

Section 1: Introduction

This section provides an overview of the project and an outline of the Water Facilities Master Plan (WFMP). A brief background of the project area and master planning work, a discussion of the objectives and scope of work, a description of the report sections to follow, and a listing of abbreviations and definitions used in this report are included in this section of the report.

1.1 Background

Created as a municipal utility under Article 9 of the City of San Bernardino Charter, San Bernardino Municipal Water Department (SBMWD or Department) was established on January 6, 1905. SBMWD is governed by a Board of Water Commissioners appointed by the Mayor and subject to confirmation by the Common Council. The first Board of Water Commissioners was appointed in May 1905 and the initial water distribution system covered approximately one square mile and served a population of only about 6,000 people. Since then, the SBWMD service area has experienced years of steady population growth and has expanded at a fast rate to provide service to most of the City of San Bernardino and portions of the unincorporated areas of the County.

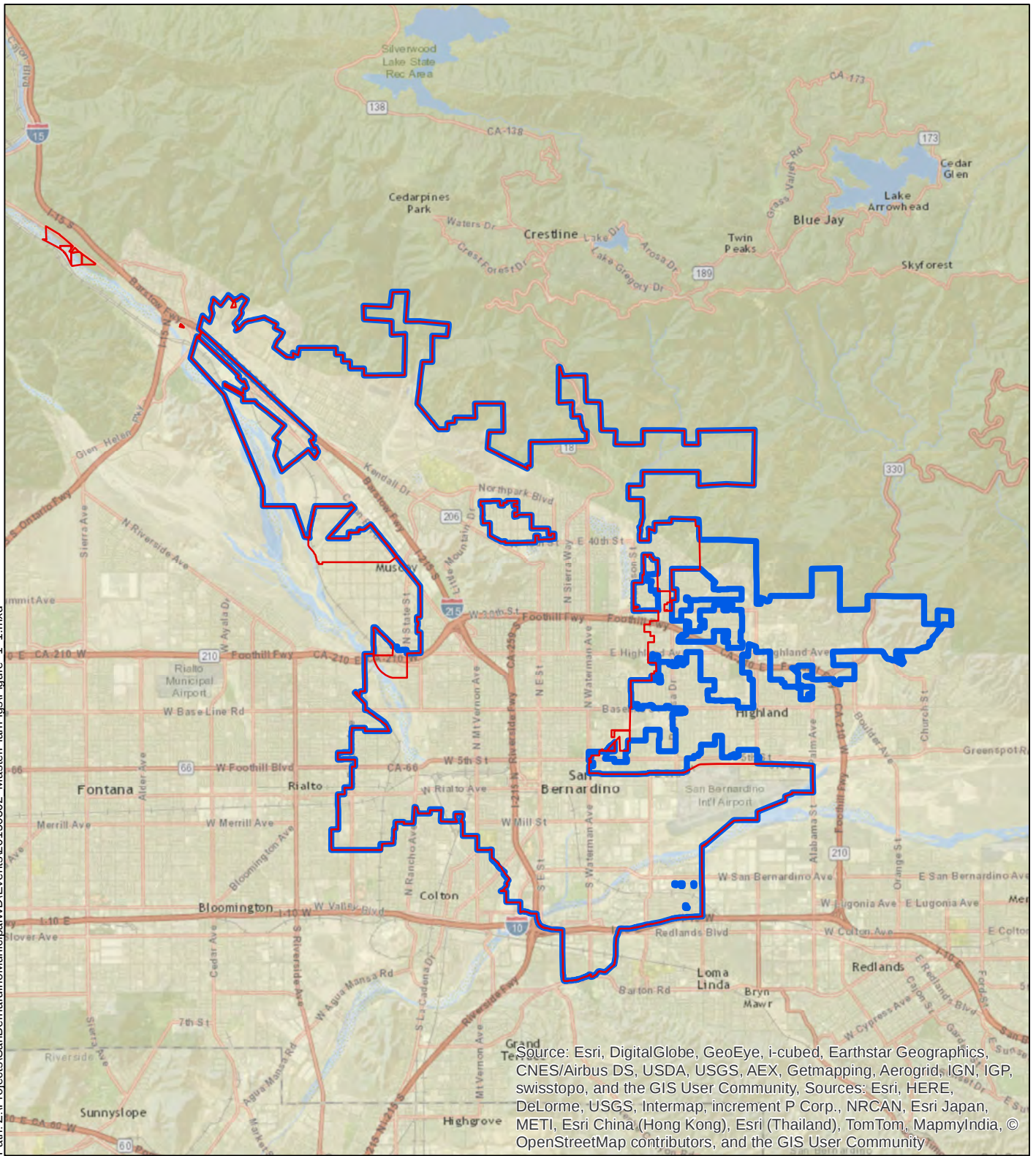
The Department's service area is bounded on the north by the San Bernardino National Forest, on the east by the East Valley Water District and Redlands Municipal Utilities Department, on the south by the cities of Loma Linda and Colton, and on the west by the West Valley Water District, the City of Rialto, and the Muscoy Mutual Water Company. Elevations within the Department's service area range from approximately 1,000 feet above sea level at the southern boundary, to an elevation in excess of 2,300 feet above sea level at its northern-most boundary. The Department's service area is graphically shown on Figure 1-1.

