SAN GORGONIO PASS WATER AGENCY

REPORT ON WATER CONDITIONS

Reporting Period 2010

San Gorgonio Pass Water Agency

Annual Report on Water Conditions

Reporting Period 2010

Prepared by

San Gorgonio Pass Water Agency
1210 Beaumont Avenue
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March 2012

SAN GORGONIO PASS WATER AGENCY

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On the cover:
Tertiary effluent from the City of Beaumont discharges into a tributary of San Timoteo Creek. Recycled water represents a potential source of water supply for the region.

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San Gorgonio Pass Water Agency

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To the Reader:

The San Gorgonio Pass Water Agency publishes this Water Conditions Report annually, and has done so in some form for over two decades.

The primary purpose of the report is to convey the status of ground and surface water resources within the region. The Agency uses the report as a tool to help us determine the extent of recharge needed in local basins each year.

The Agency maintains an extensive database on local water resources. This report affords the Agency the opportunity to make that database easily accessible to the public and other interested parties.

This report complies with the Stipulation for Entry of Judgment, Cherry Valley Environmental Planning Group vs. San Gorgonio Pass Water Agency, Case No. 249947 (Riverside Superior Court 1996). That judgment requires the Agency to produce such an annual report. According to the Judgment, "These annual reports shall evaluate, by utilizing such reliable information as may be available, the groundwater conditions with [the Agency's] jurisdiction, and shall determine the annual overdraft, if any, of the groundwater basins and amount of water to be scheduled for following year or years replenishment. In preparing the annual reports on water conditions, [the Agency] shall collect, review, and make available to the public, water extraction data within [the Agency's] boundaries from such drilling logs, recordation files, or other sources as may be available..."

This report is available on the Agency's website, www.sgpwa.com, or from the Agency's office in hard copy for a nominal copying charge. It is also available as a CD, also for a nominal cost.

In reading the report, we hope that you learn more about the Pass area's most precious natural resource—water.

Jeff Davis

March 2012

1.0 Background

The San Gorgonio Pass Water Agency is a State Water Contractor and water wholesaler that provides imported water to retail water agencies within its service area, which extends from Calimesa on the west to Cabazon on the east. Its service area covers approximately 228 square miles, most of which is in Riverside County but which includes two small areas in San Bernardino County. One of these is unpopulated and the other includes three residences owned by the Beaumont Cherry Valley Water District. The service area is depicted on **Figure 1.**

The San Gorgonio Pass is an elevated, relatively narrow land mass between the San Bernardino Mountains on the north and the San Jacinto Mountains on the south, connecting the San Bernardino Valley on the west to the Coachella Valley on the east. Both of these valleys are at much lower elevations than the Pass region. The region straddles two large watersheds. The western half of the service area is drained primarily by Little San Gorgonio Creek and Noble Creek, which are tributary to San Timoteo Creek and the Santa Ana River. The eastern half of the service area is drained by the Whitewater River, which is part of the Colorado River Basin. **Figure 2** depicts the drainage basins and principal streams in the region.

This report, published annually by the Agency in some form for over two decades, is intended to help monitor and make available to the public the quantity and quality of water in local groundwater basins. It is based on the Agency's extensive database as well as data from other sources. It includes data from 2010 as well as historical data, which provides a basis to put the most recent data into historical context.

Tables 1, 2, and 3 are extraction (production) summaries of groundwater pumping within the Agency's service area, hereinafter referred to as the region. These tables summarize annual production for the past 13 years. These data were obtained from the State Water Resources Control Board, Division of Water Rights (State Board); local sources; or in some cases estimated by the Agency. The Agency does not independently verify the data. The State Board does not require reporting for well owners who extract less than 25 acre feet per year (about eight million gallons). Also, it is likely that some well owners do not file as required. The data in these tables represent the Agency's best estimate of actual pumping, based on both actual data and production estimates. Most wells are not metered and therefore data from these wells must be estimated at some level.

The report also includes water quality data from the State Water Project's sampling station at Devil Canyon in San Bernardino. Devil Canyon is the closest sampling station to the Agency and is representative of the water that the Agency receives from the State Water Project. The data, summarized in **Table 5,** reflects that the water quality varies from year to year and from month to month. It is a function of water quality conditions in the Sacramento/San Joaquin Delta and of runoff in these watersheds.

The water quality constituent of most interest to the Agency and its retailers is TDS, or total dissolved solids (also known as salinity). Salinity is becoming more heavily regulated by Regional Water Quality Control Boards throughout the State, especially as water agencies around the state implement recycled water systems. In order to maintain reasonable TDS levels

in the lower reaches of the Santa Ana watershed (Orange County), the Santa Ana Regional Board must set standards for TDS at relatively low levels in the upper reaches of the watershed, which is where the western portion of the Agency's service area is located. Salinity is less of an issue in the eastern portion of the region, which is part of the Colorado River watershed. This watershed already has among the highest levels of TDS in the State.

State legislation passed in 2009 requires more extensive groundwater elevation monitoring in basins throughout the State similar to what the Agency has performed for over a decade. As this report is being written, the California Department of Water Resources has set up CASGEM (the California Statewide Elevation Monitoring System). The Agency has applied for and been accepted conditionally as the regional monitoring entity for the region. This provides a legislative mandate to perform the groundwater level monitoring that the Agency has been performing on its own for many years.

2.0 Water Supply Conditions

There are three principal sources of water within the region—groundwater, which begins as precipitation in the form of rain and snow in the region; imported water from the State Water Project; and recycled wastewater. Recycled water is not yet used in the region as of this writing; however most retail water agencies have plans to implement recycled water systems in the next few years and have begun planning and constructing the needed infrastructure for these systems.

2.1 Precipitation

Annual precipitation in the Beaumont area since 1888 is shown on **Figure 4.** The long-term mean annual precipitation in Beaumont is about 18 inches. This figure depicts the variable nature of precipitation. Of the approximately 120 years of records, the precipitation in 50 years has exceeded the average, while 70 years have been relatively dry as compared to the average. The figure shows several periods—1897-1904, 1948-1952, 1960-1965, 1986-1992, 1999-2002, and 2005-2009—with multiple consecutive dry years. The figure shows that 2009 was one of the driest on record in Beaumont (and in fact in all of Southern California), while 2010 was one of the wettest.

Groundwater basins are able to capture naturally and store much, but not all, of the precipitation in wet years. During and after a rainfall event, runoff drains to streams where it runs into creeks and rivers. Some of this will recharge the local groundwater basin. During large storm events, much of the runoff will flow downstream. In this case, it will either flow from San Timoteo Creek into the Santa Ana River in Redlands, or it will flow from the San Gorgonio River into the Whitewater River in the Coachella Valley. A small portion of runoff from the region flows to the San Jacinto River in Hemet. Cities and water agencies in the region have begun planning how to capture additional stormwater that currently runs down the Santa Ana River to Prado Dam and eventually to the Pacific Ocean.

2.2 State Water Project

The San Gorgonio Pass Water Agency Act was signed by Governor Pat Brown in 1961, and the Board of Directors, appointed by the Riverside County Board of Supervisors, held its first meeting in September of that year. Within another year, the Agency had signed a contract with the State of California for 15,000 acre feet of water from what at the time was known as the Feather River Project. A year later, the Agency increased its contract amount, or Table A amount, to 17,300 acre feet.

The Agency began importing State Water Project water into the region in 2003, when phase 1 of the East Branch Extension of the California Aqueduct was completed. Since that time, deliveries of State Water Project water within the region have increased every year. **Table 4** summarizes these deliveries. This table shows that the Agency delivered over 8,400 acre feet in 2010. The table also shows the allocation, or percentage of its Table A amount, that the Agency received each year. At first glance, the 50% allocation for 2010 may seem low when compared to the

rainfall data in **Figure 4.** The year 2010 was very wet in both northern California and Southern California. The reason for the relatively low 50% allocation in a very wet year was that this year followed three dry years and reservoir levels were extremely low at the beginning of the 2010 water year. Thus the initial allocation was very low (only 10%). Much of the precipitation came in April and May after reservoirs had reached dangerously low levels. The allocation did not rise above 50% because much of the precipitation and runoff in 2010 was used to fill reservoirs instead of being exported.

The allocation is a function of hydraulic conditions in the Sacramento/San Joaquin delta as well as northern California hydrology. The average long-term reliability of the State Water Project is approximately 60%. This brings out the importance of being able to store water in those years when the allocation is greater than 60%. The ability to import and store more water locally in the future is a key to the sustainability of the region.

Currently, the Agency can import a maximum of approximately 12,000 acre feet per year with existing infrastructure. When Phase 2 of the East Branch Extension is completed in 2014, the Agency will be able to import its entire Table A allocation when it is available. Completion of this $160 million project is a high priority for the Agency and the San Bernardino Valley Municipal Water District, the Agency's partner in this project.

Phase 2 of the project (named EBX 2) consists of a pipeline under the Santa Ana River near Highland, a reservoir and pump station in Mentone, and a short pipeline from this pump station to the existing Crafton Hills Pump Station in Mentone. The project also includes new pumps in the Crafton Hills Pump Station and the Cherry Valley Pump Station. The new pipeline, which will be 72-inches and 66-inches in diameter, will replace an existing 48-inch diameter line that was constructed in the 1980's.

The ability to import more water to the region will depend on this project and also additional connection capacity to the East Branch Extension. As of 2010, the total turnout capacity of the pipeline is approximately 25 cfs. The current pipeline capacity is 16 cfs. When EBX 2 goes online in 2014, the total pipeline capacity will be 48 cfs. However, unless additional infrastructure is constructed to be able to convey this additional water out of the pipeline to new or existing recharge facilities, the project will not add appreciably to the region's water resources.

2.3 Wastewater

Three public agencies discharge treated wastewater in the region—the cities of Beaumont and Banning, and the Yucaipa Valley Water District. The cumulative discharges for these three sewage treatment entities since 1987 are shown on **Figure 5.** Unlike precipitation and the State Water Project, which are variable from year to year, wastewater discharges from the region have consistently increased over time, as the region has developed. Wastewater treatment plant discharges are a function of indoor water use, not hydrology or exterior water use.

Thus, treated wastewater, or recycled water, is an important asset to the region, because it can be a reliable, non-potable water source in the future. All three of the above agencies are in various stages of implementing recycled and/or non-potable water systems for irrigation, golf courses, parks, medians, etc., or to recharge it into local groundwater basins.

As mentioned in Section 1.0, salinity is a growing concern in California, and recycled water is high in dissolved solids or salinity. While recycled water is a huge potential benefit to the region, its use as a water supply will at some point require desalting. Desalting is a very expensive process that requires brine disposal, also a costly process. The Yucaipa Valley Water District has begun construction of a desalination plant and brine disposal pipeline. Once this is complete, it will be able to utilize recycled water in lieu of groundwater or imported water for nonpotable uses.

Use of recycled water either for direct non-potable use or for recharge requires a permit from the Santa Ana Regional Water Quality Control Board. Such permits will be granted only when the Regional Board is convinced that the permit holder will take all required steps to meet its standards for salinity.

3.0 Groundwater Conditions

Figure 3 shows the principal groundwater basins, sometimes referred to as storage units, in the region. The boundaries of these basins are as defined by the United States Geological Survey. The Beaumont Basin is the largest and most productive of these basins, and serves a large majority of the population in the region.

3.1 Groundwater Extractions (Production)

Table 1 summarizes groundwater production from the eleven basins in the region. **Table 2** summarizes reported production from each individual producer, whether public or private. **Table 3** provides a detailed breakdown of extractions by each reporting producer (including some based in San Bernardino County) for each basin for the thirteen most recent years of available data. Surface diversions from the Whitewater River are not included, as the Agency is not convinced the available data are reliable enough to report. Surface diversions from Edgar Canyon are included.

Figure 6 illustrates the long-term trend in reported groundwater production in the region since 1947. **Figure 7** summarizes the same data since 1995, when significant growth started. Both figures show a distinct increasing trend in groundwater withdrawals both over the long term and over the past 14 years, though there is variability within that trend, especially over the past three years. **Figure 8** illustrates the percentage share for each basin's total extraction within the region in 2010.

Table 1 indicates that total production in the region decreased by just over 4% in 2010 from 2009, from 29,874 to 28,624 acre feet. Production in 2009 was 9% less than in 2008, which in turn was 9% less than in 2007, the peak historical year for regional withdrawals. This marks a 20% reduction in production over the past three years. Total production in 2010 was approximately equal to that in 2000.

In the Beaumont Basin, the region's largest, production was down a full 10% from 2009. This was due primarily to the fact that three of the basin's largest producers decreased their production. Beaumont Cherry Valley Water District pumping was down to 9100 acre feet from 9643 acre feet in 2009; the City of Banning reduced its withdrawals from 1623 acre feet in 2009 to 1223 in 2010; and the East Valley Golf Club, purchased by the Morongo Band of Mission Indians in 2010, reduced its withdrawals from 1158 to 791 acre feet. Much of this decrease can be explained by the continuing recession. Some homes were vacant and therefore had no water demand, while other families and businesses presumably cut back on water use to help make ends meet.

This trend can be seen clearly in the Cabazon Basin, where withdrawals by the Cabazon Water District were down over 30%, from 749 acre feet in 2009 to 513 acre feet in 2010. It is noted that there were many vacant homes in Cabazon in 2010. Overall production in the Cabazon Basin was down 16%.

An exception to this trend occurred in the Banning Canyon Basin, where production was up 42% in 2010. This is the City of Banning's least expensive water source, and if water is available in the canyon, the City pumps it in lieu of other wells. The increase in production from that basin in 2010 indicates that it was a relatively wetter year locally and the City took advantage of that. The City's withdrawals from the Beaumont Basin (as noted above) and the Banning Basin were both down in 2010, due probably in part to the increase in production of Banning Canyon water and in part to the ongoing recession.

The use of construction water for grading and to control dust, so prevalent in the 2000-2008 period, has virtually disappeared over the past three years, accounting for some of the reduction in water demand. This too can be explained by the recession.

Table 2 summarizes production by owner. In reviewing the production by the major water agencies, the data are not consistent. Production by the Cabazon Water District, City of Banning, and South Mesa Water Company are down significantly in 2010, while production from Beaumont Cherry Valley Water District is virtually the same as 2009 and production from Yucaipa Valley Water District is up substantially. The latter could be explained by its total mix of resources. Yucaipa Valley Water District produces groundwater and treats imported State Water Project Water in both San Bernardino and Riverside Counties. The increase in groundwater production in Riverside County could be explained by a reduction in State Water Project water, which could have occurred for any number of reasons. In any case, this represents a relatively small percentage of the District's overall water sales.

An examination of the groundwater production data demonstrates that economic conditions and annual precipitation play large roles in determining water demand in any given year. The overall reduction in water production in the region over the past three years can be explained in large measure by reduced construction water use, which is a function of the local economic conditions. Per capita reductions in water use in homes could be explained either by cutbacks due to economic conditions, reduced usage due to higher water rates, or water conservation efforts on the part of local residents. A detailed study would have to be performed to determine the specific impacts of these issues on the reduction in water demand over the past three years. It is expected that water demands in 2011 will decrease again or remain relatively flat, in large measure due to the fact that 2011 was one of the wettest years in recent history. The 2011 Water Conditions Report will explore this issue.

The reduction in production due to decreased water demand points out a major issue within the water industry. As water demand falls, water sales revenues fall, making it difficult for public water agencies to meet financial obligations. Most of their costs (primarily labor) are fixed and do not decrease when water demand falls. These agencies have to make up for these lost revenues in other ways, either by changing their rate structures, by increasing water rates, or by reducing their costs.

Figure 8 indicates where overall production came from. In 2010, production from the Banning Canyon basin and Edgar Canyon basin were both up, reflecting the fact that it was a relatively wet year locally. This increase in production led to decreases, percentage-wise, from the

Beaumont Basin (from 51% to 47% of overall production) and the Banning Basin (from 9% to 6%).

3.2 State of Overdraft

Overdraft of a groundwater basin refers to the amount of water pumped out in excess of its safe yield. Safe yield is the average annual replenishment of a basin through natural sources such as rainfall, runoff, snowmelt, and underflows from other groundwater basins. Safe yield is difficult to establish and represents only an average. In a given year, natural replenishment of a groundwater basin could be more or less than the safe yield depending on whether the year is a wet or dry one.

