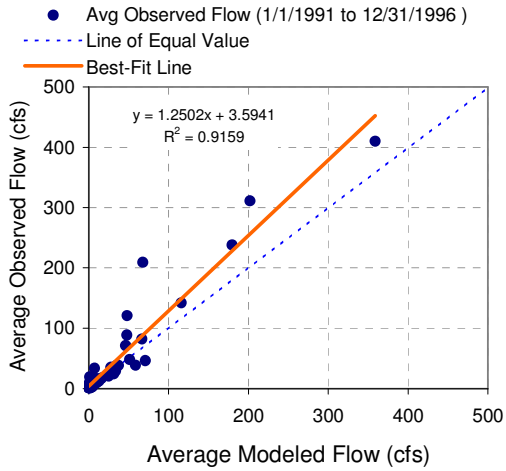
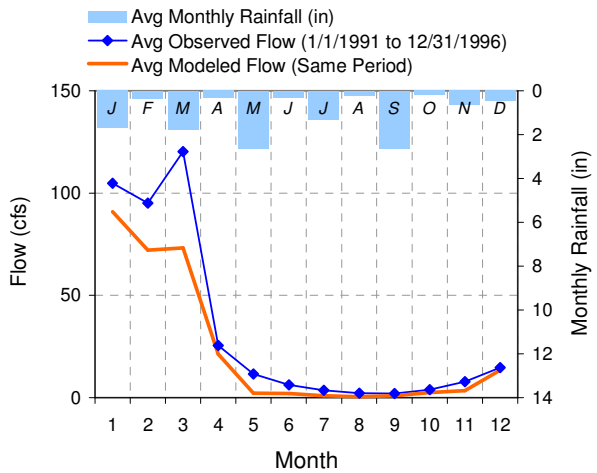
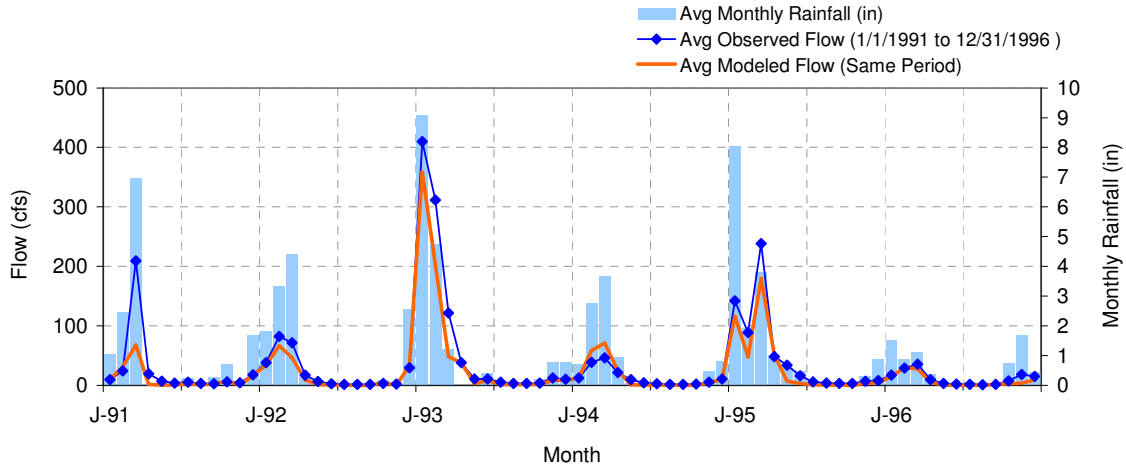
Appendix M

