable demands for the City (compared to the projected demand for the Project area included in the WMP), with a net decrease in overall demand of 298 AFY as shown in Table 17. Changes to the City's potable and non-potable water demand are broken out by five year phases in Table 18 and Table 19, respectively.

Table 17: Citywide Projected 2040 Water Demands with and without the Project

	2018 WMP Projected City Water Demand (AFY)	Change in Projected Zacharias / Baldwin Water Demand (AFY)	Updated Projected City Water Demand (AFY)
Potable	9,710	-461	9,249
Non-Potable (Irrigation)	2,091	163	2,254
Total	**11,801**	**-298**	**11,503**

Table 18: Phased Citywide Projected 2040 Potable Water Demands with and without the Project

Land Use Categories	2020	2025	2030	2035	2040
2018 WMP Projected City Demand (AFY)	5,246	6,806	7,775	8,743	9,710
Change in Projected Zacharias Demand (AFY)	0	-230	-461	-461	-461
Updated Projected City Demand (AFY)	**5,246**	**6,576**	**7,314**	**8,282**	**9,249**

Table 19: Phased Citywide Non-Projected 2040 Potable Water Demands with and without the Project

Land Use Categories	2020	2025	2030	2035	2040
2018 WMP Projected City Demand (AFY)	1,130	1,466	1,674	1,882	2,091
Change in Projected Zacharias Demand (AFY)	0	82	163	163	163
Updated Projected City Demand (AFY)	**1,130**	**1,547**	**1,837**	**2,046**	**2,254**

It is worth noting that the draft GSP assumes a higher available groundwater supply for the City at buildout (2050) than presented in the WMP. The supply portfolio presented in the draft GSP included a total of 13,078 AFY of groundwater supply (11,776 AFY of potable, below-Corcoran, supply and 1,302 AFY of non-potable, above-Corcoran, supply) compared to 11,417 AFY (10,115 AFY of potable supply and 1,302 AFY of non-potable supply) in the WMP. Though the supply projections included in the GSP are the most recent, they are not yet approved by DWR so the lower, more conservative groundwater supply numbers from the WMP (and UWMP) will be used for determining the available supply for the Project. A comparison of the projected City supply at buildout (2050) in the WMP and draft GSP is included in Table 20.

Table 20: Comparison of Planned City Groundwater Supplies at Buildout (2050)

Supply	Included in 2018 WMP Supply Portfolio	Included in Draft GSP
Potable Groundwater (AFY)	10,115	11,776
Non-Potable Groundwater (AFY)	1,302	1,302
Total Groundwater Supply (AFY)	**11,417**	**13,078**
Recycled Water (AFY)	1,512	1,512
Stormwater Capture (to potable) (AFY)	1,700	-
Total Potable (AFY)	**11,815**	**11,776**
Total Non-Potable (AFY	**2,814**	**2,814**
Total Supply (AFY)	**14,629**	**14,590**

Projected water supply (from the WMP and UWMP, updated with the onsite stormwater capture) and demand for the entire City service area including the Project is presented in Table 21. As shown in the table, the City's planned water supply is sufficient to meet demands to 2040, including those projected for the Project. Given that future water supplies for the City were planned based on available data at the time, Project stakeholders, including the City, should work together to update the phasing and implementation plan of planned supply projects now that the timing of this development project is better understood. Further, the phasing of the supplies included in the WMP does not align with those presented in the draft GSP, so the City and Project stakeholders will need coordinate with GSP partners to ensure sustainable use of the groundwater basin.

Table 21: City Water Demand (with Project) versus Supply

	2020	2025	2030	2035	2040
Total City Supply (AFY)[1]	6,969	9,457	10,633	11,810	12,986
Total City Demand (AFY)	6,376	8,123	9,151	10,327	11,503
Sufficient Supply?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

1) This supply has been updated to include stormwater capture (to non-potable) from onsite stormwater capture included in the Project. This supply was not included in the 2015 UWMP.

4.2 Supply and Demand Comparison in Dry Years

When comparing water demand and water supplies to determine availability of a long-term reliable water supply for the proposed Project, the assessment must consider available supply under "average" year conditions as well as for single-dry and multiple-dry water year conditions. The purpose is to evaluate whether there could be shortfalls in supply under various hydrologic conditions, and if so, to provide a basis for planning for those conditions. Dry year supply availability was determined as part of the 2015 UWMP (which did not include onsite stormwater capture provided by the Project). A comparison of the projected supplies and demands with the Project under dry year conditions is presented in Table 22. As shown in the table, the City has sufficient supplies to meet all projected demands, including the Project, through 2040.

As discussed in Section 3.3, the City's supply portfolio was developed with the impacts of SGMA in mind, but before the draft GSP had been prepared. It has been assumed that the supply reliability assessment presented in the 2015 UWMP is reasonable for this WSA, but it is recommended that the updated supply reliability assessment required for the 2020 UWMP (which will include additional SGMA-related impacts and new supply information) be reviewed as soon as it is available to confirm this assumption. In the meantime, in order to maintain the water supply reliability of the City supply at the level it currently resides for all of its customers, the Project should incorporate demand management in order to reduce the impact that would be caused under dry-year conditions.

Table 22: City Demand (with Project) versus Dry Year Supply

		2020	2025	2030	2035	2040
Total City Supply[1]	**Single Dry Year (AFY)**	6,376	8,272	9,448	10,625	11,801
Total City Demand – Single Dry Year (AFY)		**6,376**	**8,123**	**9,151**	**10,327**	**11,503**
Sufficient Supply?	**Single Dry-Year (AFY)**	Yes	Yes	Yes	Yes	Yes
Total City Supply[1]	**Multiple Dry Year**					
	First Year (AFY)	6,376	8,272	9,448	10,625	11,801
	Second Year (AFY)	6,376	8,272	9,448	10,625	11,801
	Third Year(AFY)	6,376	8,272	9,448	10,625	11,801
Total City Demand – Multiple Dry Year (All Years) (AFY)		**6,376**	**8,123**	**9,151**	**10,327**	**11,503**
Sufficient Supply?	**Multiple-Dry Year**					
	First Year (AFY)	Yes	Yes	Yes	Yes	Yes
	Second Year (AFY)	Yes	Yes	Yes	Yes	Yes
	Third Year(AFY)	Yes	Yes	Yes	Yes	Yes

Notes:

1) Source: 2015 City of Patterson UWMP (RMC, 2016). This supply projection has not been updated to include stormwater capture (to non-potable) from onsite stormwater capture included in the Project.

4.2.1 Water Shortage Contingency Plan

All urban suppliers are required to prepare a water shortage contingency plan detailing how the supplier would manage supplies during water shortages of up to 50%. As discussed in the previous section, the City has adequate supply to meet demands during dry year scenarios. Should the City experience a catastrophic supply interruption, its Water Shortage Contingency Plan would be implemented across the entire service area, including the Project area, to manage and meet demands. Potential demand management measures that the City could impose include:

- Stage 1: water use restrictions and voluntary water conservation of less than or equal to 10 percent of the normal base year
    - Customers must repair leaks, breaks, and malfunctions in a timely manner
    - Restrict or prohibit runoff from landscape irrigation
    - Prohibit vehicle washing except at facilities using recycled or recirculating water
    - Prohibit use of potable water for washing hard surfaces
    - Restrict water use for decorative water features, such as fountains
    - Prohibit use of potable water for construction and dust control
    - Limit landscape irrigation to specific times
- Stage 2: reduce water consumption by 10 to 20 percent from base years through the use of mandatory water use restrictions and voluntary water allocations
    - Prohibit certain types of landscape irrigation
    - Restaurants may only serve water upon request

- Limit landscape irrigation to specific days

- Stage 3: implement mandatory water use restrictions and water allocations in order to reduce demand by 20 percent or more
  - Prohibit certain types of landscape irrigation
  - Water use allocation by customer type

The 2015 UWMP includes additional details of the City's Water Shortage Contingency Plan, including the following information:

- A description of stages of action the City will take in response to a water supply shortage
- A description of non-essential water use during a water shortage, and report prohibitions, penalties and consumption reduction methods
- Estimates of the minimum water supply for the next three years
- An analysis of revenue impacts due to reduced sales during shortages

4.3 Conclusions and Recommendations

Based on the analysis presented in this WSA, it can be concluded that the City of Patterson has adequate supply to serve the Zacharias and Baldwin development areas. While the City has sufficient existing supplies to serve the Project, the Project significantly increases the City's demands and contributes a substantial portion of the City's planned buildout. Therefore, it is recommended that the City and Project Stakeholders determine an appropriate, proportional contribution to the City's fund to support continued development of water supplies and infrastructure.

As discussed in Section 2.2, the Project results in a net decrease in demand in comparison to the 2018 WMP projection for the Project area, lowering the City's projected potable demand by 461 AFY and total demand by 298 AFY. Though the total City demand is reduced, the projected non-potable demand for the Project is slightly higher (163 AFY higher) than previously projected for this area. That said, the Project will promote upper aquifer recharge throughout the development area through the incorporation of pervious surfaces per requirements for new development in the City's sphere of influence. As discussed in Section 3.2.5, the estimated yield of the onsite capture and recharge to the upper aquifer provided by the Project is approximately 1,185 AFY, which should more than offset the increase in non-potable demand of 140 AFY. That said, the non-potable demand could be reduced or mitigated through drought tolerant landscaping or by requiring more specific landscaping efficiencies.

As discussed in Section 4.2, the City's supply portfolio, 2015 UWMP and WMP (on which this WSA was based) was developed prior to the completion of the draft GSP for the Northern & Central Delta-Mendota Regions. While the WMP and UWMP did project for the impacts of SGMA and the draft GSP includes slightly higher groundwater supplies for the City at buildout then included in the WMP, it is recommended that the Project take steps to reduce its projected demand to ensure a reliable supply for the Project and all of the City's customers. Specifically, the Project should include additional conservation programs and/or require high water efficiency standards for all fixtures, appliances and industrial processes installed in the development area and consider requiring the use of drought tolerant landscaping or requiring other actions to improve landscape efficiencies.

Finally, it is recommended that the City and Project stakeholders confirm phasing of the development and coordinate with GSAs implementing the *Northern & Central Delta-Mendota Region GSP*. The City's existing future supply project CIP was based on limited information about future developments. With specific information about the phasing of the Project, the City's supply projects can be implemented appropriately to ensure a reliable supply for all of its customers through the Project implementation period.

5. REFERENCES

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GDR Engineering. 2019. *Baldwin Ranch Master Planning Area.*

GDR Engineering. 2020. *Zacharias Ranch Master Planning Area.*

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RMC Water & Environment. 2016. *Final 2015 Urban Water Management Plan for the City of Patterson*.

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Woodard & Curran. 2018. *2018 City of Patterson Water Master Plan.*

Woodard & Curran. 2020. *Northern & Central Delta-Mendota Region GSP.*

APPENDIX A: ZACHARIAS AND BALDWIN MASTER PLAN AREA DEVELOPMENT PLANS AND DOCUMENTATION

GDR ENGINEERING, Inc.
ENGINEERING/SURVEYING/PLANNING
3525 MITCHELL ROAD, SUITE G CERES, CA 95307
TELEPHONE: (209) 538-3360 FAX: (209) 538-7370
Contact: Joshua Jantz / Max Garcia
www.gdrengineering.com

ZACHARIAS ROAD
ROGERS ROAD
BALDWIN ROAD
WARD AVENUE
SPERRY AVENUE
SPERRY AVENUE

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LEGEND

- City of Patterson General Plan
- City of Patterson
- Zacharias Master Planning Area

Zacharias Master Planning Area

Location Map

City of Patterson, Stanislaus County, California
July 22, 2019

ZACHARIAS ROAD

ZACHARIAS ROAD

ROGERS ROAD

ROGERS ROAD

BALDWIN ROAD

BALDWIN ROAD

HIGHWAY 33

EUCALYPTUS AVENUE

HIGHWAY 33

IVY AVENUE

WARD AVENUE

ROSE AVENUE

LEGEND

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Downtown Residential
- Light Industrial
- Public / Quasi-Public
- General Commercial
- Park / Open Space
- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence Zacharias Master Planning Area

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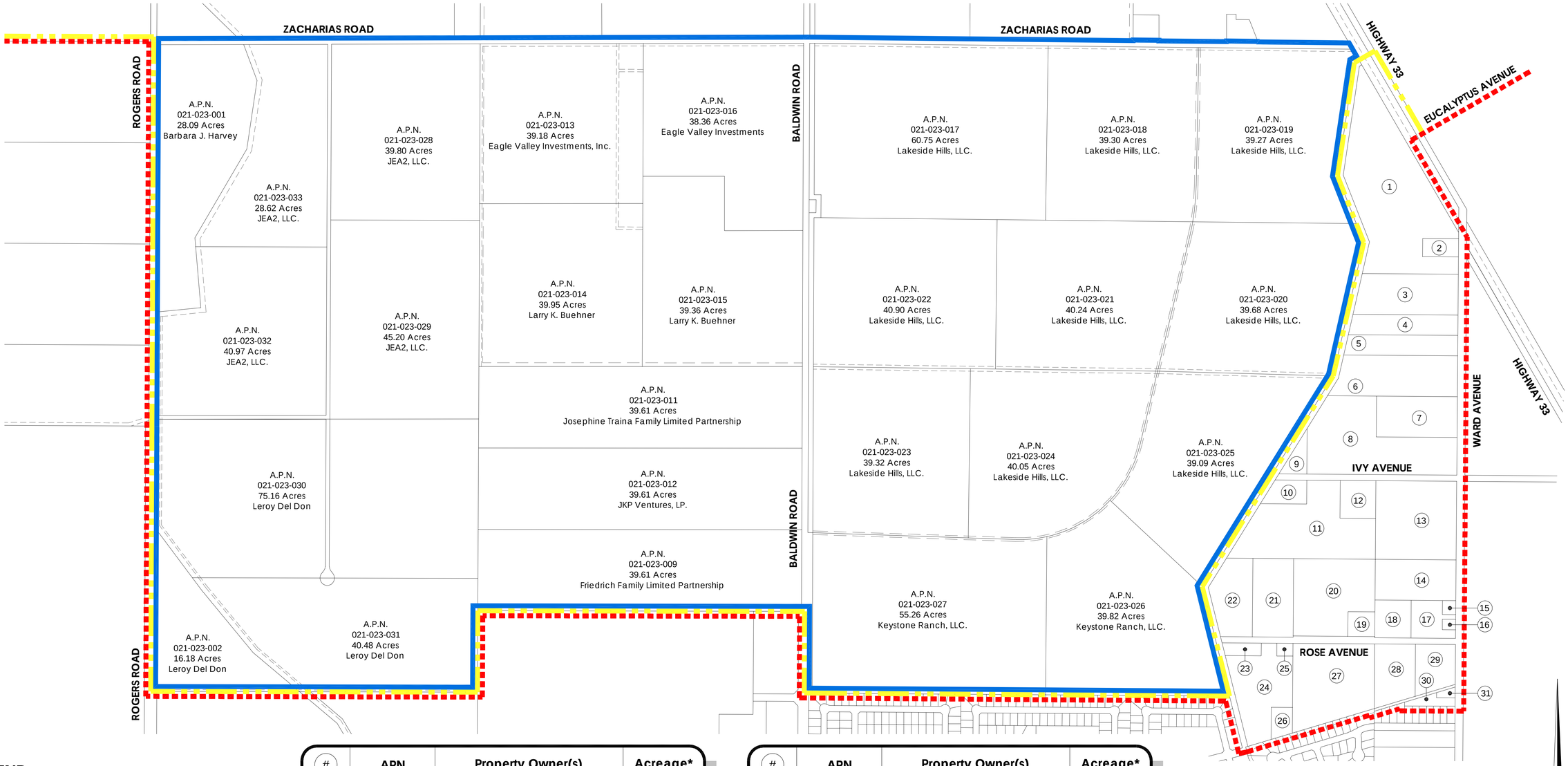
Zacharias Master Planning Area

Existing General Plan Designations

City of Patterson, Stanislaus County, California

July 22, 2019



LEGEND

- **Existing City Limits**
- **Existing Sphere of Influence**
- **Proposed Sphere of Influence**

* Acreages based on Assessors Maps

#	APN	Property Owner(s)	Acreage*
1	047-015-001	WL Torrison Farms, Inc.	18.92
2	047-015-002	Juan M. Medina	1.00
3	047-015-009	WL Torrison Farms, Inc.	6.09
4	047-015-005	Marlene Kingman	3.26
5	047-015-006	Karl L. Torrison	3.40
6	047-015-013	Rajesh Gupta	7.30
7	047-015-012	Louie & Kathleen Barletta	4.95
8	047-015-010	Louie Barletta	12.12
9	047-015-011	Antolak Family Trust	1.00
10	047-016-001	Patricia A. Johnson	1.41
11	047-016-002	Louisa S. Sarasqueta	11.29
12	047-016-003	Robert & Deborah Noblitt	2.00
13	047-016-004	WL Torrison Farms, Inc.	9.55
14	047-016-005	Ali Wahid	4.96
15	047-016-012	Carlos & Rosa Gonzales	0.28
16	047-016-011	Bret H. Hammon	0.20