The Department's last water master plan was completed in 2007. The water master plan covered historical and projected demands, and evaluated supplies, storage, pumping and the distribution system. Several of the recommendations from this plan have been implemented. While much of the growth in water demands projected in the last master plan has yet to materialize, the Department has implemented a number of facility improvements and has programmed for a new hydraulic model and Water Facilities Master Plan update to reflect the changes in facilities and planning that has occurred since the 2007 plan was prepared.

1.2 Objectives and Scope of Work

The City of San Bernardino's "mission is to provide quality and cost effective services to the people of San Bernardino. We will provide excellence in leadership through the allocation of public resources to City programs that are responsive to community priorities and maximize opportunities for economic, educational and cultural viability." The Water Department's mission is to meet its "customer's needs by providing high-quality service in water supply, water reclamation and geothermal heating in the most professional and cost-effective manner possible." This WFMP has been developed to assist the Department in achieving these objectives for its water system. The scope of work for this Water Facilities Master Plan includes the following primary tasks:

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Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Source:

Legend

- SBMWD Service Area Boundary
- San Bernardino City Limits



0 5,000 10,000
Scale: Feet

Kennedy/Jenks Consultants

San Bernardino Municipal Water Department
Water Facilities Master Plan
San Bernardino, California

San Bernardino Municipal Water Department Service Area

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Figure 1-1

- Analysis of Historical and Existing Water Demands through Statistical Regression Analysis
- Evaluation of Factors influencing Future Water Demands
- Development of Water Duty Factors and Projection of Future Water Demands
- Development of Facility Database to capture details of system facilities serving the system
- 24-hour Extended Period Simulation (EPS) Hydraulic Model Development (Importing pipelines, allocating demands, interpolating elevations, etc.)
- Hydraulic Model Calibration (Steady-State and Extended Period Simulation)
- Evaluation of Existing System
- Evaluation of Future System
- Development of Capital Improvement Program (CIP)

1.3 Data Sources

In preparation for this WFMP, Department staff supplied several reports, studies, previous planning documents and other sources of information. In addition, material was obtained from sources such as Department of Finance, Southern California Association of Governments (SCAG), Environmental Systems Research Institute, Inc. (ESRI), City of San Bernardino Planning and IT Departments, Riverside County and others. Pertinent materials included water system maps, planning and development information, historical records, billing data and detailed facility information. Numerous meetings were held with Department staff for the review and collection of the data used for the preparation of this plan. In addition, extended interactions were held with Department's operational staff during the hydraulic model development and calibration stages to incorporate their knowledge and system facilities and operational information.