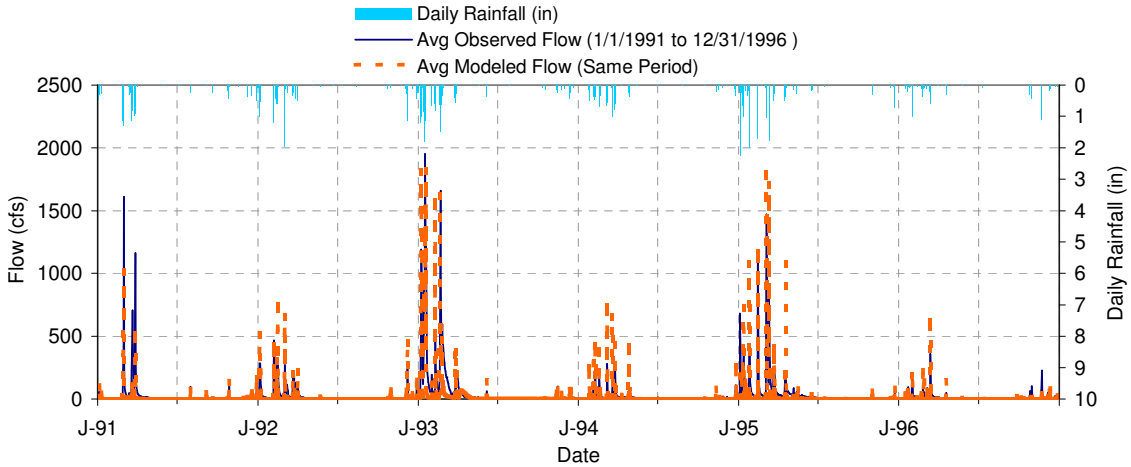
Wet Weather Model Hydrology Calibration and Validation Summary Statistics

Summary statistics of wet weather model hydrology calibration to USGS gage 11022480 (Appendix G, No. 3) (1 of 2).





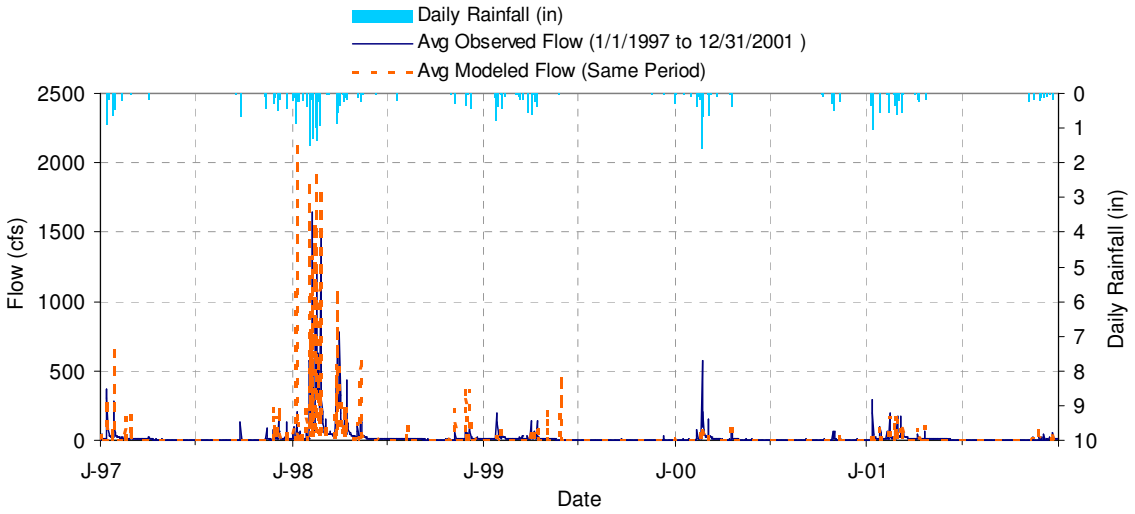




Summary statistics of wet weather model hydrology calibration to USGS gage 11022480 (Appendix G, No. 3) (2 of 2).

