

- Water Surplus and Drought Management Plan on water supply and demand as of October 30, 2008

Summary

This is the monthly report on the CY 2008 regional water supply and demand conditions as of October 30, 2008. Staff will provide oral updates to this report at the monthly meeting of the Water Planning and Stewardship Committee. The Water Surplus and Drought Management Plan (WSDM Plan) provides the overall strategy for managing Metropolitan's resources to meet the range of estimated demands for the calendar year. The following are report highlights for this month:

- SWP (35 percent Table A allocation) and CRA Base Supplies¹: 1.44 MAF
- WSDM Storage Balances as of January 1, 2008: 1.77 MAF
- WSDM Storage that is accessible through CY 2008: 776TAF
- Identified Transfers and Exchanges for CY 2008: 192 TAF
- Current Trend Total Demand: 2.24 MAF
- Firm Supplies accessible in CY 2009 under a 15% SWP Allocation: about 1.6 MAF
- Resource Options available in CY 2009: 453 TAF – 1.057 MAF

Attachments

[Attachment 1: Projected CRA and SWP Supplies for CY 2008](#)

[Attachment 2: Projected WSDM Supplies for CY 2008](#)

[Attachment 3: Metropolitan's Emergency Storage](#)

[Attachment 4: 2009 Potential Resource Options](#)

Detailed Report

This letter is the twelfth monthly WSDM Plan report on water supplies and demands for CY 2008. The purpose of this report is to keep the Board apprised of developing conditions that may impact water supply reliability and any potential WSDM actions that may be required for the year.

Water Supply and Demand Balance

Colorado River Aqueduct

Staff's estimate of total Colorado River supplies for CY 2008 is approximately 871 TAF based on the most recent forecast submitted to the Federal Bureau of Reclamation and other developments. This schedule includes Metropolitan's Basic Apportionment (550 TAF) and all other Colorado River supplies, including water transfers, that are diverted at Metropolitan's intake at Lake Havasu. Colorado River base supplies¹ are approximately 731 TAF.

While the net scheduled CRA diversion number remains essentially unchanged since last month's report, there have been some significant water supply developments in the updated schedule. These include an increase of almost 10 TAF in water from the All-American and Coachella canal lining projects, about 13 TAF projected unused water from Coachella Valley Water District, 30 TAF additional water from Southern Nevada Water Authority, and a

¹ This figure does not include 45 TAF of water from the SNWA agreement described under 'Transfers and Exchanges', 25 TAF of Central Arizona Storage Recovery water, and the 20 TAF increase in PVID program since last year, 34 TAF of Drop 2 Reservoir water, and 46 TAF of Lake Mead ICS water.

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decrease of over 50 TAF due to an increase in the projected Priority 1,2, and 3b use. The base supply¹ number has decreased by about 30 TAF since last month due mainly to the increased projected use of Priority 1, 2, and 3b. A detailed listing of the Colorado River's current forecast schedule is included in [Attachment 1](#).

State Water Project

Since February 1, 2008, the State Water Project (SWP) allocation for Metropolitan has remained at 35 percent of the Table A contract amount. This allocation reflects the record dry conditions experienced in March through May and the resulting low projection of runoff. This allocation considers conservative assumptions for SWP operational constraints, including Delta export restrictions resulting from the Federal District Court's remedy order to protect Delta smelt. On October 30, 2008, DWR announced a 15 percent initial 2009 SWP allocation. This allocation reflects the low carryover storage levels in the state's major reservoirs, ongoing drought conditions and court ordered restrictions on water deliveries from the Delta. As is usually the case, the initial allocation is conservative with a high likelihood that the final allocation will be increased. DWR formally reviews hydrologic and storage conditions on a monthly basis and updates SWP allocations, as appropriate throughout the year.

Since last month's report, the projected amount of SWP supply has increased by 4 TAF. This is due to a change in the projected amount available from the San Bernardino Valley MWD Coordinated Operating Agreement. Under the current 35 percent Table A allocation, Metropolitan is planning on receiving a total SWP supply of 737 TAF in CY 2008. A detailed listing of SWP supplies is listed in [Attachment 1](#).

Water Demands

Metropolitan's current trend estimated for water demand is 2.24 MAF, with a range of 2.19 MAF under wet/cool conditions to 2.33 MAF under hot/dry conditions. This range of estimated demand covers total water deliveries, a part of which is included in Metropolitan's projections of its rates and revenues. It reflects that water sales under the replenishment program have been discontinued, and that water sales under the Interim Agricultural Water Program are reduced by 30 percent. The total demands do not include deliveries of water as part of the exchange with Desert Water Agency and Coachella Valley Water District (DWCV). At this time, Metropolitan intends to recover water stored in the Advance Delivery Account.

Since last month's report, total demand at the current trend is higher by about 12 TAF.

