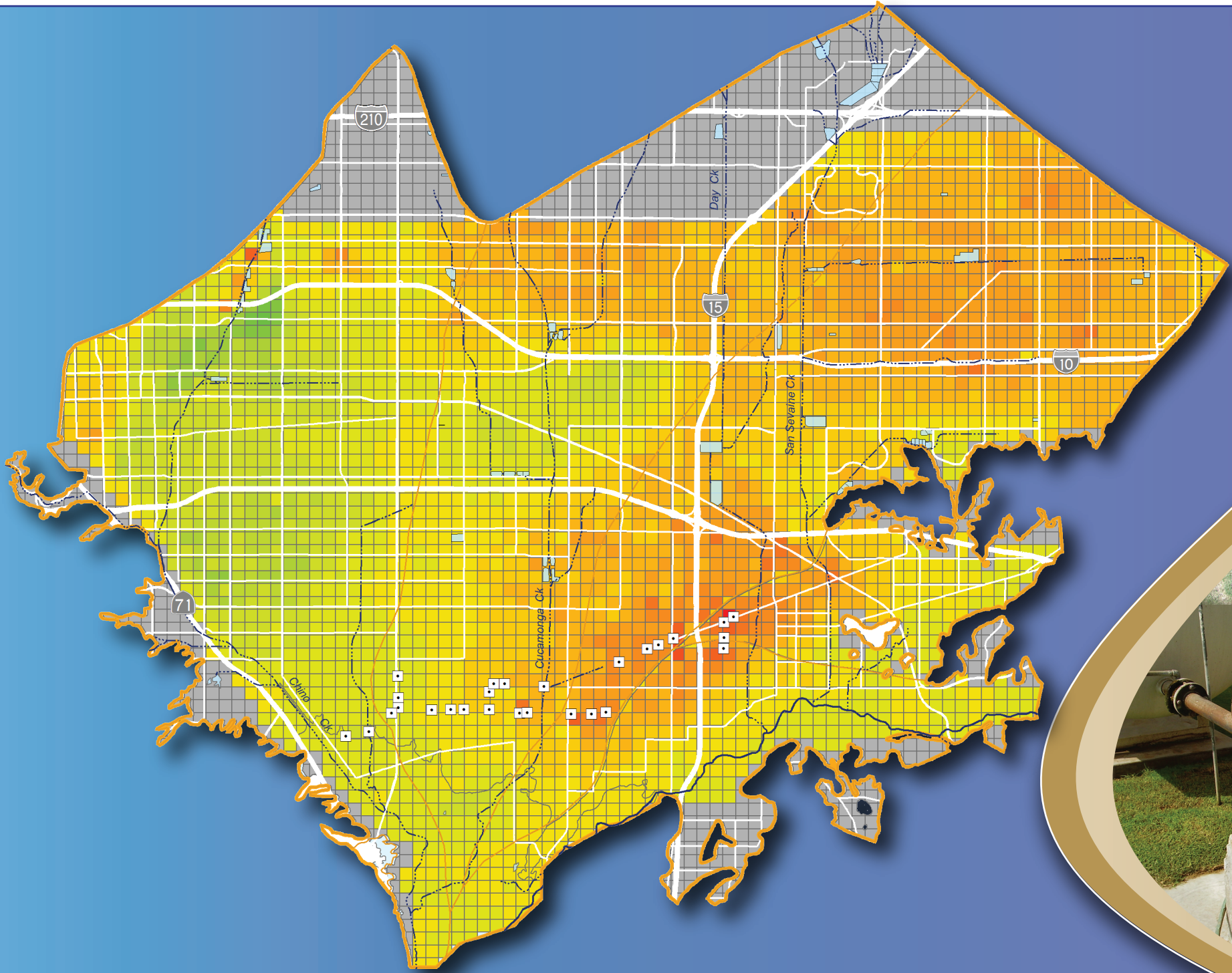


# Chino Basin Optimum Basin Management Program 2012 State of the Basin Atlas



# 2012 State of the Basin Atlas

June 2013

*Prepared for*



*Prepared by*



## Introduction

- Introductory Text to the State of the Basin
- Exhibit 1 – Chino Groundwater Basin – OBMP and Maximum Benefit Management Zones
- Exhibit 2 – Water Service Areas of the Major Appropriative Pool Parties of the Chino Basin Watermaster

## General Hydrologic Conditions

- Introductory Text to General Hydrologic Conditions
- Exhibit 3 – Santa Ana River Watershed Tributary to Prado Dam
- Exhibit 4 – Long-Term Precipitation Within and Upstream of the Chino Basin
- Exhibit 5 – Relationship of Precipitation and Storm Water Discharge in the Chino Basin – Water Year 1919/20 to 2010/11

