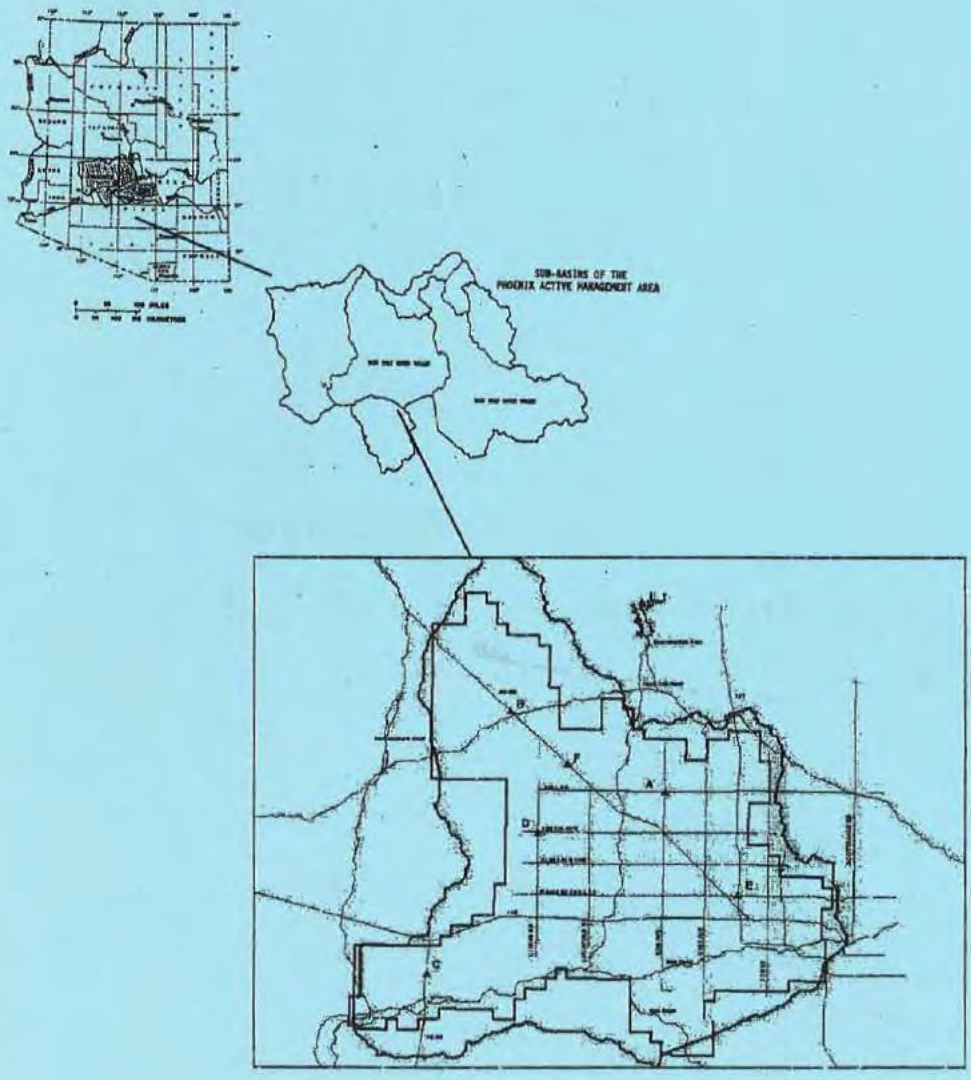
WESTCAPS
West Salt River Valley Ground-Water Supply Study

Development of a GIS Tool to Vary Pumping and Recharge Assumptions and Creation of a Basecase No-Action Alternative Ground-water Model for:

Predicting the Effects Five West Valley CAP Supply/Demand Scenarios May Have on Ground-water Levels in Years 2025 and 2100

Bureau of Reclamation
April 2001



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Thanks also to the WESTCAPS members and its Director, H. Thomas, who sat through many weekly meetings over the past several years in the planning, critique, and development of the Arc/View GIS-based pre-processor and evolution of the Basecase MODFLOW groundwater model. With their vision, the Basecase spawned five potential regional solutions on how the West Salt River Valley could better use renewable CAP water supplies and reduce dependence on groundwater pumping.

Cliff Inbau and B. Rindahl of the City of Aurora, Colorado helped jumpstart the development of the Arc/View pre-processor by providing their Avenue scripts for pumping and recharge. These were modified only slightly. Their willingness to share their work is appreciated.

LIMITATIONS:

The Arc/View pre-processor described in this report was used to prepare differing projections of pumping and recharge stresses for input into a MODFLOW groundwater model. It consists of Arc/View Avenue scripting and database tables where many assumptions on water supply sources and demands, allocation of those sources, urbanization rates, municipal gpcd water use rates, and a number of other assumptions reside. Some assumptions and certain hydrologic stresses were carried forth from the ADWR CTA model. The WESTCAPS members specified other assumptions. Some assumptions are hardcoded into the programming. Thus, this pre-processor is customized for the West Salt River Valley and the WESTCAPS entities. Chances are it would require modification for other modeling projects, and especially modeling projects in other groundwater subbasins or management areas. In some cases it is more efficient to change hydrologic stresses at the MODFLOW level.

Executive Summary

In the early 1990's several West Salt River Valley (WSRV) water providers, under pressure from groundwater replenishment requirements of the Arizona Groundwater Management Act, began investigating alternatives for the utilization of renewable Central Arizona Project (CAP) water. Working through a regional economic development organization called WESTMARC, those water providers requested assistance from Reclamation to conduct a regional study as to the best plan to migrate off groundwater to CAP.

Those water providers organized into a new association called WESTCAPS to manage the local involvement in this study. Eleven West Valley municipalities and private water companies ultimately joined WESTCAPS.

Planning Process

The process diagram Figure 1 illustrates the WESTCAPS study elements.

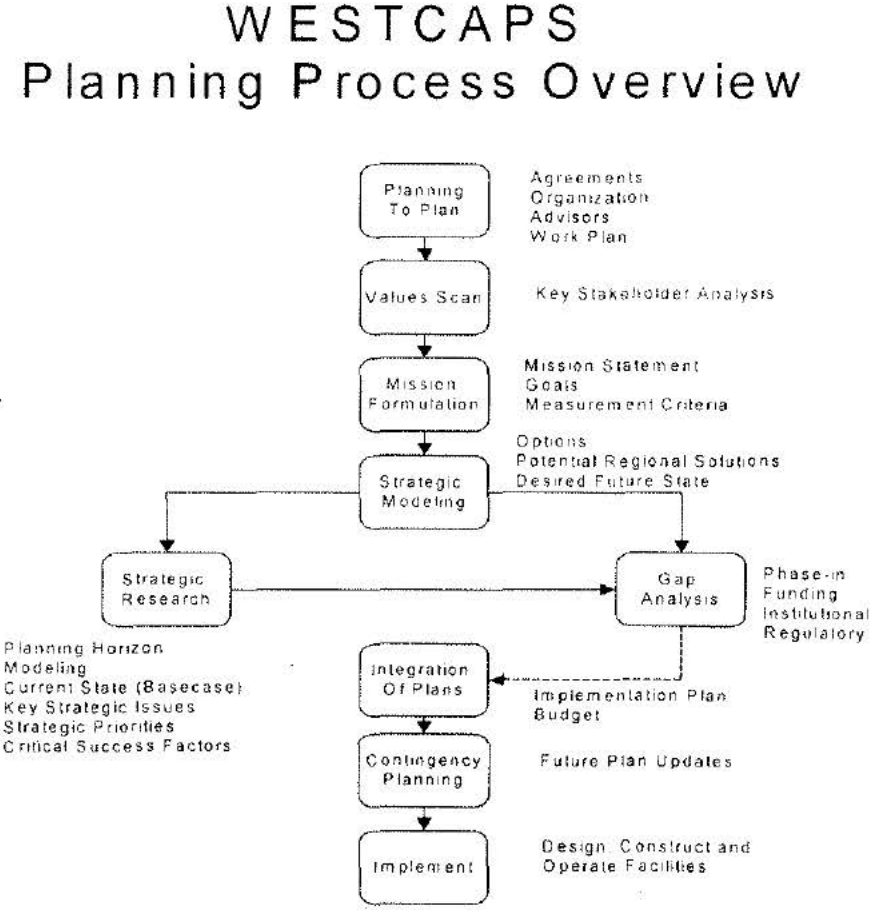


Figure 1. WESTCAPS Planning Process

As part of WESTCAPS Strategic Research the issue of continuing groundwater declines was determined to be a critical success factor. Reclamation was tasked to run a groundwater model to define what impacts various strategies for using CAP water might have on declining groundwater conditions in the west valley. While the differences between the options and the Basecase were significant, each option similarly reduced the rate of groundwater decline projected in Basecase.

In light of the modeling results, Reclamation concluded that a decision on the preferred option by WESTCAPS could be made through consideration of factors other than groundwater declines. Readers should review WESTCAP'S Final Report to determine how the information presented in this groundwater report was used by WESTCAPS in their decision regarding a preferred option.

This report documents Reclamation's groundwater modeling efforts in support of WESTCAPS overall planning process study.

Model Results - Conclusions

The Basecase model formed the baseline set of assumptions (continuing present pumping rates out to years 2025 and 2100) with its simulated water levels compared to Solutions A, C, D, E, and F/G. Each model solution was also compared against another at years 2025 and 2100 in the WSRV. Maps of simulated groundwater level contours for each of the three alluvial aquifer layers show the distributions and magnitudes of water level changes, and water table depths below ground level from differing projections of municipal pumping and artificial recharge.

Hydrographs and bar graphs were generated for six selected areas of the WSRV where historical and/or predicted water level depressions, quiescent areas, and a waterlogged area exist. These graphs show rates of water level changes and facilitate comparisons at certain snapshots in time between years 2000 and 2100. Additionally, hydrologic budget terms at 2025 and 2100 show how the Basecase and the solutions vary by aquifer layer concerning pumping and recharge.

Across the west valley simulated Basecase depth-to-water levels vary from zero feet along the Gila River to over 1000 feet below ground surface at 83rd Avenue & Bell Road by 2100. In general, except near recharge facilities, the solutions show similar magnitudes and rates of water level decline, and similar water table distributions at 2025 and 2100. The solutions had depths-to-water generally between 200 to 500 feet below ground level in 2025 and 2100 in the central, most-impacted portions of the basin. The solutions generally show water levels rising above their 2025 levels by year 2100 as recharge outpaces pumping. Simulated water levels in 2025 for all solutions range from zero to 400 feet higher in elevation than the Basecase, and by 2100, 50 feet to about 750 feet higher than the Basecase, at some recharge facilities.

The Basecase and solutions show similar water level changes since 1989 to years 2025/2100 in the northwest and southeast corners of the WSRV. Post-1989 water level changes at the CAP Canal and US-60 area ranged from about 25 feet of recovery in Solution C to about 50 feet of drawdown in Solution F/G, and 175 feet in the Basecase in 2100. At I-17 and Indian School Road, solution declines (drawdowns) ranged from 70 to 140 feet, and about 220 feet in the

Basecase by 2100. In the central WSRV, the solutions show tens to hundreds of feet of recovery since 1989 from reduced pumping (increase in CAP water use) and artificial recharge. Declines since 1989 for Basecase were 50 to 200 feet by 2025, and 200 to 500 feet by year 2100. Rate of water level decline from 2025 to 2100 at Bell & 83rd Avenue is six feet/year for Basecase and one foot/year for Solution E. In the other solutions simulated water levels remain flat or rise about 50 feet by 2100 at Bell & 83rd Avenue, in the Luke area, and at Beardsley and US-60.

All solutions including the Basecase show that water levels in the waterlogged Buckeye area will continue to remain shallow and actually rise to year 2025 and beyond. Although the solutions predict some dewatering for the upper alluvial unit in 2025, much of the eastern portions of the unit in the west valley could be dewatered by 2100. The recharge facilities in Solutions C through F/G (especially the McMicken Dam, Goodyear-Beardsley, and Agua Fria facilities) affect local groundwater flow paths and create mounding, especially after 2025.

Simulated comparative groundwater level trends are summarized below for the six representative hydrograph locations spread across the WSRV sub-basin:

(A) **Bell & 83rd Avenue:** At this location simulated absolute water level elevations are all about the same in Solutions A through F/G. Those in the Basecase are about 100 feet lower in 2025 and 400 feet lower in 2100. All show some recovery above year 2000 levels by 2025 and significant recoveries by 2100. Water levels are nearly identical in the middle alluvial unit (MAU) and the lower alluvial unit (LAU). Depth to water in Basecase at year 2100 exceeded 1000 feet.

(B) **CAP Canal & US-60:** At this location simulated absolute water level elevations are all about the same for Basecase and Solutions A through F/G at about 1100 feet amsl. The Basecase does show about 100-foot lower water levels in 2100. The Basecase and solutions show uniform water level declines from 2000, to 2025 and at 2100. There is no recovery above 2000 levels. Water levels are nearly identical in the middle alluvial unit (MAU) and the lower alluvial unit (LAU).

(C) **Buckeye Area along AZ-85**: At this location simulated absolute water level elevations are all about the same in the Basecase and Solutions A through F/G at about 875 feet amsl. Those in Solution A are about 10 feet higher than the rest. In all solutions and Basecase, year 2025 and 2100 levels are similar, and are about 30 to 40 feet higher than the 2000 simulated levels indicating further recovery and continued waterlogging. Water levels are nearly identical in the middle alluvial unit (MAU) and the lower alluvial unit (LAU).

(D) **Luke Cone Area:** At this location simulated absolute water level elevations are about the same in Solutions A through F/G between elevations 775 and 850 amsl in 2000 and 2025. In 2100 the elevations range from about 800 feet in Solution D to almost 950 feet amsl in Solution A. Those in the Basecase are about 50 to 100 feet lower than the others, and 400 to 500 feet lower by 2100. Except for Basecase, all show some recovery above year 2000. Water levels are nearly identical in the middle alluvial unit (MAU) and the LAU.

(E) **I-17 & Indian School Road:** At this location simulated absolute water level elevations are all about the same in Basecase, and in Solutions A through F/G. Although Basecase levels in 2025 are the same as the solutions, the 2100 simulated water levels are 75 to 100 feet lower than for the solutions. There is no recovery in any simulation. Watertable declines are 50 feet from 2000 to 2025, with another 50 feet of decline but over a longer timeframe to 2100. Water levels are nearly identical in the middle alluvial unit (MAU) and the lower alluvial unit (LAU).

(F) **Beardsley & Grand Avenue**: At this location simulated absolute water level elevations are all about the same in Solutions A through F/G. Those in the Basecase are about 100 feet lower in 2025 and 400 feet lower in 2100. All show some recovery above year 2000 levels by 2025 and significant recoveries by 2100. Water levels are nearly identical in the middle alluvial unit (MAU) and the lower alluvial unit (LAU).

Pumping from the middle alluvial unit (MAU) aquifer is the single largest negative stress on the WSRV groundwater system. Reducing it will slow the rate of water table decline and subsidence, and lessen migration of poorer quality water towards the sub-basin interior. Recharge appears to be effective on a local scale over relatively long durations. However, given that water must traverse hundreds of feet of generally fine-grained and layered vadose zone soils in the upper alluvial unit, not enough water can be applied quick enough to counteract present pumping rates in the middle and lower units.

I. Introduction

To resolve the problems associated with rapidly declining groundwater levels in the Phoenix metropolitan area, the Bureau of Reclamation (Reclamation) and the Arizona Department of Water Resources (ADWR) have jointly investigated ways of utilizing excess Central Arizona Project (CAP) Colorado River water allocations. Declining groundwater levels are particularly acute in the western portion of the Phoenix Salt River Valley (WSRV). Here recharge from irrigated agricultural lands is rapidly disappearing due to urbanization. Adding to the concern are increased pumping costs, water quality degradation and subsidence. Because metropolitan Phoenix relies heavily on groundwater and is one of the fastest growing cities in the country, new water sources are needed to meet future demands.

In 1996, Congress directed Reclamation to conduct a water supply study for the west valley. What follows is that study.

A. Background

In 1968 Congress authorized Reclamation to construct the CAP. The CAP conveys water from Lake Havasu on the Colorado River via an aqueduct, through a number of pumping lift plants through central Arizona and on to the Tucson metropolitan terminus. The CAP is designed to deliver Colorado River water to municipal, industrial, and agricultural users in central and southern Arizona, reducing the state's dependence on groundwater pumping.

By 1985, Reclamation had completed construction of conveyance works to the Phoenix Salt River Valley area. East Salt River Valley CAP contractors began taking deliveries immediately, encountering no problems because of their proximity to the CAP canal. However, West Valley CAP contractors were not as fortunate, their demand centers were considerably further from CAP facilities. West Valley Water Users determined that it was more cost effective to continue pumping groundwater rather than investing in conveyance and water treatment facilities necessary if they were to use their CAP allocations.

This strategy remained viable until the replenishment requirements of the Arizona Groundwater Management Act of 1980 were triggered. This Act requires replenishment of any new pumped groundwater. The expected cost to replenish pumping to meet new demand made utilization of CAP resources more attractive to West Valley Water Users.

By the early 1990's West Valley water providers, under pressure from the approaching groundwater replenishment requirements, began investigating alternatives for the delivery of CAP water. From the outset, two issues were clear: (1) Given the costs, the decision on how to implement a CAP changeover would have to be carefully analyzed; and, (2) A concerted effort was needed to investigate partnering possibilities with other West Valley communities to collectively build and operate conveyance and treatment facilities. The second issue would be the greater challenge for most West Valley water providers, because in their present world of groundwater pumping, each operates independently of the other.

Several West Valley water providers, working through a then existing regional economic development organization called WESTMARC, approached ADWR and Reclamation for assistance. WESTMARC asked for help in conducting a regional investigation of approaches for the West Valley's transition from groundwater to CAP usage. Both ADWR and Reclamation agreed and the West Salt River Valley Management (WSRV) Study was initiated.

With support assurances from the Federal and State partners, the West Valley water providers organized into a new association called WESTCAPS to specifically manage the local role in the WSRV Study. Eleven municipalities and private water companies joined WESTCAPS. They selected the City of Glendale as lead agency to develop agreements with Reclamation and ADWR and to hire an executive director to manage the WSRV Study.

A request was made to Congress to fund federal involvement in the WSRV Study. Reclamation estimated the federal effort would last six years and cost $1,500,000 that would be matched with local funds and/or in-kind services. The FY-1997 Federal Appropriations Act (October 1996) provided $200,000 for first year federal activities that included a water supply study for the West Valley. As a result, an in-kind cost sharing agreement was made with WESTCAPS.

Reclamation's first year WSRV Study efforts were administrative in nature. As the WSRV Study scope evolved, it was determined that a regional groundwater-modeling tool was needed to evaluate hydrologic conditions under the Basecase or no action alternative and the proposed action alternatives. Reclamation submitted a proposal to WESTCAPS to conduct the regional hydrologic analysis and that proposal was accepted by all parties. The WSRV Study is the summation of the hydrologic evaluation by Reclamation.

B. Reclamation's Efforts

Reclamation's proposal for the WSRV groundwater hydrologic analysis was to build upon work done by the ADWR. In the early 1990's, ADWR had developed a regional MODFLOW groundwater model for the Salt River Valley. This model utilized an Arc/Info Geographic Information System (GIS) preprocessor to create recharge and pumping projections based on population projections and expected conversion of agricultural lands to urban use. In 1996, ADWR released a report titled "Current Trends Alternative" (CTA) which was their most recent version of the Salt River Valley groundwater model (reproduced on the CD_ROM). The CTA was developed by ADWR as a regional water resources planning tool to evaluate the effects various demand and supply scenarios might have on the groundwater system to the year 2025.

WESTCAPS also wanted to use the Salt River Valley groundwater model but found the GIS preprocessor cumbersome. The Arc/Info process uses a number of different programs across several computing platforms and would be expensive for small water suppliers to learn and use. Reclamation, with ADWR cooperation, reprogrammed the Arc/Info interface (while maintaining the base logic) using one common platform – ArcView GIS. ArcView was also utilized as a MODFLOW post-processor for generating various water level contour maps of the simulations.

Additionally, WESTCAPS requested that certain demand/supply assumptions in the existing CTA groundwater model needed updating and/or revision. Reclamation developed a new Basecase scenario with the ArcView interface using WESTCAP's criteria. The first step was to successfully replicate the CTA results of the Arc/Info preprocessor and MODFLOW-96 results with ArcView and GMS MODFLOW, respectively. Once accomplished, 23 simulations were run to refine WESTCAP's member assumptions in creating the Basecase. The action alternatives (Solutions A, C, D through F/G) are compared to the Basecase.

For this Study, Reclamation proposed to:

(a) Acquire the CTA files from ADWR.

(b) Convert the preprocessor from an Arc/Info based process to ArcView and establish a Basecase MODFLOW hydrologic run using updated municipal demand drivers and existing renewable water supplies (as directed by WESTCAPS).

(c) Formulate alternatives for meeting future demand by utilizing CAP and other renewable water resources.

(d) Conduct a hydrologic evaluation of the alternatives against the Basecase in terms of water level changes over time. Although water quality was evaluated in a separate study, neither water quality nor subsidence is built into the groundwater model.

A detailed discussion of items (a) and (b) is located in the "Tools" Appendix. Discussion of item (c) is located in Chapters IV through VIII. Item (d) is discussed in the Data Results sections of Chapters II through VIII.

II. The Basecase

The background section discussed how most of the assumptions used by Reclamation to develop the Basecase were assumptions developed by ADWR in its Current Trend model run. The areas where Reclamation developed new assumptions were in the west valley only. East valley assumptions were ADWR assumptions. Areas where Reclamation developed new west valley assumptions were quantities of renewable supplies, residential unit counts, GPHUD factors, water planning area boundaries, and artificial recharge. The Basecase is a baseline scenario against which the alternatives are compared and contrasted.

This section details the west valley assumptions, and discusses the Basecase groundwater model results. Subsequent chapters discuss the alternative solutions and how they compare to the Basecase. One important point worth mentioning is that Reclamation extended the model run one additional period (11th stress period) from the 10 periods (to year 2025) of the CTA model. This eleventh period is 75 years long to bring the total simulation time to 100 years (to year 2100). The hydrologic stress rates in the tenth Basecase stress period, years 2020 to 2025, were held constant for the eleventh period, throughout the 75 year period from 2025 to 2100.

A. Basecase Assumptions

WESTCAPS and Reclamation formulated a number of assumptions regarding projected urbanization rates, household water use, water demand, and surface water and groundwater supply sources to year 2025. These assumptions are held constant in five-year increments from 1995 to 2025. These assumptions in many ways differed from those developed by ADWR in its Current Trends (CTA) model run and so define the WESTCAPS Basecase model. These projections are tabulated in nine tables included in the Basecase Appendix for the following categories: residential units, water use factors, and water budgets of each Water Planning Area (WPA) demand and supplies. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed. Assumptions not changed included non-municipal pumping, irrigated agriculture, natural recharge such as mountain-front recharge, recharge from irrigated agriculture, and underflow into or out of the modeled area.

B. Basecase Recharge File Construction

Recall that CTA assumptions established the amount and location of recharge from irrigated agriculture in the CTA model where cropped consumptive use is applied against the irrigated volumes applied. In the Basecase, the impacts of WESTCAPS urbanization are coupled to the CTA irrigation assumptions; and where conditions of urbanization were met, recharge from irrigated agriculture is curtailed. Because housing unit counts (urbanization rate) is the same for all alternatives, recharge from irrigated agriculture was the same in all WESTCAPS scenarios.

WESTCAPS members set assumptions for artificial recharge for the Basecase. Table 1 lists the cells receiving recharge and the quantities in acre-feet/year. Model grid cell numbers (one square-mile areas) are indexed to a geographical location (Water Planning Area) using Figure 7a.

TABLE 1. ARTIFICIAL RECHARGE FOR BASECASE BY CELL

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

FEB. 23, 2000 RUN
BASECASE

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1650	0	0	0	1313	2875	3041	3041	3041	3041	3041
1651	0	0	0	0	560	1568	3361	5153	6833	8513
1673	0	0	0	80	5000	5000	5000	5000	5000	5000
1895	0	0	0	0	0	25000	25000	25000	25000	25000
1929	0	296	25	0	0	0	0	0	0	0
2097	0	0	0	0	2240	4480	6720	8960	11200	13440
2672	0	0	0	8333	20000	25000	12500	12500	12500	12500
2673	0	0	0	8333	20000	25000	12500	12500	12500	12500
2760	0	0	0	8333	20000	25000	12500	12500	12500	12500

TABLE 1. ARTIFICIAL RECHARGE FOR BASECASE BY CELL (continued)

2761	0	0	0	8333	20000	25000	12500	12500	12500	12500
2762	0	0	0	8333	20000	25000	12500	12500	12500	12500
2763	0	0	0	8333	20000	25000	12500	12500	12500	12500
2819	0	0	0	0	5000	10000	15000	20000	20000	20000
2994	0	0	0	0	675	1200	2303	2809	3360	3360
3114	0	206	3749	3833	4000	4000	9000	9000	9000	9000
3127	0	0	0	0	2000	2000	2000	2000	2000	2000
3569	739	1660	1667	1871	2500	3271	3314	3314	3314	3314
4194	0	0	0	454	0	0	0	0	0	0
4195	0	0	0	454	0	0	0	0	0	0
4289	0	0	0	0	3100	3100	3100	3100	3100	3100
TOTAL	739	2162	5441	56690	145075	209619	149798	159336	163807	167727

C. Basecase - Data Results

The hydrologic effects on the groundwater system were evaluated from varying certain demand and supply assumptions in the West Salt River Valley (WSRV), between 1989 and 2100. This study used a series of water level contour maps and plots, and six hydrographs for key areas in the WSRV. Selected contour maps are included in each of the following scenario sections. Comparison hydrographs are discussed below. Column bar chart plots and a mass balance water budget (Table 2) are included in the General Comparison section. The budget table compares the ending inflows and outflows for each of the three model layers (aquifers) for years 2025 and 2100 for the Basecase and Solutions A through F/G.

Three types of water level contour maps (all with 50-foot contour intervals) are included for the upper, middle and lower alluvial units (UAU, MAU, and LAU) of the WSRV portion of the model for the years 2025 and 2100. Selected contour maps are included in this Basecase chapter and in the following Solution chapters. **(All contour maps are included on the CD-ROM).** One type of water level contour map is depth to water with the simulated depth to water in feet from ground surface (see Figure 2 on page 7; s23h_m_25.shp, for an example of this type). The second type are water level change contours (contours of drawdown). These show the change in feet from the initial water levels of 1989 to either 2025 or 2100 in the middle and lower alluvial units (see Figure 4, s23d_m_25.shp). Positive water level change contour values imply declines (drawdown) and negative values recovering (rising) water levels since 1989. The third type (difference maps) compare the difference in the depth to water between the Basecase and each of the solutions. See Figure 10 for the differences between Basecase and Solution A.

The depth to water contour maps project on a regional scale how far the simulated water table might occur below surface in the future for the west valley. These contour maps must be interpreted carefully since the depths are referenced to spatially changing ground surface elevations. Ground surface elevations vary from about 780 feet above mean sea level (amsl) in the southwest corner of the modeled area (Buckeye/Arlington) to over 2000 feet amsl in the northwestern corner (towards Morristown). While these contour maps can show the geometry of the water table surface at some snapshot in time, the hydrographs show similar information and projected rates of change for key local areas (one square mile areas) in the west valley.

The hydrographs show simulated depth to water levels in feet (referenced from the ground surface elevation of the particular hydrograph location) for each scenario in five year increments between years 2000 and 2025, and the final simulated depth to water at year 2100. Five key or "'representative" areas within the west sub-basin portion of the model were selected to portray historical or predicted groundwater conditions representative of the area. These locations are referenced to the nearest major road intersection. The hydrograph locations are shown on the depth to water contour plan maps as Location of Hydrographs A through F (see Figure 2 for an example).

Three hydrograph locations (A, D, F) occur in or near areas historically or predicted with severe water level declines. Two locations were selected to portray changes in the model where water level declines are not an issue (C, E). One area is waterlogged and another is a quiescent area of the model. A location in the northwest area (hydrograph area B) shows moderate decline rates.

The nearest point of reference and characteristics for hydrograph Areas A through F are:

A. Bell & 83rd Avenue; This area has consistently shown some of the greatest depths to water in simulation years 2025 and 2100 for the lower two alluvial units.

B. Central Arizona Project (CAP) Canal & US-60; An area in the northwest portion with moderate simulated depths to water.

C. Buckeye area on Interstate AZ-85 about five miles south of Interstate I-10: An area in the waterlogged (shallow water table conditions) southwest corner of the model.

D. Citrus Road & Peoria Avenue several miles northwest of the Luke AFB area regional cone of depression (referred to as the Luke Cone); The hydrograph location is in the western cone area. The Luke cone is an area characterized by historically severe water level declines and subsidence/earth fissuring problems. The simulated depths to water are comparable if not a little less severe here compared to Area A at Bell & 83rd Ave.

E. Interstate I-17 & Indian School Road; A hydrograph here projects some information in a large generally quiescent area in the eastern WSRV.

F. Beardsley Road & Grand Avenue; This location is representative of groundwater conditions of the Sun City West area. Simulated water level declines in this area are also significant but not as bad as areas A and D in year 2025 and beyond.

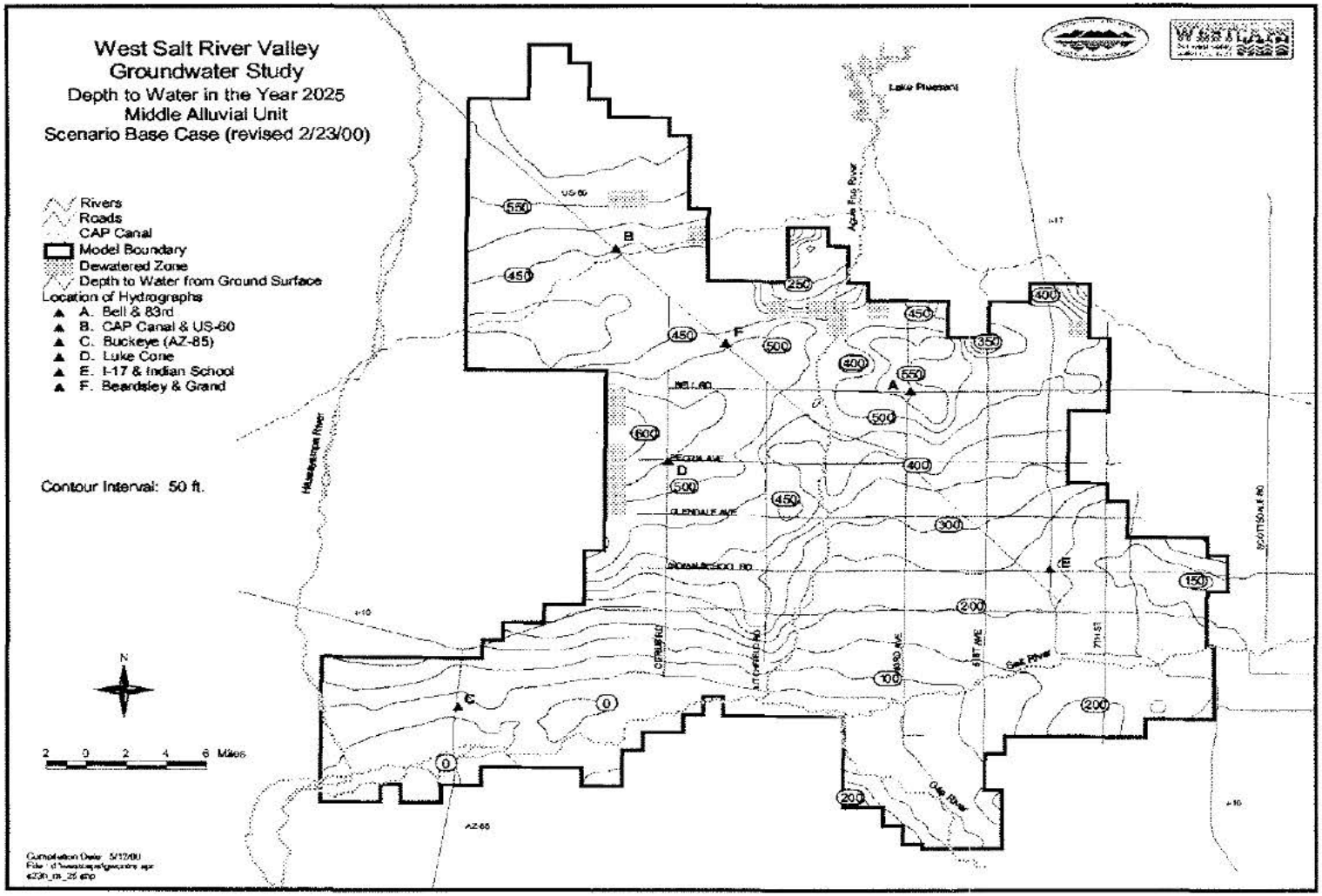


FIGURE 2. Depth to Water in the Year 2025, Middle Alluvial Unit, Scenario Basecase

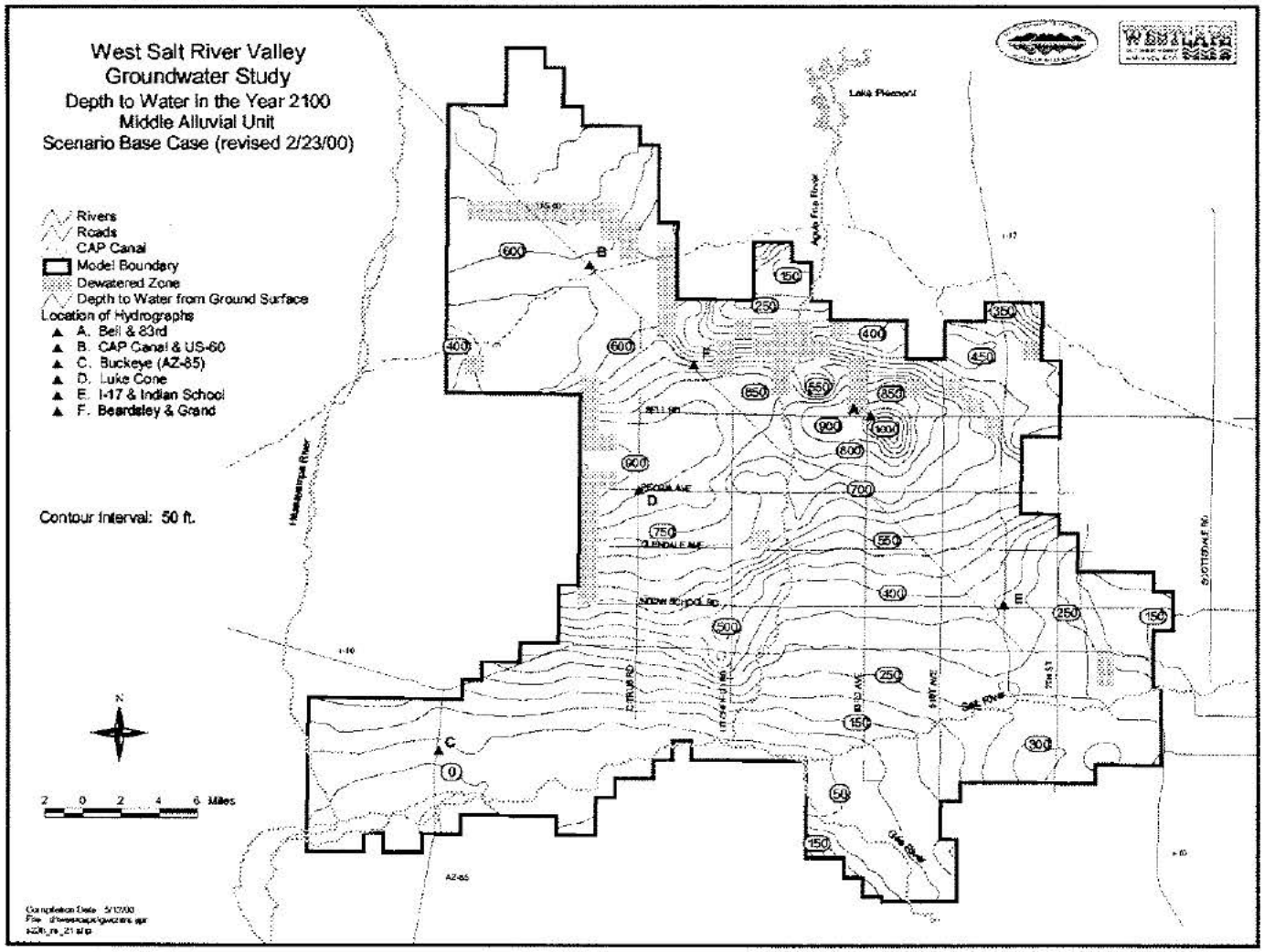


FIGURE 3. Depth to Water in the Year 2100, Middle Alluvial Unit, Scenario Basecase

Basecase Water Level Change Trends in the WSRV

The following trends characterize how groundwater levels are predicted to change in years 2025 and 2100 due to the unique combination of changing pumping and recharge assumptions which define a particular scenario solution. The demand and supply drivers (e.g., a certain recharge facility) which cause the water level changes, are discussed in the General Comparison - Data Results section. By year 2025 portions of the western Luke Cone area (along the White Tank foothills), and the Peoria and Sun City areas (e.g., Bell & 83rd) are projected to have the greatest depths to water (lowest water table elevations) from ground surface in the WSRV. The groundwater is projected to drop an additional 300 to 450 feet respectively, in these areas by 2100 (see Figures 2 and 3, s23h_m_25.shp and s23h_m_21.shp). Luke Cone area groundwater levels have historically been low so the water table is only projected to drop about 75 more feet (from 1989) by 2025 but upwards of 400 feet by 2100.

Depth to groundwater in the middle alluvial unit in an area just east of Sun City (between about 51st and 83rd Avenues and south of Bell Road), is predicted to exceed 1000 feet, the deepest projected water levels anywhere in the WSRV. The model predicts the depth to water at over 1000 feet (about 185 feet amsl) with a water level change (by year 2100) of 650 feet between 51st and 83rd Avenues a mile south of Bell Road (Figure 3).

In the upper alluvial unit in 2025, depths to water range from 50 to 500 feet between the Salt/Gila River and Bell Road (the north/south extent of the upper alluvial unit). By 2100, it is predicted most of the upper aquifer will be dewatered north of I-10 (see map s23h_u_25.shp on the CD-ROM).

In general through year 2025 the Basecase simulation for both middle and lower alluvial units show the greatest groundwater level change (mostly declines) since 1989 occurs in the west-central and north-central portions of the WSRV sub-basin. This area is roughly bounded by Interstate I-10 and Happy Valley Road, and 51st Avenue to Citrus Road along the Agua Fria River. These declines (referred to as drawdown) range from 50 to 273 feet (273 feet at Litchfield Road and I-10 and 217 feet at Bell & 83rd Avenue). Lesser water level changes of between 0 and 100 feet characterize the eastern, southwestern, and northwestern parts of the sub-basin except at I-10 and Litchfield Road where declines from 200 to 350 feet are shown (see Figures 4 and 5, s23d_m_25.shp and s23d_l_21.shp). By 2100 this area extends further north-south several more miles and about five miles further in the east-west direction. The Bell & 83rd Avenue area shows about 650 feet of decline, and 390 feet of decline occurs at Litchfield Road and I-10. The lower alluvial unit has a similar water level decline distribution to the middle unit but the lower unit shows about 50 feet less change in these two areas from 1989 to 2025, and between 50 and 100 feet less decline since 1989 in these areas in 2100. The simulation shows that more of the middle unit is dewatered than the lower unit.

The hydrograph of Area A (Bell & 83rd) shows this area has the greatest rate of decline of the six representative areas (see hydrograph Figure 6). By 2100 its simulated depth to water drops near the base elevation of the middle alluvial unit (MAU). The Luke cone area (Area D) shows a slightly lower rate of decline and the projected depth to water in 2100 is almost 150 feet less than at Bell & 83rd (Area A). The simulated Luke water level elevation is 440 feet amsl in 2100

compared to 140 feet amsl or lower for Area A. Another deep cone of depression area occurs about 2 miles southwest of Litchfield and Bell Roads. Its depth to water is about 825 feet (elevation 370 amsl).

The southwest portion of the WSRV, the Buckeye area, has shown waterlogging problems (shallow to near ground surface groundwater levels) primarily as a result of effluent recharge into the river from the 91st Avenue WWTP. The Basecase simulation predicts this area will continue to suffer waterlogging and to actually worsen slightly with depths to water as much as 50 feet less than 1989 conditions (see water level change maps). Little to no change occurs along the Gila River. The Buckeye hydrograph (Area C) shows groundwater in an area along AZ-85 to rise about 40 feet from 2000 to 2025 (Figure F-29 on the CD-ROM).

The northwest and southeast areas of the WSRV show slight to moderate simulated water level changes (moderate depths to water) from the present to 2025 and 2100. Hydrograph Areas B (northwest area at the CAP Canal and US-60) and E (Interstate I-17 and Indian School Roads) are generally representative of these relatively quiescent portions of the model (Figures F-27/F-28 and F-33/F-34 on the CD_ROM). The hydrographs show Basecase simulated depth to groundwater levels dropping in the northwest Area B at a fairly linear rate from about 410 feet in 2000 to 580 feet below ground surface in 2100. In the northwest area between hydrograph locations B and F in 2100, water levels drop at a fairly steep gradient towards the Sun City depression area probably because of the narrow aquifer in this area and underflow convergence from the Hassayampa basin into the WSRV sub-basin. In contrast, the groundwater table gradient is shallower in the southeast WSRV area. Southeast hydrograph Area E shows water levels in the middle aquifer drop a little more quickly than Area B levels with nearly 200 feet of water level decline or drawdown since year 2000, to 2100.

The simulated groundwater flow field for each alluvial aquifer (resultant vectors of the flows in and out of each square mile cell area in 2025 and 2100) shows groundwater flow generally converging into the central portion of the WSRV towards the depression cone areas. This central portion occurs along the Agua Fria between about Indian School and Bell Roads. Groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV). It flows westward along the mountain front area of the Phoenix Mountains; and it flows from the Hassayampa basin into the WSRV southeastwards along US-60. In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains. In the Peoria and Litchfield Roads area (possibly the SROG facility), flows radiating outwards indicate groundwater recharging or mounding. As shown on Figure 4 , this area shows little if any drawdown to 2025 since 1989. At Litchfield Road and I-10, flows converge in the middle and lower units towards a heavy pumping center.

The Basecase simulation predicts the waterlogging problems in the Buckeye area will actually worsen slightly as water levels in some local areas are simulated as much as 50 feet higher than they were in 1989. Simulated water levels in the lower alluvial unit aquifer show similar contour magnitudes and distribution to those of the middle unit except that not as many areas were dewatered in the lower unit.

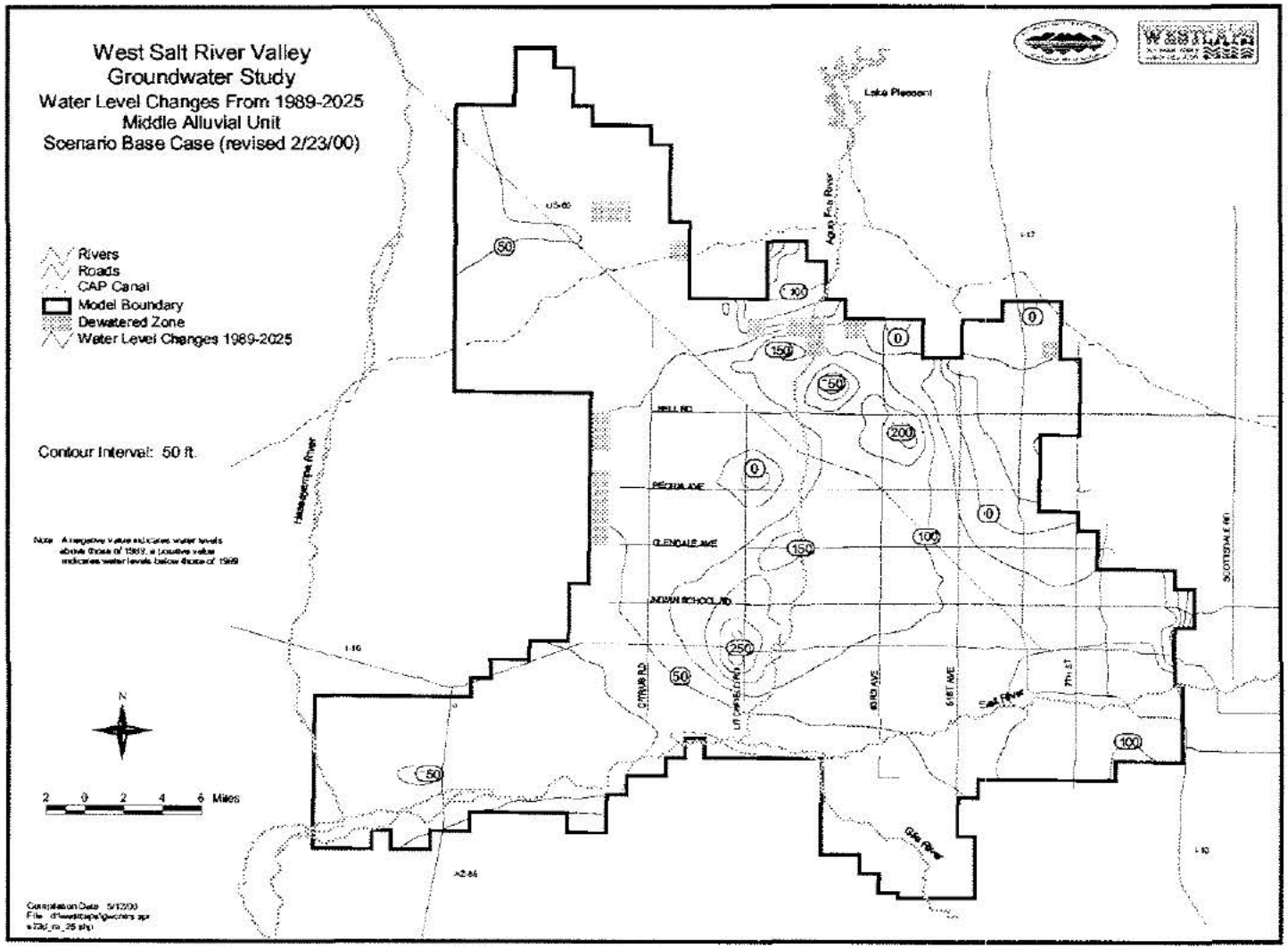


FIGURE 4. Water Level Changes from 1989 to 2025, Middle Alluvial Unit, Scenario Basecase

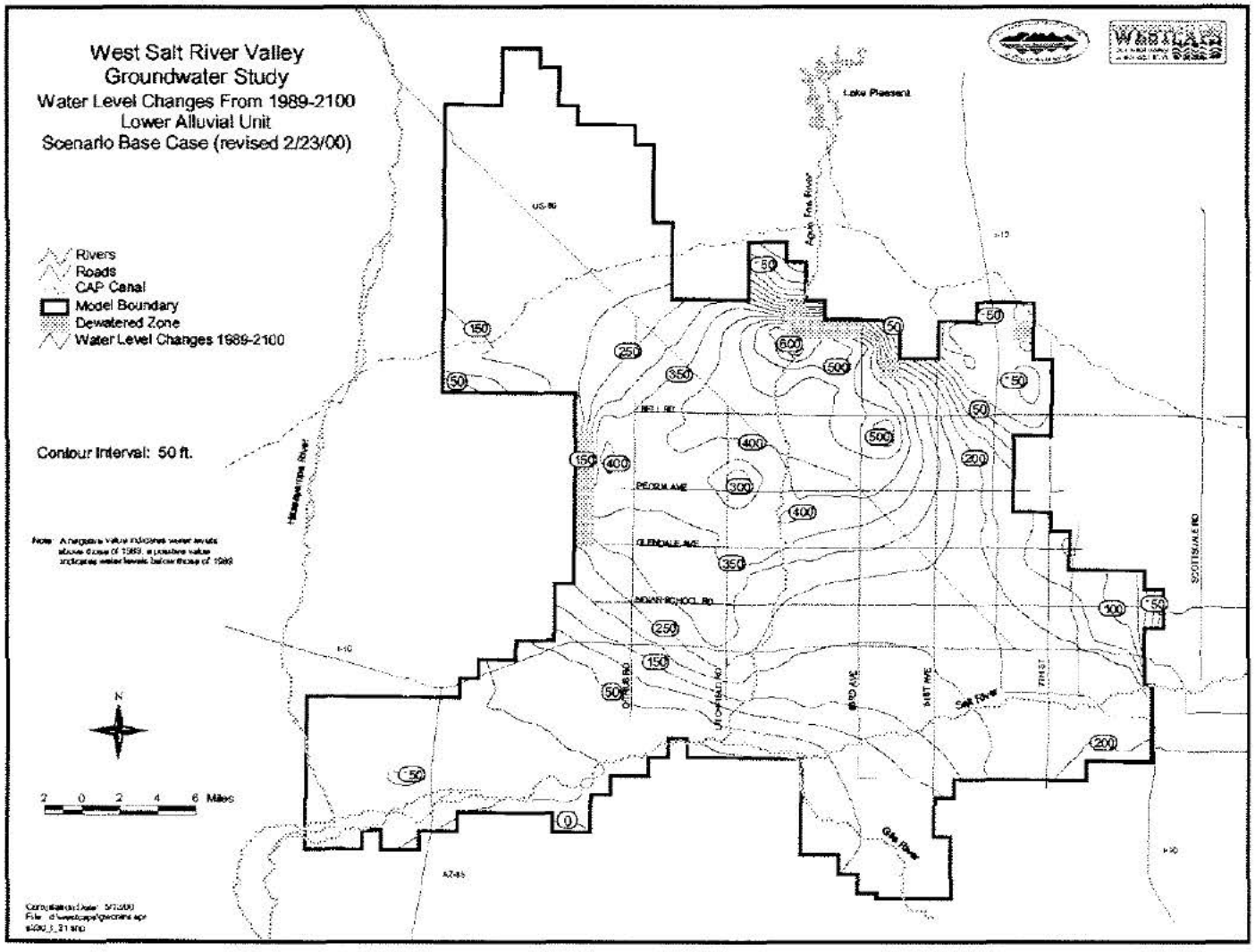


FIGURE 5. Water Level Changes from 1989 to 2100, Lower Alluvial Unit, Scenario Basecase

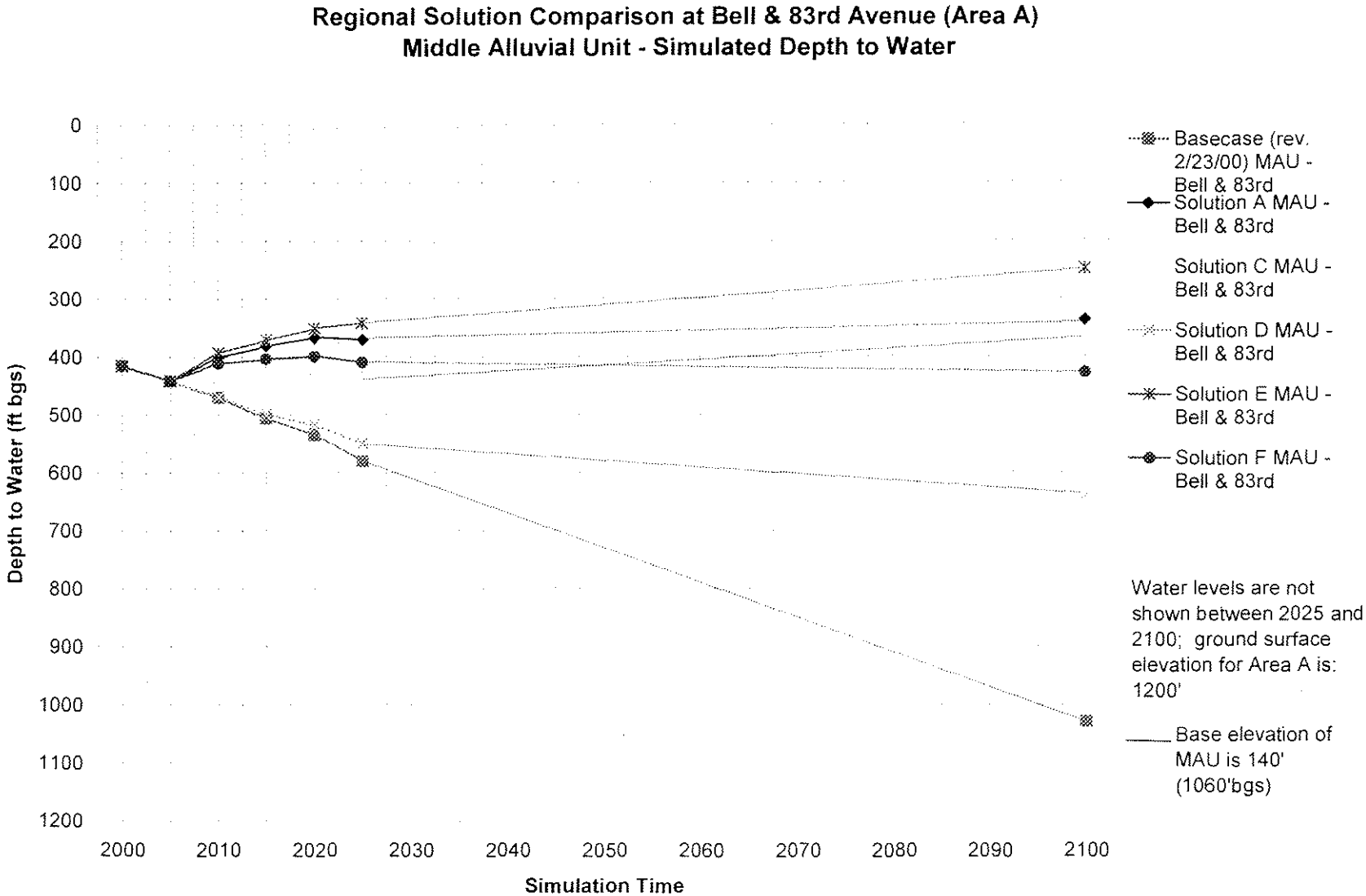


FIGURE 6. Regional Solution Comparison at Bell & 83rd Avenue (Area A) - Middle Alluvial Unit

In summary, the deepest simulated Basecase water levels in the WSRV occur in the year 2100 in an area bounded on the south by Peoria Avenue, on the north by Beardsley Road, and to the east and west by 51st Avenue and the White Tank Mountains (Citrus Road). Within this area two water level cone depression areas occur at 2025 around the Sun City (Bell & 83rd) areas and the Luke area (north of Glendale Avenue and west of Litchfield Road). By 2100 these depressions have partially coalesced resulting in a water level trough trending east-northeast as water levels drop another 300 to 400 feet from 2025 to 2100. The simulated depth to water exceeds 1000 feet in an area a mile southeast of Bell and 83rd Avenue.

III. General Comparison between Basecase and the Solutions

The Basecase is first compared with all the solutions as a group in a general discussion. Then the Basecase is compared to each solution independently in sections IV through VIII. The general discussion focuses on areas in the analysis where the simulated groundwater level results were similar from one solution scenario to another.

A. General Comparison - Basecase Assumptions

WESTCAPS developed new Basecase assumptions, replacing those used by ADWR in their CTA report. These assumptions included the number of housing units, gallons of water used by housing unit per day, gallons of water used by industrial/turf by housing unit per day, quantities of available renewable water, and quantity of artificial recharge projects.

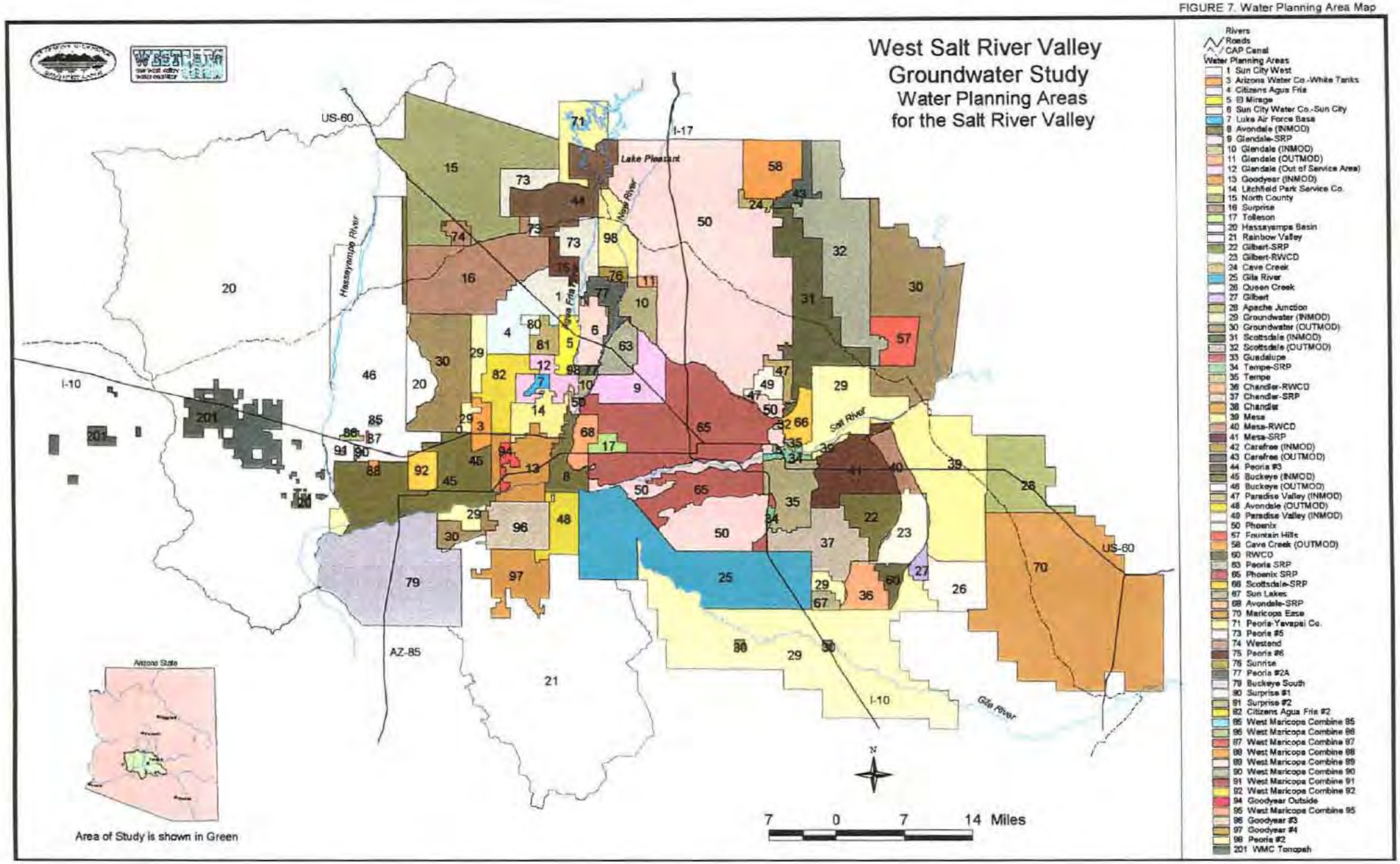
Water Demand Assumptions

a. Water Planning Areas (WPA)

Using ADWR's water planning area boundary map as the beginning point, WESTCAPS members redefined WPA boundaries to reflect current member service planning areas. In most cases, requested changes realign WPA boundaries with current service boundaries. Several new sub-areas were created to reflect special or unique service areas within member planning areas.