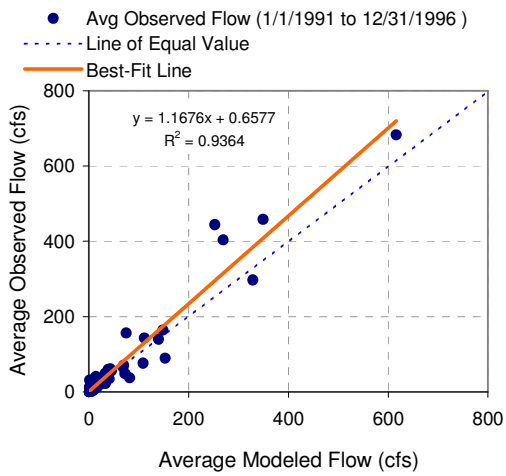
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1805 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11022480 SAN DIEGO R A MAST RD NR SANTEE CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°50'25", Longitude 117°01'30" NAD27 Drainage area 368 square miles		
Total Simulated In-stream Flow:	**13.93**	Total Observed In-stream Flow:		**19.55**
Total of simulated highest 10% flows:	**13.16**	Total of Observed highest 10% flows:		**14.77**
Total of Simulated lowest 50% flows:	**0.04**	Total of Observed Lowest 50% flows:		**0.77**
Simulated Summer Flow Volume (months 7-9):	**0.12**	Observed Summer Flow Volume (7-9):		**0.39**
Simulated Fall Flow Volume (months 10-12):	**0.98**	Observed Fall Flow Volume (10-12):		**1.33**
Simulated Winter Flow Volume (months 1-3):	**11.59**	Observed Winter Flow Volume (1-3):		**15.69**
Simulated Spring Flow Volume (months 4-6):	**1.25**	Observed Spring Flow Volume (4-6):		**2.13**
Total Simulated Storm Volume:	**12.06**	Total Observed Storm Volume:		**10.08**
Simulated Summer Storm Volume (7-9):	**0.06**	Observed Summer Storm Volume (7-9):		**0.06**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-12.20	15		
Error in storm volumes:	16.43	20		

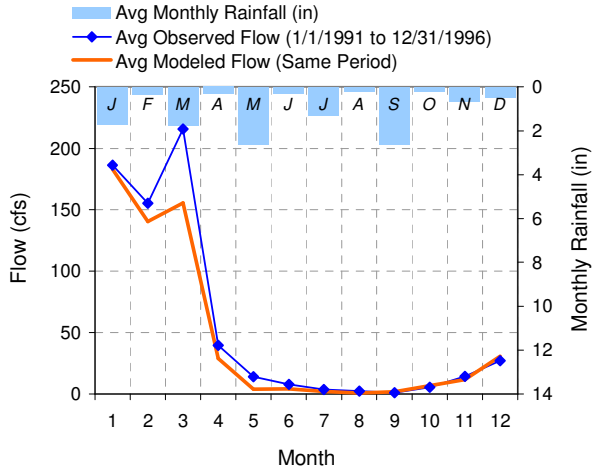
Summary statistics of wet weather model hydrology validation to USGS gage 11022480 (Appendix G, No. 3).