1.4 Report Organization

The following sections of this WFMP describe the background, existing and future systems, water demands, land use and population information, hydraulic model development and calibration, system evaluation and finally recommended system improvements.

- Section 1, Introduction - presents a brief overview of the background, scope of work, data sources and acronyms used as part of this report.
- Section 2, Service Area - presents the study area, land use, demographics and climatic conditions within the Department's service area.

- Section 3, Population and Historical Water Demands - focuses on the analysis of the Department's historical water usage trends, and population projections.
- Section 4, Projected Water Demands – documents the sources of various demand projection data, evaluates factors affecting water usage, and develops Water Duty Factors and future water demand projections.
- Section 5, Water Supply - includes the evaluation of the existing and future water supply options available to the Department.
- Section 6, Existing System Facilities - identifies the infrastructure and operational details of the existing system facilities and documentation of planning and evaluation criteria to set up the framework for model development and system analysis.
- Section 7, Hydraulic System Analysis - documents the model development and the existing and future system evaluations.
- Section 8, Capital Improvement Program (CIP) - establishes the Capital Improvement Projects needed for both existing and future conditions.

1.5 Acronyms and Abbreviations

Acronyms and abbreviations used in the report are as follows:

Table 1-1: Abbreviation Explanations

AC	Acre
ACRE-FT	Acre-feet
ACRE-FT/MO	Acre-feet per Month
ACRE-FT/YR	Acre-feet per Year
ADD	Average Day Demand
ADP	Average Day Production
APN	Assessor's Parcel Number
AWWA	American Water Works Association
BHG	Bunker Hill Groundwater Basin
CCI	Construction Cost Index
CCF	Hundred Cubic Feet
CDPH	California Department of Public Health
CFS	Cubic Feet per Second
CIP	Capital Improvement Program
COMM/IND	Commercial/Industrial
CY	Calendar Year
DBCP	Di-bromo chloropropane
DEM	Digital Elevation Model
DU	Dwelling Unit
DU/ACRE or DU/AC	Dwelling Unit per Acre
DWR	Department of Water Resources
EDU	Equivalent Dwelling Unit

ENR	Engineering News Record
EPS	Extended Period Simulation
ESRI	Environmental Systems Research Institute, Inc.
Eto	Evapotranspiration Rate
FF	Fire Flow
FT	Feet
FY	Fiscal Year
FPS	Feet per Second
GIS	Geographic Information System
GPD	Gallons per Day
GPD/ACRE	Gallons per Day per Acre
GPD/DU	Gallons per Day per Dwelling Unit
GPM	Gallons per Minute
HDR	High Density Residential
HGL	Hydraulic Grade Line
HP	Horsepower
HTE	Naviline Customer/Billing Database
HWL	High Water Level
IN	Inch
LDR	Low Density Residential
LMDR	Low Medium Density Residential
LU	Land Use
MCL	Maximum Contaminant Level
MDD	Maximum Day Demand
MDP	Maximum Day Production
MDR	Medium Density Residential
MG	Million Gallons
MGD	Million Gallons per Day
Mg/L	Milligrams per Liter
MHDR	Medium High Density Residential
MinDD	Minimum Daily Demand
PCE	Perchloroethylene
PHD	Peak Hour Demand
PRV	Pressure Reducing Valves
PS	Pump Station
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
RUWMP	Regional Urban Water Management Plan
SAWPA	Santa Ana Watershed Project Authority
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SOI	Sphere of Influence
SS	Steady-state
TCE	Trichloroethylene
TDH	Total Dynamic Head
TDS	Total Dissolved Solids

TM	Technical Memorandum
TOU	Time of Use
UBC	Uniform Building Code
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VFD	Variable Frequency Drive
WDF	Water Duty Factor
WFMP	Water Facility Master Plan
WRP	Water Reclamation Plant
WSA	Water Supply Assessment
WTP	Water Treatment Plant