#	APN	Property Owner(s)	Acreage*
17	047-016-022	Steven & Lauren Cozart	2.05
18	047-016-021	Robert & Jennifer Cozart	2.05
19	047-016-015	Louisa S. Sarasqueta	1.00
20	047-016-014	Louisa S. Sarasqueta	8.55
21	047-016-016	Landrum Family Trust	4.81
22	047-016-017	James Fairfield	4.39
23	047-017-017	Barbara Vega	0.72
24	047-017-018	Gnesa Trust	6.82
25	047-017-002	Sharon F. Reeves	0.32
26	047-017-019	Gnesa Trust	0.93
27	047-017-004	Gnesa Trust	9.94
28	047-017-021	Guadalupe & Analilia Villasenor	3.82
29	047-017-020	Nelida Cuevas	3.02
30	047-017-007	Rosario Ramirez	0.64
31	047-017-006	Gonzalez Living Trust	0.22

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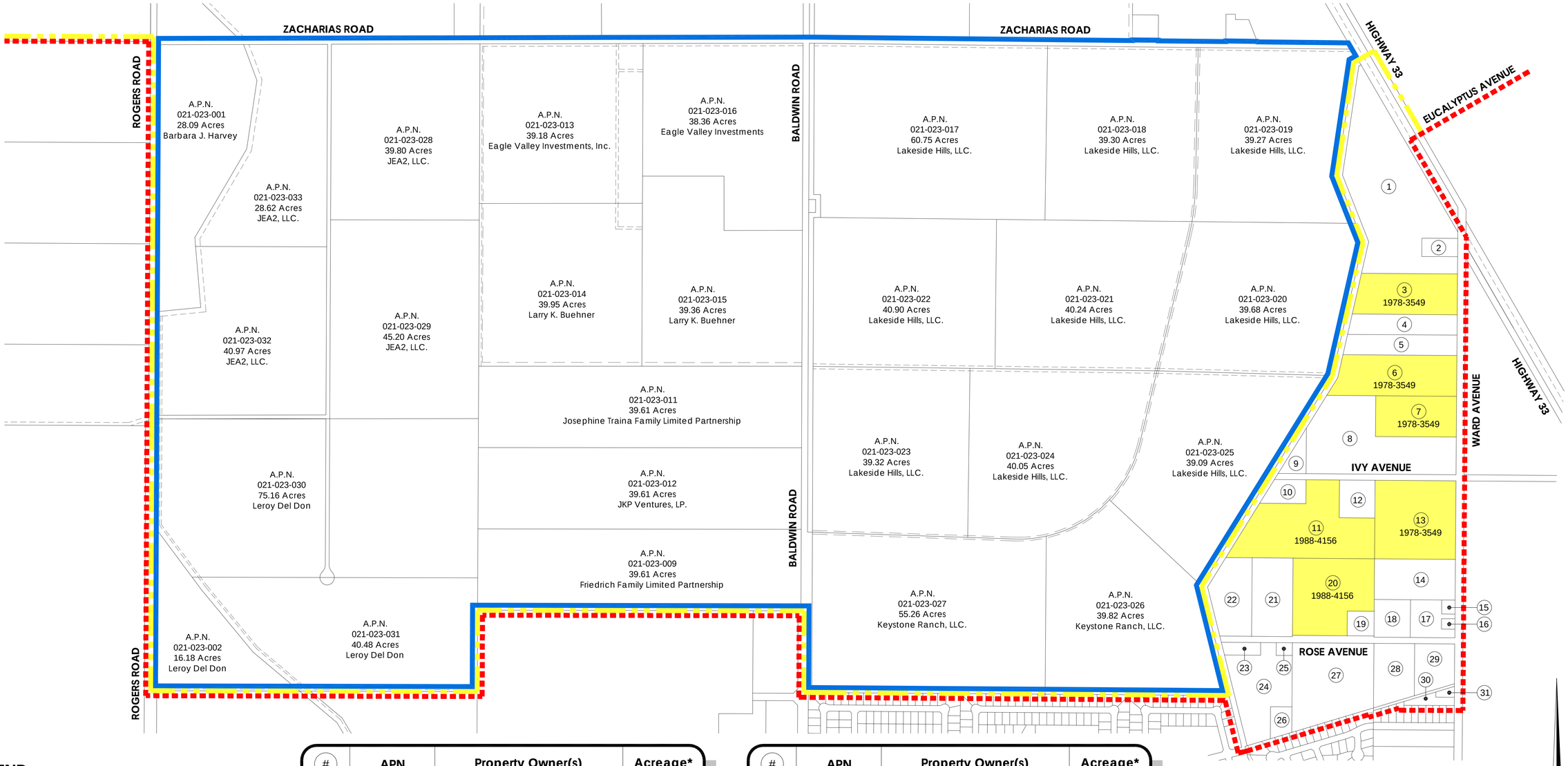
Zacharias Master Planning Area

Land Owners Information

City of Patterson, Stanislaus County, California
July 22, 2019



LEGEND

- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence
- Williamson Act

* Acreages based on Assessors Maps

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5	047-015-006	Karl L. Torrison	3.40
6	047-015-013	Rajesh Gupta	7.30
7	047-015-012	Louie & Kathleen Barletta	4.95
8	047-015-010	Louie Barletta	12.12
9	047-015-011	Antolak Family Trust	1.00
10	047-016-001	Patricia A. Johnson	1.41
11	047-016-002	Louisa S. Sarasqueta	11.29
12	047-016-003	Robert & Deborah Noblitt	2.00
13	047-016-004	WL Torrison Farms, Inc.	9.55
14	047-016-005	Ali Wahid	4.96
15	047-016-012	Carlos & Rosa Gonzales	0.28
16	047-016-011	Bret H. Hammon	0.20

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21	047-016-016	Landrum Family Trust	4.81
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26	047-017-019	Gnesa Trust	0.93
27	047-017-004	Gnesa Trust	9.94
28	047-017-021	Guadalupe & Analilia Villasenor	3.82
29	047-017-020	Nelida Cuevas	3.02
30	047-017-007	Rosario Ramirez	0.64
31	047-017-006	Gonzalez Living Trust	0.22

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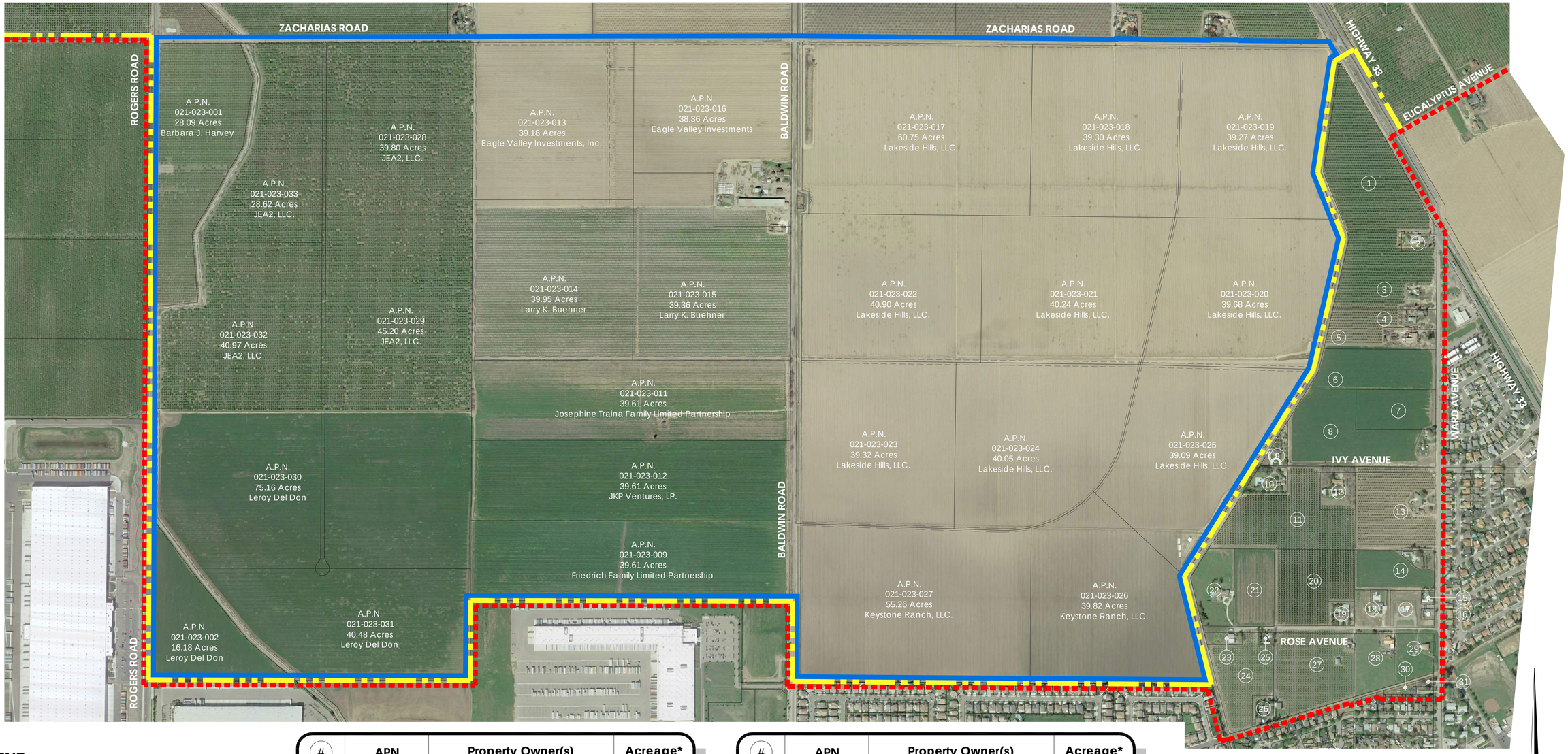
Zacharias Master Planning Area

Land Owners Information with Williamson Act

City of Patterson, Stanislaus County, California
July 22, 2019



LEGEND

- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence

* Acreages based on Assessors Maps

#	APN	Property Owner(s)	Acreage*
1	047-015-001	WL Torrison Farms, Inc.	18.92
2	047-015-002	Juan M. Medina	1.00
3	047-015-009	WL Torrison Farms, Inc.	6.09
4	047-015-005	Marlene Kingman	3.26
5	047-015-006	Karl L. Torrison	3.40
6	047-015-013	Rajesh Gupta	7.30
7	047-015-012	Louie & Kathleen Barletta	4.95
8	047-015-010	Louie Barletta	12.12
9	047-015-011	Antolak Family Trust	1.00
10	047-016-001	Patricia A. Johnson	1.41
11	047-016-002	Louisa S. Sarasqueta	11.29
12	047-016-003	Robert & Deborah Noblitt	2.00
13	047-016-004	WL Torrison Farms, Inc.	9.55
14	047-016-005	Ali Wahid	4.96
15	047-016-012	Carlos & Rosa Gonzales	0.28
16	047-016-011	Bret H. Hammon	0.20

#	APN	Property Owner(s)	Acreage*
17	047-016-022	Steven & Lauren Cozart	2.05
18	047-016-021	Robert & Jennifer Cozart	2.05
19	047-016-015	Louisa S. Sarasqueta	1.00
20	047-016-014	Louisa S. Sarasqueta	8.55
21	047-016-016	Landrum Family Trust	4.81
22	047-016-017	James Fairfield	4.39
23	047-017-017	Barbara Vega	0.72
24	047-017-018	Gnesa Trust	6.82
25	047-017-002	Sharon F. Reeves	0.32
26	047-017-019	Gnesa Trust	0.93
27	047-017-004	Gnesa Trust	9.94
28	047-017-021	Guadalupe & Analilia Villasenor	3.82
29	047-017-020	Nelida Cuevas	3.02
30	047-017-007	Rosario Ramirez	0.64
31	047-017-006	Gonzalez Living Trust	0.22

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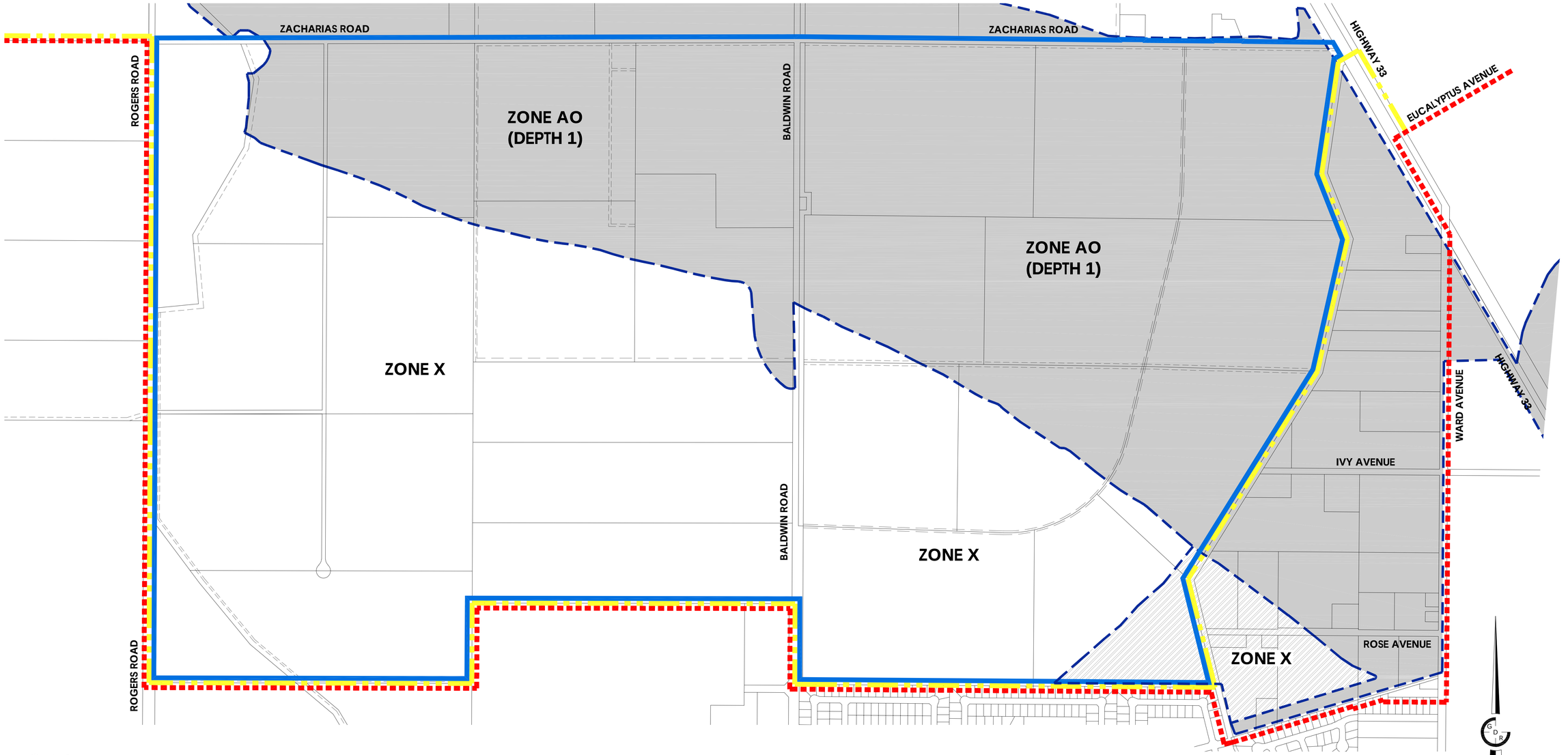
Zacharias Master Planning Area

Land Owners Information with Google Image Overlay

City of Patterson, Stanislaus County, California
July 22, 2019



LEGEND

- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence

Reference:
FIRM (Flood Insurance Rate Map)
Effective Date of September 26, 2008
Panel 732 of 1075
Map Number: 06099C0732E

Special Flood Hazard Areas (SFHAs) Subject to Inundation by the 1% Annual Chance Flood

The 1% Annual Chance Flood (100-Year Flood), Also Known as the Base Flood, is the Flood that has a 1% Chance of Being Equaled or Exceeded in any Given year. The Special Flood Hazard Area is the area Subject to Flooding by the 1% Annual Chance Flood. Areas of Special Flood Hazard Include A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the Water-Surface Elevation of the 1% Annual Chance Flood.

