The exhibits in this section characterize the physical state of the Chino Basin with respect to groundwater production, artificial recharge, and groundwater storage.

Future re-determinations of safe yield for the Chino Basin will be based largely on accurate estimations of groundwater production, artificial recharge, and basin storage changes over time. Since its establishment in 1978, Watermaster has collected information to develop groundwater production estimates. Appropriative Pool, Overlying Non-Agricultural Pool, and Chino Desalter well production estimates are based on flow-meter data that are provided by producers on a quarterly basis. Agricultural Pool estimates are based on water duty methods and meter data. The Watermaster Rules and Regulations require groundwater producers that produce in excess of 10 acre-feet per year (acre-ft/yr) to install and maintain meters on their well(s). In 2000, Watermaster initiated a meter installation and meter-reading program for agricultural pool wells. Watermaster staff the completed installation of these meters. Watermaster records production data from these meters on a quarterly basis. All production data in the Chino Basin are entered into Watermaster's database. Exhibit 6 shows, by pool, the locations of all active wells in fiscal year (FY) 2009/10.

Exhibit 7 depicts the distribution of production by pool for FY 1977/78 through 2009/10. The annual production amounts by pool for FY 1977/78 through 2009/10 are listed in Exhibit 13. During this period, annual groundwater production ranged from a high of about 189,000 acre-ft (FY 2008/09) to a low of about 122,000 acre-ft (FY 1982/83) and averaged about 154,000 acre-ft/yr. The distribution of production by pool has shifted since 1977. Agricultural Pool production, which has been mainly concentrated south of the 60 Freeway, dropped from about 56 percent of total production in FY 1977/78 to about 12 percent in FY 2009/10. During the same period, Appropriative Pool production, which has been mainly concentrated north of 60 Freeway, increased from about 38 percent of total production in FY 1977/78 to 81 percent in FY 2009/10 (for this characterization, this is the sum of production for the Appropriative Pool and the Chino Desalter Authority [CDA]). Increases in Appropriative Pool production have approximately kept pace with the decline in agricultural production. Production in the Overlying Non-Agricultural Pool declined from about 6 percent of total production in FY 1977/78 to about 1 percent in FY 2009/10.

Exhibits 8 through 10 illustrate the location and magnitude of groundwater production at wells in the Chino Basin for FYs 1977/78 (Watermaster established), 1999/2000 (commencement of the OBMP), and 2009/2010 (current conditions). These figures indicate the following:

- There was a basin-wide increase in the number of wells producing over 1,000 acre-ft/yr between 1978 and 2010. This is consistent with (1) the land use transition from agricultural to urban, (2) the trend of increasing imported water costs, and (3) the use of desalters.
- From FY 1977/78 to FY 1999/2000, production at wells south of the 60 Freeway deceased from 59 percent to 32 percent of total production in the Chino Basin, while production at wells north of the 60 Freeway increased from 41 percent to 68 percent of total production. This shift in production patterns is due to a decline in irrigated agriculture and urbanization south of the 60 Freeway and an increase in urbanization north of the 60 Freeway.
- Since the implementation of the OBMP in 2000, desalter pumping has progressively increased; in 2008/09, desalter pumping reached a historical high of 30,121 acre-ft.
- From FY 1999/2000, production at wells north of the 60 Freeway slightly deceased from 68 percent to 64 percent of total production in the Chino Basin, while production at wells south of the 60 Freeway increased from 32 percent to 36 percent of total production. Since 2000, the number of active agricultural wells in the southern portion of the basin continued to decrease by about 50 percent; the 4 percent increase in total groundwater production at wells south of the 60 Freeway since FY 1999/2000 is due to the onset of desalter well production, which began in late 2000 and progressively increased to about 29,000 acre-ft in fiscal 2009/2010.

Watermaster initiated the Chino Basin Groundwater Recharge Program. This is a comprehensive program to enhance water supply reliability and improve the groundwater quality of local drinking water wells throughout the Chino Basin by increasing the recharge of storm water, imported water, and recycled water. The general recharge requirements for the Chino Basin are outlined in Section 5.1 of the Peace Agreement—Recharge and Replenishment—and Article 8 of the Peace II Agreement. The requirements of the Peace Agreement are further discussed and expanded on in the 2010 Recharge Master Plan Update (WEI, 2010).

The Recycled Water Groundwater Recharge Program, which is implemented by the IEUA and Watermaster, is subject to the following requirements:

- California Regional Water Quality Control Board, Santa Ana Region. Order No. R8-2007-0039. Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin Recycled Groundwater Recharge Program, Phase I and Phase II Projects, San Bernardino County. June 29, 2007.
- California Regional Water Quality Control Board, Santa Ana Region. Order No. R8-2009-0057. Amending Order No. R8-2007-0039, Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin Recycled Groundwater Recharge Program, Phase I and Phase II Projects, San Bernardino County. October 30, 2009
- California Regional Water Quality Control Board, Santa Ana Region. Revised Monitoring and Reporting Program No. R8-2007-0039 for the Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin Recycled Groundwater Recharge Program, Phase I and Phase II Projects, San Bernardino County. October 27, 2010.