WSDM Supplies and Management Actions

WSDM Storage Portfolio

In addition to base CRA and SWP supplies, Metropolitan had a total of approximately 1.76 MAF of storage in its WSDM resource portfolio as of the beginning of CY 2008. The available WSDM supplies and management actions for calendar year 2008 are approximately 776 TAF. This estimate reflects the contractual minimum amounts of the programs and/or any agreed upon increase in minimum contractual amounts with banking partners. Some of the programs also have contract provisions that allow for a supply increase in relation to an increase in SWP allocation. Detailed program level estimates of operational WSDM supplies for 2008 under the current SWP allocation, along with projected storage levels, are shown in [Attachment 2](#). Metropolitan staff will continue to work cooperatively with its member agencies and other partners to ensure coordination and effective program management. [Attachment 2](#) also shows the water supply programs currently under development (unavailable in 2008).

Since last month's report, there has been an increase in the projected available WSDM storage supplies for CY 2008 of about 20 TAF. This increase is due to a change in the projected supply available to Metropolitan from the Central Valley Storage Programs and an adjustment of surface storage numbers.

Transfers/Exchanges

In November 2007, the Board authorized the General Manager to enter into an agreement with the State Water Project Contractors Authority to pursue up to 200 TAF of water transfer agreements with sellers located in the Sacramento and San Joaquin Valleys for CY 2008. Contracts have been signed for up to 60 TAF in the Sacramento Valley (net of Delta conveyance losses), and up to 8 TAF south of the Delta.

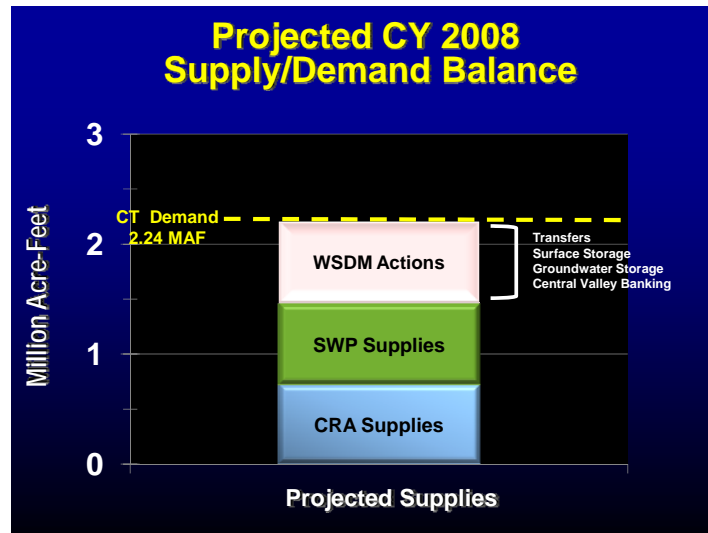
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In addition to these State Water Project transfers, there is 25 TAF of recovered water from the 1992 Central Arizona groundwater storage program and approximately 20 TAF of increased PVID following from last year that would increase CY 2008 supplies. Furthermore, an exchange agreement that started in 2002 with the SNWA allows Metropolitan to store unused Nevada apportionment of Colorado River water in California. Most recently, an additional 45 TAF acre-feet under this agreement was stored for CY 2008. In subsequent years, Nevada may request recovery of this stored water. In April, the Board approved the joint funding agreement for the Drop 2 Reservoir Project that will result in approximately 34 TAF of new supplies available to Metropolitan in CY 2008. These Colorado River actions could produce a combined total of 124 TAF acre-feet in CY 2008, bringing the total amount of transfers and exchanges identified for the year to 192 TAF.

There has been a 33 TAF increase in the projected amount of transfers since last month’s report. This amount reflects both a 3 TAF increase in the amount of Sacramento Valley transfers and a 30 TAF increase due to the additional amount of SNWA water available.

Water Balance and Actions

With currently allocated supplies on the SWP and CRA of 1.44 MAF, Metropolitan would be required to execute approximately 805 TAF of WSDM actions to meet the current trend total demand of 2.24 MAF.



The table below shows the current estimate of the actions that will be taken to balance the currently allocated SWP and CRA base supplies and demand, as well as the amount of water taken to date from the various WSDM actions.

Current Trend Demand:	2,243,000
Base Supplies	1,437,978
WSDM ACTIONS	805,022

Table of Identified WSDM Actions	Actions Under Current Trend Demand	Amount Taken to Date
Transfers and Exchanges	192,000	47,825
Central Valley Programs	185,000	144,000
In-Basin Groundwater	51,000	19,900
Surface Water	377,000	213,277
TOTAL	805,000	425,002

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In the situation that calendar year demands exceed identified WSDM actions, the additional supply needs will be supplemented by surface storage reserves. Conversely, if the demands turn out to be lower than anticipated, the excess supply will be stored in surface reservoirs, enhancing the flexibility for CY 2009.