Figure 7 shows the WESTCAPS WPA boundaries used by Reclamation for this study. The WPA was assigned a water use factor containing two parts. Part one consisted of a base factor for gallons of water used per household day. Part two used a supplemental factor of gallons of water used per household day for industrial/turf demand where the user has pump rights and meets this demand directly. A more complete description of the supplemental factors can be found in ADWR's CTA report. WPA boundaries were also used for estimating available renewable water supplies.

FIGURE 7. Water Planning Area Map



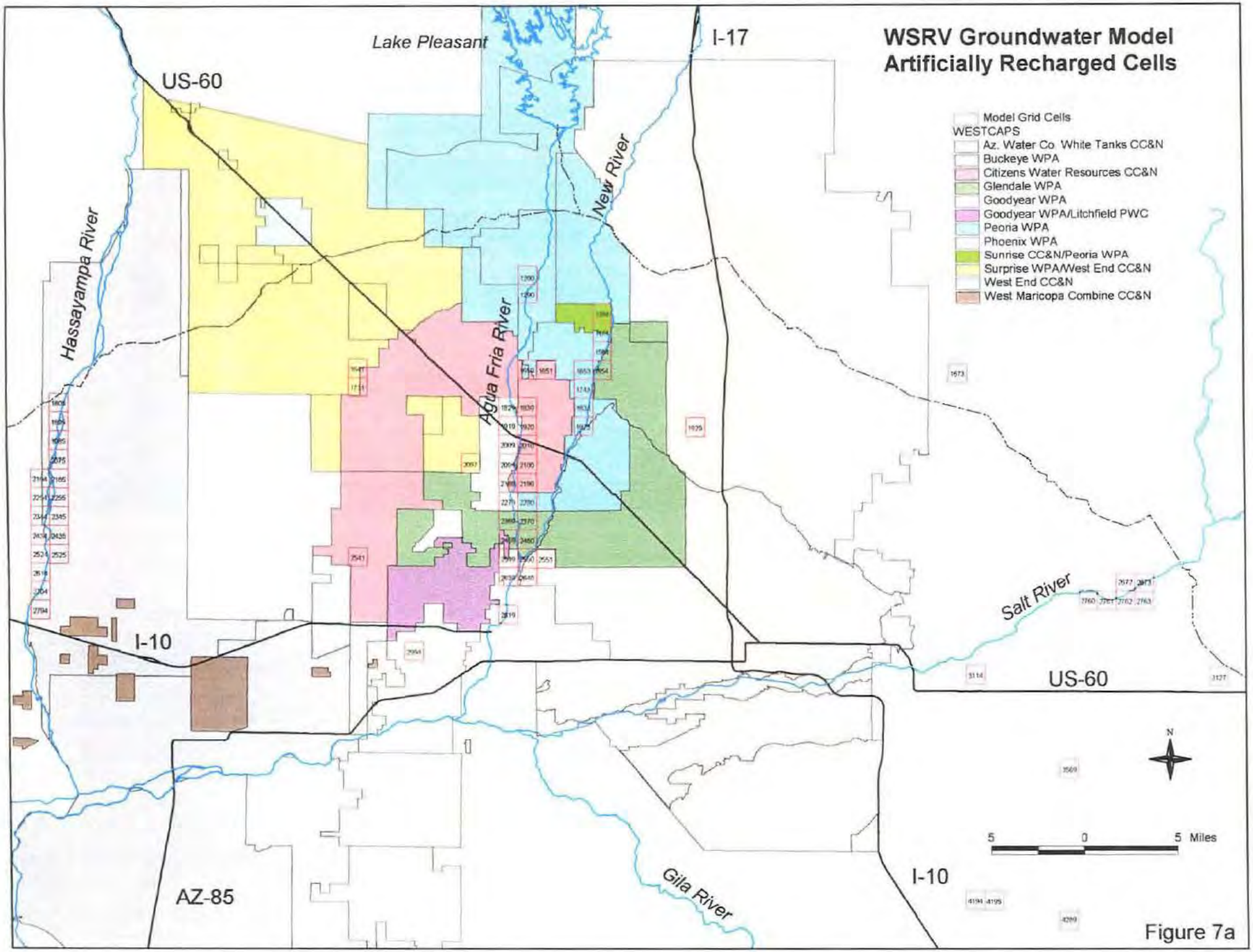

WSRV Groundwater Model
Artificially Recharged Cells
Model Grid Cells
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear WPA/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N/Peoria WPA
Surprise WPA/West End CC&N
West End CC&N
West Maricopa Combine CC&N
Lake Pleasant
US-60
I-17
New River
Hassayampa River
Agua Fria River
Salt River
I-10
US-60
AZ-85
Gila River
I-10
N
5 0 5 Miles

Figure 7a

b. Traffic Analysis Zones

Traffic Analysis Zones (TAZ) are a product of the Maricopa Association of Governments (MAG). TAZ are markers for projecting future housing units. These markers were generated by MAG and show the number of expected housing units in 5-year periods through 2020. The CTA used TAZ residential unit projections for 1991. For WESTCAPS' Basecase, 1997 TAZ residential unit estimates were adopted as a beginning point. WESTCAPS members then adjusted the residential unit projections based on their internal growth expectations. For non-WESTCAPS members, the 1997 MAG projections were used.

Recharge Assumptions

a. Agricultural Recharge

Assumptions for agricultural recharge were the same as those in the CTA report. The volume of recharge did change due to different urbanization assumptions. This was due to the Basecase using different residential unit projections that resulted in slightly different urbanization patterns. For the Basecase, the spatial location and rates of recharge from irrigated agriculture were the same as the CTA's. What changed was the loss of irrigated land to development: it followed the Basecase assumptions, not CTA's.

b. Artificial Recharge

Assumptions for artificial recharge were developed by WESTCAPS. They applied significantly more artificial recharge than ADWR assumed in the CTA. WESTCAPS included a number of newly constructed facilities as well as projecting 40,000 acre-feet in-lieu recharge within the Salt River Project (SRP) service area.

B. General Comparison - Data Results

The Basecase was compared to each of the solutions in terms of a simple MODFLOW output water budget summary for the entire WSRV sub-basin, and with bar charts and hydrographs for the middle and lower alluvial units. A series of clustered column bar charts and hydrographs were prepared for years 2025 and 2100 at key WSRV locations. Ending daily inflow and outflow rates for the final time period steps, years 2025 and 2100, are tabulated for each of the three model layers (aquifers) in mass balance water budget table Table 2, Simulated Flow Rates by Alluvial Unit for Years 2025 and 2100. Presented in the following sections are two sets of column bar charts. Both sets compare Basecase simulated water levels against simulated water levels of Solutions A, C, D, E, and F/G at five key WSRV locations (the hydrograph location designations are distinct from the Solution labels). One set compares the simulated changes in water levels from 1989 (drawdown) among the Basecase and each solution while the other set compares the differences in depth to water between the Basecase and each solution. The key locations are described below.

MODFLOW Water Budget Comparison

Table 2, Simulated Flow Rates by Alluvial Unit for Years 2025 and 2100, breaks down by alluvial aquifer unit the representative daily volume of pumpage, E-T, and recharge over the final month (final time step) of years 2025 and 2100 for the entire west SRV sub-basin. These rates may or may not be representative over the preceding months of these years or other yearly periods. Nonetheless, representative daily volumes for the ending periods of 2025 and 2100 provide a basis for comparison (the trends follow) by aquifer layer between the Basecase model and Solutions A through F/G. Evapotranspiration and aquifer recharge from the river is relevant for the upper alluvial unit aquifer.

Total pumpage for all three layers of a given scenario was similar between 2025 and 2100 since pumping assumptions are generally assumed to remain constant from 2025 on. Almost twice as much pumping is from the middle unit (MAU) compared to the upper unit (UAU) for all solutions. Lower unit (LAU) pumpage is about half that of the upper unit for all scenarios. Total pumpage was least for solution A consistent with its assumption of full direct CAP surface water use by 2025. The greatest pumpage was from Solution C, the regional recharge and recovery solution, a little higher than the Basecase.

TABLE 2. SIMULATED FLOW RATES BY ALLUVIAL UNIT FOR YEARS 2025 & 2100 WSRV SUB-BASIN

	Pumpage		ET		River Recharge		Recharge	
	ft3/d	a-f/d	ft3/d	a-f/d	ft3/d	a-f/d	ft3/d	a-f/d
Basecase								
UAU - 2025	18,087,977	415	4,358,215	100	10,248,748	235	31,455,476	722
MAU - 2025	42,173,208	968					8,933,912	205
LAU - 2025	8,527,422	196					376,079	9
	68,788,607	1,579					40,765,467	936
UAU - 2100	17,927,374	412	4,358,215	100	10,248,748	235	31,086,924	714
MAU - 2100	42,226,553	969					8,933,912	205
LAU - 2100	8,527,422	196					376,079	9
	68,681,349	1,577					40,396,915	927
Solution A								
UAU - 2025	16,429,266	377	4,771,566	110	6,293,874	144	31,452,131	722
MAU - 2025	22,834,112	524					8,937,257	205
LAU - 2025	5,715,455	131					376,080	9
	44,978,833	1,033					40,765,468	936
UAU - 2100	16,429,266	377	4,771,566	110	6,293,874	144	31,452,131	722
MAU - 2100	22,834,112	524					8,937,257	205
LAU - 2100	5,715,455	131					376,080	9
	44,978,833	1,033					40,765,468	936
Solution C								
UAU - 2025	17,935,098	412	4,746,487	109	6,641,096	152	37,744,007	866
MAU - 2025	43,374,462	996					23,799,742	544
LAU - 2025	7,865,024	181					3,059,933	70
	69,174,584	1,588					64,508,682	1,481
UAU - 2100	17,935,098	412	4,746,487	109	6,641,096	152	37,744,007	866
MAU - 2100	43,374,462	996					23,799,742	544
LAU - 2100	7,865,024	181					3,059,933	70
	69,174,584	1,588					64,513,682	1,481
Solution D								
UAU - 2025	17,443,526	400	4,780,450	110	6,129,284	141	35,145,746	807
MAU - 2025	33,218,207	808					13,102,290	301
LAU - 2025	7,758,593	178					2,887,645	66
	66,420,326	1,387					51,135,675	1,174
UAU - 2100	17,443,526	400	4,780,450	110	6,129,284	141	35,145,746	807
MAU - 2100	33,218,207	763					13,102,290	301
LAU - 2100	7,758,593	178					2,887,645	66
	58,420,326	1,341					51,135,675	1,174
Solution E								
UAU - 2025	17,148,165	394	4,704,940	108	6,173,691	142	32,906,547	755
MAU - 2025	26,946,091	619					10,618,325	244
LAU - 2025	6,770,444	155					2,842,481	65
	50,864,700	1,168					46,367,353	1,064
UAU - 2100	17,186,080	395	4,777,108	110	6,173,691	142	32,997,431	758
MAU - 2100	26,946,091	619					10,618,325	244
LAU - 2100	6,770,444	155					2,842,481	65
	50,902,615	1,169					46,458,237	1,067
Solution F/G								
UAU - 2025	17,193,341	395	4,770,352	110	6,263,023	144	35,240,248	809
MAU - 2025	29,340,238	674					8,937,257	205
LAU - 2025	6,780,229	156					1,385,278	32
	53,313,808	1,224					45,562,783	1,046
UAU - 2100	17,193,341	395	4,770,352	110	6,263,023	144	35,240,248	809
MAU - 2100	29,340,238	674					8,937,257	205
LAU - 2100	6,780,229	156					1,385,278	32
	53,313,808	1,224					45,562,783	1,046

Recharge for all three layers of a given scenario was similar between 2025 and 2100 since recharge assumptions are generally assumed to remain constant from 2025 on. Three to four times as much recharge occurs in the UAU compared to the MAU in all solutions except Solution C (1.6 times as much in the UAU). Lower unit (LAU) recharge is very low for Basecase and Solution A consistent with its assumption of full direct CAP surface water use by 2025, and less MAU pumping required. MODFLOW applies recharge to the highest saturated layer; in most cases this is layer 2. Solution C has the most recharge as it is the recharge and recovery scenario.

Evapotranspiration rates in the upper alluvial unit (UAU) vary little between solutions and are roughly three to four times less than pumpage and seven times less than recharge. Basecase and Solution C show the lowest rate of aquifer discharge by E-T with Solution D showing a little higher aquifer discharge than the others. Except in Solution E where E-T rates were higher in 2100 than in 2025, the daily rates were the same in the other models. One explanation for the increased E-T in Solution E is that the 2100 water levels were closer to the surface in 2100 than 2025 (more phreatophyte water uptake). The higher water levels in the Gila/Salt River vicinity are probably in part due to higher recharge in the Agua Fria recharge project in 2100 versus 2025.

Recharge to the UAU from river leakage was highest for the Basecase and then for Solution C. These scenarios had much greater MAU pumping compared to the others as well as more UAU pumpage in 2025; therefore, water levels were lower near the river inducing more flow out of the river into the aquifer compared to the other solutions.

Simulated Water Level Comparison in Key WSRV Areas

A series of bar charts were generated to help compare simulated water levels between the Basecase and the solutions in six WSRV areas. These graphs compare the simulated changes in water levels (or drawdown) from 1989 to 2025 and 2100, and the relative difference in feet between the simulated depths to water for each solution against the Basecase at six key WSRV hydrograph locations. Key locations where water levels are compared and contrasted are:

- A. At the intersection of Bell Road and 83rd Avenue
- B. Just north of where the CAP Canal crosses the Grand Avenue extension (US-60)
- C. In the Buckeye area along state route AZ-85 about 5 miles south of Interstate I-10
- D. At the intersection of Peoria Avenue and Citrus Road several miles northwest of Luke AFB in the "Luke Cone" pumping depression area
- E. At the intersection of Indian School Road and Interstate I-17
- F. Near the intersection of Beardsley Road and Grand Avenue

The six hydrograph locations are shown on the depth to water contour maps (e.g., Basecase Figure 2, s23h_m_25.shp).

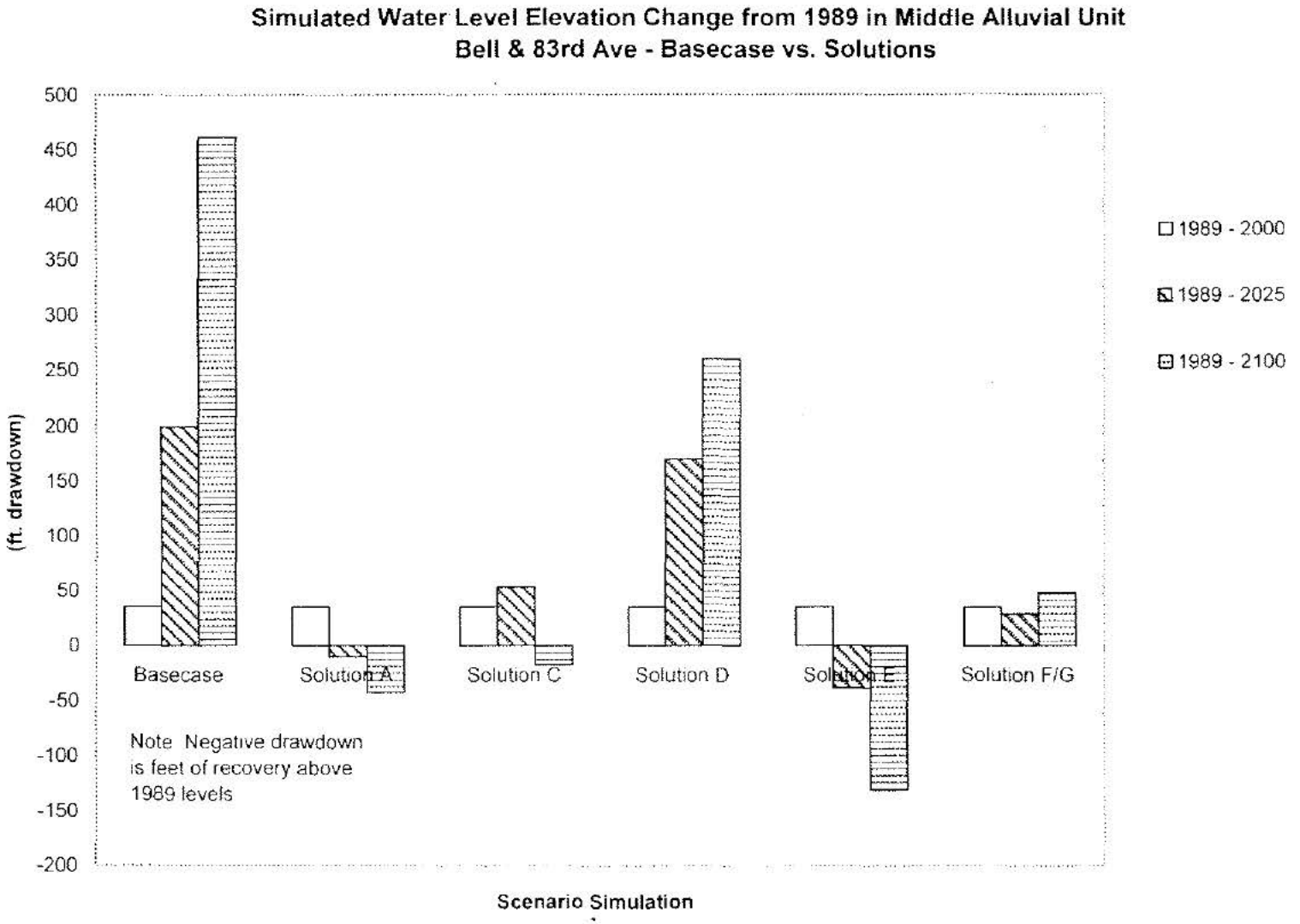


FIGURE 8. Water Level Elevation Change from 1989 at Bell & 83rd Avenue (Area A) - Middle Alluvial Unit

These locations were chosen to represent historical and/or predicted groundwater conditions unique to the area. For example, locations A and D are in areas with severe predicted and historical water level drawdown declines, respectively. Locations B and E were chosen where historical and predicted drawdowns, water table gradients, and rates of decline are moderate. At these locations the simulations are relatively insensitive to changing pumping/recharge assumptions in other west valley areas. Location C reflects shallow groundwater level conditions where waterlogging is prevalent and is predicted to continue or increase over time.

Water Level Change from 1989

The magnitudes of simulated water level elevation changes between the middle and lower alluvial units of most of the scenarios from either 1989 to 2025, or 1989 to 2100 varied little (usually less than five feet) for a given hydrograph location. This shows that (except at Bell and 83rd Road) at these locations, the vertical gradients between the MAU and LAU are small. Other WSRV areas are shown by the modeling results to have vertical gradients larger than this.

The following observations were made using the simulated water level change plots (Figures 4 and 5, and on the CD-ROM) and inferences (from the groundwater allocation tables) of recharge volumes and CAP supplies (translated as a reduction of pumping) for entities near the hydrograph location.

Bell & 83rd Road. The Basecase and Solution D showed the largest vertical gradient differentials (due to large pumpage differences in the MAU between 2025 and 2100) between the MAU and LAU - about 40 and 60 feet, respectively. Figure 8 shows that the Basecase and Solution D have over 150 feet of drawdown in 2025 and over 250 feet of drawdown in 2100 (the Basecase had over 450 feet). Solutions A and E showed between 10 to almost 150 feet of recovery (in E) in 2025 or 2100 at this location possibly due to the large CAP supply and recharge in Peoria, and relatively large CAP supply in Glendale. Solution C had no recovery in 2025 and about 20 feet in 2100. Solution F/G and Solution C show about 50 feet of decline. Another figure, Figure F-2 (on CD_ROM) shows water levels in the lower alluvial unit (LAU) among the simulations.

CAP Canal & US-60. The Basecase had about 50 feet of simulated drawdown in 2025 and 175 feet by 2100 at this location. Solutions A and E showed between 10 to almost 150 feet of recovery (in E) in 2025 or 2100 at this location. Solution A was the only one showing less drawdown at 2100 than 2025 with about 35 feet of drawdown in 2025 and about 30 feet by 2100. Solution E drawdown is comparable over the 75 year period. The relatively large Surprise and Citizens/Sun City CAP supplies seem to help slow the rate of drawdown in the period after 2010 in this area for solutions A and E. Solution C had about 20 feet of recovery in 2100 probably from McMicken and Agua Fria recharge influence of Citizens/Sun City, Peoria, and Surprise. This recharge mounding probably helps offset the southeast flow gradient from the northwest corner of the sub-basin towards the depression area. Refer to Figures F-3 and F-4 (CD_ROM).

Buckeye & AZ-85. The Buckeye area continues to experience recovery of water levels with about 35 feet higher levels in all scenarios except Solution A in 2025 and 2100. The full CAP utilization in Solution A further exacerbates the waterlogging problem in this southwest portion

of the sub-basin with water levels about 40 to 45 feet higher than the 1989 levels. Refer to figures F-5 and F-6 (CD_ROM).

Luke Cone Area. Except for the Basecase all the solutions showed recovery in this area. The recovery was 20 to almost 50 feet in 2025 in solutions C and D, and between 75 and 120 feet in 2025 for solutions A, E, and F/G. Recovery in 2100 is an additional 20 to nearly 100 feet over the 2025 values in solutions A, C, D, and E. Therefore, this area (hydrograph area D) is sensitive to reduction of pumping from a large CAP supply utilization and from recharge facilities.

The large Citizens/Sun City CAP supply (reduced pumping) seems to have a significant effect for Scenario A. Solution D has the least recovery probably as only the McMicken recharge project really contributes any appreciable volume. Solution E benefits from reduced pumping in Surprise from their CAP supply in addition to the assumed recharge volumes. Recharge from surrounding recharge facilities (Surprise McMicken, SROG, and NAUSRP, and possibly to a lesser extent the put and take Goodyear Beardsley facility) and the fact that the White Tanks form a western impermeable boundary, all contribute to rising water levels since 1989.

No recovery occurred after year 2000 for the Basecase as no direct recharge is assumed in this scenario and with the extensive MAU pumping in the Basecase after 2000, drawdown is over 350 feet by 2100. Refer to figures F-7 and F-8 (CD_ROM).

I-17 & Indian School Road. With the exception of the Basecase, all solutions show nearly the same magnitude of drawdown from 1989, about 75 feet in 2025 and 120 to 140 feet in 2100. The Basecase has about the same 2025 drawdown but due to the extended amount of MAU and LAU pumping from 2025 onwards in the Basecase, the 2100 drawdown is about 225 feet. These drawdown trends with no recovery for the Basecase and for Solutions A through F/G are reasonable. This hydrograph location in the east WSRV sub-basin occurs well upstream of the recharge facilities of the solutions so their impact on drawdown is minimal. Pumping in this area is comparable to the Basecase volumes. Refer to figures F-9 and F-10 (CD_ROM).

Beardsley & Grand Avenue. Only the Basecase shows drawdown (about 325 feet in 2100) in either 2025 or 2100 at this location. The hydrologic trends in solutions A, C, D, E, and F/G for this area are similar to those of the Luke Cone area (hydrograph location D). The difference is that recovery in 2100 is about 35 feet less in Solution A and 25 to 65 feet more for solutions C, D, and E in 2100 at Beardsley & Grand Avenue than for the Luke Cone hydrograph. Except for the Basecase all the solutions showed recovery in this area. This area (hydrograph area F) is also sensitive to reduction of pumping from a large CAP supply utilization (reduced pumping) and from recharge facilities.

The large reduction in pumping in Citizens/Sun City seems to have a significant effect for Scenario A. Solutions C and D likely have more recovery in the Beardsley & Grand area than they did in the Luke Cone hydrograph area. The most obvious reason is Beardsley & Grand occurs closer to the McMicken and Agua Fria recharge sites and closer to the Surprise service area with its CAP supply (and reduced pumping about 2010). Recharge from other surrounding recharge facilities (SROG and NAUSRP) plus the narrower aquifer in the area are other reasons that contribute to rising water levels since 1989 (figures F-11 and F-12 on CD_ROM).

Depth to Water Levels

The magnitudes of simulated depth to water level elevations between the middle and lower alluvial units varied little in four of the six hydrograph locations among the solutions at 2025 and 2100. The Bell & 83rd Avenue, and CAP Canal & US-60 hydrograph locations did show marked contrasts between the two alluvial units probably due to established vertical pumping gradients and large depression occurring in the north-middle WSRV area (e.g., Bell & 83rd Avenue).

The following observations summarize the difference in simulated depth to water level plots (text Figures 2, 3, 6, 9, 12, 14, 17, 20; and F-13 through F-24 on the CD_ROM) and inferences (from the groundwater allocation tables) of recharge volumes and CAP supplies (reduction of pumping) for entities near the hydrograph location.

Bell & 83rd Road. For all solutions in the Bell & 83rd Avenue area, the depth to water difference (the solutions had smaller depths to water, a more favorable condition) from the Basecase was 25 to 50 feet for 2025 and 50 to nearly 150 feet (in solutions A and E) by 2100. For this area, solution D is closest to the Basecase possibly as its pumping is comparable to the Basecase. Solution E is the most favorable solution having the highest absolute water table elevation. This may be attributed to the sensitivity of this location to the New River-Agua Fria recharge and that pumpage in this solution is among the lowest. Solution A has the least pumping and so this area is also sensitive to changes in pumping volumes (the large CAP supply). Refer to figures F-13 and F-14 on CD_ROM.

CAP Canal & US-60. At the CAP Canal & US-60 area in 2025, all solutions had water levels only 20 feet or less higher than the Basecase in the MAU but over 100 feet higher than the Basecase in the LAU. This shows that in this area in 2025 the LAU is much more sensitive to the assumptions of pumpage and recharge of the solutions versus the Basecase than for the MAU. Just the opposite is shown for 2100 where all solutions had water levels between 100 and 200 feet higher in elevation (lesser depth to water) than the Basecase. In all cases Solution C had the greatest differences from the Basecase in 2025 and 2100 for both alluvial units from its relatively larger recharge volumes (Figures F-15 and F-16 on CD_ROM).

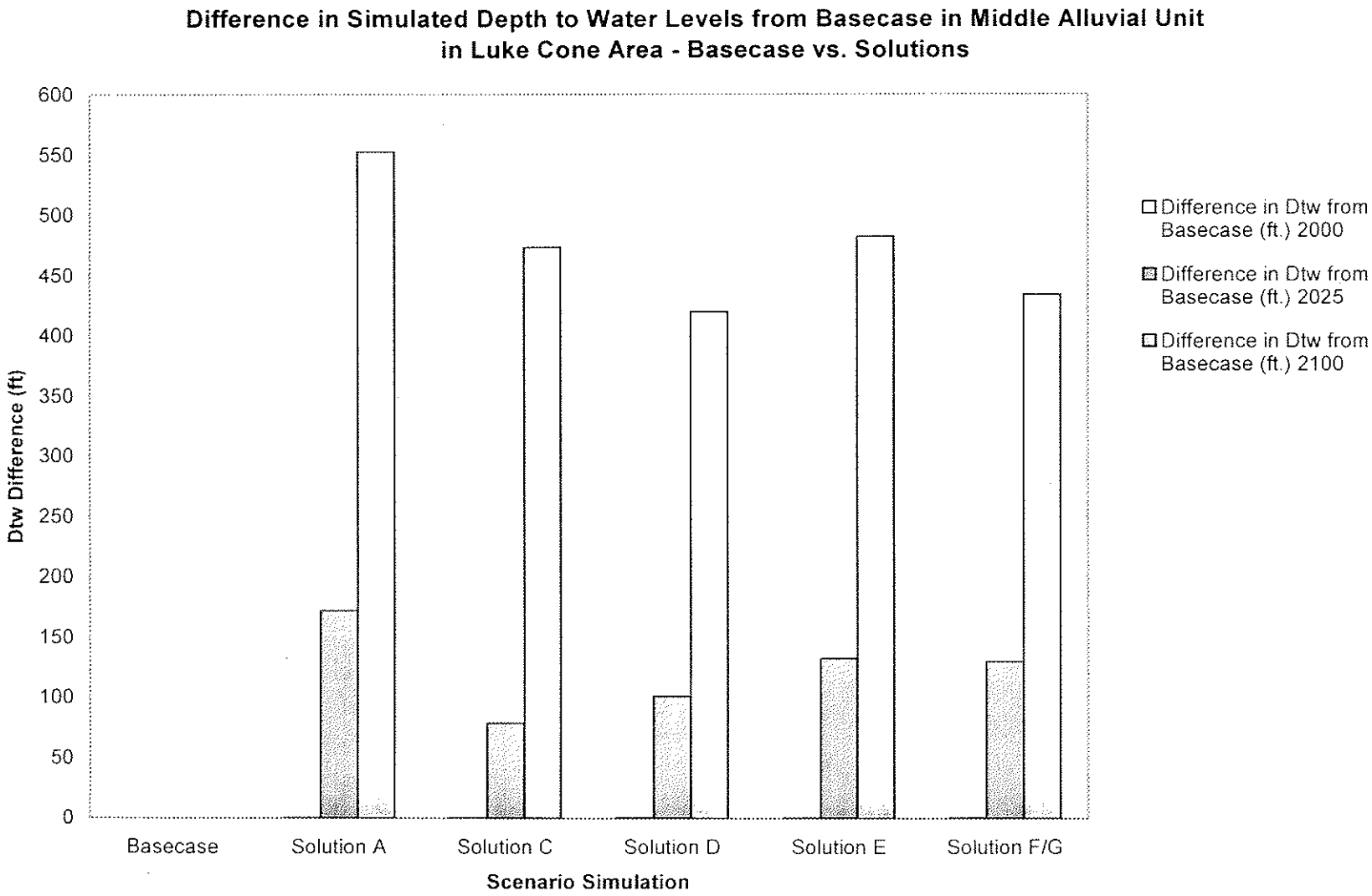


FIGURE 9. Difference in Simulated Depth to Water Levels in Luke Area - Middle Alluvial Unit

Buckeye & AZ-85. The Buckeye area continues to experience recovery of water levels. Reduced pumping (particularly for Solution A) and possibly recharge from the Goodyear-Beardsley facility helps simulated water levels to be several feet to 15 feet higher than what the Basecase projects in 2025 and 2100. Solution F/G does show an unexplained decline of several feet in 2025 compared to the Basecase. Little difference occurs between 2025 and 2100 in any solution. Refer to figures F-17 and F-18 on CD_ROM.

Luke Cone Area. This location (hydrograph area D) is also sensitive to reduction of Citizens/Sun City pumping as shown by Solution A with its large CAP supply utilization, and from the recharge facilities. It is sensitive to surrounding recharge facilities Surprise McMicken, SROG, and NAUSRP, and the fact that the White Tanks form a western hydraulic boundary from underflow leaving the basin westwards.

In both 2025 and 2100, Solution A shows the greatest differences in depth to water from the Basecase with over 150 feet higher depths to water in 2025 and 550 feet in 2100 (CD Figure F-20). Solution D depth to water differences are a little less pronounced than the other solutions but still 100 to over 400 feet (in 2100) compared to the Basecase. This is possibly that the Surprise-McMicken recharge project is the only one in this solution really contributing any appreciable volume. The Goodyear-Beardsley put/take facility probably contributes less as recovery wells immediately southeast would capture most of the mounded water. Solution E benefits from reduced pumping and more recharge in Surprise. See also CD_ROM Figure F-19 for the middle alluvial unit (MAU).

I-17 & Indian School Road. This hydrograph area is more remote from the pumping and recharge assumption changes (the solutions) which strongly influence most of the other locations. The simulated depth to water plot bears this out. All solutions show similar differences from Basecase levels of about 15 feet in 2025 and 75 to 90 feet higher groundwater table levels in 2100 versus the Basecase. Less pumping and the recharging facilities to the west and north result in shallower hydraulic gradients and thus smaller flux rates of groundwater flow from the I-17 & Indian School area towards the west and north. This leads to a slower rate of decline in aquifer storage and thus slower rates of groundwater declines for this eastern portion of the WSRV. Refer to CD_ROM figures F-21 and F-22.

Beardsley & Grand Avenue. The pattern of differences in simulated depths to water between the Basecase and each solution for the Beardsley & Grand Avenue hydrograph location is similar to the I-17 & Indian School Road pattern. All solutions are similar in magnitude. However, the magnitude of differences are much greater for Beardsley & Grand than I-17 & Indian School Road. At the Beardsley location, water levels in 2025 are between 100 and 150 feet higher than the Basecase and between 400 and 500 feet higher than the Basecase in 2100. The large reduction in pumping in Citizens/Sun City and recharge in the northern facilities (Surprise-McMicken, and New River- Agua Fria) seems to have significant positive effects on water levels relative to the Basecase assumptions at this (hydrograph F) location, especially in 2100. It is interpreted recharge from surrounding recharge facilities SROG and NAUSRP also help minimize water level declines relative to the Basecase. Refer to CD_ROM figures F-23/F-24.

IV. Solution A

For WESTCAPS, Solution A represented an alternative wherein groundwater pumping would be curtailed through acquisition of additional CAP supplies in like amounts and construction of water treatment plants.

Solution B was was dropped by WESTCAPS as it was very similar to Solution A. Solution B is not covered in this report.

A. Solution A - Assumptions

Groundwater modeling for this alternative was accomplished by adding the additional CAP supplies in the water budget beginning 2010. Groundwater pumping was reduced acre-foot for acre-foot by the new renewable supply added. Location of the pumping to be removed was determined by the preprocessor based on the information provided for each WPA by the WESTCAPS members.

Total demand in Solution A was the same as Basecase because housing units and GPHUD were the same as Basecase (see Tables 1 and 2 in the Basecase Appendix). No additional recharge was included in Solution A.

Tables 21 through 27 in Appendix "Solution A" document the Westcaps assumptions which differ from those of the Basecase, to formulate Solution A. Table 3, the Groundwater Allocation table, shows the volume of water removed from pumping, for applicable WPA's, and added as new CAP supply starting in year 2010. The allocation tables (including those of Solutions C through F/G) show the changes from Basecase in the boxed areas. Tables 21 through 27 document the Solution A water budget in terms of demand and the various renewable supplies available. Like the Basecase, a table exists for each five year period between 1995 and 2025. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed.

Table 3. Pumping Reductions for Solution A

GROUNDWATER ALLOCATION TABLE — SOLUTION A , SCENARIO 24

CHANGES FROM BASECASE — Following volume of water was removed from pumping and added as new CAP supply

WPA NAME	WPA #	2010	2015	2020	2025
ARIZONA WATER CO. WHITE T	3	873	1170	1568	2099
BUCKEYE IM	45	1938	3541	5984	8427
BUCKEYE OM	46	126	312	959	1602
BUCKEYE SOUTH	79	174	794	2149	3508
		2238	4647	9092	13537
CITIZENS AGUA FRIA	4	22182	24404	26622	28843
CITIZENS AGUA FRIA # 2	82	2144	2222	2443	2665
SUN CITY WATER CO.	6	12861	12861	12861	12861
SUN CITY WEST	1	7250	7250	7250	7250
		44437	46737	49176	51619
GLENDALE OM	11	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	14279	18739	23226
GLENDALE SRP	9	0	0	0	0
		11597	14279	18739	23226
GOODYEAR # 2	13	23322	32867	45570	58288
GOODYEAR # 3	96	0	0	0	0
GOODYEAR # 4	97	754	997	1248	1486
GOODYEAR OUTSIDE	94	3215	4301	5383	6482
		27291	38165	52201	66256
Goodyear/Litchfield PWC	14	9045	11982	14915	17839
PEORIA # 2	98	0	0	0	0
PEORIA # 2A	77	20461	27412	29747	31683
PEORIA # 3	44	455	1144	2571	3965
PEORIA # 5	73	2893	4591	6683	8771
PEORIA # 6	75	908	1155	1612	2069
PEORIA - YAV CO	71	0	0	0	0
PEORIA SRP	63	0	0	0	0
		24717	34302	40613	46488
SUNRISE	76	1242	1289	1289	1289
WEST END	74	292	314	386	452
		1534	1603	1675	1741
SURPRISE # 1	80	219	219	230	241
SURPRISE # 10	102	11	13	15	18
SURPRISE # 11	103	1	1	2	3
SURPRISE # 12	104	2	3	4	6
SURPRISE # 13	110	11	14	26	39
SURPRISE # 2	81	99	99	132	166
SURPRISE # 3	100	319	451	743	1033
SURPRISE # 4	105	125	181	327	471
SURPRISE # 5	99	221	261	351	439
SURPRISE # 6	16	309	404	735	1067
SURPRISE # 7	106	98	99	684	684
SURPRISE # 8	108	162	258	400	543
SURPRISE # 9	109	13	18	26	34
		1590	2021	3675	4744

Table 3. Pumping Reductions for Solution A (continued)

GROUNDWATER ALLOCATION TABLE — SOLUTION A , SCENARIO 24

CHANGES FROM BASECASE

Following volume of water was removed from pumping and added as new CAP supply

WPA NAME	WPA #	2010	2015	2020	2025
WEST MARICOPA COMBINE 85	85	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	47	99	152
WEST MARICOPA COMBINE 87	87	2	8	16	24
WEST MARICOPA COMBINE 88	88	3	4	4	6
WEST MARICOPA COMBINE 89	89	42	66	135	204
WEST MARICOPA COMBINE 90	90	7	10	12	16
WEST MARICOPA COMBINE 91	91	2	2	3	4
WEST MARICOPA COMBINE 92	92	1139	1529	2344	3157
WEST MARICOPA COMBINE 95	95	3	5	16	28
WMC TONOPAH	201	264	370	610	845
		1478	2041	3239	4436
				TOTAL 2025	231985

B. Solution A - Recharge File Construction

The ADWR CTA assumptions established the amount and location of recharge from irrigated agriculture in the CTA model. In Basecase, the impacts of WESTCAPS urbanization are applied to the CTA irrigation assumptions; and where conditions of urbanization were met, recharge from irrigated agriculture is curtailed. Because the urbanization rate remains constant between WESTCAPS scenarios, the recharge from irrigated agriculture remains constant between WESTCAPS scenarios.

WESTCAPS members set assumptions for recharge from artificial recharge for the Basecase. Solution A uses the same artificial recharge as the Basecase. These numbers are available in Table 1 in the Basecase section. Table 1 lists the cells receiving and the quantities for five-year periods. These numbers are applicable for Solution A.

C. Solution A - Data Results

Solution A depth to water levels in 2025 for the middle alluvial unit range from 0 to 250 feet higher than the Basecase; 200 feet higher at Bell & 83rd Rd. (hydrograph point A), and 250 feet at I-10 and Litchfield Rd. There is no change between the two scenarios in the eastern one-third of the WSRV. Solution A levels are 50 feet lower in the northern WSRV in the vicinity of the Agua Fria River (see depth to water difference map Figure 10). By 2100 these two hydrograph locations show Solution A water levels are projected to be 650 feet and 350 feet higher than the Basecase, respectively (Figure 11). In the east WSRV, Solution A levels are 50 feet to 100 feet higher than the Basecase.

The depth to water difference contour maps show the algebraic difference in feet between the depth to water for a given solution (for a particular alluvial unit at a given time), from that of the Basecase. The solutions typically but not everywhere have positive contours, which mean their simulated depths-to-water are less than the Basecase. In other words, simulated solution water levels are closer to ground surface or are higher in absolute elevation than the Basecase, normally a more favorable condition.

Solution A modeling (Figure 11) shows several areas have water levels lower than what the Basecase projects. Basecase water levels in 2100 are 150 feet higher than Solution A in the north Agua Fria River area (in the MUA) but only 50 feet higher in the LAU. The differences are less pronounced for the lower unit. In 2025 and 2100 the differences are less with about 50 feet higher levels for Solution A in 2100 in the north Agua Fria River area.

Depth to water in 2025 in the upper alluvial unit (UAU) ranges from zero along the Gila River in the Buckeye area, to about 350 feet north of Peoria Road between New River and I-17. Only a few square mile areas (cells) have dewatered in 2025 but it is simulated that much of the east quarter of the upper unit (east of I-17) is dewatered by 2100.

The simulated groundwater flow field (resultant groundwater fluxes in and out of each square mile cell) shown for the upper unit in Solution A is similar to the Basecase. In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains. In the Peoria and Litchfield Roads area (possibly the SROG facility), flows radiating outward indicate groundwater recharging or mounding. The simulated groundwater flow field for the middle and lower alluvial aquifers show groundwater flow generally converges into the central portion of the WSRV towards the depression cone areas. As with the Basecase, groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV). Groundwater also flows westward originating along the mountain front area of the Phoenix Mountains, and flows from the Hassayampa basin into the WSRV southeastwards along US-60. Flow rates, compared to the MAU, are higher in the lower unit aquifer between the Sierra Estrella and South Mountain. The magnitudes and flow patterns are similar between 2025 and 2100. Both aquifers show flow convergence along the New River alignment north of about Greenway Road due to the heavy pumping in this area. Compared to the Basecase, Solution A shows a more pronounced component of flow southwards along the front of the White Tanks to the Goodyear Beardsley facility area.

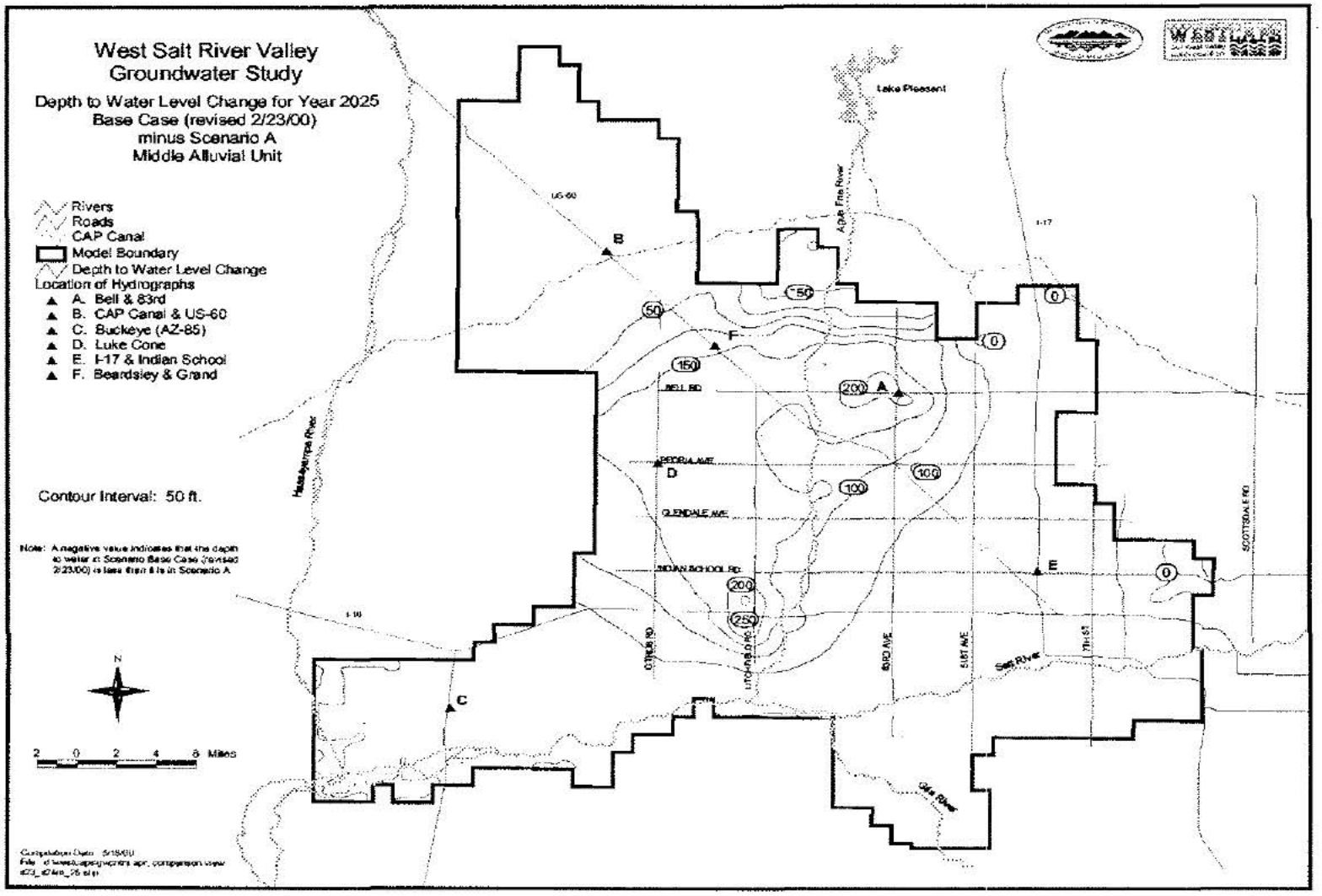


FIGURE 10. Depth to Water Level Change for Year 2025 - Scenario Basecase minus Scenario A - Middle Alluvial Unit

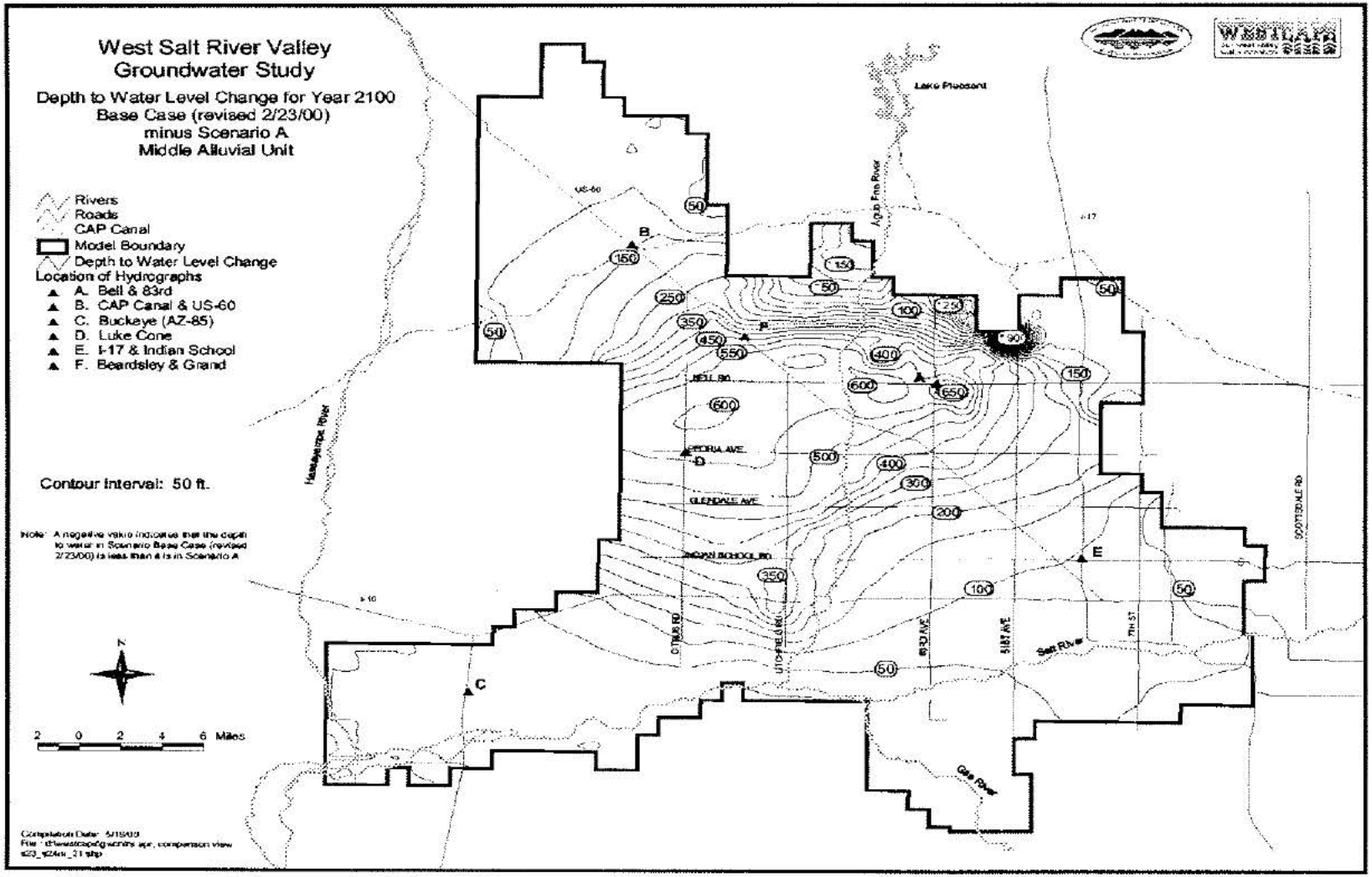


FIGURE 11. Depth to Water Level Change for Year 2100 - Scenario Basecase minus Scenario A - Middle Alluvial Unit

V. Solution C

Solution C was the recharge and recovery option. All future demand would be met by recharging surface supplies near the source or near the pumping cones of depression and recovering this water by pumping wells in or near the area of demand. Solution C includes additional artificial recharge that the Basecase does not.

A. Solution C - Assumptions

Total demand in Solution C is the same as Basecase as it uses the same assumptions of urbanization and demand (see Tables 1 and 2 in the "Basecase" Appendix). Table 1 contains the household unit counts for each WPA in five-year increments through 2025. Table 2 contains the water use factors (GPHUD) for Basecase. The 2025 population counts and demands are assumed to remain constant throughout the 2025 to 2100 increment.

Tables 28 through 34 in Appendix "Solution C" document the Westcaps assumptions which differ from those of the Basecase, to formulate Solution C. Table 4, the Groundwater Allocation table, shows the recharge facilities and volumes of recharged water differences from Basecase, for applicable WPA's starting in year 2005. The allocation tables show the changes from Basecase in the boxed areas. Tables 28 through 34 document the Solution C water budget in terms of demand and the various renewable supplies available. Like the Basecase, a table exists for each five-year period between 1995 and 2025. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed.

Table 4. Groundwater Allocation Table for Solution C

GROUNDWATER ALLOCATION TABLE SOLUTION C , SCENARIO 25
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025
ARIZONA WATER CO. W. TANKS	3	652	873	1170	1568	2099
BUCKEYE IM	45	1627	1938	3541	5984	8427
BUCKEYE OM	46	86	126	312	959	1602
BUCKEYE SOUTH	79	35	174	794	2149	3508
		1748	2238	4647	9092	13537
CITIZENS AGUA FRIA	4	13711	22182	24404	26622	28843
CITIZENS AGUA FRIA # 2	82	2062	2144	2222	2443	2665
SUN CITY WATER CO	6	2861	2861	2861	2861	2861
SUN CITY WATER CO	6	10000	10000	10000	10000	10000
SUN CITY WEST	1	7250	7250	7250	7250	7250
		35884	44437	46737	49176	51619
GLENDALE OM	11	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	5253	5798.5	7139.5	9369.5	11613
GLENDALE SRP	9	0	0	0	0	0
		10506	11597	14279	18739	23226
GOODYEAR # 2	13	15675	23322	32867	45570	58288
GOODYEAR # 3	96	0	0	0	0	0
GOODYEAR # 4	97	476	754	997	1248	1486
GOODYEAR OUTSIDE	94	2130	3215	4301	5383	6482
		18281	27291	38165	52201	66256
Goodyear-Litchfield PWC	14	6117	9045	11982	14915	17839
PEORIA # 2	98	0	0	0	0	0
PEORIA # 2A	77	58	4461	11412	13747	15683
		16000	16000	16000	16000	16000
PEORIA # 3	44	172	455	1144	2571	3965
PEORIA # 5	73	1593	2893	4591	6683	8771
PEORIA # 6	75	440	908	1155	1612	2069
PEORIA - YAV CO	71	0	0	0	0	0
PEORIA SRP	63	0	0	0	0	0
		18263	24717	34302	40613	46488
SUNRISE	76	1016	1242	1289	1289	1289
WEST END	74	282	292	314	386	452
		1298	1534	1603	1675	1741
SURPRISE # 1	80	219	219	219	230	241
SURPRISE # 10	102	11	11	13	15	18
SURPRISE # 11	103	1	1	1	2	3
SURPRISE # 12	104	1	2	3	4	6
SURPRISE # 13	110	11	11	14	26	39
SURPRISE # 2	81	99	99	99	132	166
SURPRISE # 3	100	224	319	451	743	1033
SURPRISE # 4	105	99	125	181	327	471
SURPRISE # 5	99	213	221	261	351	439
SURPRISE # 6	16	276	309	404	735	1067
SURPRISE # 7	106	23	98	99	684	684
SURPRISE # 8	108	114	162	258	400	543
SURPRISE # 9	109	12	13	18	26	34
		1303	1590	2021	3675	4744

Table 4. Groundwater Allocation Table for Solution C (continued)

GROUNDWATER ALLOCATION TABLE SOLUTION C . SCENARIO 25
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025
WEST MARICOPA COMBINE 85	85	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	16	47	99	152
WEST MARICOPA COMBINE 87	87	2	2	8	16	24
WEST MARICOPA COMBINE 88	88	3	3	4	4	6
WEST MARICOPA COMBINE 89	89	27	42	66	135	204
WEST MARICOPA COMBINE 90	90	6	7	10	12	16
WEST MARICOPA COMBINE 91	91	2	2	2	3	4
WEST MARICOPA COMBINE 92	92	937	1139	1529	2344	3157
WEST MARICOPA COMBINE 95	95	2	3	5	16	28
WMC TONOPAH	201	204	264	370	610	845
		1199	1478	2041	3239	4436

Total 2025 231985

Note: Beardsley Recharge facility is a put/take facility
All recharge in this facility is recovered in the 4 cells (square miles) to the east and south of the facility Goodyear and AZ Water Co. Pumping was reduced in other areas.

RECHARGE FACILITY KEY	
WMC	1
SROG Agua Fria	2
NAU SRP	3
CAP Agua Fria	4
Surprise McMicken	5
Goodyear Beardsley	6
New River Water Course	7

B. Solution C - Recharge File Construction

Recall that ADWR CTA assumptions established the amount and location of recharge from irrigated agriculture. In the Basecase the impacts of WESTCAPS urbanization are applied to the CTA irrigation assumptions and where conditions of urbanization are met, recharge from irrigated agriculture is curtailed. Because urbanization remains constant between WESTCAPS scenarios, the recharge from irrigated agriculture remain constant between WESTCAPS scenarios.

WESTCAPS members set assumptions for artificial recharge for Solution C. Table 5 lists the cells receiving recharge in Solution C and the quantities in acre-feet/year. Model grid cell numbers (one square-mile areas) are indexed to a geographical location (Water Planning Area) using Figure 7a.