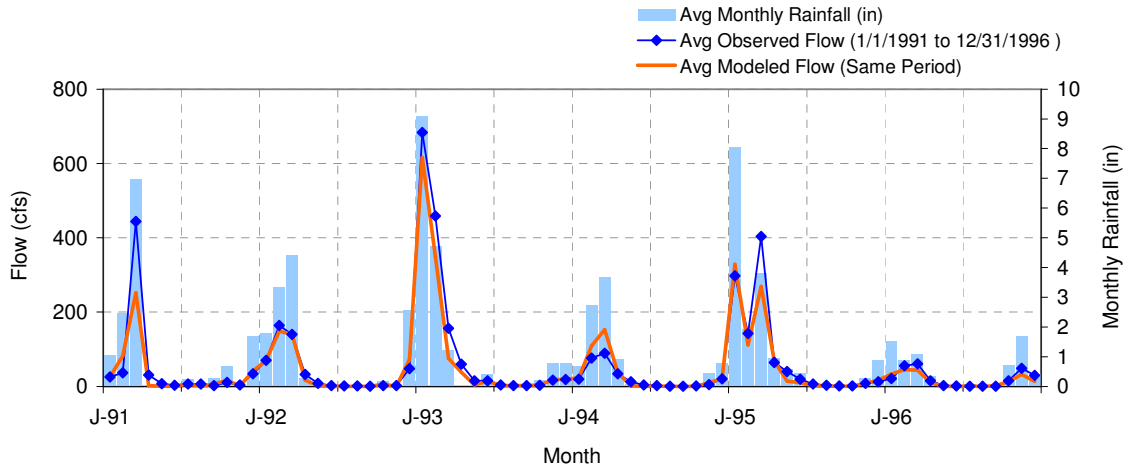


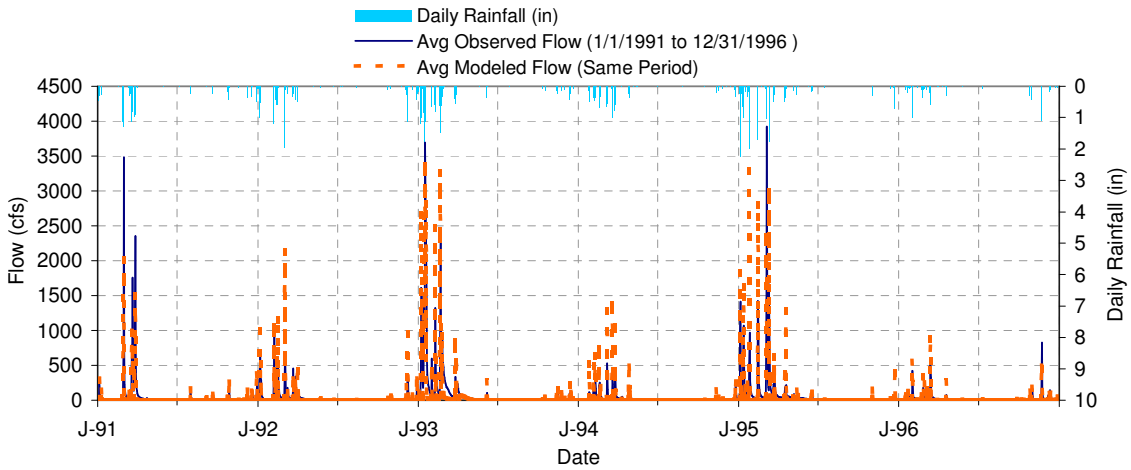
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1805 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11022480 SAN DIEGO R A MAST RD NR SANTEE CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°50'25", Longitude 117°01'30" NAD27 Drainage area 368 square miles		
Total Simulated In-stream Flow:	**11.23**	Total Observed In-stream Flow:		**12.95**
Total of simulated highest 10% flows:	**10.66**	Total of Observed highest 10% flows:		**9.60**
Total of Simulated lowest 50% flows:	**0.01**	Total of Observed Lowest 50% flows:		**0.68**
Simulated Summer Flow Volume (months 7-9):	**0.15**	Observed Summer Flow Volume (7-9):		**0.42**
Simulated Fall Flow Volume (months 10-12):	**1.09**	Observed Fall Flow Volume (10-12):		**1.18**
Simulated Winter Flow Volume (months 1-3):	**8.19**	Observed Winter Flow Volume (1-3):		**8.87**
Simulated Spring Flow Volume (months 4-6):	**1.80**	Observed Spring Flow Volume (4-6):		**2.47**
Total Simulated Storm Volume:	**10.11**	Total Observed Storm Volume:		**6.69**
Simulated Summer Storm Volume (7-9):	**0.07**	Observed Summer Storm Volume (7-9):		**0.08**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	9.93	15		
Error in storm volumes:	33.83	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11023000 (Appendix G, No. 3) (1 of 2).