The table below shows that Metropolitan has a total of 1.35 MAF in surface water storage, of which 680 TAF is available for dry-year yield. Under the current demand and supply projections, 377 TAF of surface water would be utilized, along with the other WSDM actions, to meet the current trend demand. Based on the table below, a balance of 303 TAF of surface water would remain in dry year storage for future years.

Storage	Emergency Storage	Dry-Year	Total
Diamond Valley Lake, Lake Mathews, and Lake Skinner	319,200	430,330	749,530
Flex Storage	-	203,600	203,600
Lake Mead ICS	-	46,200	46,200
DWR Emergency Storage	354,300		354,300
Total	673,500	680,130	1,353,630
Projected Take at Current Trend Demand		377,000	377,000
Remaining Balance	673,500	303,130	976,630

Metropolitan's Emergency Storage

Metropolitan's emergency storage requirements are based on the potential for major earthquake damage to the aqueducts that transport imported water supplies to Southern California. Emergency storage will allow for reserve supplies to be available within the Metropolitan service area to supplement local supplies to avoid severe water shortages during periods when the aqueducts are out of service. Metropolitan's emergency plan outlines that under catastrophic loss of water supply the following actions will be implemented: (1) interruptible water deliveries will be suspended, (2) firm supplies to member agencies would be restricted by a mandatory cutback of 25 percent from normal year retail demand levels, (3) water stored in the surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, (4) full local groundwater production, recycled water, and local surface emergency storage reserve production would be sustained, and (5) Metropolitan would draw on its emergency storage as well as other available storage. A more comprehensive look at Metropolitan's Emergency Storage is included in [Attachment 3](#).

Metropolitan's objective is to provide a 6-month water supply at 75 percent of member agencies' retail demand under normal hydrologic conditions. Under the emergency criteria, this demand will be met through:

- 1.) *Existing Surface Storage.* There are several surface reservoirs within the region that can help meet emergency needs. Metropolitan's Lake Mathews distributes Colorado River water to Riverside, Orange, Los Angeles, and San Bernardino counties and has a storage capacity of approximately 178,500 acre-feet. Lake Skinner has approximately 43,800 acre-feet of storage capacity and receives Colorado River and State Project water for distribution to Riverside and San Diego counties. DWR also owns and operates major reservoirs in or near Metropolitan's service area. Castaic Lake, Elderberry Forebay and Pyramid Lake are located on the West Branch of the California Aqueduct. Silverwood Lake and Lake Perris are on the East Branch of the California Aqueduct. Metropolitan pays for about 589,900 acre-feet of the total storage in these DWR reservoirs. The total amount of storage available for Metropolitan's emergency needs, which includes DVL, and Lakes Mathews and Skinner, is 319,200 acre-feet. In addition, the amount of emergency storage available to Metropolitan in DWR's reservoirs, which include Lake Perris, Castaic, Silverwood, and Pyramid Lakes, provide another 354,300 acre-feet of emergency storage. Please see Table 3 in [Attachment 3](#) for a detailed breakdown.
- 2.) *Local Production.* Production from other local supply projects such as groundwater recovery and recycling during such emergency is likewise assumed to continue unimpaired. The estimated local supply production

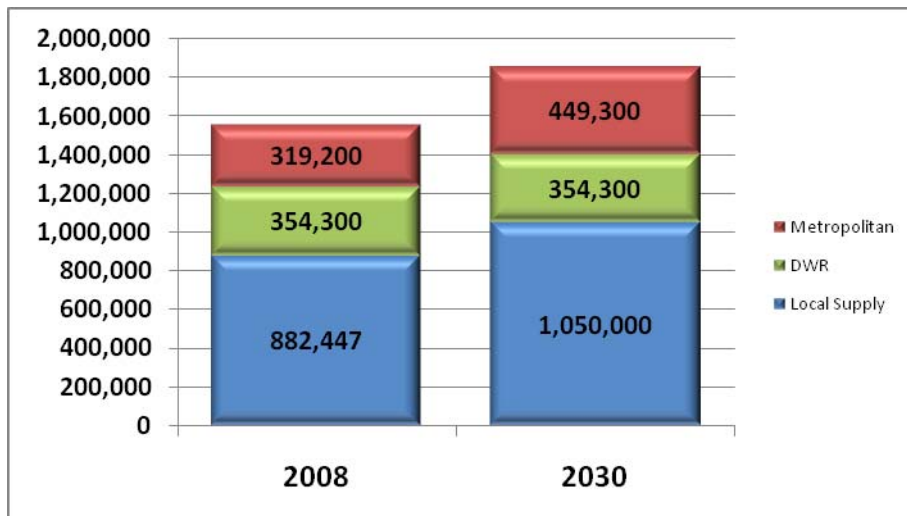
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for a six-month emergency period is approximately 882,447 acre-feet for 2008. The forecasted local supply production within Metropolitan's service area is presented in Table 4 in [Attachment 3](#).