Table 5. Artificial Recharge for Solution C by Cell

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

Feb. 29 2000 Run
Solution C

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1200	0	0	0	0	0	0	8726	11893	13962	15889
1290	0	0	0	0	0	0	8726	11893	13962	15889
1384	0	0	0	0	0	0	2139	2608	2938	3250
1474	0	0	0	0	0	0	2139	2608	2938	3250
1564	0	0	0	0	0	0	2139	2608	2938	3250
1641	0	0	0	0	0	0	13319	14187	15729	16977
1650	0	0	0	1313	2875	3041	3041	3041	3041	3041
1651	0	0	0	0	560	1568	3361	5153	6833	8513
1653	0	0	0	0	0	0	2139	2608	2938	3250
1654	0	0	0	0	0	0	2139	2608	2938	3250
1673	0	0	0	80	5000	5000	5000	5000	5000	5000
1731	0	0	0	0	0	0	13319	14187	15729	16977
1743	0	0	0	0	0	0	2139	2608	2938	3250
1805	0	0	0	0	0	0	219	393	725	1057
1829	0	0	0	0	0	0	742	956	1214	1473
1830	0	0	0	0	0	0	742	956	1214	1473
1833	0	0	0	0	0	0	2139	2608	2938	3250
1895	0	0	0	0	0	25000	25219	25393	25725	26057
1919	0	0	0	0	0	0	742	956	1214	1473
1920	0	0	0	0	0	0	742	956	1214	1473

Table 5. Artificial Recharge for Solution C by Cell (continued)

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

Feb. 29 2000 Run
Solution C

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1923	0	0	0	0	0	0	2139	2608	2938	3250
1929	0	296	25	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	219	393	725	1057
2009	0	0	0	0	0	0	742	956	1214	1473
2010	0	0	0	0	0	0	742	956	1214	1473
2075	0	0	0	0	0	0	219	393	725	1057
2097	0	0	0	0	2240	4480	6720	8960	11200	13440
2099	0	0	0	0	0	0	742	956	1214	1473
2100	0	0	0	0	0	0	742	956	1214	1473
2164	0	0	0	0	0	0	219	393	725	1057
2165	0	0	0	0	0	0	219	393	725	1057
2189	0	0	0	0	0	0	742	956	1214	1473
2190	0	0	0	0	0	0	742	956	1214	1473
2254	0	0	0	0	0	0	219	393	725	1057
2255	0	0	0	0	0	0	219	393	725	1057
2279	0	0	0	0	0	0	742	956	1214	1473
2280	0	0	0	0	0	0	742	956	1214	1473
2344	0	0	0	0	0	0	219	393	725	1057
2345	0	0	0	0	0	0	219	393	725	1057
2369	0	0	0	0	0	0	742	956	1214	1473
2370	0	0	0	0	0	0	742	956	1214	1473
2434	0	0	0	0	0	0	219	393	725	1057
2435	0	0	0	0	0	0	219	393	725	1057
2459	0	0	0	0	0	0	742	956	1214	1473
2460	0	0	0	0	0	0	742	956	1214	1473
2524	0	0	0	0	0	0	219	393	725	1057
2525	0	0	0	0	0	0	219	393	725	1057
2541	0	0	0	0	0	0	28164	39335	53769	68335
2549	0	0	0	0	0	0	742	956	1214	1473
2550	0	0	0	0	0	0	742	956	1214	1473
2551	0	0	0	0	0	0	16870	18784	21621	24474
2614	0	0	0	0	0	0	219	393	725	1057

Table 5. Artificial Recharge for Solution C by Cell (continued)

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

Feb. 29 2000 Run
Solution C

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
2639	0	0	0	0	0	0	742	956	1214	1473
2640	0	0	0	0	0	0	742	956	1214	1473
2672	0	0	0	8333	20000	25000	12500	12500	12500	12500
2673	0	0	0	8333	20000	25000	12500	12500	12500	12500
2704	0	0	0	0	0	0	219	393	725	1057
2760	0	0	0	8333	20000	25000	12500	12500	12500	12500
2761	0	0	0	8333	20000	25000	12500	12500	12500	12500
2762	0	0	0	8333	20000	25000	12500	12500	12500	12500
2763	0	0	0	8333	20000	25000	12500	12500	12500	12500
2794	0	0	0	0	0	0	219	393	725	1057
2819	0	0	0	0	5000	10000	15000	20000	20000	20000
2994	0	0	0	0	675	1200	2303	2809	3360	3360
3114	0	206	3749	3833	4000	4000	9000	9000	9000	9000
3127	0	0	0	0	2000	2000	2000	2000	2000	2000
3569	739	1660	1667	1871	2500	3271	3314	3314	3314	3314
4194	0	0	0	454	0	0	0	0	0	0
4195	0	0	0	454	0	0	0	0	0	0
4289	0	0	0	0	3100	3100	3100	3100	3100	3100
Totals	739	2162	5441	58003	147950	212660	277638	319321	361729	402738

C. Solution C - Data Results

Recharge facilities have significant positive impacts on the WSRV water table in 2025 and 2100. Solution C simulations show recharge in the Surprise McMicken Dam, Goodyear/ Beardsley, and the New River Watercourse facilities, in particular, offset the sharp water level declines of nearby adjacent areas. The contour maps clearly show mounding and/or recovery conditions at these facilities (see Figure 12 for the locations of all recharge facilities). Water level change or drawdown contour maps (e.g., maps s25d_m_25.shp and s25d_m_21.shp on the CD-ROM) are also valuable in highlighting the groundwater level recoveries above 1989 levels, from recharge.

Solution C simulated depth to water level differences in 2025 for the middle alluvial unit range from 0 to 400 feet higher than the Basecase; 175 feet higher at Bell & 83rd Avenue (hydrograph point A), and 200 feet at I-10 and Litchfield Rd. No changes occur between the two scenarios in 2025 in the southeastern one-third of the WSRV where artificial recharge is not significant. Near

the McMicken and Goodyear/Beardsley recharge facilities. Solution C depths-to-water are 350 and 400 feet less than shown by Basecase.

By 2100 Solution C depth-to-water differentials have increased over the Basecase to 750 feet and 250 feet at the two recharge facilities, and 650 feet at hydrograph location A (see Figure 13 for lower unit differences in 2100). In the east WSRV the differences range from 50 to 250 feet with the higher water levels attributed to SROG and the Agua Fria facilities.

Solution C modeling shows several areas have water levels lower (greater depths-to-water) than what the Basecase projects. Basecase water levels in 2025 are 50 feet higher in the north Agua Fria River area (west of the river). In 2100, they are 150 feet higher than Solution C in the north WSRV along 83rd Avenue north of Union Hills.

The model differences are similar between the middle and lower units in most of the WSRV except in the northern area (in the vicinity of the Agua Fria Recharge facility). This facility seems to have significant positive influence on lower unit water levels in both 2025 and 2100, much more so than for the middle unit. Near this facility in 2025, the Solution A levels are simulated to be 700 feet higher than the Basecase and 800 feet in 2100 (Figure 13).

Depth to water in 2025 in the upper alluvial unit (UAU) ranges from zero along the Gila River in the Buckeye area, to about 400 feet north of Peoria Road west of the Agua Fria River. Only a few square mile cell areas have dewatered in 2025 but much of the east quarter of the upper unit (east of I-17) is dewatered by 2100 (Figure 14). Only the SROG and NAUSRP facilities occur within the upper alluvial unit boundary and directly recharge the UAU. The other facilities are relevant to the middle and lower units but in some cases may help hydraulic heads in the UAU. For example, an upward flow component from the MAU through a breached confining bed into the UAU or by reducing the hydraulic head differential between the units would indirectly help minimize upper aquifer water level declines.

The simulated groundwater flow field (resultant groundwater fluxes in and out of each square mile cell) shown for the upper unit in Solution C is similar to the Basecase. In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains. In the Peoria and Litchfield Roads area (possibly the SROG facility), flows radiating outward indicate groundwater recharging or mounding.

The simulated groundwater flow field for the middle and lower alluvial aquifers show regional groundwater flow generally converges into the central portion of the WSRV towards the depression cone areas. As with the Basecase, groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV). Groundwater also flows westward originating along the mountain front area of the Phoenix Mountains, and flows from the Hassayampa basin into the WSRV. Flow radiates outwards from Surprise McMicken and Goodyear/ Beardsley facilities in both 2025 and 2100. The magnitudes and flow patterns are similar between 2025 and 2100 although the flow distribution is noticeably different in the hydrograph B area (area in which Hassayampa flow enters the WSRV). Here, Surprise McMicken recharge, especially by 2100, seems to alter the flow vectors by creating a hydraulic barrier. Hassayampa flowlines have to curve eastwards around this recharge facility

towards the north-central depression cone area. Compared to the Basecase, Solution C shows components of flow southwards along the front of the White Tanks from the Surprise McMicken site and northwards from the Goodyear Beardsley site.

The central WSRV area flow field (the Agua Fria River region) in the MAU shows much of the flows entering the layer from the UAU above. Between about Bell Road and Glendale Avenue, this MAU region shows a groundwater divide. From this divide, flow vectors point away northeast and southwest towards sinks or depressions at pumping centers/recovery well locations. These sinks occur near Bell and 83rd Avenue, the New River Watercourse and the Goodyear Beardsley recovery area. Both the MAU and LAU aquifers show flow convergence along the New River alignment north of about Greenway Road due to the pumping in this area.

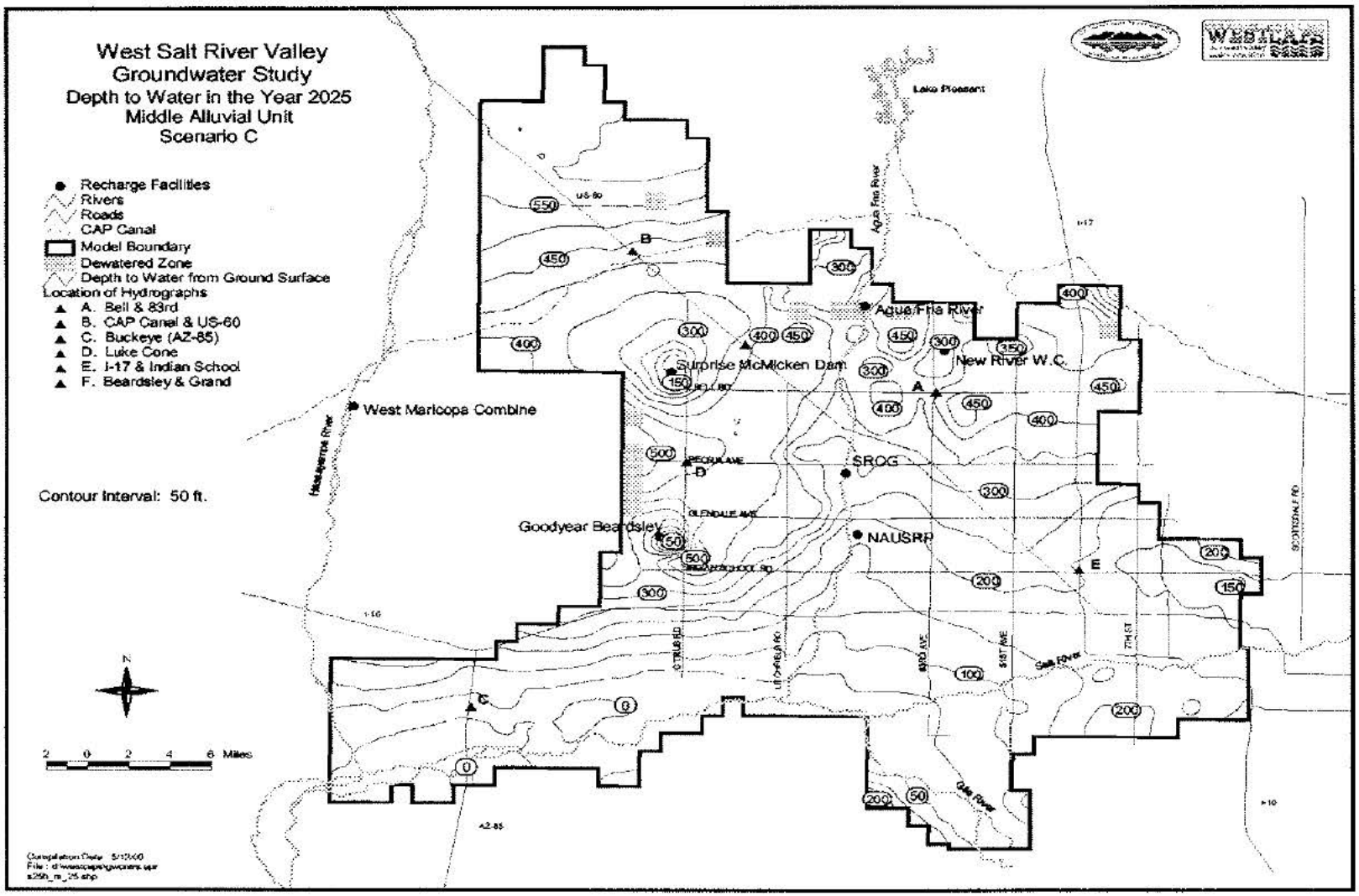


FIGURE 12. Depth to Water in the Year 2025 - Middle Alluvial Unit - Scenario C

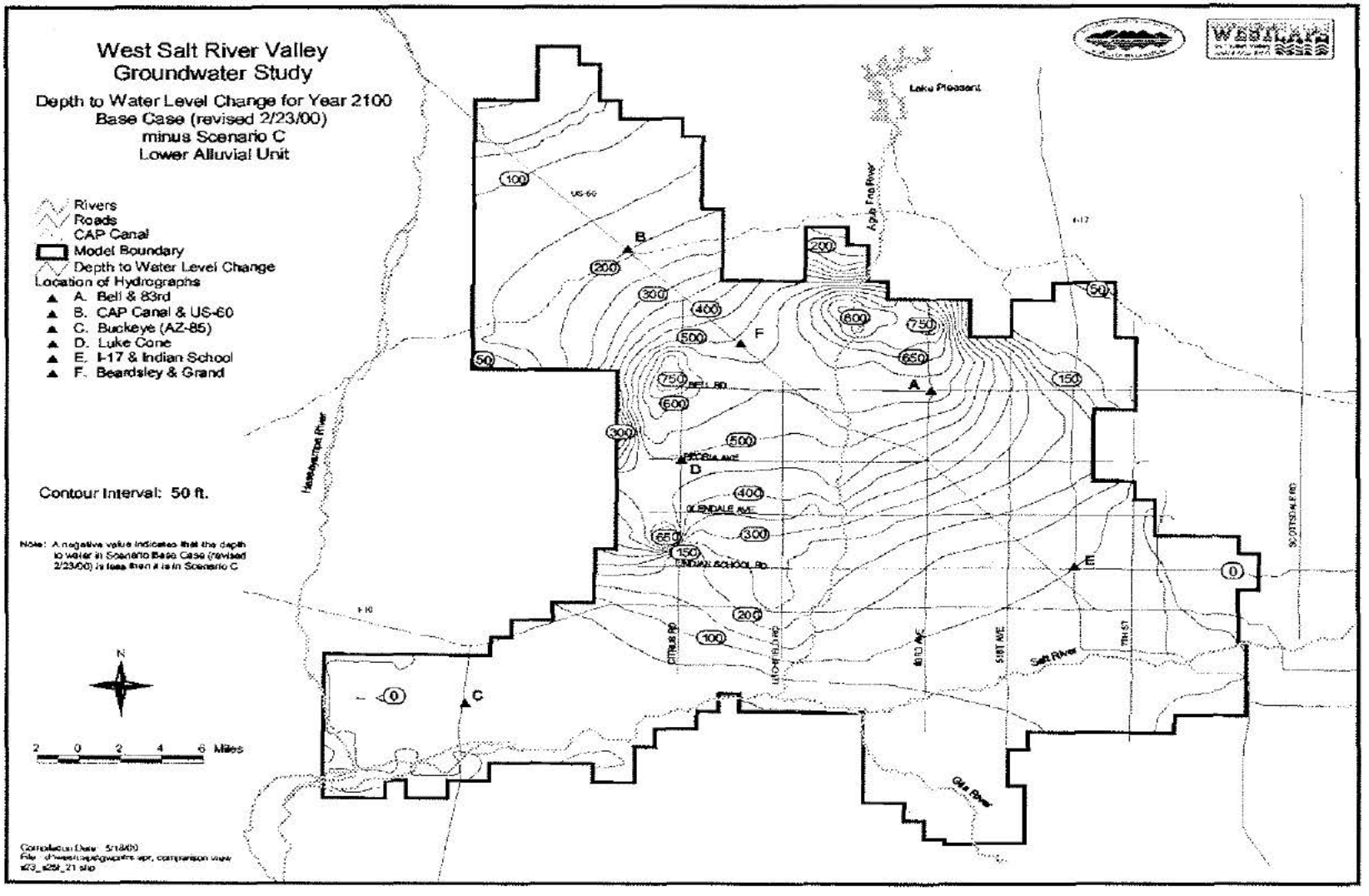


FIGURE 13. Depth to Water Level Change for Year 2100 - Scenario Basecase minus Scenario C - Lower Alluvial Unit

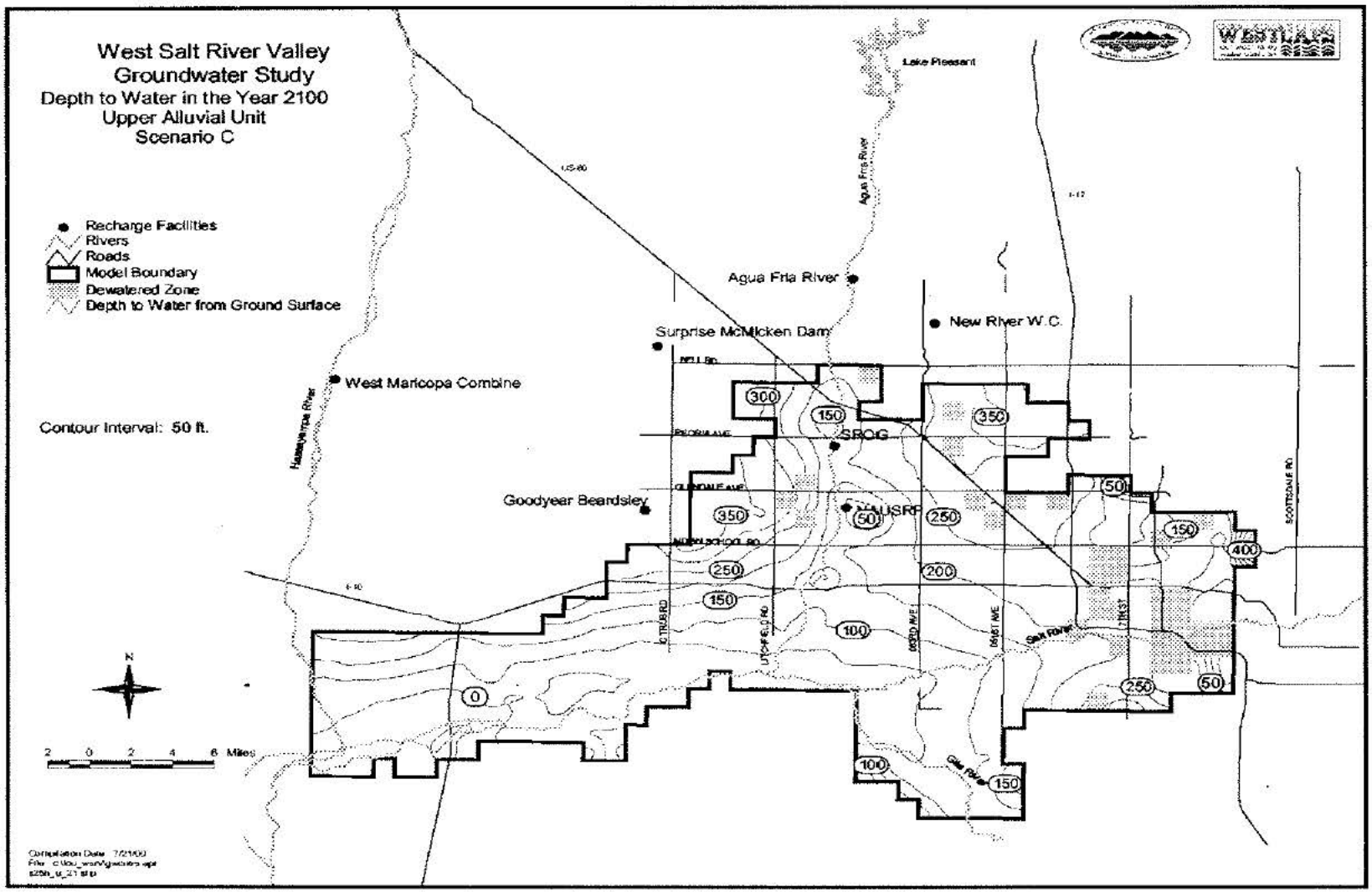


FIGURE 14. Depth to Water in the Year 2100 - Upper Alluvial Unit - Scenario C

VI. Solution D

Solution D is a WESTCAPS option that has the south WSRV entities receiving surface water through direct use surface water treatment plants through year 2025. The north valley area entities recharge their surface supplies and recover the water near the point of demand. A regional treatment plant would occur west of Citrus Road between Glendale and Indian School Roads.

Buckeye and West Maricopa Combine would recharge water at the WMC site near the CAP Canal crossing on the Hassayampa River and recover this water about 10 miles south. Surprise, Citizens Agua Fria, West End, and Sun City West would recharge water at the Surprise-McMicken site, and Peoria at the CAP Agua Fria facility.

A. Solution D - Assumptions

Total demand in Solution D is the same as Basecase since it assumes the same rates and distribution of urbanization and demand (see Tables 1 and 2 in the "Basecase" Appendix). Table 1 contains the household unit counts for each WPA in five-year increments through 2025. Table 2 contains the water use factors (GPHUD) for Basecase. The 2025 population counts and demands are assumed to remain constant throughout the 2025 to 2100 increment.

Tables 35 through 41 in Appendix "Solution D" document the Westcaps assumptions which differ from those of the Basecase, to formulate Solution D. Table 6, the Groundwater Allocation table, shows the recharge facilities and volumes, and those entities on CAP supplies, and shows the differences from Basecase, starting in year 2005. The allocation tables (including those of the other solutions) show the changes from Basecase in the boxed areas. Tables 35 through 41 document the Solution D water budget in terms of demand and the various renewable supplies available. Like the Basecase, a table exists for each five-year period between 1995 and 2025. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed.

Table 6. Groundwater Allocation Table for Solution D

GROUNDWATER ALLOCATION TABLE SOLUTION D, SCENARIO 26

CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to CAP supplies or recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
ARIZONA WATER CO W. TANKS	3		873	1170	1568	2099		X
BUCKEYE IM	45	1627	1938	3541	5984	8427	1	
BUCKEYE OM	46	86	126	312	959	1602	1	
BUCKEYE SOUTH	79	35	174	794	2149	3508	1	
		1748	2238	4647	9092	13537		
CITIZENS AGUA FRIA	4	13711	22182	24404	26622	28843	5	
CITIZENS AGUA FRIA # 2	82		2144	2222	2443	2665		X
SUN CITY WATER CO	6	6430.5	6430.5	6430.5	6430.5	6430.5	2	
SUN CITY WATER CO	6	6430.5	6430.5	6430.5	6430.5	6430.5	3	
SUN CITY WEST	1	7250	7250	7250	7250	7250	5	
		33822	44437	46737	49176	51619		
GLENDALE OM	11	0	0	0	0	0		X
GLENDALE OUT OF SERVICE	12		5798.5	7139.5	9369.5	11613	2	
GLENDALE OUT OF SERVICE	12		5798.5	7139.5	9369.5	11613	3	
GLENDALE SRP	9	0	0	0	0	0		X
			11597	14279	18739	23226		
GOODYEAR # 2	13		23322	32867	45570	58288		X
GOODYEAR # 3	96		0	0	0	0		X
GOODYEAR # 4	97		754	997	1248	1486		X
GOODYEAR OUTSIDE	94		3215	4301	5383	6482		X
			27291	38165	52201	66256		
Goodyear/Litchfield PWC	14		9045	11982	14915	17839		X
PEORIA # 2	98	0	0	0	0	0	4	
PEORIA # 2A	77	16058	20461	27412	29747	31683	4	
PEORIA # 3	44	172	455	1144	2571	3965	4	
PEORIA # 5	73	1593	2893	4591	6683	8771	4	
PEORIA # 6	75	440	908	1155	1612	2069	4	
PEORIA - YAV CO	71	0	0	0	0	0	4	
PEORIA SRP	63	0	0	0	0	0	4	
		18263	24717	34302	40613	46488		
SUNRISE	76	1016	1242	1289	1289	1289	4	
WEST END	74	282	292	314	386	452	5	
		1298	1534	1603	1675	1741		
SURPRISE # 1	80	219	219	219	230	241	5	
SURPRISE # 10	102	11	11	13	15	18	5	
SURPRISE # 11	103	1	1	1	2	3	5	
SURPRISE # 12	104	1	2	3	4	6	5	
SURPRISE # 13	110	11	11	14	26	39	5	
SURPRISE # 2	81	99	99	99	132	166	5	
SURPRISE # 3	100	224	319	451	743	1033	5	
SURPRISE # 4	105	99	125	181	327	471	5	
SURPRISE # 5	99	213	221	261	351	439	5	
SURPRISE # 6	16	276	309	404	735	1067	5	
SURPRISE # 7	106	23	98	99	684	684	5	
SURPRISE # 8	108	114	162	258	400	543	5	
SURPRISE # 9	109	12	13	18	26	34	5	
		1303	1590	2021	3675	4744		

Table 6. Groundwater Allocation Table for Solution D (continued)

GROUNDWATER ALLOCATION TABLE SOLUTION D, SCENARIO 26
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to CAP supplies or recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	1	
WEST MARICOPA COMBINE 86	86	16	16	47	99	152	1	
WEST MARICOPA COMBINE 87	87	2	2	8	16	24	1	
WEST MARICOPA COMBINE 88	88	3	3	4	4	6	1	
WEST MARICOPA COMBINE 89	89		42	66	135	204		X
WEST MARICOPA COMBINE 90	90	6	7	10	12	16	1	
WEST MARICOPA COMBINE 91	91	2	2	2	3	4	1	
WEST MARICOPA COMBINE 92	92	937	1139	1529	2344	3157	1	
WEST MARICOPA COMBINE 95	95		3	5	16	28		X
WMC TONOPAH	201	204	264	370	610	845	1	
		1170	1478	2041	3239	4436		
					Total 2025	231985		

RECHARGE FACILITY KEY	
WMC	1
SROG Agua Fria	2
NAU SRP	3
CAP Agua Fria	4
Surprise McMicken	5
Goodyear Beardsley	6
New River Water Course	7

B. Solution D - Recharge File Construction

The ADWR CTA assumptions established the amount and location of recharge from irrigated agriculture in the CTA model. In the processor run for Basecase the impacts of WESTCAPS urbanization are applied to the CTA irrigation assumptions; and where conditions of urbanization were met, recharge from irrigated agriculture is curtailed. Because the urbanization rate remains constant between WESTCAPS scenarios, the recharge from irrigated agriculture remains constant between WESTCAPS scenarios.

WESTCAPS members set assumptions for artificial recharge for Solution D. Table 7 lists the cells receiving recharge in Solution D and the quantities in acre-feet/year. Model grid cell numbers (one square-mile areas) are indexed to the Water Planning Areas using Figure 7a.

Table 7. Artificial Recharge for Solution D by Cell

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

MAR 3, 2000 RUN
SOLUTION D

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1200	0	0	0	0	0	0	9640	12980	17795	20951
1290	0	0	0	0	0	0	9640	12980	17795	20951
1641	0	0	0	0	0	0	13319	14187	15729	16977
1650	0	0	0	1313	2875	3041	3041	3041	3041	3041
1651	0	0	0	0	560	1568	3361	5153	6833	8513
1673	0	0	0	80	5000	5000	5000	5000	5000	5000
1731	0	0	0	0	0	0	13319	14187	15729	16977
1805	0	0	0	0	0	0	172	216	389	1015
1829	0	0	0	0	0	0	584	611	679	790
1830	0	0	0	0	0	0	584	611	679	790
1895	0	0	0	0	0	25000	25172	25216	25389	26015
1919	0	0	0	0	0	0	584	611	679	790
1920	0	0	0	0	0	0	584	611	679	790
1929	0	296	25	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	172	216	389	1015
2009	0	0	0	0	0	0	584	611	679	790
2010	0	0	0	0	0	0	584	611	679	790
2075	0	0	0	0	0	0	172	216	389	1015
2097	0	0	0	0	2240	4480	6720	8960	11200	13440
2099	0	0	0	0	0	0	584	611	679	790

Table 7. Artificial Recharge for Solution D by Cell (continued)

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

MAR 3, 2000 RUN
SOLUTION D

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
2100	0	0	0	0	0	0	584	611	679	790
2164	0	0	0	0	0	0	172	216	389	1015
2165	0	0	0	0	0	0	172	216	389	1015
2189	0	0	0	0	0	0	584	611	679	790
2190	0	0	0	0	0	0	584	611	679	790
2254	0	0	0	0	0	0	172	216	389	1015
2255	0	0	0	0	0	0	172	216	389	1015
2279	0	0	0	0	0	0	584	611	679	790
2280	0	0	0	0	0	0	584	611	679	790
2344	0	0	0	0	0	0	172	216	389	1015
2345	0	0	0	0	0	0	172	216	389	1015
2369	0	0	0	0	0	0	584	611	679	790
2370	0	0	0	0	0	0	584	611	679	790
2434	0	0	0	0	0	0	172	216	389	1015
2435	0	0	0	0	0	0	172	216	389	1015
2459	0	0	0	0	0	0	584	611	679	790
2460	0	0	0	0	0	0	584	611	679	790
2524	0	0	0	0	0	0	172	216	389	1015
2525	0	0	0	0	0	0	172	216	389	1015
2549	0	0	0	0	0	0	584	611	679	790
2550	0	0	0	0	0	0	584	611	679	790
2551	0	0	0	0	0	0	11685	12229	13570	15800
2614	0	0	0	0	0	0	172	216	389	1015
2639	0	0	0	0	0	0	584	611	679	790
2640	0	0	0	0	0	0	584	611	679	790
2672	0	0	0	8333	20000	25000	12500	12500	12500	12500
2673	0	0	0	8333	20000	25000	12500	12500	12500	12500
2704	0	0	0	0	0	0	172	216	389	1015
2760	0	0	0	8333	20000	25000	12500	12500	12500	12500
2761	0	0	0	8333	20000	25000	12500	12500	12500	12500
2762	0	0	0	8333	20000	25000	12500	12500	12500	12500
2763	0	0	0	8333	20000	25000	12500	12500	12500	12500

Table 7. Artificial Recharge for Solution D by Cell (continued)

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

MAR 3, 2000 RUN
SOLUTION D

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
2794	0	0	0	0	0	0	172	216	389	1015
2819	0	0	0	0	5000	10000	15000	20000	20000	20000
2994	0	0	0	0	675	1200	2303	2809	3360	3360
3114	0	206	3749	3833	4000	4000	9000	9000	9000	9000
3127	0	0	0	0	2000	2000	2000	2000	2000	2000
3569	739	1660	1667	1871	2500	3271	3314	3314	3314	3314
4194	0	0	0	454	0	0	0	0	0	0
4195	0	0	0	454	0	0	0	0	0	0
4289	0	0	0	0	3100	3100	3100	3100	3100	3100
Totals	739	2162	5441	58003	147950	212660	225046	244832	267659	295479

C. Solution D - Data Results

Solution D simulations show recharge in the Surprise McMicken Dam and Agua Fria River facilities significantly help offset the water level declines in the northern portion of the WSRV. The contour maps clearly show mounding and/or recovery conditions at these facilities (see 2025 LAU water level change map, Figure 15, for the locations and water level recoveries at these facilities).

Solution D depth to water levels in 2025 for the middle alluvial unit range from 0 to 350 feet higher than the Basecase; less than 50 feet higher at Bell & 83rd (hydrograph point A), and 250 feet at I-10 and Litchfield Rd (see Figure 16). There is no change between the two scenarios in 2025 in the eastern one-third of the WSRV where recharge and pumping conditions (assumptions) are unchanged from the Basecase. Differences of 350 feet are indicated in the vicinity of the McMicken recharge facilities (at Bell Road and Citrus Roads). The absence of the Goodyear/Beardsley recharge facility in Solution D is noticeable. Water levels at this location (west of Citrus Road between Glendale Avenue and Indian School Roads) are less than 100 feet higher than the Basecase (compared to 400 feet in Solution C that has Goodyear/Beardsley recharge).

By 2100 Solution D water levels have risen over the Basecase levels to 700 feet at McMicken and 350 feet at I-10 and Litchfield Road, and at hydrograph location A (Bell & 83rd). In the southeast WSRV the differences range from 50 to 100 feet.

Solution D modeling shows several areas with water level elevations lower (greater depths-to-water) than what the Basecase projects. Basecase water levels in 2025 are 50 feet higher in two northern Agua Fria River areas north of Bell Road. Solution D groundwater levels are higher everywhere than those of Basecase in the lower alluvial unit (LAU) in 2100.

The model differences are similar between the middle and lower alluvial units in most of the WSRV except in the north and northeast WSRV areas (near the Agua Fria Recharge facility and at Bell Road and I-17). This facility seems to have significant positive influence on lower unit water levels in both 2025 and 2100, much more so than for the middle unit. Near this facility in 2025, the Solution D recovery above 1989 levels is simulated to be 700 feet (Figure 15), and in 2100 750 feet in the LAU. There is no recovery indicated in the middle unit for either 2025 or 2100. In addition, some areas are dewatered in the middle unit north of Bell Road and US-60 in 2025 and 2100 but not in the lower unit.

Depth to water in 2025 and 2100 in the upper alluvial unit (UAU) ranges from zero along the Gila River in the Buckeye area, to about 450 feet north of Peoria Road west of the Agua Fria River and by Peoria Road and I-17. Only a few square mile cell areas have dewatered in 2025 but much of the east half of the upper unit (east of I-17 and northeast of US-60) is dewatered by 2100 (see Figure 17). Only the SROG and NAUSRP facilities occur within the upper alluvial unit boundary and directly recharge the UAU.

The simulated groundwater flow field for 2025 (resultant groundwater fluxes in and out of each square mile cell) shown for the upper unit in Solution D is similar to the Basecase. In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains towards the aquifer interior. In the central UAU area (possibly the NAUSRP facility), flows radiating outward indicate groundwater recharging or mounding. In 2100 however, the east one-fourth of the UAU aquifer flow field (north of South Mountain) shows little to no flow and groundwater moves sluggishly through the Phoenix/South Mountain pass.

The simulated groundwater flow field for the middle and lower alluvial aquifers show regional groundwater flow generally converges into the central portion of the WSRV towards the depression cone areas. As with the Basecase, groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV). Groundwater also flows westward originating along the mountain front area of the Phoenix Mountains, and flows from the Hassayampa basin into the WSRV. Flow mounding radiates outwards in the MAU and LAU from Surprise McMicken and (in the LAU only) also from the CAP Agua Fria facility.

The magnitudes and flow patterns of the two lower alluvial units are similar to each other at 2025 and 2100. Surprise McMicken and SROG recharge alters the flow vectors. Hassayampa flowlines gently curve eastwards around McMicken towards the north-central depression cone area. The central WSRV area flow field (the region west of the Agua Fria River along Peoria Avenue) in the MAU shows much of the flow volume entering from the UAU above. This water (likely from the SROG facility mounding) causes groundwater to move towards two distinct cones of depression or sinks. These sinks define the central depression cone area. These sinks are centered at about Litchfield and Peoria Roads, and at about Bell and 83rd Avenue.

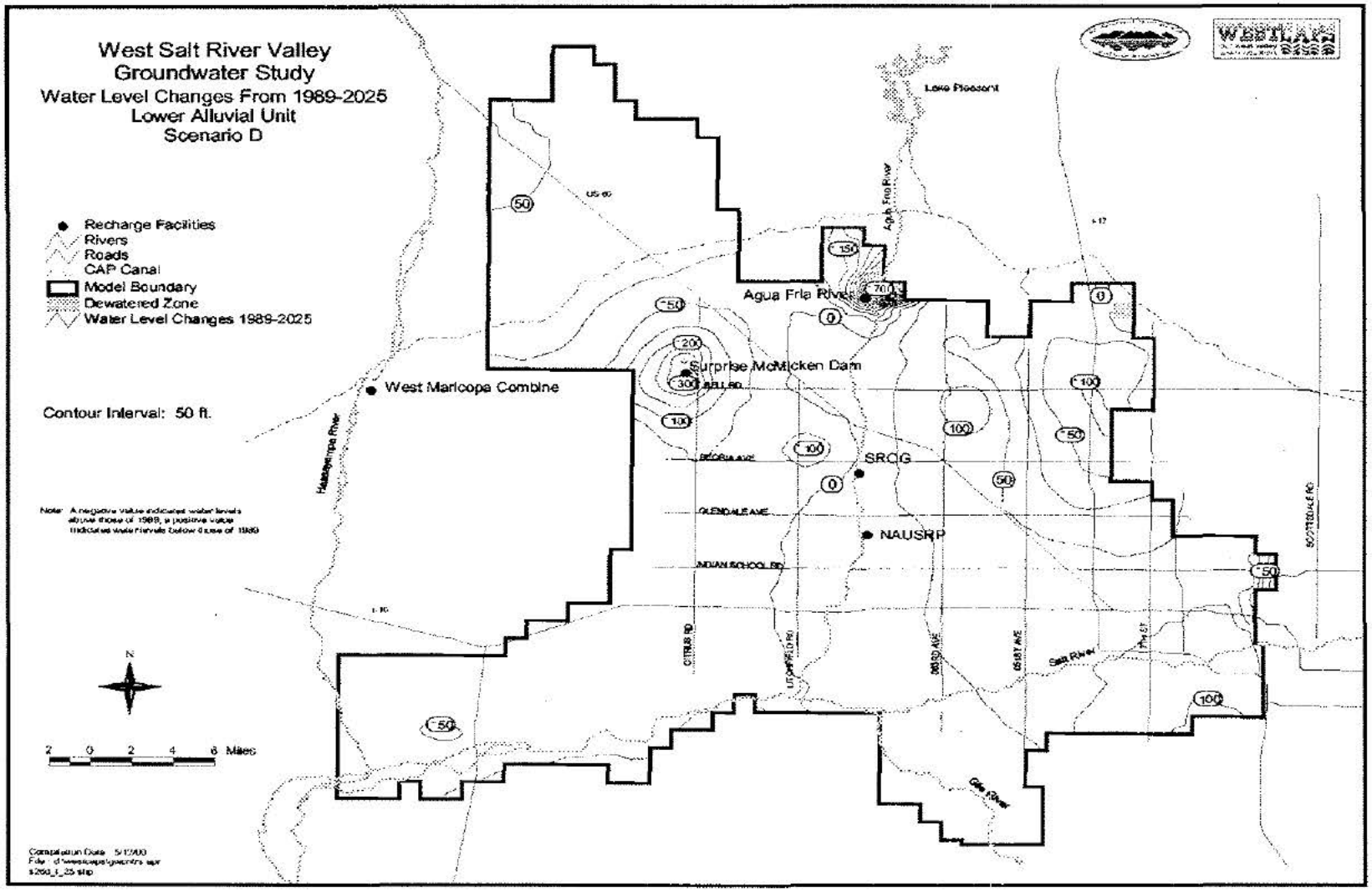


FIGURE 15. Water Level Changes from 1989 to 2025, Lower Alluvial Unit, Scenario D

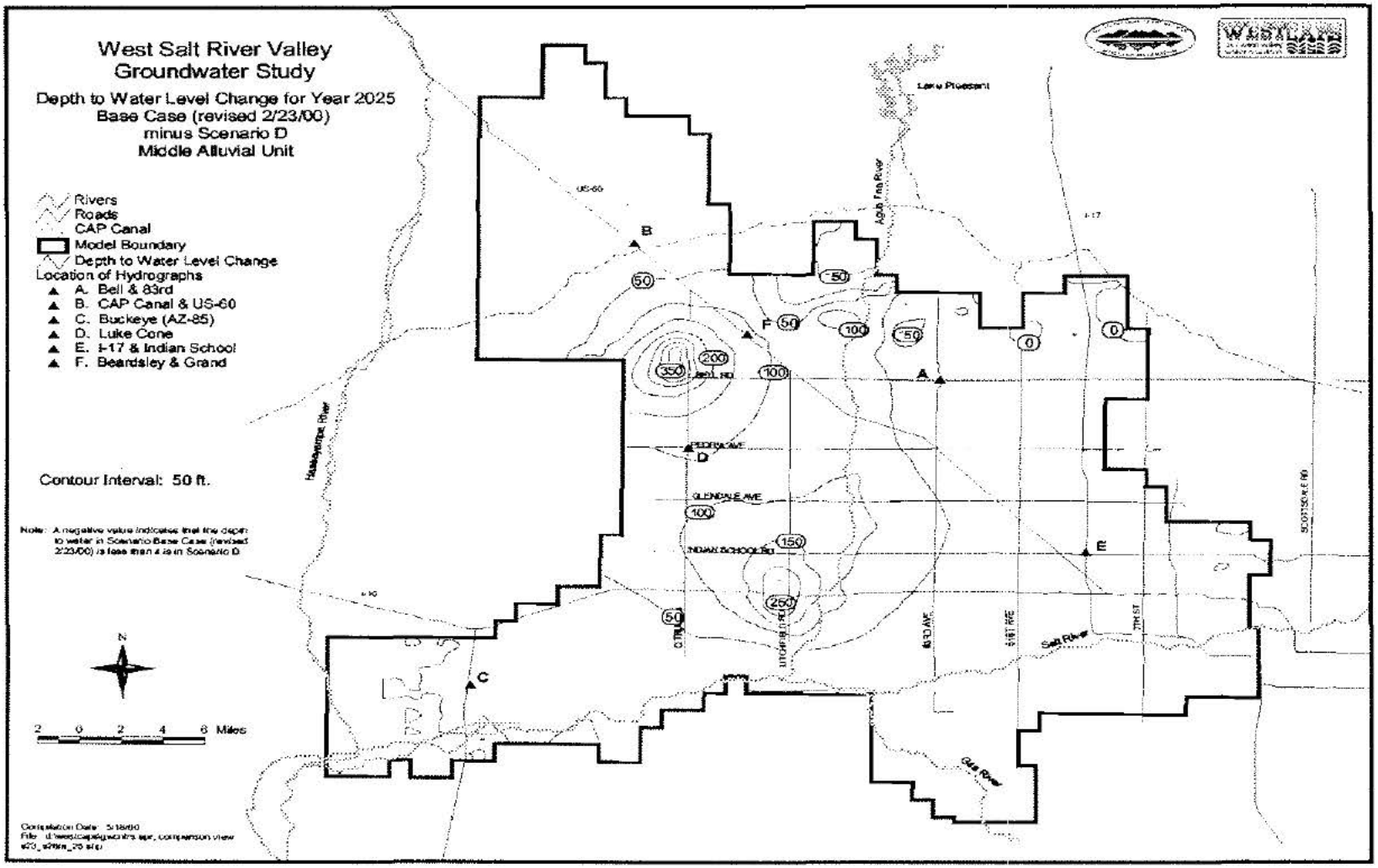


FIGURE 16. Depth to Water Level Change for Year 2025 - Scenario Basecase minus Scenario D - Middle Alluvial Unit

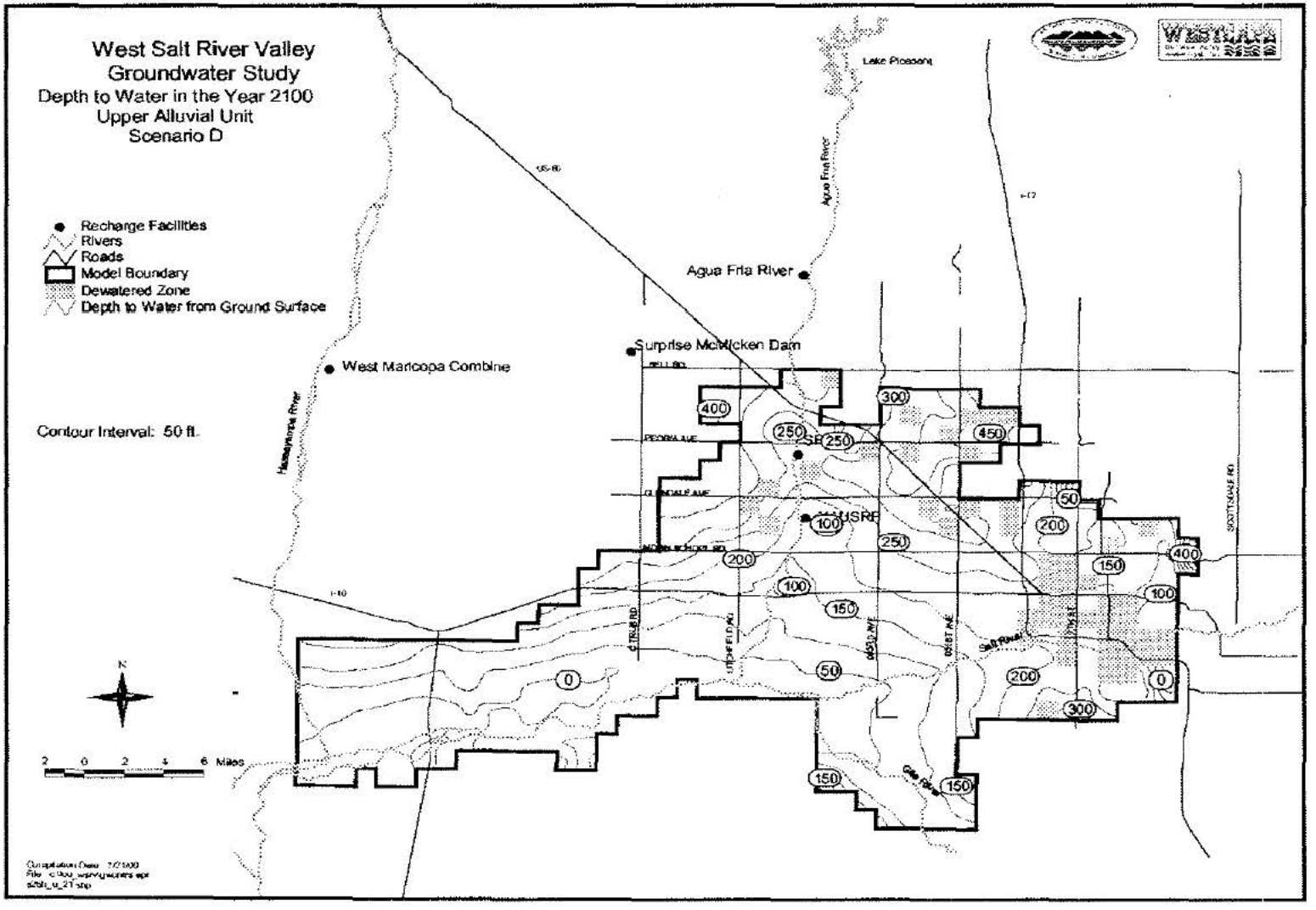


FIGURE 17. Depth to Water in the Year 2100 - Upper Alluvial Unit - Scenario D

VII. Solution E

Solution E was an option that had most of the west valley treating surface water supplies in water treatment plants. The exception is that Buckeye and West Maricopa Combine utilize the West Maricopa Combine (WMC) recharge facility to serve the southwest valley. Surprise and Goodyear would treat their CAP supplies while Sun City West, Sunrise, and several Peoria WPA's recharge water in the CAP Agua Fria recharge facility.

A. Solution E - Assumptions

Total demand in Solution E is the same as Basecase since it assumes the same rates and distribution of urbanization and demand (see Tables 1 and 2 in the "Basecase" Appendix). Table 1 contains the household unit counts for each WPA in five-year increments through 2025. Table 2 contains the water use factors (GPHUD) for Basecase. The 2025 population counts and demands are assumed to remain constant throughout the 2025 to 2100 increment.

Tables 42 through 48 in the "Solution E" Appendix document the Westcaps assumptions which differ from those of the Basecase, to formulate Solution E. Table 8, the Groundwater Allocation Table, shows the recharge facilities and volumes, and those entities using only surface CAP supplies, and shows the differences from Basecase, starting in year 2005. The allocation table (including those of the other solutions) show the changes from Basecase in the boxed areas. Tables 42 through 48 document the Solution E water budget in terms of demand and the various renewable supplies available. Like the Basecase, a table exists for each five-year period between 1995 and 2025. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed.

Table 8. Groundwater Allocation Table for Solution E

GROUNDWATER ALLOCATION TABLE SOLUTION E , SCENARIO 27
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to CAP supplies or recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
ARIZONA WATER CO W. TANKS	3		873	1170	1568	2099		
BUCKEYE IM	45	1627	1938	3541	5984	8427	1	
BUCKEYE OM	46	86	126	312	959	1602	1	
BUCKEYE SOUTH	79	35	174	794	2149	3508	1	
		1748	2238	4647	9092	13537		
CITIZENS AGUA FRIA	4		22182	24404	26622	28843		X
CITIZENS AGUA FRIA # 2	82		2144	2222	2443	2665		X
SUN CITY WATER CO	6	12861	12861	12861	12861	12861	3	
SUN CITY WEST	1	7250	7250	7250	7250	7250	4	
		20111	44437	46737	49176	51619		
GLENDALE OM	11	0	0	0	0	0		X
GLENDALE OUT OF SERVICE	12	10506	11597	14279	18739	23226	7	
GLENDALE SRP	0		0	0	0	0		X
		10506	11597	14279	18739	23226		
GOODYEAR # 2	13		23322	32867	45570	58288		X
GOODYEAR # 3	96		0	0	0	0		X
GOODYEAR # 4	97		754	997	1248	1486		X
GOODYEAR OUTSIDE	94		3215	4301	5383	6482		X
			27291	38165	52201	66256		
Goodyear Litchfield PWC	14	6117	9045	11982	14915	17839		X
PEORIA # 2	98		0	0	0	0		X
PEORIA # 2A	77		20461	27412	29747	31683		X
PEORIA # 3	44		455	1144	2571	3965		X
PEORIA # 5	73	1593	2893	4591	6683	8771	4	
PEORIA # 6	75	440	908	1155	1612	2069	4	
PEORIA - YAV CO	71		0	0	0	0		X
PEORIA SRP	63		0	0	0	0		X
		2033	24717	34302	40613	46488		
SUNRISE	76	1016	1242	1289	1289	1289	4	
WEST END	74		292	314	386	452		X
		1016	1534	1603	1675	1741		
SURPRISE # 1	80		219	219	230	241		X
SURPRISE # 10	102		11	13	15	18		X
SURPRISE # 11	103		1	1	2	3		X
SURPRISE # 12	104		2	3	4	6		X
SURPRISE # 13	110		11	14	26	39		X
SURPRISE # 2	81		99	99	132	166		X
SURPRISE # 3	100		319	451	743	1033		X
SURPRISE # 4	105		125	181	327	471		X
SURPRISE # 5	99		221	261	351	439		X
SURPRISE # 6	16		309	404	735	1067		X
SURPRISE # 7	106		98	99	684	684		X
SURPRISE # 8	108		162	258	400	543		X
SURPRISE # 9	109		13	18	26	34		X
			1590	2021	3675	4744		

Table 8. Groundwater Allocation Table for Solution E (continued)

GROUNDWATER ALLOCATION TABLE SOLUTION E . SCENARIO 27
CHANGES FROM BASECASE

		Following volume of water was removed from pumping and added to CAP supplies or recharge facilities						
WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	1	
WEST MARICOPA COMBINE 86	86	16	16	47	99	152	1	
WEST MARICOPA COMBINE 87	87	2	2	8	16	24	1	
WEST MARICOPA COMBINE 88	88	3	3	4	4	6	1	
WEST MARICOPA COMBINE 89	89		42	66	135	204		X
WEST MARICOPA COMBINE 90	90	6	7	10	12	16	1	
WEST MARICOPA COMBINE 91	91	2	2	2	3	4	1	
WEST MARICOPA COMBINE 92	92	937	1139	1529	2344	3157	1	
WEST MARICOPA COMBINE 95	95		3	5	16	28		X
WMC TONOPAH	201	204	264	370	610	845	1	
		1170	1478	2041	3239	4436		
				TOTAL 2025		231985		

RECHARGE FACILITY KEY	
WMC	1
SROG Agua Fria	2
NAU SRP	3
CAP Agua Fria	4
Surprise McMicken	5
Goodyear Beardsley	6
NewRiver Water Course	7

B. Solution E - Recharge File Construction

Recall that CTA assumptions established the amount and location of recharge from irrigated agriculture in the CTA model. In the processor run for Basecase the impacts of WESTCAPS urbanization are applied to the CTA irrigation assumptions; and where conditions of urbanization are met, recharge from irrigated agriculture is curtailed. Because the urbanization remains constant between WESTCAPS scenarios, the recharge from irrigated agriculture remains constant between WESTCAPS scenarios.

WESTCAPS members set assumptions for artificial recharge for Solution E. Table 9 lists the cells receiving recharge in Solution E and the quantities in acre-feet/year. Model grid cell numbers (one square-mile areas) are indexed to the Water Planning Areas using Figure 7a.

Table 9. Artificial Recharge for Solution E by Cell

WSRV Groundwater Model
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

Mar 6, 2000 Run
SOLUTION E

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1200	0	0	0	0	0	0	8726	11893	13962	15889
1290	0	0	0	0	0	0	8726	11893	13962	15889
1384	0	0	0	0	0	0	1313	1450	1785	2342
1474	0	0	0	0	0	0	1313	1450	1785	2342
1564	0	0	0	0	0	0	1313	1450	1785	2342
1650	0	0	0	1313	2875	3041	3041	3041	3041	3041
1651	0	0	0	0	560	1568	3361	5153	6833	8513
1653	0	0	0	0	0	0	1313	1450	1785	2342
1654	0	0	0	0	0	0	1313	1450	1785	2342
1673	0	0	0	80	5000	5000	5000	5000	5000	5000
1743	0	0	0	0	0	0	1313	1450	1785	2342
1805	0	0	0	0	0	0	172	216	389	716
1833	0	0	0	0	0	0	1313	1450	1785	2342
1895	0	0	0	0	0	25000	25172	25216	25389	25716
1923	0	0	0	0	0	0	1313	1450	1785	2342
1929	0	296	25	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	172	216	389	716
2075	0	0	0	0	0	0	172	216	389	716
2097	0	0	0	0	2240	4480	6720	8960	11200	13440
2164	0	0	0	0	0	0	172	216	389	716
2165	0	0	0	0	0	0	172	216	389	716

Table 9. Artificial Recharge for Solution E by Cell (continued)

2254	0	0	0	0	0	0	172	216	389	716
2255	0	0	0	0	0	0	172	216	389	716
2344	0	0	0	0	0	0	172	216	389	716
2345	0	0	0	0	0	0	172	216	389	716
2434	0	0	0	0	0	0	172	216	389	716
2435	0	0	0	0	0	0	172	216	389	716
2524	0	0	0	0	0	0	172	216	389	716
2525	0	0	0	0	0	0	172	216	389	716
2551	0	0	0	0	0	0	12861	12861	12861	12861
2614	0	0	0	0	0	0	172	216	389	716
2672	0	0	0	8333	20000	25000	12500	12500	12500	12500
2673	0	0	0	8333	20000	25000	12500	12500	12500	12500
2704	0	0	0	0	0	0	172	216	389	716
2760	0	0	0	8333	20000	25000	12500	12500	12500	12500
2761	0	0	0	8333	20000	25000	12500	12500	12500	12500
2762	0	0	0	8333	20000	25000	12500	12500	12500	12500
2763	0	0	0	8333	20000	25000	12500	12500	12500	12500
2794	0	0	0	0	0	0	172	216	389	716
2819	0	0	0	0	5000	10000	15000	20000	20000	20000
2994	0	0	0	0	675	1200	2303	2809	3360	3360
3114	0	206	3749	3833	4000	4000	9000	9000	9000	9000
3127	0	0	0	0	2000	2000	2000	2000	2000	2000
3569	739	1660	1667	1871	2500	3271	3314	3314	3314	3314
4194	0	0	0	454	0	0	0	0	0	0
4195	0	0	0	454	0	0	0	0	0	0
4289	0	0	0	0	3100	3100	3100	3100	3100	3100
Totals	739	2162	5441	58003	147950	212660	196580	214296	228526	246315

C. Solution E - Data Results

Changes in CAP allocations mostly affect Solution E simulated water levels. Small to moderate recharge volumes by several west entities in the New River - Agua Fria (NAUSRP), and New River Water Course (W.C) facilities, and moderate CAP Agua Fria recharge volumes appear to have some influence on projected 2025 and 2100 water levels. In particular, the New River W.C. facility seems to help offset declines in the northern WSRV middle alluvial unit (MAU) at both 2025 and 2100 but less so for the LAU, especially in 2100. In contrast, Agua Fria River recharge seems to have marked positive influence (recovery since 1989 of 550 and 450 feet, respectively) on lower alluvial unit (LAU) water levels in both 2025 and 2100 (see water level change map Figure 18).

Solution E depth to water levels in 2025 for the middle alluvial unit range from 0 to 250 feet less (Solution E has higher simulated water table elevations or a water table closer to ground level) than the Basecase at Bell & 83rd (hydrograph point A), and 250 feet less at I-10 and Litchfield Rd. No change between the two scenarios is shown in 2025 in the southeastern, southwest, and northwest portions of the WSRV (see depth to water level difference map Figure 19).

By 2100 the Solution E water level differential has increased over the Basecase to 750 feet at hydrograph (see Figure 6) location A (Bell & 83rd) and 350 feet at I-10 and Litchfield Road. In the southeast WSRV the differences range from 50 to 100 feet.

Solution E modeling shows several areas with water levels lower than what the Basecase predicts. Basecase water levels in 2025 are 50 feet higher in the north Agua Fria River area west of the river and 100 feet or more higher by 2100 north of 83rd Avenue and Union Hills.

The model differences are similar between the middle and lower units in 2025 in most of the WSRV except in the northern WSRV area near the Agua Fria Recharge facility as explained above. This facility seems to have significant positive influence on lower unit water levels in both 2025 and 2100, much more so than for the middle unit. Near this facility in 2025 for the LAU, the Solution E depths-to-water are simulated to be from 350 to 750 feet less than the Basecase (and 50 to 150 feet less for the middle unit). In 2100 this difference is about 800 to 900 feet at about 99th Avenue and Happy Valley Road (about 600 feet more than the middle unit shows in 2100 in this area).

Some areas are dewatered in the middle alluvial unit north of Beardsley Road and US-60 and along the White Tanks in 2025 and 2100 but not in the lower unit.

