

Appendix K

Teal Club Development Infrastructure Review



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Teal Club Development Infrastructure Review

May 2007

Prepared for

City of Oxnard
251 S. Hayes Avenue
Oxnard, CA 93030

K/J Project No. 0689075

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Section 1: Background and Purpose

1.1 Background

The Teal Club project consists of approximately 175.14 acres located in the City of Oxnard. The proposed Specific Plan development is bounded by Doris Road and Teal Club Drive to the North and South, respectively, and by Ventura Road and Patterson Road to the East and West, respectively. Figure 1-1 provides the location of the Teal Club development. Approximately 33.23 acres of the total site will be dedicated Park and Open Space. The project developer is SunCal Companies and as currently proposed, the project consists of:

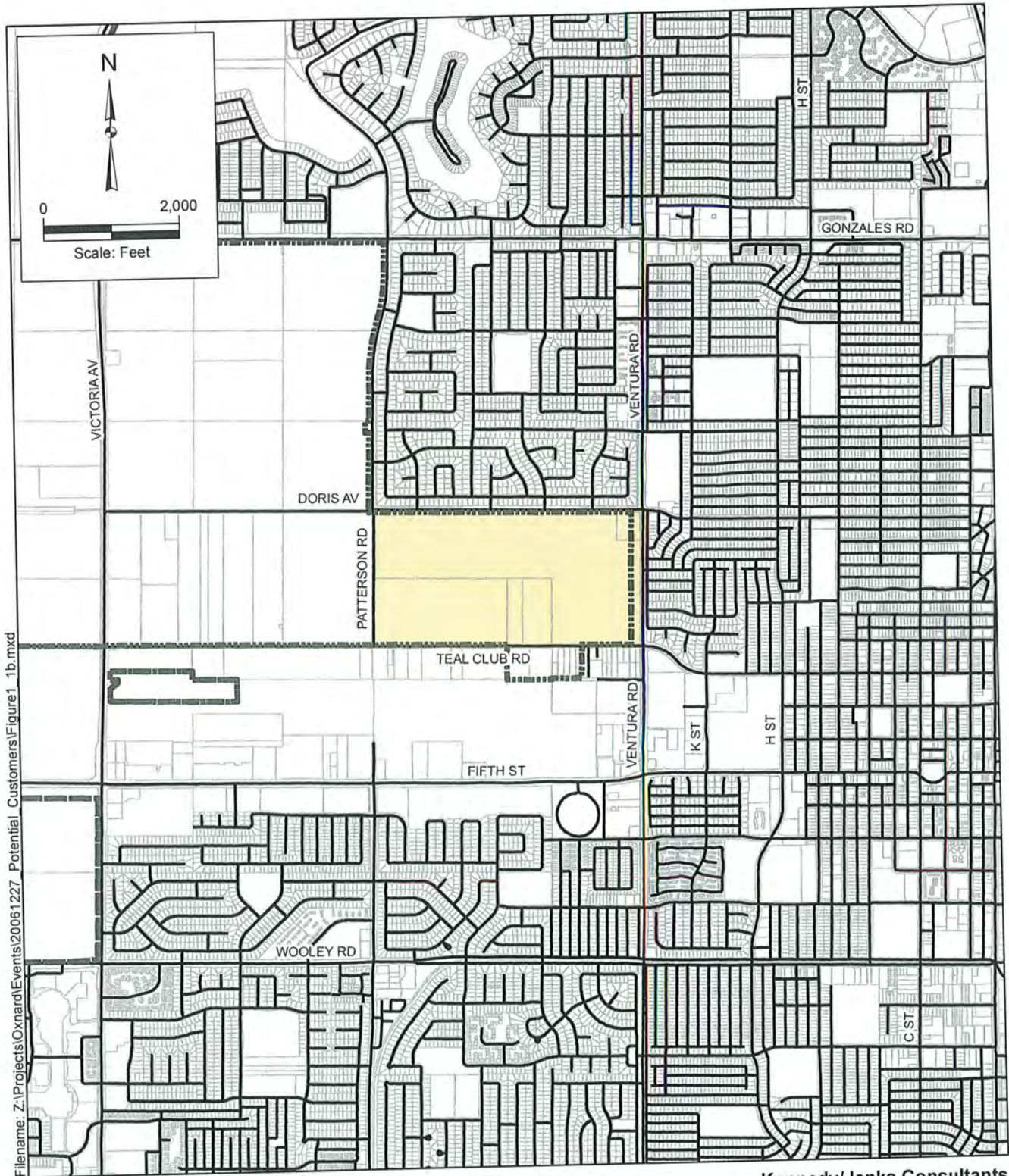
- Up to 261 single family residential units, including 60 feet, 50 feet and 40 feet wide lots;
- Up to 895 multi-family residential units, including courtyard, patio, cottage, and town home styles;
- 28.33 acres of landscaped park and open space;
- 7.76 acres for a school;
- 1.74 acres for a firehouse; and
- 2.75 acres of commercial space

The project conceptual land use plan is shown on Figure 1-2. Figure 1-3 shows the conceptual open space conceptual plan.

If approved, and as indicated by the developer, build-out of the project will take approximately five (5) years from the approval (portion controlled by the developer), with the first units projected for occupancy within a year. There is approximately one-third of the development that is within the Specific Plan but not controlled by SunCal and the development schedule for that portion may be more extended.





A Specific Plan Environmental Impact Report (EIR) has been prepared and was under public review in September 2005. Currently, the project is being "proposed" to the City's Planning Department.

The City of Oxnard will provide water and wastewater services from existing backbone/trunk systems. There also is the expectation that the City will provide recycled water from a backbone system to be developed in the future.



Filename: Z:\Projects\Oxnard\Events\2006\1227_Potential_Customers\Figure1_1b.mxd

Legend

-  City Limits
-  Streets
-  Parcel Boundary
-  Teal Club Development

Kennedy/Jenks Consultants

City of Oxnard
Teal Club Infrastructure Report
Oxnard, California

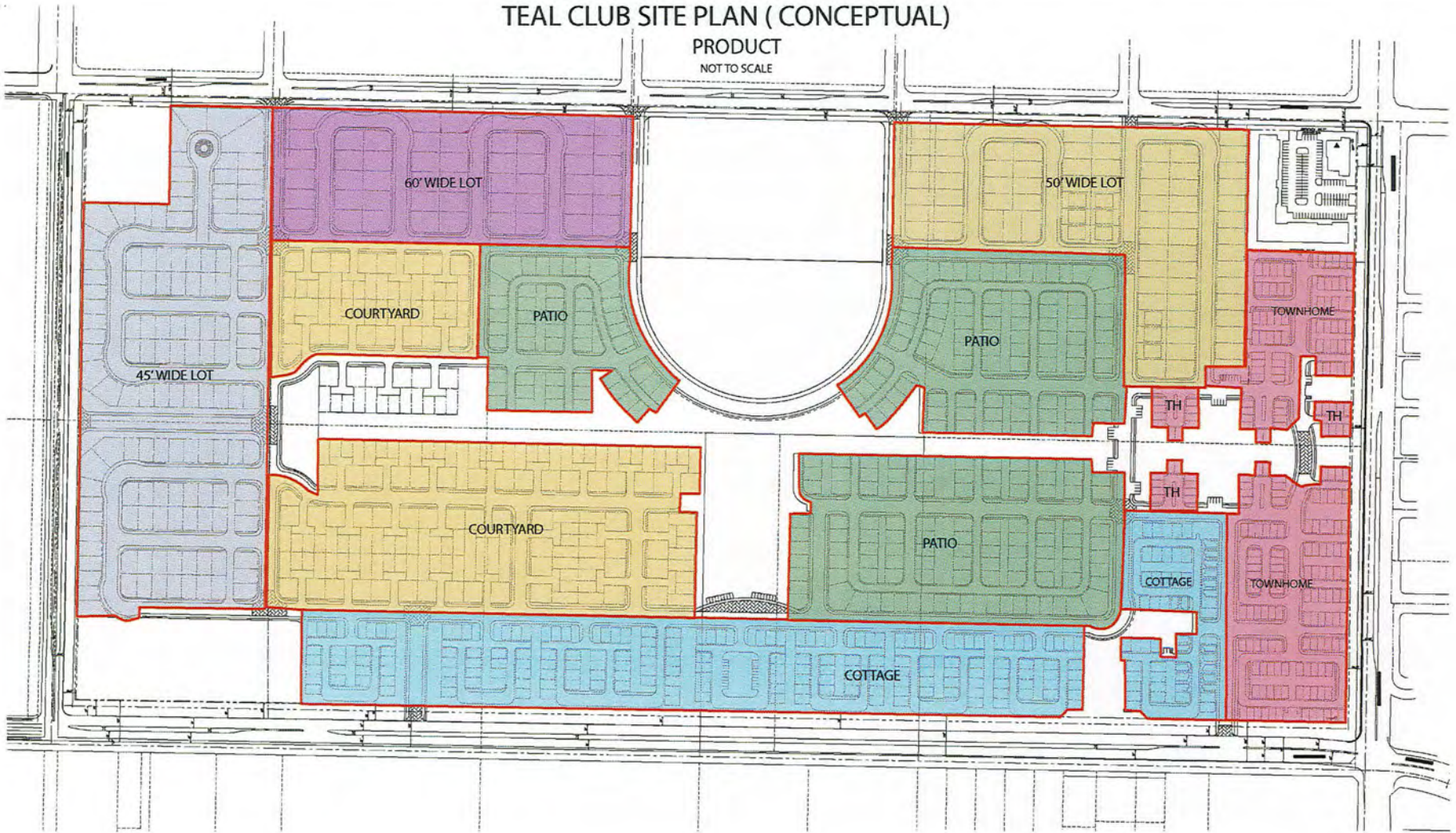
Development Location

KJ 0689075
May 2007

Figure 1-1

TEAL CLUB SITE PLAN (CONCEPTUAL)

