

Appendix C Water Infrastructure and Supply Memorandum

WATER INFRASTRUCTURE AND SUPPLY MEMORANDUM

Water Infrastructure and Supply Memorandum

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1. *Regulatory Framework and Existing Conditions*

This memorandum provides information on the regulatory framework and existing conditions related to water utility infrastructure and supply in the City of Lodi and its Sphere of Influence (SOI). The memorandum evaluates existing capacities, a summary of existing and planned capital improvement projects, and future needs for water infrastructure and supply.

The City of Lodi Water Utility (LWU) is the sole water purveyor for the City and is operated by the City. The City's water service area is contiguous with City boundaries and covers approximately 13.6 square miles. The unincorporated portions of the City's SOI are served either by maintenance districts for domestic water supply and/or irrigation districts for agricultural water supply, or by private well systems. These maintenance districts include the Mokelumne Acres Maintenance District in the northwest portion of the City's SOI which serves the unincorporated community of Woodbridge and the Sunnyside Estates Maintenance District which serves 21 properties in the southwest portion of the SOI. Irrigation districts whose service areas overlap with the City and its SOI include the Woodbridge Irrigation District (WID) which serves hundreds of acres of agricultural land to the west of the City and the Northern San Joaquin Water Conservation District which serves the northeastern portion of San Joaquin County, including a majority of the eastern portion of the City.¹

1.2 REGULATORY FRAMEWORK

1.2.1 FEDERAL REGULATIONS

Federal Safe Drinking Water Act

The Safe Drinking Water Act, the principal federal law intended to ensure safe drinking water to the public, was enacted in 1974 and has been amended several times since it came into law. The Act authorizes the U.S. Environmental Protection Agency (EPA) to set national standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally-occurring and man-made contaminants. These standards set enforceable maximum contaminant levels in drinking water and require all water providers in the United States to treat water to remove contaminants, except for private wells serving fewer than 25 people. In California, the State Water Resources Control Board (SWRCB) conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

¹ San Joaquin County. 2014, October. San Joaquin County 2035 General Plan Draft Environmental Impact Report. <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/Environmental%20Impact%20Reports/GENERAL%20PLAN%202035%20-%20DRAFT%20EIR.pdf>

WATER INFRASTRUCTURE AND SUPPLY MEMORANDUM**America's Water Infrastructure Act of 2018**

America's Water Infrastructure Act (AWIA), signed into law on October 23, 2018, authorizes federal funding for water infrastructure projects, expands water storage capabilities, assists local communities in complying with the Safe Drinking Water Act and Clean Water Act, reduces flooding risks for rural, western, and coastal communities, and addresses significant water infrastructure needs in tribal communities.² Additionally, AWIA requires that drinking water systems that serve more than 3,300 people develop or update risk assessments and emergency response plans (ERPs). Risk assessments and ERPs must be certified by the EPA within the deadline specified by the AWIA.

1.2.2 STATE REGULATIONS**SWRCB Division of Drinking Water**

The California Division of Drinking Water regulates public water systems within California; oversees water recycling projects; permits water treatment devices; and supports and promotes water system security. The Division of Financial Assistance provides funding opportunities for drinking water system improvements; provides support for small water systems and for improving technical, managerial, and financial capacity; and certifies drinking water treatment and distribution operators. The Field Operations Branch of the Division of Drinking Water is responsible for the enforcement of the federal and California Safe Drinking Water Acts and the regulatory oversight of approximately 7,500 public water systems to ensure the delivery of safe drinking water to all Californians. In this capacity, Field Operations Branch staff perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for noncompliance with laws and regulations, review water quality monitoring results, and support and promote water system security.

Urban Water Management Planning Act (Senate Bills 610 and 221)

The California Urban Water Management Planning Act and Section 10620 of the Water Code require that all urban water suppliers in California that provide water to more than 3,000 customers or supply more than 3,000 acre-feet per year (AFY)³ to prepare and adopt an Urban Water Management Plan (UWMP) and update it every five years. The act is intended to support efficient use of urban water supplies. It requires the UWMP to compare water supply and demand over the next 20 years for normal years, single dry years, and multiple dry years and to determine current and potential recycled water uses.

Senate Bill (SB) 610 and SB 221 were enacted to 1) ensure better coordination between local water supply and land use decisions and 2) confirm that there is an adequate water supply for new development. The

² John Barasso, October 10, 2018. Congress Passes America's Water Infrastructure Act. <https://www.barrasso.senate.gov/public/index.cfm/2018/10/congress-passes-america-s-water-infrastructure-act>.

³ One acre-foot is the amount of water required to cover one acre of ground (43,560 square feet) to a depth of one foot.

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following projects that are subject to the California Environmental Quality Act (CEQA) are required to prepare a Water Supply Assessment (WSA):

- Residential developments consisting of more than 500 dwelling units.
- Shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- Commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
- Hotel or motel, or both, having more than 500 rooms.
- Industrial, manufacturing, or processing plant or industrial park planned to employ more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- Mixed-use project that includes one or more of the projects specified above.
- Project that would demand an amount of water equivalent to, or greater than, the amount of water required for 500 dwelling units.

SB 221 requires written verification that there is sufficient water supply available for new residential subdivisions that include over 500 dwelling units. The verification must be provided before commencement of construction for the project.

Sustainable Groundwater Management Act of 2014

In the midst of a major drought in 2014, a three-bill legislative package was signed into law collectively known as the Sustainable Groundwater Management Act (SGMA). The Governor's signing message states "a central feature of these bills is the recognition that groundwater management in California is best accomplished locally." Under SGMA, local and regional agencies in groundwater basins that are designated as medium and high priority must form groundwater sustainability agencies (GSAs) that oversee the preparation and implementation of groundwater sustainability plans (GSPs).

The City of Lodi overlies the Eastern San Joaquin Groundwater Subbasin of the San Joaquin Valley Groundwater Basin. This groundwater basin is not adjudicated and is managed under the Eastern San Joaquin GSP, last updated in November 2019 by the Eastern San Joaquin Groundwater Authority (ESJGWA). The ESJGWA is composed of 16 GSA's including the City.

Water Meters (AB 2572)

In 2004, the State Legislature passed Assembly Bill 2572, requiring the installation of water meters on all residential, commercial, and industrial services constructed prior to 1992 by January 1, 2025, as a condition of water service from all water suppliers. The law requires all metered services billed at a metered rate, so that water bills reflect water consumption. The City has recently completed implementation of its Residential Water Meter Program which included eight phases of meter installations

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across the City resulting in 12,912⁴ meters installed by 2024.⁵ The Residential Water Meter Program primarily focused on meter installation at single-family residences and the City is currently proceeding with the conversion of multi-family residences, 240 of which are expected to be completed by the end of 2024.⁶

Water Conservation Act of 2009

The Water Conservation Act of 2009 (SB X7-7) requires all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita water use by 20 percent by 2020, with an interim goal of a 10 percent reduction in per capita water use by 2015. Effective in 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for State water grants or loans. The SB X7-7 requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified standards. Demonstration of compliance with this regulation is a required component of each water purveyor's 2020 UWMP. The City of Lodi is in compliance with its target reduction.

20x2020 Water Conservation Plan

The 20x2020 Water Conservation Plan of 2010 was a byproduct of the Water Conservation Act of 2009. The plan had a threefold effect, establishing: 1) a benchmark of current usage per capita of 2005 baseline data; 2) an intermediate goal for all water providers to meet by 2015; and 3) a 20 percent reduction by 2020 of water usage.

