Freeway Commercial

South Portion

Otay Ranch Town Center

Water Conservation Plan

Project Sponsor/Applicant:
Brookfield Properties
Contact: Tony Pauker
733 Eighth Avenue
San Diego, CA 92101
(858) 794-6157
?????? XX, 2023

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS

ac = acre

ac-ft = acre-foot

cdf = community facilities district

cfs = cubic feet per second

gpc = gallons per cycle

gpd = gallons per day

gpf = gallons per flush

gpm = gallons per minute

HOA = homeowner’s association

mgd = million gallons per day

USEFUL CONVERSIONS

1 acre-foot	=	325,829 gallons
1 mgd	=	1,000,000 gallons/day
1 cfs	=	448.8 gpm
1 cubic foot	=	7.48 gallons
1 mgd	=	694.4 gpm

EXECUTIVE SUMMARY

A Water Conservation Plan (WCP) was prepared for the Freeway Commercial (FC) project when the project was originally approved in 2002 and updated in 2019 when the SPA was amended for the northern portion of the SPA. This plan presents a review of presently available technologies and practices which result in water conservation in primarily residential development. This report presents an updated WCP with measures that will be incorporated into the planning and design of the Otay Ranch Town Center SPA, including the requirements outlined in the Chula Vista Landscape Water Conservation Ordinance (CVMC 20.12).

The FC SPA consists of the Freeway Commercial South (FC 1) site that has already been developed as commercial per the originally approved SPA plan, the Freeway Commercial North (FC 2) site that was approved in 2019 and under-construction, and an update to FC 1 to add up to 840 residential units. This updated WCP is limited to the FC 1 site. Town Center Drive, which bisects the FC 2 site, was constructed concurrent with the FC 1 site development.

The FC 1 site consists of 87.25-acres of property that is entitled for commercial uses. The SPA Amendment would rezone approximately 16.59-acres from FC to Mixed-Use/Residential (MU/R) to allow up to 840 residential dwelling units. The rezone would reduce the allowable commercial space from 960,000 to 816,000 square-feet which is a reduction of approximately 144,000 square-feet.

The Otay Water District (OWD) is the local water agency that supplies potable water and recycled water to the SPA and the surrounding Villages. The OWD does not provide recycled water within the vicinity of the project. The current total estimated average potable and recycled water use for the project is 0.26 mgd and 0.02 mgd, respectively.

The State and local government have mandated a number of water conservation measures. The project will install hot water pipe insulation, pressure reducing valves, and water efficient dishwashers in all multi-family residential units. Additionally, the builder will install dual flush toilets and other water conserving irrigation equipment and techniques in compliance with the Landscape Water Conservation Ordinance. At buildout of the project, implementation of the above measures along with the use of recycled water would increase estimated potable water usage on the project by an estimated 42,656-gpd.

INTRODUCTION

In recent years, the subject of water conservation has been given increased attention. The growing awareness of the need and value of water conservation has been sparked by local and regional water purveyors concerned about meeting the future water demands of their customers, particularly during drought conditions. Water conservation provides an alternative approach to the problem of finding new water sources to meet the water demand for a proposed community. The intent of water conservation is to manage water demand so that the customers receive adequate service but use less water.

Much has been done to educate consumers about limitations of water supply, the serious implications of a long-term drought and the need for water conservation, but there is a practical limit to the percentage reduction of water use in established communities. This limit is a result of the types of plumbing fixtures installed in existing homes as well as the difficulty in altering consumers' established patterns of water use. Any water conservation effort, voluntary or mandatory, requires the cooperation of the public. Public information should be utilized to inform and convince the consumer that a change in personal water use habits is in everyone's best interest.

The private development sector has become more attuned to the concerns of water availability and has recognized the value of addressing water conservation issues throughout planned development projects. By incorporating low water use plumbing fixtures, promoting drought tolerant landscaping, and providing educational materials to homeowners within the development project, private developments can do much to cultivate an interest in water conservation and establish new patterns of water use. These efforts can have significant impacts with regard to reducing the need for securing and importing larger quantities of water for use in San Diego County.