Depth to water in 2025 and 2100 in the upper alluvial unit (UAU) ranges from zero along the Gila River in the Buckeye area, to about 300 to 400 feet north of Peoria Road west of the Agua Fria River. The same is true around Indian School Road and 48th Street. Only a few square mile cell areas have dewatered in 2025 but much of the east third of the upper unit (east of I-17) is dewatered by 2100 (map s27h_u_21.shp on the CD_ROM). Only the NAUSRP facility occurs within the upper alluvial unit boundary and directly recharges the UAU in this solution. Depth to water at this facility in 2025 and 2100 is 100 feet.

The simulated groundwater flow field for 2025 (resultant groundwater fluxes in and out of each square mile cell) shown for the upper unit in Solution E is similar to the Basecase (and solution D). In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains towards the aquifer interior. In the central UAU area (possibly the NAUSRP facility), flows radiating outward indicate groundwater recharging or mounding. In 2100 however, the east one-fourth of the UAU aquifer flow field (north of South Mountain) shows little to no lateral flow and groundwater moves sluggishly through the Phoenix/South Mountain pass. Also, more flow passes downwards into the MAU rather than southwards towards the Gila River in the Buckeye area for Solution E compared to the Basecase.

The simulated groundwater flow field for the middle and lower alluvial aquifers show regional groundwater flow generally converges into the central portion of the WSRV towards the

depression cone areas. As with the Basecase, groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV). Groundwater also flows westward originating along the mountain front area of the Phoenix Mountains, and flows from the Hassayampa basin into the WSRV. Some lateral flow radiates outwards in the MAU and LAU from an area at about Litchfield Road and Peoria Avenue (possibly from downward SROG flow), and in the north WSRV area at the Agua Fria River recharge area.

The magnitudes and flow patterns of the two lower alluvial units are similar to each other at 2025 and 2100 with some exceptions. In the LAU in 2100, the sink at Bell and 83rd is not as prominent as it is in the MAU. The LAU shows a more pronounced zone of flow convergence at about 51st Avenue and I-10 than the MAU does in both time frames. The central WSRV area flow field (a relatively small region just west of the Agua Fria River along about Peoria Avenue) in the MAU shows much of the flow volume entering from the UAU above. This water (likely from the SROG facility mounding) causes groundwater in the MAU to move towards the two cones of depression or sinks as discussed in more detail in the Solution D section. This effect is much less noticeable by 2100.

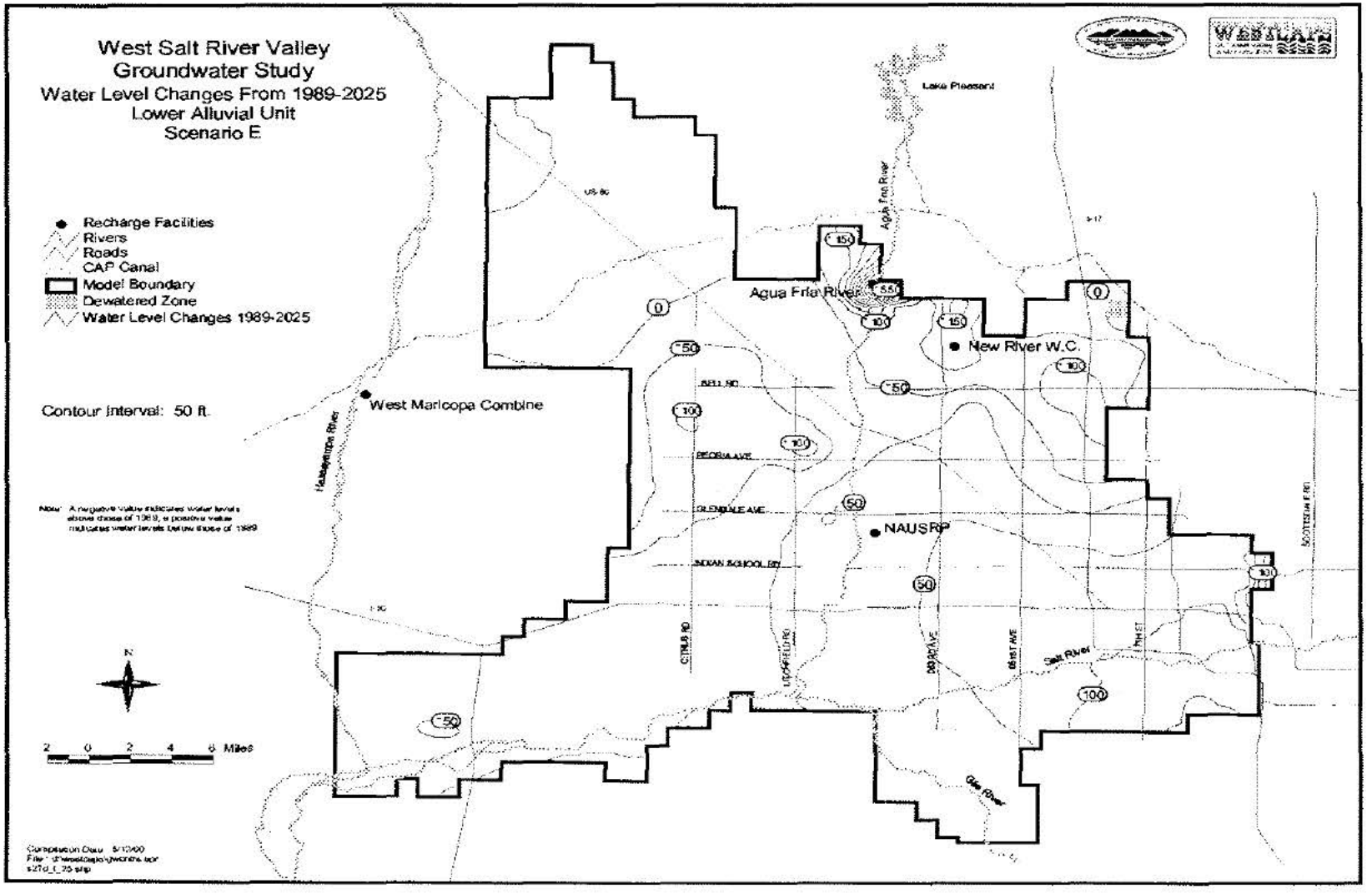


FIGURE 18. Water Level Changes from 1989 to 2025 - Lower Alluvial Unit - Scenario E

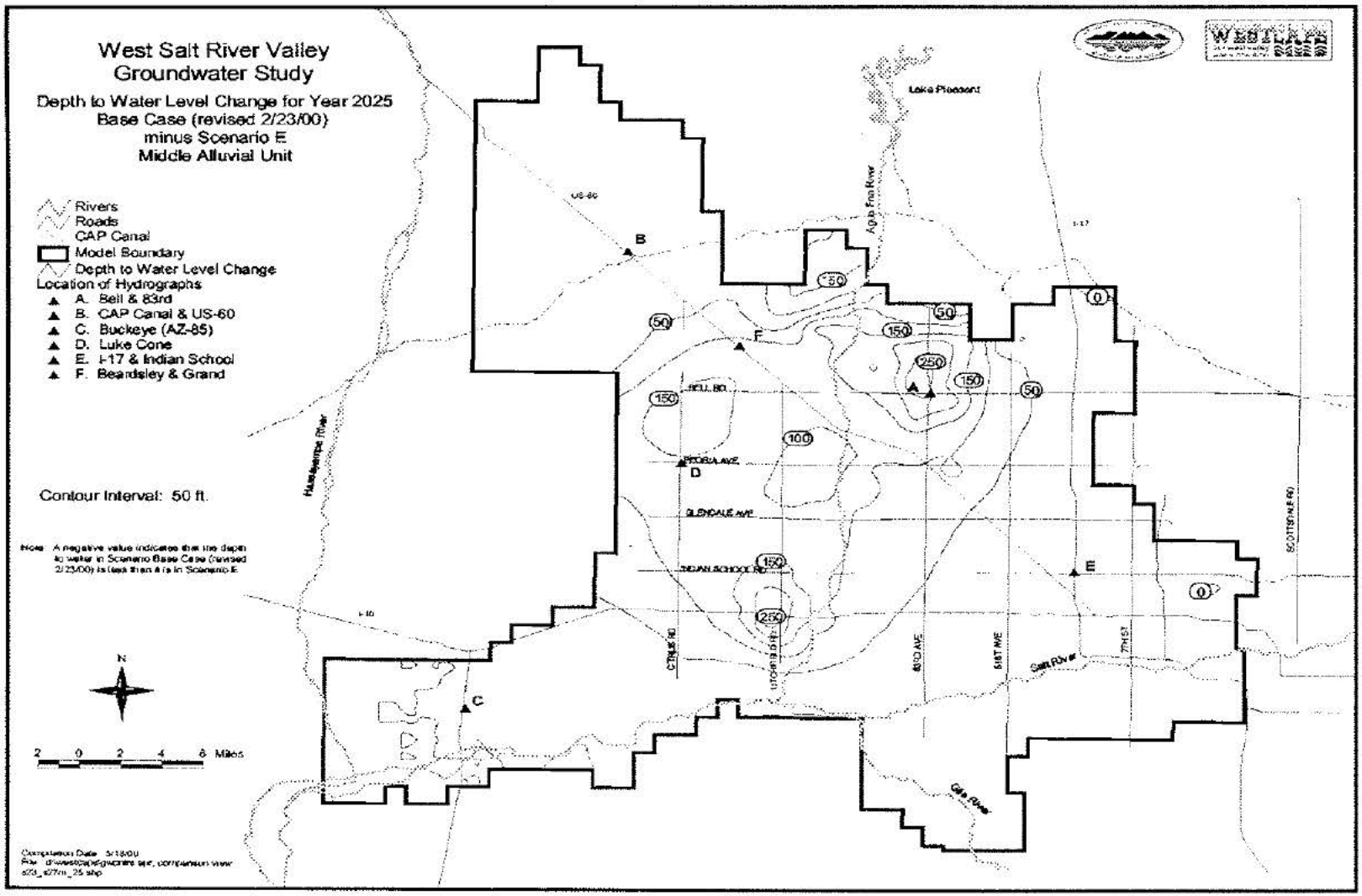


FIGURE 19. Depth to Water Level Change for Year 2025 - Scenario Basecase minus Scenario E - Middle Alluvial Unit

VIII. Solution F/G

Westcaps solutions F and G primarily differ from Solution E in that one Goodyear (#2) WPA pumps 20,000 acre-feet of impaired groundwater (mostly with high total dissolved solids) and treats it at the proposed Goodyear WTP in solution F/G. This is in addition to the surface supplies to make up the water budget. This option reflects the hydrologic consequence of pumping the additional 20,000 acre-feet per year in the Buckeye area near the Gila River. Solution E includes the Lake Pleasant WTP. Solution F/G does not.

Hydrologically, solutions F and G are identical regarding groundwater impacts. The only variation between the two options was in the location of two surface water treatment plants. The South Beardsley Regional WTP in Solution F (near Citrus and Indian School Roads) was removed and the Grand Regional WTP added at Glendale and 91st Avenue.

West Maricopa Combine and Buckeye continue to recharge in the WMC facility, and the Sunrise, Sun City West, and Peoria (WPA #5 and #6) entities continue recharging at the CAP Agua Fria facility.

A. Solution F & G - Assumptions

Total demand in Solutions F and G are the same as Basecase since it assumes the same rates and distribution of urbanization and demand (see Tables 1 and 2 in the "Basecase" Appendix). Table 1 contains the household unit counts for each WPA in five year increments through 2025. Table 2 contains the water use factors (GPHUD) for Basecase. The 2025 population counts and demands are assumed to remain constant throughout the 2025 to 2100 increment.

Tables 49 through 55 in the "Solution F/G" Appendix document the Westcaps assumptions which differ from those of the Basecase, to formulate Solution F/G. Table 10, the Groundwater Allocation table, shows the recharge facilities and volumes, and those entities on CAP supplies, and shows the differences from Basecase starting in year 2005. The allocation table shows the changes from Basecase in the boxed areas. Tables 49 through 55 document the Solution F/G water budget in terms of demand and the various renewable supplies available. Like the Basecase, a table exists for each five-year period between 1995 and 2025. Water use factors are assumed to remain constant from 1995 through 2025 so no year is listed.

Table 10. Groundwater Allocation Table for Solution F/G

GROUNDWATER ALLOCATION TABLE SOLUTION F/G , SCENARIO 27/28
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to CAP supplies or recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
ARIZONA WATER CO W TANKS	3		873	1170	1568	2099		X
BUCKEYE IM	45	1627	1938	3541	5984	8427	1	
BUCKEYE OM	46	86	126	312	959	1602	1	
BUCKEYE SOUTH	79	35	174	794	2149	3508	1	
		1748	2238	4647	9092	13537		
CITIZENS AGUA FRIA	4		22182	24404	26622	28843		X
CITIZENS AGUA FRIA # 2	82		2144	2222	2443	2665		X
SUN CITY WATER CO	6	12861	12861	12861	12861	12861	3	
SUN CITY WEST	1	7250	7250	7250	7250	7250	4	
		20111	44437	46737	49176	51619		
GLENDALE OM	11		0	0	0	0		X
GLENDALE OUT OF SERVICE	12	10506	11597	14279	18739	23226	3	
GLENDALE SRP	9		0	0	0	0		X
		10506	11597	14279	18739	23226		
GOODYEAR # 2	13		3322	12867	25570	38288		X
GOODYEAR # 2			20000	20000	20000	20000		See note
GOODYEAR # 3	96		0	0	0	0		X
GOODYEAR # 4	97		754	997	1248	1486		X
GOODYEAR OUTSIDE	94		3215	4301	5383	6482		X
			27291	38165	52201	66256		
Goodyear/Litchfield PWC	14	6117	9045	11982	14915	17839		X
PEORIA # 2	98		0	0	0	0		X
PEORIA # 2A	77		20461	27412	29747	31683		X
PEORIA # 3	44		455	1144	2571	3965		X
PEORIA # 5	73	1593	2893	4591	6683	8771	4	
PEORIA # 6	75	440	908	1155	1612	2069	4	
PEORIA - YAV CO	71		0	0	0	0		X
PEORIA SRP	63		0	0	0	0		X
		2033	24717	34302	40613	46488		
SUNRISE	76	1016	1242	1289	1289	1289	4	
WEST END	74		292	314	386	452		X
		1016	1534	1603	1675	1741		
SURPRISE # 1	80		219	219	230	241		X
SURPRISE # 10	102		11	13	15	18		X
SURPRISE # 11	103		1	1	2	3		X
SURPRISE # 12	104		2	3	4	6		X
SURPRISE # 13	110		11	14	26	39		X
SURPRISE # 2	81		99	99	132	166		X
SURPRISE # 3	100		319	451	743	1033		X
SURPRISE # 4	105		125	181	327	471		X
SURPRISE # 5	99		221	261	351	439		X
SURPRISE # 6	16		309	404	735	1067		X
SURPRISE # 7	106		98	99	684	684		X
SURPRISE # 8	108		162	258	400	543		X
SURPRISE # 9	109		13	18	26	34		X
			1590	2021	3675	4744		

Table 10. Groundwater Allocation Table for Solution F/G (continued)

GROUNDWATER ALLOCATION TABLE SOLUTION F/G , SCENARIO 27/28
CHANGES FROM BASECASE

Following volume of water was removed from pumping and added to CAP supplies or recharge facilities

WPA NAME	WPA #	2005	2010	2015	2020	2025	Recharge	CAP
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	1	
WEST MARICOPA COMBINE 86	86	16	16	47	99	152	1	
WEST MARICOPA COMBINE 87	87	2	2	8	16	24	1	
WEST MARICOPA COMBINE 88	88	3	3	4	4	6	1	
WEST MARICOPA COMBINE 89	89	27	42	66	135	204	1	
WEST MARICOPA COMBINE 90	90	6	7	10	12	16	1	
WEST MARICOPA COMBINE 91	91	2	2	2	3	4	1	
WEST MARICOPA COMBINE 92	92	937	1139	1529	2344	3157	1	
WEST MARICOPA COMBINE 95	95		3	5	16	28		X
WMC TONOPAH	201	204	264	370	610	845	1	
		1197	1478	2041	3239	4436		
					TOTAL 2025	231985		

Note: 20,000 acre-feet/year added to 10 cells (2000 ac-ft/yr per cell) south of Yuma Road

RECHARGE FACILITY KEY	
WMC	1
SROG Agua Fria	2
NAU SRP	3
CAP Agua Fria	4
Surprise McMicken	5
Goodyear Beardsley	6
NewRiver Water Course	7

B. Solution F/G - Recharge File Construction

The ADWR CTA assumptions established the amount and location of recharge from irrigated agriculture. In the processor run for Basecase the impacts of WESTCAPS urbanization are applied to the CTA irrigation assumptions; and where conditions of urbanization are met, recharge from irrigated agriculture is curtailed. Because urbanization remains constant between WESTCAPS scenarios, the recharge from irrigated agriculture remains constant between WESTCAPS scenarios.

WESTCAPS members set assumptions for artificial recharge for Solution F/G. Table 11 lists the cells receiving recharge in Solution F/G and the quantities in acre-feet/year. Model grid cell numbers (one square-mile areas) are indexed to the Water Planning Areas using Figure 7a.

Table 11. Artificial Recharge for Solution F/G by Cell

WSRV GROUNDWATER MODEL
ARTIFICIAL RECHARGE BY CELL, 1989 TO 2021
ACRE-FEET/YEAR

Mar 7, 2000 Run
SOLUTION F

GRID	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR	YEAR
Cell No.	1989	1990	1991	1992	1996	2001	2006	2011	2016	2021
1200	0	0	0	0	0	0	5150	6147	7143	8417
1290	0	0	0	0	0	0	5150	6147	7143	8417
1650	0	0	0	1313	2875	3041	3041	3041	3041	3041
1651	0	0	0	0	560	1568	3361	5153	6833	8513
1673	0	0	0	80	5000	5000	5000	5000	5000	5000
1805	0	0	0	0	0	0	70	87	120	190
1895	0	0	0	0	0	25000	25007	25087	25120	25190
1929	0	296	25	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	70	87	120	190
2075	0	0	0	0	0	0	70	87	120	190
2097	0	0	0	0	2240	4480	6720	8960	11200	13440
2164	0	0	0	0	0	0	70	87	120	190
2165	0	0	0	0	0	0	70	87	120	190
2254	0	0	0	0	0	0	70	87	120	190
2255	0	0	0	0	0	0	70	87	120	190
2344	0	0	0	0	0	0	70	87	120	190
2345	0	0	0	0	0	0	70	87	120	190
2434	0	0	0	0	0	0	70	87	120	190
2435	0	0	0	0	0	0	70	87	120	190
2524	0	0	0	0	0	0	70	87	120	190
2525	0	0	0	0	0	0	70	87	120	190

Table 11. Artificial Recharge for Solution F/G by Cell (continued)

2551	0	0	0	0	0	0	23367	24458	27140	31600
2614	0	0	0	0	0	0	70	87	120	190
2672	0	0	0	8333	20000	25000	12500	12500	12500	12500
2673	0	0	0	8333	20000	25000	12500	12500	12500	12500
2704	0	0	0	0	0	0	70	87	120	190
2760	0	0	0	8333	20000	25000	12500	12500	12500	12500
2761	0	0	0	8333	20000	25000	12500	12500	12500	12500
2762	0	0	0	8333	20000	25000	12500	12500	12500	12500
2763	0	0	0	8333	20000	25000	12500	12500	12500	12500
2794	0	0	0	0	0	0	70	87	120	190
2819	0	0	0	0	5000	10000	15000	20000	20000	20000
2994	0	0	0	0	675	1200	2303	2809	3360	3360
3114	0	206	3749	3833	4000	4000	9000	9000	9000	9000
3127	0	0	0	0	2000	2000	2000	2000	2000	2000
3569	739	1660	1667	1871	2500	3271	3314	3314	3314	3314
4194	0	0	0	454	0	0	0	0	0	0
4195	0	0	0	454	0	0	0	0	0	0
4289	0	0	0	0	3100	3100	3100	3100	3100	3100
Totals	739	2162	5441	58003	147950	212660	187633	200608	210314	222432

C. Solution F/G - Data Results

As in Solution E, changes in CAP allocations mostly affect Solution F (and G) simulated water levels. The main differences from Solution E is that Solution F includes the proposed Goodyear (pump and treat) WTP located at about Lower Buckeye and Sarival Roads, and the Regional WTP near the CAP Canal along US-60. In addition, Solution E includes the Lake Pleasant WTP which F and G do not. The Glendale out of service area recharges water in the NAUSRP rather than the New River W.C. (as in Solution E).

The only difference between Solutions F and G is that the South Beardsley Regional WTP in Solution F (near Citrus and Indian School Roads) was removed and the Grand Regional WTP location added at Glendale and 91st Avenue. Hydrologically, the simulated water level elevations and distribution over time are identical between Solutions F and G. This is why another set of water level contour maps was not created.

Solution F depth to water levels in 2025 for the middle alluvial unit range from 0 to 250 feet less than for the Basecase; about 150 feet higher at Bell & 83rd (hydrograph point A), and 250 feet higher at I-10 and Litchfield Rd. No change between the two scenarios is shown in 2025 in all four corners of the WSRV (see depth to water level contour difference map, Figure 21).
By 2100 the Basecase/Solution F water level differential has increased 250 feet or more from year 2025 to about 400 feet near the McMicken area, 350 feet at I-10 and Litchfield Road, and

600 feet at hydrograph location A (Bell & 83rd). In the southeast WSRV, the differences range from 50 to 200 feet, and zero to 100 feet in the southwest (Buckeye) and northwest WSRV corners.

Solution F modeling shows several areas with water levels lower than what the Basecase projects. Basecase water levels in 2025 are 50 feet higher in the north Agua Fria River area (north of Beardsley Road between about 59th Avenue and Litchfield Rd).

The model differences are similar between the middle and lower units in most of the WSRV except in the northern WSRV area (in the vicinity of the Agua Fria Recharge facility). This facility seems to have significant positive influence on lower unit water levels in both 2025 and 2100, not so for the middle unit. Near this facility in 2025, the Solution F levels are simulated to be 400 feet higher than the Basecase (but 0 feet difference for the middle unit). And 500 to 600 feet higher in 2100 in the vicinity of the Agua Fria River recharge facility (but 0 to 50 feet lower than the Basecase in 2100 in the middle unit).

It is projected some middle alluvial unit areas are dewatered north of Deer Valley Road and US-60 and along the White Tanks in 2025 and 2100 (see 2025 depth to water contour map, Figure 20).

Depth to water in 2025 and 2100 in the upper alluvial unit (UAU) ranges from zero along the Gila River in the Buckeye area, to 350 to 450 feet north of Peoria Road west of the Agua Fria River, and at Indian School Road and 48th Street. Only the NAUSRP facility occurs within the upper alluvial unit boundary and directly recharges the UAU in this solution. Simulated depth to water at this facility in 2025 and 2100 is zero to 50 feet. Some square mile cell areas have dewatered in 2025 but much of the east third of the upper unit (east of I-17 and between I-17 and US-60) is dewatered by 2100 (maps s28h_u_21.shp on the CD-ROM).

The simulated groundwater flow field for 2025 (resultant groundwater fluxes in and out of each square mile cell) shown for the upper unit in Solution F is very similar to Solution E. It varies from the Basecase in the Buckeye area and along the Agua Fria River. More lateral flow towards the Gila River and lateral flow west of the Agua Fria River (towards the Agua Fria) is apparent in the Basecase simulation. In these areas in Solution F, much of the flow is vertically down into the MAU. Flow also radiates outwards from the NAUSRP recharge facility in Solution F in both 2025 and 2100. This facility is not a part of the Basecase and so this mounding is absent in that scenario.

In the upper alluvial unit, some flow from the ESRV passes between the Phoenix and South Mountains towards the aquifer interior. In 2100 however, the east quarter of the UAU aquifer flow field (north of South Mountain) shows little to no lateral flow and groundwater moves sluggishly through the Phoenix/South Mountain pass towards the center of the aquifer.

The simulated groundwater flow field for the middle and lower alluvial aquifers show regional groundwater flow generally converges into the central portion of the WSRV towards the depression cone areas. As with the Basecase, groundwater flows enter the WSRV sub-basin around the south side of South Mountain from the East Salt River Valley sub-basin (ESRV).

Groundwater also flows westward originating along the mountain front area of the Phoenix Mountains, and flows from the Hassayampa basin into the WSRV. The component of flow from the Buckeye area northwards towards the depression area is stronger in the Basecase and weak in Solution F. Some lateral flow radiates outwards in the MAU and LAU in 2025 and 2100. This flow originates from an area located at about Litchfield Road and Peoria Avenue (possibly from downward SROG flow), and in the north WSRV area at the Agua Fria River recharge area.

The magnitudes and flow patterns of the two lower alluvial units are similar to each other at 2025 and 2100 with some exceptions. The LAU shows a more pronounced zone of flow convergence at the foothills of South Mountain (at about 51st Avenue and I-10) than the MAU does in both time frames. In the central WSRV area flow field there are some relatively small isolated groundwater divides (just west of the Agua Fria River along about Peoria Avenue) in both the MAU and LAU. In these isolated regions much of the component of flow in the MAU enters from the UAU above, and for some cells, from the LAU upwards rather than towards the two cones of depression. Moreover, unlike the Basecase and Solution E in 2100 for the LAU, Solution F shows the well-defined cone at Bell and 83rd Avenue.

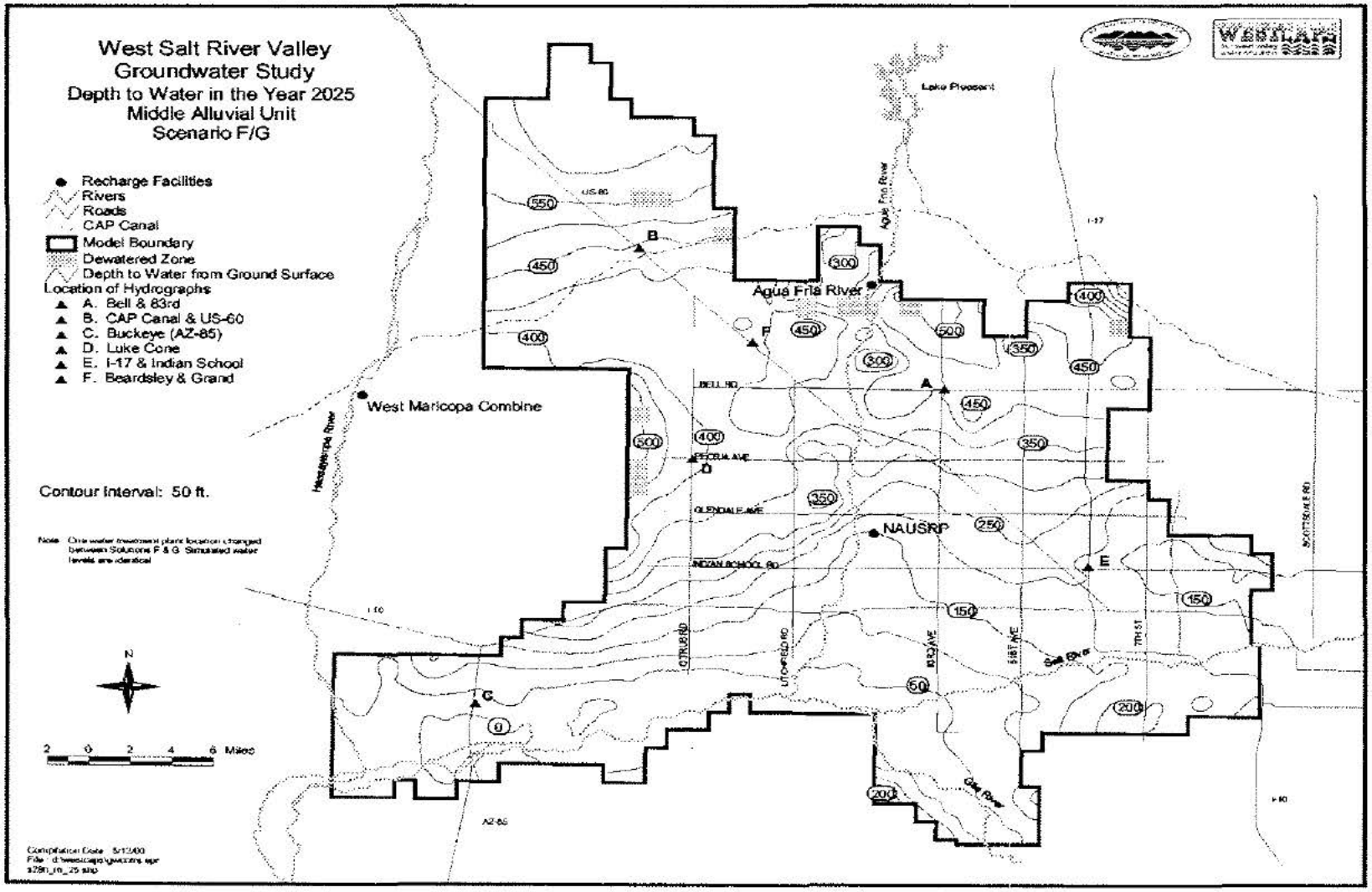


FIGURE 20. Depth to Water in the Year 2025 - Middle Alluvial Unit - Scenario F/G

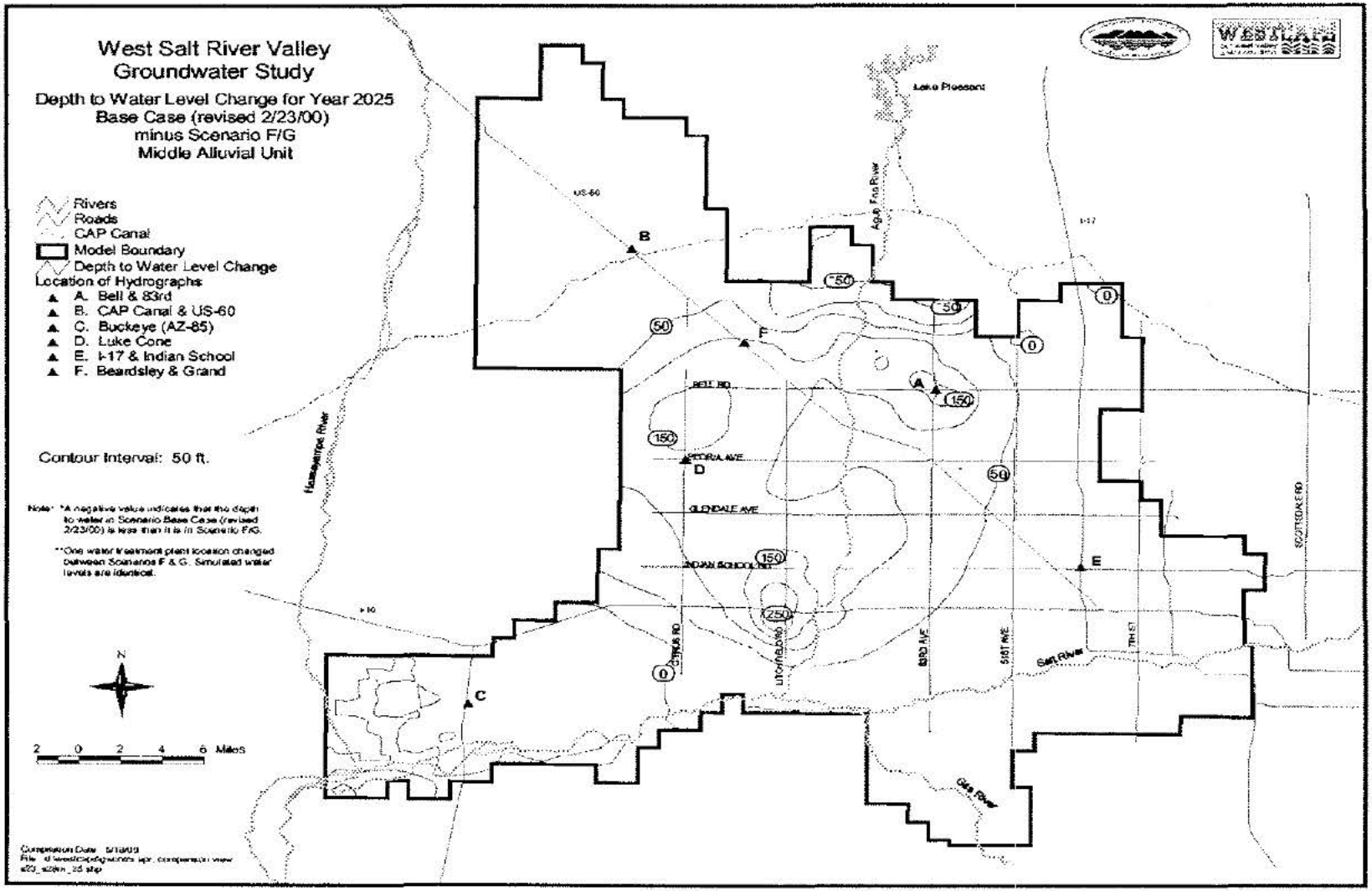


FIGURE 21. Depth to Water Level Change for Year 2025 - Scenario Basecase minus Scenario F/G - Middle Alluvial Unit

APPENDICES

APPENDICES

Tools

A. GIS Pre-Processor

Background

In late 1997 a group of West Salt River Valley (WSRV) municipal and private water providers formed a study group (WESTCAPS) to look at present and future urban water supply issues. The group had the following in common; they were located in an area of declining groundwater levels, all were contributors to that decline due to municipal pumping, each held a Central Arizona Project (CAP) water service contract; and they lacked the infrastructure to fully utilize their CAP water allocation.

WSETCAPS adopted the following mission statement:

> WESTCAPS is a coalition of CAP subcontractors most of whom serve drinking water to communities in the west Salt River Valley. It is WESTCAPS' mission to develop workable alternatives for its members to provide their customers with cost effective, sustainable, reliable, and high quality water supply through partnerships and cooperative efforts in regional water resource planning and management, emphasizing CAP utilization.

Tools

WESTCAPS requested planning assistance from the Bureau of Reclamation and the Arizona Department of Water Resources (ADWR). Reclamation is the entity responsible for the planning and construction of the CAP water conveyance system and ADWR, among other things, is the State agency responsible for the implementation of the Arizona Ground Water Management Act. Reclamation and ADWR both allocated resources to support the efforts of WESTCAPS.

WESTCAPS recognized early on in its work planning process that alternatives considered for CAP utilization would require an evaluation of impacts on future groundwater conditions. CAP/groundwater utilization alternatives would have to be evaluated regarding the physical availability of groundwater in the future and the extent it could impact safe yield criteria established for the Salt River groundwater basin. WESTCAPS concluded that a regional groundwater model developed by ADWR (early 1990's) was the best tool for understanding the implications of various CAP alternatives on groundwater conditions.

During the early 1990's the Arizona Department of Water Resources (ADWR) using the United States Geological Survey (USGS) MODFLOW ground water flow simulation software program, developed a model of the Salt River Valley groundwater basin. That ADWR simulation projected groundwater levels between1989 and 2025 over a 5600 square mile section of the Phoenix metropolitan area. ADWR constructed the MODFLOW well and recharge input files, with some thought toward automating the process for future simulation development. The ADWR wrote a series of "pre-processor" programs to simulate housing density, water demand, renewable water supplies (non-ground water), agriculture practices and the location of pumping.

The ADWR utilized a combination of Arc/Info, FoxPro and Basic programs to calculate the appropriate MODFLOW stresses then converted the files to ASCII MODFLOW input data file formats.

The ADWR's "pre-processor" approach to MODFLOW analysis had an advantage for a project like WESTCAPS. The ADWR stress input pre-processor utilized computer processing allowing for efficiency in multiple runs. WESTCAPS intended to formulate numerous CAP utilization alternatives so automation of the preprocessor would lessen the time and cost for analysis of the alternatives.

The WESTCAPS group, possessing limited technical capability to run the ADWR groundwater model, requested ADWR make model runs on WESTCAPS behalf. ADWR, while willing to assist WESTCAPS in groundwater modeling, had other workload commitments that prevented ADWR from taking lead. WESTCAPS requested Reclamation lead the SRV groundwater modeling effort. Reclamation agreed so long as ADWR agreed to continue the advisory role.

Conversion of ADWR's Well and Recharge Pre-Processor Logic to Arc/View

WESTCAPS indicated that it desired Reclamation's approach to running the SRV groundwater model mirror that of earlier ADWR work except that Reclamation could convert the well and recharge file pre-processor from ADWR's Arc/Info platform to an Arc/View platform. Reclamation's request to migrate to Arc/View was due to the belief that Arc/View was a more efficient way to accomplish the pre-processing.

Converting the pre-processor to Arc/View provided several significant time reduction benefits to the effort. Under the ADWR process some input data was hard coded into the Arc/Info AML programs, requiring the AML (the Arc/Info computer program) to be updated prior to running simulations. The conversion to Arc/View provided an opportunity to utilize tables instead of hard coding input data into the program, thus the Avenue Script (Arc/View program) required no changes between simulations. In addition, because an Arc/View table structure was utilized, the need to convert data between table formats was eliminated. The single program approach within Arc/View Avenue Script allowed seamless data processing yielding the timesavings over the ADWR process. The ease of accessing the Arc/View table structure made the tracking of variable data throughout the simulation relatively easily.

The WESTCAPS group was sensitive to the potential that Reclamation's conversion to Arc/View could modify the basic logic concerning pumping and recharge as they relate to stresses on the model from the way ADWR developed those stresses.

To address this concern Reclamation implemented four measures:

1) The actual Arc/Info logic would be rewritten in the Arc/View environment (known as Avenue Script).
2) ADWR would be consulted concerning Reclamation's logic flow to assure the outcome of the Arc/View preprocess would be the same as ADWR's Arc/Info.

3) Once the conversion was running, Reclamation would take an existing ADWR data set for which ADWR model results were available, then run that data set in the Arc/View preprocessor demonstrating replication of ADWR results.
4) A third party consultant would be brought in by Reclamation to conduct quality control on the phase one effort.

As Reclamation proceeded in the conversion effort several unanticipated problems developed. WESTCAPS, ADWR, and Reclamation decided early on that the ADWR data set, Current Trends Alternative (CTA), would be used to demonstrate that Reclamation's Arc/View process would replicate the stresses developed by ADWR's process.

The ADWR stresses for the CTA run were developed in a 1995 time period with much of the programming adopted from modeling efforts made several years earlier. Reclamation would need all initial ADWR inputs to their CTA pre-process effort if Reclamation was to replicate the construction of the well and recharge input files.

Unfortunately, some of the principal staff at ADWR (on the CTA) effort had left the Agency. Current staff had difficulties in locating the original CTA input data. While doing everything within their ability to convey the needed information, ADWR staff was constrained by their systems inability to yield the detail sought by Reclamation.

Once it was determined that some of the original CTA inputs would not be available a decision was made to move forward with what could be reassembled. Reclamation began working with ADWR to reconstruct some of the CTA data sets from secondary sources and staff memory. However, this decision meant the possibility of an exact replication was probably eliminated. In recognition that exact replication would not be attainable the test of Reclamation's Arc/View pre-process moved to a standard of close approximation.

Having ADWR's staff actively involved in the reconstruction process and dealing with missing logic and/or unavailable data provided an additional degree of quality assurance. This also allowed ADWR to communicate directly with WESTCAPS regarding their take on Reclamation's Arc/View process and its ability to replicate ADWR's Arc/Info CTA process.

Programming Logic for Developing Pumping (Well) Stresses

The SRV Groundwater Model as a MODFLOW based process requires an input file describing the pumping stress (well file) for certain cells for each period in a simulation. In the ADWR process the SRV municipal pumping stress was calculated as total water demand less any renewable (non-groundwater) water supply. Non-municipal demand was assumed to be the amount reported to ADWR by pumpers in their respective 1991 GFR pumping report. Non-municipal pumping was held constant through the model periods except that irrigation pumping was eliminated whenever irrigated lands were projected to urbanize. Water was added to the appropriate cells in the well file (as a gain to the aquifer) to simulate mountain front recharge.

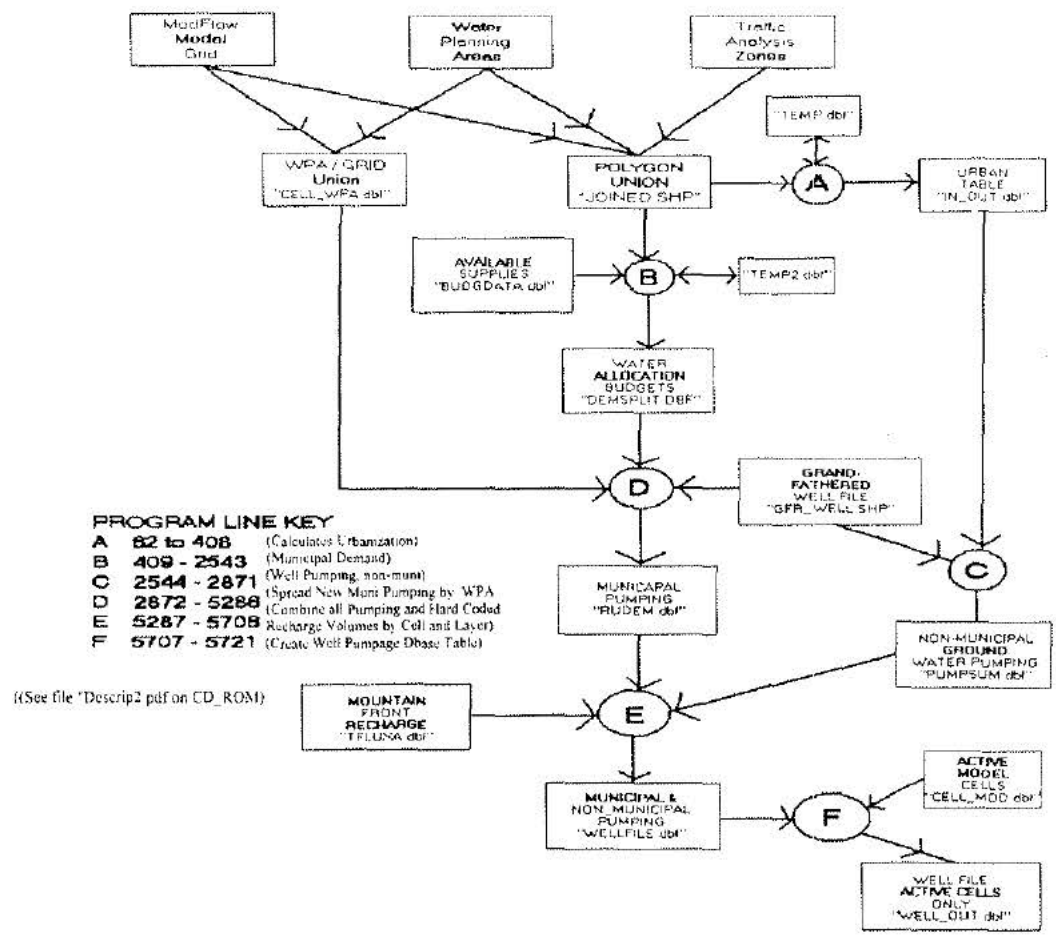
Inputs into the Well File Module

ADWR's well file logic had four significant inputs (assumptions); the number of residential units used to calculate municipal demand; available renewable water supplies to offset the requirement to pump groundwater to meet some or all of the municipal demand; the non-municipal pumping from 1991 GFR records, and mountain front recharge volumes.

Reclamation's approach was to construct tables (dBase format in Arc/View) which would hold all assumptions for a given simulation and to develop script to process those assumptions to arrive at the appropriate pumping stresses by model cell for the simulation. Developing the table structure was important because once programming was developed the table structure could not be altered without modifying the program.

Figure 22 represents the logic flow for the Arc/View pre-process for calculating the well stresses. The rectangle boxes represent tables, some with spatial (GIS) attribution. The circles represent action on the table, which can update an existing table or create new tables. On the CD_ROM under the av_scripts folder, file "Descrip2.pdf" describes the scripting by Program Line.

FIGURE 22. Arc/View Pre-Process Logic Flow for Calculating the Well Stresses



The WESTCAPS Well Pre-Processor

The underlining function of the Well Pre-processor is to define the pumping input stresses for a groundwater modeling run. Pumping stresses are derived from municipal pumping and non-municipal pumping. Because the area of consideration is an urban area or an area in transition from agriculture to urban, the approach to defining municipal versus non-municipal was quite different. Because the driver of change was urbanization, the preprocessor had to properly consider the forces of urbanization as it related to groundwater pumping. Non-municipal pumping was more reactive to the urbanization forces and thus non-municipal pre-processing was in reaction to the urban influences.

a. Municipal Influences on Pumping

Spatial distribution of Residential Units-
Pumping stresses for the 11 stress periods are determined from two input sources:
1) Municipal pumping is derived from residential unit counts multiplied by "municipal gallons per housing unit day" (MGPHUD) and "industrial turf gallons per housing unit day" (ITGPHUD) factors.
Assumptions for municipal pumping:
a). Spatial distribution of residential units from Traffic Analysis Zones (TAZ).
b). GPHUD factors for each WPA, and
c). Available renewable water resources for each WPA.

2) Non-municipal pumping is derived from reported groundwater pumping to ADWR for water year 1991. Assumptions for non-municipal pumping is derived from reported groundwater pumping by model cell.

Spatial data sets (covers) with related attribution tables form the basis for the construction of the WELL file. Both WESTCAPS and ADWR's preprocessor programming assume the existence of a special cover wherein the residential unit information (TAZ), the GPHUD and renewable water resources information (WPA), and the model grid have underwent an "unionizing." WESTCAPS name of this special file is JOINED.SHP. The ".shp" file extension implies the file is a shapefile. Creation of the JOINED.SHP was done in the ADWR preprocessor development period in ARC/INFO by joining three covers - the Traffic Analysis Zone cover, the Water Planning Area cover, and the model grid cover. Once the Joined.shp was created the spatial parameters for inputting assumptions were locked for the entire analysis effort. The function of the pre-processor was to input or modify assumptions about groundwater use into those spatial areas as defined, not modify the spatial parameters.

b. Definition of Spatial Parameters

The TAZ, WPA, and MODFLOW model grid (GRID) covers were joined (in ARC/INFO) to create a new cover called JOINED. In the joining process all TAZ, WPA, and GRID data (in

their respective attribution tables) was attributed to the appropriate "split" polygons of JOINED. Several additional fields were added to Joined.dbf. Table XX contains a full description of the Joined.dbf table, all table fields and their respective use.

What was added to Joined.dbf was a field for each of the 11 stress periods to assign the appropriate residential unit counts (for split polygons). These fields were called SRU (xx) where xx represents the stress period (year). A field called SPLTWEIG was added. This field contains the percentage that the split polygon represented of the TAZ area or its split weight. SPLTWEIG was calculated by dividing the split polygon area into the TAZ polygon area. The appropriate residential unit count was establish for each SRU (xx) field by multiplying the TAZ residential unit count by the SPLTWEIG value.

c. Residential Units by Split Area

In the JOINED table the residential unit number for each TAZ for each period is apportioned to the split polygons making up that the TAZ. The allocation method is to calculate the split polygon area as a percentage of the TAZ area then multiply the residential units by the percentage resulting in the division of the TAZ residential units to the split polygons. This is done for each period in the simulation. Municipal demand is calculated for each split polygon by multiplying the residential units by the municipal gallons per household day (MGPHUD) and the industrial turf gallon per household (ITGPHUD) day. The sum of these two calculations is the total municipal demand for the split polygon. This calculation is made for each period. The final step is the creation of a summation table call AFYR_WPA in which the split polygon municipal demand calculated above is converted from gallons per day to acre-feet per year and summed by WPA.

d. Determination of If and When Cells Urbanize

Eleven additional fields were added to JOINED.DBF as part of the process to determine if and when a cell urbanizes. The fields were used to process information concerning the number of housing units (residential units) as that number relates to the size of the split polygon. i.e., its area. These housing unit/acreage fields were titled HUAC (xx) where xx represented the stress period.

For each stress period the number of residential units is divided into the split polygon acreage with the result written to HUACxx. This value represents the number of residential units per acre in each split polygon. This value is calculated for each split polygon for each stress period. A value of 1 or greater indicates that the split polygon has at least one house per acre. For each stress period the program selects only the split polygons where the housing density is at least 1 house per acre (a value at least equal to one). For those selected polygons the residential unit value is overwritten with the polygon acreage. The Arc/Info n-select command is used to reverse the selection wherein only the split polygons where the residential unit density was less than one unit per acre. For those reselected polygons the value of HUACxx is overwritten with a zero. At

this point the HUACxx split polygon fields that have at least one unit per acre contain their respective acreage, those that had less than 1 unit per acre contain a zero.

A summary command is initiated for the HUACxx fields in the split polygon table creating a new temporary table summarizing the HUACxx values by model cells (5580 cells). Because values remaining in HUACxx are only acreage values where the "at least 1 unit per acre" condition was met, the sum of that value for a cell is the acres of the cell that has at least one unit per acre. The summary table is named TEMP.

Cell number links the TEMP table to a blank urbanization table called IN_OUT. Besides the cell number field, IN-OUT has 11 additional fields one for each stress period (named URB_(xx), where xx is the stress period year). The purpose of the IN_OUT table is to determine, for the analysis, if the cell is to continue "in" agriculture or is considered urbanized or "out" of agriculture. If conditions of urbanization are met, the URB_xx field in the IN_OUT table is flagged.

After the linking of the Temp.dbf to the IN_OUT.dbf table the program selects for each stress period those records in Temp.dbf where the value is greater than 319. This record selection would be those cells that have at least 50% (320 acres) of their area containing at least one house per acre or half or more of the cell has a density of at least one house per acre. Where the condition of at least 320 acres is met that cell is thereafter considered urbanized. Therefore, for any records selected the appropriate field in the IN_OUT.dbf table is flagged with a 1 indicating the cell has urbanized.

e. Calculating Municipal Demand

Calculation of municipal demand begins with the JOINED.DBF table. Ten fields are added, one field for each stress period named DEM (xx) AF, where xx represents the stress period year. The calculation will be made in gallons per day then converted to acre-feet per year.

DEM (xx) AF for each split polygon is calculated as the resulting value from SRU (xx) times the water use factors for municipal and industrial/turf gallons per housing unit day. To convert to Acre-feet per year the GPHUD is multiplied by 892.7. The municipal factor is multiplied against the total residential units for any given stress period, the industrial/turf factor is only multiplied against the increases in residential units between 1990 and the stress period for which the demand is being determined.

Once municipal demand for each split polygon is known the next program step is the summarization of the demand by WPA. A WPA summary table for the demand in acre-feet for each stress period is written to a table named AFYR_WPA. The AFYR_WPA table now contains the municipal demand for each WPA for the 11 stress periods.
The last adjustment to the municipal demand calculation is the movement of demand between the WPA's. Based on assumptions used in CTA the program shifts demand from one WPA to another. The assumptions for the losing and gaining WPA is hard coded into the programming.

The rule for how demand shifts were left to the entities representing the WPA. Numerous methodologies were requested by the entities this each method was independently programmed. The easiest way for a person to interpret the rules for shifting demand between WPA is to read the program.

f. Calculating Municipal Groundwater Pumping

To determine groundwater pumping for the various WPA's available renewable supplies needs to be calculated. The assumption table for renewable supplies is accessed and linked to the AFYR_WPA table. This renewable supply table is named BUDGDATA. It contains assumptions from CTA for available municipal supplies from the Salt River Project, the Central Arizona Project, reuse, and other surface water sources. The BUDGDATA table also contains two categories of groundwater that are treated as surface supplies; they are SRP and MWD groundwater. An explanation of how these two groundwater sources are added into the well package follows in the non-municipal pumping discussion.

The BUDGDATA table contains the quantity (in acre-feet) of the surface supplies for each stress period for each WPA. Once the link between the demand table (AFYR_WPA) and the renewable supply table (BUDGDATA) is established, the difference between the total demand less the surface supplies is calculated as the amount of groundwater to be pumped. How this is calculated is via a third table called DEMSPLIT. DEMSPLIT is a table that when joined to the two previously mentioned tables , provides fields to calculate the assignment of the demand to supplies. The program has a hierarchy of using renewable supplies: first all SRP is applied to demand, then CAP, and finally reuse and other supplies. If the amount of renewable supply is not adequate to cover the demand then the unmet balance is written to a field in the DEMSPLIT table as groundwater to be pumped. When this element of the program is finished the amount of municipal groundwater for each WPA for each stress period is known.

g. Allocating Municipal Pumping to Cells

Once the pumping totals are known for each WPA, allocation to cells is made first to municipal well (right type 56) in respective WPA's as identified in the well database. The logic follows that any municipal groundwater pumping that is projected to occur will first be pumped from existing municipal capacity. To resolve the spatial question of where municipal capacity might exist requires two preliminary steps. First, the amount of available right type 56 capacity must be determined for each WPA from the GFR data. Second, if the pumping requirement is not equal to the available capacity then adjustment s are needed.

The DEMSPLIT table has several fields added to facilitate this logic. A field called PUMP56 contains the summarized municipal capacity for each respective WPA. Ten associated fields were added called ADJ (xx) GW. These fields (adjusted groundwater) will contain any pumping requirement assigned to existing right type 56 wells and again xx is the stress period year. Also ten fields were added called PER56 (xx). These fields contain the percentage that the capacity noted in PUMP56 represents of the pumping requirement for each stress period.

The PER56 (xx) fields are used to determine if the total right type 56 well capacity is to be used or just a part. To determine this outcome the programming compares to GWTOT (xx) fields in the DEMSPLIT table. field PUMP56. If the pumping requirement for any stress period is equal to or greater than the right type 56 capacity then the PER56 (xx) is set to 1. If the stress period pumping requirement is less than the 56 right type capacity then the stress period pumping requirement is divided into the 56 type pumping capacity with the result written to the appropriate stress period PER56 (xx).

h. Non Municipal pumping

Recall that in programming the residential unit number for each TAZ for each stress period was apportioned to the split polygons making up the TAZ. For split polygons where the density of houses is greater than one house per acre the split polygon average is added to other split polygon acreage for that cell meeting the same density condition. Then, from each stress period, cells having at least 319 acres, meeting the 1 house per acre density, those cell are flagged in the IN_OUT table with a number 1 as the indication the cell has urbanized. Other cells retained the flag "zero" and are considered non-urban.

The IN_OUT table with its urbanization data is linked to the GFR_WELL table to determine the future pumping volumes of the non-municipal wells. The first assumption is the non-municipal GFR_WELL volumes would remain constant through the simulation except the in cells that urbanize, then irrigated agriculture pumping would terminate. For wells that are not municipal or irrigated agriculture the GFR_WELL volumes are held constant in all stress periods. For wells used in irrigated agriculture the GFR_WELL volume is constant as long as the cell is not flagged as urban. Once the cell is flagged as urban then the irrigated well volume is zeroed out. All non-municipal results are written to the PUMPSUM table.

i. Spatial Location of Municipal Pumping not Assigned to Existing Wells

Recall that where possible municipal pumping was assigned to cells that had known municipal wells. Not all future capacity could be assigned and the amount unassigned was calculated in a field in Demsplit. Next the remaining pumping is assigned to the cells per logic in CTA. While the majority is spread evenly over WPA's there are exceptions to this rule. Those rules are hard coded in to the programming beginning at line 3109 through line 5275

j. Combining all Pumping into a Single File

The WELLFILE table is the output table for all pumping. The PUMPSUM table (non-municipal pumping) and the RUDEM table (municipal pumping) are linked to the WELLFILE table. Also, the IN_MOD table (flag concerning active cell in model) and the TFLUXA table (mountain front recharge) are linked to WELLFILE. Pumping volumes in PUMPSUM, RUDEM, and TFLUXA

are added and written to the WELLFILE table. Units are normalized, and values are shifted from positive to negative or negative to positive for input into the script which converts to a MODFLOW format.

The volume is distributed between the upper, middle, and lower unit based on the percentage in the WELLFILE table for this distribution. Then, for those WELLFILE volumes that are flagged in IN_MOD as active model cells, the cell volume is converted from acre-feet per year to cubic feet per day and written to the WELL_OUT table in dBase format

Programming Logic for Recharge Stresses

ADWR, as part of its CTA preprocessing for recharge stress, developed a logic that looked at existing agriculture, its efficiencies, loss of irrigated agriculture land to urbanization, seepage from rivers, canals, lakes, regional waste water treatment plant outflows and constructed recharge facilities. Having determined going into this effort that WESTCAPS planned to use the ADWR assumptions for all WESTCAPS model runs, the programs approach by Reclamation was to incorporate the benefits of ADWR's prior efforts rather than reinvent the wheel.

The simplest way to incorporate that logic would have been to use ADWR's CTA MODFLOW recharge file from the CTA run. But it was understood that WESTCAPS would be looking at differing urbanization patterns and constructed recharge facilities than did ADWR in CTA. For this reason a "mini" recharge pre-processor was necessary for the differing assumptions. This was easily accomplished because ADWR had constructed its recharge pre-processor so that near the end of its process, and just prior to applying urbanization to determine loss of irrigated land, two tables (WSRVAGW and WSRVREC2) contained all necessary information. The work Reclamation undertook was to incorporate those two tables, with their ADWR CTA data, into an Arc/View process where the urbanization table created in the Reclamation work described above could be used to redefine CTA recharge. Recharge facilities from ADWR CTA assumptions were in the WSRVREC2 table. This was deemed the simplest and most cost efficient way to deal with the recharge file.

The Arc/View pre-processing that Reclamation developed with ADWR's assistance was to apply Youngs equation (Youngs, 1960) to calculate the fate and temporal transit lag time for irrigation water to travel through the vadose zone to the saturated zone, ater an area urbanized. That process is described in detail in two memos included in the Memos folder on the CD_ROM.

B. GMS MODFLOW Groundwater Modeling

Description

GMS software (version 2.1) was used exclusively for this project. GMS is a popular pre- and post- processing groundwater modeling package with a graphical MODFLOW interface. MODFLOW is a three-dimensional, finite-difference numerical groundwater flow code for saturated porous-media (McDonald, M.G., and Harbaugh, A.W., 1984, *A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model*, U.S. Geological Survey).