## Basin Production and Recharge

- Introductory Text to Basin Production and Recharge
- Exhibit 6 – Active Groundwater Production Wells – Fiscal Year 2011/2012
- Exhibit 7 – Distribution of Groundwater Production – Fiscal Year 1978 to 2012
- Exhibit 8 – Groundwater Production by Well – Fiscal Year 1977/1978
- Exhibit 9 – Groundwater Production by Well – Fiscal Year 1999/2000
- Exhibit 10 – Groundwater Production by Well – Fiscal Year 2011/2012
- Exhibit 11 – Desalter Well Production – Fiscal Year 2011/2012
- Exhibit 12 – Groundwater Recharge in the Chino Basin
- Exhibit 13 – Summary of Annual Wet Water Recharge Records in the Chino Basin
- Exhibit 14 – Recycled Water Deliveries for Direct Use – Fiscal Year 2011/2012

## Groundwater Levels and Storage

- Introductory Text to Groundwater Levels and Storage
- Exhibit 15 – Groundwater Level Monitoring Network – Well Location and Measurement Frequency as of 2012
- Exhibit 16 – Groundwater Elevation Contours in Spring 2000 – Shallow Aquifer System
- Exhibit 17 – Groundwater Elevation Contours in Spring 2010 – Shallow Aquifer System
- Exhibit 18 – Groundwater Elevation Contours in Spring 2012 – Shallow Aquifer System
- Exhibit 19 – Groundwater Level Change from Spring 2010 to Spring 2012 – Shallow Aquifer System
- Exhibit 20 – Groundwater Level Change – Spring 2000 to Spring 2012
- Exhibit 21 – State of Hydraulic Control in Spring 2000 – Shallow Aquifer System
- Exhibit 22 – State of Hydraulic Control in Spring 2012 – Shallow Aquifer System
- Exhibit 23 – Wells Used to Characterize Long-Term Trends in Groundwater Levels Versus Climate, Production, and Recharge
- Exhibit 24 – Time-Series Chart of Groundwater Levels, Production, Recharge, and Climate – MZ1 1978 to 2012
- Exhibit 25 – Time-Series Chart of Groundwater Levels, Production, Recharge, and Climate – MZ2 1978 to 2012
- Exhibit 26 – Time-Series Chart of Groundwater Levels, Production, Recharge, and Climate – MZ3 1978 to 2012
- Exhibit 27 – Time-Series Chart of Groundwater Levels, Production, Recharge, and Climate – MZ4 1978 to 2012
- Exhibit 28 – Time-Series Chart of Groundwater Levels, Production, Recharge, and Climate – MZ5 1978 to 2012
- Exhibit 29 – Change in Groundwater Storage – Spring 2010 to Spring 2012
- Exhibit 30 – Change in Groundwater Storage – Spring 2000 to Spring 2012

## Groundwater Quality

- Introductory Text to Groundwater Quality
- Exhibit 31 – Wells with Groundwater Quality Data – July 2007 to June 2012
- Exhibit 32 – Total Dissolved Solids (TDS) in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 33 – Nitrate as Nitrogen in Groundwater – Maximum Concentration (July 2007 to June 2012)
- Exhibit 34 – Perchlorate in Groundwater – Maximum Concentration (July 2007 to June 2012)
- Exhibit 35 – Total Chromium in Groundwater – Maximum Concentration (July 2007 to June 2012)
- Exhibit 36 – Hexavalent Chromium in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 37 – Arsenic in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 38 – Trichloroethene (TCE) in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 39 – Tetrachloroethene (PCE) in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 40 – 1,2,3-Trichloropropane (1,2,3-TCP) in Groundwater – Maximum Concentration (July 2007 to June 2012)
- Exhibit 41 – Cis-1,2-Dichloroethene in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 42 – 1,1-Dichloroethene in Groundwater - Maximum Concentration (July 2007 to June 2012)
- Exhibit 43 – 1,2-Dichloroethane in Groundwater – Maximum Concentration (July 2007 to June 2012)
- Exhibit 44 – Delineation of Groundwater Contamination Plumes and Point Sources of Concern
- Exhibit 45 – Chino Airport TCE Plume – Shallow and Deep Aquifers
- Exhibit 46 – Archibald South TCE Plume
- Exhibit 47 – VOC Composition Chart – Wells Within and Adjacent to VOC Plumes
- Exhibit 48 – Trends in Ambient Water Quality Determinations for Total Dissolved Solids (TDS) By Management Zones
- Exhibit 49 – Trends in Ambient Water Quality Determinations for Nitrate as Nitrogen (NO<sub>3</sub>-N) By Management Zone
- Exhibit 50 – Chino Basin Management Zone 1 – Trends in Total Dissolved Solids Concentrations
- Exhibit 51 – Chino Basin Management Zone 1 – Trends in Nitrate as Nitrogen Concentrations
- Exhibit 52 – Chino Basin Management Zone 2 – Trends in Total Dissolved Solids Concentrations
- Exhibit 53 – Chino Basin Management Zone 2 – Trends in Nitrate as Nitrogen Concentrations
- Exhibit 54 – Chino Basin Management Zone 3 – Trends in Total Dissolved Solids Concentrations
- Exhibit 55 – Chino Basin Management Zone 3 – Trends in Nitrate as Nitrogen Concentrations
- Exhibit 56 – Chino Basin Management Zone 4 and Zone 5 – Trends in Total Dissolved Solids Concentrations
- Exhibit 57 – Chino Basin Management Zones 4 and Zone 5 – Trends in Nitrate as Nitrogen Concentrations