- 3.) *Storage in DVL.* To safeguard the region from catastrophic loss of water supply, Metropolitan has made substantial investments in emergency storage. Diamond Valley Lake is Southern California's largest freshwater reservoir, with an approximately 798,500 acre-ft of storage capacity. DVL provides Metropolitan additional storage flexibility that can be used to meet demands and emergency water supplies. Considering current level of local supply development and available emergency storage in Metropolitan and DWR surface reservoirs, it is estimated that the required emergency storage in DVL is approximately 206,900 acre-feet for 2008. This emergency storage in DVL is in addition to the 446,600 acre-feet of emergency storage that is available in various surface reservoirs within the region. In the short-term basis for operational purposes, storage at any specific reservoir may be below these planning levels. When this happens, the emergency storage requirement is shifted temporarily to the other existing reservoirs.

Since the emergency storage requirement is a function of the demand forecast, local supply development, and changes in emergency storage allotment in the existing surface reservoirs, it will vary with changed conditions. For instance, when the Final EIR for the Eastside Reservoir Projects (now Diamond Valley Lake) was completed in October 1991, the estimated emergency storage requirement in DVL for year 2030 was approximately 400,000 acre-feet. This estimate for storage requirement was derived using the same methodology presented above. With lower demand forecasts based on updated demographics, changes in emergency storage availability in existing regional surface reservoirs, and increased development in local supply production, the new estimate for required emergency storage in DVL for year 2030 is 337,000 acre-feet. The graph below shows the different components of emergency storage for years 2008 and 2030.

Required Emergency Storage
(Values in Acre-feet)



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2009 Supply Situation

Approximately 453 TAF of additional water supplies and extraordinary conservation measures are being developed for 2009 and are shown in [Attachment 4](#). These supplies and conservation measures would enhance water supply reliability in Metropolitan's service area in the event that critical dry conditions and court ordered restrictions on the State Water Project deliveries continue. At a Board workshop held on October 28 a presentation on these resource options was provided

CY 2008 Projected CRA and SWP Supplies

Colorado River Diversion Schedule	
Basic Total Apportionment	550,000
IID-MWD Conservation Program	85,000
Water Exchanged with SDCWA (IID Transfer & All American Canal Lining)	79,786
Canal Lining Water to MWD	5,864
Central Arizona storage recovery	25,000
Lower Colorado Water Supply Project	6,679
PVID Land Fallowing	82,109
Southern Nevada Water Authority Water Exchange	45,000
System Efficiency ICS (Drop 2 Reservoir)	34,000
Extraordinary Conservation ICS (Lake Mead ICS)	46,170
MWD Water Budget Agricultural Adjustment	-88,060
<i>Priority 1,2, and 3b</i>	96,690
<i>Imperial ID</i>	0
<i>Coachella Valley WD</i>	13,004
<i>Misc and Indian PPR's</i>	-4,374
Colorado River Supplies Total	871,548
State Water Project Supplies	
Table A (35 percent allocation)	669,025
Turnback pool	1,689
Desert Water/Coachella Valley exchange (Table A/Turnback Pool)	60,036
San Bernardino Valley MWD Coordinated Operation Agreement	4,000
Port Hueneme Agreement	1,850
State Water Project Supplies Total	736,600
Total	1,608,148