Exhibit 11 shows the locations of the groundwater recharge basins. Storm water, urban runoff, recycled water, and imported water amounts recharged to basins are monitored and recorded by the IEUA. Exhibit 12 lists the operable recharge facilities in the Chino Basin and summarizes annual recharge (by type) for the period of June 1, 2000 through June 30, 2010.[2] The following are the general trends in groundwater recharge:

- Storm water runoff recharge amounts prior to FY 2004/05 were not measured. Since FY 2004/05, total storm water recharge amounts have ranged from 4,745 acre-ft/yr to 17,648 acre-ft/yr and have averaged approximately 11,200 acre-ft/yr. The recharge and monitoring of storm water is important to Watermaster, as storm water recharge above 5,600 acre-ft/yr is considered new yield.
- Since 2000, the imported water recharge amounts have ranged from 0 acre-ft/yr to 34,567 acre-ft/yr and have

[2] The IEUA does not distinguish storm water from urban runoff in the recharge tabulations it submits to Watermaster.

averaged about 11,100 acre-ft/yr. The wide range in annual imported water recharged is reflective of the MWDSC Dry Year Yield (DYY) program. During FY 2004/05, 2005/06, and 2006/07, imported water recharge was well above the period average because the MWDSC was doing a "put" operation pursuant to its DYY agreement with Watermaster and the IEUA. During FY 2007/08, 2008/09, and 2009/10, imported water recharge was below the period average or zero due to the lack of low cost replenishment service water from MWDSC.

- Since 2000, the amount of recycled water recharged ranged from 49 to 7,210 acre-ft/yr. In FY 2005/06, recycled water recharge increased from an average of about 280 acre-ft/yr to about 3,300 acre-ft/yr after the implementation of the Recycled Water Groundwater Recharge Program. After the expansion of the program in 2007, recycled water recharge continued to increase and reached a historical high of 7,210 acre-ft/yr in FY 2009/2010.

Exhibit 13 shows an accounting of the recharge and discharge in the Chino Basin for the period of 1977/78 to 2009/10, based on Watermaster records. The recharge components include: the safe yield; wet water recharge of replenishment water, including water for cyclic storage and other conjunctive use programs and the MZ1 recharge program; wet water recharge of recycled water; and new yield from new storm water recharge over 5,600 acre-ft/yr. From July 1, 1977 through June 30, 2010, total recharge in the Basin was about 5,072,626 acre-ft. The wet water recharge amounts for replenishment, recycled, and storm water amounts were obtained from Watermaster and IEUA records.

The discharge components include groundwater production by all Watermaster parties. All other discharges are assumed to be netted out in the safe yield. From July 1, 1977 through June 30, 2010, total discharge from the Chino Basin was about 5,065,951 acre-ft. Production amounts are the totals obtained from Watermaster's well production database.

The difference between recharge and discharge since the Judgment (July 1, 1977 through June 30, 2010) is 6,675 acre-ft. The difference between recharge and discharge since OBMP implementation (July 1, 1999 through June 30, 2010) is -162,104 acre-ft.

117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Cucamonga Fault Zone

Cucamonga Basin

Claremont Basin

Pomona Basin

Rialto-Colton Basin

Indian Hill Fault

San Jose Fault

Red Hill Fault

San Antonio Ck

Day Ck

Lytle Ck

Barrier J

Loma Linda Fault

Rialto-Colton Fault

San Jacinto Fault

Foothill Blvd

Holt Blvd

Mission Blvd

Riverside Dr

Euclid Ave

Central Ave

Haven Ave

Etiwanda Ave

Sierra Ave

Riverside Ave

Cucamonga Ck

Jurupa Mountains

San Bernardino County

Riverside County

Riverside Basins

Bellegrave Ave

Limonite Ave

Mission Blvd

Santa Ana River

Chino Fault

Chino Ck

Chino Hills

San Bernardino County

Orange County

Prado Flood Control Basin

La Sierra Hills

Puente Hills

Temescal Basin

El Sobrante de San Jacinto

15 · 210 · 71 · 10 · 215 · 60

## Groundwater Production Wells by Pool

- Agricultural Pool (Pool 1)
- Overlying Non-Agricultural Pool (Pool 2)
- Appropriative Pool (Pool 3)
- Chino Desalter Authority

OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins

### *Geology*

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

*Faults*

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

***This map shows the location of active production wells by pool as of FY 2009/2010. Since its establishment in 1978, Watermaster has collected information to develop groundwater production estimates.*** Appropriative Pool, Overlying Non-Agricultural Pool, and Chino Desalter well production estimates are based on flow-meter data. Agricultural Pool estimates are based on water duty methods and meter data. The Watermaster Rules and Regulations require groundwater producers that produce in excess of 10 acre-ft/year to install and maintain meters on their well(s). Many of the Agricultural Pool wells did not have properly functioning wells meters installed when the OBMP was adopted, and Watermaster initiated a meter installation program for these wells. Watermaster staff completed meter installation at the majority of the agricultural wells and began reading meters in 2003. Some wells were not metered due to the anticipated conversion from agricultural to urban land use. Watermaster records production data from these meters on a quarterly basis. A "water duty" method is used to estimate production at the agricultural wells that do not have meters. All production data in the Chino Basin are entered into Watermaster's database.

Produced by:

WILDERMUTH ENVIRONMENTAL INC.