The Basecase MODFLOW Groundwater Model

The WESTCAPS MODFLOW Groundwater model (revised 2/23/00) is built upon ADWR's Current Trends Alternative (CTA) MODFLOW groundwater model. The CTA MODFLOW model is documented in the CTA report (Report No. 11) attached on the CD-ROM. The fundamental differences between the two transient models is that the Basecase simulation extends to year 2100 rather than ending in 2025, and the Basecase has different pumping and recharge assumption projections than the CTA.

The Basecase is a transient, quasi-three dimensional finite-difference grid groundwater flow model. The model simulates the change in aquifer storage and thus water level elevation change for each active cell between 1989 and 2100 in eleven time (stress) periods. Hydrologic stresses (e.g., recharge and pumpage) can only change at the beginning of each stress period. The model is quasi-three dimensional as confining aquitard units (e.g., clay layers) are simulated using vertical conductivity (leakance) terms between the aquifer layers rather than physically as actual layers.

The model has three aquifer layers, with each layer containing 5580 equal area (one square mile) cells covering the western and eastern sub-basins of the Salt River Valley (SRV). The three layers simulate the upper unconfined, and middle and lower unconfined/confined (convertible) alluvial aquifers identified in the SRV. The model has 62 rows and 90 columns per layer for 16,740 cells. The grid is oriented along the principal geographic directions. The vertical dimension of each cell within a layer coincides with the thickness of one of the three alluvial aquifers (upper, middle, and lower alluvial units) at that spatial location.

The principal hydrologic stresses simulated are injection and extraction (pumping) wells, and recharge to the highest active cell (highest water table surface) in a vertical column among the three layers. Evapotranspiration discharge is from the upper alluvial aquifer, and interactions between the Salt and Gila Rivers and groundwater is simulated using the river package. Boundary conditions include inactive (no-flow) cells normally representing impermeable bedrock, constant head and constant flux cells (simulated with injection wells) to model underflow and recharge, and underflow and discharge areas in and out of the model. For instance, mountain front recharge is simulated using constant flux injection wells. The model utilizes well deepening which means that well pumping volumes were "moved" into the next lower layer for any cells which contained well(s), which have gone dry during the course of a simulation (see Tool Refinements section). This preserves the pumping demands on the groundwater system over time.

The Basecase model uses WESTCAPS provider assumptions for population data, municipal GPHUD data, industrial turf GPHUD data, and surface water data sources. These assumptions reside in raw database files Well_out.dbf and Wsrvrec2.dbf. The well and recharge ArcView GIS program (preprocessor) calculates appropriate stresses for active cells in the MODFLOW model. The output from this GIS program is these two dBase tables. Another GIS Arc/View program (script) is then used to convert the dBase table(s) to an ascii text well file (MODFLOW format). The dBase to ASCII well conversion script, developed by B. Rindahl and C. Inbau for the City of Aurora, Colorado (Inbau and Rindahl, 1997), was modified as "Pump_out.ave" It is on the CD-ROM.

These initial well and recharge files are used with six other GMS input files (these six other files remained constant between the Basecase and Alternatives) to make the first interim simulation run. This is the first step in running the Basecase model.

The computed water level elevations (heads) for each active cell of each layer at the close of the first stress period were captured and processed in the well deepening routine to create a new well file. This process is detailed in the Tool Refinements Appendix section. This new well file is input into GMS to run the second interim simulation and so forth through all of the first ten stress periods. The final run output files through stress period eleven were used in creating the final contour maps and hydrographs, and mass balance budget summaries.

The GMS MODFLOW input files and ArcView input database files and scripts used to run the Basecase and solution models are described below.

Basecase ArcView Input Files

The following section highlights the ArcView database input files and programming scripts used to create well and recharge input files and for outputting results for the Basecase MODFLOW simulation. Figure 23A/B is a flowchart of the ArcView pre-processor and MODFLOW interface. It shows how the model grid, water planning area (WPA), and urbanization and irrigation coverages are combined. Then it shows how assumption changes in urbanization and recharge and pumping are realized by manipulating a number of existing database tables and creation of others to create two resultant database tables. These two tables, one for recharge and the other for pumping, are converted into an ascii format suitable for import into the GMS MODFLOW software.

ArcView Well and Recharge Input Assumption Database Files:

Well_out.dbf: well assumptions file

Wsrvrec2.dbf: recharge assumptions file

ArcView Processing Files Used:

Wel&Rech.apr: the ArcView "project file" containing the paths to the required database tables, views, and ArcView Avenue scripts.

Database tables: deepbas1.dbf, deepbase.dbf, dry_all1.dbf

Avenue Scripts: Deepen.ave, Left_jus.ave, Right_ju.ave, newrecha.ave, Pump_out.ave

Theme covers: Wsrvba~1.shp, Roads.shp, Rivers.shp, Wsrv MODFLOW grid

The database tables and scripts Deepen, Left_jus, Right_ju, and Pump_out are used to run the well deepening process. Pump_out.ave converts the well_out.dbf table into an ascii text MODFLOW input file (e.g., well1.wel). Newrecha.ave converts recharge table Wsrvrec2.dbf to a MODFLOW input file (e.g., recharg23D.rch).

FIGURE 23A. ArcView GIS Recharge Pre-Processor

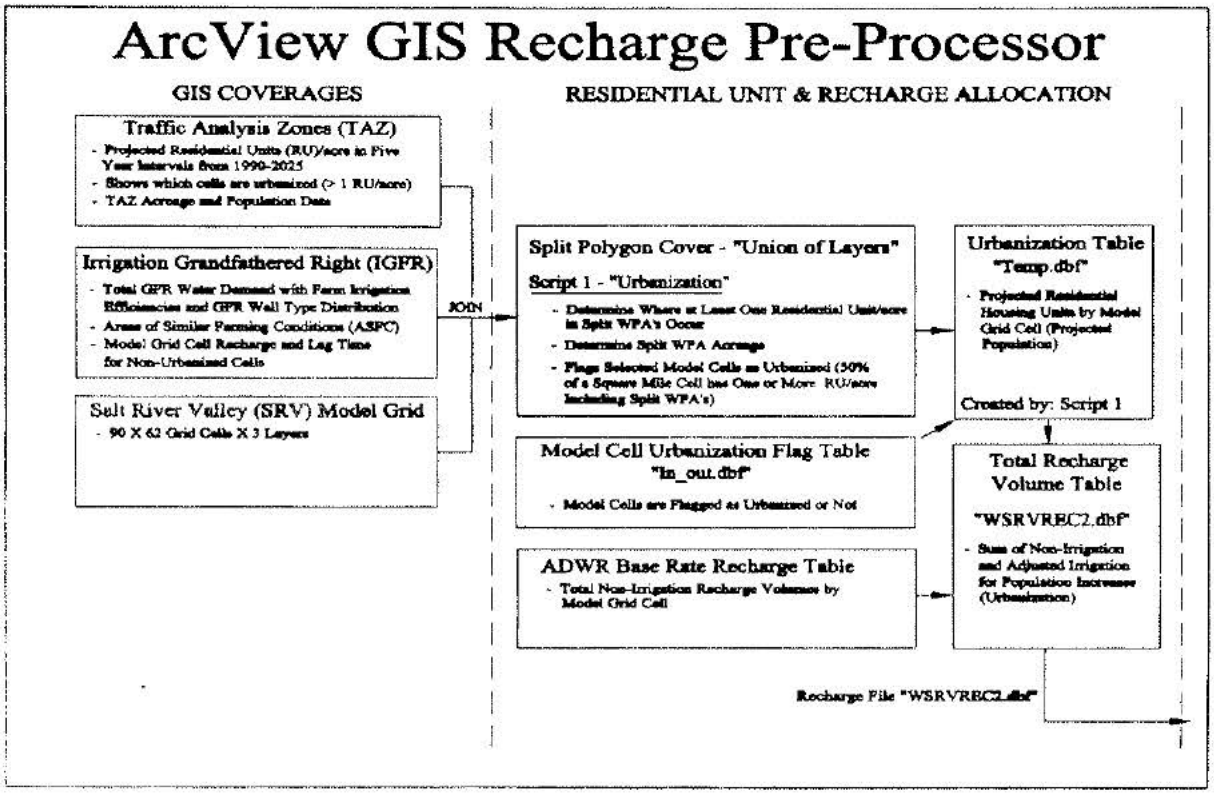
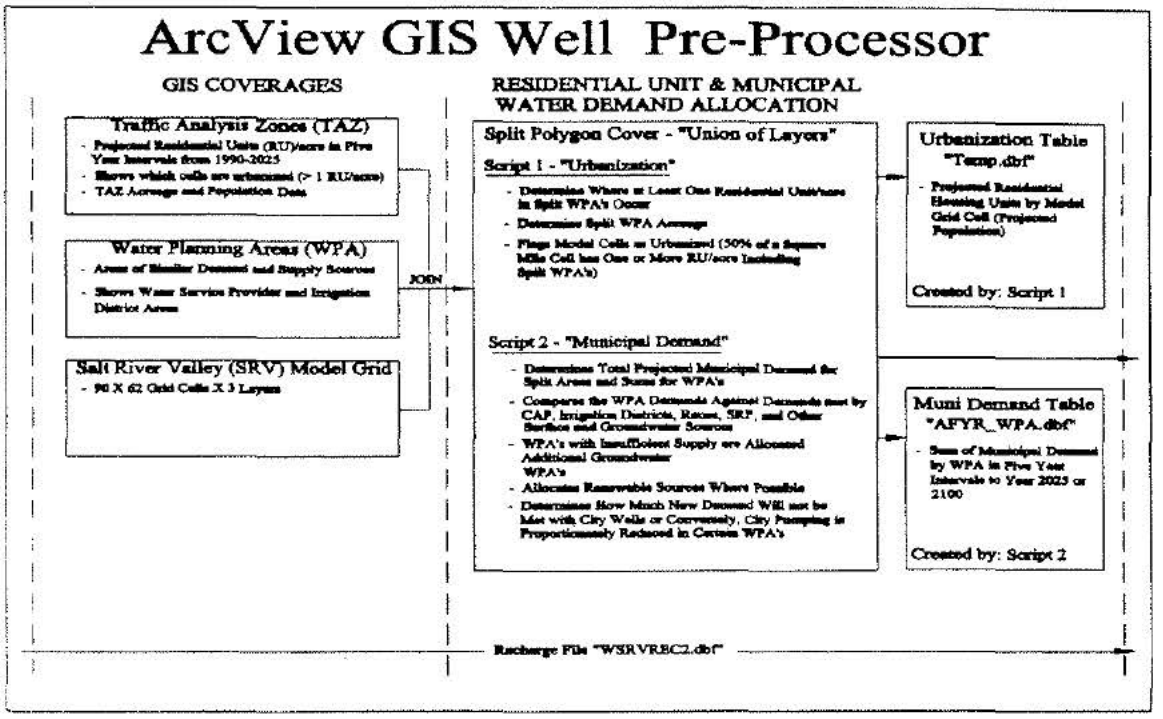
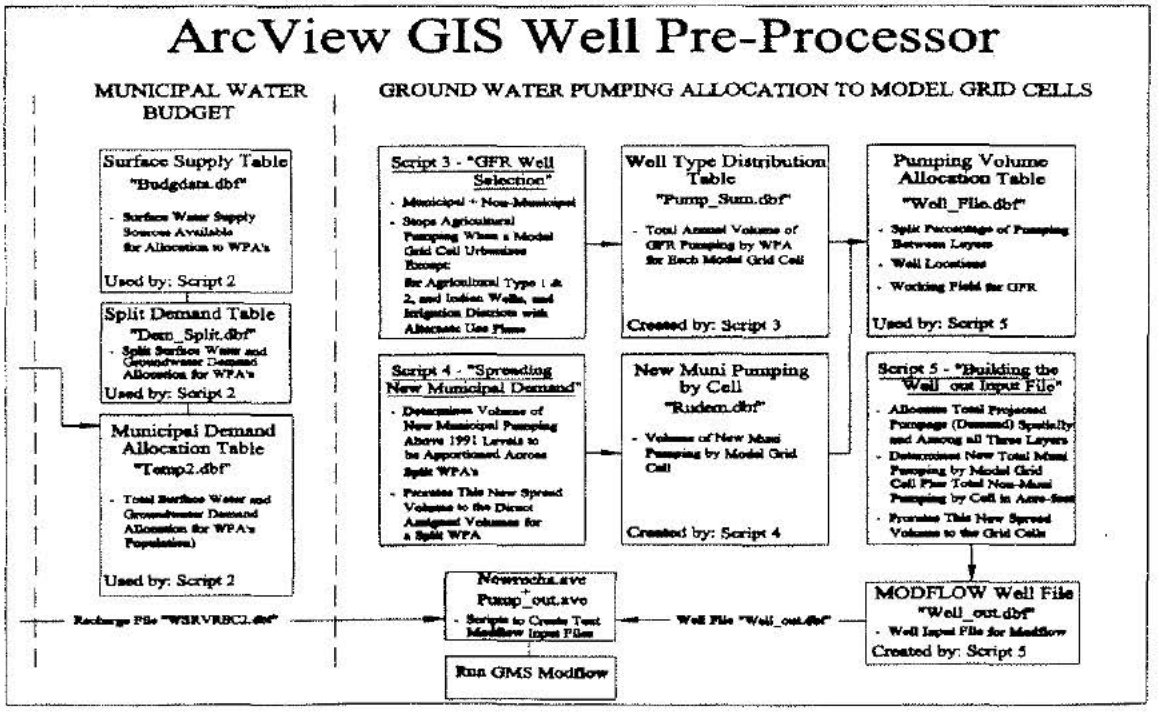


FIGURE 23B. ArcView GIS Well Pre-Processor





Creating MODFLOW Well and Recharge Input Files

a. Using ARCVIEW Avenue Script "Pump_Out.ave"

The following procedure is a step-by-step "cookbook" to convert an ArcView Well_out database table (a scenario's well pumping assumptions file in acre-feet/year) into a MODFLOW compatible ascii text well input file (pumping rates in cubic feet/day) using ArcView Avenue script Pump_out.ave.

1) Open project containing scripts (e.g. Wel&Rech.apr or Welldeepen.apr) in ArcView.

2) Have the scenario-of-interest file Well_out.dbf open (highlighted; add into ArcView project window) and select all if you want all wells (the default). Any previously revised Well_out.dbf versions (if deepening was performed as discussed below) must continue to be named "Well_out.dbf." You may want to establish an original backup somewhere. Ensure that all stress period fields in *.dbf file are together (i.e. - Sp11 field not separated from Sp10 field) otherwise you will get a script run-time error.

3) In Project Window select the script icon and highlight "Pump_out" to run the script. Run by selecting Run button or running man icon. This script puts the well_out.dbf well file into GMS format.

4) Navigate and select Sp1 then ok. Select Sp10 or Sp11 (the last stress period) then ok. These are the defaults.

5) At "Please enter well input filename..." enter a filename such as well1.wel and change destination directory(s) if desired. At the next iteration of this process enter wel2.wel and so on.

6) At "Is Input Well Pumping Data Postive?" dialog, enter NO. At "WELCB Input" dialog go with the default of 39.

At this point the script rewrites the data to a MODFLOW well input file called well#.wel (typically starts at well1.wel). A busy hourglass appears to let you know it is running. Delete well_out.dbf under the Tables icon in the project window using the Project pull-down menu. You can exit or minimize ARCVIEW. This takes about 5 minutes.

7) Run GMS MODFLOW with newly created well file. (Note: Enter 9999.99 to flag dry cells in BCF otherwise "Deepening" process won't work using existing string matching algorithm in "deepen.ave"). You won't need output control in GMS until the final iteration.

b. Using ARCVIEW Avenue Script "Recharge.ave"

The following procedure is a step-by-step "cookbook" to convert an ArcView Wsrvrec2.dbf database table (a scenario's recharge assumptions file in acre-feet/year) into a MODFLOW compatible ascii text recharge package input file (recharge rates in feet/day) using ArcView Avenue script Recharge.ave.

1) Open project containing scripts (e.g. Wel&Rech.apr) in ArcView.

2) Pick the tables icon and add or bring in and highlight (open) the desired scenario Wsrvrec2.dbf table. Make sure you are not using another scenarios' Wsrvrec2.dbf table!

3) Select loc_tag field in the table above and leave open.

4) Pick the View icon and open "Salt River Valley Groundwater Study"and highlight theme Wsrv MODFLOW Grid (make sure it is raised or active in ArcView's table of contents).

5) Open the associated theme table to the above theme in 4) and depress loc_tag field button. Make sure "Attributes of WSRV MODFLOW Grid" table is active as it will be the destination table. Ensure that any previous recharge script runs have not left the joined fields from former Wsrvrec2.dbf files in the Wsrv MODFLOW Grid table. If so, use the Remove all joins option under the ArcView Table menu prior to continuing.

6) Do a join to append new Wsrvrec2.dbf field data (the stress period data) into destination table. This will close the Wsrvrec2.dbf source table. Keep view on screen.

7) Go to the scripts icon in the Project Window and highlight (open) the Recharge script. Press run button or can open (see programming) and press running man icon.

8) Select MODFLOW Grid Theme "WSRV MODFLOW Grid" and enter ok.

9) Pick the first (Sp1) and last desired (Sp11) stress periods to be processed by scrolling down and entering ok after each.

10) Enter MODFLOW recharge input file name (e.g. recharg#.rch) and directory. Note: script is currently written to save to one current place only. You will get an error if another path is entered. Edit the script to a selected directory.

11) At "Please Select Recharge Option Code" select 3 and press ok.

12) Do the same for the succeeding windows picking 39, 18, 1.0000E-5, and 0 printing code. The 1.0000E-5 recharge multiplier could be something different on different projects!

13) Let the script run. You won't see any on-screen indications that it is running but just wait until tool bar reappears.

14) Remove all joins (see step 5 above) and close table window.

15) Continue with next recharge file conversion using another scenario Wsrvrec2.dbf file. Be sure to delete out previously processed recharge files under Tables in the Project Window otherwise may wind up with a recharge file not reflective of the latest scenario assumptions. Add in the one of interest.

Quality Assurance/Quality Control

The evolution of the WSRV Arcview pre-processor and the conversion of the ADWR CTA MODFLOW model to the Basecase MODFLOW model required a number of quality assurance steps both internally and by several outside entities. Westcaps also made reviews and suggestions.

Consultant Peter A. Mock & Associates, Inc. performed the primary validation that the ArcView pre-processor reasonably preserved and replicated ADWR's supply/demand logic, and that GMS MODFLOW could reasonably replicate ADWR's CTA MODFLOW-96 output results (using ADWR's CTA MODFLOW input files in GMS). A report of those findings dated December 1, 1998 entitled *Review and Recommendations: WESTCAPS/U.S. Bureau of Reclamation Replication of the Arizona Department of Water Resources Current Trends Alternative Simulation*, is included on the CD_ROM (see Section D). Mock's conclusions are summarized below.

The ADWR Phoenix AMA group in May 1999 requested an explanation for the minor differences which were never fully reconciled (but ultimately accepted by Westcaps) between their CTA results and the Westcaps Basecase results. This explanation as well as the other internal and external QA/QC work items, is summarized in this section.

Water level elevation hydrographs were generated as one tool for use in interpreting and contrasting the change in simulated water levels over time between different scenarios and between different areas within a particular scenario. The hydrograph data is extracted and processed independently of the contour mapping process so the hydrographs are also useful in verifying or cross-checking the results of the mapping. These hydrographs are discussed and first presented in the Basecase Data Results section.

a. Replicating the CTA MODFLOW Model Using GMS MODFLOW

One of the first project tasks was to import the Arizona Department of Water Resource's (ADWR) Current Trends Alternative (CTA) scenario input files into the Groundwater Modeling System v2.1 software, and replicate their output results. GMS is a popular pre- and post-processing groundwater modeling software package with a graphical MODFLOW interface. The ADWR CTA model used the USGS public domain version MODFLOW program, MODFLOW-96. The reader is referred to McDonald, M.G., and Harbaugh, A.W., 1984, *A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model*, U.S. Geological Survey, for documentation for the original MODFLOW program.

In January 1998 the Arizona Department of Water Resources (ADWR) provided the initial CTA set of MODFLOW input data files, and final CTA files were provided in July, 1998. The only difference between those datasets was that some minor recharge assumption changes resulted in a revised MODFLOW recharge input file. The standard MODFLOW output text file from ADWR's CTA run was also provided for comparison purposes. It was expected identical output results would show that GMS MODFLOW itself could not be responsible for changes or discrepancies not directly attributable to the GIS input conversion process. Several of the CTA input package files required modification so GMS would correctly input them. Specifically, some of the arrays in the basic, block-centered flow, evapotranspiration, and recharge input files had extra FORTRAN format characters for the MODFLOW FMTIN variable in the array control record headers which were deleted with a text editor.

The CTA input files were successfully run through GMS (with some technical help from BOSS International, the GMS vendor) and ADWR's output results replicated in September, 1998. The GMS MODFLOW text output file shows identical volumetric budget numbers for the various hydrologic sources and sinks and identical mass balance percent discrepancy numbers. The GMS water level contour maps closely matched those of Figure 9 in ADWR's CTA Modeling Report No.11. This replication is also discussed in the attached Peter A. Mock & Associates, Inc. report, on the CD_ROM (see section D. Supporting Data).

b. Consultant's Findings

Mock & Associates review included two separate tasks. Their first less critical task was to run the ADWR CTA MODFLOW input files through MODFLOW-96, the USGS public domain groundwater flow model, and compare and contrast the ADWR-CTA output results to those of the BOR-CTA GMS run. The second task was to review and evaluate the ArcView GIS pre-processor used to create MODFLOW well and recharge input files from varying urbanization projections; and see if ADWR's logic and programming operations were maintained with the ArcView platform.

In the first task MODFLOW output was compared between the two models for each alluvial unit using simulated water level elevation hydrographs, mass balance budget summaries, water level elevation difference contours for the year 2025, and by comparing the number of cells which converted between dry and wet status. It was concluded that the differences in the two MODFLOW models (based on simulated mass balance results, hydrograph trends, water level difference contours, and wet-dry conversions) was reasonable and readily explainable by smaller documented pumping rates (roughly 7% less) of the BOR model compared to the CTA model. The consultant recommended retaining the GMS MODFLOW tool.

The second task evaluation concluded that the ArcView GIS pre-processor reasonably replicated ADWR's Arc/Info process, was more user friendly and is a streamlined improvement. Differences in results could be attributed to the differences in pumping and urbanization rates, and population projections in some areas. In order to stay on schedule it was recommended the ArcView GIS pre-processor be used even though it was acknowledged perfect replication would not be achieved. As discussed in the report, some of the original ADWR files documenting the

logic were lost. Even if recovered, the time to achieve replication could not be justified by slight increases in accuracy.

c. ADWR Testing

In May 1999 ADWR AMA representatives met with Reclamation to discuss the results of the Basecase model (superceded version Scenario 17; the final Basecase is Scenario 23) and why there were some differences between it and ADWR's CTA model. It was explained that some assumptions on pumping and urbanization rates, and minor programming logic algorithms were different between the models, and that the same set of CTA MODFLOW input files were used (aside from slightly different well and recharge files).

Prior to the meeting, ADWR had sent Reclamation 13 water level elevation output files (for years 1995, 2010, 2025, 2050, and 2110 for each of the three alluvial units) from their run of the CTA to compare with Reclamation's CTA model results. Middle and lower unit hydrographs at five WSRV locations were prepared comparing the simulated water level elevations between the ADWR and Reclamation CTA runs and Scenario 17 (old Basecase) run from 1995 to 2110. At all locations the water level elevation differences were 10 feet or less to 2025 in the CTA models. The ADWR CTA and Basecase graphs showed Basecase water levels comparable from 1995 to 2025, and up to 100 feet higher at 2025 in some locations (the Basecase has less pumping than CTA). The difference was up to 200 feet higher in one location from 2100 to 2110. No further concerns were raised on this issue.

d. Internal Checks and Sensitivity Simulations

A number of quality control steps were initiated throughout the project. These ranged from initially trying to replicate ADWR's CTA results using the GMS MODFLOW interface: while simulations were being run to support and test the ongoing changes and improvements to the ArcView Avenue scripting logic (GIS pre-processor used to create the well and recharge input files), and to the numerous simulation runs required in the evolution of the current WSRV Basecase groundwater model.

Some key MODFLOW options were held constant throughout the entire modeling project for consistency and conformability with ADWR's source (CTA) SRV model. For instance, aquifer parameters such as hydraulic conductivity, leakance factors, storage coefficients, aquifer elevations, etc. were never changed from the CTA values. Also, river conductance and evapotranspiration factors, and boundary flux values were maintained.

The key model options maintained were:

- ✓ Recharge would be applied to the highest active cell in each vertical column of the three layers.
- ✓ Evapotranspiration is applied to the top layer only.

- ✓ A well deepening process similar to the one ADWR used, where demands are moved into lower layers in dewatered areas (see Tool Refinements for a detailed discussion), was utilized in the Basecase and Solutions A-F/G, and in the evolutionary runs. One test case simulation using the BOR-CTA model showed the "deepened" version pumpage at 2025 was 2 to 3 percent greater than the pumpage volumes from the "not deepened" version (pumpage not lost). The deepened run normalized to the ADWR-CTA model was about 4 to 6 percent less. These test cases showed the pre-processor deepening scripts were doing what they were designed to do.

- ✓ The block-centered flow BCF3 package was used where rewetting of dry cells is possible (the BCF3 option is actually the BCF2 option plus the ability to specify one of four averaging methods in calculating the interblock transmissivity). The rewetting parameters, layer aquifer types, and other BCF3 CTA parameters were maintained.

- ✓ The basic package setup remained essentially unchanged between the CTA and the Basecase/Solution A-F/G models with several exceptions. Another stress period was added from year 2025 to 2100 (see Tool Refinement section), and the starting water level elevations (starting heads) and boundary (Ibound) codes for four layer 2 cells were modified with ADWR concurrence after two anomolies were seen in some contour maps.

First seen in evolutionary scenarios 10-13, two anomolous areas were evident in contour plots of drawdown at 2025 and in 2100. One area occurs between South Mountain and the Phoenix Mountains (three layer 2 cells were modified here), and the other cell in the Hedgepeth/Union Hills area. Large negative drawdown values were computed by MODFLOW and contoured resulting in dense contour blotches in these areas. It was found that four aquifer boundary cells were discretized as inactive with starting heads of 0.0 feet elevation in these anomolous areas. These cells were set to active status with starting heads reflective of adjacent areas (cells). A test case run for scenario 12 at year 2100 in the middle alluvial unit (the only simulation which showed the anomolous contour areas in 2100 before making the four cell changes) showed that the anomalous contour blotches disappeared. No further anomolies pertaining to these four cells have arisen through the Solution simulations.

- ✓ The mathematical solver used was the Slice-Successive Overrelaxation Solver (SSOR) Package using 100 or 200 maximum iterations per time step for mathematical convergence closure, an acceleration parameter of 1.0, and head change criterion for convergence of 0.5 feet. As discussed in the Mock report, this value of 0.5 feet ideally should be smaller (say 0.01) but again the options were not changed for comparability.

Similar solver convergence problems occured in the eight scenarios. Instead of reducing the pumping rates to achieve an interim solution, it was decided that the number of time steps would be increased (to make shorter computational time increments) in stress periods 8, 9, and 10. All eight scenarios successfully terminated using 100 time steps for stress periods 8, 9, and 10.

Two test simulations were run to see the sensitivity of the model to changing the number of time steps in stress periods 8, 9, and 10 and to ensure that this was acceptable in resolving the solver convergence problems overcome earlier (by decreasing the pumping rate in those problem cells).

One run used the CTA time convention (20 time steps in stress periods 8, 9, and 10) and the second run used 100 time steps in those three periods. The percent discrepancies for both the total cumulative volumes and the fluxes for the last time step of stress periods 8 through 11 showed the discrepancy was in almost all cases less (closer to zero) for the 100 time step run than the 20 time step run. Only the flux at the end of stress period 10 was slightly greater, and the cumulative and flux percent discrepancies in stress period 11 slightly greater for the 100 time step run compared to the 20 time step run. From this analysis, 100 time steps in stress periods 8 through 10 were maintained throughout the modeling project through Solution G.

The results of scenarios 10 through 13 led to three new ones with slightly different Provider demand assumptions based on minor input changes from some Westcaps members. These employed well deepening. Scenario 14 was an update to scenario 13, scenario 15 to 11, and scenario 16 updated scenario 12.

A set of water level plots for Scenarios 14-16 showed other anomalous contour areas (unrelated to the four cells discussed above) for several of the depth to water plots for 2025 and 2100. One anomously high water level was seen in the extreme north area of the middle alluvial unit map for year 2100. Another area around 51st Avenue and Beardsley Road was apparent in the 2025 depth to water map in the middle alluvial unit for Scenario 14. A zero elevation value was used for contouring but the correct simulated MODFLOW value was elevation 329. This correction was later made to the contouring database and the map regenerated. The contouring algorithm in Spatial Analyst sometimes derived artificial water level values in some boundary areas (especially the extreme north area of the SRV model in the Agua Fria River area) by extrapolating from actual water level values calculated by MODFLOW within the active middle unit layer boundary. These new values were then contoured to produce anomalous contours.

Some similar anomalies with simulated ground water levels in the GRUSP area were described by ADWR in their CTA Modeling Report No. 11. The model was computing water levels above ground surface. MODFLOW does not know where the top of layer 1 is (using GMS v.2.1) and assumes the layer has infinite thickness.

The well deepening process requires at minimum about four hours per scenario run. A test case sensitivity run was made to determine if the deepening process could be shortened without losing pumpage accuracy by not having to run nine interim simulations (further discussed in the Tool Refinements section) to get to the final simulation results. It was thought this comparison might show very little if any differences in observable output.

To compare differences, GMS water level elevation and water level change (drawdown), and depth to water contour maps were generated for layers 2 and 3 for the years 2025 and 2100 for both simulations. Comparison hydrographs were produced for the middle and lower alluvial units (layers 2 and 3) between the years 1989 and 2100 for the Bell & 83rd, Luke Cone, and Buckeye areas. The second and third layers were expected to show the greatest pumping volume differences between a fully deepened and partially deepened run compared to the upper unit. Volumetric budget summaries for the entire model at the end of the simulations (through year 2100) were printed.

The contour maps showed almost imperceptible changes. In layer 2 at 2025, the contour configuration was very slightly different but with the same magnitudes in the extreme north tip (Cave Creek just east of the Union Hills) and in 2100 at I-10 southeast of South Mountain. For the drawdown maps layer 2, there were no visible differences at 2025 and in 2100 only a noticeable change in the 100-foot contour immediately southeast of South Mountain. The depth to water maps *at 2025* in layer 2 between the two scenarios appeared identical. A statistics check in GMS did show a four-foot difference in the minimum depth to water value but the maximums and mean depths to water varied less than a foot. A little more variation was apparent in *2100* in layers 2 and 3 with about 4 feet difference for the minimum values, 14 feet difference for the maximum values, and 1.2 feet difference in the mean depths to water.

Differences could not be detected (graphs superimposed) in the comparison hydrographs for years 1990 through 2100 for the Bell & 83rd, Luke Cone, and Buckeye areas. In the MODFLOW budget summaries, the fully deepened run (Scenario 14) showed slightly more cumulative volume (cubic feet) on the outflow side for wells and for the total volume out, and on the inflow side for river leakage, versus the partially deepened run of Scenario 14Test. The difference in cumulative well pumping (outflow) volume *for the entire model* was about 0.2 percent for the fully deepened run versus the partially deepened one. The final time step of the full deepened run showed a little less river leakage and slightly greater storage, total out, and well fluxes for outflow terms.

In conclusion, the time spent performing the full well deepening process was probably not justified up to 2025 for Scenario 14. It was possibly justified to 2100 based on the contour differences and budget differences. Other scenarios with similar assumptions should show similar conclusions to the effects of deepening. Scenarios with greater assumption changes could show more dramatic effects of deepening. It was decided that with the number of pumping change assumptions increasingly being made in future scenarios, deepening would be applied to maintain comparability.

Minor Westcaps provider demand assumption changes led to three additional fully deepened scenarios: Scenarios 17 through 19. Scenario 17 updated Scenario 14, Scenario 18 from 15, and Scenario 19 updated scenario 16. Scenario 17 was considered the Base Case run until it was replaced in February 2000 by Scenario 23. Scenario 23 is the new Base Case from which Solutions A through F/G are compared.

Tool Refinements

a. An Eleven Stress Period Groundwater Model to the Year 2100

In the November 13, 1998 Westcaps meeting, plans were made to add another stress period to the WSRV BOR-CTA groundwater model so projections from 2025 to the year 2100 could be made. The impetus to make this change was the desire to possibly use the model as a screening tool for ADWR Assured Water Supply (AWS) projections to 2100.

A single 75 year stress period (stress period 11) with 15 equal length time steps each initially 5 years long was added to the BOR-CTA MODFLOW basic package input file. The MODFLOW evapotranspiration, river, recharge, well, and block-centered flow input package files also required some modifications to coincide with the new eleven period model. The first simulation attempt, based on the BOR-CTA assumptions, failed to converge in stress period 9 due to a number of model grid cells in the middle alluvial unit (layer 2) oscillating between wet and dry. The well package was modified by decreasing the pump rate 300,000 cubic feet/day in one of the cells (2-32-27) which before had disproportionately high pumping rates compared to adjacent cells. The simulation made it to the first time step of stress period 11 before failing to converge in another cell in layer 1 (1-32-48). The pumping rate in this cell was then initially reduced 300,000 cubic feet/day but the model did not converge. Four more attempts were made each time reducing the pump rate 100,000 cubic feet/day (the last was set to zero) with the same results. The SIP flow equation solver was tried without success. Then varying head closure criterion values were tried in the SSOR solver in an effort to bring mathematical convergence (the CTA default is 0.5 feet).

Reasoning that the five year time step lengths in the 75 year stress period eleven were probably too long, the time step lengths were shortened. To better correspond with the 91 day time step lengths ADWR gave for stress periods 4 through 10 of the CTA model, first 300 timesteps (90 days) and then 500 timesteps were tried but still the model failed to converge through year 2100. Finally, a round time step length of 30 days (912 time steps) resulted in successful program termination to the year 2100. The default head closure value of 0.5 feet was retained.

b. Well Deepening Procedure

The following procedure documents the well deepening process used for the Basecase and Solutions A through F/G. In any given MODFLOW groundwater simulation, it is common for some model cells in one or more model grid layers to dewater (go dry) during the course of the simulation. This is particularly critical for the SRV model since many of these cells are modeled with pumping (extraction) wells and in the WSRV pumping is generally assumed to increase over time due to population increases and other demands to the year 2025.

Once a cell dries (its water level drops below the base of the cell) it is set to inactive status and no further conductances (cell to cell flows) are calculated or tracked over the remaining time of the simulation unless the cell rewets. If the cell rewets (e.g., when an injection well is added), conductances/fluxes are calculated but the intervening flow budget information is not factored. In the case of wells, significant pumping volumes would be unaccounted and underrepresented. A comparison between several pre-Basecase deepened and non-deepened simulations showed this difference was about five percent. In reality, a well owner would probably deepen a well that has gone dry due to declining water levels. This is the premise that ADWR used in building their CTA model. The pumping volumes of wells in dry cells were reapplied to the cell (aquifer) in the next lower aquifer layers see cell (ADWR Modeling Report No. 11, pg. 38). Therefore, a well deepening procedure was created and applied to the Basecase and Solutions A through F/G.

An ArcView Avenue script "Deepen.ave" along with supporting database files well_out.dbf, Dry_all1.dbf and Deepbase1.dbf are used to create an interim version of well_out for each stress period iteration. These interim well_out versions are used to create interim MODFLOW well input files using script "Pump_out.ave." At the start of the final stress period in a MODFLOW simulation, a final well file is created and used to run the simulation. Figure 24 is a flow diagram of how the well deepening process works. A step-by-step "cookbook" narrative of the procedure, and a bookkeeping form developed to track the numerous files created during the procedure follow.

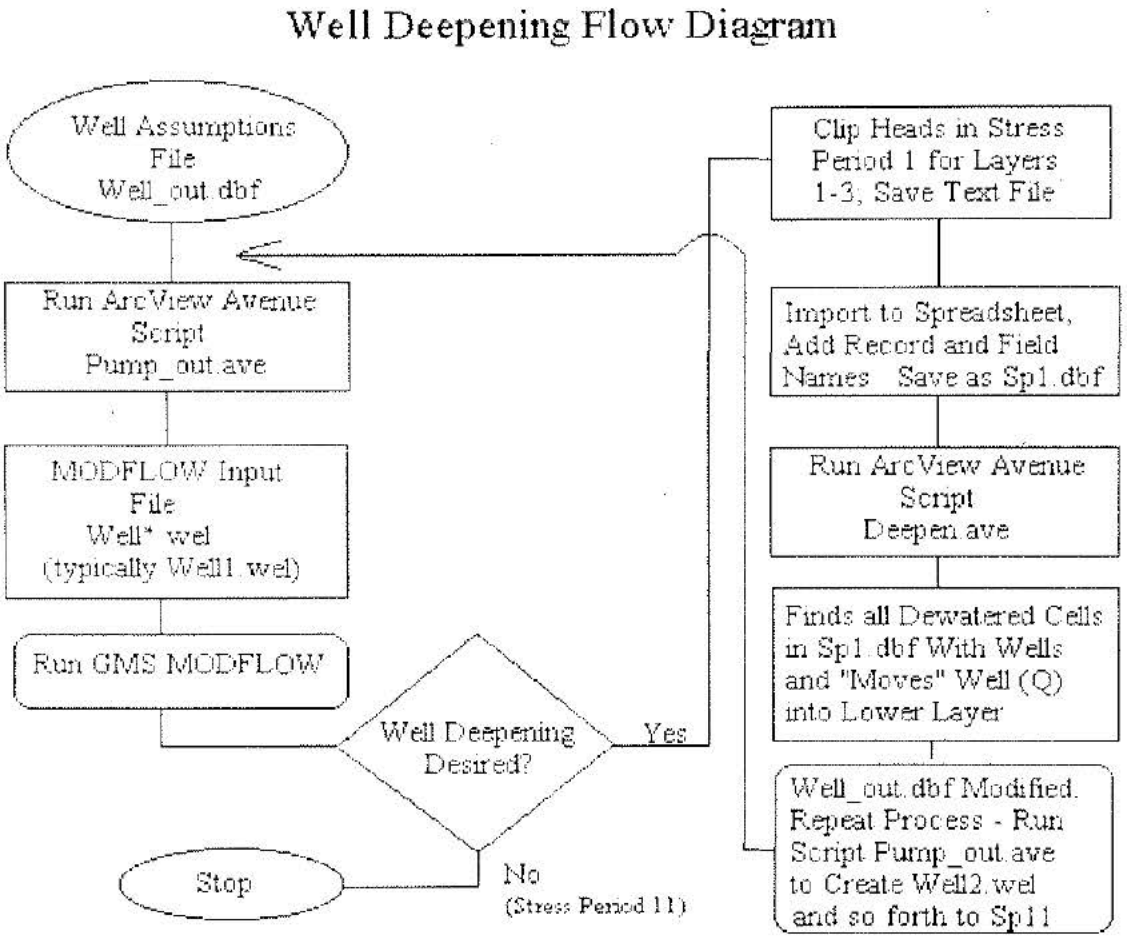


Figure 24. Well Deepening Flow Diagram

The following is a step-by-step "cookbook" procedure for creating a Stress-Period-by-Stress-Period *.dbf file of computed heads from GMS MODFLOW output file to run in ARCVIEW Avenue script "Deepen.ave"

Using the MODFLOW well input file created from the ArcView Avenue script "Pump_out.ave" (typically named well1.wel) run GMS MODFLOW (note: a value of 9999.99 is entered to flag dry cells in the block-centered flow (BCF) package since the "Deepening" process won't work using the existing string matching algorithm in "Deepen.ave"). The script can be modified to utilize other flags.

1) Open the newly created *.out MODFLOW file in Wordpad. Select all and change font to Times New Roman size 8. This makes arrays much easier to see on screen. Select "Heads in Layer 1 at end of Time step # in stress period #" including header. Also do this for the layer 2 and 3 arrays at the same time. Generally, SP1 is done first in any deepening exercise.

2) Copy selection to clipboard and open new document picking text option. Don't save *.out file when asked in the dialog. Paste selection into the new document and cut out headers leaving no blank lines. Keep Row identifiers at left margin intact. Save file (e.g. Scen23run1clipsp1.txt") in another folder such as Newruns. Close or minimize Wordpad.

3) Open EXCEL picking above text file. In file text convert wizard pick fixed width columns and make row id five spaces with each remaining column 12 spaces in width (this will ensure the "dry" flagged numbers (i.e. - 1.0000E+4) don't get truncated). Pick general number format and finish wizard. Add a header row with "REC" as first field followed by "C1"..."C10" in the remaining columns. Change Row id numbers to a sequential list from 1 to 1674. Save file as *.dbf (typically something like Scen23run1sp1.dbf if you are on the first stress period and so on). Do this by selecting and highlighting rows 1-1674 before saving as a .dbf file. Close and minimize EXCEL.

Creating Nine Interim and One Final GMS MODFLOW Well Input File from WELL_OUT.dbf Using ARCVIEW Avenue Script "Deepen.ave"

1) Open or maximize Wel&Rech.apr and add latest *.dbf (such as Scen23run1sp1.dbf) to Project Window under Tables icon. Also make sure the files *Deephas1.dbf, Dry_all1.dbf,* ***and Well_out.dbf*** (the latest version you are currently processing - each stress period iteration changes well_out.dbf which will probably not be readily apparent) are there. For the next iteration, you would want to make sure *run2sp2.dbf is there and so on by adding them to the Project.

2) Access (highlight) *run1sp1.dbf created from Excel (or the latest iteration you are on) and select the script icon (*run#sp#.dbf table doesn't need to be open and highlighted like for the "pump_out" script).

3) Open up "Deepen" script box (should see programming code). Scroll down looking for "*run#sp#.dbf" from last iteration. You want to change all occurrences of this to correspond to

the stress period desired. Go to edit menu and pick replace. Enter in the find dialog what the file is in quotes in the script box. Enter the desired file name (i.e.- the next *run#[+1]sp#[+1].dbf).

4) Press COMPILE button! Then press the run button or running man. This step will usually make changes to Well_out.dbf. This takes about two minutes. Delete current Well_out.dbf and latest *run#sp#.dbf files from under the Tables icon under the project window using the Project pull-down menu. This ensures these do not get used in the next iteration cycle. Close script window and minimize ARCVIEW.

5) Go to Windows Explorer (pick refresh under View menu) under "Deepening" folder (or wherever the well_out.dbf files are being saved) and select the well_out.dbf file. Right click, choose copy and under pull down edit menu choose paste. This creates a backup copy in case the process needs to be repeated. This could save starting back at SP1! Rename "Copy of well_out.dbf" to something like "Well_outsp#.dbf." May need to use refresh in pulldown View menu to note the change of time/date for the most recent Well_out version. In some cases may not "see" a change indicating no new cells containing a well dried requiring stresses to be moved lower. Minimize Explorer.

Repeat Iteration for all Stress Periods

6) Repeat the process for the next stress period of interest. Go back to top of this section to create the next wel#.wel file using script "Pump_Out.ave" in Welldeepen or Wel&Rech.apr.

Note: After processing run9 (stress period 9) or the # of stress periods in model minus one, and running script Deepen.ave, go run script "Pump_out.ave" for the last time to create the final wel#.wel file.

7) Run GMS using this last wel#.wel file. Enable output control if you will generate *.hed and *.drw files for contouring. Initialize well file with final wel#.wel file.

C. Post-Processing

Building a Map File for Contouring Groundwater Levels

The following is a step-by-step "cookbook" procedure for converting output head or drawdown files created from a MODFLOW simulation run into an ArcView compatible format for creating ArcView quality contour maps of a simulation's water levels in various formats. These might be depth to water (DTW), drawdown (or water level change maps from some particular time - generally the start time of the transient simulation (i.e. 1989 in the SRV model), difference maps, etc.

1) Obtain and open a clean updated map_XXX.dbf file or create in dbase or ArcView. An example is map_Phx.dbf. You can take an existing one and add/delete fields. Using the calculator zero out (initialize) all records in all map and raw data fields.

2) Convert all MODFLOW text output head or drawdown files created from GMS (e.g. - H_s1_25.txt or #3_25H.txt for scenarios 1 or 3 at 2025) to dbase format using dbase or other program. Note: be careful naming the GMS text files (keep no more than eight alphanumeric characters: *.txt) as it is hard to determine which file you are dealing with in some programs (i.e. dbase) due to truncation. It is generally more efficient to convert all head and drawdown files in one session.

2a) Open dbase. Create new dbase table using "designer" icon. Specify one field called "data" of numeric type with say a width of 20. Go to lightening bolt icon. Name table to reflect the scenario run. Examples are D_s2_25.dbf and H_s1_21.dbf (for 2100). You can name them the same as the text file.

3) Go to menu File Import and pick text file radio button which imports the GMS text file. Under browse "Name" pick raw GMS created data text file. Verify correct # of records and filename is proper for the run. There should be 33488 records for the SRV model. Save under File menu (pick "Save Record and Close"). Close dbase if done or repeat above steps for remaining GMS output files. Go back to the start of this paragraph to convert other text files. Double click on skeleton file in dbase list to open for viewing/manipulation.

At this point these converted GMS text files to *.dbf files need to be added to the map_XXX.dbf table for processing of depth-to-water, drawdown, difference maps, etc.

4) If not already open, open ArcView and open project file and add your map_XXX.dbf table. Enable editing (if not already on) of the table. Delete last table converted in the project window. Add to project your first (or next) converted GMS raw database file (i.e.- H_s1_25.dbf) or all of them. Note: Doing one at a time is less error prone as far as mixing filenames, etc. You will probably have to create new columns (field names) as numeric (i.e., H_s31_2025), for each of the four GMS source files (two head files at 2025 and 2100, and two drawdown files at 2025 and 2100).

5) Go to scripts icon. Ensure script "conv2.ave" is loaded. If not, double click on script icon. Go to script menu and pick "Loadtext file" and navigate to the script location. You can rename it. Recompile and run. Be sure to select the raw data file (step 4) you want to process. This script adds a "Record" (#) field to the "Data" (step 2a) field created previously when the GMS text file(s) were converted to dbase. Check that record 16747 contains the first value (non 0 or 1) as the first line in the raw data file and record 33486 is the last one. This file will have format as follows:

Data	Record
<blank>	0
"	1
"	2
"	3
"	4
"	5
"	6
0	7
1	8
[0 or 1 and so forth to]...	
-8990	16747
[or with values]...	
value	33486
<blank>	33487

6) At this point check that all joins are removed from map_XXX.dbf from previous processing.

7) Link (join) the "raw data" file (5) to map_XXX.dbf (the destination table) on "Record" field. This creates a new field "Data" at end of map_XXX.dbf table.

8) Invoke the editor if not already on. Copy, using the calculate tool, from "Data" field to appropriate field in map_XXX.dbf table. The Data field will show as slanted. Go to the desired field and in calculator set the field equal to "Data" field values. Remove all joins to map table. Go back to step 4) and repeat. Delete the table you just converted in project window under Tables and add in the next one. Save table.

9) Copy each filled primary data field (i.e. - H_s31_2025.dbf) you want to the respective map field using the calculator so original (primary) data fields are untouched in case you have to come back to them from data corruption (avoids repeating above steps) and for use in other mapping formats such as using for difference maps. Use head files for Dtw maps and drawdown files for water level change maps. Remove all joins of "data" from map_XXX.dbf table.

At this point, the various desired maps for mapping will be created.

The following assumes one is only concerned with mapping layer 2 data. If mapping other layer data the following procedure would be modified accordingly. Note: a / indicates a keystroke.

10) Make sure you are doing operations on the "Map#" fields (except the initial 10a. Select).

a. Query builder select layer = "2" if you want to map the MAU; select layer = "3" for mapping the LAU, and layer ="1" for the UAU. Check for 5580 records.

b. Switch selection to L1&L3 (or L1&L2 if mapping the LAU). For each map to be processed use /calculator/Map#=-8990 (or all other values) to 9999 as you don't want to map these. Make sure you have only one field selected otherwise you will change all the fields. This is done if only mapping of the MAU (Layer 2) of the SRV model is desired. If want maps of L3 only then could make all records in L1 and L2 9999 which means they won't get mapped.

c. Switch selection back to L2 (or L3) only. In query builder Map#<-7777 to subselect all -8990 in L2 or L3 (will be about 3500 to 3800 records for the WSRV model).

d. Calculator/Map# = 9999 (changes -8990 to 9999 for L2 or L3). In Query builder select all L2 or L3 (i.e. - Layer = "2/3") selecting newset; check for 5580 records.

e. In Query builder Map# <9999 subselect (this operation excludes the new 9999 & 10.000 (or dry cells) values from conversion for Dtw or drawdown format. There will be about 1700 to 2100 records in the WSRV model.

f. Example given: If desire mapping depth to water you would use Calculator/Map# = (Selv2) - (H_s1_25) This changes all non 9999 & 10.000 values to the Dtw value rather than the straight head or drawdown values. Note: for drawdown maps no calculation is required at this point because the drawdown values had been copied from field D_s1_2100 (e.g.).

g. Save table edits: continue or repeat for other files for ArcView mapping. Save project.

h. Check for anomalous values (e.g., in difference maps one scenario may have a dry value (10.000) which when compared to another value will yield something like say 9980 which might get contoured. Use query builder to identify these using Map# = and checking "Update Values" check box or Map# > 2000 and Map#<9999. In difference maps both scenarios may have 10.000 (a dry cell) in a particular cell. When one is subtracted from another an anomalous result of zero will occur. You want to exclude these dry cells from the difference calculation. Copy the map#'s you want to do subtraction on over to the new Map#'s (temporary) fields. In query builder new Map#<9999 subselect to exclude. Then use calculator to do the operation New Map# = New Map# - next new Map#.

Contouring Groundwater Levels in ArcView

The following step-by-step procedure can be used to create the contour shapefiles (using ArcView extension Spatial Analyst) needed for creating ArcView quality contour maps of a simulation's water levels in various formats. These might be depth to water (DTW), drawdown (or water level change maps from some particular time - generally the start time of the transient simulation (i.e. 1989 in the SRV model), difference maps, etc.

1) Open Mapping project in ArcView (e.g. Mapping.apr). The view should include shapefiles for the Wsrv perimeter, rivers, roads, CAP Canal, model boundary, and model grid layer point files (e.g. layer1pts.shp, layer2pts.shp, and layer3pts.shp). If not add in with new themes. The model boundary theme outline should be set to 2.0 and white. In Tables you should have your map file database table available (e.g. WC_Options.dbf). Ensure the Spatial Analyst extension is available.

2) Turn on the appropriate point layer shapefile you are mapping (i.e. - layer3pts.shp) to see that layer and ensure it is active (raised).

3) Open theme attribute table for layer3pts.shp.

4) Highlight layer of interest (i.e. - Layer 3 in Query Builder to select 5580 records in the appropriate layer) in the map file database table.

5) Join the "loc-tag" or "loc-lay" field of the map file (i.e.- WC_Options.dbf) to the Layer" field of "Attributes of Layer3pts.shp."

6) In Query builder turn on Update Values check box.

7) Select field Map# (the Map field you want to map). You should see the head or depth-to-water values. Set Map#<9999 as a new set. This will show the selected active cells in your view.

8) To generate contours go to the Analysis menu and Create contours. Output grid extent should be the same as layer #pts.shp (grid points). The output grid cell size should be 100 map units (specify meters). Depending on project, 250 may be okay but can be too choppy. The number of rows and columns will change depending on the output grid cell size setting.

9) Pick contouring algorithm Spline (possibly use IDW). The Z value field should equal the Map# (the map# you are currently processing).

10) The defaults for line weight (0.1), number of points (1), and type (tension) are normally used although number of points can be adjusted. ArcView Spatial Analyst draws the contours.

11) Contours are drawn. Choose contour interval (i.e.- 50 feet for most Wsrv maps such as head or depth-to-water maps; 10 to 50- foot for difference maps depending on the data range). This automatically creates a new contour shapefile "Contours of Layer#pts.shp" you can turn on.

12) Pull raised contour theme just created under Model boundary to hide outside (extraneous) contours. If not already on and active, turn on "Contours of Layer#pts.shp" theme by raising it. You will be editing the contour properties. Change contours to black in Color Pallette; line size is 0.1; Cap is butt and join is miter. Apply changes. Change size of text in pallette to make contour labels Arial and size 4 to 10.

13) Go to Theme properties to change source directory for filing the contour files. The analyst automatically brings up ctour1.shp if no previous ones exist in that save directory. Otherwise, it will pick the next available number. It is recommended a person go into the Comments box and type in descriptive information such as: "West Salt River Valley Groundwater Study, Depth to Water in the Year 2025, Middle Alluvial Unit, Scenario Option F." You can change the theme name in theme properties to something more descriptive for the legend (i.e. - Depth to Water from Ground Surface or Water Level Changes from 1989 to 2025).

14) Go to Theme menu and pick Auto-label. A menu pops up. In Label Field pick "Contour, "Find best label placement, remove duplicates, line label position options on, scale labels on, label only features in view extent on and pick okay. Note: Labels look small in View! Turn off layer #pts.shp and Srv Model Grid.shp to better see contours.

15) Can use select all graphics and delete if you don't like the displayed labels. Depends on how far zoomed in. Click on any labels you don't want (i.e. - outside the model boundary) and delete. In Edit menu you can select all graphics to grab all labels or you can window an area which will show boxes for the feature to be edited. You can click on a label to move it, copy one to place somewhere else using the Edit menu copy, moving it, and then paste. You can do the above and then relabel value using the Graphics properties dialog and/or rotate it (a positive # goes up and vice-versa). You can use the identify button to check the value of a particular contour. You can look at the attribute table. Be sure to save often!

16) To portray dry cells, initially join the map file to the grid layer# shapefile (i.e., MODFLOW_3.shp) on the fields containing the three digits (i.e., 35-32-3). Use query builder to select all dry cells (10.000) in the grid layer# shapefile (map#) you are processing. This will highlight those cells in your view (grid). Then convert these highlighted cells to get another shapefile (Theme Convert to Shapefile) which is added to the view. Name or rename to "Dry Cells#.shp (for whatever time period) and can recolor to gray.

17) For hydrograph point locations add the theme in and rename in Theme Properties. You can use autolabel.

18) Be sure to center your view and frame it the way you want it as this is how it will look in layout!

Layouts

19) Go to Layout and page setup. Pick landscape and margins at 0.

20) In view frame don't fill up the whole page but leave room for the legend, north arrow, etc.

21) Make the legend using the Legend frame.

22) Pick rectangle icon (neatline) and draw one on your layout. This puts a nice border in. Use 2 as an outline setting (fill) in symbol window. Pick Extent: Clip to View in most cases and Inset from margins.

23) Make titles by picking big "T" icon and size 14 Arial. Use text for the contour interval note.

24) For the scale bar, check view properties (set map units to meters for the UTM grid that the process is set in). The distance units can be anything but the Wsrv process uses miles. You can use the default intervals. You can resize it but if between grid ticks you may have to turn the snap to grid off.

25) Use the "T" button and make a note (size 7) of the Compilation Date: X/X/xxxx; File: C:\MODFLOW...\watermaps3.apr" or whatever and wherever you are storing the project file; and list the "Map#, ctour140.shp" as an example on the third line.

26) You can print a hardcopy. You can also export an EPS (encapsulated postscript) image file (possibly make a separate Image directiory) which can be sent to a plotter at 600 dpi.