In 2006, the State repealed the Water Conservation in Landscaping Act and adopted a new Water Conservation in Landscaping Act, Government Code Sections 65591 et seq. The new Act requires the Department of Water Resources to update the previously adopted model efficient landscape ordinance that provides for greater efforts at water conservation and more efficient use of water in landscaping. The model ordinance was required to include provisions for: 1) water conservation by the appropriate use and groupings of plants that are well adapted to particular sites and local conditions; 2) a landscape water budget that establishes the maximum amount of water to be applied through the irrigation system; 30 automatic irrigation systems and irrigation schedules based on climatic conditions, terrains and soil types and other environmental conditions; 4) on-site soil assessment and soil management plans that include grading and drainage to promote healthy plant growth and prevent excessive erosion and run-off; and 5) promoting the use of recycled water for landscaping when it is available and the use is consistent with State law.

Government Code Section 65595 requires that on or before January 1, 2010, a local agency shall adopt a water efficient landscape ordinance that is at least as effective in conserving water as the updated model ordinance or adopt the model ordinance. The City of Chula Vista Landscape Water Conservation Ordinance went into effect on January 1, 2010, and requires homeowners to be efficient with the landscape systems and plant selection.

The City of Chula Vista City Council adopted an ordinance that complies with the findings and declarations of the State's Water Conservation in Landscaping Act and is as effective as the State's updated model water efficient landscape ordinance. This water conservation plan incorporates the requirement of the City's ordinance.

The Otay Ranch Freeway Commercial project is within the Otay Ranch General Development Plan (Otay Ranch GDP). The Otay Ranch GDP was adopted in 1993 and included objectives for water conservation to be incorporated into the development of Otay Ranch. These objectives included the implementation of water efficient fixtures, increased use of drought tolerant landscaping, and use of recycled water for irrigation. The objective of these measures is to reduce the per capita water use within Otay Ranch by 25-percent as compared to county wide 1989, per capita levels. This report will demonstrate how the City, in partnership with the OWD and development community are meeting these objectives.

PURPOSE

The State Legislature determined in the Water Conservation in Landscaping Act that the State's water resources are in limited supply. The Legislature also recognized that while landscaping is essential to the quality of life in California, landscape design and maintenance must be water efficient. . The City has adopted guidelines for the preparation and implementation of required WCP.

This report will present water conservation measures which will be incorporated into the planning and design of the project, including an estimate of the anticipated water savings. Approximately half of the water used by residences in California is used outdoors. For this reason, the City's Landscape Water Conservation Ordinance will be an important component of reduced water usage.

Although not covered in detail, there are several secondary benefits to conserving water that should be kept in mind when reviewing material in this report. These benefits include reduced sewage flows, reduced natural gas use, and reduced electricity use. Using less water in the shower, for example, reduces the amount of water input into the sewer system and reduces the amount of energy required to heat the water.

PROJECT DESCRIPTION

The FC SPA includes the Otay Ranch Town Center (FC 1) site which located on the east side of State Route 125, and bounded by Olympic Parkway to the north, Eastlake Parkway to the east, and Birch Road to the south. The proposed redevelopment covers approximately 16.59-acres and includes the addition of up to 840 residential dwelling units and reduction in the entitled commercial square-footage from approximately 960,000 square-feet to approximately 816,000, a reduction of approximately 144,000 square-feet. Appendix A provides the proposed land use plan for Otay Ranch Town Center and Table 1 provides a land use summary.

TABLE 1
OTAY RANCH TOWN CENTER REDEVELOPMENT

LAND USE SUMMARY		
Land Use	**Area Acres**	**Units**
Existing Commercial [1]	70.66	
Mixed-Use (Multi-Family Residential and Replacement Commercial)	10.57	840
Park/Plaza	2.56	
Private Streets	2.93	
Total Site Area	**87.25**	**840**

1 Acreage of existing Otay Ranch Town Center site (approximately 87.25-acres) reduced by approximately 16.59-acres

WATER SERVICE AND SUPPLY

The OWD is the local water agency that supplies potable water and recycled water to SPA. The OWD relies solely on the San Diego County Water Authority (SDCWA) for its potable water supply. The SDCWA is the largest of 27-member agencies of the Metropolitan Water District of Southern California (MWD), which is the primary importer of domestic water in Southern California.

PROJECTED WATER USE

Potable Water Demand

Potable water use is estimated by taking the acreage for each land use and multiplying by the corresponding water use factors. Table 2 provides the projected potable water demand for the Otay Ranch Town Center redevelopment. The total estimated potable water use is 0.26-mgd. Potable water use factors were taken from the 2015, Otay Water District Water Facilities Master Plan.

