

Executive Summary

Pure Water Phase 1 is an indirect potable reuse project with surface water augmentation that will consist of the following key facilities that are designed to produce 30 mgd of purified water from wastewater that will be delivered to the City's Miramar reservoir for purposes of providing an environmental barrier, blending with freshwater supplies, and storage: (see San Diego_Maps)

Morena Pump Station and Pipeline

The Morena Pump Station and Pipeline Project will deliver additional wastewater flows to the North City Water Reclamation Plant via an average 32-million gallons per day (mgd) pump station (average daily flow) and 10.4 miles of 48-inch force main. The Morena project also includes a 10.4-mile, 30-inch pipeline to dispose of the brine generated at the North City Pure Water Facility and Centrate generated from the Metro Biosolids Center (MBC).

North City Water Reclamation Plant Expansion (NCWRP)

The NCWRP treats wastewater from several San Diego Communities and distributes recycled water for irrigation and industrial purposes in the northern San Diego region. As part of the Pure Water Program, the NCWRP will be expanded from to 52 mgd so the facility can continue to serve recycled water customers, and provide tertiary-treated water to the future North City Pure Water Facility (NCPWF). This project also includes the design of a pump station and pipeline (NCPWF Influent Conveyance), which will be located at the NCWRP site and will convey tertiary-treated flows produced at the NCWRP to the future NCPWF.

North City Pure Water Facility (NCPWF)

The NCPWF will be constructed north of Eastgate Mall across from the existing NCWRP. The treatment process will include ozone and biological activated carbon filters, membrane filtration, reverse osmosis, and ultraviolet with advanced oxidation. Once operational in 2021, the new plant will have a production capacity of an annual average of 30 mgd. The purified water from the NCPWF will be conveyed to Miramar Reservoir for augmentation. After blending with raw water in Miramar Reservoir this water will be treated at the Miramar Water Treatment Plant and sent to customers through the City of San Diego's potable water transmission and distribution facilities.

North City Pure Water Pump Station and Pipeline to Miramar Reservoir

A new 30-mgd pump station and 8-mile, 48-inch force main and a subaqueous dispersion pipeline are needed to convey the purified water produced at the NCPWF to the City's Miramar Reservoir. The purified water will then blend with the City's other water supplies before the water is treated at the adjacent Miramar Water Treatment Plant (WTP) and distributed to customers. The capacity of Miramar Reservoir is 6,682 acre-feet and it is connected to both SDCWA's regional water aqueducts and upstream reservoirs, including the City's San Vicente Reservoir (total capacity: 249,358 AF). The interconnected nature of

Executive Summary

the City's storage system with the regional aqueducts provides superior operational redundancy and flexibility, providing regional water supply and water quality benefits.

North City Renewable Energy Project

The Renewable Energy Project will capture landfill gas to generate energy and help meet the Climate Action Plan targets for reducing Greenhouse Gas Emissions. The project will produce the majority of power needed for the Phase 1 - North City facilities, including the expanded NCWRP, NCPWF, North City Pure Water Pump Station, and expanded Metropolitan Biosolids Center (MBC). The City will install a new ~15.4-MW generation facility at NCWRP, 1.6-MW generation facility at MBC, and landfill gas compressor station and pipeline.

Metro Biosolids Center Improvements

The MBC is the City's regional biosolids facility which receives and processes solids from both the NCWRP and the Point Loma Wastewater Treatment Plant (PLWTP). As part of the Pure Water Program, the NCWRP will be expanded to 52 mgd. Due to the expansion of the NCWRP, the MBC will experience higher flows than it is currently receiving. Thus to accommodate the additional flows, upgrades and improvements to the existing process systems are necessary. The major project scope elements at MBC entail improvements to the following process areas: grit removal, biosolids thickening, anaerobic digestion, and centrate pump station.

The City's water system is one of the most complex in California spanning three major water treatment service areas, with three water treatment plants, nine reservoirs, and two water reclamation plants. The City's water service area also overlays several groundwater basins. There are 128 main pressure zones in the City's retail system, reflecting the varied topography of the water service area. In addition to local runoff from rainfall that is captured in the City's reservoirs and the use of recycled water for non-potable water demands from the City's two water reclamation plants, imported water blended with locally produced desalinated seawater is currently purchased from the San Diego County Water Authority (SDCWA) via the Metropolitan Water District of Southern California (MWD) to meet the majority of water demands in the City.