Projected WSDM Supplies for CY 2008

Program	1/1/2008 Storage Levels	Amount Available at 35% SWP Allocation	CY 2008 Put Capacity
SURFACE STORAGE	680,445	490,345	514,900
<i>Lake Mead ICS Account</i>	46,200	46,200	200,000
<i>Castaic Lake (DWR Flex Storage)</i>	138,600	138,600	15,400
<i>Lake Perris (DWR Flex Storage)</i>	65,000	65,000	0
<i>Diamond Valley Lake</i>	390,100	200,000	213,000
<i>Lake Mathews & Lake Skinner (Dry-Year Storage)</i>	40,545	40,545	86,500
CENTRAL VALLEY BANKING PROGRAMS	488,900	184,700	131,700
<i>Arvin Edison Storage Program</i>	189,400	37,400	45,000
<i>Semitropic Storage Program</i>	249,300	131,000	31,700
<i>Kern Delta Storage Program</i>	31,300	7,800	55,000
<i>Mojave Storage Program</i>	18,900	8,500	0
GROUNDWATER STORAGE PROGRAMS	545,800	50,600	187,950
CONJUNCTIVE USE PROGRAMS	213,500	43,600	37,950
<i>IEUA/TVMWD (Chino Basin)</i>	88,400	22,000	12,000
<i>Long Beach (Cent. Basin)</i>	10,600	2,200	3,300
<i>Long Beach (Lakewood)</i>	1,800	0	900
<i>Foothill (Raymond and Monks Hill)</i>	2,900	1,700	2,250
<i>Calleguas (N. Las Posas)</i>	58,600	6,000	0
<i>MWDOC (Orange County Basin)</i>	49,000	11,000	15,000
<i>Three Valleys (Live Oak)</i>	700	0	750
<i>Three Valleys (upper Claremont)</i>	0	0	750
<i>Compton</i>	1,100	300	0
<i>Western</i>	400	400	3,000
CYCLIC PROGRAMS	61,700	0	0
<i>Cyclic - USG</i>	48,300	<i>Up to stored volume</i>	0
<i>Cyclic - PM (Three Valleys)</i>	13,400	<i>Up to stored volume</i>	0
<i>Cyclic - IEUA (Chino Basin)</i>	0	0	0
SUPPLEMENTAL PROGRAMS	27,000	7,000	0
<i>Supplemental Storage Program (Los Angeles)</i>	20,000	0	0
<i>Supplemental Storage Program (MWDOC)</i>	7,000	7,000	0
OTHER PROGRAMS	243,600	0	150,000
<i>Advance Delivery Account (DWCV) *</i>	121,400	0	150,000
<i>SBVMWD Coordinated Operating Agreement **</i>	50,000	0	0
<i>Central Arizona Storage Demonstration Project **</i>	72,200	0	0
OTHER WSDM ACTIONS	50,000	50,000	0
<i>EWA Wet/Dry Exchange</i>	50,000	50,000	0
TOTAL	1,765,145	775,645	834,550

* DWCV is shown as zero because it has been accounted for in base supplies.

** Central Arizona and SBVMWD COA are shown as zero because they have been accounted for in Transfers & Exchanges.

Programs Under Development in 2008

Program	1/1/2008 Storage Levels	Amount Available at 35% SWP Allocation	CY 2008 Put Capacity
<i>Conj. Use - Pasadena</i>	21,700	0	0
<i>Hayfield Storage Program</i>	100,000	0	0
<i>MWD '08 Carryover</i>	0	0	200,000
<i>DWCV '08 Carryover</i>	0	0	85,550
<i>Sacramento Valley Transfers Stored in Shasta</i>	47,000	0	0
TOTAL	168,700	0	285,550

Metropolitan's Emergency Storage

Summary

This Report provides summary of policy, history, and usage of Metropolitan's Emergency Storage. Metropolitan's emergency storage requirements are based on the potential for major earthquake damage to the aqueducts that transport imported water supplies to Southern California. Emergency storage will allow for reserve supplies to be available within the Metropolitan service area to supplement local supplies to avoid severe water shortages during periods when the aqueducts are out of service. Metropolitan's emergency plan outlines that under catastrophic loss of water supply the following actions will be implemented: 1) interruptible water deliveries will be suspended, 2) firm supplies to member agencies would be restricted by a mandatory cutback of 25 percent from normal year retail demand levels, 3) water stored in the surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, 4) full local groundwater production, recycled water, and local surface emergency storage reserve production would be sustained, and 5) Metropolitan would draw on its emergency storage as well as other available storage.

Using the current demand forecasts and latest estimates in local supply production, Metropolitan will require approximately 207,000 acre-feet of emergency storage in Diamond Valley Lake (DVL) in 2008, in addition to almost 467,000 acre-feet of available emergency storage at various surface reservoirs within the region. By 2030, the required emergency storage in DVL is estimated to be 337,000 acre-feet, a decrease from the original 400,000 acre-feet estimate prepared during the DVL planning process due to changed conditions.

Detailed Report

Criteria for Emergency Storage

The Metropolitan Water District of Southern California (Metropolitan) established its criteria for determining emergency storage requirements from the following documents:

- 1.) Final Environmental Impact Report for the Eastside Reservoir (now named the Diamond Valley Lake) dated October 1991, which was adopted by your Board on September 24, 1991;
- 2.) Southern California's 1996 Integrated Water Resources Plan, which was adopted by your Board on January 9, 1996;
- 3.) Reports on Metropolitan Water Supplies dated February 2002 and March 2003;
- 4.) The Regional Urban Water Management Plan dated November 2005, which was adopted by your Board on November 7, 2007; and
- 5.) 2006 IRP Implementation Plan, which was presented to your Board on September 11, 2006 and transmitted on October 9, 2006.