TABLE 2
OTAY RANCH TOWN CENTER REDEVELOPMENT
PROJECTED POTABLE WATER DEMAND

Land Use	Quantity	Water Demand Factor	Average Potable Water Demand, gpd
Existing Development to Remain			
Existing Commercial [1]	70.66-acres	1,607 gpd/acre	113,551
Proposed Development [2]			
Residential (>10 DU/ac)	840 DU	170 gpd/DU	142.800
Proposed Commercial	0.85-acres	1,607 gpd/acre	1,366
Total			**257,717**

1 Acreage of existing Otay Ranch Town Center site (approximately 87.25-acres) reduced by approximately 16.57-acres (redevelopment).

2 .Acreage excludes private street area (approximately 2.93-acres0 and park/plaza area (approximately 2.56-acres) as no potable water demands are expected.

Recycled Water Demand

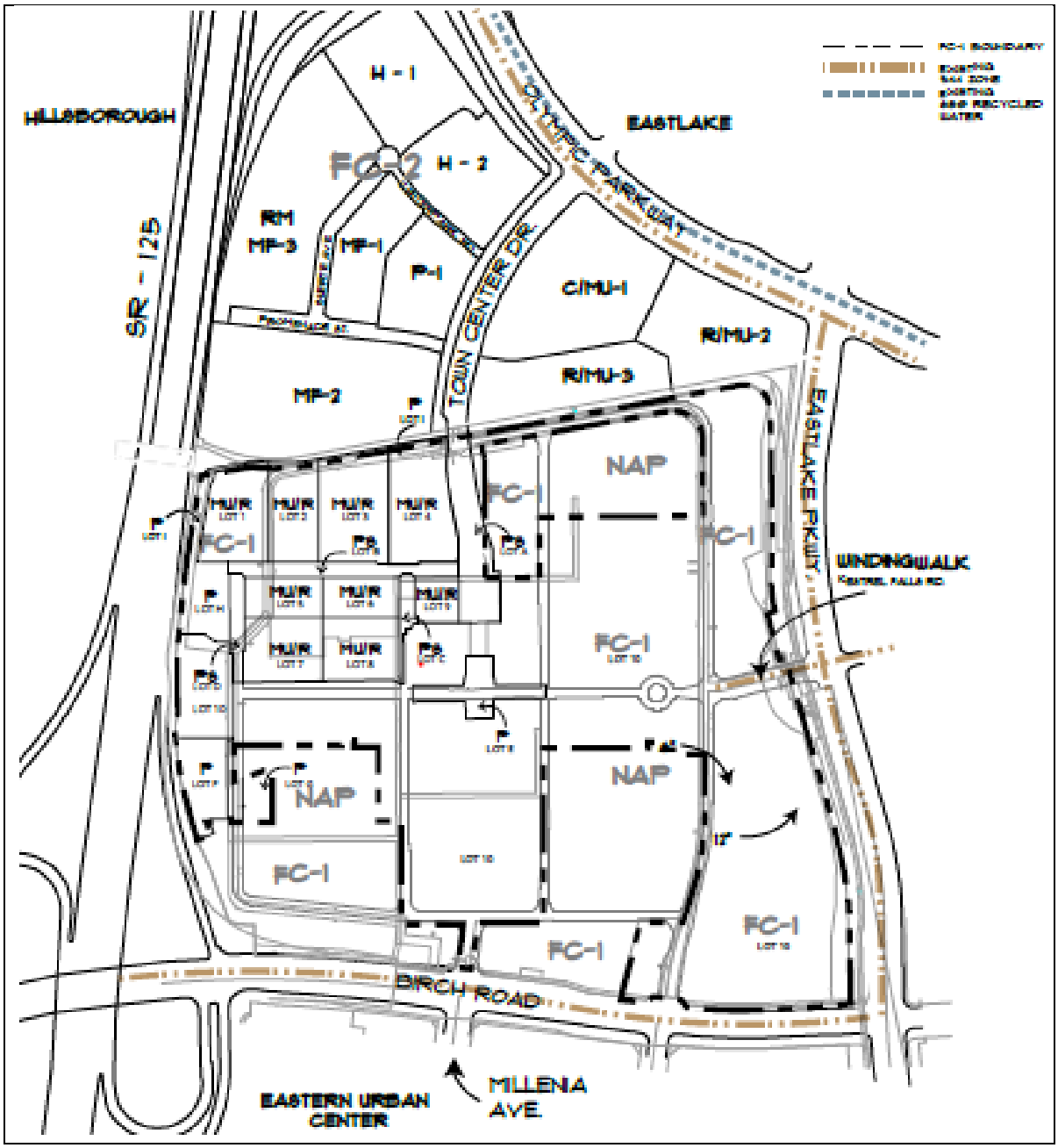
In accordance with Section 26 of the Otay Water District Code of Ordinances, Otay Ranch Town Center redevelopment will utilize recycled water for the irrigation of open space slopes, parks, and the common area of commercial and multi-family residential sites. Appendix B includes an exhibit that shows the location of anticipated recycled water use areas in green. Table 3 provides the estimated recycled water demand for the project. The total estimated recycled water demand is 0.02-mgd.