PRODUCT
NOT TO SCALE



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CITY OF OXNARD
TEAL CLUB DEVELOPMENT
INFRASTRUCTURE REVIEW

TEAL CLUB LAND USE

K/J 0689075
JANUARY 2007

FIGURE 1-2

TEAL CLUB SITE PLAN (CONCEPTUAL)

PARK & OPEN SPACE
NOT TO SCALE



Kennedy/Jenks Consultants
CITY OF OXNARD
TEAL CLUB DEVELOPMENT
INFRASTRUCTURE REVIEW
TEAL CLUB OPEN SPACE
K/J 0689075
JANUARY 2007
FIGURE 1-3

1.2 Technical Memorandum Purpose

The purpose of this Technical Memorandum (TM) is to evaluate the ability of the City's existing and/or planned water, wastewater, and recycled water systems to accommodate the planned development of the Teal Club Specific Plan area as well as to provide specific connection and/or system extension requirements.

This review is part of the orderly development of properties within the City of Oxnard and is precedent to the development of specific conditions of development. The findings and recommendations are based upon current understanding of the capabilities of the existing and/or planned systems. There is no specific representation as to the actual conditions in the future beyond those based on the best available information.

1.3 Prior and Current Supporting Reports

The key documents used in this evaluation are:

- A. 2003 Water Master Plan, Kennedy/Jenks Consultants (Kennedy/Jenks). This plan examined the capabilities and requirements for the City's water system. Analysis was for both current and ultimate development of properties within the City.
- B. 2005 Urban Water Management Plan (UWMP by Kennedy/Jenks). This plan, submitted per State Guidelines addresses overall water supply for the period 2005 through 2030 available to meet water demand projections for that same period of time. The significance is that all anticipated land uses were included in the analysis, including the specific plan areas, and therefore findings have application to a variety of projects.
- C. 2005 Water Supply Assessment for Teal Club (Kennedy/Jenks). This assessment takes the base information from the 2005 UWMP and provides specific findings of long-term supply adequacy for domestic water purposes. It doesn't address specific pipeline infrastructure to and within the Teal Club.
- D. 2006 Wastewater Master Plan (Draft, Kennedy/Jenks). This plan, which is well underway, examines the capabilities and requirements for the City's wastewater trunk sewer pipelines. Analysis was for both current and ultimate development of properties within the City. It reports the overall capabilities of the City's Oxnard Wastewater Treatment Plant, but does not perform any evaluation of that component.
- E. 2007 Recycled Water Facilities Plan (Draft, Kennedy/Jenks). This plan, which has been submitted to the State of California examines at a concept level the planned recycled water system (city-wide and outside the City). Discussed in greater detail is the "Recycled Water Backbone System" which extends from the Advanced Water Purification Facility (AWPF) adjacent to the Oxnard Wastewater Treatment Plant (OWTP) generally northerly along Ventura Road to the immediately north of the 101 Freeway.

- F. 2007 Water Master Plan (Draft, Kennedy/Jenks). This plan addresses changes in the Water Master Plan since the 2003 Master Plan report. Most important is the incorporation of the GREAT (Groundwater Recovery, Enhancement and Treatment) Program and its impact on water facilities, particularly the blending stations and two desalters. .

Section 2: Description of the Project

2.1 Description of Development

Planned for the Teal Club Specific Plan area are the land uses described in Section 1.1.

2.2 Ownership/Developers

The developer of the Teal Club property is:

The Developer name and address is:
LBREP/L-SunCal Patterson Ranch, LLC
(SunCal Companies)
25152 Springfield Court, Suite 300
Santa Clarita, CA 91355

SunCal does not own the property at this point; the ownership of 113 acres of the site is maintained by the Borchard family. There are three additional separate ownerships that make up the balance of the 175 acres.

2.3 Phasing and Schedule

The developers of the Teal Club have indicated that the entitlement process will be completed in 2008 and development will begin in 2009. Because the developers control approximately two-thirds of the property with the other one-third being under ownership by others, the development schedule is only reasonably known for the former, projected to be over a five (5) year period. It is likely that the development of the remainder will extend beyond that point.

Section 3: Evaluation of Potable Water Facilities

3.1 Demand Requirements

Table 3-1 presents an estimate of the demand of the Teal Club Development as indicated in the Water Supply Assessment report prepared by Kennedy/Jenks.

**TABLE 3-1
DEMAND ESTIMATE FOR THE TEAL CLUB DEVELOPMENT**

Sector	Acres or No. of Students	Demand^(a) (gpad)	Demand Total (AFY)
Single Family Residences	41.04	2,100	97
Multi-Family Residences	73.7	2,800	232
Elementary School	650	20	15
Commercial	2.75	1,500	5
Total Potable Water Demand			347
Landscape ^(b)	33.23	3,124	117
Total Recycled Water Demand ^(b)			117
Total AFY			464

Notes:

- (a) Unit demands for the school and for landscaping are as provided in the 2005 UWMP all others are from Table 3-6 of the 2005 Draft Wastewater Master Plan.
- (b) Recycled water will not be available until late 2009/early 2010 at the earliest. Therefore, the developer will need to plan for landscaping to be served by domestic water up to the time when recycled water is available.

The total demand of approximately 465 acre-feet per year (AFY) for the Teal Club Development can be compared to the current (2005) demand of approximately 30,800 AFY and the projected 2030 demand of approximately 44,570 AFY for the City's total service area. Therefore in approximate numbers, The Teal Club development project represents approximately 1 percent of the 2030 projected demand and approximately 3 percent of the anticipated increased demand in the City. Although the total demand number varies slightly with the original estimate of 400 AFY it would not change the findings of the 2005 UWMP since the difference in the demands for The Teal Club Development represents approximately 1 percent of the total build-out demand and is thus well within the contingency allowances in the demand projections.

The key numbers for the City (2005) are:

- Current Water Demand (FY 2005) - Approximately 30,800 AFY.
- Projected Water Demand (2030) with the Teal Club Project - Approximately 44,570 AFY.
- Projected Demand – Teal Club Project - Approximately 465 AFY.

- Percentage of 2030 Demand for the Teal Club Project - Approximately 1 percent.
- Percentage of Demand Increase for the Teal Club Project – Approximately 3 percent.

The total water demand in terms of maximum day and peak hour usage is summarized in Table 3-2. The approach is slightly different than that taken in the Water Supply Assessment as noted in the footnotes below the table. To obtain these values, the following peaking factors are taken from the current draft Water Master Plan Update:

- Maximum day demand or MDD (ratio of the average of the maximum day demand to the yearly average day demand) equals 1.5.
- Peak hour demand or PHD (ratio of the peak hour demand to the yearly average day demand equals 2.84 (set at 1.67 times the MDD).

**TABLE 3-2
POTABLE WATER DEMANDS – PROPOSED DEVELOPMENT
(gpm unless otherwise indicated)**

Land Use Type	Annual (AFY)	Maximum Day	Peak Hour	Comment
261 Single Family Residential Units	103 AFY	105 gpm	175 gpm	(a)
895 Multi-Family Residential Units	280 AFY	260 gpm	435 gpm	(b)
School (7.8 acres)	18 AFY	20 gpm	30 gpm	(c)
Fire House (1.7 acre)	3 AFY	3 gpm	20 gpm	(d)
Commercial (2.7 acres)	9 AFY	9 gpm	15 gpm	(e)
Subtotal				
Landscape and Open Space (28.3 acres)	70 AFY	65 gpm	110 gpm	(f)
Total	483 AFY	460 gpm	800 gpm	

Notes:

- (a) Assuming 3.2 persons per unit and 110 gpcd on average, recognizing that this type of development will have relatively low amounts of exterior water use aside from the common areas that are separately reported. The result is as shown. The total use is close to that reported in the Water Supply Assessment report.
- (b) Assuming 2.8 persons per unit and 100 gpcd on average, recognizing that this type of development will have relatively low amounts of exterior water use aside from the common areas that are separately reported. The result is as shown. The total use is somewhat higher than that reported in the Water Supply Assessment report, which is acceptable from the standpoint of sizing facilities.
- (c) Assuming 650 students and 20 gpd/student and 9 months = 10.9 AFY and add 3 acres for turf/landscaping at 2.5 AFY/Acre = 7.5 AFY. Total is 18.4 AFY which is a relatively close match to that in the Water Supply Assessment report.
- (d) Reasonable assumptions
- (e) Reasonable assumptions
- (f) Based on 2.5 AFY/Acre. This is perhaps on the low side of the potential range. The upper end may be on the order of 90 AFY.