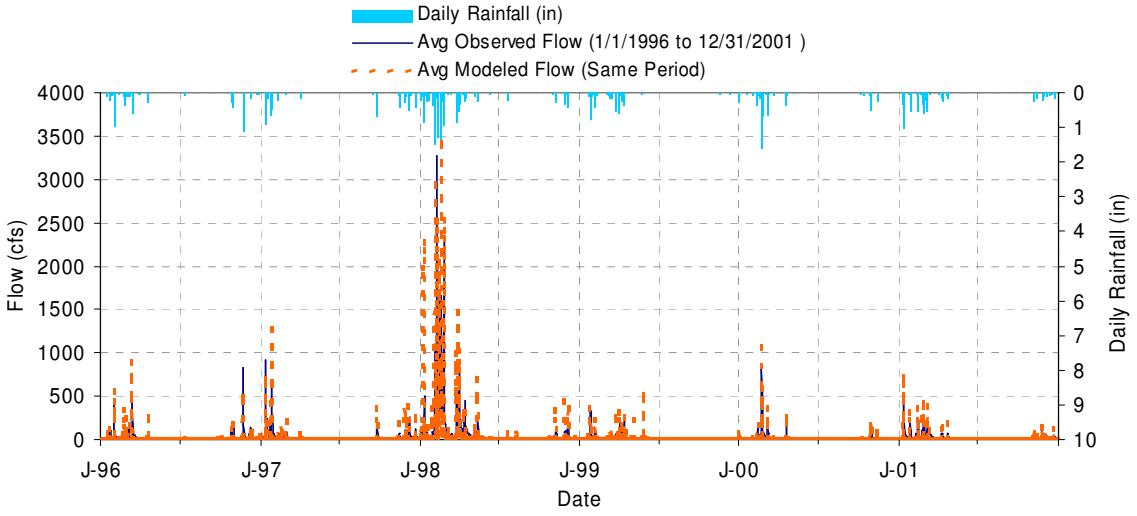




Summary statistics of wet weather model hydrology calibration to USGS gage 11023000 (Appendix G, No. 3) (2 of 2).

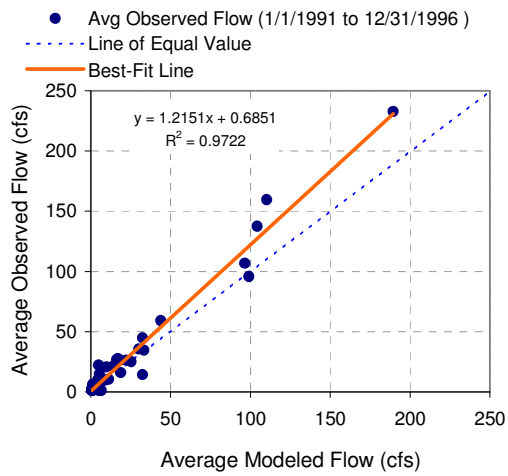
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1801 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11023000 SAN DIEGO R A FASHION VALLEY AT SAN DIEGO CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°45'54", Longitude 117°10'04" NAD27 Drainage area 429 square miles		
Total Simulated In-stream Flow:	**1.49**	Total Observed In-stream Flow:		**1.77**
Total of simulated highest 10% flows:	**1.42**	Total of Observed highest 10% flows:		**1.38**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.04**
Simulated Summer Flow Volume (months 7-9):	**0.01**	Observed Summer Flow Volume (7-9):		**0.02**
Simulated Fall Flow Volume (months 10-12):	**0.13**	Observed Fall Flow Volume (10-12):		**0.12**
Simulated Winter Flow Volume (months 1-3):	**1.25**	Observed Winter Flow Volume (1-3):		**1.46**
Simulated Spring Flow Volume (months 4-6):	**0.10**	Observed Spring Flow Volume (4-6):		**0.16**
Total Simulated Storm Volume:	**1.43**	Total Observed Storm Volume:		**1.26**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	2.65	15		
Error in storm volumes:	12.33	20		

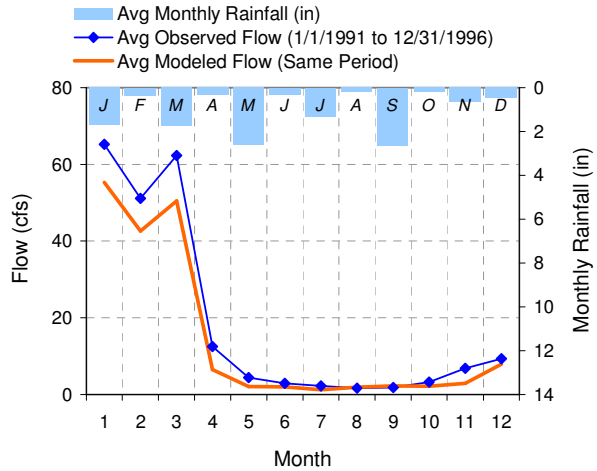
Summary statistics of wet weather model hydrology validation to USGS gage 11023000 (Appendix G, No. 3).