2018 Water Conservation Legislation

In 2018, the California Legislature enacted two policy bills (SB 606 and Assembly Bill [AB] 1668) to establish long-term improvements in water conservation and drought planning to adapt to climate change and longer and more intense droughts in California.⁷ The DWR and SWRCB will develop new standards for:

- Indoor residential water use
- Outdoor residential water use
- Commercial, industrial, and institutional water use for landscape irrigation with dedicated meters
- Water loss

⁴ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

⁵ Lodi, City of. 2024. Annual Budget 2024-2025, Budget Message. <https://city-lodi-ca-budget-book.cleargov.com/16366/introduction/transmittal-letter>

⁶ Lodi, City of. 2024. Annual Budget 2024-2025, Budget Message. <https://city-lodi-ca-budget-book.cleargov.com/16366/introduction/transmittal-letter>

⁷ California Department of Water Resources, 2021, 2018 Water Conservation Legislation, <https://water.ca.gov/Programs/Water-Use-And-Efficiency/2018-Water-Conservation-Legislation>, accessed August 23, 2023.

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Urban water suppliers are required to stay within annual water budgets based on their standards for their service areas, and to calculate and report their urban water use objectives in an annual water use report. Based on recent legislation (SB 1157), the California Water Code defines a 55-gallon-per-person daily standard for indoor residential use until 2025, at which time it decreases to 47 gallons, and further decreases to 42 gallons by 2030.

The legislation also includes changes to UWMP preparation requirements. These changes include additional requirements for Water Shortage Contingency Plans (WSCPs), expansion of dry year supply reliability assessments to a five-year drought period, establishment of annual drought risk assessment procedures and reporting, and new conservation targets referred to “annual water use objectives,” which require retailers to continue to reduce water use beyond the 2020 SB X7-7 targets.

Mandatory Water Conservation

Following the declaration of a state of emergency on July 15, 2014, due to drought conditions, the SWRCB adopted Resolution No. 2014-0038 for emergency regulation of statewide water conservation efforts. These regulations, which went into effect on August 1, 2014, were intended to reduce outdoor urban water use and have all California households voluntarily reduce their water consumption by 20 percent. Water companies with 3,000 or more service connections were required to report monthly water consumption to the SWRCB. The SWRCB readopted the regulations several times, most recently requiring local water agencies to implement Level 2 drought contingency plans. In March 2023, Governor Newsom announced the lifting of some of the drought restrictions following a wet winter, including the Level 2 demand reduction actions.

However, there are portions of the water conservation emergency regulations that remain in effect. These include wasteful water use practices that are still in effect include: 1) the application of potable water to outdoor landscapes in a manner that causes excess runoff; 2) the washing of vehicles without an automatic shut-off nozzle; 3) the application of potable water to driveways and sidewalks; 4) the use of potable water in nonrecirculating ornamental fountains; and 5) the application of potable water to outdoor landscapes during and within 48 hours after at least 0.25 inch of rainfall. In addition, watering decorative grass in commercial, industrial, and institutional areas is currently prohibited but is set to expire next June. However, a new bill (AB 1572), which is being decided in the California legislature, would make this ban permanent, unless these areas are using recycled water. Urban water suppliers are still required to submit monthly water monitoring reports to the SWRCB.

Governor’s 2021 Drought Declaration

Governor Gavin Newsom declared a drought state of emergency on April 21, 2021, and asked state agencies to partner with local water districts and utilities to make Californians aware of drought and encourage actions to reduce water usage by promoting DWR’s Save Our Water Campaign and other water conservation programs. The proclamation also included measures to be implemented by the DWR, SWRCB, the Department of Fish and Wildlife, and the Department of Food and Agriculture that included coordinated state and local actions to address issues stemming from continued dry conditions.

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The governor issued subsequent drought emergency proclamations on May 10, June 8, and October 19 of 2021, and March 28 of 2022. The May 10 proclamation included further measures to be implemented by DWR, SWRCB, the Department of Fish and Wildlife, and the Department of Food and Agriculture. The July 8 proclamation called on Californians to voluntarily reduce water use by 15 percent from their 2020 levels. The October 19 proclamation required local water suppliers to implement water shortage contingency plans that are responsive to local conditions and prepare for the possibility of a third dry year. The March 28 proclamation required that by May 25, 2022, the SWRCB must consider adopting emergency regulations defining nonfunctional turf⁸ and banning irrigation of nonfunctional turf in the commercial, industrial, and institutional sectors. The proclamation also required that by May 25, 2022, SWRCB must consider adopting emergency regulations to implement the shortage response actions specified in UWMPs for a water shortage level of up to 20 percent.

The SWRCB tracks and reports monthly on the state's progress toward achieving a 15 percent reduction in statewide urban water use compared to 2020 use.

State Water Resources Control Board Resolution No. 2022-002

On January 4, 2022, the SWRCB adopted an emergency regulation by resolution. On January 18, 2022, the emergency regulation became effective and would remain in effect for one year from the effective date unless the SWRCB acted to end, modify, or readopt it. The emergency regulation requirements include:

- Turning off decorative water fountains.
- Turning off/pausing irrigation systems when it rains and for two days after rain.
- Using an automatic shut-off nozzle on water hoses.
- Using a broom, not water, to clean sidewalks and driveways.

Water Conservation in Landscaping Act of 2006

The Water Conservation in Landscaping Act (AB 1881) requires cities and counties to adopt the State of California's Model Water Efficient Landscape Ordinance (MWELo) or adopt a comparable landscape water conservation ordinance that is at least as effective as the State's MWELo in conserving water.

The MWELo was revised in July 2015 via Executive Order B-29-15 to address the ongoing drought and to build resiliency for future droughts. The 2015 revisions to the MWELo increased water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, and on-site stormwater capture and by limiting the portion of landscapes that can be covered in turf. Each city and county is required to submit annual reports to DWR that document how the agency is achieving

⁸ Nonfunctional turf is turf that is ornamental and not otherwise used for human recreation purposes such as school fields, sports fields, and parks.

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compliance with the State MWELD and how many projects were subject to the ordinance during the annual reporting period.

The City of Lodi adopted water efficient landscape requirements in Section 17.30.070, *Water Efficient Landscape Requirements*, of the Lodi Municipal Code (LMC). The ordinance applies to all new and rehabilitated landscape projects that require a building or grading permit, plan check, design review, or utilities certificate.

California Water Code

The Water Code states that the water resources of the State must be put to beneficial use and that waste or unreasonable use of water be prevented. The code is divided into several sections that include provisions regarding water quality, formation of irrigation districts and water districts, safe drinking water, and water supply and infrastructure improvements.

California Plumbing Code

The latest version of the California Plumbing Code was issued in 2022 and became effective as of January 1, 2023. The code is updated on a three-year cycle. It specifies technical standards for the design, materials, workmanship, and maintenance of plumbing systems. One of the purposes of the plumbing code is to prevent conflicting plumbing codes within local jurisdictions. Among many topics covered in the code are water fixtures, potable and non-potable water systems, and recycled water systems. The City of Lodi adopts the California Plumbing Code under LMC Chapter 15.12, *Plumbing Code*.

California Building Code: CALGreen

The California Building Standards Commission adopted the nation's first green building standards in July 2008, the California Green Building Standards Code, also known as CALGreen. CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure in California. The code establishes building standards for sustainable site development, including water efficiency and water conservation measures that typically reduce water consumption by 20 percent.

CALGreen is updated every three years to allow for consideration and possible incorporation of new low flow plumbing fixtures and water efficient appliances. The mandatory provisions of CALGreen became effective January 1, 2011 and the latest 2022 version became effective on January 1, 2023. The building efficiency standards are enforced through the local building permit process. The City of Lodi has regularly adopted each new CALGreen update under Chapter 15.18, *Green Building Code*.

California Health and Safety Code

A portion of the State Health and Safety Code is dedicated to water issues, including testing and maintenance of backflow prevention devices, coloring of pipes carrying recycled water, and programs addressing cross-connection control by water users.