The Agency has been closely monitoring overdraft of the Beaumont Basin since at least 1988, when the Agency's first engineering investigation of the basin indicated that pumping significantly exceeded the basin's safe yield. Prior studies by the Agency have pointed to an estimated long-term annual safe yield of about 5,000 to 6,100 acre feet per year for the Beaumont Basin (Boyle Engineering, 1995; Boyle Engineering, 2002). This is smaller than the safe yield of 8,650 acre feet defined in the Beaumont Basin Stipulated Judgment, a number which represents the sum of overlier water rights. Overlier water rights refer to rights based on historical production for water used on the land.

Thus, current and future pumping from the Beaumont Basin, even if in accordance with the Judgment, could exceed the long-term safe yield of the basin as identified in Boyle. The Judgment includes a clause enabling a party to challenge the determinations of the Judgment ("seek judicial relief") if that party demonstrates harm from the consequences of the Judgment (if pumping activities of others "constitute an unreasonable interference with the complaining party's ability to extract groundwater").

The Judgment also requires the Beaumont Basin Watermaster to "redetermine" the safe yield of the basin at least every ten years, beginning ten years after the date of entry of the Judgment (no later than February 2014). If the redetermined safe yield were to be different from the 8,650 acre feet per year identified in the Judgment, it would change the amount of overdraft on an annual basis. Depending on the redetermined safe yield, this could be more or less than the current overdraft.

According to the Judgment, the basin must be in balance after 2014. That is, the total amount pumped out cannot exceed the annual safe yield unless it is drawn out of storage accounts already in place at that time, or replenished from additional sources, including State Water Project water, recycled water, or stormwater.

Total production in 2010 from the basin, as reported, was 13,469 acre feet. Therefore, the Beaumont Basin experienced an apparent overdraft of about 7,369 acre feet, assuming a safe yield of 6,100 acre feet. This was offset by importing 8,403 acre-feet of supplemental water, essentially adding to the volume of the basin this year by approximately 1000 acre-feet. This is the first time that this has occurred since importation of State Water Project water began in 2003.

Selecting 1997 as a base year (the year when significant increases in production began in the region), the cumulative overdraft in the Beaumont Basin since that time (assuming a safe yield of

6,100 acre feet) would be 121,715 acre feet, an average of approximately 8,700 acre feet per year over the past 14 years, without importation of State Water Project water. **Figure 9a** depicts this graphically. Through 2010, the Agency has imported nearly 31,000 acre-feet of water. This offsets the cumulative overdraft and reduces it to closer to 90,000 acre-feet over the same time period. This is depicted in **Figure 9b.** The difference in these two figures shows the immense impact that State Water Project has had on the region in less than a decade.

Although other local groundwater basins are at similar risk of overdraft, the state of the overdraft of the Beaumont Basin is far more apparent (in part because it has been studied more) and, due to the large population served by the basin, more critical to the region. Since the safe yield of other basins in the region have not yet been defined, it is impossible to determine whether or not they are in overdraft at this time.

The Agency is continuing its studies of the Cabazon Basin and at some point in the next several years will likely define a safe yield for this basin. It is estimated that this is the second largest basin in the region based on storage volume.

3.3 Groundwater Levels

The Agency monitors water levels in a large monitoring well network. Currently there are over 120 wells in the system, each of which is monitored for groundwater elevation twice a year, typically in May and November.

Starting in 2011, the Agency will become part of the California State Groundwater Elevation Monitoring (CASGEM) system. This is a new, formal statewide groundwater monitoring system initiated due to 2009 legislation. The Agency will become a formal monitoring entity for two basins—the San Timoteo sub-basin and the San Gorgonio sub-basin—which roughly correspond to the Agency's boundaries. The state uses different basin names because it views the statewide geology and hydrology on a larger scale.

Figures 11 through 16 show time-series groundwater elevations (hydrographs) for selected wells in five different basins within the Agency service area. These same wells have been depicted in this report for the past several years.

The two wells shown in Figure 11 are Banning production wells in the Banning Basin. Each shows great variability in groundwater elevation from 2002 to 2006. Since that time, both wells appear to be higher in elevation, though the well identified in Figure 11a shows a lower groundwater elevation in 2010. Both of these wells show a long-term trend of lower groundwater levels. The well depicted in Figure 11a appears to be down 150 feet over the past 12 years, whereas the well in Figure 11b is down about 75 feet over that same time period.

The five wells depicted in Figures 12-14 are in the Beaumont Basin. The wells in Figures 12b and 14b are in the same location, approximately 1000 feet east of Beaumont Avenue and 50 feet south of Cherry Valley Boulevard in Cherry Valley. This location is likely influenced by the ongoing recharge at Little San Gorgonio Creek. The upturn in water levels over the past two years indicate that this is quite possibly the case. The wells in Figures 13 and 14a are on Calimesa Boulevard on the Suzy Q Ranch near the western fringe of the Beaumont Basin. These

wells show continually falling water levels over the past decade. That portion of the Beaumont Basin would appear to not be influenced by the ongoing recharge efforts, wet years, and reduced production.

The two wells in Figure 15 are both in the Cabazon Basin. They are both production wells—one for the Mission Springs Water District and the other for the Cabazon Water District. Both show severe drops in water surface elevation over the past several years. The well in Figure 15a shows a drop of approximately 35 feet over the past ten years. The well in Figure 15b is changed from previous reports. Previously this report depicted the Cabazon Water District's Well Number 1. However, this well has become difficult if not impossible to monitor; thus it is replaced with Well Number 2. This well shows a drop of approximately 15 feet over the past five years. These data, along with previous data from the Cabazon Water District Well Number 1, would seem to indicate that, even though the three wells are several miles away from each other, that water levels in the Cabazon Basin are dropping quickly and have been for a number of years.

The wells depicted in Figure 16 are in the Calimesa and Banning Canyon Basins. The data in Figure 16b show clearly that the Banning Canyon Basin is a shallow basin, and that water levels fluctuate more in such basins. The year 2006 was a wet one locally, and the figure shows that groundwater levels in the basin came up nearly 15 feet that year. The next three years, on the other hand, were dry ones, and the water level dropped nearly seven feet in that time. The data for the well in the Calimesa Basin show nothing remarkable about that basin. Water levels have been relatively constant for past decade or more.

These figures represent only a small portion of all groundwater elevation data available in the region. These data indicate that, in general, groundwater elevations continue to decline except in certain areas where recharge of imported water is apparently raising the water levels.

The implications of lower water levels are great. As water levels decline throughout the local basins, every well will have to pump water from a lower elevation, thus increasing power costs for all well owners. Some overliers' wells may be quite shallow, and as water levels decrease further some of these wells may be in danger of going dry. This would necessitate a large expense to the overlier—either a new well, a deeper well, or connection to one of the water purveyors' systems.

In general, continually decreasing water levels can also lead to land subsidence and the drying up of traditional wetlands or streambeds. In the region, most of these wet areas dried up many years ago. The Beaumont Basin Watermaster is charged with monitoring land elevations to determine if subsidence is taking place in the Beaumont Basin. As of this time, the Watermaster has not reported any appreciable land subsidence over the basin.

4.0 Water Quality

4.1 State Water Project

The Agency takes delivery of its State Water Project water at Devil Canyon hydroelectric facility in San Bernardino and conveys it through the East Branch Extension to various delivery points. Water quality is a very important component of the Agency's supplemental water supply program.

Table 5 shows six common constituents and their measured amounts from the SWP system at Devil Canyon over the past four years. TDS, or total dissolved solids, is perhaps the most significant constituent in this table. It represents salinity, which is becoming more important to water agencies in California. Over the past four years it can be seen that TDS has mostly been below 300 parts per million (ppm) or milligrams per liter (mg/l). Only three times was the reported concentration greater than this amount. Many readings are in the 240-250 ppm range, and there are a number of readings in the 220 range and below. This is significant because the ambient salinity concentration of the Beaumont Basin is approximately 280 ppm, so the great majority of the time, SWP water reduces the overall concentration of salinity in the Beaumont basin.

Figure 16 shows the monthly average salinity concentration at Devil Canyon since 2004, while **Figure 17** shows the annual average since 1990. The annual average is useful because it indicates clearly that salinity is higher in dry years and lower in wet years. The two highest years, 1991 and 1992, were very dry and the last two years of a five year drought in California. The years 1996, 1997, 1998, and 2006 were all very wet years. Salinity in 2010 is significantly lower than the previous three years, which represented a three year drought in California. This inverse correlation between salinity and rainfall comes about because State Water Project passes through the Sacramento/San Joaquin delta. In dry years, there is less fresh water available to flush out the system, so the fresh water/salt water interface is higher in the delta and hence salinity of SWP water is higher.

4.2 Groundwater

The Santa Ana Regional Water Quality Control Board's Basin Plan has a maximum benefit goal of 330 ppm of salinity for the Beaumont Management Zone, which includes the Beaumont Basin. The current ambient salinity concentration is the Beaumont basin is approximately 280 ppm. The Basin Plan requires local entities to begin planning desalters when the ambient TDS concentration increases to 320 ppm or if other conditions are met. These desalters must be online within seven years after that time.

Groundwater quality in the region is very high. There is no known historical industrial or mining activity in the region that has generated harmful plumes of pollutants. In addition to salinity or TDS, nitrate is the only other constituent that needs to be monitored closely. This too is regulated by the Regional Board, but nitrate concentrations are currently well within the maximum benefit standards. Over the past few years there have been isolated incidents of high

nitrates at individual wells for short periods of time, typically after a large rainstorm that causes flushing of the system. However these have not proven to be a health hazard.

Nitrates in ambient groundwater do not necessarily translate to a danger in drinking water. Nitrates in drinking water are regulated by the California Department of Public Health, not the Regional Board. Nitrates in groundwater frequently can effectively be managed if needed through dilution. If nitrates were to become a persistent problem in a particular location, the local purveyor may consider installing wellhead treatment for nitrates. Such treatment is costly. However, there is no evidence that such treatment is needed in the region in the foreseeable future.

It should be noted that salinity in drinking water is regulated by a secondary water quality standard, while nitrate is regulated under a primary standard. Primary standards are for constituents that can directly impact human health. Secondary standards are for constituents that do not directly impact human health, but that may have aesthetic issues. Salinity is not harmful to human health and safety directly.

4.3 Emerging Contaminants

There is a relatively new class of chemical constituents that have recently been found in the environment and in drinking water known as emerging contaminants. These are primarily pharmaceuticals and personal care products that pass through human or animal bodies or get flushed and end up in sewage or septic flows. They have become known because of the technological ability to measure concentrations at increasingly small concentrations (parts per billion or even parts per trillion). Because of their presence in the environment, the Santa Ana Regional Water Quality Control Board has required that dischargers (those entities that own and operate sewage treatment plants) monitor for these constituents on an annual basis.

There is no evidence whatsoever that these constituents are harmful to humans in their current concentrations in the environment. Some groups have claimed that these products could harm animals in the environment and thus have called for their regulation. At this point in time they are not regulated. Water agencies in the watershed are developing a database so that the number and concentrations of these constituents can be monitored on an ongoing basis.

Emerging constituents are mentioned in this report not because they have any immediate impact on water quality in the region, or even that they are expected to have an impact in the near future. They are included because they are mentioned increasingly in the literature and by regulators as a growing issue for the water industry to be aware of.

5.0 SUMMARY

Reported groundwater extractions within the region decreased for the third consecutive year. Extractions in 2010 were approximately 20% below levels for 2007, which is the peak historical year for extractions in the region. This is likely due to the downturn in the economy, wetter winters, and a new surface water filtration plant in the region.

Local retail water purveyors continue to make slow progress in implementing recycled water systems. These systems are complex and expensive to complete, and funding and water quality (salinity) are key issues that require attention. Implementation of these systems over the next few years should reduce groundwater extractions significantly.

Another factor that should lead to reduced withdrawals is the ten year anniversary of the Beaumont Basin Judgment in February 2014. This will end the ten year "temporary surplus" in the basin and require appropriators to replace any water withdrawn that exceeds their share of the basin safe yield as identified in the judgment.

Based on data in this report, there is some evidence that groundwater levels have increased slightly in portions of the region over the past year. In other areas, the rate of groundwater decline has slowed. Future reports will determine the significance of these data.

Over the past five years, retail water agencies in the region have done a good job of managing resources. The Yucaipa Valley Water District has built a surface water treatment plant in order to reduce its groundwater withdrawals. The Beaumont Cherry Valley Water District has constructed a recharge facility in the Beaumont Basin and has purchased a large quantity of replenishment water. The City of Banning has begun purchasing water for replenishment as well, and is working with Southern California Edison to make improvements to a flume system that delivers runoff from the San Bernardino Mountains to the Banning Bench and the City of Banning. High Valleys Water District has replaced much of its old, leaky pipe, thus reducing its losses significantly. Three major recycled water systems are in the design or construction phase. These are all positive steps that will help extend and preserve local groundwater basins into the future.

During this same time period, the Agency has increased its imported water deliveries to such an extent that, in 2010, more water was put into the Beaumont Basin than withdrawn from it. This is a milestone for the region and is an indication of how vital imported water is to the region's future.

In the future, the local economy and local weather patterns will continue to play large roles in determining water demands each year. As new homes are constructed in the future, recent legislation will require lower water use landscaping. This should reduce per capita water consumption for future development, further extending the life of local water resources.

6.0 References

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San Gorgonio Pass Water Agency
Totals by Basin
Non-Verified Production Data
(in acre feet)

Basin	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Banning	179	424	586	839	1,103	2,381	1,180	1,485	1,787	2,512	1,999	2,787	1,782
Banning Bench	2,182	1,743	730	753	807	952	1,319	2,332	2,987	2,199	1,299	1,415	1,561
Banning Canyon	5,048	5,216	4,955	5,600	3,024	2,582	3,329	3,649	3,464	2,662	3,237	2,771	3,941
Beaumont	7,343	10,548	13,937	14,474	19,149	19,624	17,756	13,670	17,444	19,331	17,571	14,948	13,469
Cabazon	837	1,063	594	1,182	1,749	1,208	1,604	1,379	1,314	1,466	1,412	1,258	1,054
Calimesa (2)	1,548	815	1,635	1,689	1,557	1,725	1,535	1,575	1,445	1,532	1,133	1,315	1,114
Edgar Canyon (1)	4,376	4,480	3,979	2,926	3,039	2,549	2,759	2,766	3,872	3,085	3,140	2,784	3,108
Millard Canyon	-	-	-	256	1,366	675	823	595	707	842	757	750	750
San Timoteo	1,182	1,304	1,450	1,234	1,465	1,392	1,469	2,132	1,904	1,384	1,533	1,367	1,329
Singleton	467	579	558	547	535	345	483	636	645	666	471	382	405
South Beaumont	68	78	77	77	92	95	92	85	83	94	79	97	119
Totals	**23,230**	**26,250**	**28,501**	**29,577**	**33,886**	**33,528**	**32,349**	**30,304**	**35,652**	**35,773**	**32,631**	**29,874**	**28,624**

Notes:
Amounts shown are rounded to nearest acre-foot
Amounts as reported to the SWRCB Division of Water Rights, made available by a purveyor, reported by Beaumont Basin Watermaster or estimated by SGPWA
Data revised to agree with basin boundaries as defined in USGS 2004 report
(1) Includes wells located in Upper Edgar Canyon in San Bernardino County
(2) Includes wells located in Riverside and San Bernardino County

Table 1: Groundwater Production in San Gorgonio Pass Water Agency by Basin (1998 through 2010 as reported)

San Gorgonio Pass Water Agency
Totals by Owner
Non-Verified Production Data
(in acre feet)