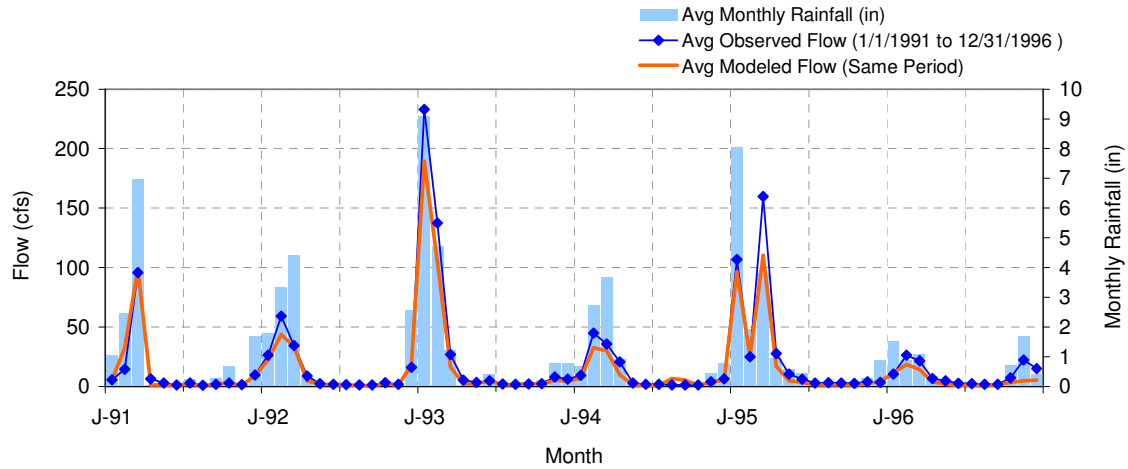


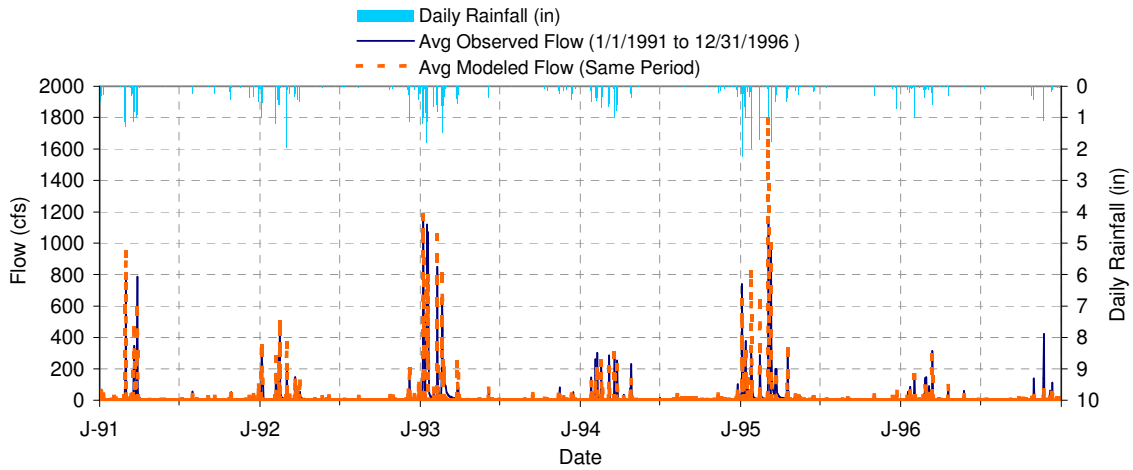
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1801 6-Year Analysis Period: 1/1/1996 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11023000 SAN DIEGO R A FASHION VALLEY AT SAN DIEGO CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°45'54", Longitude 117°10'04" NAD27 Drainage area 429 square miles		
Total Simulated In-stream Flow:	**0.93**	Total Observed In-stream Flow:		**0.97**
Total of simulated highest 10% flows:	**0.89**	Total of Observed highest 10% flows:		**0.71**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.04**
Simulated Summer Flow Volume (months 7-9):	**0.01**	Observed Summer Flow Volume (7-9):		**0.02**
Simulated Fall Flow Volume (months 10-12):	**0.11**	Observed Fall Flow Volume (10-12):		**0.12**
Simulated Winter Flow Volume (months 1-3):	**0.68**	Observed Winter Flow Volume (1-3):		**0.68**
Simulated Spring Flow Volume (months 4-6):	**0.12**	Observed Spring Flow Volume (4-6):		**0.15**
Total Simulated Storm Volume:	**0.89**	Total Observed Storm Volume:		**0.62**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	20.16	15		
Error in storm volumes:	29.61	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11023340 (Appendix G, No. 3) (1 of 2).