ZONE AO — **Flood Depths of 1 to 3 Feet (Usually Areas of Ponding); Base Flood Elevations Determined**

Other Flood Areas

ZONE X — **Areas of 0.2% Annual Chance Flood; Areas of 1% Annual Chance Flood with Average Depths of Less Than 1 Foot or with Drainage Areas Less Than 1 Square Mile; and Areas Protected by Levees From 1% Annual Chance Flood.**

Other Areas

ZONE X — **Areas Determined to be Outside the 0.2% Annual Chance Floodplain.**

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Zacharias Master Planning Area

Existing FEMA Flood Zone

City of Patterson, Stanislaus County, California
July 22, 2019

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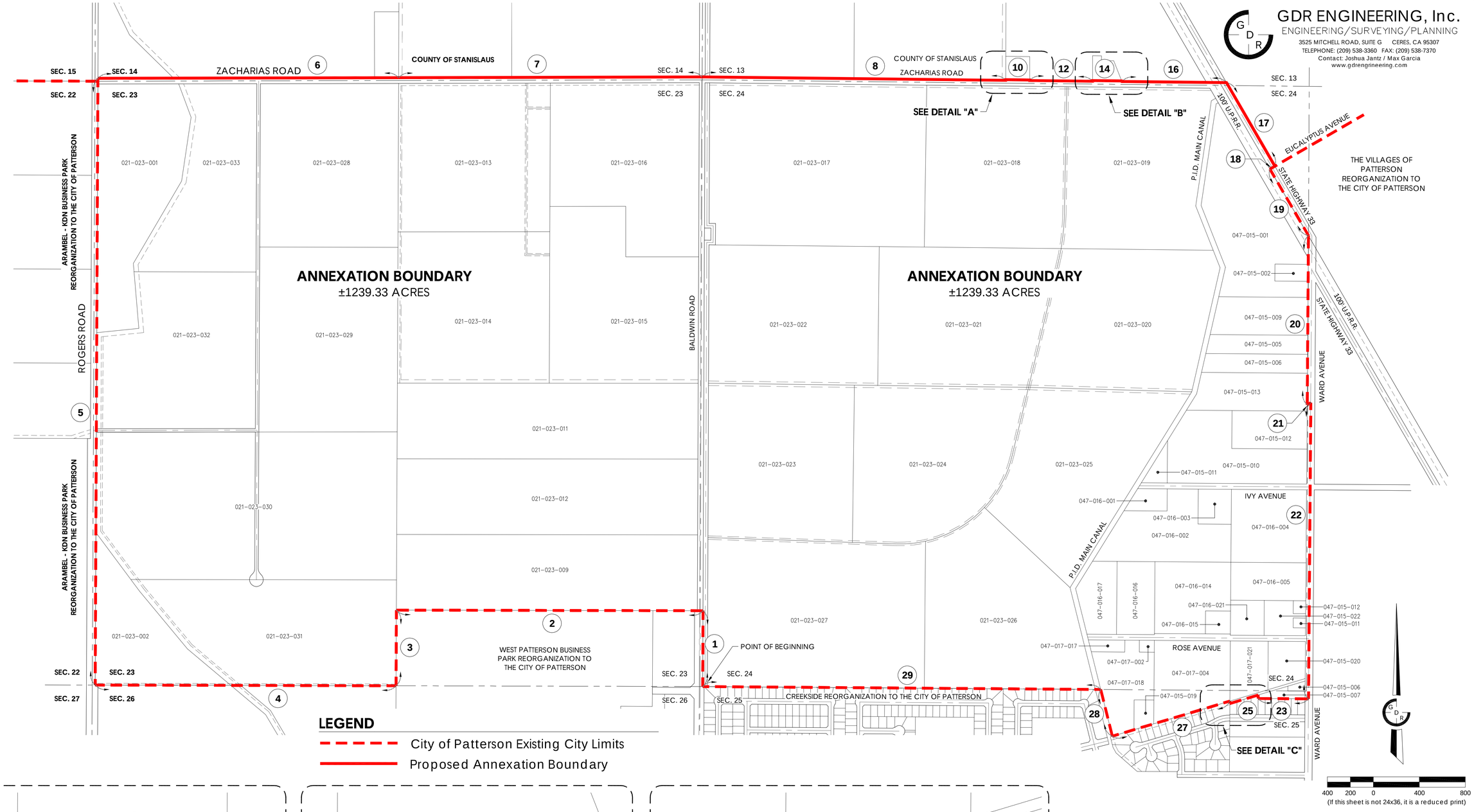
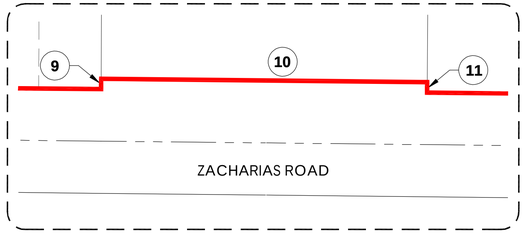
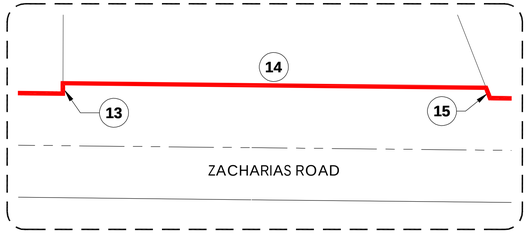


LEGEND

- City of Patterson Existing City Limits
- Proposed Annexation Boundary



DETAIL "A"
NOT TO SCALE



DETAIL "B"
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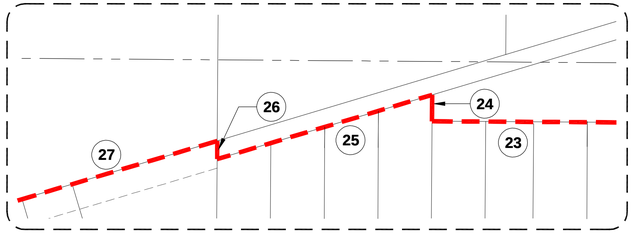

DETAIL "C"
NOT TO SCALE

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Zacharias Master Planning Area

Annexation Boundary

City of Patterson, Stanislaus County, California
July 22, 2019

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Zacharias Master Planning Area Reorganization to the City of Patterson

A portion of Sections 13, 14, 23, 24 and 25, Township 5, South, Range 7 East, Mount Diablo Meridian, situate in the County of Stanislaus, State of California, more particularly described as follows:

Beginning at the intersection of the south line of said Section 24 with the east line of Baldwin Road, said east line being 25.00 feet east of and parallel with the west line of said Section 24, said point of beginning also lying on the north line of the Creekside Reorganization to the City of Patterson;

1) thence along the existing city limits line as described the West Patterson Business Park Reorganization to the City of Patterson and the said east line of Baldwin Road, North 00°13'00'' East, 660.24 feet to the easterly prolongation of the north line of Parcel 3 as shown in Book 32 of Parcel Maps, Page 101, Stanislaus County Records;
2) thence continuing along said city limits line and along said prolongation and the north line of said Parcel 3, North 89°53'26'' West, 2667.40 feet to the northwest corner of said Parcel 3;
3) thence continuing along said city limits line, the west line of said Parcel 3 and the west line of the southeast quarter of said Section 23, South 00°14'32'' West, 658.55 feet to the southwest corner of said southeast quarter of Section 23;
4) thence continuing along said city limits line and the south line of the southwest quarter of said Section 23, North 89°51'05'' West, 2617.90 feet to the east line of the Arambel-KDN Business Park Reorganization to the City of Patterson and the east line of Rogers Road, said east line being 25.00 feet east of and parallel with the west line of said Section 23;
5) thence continuing along said city limits line and the and said east line its northerly prolongation, North 00°15'44'' East, 5280.25 feet to the north line of Zacharias Road, said north line being 25.00 feet north of and parallel with the north line of said Section 23;
6) thence along said north line of Zacharias Road, North 89°52'15'' East, 2615.75 feet to the east line of the southwest quarter of said Section 14;
7) thence continuing along the north line of Zacharias Road, North 89°52'31'' East, 2640.74 feet to the east line of said Section 14;
8) thence continuing along the north line of Zacharias Road, South 89°22'32'' East, 2640.03 feet to the southeast corner of Parcel 10 as shown on the map recorded in Book 53 of Parcel Maps, Page 53, Stanislaus County Records;
9) thence continuing along the north line of said Zacharias Road and along the east line of said Parcel 10, North 00°16'13'' East, 5.00 feet;
10) thence continuing along the north line of said Zacharias Road and the south line of Parcel A as shown on the map recorded in Book 15 of Parcel Maps, Page 93, Stanislaus County Records, South 89°23'29'' East, 208.71 feet to the southeast corner of said Parcel A;
11) thence continuing along the north line of said Zacharias Road, South 00°16'13'' West, 5.00 feet;
12) thence continuing along the north line of said Zacharias Road, South 89°23'29'' East, 546.70 feet;
13) thence continuing along the north line of said Zacharias Road, North 00°16'13'' East, 5.00 feet;
14) thence continuing along the north line of said Zacharias Road, South 89°23'29'' East, 253.58 feet;
15) thence continuing along the north line of said Zacharias Road, South 21°23'32'' East, 5.39 feet;
16) thence continuing along the north line of said Zacharias Road and its easterly prolongation, South 89°23'29'' East, 909.59 feet to the northeasterly line of State Highway 33;
17) thence along said northeasterly line of Highway 33, South 30°04'35'' East, 829.93 feet to the northwesterly line of Eucalyptus Avenue and the existing city limits line per the Villages of Patterson Reorganization to the City of Patterson;
18) thence along said city limits line, South 60°00'45'' West, 50.00 feet to the southwesterly line of said Highway 33;
19) thence continuing along said city limits line and said southwesterly line, South 30°04'35'' East, 668.40 feet to the west line of Ward Avenue;
20) thence continuing along said city limits line and said west line, South 00°15'50'' West, 1483.28 feet;
21) thence continuing along said city limits line, North 59°55'25 East, 38.24 feet to the centerline of said Ward Avenue;
22) thence continuing along said city limits line and said centerline, South 00°15'50'' West, 2602.45 feet to the easterly prolongation of the north line of the Correia Tract recorded in Book 18 of Maps, Page 3, Stanislaus County Records;
23) thence continuing along said city limits line, North 89°40'00'' West, 441.12 feet;
24) thence continuing along said city limits line, North 00°20'00'' East, 21.31 feet;
25) thence continuing along said city limits line, South 73°59'00'' West, 256.36 feet;
26) thence continuing along said city limits line, North 00°20'00'' East, 27.50 feet;
27) thence continuing along said city limits line, South 73°21'47'' West, 1065.60 feet to the easterly line of the Patterson Irrigation District Main Canal Extension;
28) thence continuing along said city limits line and said easterly line, North 13°58'19'' West, 443.92 feet to the south line of said Section 24;
29) thence continuing along said city limits line and said south line of Section 24, North 89°34'39'' West, 3,461.95 feet to the point of beginning.

Contains 1,239.33 acres, more or less.

Zacharias Master Planning Area

Annexation Legal Description

City of Patterson, Stanislaus County, California
July 22, 2019

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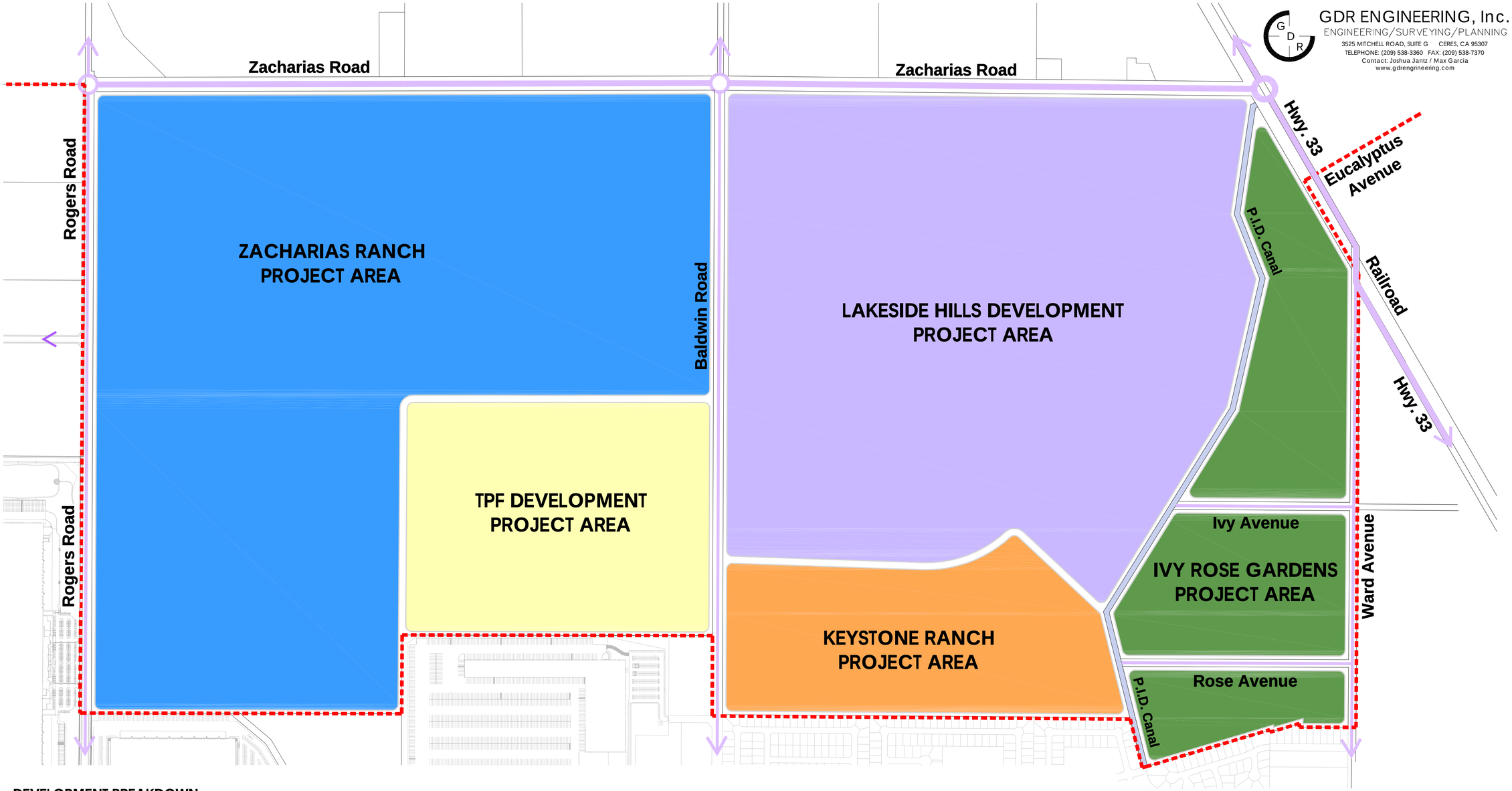

DEVELOPMENT BREAKDOWN

	Zacharias Ranch	±478.7 Gross Acres	±700 Units	±7,260,000 Building Sq. Ft.
	TPF Development	±119.7 Gross Acres	±720 Units	~
	Keystone Ranch	±97.3 Gross Acres	±714 Units	~
	Lakeside Hills Development	±387.7 Gross Acres	±2,521 Units	±505,000 Building Sq. Ft.
	Ivy Rose Gardens	±143.7 Gross Acres	±431 Units	~
	Zacharias Master Planning Area - Project Total	±1,227.1 Gross Acres	±5,086 Units	±7,765,000 Building Sq. Ft.