Owner	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Albor Properties III, LP		92	122	151	164	163	163	165	170	175	200	193	174
Banning Heights Mutual Water Co.	128	242	120	153	275	207	32	73	21	22	31	4	17
Banning, City of (1)	8,420	9,037	9,490	10,338	9,526	10,053	8934	9082	10,162	10,223	9,583	8,996	8,415
Beaumont-Cherry Valley Water District (1)	5,007	6,094	6,522	5,614	8,762	9,205	8606	7070	11,748	13,031	12,744	10,849	10,975
Beckman, Walt									116	83	13	0	0
Brinton, Barbara	10	10	10	10	10	10	10	10		10	10	10	10
Cabazon County Water District	728	949	477	1,042	1,434	882	1,092	915	824	780	737	749	513
California Oak Valley Management	558	830	718	684	925	950	852	991	965	742	781	753	546
Desert Hills Premium Outlets				136	146	153	169	154	142	143	138	156	197
Dowling, Frances M. Jr.	68	78	77	77	92	95	92	85	83	94	79	72	96
El Casco Lake Ranch	160	160	160	160	160	160	160	160	160	160	160	160	160
Hudson, Merton Lonnie	472	475	385	510	465	430	430	430	435	445	435	430	430
Illy, Katharina	267	267	267	267	267	267	267	267	267	265	265	265	270
Lane, Christie						7	7	1					
Los Rios Inc & The Wildlands Conservancy	717	383	359	250	242	226	194	343	343	470	435	386	493
Merlin Properties, LLC	550	545	535	530	530	520	500	500	100	100	150	175	100
Mission Spring Water District					165	169	157	171	190	206	164	162	144
Morongo Band of Mission Indians (3)		386	1,688	1,581	2,593	2,057	2,191	1,822	2,530	2,326	1,890	1,908	1,541
Oak Valley Partners	311	421	446	401	383	453	430	350	312	312	311	311	311
Perisits, Jack	46	46	40	40	40	40	40	40					
Plantation on the Lake (2)	237	264	289	286	280	300	310	320	351	345	354	354	354
Rancho Calimesa Mobile Home Ranch	170	170	150	198	206	202	202	60	61	61	40	40	42
Riverside Land Conservancy									5	5	5	5	5
Robertson's Ready Mix	109	114	117	4	4	4	186	139	158	337	373	191	200
Sharondale Mesa Owners Association	166	197	167	190	185	182	158	181	189	183	196	154	131
Shiloh's Hill LLC					107	11	121	160	146	150	61	172	200
South Mesa Water Co.	2,141	1,660	2,609	2,583	2,745	2,645	2,679	2,551	2,711	2,839	2,681	2,514	2,222
Summit Cemetery District	55	55	55	65	65	65	65	65	65	65	65	90	88
Sun Cal Companies	145	132	97	82	47	49	89	839	555				0
Sunny-Cal Egg & Poultry, Inc.	1,366	1,731	1,762	1,876	1,475	1,475	1,477	1,153	50	50	50	50	25
The Diocese of San Bernardino	97	105	114	114	140	140	140	70	70	70			0
Wildlands Conservancy, The		386	381	433	460	317	462	283	301	9	21	40	16
Yucaipa Valley Water District	1,302	1,421	1,344	1,802	1,993	2,091	2,134	1,854	2,422	2,072	659	685	949
Totals	**23,230**	**26,250**	**28,501**	**29,577**	**33,886**	**33,528**	**32,349**	**30,304**	**35,652**	**35,773**	**32,631**	**29,874**	**28,624**

Notes:
Amounts shown are rounded to nearest acre-foot
Amounts as reported to the SWRCB Division of Water Rights, made available by a purveyor, reported by Beaumont Watermaster or estimated by SGPWA
Data revised to agree with basin boundaries as defined in USGS 2004 report
(1) Amount adjusted for production in 2006, 2007, 2008 & 2009 by BCVWD for City of Banning from co-owned wells
(2) 2010 Data not reported - Preceeding year (2009) data used
(3) Previous Well Owners - Arrowhead Mtn Spring Bottling Co. & East Valley Golf Club LLC

Table 2: Groundwater Production in San Gorgonio Pass Water Agency by Purveyor (1998 through 2010 as reported)

San Gorgonio Pass Water Agency
Totals by Owner by Basin
Non-Verified Production Data
(in acre feet)

Owner	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BANNING BASIN													
Banning, City of	179	424	586	839	1,103	2,381	1,180	1,485	1,787	2,512	1,999	2787	1782
TOTALS FOR BANNING BASIN	179	424	586	839	1,103	2,381	1,180	1,485	1,787	2,512	1,999	2787	1782
BANNING BENCH BASIN													
Banning, City of	2,117	1,678	665	678	732	877	1,244	2,257	2,922	2,124	1,224	1340	1486
Brinton, Barbara	10	10	10	10	10	10	10	10	0	10	10	10	10
Summit Cemetery District	55	55	55	65	65	65	65	65	65	65	65	65	65
TOTALS FOR BANNING BENCH BASIN	2,182	1,743	730	753	807	952	1,319	2,332	2,987	2,199	1,299	1415	1561
BANNING CANYON BASIN													
Banning Heights Mutual Water Co.	128	242	120	153	275	207	32	73	21	22	31	4	17
Banning, City of	4,920	4,974	4,835	5,447	2,749	2,368	3,290	3,575	3,443	2,640	3,206	2767	3924
Lane, Christie	0	0	0	0	0	7	7	1	0	0	0	0	0
TOTALS FOR BANNING CANYON BASIN	5,048	5,216	4,955	5,600	3,024	2,582	3,329	3,649	3,464	2,662	3,237	2771	3941
BEAUMONT BASIN													
Albor Properties III, LP	0	92	122	151	164	163	163	165	170	175	200	193	174
Banning, City of (1)	1,204	1,961	3,404	3,374	4,942	4,427	3,220	1,765	2,010	2,947	3,154	1623	1223
Beaumont-Cherry Valley Water District (1)	1,905	2,958	3,768	3,971	7,088	7,692	7,103	5,607	9,200	11,096	10,617	9643	9100
Walt Beckman									116	83	13	0	0
California Oak Valley Management	558	830	718	684	925	950	852	991	965	742	781	753	546
Morongo Band of Mission Indians (2)	0	386	1,688	1,325	1,227	1,382	1,368	1,227	1,823	1,484	1,133	1158	791
Merlin Properties, LLC	550	545	535	530	530	520	500	500	100	100	150	175	100
Oak Valley Partners	311	421	446	401	383	453	430	350	312	312	311	311	311
Plantation on the Lake	237	264	289	286	280	300	310	320	351	345	354	354	354
Rancho Calimesa Mobile Home Ranch	170	170	150	198	206	202	202	60	61	61	40	40	42
Sharondale Mesa Owners Association	166	197	167	190	185	182	158	181	189	183	196	154	131
Sunny-Cal Egg & Poultry, Inc.	1,366	1,731	1,762	1,876	1,475	1,475	1,477	1,153	50	50	50	50	25
Diocese of San Bernardino, The	97	105	114	114	140	140	140	70	70	70	0	0	0
Yucaipa Valley Water District	779	888	774	1,374	1,604	1,738	1,833	1,281	2,027	1,683	572	494	672
TOTALS FOR BEAUMONT BASIN	7,343	10,548	13,937	14,474	19,149	19,624	17,756	13,670	17,444	19,331	17,571	14948	13469
CABAZON BASIN													
Cabazon Water District	728	949	477	1,042	1,434	882	1,092	915	824	780	737	749	513
Desert Hills Premium Outlets	0	0	0	136	146	153	169	154	142	143	138	156	197
Mission Springs Water District	0	0	0	0	165	169	157	171	190	206	164	162	144
Robertson's Ready Mix	109	114	117	4	4	4	186	139	158	337	373	191	200
TOTALS FOR CABAZON BASIN	837	1,063	594	1,182	1,749	1,208	1,604	1,379	1,314	1,466	1,412	1258	1054

Table 3: Groundwater Production in San Gorgonio Pass Water Agency by Purveyor by Basin (1998 through 2010 as reported)

San Gorgonio Pass Water Agency
Totals by Owner by Basin
Non-Verified Production Data
(in acre feet)

Owner	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CALIMESA BASIN													
Illy, Katharina	267	267	267	267	267	267	267	267	267	265	265	265	270
Perisits, Jack	46	46	40	40	40	40	40	40	0	0	0	0	0
South Mesa Water Co.	797	69	858	1,044	952	1,117	976	782	882	954	842	930	653
Yucaipa Valley Water District	438	433	470	338	298	301	252	486	296	313	26	120	191
TOTALS FOR CALIMESA BASIN	1,548	815	1,635	1,689	1,557	1,725	1,535	1,575	1,445	1,532	1,133	1,315	1,114
EDGAR CANYON BASIN													
Beaumont-Cherry Valley Water District	3,102	3,136	2,754	1,643	1,674	1,513	1,503	1,463	2,548	1,935	2,127	1,685	1,875
Hudson, Merton Lonnie	472	475	385	510	465	430	430	430	435	445	435	430	430
Los Rios Inc & The Wildlands Conservancy	717	383	359	250	242	226	194	343	343	470	435	386	493
Shiloh's Hill LLC	0	0	0	0	107	11	121	160	146	150	61	172	200
Wildlands Conservancy, The	0	386	381	433	460	317	462	283	301	9	21	40	16
Yucaipa Valley Water District	85	100	100	90	91	52	49	87	99	76	61	71	86
TOTALS FOR EDGAR CANYON BASIN	4,376	4,480	3,979	2,926	3,039	2,549	2,759	2,766	3,872	3,085	3,140	2,784	3,100
MILLARD CANYON BASIN													
Morongo Band of Mission Indians (3)	0	0	0	256	1,366	675	823	595	707	842	757	750	750
TOTALS FOR MILLARD CANYON BASIN	0	0	0	256	1,366	675	823	595	707	842	757	750	750
SAN TIMOTEO BASIN													
El Casco Lake Ranch	160	160	160	160	160	160	160	160	160	160	160	160	160
Morongo Band of Mission Indians (2)	0	30	0	0	0	0	0	0	0	0	0	0	0
Riverside Land Conservancy									5	5	5	5	5
South Mesa Water Co.	877	1,012	1,193	992	1,258	1,183	1,220	1,133	1,184	1,219	1,368	1,202	1,164
SunCal Companies	145	132	97	82	47	49	89	839	555	0	0	0	0
TOTALS FOR SAN TIMOTEO BASIN	1,182	1,334	1,450	1,234	1,465	1,392	1,469	2,132	1,904	1,384	1,533	1,367	1,329
SINGLETON BASIN													
South Mesa Water Co.	467	579	558	547	535	345	483	636	645	666	471	382	405
Yucaipa Valley Water District	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS FOR SINGLETON BASIN	467	579	558	547	535	345	483	636	645	666	471	382	405
SOUTH BEAUMONT BASIN													
Dowling, Frances M. Jr.	68	78	77	77	92	95	92	85	83	94	79	72	96
Summit Cemetery District												25	23
TOTALS FOR SOUTH BEAUMONT BASIN	68	78	77	77	92	95	92	85	83	94	79	97	119
TOTALS FOR ALL BASINS	**23,230**	**26,280**	**28,501**	**29,577**	**33,886**	**33,528**	**32,349**	**30,304**	**35,652**	**35,773**	**32,631**	**29,874**	**28,624**

Notes:

Amounts shown are rounded to nearest acre-foot

Amounts as reported to the SWRCB Division of Water Rights, made available by a purveyor, reported by Beaumont Basin Watermaster or estimated by SGPWA

Data revised to agree with basin boundaries as defined in USGS 2004 report

(1) Amount adjusted for production in 2006, 2007, 2008 & 2009 by BCVWD for City of Banning from co-owned wells

(2) Previous Well Owner - East Valley Golf Club LLC

(3) Previous Well Owner - Arrowhead Mountain Spring Water Bottling Co.

Table 3: Groundwater Production in San Gorgonio Pass Water Agency by Purveyor by Basin (1998 through 2010 as reported)

State Water Project Deliveries to
San Gorgonio Pass Water Agency Service Area

Calendar Year	Amount in Acre-Feet	Allocation
2003 (1)	116	90%
2004	814	65%
2005	687	90%
2006 (2)	4420	100%
2007 (2)	4815	60%
2008 (2)	4905	35%
2009 (2)	6609	40%
2010 (2)	8403	50%

(1) Start Up / Partial Year

(2) Includes deliveries to Yucaipa Valley Water District

Deliveries to Beaumont Cherry Valley Water District began in September 2006

Source: San Bernardino Valley Municipal Water District Operations Manager

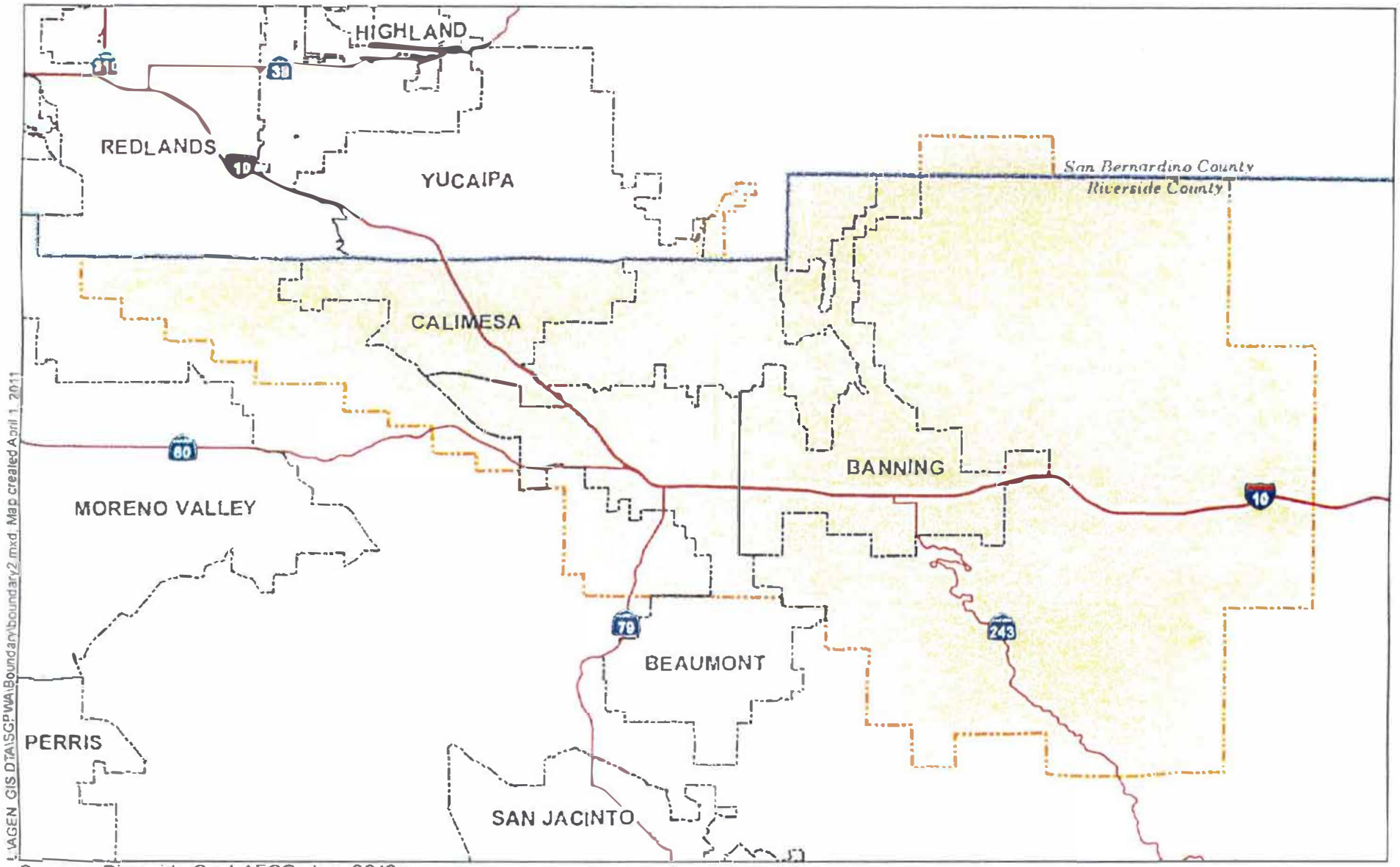
Table 4: State Water Project Deliveries to
San Gorgonio Pass Water Agency Service Area

Water Quality Analysis at Devil Canyon Afterbay

DATE	TDS mg/L	Chloride mg/L	Sodium mg/L	Sulfate mg/L	Nephelometric Turbidity Units	Nitrate+ Nitrite mg/L
Jan-07	268	75	54	35	1	0.86
Feb-07	309	95	65	41	6	0.94
Mar-07	NR	74	54	48	1	1.10
Apr-07	258	63	51	45	2	0.99
May-07	245	61	46	39	1	0.72
Jun-07	252	66	47	38	2	0.50
Jul-07	258	60	45	36	4	0.60
Aug-07	297	50	38	26	1	0.40
Sep-07	NR	80	53	26	3	0.36
Oct-07	292	97	69	31	16	0.53
Nov-07	283	87	62	36	3	0.80
Dec-07	276	80	58	39	11	0.95
Jan-08	272	73	58	41	2	1.06
Feb-08	271	74	58	43	1	1.20
Mar-08	N/R	73	57	46	3	1.23
Apr-08	285	70	56	50	1	1.20
May-08	282	76	58	50	1	0.78
Jun-08	279	79	58	46	1	0.82
Jul-08	294	81	58	44	<1	0.70
Aug-08	285	71	54	42	3	0.49
Sep-08	N/R	72	53	42	1	0.48
Oct-08	267	71	58	43	2	0.54
Nov-08	293	76	61	48	<1	0.59
Dec-08	308	76	61	48	1	1.00
Jan-09	276	76	61	47	<1	0.76
Feb-09	266	70	58	43	<1	0.79
Mar-09	270	72	55	44	1	0.65
Apr-09	282	73	63	47	1	0.52
May-09	299	76	64	52	2	0.61
Jun-09	295	77	62	54	1	0.43
Jul-09	325	89	67	52	4	0.35
Aug-09	225	58	42	30	5	0.33
Sep-09	235	78	56	26	1	0.15
Oct-09	287	93	63	33	1	0.37
Nov-09	274	83	62	37	1	0.56
Dec-09	245	69	52	35	4	0.76
Jan-10	254	70	53	36	1	0.68
Feb-10	222	56	42	33	6	0.74
Mar-10	214	50	41	35	1	0.85
Apr-10	240	54	45	46	2	0.80
May-10	226	49	40	55	3	0.54
Jun-10	241	59	45	43	2	0.52
Jul-10	234	56	41	37	3	0.40
Aug-10	205	54	43	30	2	0.21
Sep-10	214	60	41	26	16	0.14
Oct-10	275	94	60	25	18	0.32
Nov-10	264	87	55	27	1	0.46
Dec-10	255	82	54	28	1	0.44

mg/L: milligrams per liter
Source: SWP/DWR O & M, Table 32 DWR Monthly OPS Report
NR: Not Reported

Table 5: Water Quality Analysis at Devil Canyon Afterbay near San Bernardino (Selected Constituents)



Sources: Riverside Co. LAFCO, Jan. 2010;
Riverside County GIS, 2008.