## Land-Subsidence Monitoring

- Introductory Text to Land Subsidence Monitoring
- Exhibit 58 – Historical Land Surface Deformation in Management Zone 1 – Leveling Surveys (1987 to 1999) and InSAR (1993 to 1995)
- Exhibit 59 – Vertical Ground Motion as Measured by InSAR – 2005 to 2010
- Exhibit 60 – Vertical Ground Motion as Measured by InSAR – 2011 to 2012
- Exhibit 61 – The History of Land Subsidence in the MZ1 Managed Area
- Exhibit 62 – The History of Land Subsidence in the Central MZ1 Area
- Exhibit 63 – The History of Land Subsidence in the Pomona Area
- Exhibit 64 – The History of Land Subsidence in the Ontario Area
- Exhibit 65 – The History of Land Subsidence in the Southeast Area

## References

**Acronyms, Abbreviations, and Initialisms**

µg/L	micrograms per liter
1,1,1-TCA	1,1,1-trichloroethane
1,1-DCE	1,1-dichloroethene
1,2,3-TCP	1,2,3-trichloropropane
1,2-DCA	1,2-dichloroethane
acre-ft	acre-feet
acre-ft/yr	acre-feet per year
AWQ	ambient water quality
Basin Plan	Water Quality Control Plan for the Santa Ana River Basin
BM	bench mark
CAO	Cleanup and Abatement Order
CBWM ID	Chino Basin Watermaster Well Identification
CDA	Chino Desalter Authority
CDFM	cumulative departure from mean
CDPH	California Department of Public Health (formerly the Department of Health Services)
CIM	California Institution for Men
<i>cis</i> -1,2-DCE	<i>cis</i> -1,2-dichloroethene
CVWD	Cucamonga Valley Water District
DLR	detection limit for reporting
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EPA	US Environmental Protection Agency
ft	feet
ft-bgs	feet below ground surface
ft-brp	feet below reference point ( <i>e.g.</i> static surveyed measurement point)
FY	fiscal year
GE	General Electric
GIS	Geographic Information System
HCMP	Hydraulic Control Monitoring Program
IEUA	Inland Empire Utilities Agency

**Acronyms, Abbreviations, and Initialisms**

InSAR	Synthetic Aperture Radar Interferometry
JCSD	Jurupa Community Services District
KM	kilometer
MCL	maximum contaminant level
mg/L	milligrams per liter
MSL	Milliken Sanitary Landfill
MVWD	Monte Vista Water District
MWDSC	Metropolitan Water District of Southern California
MZ	Management Zone
NO <sub>3</sub> - N	nitrate expressed as nitrogen
ND	non-detect
OBMP	Optimum Basin Management Program
PBMZ	Prado Basin Management Zone
PCE	tetrachloroethene
PRISM	Parameter-Elevation Regressions on Independent Slope Model
PRP	potentially responsible party
POTW	Publicly Owned Treatment Works
RP	Regional Plant
RWQCB	Regional Water Quality Control Board
SARWC	Santa Ana River Water Company
SBCFCD	San Bernardino County Flood Control District
SOB	State of the Basin
SWP	State Water Project
TCE	trichloroethene
TDS	total dissolved solids
US EPA	US Environmental Protection Agency
USGS	US Geological Survey
VOC	volatile organic compound
Watermaster	Chino Basin Watermaster
WEI	Wildermuth Environmental, Inc.
XRef	anonymous well reference ID