23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com

Author: VMW
Date: 20110525
File: Exhibit_6.mxd

0 1 2 3 4 5 Miles

0 2 4 6 8 KM

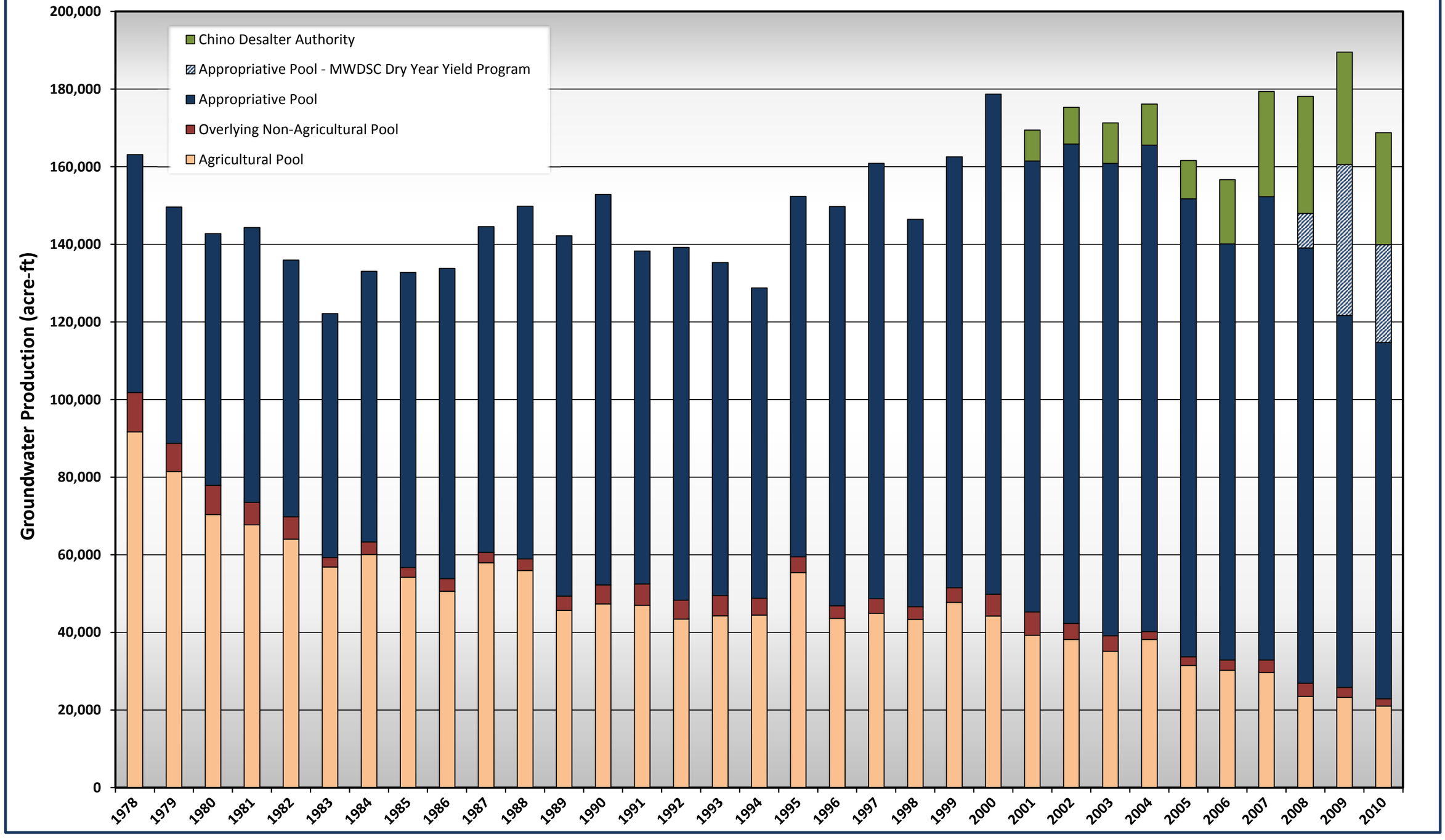
2010 State of the Basin
*Basin Production and Recharge*

# Active Groundwater Production Wells

*Fiscal Year 2009/2010*

**Exhibit 6**

# Exhibit 7
## Distribution of Groundwater Production



117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Cucamonga Fault Zone

Cucamonga Basin

Claremont Basin

Pomona Basin

Rialto-Colton Basin

Puente Hills

Chino Hills

Temescal Basin

Jurupa Mountains

Riverside Basins

La Sierra Hills

El Sobrante de San Jacinto

Prado Flood Control Basin

San Antonio Ck

Red Hill Fault

Indian Hill Fault

San Jose Fault

Haven Ave

Day Ck

Etiwanda Ave

Euclid Ave

Central Ave

Holt Blvd

Foothill Blvd

Mission Blvd

Cucamonga Ck

Riverside Dr

Archibald Ave

Limonite Ave

Chino Fault

Chino Ck

Barrier J

Sierra Ave

Lytle Ck

Loma Linda Fault

Riverside Ave

San Jacinto Fault

Rialto-Colton Fault

Santa Ana River

San Bernardino County

Riverside County

Orange County

15

210

215

10

71

60

This map shows the locations of wells and the magnitude of production in FY 1977/1978 when the Chino Basin Watermaster was established. Total production during this year was about 163,000 acre-ft, based on Watermaster records. Though, it is likely that actual groundwater production was significantly greater as agricultural production was likely under-reported. ***According to Watermaster records, the Agricultural Pool pumped 56 percent, the Appropriative Pool pumped 38 percent, and the Overlying Non-Agricultural Pool pumped 6 percent of total production.*** The production south of Highway 60 was about 96,500 acre-ft, accounting for about 59 percent of the total production. The production north of the Highway 60 was about 66,500 acre-ft, accounting for about 41 percent of the total production.

## Groundwater Production
Fiscal Year 1977/1978 (acre-ft)

- < 10
- 10 - 100
- 100 - 500
- 500 - 1,000
- 1,000 - 2,500
- 2,500 - 5,000
- > 5,000

OBMP Management Zones

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

### *Geology*

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

*Faults*

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Produced by:

WILDERMUTH ENVIRONMENTAL INC.