0 2 4 6 Miles

San Gorgonio Pass Water Agency
Service Area Boundary

Albert A. WEBB Associates

Figure 1: San Gorgonio Pass Water Agency

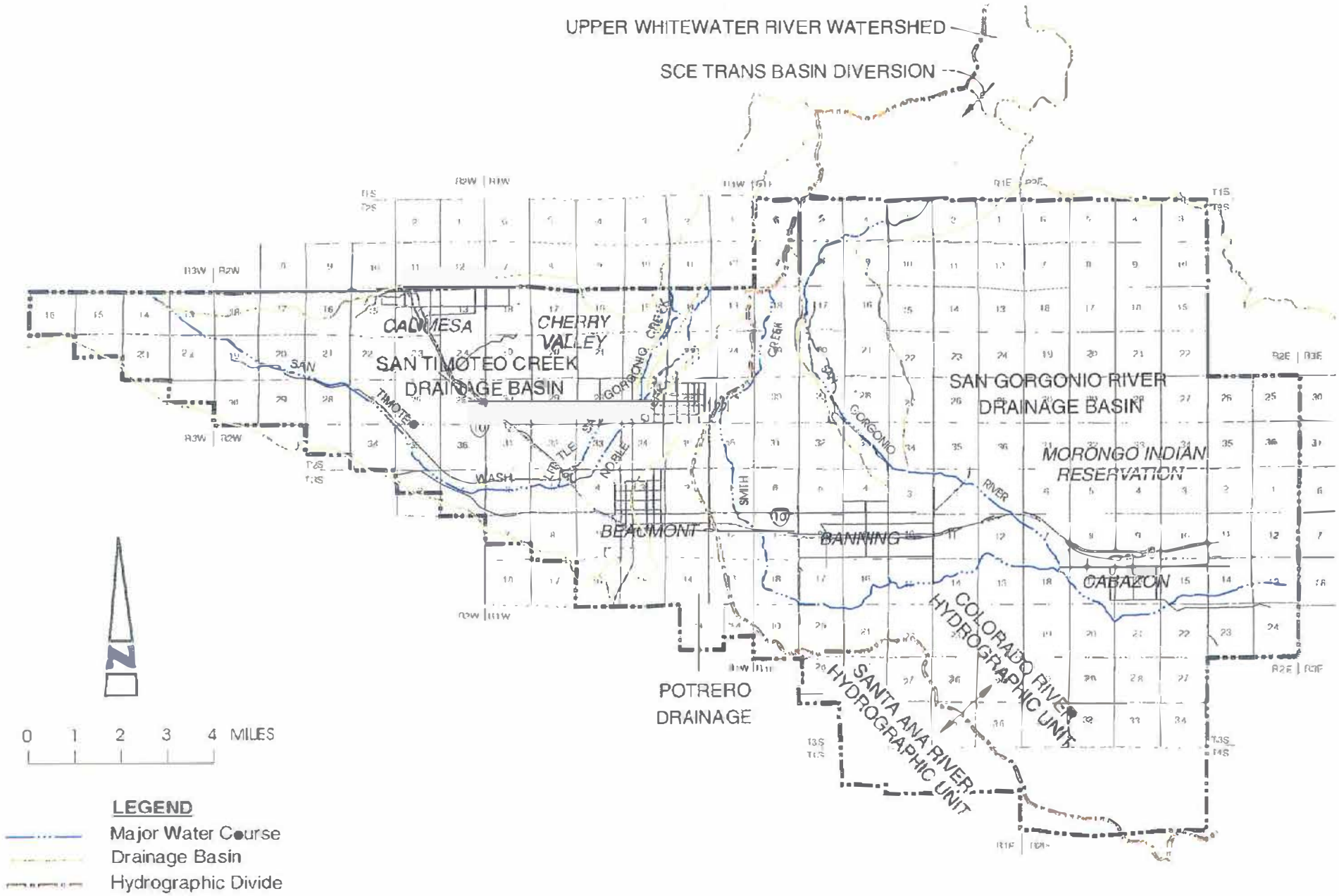
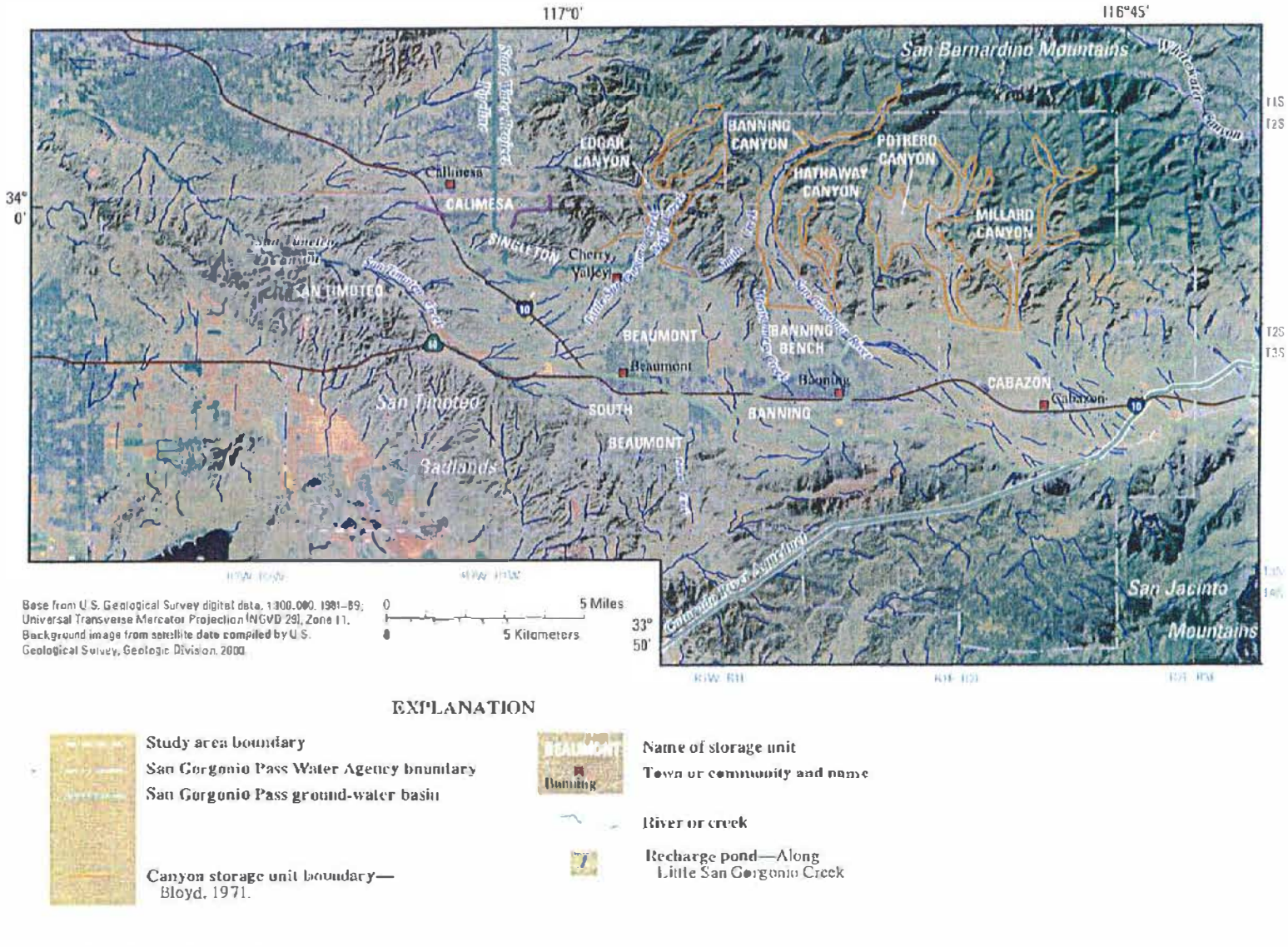