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1.2.3 REGIONAL REGULATIONS

Eastern San Joaquin Groundwater Subbasin Sustainability Plan

The City has historically relied on groundwater for the majority of its water supply. The Lodi service area overlies the Eastern San Joaquin Groundwater Subbasin of the San Joaquin Valley Groundwater Basin, which is managed under the Eastern San Joaquin Groundwater Sustainability Plan (ESJGSP). The goal of the ESJGSP is to achieve groundwater basin sustainability by implementing water supply projects that either replace groundwater use or supplement groundwater supplies to offset current pumping and increase recharge. For example, the ESJGSP documented a project for the expansion of the Lodi Surface Water Treatment Plant to allow for an additional 10 million gallons per day (mgd) capacity of surface water treatment. The project relies on the securing of additional raw surface water and is projected to be completed between 2030 and 2040 if current treatment plant capacity is exceeded.⁹

Integrated Regional Water Management Plan

The Eastern San Joaquin Integrated Regional Water Management Plan (IRWMP) defines and integrates key water management strategies and establishes a course of actions for the implementation of a comprehensive solution for water supplies in Eastern San Joaquin County. This comprehensive solution, called the Eastern San Joaquin Integrated Conjunctive Use Program, is a prioritized set of projects and actions that conjunctively manage surface water and groundwater supplies in a manner that ensures the social, economic, and environmental sustainability of this community. The Greater San Joaquin County Regional Water Coordinating Committee (Coordinating Committee) was established in 2019 to develop and implement the IRWMP in replacement of the Eastern San Joaquin Groundwater Basin Authority which has been inactive since 2017. As a member of the Coordinating Committee, the City participated in the development of the IRWMP and its latest 2020 Addendum adopted in February 2021.¹⁰

San Joaquin County Special Districts Service Charges Report

The San Joaquin County Department of Public Works prepared a report for the 2024-2025 fiscal year detailing the service charges imposed on the special districts within the County which include the Mokelumne Acres Maintenance District and the Sunnyside Estates Maintenance District that serve

⁹ Eastern San Joaquin Groundwater Authority. 2022, June (revised). Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan. https://www.sjgov.org/docs/default-source/public-works-documents/water-resources/final-esj-revised-gsp_june2022_clean.pdf?sfvrsn=675b059b_5

¹⁰ Greater San Joaquin County Regional Water Coordinating Committee, prepared by GEI Consultants. 2021, February. Eastern San Joaquin Integrated Regional Water Management Plan 2020 Addendum. https://www.esjirwm.org/Portals/0/assets/docs/IRWMP/ESJIRWMP_2020_Addendum.pdf?ver=97AzFMXzKgZxFb4kU3dX0Q%3d%3d

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portions of the City's SOI. Each of these maintenance districts are charged for water service based on Single-Family Equivalent units or metered rates.¹¹

San Joaquin Code of Ordinances

Areas of the City's SOI within a water district are subject to the provisions of Title 3, Health and Sanitation, Division 3, Utilities. These include regulations for water service connections and water conservation requirements. Division 4, Wells and Well Drilling, includes provisions for groundwater well construction, use, maintenance, and destruction which applies to all portions of the unincorporated County.

1.2.4 LOCAL REGULATIONS

City of Lodi 2020 Urban Water Management Plan

In compliance with the Urban Water Management Planning Act and The Water Conservation Act of 2009, the City of Lodi, as its own service water provider, adopted its 2020 Urban Water Management Plan (UWMP) in August 2021. All urban water suppliers are required to prepare, adopt, and file a UWMP with the DWR every five years. The 2020 UWMP outlines current water demands, sources, and supply reliability for its service area by forecasting water use based on climate, demographics, and future water savings due to conservation and water efficient fixtures. The UWMP also provides water supply contingency planning in case of shortage emergencies and demand management measures to increase water use efficiency and conserve water resources.

City of Lodi Water Master Plan

The City of Lodi Water Master Plan was first adopted in 1990 and was last updated in 2012 to implement a policy in the 2010 General Plan Growth Management and Infrastructure Element. The 2012 Water Master Plan defines the level of service, presents design criteria, analyzes service demands, and considers alternative facilities plans.

City of Lodi Recycled Water Master Plan

The City of Lodi's Recycled Water Master Plan was adopted in 2008 and describes the City's approach to optimizing the use of recycled water in the Lodi service area. It evaluated existing potential customers for recycled, availability of water supplies, the financial feasibility of implementing recycled water projects and infrastructure. Through the evaluation, it was determined that there were no economically feasible projects without additional outside funding. The 2020 UWMP notes that the City will continue to evaluate the potential for grant funding of recycled water projects, and/or seek opportunities to implement

¹¹ San Joaquin County. County of San Joaquin Lighting Districts, Maintenance Districts, and County Service Areas, Engineer's Report on Service Charges for Fiscal Year 2024-25. <https://www.sjgov.org/docs/default-source/public-works-documents/special-districts/engineer-reports/2024/2024-2025-engineer-s-report.pdf>

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portions of larger projects as they become economically feasible. However, the City does not have any current plans to utilize financial incentives for recycled water use.¹²

City of Lodi General Plan

The City of Lodi 2010 General Plan includes policies related to water supply and conservation:

- **Policy GM-G2:** Provide infrastructure—including water, sewer, stormwater, and solid waste/recycling systems—that is designed and timed to be consistent with projected capacity requirements and development phasing.
- **Policy GM-P5:** Update impact fee system to balance the need to sufficiently fund needed facilities and services without penalizing multifamily housing or infill development.
- **Policy GM-P8:** Ensure that public facilities and infrastructure—including water supply, sewer, and stormwater facilities—are designed to meet projected capacity requirements to avoid the need for future replacement and upsizing, pursuant to the General Plan and relevant master planning.
- **Policy GM-P9:** Coordinate extension of sewer service, water service, and stormwater facilities into new growth areas concurrent with development phasing. Decline requests for extension of water and sewer lines beyond the city limit prior to the relevant development phase and approve development plans and water system extension only when a dependable and adequate water supply for the development is assured.
- **Policy GM-P10:** Develop new facilities and rehabilitate existing facilities as needed to serve existing development and expected development, in accordance with the General Plan and relevant infrastructure master plans.
- **Policy GM-P11:** Prepare master plan documents as necessary during the planning period to address the infrastructure needs of existing and projected growth, and to determine appropriate infrastructure provision for each phase. Existing master plan documents should be used until new master plans are developed, and updates should occur as follows:
 - A sanitary sewer system master plan should be undertaken soon after General Plan adoption. In particular, this master plan should address how to best provide sewer service for the growth on the east side of the city and for infill development, and to determine if additional wastewater flows will need to be diverted into the proposed South Wastewater Trunk Line.
 - A citywide stormwater master plan should be prepared soon after General Plan adoption to confirm or revise existing planning studies.

¹² City of Lodi. 2021, August. 2020 Urban Water Management Plan. file:///pw102/Mend_L/LODI-01.0/03_ProductFiles/InhouseTech/Utilities/Resources/Lodi%202020%20UWMP%20Final.pdf

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- A White Slough Water Pollution Control Facility master plan should be completed during the early stages of Phase 1, most likely in 2013 or 2014.
- A recycled water master plan was prepared in May 2008 and is current as of 2009. It may be appropriate to update this document when the next WSWPCF master plan is prepared, in 2013 or 2014, to evaluate the feasibility of constructing a scalping plant to provide recycled water for use within the city.
- A potable water supply and distribution master plan is not urgently needed, as of 2009. Future planning should be completed as necessary.
- The Urban Water Management Plan should be updated on a five year basis in compliance with State of California mandated requirements. Future plans should be developed in 2010, 2015, 2020, 2025, and 2030.
- **Policy GM-P18:** Explore a program of complete wastewater reclamation and reuse at the White Slough Water Pollution Control Facility.
- **Policy GM-P19:** Encourage the use of tertiary treated wastewater for irrigation of agricultural lands, large landscaped areas, and recreation/open space areas within close proximity to the White Slough Water Pollution Control Facility

Lodi Municipal Code

The City of Lodi Municipal Code (LMC) is a primary tool that shapes physical development in the City. The LMC includes various directives pertaining to water supply and conservation issues. Also included are requirements for new development with respect to water service and fire safety. Water use in the City's SOI is regulated under the San Joaquin County Code of Ordinances, Title 5, Health and Sanitation, Division 3, Utilities, as described below. Selected LMC Sections pertaining to water supply and conservation issues are listed below:

- **Chapter 13.08, Article 1, Generally:** This article details the charging of water rates for development within and outside the City. Section 13.08.020 states that water service outside of the City shall be 150 percent of the rate of service within the City. Section 13.08.060 establishes additional connection and monthly service fees for single-family development that requires automatic fire protection systems pursuant to state law and LMC Chapters 15.04 or 15.40.
- **Chapter 13.08, Article 2, Main Extensions:** This article establishes the requirement for new water service to submit an application to the public works director. Should extension of a water main be required, it shall be installed at the applicant's expense in accordance with engineering plans furnished by applicant and approved by the public works director.
- **Chapter 13.08, Article 3, Water Conservation:** This article outlines the allowed watering/days hours and prohibits the waste of water. It also details the enforcement procedures and penalties for water waste. More detail regarding these requirements is discussed in *City of Lodi Water Conservation Ordinance* below.