3.2 Design Criteria

The water service pressure requirements used in the 2003 Water Master Plan are as follows:

- Minimum allowable pressure at peak hour demand: 40 psi*
- Minimum allowable pressure at maximum day with fire flow: 20 psi**
- Maximum allowable service pressure: 125 psi

To avoid excessive velocity and headloss within the distribution system, the following pipeline design criteria is also recommended:

- Maximum allowable velocity at maximum day with fire flow: 15 ft/s
- Maximum allowable headloss: 15 ft/1000 ft
- Hazen-Williams C factor: 130

* While listed as a minimum criteria, it is recognized that pressures at or near to 40 psi are quite marginal.

** As required by the Fire Department.

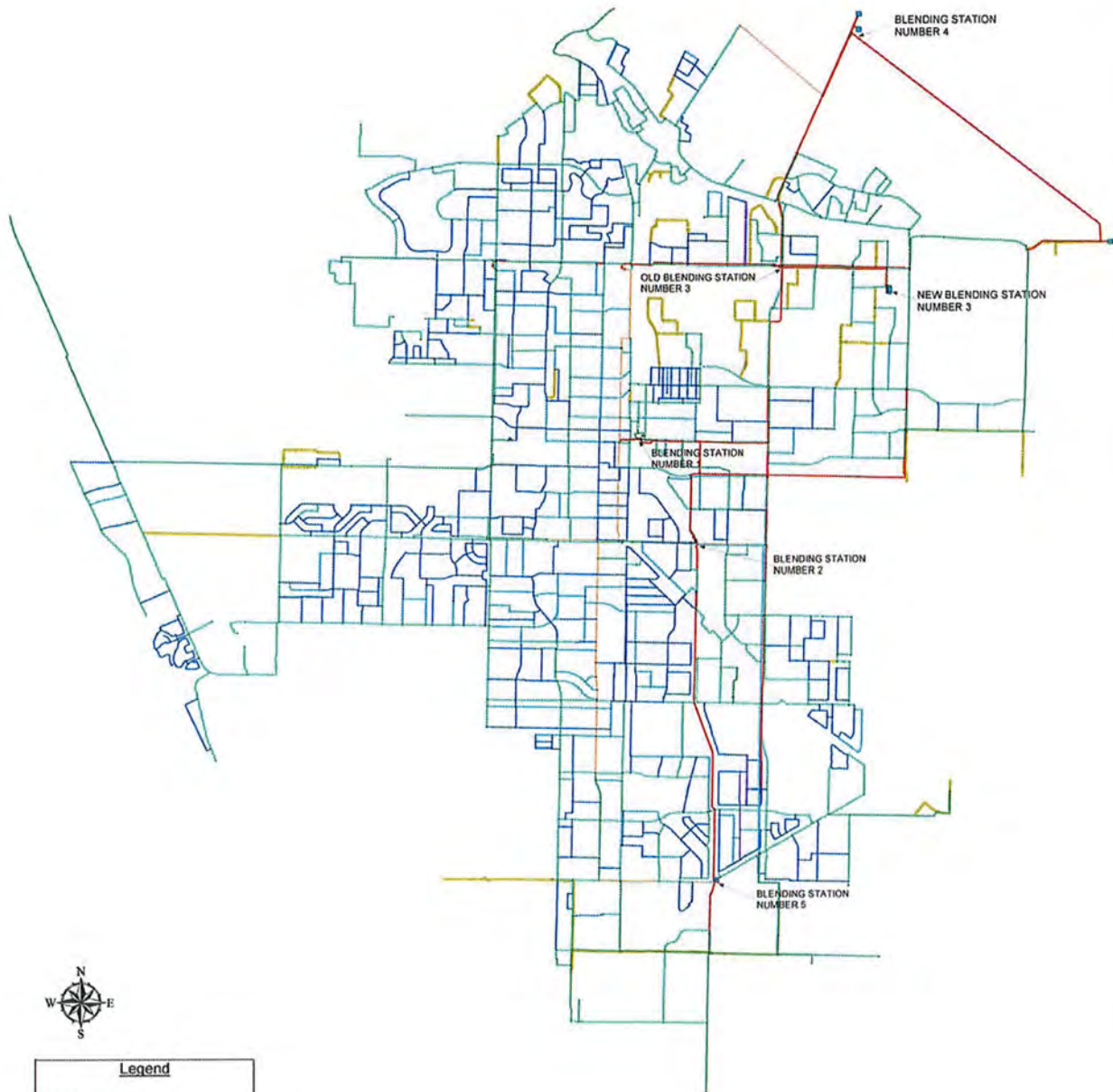
3.3 Water Infrastructure

The Teal Club is surrounded by the following streets:

- Ventura Road – With a 16-inch pipelines and a 10-inch pipeline
- Teal Club Road – With a 12-inch pipeline
- Doris Avenue – With a 12-inch pipeline

The primary sources of water will be Blending Station Nos. 1 and 3, located to the east. The east-west pipelines that will serve the Teal Club and shall include the 36-inch pipeline in Gonzales Road.

Figure 3-1 shows an overview of City Water Facilities. Figure 3-2 illustrates the immediately adjacent pipelines.



Legend	
PIPE DIAMETER	
	1" - 6"
	7" - 8"
	9" - 12"
	13" - 18"
	19" - 24"
	25" - 45"
	Proposed Additional Pipes

Kennedy/Jenks Consultants

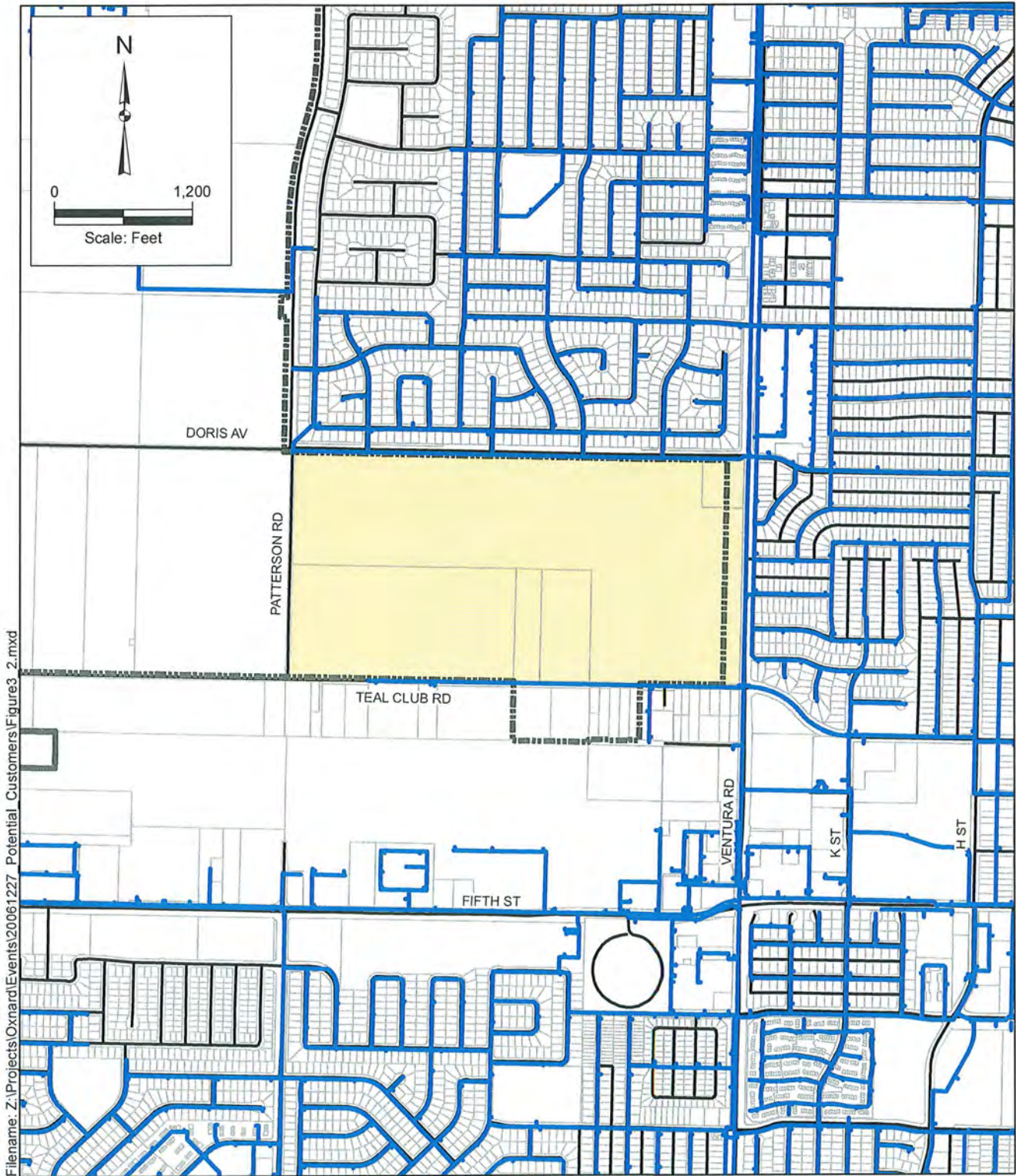
CITY OF OXNARD
Teal Club Develop
Infrastructure Review