Deepening Process Tracking Form for Scenario_____ Date_____

Save Path: _________

A) Start with two raw well and recharge files reflecting new assumptions: Well_out.dbf & Wsrvrec2.dbf

B) Convert (run Pump_out script) Well_out.dbf to Well1.wel (initial well file) and Wsrvrec2.dbf to recharg1.rch

Begin deepening Process: Run GMS MODFLOW first time

1) GMS Files: Scen____run1.*
   Scen____run1clipsp1.txt
   Scen____run1sp1.dbf
   Run "Deepen"
   Scen____Well_outsp1.dbf (copy)

2) Run "Pump_out" script to create Well2.wel Run GMS
   GMS Files: Scen____run2.*
   Scen____run2clipsp2.txt
   Scen____run2sp2.dbf
   Run "Deepen"
   Scen____Well_outsp2.dbf (copy)

3) Run "Pump_out" script to create Well3.wel Run GMS
   GMS Files: Scen____run3.*
   Scen____run3clipsp3.txt
   Scen____run3sp3.dbf
   Run "Deepen"
   Scen____Well_outsp3.dbf (copy)

4) Run "Pump_out" script to create Well4.wel Run GMS
   GMS Files: Scen____run4.*
   Scen____run4clipsp4.txt
   Scen____run4sp4.dbf
   Run "Deepen"
   Scen____Well_outsp4.dbf (copy)

5) Run "Pump_out" script to create Well5.wel Run GMS
   GMS Files: Scen____run5.*
   Scen____run5clipsp5.txt
   Scen____run5sp5.dbf
   Run "Deepen"
   Scen____Well_outsp5.dbf (copy)

Deepening Process Tracking Form for Scenario_____ Date_____

Save Path: _________

6) Run "Pump_out" script to create Well6.wel Run GMS
GMS Files: Scen____run6.*
Scen____run6clipsp6.txt
Scen____run6sp6.dbf
Run "Deepen"
Scen____Well_outsp6.dbf (copy)

7) Run "Pump_out" script to create Well7.wel Run GMS
GMS Files: Scen____run7.*
Scen____run7clipsp7.txt
Scen____run7sp7.dbf
Run "Deepen"
Scen____Well_outsp7.dbf (copy)

8) Run "Pump_out" script to create Well8.wel Run GMS
GMS Files: Scen____run8.*
Scen____run8clipsp8.txt
Scen____run8sp8.dbf
Run "Deepen"
Scen____Well_outsp8.dbf (copy)

9) Run "Pump_out" script to create Well9.wel Run GMS
GMS Files: Scen____run9.*
Scen____run9clipsp9.txt
Scen____run9sp9.dbf
Run "Deepen"
Scen____Well_outsp9.dbf (copy)

10) Run "Pump_out" script to create Well10.wel Run GMS
GMS Files: Scen____run10.*
Scen____run10clipsp10.txt
Scen____run10sp10.dbf
Run "Deepen"
Scen____Well_outsp10.dbf (copy)

11) Run "Pump_out" script to create **Final** Well11.wel well file (for 11 stress period models).
Run GMS to create final Scenario_____files

D. Supporting Data

References

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Tables

12. Residential Units for Basecase (for projected population at each five year increment)
13. Basecase Water Use Factors (for Municipal and Industrial Turf (GPHUD))
14. Basecase Water Budget, 1995
15. Basecase Water Budget, 2000
16. Basecase Water Budget, 2005
17. Basecase Water Budget, 2010
18. Basecase Water Budget, 2015
19. Basecase Water Budget, 2020
20. Basecase Water Budget, 2025

Basecase MODFLOW Input File Descriptions

TABLE 12. RESIDENTIAL UNITS FOR BASECASE

WSRV GROUNDWATER MODEL
RESIDENTIAL UNITS
FEB. 23, 2000 RUN

BASECASE		RESIDENTIAL UNITS							
WPA NAME	WPA NUMBER	1990	1995	2000	2005	2010	2015	2020	2025
SUN CITY WEST	1	13005	13860	17304	17304	17304	17304	17305	17305
ARIZONA WATER CO. WHITE T	3	678	721	963	1285	1721	2306	3090	4136
CITIZENS AGUA FRIA	4	2285	2611	11214	22235	35501	38982	42455	45934
EL MIRAGE WPA	5	3250	3462	3532	3561	3563	3611	3972	4338
SUN CITY WATER CO	6	24316	25917	27732	27732	27732	27732	27732	27732
LUKE AIR FORCE BASE WPA	7	38	39	39	41	46	47	50	53
AVONDALE (INMOD)	8	4169	4441	5199	5907	6105	8391	12570	16748
GLENDALE SRP	9	50702	54039	58257	62430	66616	70810	72668	72668
GLENDALE IM	10	12396	13166	15918	18654	21338	24073	24384	24384
GLENDALE OM	11	1079	1145	1387	1622	1856	2095	2123	2123
GLENDALE OUT OF SERVICE	12	2029	2162	2502	2985	3295	4057	5324	6599
GOODYEAR # 2	13	1397	1482	3314	6027	8648	12916	19881	26843
LPSCO	14	2355	2503	4755	8526	12282	16049	19810	23561
NORTH COUNTY	15	2	2	2	2	2	2	2	2
SURPRISE # 6	16	381	403	531	626	702	917	1670	2423
TOLLESON WPA	17	1263	1348	1432	1520	2278	2492	2725	2954
HASSAYAMPA BASIN WPA	20	1517	1586	2088	2821	3733	5218	8673	12113
RAINBOW VALLEY WPA	21	47	48	93	179	295	746	1914	2901
GILBERT-SRP WPA	22	18147	19341	31137	35075	41511	45820	50699	55570
GILBERT-RWCD WPA	23	1703	1812	4886	7759	14153	17975	23092	28209
CAVE CREEK WPA	24	123	130	186	271	370	584	707	831
GILA RIVER WPA	25	689	757	762	767	823	849	900	966
QUEEN CREEK	26	1083	1147	1722	2738	3758	4751	5788	6825
GILBERT WPA	27	182	193	264	1428	2778	4481	7390	10298
APACHE JUNCTION WPA	28	7	7	17	21	27	30	31	33
GROUND WATER (INMOD) WPA	29	3334	3534	5457	7301	9296	11259	15554	19857
GROUND WATER (OUTMOD) WPA	30	1209	1253	1761	2443	3610	4636	8152	11692
SCOTTSDALE (INMOD) WPA	31	37423	39890	51703	62579	69312	74749	77262	79773
SCOTTSDALE (OUTMOD) WPA	32	3909	4158	7197	14355	21797	28379	32386	36394
GUADALUPE WPA	33	1182	1258	1309	1358	1375	1375	1377	1379
TEMPE WPA	34	3225	3434	4223	4778	5548	7053	7502	7951
TEMPE SRP WPA	35	55257	58906	63031	64892	65712	67128	67546	67965
CHANDLER RWCD WPA	36	1118	1189	2777	4408	6219	9574	13623	17671
CHANDLER SRP WPA	37	43998	46900	57174	65305	71521	74374	77530	80684
CHANDLER WPA	38	13	14	25	25	34	34	34	34
MESA WPA	39	41819	44564	58444	77892	97058	106481	114131	121784
MESA RWCD WPA	40	13519	14409	16584	18193	21289	21609	23304	24996
MESA SRP WPA	41	84885	90481	95717	98809	101136	102228	104290	106339
CAREFREE (INMOD) WPA	42	8	8	11	13	17	19	20	22
CAREFREE (OUTMOD) WPA	43	1102	1174	1541	1838	2490	2714	2933	3152
PEORIA # 3	44	7	7	8	257	678	1703	3826	5901
BUCKEYE IM	45	2091	2218	2679	3426	4080	7455	12599	17742
BUCKEYE OM	46	155	160	177	181	265	657	2020	3374
PARADISE VALLEY (INMOD) W	47	2434	2593	2698	2698	2698	2698	2698	2698
AVONDALE (OUTMOD) WPA	48	13	14	34	74	159	170	190	209
PARADISE VALLEY (OUTMOD)	49	2519	2681	2865	2865	2865	2865	2865	2865
PHOENIX	50	192233	204886	244625	275917	314976	349373	383664	418001
FOUNTAIN HILLS WPA	57	5683	6053	8113	11391	15412	23385	24387	25394
CAVE CREEK (OUTMOD) WPA	58	1109	1174	1637	2546	3736	4590	5200	5800

TABLE 12. RESIDENTIAL UNITS FOR BASECASE (continued)

WSRV GROUNDWATER MODEL
RESIDENTIAL UNITS
FEB. 23, 2000 RUN

BASECASE WPA NAME	RESIDENTIAL UNITS								
	WPA NUMBER	1990	1995	2000	2005	2010	2015	2020	2025
RWCD WPA	60	303	322	578	1077	1753	2723	3400	4084
PEORIA SRP	63	16576	17663	20798	26690	27311	27341	27364	27384
PHOENIX SRP	65	229764	244924	262208	276763	286255	298539	311622	324694
SCOTTSDALE SRP	66	32562	34713	36998	37003	37003	37005	37005	37005
SUN LAKES WPA	67	5096	5432	8142	10693	12162	13986	17010	20032
AVONDALE-SRP (INMOD) WPA	68	2825	3008	4137	4663	6190	7992	15033	22072
MARICOPA EAST	70	0	0	0	1	5	7	9	10
PEORIA - YAV CO	71	0	0	0	10	20	31	41	41
PEORIA # 5	73	417	445	672	2449	4383	6910	10022	13129
WEST END	74	256	664	696	720	744	800	984	1152
PEORIA # 6	75	0	0	18	654	1351	1718	2399	3078
SUNRISE	76	544	580	1080	2160	2640	2740	2740	2740
PEORIA # 2A	77	9263	10539	15625	25651	32203	42545	46019	48899
BUCKEYE SOUTH	79	0	0	0	75	368	1673	4526	7386
SURPRISE # 1	80	11	11	428	498	498	498	523	548
SURPRISE # 2	81	11	11	219	226	226	226	300	378
CITIZENS AGUA FRIA # 2	82	662	703	1823	3450	3579	3701	4046	4394
UNKNOWN	83	0	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	23	25	25	25	25	76	159	243
WEST MARICOPA COMBINE 87	87	4	4	4	4	4	13	25	39
WEST MARICOPA COMBINE 88	88	5	5	5	5	5	7	7	9
WEST MARICOPA COMBINE 89	89	0	0	14	44	68	105	217	327
WEST MARICOPA COMBINE 90	90	10	10	10	10	11	16	19	25
WEST MARICOPA COMBINE 91	91	3	3	3	3	3	4	5	6
WEST MARICOPA COMBINE 92	92	980	1042	1270	1502	1825	2451	3756	5060
GOODYEAR OUTSIDE	94	145	154	860	1861	2794	3728	4659	5604
WEST MARICOPA COMBINE 95	95	3	3	3	3	4	8	26	45
GOODYEAR # 3	96	614	645	3644	7859	11815	15755	19715	23691
GOODYEAR # 4	97	32	32	177	416	655	864	1080	1284
PEORIA # 2	98	98	103	2026	5629	7576	8787	9175	9175
SURPRISE # 5	99	425	446	458	484	501	593	797	998
SURPRISE # 3	100	157	165	265	509	724	1025	1688	2346
SURPRISE # 10	102	18	19	21	24	26	29	35	41
SURPRISE # 11	103	0	0	1	2	2	3	5	7
SURPRISE # 12	104	0	0	1	3	4	6	10	13
SURPRISE # 4	105	49	49	120	226	284	412	742	1070
SURPRISE # 7	106	0	0	0	52	223	224	1553	1553
SURPRISE # 8	108	66	70	192	258	369	586	908	1233
SURPRISE # 9	109	21	23	27	28	30	40	58	77
SURPRISE # 13	110	16	17	20	24	25	32	60	88
WMC TONOPAH	201	106	111	210	327	423	593	978	1355
OUTSIDE	999	4700	5007	7318	10155	12091	15168	20738	26259
	TOTAL	946853	1010228	1195122	1377296	1553898	1715706	1887506	2054800

TABLE 13. BASECASE WATER USE FACTORS

WSRV GROUNDWATER MODEL
GALLONS PER HOUSEHOLD UNIT PER DAY (GPHUD)
FEB. 23, 2000 RUN
BASECASE

WPA NAME	WPA NUMBER	MUNICIPAL GPHUD	INDUSTRIAL TURF GPHUD
SUN CITY WEST	1	374	0
ARIZONA WATER CO. WHITE TANKS	3	453	0
CITIZENS AGUA FRIA	4	380	190
EL MIRAGE WPA	5	329	52
SUN CITY WATER CO	6	414	0
LUKE AIR FORCE BASE WPA	7	303	0
AVONDALE (INMOD)	8	575	54
GLENDALE SRP	9	534	0
GLENDALE IM	10	897	0
GLENDALE OM	11	897	0
GLENDALE OUT OF SERVICE	12	3142	0
GOODYEAR # 2	13	829	209
LPSCO	14	495	201
NORTH COUNTY	15	283	132
SURPRISE # 6	16	393	0
TOLLESON WPA	17	1137	216
HASSAYAMPA BASIN WPA	20	277	130
RAINBOW VALLEY WPA	21	382	179
GILBERT-SRP WPA	22	626	179
GILBERT-RWCD WPA	23	626	179
CAVE CREEK WPA	24	284	137
GILA RIVER WPA	25	398	186
QUEEN CREEK	26	693	359
GILBERT WPA	27	626	179
APACHE JUNCTION WPA	28	0	0
GROUND WATER (INMOD) WPA	29	398	186
GROUND WATER (OUTMOD) WPA	30	398	186
SCOTTSDALE (INMOD) WPA	31	591	50
SCOTTSDALE (OUTMOD) WPA	32	591	50
GUADALUPE WPA	33	620	40
TEMPE WPA	34	620	40
TEMPE SRP WPA	35	620	40
CHANDLER RWCD WPA	36	610	73
CHANDLER SRP WPA	37	610	73
CHANDLER WPA	38	610	73
MESA WPA	39	378	30
MESA RWCD WPA	40	378	30
MESA SRP WPA	41	378	30
CAREFREE (INMOD) WPA	42	1017	215
CARLFREE (OUTMOD) WPA	43	1017	215
PEORIA # 3	44	486	114
BUCKEYE IM	45	424	0
BUCKEYE OM	46	424	0
PARADISE VALLEY (INMOD) W	47	2134	0
AVONDALE (OUTMOD) WPA	48	575	54
PARADISE VALLEY (OUTMOD)	49	2134	0
PHOENIX	50	563	42
FOUNTAIN HILLS WPA	57	483	131
CAVE CREEK (OUTMOD) WPA	58	284	137
RWCD WPA	60	398	186
PEORIA SRP	63	486	114
PHOENIX SRP	65	563	42
SCOTTSDALE SRP	66	591	50

TABLE 13. BASECASE WATER USE FACTORS (continued)

WSRV GROUNDWATER MODEL
GALLONS PER HOUSEHOLD UNIT PER DAY (GPHUD)
FEB 23, 2000 RUN
BASECASE

WPA NAME	WPA NUMBER	MUNICIPAL GPHUD	INDUSTRIAL TURF GPHUD
SUN LAKES WPA	67	553	0
AVONDALE-SRP (INMOD) WPA	68	575	54
MARICOPA EAST	70	398	186
PEORIA - YAV CO	71	486	114
PEORIA # 5	73	486	114
WEST END	74	350	0
PEORIA # 6	75	486	114
SUNRISE	76	420	0
PEORIA # 2A	77	486	114
BUCKEYE SOUTH	79	424	0
SURPRISE # 1	80	393	0
SURPRISE # 2	81	393	0
CITIZENS AGUA FRIA # 2	82	380	190
UNKNOWN	83	0	0
WEST MARICOPA COMBINE 85	85	557	0
WEST MARICOPA COMBINE 86	86	557	0
WEST MARICOPA COMBINE 87	87	557	0
WEST MARICOPA COMBINE 88	88	557	0
WEST MARICOPA COMBINE 89	89	557	0
WEST MARICOPA COMBINE 90	90	557	0
WEST MARICOPA COMBINE 91	91	557	0
WEST MARICOPA COMBINE 92	92	557	0
GOODYEAR OUTSIDE	94	829	209
WEST MARICOPA COMBINE 95	95	557	0
GOODYEAR # 3	96	829	209
GOODYEAR # 4	97	829	209
PEORIA # 2	98	486	114
SURPRISE # 5	99	393	0
SURPRISE # 3	100	393	0
SURPRISE # 10	102	393	0
SURPRISE # 11	103	393	0
SURPRISE # 12	104	393	0
SURPRISE # 4	105	393	0
SURPRISE # 7	106	393	0
SURPRISE # 8	108	393	0
SURPRISE # 9	109	393	0
SURPRISE # 13	110	393	0
WMC TONOPAH	201	557	0
OUTSIDE	999	398	186

TABLE 14. BASECASE WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995 - RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO.	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
LPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
HASSAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
CAVE CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUND WATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 14. BASECASE WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB. 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP (INMOD) WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
CITIZENS AGUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMC TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 15. BASECASE WATER BUDGET, 2000

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR # 2	13	7619	0	0	0	0	0	7619
LPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
GILA RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUND WATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39978	0	0	39978	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 15. BASECASE WATER BUDGET, 2000 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP (INMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA # 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA # 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	188	0	0	0	0	0	188
SURPRISE # 2	81	96	0	0	0	0	0	96
CITIZENS AGUA FRIA # 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	198	0	0	0	0	0	198
PEORIA # 2	98	1349	0	0	1349	0	0	0
SURPRISE # 5	99	202	0	0	0	0	0	202
SURPRISE # 3	100	117	0	0	0	0	0	117
SURPRISE # 10	102	9	0	0	0	0	0	9
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	53	0	0	0	0	0	53
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	85	0	0	0	0	0	85
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	9	0	0	0	0	0	9
WMC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 16. BASECASE WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR # 2	13	15675	0	0	0	0	0	15675
LPSCO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27990	19593	8397	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
GILA RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUND WATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA # 3	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 16. BASECASE WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (INMOD) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA # 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA # 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA # 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	476	0	0	0	0	0	476
PEORIA # 2	98	3771	0	0	3771	0	0	0
SURPRISE # 5	99	213	0	0	0	0	0	213
SURPRISE # 3	100	224	0	0	0	0	0	224
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	1	0	0	0	0	0	1
SURPRISE # 4	105	99	0	0	0	0	0	99
SURPRISE # 7	106	23	0	0	0	0	0	23
SURPRISE # 8	108	114	0	0	0	0	0	114
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL AF/YR		881536	273856	105979	267458	6577	2477	225189

TABLE 17. BASECASE WATER BUDGET, 2010.

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	873	0	0	0	0	0	873
CITIZENS AGUA FRIA	4	22182	0	0	0	0	0	22182
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	23306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	0	0	0	11597
GOODYEAR # 2	13	23322	0	0	0	0	0	23322
LPSCO	14	9045	0	0	0	0	0	9045
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	309	0	0	0	0	0	309
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
QUEEN CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	5387	0	0	0	0	0	5387
GROUND WATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA # 3	44	455	0	0	0	0	0	455
BUCKEYE IM	45	1938	0	0	0	0	0	1938
BUCKEYE OM	46	126	0	0	0	0	0	126
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160000	8100	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 17. BASECASE WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (INMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAV CO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	0	0	0	2893
WEST END	74	292	0	0	0	0	0	292
PEORIA # 6	75	908	0	0	0	0	0	908
SUNRISE	76	1242	0	0	0	0	0	1242
PEORIA # 2A	77	20461	0	0	0	0	0	20461
BUCKEYE SOUTH	79	174	0	0	0	0	0	174
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2144	0	0	0	0	0	2144
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	42	0	0	0	0	0	42
WEST MARICOPA COMBINE 90	90	7	0	0	0	0	0	7
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1139	0	0	0	0	0	1139
GOODYEAR OUTSIDE	94	3215	0	0	0	0	0	3215
WEST MARICOPA COMBINE 95	95	3	0	0	0	0	0	3
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	754	0	0	0	0	0	754
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	0	0	0	221
SURPRISE # 3	100	319	0	0	0	0	0	319
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	2	0	0	0	0	0	2
SURPRISE # 4	105	125	0	0	0	0	0	125
SURPRISE # 7	106	98	0	0	0	0	0	98
SURPRISE # 8	108	162	0	0	0	0	0	162
SURPRISE # 9	109	13	0	0	0	0	0	13
SURPRISE # 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	264	0	0	0	0	0	264
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL AF/YR		1005820	292076	111530	270884	12409	35595	283326

TABLE 18. BASECASE WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1170	0	0	0	0	0	1170
CITIZENS AGUA FRIA	4	24404	0	0	0	0	0	24404
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	0	0	0	14279
GOODYEAR # 2	13	32867	0	0	0	0	0	32867
LPSCO	14	11982	0	0	0	0	0	11982
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	404	0	0	0	0	0	404
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37689	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
GILA RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUND WATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA # 3	44	1144	0	0	0	0	0	1144
BUCKEYE IM	45	3541	0	0	0	0	0	3541
BUCKEYE OM	46	312	0	0	0	0	0	312
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151900	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 18. BASECASE WATER BUDGET, 2015 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (UNMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAV CO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	0	0	0	4591
WEST END	74	314	0	0	0	0	0	314
PEORIA # 6	75	1155	0	0	0	0	0	1155
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	27412	0	0	0	0	0	27412
BUCKEYE SOUTH	79	794	0	0	0	0	0	794
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2222	0	0	0	0	0	2222
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	0	0	0	47
WEST MARICOPA COMBINE 87	87	8	0	0	0	0	0	8
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	66	0	0	0	0	0	66
WEST MARICOPA COMBINE 90	90	10	0	0	0	0	0	10
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1529	0	0	0	0	0	1529
GOODYEAR OUTSIDE	94	4301	0	0	0	0	0	4301
WEST MARICOPA COMBINE 95	95	5	0	0	0	0	0	5
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	0	0	0	997
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	0	0	0	261
SURPRISE # 3	100	451	0	0	0	0	0	451
SURPRISE # 10	102	13	0	0	0	0	0	13
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	3	0	0	0	0	0	3
SURPRISE # 4	105	181	0	0	0	0	0	181
SURPRISE # 7	106	99	0	0	0	0	0	99
SURPRISE # 8	108	258	0	0	0	0	0	258
SURPRISE # 9	109	18	0	0	0	0	0	18
SURPRISE # 13	110	14	0	0	0	0	0	14
WMIC TONOPAH	201	370	0	0	0	0	0	370
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL AF/YR		1122720	308322	115415	263747	15641	67707	351888

TABLE 19. BASECASE WATER BUDGET, 2020.

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1568	0	0	0	0	0	1568
CITIZENS AGUA FRIA	4	26622	0	0	0	0	0	26622
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR = 2	13	45570	0	0	0	0	0	45570
UPSCO	14	14915	0	0	0	0	0	14915
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE = 6	16	735	0	0	0	0	0	735
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
HASSAYAMPA BASIN WPA	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
GILA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GILBERT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUND WATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA = 3	44	2571	0	0	0	0	0	2571
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 19. BASECASE WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (NMOD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	0	0	0	386
PEORIA # 6	75	1612	0	0	0	0	0	1612
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	29747	0	0	0	0	0	29747
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE # 1	80	230	0	0	0	0	0	230
SURPRISE # 2	81	132	0	0	0	0	0	132
CITIZENS AGUA ERIA # 2	82	2443	0	0	0	0	0	2443
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	0	0	0	135
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5383	0	0	0	0	0	5383
WEST MARICOPA COMBINE 95	95	16	0	0	0	0	0	16
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	0	0	0	1248
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	0	0	0	351
SURPRISE # 3	100	743	0	0	0	0	0	743
SURPRISE # 10	102	15	0	0	0	0	0	15
SURPRISE # 11	103	2	0	0	0	0	0	2
SURPRISE # 12	104	4	0	0	0	0	0	4
SURPRISE # 4	105	327	0	0	0	0	0	327
SURPRISE # 7	106	684	0	0	0	0	0	684
SURPRISE # 8	108	400	0	0	0	0	0	400
SURPRISE # 9	109	26	0	0	0	0	0	26
SURPRISE # 13	110	26	0	0	0	0	0	26
WMC HONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL AF/YR		1246600	326734	120599	255191	18041	98487	427748

TABLE 20. BASECASE WATER BUDGET, 2025.

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025. RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	2099	0	0	0	0	0	2099
CITIZENS AGUA FRIA	4	28843	0	0	0	0	0	28843
EL MIRAGE WPA	5	1662	0	0	0	0	0	1662
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	18	0	0	0	0	0	18
AVONDALE (INMOD)	8	11694	0	0	0	0	0	11694
GLENDALE SRP	9	43469	30428	13041	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	23226	0	0	0	0	0	23226
GOODYEAR # 2	13	58288	0	0	0	0	0	58288
LPSCO	14	17839	0	0	0	0	0	17839
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	1067	0	0	0	0	0	1067
TOLLESON WPA	17	4172	2920	1252	0	0	0	0
HASSAYAMPA BASIN WPA	20	5302	0	0	0	0	0	5302
RAINBOW VALLEY WPA	21	1813	0	0	0	0	0	1813
GILBERT-SRP WPA	22	46472	32539	13942	0	0	0	0
GILBERT-RWCD WPA	23	25096	0	0	4800	0	0	20296
CAVE CREEK WPA	24	373	0	0	0	0	200	173
GILA RIVER WPA	25	489	0	0	0	0	0	489
QUEEN CREEK	26	7607	0	0	0	0	0	7607
GILBERT WPA	27	9250	0	0	200	0	0	9050
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	12296	0	0	0	0	0	12296
GROUND WATER (OUTMOD) WPA	30	7397	0	0	0	0	0	7397
SCOTTSDALE (INMOD) WPA	31	81099	0	0	64000	0	0	17099
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	967	0	0	967	0	0	0
TEMPE WPA	34	5734	5734	0	0	0	0	0
TEMPE SRP WPA	35	47773	0	0	4400	0	0	43373
CHANDLER RWCD WPA	36	13429	0	0	3125	0	0	10304
CHANDLER SRP WPA	37	58133	40693	17440	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	54255	0	0	0	0	0	54255
MESA RWCD WPA	40	10970	0	0	10970	0	0	0
MESA SRP WPA	41	45748	32024	13724	0	0	0	0
CAREFREE (INMOD) WPA	42	28	0	0	0	0	0	28
CAREFREE (OUTMOD) WPA	43	4085	0	0	0	0	0	4085
PEORIA # 3	44	3965	0	0	0	0	0	3965
BUCKEYE IM	45	8427	0	0	0	0	0	8427
BUCKEYE OM	46	1602	0	0	0	0	0	1602
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	274243	0	0	142300	14600	117343	0
FOUNTAIN HILLS WPA	57	16632	0	0	0	0	0	16632
CAVE CREEK (OUTMOD) WPA	58	2565	0	0	0	0	0	2565

TABLE 20. BASECASE WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN BASECASE	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2609	0	0	0	0	18	2591
PEORIA SRP	63	16288	11402	4886	0	0	0	0
PHOENIX SRP	65	209241	160463	48778	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	12409	0	0	0	0	0	12409
AVONDALE-SRP (INMOD) WPA	68	15381	10767	4614	0	0	0	0
MARICOPA EAST	70	7	0	0	0	0	0	7
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	8771	0	0	0	0	0	8771
WEST END	74	452	0	0	0	0	0	452
PEORIA # 6	75	2069	0	0	0	0	0	2069
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	31683	0	0	0	0	0	31683
BUCKEYE SOUTH	79	3508	0	0	0	0	0	3508
SURPRISE # 1	80	241	0	0	0	0	0	241
SURPRISE # 2	81	166	0	0	0	0	0	166
CITIZENS AGUA FRIA # 2	82	2665	0	0	0	0	0	2665
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	152	0	0	0	0	0	152
WEST MARICOPA COMBINE 87	87	24	0	0	0	0	0	24
WEST MARICOPA COMBINE 88	88	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 89	89	204	0	0	0	0	0	204
WEST MARICOPA COMBINE 90	90	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 91	91	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 92	92	3157	0	0	0	0	0	3157
GOODYEAR OUTSIDE	94	6482	0	0	0	0	0	6482
WEST MARICOPA COMBINE 95	95	28	0	0	0	0	0	28
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1486	0	0	0	0	0	1486
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	439	0	0	0	0	0	439
SURPRISE # 3	100	1033	0	0	0	0	0	1033
SURPRISE # 10	102	18	0	0	0	0	0	18
SURPRISE # 11	103	3	0	0	0	0	0	3
SURPRISE # 12	104	6	0	0	0	0	0	6
SURPRISE # 4	105	471	0	0	0	0	0	471
SURPRISE # 7	106	684	0	0	0	0	0	684
SURPRISE # 8	108	543	0	0	0	0	0	543
SURPRISE # 9	109	34	0	0	0	0	0	34
SURPRISE # 13	110	39	0	0	0	0	0	39
WMC TONOPAH	201	845	0	0	0	0	0	845
OUTSIDE	999	16200	0	0	0	0	0	16200
TOTAL AF/YR		1367779	344284	125101	255966	19641	120157	502630

Basecase - GMS MODFLOW Input Files

The following section describes each of the GMS MODFLOW input files used for the Basecase simulation. The input files for the former Basecase simulation (Scenario 17), except for some changed assumptions reflected in the new well and recharge input files (unique to the February 2000 revised Basecase), were renamed and used. Differences in input options between the revised Basecase and CTA models are also explained.

Scen23Drun1.bas; the basic package file. Eleven stress periods were specified to the year 2100. Stress periods 8, 9, and 10 used 100 time steps (each is one-month in duration) and stress period 11 uses 912 (one-month duration each) time steps. Time steps were the same as for the CTA in the first seven stress periods. Eighty additional time steps in stress periods 8 through 10 (above the 20 time steps in CTA) were added for a smooth monthly transition from year 2010 through 2100. This also helped to overcome solver convergence problems when the eleven stress period model was created. All IUNIT array index and unit numbers are identical between the CTA and Basecase basic packages.

The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Basecase basic package options used are: (1) -8989.89 to display no-flow (inactive) cells in the output; (2) save starting heads was enabled; (3) Time unit was in days; and, (4) cells (layer-row-column) 2-21-40, 2-35-47, 2-35-48, and 2-36-48 were changed to IBOUND codes of 2 (layer 2 active) and starting heads (from 0.0 in the CTA) of 770, 1060, 1070, and 1070 respectively. The CTA used 0.0 to flag inactive cells in the output, starting heads were also enabled and CTA time was also in days. The four cells in CTA had IBOUND codes of 0 (inactive) and starting heads of 0 feet elevation. The reasons for changing these four cells in Basecase are discussed under the QA/QC Appendix section.

Scen23Drun1.bcf; the block-centered flow (BCF3) package file. This input package file was the same as the CTA BCF3 file except for the additional eleventh stress period added for the Basecase/revised Basecase, and that CTA used 0.0 as head assigned to flag dry cells. Basecase and CTA options used (except the dry cell flag used for CTA of 0.0) were: (1) Transient simulation; (2) CCF saved to unit 39; (3) 9999.99 to display head assigned to dry cells in the Basecase output; this flag is used in the well deepening scripts; (4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH); (5) interblock transmissivity by harmonic mean; (6) anisotropy factor of 1.0; and, (7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between confined /unconfined (type 3). Transmissivity changes in type 3.

Scen23Drun1.oc: the output control package file. The output control file was setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model. The ADWR CTA output control file was configured to print heads and drawdowns only for stress periods 4 through 10. Cell by cell terms were not saved or printed except at the end of stress period 10 in the CTA.

Scen23Drun1.et: the evapotranspiration package file. Identical to the CTA E-T file except for the additional eleventh stress period. Stress period 11 uses the stress period 10 E-T rates. Options used were: (1) Applied to top layer only; (2) CCF output to Unit 39; and, (3) ET elevation multiplier is 1.0, maximum E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen23Drun1.riv: the river package file. Identical to the CTA river file except for the additional eleventh stress period. Stress period 11 uses the stress period 10 river stage elevations, river bed elevations, and conductances. Only applicable for layer one. The option used was CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River, and the Gila River are simulated using the River package.

Well1.wel: the well package file. This was the eleven stress period MODFLOW compatible well input file used in the first Basecase interim run during the deepening process. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. Therefore, it reflected the changed demand assumptions unique to the revised Basecase. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files were well2.wel, well3.well and so forth to well10.wel. Except in those areas (cells) which were changed by varying pumping assumptions of the Basecase, stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms were saved to Unit 39. As is customary and like the CTA model, well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values. The CTA well file had 10 stress periods.

Recharg23D.rch: the recharge package file. This was the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions fileWsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process, the ArcView converted recharge file (e.g., recharg23D.rch) was not altered in interim MODFLOW runs from stress period to stress period. It was input once at the beginning of a simulation whether deepened or not. Although many areas (cells) were changed by varying recharge assumptions of the Basecase, stress period eleven recharge data would otherwise be the same as stress period ten data without a change in recharge assumptions. Although recharge rates and/or locations vary between the Basecase and CTA, the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells was the same.

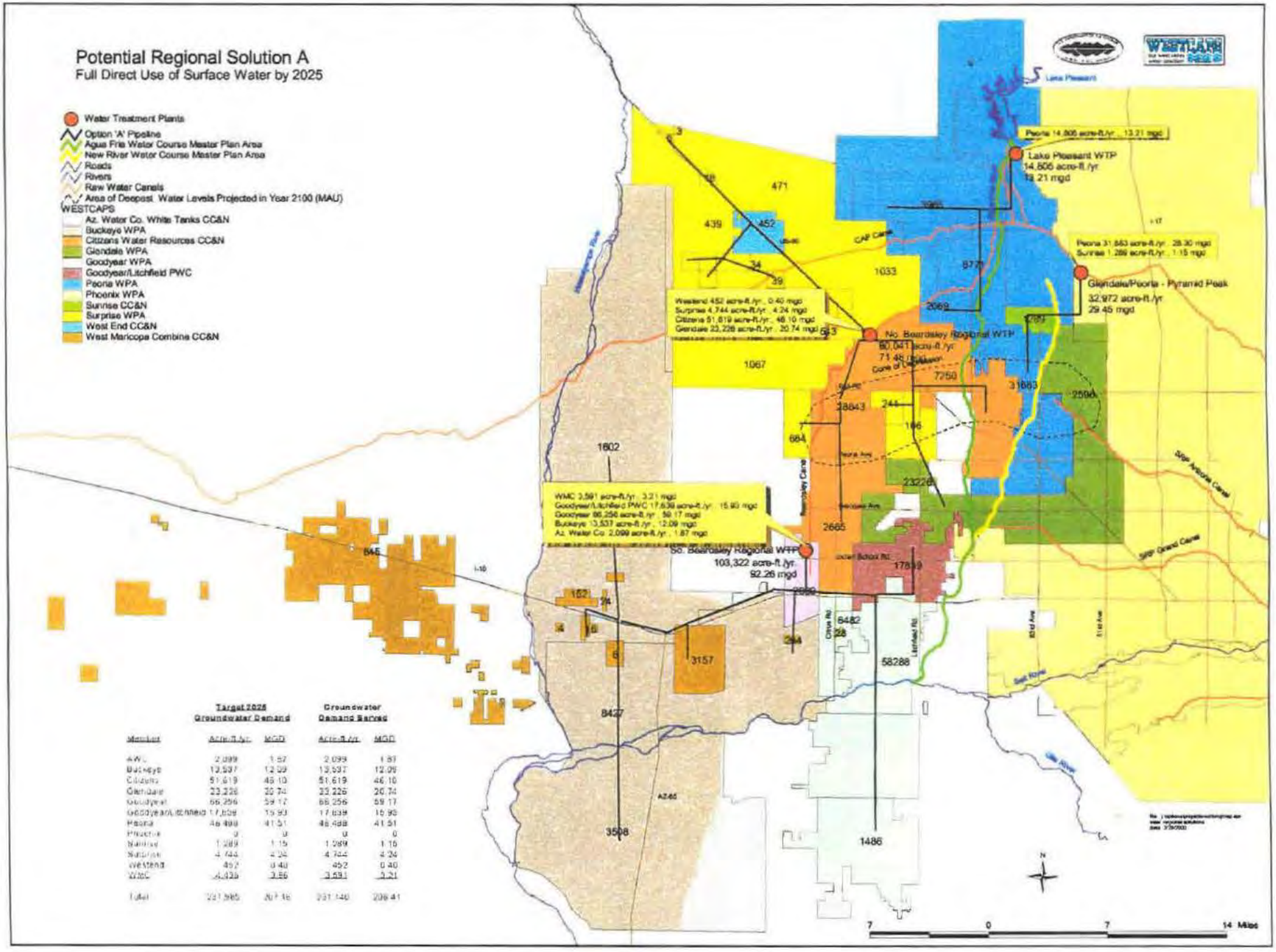
Scen23Drun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in the Basecase was the same used for the CTA

simulation *for comparison reasons*. The parameter options used in the CTA and Basecase models were: (1) Maximum number of iterations per time step for convergence is 100 (200 for the Basecase): (2) the acceleration parameter is 1.0; (3) the head change criterion for convergence is 0.5 feet; and, (4) print-out interval flag is zero.

Figure 25. Potential Regional Solution A - Infrastructure Layout

Tables

GMS MODFLOW Input File Descriptions



Member	Target 2025 Groundwater Demand Acre-ft./yr.	MGD	Groundwater Demand Served Acre-ft./yr.	MGD
AWC	2,099	1.87	2,099	1.87
Buckeye	13,537	12.09	13,537	12.09
Citizens	51,619	46.10	51,619	46.10
Glendale	23,226	20.74	23,226	20.74
Goodyear	66,256	59.17	66,256	59.17
Goodyear/Litchfield	17,839	15.93	17,839	15.93
Peoria	46,488	41.51	46,488	41.51
Phoenix	0	0	0	0
Sunrise	1,289	1.15	1,289	1.15
Surprise	4,744	4.24	4,744	4.24
Westend	452	0.40	452	0.40
WMC	3,439	3.86	3,691	3.21
Total	231,585	207.16	231,140	206.41

Figure 25

TABLE 21. SOLUTION A WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION A. 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
TPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
HASSAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
CAVE CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUND WATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 21. SOLUTION A WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A: 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP (INMOD) WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
CITIZENS AGUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMC TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL - AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 22. SOLUTION A WATER BUDGET, 2000.

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR + 2	13	7619	0	0	0	0	0	7619
IPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
GILA RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUND WATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39978	0	0	39978	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA + 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 22. SOLUTION A WATER BUDGET, 2000 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP (INMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA # 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA # 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	188	0	0	0	0	0	188
SURPRISE # 2	81	96	0	0	0	0	0	96
CITIZENS AGUA FRIA # 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	198	0	0	0	0	0	198
PEORIA # 2	98	1349	0	0	1349	0	0	0
SURPRISE # 5	99	202	0	0	0	0	0	202
SURPRISE # 3	100	117	0	0	0	0	0	117
SURPRISE # 10	102	9	0	0	0	0	0	9
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	53	0	0	0	0	0	53
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	85	0	0	0	0	0	85
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	9	0	0	0	0	0	9
WMC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL - AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 23. SOLUTION A WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A. 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR # 2	13	15675	0	0	0	0	0	15675
LPSCO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27990	19593	8397	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
GILA RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUND WATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA # 3	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 23. SOLUTION A WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (INMOD) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA # 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA # 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA # 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	476	0	0	0	0	0	476
PEORIA # 2	98	3771	0	0	3771	0	0	0
SURPRISE # 5	99	213	0	0	0	0	0	213
SURPRISE # 3	100	224	0	0	0	0	0	224
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	1	0	0	0	0	0	1
SURPRISE # 4	105	99	0	0	0	0	0	99
SURPRISE # 7	106	23	0	0	0	0	0	23
SURPRISE # 8	108	114	0	0	0	0	0	114
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL - AF/YR		881536	273856	105979	267458	6577	2477	225189

TABLE 24. SOLUTION A WATER BUDGET, 2010

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	7250	0	0	0
ARIZONA WATER CO. W. TANKS	3	873	0	0	873	0	0	0
CITIZENS AGUA FRIA	4	22182	0	0	22182	0	0	0
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	12861	0	0	0
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	23306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	11597	0	0	0
GOODYEAR # 2	13	23322	0	0	23322	0	0	0
LPSCO	14	9045	0	0	9045	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	309	0	0	309	0	0	0
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
QUEEN CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	5387	0	0	0	0	0	5387
GROUNDWATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA # 3	44	455	0	0	455	0	0	0
BUCKEYE IM	45	1938	0	0	1938	0	0	0
BUCKEYE OM	46	126	0	0	126	0	0	0
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160900	8100	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 24. SOLUTION A WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (INMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAV CO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	2893	0	0	0
WEST END	74	292	0	0	292	0	0	0
PEORIA # 6	75	908	0	0	908	0	0	0
SUNRISE	76	1242	0	0	1242	0	0	0
PEORIA # 2A	77	20461	0	0	20461	0	0	0
BUCKEYE SOUTH	79	174	0	0	174	0	0	0
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA FRIA # 2	82	2144	0	0	2144	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	16	0	0	0
WEST MARICOPA COMBINE 87	87	2	0	0	2	0	0	0
WEST MARICOPA COMBINE 88	88	3	0	0	3	0	0	0
WEST MARICOPA COMBINE 89	89	42	0	0	42	0	0	0
WEST MARICOPA COMBINE 90	90	7	0	0	7	0	0	0
WEST MARICOPA COMBINE 91	91	2	0	0	2	0	0	0
WEST MARICOPA COMBINE 92	92	1139	0	0	1139	0	0	0
GOODYEAR OUTSIDE	94	3215	0	0	3215	0	0	0
WEST MARICOPA COMBINE 95	95	3	0	0	3	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	754	0	0	754	0	0	0
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	221	0	0	0
SURPRISE # 3	100	319	0	0	319	0	0	0
SURPRISE # 10	102	11	0	0	11	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	2	0	0	2	0	0	0
SURPRISE # 4	105	125	0	0	125	0	0	0
SURPRISE # 7	106	98	0	0	98	0	0	0
SURPRISE # 8	108	162	0	0	162	0	0	0
SURPRISE # 9	109	13	0	0	13	0	0	0
SURPRISE # 13	110	11	0	0	11	0	0	0
WMC TONOPAH	201	264	0	0	264	0	0	0
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL - AF/YR		1005820	292076	111530	395684	12409	35595	158526

TABLE 25. SOLUTION A WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	7250	0	0	0
ARIZONA WATER CO W TANKS	3	1170	0	0	1170	0	0	0
CITIZENS AGUA FRIA	4	24404	0	0	24404	0	0	0
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO	6	12861	0	0	12861	0	0	0
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	14279	0	0	0
GOODYEAR + 2	13	32867	0	0	32867	0	0	0
H,PSCO	14	11982	0	0	11982	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	404	0	0	404	0	0	0
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37680	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
GILA RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUNDWATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA + 3	44	1144	0	0	1144	0	0	0
BUCKEYE IM	45	3541	0	0	3541	0	0	0
BUCKEYE OM	46	312	0	0	312	0	0	0
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151909	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 25. SOLUTION A WATER BUDGET, 2015 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (INMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAV CO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	4591	0	0	0
WEST END	74	314	0	0	314	0	0	0
PEORIA # 6	75	1155	0	0	1155	0	0	0
SUNRISE	76	1289	0	0	1289	0	0	0
PEORIA # 2A	77	27412	0	0	27412	0	0	0
BUCKEYE SOUTH	79	794	0	0	794	0	0	0
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA FRIA # 2	82	2222	0	0	2222	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	47	0	0	0
WEST MARICOPA COMBINE 87	87	8	0	0	8	0	0	0
WEST MARICOPA COMBINE 88	88	4	0	0	4	0	0	0
WEST MARICOPA COMBINE 89	89	66	0	0	66	0	0	0
WEST MARICOPA COMBINE 90	90	10	0	0	10	0	0	0
WEST MARICOPA COMBINE 91	91	2	0	0	2	0	0	0
WEST MARICOPA COMBINE 92	92	1529	0	0	1529	0	0	0
GOODYEAR OUTSIDE	94	4301	0	0	4301	0	0	0
WEST MARICOPA COMBINE 95	95	5	0	0	5	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	997	0	0	0
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	261	0	0	0
SURPRISE # 3	100	451	0	0	451	0	0	0
SURPRISE # 10	102	13	0	0	13	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	3	0	0	3	0	0	0
SURPRISE # 4	105	181	0	0	181	0	0	0
SURPRISE # 7	106	99	0	0	99	0	0	0
SURPRISE # 8	108	258	0	0	258	0	0	0
SURPRISE # 9	109	18	0	0	18	0	0	0
SURPRISE # 13	110	14	0	0	14	0	0	0
WMC TONOPAH	201	370	0	0	370	0	0	0
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL - AF/YR		1122720	308322	115415	42069	15641	67707	194941

TABLE 26. SOLUTION A WATER BUDGET, 2020

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A. 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	7250	0	0	0
ARIZONA WATER CO. W. TANKS	3	1568	0	0	1568	0	0	0
CITIZENS AGUA FRIA	4	26622	0	0	26622	0	0	0
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO	6	12861	0	0	12861	0	0	0
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	18739	0	0	0
GOODYEAR # 2	13	45570	0	0	45570	0	0	0
UPSCO	14	14915	0	0	14915	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	735	0	0	735	0	0	0
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
HASSAYAMPA BASIN WPA	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
GILA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GILBERT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUND WATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA # 3	44	2571	0	0	2571	0	0	0
BUCKEYE IM	45	5984	0	0	5984	0	0	0
BUCKEYE OM	46	959	0	0	959	0	0	0
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 26. SOLUTION A WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (INMOD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	6683	0	0	6683	0	0	0
WEST END	74	386	0	0	386	0	0	0
PEORIA # 6	75	1612	0	0	1612	0	0	0
SUNRISE	76	1289	0	0	1289	0	0	0
PEORIA # 2A	77	29747	0	0	29747	0	0	0
BUCKEYE SOUTH	79	2149	0	0	2149	0	0	0
SURPRISE # 1	80	230	0	0	230	0	0	0
SURPRISE # 2	81	132	0	0	132	0	0	0
CITIZENS AGUA FRIA # 2	82	2443	0	0	2443	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	99	0	0	0
WEST MARICOPA COMBINE 87	87	16	0	0	16	0	0	0
WEST MARICOPA COMBINE 88	88	4	0	0	4	0	0	0
WEST MARICOPA COMBINE 89	89	135	0	0	135	0	0	0
WEST MARICOPA COMBINE 90	90	12	0	0	12	0	0	0
WEST MARICOPA COMBINE 91	91	3	0	0	3	0	0	0
WEST MARICOPA COMBINE 92	92	2344	0	0	2344	0	0	0
GOODYEAR OUTSIDE	94	5383	0	0	5383	0	0	0
WEST MARICOPA COMBINE 95	95	16	0	0	16	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	1248	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	351	0	0	0
SURPRISE # 3	100	743	0	0	743	0	0	0
SURPRISE # 10	102	15	0	0	15	0	0	0
SURPRISE # 11	103	2	0	0	2	0	0	0
SURPRISE # 12	104	4	0	0	4	0	0	0
SURPRISE # 4	105	327	0	0	327	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	400	0	0	400	0	0	0
SURPRISE # 9	109	26	0	0	26	0	0	0
SURPRISE # 13	110	26	0	0	26	0	0	0
WMC TONOPAH	201	610	0	0	610	0	0	0
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF/YR		1246600	326734	120399	450084	18041	98487	232855

TABLE 27. SOLUTION A WATER BUDGET, 2025

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	7250	0	0	0
ARIZONA WATER CO. W. TANKS	3	2099	0	0	2099	0	0	0
CITIZENS AGUA FRIA	4	28843	0	0	28843	0	0	0
EL MIRAGE WPA	5	1662	0	0	0	0	0	1662
SUN CITY WATER CO	6	12861	0	0	12861	0	0	0
LUKE AIR FORCE BASE WPA	7	18	0	0	0	0	0	18
AVONDALE (INMOD)	8	11694	0	0	0	0	0	11694
GLENDALE SRP	9	43469	30428	13041	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	23226	0	0	23226	0	0	0
GOODYEAR # 2	13	58288	0	0	58288	0	0	0
UPSCO	14	17839	0	0	17839	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	1067	0	0	1067	0	0	0
TOLLESON WPA	17	4172	2920	1252	0	0	0	0
HASSAYAMPA BASIN WPA	20	5302	0	0	0	0	0	5302
RAINBOW VALLEY WPA	21	1813	0	0	0	0	0	1813
GILBERT-SRP WPA	22	46472	32530	13942	0	0	0	0
GILBERT-RWCD WPA	23	25096	0	0	4800	0	0	20296
CAVE CREEK WPA	24	373	0	0	0	0	200	173
GILA RIVER WPA	25	489	0	0	0	0	0	489
QUEEN CREEK	26	7607	0	0	0	0	0	7607
GILBERT WPA	27	9250	0	0	200	0	0	9050
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	12296	0	0	0	0	0	12296
GROUND WATER (OUTMOD) WPA	30	7397	0	0	0	0	0	7397
SCOTTSDALE (INMOD) WPA	31	81099	0	0	64000	0	0	17099
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	967	0	0	967	0	0	0
TEMPE WPA	34	5734	5734	0	0	0	0	0
TEMPE SRP WPA	35	47773	0	0	4400	0	0	43373
CHANDLER RWCD WPA	36	13429	0	0	3125	0	0	10304
CHANDLER SRP WPA	37	58133	40693	17440	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	54255	0	0	0	0	0	54255
MESA RWCD WPA	40	10970	0	0	10970	0	0	0
MESA SRP WPA	41	45748	32024	13724	0	0	0	0
CAREFREE (INMOD) WPA	42	28	0	0	0	0	0	28
CAREFREE (OUTMOD) WPA	43	4085	0	0	0	0	0	4085
PEORIA # 3	44	3965	0	0	3965	0	0	0
BUCKEYE IM	45	8427	0	0	8427	0	0	0
BUCKEYE OM	46	1602	0	0	1602	0	0	0
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	274243	0	0	142300	14600	117343	0
FOUNTAIN HILLS WPA	57	16632	0	0	0	0	0	16632
CAVE CREEK (OUTMOD) WPA	58	2565	0	0	0	0	0	2565

TABLE 27. SOLUTION A WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION A 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2609	0	0	0	0	18	2591
PEORIA SRP	63	16288	11402	4886	0	0	0	0
PHOENIX SRP	65	209241	160463	48778	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	12409	0	0	0	0	0	12409
AVONDALE-SRP (INMOD) WPA	68	15381	10767	4614	0	0	0	0
MARICOPA EAST	70	7	0	0	0	0	0	7
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	8771	0	0	8771	0	0	0
WEST END	74	452	0	0	452	0	0	0
PEORIA # 6	75	2069	0	0	2069	0	0	0
SUNRISE	76	1289	0	0	1289	0	0	0
PEORIA # 2A	77	31683	0	0	31683	0	0	0
BUCKEYE SOUTH	79	3508	0	0	3508	0	0	0
SURPRISE # 1	80	241	0	0	241	0	0	0
SURPRISE # 2	81	166	0	0	166	0	0	0
CITIZENS AGUA FRIA # 2	82	2665	0	0	2665	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	152	0	0	152	0	0	0
WEST MARICOPA COMBINE 87	87	24	0	0	24	0	0	0
WEST MARICOPA COMBINE 88	88	6	0	0	6	0	0	0
WEST MARICOPA COMBINE 89	89	204	0	0	204	0	0	0
WEST MARICOPA COMBINE 90	90	16	0	0	16	0	0	0
WEST MARICOPA COMBINE 91	91	4	0	0	4	0	0	0
WEST MARICOPA COMBINE 92	92	3157	0	0	3157	0	0	0
GOODYEAR OUTSIDE	94	6482	0	0	6482	0	0	0
WEST MARICOPA COMBINE 95	95	28	0	0	28	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1486	0	0	1486	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	439	0	0	439	0	0	0
SURPRISE # 3	100	1033	0	0	1033	0	0	0
SURPRISE # 10	102	18	0	0	18	0	0	0
SURPRISE # 11	103	3	0	0	3	0	0	0
SURPRISE # 12	104	6	0	0	6	0	0	0
SURPRISE # 4	105	471	0	0	471	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	543	0	0	543	0	0	0
SURPRISE # 9	109	34	0	0	34	0	0	0
SURPRISE # 13	110	39	0	0	39	0	0	0
WMC TONOPAH	201	845	0	0	845	0	0	0
OUTSIDE	999	16200	0	0	0	0	0	16200
TOTAL AF/YR		1367779	344284	125101	487951	19641	120157	270645

Solution A - GMS MODFLOW Input Files

The following section describes each of the MODFLOW input files used for the Solution A simulation. The input files for the Basecase simulation, except for some changed assumptions reflected in the new well and recharge input files (unique to Solution A), were renamed and used.

Scen24aDrun1.bas: the basic package file. Eleven stress periods are specified to the year 2100. Stress periods 8, 9, and 10 use 100 time steps (each is one-month in duration) and stress period 11 uses 912 (one month duration each) time steps. Time steps are the same as for the Basecase (and CTA) in the first seven stress periods. All IUNIT array index and unit numbers are identical between the Basecase and Solution A basic packages. The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Solution A basic package options use 1) -8989.89 to display no-flow (inactive) cells in the output, 2) save starting heads is enabled, 3) Time unit is in days.

Scen24aDrun1.bcf: the block-centered flow (BCF3) package file. This input package file is the same as the Basecase BCF3 file. Options are: 1) transient simulation, 2) CCF saved to unit 39, 3) 9999.99 to display head assigned to dry cells in the output; this flag is used in the well deepening scripts, 4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH), 5) interblock transmissivity by harmonic mean, 6) anisotropy factor of 1.0, and 7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between layer types confined/unconfined (type 3). Transmissivity changes in type 3.

Scen24aDrun1.oc: the output control package file. Identical to the Basecase output control file. It is setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model.

Scen24aDrun1.et: the evapotranspiration package file Identical to the Basecase E-T file. Options used are: 1) apply to top layer only, 2) CCF output to Unit 39, 3) E-T elevation multiplier is 1.0, max. E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen24aDrun1.riv: the river package file. Identical to the Basecase river file. Only applicable for layer one. Options used are: CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River and the Gila River are simulated using the River package.

Well1.wel: the well package file. This is the eleven stress period MODFLOW compatible well input file reflecting the changed demand assumptions unique to Solution A. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files are well2.wel, well3.well and so forth to well10.wel. Except in those areas (cells) which may be changed by varying pumping assumptions of Solution A, stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms are saved to Unit 39. As is customary and like the Basecase model, well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values.

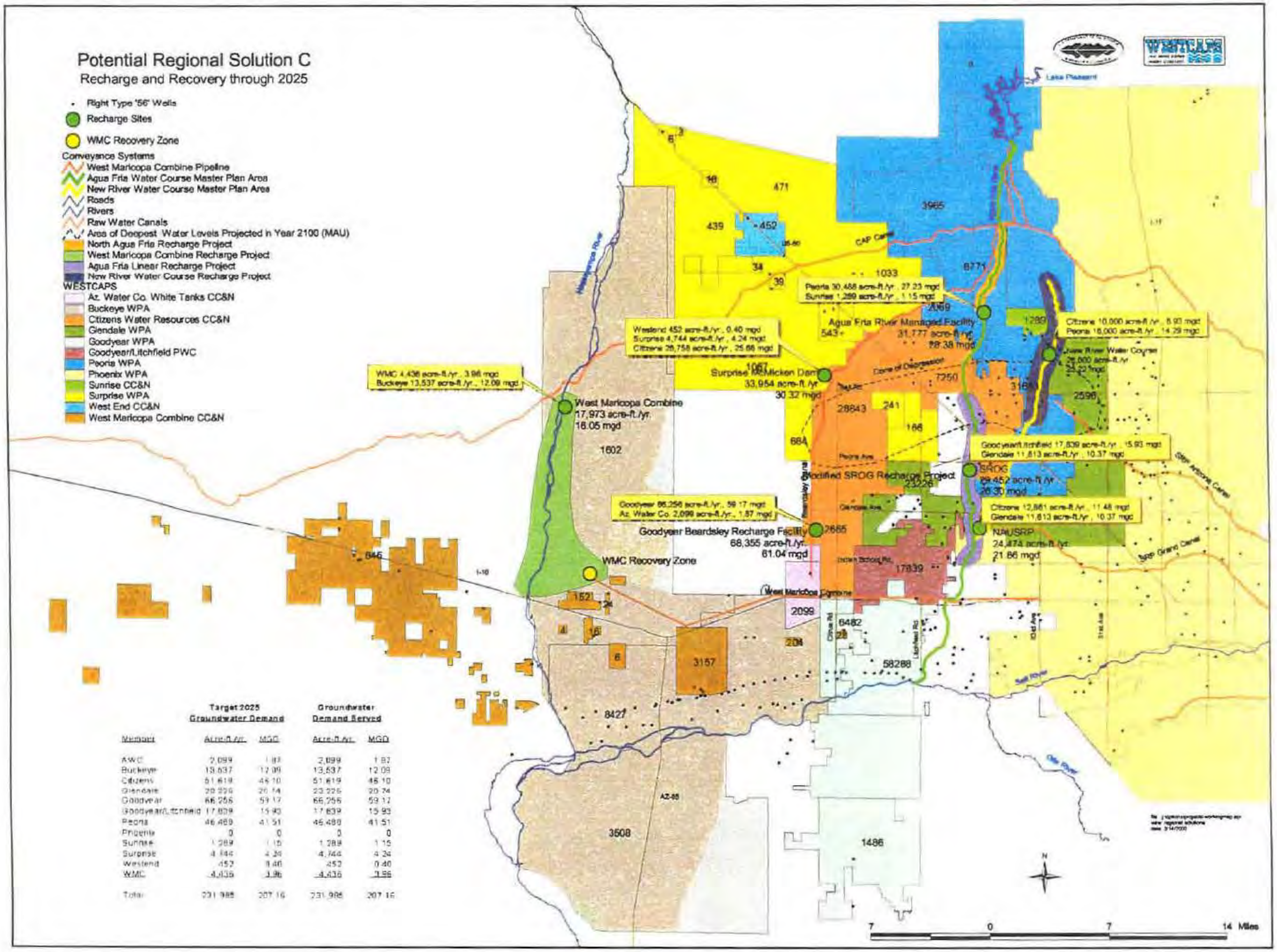
Recharg24aD.rch: the recharge package file. This is the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions file Wsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process, the ArcView converted recharge file (e.g. recharg24aD.rch) is not altered in interim MODFLOW runs from stress period to stress period. It is input once at the beginning of a simulation whether deepened or not. Although recharge rates and/or locations may vary between the Basecase and Solution A, the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells is the same.

Scen24aDrun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in Solution A is the same used for the Basecase (and CTA) for comparison reasons. The parameter options used in Solution A are: 1) maximum number of iterations per time step for convergence is 200, 2) the acceleration parameter is 1.0, 3)the head change criterion for convergence is 0.5 feet, and 4) print-out interval flag is zero.