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- **Title 15, Chapter 15.40, On-site Fire Protection:** This chapter prescribes the City's requirements for adequate fire flow in new building construction. It also requires building permit applications to be approved by the City fire chief.
- **Title 17, Chapter 17.30, Landscaping:** Section 17.30.070 outlines the City's water efficient landscaping requirements for development. For example, new construction projects with an aggregate landscape area equal to or greater than five hundred square feet require a building or landscape permit, plan check or design review approval.
- **Title 17, Chapter 17.50, Subdivision Design and Improvement Requirements:** This chapter includes Section 17.50.120 which states the requirement for subdividers to submit a master water plan conforming to the City's master water plan for the entire area covered by the proposed tentative map.

City of Lodi Impact Fee Mitigation Program

The City has adopted an Impact Fee Mitigation Program (IFMP) to fund the expansion of backbone infrastructure and capital facilities that will serve current and future development. This includes a Water Impact Mitigation Fee which was first adopted in 1991 and last revised in 2021 as part of the City of Lodi's Mitigation Fee Program Nexus Study. As identified in the 2021 study, the IFMP's water service fees are used to pay back the construction of the Surface Water Treatment Plant in addition to the funding of future improvements to the Plant. The fees also fund new water supply facilities that have been identified by the City's Capital Improvement Program which include construction of a 1.5 million-gallon water storage tank (referred to as the Southwest Water Tank in the City's 2024-2025 Annual Budget) and one additional groundwater well needed to ensure adequate water system pressure and fire flows during peak water use periods.¹³ The most recent water fee adopted for 2023 ranged from \$2,093 for 5/8 inch water meter connections to \$239,547 for 10 inch water meter connections.¹⁴

City of Lodi Design Standards

The City has adopted public improvement design standards that guide the design of public water facilities within the public right-of-way or within a public utilities easement. The most recent iteration of the design standards adopted in 2024 state that in residential developments, on-site water mains and hydrants for fire protection shall be public. Other on-site facilities, unless specifically noted in the Standards or as required as part of project approval, shall be private and shall be designed and constructed in accordance with the provisions of the Uniform Plumbing Code, as adopted by the City. The Standards outline the

¹³ Lodi, City of. 2021, June. Impact Mitigation Fee Program Update. <https://www.lodi.gov/DocumentCenter/View/967/Impact-Mitigation-Fee-Program-Report-PDF>

¹⁴ Lodi, City of. 2023. Annual Impact Mitigation Fee Program Report for the City of Lodi for Fiscal Year 2022-23. <https://www.lodi.gov/DocumentCenter/View/7178/2022-23-IMF-Report>

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water demand factor, fire flow requirements, and minimum pipe diameters for class of land use in the City.¹⁵

City of Lodi Water Conservation Ordinance

The City's Water Conservation Ordinance was adopted on November 18, 2015 and is incorporated in the LMC as Section 13.08, Article 3. All requirements of the City's Water Conservation Ordinance are in effect during normal water conditions. The waste of water is prohibited and defined in the Water Conservation Ordinance as:

- Failure to repair a controllable leak of water or to correct or repair overspray, low head drainage, leaks or excessive watering amounts from irrigation system or landscape watering.
- Watering of lawns, flower beds, landscaping, ornamental plants or gardens on days or times other than those outlined in Section 13.08.240 of the Water Conservation Ordinance as:

A. Watering Days:

1. Premises having odd numbered street addresses on Wednesday, Friday, and Sunday.
2. Premises having even numbered street addresses on Tuesday, Thursday, and Saturday.
3. No watering will be allowed by any addresses on Monday.

B. Watering Hours: Any hour except between the hours of 10 a.m. and 6 p.m. is prohibited.

- Washing of sidewalks, driveways, parking areas, tennis courts, patios, streets, or other exterior paved areas or buildings except when required to remove any spillage of substances that may be a danger to public health or safety.
- Washing with water any motor vehicles, trailers, or movable equipment other than with a bucket and rinsing the vehicle or equipment by use of a hose for not more than three minutes.
- Use of a hose without a positive shut off nozzle.
- The excess watering of any area so that water flows into a gutter or any drainage area.
- The unnecessary running of water in any residential, commercial, or industrial establishment onto the floor, pavement, ground, or into any drain or drainage area, with any equipment or in any way.

¹⁵ Lodi, City of. 2024. Public Improvement Design Standards. <https://www.lodi.gov/DocumentCenter/View/2518/Public-Improvement-Design-Standards-PDF?bidId=>

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- Watering of lawns or landscapes during or within 48 hours following a measurable rain.
- Operation of a water fountain or other decorative water feature that does not use re-circulated water.

1.3 EXISTING CONDITIONS

1.3.1 WATER SUPPLY SOURCES

As of 2020, LWU serves 26,230 municipal connections and delivers approximately 13,978 acre-feet (AF) to its customers. These primarily include residential, government, and commercial customers in the City, though the LWU has also sold water to the Sunnyside Estates Maintenance District (19 AF in 2020).¹⁶ Water supply for the Mokelumne Acres Maintenance District is provided by four groundwater wells (one of which is only used in emergencies) within the service area.¹⁷

LWU's water supply includes local groundwater from the Eastern San Joaquin Subbasin and surface water supplies from the Mokelumne River purchased from WID. The City's primary source of water is groundwater that it pumps using 28 groundwater production wells distributed throughout the water service area. Surface water is treated through the Lodi Surface water treatment plant (SWTP). The City's White Slough Water Pollution Control Facility (WWTP) also produces recycled water that is used for cultivation and harvesting of feed and fodder crops on land in the vicinity of the WWTP.¹⁸

Purchased/Imported Water

In May 2003, the City entered into an agreement with WID to purchase 6,000 acre-feet per year (AFY) of surface water from the Mokelumne River (with delivery via WID canal facilities near Woodbridge Dam) for a period of 40 years. The City does not have water rights to any direct diversions from this river or any other sources of raw surface water. An amendment approved in January 2008 extended the agreement to 2047. The agreement also included a provision allowing the City to bank any unused water to be used later if excess supplies are available. The City was not able to use its allotted 6,000 AFY until the Lodi SWTP was constructed in 2012, so its supply of banked water is currently 53,534 AF. The agreement allows a total of 42,000 AF of water to be banked, though an additional 12,000 AF of water was added to this total during a later amendment to the agreement.¹⁹ The banked water is available to the City during

¹⁶ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

¹⁷ San Joaquin County. 2024. 2023 Consumer Confidence Report for San Joaquin County Water Systems. https://www.sjgov.org/docs/default-source/public-works-documents/special-districts/ccrs-2020/ccr_mokelumneacres_md2efe6131-aa95-47bf-ae3f-f7706b3c7305.pdf?sfvrsn=43ebba80_3

¹⁸ Lodi, City. 2024, August 11 (accessed). "Waste Water". <https://www.lodi.gov/580/Waste-Water>

¹⁹ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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wet years and, by averaging the use of banked water over the term of the agreement, the average annual delivery of surface water to the City would be 7,200 acre feet per year or 2.345 billion gallons per year. The agreement also stipulates that water is released to the City between March 1st and October 15th.