OVERVIEW OF CITY AND
REGIONAL WATER FACILITIES

K/J 0689075
MAY 2007

FIGURE 3-1

G:\PROJECTS\2005\058901\420051\UWMP\FIGURES FOR REPORT\FIGURE2-1.PPT



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Legend

- Water Pipeline
- City Limits
- Streets
- Parcel Boundary
- Teal Club Development

Kennedy/Jenks Consultants

City of Oxnard
Teal Club Infrastructure Report
Oxnard, California

Current Water System

KJ 0689075
May 2007

Figure 3-2

3.4 City Water Supply and Backbone Facilities – Other Than Fire Flow

As part of the current water master plan, a computer model has been created for the purposes of simulating water system performance under varying conditions. Aside from the fire flow scenario, the most significant conditions are the following:

- Maximum day demand or the average demand conditions during the single day of the year with the maximum demand.
- Peak hour demand or the average demand during the single highest demand period of the year.

The most significant condition is the performance at ultimate build-out conditions, which for purposes of the water model is assumed to be in the period 2025 through 2030.

As part of this review, Kennedy/Jenks has determined through the existing water model that normal flows are available as indicated in Table 3-3.

**TABLE 3-3
DOMESTIC WATER AVAILABILITY TO TEAL CLUB^(a)**

Condition	Assumed Teal Club Flow, gpm	Pressure, psi^(b)
<i>Existing System</i>		
- Maximum day	460 gpm	
- Peak Hour	800 gpm	
<i>Ultimate System</i>		
- Maximum Day	460 gpm	58 psi
- Peak Hour	800 gpm	39-43 psi

Notes:

- (a) Along Ventura Road adjacent to the proposed the Teal Club Development.
- (b) Pressure at ground line. Pressures within the project will be slightly less due to pipeline, meter and service line losses. Also pressures within individual structures on upper floors will be slightly less due to the elevation difference.

From Table 3-3 it is noted that under the ultimate condition, domestic pressures during the peak hour drop to approximately 40 psi. While this meets the minimum standard established by the Public Utilities Commission, it may lead to complaints of water pressure, particularly in multi-story buildings. There are two mitigation measures:

- The developer may desire to oversize service lines and meters to reduce the on-site pressure losses.
- The City will be considering pipeline improvements as part of the to-be-released Water Master Plan. These should improve the projected low pressures.

- The developer may desire to install an on-site booster pump to increase pressures within the development. Such an installation would allow fire flows to enter through a check valve.

3.5 Fire Flow Requirement and Capabilities

It is critical that fire flow requirements be met under the maximum day condition.

The City's Standard Plans for Public Works Construction 1988 Edition delineate minimum hydrant and water flow requirements. These standards are typical of smaller communities and should be adequate for future planning conditions. The requirements for residential and industrial/commercial areas are summarized below:

- Residential – Fire flow of 2,500 gpm @ 20 psi. Five-hundred (500)-feet fire hydrant spacing for single family residential with no structure more than 300-feet from a hydrant. 300-feet fire hydrant spacing for multi-family residential with no structure more than 200-feet from a hydrant.
- Industrial/commercial – Fire flow of 4,500 gpm @ 20 psi. Three-hundred (300)-feet fire hydrant spacing for single family residential with no structure more than 150-feet from multiple hydrants (On-site included).

In preparing the 2006/07 Water Master Plan Update, it was noted that the above criteria didn't have a sufficient number of categories to represent the varied types of property uses. Further, as a result there were pipelines that were in the "deficiency" category in terms of fire flow due to what was thought to be unusually high fire flow demands. Therefore, in cooperation with the Oxnard Fire Department, the following criteria were established (see Table 3-4).

**TABLE 3-4
FIRE FLOW REQUIREMENTS^(a)**

	Use Type	Flow, gpm	Pressure, psi
SF1	Single Family 1	1,500	20 psi
SF2	Single Family 2	2,500	20 psi
GC	General Commercial	2,500	20 psi
HC	Heavy Commercial	3,500	20 psi
MF	Multi Family	3,000	20 psi
CBD	Commercial Business District ^(b)	4,000	20 psi
M/I	Manufacturing/Industry	4,500	20 psi

Notes:

(a) To be used in the 2006/07 Water Master Plan.

(b) Reserved for the downtown Oxnard area.

The developers have noted that some of the attached project may be 3 stories. This, however, isn't sufficiently high to cause the fire flow demand to increase above the multi-family category.

The Fire Department has indicated that the fire flow for the school should be 3,000 gpm.

Based on the type of development within Teal Club, the fire flow requirement has been established as 3,000 gpm. This flow must be available under maximum day conditions with a residual of 20 psi. That means that with fire hydrant(s) flowing the pressure must not drop below 20 psi, a requirement established by the Fire Department. The 3,000 gpm figure is based on the multi-family units and assumes that flow will satisfy the needs for the school. The Fire Department has indicated that 3,000 gpm will be acceptable providing that the no building at the school is larger than 25,000 square feet. While no specific plans are available for the school, it is believed that no building will be larger than 25,000 square feet; therefore, 3,000 gpm is assumed as the fire flow requirement.

From the computer model, it has been determined that under fire flow conditions (fire flow under maximum day conditions and assuming flow along Ventura Road (see Table 3-5) :

**TABLE 3-5
FIRE FLOW AVAILABILITY TO TEAL CLUB^(a)**

Condition	Flow Available
Existing	4,500 gpm
Ultimate	4,000 gpm

Note: (a) Along Ventura Road adjacent to the proposed Teal Club Development.

Of course, the fire flow requirements must be met within the Teal Club development. The developer's engineer will be required to design the interior pipeline system such that required fire flows are met including pressure losses within the interior-development piping.

3.6 Improvements and Changes to the City's Water System

The City's water system is and/or will be undergoing changes, including the following:

- A. Desalter Projects. Desalters will be installed at Blending Station Nos. 1 and 3. These are required as a part of the GREAT implementation program. That program will increase groundwater pumping and because the groundwater quality is less than that of the Calleguas Municipal Water District and less than that desired for the overall blended quality, the increase in groundwater pumping must include treating a portion of the groundwater pumping to a level such that when blended with other groundwater will meet water quality objectives.

Impact to the Teal Club: No change in the available flows – either for domestic and fire flow purposes. If there is any impact, it may be improvements in water quality from current conditions.

- B. Implementation of the Recycled Water Backbone System. This project, as discussed in Section 5, will make recycled water available to the Teal Club as well as others in the northwest portion of the City.

Impact to Teal Club: Recycled water will be available. There will be a decrease in domestic water demands (mostly parks and schools), improving flow to the Teal Club.

- C. Implementation of Other Recycled Water Projects. These include other M&I (municipal and industrial) and agricultural customers as well as groundwater injection (for domestic pumping or the Seawater Intrusion Barrier).

Impact to Teal Club: All of these projects improve the overall water supply. Only the other M&I portion, however, reduces existing domestic water demands.

- D. Water System Improvements. To meet both existing and ultimate water demands, the 2006/07 Water Master Plan will recommend a series of pipeline projects as part of the City's capital improvement program. It is not anticipated that any will be the direct responsibility of the Teal Club. It also is not anticipated that the normal development process of the Teal Club will be delayed because of delays in the City's capital improvement program.

3.7 Extension and Connection Requirements

To serve the Teal Club, the City has an existing 16-inch waterline within Ventura Road. This is considered as a main transmission pipeline. Computer simulation indicates available flow as indicated in Tables 3-4 and 3-5.

Teal Club will be responsible for:

Connection to the City's system at a location to be approved by the City, but generally located on either Ventura Road, Teal Club Road and/or Doris Avenue. The on-site system shall include:

- a. At least two connections to the domestic water system, providing for looping through the development. One connection shall be along Ventura Road or within 200 feet of Ventura Road.
- b. Separate water meters to all single family dwellings. This will necessitate a "public water system" within the development.
- c. Separate water meters for the multi-family units, commercial businesses, and school.
- d. Separate water meter (1) for the common landscape areas that will be connected to the future recycled water system.
- e. An internal water system designed to provide for the higher of: maximum day plus fire or peak hour demand.

Payment of capital improvement/connection fees and all related "installation fees."

Verification of actual fire flow availability through field testing in accordance with City Building and Safety Department requirements.