TABLE 3
OTAY RANCH TOWN CENTER REDEVELOPMENT
PROJECTED RECYCLED WATER DEMAND

Land Use	Quantity	Percent Irrigated	Irrigated Acreage	Recycled Water Demand Factor	Average Recycled Water Demand, gpd
Existing Development to Remain					
Existing Commercial [1]	70.66-acres	10	7.07	1,900gpd/acre	13,433
Proposed Development [2]					
Mixed-Use (Residential and Commercial)	10.57-acres	15	1.59	1,900gpd/acre	3,021
Park/Plaza	2.56-acres	100	2.56	1,900gpd/acre	5,187
TOTAL					**21,641**

1 Acreage of Existing Otay Ranch Town Center site (approximately 87.25-acres) reduced by approximately 16.59-acres (redevelopment area)

2 Acreage excludes private street area (approximately 2.93-acres) as no recycled water demand is expect..



STATE AND FEDERAL WATER CONSERVATION MEASURES

The State and Federal Governments have mandated a number of water conservation measures. Table 4 summarizes the conservation measures that are currently mandated by the State of California and nationally. The State of California requirements are based on the 2022 Green Building Standards Code and the federal requirements are based on the 2021 National Standard Plumbing Code.

TABLE 4 MANDATED WATER CONSERVATION DEVICES		
Device	**2022 Green Building Standards Code**	**2021 National Standard Plumbing Code**
Water Closets	1.28gpf	1.25gpf
Wall-Mounted Urinals	0.125gpf	0.5gpf
Floor-Mounted Urinals	0.5gpf	0.5gpf
Showerheads	1.8gpm	2.0 gpm
Lavatory Faucets	0.5gpm	0.5gpm
Kitchen Faucets [1]	1.8gpm	1.8gpm
Wash Fountains	1.8gpm/20 [rim space (in.)]	2.2gpm/20[rim space (in.)]
Metering Faucets	0.2gpc	0.25 gal/cycle
Pre-Rinse Spray Value – Product Class 1	1.0 gpm	1.3 gpc
Pre-Rinse Spray Value – Product Class 2	1.2 gpm	1.3 gpm
Pre-Rinse Spray Value – Product Class 3	1.28 gpm	1.3 gpm
Food Waste Disposers [2]	8 gpm	N/A

1 Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute, and must default to a maximum flow rate of 1.8 gpm.
2 Disposers shall either modulate the use of water to no more than 1gpm when the disposer is not in use or shall automatically shut-off after no more than 10-minutes of inactivity.

LOCAL WATER CONSERVATION REQUIREMENTS

There are a number of water conserving measures required by the Otay Water District and City of Chula Vista Landscape Manual. These include the use of recycled water for the irrigation of open space slopes, and common landscaped areas, where feasible. The Landscape Manual also requires some drought tolerant plant selection in the landscaping plan and the use of evapotranspiration controllers for parks and common landscaped areas. Additionally, the City of Chula Vista Landscape Water Conservation Ordinance that went into effect on January 1, 2015, is expected to reduce outdoor water consumption due to the setting of strict water budgets on City approved landscape plans that must not be exceeded.

The City of Chula Vista Water Conservation Plan Guidelines requires the following three indoor water conservation measures for residential units and non-residential units. These measures are mandatory.

Residential Measures - Mandatory

1. Hot Water Pipe Insulation. This measure involves the insulation of hot water pipes with 1-inch walled pipe insulation and separation of hot and cold-water piping. This measure is estimated to cost an addition-al $50 during initial construction and result in annual savings of 2,400 gallons per residential unit.

2. Pressure Reducing Valves. Setting the maximum service pressure to 60-psi reduces any leakage present and prevents excessive flow of water from all appliances and fixtures. This measure is estimated to cost $100 during initial construction and result in annual water savings of 1,800-gallons per residential unit.