23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com

Author: VMW

Date: 20110618

File: Exhibit_8.mxd

0 1 2 3 4 5 Miles

0 2 4 6 8 KM

2010 State of the Basin
*Basin Production and Recharge*

# Groundwater Production by Well
*Fiscal Year 1977/1978*

**Exhibit 8**

117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Cucamonga Fault Zone

Cucamonga Basin

Claremont Basin

Pomona Basin

Rialto-Colton Basin

Indian Hill Fault

San Jose Fault

Red Hill Fault

Barrier J

Lytle Ck

Loma Linda Fault

San Jacinto Fault

Rialto-Colton Fault

San Antonio Ck

Day Ck

Cucamonga Ck

Chino Ck

Sierra Ave

Riverside Ave

Haven Ave

Euclid Ave

Etiwanda Ave

Central Ave

Foothill Blvd

Holt Blvd

Mission Blvd

Riverside Dr

Bellegrave Ave

Limonite Ave

Jurupa Mountains

San Bernardino County

Riverside County

Riverside Basins

Santa Ana River

Puente Hills

Chino Fault

Chino Hills

San Bernardino County
Orange County

Prado Flood Control Basin

La Sierra Hills

El Sobrante de San Jacinto

Temescal Basin

15 · 210 · 71 · 10 · 215 · 60

This map shows the locations of wells and the magnitude of production in FY 1999/2000. Total production during this year was about 178,700 acre-ft, based on Watermaster records. Though, it is likely that actual groundwater production was significantly greater as agricultural production was likely under-reported. According to Watermaster records, the Agricultural Pool pumped 25 percent, the Appropriative Pool pumped 72 percent, and the Overlying Non-Agricultural Pool pumped 3 percent of total production. ***Since FY 1977/78, the location of groundwater production has shifted north with groundwater production south of Highway 60 declining from 59 to 32 percent of total production. Production north of Highway 60 has increased from 41 to 68 percent of total production.*** This shift in production was caused by dairy land use replacing irrigated agricultural uses south of Highway 60 and an increase in appropriator production north of Highway 60 in response to urbanization.

## Groundwater Production
## Fiscal Year 1999/2000 (acre-ft)

- < 10
- 10 - 100
- 100 - 500
- 500 - 1,000
- 1,000 - 2,500
- 2,500 - 5,000
- > 5,000

OBMP Management Zones

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

### *Geology*

*Water-Bearing Sediments*

Quaternary Alluvium

*Consolidated Bedrock*

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

*Faults*

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Produced by:

WILDERMUTH ENVIRONMENTAL INC.