3.8 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 4: Evaluation of Wastewater Facilities

4.1 Flow Generation

4.1.1 Teal Club Flows Developed in Oxnard Wastewater Master Plan

The 2005 Water Supply Assessment for Teal Club (2005 WSATC) was being developed concurrently with the pipeline deficiencies identification phase of the 2005 Draft Oxnard Wastewater Master Plan Update (2005 DWWMPU). The flows in the wastewater model were developed using future land uses for the parcels contained within the proposed Teal Club boundaries as specified in the 2020 General Plan since the specific plan land uses were not yet finalized. These parcels also drained to two separate sewer basins resulting in the use of different return-to-sewer ratios for similar land uses. Furthermore, 50 percent more acreage was multi-family residential under the 2020 General Plan land uses compared to what is currently presented in the Teal Club specific plan. The end result was an average day flow of 270 gpm, which was used in the model and presented in 2005 DWWMPU. In light of the current land use acreages, this average day flow appears high. Such differences are expected which is why the model is designed to be updated as new development information becomes available.

4.1.2 Teal Club Flows Developed for this Infrastructure Review

Table 4-1 updates the wastewater flows for Teal Club using the values given in the 2005 WSATC:

**TABLE 4-1
WASTEWATER FLOWS**

Land Use Type	Acreage	Wastewater Duty Factor (gpad)	Wastewater Flow (gpd)	Wastewater Flow (gpm)
Single Family Residential	41.04	1365	56,020	38.9
Multi-Family Residential	73.70	2380	175,410	121.8
School	7.76	1500	11,640	8.1
Fire Station	1.74	600	1,040	0.7
Commercial	2.75	1350	3,710	2.6
Total Average Day Flow			247,820	172
Total Peak Dry Weather Flow (PDWF = 1.81)			449,370	312
RDI/I	175.14	600	105,080	73
Total Peak Wet Weather Flow			554,450	385

The peak dry weather factor is calculated using the following equation as given in the 2005 DWWMPU:

$$\text{Peak Dry Weather Factor} = 1.73 \times (\text{Average Dry Weather Flow Rate})^{-0.0337}$$

The above results in a Peak Dry Weather Factor of 1.81 for the average day flow resulting in a Peak Dry Weather Flow of 312 gpm. The Rainfall Dependent Inflow/Infiltration (RDI/I) was calculated for the entire 175 acre project area using a value of 600 gpad. Therefore, the RDI/I is 73 gpm and the Peak Wet Weather Flow (PWWF) is 385 gpm.

Flows are based on 'return to sewer' ratios as indicated in the 2005 Draft Wastewater Master Plan – 0.65 for single family residential, 0.85 for multi-family residential, and 0.9 for commercial/industrial.

4.2 Collection System Design Criteria

The design criteria were developed and utilized for the 2005 DWWMPU. These criteria are presented as follows:

4.2.1 Gravity Main Criteria

Gravity sewers were evaluated through the use of a static sewer model for the purposes of the 2005 DWWMPU. Sanitary sewer overflows (SSO) identification and pipeline sizing were based on the Manning's equation and the following criteria:

- Pipes 10-inches in diameter and smaller: ½ full at peak wet flow
- Pipes over 10-inches in diameter: 2/3 full at peak wet flow
- Minimum velocity: 2 feet per second
- Maximum velocity: 10 feet per second
- Manning's n value: 0.0135
- Minimum Slope requirements: See Table 4-2 below
- Pipelines identified to remediate hydraulic deficiencies shall be conservatively based on full replacement for pipe diameter and costs.

**TABLE 4-2
MINIMUM SLOPE REQUIREMENTS**

Sewer Size (in)	Grade (ft/ft)
8 inch	0.0040
10 inch	0.0028
12 inch	0.0020
15 inch	0.0016
16 inch	0.0016
18 inch	0.0016
21 inch	0.0012
24 inch	0.0012
27 inch	0.0012
30 inch	0.0012
33 inch	0.0012
36 inch	0.0012
42 inch	0.0012
48 inch	0.0012
54 inch	0.0012
60 inch	0.0012
66 inch	0.0012

4.2.2 Force Main Criteria

The following pertain:

- Minimum Force Main Diameter: 4 inches
- Minimum Velocity: 3 feet per second
- Maximum Velocity: 5 feet per second
- Maximum allowable headloss: 10 feet/1,000 feet of pipeline
- Maximum desirable headloss: 5 feet/1,000 feet of pipeline
- Hazen-Williams C factor: 120

4.2.3 Pump Station Criteria

Pump stations should be sized for the peak wet weather flow rate plus an additional 20 percent capacity to account for condition deterioration over time, miscellaneous debris, etc. that may reduce pumping performance. Pump stations should be capable of meeting the following criteria with the largest capacity pump serving as standby:

- Manufacturers recommended cycling times for pumping equipment.
- 60 percent pump efficiency is assumed, except where other information is available.
- 90 percent motor efficiency is assumed, except where other information is available.

4.3 City Wastewater Trunk Sewer/Treatment Facilities

The Oxnard Wastewater Treatment Plant (OWTP) has a current capacity of 31.7 million gallons per day (mgd) with average daily flows of approximately 24.0 mgd. The City anticipates expansion of the plant to 39.7 mgd by 2020. There is and will be sufficient capacity to accommodate the flows from the Teal Club as well as from other planned developments.

Teal Club is surrounded by the 21-inch Western Trunk Sewer that flows southerly along Patterson Road then west along Teal Club Road and by the 42-inch Redwood Trunk Sewer than flows southerly along Ventura Road.

4.4 City Wastewater Pipeline Capacity and Pump Station Facilities

As part of the 2005 DWWMPU, a computer model was created for the purpose of simulating wastewater system performance and identifying deficiencies under various peak flow scenarios. The two scenarios used for design were peak wet weather flows under existing and ultimate build-out conditions.

Build-out conditions for the wastewater model was assumed to be 2020 which is the time frame of the current "Save Our Agricultural Resources" (SOAR) boundary which limits the extent of urban growth, or rather the extent of urban infrastructure such as wastewater and water services.

Redwood Trunk Sewer was designed to relieve the former Ventura Trunk Sewer and to open up capacity along the Central Trunk Sewer. It was also designed to accept flows from future growth and anticipated specific plans.

The Western Trunk Sewer approaches design capacity without including flows generated on the parcels that comprise Teal Club. The 27-inch diameter reach of the trunk sewer is shown to be over design capacity using peak wet weather flows under ultimate conditions. Replacement pipes ranging from 30-inch to 33-inch diameter are indicated without the Teal Club development. However, by adding Teal Club flows to the Western Trunk Sewer, the entire pipeline south of Manhole AY+01 at intersection of Patterson and Teal Club roads is over design capacity. Teal Club flows also exacerbate the conditions along the 27-inch diameter reach necessitating even larger pipes along this section - in the range of 33-inch to 36-inch diameter. The replacement diameters for the Ult-2 project listed in the 2005 DWWMPU assume Teal Club flows going to the Western Trunk Sewer.

4.5 Extension and Connection Requirements

Several gravity flow drainage scenarios were explored. They consisted of the following:

- Western Trunk Option: Drain all flows to Manhole AY+01 of the Western Trunk Sewer at the intersection of Patterson and Teal Club roads near the southwest corner of the Teal Club property.
- Redwood Trunk Option: Drain all flows to Manhole AAA+061 of the Redwood Trunk Sewer at the intersection of Ventura and Teal Club roads near the southeast corner of the Teal Club property.
- Flow Split Option: Split the flows to both Redwood and Western trunk sewers as originally developed in the 2005 DWWMPU per existing wastewater drainage basins. It is noted that the plan assumed that approximately 50 percent of the flow would flow easterly and approximately 50 percent westerly. This approximation has been confirmed by the developer.
- Relief Sewer Option: Drain all flows to Manhole AY+01 along Patterson and then divert all flows along the Western Trunk Sewer upstream of Manhole AY+01 to a proposed relief sewer along Teal Club Road that connects to the Redwood Trunk Sewer at Manhole AAA+061.

Although the Redwood Trunk Sewer has the capacity to absorb flows from Teal Club, topography and hydraulics appear unsuitable for gravity flow. Teal Club developers have stated that the property drains to the southwest which would deliver flows to Manhole AY+01 of the Western Trunk Sewer. The rim elevation of this manhole is 31.4 feet while the sump elevation is 16 feet. Manhole AAA+061 along the Redwood Trunk Sewer has a rim elevation of 40.9 feet and a sump elevation of 27.8 feet. Conveying wastewater flows to the Redwood Trunk Sewer would require a pump station. As such, the following options appear hydraulically feasible:

- Alternative 1 - Western Trunk Option: Drain all flows by gravity to Manhole AY+01 and assess the difference in the pipeline replacement requirements (above existing design capacity) caused by Teal Club flows.
- Alternative 2 - Teal Club Pump Relief Sewer and Pump Station Option: Pump all Teal Club flows along Teal Club Road to Manhole AAA+061 along the Redwood Trunk Sewer. If this option were selected, the City should evaluate financial and operational responsibilities of the Teal Club with respect to the pump station and force main serving only the development.
- Alternative 3 - Regional Relief Sewer and Pump Station Option: Pump all flows upstream of Manhole AY+01 along Western Trunk Sewer including Teal Club flows to Manhole AAA+061 along Redwood Trunk Sewer. Verify that this will eliminate need to upsize pipes along Western Trunk Sewer south of Manhole AY+01. This option requires a more intricate cost analysis involving elimination of gravity pipes and addition of force mains as well as a pump station.