LWU also had an agreement with the North San Joaquin Water Conservation District (NSJWCD) that allows an additional 1,000 AFY of Mokelumne River surface water to be released to the City between October 15th to March 30th, as long as NSJWCD has sufficient water available. This agreement ended in 2020 without a renewal.²⁰

Groundwater

The City overlies the Eastern San Joaquin Subbasin of the San Joaquin Valley Groundwater Basin. While the City has historically relied on groundwater supplies to meet all of its water demand, groundwater use has decreased since operation of the SWTP. An average of 26 percent of LWU's supply has come from surface water from the Mokelumne River between 2012 and 2016. As of 2020, 50 percent of the City's water supply is from surface water.

The Eastern San Joaquin Subbasin is not adjudicated and is currently managed under the ESJGSP. The Eastern San Joaquin Subbasin was identified as critically overdrafted by the DWR due to issues related to overpumping of groundwater, degradation of water quality, and seawater intrusion. The ESJGSP identified projects to help the subbasin reach sustainability which included expansion of the Lodi Surface Water Treatment Plant to allow for an additional 10 mgd capacity of surface water treatment.

The whole of the San Joaquin Valley Groundwater Basin frequently faces water quality issues due to the widespread occurrence of nitrate and pesticides in the water supply. Areas with high levels of nitrate in groundwater exist southeast of Lodi, south of Stockton, and east of Manteca, extending towards the San Joaquin–Stanislaus County line. Potential long-term degradation of water quality with nitrate is of concern due to continued fertilizer use, the predominantly downward movement of groundwater, and limited nitrate attenuation in the aquifer system. However, the City has not observed issues with regard to groundwater contamination in its own supply.

The 2020 UWMP assumes a safe groundwater extraction rate of 15,000 AFY as the amount of groundwater available to the City during all future years. However, the 28 wells that currently provide groundwater to the City have a combined capacity of 38,355 gallons per minute (gpm) or 170.4 AF per day, which could pump a maximum of over 62,000 AFY. In 2020, the City used 7,475 AFY of this groundwater.²¹

²⁰ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

²¹ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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Recycled Water

The City collects, treats, and discharges all municipal wastewater generated within the service area at its WWTP and does not coordinate with any other agencies with regards to collecting and treating Lodi wastewater. The City's industrial wastewater, the majority of which comes from a fruit canning facility, is blended with treated flows and is stored for agricultural irrigation of neighboring City-owned land.

In 2020, the City used a total of 3,729 AF of recycled water for agricultural irrigation, composed of 1,909 AF of undisinfected wastewater effluent and 1,820 AF of disinfected wastewater effluent. Recycled water is provided throughout the year, though the total supply was significantly reduced during winter months (November through February) to an average volume of 222 AF in 2020. The average recycled water flow during the remaining months (March through October) was 509 AF in 2020.

The Lodi Energy Center operated by the Northern California Power Agency (NCPA) also utilizes 1,800 SFY of recycled water for its cooling towers. NCPA also uses recycled water to provide steam for the 49-megawatt natural gas-powered generator at the plant. Additionally, the WWTP has supplied the San Joaquin County Mosquito and Vector Control District with 213 AF of tertiary-treated, UV disinfected wastewater effluent to replenish the White Slough Mosquitofish Rearing Facility's mosquito fish rearing ponds.²²

1.3.2 WATER SUPPLY INFRASTRUCTURE

The City's existing water distribution system is a 240-mile grid network of mains ranging from 2 inch to 36 inches in diameter, approximately 7,800 water valves and 1,800 fire hydrants,²³ four water storage tanks with a capacity of 5.1 million gallons (12.6 AF), and a total of 28 groundwater wells spaced at half-mile intervals throughout the City. The capacity of the wells ranges from 1.2 to 3.0 mgd and the total capacity of the 28 existing wells is approximately 55.5 mgd (170.4 AF per day).²⁴ The surface water from the Mokelumne River is conveyed to the City's other distribution pipelines via a 36-inch diameter transmission pipeline beginning at the intersection of North Mills Avenue and West Turner Road, continuing south along North Mills Avenue until its intersection with Elm Street.²⁵ The City built a new storage tank at Well 23 (Maggio Circle) that has been in operation since 2020. In addition, a storage tank at Well 28 (Kettleman Lane and Westgate Drive) is scheduled to be completed by 2025.²⁶

²² Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

²³ Lodi, City of. 2024. Annual Budget 2024-2025, Water Utility Fund. <https://city-lodi-ca-budget-book.cleargov.com/16366/departments/electric-utility-fund>

²⁴ Lodi, City of. 2012, August. Lodi Water Master Plan. <https://www.lodi.gov/DocumentCenter/View/965/Water-Master-Plan-PDF>

²⁵ Lodi, City of. 2012, August. Lodi Water Master Plan. <https://www.lodi.gov/DocumentCenter/View/965/Water-Master-Plan-PDF>

²⁶ Lodi, City of. 2022, July. City of Lodi 2022 Municipal Service Review and Sphere of Influence Plan. <https://www.lodi.gov/DocumentCenter/View/5894/City-of-Lodi-2022-MSR-SOI-Plan>

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The City's SWTP began operation in 2012 and is used to treat the purchased surface water from the Mokelumne River. The SWTP has a treatment capacity of 10 mgd (11, 200 afy) and has the potential to expand to 20 mgd with future improvements. The City's WWTP also provides water used for irrigating crops for cattle, power plant cooling, and pond replenishment. The WWTP has a treatment capacity of 8.5 mgd or 9,500 AFY. In 2020, the WWTP collected 5,787 AF of wastewater and provided 4,746 AF of recycled water.

1.3.3 CAPITAL IMPROVEMENT INITIATIVES

Capital Improvement Projects (CIPs) from the LWU are funded by the City's Water Fund. These funds are largely derived from charges of service and development impact fees from the City's IMFP.²⁷ Revenue for the Water Fund continues to increase each year due to the expanding installation of water meters that allow the City to charge usage-based water bills. Most of the CIPs identified within recent budgets involve ongoing water quality management efforts for the City's groundwater supplies and rehabilitation/upgrades for several of the City's 28 groundwater wells. The following are the major water infrastructure projects identified in the City's last two budget cycles (2023-2024 and 2024-2025).

- **SWTP Membrane Replacement Project:** This project provides funding to procure and install 420 new microfilters at the surface water treatment plant to replace the initial batch of filters installed in 2012.
- **Water Taps & Main Replacement Project:** This project involves the repair and upgrade of various components of existing water systems, including water taps (individual customer service) and water mains. These would be new improvements that were not be previously included in the City's Water Master Plan and the locations of the improvements would need to be determined once additional analysis is performed. This project involves ongoing yearly funding.
- **Southwest Gateway Water Tank:** This project would construct a 1.5-million-gallon ground level water storage tank and pump station to serve the southwest area of the City near groundwater well 28. This project was funded within the 2023-2024 Annual Budget²⁸ through City's IMFP funds.²⁹

The City's Water Master Plan also outlines additional facilities that would be needed to meet the demand of development under the adopted 2010 General Plan. For example, the Plan states that three new groundwater wells located south of Harney Lane would be needed to meet additional water demand from development by 2035. However, the 2020 UWMP states that the availability of purchased surface water

²⁷ Lodi, City of. 2023. Annual Budget 2023-2024. <https://www.lodi.gov/ArchiveCenter/ViewFile/Item/588>

²⁸ Lodi, City of. 2024. Annual Budget 2024-2025, Capital Improvements, Southwest Gateway Water Tank. <https://city-lodi-ca-budget-book.cleargov.com/16366/capital-request/100414/view>

²⁹ Lodi, City of. 2024. Annual Budget 2024-2025. <https://city-lodi-ca-budget-book.cleargov.com/16366/capital-improvements/capital-improvements-multi-year>

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and the planned construction of the Southwest Gateway Water Tank could offset the need for the new wells and additional groundwater supplies identified in the Water Master Plan.