3. Water Efficient Dishwashers. There are a number of water efficient dishwashers available that carry the Energy Star label. These units cost an additional $500 on average and result in an estimated yearly water savings of 650 gallons per residential unit.

In addition, to comply with the City's current water conservation requirements, the developer must select at least one outdoor measure and one additional indoor or outdoor water conservation measure for residential development and non-residential development. Water conservation measures not included on the City's Residential Water Conservation Measures list may be proposed by the developer. Since this project does not propose any single-family residences, all outdoor irrigation water use is proposed to be met with recycled water. Thus, there are no outdoor water measures that would result in a direct reduction in potable water use.

The developer will implement, from the City's list of approved measures, the following indoor non-mandatory measure in multi-family residential units and non-residential units.

1. Dual Flush Toilets. The developer will install dual flush toilets within the project. This measure is estimated to cost $200 per household and result in annual water savings of 4,000-gallons per year per residential unit.

WATER CONSERVATION ESTIMATED SAVINGS

The estimated water savings for water conservation measures are based on the estimates provided in the previous section of this report. The potential water savings varies widely based on land use types. Multi-family residential units, for example, have much less opportunity to implement additional water saving measures than low-density single-family residential units. This is primarily because the common landscaped areas of multi-family units are required to be irrigated with recycled water and, thus, there are no outdoor water conservation measures that can directly offset potable water usage in these areas.

Table 5 summarizes the total estimated water savings for the Otay Ranch Town Center portion of the Freeway Commercial SPA based on the proposed required measures and non-mandatory measure described above.

TABLE 5 OTAY RANCH TOWN CENTER REDEVELOPMENT WATER CONSERVATION MEASURES					
Measure	***Location***	***Yearly Water Savings, gal/unit***	***Daily Water Savings, gpd/unit***	***Percentage of Total Usage[1]***	***Project Total Water Savings[2], gpd***
Hot Water Pipe Insulation	*Indoor*	*2,400*	*6.58*	*3.9*	*5,527*
Pressure Reducing Valves	*Indoor*	*1,800*	*4.93*	*2.9*	*4,141*
Water Efficient Dishwashers	*Indoor*	*650*	*1.78*	*1.0*	*1,495*
Dual Flush Toilets	*Indoor*	*4,000*	*10.96*	*6.4*	*9,206*
TOTAL		***8,850***	***24.25***	***14.3***	***20,369***

1 Based on 170 gpd/unit average usage.

2 Based on 840 Multi-Family Residential Units.

Water Conservation Summary

As detailed in this report, the Otay Ranch Town Center project is committed to being water efficient through the use of recycled water for irrigation and utilizing other water conservation devices and measures. Table 6 summarizes the baseline potable water use if recycled water and water conservation measures were not utilized and provides the anticipated water savings outlined in this report. As shown, the use of recycled water and other water conservation measures is expected to reduce potable water usage by 42,656-gpd, or 15.2-percent.

TABLE 6 OTAY RANCH TOWN CENTER REDEVELOPMENT WATER CONSERVATION SUMMARY	
Description	**Average Use, gpd**
Total Water Use	
Potable Water Use (Table 2)	*257,717*
Recycled Water Use (Table 3)	*21,641*
Total Baseline Water Use	***279,358***
Water Conservation Savings	
Recycled Water (Table 3)	*21,641*
Multi Family Measures (Table 5)	*20,369*
Total Conservation Savings	***42,010***
Net Potable Water Usage[1]	*237,348*
Reduction from Baseline Usage	*15.2%*

1 Potable water use (Table 2) minus water conservation savings (Table 5).

IMPLEMENTATION AND MONITORING

For the water conservation measures proposed to be incorporated into the Otay Ranch Town Center project, Table 7 summarizes the implementation timing for each measure, as well as the responsibility for monitoring the implementation of the measures.