- Alternative 4 - Flow Split Option: Determine if hydraulically possible and feasible to convey portion of Teal Club flows to Redwood Trunk Sewer by gravity. Teal Club would be responsible for the connection to Redwood Trunk Sewer and the City would need to evaluate any financial obligations for the upsized pipe diameters along Western Trunk Sewer (due to that portion) draining to the Western Trunk Sewer.

It is noted that the above discussion indicates feasible alternatives. In a meeting with the City and developer's representatives, it was concluded that:

- Options involving the installation of a pumping station are not preferable. Such 'lift' stations can cause operational problems as well as odor problems. That eliminates alternatives 2 and 3 above.
- At a meeting held with the developer's representatives, they were asked to evaluate for themselves Alternative 4 feasibility. In response, they report that:
 - "Given the requirements for minimum sewer main slope and required sewer lateral cover and slope, approximately 250 units could be sewer to Ventura Boulevard. The remainder of the site, 900 units will flow to Patterson. Providing sewer service to the 250 units at Ventura Road will require lowering the existing stub."
 - "The project EIR should determine if there are impacts to the existing infrastructure given the site constraints above."
- As a cautionary note, City staff desired to avoid over-committing the Redwood Trunk Sewer.

For Alternative 1, the approximate difference in capital costs with and without the Teal Club development is \$3,245,000 based on the information presented in Table 4-3.

Table 4-4 presents similar information assuming that 50 percent of the Teal Club property drains to the Redwood Trunk Sewer – Alternative 4. The flows from Teal Club represent a marginal contribution to the expected ultimate flows in the Redwood Trunk Sewer which were calculated using the land use designations from the 2020 General Plan. Western Trunk Sewer wastewater flows are pumped via Lift Station No. 29 to Manhole AAA+039 of the Redwood Trunk Sewer at the intersection of Redwood Street and Ventura Road. With all these considerations, Redwood Trunk Sewer was designed to handle expected ultimate (build-out) peak wet weather flows; and therefore, will require no upsizing. It should be noted that this is true under the following two conditions: (1) land use designations presented in the 2020 General Plan and (2) SOAR (urban services limit) boundary expiring at the end of calendar year 2020. Any changes to either one of these two factors may affect wastewater flow contributions to Redwood Trunk Sewer. Therefore, only the Western Trunk Sewer will require replacement pipes due to Teal Club flows. For Alternative 4, the approximate difference in capital costs with and without the Teal Club development is \$845,000 based on the information presented in Table 4-4.

For information, the costs are based on the 2005 Draft Wastewater Master Plan updated values (2005 ENR-CC) updated to March 2007 ENR-CC).

**TABLE 4-3
ALTERNATIVE 1 (All Flow to Patterson)
CAPITAL COSTS**

Sewer Segment	Existing Diameter Inches	Ultimate Diameter w/o Teal Club	Ultimate Diameter w/Teal Club	Capital Cost w/o Teal Club	Capital Cost w/Teal Club
Western Trunk					
1	21 inch	21 inch	21 inch	\$0	\$0
2	21 inch	21 inch	24 inch	\$0	\$213,200
3	21 inch	21 inch	24 inch	\$0	\$214,400
4	21 inch	21 inch	24 inch	\$0	\$216,300
5	21 inch	21 inch	24 inch	\$0	\$215,400
6	21 inch	21 inch	24 inch	\$0	\$215,500
7	21 inch	21 inch	24 inch	\$0	\$212,800
8	21 inch	21 inch	24 inch	\$0	\$211,500
9	21 inch	21 inch	24 inch	\$0	\$212,800
10	21 inch	21 inch	24 inch	\$0	\$154,500
11	21 inch	21 inch	24 inch	\$0	\$59,400
12	21 inch	21 inch	24 inch	\$0	\$225,000
13	21 inch	21 inch	24 inch	\$0	\$209,000
14	21 inch	21 inch	24 inch	\$0	\$215,900
15	21 inch	21 inch	24 inch	\$0	\$204,400
16	21 inch	21 inch	24 inch	\$0	\$217,600
17	21 inch	24 inch	24 inch	\$231,600	\$231,600
18	21 inch	24 inch	24 inch	\$146,100	\$146,100
19	21 inch	24 inch	24 inch	\$85,200	\$85,200
20	24 inch	24 inch	24 inch	\$0	\$0
21	24 inch	24 inch	24 inch	\$0	\$0
22	24 inch	24 inch	24 inch	\$0	\$0
23	24 inch	24 inch	27 inch	\$0	\$249,100
24	24 inch	27 inch	27 inch	\$242,800	\$242,800
25	27 inch	30 inch	30 inch	\$205,700	\$205,700
26	27 inch	33 inch	33 inch	\$95,300	\$95,300
27	27 inch	33 inch	33 inch	\$122,600	\$122,600
28	27 inch	33 inch	33 inch	\$86,900	\$86,900
29	27 inch	33 inch	33 inch	\$123,900	\$123,900
30	27 inch	33 inch	33 inch	\$264,700	\$264,700
31	27 inch	36 inch	36 inch	\$240,200	\$240,200
32	27 inch	36 inch	36 inch	\$271,100	\$271,100
33	27 inch	36 inch	36 inch	\$126,500	\$126,500
34	27 inch	36 inch	36 inch	\$150,700	\$150,700
35	27 inch	36 inch	36 inch	\$264,300	\$264,300
36	27 inch	36 inch	36 inch	\$284,100	\$284,100
37	27 inch	36 inch	36 inch	\$11,300	\$11,300
Total				\$2,953,000	\$6,200,000
Difference Compared to "No Teal Club" Scenario					\$3,245,000

**TABLE 4-4
ALTERNATIVE 4 (50% of Flow to Ventura and 50% to Patterson)
CAPITAL COSTS**

Sewer Segment	Existing Diameter Inches	Ultimate Diameter w/o Teal Club	Ultimate Diameter w/Teal Club	Capital Cost w/o Teal Club	Capital Cost w/Teal Club
Western Trunk					
1	21 inch	21 inch	21 inch	\$0	\$0
2	21 inch	21 inch	21 inch	\$0	\$0
3	21 inch	21 inch	21 inch	\$0	\$0
4	21 inch	21 inch	21 inch	\$0	\$0
5	21 inch	21 inch	21 inch	\$0	\$0
6	21 inch	21 inch	21 inch	\$0	\$0
7	21 inch	21 inch	21 inch	\$0	\$0
8	21 inch	21 inch	21 inch	\$0	\$0
9	21 inch	21 inch	21 inch	\$0	\$0
10	21 inch	21 inch	21 inch	\$0	\$0
11	21 inch	21 inch	21 inch	\$0	\$0
12	21 inch	21 inch	21 inch	\$0	\$0
13	21 inch	21 inch	24 inch	\$0	\$209,000
14	21 inch	21 inch	24 inch	\$0	\$215,900
15	21 inch	21 inch	24 inch	\$0	\$204,400
16	21 inch	21 inch	24 inch	\$0	\$217,600
17	21 inch	24 inch	24 inch	\$231,600	\$231,600
18	21 inch	24 inch	24 inch	\$146,100	\$146,100
19	21 inch	24 inch	24 inch	\$85,200	\$85,200
20	24 inch	24 inch	24 inch	\$0	\$0
21	24 inch	24 inch	24 inch	\$0	\$0
22	24 inch	24 inch	24 inch	\$0	\$0
23	24 inch	24 inch	24 inch	\$0	\$0
24	24 inch	27 inch	27 inch	\$242,800	\$242,800
25	27 inch	30 inch	30 inch	\$205,700	\$205,700
26	27 inch	33 inch	33 inch	\$95,300	\$95,300
27	27 inch	33 inch	33 inch	\$122,600	\$122,600
28	27 inch	33 inch	33 inch	\$86,900	\$86,900
29	27 inch	33 inch	33 inch	\$123,900	\$123,900
30	27 inch	33 inch	33 inch	\$264,700	\$264,700
31	27 inch	36 inch	36 inch	\$240,200	\$240,200
32	27 inch	36 inch	36 inch	\$271,100	\$271,100
33	27 inch	36 inch	36 inch	\$126,500	\$126,500
34	27 inch	36 inch	36 inch	\$150,700	\$150,700
35	27 inch	36 inch	36 inch	\$264,300	\$264,300
36	27 inch	36 inch	36 inch	\$284,100	\$284,100
37	27 inch	36 inch	36 inch	\$11,300	\$11,300
Total				\$2,955,000	\$3,800,000
Difference Compared to "No Teal Club" Scenario					\$845,000

For reference, Table 4-5 provides the Western Trunk Sewer segments affected along with the upstream and downstream manholes, pipe lengths, and existing pipe diameters.