Existing Roads
City of Patterson Limits

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Development Area Breakdown

City of Patterson, Stanislaus County, California
July 22, 2019

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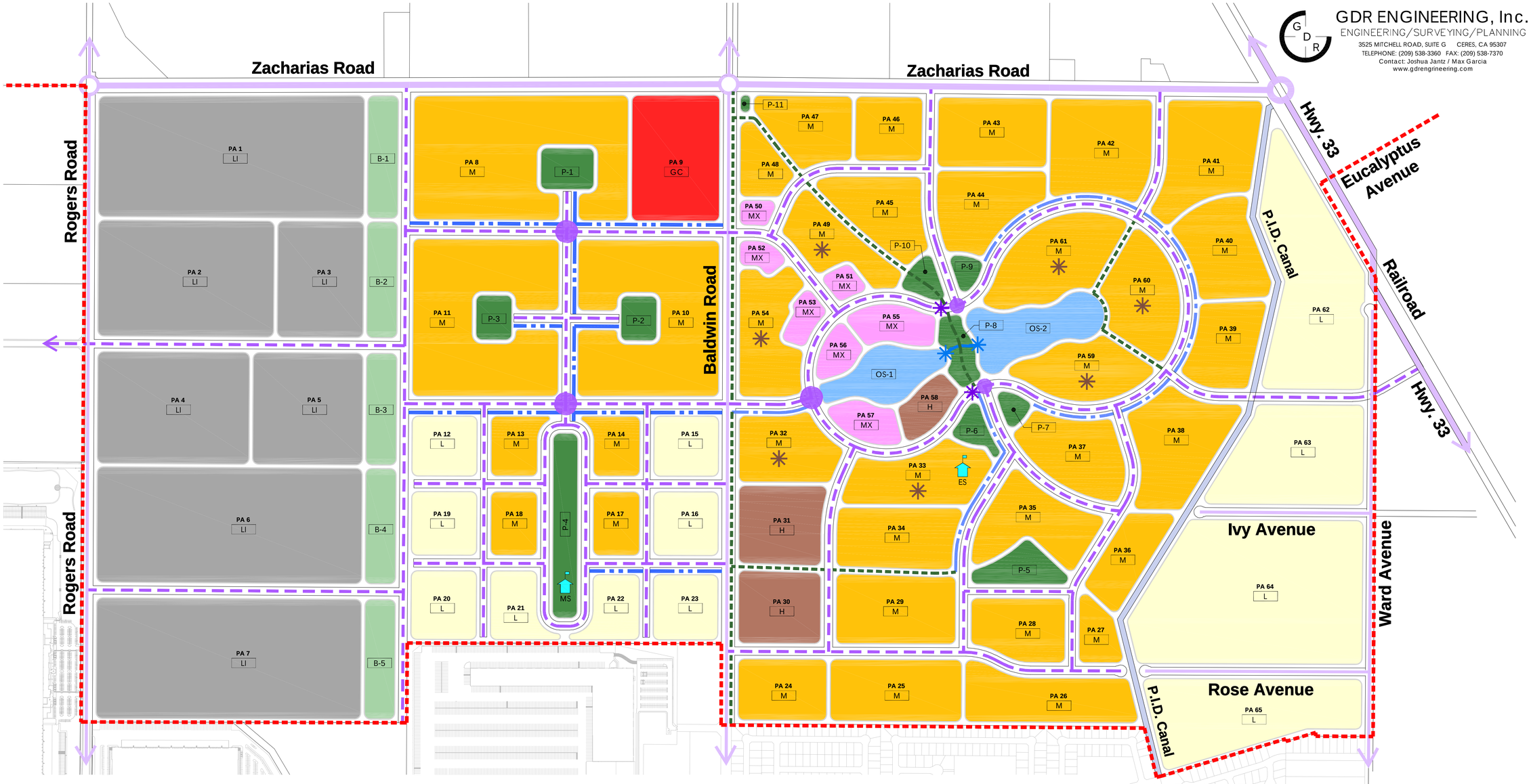

DEVELOPMENT FRAMEWORK

L	**Low Density Residential** (1.0 - 5.0 U.P.A.)	GC	**General Commercial**
M	**Medium Density Residential** (5.1 - 12.0 U.P.A.)	LI	**Light Industrial**
H	**High Density Residential** (12.1 - 20.0 U.P.A.)	B	**Detention Basin**
MX	**Mixed Use**	P	**Proposed Parks**
ES	**Future ±14 Elementary School Site East of Baldwin Road** (Final Location to be Determined)	OS	**Open Space / Lake / Flood Control / Park / Recharge Basin**
MS	**Future ±15 Acre Middle School Site West of Baldwin Road** (Final Location to be Determined)		

- **Round-A-Bout**
- **Front Loaded Residential Encouraged**
- **Pedestrian Undercrossing**
- **Water Feature Connection**
- **Existing Roads**
- **New Minor Roads**
- **Bike & Pedestrian Pathways**
- **Class I Bike Pathways**
- **Class II Bike Pathways**
- **City of Patterson Limits**

400 200 0 400 800
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Zacharias Master Planning Area

Conceptual Land Use Plan

City of Patterson, Stanislaus County, California
January 8, 2020

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ZACHARIAS RANCH

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
1	Light Industrial	66.4	~	~	1,360,500
2	Light Industrial	36.7	~	~	845,500
3	Light Industrial	25.4	~	~	523,500
4	Light Industrial	31.0	~	~	720,500
5	Light Industrial	29.5	~	~	585,250
6	Light Industrial	62.6	~	~	1,420,500
7	Light Industrial	65.9	~	~	1,454,250
8	Medium Density Residential	47.9	5.4	259	~
9	General Commercial	22.2	~	~	350,000
10	Medium Density Residential	42.2	5.4	228	~
11	Medium Density Residential	39.4	5.4	213	~
P-1	Park	3.0	~	~	~
P-2	Park	3.0	~	~	~
P-3	Park	3.5	~	~	~
	ZACHARIAS RANCH - TOTAL	**478.7**	**~**	**700**	**7,260,000**

TPF DEVELOPMENT

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
12	Low Density Residential	9.0	5.1	47	~
13	Medium Density Residential	9.4	9.4	87	~
14	Medium Density Residential	9.3	9.4	87	~
15	Low Density Residential	9.6	5.1	50	~
16	Low Density Residential	10.1	5.1	53	~
17	Medium Density Residential	9.2	9.4	84	~
18	Medium Density Residential	9.2	9.4	84	~
19	Low Density Residential	9.5	5.1	49	~
20	Low Density Residential	9.1	5.1	47	~
21	Low Density Residential	7.9	5.1	41	~
22	Low Density Residential	7.9	5.1	41	~
23	Low Density Residential	9.6	5.1	50	~
P-4	Park	9.9	~	~	~
	TPF DEVELOPMENT - TOTAL	**119.7**	**~**	**720**	**~**

KEYSTONE RANCH

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
24	Medium Density Residential	11.1			
25	Medium Density Residential	15.4	6.1	258	~
26	Medium Density Residential	15.7			
27	Medium Density Residential	5.1			
28	Medium Density Residential	12.5	7.1	240	~
29	Medium Density Residential	16.1			
30	High Density Residential	12.6	17.1	216	~
P-5	Park	8.8	~	~	~
	KEYSTONE RANCH - TOTAL	**97.3**	**~**	**714**	**~**

LAKESIDE HILLS DEVELOPMENT

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
31	High Density Residential	13.0	18.0	232	~
32	Medium Density Residential	13.0	6.5	84	~
33	Medium Density Residential	13.9	6.5	90	~
34	Medium Density Residential	13.6	6.5	88	~
35	Medium Density Residential	14.8	6.5	96	~
36	Medium Density Residential	8.8	6.5	57	~
37	Medium Density Residential	15.6	6.5	101	~
38	Medium Density Residential	16.7	6.5	108	~
39	Medium Density Residential	11.4	6.5	73	~
40	Medium Density Residential	13.1	6.5	85	~
41	Medium Density Residential	19.4	6.5	125	~
42	Medium Density Residential	19.8	6.5	128	~
43	Medium Density Residential	15.3	6.5	99	~
44	Medium Density Residential	13.2	6.5	85	~
45	Medium Density Residential	12.6	6.5	81	~
46	Medium Density Residential	10.0	6.5	64	~
47	Medium Density Residential	11.6	6.5	75	~
48	Medium Density Residential	6.3	6.5	40	~
49	Medium Density Residential	10.3	6.5	66	~
50	Mixed Use	2.7	10.5	26	50,500
51	Mixed Use	2.8	10.5	27	48,500
52	Mixed Use	3.1	10.5	31	58,500
53	Mixed Use	3.5	10.5	35	61,500
54	Medium Density Residential	14.7	6.5	95	~
55	Mixed Use	6.4	10.5	66	113,500
56	Mixed Use	4.2	10.5	43	74,000
57	Mixed Use	5.5	10.5	57	98,500
58	High Density Residential	5.0	18.0	90	~
59	Medium Density Residential	12.2	6.5	79	~
60	Medium Density Residential	13.7	6.5	88	~
61	Medium Density Residential	16.6	6.5	107	~
P-6	Park	4.5	~	~	~
P-7	Park	4.5	~	~	~
P-8	Park	10.5	~	~	~
P-9	Park	4.0	~	~	~
P-10	Park	5.0	~	~	~
P-11	Park	3.0	~	~	~
OS-1	Open Space / Lake	5.4	~	~	~
OS-2	Open Space / Lake	8.0	~	~	~
	LAKESIDE HILLS DEVELOPMENT - TOTAL	**387.7**	**~**	**2,521**	**505,000**

IVY ROSE GARDENS

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
62	Low Density Residential	34.7	3.0	104	~
63	Low Density Residential	26.4	3.0	79	~
64	Low Density Residential	55.3	3.0	166	~
65	Low Density Residential	27.3	3.0	82	~
	IVY ROSE GARDENS - TOTAL	**143.7**	**3.0**	**431**	**~**

PROJECT SUMMARY BY DEVELOPMENT

Color	Development	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
	Zacharias Ranch	478.7	~	700	7,260,000
	TPF Development	119.7	~	720	~
	Keystone Ranch	97.3	~	714	~
	Lakeside Hills Development	387.7	~	2,521	505,000
	Ivy Rose Gardens	143.7	3.0	431	~
	PROJECT TOTAL	**1,227.1**	**~**	**5,086**	**7,765,000**

PROJECT SUMMARY BY LAND USE

Color	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
	Light Industrial	317.5	~	~	6,910,000
	General Commercial	22.2	~	~	350,000
	Low Density Residential	216.4	3.7	809	~
	Medium Density Residential	539.1	6.4	3,454	~
	High Density Residential	30.6	17.6	538	~
	Mixed Use	28.2	10.4	285	505,000
	Park / Bike & Pedestrian Pathways	59.7	~	~	~
	Open Space / Lake	13.4	~	~	~
	PROJECT TOTAL	**1,227.1**	**~**	**5,086**	**7,765,000**

1. Areas for B-1 through B-5 are INCLUDED in the Planning Area Acreages. Exact size to be determined with Development of each Planning Area
2. Future ±14 Acre Elementary School to be located East of Baldwin Road (acreage not included in calculations above)
3. Future ±15 Acre Middle School to be located West of Baldwin Road (acreage not included in calculations above)

Zacharias Master Planning Area

Conceptual Land Use Plan Breakdown

City of Patterson, Stanislaus County, California
January 8, 2020

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Zacharias Road

Zacharias Road

Rogers Road

Baldwin Road

Hwy. 33

Eucalyptus Avenue

P.I.D. Canal

Railroad

Hwy. 33

Ivy Avenue

Ward Avenue

Rose Avenue

P.I.D. Canal

Rogers Road

LEGEND

- Round-A-Bout
- Arterials
- Major Collectors
- Minor Collectors
- City of Patterson Limits

400 200 0 400 800
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Zacharias Master Planning Area

Master Circulation Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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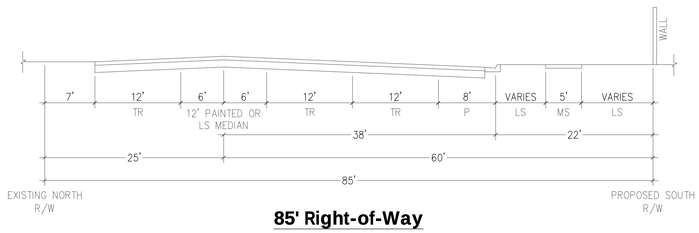
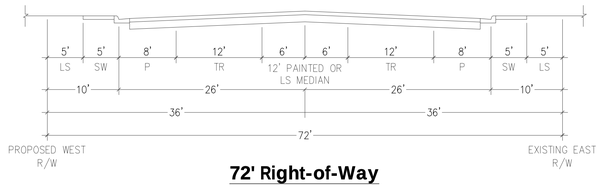
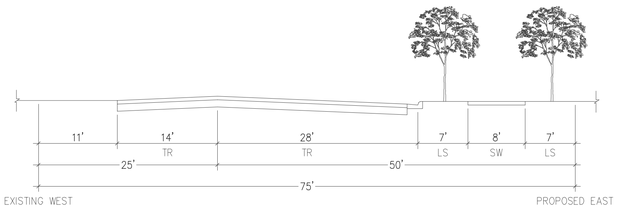


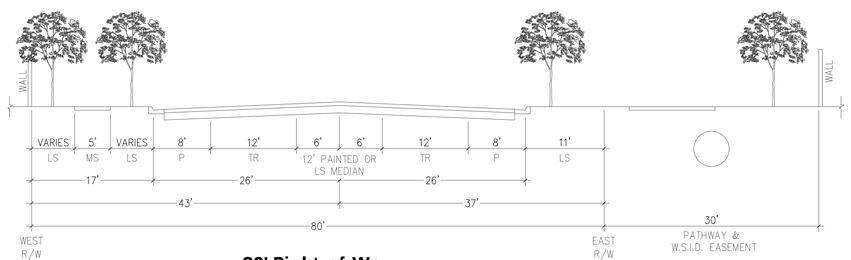
85' Right-of-Way
Zacharias Road
Not to Scale



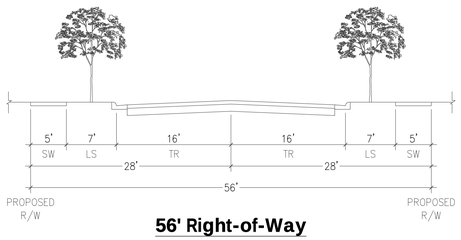
72' Right-of-Way
Ward Avenue
Not to Scale



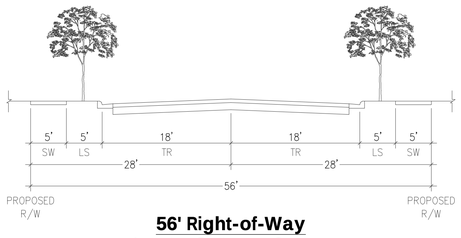
75' Right-of-Way
Rogers Road
Not to Scale



80' Right-of-Way
Baldwin Road (Zacharias Master Planning Area)
Not to Scale

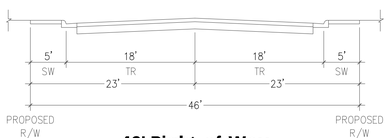


56' Right-of-Way
Interior Collector Streets
(Add 5' of Landscaping behind walk where wall is required)
Not to Scale

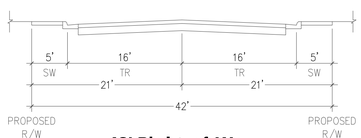


56' Right-of-Way
Interior Collector Streets
(Add 5' of Landscaping behind walk where wall is required)
Not to Scale

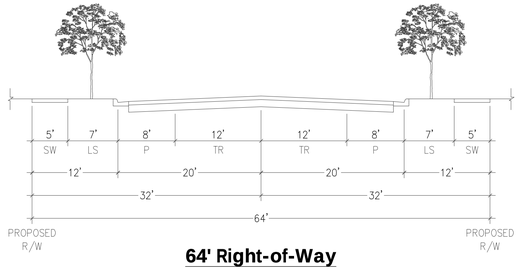
50' Right-of-Way
Interior Streets w/ Bike Path
Not to Scale



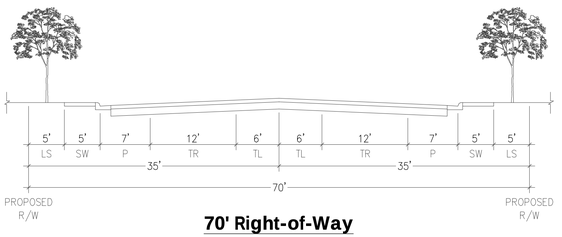
46' Right-of-Way
Interior Streets
Not to Scale



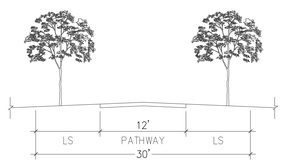
42' Right-of-Way
Interior Streets
Not to Scale



64' Right-of-Way
Collector
(Add 5' of Landscaping behind walk where wall is required)
Not to Scale