Figure 2: Drainage Basins and Principal Streams



Source: USGS Scientific Investigations Report 2006-5026

Figure 3: Groundwater Storage Units

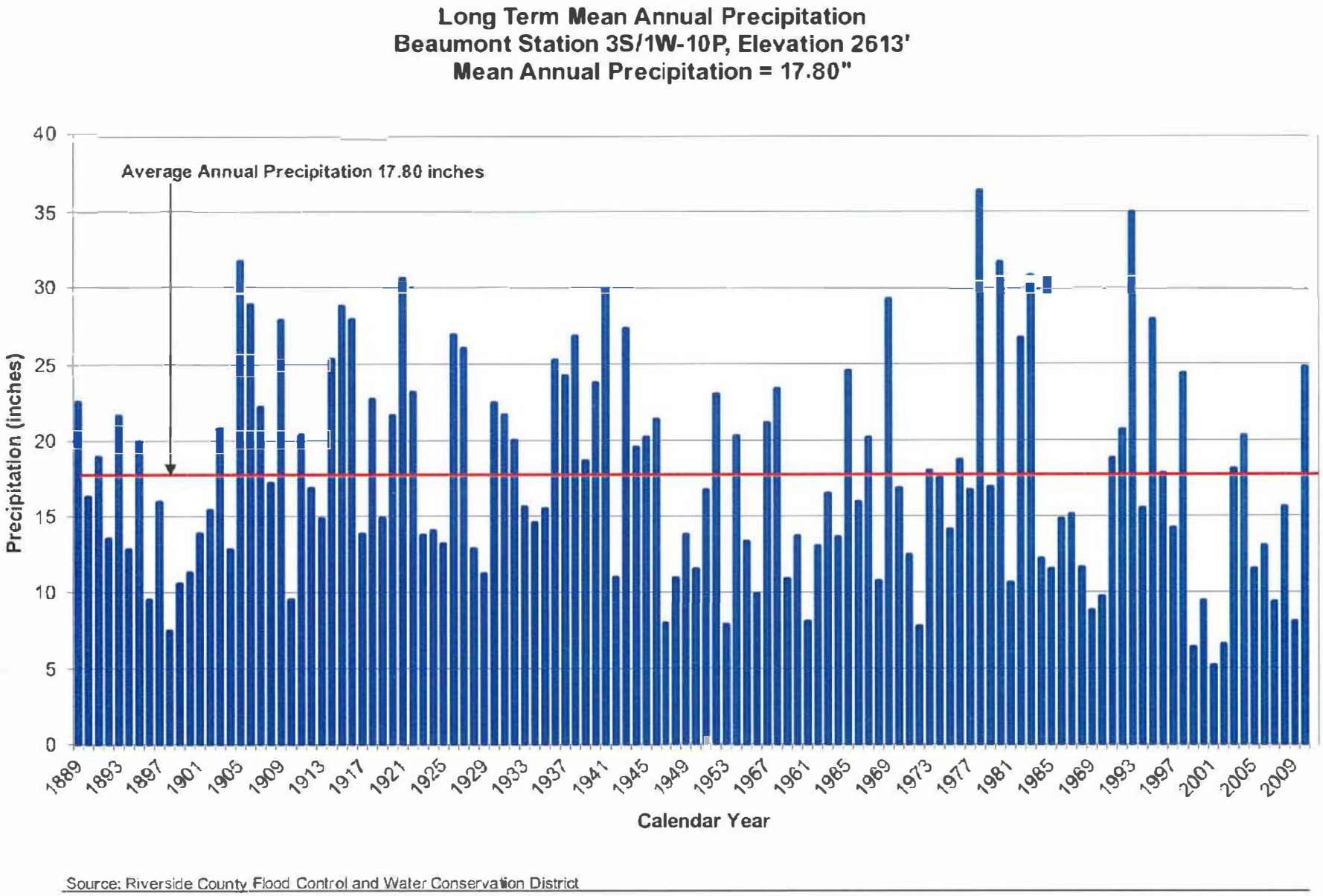


Figure 4: Long Term Mean Annual Precipitation at Beaumont

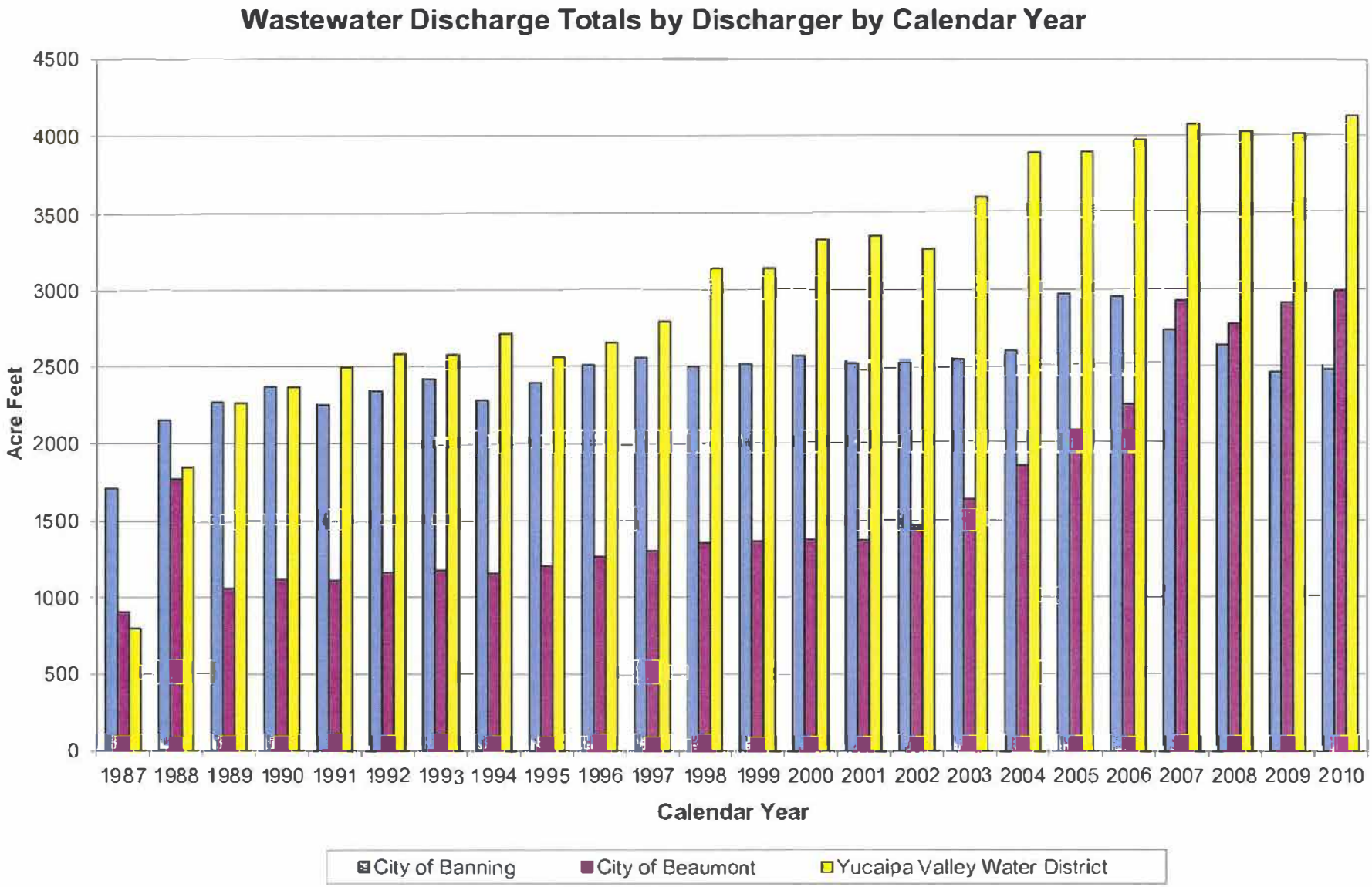


Figure 5: Wastewater Discharge Totals by Discharger by Calendar Year

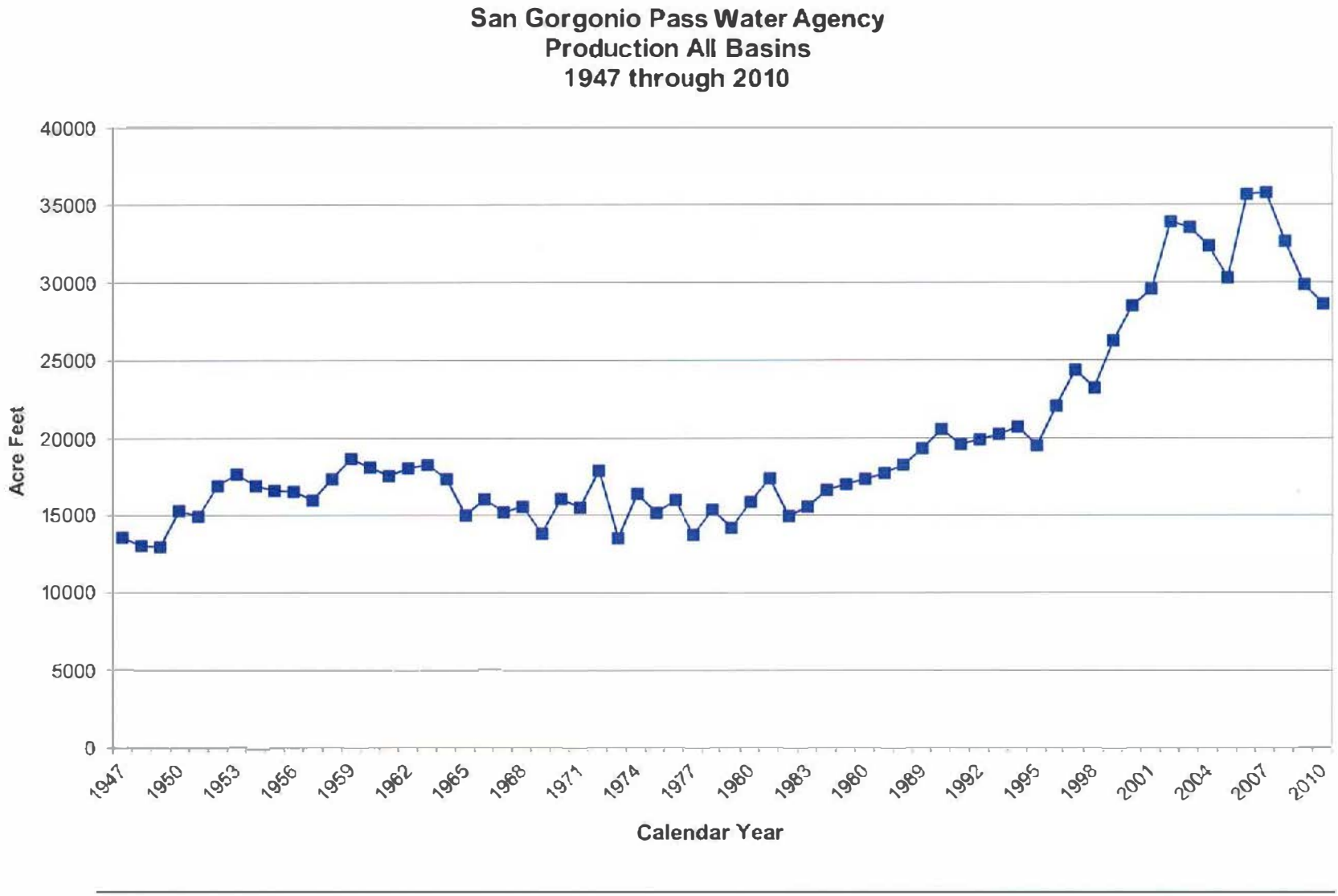


Figure 6: Historical Groundwater Production All Basins 1947 through 2010 (as reported)

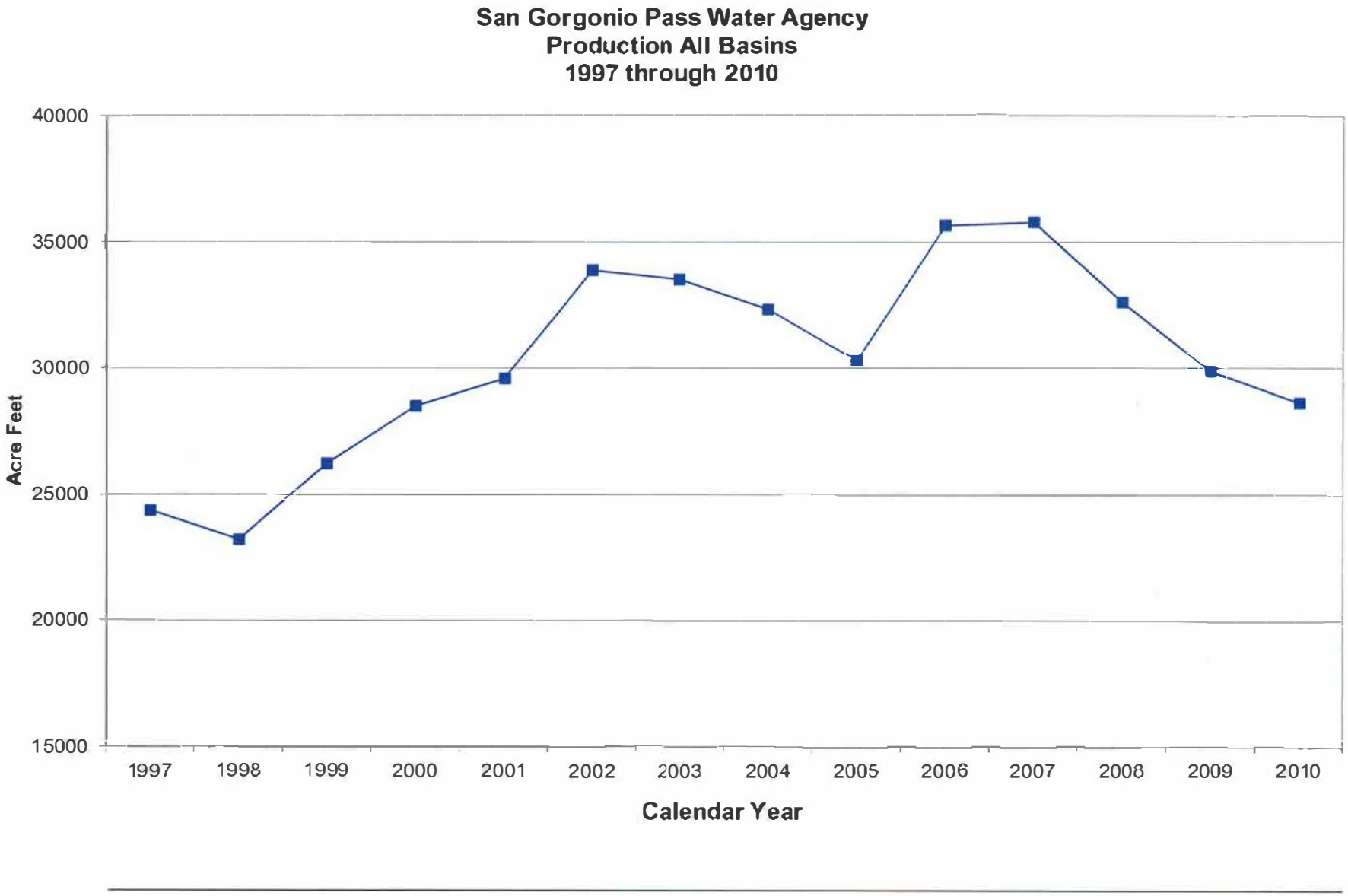


Figure 7: Historical Groundwater Production All Basins 1997 through 2010 (as reported)

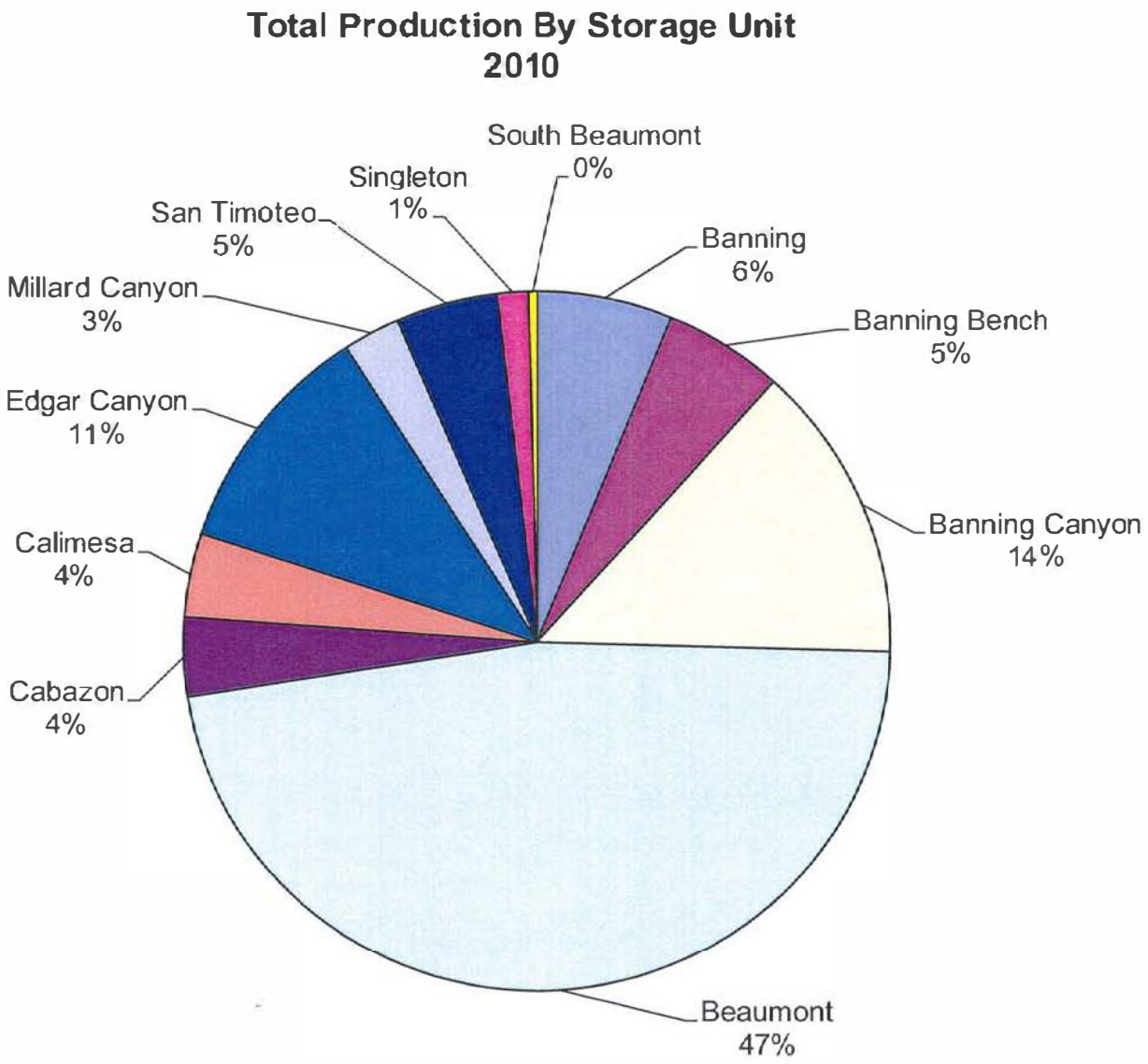


Figure 8: Total Agency Production by Storage Unit in 2010 (as reported)