The Water Master Plan has also developed preliminary plans that show the extensions to the existing water system needed to serve future development anticipated in the 2010 General Plan. This includes an extension of the 36-inch transmission line that currently extends south on North Mills Avenue from Turner Road at the SWTP to Elm Street. Under proposed conditions, the pipeline would extend south on North Mills Avenue to Lodi Avenue then extend west on Lodi Avenue toward the City Limit in order to serve future development in the western portion of the SOI. The Water Master Plan also determined the pipe sizing needed to satisfy the water demand and fire flow requirements of future development located west of Lower Sacramento Road and south of Harney Lane. This extension of service is anticipated to occur as new development is proposed for these areas.³⁰

The 2020 UWMP also identifies the potential to expand the capacity of the SWTP from 10 mgd (36.1 AF per day) to 20 mgd (61.4 AF per day). This project is intended to reduce demand for groundwater from the Eastern San Joaquin Subbasin as part of the sustainability strategies under the ESJGSP. Its implementation is planned for 2030 or as needed when water demand begins to approach supply. This project would include new water supply agreements to increase the City's surface water supplies beyond 6,000 AFY.

³⁰ Lodi, City of. 2012, August. Lodi Water Master Plan. <https://www.lodi.gov/DocumentCenter/View/965/Water-Master-Plan-PDF>

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2. *Projected Supply and Demand*

2.1 2020 URBAN WATER MANAGEMENT PLAN

The LWU provided water service 26,230 single-family, multi-family, commercial, government, and industrial customers in its service area in 2020. These consisted of 8,745 unmetered accounts and 17,845 metered accounts. According to the 2020 UWMP, the number of accounts served by the LWU has not changed between 2016 and 2020, though total potable water use has fluctuated between these years ranging from 23,109 AF in 2016 to 8,518 AF in 2018. 13,429 AF of potable water was used in 2020. When accounting for system losses the total water use in 2020 was 13,979 AF. The City's supply of recycled water is not accounted for within its water demand calculations since this water would not replace potable that would have otherwise been supplied by the City.

For the purposes of calculating changes to water demand in the 2020 UWMP, the LWU projected an annual growth rate of 1.13 percent within its service area based on the historic growth rate of the City and the growth rate projected in the 2010 General Plan. According to the Department of Finance's 2020 population estimates, the City had 67,930 residents. With the 1.13 percent growth rate, the UWMP projected this would increase to 90,008 residents by 2045. The total water demand in the City is therefore projected to increase from 13,979 AF in 2020 to 18,365 AF by 2045.³¹

Table 1 shows projected normal, dry, and multiple dry year supply and demand comparisons. During single-dry water years, LWU projects that up to 50 percent of the City's purchased surface water supply by WID would be curtailed. While no reductions in groundwater are assumed for single-dry years, the City's safe yield groundwater supply is projected to decrease by 5 percent for each additional dry year after the first year. Additionally, after the dry first year, projected demand is expected to decrease as the City implements its Water Shortage Contingency Plan stages. It is assumed that the City would implement Stage I actions during the second and third year of the drought and Stage II during the fourth and fifth year. However, the City's demands will most likely not meet the full reduction goal of the Stage within the first year that Stage is implemented. Therefore, there is an expected three percent reduction in demand for year two, a five percent reduction in year three, an eight percent reduction in year four, and a ten percent reduction in year five.

TABLE 1 PROJECTED NORMAL, DRY, AND MULTIPLE-DRY SUPPLY AND DEMAND COMPARISONS (AFY)

	2025	2030	2035	2040	2045
Normal Year					
Supply Totals	21,000	21,000	21,000	21,000	21,000
Demand Totals	14,663	15,512	16,410	17,360	18,365

³¹ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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Difference	6,337	5,488	4,590	3,640	2,635
Dry Year					
Supply Totals	18,000	18,000	18,000	18,000	18,000
Demand Totals	14,663	15,512	16,410	17,360	18,365
Difference	3,337	2,488	1,590	640	-365
Multiple Dry Year					
First Year					
Supply Totals	18,000	18,000	18,000	18,000	18,000
Demand Totals	14,663	15,512	16,410	17,360	18,365
Difference	3,337	2,488	1,590	640	-365
Second Year					
Supply Totals	17,250	17,250	17,250	17,250	17,250
Demand Totals	14,296	15,124	15,999	16,926	17,906
Difference	2,954	2,126	1,251	324	-656
Third Year					
Supply Totals	16,500	16,500	16,500	16,500	16,500
Demand Totals	13,929	14,736	15,589	16,492	17,447
Difference	2,571	1,764	911	8	-947
Fourth Year					
Supply Totals	15,750	15,750	15,750	15,750	15,750
Demand Totals	13,563	14,348	15,179	16,058	16,987
Difference	2,187	1,402	571	-308	-1,237
Fifth Year					
Supply Totals	15,000	15,000	15,000	15,000	15,000
Demand Totals	13,196	13,960	14,769	15,624	16,528
Difference	1,804	1,040	231	-624	-1,528

Source: Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>.

As shown in Table 1, an additional source of supply will be needed to supplement existing groundwater and surface water supplies to ensure the City can deliver all water demands to its customers. Based on the single and multiple year drought projections, the City will not have enough supply to meet demand for prolonged dry conditions in the future. To ensure that the City can meet its anticipated future demand, the City plans to expand the SWTP by 2030 and enter new supply agreements to increase its purchased supply beyond 6,000 AFY. In addition, the City anticipates that water saving actions through the Water Shortage Contingency Plan and Demand Management Measures will help reduce demand especially during dry periods.

SB X7-7 requires urban water suppliers to report in the UWMP a baseline water use calculation and specific water use targets to meet the 2020 goal of 20 percent water use reduction. All water suppliers are

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required to submit the SB X7-7 Verification Form, which is typically an appendix of the UWMP. The LWU's 2020 water use target was 200 gallons per capita per day (GPCD) which the City met with 184 GPCD.³²

2.2 2024 GENERAL PLAN UPDATE

The City is currently in the process of updating its General Plan. This update would replace the City's existing General Plan that was adopted in 2010. The update primarily focuses on adding growth within areas of existing development including the Downtown area and reconciling changes to the land use map needed to implement the 2023-2031 Housing Element. As seen in Table 2, *Buildout Projections in the City and SOI*, the 2024 General Plan would increase the number of residential units in the City by approximately 6,100 units and the amount of non-residential space by 2.6 million square feet at the horizon year of 2045 when compared to existing conditions. This update would, however, result in less growth within the City when compared the buildout of the existing 2010 General Plan at 2045.

TABLE 2 BUILDOUT PROJECTIONS IN THE CITY AND SOI

	City Limits	SOI	City + SOI
Existing Conditions (2020)			
Residential Units (DU)	24,129	1,382	25,511
Commercial Space (SF)	6,821	116	6,937
Industrial Space (SF)	8,998	356	9,354
Existing 2010 General Plan			
Residential Units (DU)	26,951	5,026	31,977
Commercial Space (SF)	7,523	538	8,061
Industrial Space (SF)	10,436	701	11,137
Proposed 2024 General Plan			
Residential Units (DU)	26,951	4,659	31,610
Commercial Space (SF)	7,519	475	7,994
Industrial Space (SF)	10,198	690	10,888
Difference Between Proposed 2024 General Plan and Existing Conditions (2020)			
Residential Units (DU)	+2,822	+3,277	+6,099
Commercial Space (SF)	+698	+359	+1,057
Industrial Space (SF)	+1,200	+334	+1,534
Difference Between Proposed 2024 General Plan and Existing 2010 General Plan			
Residential Units (DU)	0	-367	-367
Commercial Space (SF)	-4	-63	-67
Industrial Space (SF)	-238	-11	-249

Source: PlaceWorks 2024 (see Chapter 3, *Project Description*, Table 3-2, *2045 General Plan Planning Horizon Forecast*, of the Draft EIR).

³² Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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The water demand for existing development in 2020, in addition to the projected water demand for the year 2045 for the 2010 General Plan and the 2024 General Plan Update, is shown in Table 3, *Water Demand Under Buildout Scenarios (Gallons/Day)*. The commercial and industrial water demands are based on the water use factors in the City's 2012 Water Master Plan while the residential water use is based on the average residential water use in Lodi from April 2022 through March 2023 as reported by the SWRCB's Water Conservation and Production Reports.³³

TABLE 3 WATER DEMAND UNDER BUILDOUT SCENARIOS (GALLONS/DAY)

	City Limits	SOI	City + SOI
Existing Conditions (2020)			
Residential	6,921,806	396,450	7,318,256
Commercial	430,619	7,323	437,942
Industrial Space	454,444	17,980	472,424
TOTAL	7,806,869	421,753	8,228,622
Existing 2010 General Plan			
Residential	7,731,344	1,441,792	9,173,135
Commercial	474,937	33,965	508,902
Industrial Space	527,071	35,404	562,475
TOTAL	8,733,351	1,511,161	10,244,512
Proposed 2024 General Plan			
Residential	7,731,344	1,336,512	9,067,855
Commercial	474,684	29,987	504,672
Industrial Space	515,051	34,848	549,899
TOTAL	8,721,078	1,401,348	10,122,426
Difference Between Proposed 2024 General Plan and Existing Conditions (2020)			
Residential	+809,538	+940,062	+1,749,600
Commercial	+44,066	+22,664	+66,730
Industrial Space	+60,606	+16,869	+77,475
TOTAL	+914,209	+979,595	+1,893,804
Difference Between Proposed 2024 General Plan and Existing 2010 General Plan			
Residential	0	-105,280	-105,280
Commercial	-253	-3,977	-4,230
Industrial Space	-12,020	-556	-12,576
TOTAL	-12,273	-109,813	-122,086

Sources: State Water Resources Control Board. 2024. Water Conservation Portal, Current Monthly Reports, Lodi April 2022-March 2023. https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html; Lodi, City of. 2012, August. Water Master Plan. <https://www.lodi.gov/DocumentCenter/View/965/Water-Master-Plan-PDF>
Notes:

³³ State Water Resources Control Board. 2024. Water Conservation Portal, Current Monthly Reports, Lodi April 2022-March 2023. https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html

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Residential water use is based on a use factor of 110 gallons/capita/day from the Water Resources Control Board's Water Conservation and Production Reports for water use in Lodi averaged over 12 months (April 2022 - March 2023). Population projections are based on a persons per housing unit ratio of 2.60 (see Chapter 3, Table 3-2 of the Draft EIR).

Commercial water use is based on a factor of 2,750 gallons/acre/day and industrial water use is based on a factor of 2,200 gallons/acre/day. See Attachment A, *Water Demand Calculations*, for more information.

As seen in Table 3, development under the 2024 General Plan would increase water demand in the City and SOI by approximately 1.89 mgd (2,121 AFY) when compared to existing conditions. However, when compared to the buildout under the 2010 General Plan, the 2024 General Plan would decrease water demand by 0.12 mgd (137 AFY). As shown in Table 1, the 2020 UWMP projects water demand in the LWU service area to increase to 18,365 AFY by 2045. Under the conservative assumption that all land in the SOI was annexed into the service area of the LWU by 2045, the total water demand under buildout of the 2024 General Plan would be 11,339 AFY (10.12 mgd), which is approximately 38 percent less than the water demand projected in 2020 UWMP by 2045. Buildout under the 2024 General Plan would therefore not exceed the City's available water supplies under the most restrictive water use scenario, 15,000 AFY at the fifth dry year.

Additionally, the demands projected in the UWMP and for the 2024 General Plan do not consider per capita water use reductions in future years that would occur due to the water efficiency requirements of CALGreen, California Plumbing Code, and the City's water conservation measures in the municipal code. New construction for both residential and commercial land uses typically achieve a reduction in water usage rates of 20 percent through compliance with these regulations. SB 606, AB 1668, and SB 1157 also amended the California Water Code to establish indoor water use standards of 55 gallons per person per day until 2025, 47 gallons per person per day until 2030, and 42 gallons per person per day after 2030. Therefore, the overall water demand under the 2024 General Plan is expected to be lower than projected in these calculations.

Should demands increase as projected within the 2020 UWMP, therefore outpacing the City's water supply for most dry years, the LWU plans to expand the SWTP to accommodate 20 mgd of water treatment capacity. This would also accompany new water supply agreements to increase the City's purchased surface water supply.³⁴

³⁴ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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3. Potential Threats to Reliability

Threats to the City's water supply primarily consist of potential catastrophic events, such as earthquakes, major fire emergencies, water outages due to extended losses of power, localized flooding, surface water or groundwater contamination, and acts of sabotage, and climate change-related impacts including decreased precipitation, increased temperatures, and longer dry periods.

3.1 EMERGENCY RESPONSE

To address the potential for the immediate, catastrophic interruption of water supplies, the City in the process of developing an Emergency Response Plan (ERP). The ERP would include federal, state, and local contact directories, an emergency contractor directory, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations.

The City also maintains a preventative maintenance program for its distribution system. Auxiliary generators are available the City makes frequent improvements to water facilities to minimize loss of these facilities during an earthquake or any disaster causing an electric power outage. The City's metering program also includes surveying and replacing of water mainlines, which both limits distribution system loss and better ensures the water system's reliability in the event of a catastrophic supply interruption. The City also continues to increase existing water storage through the construction of additional storage tanks, like the Southwest Gateway Water Tank.

Additionally, to mitigate against groundwater contaminants, all groundwater wells require continuous chlorination and are complete with chlorination equipment.³⁵ Nine of the City's wells are equipped with granular activated carbon (GAC) treatment systems to remove DBCP³⁶ and TCP³⁷ which provide added insurance against inconsistencies caused by the presence of contaminants in the City's aquifer. Replacement of these filters was included in the City's CIP for 2024-2025.³⁸

³⁵ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

³⁶ Dibromochloropropane (DBCP) is a groundwater pollutant that was used as a soil fumigant in the control of nematodes. DBCP's use in California was stopped in 1977, and EPA had banned the agricultural application of DBCP in the continental United States in 1979 (State Water Resources Control Board, Division of Water Quality. 2016, July. Groundwater Information Sheet, Dibromochloropropane. https://www.waterboards.ca.gov/water_issues/programs/gama/docs/coc_dbcb_infosheet_jz0610.pdf)

³⁷ Trichloropropane (TCP) is a persistent contaminant in groundwater due to its slow degradation rate. It can result from the production of soil fumigants or be used as an intermediate in the production of other chemicals. It is classified as a human carcinogen. (State Water Resources Control Board, Division of Water Quality. 2017, October. Groundwater Fact Sheet 1,2,3 - Trichloropropane (TCP). https://www.waterboards.ca.gov/gama/docs/coc_tcp123.pdf)

³⁸ Lodi, City of. 2024. Annual Budget 2024-2025, Water Utility Fund. <https://city-lodi-ca-budget-book.cleargov.com/16366/capital-request/100418/view>

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3.2 DROUGHT RISK

While the groundwater subbasin underlying the City is critically overdrafted, groundwater levels have been increasing in recent years indicating progress in implementing the ESJGSP. LWU does not anticipate that overdrafting conditions will significantly impact its ability to extract groundwater in the short term. The City also anticipates that even in the most severe shortage conditions, its supply of surface water would only decrease by 50 percent (to 3,000 AFY).³⁹ Therefore, the City expects to meet demands for the next five years under a five-year consecutive drought. With the majority of the City's groundwater safe yield and all recycled water still available, the City's water supplies would meet normal or near-normal demands. As discussed below, the UWMP's drought risk analysis also assumes that the City would implement demand reduction actions through its Water Shortage Contingency Plan to reduce supply stress.