70' Right-of-Way
Industrial Streets
Not to Scale



30' Right-of-Way
Pathway
Not to Scale

Zacharias Master Planning Area

Street Sections

City of Patterson, Stanislaus County, California
July 22, 2019

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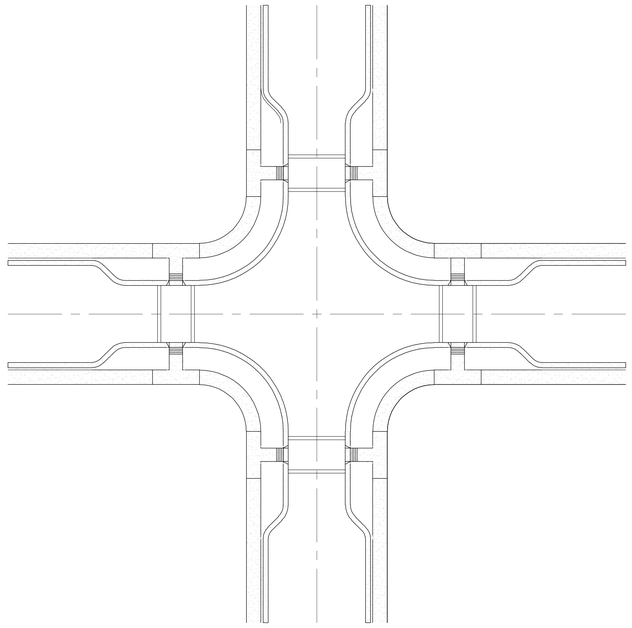
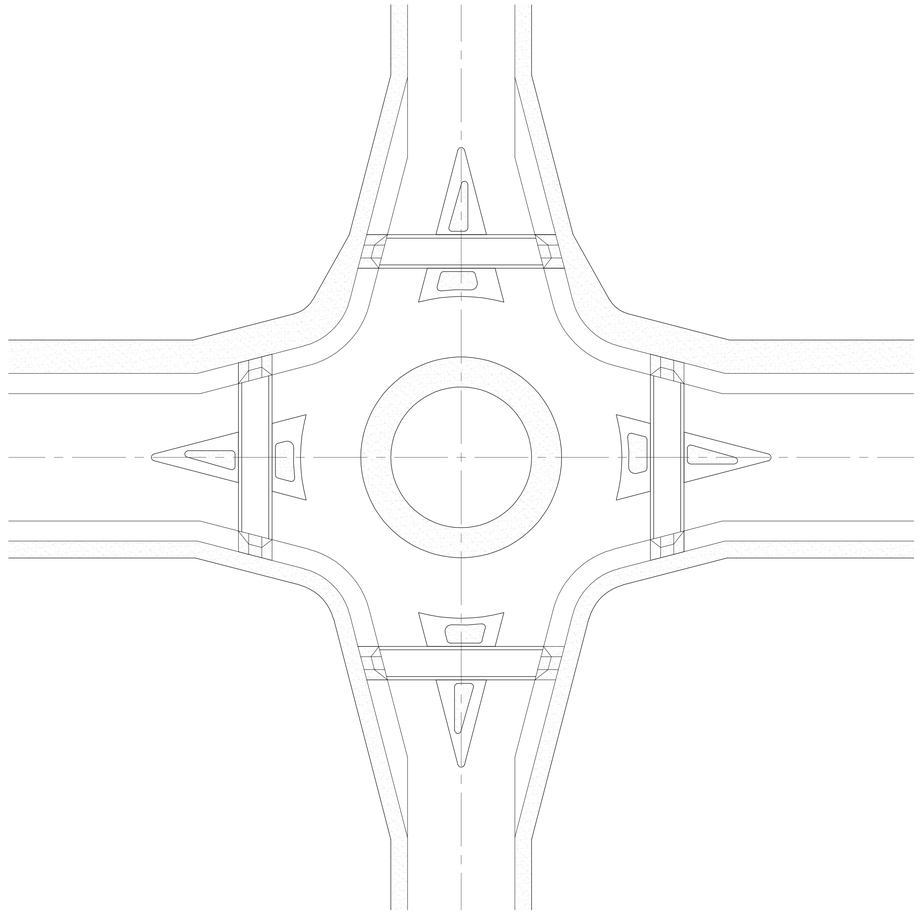


INTERSECTION TRAFFIC CALMING CHOKER
Not to Scale

MID-BLOCK TRAFFIC CALMING BULB-OUT
Not to Scale



ROUND-A-BOUT
Not to Scale
See City of Patterson Improvement Standards
3-K and 3-L for Round-A-Bout Details and Dimensions

Zacharias Master Planning Area

Traffic Calming Details

City of Patterson, Stanislaus County, California
July 22, 2019

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Domestic Water System Design & Parameters

The City of Patterson will provide potable water to future uses within the Zacharias Master Planning Area. The City's current potable water system consists of domestic wells, pump stations, water tanks, and a series of looped mains.

The Annexation Plan consists of a closed loop system consisting of 8-inch, 10-inch, 12-inch, and 16-inch potable water lines, with the boundaries of Rogers Road, Zacharias Road, and Ward Avenue / State Route 33 as the limits of improvements. Connections to existing utility lines will occur on Rogers Road, Baldwin Road, and Ward Avenue / State Route 33 (3 connections), to tie into the existing potable system. Note that a new 12-inch water line will be installed on Ward Avenue parallel to existing water lines and connected to the existing lines.

The Zacharias Master Planning Area will require a potable water demand of 1.02 million gallons per day (mgd) between the five planning areas, or 1142 acre-feet per year. This demand is split up as 0.09mgd for Keystone Ranch, 0.33mgd for Lakeside Hills, 0.09 for TPF, 0.37mgd for Baldwin Ranch, and 0.13mgd for Ivy Rose Gardens. The Calculations are based on the City of Patterson Water Supply Assessment, with a 20-percent reduction factor for state conservation requirements (the WSA originally excluded this factor). Potable water will be provided to the Zacharias Master Planning Area by potable water wells and storage tanks located offsite within the City of Patterson.

Exhibit ____, on Page _____, illustrates the conceptual water system for the Zacharias Master Planning Area consistent with the conceptual circulation plan shown on Exhibit ___. The actual alignment and configuration may be modified to be consistent within future tentative map proposals and designs.

Sanitary Sewer System Design & Parameters

The City of Patterson provides sewer service throughout the City. Sewer service includes collection, transmission, and treatment of wastewater through a series of gravity trunk lines, sewer lift stations and force mains, and a wastewater treatment plant. This system will be expanded to include the Zacharias Master Planning Area. The existing treatment plant has previously been designed per the City of Patterson Wastewater Master Plan to include the proposed annexation area as a part of its future build-out area.

The sanitary sewer lines will flow to three different directions. The two southernmost warehouse buildings for the Baldwin Ranch Planning area (parcels PA 6 & PA 7) will flow south to Keystone Pacific Parkway, flowing east until it eventually connects to the existing trunk sewer line flowing down American Eagle Avenue, M Street, and Walnut Avenue to the treatment plant. The reason for flowing south is to allow the warehouses to be built quickly while using the existing flow from the planned build-out area, per the City of Patterson Wastewater Master Plan, flowing south to the existing trunk sewer line. The second flow area will consist of the TPF Planning area, Keystone Ranch Planning Area, parcel PA 65 of the Ivy Rose Gardens Planning Area, and approximately half of parcel PA 64 of the Ivy Rose Gardens Planning Area. This will flow east to Ward Avenue, connecting to the existing sewer main on Vicki Lynn Lane. A section of the existing sewer main between Salado Creek and M Street will need to be reconstructed in 4th Street to accommodate the increased flow. The proposed reconstructed line on 4th Street will connect to the M Street sewer trunk line downstream of the section with the reverse-flow direction (at the M Street - 6th Street intersection) that causes capacity issues, preventing additional capacity from being added to that section. The third and final flow area will connect to the future North Patterson Trunk Sewer Line on Zacharias Road, that leads to Eucalyptus Avenue east of the project site. This will include the entirety of the Lakeside Hills Planning Area, and the remainder of the Baldwin Ranch Planning Area. The North Patterson Trunk Sewer Line will need to be installed up to the treatment plant as a part of this project.

Exhibit ____, on Page _____, illustrates the sewer collection system for the Zacharias Master Planning Area consistent with the Conceptual Circulation Plan shown on Exhibit ____, Page ____. The actual alignments may be modified to be consistent with future tentative map proposals and designs. Exhibit ____, on Page _____, shows a schematic of the modification to the sewer line east of the project on 4th Street, connecting to the M Street Trunk Line. Exhibit ____, on Page _____, shows the continuation of the North Patterson Trunk Sewer Line per the City of Patterson Master Plan to the existing treatment plant.

Zacharias Master Planning Area

Public Facilities & Services

City of Patterson, Stanislaus County, California
July 22, 2019

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Non-Potable Water System Design & Parameters

The City of Patterson will provide non-potable water to future uses within the Zacharias Master Planning Area. The City's current non-potable water systems consists of a number of wells, pump stations, and main lines.

The Annexation Plan Area will connect to the existing non-potable mains on Rogers Road and Baldwin Road. A 12-inch line size will be used as a loop around the exterior of the project, with interior lines of 6-inch, 8-inch, and 10-inch sizes in-between. The intent of the non-potable lines is to connect between the different park, school, and lake sites within the Annexation Plan Area. Additionally, wells may be needed per design requirements to provide additional flow to the system within the Annexation Plan Area, to be possibly located within the park sites. This configuration is concurrent with the requirements from the City of Patterson Water Master Plan.

The Zacharias Master Planning Area will require a potable water demand of 0.22 million gallons per day (mgd) between the five planning areas, or 252 acre-feet per year. This is based on demands from the park, lake, and school sites only. The Calculations are based on the City of Patterson Water Supply Assessment, with a 20-percent reduction factor for state conservation requirements (the WSA originally excluded this factor).

Exhibit ____, on Page _____, illustrates the conceptual non-potable water system for the Zacharias Master Planning Area consistent with the conceptual circulation plan shown on Exhibit __, on Page _____. The actual alignment may be modified to be consistent with future tentative map proposals and designs.

Storm Drain System Design & Parameters

The storm drainage control facilities will be implemented within the Zacharias Master Planning Area with the intention of providing for two goals: storm drain recharge, and flood control. A storm drain recharge basin facility will be built west of the annexation area on the north side of Zacharias Road, per Exhibit X on Page X. The intention is to recharge the water through retention to the lower aquifer where potable water is drawn by city wells, with the ground filtering the water prior to reaching the water table. For flood mitigation, the proposed Stanislaus County Regional Park to the West of the proposed school site north of Zacharias Road will be designed to store the anticipated 160 acres of flood water runoff for a 100-year storm event (calculated by Balance Hydrologies, Inc.), mitigating the effects of floodwaters shown in the 100-Year Flood Depths for Del Puerto Creek Hydraulic Model provided by Balance Hydrologics, Inc. This will serve as the FEMA solution for flood protection for a 100-year storm.

The storm drainage system for the Zacharias Master Planning Area will consist of a series of basins, SCADA outlet systems, gravity lines, pump stations, and force mains. Each planning area will have one or more basin areas. The Keystone Ranch, TPF, and Ivy Rose Gardens Planning Areas will each have one or more park basins for storage. The Lakeside Hills Planning Area will utilize the lake areas for storage as wet basin systems. The Baldwin Ranch Planning Area will have a mixed of basin and park basin areas as drainage storage facilities. These facilities will ultimately serve as detention basin facilities designed for a 50-year, 24-hour storm per the City of Patterson Standards for detention facilities with a pump-outlet system. Any facilities constructed prior to the installation and operation of the recharge basin facility on Zacharias Road will need to have temporary retention basins installed and design for a 100-year, 24-hour storm per the City of Patterson Standards for retention basin facilities. These basins will be converted to detention facilities and connected to outlet storm drain facilities once the recharge basin is constructed and operational.

All storm drain detention facilities will be connected to SCADA outlet systems. Gravity lines will be connected between these facilities and the pump station facilities. From the storm drain pump stations, force mains will flow to Zacharias Road, and head west up to the proposed recharge basin. Exhibit _____ on Page _____ shows the storm drain pipe, basin, and pump station facilities within the planning areas.

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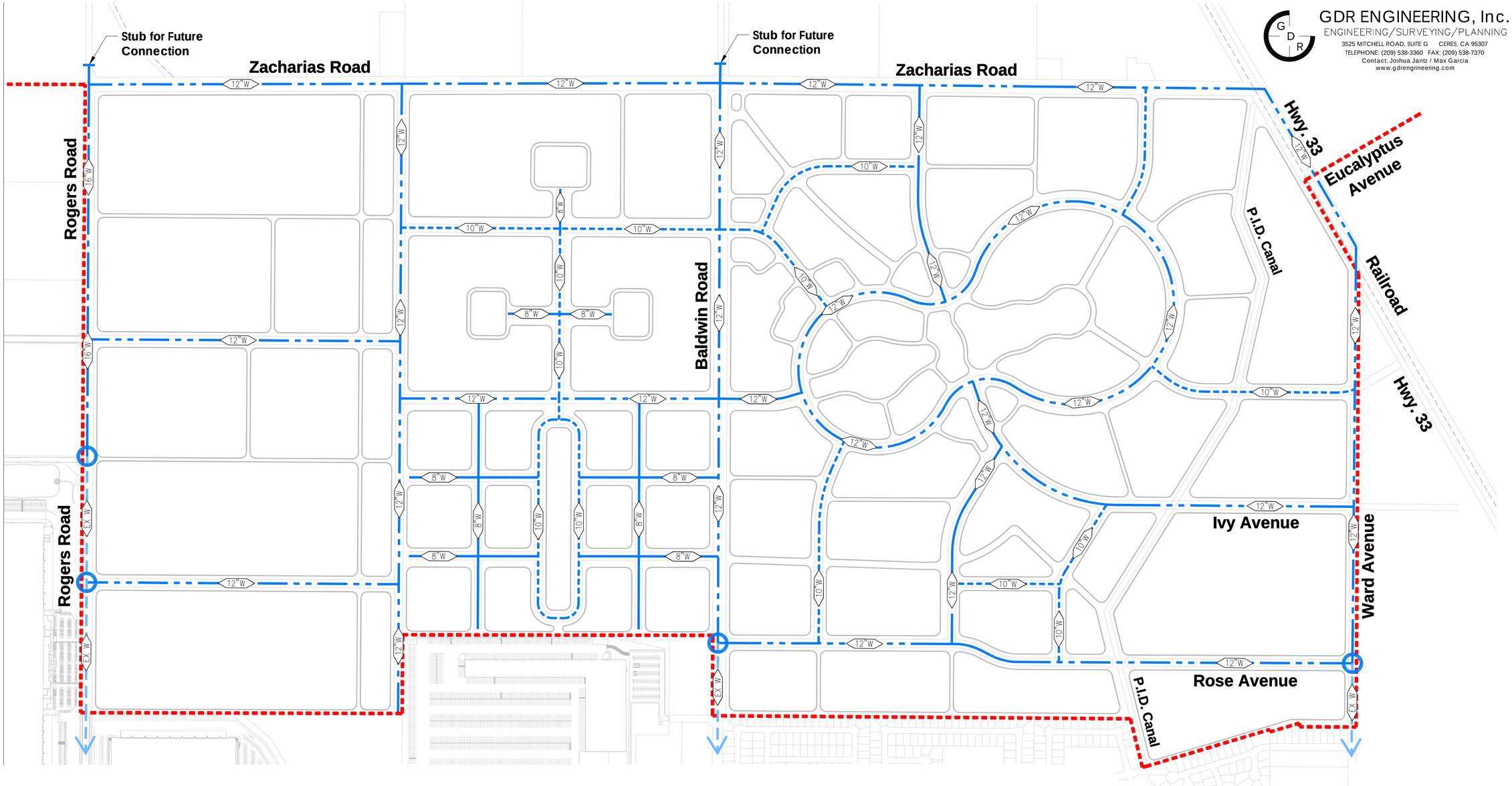

LEGEND

- City of Patterson
- Existing Water Main
- Proposed 8 Inch Water Main
- Proposed 10 Inch Water Main
- Proposed 12 Inch Water Main
- Proposed 16 Inch Water Main
- Connect to Existing Water Main