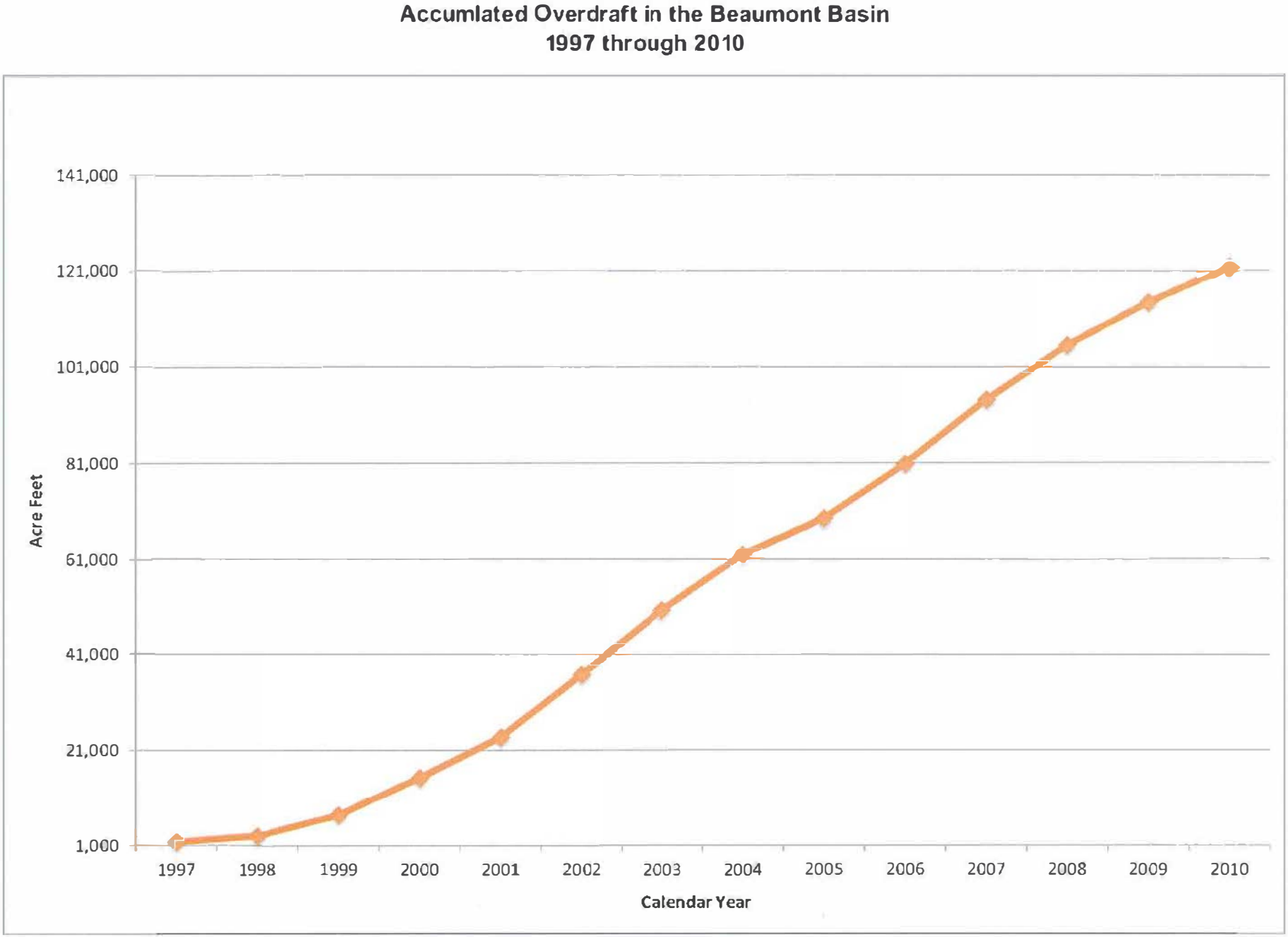


Figure 9a: Accumulated Overdraft in the Beaumont Basin 1997 through 2010

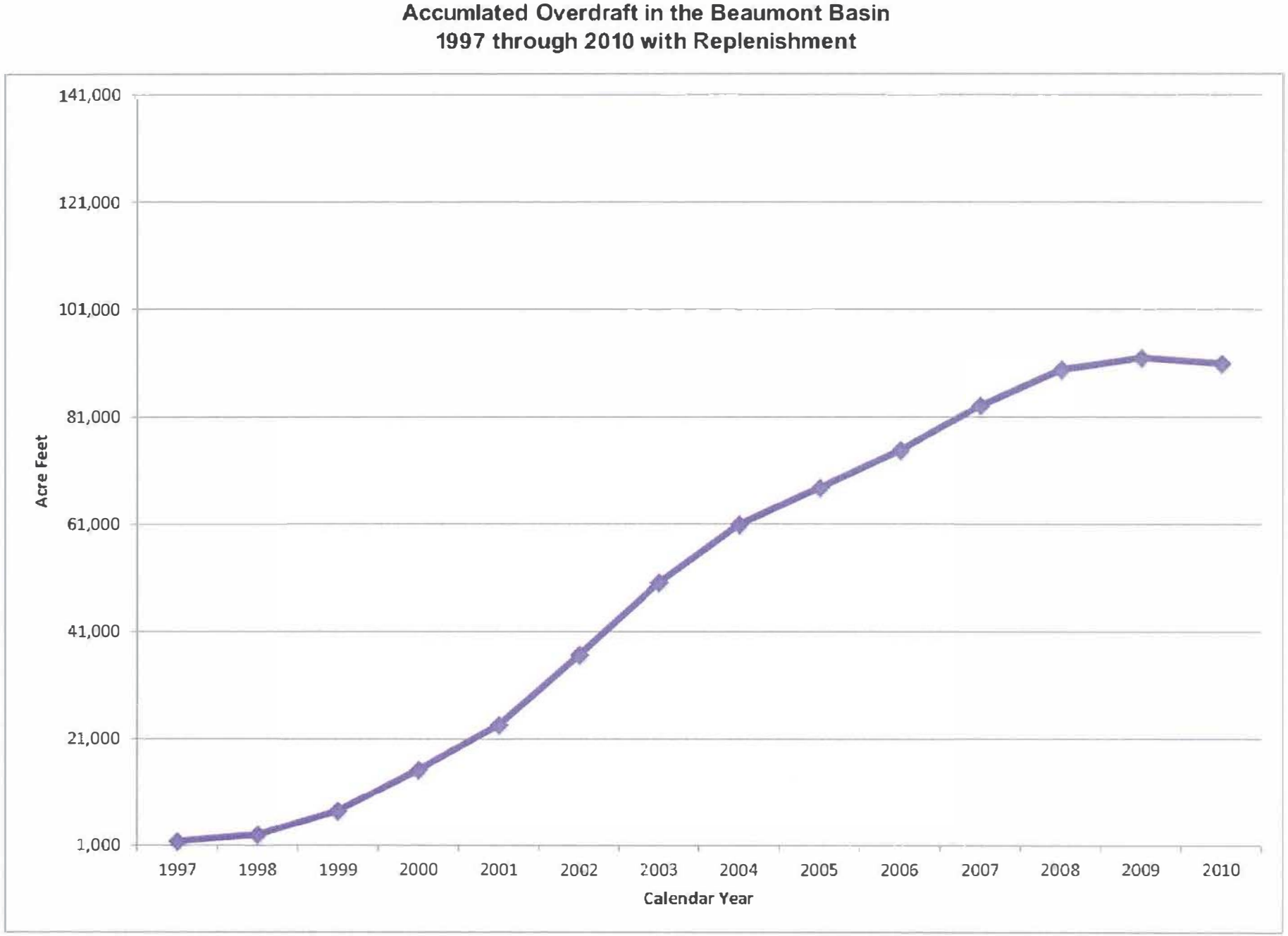
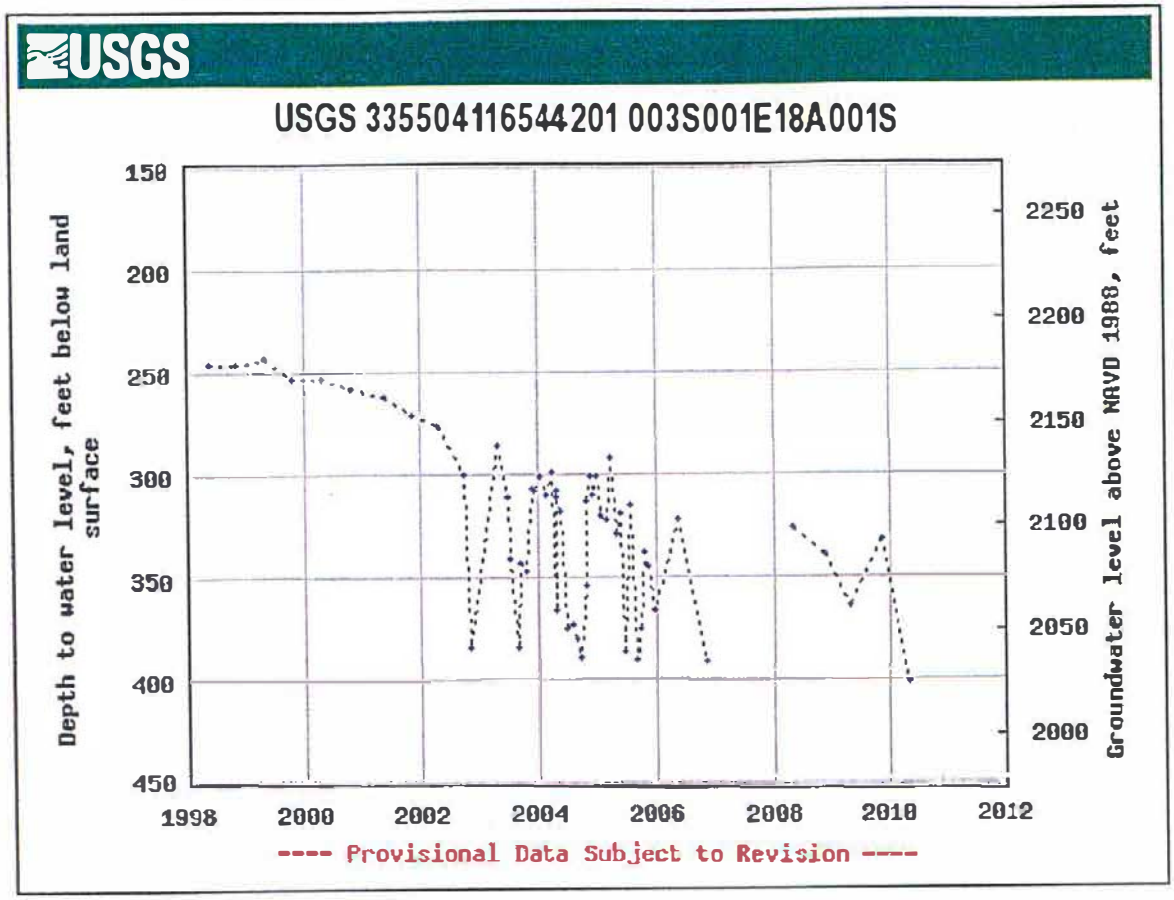


Figure 9b: Accumulated Overdraft in the Beaumont Basin 1997 through 2010 with Replenishment



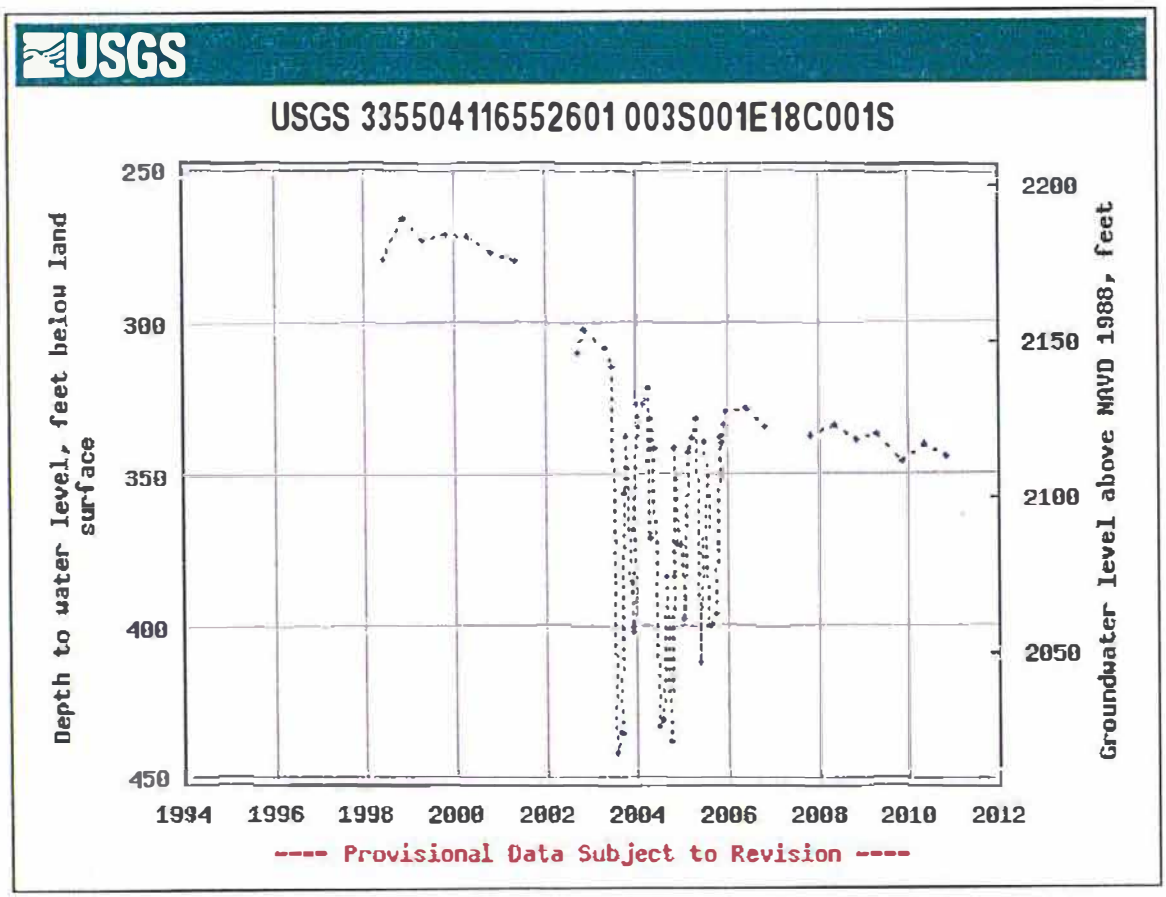
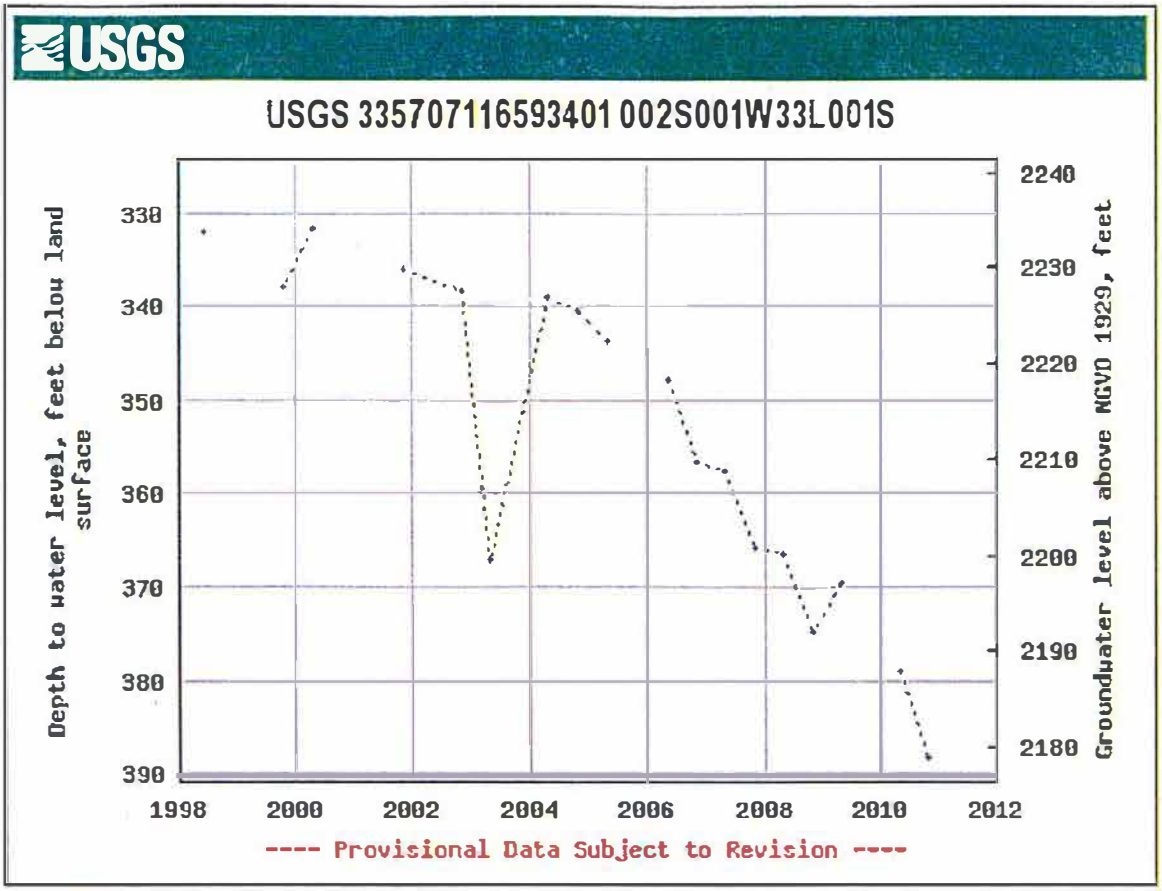