Emergency Storage Requirements

Metropolitan's emergency storage requirements are based on the potential for major earthquake damage to the Colorado River, California, and Los Angeles Aqueducts that could isolate Southern California from its essential imported water supplies. The adopted criteria assume that damage from such a catastrophic event could render the aqueducts that transport imported water supplies to Southern California out of service for six months. Metropolitan's objective is to provide emergency storage that will allow for reserve supplies to be available within the service area. The emergency storage will supplement local supplies to avoid severe water shortages during periods when aqueducts are out of service. The emergency guideline assumes that the production of local supplies would continue unimpaired during the emergency. Additionally, local agencies would produce their own stored emergency supplies. Metropolitan's emergency plan outlines that under catastrophic loss of water supply, the following actions would take effect:

- interruptible water deliveries will be suspended,

- firm supplies to member agencies would be restricted by a mandatory cutback of 25 percent from normal year retail demand levels,
- water stored in the surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available,
- full local groundwater production and recycled water would be sustained,
- Metropolitan would draw on its emergency storage as well as other available storage.

In addition, Metropolitan has access to storage at the State Water Project (SWP) terminal reservoirs and in its groundwater conjunctive use storage accounts. With few exceptions, Metropolitan can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major earthquake. The Water Surplus and Drought Management (WSDM) Plan shortage stages will guide Metropolitan's management of available supplies and resources during the emergency to minimize the impacts of the catastrophe.

Existing Storage

Table 1 below lists the existing regional surface water storage facilities within or near Metropolitan's service area. With some limitations, these reservoirs are used to help meet the region's water storage requirements for emergency, seasonal, and drought carryover uses. Total storage capacity available to Metropolitan in these existing reservoirs is nearly 1.7 million acre-feet. The Monterey Amendment, executed by the Department of Water Resources (DWR) and most of the State Water Contractors in 1995 and 1996, primarily addresses the allocation of SWP water in times of shortage and deals with a number of other issues that facilitate more water management flexibility for Contractors.

Table 1
Existing Reservoirs Available for Metropolitan Use
(Values in acre-feet)

Owner	Reservoir	Total Storage	Dead Storage	Storage Paid by Others	Storage Paid by Metropolitan for Regional Use
Metropolitan	Lake Mathews	182,000	3,500	0	178,500
	Lake Skinner	44,000	200	0	43,800
	Diamond Valley	810,000	11,500	0	798,500
	<i>Subtotal</i>	<i>1,036,000</i>	<i>15,200</i>	<i>0</i>	<i>1,020,800</i>
Department of Water Resources	Pyramid Lake	171,200	4,800	8,100	158,300
	Castaic Lake	323,700	18,600	11,600	293,500
	Elderberry	32,500	200	1,200	31,100
	Silverwood Lake	75,000	20,000	18,400	36,600
	Lake Perris ¹	74,500	4,100	0	70,400
	<i>Subtotal</i>	<i>676,900</i>	<i>47,700</i>	<i>39,300</i>	<i>589,900</i>
Total		1,712,900	62,900	39,300	1,610,700

Note: ¹ Because of seismic safety issues, DWR announced in July 2005 plans to draw down Lake Perris to a maximum storage elevation of 1,563 feet MSL or approximately 74,500 acre-ft of storage.

Metropolitan Existing Surface Storage. Metropolitan's Lake Mathews and Lake Skinner provide 222,300 acre-feet of storage capacity. Lake Mathews distributes Colorado River water to Riverside, Orange, Los Angeles, and San Bernardino counties. Available storage in Lake Mathews is approximately 178,500 acre-feet. Lake Skinner has approximately 43,800 acre-ft of storage and receives Colorado River and State Project water for distribution to Riverside and San Diego counties.

To safeguard the region from catastrophic loss of water supply, Metropolitan has made substantial investments in emergency storage. DVL is Southern California's largest freshwater reservoir holding approximately 810,000 acre-feet. Located four miles southwest of the city of Hemet, it consists of three dams, a delivery pipeline, a pumping plant, recreational facilities and environmental reserves. DVL stores water from the Colorado River and State Project. Water began pouring into the reservoir in November 1999 and the lake was almost filled by early 2003. Approximately 798,500 acre-feet of

storage capacity is available in Diamond Valley Lake. DVL provides Metropolitan additional storage flexibility that can be used to meet demands and emergency water supplies.

Existing Storage in DWR Facilities. DWR owns and operates five major reservoirs in or near Metropolitan's service area. Castaic Lake, Elderberry Forebay and Pyramid Lake are located on the West Branch of the California Aqueduct. Silverwood Lake and Lake Perris are on the East Branch of the California Aqueduct. Metropolitan pays for about 589,900 acre-feet of the total storage in these reservoirs. In July 2005, DWR announced that, because of seismic safety issues, it would temporarily lower the maximum storage elevation in Lake Perris from 1,588 feet MSL to 1,563 feet MSL. This elevation change would result in a reduction of available storage to Metropolitan in Lake Perris from 127,400 acre-feet to about 70,400 acre-feet. For purposes of the emergency storage analysis provided herein, it is assumed that only 70,400 acre-feet would be available to Metropolitan from Lake Perris through 2050.