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Water Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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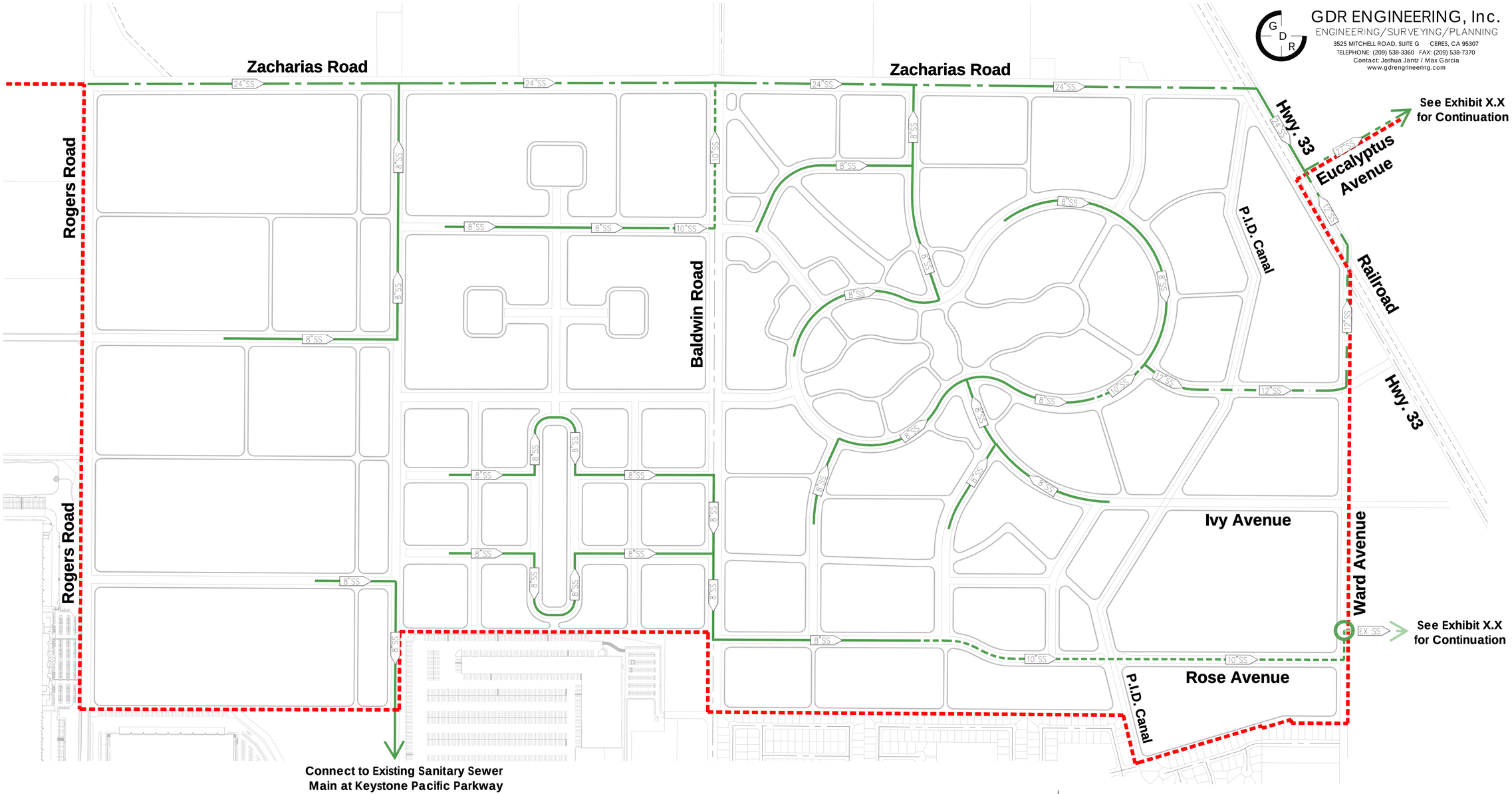

LEGEND

- City of Patterson
- Existing Sanitary Sewer Main
- Proposed 8 Inch Sanitary Sewer Main
- Proposed 10 Inch Sanitary Sewer Main
- Proposed 12 Inch Sanitary Sewer Main
- Proposed 24 Inch Sanitary Sewer Main
- Proposed 27 Inch Sanitary Sewer Main
- Connect to Existing Sanitary Sewer Main

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Sanitary Sewer Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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LEGEND

- Proposed 12 Inch Sanitary Sewer Main
- Proposed 24 Inch Sanitary Sewer Main
- Proposed 27 Inch - 36 Inch Sanitary Sewer Main

600 300 0 600 1200
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Sanitary Sewer Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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LEGEND

- Existing Sanitary Sewer Main
- Proposed 10 Inch Sanitary Sewer Main
- Connect to Existing Sanitary Sewer Main

100 50 0 100 200
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Zacharias Master Planning Area

Sanitary Sewer Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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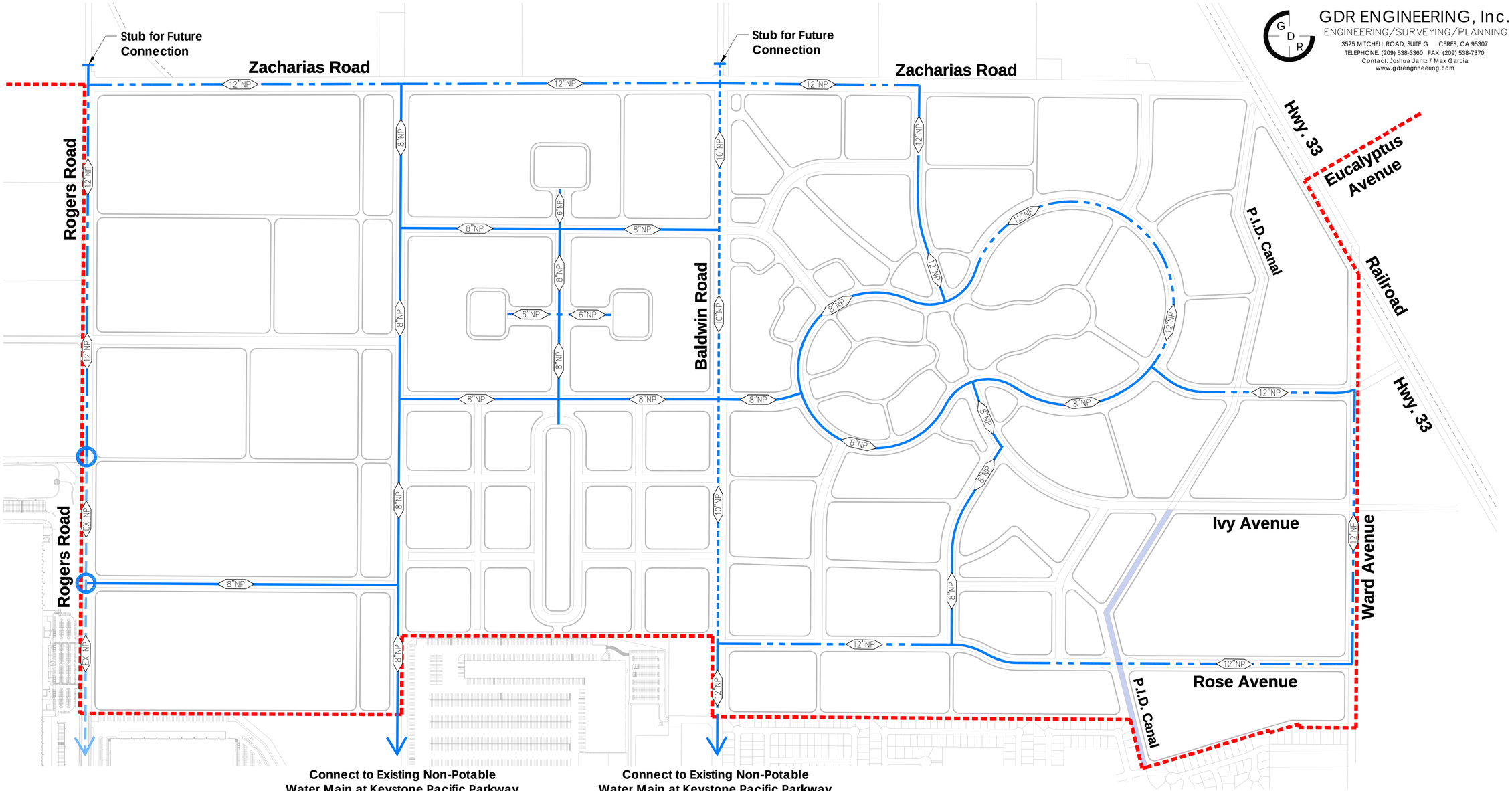

LEGEND

- City of Patterson
- Existing Non-Potable Water Main
- Proposed 6 Inch Non-Potable Water Main
- Proposed 8 Inch Non-Potable Water Main
- Proposed 10 Inch Non-Potable Water Main
- Proposed 12 Inch Non-Potable Water Main
- Connect to Existing Non-Potable Water Main

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Non-Potable Water Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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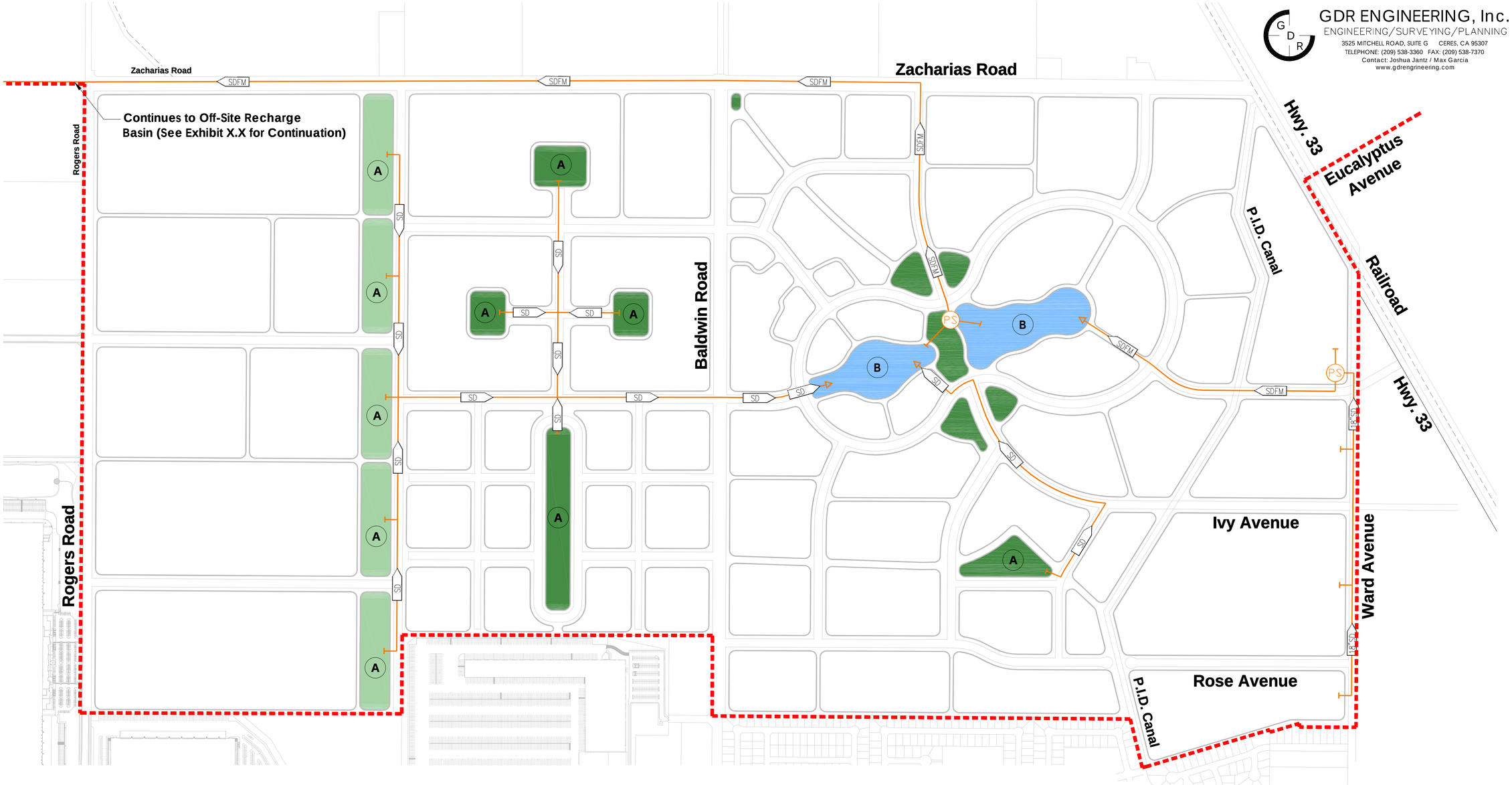

LEGEND

- City of Patterson
- Proposed Storm Drain (SD)
- Proposed Storm Drain Force Main (SDFM)
- Proposed Pump Station (PS)
- Proposed Inlet Pipe (To Basin)
- Proposed Outlet Pipe (From Basin)
- Storm Drainage Basin
- Park / Storm Drainage Basin
- Open Space / Lake / Flood Control
- (A) Temporary Retention Basin, Ultimate Detention Basin
- (B) Ultimate Storage / Wet Basin

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Storm Drain, Stormwater Recharge & FEMA Solution Master Plan

City of Patterson, Stanislaus County, California

July 22, 2019

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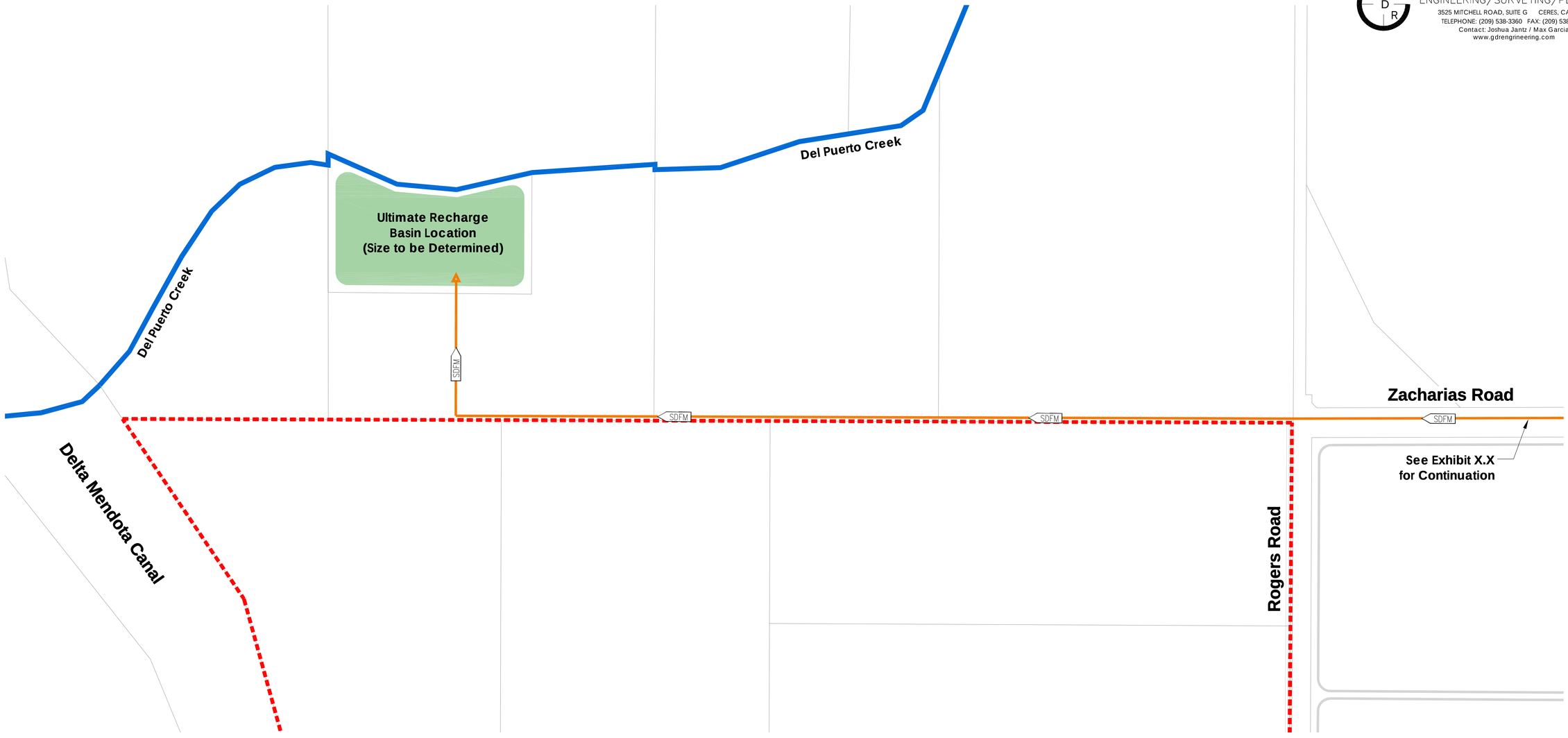

LEGEND

- City of Patterson
- SDFM — Proposed Storm Drain Force Main
- Proposed Inlet Pipe (To Basin)
- Storm Drainage Recharge Facility

200 100 0 200 400
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Storm Drain, Stormwater Recharge & FEMA Solution Master Plan