3.3 WATER SHORTAGE CONTINGENCY PLAN

As part of urban water management planning, water suppliers are required to provide a Water Shortage Contingency Plan (WSCP) that outlines how the supplier will prepare for and respond to a water supply shortage or catastrophic interruption. LWU's WSCP includes six stages and cover a possible reduction in supply of more than 50 percent. These are shown in Table 7.1-2. These six stages would be implemented depending on the severity and anticipated duration of the water supply shortage. Each stage has either voluntary or mandatory reductions.⁴⁰

TABLE 7.1-2 STAGES OF WATER SHORTAGE CONTINGENCY PLAN

Stage	Percent Supply Reduction	Shortage Response Actions
1	10%	Stage I is implemented by a reduction in water supply up to 10%. All requirements of the City's Water Conservation Ordinance are in effect for Stage I as during normal conditions. Also, as in normal conditions, the State's Model Water Efficient Landscape Ordinance is in effect in the City, per the State's mandate as of January 1, 2010. Lodi's Water Conservation Program consists mainly of outdoor watering restrictions enforced by water conservation patrol staff, public education through local fairs and other events, bill inserts, and newspaper articles, and an in-school education program. During Stage I, public outreach from the Water Conservation Program remains the same.
2	20%	Stage II is implemented by a reduction in water supply between 10% to 20%. This makes all the voluntary demand reduction actions and wasteful water practices from Stage I mandatory. Additionally, dining establishments are not to serve water unless requested. Hotels and motels must offer guests the option of not having towels and linens laundered daily by displaying notices prominently in each guestroom.
3	25%	Stage III is implemented by a reduction in water supply between 20% to 30%. This includes the following additional mandatory reduction actions on top of the actions already required from Stage II:

³⁹ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

⁴⁰ Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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		<ul style="list-style-type: none"> ▪ Landscape irrigation restrictions are implemented to limit the allowable frequency of irrigation to a maximum of two days per week based on the following schedule: <ol style="list-style-type: none"> 1. Premises having odd numbered street addresses irrigate only on Wednesday and Sunday. 2. Premises having even numbered street addresses irrigate only on Tuesday and Saturday. 3. No watering will be allowed by any addresses on Monday, Thursday, and Friday.
		<p>Stage IV is implemented by a reduction in water supply between 30% and 40%. This includes the following additional mandatory reductions on top of the actions already required from Stage III:</p> <ul style="list-style-type: none"> ▪ Landscape irrigation restrictions are implemented to limit the allowable frequency of irrigation to a maximum of one day per week and based on the following schedule: <ol style="list-style-type: none"> 1. Premises having odd numbered street addresses irrigate only on Sunday. 2. Premises having even numbered street addresses irrigate only on Saturday. ▪ No potable water from the City's system is used to fill or refill new swimming pools, artificial lakes, ponds, or streams until the water crisis is declared over. ▪ Water use for ornamental ponds and fountains is prohibited. ▪ Washing of automobiles and equipment must be done on the lawn or at a commercial establishment that uses recycled or reclaimed water. ▪ Flushing of sewers or fire hydrants is permitted only in cases of emergency and essential operations. <p>In addition to the penalties for waster wasting outlined in LMC Chapter 13.08, permanent water meters on existing non-metered services and/or flow restrictors on existing metered services would be installed by the City at the customer's expense in the event of a second violation.</p>
4	30%	
		<p>Stage V is implemented by a reduction in water supply between 40% and 50%. This includes the following additional mandatory reductions on top of the actions already required from Stage IV:</p> <ul style="list-style-type: none"> ▪ Landscape irrigation is not allowed. ▪ Washing of automobiles and equipment must be done at a commercial establishment that uses recycled or reclaimed water. ▪ No potable water from the City's system can be used for construction purposes, such as dust control, compaction, or trench jetting. ▪ Large industrial users, for example canneries and other food manufacturers, are required to reduce all water use.
5	50%	
		<p>Stage VI is implemented by a reduction is water supply over 50%. This includes the following additional mandatory reductions on top of the actions already required from Stage V:</p> <ul style="list-style-type: none"> ▪ Increased mandatory water use reduction. ▪ Large industrial users are required to cease all water use. ▪ Commercial kitchens are required to use pre-rinse spray valves.
6	>50%	

Source: Lodi, City of. 2021, August. 2020 Urban Water Management Plan. <https://www.lodi.gov/DocumentCenter/View/4623/2020-Urban-Water-Management-Plan-PDF>

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Attachment A Water Demand Calculations

Buildout Summary										
Land Use	Unit	Existing (2020)			Current General Plan			Proposed General Plan		
		City Limits	SOI Only	Outside SOI	City Limits	SOI Only	Outside SOI	City Limits	SOI Only	Outside SOI
Residential ¹	population	62,735	3,593	3,305	70,073	13,068	7,259	70,073	12,113	3,832
Commercial	Acres	157	3	5	173	12	27	173	11	24
Industrial	Acres	207	8	30	240	16	40	234	16	52

Notes:

¹Population calculated by multiplying the number of dwelling units under each scenario by the Lodi DOF 2022 and 2023 persons per household, which is 2.6 persons/household (see Chapter 3, *Project Description*, of Draft EIR)

Total Indoor Water Demand (gallons/day)									
Land Use	EXISTING			CURRENT GENERAL PLAN			PROPOSED GENERAL PLAN		
	City Limits	SOI Only	City +SOI	City Limits	SOI Only	City +SOI	City Limits	SOI Only	City +SOI
Residential	6,921,806	396,450	7,318,256	7,731,344	1,441,792	9,173,135	7,731,344	1,336,512	9,067,855
Commercial	430,619	7,323	437,942	474,937	33,965	508,902	474,684	29,987	504,672
Industrial	454,444	17,980	472,424	527,071	35,404	562,475	515,051	34,848	549,899
TOTAL	7,806,869	421,753	8,228,622	8,733,351	1,511,161	10,244,512	8,721,078	1,401,348	10,122,426
		City+SOI	8,228,622		City+SOI	10,244,512		City+SOI	10,122,426

Notes:

Commercial water use factor = 2,750 gallons/acre/day and industrial water use factor = 2,200 gallons/acre/day (Lodi 2012)

Residential water use factor = 110 gallons/capita/day based on the water use in Lodi averaged over 12 months (April 2022 - March 2023) from the State Water Resource Board Water Conservation and Production Reports (SWRCB 2024)

Sources:

Lodi, City of. 2012, August. Water Master Plan. <https://www.lodi.gov/DocumentCenter/View/965/Water-Master-Plan-PDF>

State Water Resources Control Board. 2024. Water Conservation Portal, Current Monthly Reports, Lodi April 2022-March 2023.

https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html

Indoor Wastewater Water Demand (gallons/day)									
Land Use	EXISTING			CURRENT GENERAL PLAN			PROPOSED GENERAL PLAN		
	City Limits	SOI Only	City + SOI	City Limits	SOI Only	Outside SOI	City Limits	SOI Only	Outside SOI
Residential	6,229,625	356,805	6,586,430	6,958,209	1,297,613	8,255,822	6,958,209	1,202,861	8,161,070
Commercial	313,177	5,326	318,503	345,409	24,702	370,110	345,225	21,809	367,034
Industrial	309,848	12,259	322,107	359,366	24,139	383,506	351,171	23,760	374,931
TOTAL	6,852,651	374,390	7,227,041	7,662,984	1,346,453	9,009,438	7,654,605	1,248,430	8,903,035
		City+SOI	7,227,041		City+SOI	9,009,438		City+SOI	8,903,035

Notes:

Commercial water use factor = 2,000 gallons/acre/day and industrial water use factor = 1,500 gallons/acre/day (Lodi 2012)

Residential water use is assumed to be 90 percent of the total per capital water demand (King County 2014)

Sources:

Lodi, City of. 2012, July. Wastewater Master Plan. <https://www.lodi.gov/DocumentCenter/View/964/Wastewater-Master-Plan-PDF>

King County Department of Natural Resources and Parks. 2014, July. Updated Planning Assumptions for Wastewater Flow Forecasting. https://your.kingcounty.gov/dnrp/library/wastewater/wtd/construction/Planning/RWSP/CompReview/13/1407_UpdatedPlanningAssumptions2014.pdf, accessed on April 11, 2024.

Appendices

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