23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com


Author: VMW

Date: 20110618

File: Exhibit_9.mxd

0 1 2 3 4 5 Miles

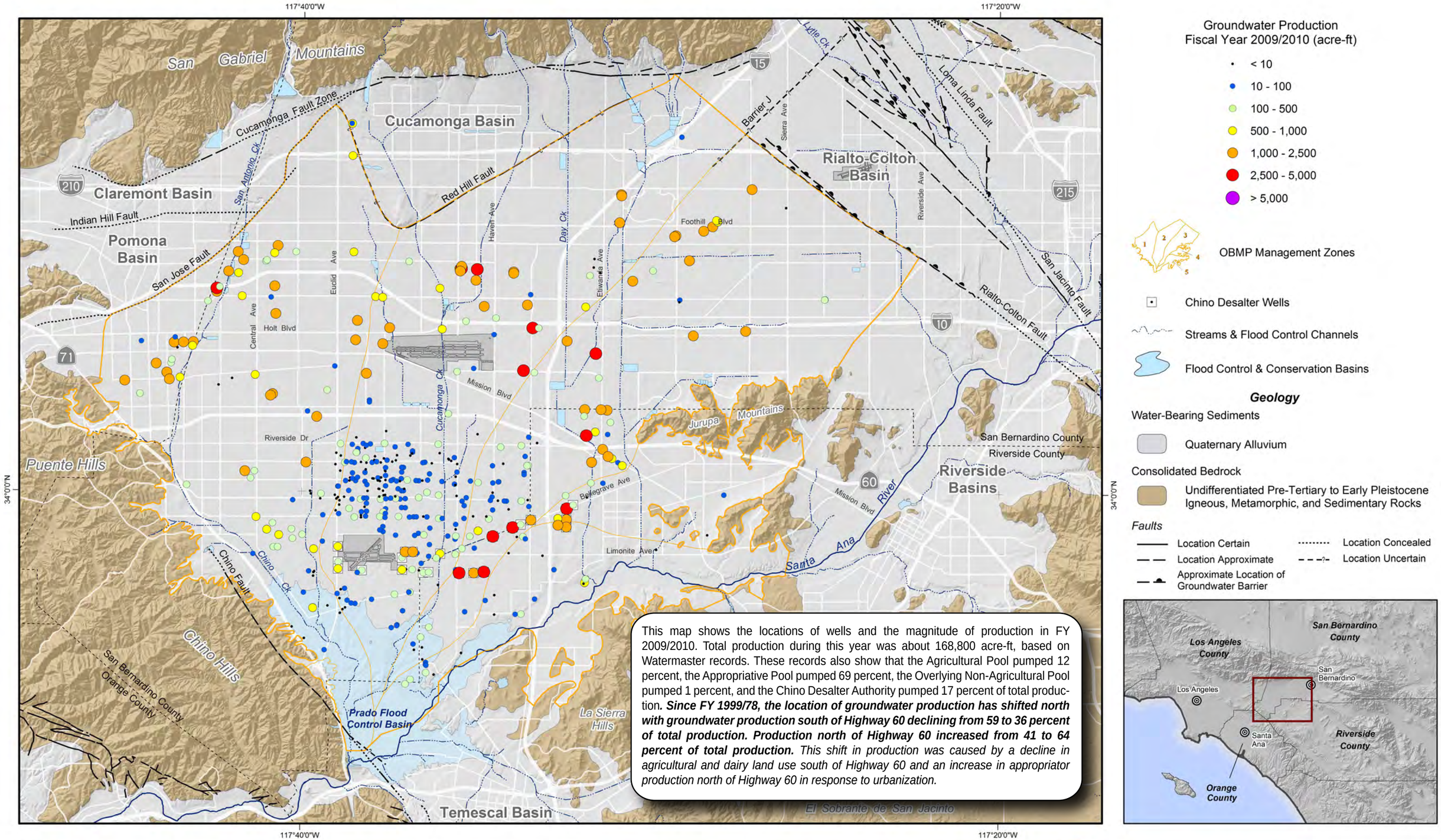
0 2 4 6 8 KM

2010 State of the Basin
*Basin Production and Recharge*

# Groundwater Production by Well

*Fiscal Year 1999/2000*

**Exhibit 9**




This map shows the locations of wells and the magnitude of production in FY 2009/2010. Total production during this year was about 168,800 acre-ft, based on Watermaster records. These records also show that the Agricultural Pool pumped 12 percent, the Appropriative Pool pumped 69 percent, the Overlying Non-Agricultural Pool pumped 1 percent, and the Chino Desalter Authority pumped 17 percent of total production. ***Since FY 1999/78, the location of groundwater production has shifted north with groundwater production south of Highway 60 declining from 59 to 36 percent of total production. Production north of Highway 60 increased from 41 to 64 percent of total production.*** *This shift in production was caused by a decline in agricultural and dairy land use south of Highway 60 and an increase in appropriator production north of Highway 60 in response to urbanization.*


Produced by:
WILDERMUTH ENVIRONMENTAL INC.
23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com


Author: VMW
Date: 20110618
File: Exhibit_10.mxd

0 1 2 3 4 5 Miles
0 2 4 6 8 KM

2010 State of the Basin
*Basin Production and Recharge*

**Groundwater Production by Well**
*Fiscal Year 2009/2010*

**Exhibit 10**

117°40'0"W

34°0'0"N

San Gabriel Mountains

Cucamonga Fault Zone

San Antonio Ck

Cucamonga Basin

Claremont Basin

Red Hill Fault

Lower Day

Etiwanda Debris

San Sevaine Basins

Barrier J

Sierra Ave

Etiwanda Ave

Victoria

215

15

Foothill Blvd

Banana

Hickory

MZ3

East Etiwanda Ck

San Sevaine Ck

Day Ck

Haven Ave

Pomona Basin

San Jose Fault

College Heights

Upland

Montclair Basins

7th & 8th Street

Turner

Euclid Ave

10

Holt Blvd

Central Ave

Brooks

MZ1

MZ2

Cucamonga Ck

Jurupa

RP3

Ely Basins

Mission Blvd

Declez

Jurupa Mountains

Riverside Dr

Grove

60

Chino Fault

Chino Ck

***There are four types of water recharged within the Chino Basin: imported water, storm water, urban runoff, and recycled water.*** Since the implementation of the OBMP, sensors have been installed at some of the recharge basins to calculate storm water and urban runoff recharge volumes. This monitoring program is important to Watermaster, as storm water recharge over 5,600 acre-feet per year is considered new yield. Imported water amounts are recorded by the MWDSC and the IEUA. Recharge is monitored and reported by the IEUA.

117°40'0"W

Basins in the Recycled Water Groundwater Recharge Program (Recycled Water Initiated)

Basins in the Recycled Water Groundwater Recharge Program (Recycled Water Not Initiated)

Flood Control & Conservation Basins

OBMP Management Zones

Chino Desalter Well

Streams & Flood Control Channels

***Geology***

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

*Faults*

Location Certain

Location Approximate

Approximate Location of Groundwater Barrier

Location Concealed

Location Uncertain

Produced by:

WILDERMUTH ENVIRONMENTAL INC.

*23692 Birtcher Drive*
*Lake Forest, CA 92630*
*949.420.3030*
*www.wildermuthenvironmental.com*