**TABLE 4-5
WESTERN TRUNK SEWER CHARACTERISTICS**

Sewer Segment	Upstream Manhole	Downstream Manhole	Pipe Length Feet	Existing Diameter Inches
1	AY+01	AV+10	351.62	21 inch
2	AV+10	AV+09	398.01	21 inch
3	AV+09	AV+08	400.27	21 inch
4	AV+08	AV+07	403.89	21 inch
5	AV+07	AV+06	402.18	21 inch
6	AV+06	AV+05	402.38	21 inch
7	AV+05	AV+04	397.35	21 inch
8	AV+04	AV+03	394.81	21 inch
9	AV+03	AV+02	397.32	21 inch
10	AV+02	AV+01	288.50	21 inch
11	AV+01	AN+24	110.91	21 inch
12	AN+24	AN+23	420.01	21 inch
13	AN+23	AN+22	390.21	21 inch
14	AN+22	AN+21	403.01	21 inch
15	AN+21	AN+20	381.58	21 inch
16	AN+20	AN+19	406.19	21 inch
17	AN+19	AN+18	432.47	21 inch
18	AN+18	ANF34	272.71	21 inch
19	ANF34	AN+17	159.15	21 inch
20	AN+17	ANF17	293.47	24 inch
21	ANF17	AN+16	142.40	24 inch
22	AN+16	AN+15	458.95	24 inch
23	AN+15	AN+14	447.81	24 inch
24	AN+14	AN+13	436.48	24 inch
25	AN+13	AN+12	341.10	27 inch
26	AN+12	AN+25	147.910	27 inch
27	AN+25	AN+11	190.30	27 inch
28	AN+11	AN+10	134.85	27 inch
29	AN+10	AN+09	192.21	27 inch
30	AN+09	AN+08	410.74	27 inch
31	AN+08	AN+07	329.60	27 inch
32	AN+07	AN+06	372.12	27 inch
33	AN+06	AN+05	173.67	27 inch
34	AN+05	AN+04	206.86	27 inch
35	AN+04	AN+03	362.75	27 inch
36	AN+03	AN+02	389.93	27 inch
37	AN+02	AN+01	15.45	27 inch

See Section 6 for findings and recommendations.

4.6 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 5: Evaluation of Recycled Water Facilities

5.1 Introduction

The City as part of its GREAT Program anticipates a major recycled water system consisting of:

An Advanced Water Purification Facility (AWPF) located adjacent to the OWTP and including advanced treatment processes, including reverse osmosis, to create recycled water that exceeds the State Title 22 water quality requirement and is suitable for all allowed uses of recycled water.

A distribution system for municipal and industrial purposes that includes the “Recycled Water Backbone System (RWBS)” as shown in Figure 5-1. This system is designed to deliver up to approximately 1,300 AFY to recycled water customers, including the Teal Club property.

Other potential “customers” including an expanded municipal and industrial system, agricultural and groundwater injection such that the total use at build-out is approximately 17,500 AFY.

Based on proximity to the RWBS, it has been assumed that the Teal Club will connect to the recycled water system for the purposes of receiving water for irrigation purposes.

5.2 Potential Demand and Design Criteria

Based on Table 3-2, which is from the Water Supply Assessment, it is estimated that the demand for recycled water will be approximately 90 AFY, which is somewhat less than one-quarter of the total water demand. It is noted that the developer has indicated a volume somewhat higher than reported above. This could be accommodated with the Recycled Water Backbone System.

Design Criteria is presented both in the Recycled Water Backbone System Study and the “Recycled Water Facilities Plan” or RWFP which has been submitted to the State of California.

Table 5-1 presents the various peaking factors that are used in prior reports.



REACH B
SLIPLINE NEW 22"

REACH C
SLIPLINE NEW 20"

REACH D
SLIPLINE NEW 18"

REACH E
SLIPLINE NEW 16"

REACH F
SLIPLINE NEW 12"

LOOPED PIPE - 20"

CUT AND COVER
20"

REACH A
SLIPLINE NEW 22"

Advanced Water Purification Facility

BORE AND JACK
OR @ UNDERCROSSING
16"

FLOW 5.00 MGD
MAX. PRESSURE 150 PSI
DELIVERY 1,230 AFY

Legend

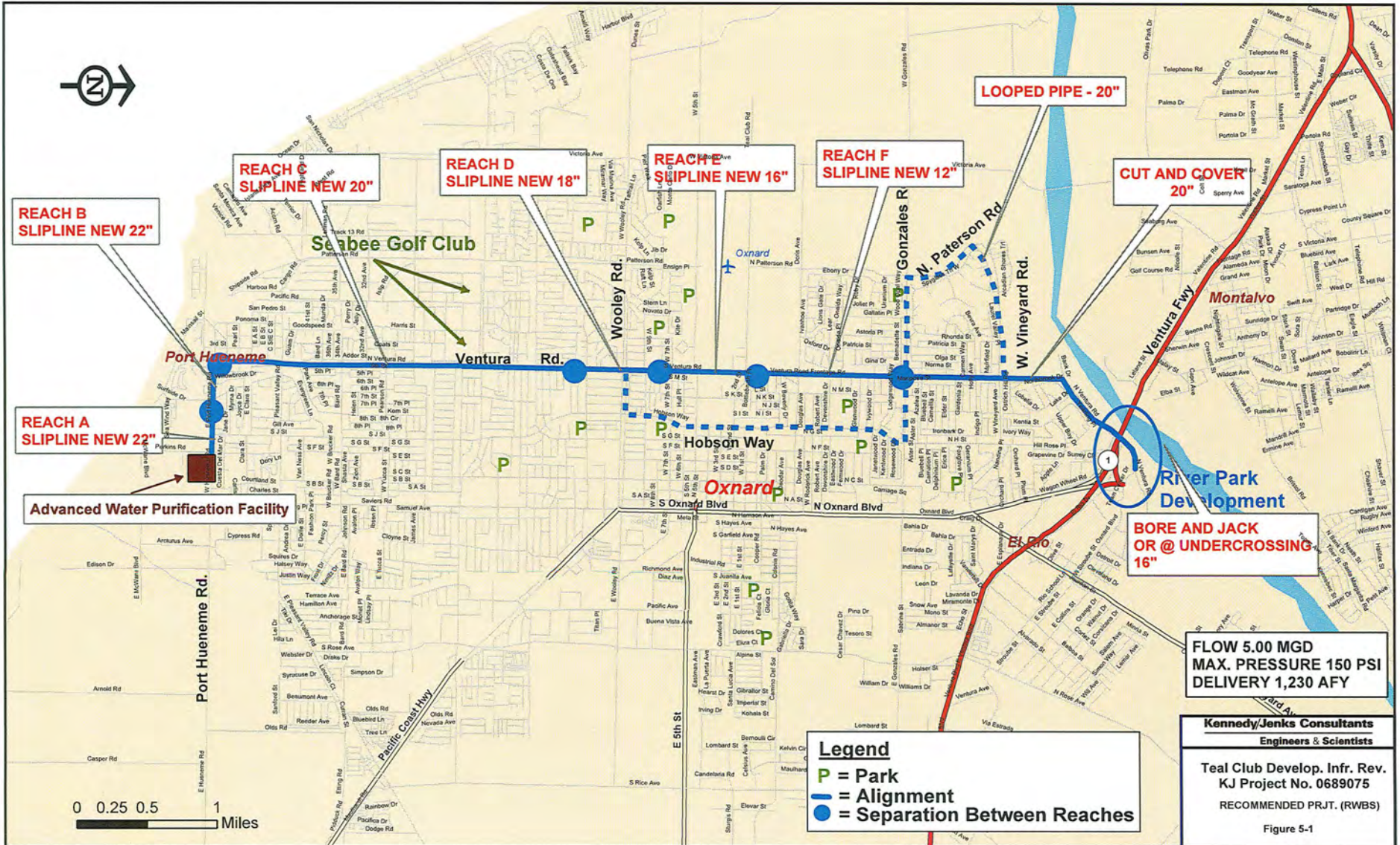
- P** = Park
- = Alignment
- = Separation Between Reaches

Kennedy/Jenks Consultants
Engineers & Scientists

Teal Club Develop. Infr. Rev.
KJ Project No. 0689075
RECOMMENDED PRJT. (RWBS)

Figure 5-1

0 0.25 0.5 1
Miles



**TABLE 5-1
DEMAND FACTORS
(All with respect to average annual demand)**

Factor	M&I	Agricultural	Groundwater Injection
Average Day	1.0	1.0	
Maximum Month ^(a)	1.6	1.4	(d)
Maximum Day ^(b)	2.0	2.2	(d)
Peak Hour ^(c)	7.0	6.4	(d)

Notes:

- (a) Maximum month factors are predominantly for information. They are not used in the sizing of pipelines.
- (b) Maximum day demands tend to be during the maximum month, but not necessarily. For the domestic water system, records indicate that the maximum day demand factor is approximately 2.0 for Oxnard.
- (c) The peak hour factor for M&I assume that it is essentially irrigation based during the 8-hour irrigation period of 10:00 p.m. until 8:00 a.m. Further, it is assumed that the use is even during that period, which experience indicates will not be the case. However, arguing for lower factors is the fact that some irrigation demand may be during the day (i.e., the River Ridge Golf Course) however, arguing for a higher factor is the tendency for irrigation to be more concentrated in the 3:00 a.m. to 6:00 a.m. period than the remainder of the 8-hour irrigation period. On balance, it is reasonable to assume an 8-hour irrigation period which causes a demand factor 3 times the maximum day factor. To this must be added a factor to account for some variation in demand.
The peak hour factor for agriculture assumes irrigation between 6:00 a.m. and 5:00 p.m. During summer the irrigation is extended and during the winter it is somewhat shorter. The corresponding 11 hours would result in a peak hour factor of 2.18 when compared to the maximum day. However, this must recognize some variability and therefore the assumed factor is 2.9 times the maximum day factor.