Imported water is conveyed to the City using pipeline connections to SDCWA's aqueducts. The majority of imported water is stored in several of the City's reservoirs and treated at the City's water treatment facilities. Some treated imported water is also purchased from SDCWA. MWD, Southern California's regional water wholesaler, operates the largest water system in the nation. MWD imports water from two main supply sources: (1) the Colorado River Aqueduct (CRA), which it owns and operates and which brings water from the Colorado River into Southern California; and (2) the State Water Project (SWP), which it contracts with to bring water from the Bay-Delta. The SWP and CRA are part of an extensive water supply system that includes State, federal and local conveyance of water.

Pure Water San Diego will provide a reliable drinking water supply that is locally controlled and drought-proof and will reduce reliance on imported delta supplies. The program will use advanced water treatment processes to turn recycled water into a source

Executive Summary

water supply of equal or greater quality than the current sources. San Diego is active in the Integrated Regional Water Management Plan in addition to producing the the Urban Water Management Plan (UWMP) every five years as required by law.

Phase 1 of Pure Water will continuously provide an annual average of 30 mgd of reliable drinking water supply that is locally controlled and drought-proof. How this increases the flexibility and resiliency of the City’s water system can be found in the 2012 Recycled Water Study, the 2015 City of San Diego UMWP, and the 2015 SDCWA UMWP and the 2015 MWD UWMP.

By continuously providing an annual average of 30 mgd of reliable drinking water supply that is locally controlled and drought-proof Phase 1 of Pure Water will increase system reliance and provide other public benefits. How this increases system reliance of the City’s water systems can be found in the 2012 Recycled Water Study and the 2015 City of San Diego’s UWMP. Information on Public Benefits may be found in later Tabs within this Application.

The City’s overall efforts towards sustainable groundwater management are summarized in Section 6.3 of the 2015 UWMP. In addition, Phase 1 of Pure Water will provide water with reduced salinity. This water is expected to offer benefits to several groundwater basins in the region. These benefits and the basins are described further in later sections of this Application.

Pure Water will ultimately produce 83 mgd of purified water by 2035. Subsequent to Phase 1, Central Area facilities will produce water that will be stored in either Lake Murray or San Vicente Reservoir. It is not yet determined if all of the remaining 53 mgd can be produced in the Central Area. If additional purification capacity is needed to reach the full 83 mgd goal, South Bay facilities will be implemented and will convey purified water to Otay Reservoir.

Other Tabs within this Application provide details of the public and non-public benefits of Pure Water Phase 1. A summary of these benefits as provided here as follows:

Category	Benefit	NPV
Ecosystem	Solids Reduction at PLWWTP (P4, P16)	398.75
	Reduced Delta Outflows (P4, P7, P9, P16)	18.20
	Invasive Species Management (P15)	0.97
	Ecosystem Improvements	19.32
Total Ecosystem Benefits		\$437.24
Water Quality	Local Salinity Reductions (P5)	383.92
	High/Medium Priority Basin Protection (P6)	191.96

Executive Summary

	Reduced Delta Exports (P8)	6.39
Total Water Quality Benefits		\$582.27
Emergency Response	Post - Fire Erosion & Flood Control	0.43
	Post - Fire Watershed Restoration	1.48
	Emergency Storage	265.99
	Drought Response	48.33
Total Emergency Response Benefits		\$316.23
Recreation	North City Visitor Center	0.73
Total Recreation Benefits		\$0.73
TOTAL BENEFITS in \$Millions		\$1,336.48

Pure Water Phase 1 is providing minor modifications to a local reservoir; however, the benefits of this system that will continuously provide an annual average of 30 mgd of reliable drinking water supply that is locally controlled and drought-proof are significant to the State of California and will benefit the ecosystem of the Delta. In addition to the public benefits which are identified and monetized herein, Pure Water Phase 1 may also provide other benefits such as flood control in local reservoirs, habit management and invasive species management plans at Miramar Reservoir. In addition, Pure Water Phase 1 will provide water supply with a very low net energy requirement. This will provide lasting reductions in the energy use and greenhouse gas emissions which incrementally help climate change impacts such as sea level rise. These broader benefits provide other significant benefits to the Delta's ecosystem. In order acknowledge the complexity of State's water system, the City has also included \$20M in the Project budget for the purchase of instream water in the Delta.