Author: VMW
Date: 20110618
File: Exhibit_5.mxd

0 1 2 3 4 5 Miles

0 2 4 6 8 KM

**2010 State of the Basin**
*Basin Production and Recharge*

## Recharge Basin Locations

**Exhibit 11**

**Exhibit 12**
**Summary of Annual Wet Water Recharge Records in the Chino Basin**
**(acre-ft)**

| Basin Name | FY 2000/2001 | | | | FY 2001/2002 | | | | FY 2002/2003 | | | | FY 2003/2004 | | | | FY 2004/2005 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge |
| Banana Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 425 | 0 | 0 | 425 |
| Declez Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 19 | 0 | 0 | 19 |
| Hickory Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 298 | 197 | 0 | 495 |
| Jurupa Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RP-3 Basins | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 1,105 | 0 | 0 | 1,105 |
| Turner Basins | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 1428 | 310 | 0 | 1,738 |
| 7th and 8th Street Basins | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 620 | 0 | 0 | 620 |
| Brooks Street Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 1776 | 0 | 0 | 1,776 |
| College Heights Basins | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ely Basins | NM | 0 | 500 | 500 | NM | 0 | 504 | 504 | NM | 0 | 184 | 184 | NM | 0 | 49 | 49 | 2,010 | 0 | 158 | 2,168 |
| Grove Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Etiwanda Debris Basins | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 2,812 | 0 | 2,812 | 0 | 2,137 | 0 | 2,137 |
| Lower Day Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 2798 | 107 | 0 | 2,905 |
| Montclair Basins | NM | 6,530 | 0 | 6,530 | NM | 6,500 | 0 | 6,500 | NM | 6,499 | 0 | 6,499 | NM | 3,558 | 0 | 3,558 | 3,350 | 7,887 | 0 | 11,237 |
| San Sevaine | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 1,211 | 0 | 1,211 | 2,830 | 1,621 | 0 | 4,451 |
| Upland Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 989 | 0 | 0 | 989 |
| Victoria Basin | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | NM | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals: | NM | 6,530 | 500 | 7,030 | NM | 6,500 | 504 | 7,004 | NM | 6,499 | 184 | 6,683 | NM | 7,582 | 49 | 7,631 | 17,648 | 12,258 | 158 | 30,064 |

| Basin Name | FY 2005/2006 | | | | FY 2006/2007 | | | | FY 2007/2008 | | | | FY 2008/2009 | | | | FY 2009/2010 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge | Storm Water | Imported Water | Recycled Water | Total Recharge |
| Banana Basin | 300 | 193 | 529 | 1,022 | 226 | 783 | 643 | 1,652 | 278 | 0 | 157 | 435 | 383 | 0 | 40 | 423 | 416 | 0 | 898 | 1,314 |
| Declez Basin | 737 | 0 | 0 | 737 | 0 | 0 | 0 | 0 | 730 | 0 | 0 | 730 | 656 | 0 | 0 | 656 | 774 | 0 | 0 | 774 |
| Hickory Basin | 438 | 636 | 586 | 1,660 | 536 | 212 | 646 | 1,394 | 949 | 0 | 567 | 1,516 | 200 | 0 | 46 | 246 | 700 | 7 | 856 | 1,563 |
| Jurupa Basin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RP-3 Basins | 767 | 0 | 0 | 767 | 802 | 0 | 0 | 802 | 511 | 0 | 0 | 511 | 613 | 0 | 106 | 719 | 1,902 | 1 | 2,051 | 3,954 |
| Turner Basins | 2,575 | 346 | 0 | 2,921 | 406 | 313 | 1,237 | 1,956 | 1,542 | 0 | 0 | 1,542 | 1,226 | 0 | 171 | 1,397 | 2,165 | 0 | 397 | 2,562 |
| 7th and 8th Street Basins | 1,271 | 0 | 0 | 1,271 | 640 | 0 | 0 | 640 | 959 | 0 | 1,054 | 2,013 | 1,139 | 0 | 352 | 1,491 | 1,745 | 6 | 1,067 | 2,818 |
| Brooks Street Basin | 524 | 2,032 | 0 | 2,556 | 205 | 1,604 | 0 | 1,809 | 475 | 0 | 0 | 475 | 434 | 0 | 1,605 | 2,039 | 666 | 0 | 1,695 | 2,361 |
| College Heights Basins | 108 | 5,326 | 0 | 5,434 | 1 | 3,125 | 0 | 3,126 | 172 | 0 | 0 | 172 | 0 | 0 | 0 | 0 | 65 | 382 | 0 | 447 |
| Ely Basins | 1,531 | 0 | 188 | 1,719 | 631 | 0 | 466 | 1,097 | 1,603 | 0 | 562 | 2,165 | 937 | 0 | 364 | 1,301 | 1,164 | 0 | 246 | 1,410 |
| Grove Basin | 133 | 0 | 0 | 133 | 166 | 0 | 0 | 166 | 326 | 0 | 0 | 326 | 402 | 0 | 0 | 402 | 351 | 0 | 0 | 351 |
| Etiwanda Debris Basins | 20 | 2,488 | 0 | 2,508 | 0 | 1,160 | 0 | 1,160 | 10 | 0 | 0 | 10 | 28 | 0 | 0 | 28 | 775 | 7 | 0 | 782 |
| Lower Day Basin | 624 | 2,810 | 0 | 3,434 | 78 | 2,266 | 0 | 2,344 | 303 | 0 | 0 | 303 | 165 | 0 | 0 | 165 | 540 | 3 | 0 | 543 |
| Montclair Basins | 1,296 | 5,579 | 0 | 6,875 | 355 | 10,681 | 0 | 11,036 | 859 | 0 | 0 | 859 | 611 | 0 | 0 | 611 | 858 | 4,593 | 0 | 5,451 |
| San Sevaine | 2,072 | 9,172 | 0 | 11,244 | 244 | 5,749 | 0 | 5,993 | 749 | 0 | 0 | 749 | 225 | 0 | 0 | 225 | 993 | 0 | 0 | 993 |
| Upland Basin | 214 | 5,985 | 0 | 6,199 | 195 | 7,068 | 0 | 7,263 | 312 | 0 | 0 | 312 | 274 | 0 | 0 | 274 | 532 | 0 | 0 | 532 |
| Victoria Basin | 330 | 0 | 0 | 330 | 260 | 0 | 0 | 260 | 427 | 0 | 0 | 427 | 250 | 0 | 0 | 250 | 494 | 2 | 0 | 496 |
| Totals: | 12,940 | 34,567 | 1,303 | 48,810 | 4,745 | 32,961 | 2,992 | 40,698 | 10,205 | 0 | 2,340 | 12,545 | 7,543 | 0 | 2,684 | 10,227 | 14,140 | 5,001 | 7,210 | 26,351 |