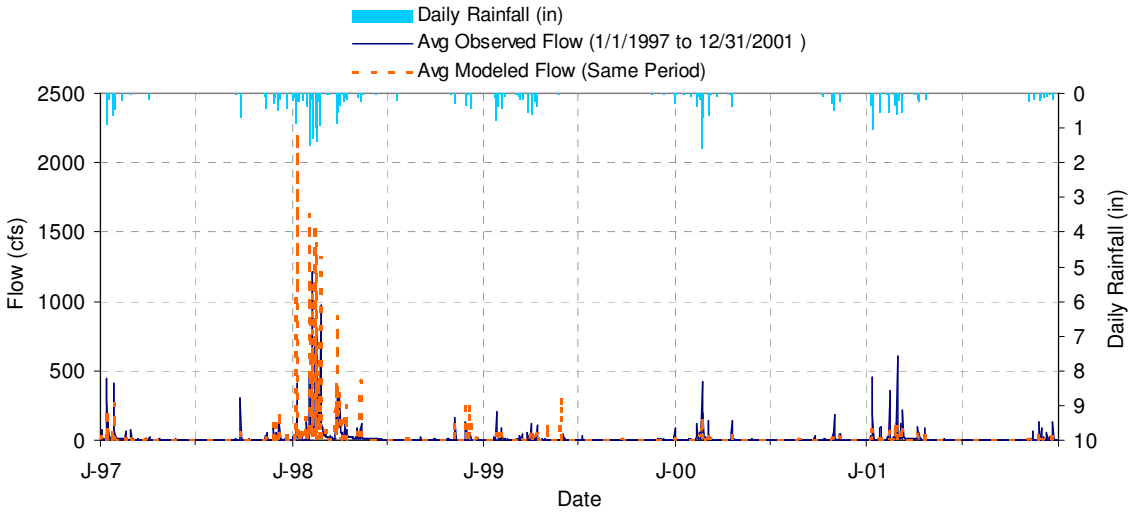




Summary statistics of wet weather model hydrology calibration to USGS gage 11023340 (Appendix G, No. 3) (2 of 2).