The total storage capacity of existing Metropolitan and DWR surface reservoirs and the allocation to emergency storage, seasonal/regulatory, and drought carryover needs are shown in Table 2. In the short-term basis for operational purposes, storage at any specific reservoir may be below these planning levels. When this happens, the emergency storage requirement is shifted temporarily to the other existing reservoirs.

Table 2
Storage Capacities of Existing Reservoirs
(Values in acre-feet)

Reservoir	Total Storage Capacity	Capacity Allocated for Emergency Storage	Seasonal/Regulatory and Drought Storage
Metropolitan			
Lake Mathews	178,500	78,500	100,000
Lake Skinner	43,800	33,800	10,000
Diamond Valley Lake ¹	798,500	206,900	591,600
<i>Subtotal</i>	<i>1,020,800</i>	<i>319,200</i>	<i>701,600</i>
DWR			
Pyramid Lake	158,300	158,300	0
Castaic Lake	293,500	170,600	122,900
Elderberry Forebay	31,100	0	0
Silverwood Lake	36,600	20,000	16,600
Lake Perris ²	70,400	5,400	65,000
<i>Subtotal</i>	<i>589,900</i>	<i>354,300</i>	<i>204,500</i>
Total	1,610,700	673,500	906,100

Note: ¹ It is assumed that all storage in Diamond Valley Lake could be available for emergency storage if necessary.

² It is assumed that DWR will make Metropolitan's deliveries of flexible storage available despite a reduction in physical storage at Lake Perris due to seismic issues.

Seasonal/regulatory storage allocation is based on historical reservoir cycling and known cycling targets. Because DWR's Silverwood Lake is located east of the San Andreas Fault and therefore may be unavailable following a major seismic event, its capacity is assumed to be available only for seasonal/regulatory needs. In addition, storage in Eldeberry Forebay does not add to the emergency storage already counted as part of Pyramid Lake. As part of the Monterey Agreement, Metropolitan has access to a portion of the water stored in Castaic and Perris reservoirs on a "loan" basis. Under the amendment, Metropolitan would be able to withdraw water from this storage, in addition to its allocated SWP supply, and would have up to five years to replace that water in storage. The amount of water to which Metropolitan has access is 153,940 acre-feet from Castaic Lake and 65,000 acre-feet from Lake Perris. It is anticipated that withdrawals from this storage would occur primarily in years when supplies are inadequate and that this water would be replaced in wetter years. This change in operation should not affect the availability of water from the remaining storage in SWP reservoirs that could be made available

under emergency conditions. Although this agreement provides additional dry year storage during droughts, it does not significantly change the region's total storage needs.

As indicated in Table 2, approximately 673,500 acre-feet of surface storage is designated for emergency needs. The remaining 906,100 acre-feet of surface storage capacity would be available for seasonal/regulatory and drought storage.

Emergency Storage under Current Conditions

Existing Surface Storage. As of October 1, 2008, the total surface storage available within the region is over 1,250,000 AF, as shown in Table 3 below. Approximately 673,500 acre-feet of surface storage is designated for emergency needs and the remaining storage of 553,200 AF would be available for seasonal/regulatory and drought storage.

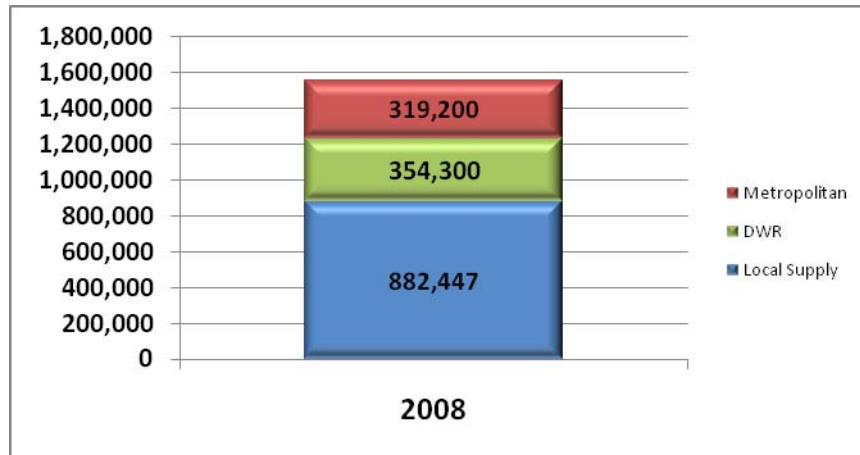
Table 3
Current Storage in Existing Reservoirs
(Values in acre-feet)