The demand factors for groundwater injection, whether for the purposes of recovery for domestic water purposes or for the purpose of the seawater barrier injection project are, in essence, the reverse of the M&I and Agricultural sectors being low when those uses are high and vice-versa.

5.3 City Recycled Water Facilities

From Figure 5-1 (which is Figure 1-2 from the Recycled Water Backbone System Study), it can be seen that the City is preliminarily planning on installing a recycled water pipeline along Ventura Road from approximately the 101 Freeway to Port Hueneme Road and then easterly to the Advanced Water Purification Facility (AWPF) which is now under design. For the portion of the new recycled water pipeline southerly of Gonzales Road, it will be sliplined inside the Redwood Trunk Sewer, which has been abandoned (due to its needing to be replaced with a larger facility). It is this sliplined facility that will serve the Teal Club development.

Recycled water from the AWPF, as distributed by the RWBS is planned to be available in late 2009 or early 2010; that date may be delayed depending on financing, permitting and the significant nature of the project. It is anticipated that the RWBS facilities will be constructed substantially in advance of the AWPF facilities.

When available, the Teal Club development must connection to the domestic water system. Until that time, the Teal Club irrigation system shall be connected to the domestic system.

5.4 Extension and Connection Requirements

The Teal Club will be responsible for:

The extension of the pipeline from the mainline in Ventura Road to the property (either to construct the line or to reimburse the City if as part of the RWBS project, a line is extended to the Teal Club property). This will include a single recycled water meter along Ventura Road. Construction will be per normal City requirements and fees.

Assuming an annual demand of 90 AFY, night-irrigation, and a peak hour factor of 7.0 (see Table 5-1), the resulting flow is approximately 390 gpm. A 6-inch service pipeline would be appropriate for that flow. Inherent in the above numbers is that the Teal Club irrigation systems will be designed such that the demand is relatively constant throughout the irrigation period of 10:00 p.m. to 6:00 a.m. If it isn't, then the peaking factor will be larger.

Provision of an irrigation system for all common areas that is to the maximum extent possible: (1) separated from the domestic water system, (2) constructed per the City's Recycled Water Construction Standards (being developed), including night irrigation and (3) has proper signage. It should be noted that installation of the signage may be deferred until recycled water is available.

Until the recycled water system is operational, the common area irrigation system will be connected to the domestic system. Once recycled water is available, and connection to the recycled water system is made, the developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system.

Payment of the Recycled Water Connection Fee (being developed) or the water connection fee, whichever is greater for facilities constructed prior to the availability of recycled water.

The developer shall be responsible for appropriate CCR's dealing with the use of recycled water on the Teal Club property.

5.5 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 6: Findings & Suggested Conditions

6.1 Findings

As an overview:

- A. For domestic water, the City's water system is sufficient, with the recommended improvements for ultimate development, to meet both domestic and fire flow requirements. Teal Club will be required to connect to the existing surrounding system.
- B. For wastewater service, the City's system can accommodate the Teal Club development with improvements to the Western Trunk Sewer. The impact of the Teal Club is approximately \$3.3 million as discussed in section 4 if all flow is to the Western Trunk Sewer. That impact could be significantly reduced by taking a portion of the flow to Ventura Road. Alternative 4 provides analysis for a 50/50 percent split with a net increase in the capital need for the Western Trunk Sewer of approximately \$0.9 million. However, the developer has noted that only about 20 percent of the development can flow by gravity to Ventura Road. Without performing a specific analysis on this percentage, it is noted that the impact of the Teal Club on the Western Trunk Sewer assuming it accepts 80 percent of the flow will probably be on the order of \$ 2.0 to 2.5 million.
- C. For recycled water service, the City is planning on the development of a major recycling water program including the extension of a system northerly on Ventura Road, passing the Teal Club, which will be required to connect when that system is available. Until that time, the irrigation system will be required to be connected to the domestic water system in a completely separate system.

6.2 Suggested Conditions

Note: The following are suggested conditions of development as offered as part of this infrastructure review. The actual suggested conditions through the City's entitlement process may vary.

Water:

- (a) The domestic water connection shall connect to the City's system in at least two (2) locations as approved by the City, generally located along the eastern side of the property (Ventura Road) and along either the north or southern side of the development away from Ventura Road. There shall be an on-site looped main transmission system through the development.
- (b) The on-site domestic water system shall include:

1. Public pipeline systems which feed into separate water meters for each ownership. In addition, there shall be separate water meters for each multi-family unit – townhouses, but not apartments.
 2. Separate water meter (1) for the common landscape areas that will be connected to the future recycled water system.
 3. An internal water system designed to provide for the higher of: maximum day plus fire or peak hour demand.
- (c) All domestic water pipelines shall adhere to DOHS requirements for separation between water and recycled water/wastewater pipelines.
- (d) Fire flow requirements shall be met through the public pipeline system without allowance for any internal development pumping system.
- (e) The developer shall be responsible for payment of capital improvement/connection fees (currently being reviewed), including all related “installation fees.”
- (f) The developer shall verify actual fire flow availability through field testing in accordance with City Building and Safety Department requirements. However, field testing shall supplement and not replace verified adequacy through computer simulation.

Recycled Water:

- (a) The developer will be responsible for the pipeline extension from the mainline in Ventura Road to the property.
- (b) The developer shall be responsible for the design and construction of the recycled water main pipeline system within the development. The mainline shall be a public system with meters, as appropriate, to recycled water customers. Construction will be per City standard requirements with applicable fees. The design must allow for connection to the domestic water system until the time when recycled water is available. At that time the system will be switched from domestic water to recycled water.
- (c) The developer shall provide a recycled water system that serves all practical irrigated areas and which is: (1) separated from the domestic water system, (2) constructed per the City’s Recycled Water Construction Standards (being developed), (3) irrigated at night and (3) properly signed. Installation of recycled water signage may be deferred until recycled water is available.
- (d) The portion of the irrigation intended for the future recycled water system shall be separately metered from that portion of the system that will not be connected to the future recycled water system, if any.
- (e) Until the recycled water system is operational, the common area irrigation system shall be connected to the domestic system. Once recycled water is available, and

connection to the recycled water system is made, the developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system.

- (f) The developer shall be responsible for payment of the Recycled Water Connection Fee (being developed) or the water connection fee, whichever is greater for facilities constructed prior to the availability of recycled water.
- (g) At such time as recycled water is available, the developer shall be responsible for all costs involved with the re-connection of the applicable portions of the irrigation system to the public recycled water system, including appropriate signage. Credits for connection fees shall be given by the City based on the size of the meter(s). Under no circumstance will there be a refund of water connection fees already paid.
- (h) The developer shall be responsible for appropriate CCR's covering the use of recycled water within the property and for proper disclosures.

Wastewater:

- (a) The development shall connect all units and buildings having sewer facilities to the public sewer system.
- (b) Prior to the submission of subdivision improvement plans for wastewater (sewer) lines, the developer shall submit a letter report indicating the split between units draining to Ventura Road and those draining to the west to Patterson Road and the Western Trunk Sewer. Preliminarily, the developer has indicated that no more than approximately 20 percent of the total wastewater load for the development would drain easterly towards Ventura Road and the Redwood Trunk Sewer.
- (c) The developer shall be responsible for payment of the Wastewater Connection Fee based on the value of that fee at the time that payment is made, unless otherwise agreed to in writing with the City.
- (d) The developer shall be responsible for the costs involved with the City's providing capacity in the Western Trunk Sewer, i.e. system capacity increase. The precise fee shall be determined by the City based on the submittal of a letter report indicating the projection of flows to the Western Trunk Sewer.
- (e) The City shall be responsible for the improvements to the Western Trunk Sewer and occupancy for developer's units must await the completion of the project to increase capacity of the Western Trunk Sewer. Should the City not be able to construct said improvements in a manner timely for the developer's project, then the City may consider having the developer install such improvements subject to a reimbursement agreement for those costs that are considered as a City responsibility.
- (f) Lift stations for sewer purposes aren't approved for this project.