City of Patterson, Stanislaus County, California
July 22, 2019

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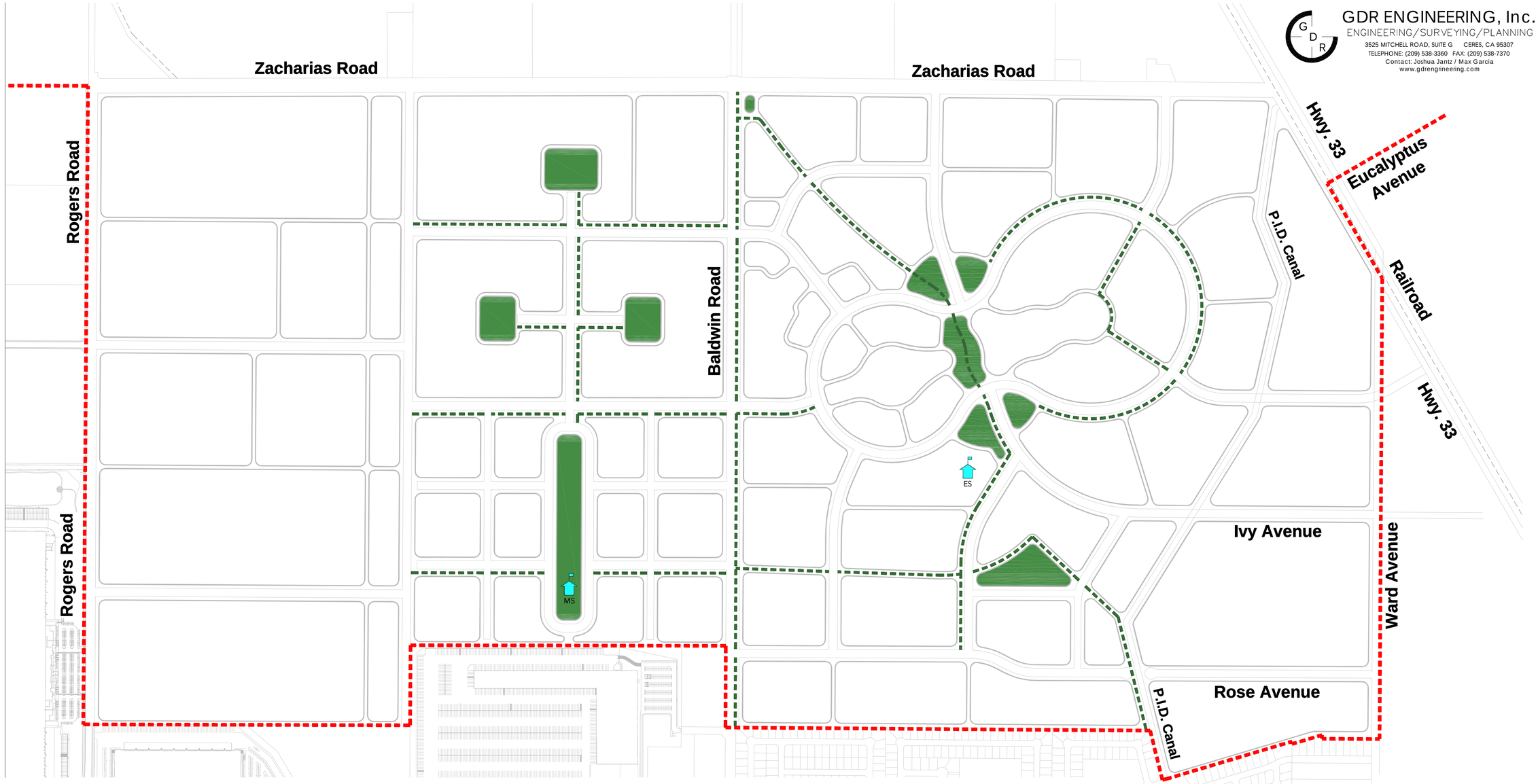
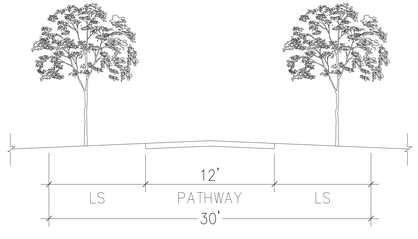


LEGEND

- **City of Patterson**
- **Bike & Pedestrian Paths (30' Wide Typical)**
- P — **Proposed Parks**
- ES — **Future ±14 Elementary School Site East of Baldwin Road** (Final Location to be Determined)
- MS — **Future ±15 Acre Middle School Site West of Baldwin Road** (Final Location to be Determined)



30' Right-of-Way
Pathway
Not to Scale

400 200 0 400 800
(If this sheet is not 24x36, it is a reduced print)

Zacharias Master Planning Area

Parks, Pedestrian Pathways & Future School Sites

City of Patterson, Stanislaus County, California
July 22, 2019

ZACHARIAS MASTER PLANNING AREA

Conceptual Lane Use Plan - Project Breakdown

July 22, 2019

	PA	Land Use	Acreage (Gross)	Density	# of Units	Building Sq. Ft.
ZACHARIAS RANCH	1	Light Industrial	66.4	~	~	1,360,500
	2	Light Industrial	36.7	~	~	845,500
	3	Light Industrial	25.4	~	~	523,500
	4	Light Industrial	31.0	~	~	720,500
	5	Light Industrial	29.5	~	~	585,250
	6	Light Industrial	62.6	~	~	1,420,500
	7	Light Industrial	65.9	~	~	1,454,250
	8	Medium Density Residential	45.9	5.5	262	~
	9	Community Commercial	22.2	~	~	350,000
	10	Medium Density Residential	40.2	5.4	223	~
	11	Medium Density Residential	39.2	5.4	215	~
	P-1	Park	4.0	~	~	~
	P-2	Park	3.0	~	~	~
	P-3	Park	3.0	~	~	~
		Bike & Pedestrian Pathways (30' Wide)	3.7	~	~	~
		ZACHARIAS RANCH - TOTAL	**478.7**	**~**	**700**	**7,260,000**

* Areas for B-1 through B-5 are INCLUDED in the Planning Area acreages. Exact size to be determined with Development of each Planning Area.

	PA	Land Use	Acreage (Gross)	Density	# of Units	Building Sq. Ft.
TPF DEVELOPMENT	12	Low Density Residential	9.0	5.1	47	~
	13	Medium Density Residential	7.9	11.0	87	~
	14	Medium Density Residential	7.8	11.0	87	~
	15	Low Density Residential	9.6	5.1	50	~
	16	Low Density Residential	10.1	5.1	53	~
	17	Medium Density Residential	7.6	11.0	84	~
	18	Medium Density Residential	7.6	11.0	84	~
	19	Low Density Residential	9.5	5.1	49	~
	20	Low Density Residential	9.1	5.1	47	~
	21	Low Density Residential	7.9	5.1	41	~
	22	Low Density Residential	7.9	5.1	41	~
	23	Low Density Residential	9.6	5.1	50	~
	P-4	Park	12.6	~	~	~
		Bike & Pedestrian Pathways (30' Wide)	3.5	~	~	~
		TPF DEVELOPMENT - TOTAL	**119.7**	**~**	**720**	**~**

	PA	Land Use	Acreage (Gross)	Density	# of Units	Building Sq. Ft.
KEYSTONE RANCH	24	Medium Density Residential	11.1	6.1	258	~
	25	Medium Density Residential	15.4			
	26	Medium Density Residential	15.7			
	27	Medium Density Residential	5.1	7.1	240	~
	28	Medium Density Residential	12.5			
	29	Medium Density Residential	16.1			
	30	High Density Residential	12.6	17.1	216	~
	P-5	Park	5.9	~	~	~
		Bike & Pedestrian Pathways (30' Wide)	2.9	~	~	~
		KEYSTONE RANCH - TOTAL	**97.3**	**~**	**714**	**~**

	PA	Land Use	Acreage (Gross)	Density	# of Units	Building Sq. Ft.
LAKESIDE HILLS DEVELOPMENT	31	High Density Residential	12.9	18.0	232	~
	32	Medium Density Residential	12.9	6.5	84	~
	33	Medium Density Residential	13.8	6.5	90	~
	34	Medium Density Residential	13.5	6.5	88	~
	35	Medium Density Residential	14.7	6.5	96	~
	36	Medium Density Residential	8.7	6.5	57	~
	37	Medium Density Residential	15.5	6.5	101	~
	38	Medium Density Residential	16.6	6.5	108	~
	39	Medium Density Residential	11.3	6.5	73	~
	40	Medium Density Residential	13.0	6.5	85	~
	41	Medium Density Residential	19.3	6.5	125	~
	42	Medium Density Residential	19.7	6.5	128	~
	43	Medium Density Residential	15.2	6.5	99	~
	44	Medium Density Residential	13.1	6.5	85	~
	45	Medium Density Residential	12.5	6.5	81	~
	46	Medium Density Residential	9.9	6.5	64	~
	47	Medium Density Residential	11.5	6.5	75	~
	48	Medium Density Residential	6.2	6.5	40	~
	49	Medium Density Residential	10.2	6.5	66	~
	50	Mixed Use	2.6	10.5	26	50,500
	51	Mixed Use	2.7	10.5	27	48,500
	52	Mixed Use	3.0	10.5	31	58,500
	53	Mixed Use	3.4	10.5	35	61,500
	54	Medium Density Residential	14.6	6.5	95	~
	55	Mixed Use	6.3	10.5	66	113,500
	56	Mixed Use	4.1	10.5	43	74,000
	57	Mixed Use	5.4	10.5	57	98,500
	58	High Density Residential	5.0	18.0	90	~
	59	Medium Density Residential	12.1	6.5	79	~
	60	Medium Density Residential	13.6	6.5	88	~
	61	Medium Density Residential	16.5	6.5	107	~
	P-6	Park	4.2	~	~	~
	P-7	Park	2.5	~	~	~
	P-8	Park	10.4	~	~	~
	P-9	Park	2.6	~	~	~
	P-10	Park	3.5	~	~	~
	P-11	Park	1.1	~	~	~
		Bike & Pedestrian Pathways (30' Wide)	10.2	~	~	~
	OS-1	Open Space / Lake	5.4	~	~	~
	OS-1	Open Space / Lake	8.0	~	~	~
		LAKESIDE HILLS DEVELOPMENT - TOTAL	**387.7**	**~**	**2,521**	**505,000**
IVY ROSE GARDENS	62	Low Density Residential	34.7	3.0	104	~
	63	Low Density Residential	26.4	3.0	79	~
	64	Low Density Residential	55.3	3.0	166	~
	65	Low Density Residential	27.3	3.0	82	~
		IVY ROSE GARDENS - TOTAL	**143.7**	**3.0**	**431**	**~**

PROJECT SUMMARY BY DEVELOPMENT					
Development		Acreage (Gross)	Density	# of Units	Building Sq. Ft.
	ZACHARIAS RANCH	478.7	~	700	7,260,000
	TPF DEVELOPMENT	119.7	~	720	~
	KEYSTONE RANCH	97.3	~	714	~
	LAKESIDE HILLS DEVELOPMENT	387.7	~	2,521	505,000
	IVY ROSE GARDENS	143.7	3.0	431	~
ZACHARIAS MASTER PLANNING AREA - PROJECT TOTAL		1227.1	~	5,086	7,765,000

PROJECT SUMMARY BY LAND USE					
Development		Acreage (Gross)	Density	# of Units	Building Sq. Ft.
	LIGHT INDUSTRIAL	317.5	~	~	6,910,000
	COMMUNITY COMMERCIAL	22.2	~	~	350,000
	LOW DENSITY RESIDENTIAL	216.4	3.7	809	~
	MEDIUM DENSITY RESIDENTIAL	526.5	6.6	3,454	~
	HIGH DENSITY RESIDENTIAL	30.5	17.6	538	~
	MIXED USE	27.5	10.4	285	505,000
	PARK / BIKE & PEDESTRIAN PATHWAYS	73.1	~	~	~
	OPEN SPACE / LAKE	13.4	~	~	~
ZACHARIAS MASTER PLANNING AREA - PROJECT TOTAL		1227.1	~	5,086	7,765,000

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Contact: Joshua Jantz / Max Garcia
www.gdrengineering.com

ZACHARIAS ROAD
ROGERS ROAD
BALDWIN ROAD
WARD AVENUE
SPERRY AVENUE
SPERRY AVENUE

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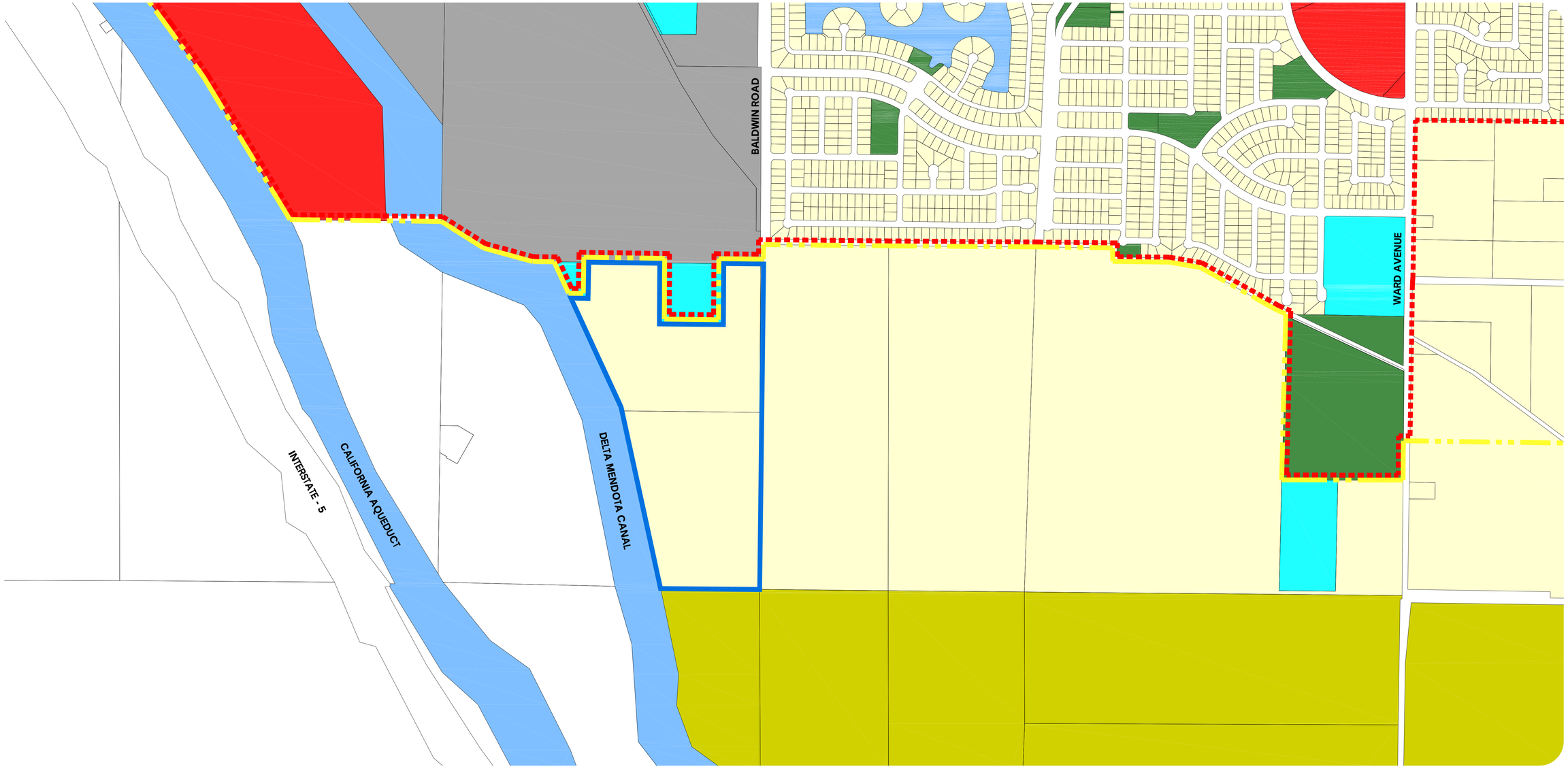
LEGEND

- City of Patterson General Plan
- City of Patterson
- Baldwin Ranch Master Planning Area

Baldwin Ranch Master Planning Area

Location Map

City of Patterson, Stanislaus County, California
July 22, 2019



LEGEND

- Low Density Residential
- Estate Residential
- Light Industrial
- Public / Quasi-Public
- General Commercial
- Park / Open Space
- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence / Baldwin Ranch Master Planning Area

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Baldwin Ranch Master Planning Area