Figure 26. Potential Regional Solution C - Infrastructure Layout

Tables

GMS MODFLOW Input File Descriptions



Potential Regional Solution C
Recharge and Recovery through 2025
Right Type '56' Wells
Recharge Sites
WMC Recovery Zone
Conveyance Systems
West Maricopa Combine Pipeline
Agua Fria Water Course Master Plan Area
New River Water Course Master Plan Area
Roads
Rivers
Raw Water Canals
Area of Deepest Water Levels Projected in Year 2100 (MAU)
North Agua Fria Recharge Project
West Maricopa Combine Recharge Project
Agua Fria Linear Recharge Project
New River Water Course Recharge Project
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N
Surprise WPA
West End CC&N
West Maricopa Combine CC&N
Lake Pleasant
CAP Canal
Peoria 30,488 acre-ft./yr., 27.23 mgd
Sunrise 1,289 acre-ft./yr., 1.15 mgd
Agua Fria River Managed Facility
31,777 acre-ft./yr.
28.38 mgd
Westend 452 acre-ft./yr., 0.40 mgd
Surprise 4,744 acre-ft./yr., 4.24 mgd
Citizens 28,758 acre-ft./yr., 25.66 mgd
Surprise McMicken Dam
33,954 acre-ft./yr
30.32 mgd
WMC 4,436 acre-ft./yr., 3.96 mgd
Buckeye 13,537 acre-ft./yr., 12.09 mgd
West Maricopa Combine
17,973 acre-ft./yr.
16.05 mgd
Citizens 10,000 acre-ft./yr., 8.93 mgd
Peoria 16,000 acre-ft./yr., 14.29 mgd
Goodyear/Litchfield 17,839 acre-ft./yr., 15.93 mgd
Glendale 11,813 acre-ft./yr., 10.37 mgd
Modified SROG Recharge Project
SROG
30.30 mgd
Goodyear 66,256 acre-ft./yr., 59.17 mgd
Az. Water Co. 2,099 acre-ft./yr., 1.87 mgd
Goodyear Beardsley Recharge Facility
68,355 acre-ft./yr.
61.04 mgd
Citizens 12,861 acre-ft./yr., 11.48 mgd
Glendale 11,813 acre-ft./yr., 10.37 mgd
NAUSRP
24,474 acre-ft./yr.
21.86 mgd
WMC Recovery Zone
West Maricopa Combine
Peoria Ave
Glendale Ave
Indian School Rd
SRP Arizona Canal
SRP Grand Canal
Salt River
Gila River
I-10
AZ-85
3965
471
439
452
34
39
1033
6771
2069
543
1289
1067
7250
3168
2596
28843
241
166
684
1602
23226
2665
17839
2099
6482
58288
208
646
1521
24
4
16
6
3157
8427
3508
1486
N
7
0
7
14 Miles

Member	Target 2025 Groundwater Demand Acre-ft./yr.	Target 2025 Groundwater Demand MGD	Groundwater Demand Served Acre-ft./yr.	Groundwater Demand Served MGD
AWC	2,099	1.87	2,099	1.87
Buckeye	13,537	12.09	13,537	12.09
Citizens	51,619	46.10	51,619	46.10
Glendale	23,226	20.74	23,226	20.74
Goodyear	66,256	59.17	66,256	59.17
Goodyear/Litchfield	17,839	15.93	17,839	15.93
Peoria	46,488	41.51	46,488	41.51
Phoenix	0	0	0	0
Sunrise	1,289	1.15	1,289	1.15
Surprise	4,744	4.24	4,744	4.24
Westend	452	0.40	452	0.40
WMC	4,436	3.96	4,436	3.96
Total	231,985	207.16	231,985	207.16

Figure 26

TABLE 28. SOLUTION C WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION C 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
EPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
HASSAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
CAVE CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUND WATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 28. SOLUTION C WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP (INMOD) WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
CITIZENS AGUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMC TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 29. SOLUTION C WATER BUDGET, 2000

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C. 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR # 2	13	7619	0	0	0	0	0	7619
LPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
GILA RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUNDWATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39978	0	0	39978	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 29. SOLUTION C WATER BUDGET, 2000 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP (INMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA = 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA = 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA = 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE = 1	80	188	0	0	0	0	0	188
SURPRISE = 2	81	96	0	0	0	0	0	96
CITIZENS AGUA FRIA = 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR = 3	96	0	0	0	0	0	0	0
GOODYEAR = 4	97	198	0	0	0	0	0	198
PEORIA = 2	98	1349	0	0	1349	0	0	0
SURPRISE = 5	99	202	0	0	0	0	0	202
SURPRISE = 3	100	117	0	0	0	0	0	117
SURPRISE = 10	102	9	0	0	0	0	0	9
SURPRISE = 11	103	0	0	0	0	0	0	0
SURPRISE = 12	104	0	0	0	0	0	0	0
SURPRISE = 4	105	53	0	0	0	0	0	53
SURPRISE = 7	106	0	0	0	0	0	0	0
SURPRISE = 8	108	85	0	0	0	0	0	85
SURPRISE = 9	109	12	0	0	0	0	0	12
SURPRISE = 13	110	9	0	0	0	0	0	9
WMC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 30. SOLUTION C WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION C. 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR # 2	13	15675	0	0	0	0	0	15675
LPSCO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27990	19593	8397	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
GILA RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUND WATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA # 3	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 30. SOLUTION C WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (INMOD) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA = 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA = 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA = 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE = 1	80	219	0	0	0	0	0	219
SURPRISE = 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA = 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR = 3	96	0	0	0	0	0	0	0
GOODYEAR = 4	97	476	0	0	0	0	0	476
PEORIA = 2	98	3771	0	0	3771	0	0	0
SURPRISE = 5	99	213	0	0	0	0	0	213
SURPRISE = 3	100	224	0	0	0	0	0	224
SURPRISE = 10	102	11	0	0	0	0	0	11
SURPRISE = 11	103	1	0	0	0	0	0	1
SURPRISE = 12	104	1	0	0	0	0	0	1
SURPRISE = 4	105	99	0	0	0	0	0	99
SURPRISE = 7	106	23	0	0	0	0	0	23
SURPRISE = 8	108	114	0	0	0	0	0	114
SURPRISE = 9	109	12	0	0	0	0	0	12
SURPRISE = 13	110	11	0	0	0	0	0	11
WMC TON/PAH	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL AF/YR		881536	273856	105979	267458	6577	2477	225189

TABLE 31. SOLUTION C WATER BUDGET, 2010

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C, 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. WHITE T	3	873	0	0	0	0	0	873
CITIZENS AGUA FRIA	4	22182	0	0	0	0	0	22182
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	23306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	0	0	0	11597
GOODYEAR # 2	13	23322	0	0	0	0	0	23322
TPSCO	14	9045	0	0	0	0	0	9045
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	309	0	0	0	0	0	309
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
QUEEN CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	5387	0	0	0	0	0	5387
GROUND WATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA # 3	44	455	0	0	0	0	0	455
BUCKEYE IM	45	1938	0	0	0	0	0	1938
BUCKEYE OM	46	126	0	0	0	0	0	126
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160900	8100	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 31. SOLUTION C WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (INMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAV CO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	0	0	0	2893
WEST END	74	292	0	0	0	0	0	292
PEORIA # 6	75	908	0	0	0	0	0	908
SUNRISE	76	1242	0	0	0	0	0	1242
PEORIA # 2A	77	20461	0	0	0	0	0	20461
BUCKEYE SOUTH	79	174	0	0	0	0	0	174
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2144	0	0	0	0	0	2144
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	42	0	0	0	0	0	42
WEST MARICOPA COMBINE 90	90	7	0	0	0	0	0	7
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1139	0	0	0	0	0	1139
GOODYEAR OUTSIDE	94	3215	0	0	0	0	0	3215
WEST MARICOPA COMBINE 95	95	3	0	0	0	0	0	3
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	754	0	0	0	0	0	754
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	0	0	0	221
SURPRISE # 3	100	319	0	0	0	0	0	319
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	2	0	0	0	0	0	2
SURPRISE # 4	105	125	0	0	0	0	0	125
SURPRISE # 7	106	98	0	0	0	0	0	98
SURPRISE # 8	108	162	0	0	0	0	0	162
SURPRISE # 9	109	13	0	0	0	0	0	13
SURPRISE # 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	264	0	0	0	0	0	264
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL - AF/YR		1005820	292076	111530	270884	12409	35595	283326

TABLE 32. SOLUTION C WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C, 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1170	0	0	0	0	0	1170
CITIZENS AGUA FRIA	4	24404	0	0	0	0	0	24404
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	0	0	0	14279
GOODYEAR # 2	13	32867	0	0	0	0	0	32867
LPSCO	14	11982	0	0	0	0	0	11982
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	404	0	0	0	0	0	404
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37680	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
SALT RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUND WATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA # 3	44	1144	0	0	0	0	0	1144
BUCKEYE IM	45	3541	0	0	0	0	0	3541
BUCKEYE OM	46	312	0	0	0	0	0	312
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151900	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 32. SOLUTION C WATER BUDGET, 2015 (continued)

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION C: 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (INMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAVCO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	0	0	0	4591
WEST END	74	314	0	0	0	0	0	314
PEORIA # 6	75	1155	0	0	0	0	0	1155
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	27412	0	0	0	0	0	27412
BUCKEYE SOUTH	79	794	0	0	0	0	0	794
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2222	0	0	0	0	0	2222
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	0	0	0	47
WEST MARICOPA COMBINE 87	87	8	0	0	0	0	0	8
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	66	0	0	0	0	0	66
WEST MARICOPA COMBINE 90	90	10	0	0	0	0	0	10
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1529	0	0	0	0	0	1529
GOODYEAR OUTSIDE	94	4301	0	0	0	0	0	4301
WEST MARICOPA COMBINE 95	95	5	0	0	0	0	0	5
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	0	0	0	997
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	0	0	0	261
SURPRISE # 3	100	451	0	0	0	0	0	451
SURPRISE # 10	102	13	0	0	0	0	0	13
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	3	0	0	0	0	0	3
SURPRISE # 4	105	181	0	0	0	0	0	181
SURPRISE # 7	106	99	0	0	0	0	0	99
SURPRISE # 8	108	258	0	0	0	0	0	258
SURPRISE # 9	109	18	0	0	0	0	0	18
SURPRISE # 13	110	14	0	0	0	0	0	14
WMC TONOPAH	201	370	0	0	0	0	0	370
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL - AF/YR		1122720	308322	115415	263747	15641	67707	351888

TABLE 33. SOLUTION C WATER BUDGET, 2020

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W TANKS	3	1568	0	0	0	0	0	1568
CITIZENS AGUA FRIA	4	26622	0	0	0	0	0	26622
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR + 2	13	45570	0	0	0	0	0	45570
EPSCO	14	14915	0	0	0	0	0	14915
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	735	0	0	0	0	0	735
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
HASSAYAMPA BASIN WPA	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
AGUA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GUBBRT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUNDWATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA + 3	44	2571	0	0	0	0	0	2571
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 33. SOLUTION C WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION C 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (NMOD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA = 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	0	0	0	386
PEORIA = 6	75	1612	0	0	0	0	0	1612
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA = 2A	77	29747	0	0	0	0	0	29747
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE = 1	80	230	0	0	0	0	0	230
SURPRISE = 2	81	132	0	0	0	0	0	132
CITIZENS AGUA FRIA = 2	82	2443	0	0	0	0	0	2443
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	0	0	0	135
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5383	0	0	0	0	0	5383
WEST MARICOPA COMBINE 95	95	16	0	0	0	0	0	16
GOODYEAR = 3	96	0	0	0	0	0	0	0
GOODYEAR = 4	97	1248	0	0	0	0	0	1248
PEORIA = 2	98	6154	0	0	6154	0	0	0
SURPRISE = 5	99	351	0	0	0	0	0	351
SURPRISE = 3	100	743	0	0	0	0	0	743
SURPRISE = 10	102	15	0	0	0	0	0	15
SURPRISE = 11	103	2	0	0	0	0	0	2
SURPRISE = 12	104	4	0	0	0	0	0	4
SURPRISE = 4	105	327	0	0	0	0	0	327
SURPRISE = 7	106	684	0	0	0	0	0	684
SURPRISE = 8	108	400	0	0	0	0	0	400
SURPRISE = 9	109	26	0	0	0	0	0	26
SURPRISE = 13	110	26	0	0	0	0	0	26
WMC TONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF YR		1246600	326734	120399	255191	18041	98487	427748

TABLE 34. SOLUTION C WATER BUDGET, 2025

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION C. 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	2099	0	0	0	0	0	2099
CITIZENS AGUA FRIA	4	28843	0	0	0	0	0	28843
EL MIRAGE WPA	5	1662	0	0	0	0	0	1662
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	18	0	0	0	0	0	18
AVONDALE (INMOD)	8	11694	0	0	0	0	0	11694
GLENDALE SRP	9	43469	30428	13041	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	23226	0	0	0	0	0	23226
GOODYEAR # 2	13	58288	0	0	0	0	0	58288
LPSCO	14	17839	0	0	0	0	0	17839
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	1067	0	0	0	0	0	1067
TOLLESON WPA	17	4172	2920	1252	0	0	0	0
HASSAYAMPA BASIN WPA	20	5302	0	0	0	0	0	5302
RAINBOW VALLEY WPA	21	1813	0	0	0	0	0	1813
GILBERT-SRP WPA	22	46472	32530	13942	0	0	0	0
GILBERT-RWCD WPA	23	25096	0	0	4800	0	0	20296
CAVE CREEK WPA	24	373	0	0	0	0	200	173
GILA RIVER WPA	25	489	0	0	0	0	0	489
QUEEN CREEK	26	7607	0	0	0	0	0	7607
GILBERT WPA	27	9250	0	0	200	0	0	9050
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	12296	0	0	0	0	0	12296
GROUND WATER (OUTMOD) WPA	30	7397	0	0	0	0	0	7397
SCOTTSDALE (INMOD) WPA	31	81099	0	0	64000	0	0	17099
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GLADALUPE WPA	33	967	0	0	967	0	0	0
TEMPE WPA	34	5734	5734	0	0	0	0	0
TEMPE SRP WPA	35	47773	0	0	4400	0	0	43373
CHANDLER RWCD WPA	36	13429	0	0	3125	0	0	10304
CHANDLER SRP WPA	37	58133	40693	17440	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	54255	0	0	0	0	0	54255
MESA RWCD WPA	40	10970	0	0	10970	0	0	0
MESA SRP WPA	41	45748	32024	13724	0	0	0	0
CAREFREE (INMOD) WPA	42	28	0	0	0	0	0	28
CAREFREE (OUTMOD) WPA	43	4085	0	0	0	0	0	4085
PEORIA # 3	44	3965	0	0	0	0	0	3965
BUCKEYE IM	45	8427	0	0	0	0	0	8427
BUCKEYE OM	46	1602	0	0	0	0	0	1602
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	274243	0	0	142300	14600	117343	0
FOUNTAIN HILLS WPA	57	16632	0	0	0	0	0	16632
CAVE CREEK (OUTMOD) WPA	58	2565	0	0	0	0	0	2565

TABLE 34. SOLUTION C WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION C, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2609	0	0	0	0	18	2591
PEORIA SRP	63	16288	11402	4886	0	0	0	0
PHOENIX SRP	65	209241	160463	48778	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	12409	0	0	0	0	0	12409
AVONDALE-SRP (INMOD) WPA	68	15381	10767	4614	0	0	0	0
MARICOPA EAST	70	7	0	0	0	0	0	7
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	8771	0	0	0	0	0	8771
WEST END	74	452	0	0	0	0	0	452
PEORIA # 6	75	2069	0	0	0	0	0	2069
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	31683	0	0	0	0	0	31683
BUCKEYE SOUTH	79	3508	0	0	0	0	0	3508
SURPRISE # 1	80	241	0	0	0	0	0	241
SURPRISE # 2	81	166	0	0	0	0	0	166
CITIZENS AGUA FRIA # 2	82	2665	0	0	0	0	0	2665
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	152	0	0	0	0	0	152
WEST MARICOPA COMBINE 87	87	24	0	0	0	0	0	24
WEST MARICOPA COMBINE 88	88	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 89	89	204	0	0	0	0	0	204
WEST MARICOPA COMBINE 90	90	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 91	91	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 92	92	3157	0	0	0	0	0	3157
GOODYEAR OUTSIDE	94	6482	0	0	0	0	0	6482
WEST MARICOPA COMBINE 95	95	28	0	0	0	0	0	28
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1486	0	0	0	0	0	1486
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	439	0	0	0	0	0	439
SURPRISE # 3	100	1033	0	0	0	0	0	1033
SURPRISE # 10	102	18	0	0	0	0	0	18
SURPRISE # 11	103	3	0	0	0	0	0	3
SURPRISE # 12	104	6	0	0	0	0	0	6
SURPRISE # 4	105	471	0	0	0	0	0	471
SURPRISE # 7	106	684	0	0	0	0	0	684
SURPRISE # 8	108	543	0	0	0	0	0	543
SURPRISE # 9	109	34	0	0	0	0	0	34
SURPRISE # 13	110	39	0	0	0	0	0	39
WMC TONOPAH	201	845	0	0	0	0	0	845
OUTSIDE	999	16200	0	0	0	0	0	16200
TOTAL AF/YR		1367779	344284	125101	255966	19641	120157	502630

Solution C - MODFLOW Input Files

The following section describes each of the MODFLOW input files used for the Solution C simulation. The input files for the Basecase simulation, except for some changed assumptions reflected in the new well and recharge input files (unique to Solution C), were renamed and used.

Scen25Drun1.bas: the basic package file. Eleven stress periods are specified to the year 2100. Stress periods 8, 9, and 10 use 100 time steps (each is one-month in duration) and stress period 11 uses 912 (each one month duration) time steps. Time steps are the same as for the Basecase (and CTA) in the first seven stress periods. All IUNIT array index and unit numbers are identical between the Basecase and Solution C basic packages. The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Solution C basic package options use 1) -8989.89 to display no-flow (inactive) cells in the output, 2) save starting heads is enabled, 3) Time unit is in days

Scen25Drun1.bcf: the block-centered flow (BCF3) package file. This input package file is the same as the Basecase BCF3 file. Options are: 1) transient simulation, 2) CCF saved to unit 39, 3) 9999.99 to display head assigned to dry cells in the output: this flag is used in the well deepening scripts, 4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH), 5) interblock transmissivity by harmonic mean, 6) anisotropy factor of 1.0, and 7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between layer types confined/unconfined (type 3). Transmissivity changes in type 3.

Scen25Drun1.oc: the output control package file. Identical to the Basecase output control file. It is setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model.

Scen25Drun1.et: the evapotranspiration package file. Identical to the Basecase E-T file. Options used are: 1) apply to top layer only, 2) CCF output to Unit 39, 3) E-T elevation multiplier is 1.0, max. E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen25Drun1.riv: the river package file. Identical to the Basecase river file. Only applicable for layer one. Options used are: CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River and the Gila River are simulated using the River package.

Well1.wel: the well package file. This is the eleven stress period MODFLOW compatible well input file reflecting the changed demand assumptions unique to Solution C. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files are well2.wel, well3.well and so forth to well10.wel. Except in those areas (cells) which are changed by varying pumping assumptions of Solution C, stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms are saved to Unit 39. As is customary and like the Basecase model, well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values.

Recharg25D.rch: the recharge package file. This is the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions file Wsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process, the ArcView converted recharge file (e.g. recharg25D.rch) is not altered in interim MODFLOW runs from stress period to stress period. It is input once at the beginning of a simulation whether deepened or not. Although recharge rates and/or locations vary between the Basecase and Solution C, the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells is the same.

Scen25Drun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in Solution C is the same used for the Basecase for comparison reasons. The parameter options used in Solution C are:

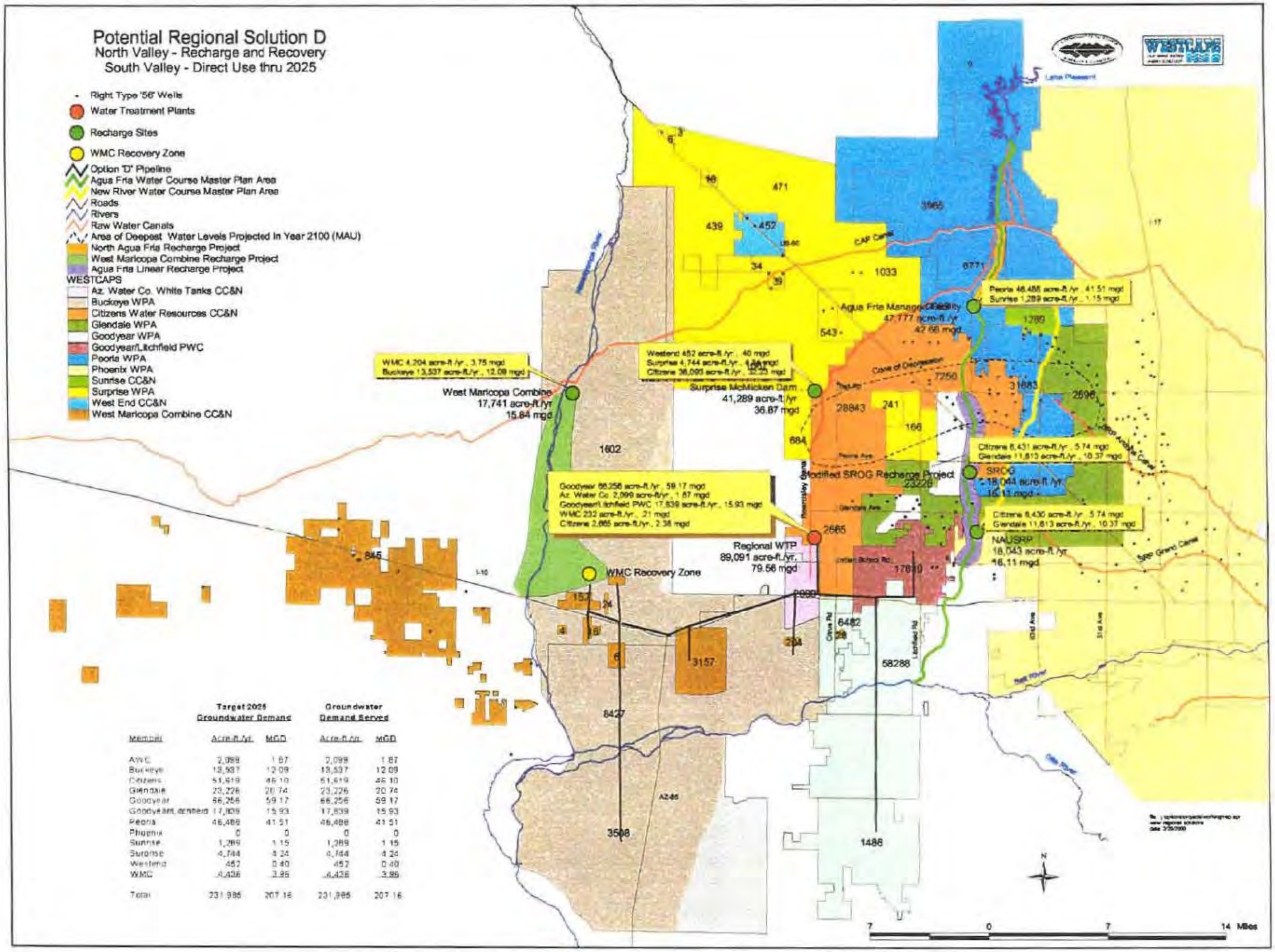
1) maximum number of iterations per time step for convergence is 200. 2) the acceleration parameter is 1.0. 3) the head change criterion for convergence is 0.5 feet, and 4) print-out interval flag is zero.

Figure 27. Potential Regional Solution D - Infrastructure Layout

Tables

35. Solution D Water Budget, 1995
36. Solution D Water Budget, 2000
37. Solution D Water Budget, 2005
38. Solution D Water Budget, 2010
39. Solution D Water Budget, 2015
40. Solution D Water Budget, 2020
41. Solution D Water Budget, 2025

GMS MODFLOW Input File Descriptions


Potential Regional Solution D
North Valley - Recharge and Recovery
South Valley - Direct Use thru 2025
Right Type '56' Wells
Water Treatment Plants
Recharge Sites
WMC Recovery Zone
Option 'D' Pipeline
Agua Fria Water Course Master Plan Area
New River Water Course Master Plan Area
Roads
Rivers
Raw Water Canals
Area of Deepest Water Levels Projected in Year 2100 (MAU)
North Agua Fria Recharge Project
West Maricopa Combine Recharge Project
Agua Fria Linear Recharge Project
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N
Surprise WPA
West End CC&N
West Maricopa Combine CC&N
WMC 4,204 acre-ft./yr., 3.75 mgd
Buckeye 13,537 acre-ft./yr., 12.09 mgd
West Maricopa Combine
17,741 acre-ft./yr
15.84 mgd
Westend 452 acre-ft./yr., .40 mgd
Surprise 4,744 acre-ft./yr., 4.24 mgd
Citizens 36,093 acre-ft./yr., 32.23 mgd
Surprise McMicken Dam
41,289 acre-ft./yr
36.87 mgd
Agua Fria Management Facility
47,777 acre-ft./yr
42.66 mgd
Peoria 46,488 acre-ft./yr., 41.51 mgd
Sunrise 1,289 acre-ft./yr., 1.15 mgd
Citizens 8,431 acre-ft./yr., 5.74 mgd
Glendale 11,613 acre-ft./yr., 10.37 mgd
Modified SROG Recharge Project
SROG
18,044 acre-ft./yr
16.11 mgd
Citizens 8,430 acre-ft./yr., 5.74 mgd
Glendale 11,613 acre-ft./yr., 10.37 mgd
NAUSRP
18,043 acre-ft./yr
16.11 mgd
Goodyear 66,256 acre-ft./yr., 59.17 mgd
Az. Water Co. 2,099 acre-ft./yr., 1.87 mgd
Goodyear/Litchfield PWC 17,839 acre-ft./yr., 15.93 mgd
WMC 232 acre-ft./yr., .21 mgd
Citizens 2,665 acre-ft./yr., 2.38 mgd
Regional WTP
89,091 acre-ft./yr.
79.56 mgd
WMC Recovery Zone
CAP Canal
Lake Pleasant
I-10
I-17
1602
8427
3508
3157
58288
1486
1033
3965
471
439
452
543
684
28843
241
166
31683
2696
7750
23228
2665
17680
6482
845
152
N
7
0
7
14 Miles

Member	Target 2025 Groundwater Demand Acre-ft./yr.	Target 2025 Groundwater Demand MGD	Groundwater Demand Served Acre-ft./yr.	Groundwater Demand Served MGD
AWC	2,099	1.87	2,099	1.87
Buckeye	13,537	12.09	13,537	12.09
Citizens	51,619	46.10	51,619	46.10
Glendale	23,226	20.74	23,226	20.74
Goodyear	66,256	59.17	66,256	59.17
Goodyear/Litchfield	17,839	15.93	17,839	15.93
Peoria	46,488	41.51	46,488	41.51
Phoenix	0	0	0	0
Sunrise	1,289	1.15	1,289	1.15
Surprise	4,744	4.24	4,744	4.24
Westend	452	0.40	452	0.40
WMC	4,436	3.96	4,436	3.96
Total	231,986	207.16	231,986	207.16

Figure 27

TABLE 35. SOLUTION D WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D: 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
LPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
HASSAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
CAVE CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUNDWATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 35. SOLUTION D WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D: 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP (INMOD) WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
CITIZENS AGUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMC TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL - AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 36. SOLUTION D WATER BUDGET, 2000

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D. 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD. 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD. 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR # 2	13	7619	0	0	0	0	0	7619
LPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
GILA RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUND WATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39978	0	0	39978	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 36. SOLUTION D WATER BUDGET, 2000 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP (INMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA # 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA # 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	188	0	0	0	0	0	188
SURPRISE # 2	81	96	0	0	0	0	0	96
CLIZ/NSAGUA FRIA # 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	198	0	0	0	0	0	198
PEORIA # 2	98	1349	0	0	1349	0	0	0
SURPRISE # 5	99	202	0	0	0	0	0	202
SURPRISE # 3	100	117	0	0	0	0	0	117
SURPRISE # 10	102	9	0	0	0	0	0	9
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	53	0	0	0	0	0	53
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	85	0	0	0	0	0	85
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	9	0	0	0	0	0	9
WMC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL - AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 37. SOLUTION D WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION D: 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD: 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD: 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W.TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR + 2	13	15675	0	0	0	0	0	15675
APS CO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27990	19593	8397	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
SALT RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUNDWATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA + 3	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 37. SOLUTION D WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D, 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (INMOD) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA = 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA = 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA = 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE = 1	80	219	0	0	0	0	0	219
SURPRISE = 2	81	99	0	0	0	0	0	99
CITIZENS AGUAFRIA = 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR = 3	96	0	0	0	0	0	0	0
GOODYEAR = 4	97	476	0	0	0	0	0	476
PEORIA = 2	98	3771	0	0	3771	0	0	0
SURPRISE = 5	99	213	0	0	0	0	0	213
SURPRISE = 3	100	224	0	0	0	0	0	224
SURPRISE = 10	102	11	0	0	0	0	0	11
SURPRISE = 11	103	1	0	0	0	0	0	1
SURPRISE = 12	104	1	0	0	0	0	0	1
SURPRISE = 4	105	99	0	0	0	0	0	99
SURPRISE = 7	106	23	0	0	0	0	0	23
SURPRISE = 8	108	114	0	0	0	0	0	114
SURPRISE = 9	109	12	0	0	0	0	0	12
SURPRISE = 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL - AF/YR		881536	273856	105979	267458	6577	2477	225189

TABLE 38. SOLUTION D WATER BUDGET, 2010

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D. 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	873	0	0	873	0	0	0
CITIZENS AGUA FRIA	4	22182	0	0	0	0	0	22182
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	23306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	0	0	0	11597
GOODYEAR # 2	13	23322	0	23322	0	0	0	0
LPSCO	14	9045	0	0	9045	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	309	0	0	0	0	0	309
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
QUEEN CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	5387	0	0	0	0	0	5387
GROUND WATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA # 3	44	455	0	0	0	0	0	455
BUCKEYE IM	45	1938	0	0	0	0	0	1938
BUCKEYE OM	46	126	0	0	0	0	0	126
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160900	8100	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 38. SOLUTION D WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D: 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (NMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAVCO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	0	0	0	2893
WEST END	74	292	0	0	0	0	0	292
PEORIA # 6	75	908	0	0	0	0	0	908
SUNRISE	76	1242	0	0	0	0	0	1242
PEORIA # 2A	77	20461	0	0	0	0	0	20461
BUCKEYE SOUTH	79	174	0	0	0	0	0	174
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2144	0	0	2144	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	42	0	0	42	0	0	0
WEST MARICOPA COMBINE 90	90	7	0	0	0	0	0	7
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1139	0	0	0	0	0	1139
6068DYEAR OUTSIDE	94	3215	0	3215	0	0	0	0
WEST MARICOPA COMBINE 95	95	3	0	0	3	0	0	0
6068DYEAR # 3	96	0	0	0	0	0	0	0
6068DYEAR # 4	97	754	0	754	0	0	0	0
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	0	0	0	221
SURPRISE # 3	100	319	0	0	0	0	0	319
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	2	0	0	0	0	0	2
SURPRISE # 4	105	125	0	0	0	0	0	125
SURPRISE # 7	106	98	0	0	0	0	0	98
SURPRISE # 8	108	162	0	0	0	0	0	162
SURPRISE # 9	109	13	0	0	0	0	0	13
SURPRISE # 13	110	11	0	0	0	0	0	11
WMC TONOPAH	201	264	0	0	0	0	0	264
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL AF/YR		1005820	292076	138821	282991	12409	35595	243928

TABLE 39. SOLUTION D WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D. 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1170	0	0	1170	0	0	0
CITIZENS AGUA FRIA	4	24404	0	0	0	0	0	24404
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	0	0	0	14279
GOODYEAR # 2	13	32867	0	0	32867	0	0	0
LPSCO	14	11982	0	0	11982	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	404	0	0	0	0	0	404
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37680	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
GILA RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUND WATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA # 3	44	1144	0	0	0	0	0	1144
BUCKEYE IM	45	3541	0	0	0	0	0	3541
BUCKEYE OM	46	312	0	0	0	0	0	312
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151900	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 39. SOLUTION D WATER BUDGET. 2015 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D. 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (NMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAV CO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	0	0	0	4591
WEST END	74	314	0	0	0	0	0	314
PEORIA # 6	75	1155	0	0	0	0	0	1155
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	27412	0	0	0	0	0	27412
BUCKEYE SOUTH	79	794	0	0	0	0	0	794
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2222	0	0	2222	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	0	0	0	47
WEST MARICOPA COMBINE 87	87	8	0	0	0	0	0	8
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	66	0	0	66	0	0	0
WEST MARICOPA COMBINE 90	90	10	0	0	0	0	0	10
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1529	0	0	0	0	0	1529
GOODYEAR OUTSIDE	94	4301	0	0	4301	0	0	0
WEST MARICOPA COMBINE 95	95	5	0	0	5	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	997	0	0	0
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	0	0	0	261
SURPRISE # 3	100	451	0	0	0	0	0	451
SURPRISE # 10	102	13	0	0	0	0	0	13
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	3	0	0	0	0	0	3
SURPRISE # 4	105	181	0	0	0	0	0	181
SURPRISE # 7	106	99	0	0	0	0	0	99
SURPRISE # 8	108	258	0	0	0	0	0	258
SURPRISE # 9	109	18	0	0	0	0	0	18
SURPRISE # 13	110	14	0	0	0	0	0	14
WMIC TONOPAH	201	370	0	0	0	0	0	370
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL - AF/YR		1122720	308322	115415	317357	15641	67707	298278

TABLE 40. SOLUTION D WATER BUDGET, 2020

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION D. 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1568	0	0	1568	0	0	0
CITIZENS AGUA FRIA	4	26622	0	0	0	0	0	26622
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR # 2	13	45570	0	0	45570	0	0	0
UPSCO	14	14915	0	0	14915	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	735	0	0	0	0	0	735
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
HASSAYAMPA BASIN WPA	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
GILA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GILBERT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUND WATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GLENDALE/PEORIA WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA # 3	44	2571	0	0	0	0	0	2571
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 40. SOLUTION D WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB. 2000 RUN SOLUTION D, 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (INMED) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	0	0	0	386
PEORIA # 6	75	1612	0	0	0	0	0	1612
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	29747	0	0	0	0	0	29747
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE # 1	80	230	0	0	0	0	0	230
SURPRISE # 2	81	132	0	0	0	0	0	132
CITIZENS AGUA FRIA # 2	82	2443	0	0	2443	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	135	0	0	0
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5383	0	0	5383	0	0	0
WEST MARICOPA COMBINE 95	95	16	0	0	16	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	1248	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	0	0	0	351
SURPRISE # 3	100	743	0	0	0	0	0	743
SURPRISE # 10	102	15	0	0	0	0	0	15
SURPRISE # 11	103	2	0	0	0	0	0	2
SURPRISE # 12	104	4	0	0	0	0	0	4
SURPRISE # 4	105	327	0	0	0	0	0	327
SURPRISE # 7	106	684	0	0	0	0	0	684
SURPRISE # 8	108	400	0	0	0	0	0	400
SURPRISE # 9	109	26	0	0	0	0	0	26
SURPRISE # 13	110	26	0	0	0	0	0	26
WMC TONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF/YR		1246600	326734	120399	326469	18041	98487	356470

TABLE 41. SOLUTION D WATER BUDGET, 2025

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	2099	0	0	2099	0	0	0
CITIZENS AGUA FRIA	4	28843	0	0	0	0	0	28843
EL MIRAGE WPA	5	1662	0	0	0	0	0	1662
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	18	0	0	0	0	0	18
AVONDALE (INMOD)	8	11694	0	0	0	0	0	11694
GLENDALE SRP	9	43469	30428	13041	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	23226	0	0	0	0	0	23226
GOODYEAR + 2	13	58288	0	0	58288	0	0	0
LPSCO	14	17839	0	0	17839	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	1067	0	0	0	0	0	1067
TOLLESON WPA	17	4172	2920	1252	0	0	0	0
HASSAYAMPA BASIN WPA	20	5302	0	0	0	0	0	5302
RAINBOW VALLEY WPA	21	1813	0	0	0	0	0	1813
GILBERT-SRP WPA	22	46472	32530	13942	0	0	0	0
GILBERT-RWCD WPA	23	25096	0	0	4800	0	0	20296
CAVE CREEK WPA	24	373	0	0	0	0	200	173
GILA RIVER WPA	25	489	0	0	0	0	0	489
QUEEN CREEK	26	7607	0	0	0	0	0	7607
GILBERT WPA	27	9250	0	0	200	0	0	9050
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	12296	0	0	0	0	0	12296
GROUND WATER (OUTMOD) WPA	30	7397	0	0	0	0	0	7397
SCOTTSDALE (INMOD) WPA	31	81099	0	0	64000	0	0	17099
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	967	0	0	967	0	0	0
TEMPE WPA	34	5734	5734	0	0	0	0	0
TEMPE SRP WPA	35	47773	0	0	4400	0	0	43373
CHANDLER RWCD WPA	36	13429	0	0	3125	0	0	10304
CHANDLER SRP WPA	37	58133	40693	17440	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	54255	0	0	0	0	0	54255
MESA RWCD WPA	40	10970	0	0	10970	0	0	0
MESA SRP WPA	41	45748	32024	13724	0	0	0	0
CAREFREE (INMOD) WPA	42	28	0	0	0	0	0	28
CAREFREE (OUTMOD) WPA	43	4085	0	0	0	0	0	4085
PEORIA + 3	44	3965	0	0	0	0	0	3965
BUCKEYE IM	45	8427	0	0	0	0	0	8427
BUCKEYE OM	46	1602	0	0	0	0	0	1602
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	274243	0	0	142300	14600	117343	0
FOUNTAIN HILLS WPA	57	16632	0	0	0	0	0	16632
CAVE CREEK (OUTMOD) WPA	58	2565	0	0	0	0	0	2565

TABLE 41. SOLUTION D WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION D: 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD: 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2609	0	0	0	0	18	2591
PEORIA SRP	63	16288	11402	4886	0	0	0	0
PHOENIX SRP	65	209241	160463	48778	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	12409	0	0	0	0	0	12409
AVONDALE-SRP (NMOD) WPA	68	15381	10767	4614	0	0	0	0
MARICOPA EAST	70	7	0	0	0	0	0	7
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	8771	0	0	0	0	0	8771
WEST END	74	452	0	0	0	0	0	452
PEORIA # 6	75	2069	0	0	0	0	0	2069
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	31683	0	0	0	0	0	31683
BUCKEYE SOUTH	79	3508	0	0	0	0	0	3508
SURPRISE # 1	80	241	0	0	0	0	0	241
SURPRISE # 2	81	166	0	0	0	0	0	166
CITIZENS AGUA FRIA # 2	82	2665	0	0	2665	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	152	0	0	0	0	0	152
WEST MARICOPA COMBINE 87	87	24	0	0	0	0	0	24
WEST MARICOPA COMBINE 88	88	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 89	89	204	0	0	204	0	0	0
WEST MARICOPA COMBINE 90	90	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 91	91	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 92	92	3157	0	0	0	0	0	3157
GOODYEAR OUTSIDE	94	6482	0	0	6482	0	0	0
WEST MARICOPA COMBINE 95	95	28	0	0	28	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1486	0	0	1486	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	439	0	0	0	0	0	439
SURPRISE # 3	100	1033	0	0	0	0	0	1033
SURPRISE # 10	102	18	0	0	0	0	0	18
SURPRISE # 11	103	3	0	0	0	0	0	3
SURPRISE # 12	104	6	0	0	0	0	0	6
SURPRISE # 4	105	471	0	0	0	0	0	471
SURPRISE # 7	106	684	0	0	0	0	0	684
SURPRISE # 8	108	543	0	0	0	0	0	543
SURPRISE # 9	109	34	0	0	0	0	0	34
SURPRISE # 13	110	39	0	0	0	0	0	39
WMIDD NONOPAH	201	845	0	0	0	0	0	845
OUTSIDE	999	16200	0	0	0	0	0	16200
TOTAL - AF/YR		1367779	344284	125101	345057	19641	120157	413539

Solution D - GMS MODFLOW Input Files

The following section describes each of the MODFLOW input files used for the Solution D simulation. The input files for the Basecase simulation, except for some changed assumptions reflected in the new well and recharge input files (unique to Solution D), were renamed and used.

Scen26Drun1.bas: the basic package file. Eleven stress periods are specified to the year 2100. Stress periods 8, 9, and 10 use 100 time steps (each is one-month in duration) and stress period 11 uses 912 (each one month duration) time steps. Time steps are the same as for the Basecase (and CTA) in the first seven stress periods. All IUNIT array index and unit numbers are identical between the Basecase and Solution D basic packages. The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Solution D basic package options use 1) -8989.89 to display no-flow (inactive) cells in the output, 2) save starting heads is enabled, 3) Time unit is in days

Scen26Drun1.bcf: the block-centered flow (BCF3) package file. This input package file is the same as the Basecase BCF3 file. Options are: 1) transient simulation, 2) CCF saved to unit 39, 3) 9999.99 to display head assigned to dry cells in the output; this flag is used in the well deepening scripts, 4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH), 5) interblock transmissivity by harmonic mean, 6) anisotropy factor of 1.0, and 7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between layer types confined/unconfined (type 3). Transmissivity changes in type 3.

Scen26Drun1.oc: the output control package file. Identical to the Basecase output control file. It is setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model.

Scen26Drun1.et: the evapotranspiration package file. Identical to the Basecase E-T file. Options used are: 1) apply to top layer only, 2) CCF output to Unit 39, 3) E-T elevation multiplier is 1.0, max. E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen26Drun1.riv: the river package file. Identical to the Basecase river file. Only applicable for layer one. Options used are: CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River and the Gila River are simulated using the River package.

Well1.wel: the well package file. This is the eleven stress period MODFLOW compatible well input file reflecting the changed demand assumptions unique to Solution D. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files are well2.wel, well3.well and so forth to well10.wel. Except in those areas (cells) which are changed by varying pumping assumptions of Solution D, stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms are saved to Unit 39. As is customary and like the Basecase model, well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values.

Recharg26D.rch: the recharge package file. This is the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions file Wsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process, the ArcView converted recharge file (e.g. recharg26D.rch) is not altered in interim MODFLOW runs from stress period to stress period. It is input once at the beginning of a simulation whether deepened or not. Although recharge rates and/or locations may vary between the Basecase and Solution D, the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells is the same.

Scen26Drun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in Solution D is the same used for the Basecase for comparison reasons. The parameter options used in Solution D are:
1) maximum number of iterations per time step for convergence is 200, 2) the acceleration parameter is 1.0, 3) the head change criterion for convergence is 0.5 feet, and 4) print-out interval flag is zero.

Figure 28. Potential Regional Solution E - Infrastructure Layout

Tables

42. Solution E Water Budget, 1995
43. Solution E Water Budget, 2000
44. Solution E Water Budget, 2005
45. Solution E Water Budget, 2010
46. Solution E Water Budget, 2015
47. Solution E Water Budget, 2020
48. Solution E Water Budget, 2025

GMS MODFLOW Input File Descriptions

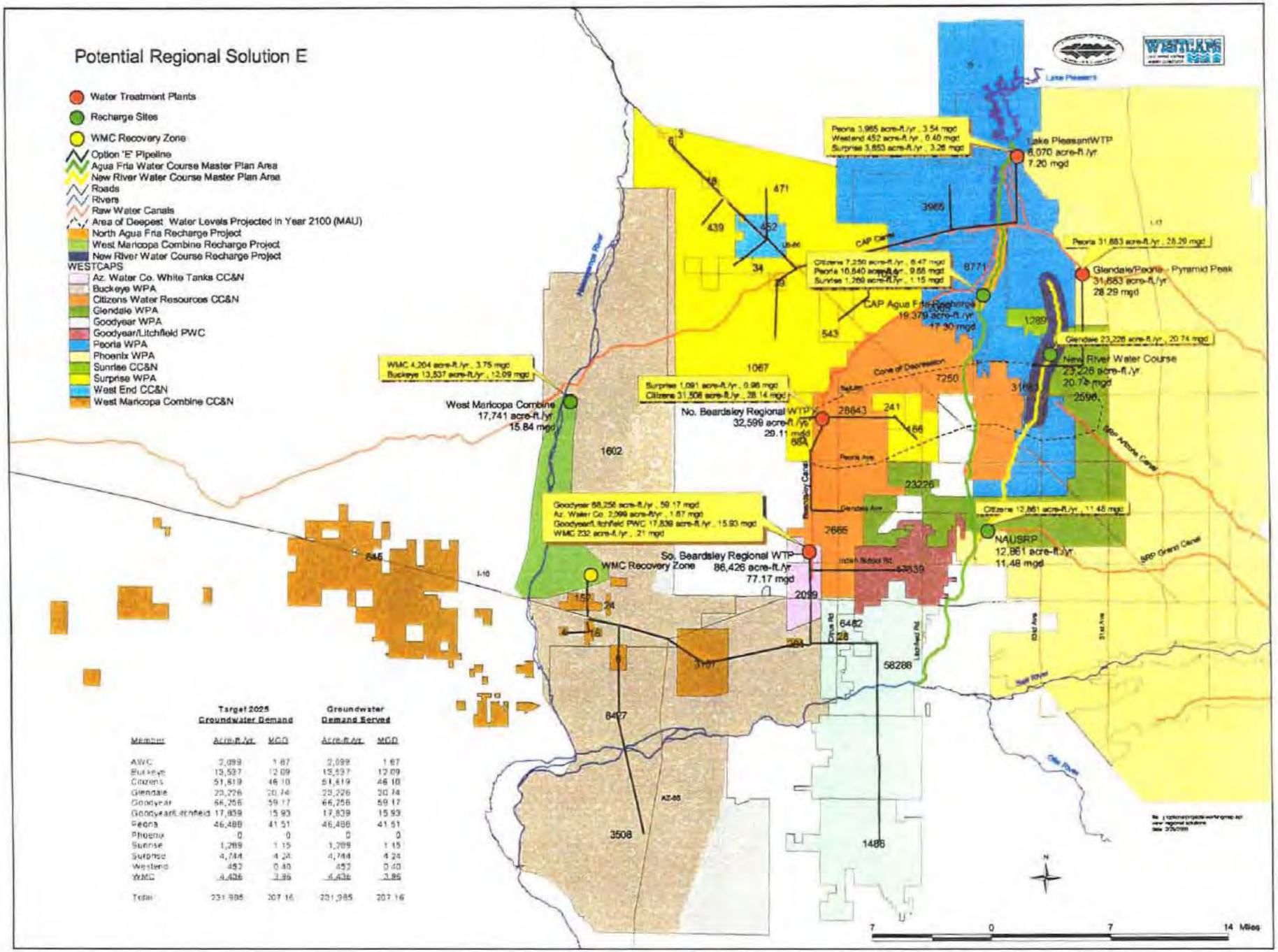

Potential Regional Solution E
Water Treatment Plants
Recharge Sites
WMC Recovery Zone
Option 'E' Pipeline
Agua Fria Water Course Master Plan Area
New River Water Course Master Plan Area
Roads
Rivers
Raw Water Canals
Area of Deepest Water Levels Projected in Year 2100 (MAU)
North Agua Fria Recharge Project
West Maricopa Combine Recharge Project
New River Water Course Recharge Project
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N
Surprise WPA
West End CC&N
West Maricopa Combine CC&N
Lake Pleasant WTP
6,070 acre-ft./yr
7.20 mgd
Glendale/Peoria - Pyramid Peak
31,883 acre-ft./yr
28.29 mgd
New River Water Course
23,226 acre-ft./yr
20.74 mgd
CAP Agua Fria Recharge
19,379 acre-ft./yr
17.30 mgd
West Maricopa Combine
17,741 acre-ft./yr
15.84 mgd
No. Beardsley Regional WTP
32,599 acre-ft./yr
29.11 mgd
So. Beardsley Regional WTP
86,426 acre-ft./yr
77.17 mgd
WMC Recovery Zone
NAUSRP
12,861 acre-ft./yr
11.48 mgd
Cone of Depression
Beardsley Canal
New Waddell Canal
Grand Canal
Agua Fria River
Gila River
CAP Canal
I-10
Target 2025 Groundwater Demand
Groundwater Demand Served
Member | Acre-ft./yr. | MGD | Acre-ft./yr. | MGD
AWC | 2,099 | 1.87 | 2,099 | 1.87
Buckeye | 13,537 | 12.09 | 13,537 | 12.09
Citizens | 51,819 | 46.10 | 51,819 | 46.10
Glendale | 23,226 | 20.74 | 23,226 | 20.74
Goodyear | 66,256 | 59.17 | 66,256 | 59.17
Goodyear/Litchfield | 17,839 | 15.93 | 17,839 | 15.93
Peoria | 46,488 | 41.51 | 46,488 | 41.51
Phoenix | 0 | 0 | 0 | 0
Sunrise | 1,289 | 1.15 | 1,289 | 1.15
Surprise | 4,744 | 4.24 | 4,744 | 4.24
Westend | 452 | 0.40 | 452 | 0.40
WMC | 4,436 | 3.96 | 4,436 | 3.96
Total | 231,985 | 207.16 | 231,985 | 207.16
7 0 7 14 Miles

Figure 28

TABLE 42. SOLUTION F WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
LPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
HASSAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
CAVE CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUND WATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 42. SOLUTION E WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP (INMOD) WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
CITIZENS AGUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMC TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 43. SOLUTION E WATER BUDGET, 2000

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR # 2	13	7619	0	0	0	0	0	7619
LPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
GILA RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUND WATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39978	0	0	39978	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 43. SOLUTION E WATER BUDGET, 2000 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP (UNMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAVCO	71	0	0	0	0	0	0	0
PEORIA # 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA # 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA # 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	188	0	0	0	0	0	188
SURPRISE # 2	81	96	0	0	0	0	0	96
CITIZENS AGUA FRIA # 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	198	0	0	0	0	0	198
PEORIA # 2	98	1349	0	0	1349	0	0	0
SURPRISE # 5	99	202	0	0	0	0	0	202
SURPRISE # 3	100	117	0	0	0	0	0	117
SURPRISE # 10	102	9	0	0	0	0	0	9
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	53	0	0	0	0	0	53
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	85	0	0	0	0	0	85
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	9	0	0	0	0	0	9
WMC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 44. SOLUTION E WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD. 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR # 2	13	15675	0	0	0	0	0	15675
EPSCO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27990	19593	8397	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
GILA RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUNDWATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GLADAFUP WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA # 3	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 44. SOLUTION E WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (NMOD) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA # 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA # 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA # 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUA FRIA # 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	476	0	0	0	0	0	476
PEORIA # 2	98	3771	0	0	3771	0	0	0
SURPRISE # 5	99	213	0	0	0	0	0	213
SURPRISE # 3	100	224	0	0	0	0	0	224
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	1	0	0	0	0	0	1
SURPRISE # 4	105	99	0	0	0	0	0	99
SURPRISE # 7	106	23	0	0	0	0	0	23
SURPRISE # 8	108	114	0	0	0	0	0	114
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	11	0	0	0	0	0	11
WMIC TONOPAH	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL - AF YR		881536	273856	105979	267458	6577	2477	225189

TABLE 45. SOLUTION E WATER BUDGET, 2010

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W TANKS	3	873	0	0	873	0	0	0
CITIZENS AGUA FRIA	4	22182	0	0	22182	0	0	0
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	25306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	0	0	0	11597
GOODYEAR = 2	13	23322	0	0	23322	0	0	0
LPSCO	14	9045	0	0	9045	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE = 6	16	309	0	0	309	0	0	0
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
ROCK CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	5387	0	0	0	0	0	5387
GROUNDWATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA = 3	44	455	0	0	455	0	0	0
BUCKEYE IM	45	1938	0	0	0	0	0	1938
BUCKEYE OM	46	126	0	0	0	0	0	126
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160980	8160	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 45. SOLUTION E WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (INMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAV CO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	0	0	0	2893
WEST END	74	292	0	0	292	0	0	0
PEORIA # 6	75	908	0	0	0	0	0	908
SUNRISE	76	1242	0	0	0	0	0	1242
PEORIA # 2A	77	20461	0	0	20461	0	0	0
BUCKEYE SOUTH	79	174	0	0	0	0	0	174
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA FRIA # 2	82	2144	0	0	2144	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	42	0	0	42	0	0	0
WEST MARICOPA COMBINE 90	90	7	0	0	0	0	0	7
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1139	0	0	0	0	0	1139
GOODYEAR OUTSIDE	94	3215	0	0	3215	0	0	0
WEST MARICOPA COMBINE 95	95	3	0	0	3	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	754	0	0	754	0	0	0
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	221	0	0	0
SURPRISE # 3	100	319	0	0	319	0	0	0
SURPRISE # 10	102	11	0	0	11	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	2	0	0	2	0	0	0
SURPRISE # 4	105	125	0	0	125	0	0	0
SURPRISE # 7	106	98	0	0	98	0	0	0
SURPRISE # 8	108	162	0	0	162	0	0	0
SURPRISE # 9	109	13	0	0	13	0	0	0
SURPRISE # 13	110	11	0	0	11	0	0	0
WMC TONOPAH	201	264	0	0	0	0	0	264
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL - AF/YR		1005820	292076	111530	355262	12409	35595	198948

TABLE 46. SOLUTION E WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2006 RUN SOLUTION E 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1170	0	0	1170	0	0	0
CITIZENS AGUA FRIA	4	24404	0	0	24404	0	0	0
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	0	0	0	14279
GOODYEAR # 2	13	32867	0	0	32867	0	0	0
UPSCO	14	11982	0	0	11982	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	404	0	0	404	0	0	0
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37680	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
GILA RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUNDWATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA # 5	44	1144	0	0	1144	0	0	0
BUCKEYE IM	45	3541	0	0	0	0	0	3541
BUCKEYE OM	46	312	0	0	0	0	0	312
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151900	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 46. SOLUTION E WATER BUDGET, 2015 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (NMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAV CO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	0	0	0	4591
WEST END	74	314	0	0	314	0	0	0
PEORIA # 6	75	1155	0	0	0	0	0	1155
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	27412	0	0	27412	0	0	0
BUCKEYE SOUTH	79	794	0	0	0	0	0	794
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA FRIA # 2	82	2222	0	0	2222	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	0	0	0	47
WEST MARICOPA COMBINE 87	87	8	0	0	0	0	0	8
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	66	0	0	66	0	0	0
WEST MARICOPA COMBINE 90	90	10	0	0	0	0	0	10
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1529	0	0	0	0	0	1529
GOODYEAR OUTSIDE	94	4301	0	0	4301	0	0	0
WEST MARICOPA COMBINE 95	95	5	0	0	5	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	997	0	0	0
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	261	0	0	0
SURPRISE # 3	100	451	0	0	451	0	0	0
SURPRISE # 10	102	13	0	0	13	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	3	0	0	3	0	0	0
SURPRISE # 4	105	181	0	0	181	0	0	0
SURPRISE # 7	106	99	0	0	99	0	0	0
SURPRISE # 8	108	258	0	0	258	0	0	0
SURPRISE # 9	109	18	0	0	18	0	0	0
SURPRISE # 13	110	14	0	0	14	0	0	0
WMC TONOPAH	201	370	0	0	0	0	0	370
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL - AF/YR		1122720	308322	115415	372652	15641	67707	242983

TABLE 47. SOLUTION E WATER BUDGET, 2020

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	1568	0	0	1568	0	0	0
CITIZENS AGUA FRIA	4	26622	0	0	26622	0	0	0
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR + 2	13	45570	0	0	45570	0	0	0
LITCHFIELD PARK SERVICE CO	14	14915	0	0	14915	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE + 6	16	735	0	0	735	0	0	0
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
BUCKEYE SALT SRP	18	0	0	0	0	0	0	0
BUCKEYE SALT IM	19	0	0	0	0	0	0	0
BUCKEYE SALT OM	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
SUA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GILBERT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUNDWATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA + 3	44	2571	0	0	2571	0	0	0
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 47. SOLUTION E WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (INMOD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA + AVCO	71	28	0	0	28	0	0	0
PEORIA # 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	386	0	0	0
PEORIA # 6	75	1612	0	0	0	0	0	1612
SUNDUST	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	29747	0	0	29747	0	0	0
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE # 1	80	230	0	0	230	0	0	0
SURPRISE # 2	81	132	0	0	132	0	0	0
LITCHFIELD AGUA FRIA # 2	82	2443	0	0	2443	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	135	0	0	0
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5383	0	0	5383	0	0	0
WEST MARICOPA COMBINE 95	95	16	0	0	16	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	1248	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	351	0	0	0
SURPRISE # 3	100	743	0	0	743	0	0	0
SURPRISE # 10	102	15	0	0	15	0	0	0
SURPRISE # 11	103	2	0	0	2	0	0	0
SURPRISE # 12	104	4	0	0	4	0	0	0
SURPRISE # 4	105	327	0	0	327	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	400	0	0	400	0	0	0
SURPRISE # 9	109	26	0	0	26	0	0	0
SURPRISE # 13	110	26	0	0	26	0	0	0
WMC TONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF/YR		1246600	326734	120399	389470	18041	98487	293469

TABLE 48. SOLUTION E WATER BUDGET, 2025

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	2099	0	0	2099	0	0	0
CITIZENS AGUA FRIA	4	28843	0	0	28843	0	0	0
EL MIRAGE WPA	5	1662	0	0	0	0	0	1662
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	18	0	0	0	0	0	18
AVONDALE (INMOD)	8	11694	0	0	0	0	0	11694
GLENDALE SRP	9	43469	30428	13041	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	23226	0	0	0	0	0	23226
GOODYEAR # 2	13	58288	0	0	58288	0	0	0
LPSCO	14	17839	0	0	17839	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	1067	0	0	1067	0	0	0
TOLLESON WPA	17	4172	2920	1252	0	0	0	0
HASSAYAMPA BASIN WPA	20	5302	0	0	0	0	0	5302
RAINBOW VALLEY WPA	21	1813	0	0	0	0	0	1813
GILBERT-SRP WPA	22	46472	32530	13942	0	0	0	0
GILBERT-RWCD WPA	23	25096	0	0	4800	0	0	20296
CAVE CREEK WPA	24	373	0	0	0	0	200	173
GILA RIVER WPA	25	489	0	0	0	0	0	489
QUEEN CREEK	26	7607	0	0	0	0	0	7607
GILBERT WPA	27	9250	0	0	200	0	0	9050
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	12296	0	0	0	0	0	12296
GROUND WATER (OUTMOD) WPA	30	7397	0	0	0	0	0	7397
SCOTTSDALE (INMOD) WPA	31	81099	0	0	64000	0	0	17099
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	967	0	0	967	0	0	0
TEMPE WPA	34	5734	5734	0	0	0	0	0
TEMPE SRP WPA	35	47773	0	0	4400	0	0	43373
CHANDLER RWCD WPA	36	13429	0	0	3125	0	0	10304
CHANDLER SRP WPA	37	58133	40693	17440	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	54255	0	0	0	0	0	54255
MESA RWCD WPA	40	10970	0	0	10970	0	0	0
MESA SRP WPA	41	45748	32024	13724	0	0	0	0
CAREFREE (INMOD) WPA	42	28	0	0	0	0	0	28
CAREFREE (OUTMOD) WPA	43	4085	0	0	0	0	0	4085
PEORIA # 3	44	3965	0	0	3965	0	0	0
BUCKEYE IM	45	8427	0	0	0	0	0	8427
BUCKEYE OM	46	1602	0	0	0	0	0	1602
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	274243	0	0	142300	14600	117343	0
FOUNTAIN HILLS WPA	57	16632	0	0	0	0	0	16632
CAVE CREEK (OUTMOD) WPA	58	2565	0	0	0	0	0	2565

TABLE 48. SOLUTION E WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION E, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2609	0	0	0	0	18	2591
PEORIA SRP	63	16288	11402	4886	0	0	0	0
PHOENIX SRP	65	209241	160463	48778	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	12409	0	0	0	0	0	12409
AVONDALE-SRP (INMOD) WPA	68	15381	10767	4614	0	0	0	0
MARICOPA EAST	70	7	0	0	0	0	0	7
PEORIA - YAV CO	71	28	0	0	28	0	0	0
PEORIA # 5	73	8771	0	0	0	0	0	8771
WEST END	74	452	0	0	452	0	0	0
PEORIA # 6	75	2069	0	0	0	0	0	2069
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	31683	0	0	31683	0	0	0
BUCKEYE SOUTH	79	3508	0	0	0	0	0	3508
SURPRISE # 1	80	241	0	0	241	0	0	0
SURPRISE # 2	81	166	0	0	166	0	0	0
CITIZENS AGUAFRIA # 2	82	2665	0	0	2665	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	152	0	0	0	0	0	152
WEST MARICOPA COMBINE 87	87	24	0	0	0	0	0	24
WEST MARICOPA COMBINE 88	88	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 89	89	204	0	0	204	0	0	0
WEST MARICOPA COMBINE 90	90	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 91	91	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 92	92	3157	0	0	0	0	0	3157
GOODYEAR OUTSIDE	94	6482	0	0	6482	0	0	0
WEST MARICOPA COMBINE 95	95	28	0	0	28	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1486	0	0	1486	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	439	0	0	439	0	0	0
SURPRISE # 3	100	1033	0	0	1033	0	0	0
SURPRISE # 10	102	18	0	0	18	0	0	0
SURPRISE # 11	103	3	0	0	3	0	0	0
SURPRISE # 12	104	6	0	0	6	0	0	0
SURPRISE # 4	105	471	0	0	471	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	543	0	0	543	0	0	0
SURPRISE # 9	109	34	0	0	34	0	0	0
SURPRISE # 13	110	39	0	0	39	0	0	0
WMC TONOPAH	201	845	0	0	0	0	0	845
OUTSIDE	999	16200	0	0	0	0	0	16200
TOTAL AF/YR		1367779	344284	125101	414744	19641	120157	343852

Solution E - GMS MODFLOW Input Files

The following section describes each of the MODFLOW input files used for the Solution E simulation. The input files for the Basecase simulation, except for some changed assumptions reflected in the new well and recharge input files (unique to Solution E), were renamed and used.