Figure 10: Groundwater Hydrographs – Banning Basin
3S/1E-18A01 and 3S/1E-18C01



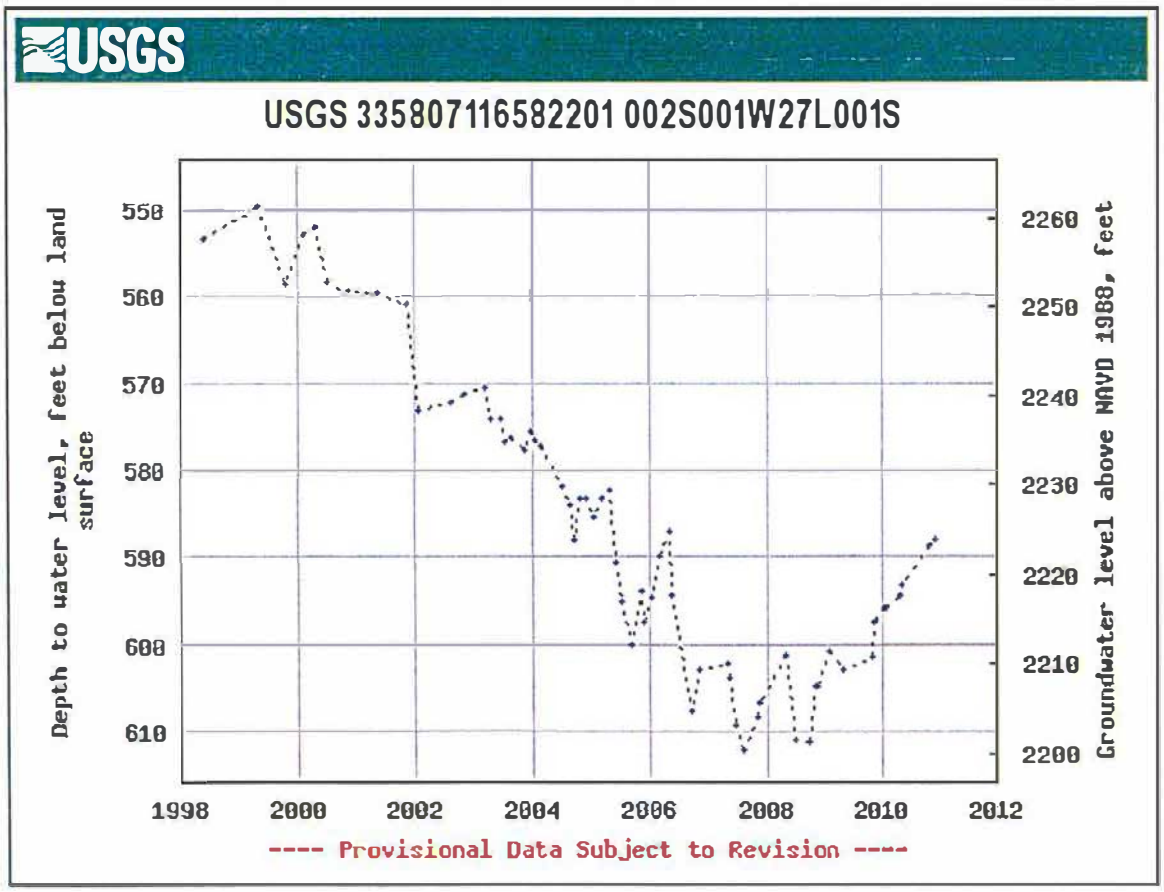


Figure 11: Groundwater Hydrographs – Beaumont Basin
2S/1W-33L01 and 2S/1W-27L01

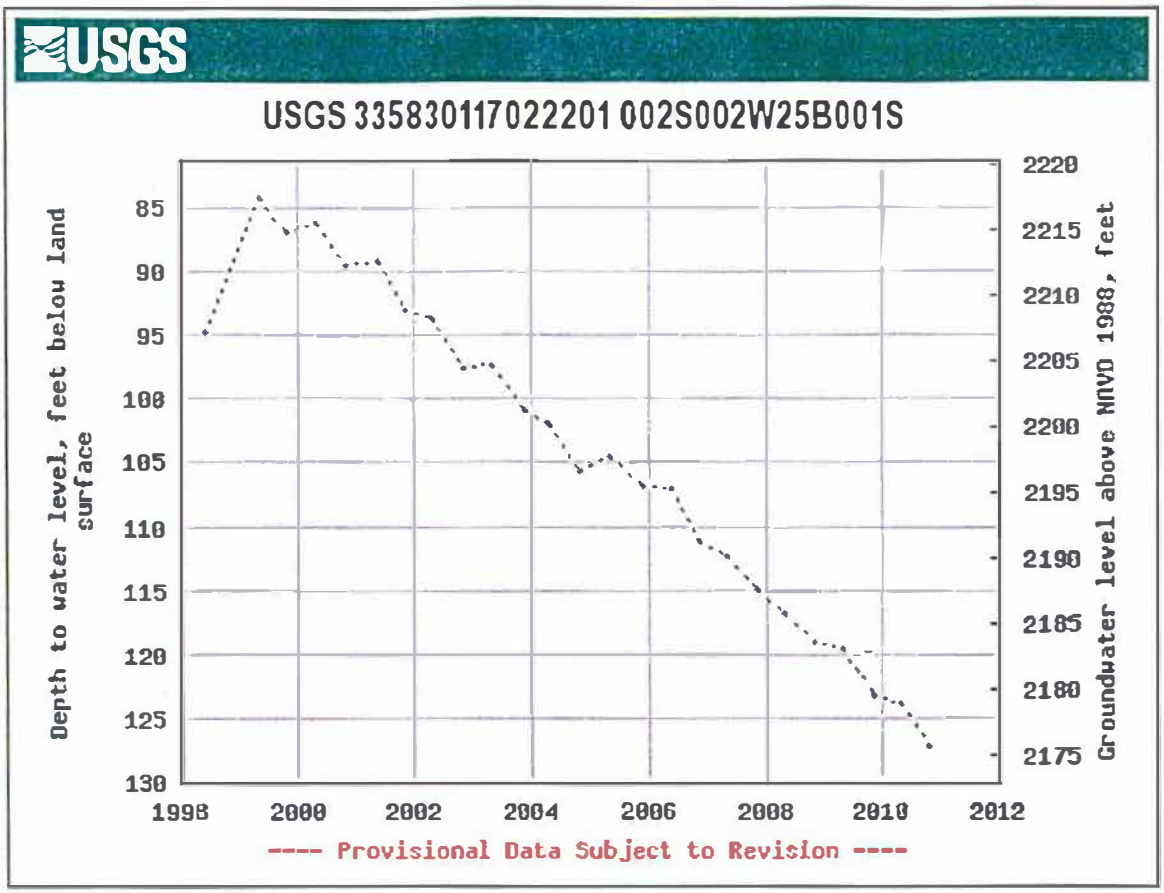
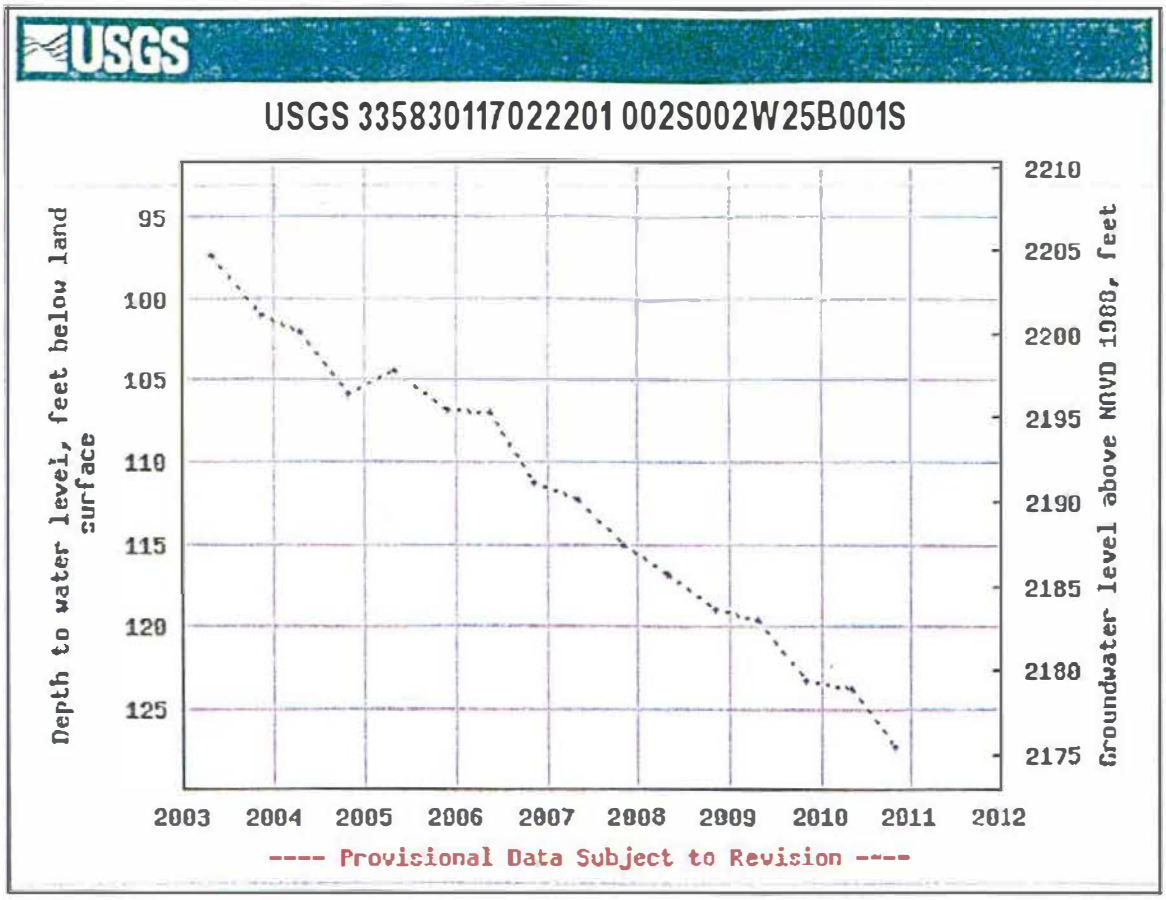


Figure 12: Groundwater Hydrographs – Beaumont Basin
2S/2W-25B01



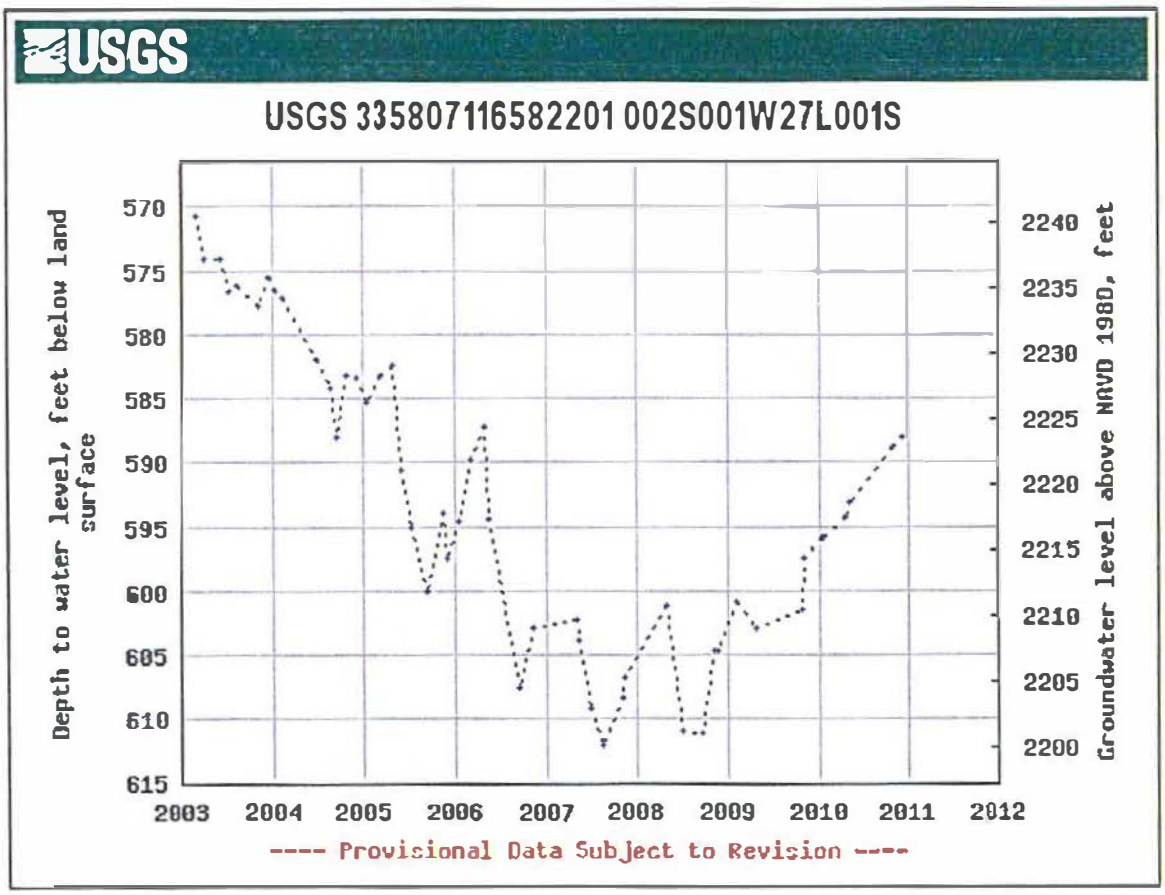
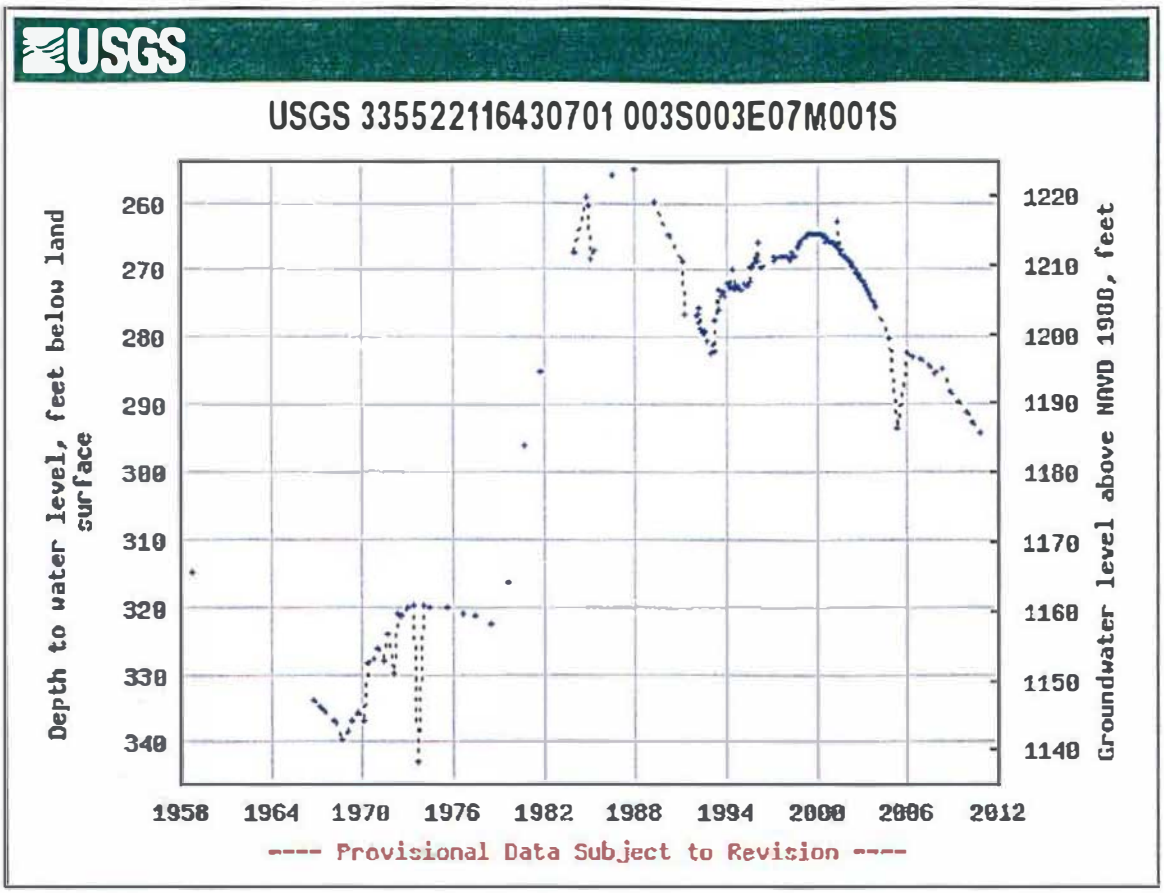


Figure 13: Groundwater Hydrographs – Beaumont Basin 2003 - 2010
2S/2W-25B01 and 2S/1W-27L01