TABLE 7
OTAY RANCH TOWN CENTER REDEVELOPMENT
IMPLEMENTATION AND MONITORING PROGRAM

Water Conservation Measure	Responsibility for Implementation	Monitoring of the Implementation
Hot Water Pipe Insulation	Developer	City Building Department
Pressure Reducing Valves	Developer	City Building Department/Otay Water District
Water Efficient Dishwashers	Developer	City Building Department
Dual Flush Toilets	Developer	City Building Department

REFERENCES

1. 2010 California Code Government Code Article 10.8 Water Conservation in Landscaping Government Code Section 65591-65599

2. National Standard Plumbing Code 2021

3. Chapter 20.12 Chula Vista Landscape Water Conservation Ordinance, November 1, 2022.

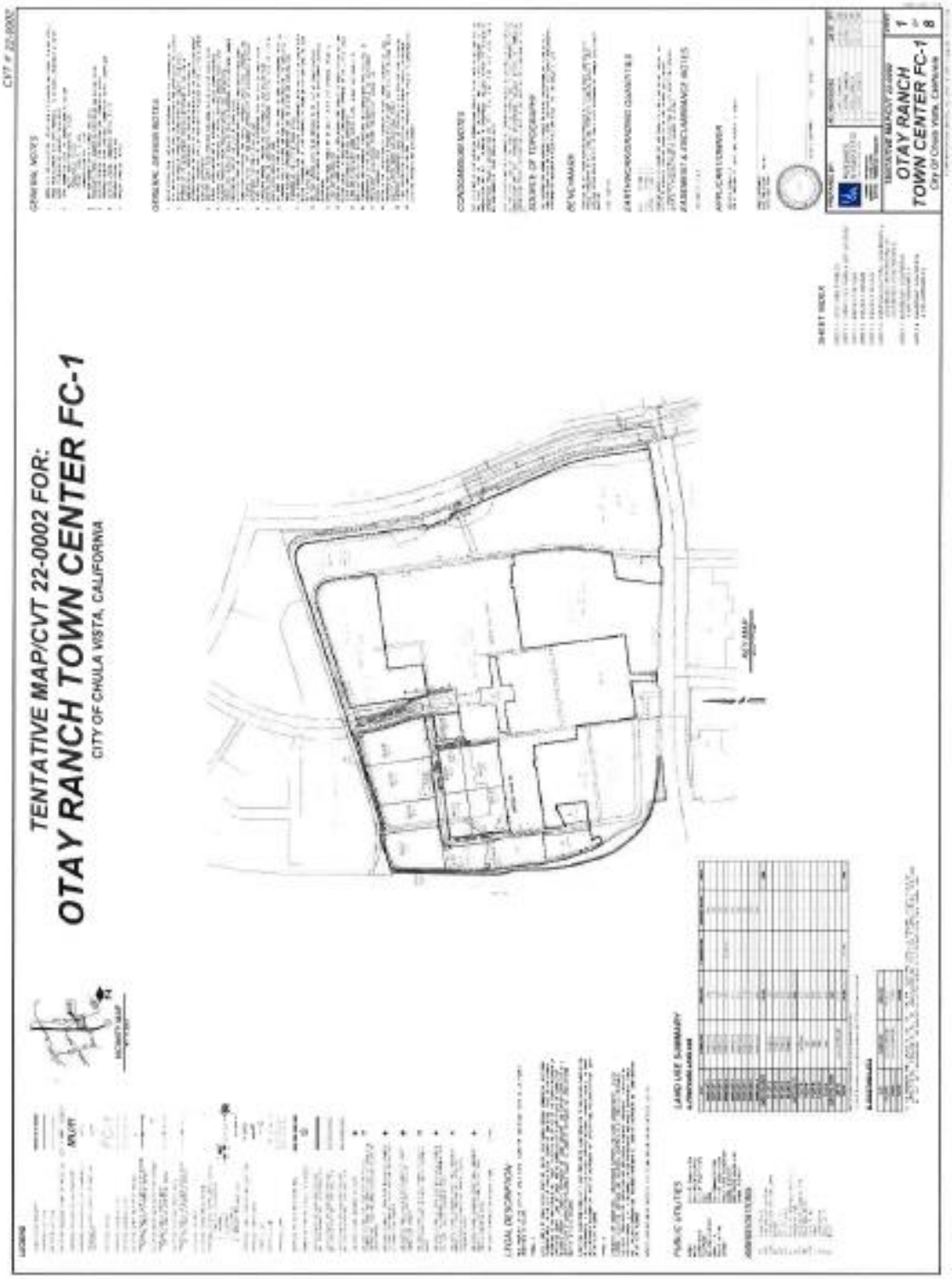
4. Otay Water District Water Facilities Master Plan Update 2015

5. California Green Building Standards Code, 2022.

APPENDIX A

OTAY RANCH TOWN CENTER

PROPOSED TENTATIVE MAP



APPENDIX B

LAND USE MAP