Scen2~Drun1.bas: the basic package file. Eleven stress periods are specified to the year 2100. Stress periods 8, 9, and 10 use 100 time steps (each is one-month in duration) and stress period 11 uses 912 time steps (each of one month duration). Time steps are the same as for the Basecase (and CTA) in the first seven stress periods. All IUNIT array index and unit numbers are identical between the Basecase and Solution E basic packages.
The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Solution E basic package options use 1) -8989.89 to display no-flow (inactive) cells in the output, 2) save starting heads is enabled, 3) Time unit is in days

Scen2~Drun1.bcf: the block-centered flow (BCF3) package file. This input package file is the same as the Basecase BCF3 file. Options are: 1) transient simulation, 2) CCF saved to unit 39, 3) 9999.99 to display head assigned to dry cells in the output; this flag is used in the well deepening scripts, 4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH), 5) interblock transmissivity by harmonic mean, 6) anisotropy factor of 1.0, and 7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between layer types confined/unconfined (type 3). Transmissivity changes in type 3.

Scen2~Drun1.oc: the output control package file. Identical to the Basecase output control file. It is setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model.

Scen2~Drun1.et: the evapotranspiration package file. Identical to the Basecase E-T file. Options used are: 1) apply to top layer only, 2) CCF output to Unit 39, 3) E-T elevation multiplier is 1.0, max. E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen27Drun1.riv: the river package file. Identical to the Basecase river file. Only applicable for layer one. Options used are: CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River and the Gila River are simulated using the river package.

Well1.wel: the well package file. This is the eleven stress period MODFLOW compatible well input file reflecting the changed demand assumptions unique to Solution E. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files are well2.wel. well3.well and so forth to well10.wel. Except in those areas (cells) which are changed by varying pumping assumptions of Solution E. stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms are saved to Unit 39. As is customary and like the Basecase model. well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values.

Recharg27D.rch: the recharge package file. This is the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions file Wsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process. the ArcView converted recharge file (e.g. recharg27D.rch) is not altered in interim MODFLOW runs from stress period to stress period. It is input once at the beginning of a simulation whether deepened or not. Although recharge rates and/or locations may vary between the Basecase and Solution E. the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells is the same.

Scen27Drun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in Solution E is the same used for the Basecase for comparison reasons. The parameter options used in Solution E are:
1) maximum number of iterations per time step for convergence is 200. 2) the acceleration parameter is 1.0. 3) the head change criterion for convergence is 0.5 feet. and 4) print-out interval flag is zero.

Figures 29 & 30. Potential Regional Solutions F & G - Infrastructure Layouts

Tables

49. Solution F/G Water Budget, 1995
50. Solution F/G Water Budget, 2000
51. Solution F/G Water Budget, 2005
52. Solution F/G Water Budget, 2010
53. Solution F/G Water Budget, 2015
54. Solution F/G Water Budget, 2020
55. Solution F/G Water Budget, 2025

GMS MODFLOW Input File Descriptions

Solutions F&G (F/G)

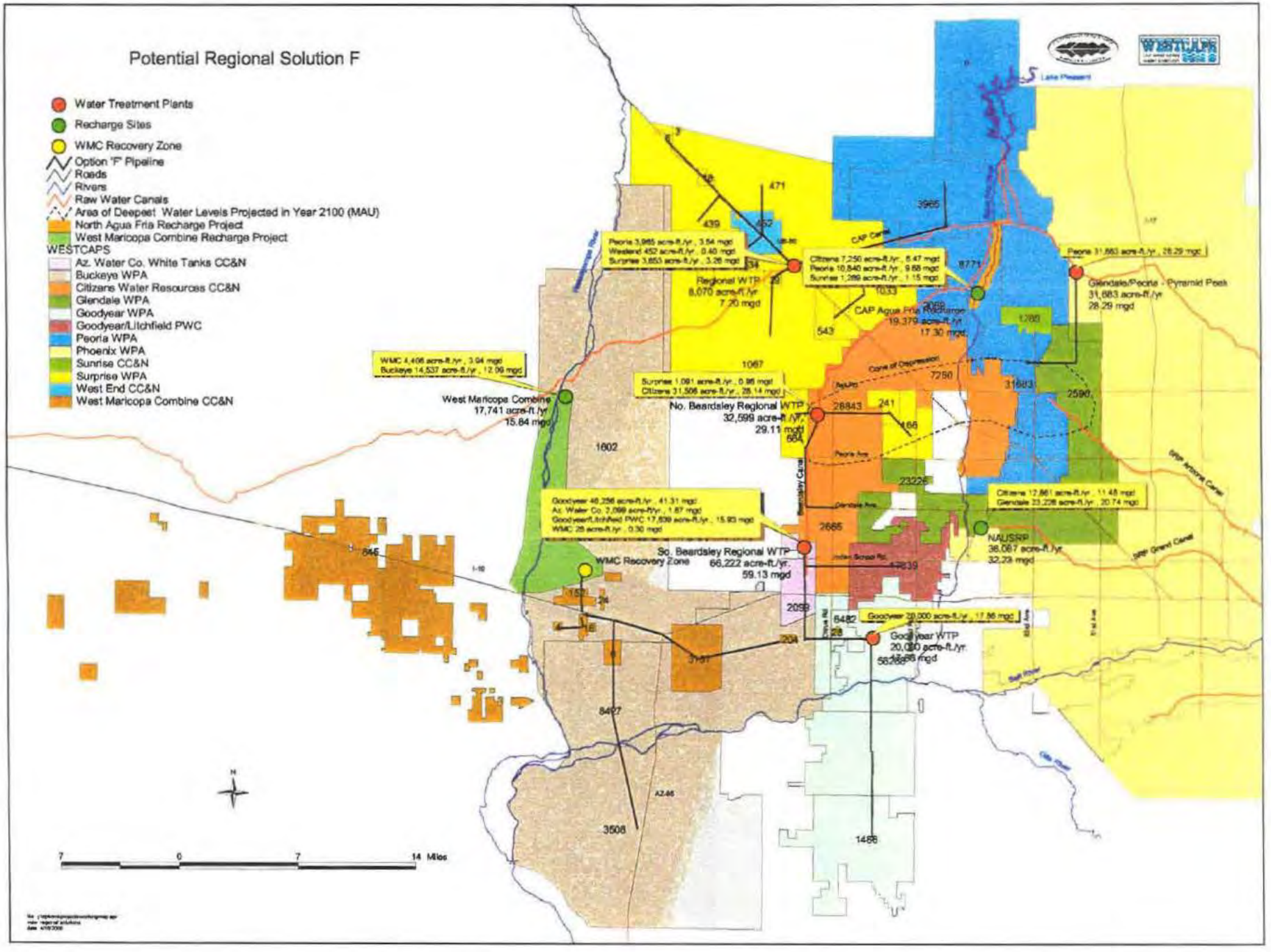

Potential Regional Solution F
Water Treatment Plants
Recharge Sites
WMC Recovery Zone
Option 'F' Pipeline
Roads
Rivers
Raw Water Canals
Area of Deepest Water Levels Projected in Year 2100 (MAU)
North Agua Fria Recharge Project
West Maricopa Combine Recharge Project
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N
Surprise WPA
West End CC&N
West Maricopa Combine CC&N
West Maricopa Combine
17,741 acre-ft./yr
15.84 mgd
WMC Recovery Zone
No. Beardsley Regional WTP
32,599 acre-ft./yr
29.11 mgd
So. Beardsley Regional WTP
66,222 acre-ft./yr
59.13 mgd
Goodyear WTP
20,000 acre-ft./yr
17.86 mgd
Regional WTP
8,070 acre-ft./yr
7.20 mgd
CAP Agua Fria Recharge
19,379 acre-ft./yr
17.30 mgd
Glendale/Peoria - Pyramid Peak
31,683 acre-ft./yr
28.29 mgd
NAUSRP
36,067 acre-ft./yr
32.23 mgd
Lake Pleasant
CAP Canal
Beardsley Canal
New Waddell Dam
Central Arizona Project
Salt River
Gila River
7 0 7 14 Miles

Figure 29

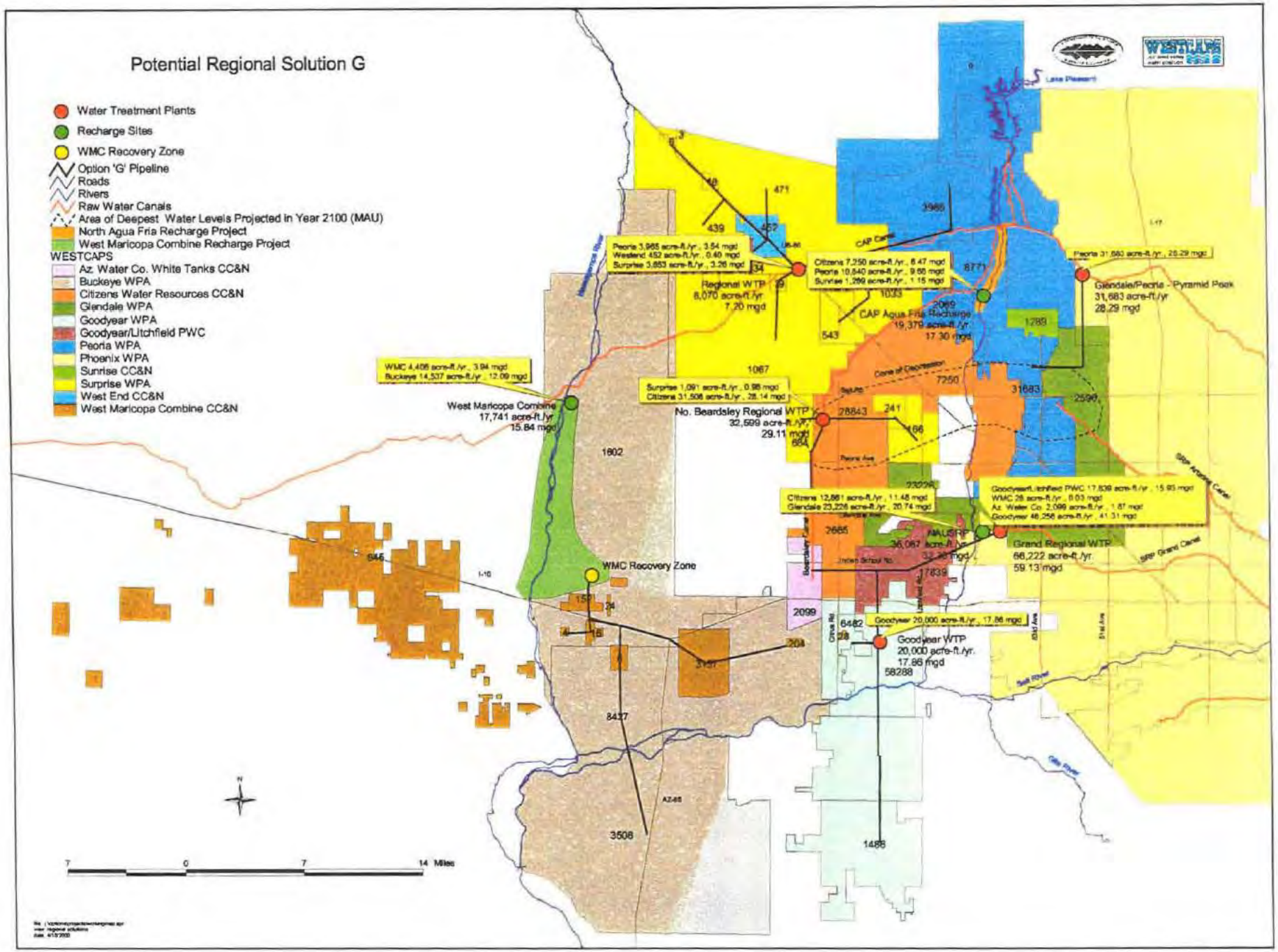

Potential Regional Solution G
Water Treatment Plants
Recharge Sites
WMC Recovery Zone
Option 'G' Pipeline
Roads
Rivers
Raw Water Canals
Area of Deepest Water Levels Projected in Year 2100 (MAU)
North Agua Fria Recharge Project
West Maricopa Combine Recharge Project
WESTCAPS
Az. Water Co. White Tanks CC&N
Buckeye WPA
Citizens Water Resources CC&N
Glendale WPA
Goodyear WPA
Goodyear/Litchfield PWC
Peoria WPA
Phoenix WPA
Sunrise CC&N
Sunrise WPA
West End CC&N
West Maricopa Combine CC&N
Peoria 3,985 acre-ft./yr., 3.54 mgd
Westend 452 acre-ft./yr., 0.40 mgd
Sunrise 3,853 acre-ft./yr., 3.26 mgd
Regional WTP
8,070 acre-ft./yr.
7.20 mgd
Citizens 7,250 acre-ft./yr., 6.47 mgd
Peoria 10,640 acre-ft./yr., 9.66 mgd
Sunrise 1,299 acre-ft./yr., 1.15 mgd
CAP Agua Fria Recharge
19,379 acre-ft./yr.
17.30 mgd
Peoria 31,683 acre-ft./yr., 28.29 mgd
Glendale/Peoria - Pyramid Peak
31,683 acre-ft./yr.
28.29 mgd
WMC 4,406 acre-ft./yr., 3.94 mgd
Buckeye 14,537 acre-ft./yr., 12.99 mgd
West Maricopa Combine
17,741 acre-ft./yr.
15.84 mgd
Surprise 1,091 acre-ft./yr., 0.98 mgd
Citizens 31,508 acre-ft./yr., 28.14 mgd
No. Beardsley Regional WTP
32,599 acre-ft./yr.
29.11 mgd
Citizens 12,861 acre-ft./yr., 11.48 mgd
Glendale 23,226 acre-ft./yr., 20.74 mgd
Goodyear/Litchfield PWC 17,839 acre-ft./yr., 15.93 mgd
WMC 26 acre-ft./yr., 0.03 mgd
Az. Water Co. 2,099 acre-ft./yr., 1.87 mgd
Goodyear 46,256 acre-ft./yr., 41.31 mgd
Grand Regional WTP
66,222 acre-ft./yr.
59.13 mgd
WMC Recovery Zone
Goodyear 20,000 acre-ft./yr., 17.86 mgd
Goodyear WTP
20,000 acre-ft./yr.
17.86 mgd
58288
1802
8427
3506
1488
14 Miles

Figure 30

TABLE 49. SOLUTION F/G WATER BUDGET, 1995

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION: F/G, 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
SUN CITY WEST	1	5807	0	0	0	0	0	5807
ARIZONA WATER CO. W. TANKS	3	366	0	0	0	0	0	366
CITIZENS AGUA FRIA	4	1181	0	0	0	0	0	1181
EL MIRAGE WPA	5	1288	0	0	0	0	0	1288
SUN CITY WATER CO.	6	12019	0	0	0	0	0	12019
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	2886	0	0	0	0	0	2886
GLENDALE SRP	9	32325	22636	9689	0	0	0	0
GLENDALE IM	10	14380	0	0	14380	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	7610	0	0	0	0	0	7610
GOODYEAR # 2	13	2002	0	0	0	0	0	2002
EPSCO	14	1421	0	0	0	0	0	1421
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	177	0	0	0	0	0	177
TOLLESON WPA	17	1737	1216	521	0	0	0	0
TANNAYAMPA BASIN WPA	20	502	0	0	0	0	0	502
RAINBOW VALLEY WPA	21	21	0	0	0	0	0	21
GILBERT-SRP WPA	22	13802	9661	4141	0	0	0	0
GILBERT-RWCD WPA	23	1293	0	0	1293	0	0	0
PANTANO CREEK WPA	24	42	0	0	0	0	42	0
GILA RIVER WPA	25	352	0	0	0	0	0	352
QUEEN CREEK	26	916	0	0	0	0	0	916
GILBERT WPA	27	138	0	0	138	0	0	0
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	1617	0	0	0	0	0	1617
GROUNDWATER (OUTMOD) WPA	30	568	0	0	0	0	0	568
SCOTTSDALE (INMOD) WPA	31	29314	0	0	29314	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	877	0	0	877	0	0	0
TEMPE WPA	34	2394	2394	0	0	0	0	0
TEMPE SRP WPA	35	41075	0	0	4400	0	0	36675
CHANDLER RWCD WPA	36	818	0	0	818	0	0	0
CHANDLER SRP WPA	37	32285	22600	9685	0	0	0	0
CHANDLER WPA	38	10	0	0	10	0	0	0
MESA WPA	39	18962	0	0	0	0	0	18962
MESA RWCD WPA	40	6131	0	0	6131	0	0	0
MESA SRP WPA	41	38501	26951	11550	0	0	0	0
CAREFREE (INMOD) WPA	42	9	0	0	0	0	0	9
CAREFREE (OUTMOD) WPA	43	1355	0	0	0	0	0	1355
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1053	0	0	0	0	0	1053
BUCKEYE OM	46	76	0	0	0	0	0	76
PARADISE VALLEY (INMOD) W	47	12608	0	0	0	0	0	12608
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	129810	0	0	129810	0	0	0
FOUNTAIN HILLS WPA	57	3329	0	0	0	0	0	3329
CAVE CREEK (OUTMOD) WPA	58	383	0	0	0	0	0	383

TABLE 49. SOLUTION F/G WATER BUDGET, 1995 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 1995	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 1995 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 1995							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	1995	1995	1995	1995	1995	1995	1995
RWCD WPA	60	148	0	0	0	0	18	130
PEORIA SRP	63	9755	6830	2925	0	0	0	0
PHOENIX SRP	65	155180	110860	44320	0	0	0	0
SCOTTSDALE SRP	66	23102	16171	6931	0	0	0	0
SUN LAKES WPA	67	3365	0	0	0	0	0	3365
AVONDALE-SRP/INMODI WPA	68	1949	1364	585	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA # 5	73	246	0	0	0	0	0	246
WEST END	74	260	0	0	0	0	0	260
PEORIA # 6	75	0	0	0	0	0	0	0
SUNRISE	76	273	0	0	0	0	0	273
PEORIA # 2A	77	5901	0	0	0	0	0	5901
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE # 1	80	5	0	0	0	0	0	5
SURPRISE # 2	81	5	0	0	0	0	0	5
LITCHFIELD/AQUA FRIA # 2	82	308	0	0	0	0	0	308
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	650	0	0	0	0	0	650
GOODYEAR OUTSIDE	94	145	0	0	0	0	0	145
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	30	0	0	0	0	0	30
PEORIA # 2	98	57	0	0	57	0	0	0
SURPRISE # 5	99	196	0	0	0	0	0	196
SURPRISE # 3	100	73	0	0	0	0	0	73
SURPRISE # 10	102	8	0	0	0	0	0	8
SURPRISE # 11	103	0	0	0	0	0	0	0
SURPRISE # 12	104	0	0	0	0	0	0	0
SURPRISE # 4	105	22	0	0	0	0	0	22
SURPRISE # 7	106	0	0	0	0	0	0	0
SURPRISE # 8	108	31	0	0	0	0	0	31
SURPRISE # 9	109	10	0	0	0	0	0	10
SURPRISE # 13	110	7	0	0	0	0	0	7
WMIDD TONOPAH	201	69	0	0	0	0	0	69
OUTSIDE	999	2296	0	0	0	0	0	2296
TOTAL - AF/YR		625580	220683	90347	187228	0	60	127262

TABLE 50. SOLUTION F/G WATER BUDGET, 2000

WSRV GROUNDWATER MODEL FEB 2006 RUN SOLUTION F-G, 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	489	0	0	0	0	0	489
CITIZENS AGUA FRIA	4	6674	0	0	0	0	0	6674
EL MIRAGE WPA	5	1318	0	0	0	0	0	1318
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	13	0	0	0	0	0	13
AVONDALE (INMOD)	8	3434	0	0	0	0	0	3434
GLENDALE SRP	9	34848	24411	10437	0	0	0	0
GLENDALE IM	10	17389	0	0	17389	0	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	8806	0	0	0	0	0	8806
GOODYEAR # 2	13	7619	0	0	0	0	0	7619
LPSCO	14	3177	0	0	0	0	0	3177
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	234	0	0	0	0	0	234
TOLLESON WPA	17	1865	1306	559	0	0	0	0
HASSAYAMPA BASIN WPA	20	731	0	0	0	0	0	731
RAINBOW VALLEY WPA	21	49	0	0	0	0	0	49
GILBERT-SRP WPA	22	24439	17107	7332	0	0	0	0
GILBERT-RWCD WPA	23	4064	0	0	4064	0	0	0
CAVE CREEK WPA	24	69	0	0	0	0	69	0
SALT RIVER WPA	25	355	0	0	0	0	0	355
QUEEN CREEK	26	1594	0	0	0	0	0	1594
GILBERT WPA	27	202	0	0	200	0	0	2
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	2875	0	0	0	0	0	2875
GROUNDWATER (OUTMOD) WPA	30	900	0	0	0	0	0	900
SCOTTSDALE (INMOD) WPA	31	39078	0	0	39078	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	915	0	0	915	0	0	0
TEMPE WPA	34	2978	2978	0	0	0	0	0
TEMPE SRP WPA	35	44125	0	0	4400	0	0	39725
CHANDLER RWCD WPA	36	2033	0	0	2033	0	0	0
CHANDLER SRP WPA	37	40146	28102	12044	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	25306	0	0	0	0	0	25306
MESA RWCD WPA	40	7125	0	0	7125	0	0	0
MESA SRP WPA	41	40894	28626	12268	0	0	0	0
CAREFREE (INMOD) WPA	42	13	0	0	0	0	0	13
CAREFREE (OUTMOD) WPA	43	1861	0	0	0	0	0	1861
PEORIA # 3	44	4	0	0	0	0	0	4
BUCKEYE IM	45	1272	0	0	0	0	0	1272
BUCKEYE OM	46	84	0	0	0	0	0	84
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	156743	0	0	156743	0	0	0
FOUNTAIN HILLS WPA	57	4746	0	0	0	0	0	4746
CAVE CREEK (OUTMOD) WPA	58	602	0	0	0	0	0	602

TABLE 50. SOLUTION F/G WATER BUDGET, 2000 (continued)

WSRA GROUNDWATER MODEL FEB 2006 RUN SOLUTION F/G: 2000	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD: 2000 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD: 2000							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2000	2000	2000	2000	2000	2000	2000
RWCD WPA	60	315	0	0	0	0	18	297
PEORIA SRP	63	11862	8305	3557	0	0	0	0
PHOENIX SRP	65	166893	121608	45285	0	0	0	0
SCOTTSDALE SRP	66	24742	17319	7423	0	0	0	0
SUN LAKES WPA	67	5044	0	0	0	0	0	5044
AVONDALE-SRP(INMOD) WPA	68	2744	1921	823	0	0	0	0
MARICOPA EAST	70	0	0	0	0	0	0	0
PEORIA - YAV CO	71	0	0	0	0	0	0	0
PEORIA = 5	73	398	0	0	0	0	0	398
WEST END	74	273	0	0	0	0	0	273
PEORIA = 6	75	12	0	0	0	0	0	12
SUNRISE	76	508	0	0	0	0	0	508
PEORIA = 2A	77	9319	0	0	0	0	0	9319
BUCKEYE SOUTH	79	0	0	0	0	0	0	0
SURPRISE = 1	80	188	0	0	0	0	0	188
SURPRISE = 2	81	96	0	0	0	0	0	96
LITCHFIELD/AGUA FRIA = 2	82	1023	0	0	0	0	0	1023
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	9	0	0	0	0	0	9
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	792	0	0	0	0	0	792
GOODYEAR OUTSIDE	94	966	0	0	0	0	0	966
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR = 3	96	0	0	0	0	0	0	0
GOODYEAR = 4	97	198	0	0	0	0	0	198
PEORIA = 2	98	1349	0	0	1349	0	0	0
SURPRISE = 5	99	202	0	0	0	0	0	202
SURPRISE = 5	100	117	0	0	0	0	0	117
SURPRISE = 10	102	9	0	0	0	0	0	9
SURPRISE = 11	103	0	0	0	0	0	0	0
SURPRISE = 12	104	0	0	0	0	0	0	0
SURPRISE = 4	105	53	0	0	0	0	0	53
SURPRISE = 7	106	0	0	0	0	0	0	0
SURPRISE = 8	108	85	0	0	0	0	0	85
SURPRISE = 9	109	12	0	0	0	0	0	12
SURPRISE = 15	110	9	0	0	0	0	0	9
WNIC TONOPAH	201	131	0	0	0	0	0	131
OUTSIDE	999	3806	0	0	0	0	0	3806
TOTAL - AF/YR		754584	251683	99728	234214	0	87	168872

TABLE 51. SOLUTION F/G WATER BUDGET, 2005

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	652	0	0	0	0	0	652
CITIZENS AGUA FRIA	4	13711	0	0	0	0	0	13711
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	14	0	0	0	0	0	14
AVONDALE (INMOD)	8	3961	0	0	0	0	0	3961
GLENDALE SRP	9	37345	26168	11177	0	0	0	0
GLENDALE IM	10	20374	0	0	18997	1377	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	10506	0	0	0	0	0	10506
GOODYEAR # 2	13	15675	0	0	0	0	0	15675
LPSCO	14	6117	0	0	0	0	0	6117
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	276	0	0	0	0	0	276
TOLLESON WPA	17	1998	1399	599	0	0	0	0
HASSAYAMPA BASIN WPA	20	1065	0	0	0	0	0	1065
RAINBOW VALLEY WPA	21	103	0	0	0	0	0	103
GILBERT-SRP WPA	22	27900	19593	8307	0	0	0	0
GILBERT-RWCD WPA	23	6655	0	0	4800	0	0	1855
CAVE CREEK WPA	24	109	0	0	0	0	109	0
GILA RIVER WPA	25	358	0	0	0	0	0	358
QUEEN CREEK	26	2791	0	0	0	0	0	2791
GILBERT WPA	27	1251	0	0	200	0	0	1051
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUND WATER (INMOD) WPA	29	4082	0	0	0	0	0	4082
GROUND WATER (OUTMOD) WPA	30	1346	0	0	0	0	0	1346
SCOTTSDALE (INMOD) WPA	31	52928	0	0	52928	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	951	0	0	951	0	0	0
TEMPE WPA	34	3388	3388	0	0	0	0	0
TEMPE SRP WPA	35	45501	0	0	4400	0	0	41101
CHANDLER RWCD WPA	36	3281	0	0	3125	0	0	156
CHANDLER SRP WPA	37	46367	32457	13910	0	0	0	0
CHANDLER WPA	38	18	0	0	18	0	0	0
MESA WPA	39	34194	0	0	0	0	0	34194
MESA RWCD WPA	40	7861	0	0	7861	0	0	0
MESA SRP WPA	41	42307	29615	12692	0	0	0	0
CAREFREE (INMOD) WPA	42	16	0	0	0	0	0	16
CAREFREE (OUTMOD) WPA	43	2271	0	0	0	0	0	2271
PEORIA # 5	44	172	0	0	0	0	0	172
BUCKEYE IM	45	1627	0	0	0	0	0	1627
BUCKEYE OM	46	86	0	0	0	0	0	86
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	177950	0	0	170400	5200	2350	0
FOUNTAIN HILLS WPA	57	7001	0	0	0	0	0	7001
CAVE CREEK (OUTMOD) WPA	58	1031	0	0	0	0	0	1031

TABLE 51. SOLUTION F/G WATER BUDGET, 2005 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G 2005	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2005 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2005							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2005	2005	2005	2005	2005	2005	2005
RWCD WPA	60	641	0	0	0	0	18	623
PEORIA SRP	63	15822	11075	4747	0	0	0	0
PHOENIX SRP	65	176757	130658	46099	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	6624	0	0	0	0	0	6624
AVONDALE-SRP (NMID) WPA	68	3115	2181	934	0	0	0	0
MARICOPA EAST	70	1	0	0	0	0	0	1
PEORIA - YAV CO	71	7	0	0	7	0	0	0
PEORIA # 5	73	1593	0	0	0	0	0	1593
WEST END	74	282	0	0	0	0	0	282
PEORIA # 6	75	440	0	0	0	0	0	440
SUNRISE	76	1016	0	0	0	0	0	1016
PEORIA # 2A	77	16058	0	0	0	0	0	16058
BUCKEYE SOUTH	79	35	0	0	0	0	0	35
SURPRISE # 1	80	219	0	0	0	0	0	219
SURPRISE # 2	81	99	0	0	0	0	0	99
CITIZENS AGUILA FRIA # 2	82	2062	0	0	0	0	0	2062
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	27	0	0	0	0	0	27
WEST MARICOPA COMBINE 90	90	6	0	0	0	0	0	6
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	937	0	0	0	0	0	937
GOODYEAR OUTSIDE	94	2130	0	0	0	0	0	2130
WEST MARICOPA COMBINE 95	95	2	0	0	0	0	0	2
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	476	0	0	0	0	0	476
PEORIA # 2	98	3771	0	0	3771	0	0	0
SURPRISE # 5	99	213	0	0	0	0	0	213
SURPRISE # 3	100	224	0	0	0	0	0	224
SURPRISE # 10	102	11	0	0	0	0	0	11
SURPRISE # 11	103	1	0	0	0	0	0	1
SURPRISE # 12	104	1	0	0	0	0	0	1
SURPRISE # 4	105	99	0	0	0	0	0	99
SURPRISE # 7	106	23	0	0	0	0	0	23
SURPRISE # 8	108	114	0	0	0	0	0	114
SURPRISE # 9	109	12	0	0	0	0	0	12
SURPRISE # 13	110	11	0	0	0	0	0	11
WAR EAGLE	201	204	0	0	0	0	0	204
OUTSIDE	999	5663	0	0	0	0	0	5663
TOTAL AF/YR		881536	273856	105029	267458	6577	2477	225189

TABLE 52. SOLUTION F/G WATER BUDGET, 2010

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	873	0	0	873	0	0	0
CITIZENS AGUA FRIA	4	22182	0	0	22182	0	0	0
EL MIRAGE WPA	5	1331	0	0	0	0	0	1331
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	4160	0	0	0	0	0	4160
GLENDALE SRP	9	39849	27931	11918	0	0	0	0
GLENDALE IM	10	23306	0	0	18997	4309	0	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	11597	0	0	0	0	0	11597
GOODYEAR # 2	13	23322	0	0	3322	0	20000	0
LPSCO	14	9045	0	0	9045	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	309	0	0	309	0	0	0
TOLLESON WPA	17	3147	2203	944	0	0	0	0
HASSAYAMPA BASIN WPA	20	1481	0	0	0	0	0	1481
RAINBOW VALLEY WPA	21	176	0	0	0	0	0	176
GILBERT-SRP WPA	22	33794	23656	10138	0	0	0	0
GILBERT-RWCD WPA	23	12421	0	0	4800	0	0	7621
CAVE CREEK WPA	24	156	0	0	0	0	156	0
GILA RIVER WPA	25	395	0	0	0	0	0	395
QUEEN CREEK	26	3993	0	0	0	0	0	3993
GILBERT WPA	27	2469	0	0	200	0	0	2269
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER-INMOD WPA	29	5387	0	0	0	0	0	5387
GROUNDWATER (OUTMOD) WPA	30	2110	0	0	0	0	0	2110
SCOTTSDALE (INMOD) WPA	31	63105	0	0	63105	0	0	0
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	3957	3957	0	0	0	0	0
TEMPE SRP WPA	35	46107	0	0	4400	0	0	41707
CHANDLER RWCD WPA	36	4667	0	0	3125	0	0	1542
CHANDLER SRP WPA	37	51122	35785	15337	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	42954	0	0	0	0	0	42954
MESA RWCD WPA	40	9276	0	0	9276	0	0	0
MESA SRP WPA	41	43371	30360	13011	0	0	0	0
CAREFREE (INMOD) WPA	42	22	0	0	0	0	0	22
CAREFREE (OUTMOD) WPA	43	3171	0	0	0	0	0	3171
PEORIA # 3	44	455	0	0	455	0	0	0
BUCKEYE IM	45	1938	0	0	0	0	0	1938
BUCKEYE OM	46	126	0	0	0	0	0	126
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	204421	0	0	160900	8100	35421	0
FOUNTAIN HILLS WPA	57	9766	0	0	0	0	0	9766
CAVE CREEK (OUTMOD) WPA	58	1592	0	0	0	0	0	1592

TABLE 52. SOLUTION F/G WATER BUDGET, 2010 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2010	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2010							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2010	2010	2010	2010	2010	2010	2010
RWCD WPA	60	1084	0	0	0	0	18	1066
PEORIA SRP	63	16239	11367	4872	0	0	0	0
PHOENIX SRP	65	183190	136561	46629	0	0	0	0
SCOTTSDALE SRP	66	24746	17322	7424	0	0	0	0
SUN LAKES WPA	67	7534	0	0	0	0	0	7534
AVONDALE-SRP (NMOD) WPA	68	4191	2934	1257	0	0	0	0
MARICOPA EAST	70	3	0	0	0	0	0	3
PEORIA - YAVCO	71	13	0	0	13	0	0	0
PEORIA # 5	73	2893	0	0	0	0	0	2893
WEST END	74	292	0	0	292	0	0	0
PEORIA # 6	75	908	0	0	0	0	0	908
SUNRISE	76	1242	0	0	0	0	0	1242
PEORIA # 2A	77	20461	0	0	20461	0	0	0
BUCKEYE SOUTH	79	174	0	0	0	0	0	174
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA FRIA # 2	82	2144	0	0	2144	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 87	87	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 88	88	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 89	89	42	0	0	0	0	0	42
WEST MARICOPA COMBINE 90	90	7	0	0	0	0	0	7
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1139	0	0	0	0	0	1139
GW # 0 YEAR OUTSIDE	94	3215	0	0	3215	0	0	0
WEST MARICOPA COMBINE 95	95	3	0	0	3	0	0	0
GW # 0 YEAR # 3	96	0	0	0	0	0	0	0
GW # 0 YEAR # 4	97	754	0	0	754	0	0	0
PEORIA # 2	98	5079	0	0	5079	0	0	0
SURPRISE # 5	99	221	0	0	221	0	0	0
SURPRISE # 3	100	319	0	0	319	0	0	0
SURPRISE # 10	102	11	0	0	11	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	2	0	0	2	0	0	0
SURPRISE # 4	105	125	0	0	125	0	0	0
SURPRISE # 7	106	98	0	0	98	0	0	0
SURPRISE # 8	108	162	0	0	162	0	0	0
SURPRISE # 9	109	13	0	0	13	0	0	0
SURPRISE # 13	110	11	0	0	11	0	0	0
WMC TONOPAH	201	264	0	0	0	0	0	264
OUTSIDE	999	6930	0	0	0	0	0	6930
TOTAL - AF/YR		1005820	292076	111530	335220	12409	55595	198990

TABLE 53. SOLUTION F/G WATER BUDGET, 2015

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW. APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO. W. TANKS	3	1170	0	0	1170	0	0	0
CITIZENS AGUA FRIA	4	24404	0	0	24404	0	0	0
EL MIRAGE WPA	5	1352	0	0	0	0	0	1352
SUN CITY WATER CO.	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	16	0	0	0	0	0	16
AVONDALE (INMOD)	8	5779	0	0	0	0	0	5779
GLENDALE SRP	9	42358	29697	12661	0	0	0	0
GLENDALE IM	10	26294	0	0	18997	5041	2256	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	14279	0	0	0	0	0	14279
GOODYEAR # 2	13	32867	0	0	12867	0	20000	0
TOSCO	14	11982	0	0	11982	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	404	0	0	404	0	0	0
TOLLESON WPA	17	3471	2430	1041	0	0	0	0
HASSAYAMPA BASIN WPA	20	2158	0	0	0	0	0	2158
RAINBOW VALLEY WPA	21	460	0	0	0	0	0	460
GILBERT-SRP WPA	22	37680	26376	11304	0	0	0	0
GILBERT-RWCD WPA	23	15868	0	0	4800	0	0	11068
CAVE CREEK WPA	24	257	0	0	0	0	200	57
GILA RIVER WPA	25	412	0	0	0	0	0	412
QUEEN CREEK	26	5163	0	0	0	0	0	5163
GILBERT WPA	27	4004	0	0	200	0	0	3804
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	6671	0	0	0	0	0	6671
GROUNDWATER (OUTMOD) WPA	30	2781	0	0	0	0	0	2781
SCOTTSDALE (INMOD) WPA	31	71735	0	0	64000	0	0	7735
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	964	0	0	964	0	0	0
TEMPE WPA	34	5070	5070	0	0	0	0	0
TEMPE SRP WPA	35	47154	0	0	4400	0	0	42754
CHANDLER RWCD WPA	36	7234	0	0	3125	0	0	4109
CHANDLER SRP WPA	37	53305	37314	15991	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	47261	0	0	0	0	0	47261
MESA RWCD WPA	40	9422	0	0	9422	0	0	0
MESA SRP WPA	41	43870	30709	13161	0	0	0	0
CAREFREE (INMOD) WPA	42	24	0	0	0	0	0	24
CAREFREE (OUTMOD) WPA	43	3480	0	0	0	0	0	3480
PEORIA # 3	44	1144	0	0	1144	0	0	0
BUCKEYE IM	45	3541	0	0	0	0	0	3541
BUCKEYE OM	46	312	0	0	0	0	0	312
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	227733	0	0	151900	10600	65233	0
FOUNTAIN HILLS WPA	57	15250	0	0	0	0	0	15250
CAVE CREEK (OUTMOD) WPA	58	1994	0	0	0	0	0	1994

TABLE 53. SOLUTION F/G WATER BUDGET, 2015 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2015	WATER PLANNING AREA DEMAND (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR.) BY FIVE YEAR PERIOD, 2015							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2015	2015	2015	2015	2015	2015	2015
RWCD WPA	60	1718	0	0	0	0	18	1700
PEORIA SRP	63	16260	11382	4878	0	0	0	0
PHOENIX SRP	65	191516	144199	47317	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	8664	0	0	0	0	0	8664
AVONDALE-SRP (EXMOD) WPA	68	5460	3822	1638	0	0	0	0
MARICOPA EAST	70	5	0	0	0	0	0	5
PEORIA - YAVCO	71	21	0	0	21	0	0	0
PEORIA # 5	73	4591	0	0	0	0	0	4591
WEST END	74	314	0	0	314	0	0	0
PEORIA # 6	75	1155	0	0	0	0	0	1155
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	27412	0	0	27412	0	0	0
BUCKEYE SOUTH	79	794	0	0	0	0	0	794
SURPRISE # 1	80	219	0	0	219	0	0	0
SURPRISE # 2	81	99	0	0	99	0	0	0
CITIZENS AGUA TRIA # 2	82	2222	0	0	2222	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	47	0	0	0	0	0	47
WEST MARICOPA COMBINE 87	87	8	0	0	0	0	0	8
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	66	0	0	0	0	0	66
WEST MARICOPA COMBINE 90	90	10	0	0	0	0	0	10
WEST MARICOPA COMBINE 91	91	2	0	0	0	0	0	2
WEST MARICOPA COMBINE 92	92	1529	0	0	0	0	0	1529
GOODYEAR OUTSIDE	94	4301	0	0	4301	0	0	0
WEST MARICOPA COMBINE 95	95	5	0	0	5	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	997	0	0	997	0	0	0
PEORIA # 2	98	5893	0	0	5893	0	0	0
SURPRISE # 5	99	261	0	0	261	0	0	0
SURPRISE # 3	100	451	0	0	451	0	0	0
SURPRISE # 10	102	13	0	0	13	0	0	0
SURPRISE # 11	103	1	0	0	1	0	0	0
SURPRISE # 12	104	3	0	0	3	0	0	0
SURPRISE # 4	105	181	0	0	181	0	0	0
SURPRISE # 7	106	99	0	0	99	0	0	0
SURPRISE # 8	108	258	0	0	258	0	0	0
SURPRISE # 9	109	18	0	0	18	0	0	0
SURPRISE # 13	110	14	0	0	14	0	0	0
WMC TONOPAH	201	370	0	0	0	0	0	370
OUTSIDE	999	8944	0	0	0	0	0	8944
TOTAL - AF/YR		1122720	308322	115415	352586	15641	87707	243049

TABLE 54. SOLUTION F/G WATER BUDGET, 2020

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	1568	0	0	1568	0	0	0
CITIZENS AGUA FRIA	4	26622	0	0	26622	0	0	0
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR # 2	13	45570	0	0	25570	0	20000	0
TPSCO	14	14915	0	0	14915	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	735	0	0	735	0	0	0
TOLLESON WPA	17	3825	2678	1147	0	0	0	0
PASSYAMPA BASIN WPA	20	3733	0	0	0	0	0	3733
RAINBOW VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
GILA RIVER WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
QUEEN CREEK WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUNDWATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GLENDALE UPL WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA # 3	44	2571	0	0	2571	0	0	0
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUR PEAKS HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 54. SOLUTION F/G WATER BUDGET, 2020 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2020	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2020							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2020	2020	2020	2020	2020	2020	2020
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP(INMOD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - YAVCO	71	28	0	0	28	0	0	0
PEORIA # 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	386	0	0	0
PEORIA # 6	75	1612	0	0	0	0	0	1612
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	29747	0	0	29747	0	0	0
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE # 1	80	230	0	0	230	0	0	0
SURPRISE # 2	81	132	0	0	132	0	0	0
CITIZENS AG/LITCHFIELD # 2	82	2443	0	0	2443	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	0	0	0	135
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5583	0	0	5583	0	0	0
WEST MARICOPA COMBINE 95	95	16	0	0	16	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	1248	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	351	0	0	0
SURPRISE # 3	100	743	0	0	743	0	0	0
SURPRISE # 10	102	15	0	0	15	0	0	0
SURPRISE # 11	103	2	0	0	2	0	0	0
SURPRISE # 12	104	4	0	0	4	0	0	0
SURPRISE # 4	105	327	0	0	327	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	400	0	0	400	0	0	0
SURPRISE # 9	109	26	0	0	26	0	0	0
SURPRISE # 13	110	26	0	0	26	0	0	0
WMC TONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF/YR		1246600	326734	120399	369335	18041	118487	293604

TABLE 55. SOLUTION F/G WATER BUDGET, 2025

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
SUN CITY WEST	1	7250	0	0	0	0	0	7250
ARIZONA WATER CO W. TANKS	3	1568	0	0	1568	0	0	0
CITIZENS AGUA FRIA	4	26622	0	0	26622	0	0	0
EL MIRAGE WPA	5	1506	0	0	0	0	0	1506
SUN CITY WATER CO	6	12861	0	0	0	0	0	12861
LUKE AIR FORCE BASE WPA	7	17	0	0	0	0	0	17
AVONDALE (INMOD)	8	8738	0	0	0	0	0	8738
GLENDALE SRP	9	43469	30480	12989	0	0	0	0
GLENDALE IM	10	26634	0	0	18997	5041	2596	0
GLENDALE OM	11	0	0	0	0	0	0	0
GLENDALE OUT OF SERVICE	12	18739	0	0	0	0	0	18739
GOODYEAR # 2	13	45570	0	0	25570	0	20000	0
LIPSCO	14	14915	0	0	14915	0	0	0
NORTH COUNTY	15	1	0	0	0	0	0	1
SURPRISE # 6	16	735	0	0	735	0	0	0
PEORIA SRP WPA	17	3825	2678	1147	0	0	0	0
PHASS/AMPA BASIN WPA	20	3733	0	0	0	0	0	3733
SAN TAN VALLEY WPA	21	1194	0	0	0	0	0	1194
GILBERT-SRP WPA	22	42080	29456	12624	0	0	0	0
GILBERT-RWCD WPA	23	20482	0	0	4800	0	0	15682
CAVE CREEK WPA	24	315	0	0	0	0	200	115
GUADALUPE WPA	25	446	0	0	0	0	0	446
QUEEN CREEK	26	6385	0	0	0	0	0	6385
GILBERT WPA	27	6628	0	0	200	0	0	6428
APACHE JUNCTION WPA	28	0	0	0	0	0	0	0
GROUNDWATER (INMOD) WPA	29	9481	0	0	0	0	0	9481
GROUNDWATER (OUTMOD) WPA	30	5081	0	0	0	0	0	5081
SCOTTSDALE (INMOD) WPA	31	76418	0	0	64000	0	0	12418
SCOTTSDALE (OUTMOD) WPA	32	0	0	0	0	0	0	0
GUADALUPE WPA	33	965	0	0	965	0	0	0
TEMPE WPA	34	5402	5402	0	0	0	0	0
TEMPE SRP WPA	35	47463	0	0	4400	0	0	43063
CHANDLER RWCD WPA	36	10332	0	0	3125	0	0	7207
CHANDLER SRP WPA	37	55720	39004	16716	0	0	0	0
CHANDLER WPA	38	25	0	0	25	0	0	0
MESA WPA	39	50757	0	0	0	0	0	50757
MESA RWCD WPA	40	10197	0	0	10197	0	0	0
MESA SRP WPA	41	44812	31368	13444	0	0	0	0
CAREFREE (INMOD) WPA	42	26	0	0	0	0	0	26
CAREFREE (OUTMOD) WPA	43	3782	0	0	0	0	0	3782
PEORIA # 3	44	2571	0	0	2571	0	0	0
BUCKEYE IM	45	5984	0	0	0	0	0	5984
BUCKEYE OM	46	959	0	0	0	0	0	959
PARADISE VALLEY (INMOD) W	47	13299	0	0	0	0	0	13299
AVONDALE (OUTMOD) WPA	48	0	0	0	0	0	0	0
PARADISE VALLEY (OUTMOD)	49	0	0	0	0	0	0	0
PHOENIX	50	250973	0	0	142300	13000	95673	0
FOUNTAIN HILLS WPA	57	15940	0	0	0	0	0	15940
CAVE CREEK (OUTMOD) WPA	58	2282	0	0	0	0	0	2282

TABLE 55. SOLUTION F/G WATER BUDGET, 2025 (continued)

WSRV GROUNDWATER MODEL FEB 2000 RUN SOLUTION F/G, 2025	WATER PLANNING AREA DEMAND (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025 RENEWABLE SUPPLIES AVAILABLE (ACRE-FEET/YR) BY FIVE YEAR PERIOD, 2025							
	PLANNING AREA NUMBER	TOTAL WPA DEMAND	SRP SURFACE WATER APPLIED	SRP GROUND WATER APPLIED	CAP APPLIED	REUSE APPLIED	OTHER RENEW APPLIED	GROUND WATER PUMPED
PLANNING AREA NAME	"WPA"	2025	2025	2025	2025	2025	2025	2025
RWCD WPA	60	2161	0	0	0	0	18	2143
PEORIA SRP	63	16275	11393	4882	0	0	0	0
PHOENIX SRP	65	200382	152335	48047	0	0	0	0
SCOTTSDALE SRP	66	24747	17323	7424	0	0	0	0
SUN LAKES WPA	67	10537	0	0	0	0	0	10537
AVONDALE-SRP (NMIDD) WPA	68	10421	7295	3126	0	0	0	0
MARICOPA EAST	70	6	0	0	0	0	0	6
PEORIA - VAN CO	71	28	0	0	28	0	0	0
PEOREA # 5	73	6683	0	0	0	0	0	6683
WEST END	74	386	0	0	386	0	0	0
PEORIA # 6	75	1612	0	0	0	0	0	1612
SUNRISE	76	1289	0	0	0	0	0	1289
PEORIA # 2A	77	29747	0	0	29747	0	0	0
BUCKEYE SOUTH	79	2149	0	0	0	0	0	2149
SURPRISE # 1	80	230	0	0	230	0	0	0
SURPRISE # 2	81	132	0	0	132	0	0	0
CITIZENS ADD AREA # 2	82	2443	0	0	2443	0	0	0
UNKNOWN	83	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 85	85	0	0	0	0	0	0	0
WEST MARICOPA COMBINE 86	86	99	0	0	0	0	0	99
WEST MARICOPA COMBINE 87	87	16	0	0	0	0	0	16
WEST MARICOPA COMBINE 88	88	4	0	0	0	0	0	4
WEST MARICOPA COMBINE 89	89	135	0	0	0	0	0	135
WEST MARICOPA COMBINE 90	90	12	0	0	0	0	0	12
WEST MARICOPA COMBINE 91	91	3	0	0	0	0	0	3
WEST MARICOPA COMBINE 92	92	2344	0	0	0	0	0	2344
GOODYEAR OUTSIDE	94	5383	0	0	5383	0	0	0
WEST MARICOPA COMBINE 95	95	16	0	0	16	0	0	0
GOODYEAR # 3	96	0	0	0	0	0	0	0
GOODYEAR # 4	97	1248	0	0	1248	0	0	0
PEORIA # 2	98	6154	0	0	6154	0	0	0
SURPRISE # 5	99	351	0	0	351	0	0	0
SURPRISE # 3	100	743	0	0	743	0	0	0
SURPRISE # 10	102	15	0	0	15	0	0	0
SURPRISE # 11	103	2	0	0	2	0	0	0
SURPRISE # 12	104	4	0	0	4	0	0	0
SURPRISE # 4	105	327	0	0	327	0	0	0
SURPRISE # 7	106	684	0	0	684	0	0	0
SURPRISE # 8	108	400	0	0	400	0	0	0
SURPRISE # 9	109	26	0	0	26	0	0	0
SURPRISE # 13	110	26	0	0	26	0	0	0
WMC TONOPAH	201	610	0	0	0	0	0	610
OUTSIDE	999	12588	0	0	0	0	0	12588
TOTAL - AF/YR		1246600	326734	120309	369335	18041	118487	293604

Solution F/G - GMS MODFLOW Input Files

The following section describes each of the MODFLOW input files used for the Solution F and G simulations. Solution F differs from Solution G in the location of a water treatment plant. The input files are identical between them. The input files for the Basecase simulation, except for some changed assumptions reflected in the new well and recharge input files (unique to Solution F/G), were renamed and used.

Scen28Drun1.bas: the basic package file. Eleven stress periods are specified to the year 2100. Stress periods 8, 9, and 10 use 100 time steps (each is one-month in duration) and stress period 11 uses 912 time steps (one month duration each). Time steps are the same as for the Basecase (and CTA) in the first seven stress periods. All IUNIT array index and unit numbers are identical between the Basecase and Solution F/G basic packages. The basic package setup is:

	IUNIT Index	Unit #
Basic	Not applicable	1
Output Control	12	22
Block Centered Flow (BCF3)	1	11
Slice Successive Overrelaxation Solver (SSOR)	11	21
Recharge	8	18
Evapotranspiration	5	15
River	4	14
Well	2	12

Solution F/G basic package options use 1) -8989.89 to display no-flow (inactive) cells in the output, 2) save starting heads is enabled, 3) Time unit is in days

Scen28Drun1.bcf: the block-centered flow (BCF3) package file. This input package file is the same as the Basecase BCF3 file. Options are: 1) transient simulation, 2) CCF saved to unit 39, 3) 9999.99 to display head assigned to dry cells in the output; this flag is used in the well deepening scripts, 4) rewetting enabled with wetting factor of 1.0, a wetting iteration interval of 5.0, and wetting equation h=BOT + WETFCT(THRESH), 5) interblock transmissivity by harmonic mean, 6) anisotropy factor of 1.0, and 7) layer 1 specified as unconfined (type 1) with layers 2 and 3 convertible between layer types confined/unconfined (type 3). Transmissivity changes in type 3.

Scen28Drun1.oc: the output control package file. Identical to the Basecase output control file. It is setup to enable output of head and drawdown, volumetric budget, cell by cell flow terms, to treat all layers the same, and to save and print heads and drawdowns at the final time step of all eleven stress periods. The output control file was disabled during all interim well deepening runs but enabled for the final run to view the output text file and to generate head, drawdown, depth to water contours, and flow budgets for different areas of the model.

Scen28Drun1.et: the evapotranspiration package file. Identical to the Basecase E-T file. Options used are: 1) apply to top layer only, 2) CCF output to Unit 39, 3) E-T elevation multiplier is 1.0, max. E-T rate multiplier is 1.000E-05, and E-T extinction depth multiplier is 1.0 for each cell of each layer array.

Scen28Drun1.riv: the river package file. Identical to the Basecase river file. Only applicable for layer one. Options used are: CCF flow terms saved to Unit 39. Forty square miles (40 cells) of a portion of the lower Salt River and the Gila River are simulated using the River package.

Well1.wel: the well package file. This is the eleven stress period MODFLOW compatible well input file reflecting the changed demand assumptions unique to Solution F/G. This file was created by the ArcView script pump_out.ave from the well assumptions file well_out.dbf. The final well package input file modified by the deepening process in GMS was called FinalWell11.wel. Interim well files are well2.wel, well3.well and so forth to well10.wel. Except in those areas (cells) which are changed by varying pumping assumptions of Solution F/G stress period eleven pumping data would otherwise be the same as stress period ten pumping data. File well1.wel would be the only well file input in any non-deepened Basecase simulation. Cell to cell flow (CCF) terms are saved to Unit 39. As is customary and like the Basecase model, well pumping (extraction) is denoted by negative discharge values (in cubic feet per day) and injection volumes by positive values.

Recharg28D.rch: the recharge package file. This is the eleven stress period MODFLOW compatible recharge input file created from the recharge assumptions file Wsrvrec2.dbf using ArcView script Newrecha.ave. Unlike the well file in the deepening process, the ArcView converted recharge file (e.g. recharg28D.rch) is not altered in interim MODFLOW runs from stress period to stress period. It is input once at the beginning of a simulation whether deepened or not. Although recharge rates and/or locations may vary between the Basecase and Solution F/G, the recharge option to apply recharge rates to the highest active cell among the three layers in each vertical column of grid cells is the same.

Scen28Drun1.sso: the slice successive over-relaxation (SSOR) finite-difference solver. This is the mathematical solver. This type solver used in Solution F/G is the same used for the Basecase for comparison reasons. The parameter options used in Solution F/G are: 1) maximum number of iterations per time step for convergence is 200, 2) the acceleration parameter is 1.0, 3) the head change criterion for convergence is 0.5 feet, and 4) print-out interval flag is zero.