Reservoir	Storage Level (as of 10/01/2008)	Current Available for Emergency Storage	Seasonal/Regulatory and Drought Storage
Metropolitan			
Lake Mathews	133,600	78,500	55,100
Lake Skinner	37,000	33,800	3,200
Diamond Valley Lake	489,900	206,900	283,000
<i>Subtotal</i>	<i>660,500</i>	<i>319,200</i>	<i>341,300</i>
DWR			
Pyramid Lake	161,200	158,300	2,900
Castaic Lake	265,700	170,600	95,100
Elderberry Forebay	23,700	0	0
Silverwood Lake	70,800	20,000	50,800
Lake Perris	68,500	5,400	63,100
<i>Subtotal</i>	<i>589,900</i>	<i>354,300</i>	<i>231,900</i>
Total	1,250,400	673,500	553,200

Local Supplies. The emergency plan outlines that under catastrophic loss of water supply from imported sources, all interruptible service deliveries would be suspended, accompanied by a mandatory reduction in water use of 25 percent from normal-year retail demand levels. Water stored in surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, and full local groundwater production would be sustained. Production from other local supply projects such as groundwater recovery and recycling during such emergency is likewise assumed to continue unimpaired. The estimated local supply production for a 6-month emergency period is approximately 882,447 acre-feet for 2008. The forecasted local supply production within Metropolitan's service area is presented in Table 4.

Required Emergency Storage. Metropolitan's objective is to provide a six-month water supply at 75 percent of member agencies' retail demand under normal hydrologic conditions. Figure 1 shows the required emergency storage at DVL after considering local supply production and available emergency storage in Metropolitan and DWR surface reservoirs. For 2008, it is estimated that the required emergency storage in DVL to be approximately 209,600 acre-feet, with almost 283,000 acre-feet available for seasonal/regulatory and drought storage. This emergency storage in DVL is in addition to the 466,600 acre-feet of emergency storage that is available in various surface reservoirs within the region.

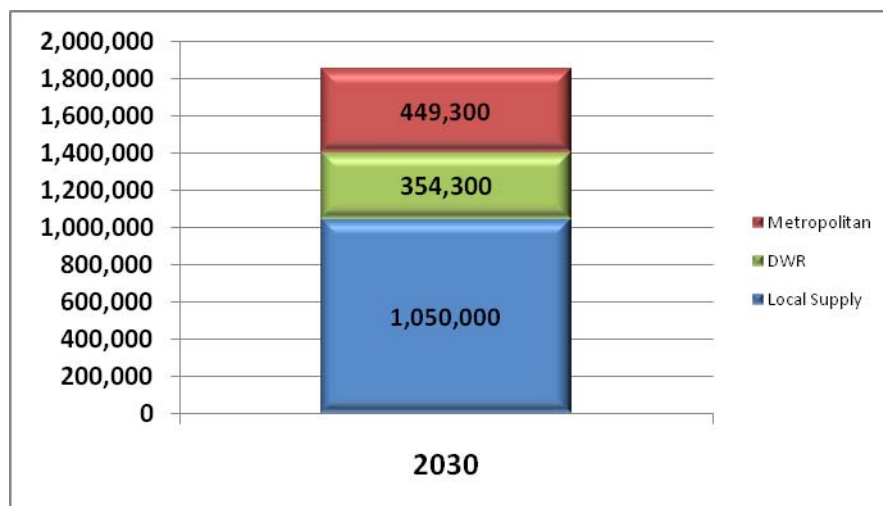
Figure 1
Required Emergency Storage in 2008
 (Values in Acre-feet)



Future Emergency Storage Requirement

Since the emergency storage requirement is a function of the demand forecast, local supply development, and changes in emergency storage allotment in the existing surface reservoirs, it will vary with changed conditions. For instance, when the Final EIR for the Eastside Reservoir Projects (now Diamond Valley Lake) was completed in October 1991, the estimated emergency storage requirement in DVL for year 2030 was approximately 400,000 acre-feet. This estimate for storage requirement was derived using the same methodology presented above. With lower demand forecasts based on updated demographics, changes in emergency storage availability in existing regional surface reservoirs, and increased development in local supply production, the new estimate for required emergency storage in DVL for year 2030 is 337,000 acre-feet, as shown in Figure 2. Staff anticipates that estimates of required emergency storage will be updated as new demand forecasts are developed under future IRP processes.

Figure 2
Required Emergency Storage in 2030
 (Values in Acre-feet)



2009 Resource Options

<u>Resource Options</u>	<u>Annual Yield</u>
	<u>TAF</u>
Conservation	215 – 415
CR Transactions	113– 262
Near-Term Delta Actions	0 – 0
SWP Transactions	110 – 343
Groundwater Recovery	10 – 30
Local Resources	5 – 7
Total	453 – 1,057