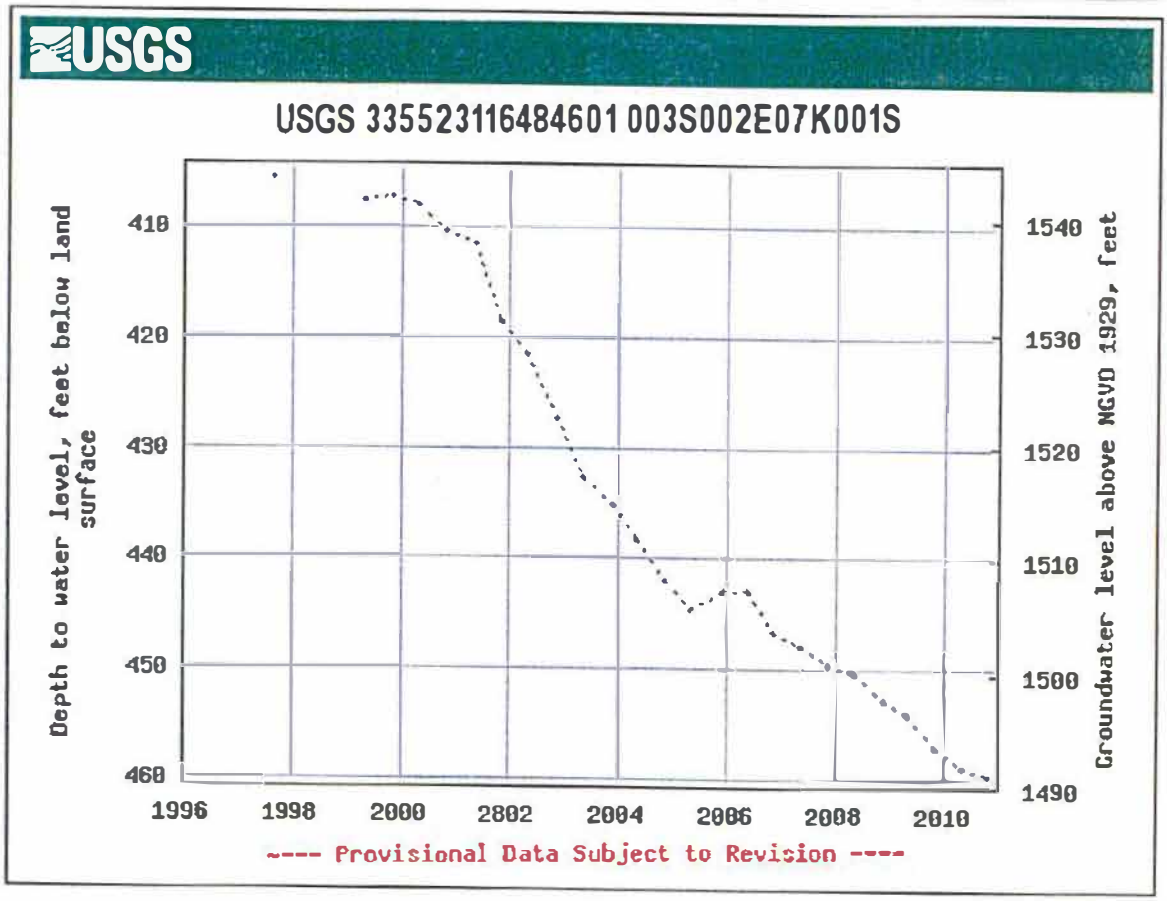
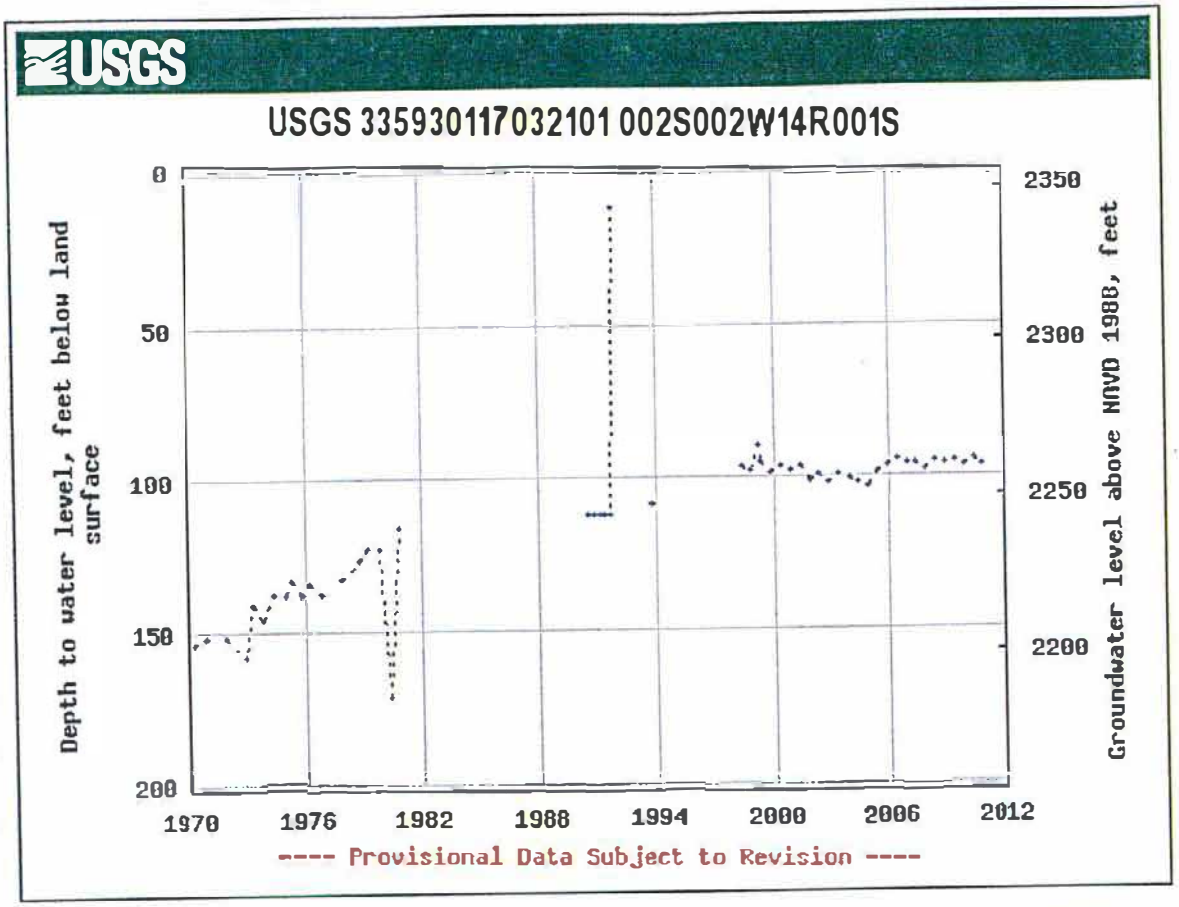


Figure 14: Groundwater Hydrographs – Cabazon Basin
3S/3E-07M01 and 3S/2E-07K01



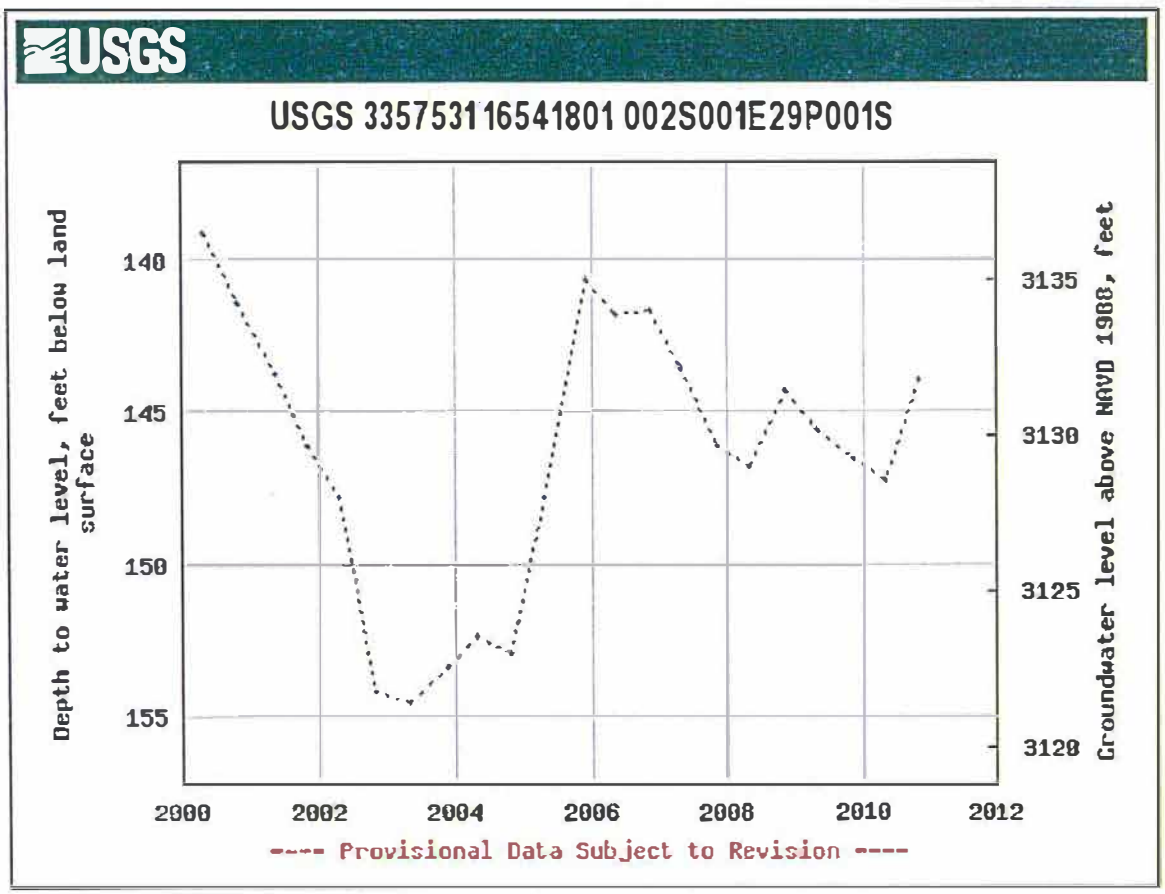
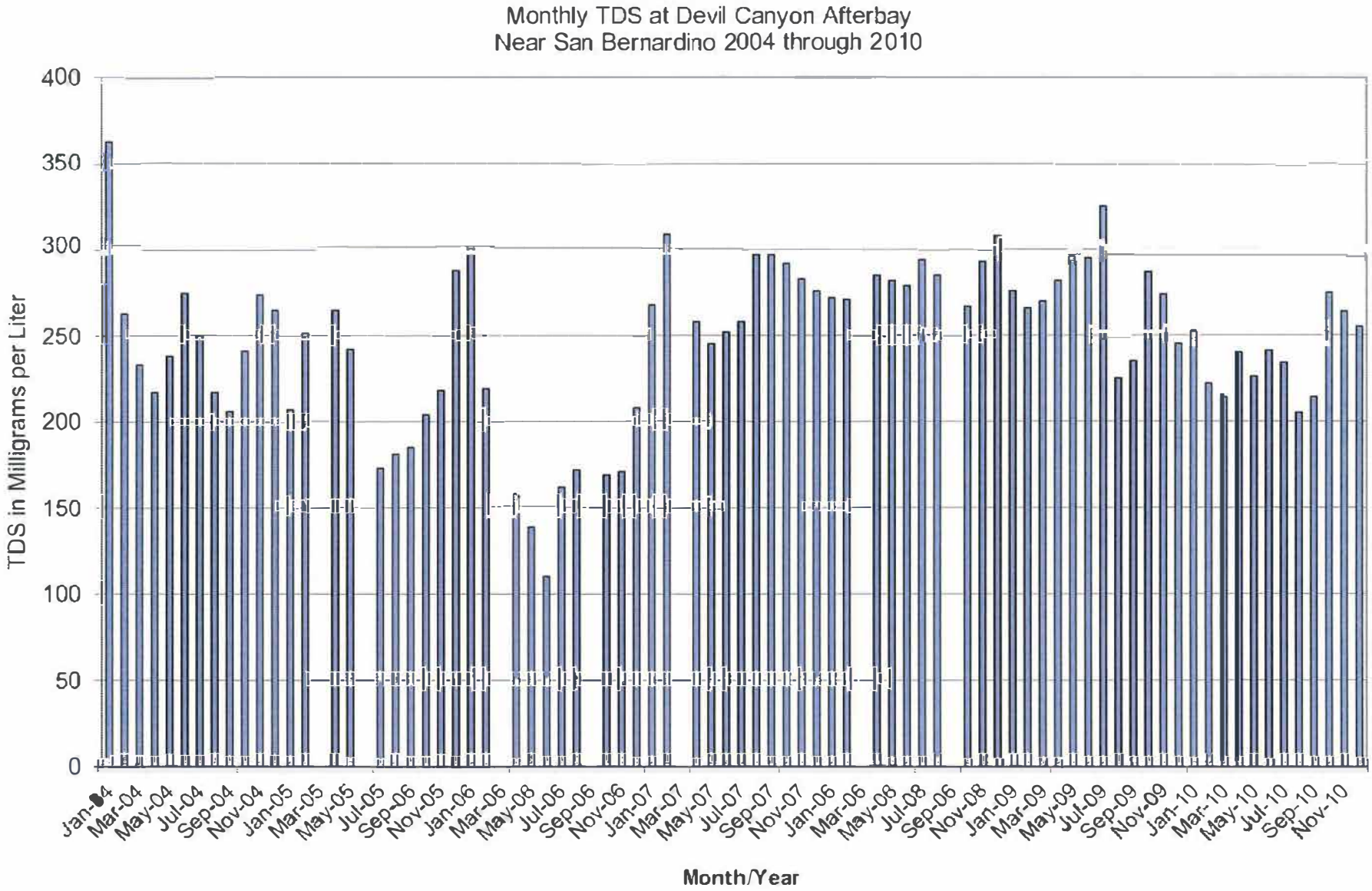


Figure 15: Groundwater Hydrographs – Calimesa and Banning Canyon Basins 2S/2W-14R01 and 2S/1E-29P01



Source: Table 32, DWR Monthly Operations Report

Figure 16: Monthly TDS at Devil Canyon Afterbay near San Bernardino 2004 through 2010

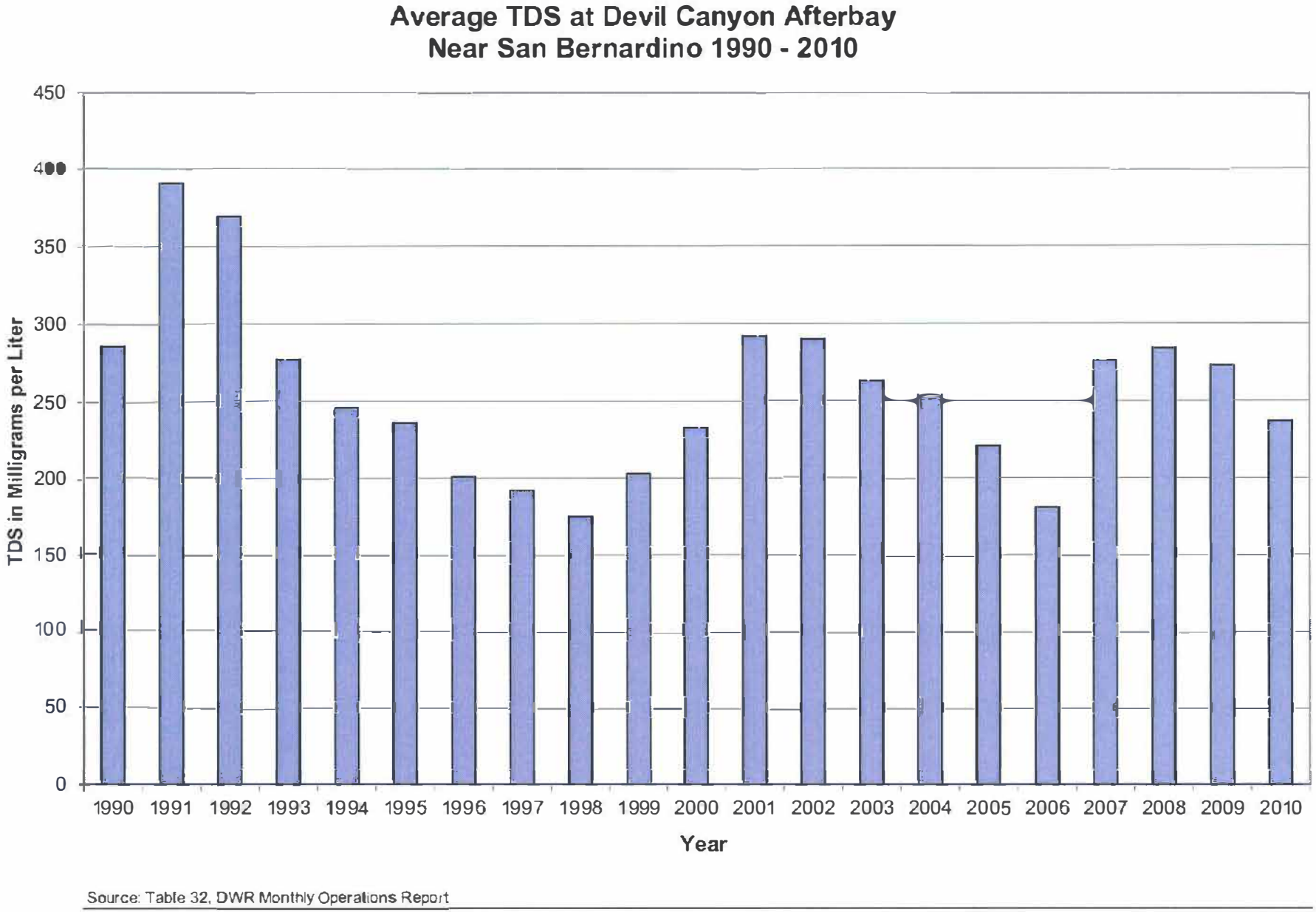


Figure 17: Average TDS at Devil Canyon Afterbay near San Bernardino 1990 through 2010

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