NM - Not measured

**Exhibit 13**
**Summary of Recharge and Discharge Based on Watermaster Records**
**(acre-ft)**

| Fiscal Year | Recharge | | | | | | Discharge [5] | | | | | Pumping Distribution (% of Total) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Wet Water Recharge [1] | | | | | Pumping [6] | | | | | | | | |
| | Safe Yield | Recharge and Replenishment Water[2] | Recycled Water | New Storm Water | Total Recharge | Total Inflow | Appropriative Pool [7] | Chino Desalter Authority | Agricultural Pool | Overlying Non-Ag Pool | Total Outflow | Appropriative Pool | Chino Desalter Authority | Agricultural Pool | Overlying Non-Ag Pool |
| 1977 - 1978 | 140,000 | 6,978 | 0 | 0 | 6,978 | 146,978 | 61,308 | 0 | 91,714 | 10,102 | 163,123 | 38% | 0% | 56% | 6% |
| 1978 - 1979 | 140,000 | 28,395 | 0 | 0 | 28,395 | 168,395 | 60,868 | 0 | 81,479 | 7,263 | 149,610 | 41% | 0% | 54% | 5% |
| 1979 - 1980 | 140,000 | 16,428 | 0 | 0 | 16,428 | 156,428 | 64,877 | 0 | 70,367 | 7,541 | 142,784 | 45% | 0% | 49% | 5% |
| 1980 - 1981 | 140,000 | 20,890 | 0 | 0 | 20,890 | 160,890 | 70,836 | 0 | 67,726 | 5,777 | 144,338 | 49% | 0% | 47% | 4% |
| 1981 - 1982 | 140,000 | 21,656 | 0 | 0 | 21,656 | 161,656 | 66,123 | 0 | 64,032 | 5,801 | 135,956 | 49% | 0% | 47% | 4% |
| 1982 - 1983 | 140,000 | 27,588 | 0 | 0 | 27,588 | 167,588 | 62,868 | 0 | 56,858 | 2,448 | 122,175 | 51% | 0% | 47% | 2% |
| 1983 - 1984 | 140,000 | 22,237 | 0 | 0 | 22,237 | 162,237 | 69,747 | 0 | 60,076 | 3,258 | 133,080 | 52% | 0% | 45% | 2% |
| 1984 - 1985 | 140,000 | 20,897 | 0 | 0 | 20,897 | 160,897 | 76,049 | 0 | 54,248 | 2,446 | 132,744 | 57% | 0% | 41% | 2% |
| 1985 - 1986 | 140,000 | 18,427 | 0 | 0 | 18,427 | 158,427 | 79,986 | 0 | 50,611 | 3,255 | 133,852 | 60% | 0% | 38% | 2% |
| 1986 - 1987 | 140,000 | 20,007 | 0 | 0 | 20,007 | 160,007 | 83,905 | 0 | 57,964 | 2,696 | 144,565 | 58% | 0% | 40% | 2% |
| 1987 - 1988 | 140,000 | 2,494 | 0 | 0 | 2,494 | 142,494 | 90,845 | 0 | 55,949 | 3,018 | 149,812 | 61% | 0% | 37% | 2% |
| 1988 - 1989 | 140,000 | 7,407 | 0 | 0 | 7,407 | 147,407 | 92,840 | 0 | 45,683 | 3,692 | 142,215 | 65% | 0% | 32% | 3% |
| 1989 - 1990 | 140,000 | 0 | 0 | 0 | 0 | 140,000 | 100,583 | 0 | 47,358 | 4,927 | 152,868 | 66% | 0% | 31% | 3% |
| 1990 - 1991 | 140,000 | 3,607 | 0 | 0 | 3,607 | 143,607 | 85,806 | 0 | 47,011 | 5,479 | 138,296 | 62% | 0% | 34% | 4% |
| 1991 - 1992 | 140,000 | 5,551 | 0 | 0 | 5,551 | 145,551 | 90,890 | 0 | 43,456 | 4,900 | 139,246 | 65% | 0% | 31% | 4% |
| 1992 - 1993 | 140,000 | 14,212 | 0 | 9,041 [3] | 23,253 | 163,253 | 85,771 | 0 | 44,300 | 5,226 | 135,298 | 63% | 0% | 33% | 4% |
| 1993 - 1994 | 140,000 | 16,493 | 0 | 0 | 16,493 | 156,493 | 79,943 | 0 | 44,492 | 4,344 | 128,779 | 62% | 0% | 35% | 3% |
| 1994 - 1995 | 140,000 | 10,300 | 0 | 0 | 10,300 | 150,300 | 92,904 | 0 | 55,415 | 4,091 | 152,409 | 61% | 0% | 36% | 3% |
| 1995 - 1996 | 140,000 | 82 | 0 | 0 | 82 | 140,082 | 102,876 | 0 | 43,635 | 3,241 | 149,752 | 69% | 0% | 29% | 2% |
| 1996 - 1997 | 140,000 | 17 | 0 | 0 | 17 | 140,017 | 112,201 | 0 | 44,921 | 3,779 | 160,901 | 70% | 0% | 28% | 2% |
| 1997 - 1998 | 140,000 | 8,323 | 0 | 0 | 8,323 | 148,323 | 99,805 | 0 | 43,369 | 3,274 | 146,448 | 68% | 0% | 30% | 2% |
| 1998 - 1999 | 140,000 | 5,796 | 0 | 0 | 5,796 | 145,796 | 111,045 | 0 | 47,791 | 3,734 | 162,570 | 68% | 0% | 29% | 2% |
| 1999 - 2000 | 140,000 | 1,001 | 507 | 0 | 1,508 | 141,508 | 128,888 | 0 | 44,241 | 5,605 | 178,734 | 72% | 0% | 25% | 3% |
| 2000 - 2001 | 140,000 | 6,530 | 500 | 0 [4] | 7,030 | 147,030 | 116,201 | 7,989 | 39,280 | 5,991 | 169,461 | 69% | 5% | 23% | 4% |