Existing General Plan Designations

City of Patterson, Stanislaus County, California
July 22, 2019

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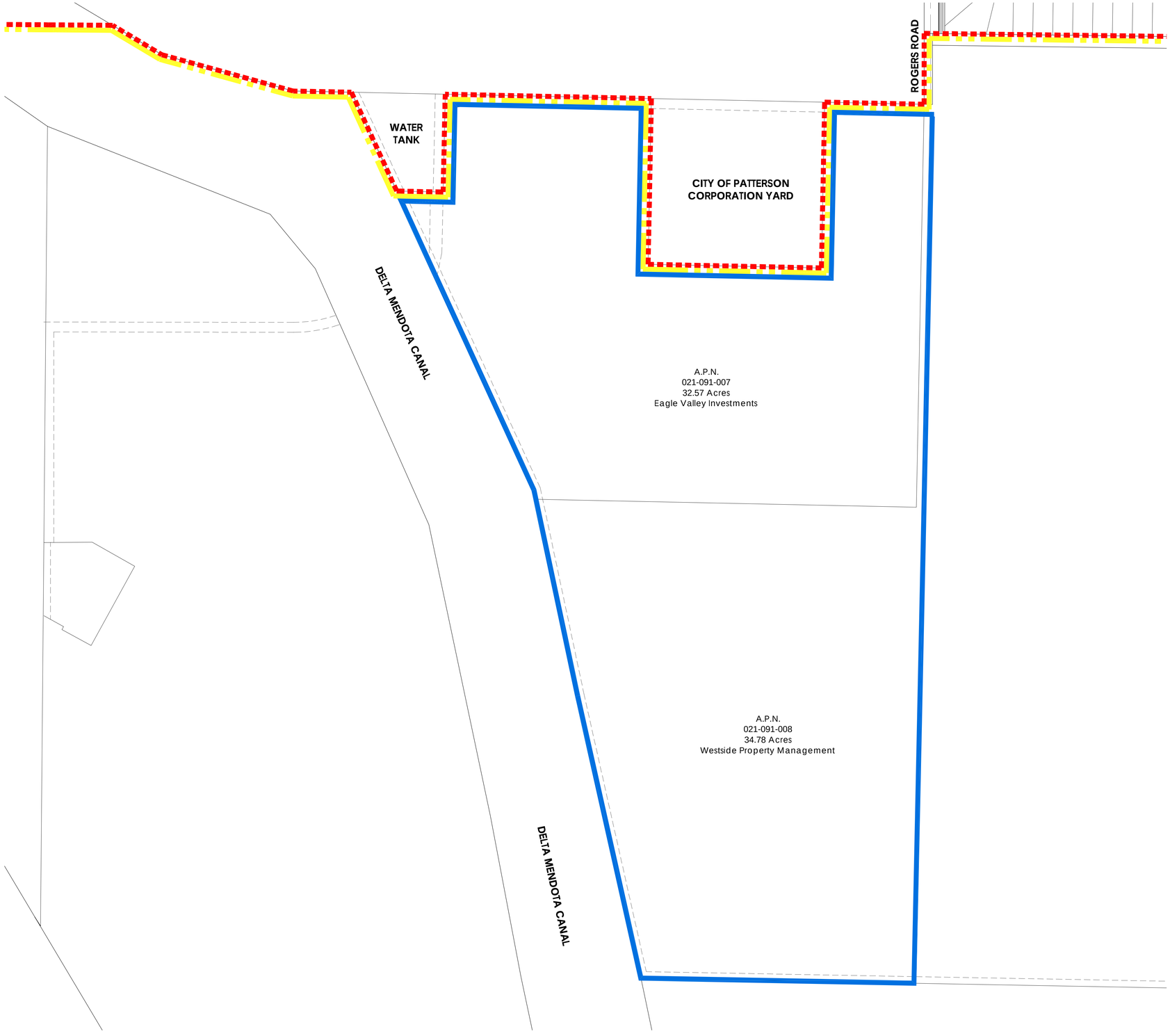
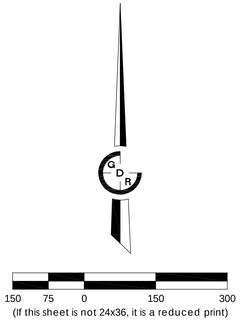




LEGEND

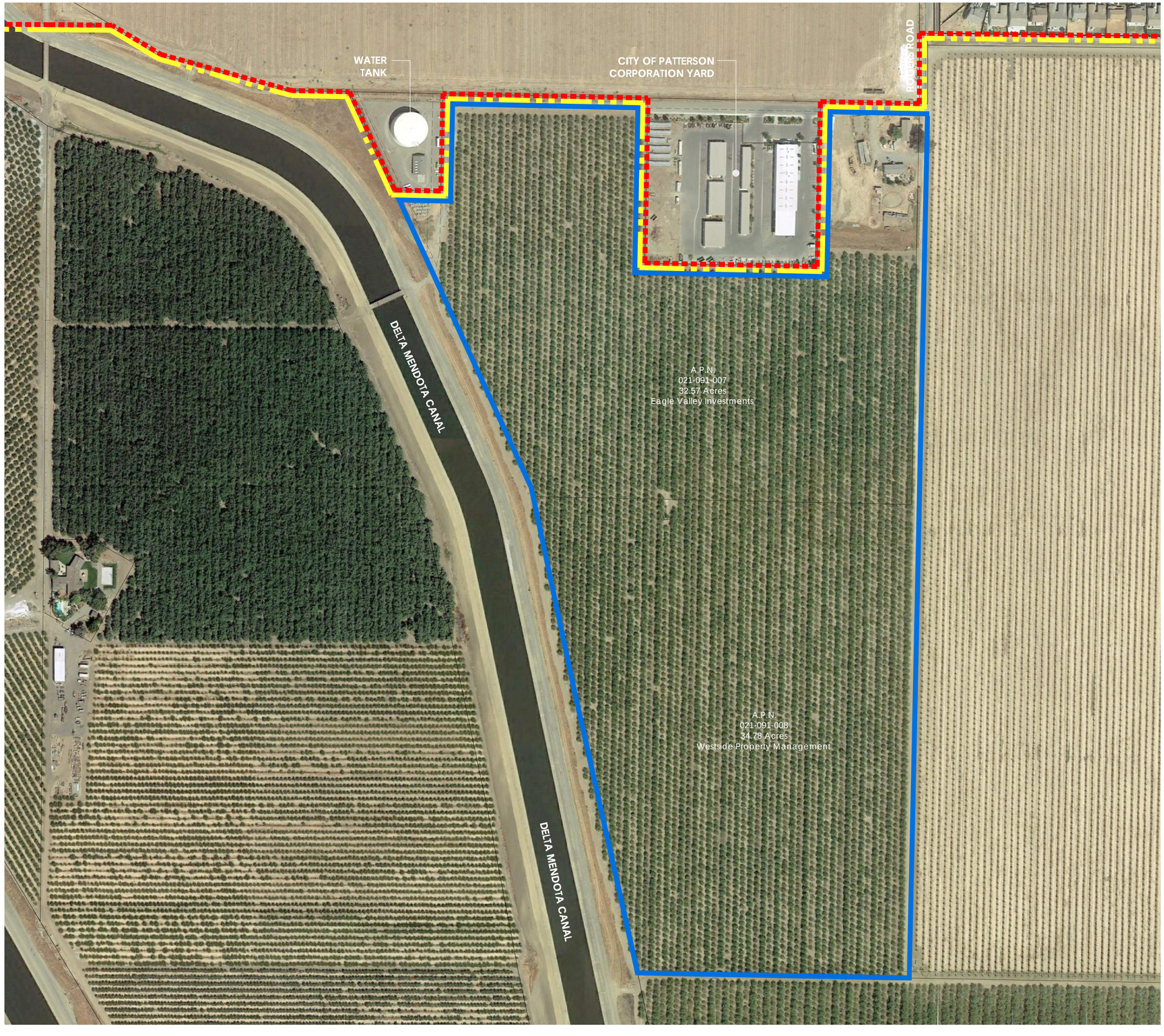
- **Existing City Limits**
- **Existing Sphere of Influence**
- **Proposed Sphere of Influence**

* Acreages based on Assessors Maps

Baldwin Ranch Master Planning Area

Land Owners Information

City of Patterson, Stanislaus County, California
July 22, 2019



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LEGEND

- Existing City Limits
- Existing Sphere of Influence
- Proposed Sphere of Influence

* Acreages based on Assessors Maps

Baldwin Ranch Master Planning Area

Land Owners Information with Google Image Overlay

City of Patterson, Stanislaus County, California
July 22, 2019

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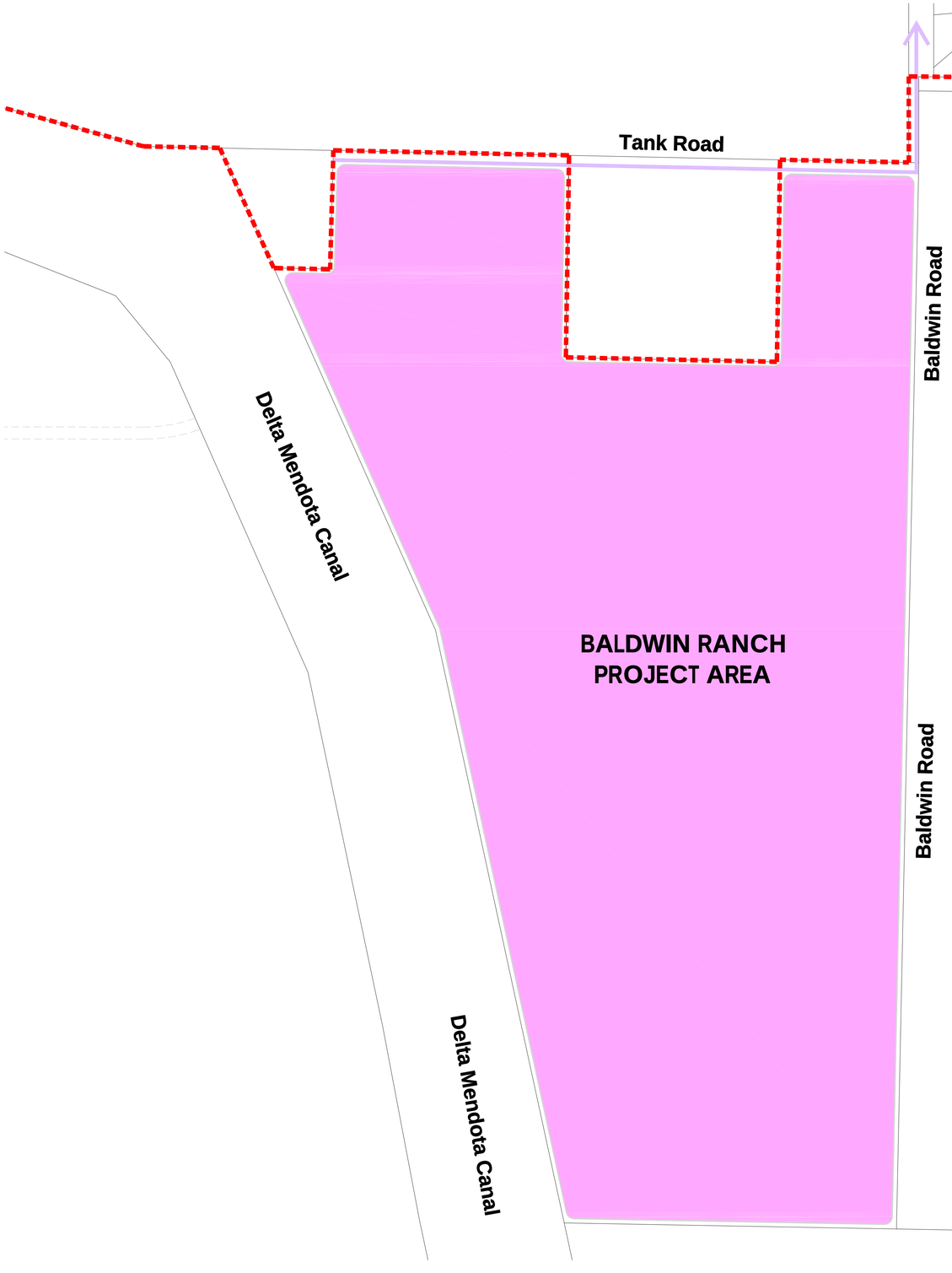

DEVELOPMENT BREAKDOWN

	Baldwin Ranch	±65.9 Gross Acres	±305 Units
	Existing Roads		
	City of Patterson Limits		

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Baldwin Ranch Master Planning Area

Development Area Breakdown

City of Patterson, Stanislaus County, California
July 22, 2019

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DEVELOPMENT FRAMEWORK

- L — **Low Density Residential** (1.1 - 5.0 U.P.A.)
- P — **Proposed Parks / Basin / Landscape Buffer**
- **Existing Roads**
- **New Minor Roads**
- **City of Patterson Limits**

BALDWIN RANCH

PA	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
1	Low Density Residential	8.8	5.0	44	~
2	Low Density Residential	13.9	5.0	70	~
3	Low Density Residential	15.0	5.0	75	~
4	Low Density Residential	23.2	5.0	116	~
P-1	Park	2.0	~	~	~
P-2	Park / Basin	2.0	~	~	~
P-3	Landscape Buffer / Bike Path	1.0	~	~	~
	BALDWIN RANCH - TOTAL	**65.9**	**~**	**305**	**~**

PROJECT SUMMARY BY LAND USE

Color	Land Use	Acreage (Gross)	Density	# of Units	Bldg. Sq. Ft.
	Low Density Residential	60.9	5.0	305	~
	Park	5.0	~	~	~
	PROJECT TOTAL	**65.9**	**~**	**305**	**~**

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Baldwin Ranch Master Planning Area

Conceptual Land Use Plan

City of Patterson, Stanislaus County, California
October 3, 2019

APPENDIX B: ZACHARIAS AND BALDWIN MASTER PLAN AREA DEMAND CALCULATION BY PLANNING AREA

ZACHARIAS RANCH PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Mid-Density Residential	129.5	1.1	142.5			0.0	
Light Industrial	317.5	0.4	127.0		0.47	148.7	
Community Commercial	22.2	0.8	17.8		0.47	10.4	
Parks and Recreation	9.5	2.6	24.7		3.75	35.6	
Total	478.7	TOTALS	311.9	AC-FT		194.8	AC-FT
TOTAL POTABLE DEMAND			311.9	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			194.8	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

TPF DEVELOPMENT PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Low-Density Residential	58.7	1.9	111.5			0.0	
Mid-Density Residential	37.1	1.1	40.8			0.0	
Parks and Recreation	9.9	2.6	25.7		3.75	37.1	
Public / Institutional	14.0	1.1	15.4		2.34	32.8	
Total	119.7	TOTALS	193.5	AC-FT		69.9	AC-FT
TOTAL POTABLE DEMAND			193.5	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			69.9	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

KEYSTONE RANCH PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Mid-Density Residential	75.9	1.1	83.5			0.0	
High-Density Residential	12.6	2.5	31.5			0.0	
Parks and Recreation	8.8	2.6	22.9		3.75	33.0	
Total	97.3	TOTALS	137.9	AC-FT		33.0	AC-FT
TOTAL POTABLE DEMAND			137.9	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			33.0	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

LAKESIDE HILLS PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Mid-Density Residential	281.6	1.1	309.8			0.0	
High-Density Residential	18.0	2.5	45.0			0.0	
Mixed Use	28.2	2.2	62.0		0.47	13.2	
Parks and Recreation	31.5	2.6	81.9		3.75	118.1	
Lakes (Evaporation Only)	13.4	0.0	0.0			116*	
Public / Institutional	15.0	1.1	16.5		2.34	35.1	
Total	387.7	TOTALS	515.2	AC-FT		282.4	AC-FT
TOTAL POTABLE DEMAND			515.2	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			282.4	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

*Based on Evaporation Rate Calculation by Woodard & Curran for Draft Water Supply Assessment, Dated October 2019, Factored up to 13.4 Gross Acres Area.

IVY ROSE GARDENS PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Low-Density Residential	143.7	1.9	273.0			0	
Total	143.7	TOTALS	273.0	AC-FT		0.0	AC-FT
TOTAL POTABLE DEMAND			273.0	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			0.0	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

BALDWIN RANCH PLANNING AREA WATER DEMAND

Land Use	Gross Area (Acres)	Potable Water Factor*	Total Water Demand		Non-Potable Water Factor*	Total Water Demand	
Low-Density Residential	60.9	1.9	115.7			0.0	
Parks and Recreation	5.00	2.6	13.0		3.75	18.7	
Total	65.9	TOTALS	128.7	AC-FT		18.7	AC-FT
TOTAL POTABLE DEMAND			128.7	AC-FT/YR			
TOTAL NONPOTABLE DEMAND			18.7	AC-FT/YR			

Water Supply Factors Based on the City of Patterson 2018 Water Master Plan, and the Woodard & Curran, Inc. Draft Water Supply Assessment, Dated October 2019.

OVERALL WATER DEMAND SUMMARY

Planning Area	Potable Demand (AC-FT/YR)	Potable Demand (MGD)*	Non-Potable Demand (AC-FT/YR)	Non-Potable Demand (MGD)*
Zacharias Ranch	312	0.28	195	0.17
TPF Development	193	0.17	70	0.06
Keystone Ranch	138	0.12	33	0.03
Lakeside Hills	515	0.46	282	0.25
Ivy Rose Gardens	273	0.24	0	0.00
Baldwin Ranch	129	0.11	19	0.02
Total	**1560**	**1.39**	**599**	**0.53**

*Million Gallons Per Day

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COMMITMENT & INTEGRITY DRIVE RESULTS

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