| 2001 - 2002 | 140,000 | 6,500 | 504 | 0 [4] | 7,004 | 147,004 | 123,527 | 9,458 | 38,194 | 4,150 | 175,330 | 70% | 5% | 22% | 2% |
| 2002 - 2003 | 140,000 | 6,499 | 184 | 0 [4] | 6,683 | 146,683 | 121,744 | 10,439 | 35,167 | 3,979 | 171,329 | 71% | 6% | 21% | 2% |
| 2003 - 2004 | 140,000 | 7,578 | 49 | 0 [4] | 7,627 | 147,627 | 125,318 | 10,605 | 38,190 | 2,057 | 176,170 | 71% | 6% | 22% | 1% |
| 2004 - 2005 | 140,000 | 12,259 | 158 | 12,048 [4] | 24,465 | 164,465 | 117,991 [8] | 9,854 | 31,502 | 2,246 | 161,592 | 73% | 6% | 19% | 1% |
| 2005 - 2006 | 140,000 | 34,567 | 1,303 | 7,340 [4] | 43,210 | 183,210 | 107,248 [8] | 16,542 | 30,250 | 2,641 | 156,681 | 68% | 11% | 19% | 2% |
| 2006 - 2007 | 140,000 | 32,960 | 2,992 | 0 [4] | 35,952 | 175,952 | 119,417 [8] | 27,077 | 29,649 | 3,251 | 179,394 | 67% | 15% | 17% | 2% |
| 2007 - 2008 | 140,000 | 0 | 2,340 | 4,605 [4] | 6,945 | 146,945 | 121,034 [9] | 30,121 | 23,530 | 3,421 | 178,107 | 68% | 17% | 13% | 2% |
| 2008 - 2009 | 140,000 | 0 | 2,684 | 1,943 [4] | 4,627 | 144,627 | 134,723 [9] | 28,985 | 23,268 | 2,575 | 189,551 | 71% | 15% | 12% | 1% |
| 2009 - 2010 | 140,000 | 5,001 | 7,210 | 8,540 [4] | 20,751 | 160,751 | 117,044 [9] | 28,823 | 21,034 | 1,883 | 168,784 | 69% | 17% | 12% | 1% |
| FY 2001 - 2010 | | | | | | | | | | | | | | | |
| Total | 1,400,000 | 111,894 | 17,924 | 34,476 | 164,294 | 1,564,294 | 1,204,247 | 179,891 | 310,063 | 32,196 | 1,726,398 | - | - | - | - |
| Average | 140,000 | 11,189 | 1,792 | 3,448 | 16,429 | 156,429 | 120,425 | 17,989 | 31,006 | 3,220 | 172,640 | 70% | 9% | 19% | 2% |
| Max | 140,000 | 34,567 | 7,210 | 12,048 | 43,210 | 183,210 | 134,723 | 30,121 | 39,280 | 5,991 | 189,551 | 73% | 17% | 23% | 4% |
| Min | 140,000 | 0 | 49 | 0 | 1,508 | 144,627 | 107,248 | 7,989 | 21,034 | 1,883 | 156,681 | 67% | 5% | 12% | 1% |
| FY 1978 - 2010 | | | | | | | | | | | | | | | |
| Total | 4,620,000 | 390,678 | 18,431 | 43,517 | 452,626 | 5,072,626 | 3,175,211 | 179,891 | 1,572,757 | 138,092 | 5,065,951 | - | - | - | - |
| Average | 140,000 | 11,839 | 559 | 1,319 | 13,716 | 153,716 | 96,219 | 17,989 | 47,659 | 4,185 | 153,514 | 60% | 3% | 32% | 3% |
| Max | 140,000 | 34,567 | 7,210 | 12,048 | 43,210 | 183,210 | 134,723 | 30,121 | 91,714 | 10,102 | 189,551 | 73% | 17% | 56% | 6% |
| Min | 140,000 | 0 | 0 | 0 | 0 | 140,000 | 60,868 | 7,989 | 21,034 | 1,883 | 122,175 | 38% | 0% | 12% | 1% |

[1] Includes only water actually spread
[2] Includes wet water recharge for replenishment, cyclic, conjunctive use, and the MZ1 Program ( Peace Agreement, Section V. 5.1)
[3] 9,041 acre-ft of surface water recharge in the Chino Basin that would otherwise have recharged the Claremont Heights Basin in FY 1992/1993
[4] New storm water amounts are less 5,600 AFY which is established as a baseline condition in the safe yield. Storm water recharge above 5,600 AFY is considered new yield. (Peace Agreement Rules and Regulations Article VI.6.2.e.). If recharged storm water minus 5,600 AF is less than zero, new storm water is zero
[5] The only discharge considered herein is pumping, the other discharges are assumed netted out in the safe yield
[6] Actual production reported in the Watermaster database
[7] Appropriative production values are actual production amounts at wells owned by the Appropriative Pool and reported in the Watermasters database.
[8] Appropriative Pool actual production amounts are less than normal due to MWDSC "puts" in the basin for the Dry Year Yield Program.
[9] Appropriative Pool actual production amounts are more than normal due to MWDSC "takes" from the basin for the Dry Year Yield Program.