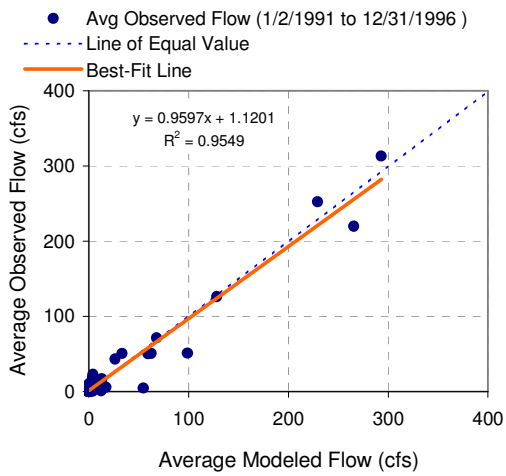
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1406 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11023340 LOS PENASQUITOS C NR POWAY CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°56'35", Longitude 117°07'15" NAD27 Drainage area 42.1 square miles		
Total Simulated In-stream Flow:	**4.74**	Total Observed In-stream Flow:		**5.98**
Total of simulated highest 10% flows:	**4.38**	Total of Observed highest 10% flows:		**4.91**
Total of Simulated lowest 50% flows:	**0.09**	Total of Observed Lowest 50% flows:		**0.26**
Simulated Summer Flow Volume (months 7-9):	**0.14**	Observed Summer Flow Volume (7-9):		**0.15**
Simulated Fall Flow Volume (months 10-12):	**0.35**	Observed Fall Flow Volume (10-12):		**0.53**
Simulated Winter Flow Volume (months 1-3):	**3.96**	Observed Winter Flow Volume (1-3):		**4.77**
Simulated Spring Flow Volume (months 4-6):	**0.28**	Observed Spring Flow Volume (4-6):		**0.53**
Total Simulated Storm Volume:	**4.44**	Total Observed Storm Volume:		**4.49**
Simulated Summer Storm Volume (7-9):	**0.09**	Observed Summer Storm Volume (7-9):		**0.03**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-12.11	15		
Error in storm volumes:	-1.31	20		

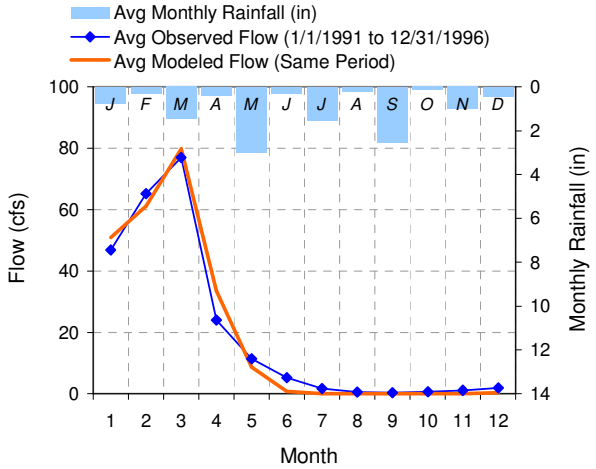
Summary statistics of wet weather model hydrology validation to USGS gage 11023340 (Appendix G, No. 3).

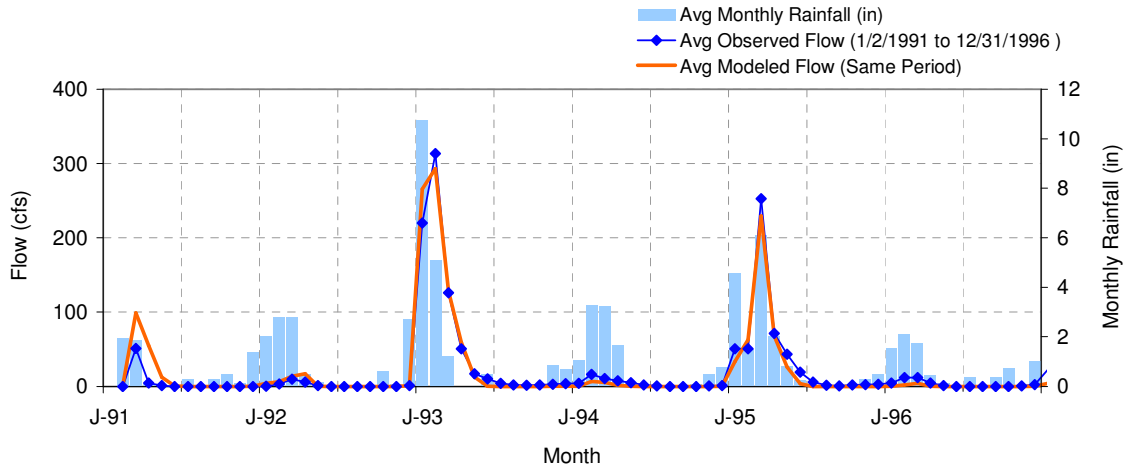


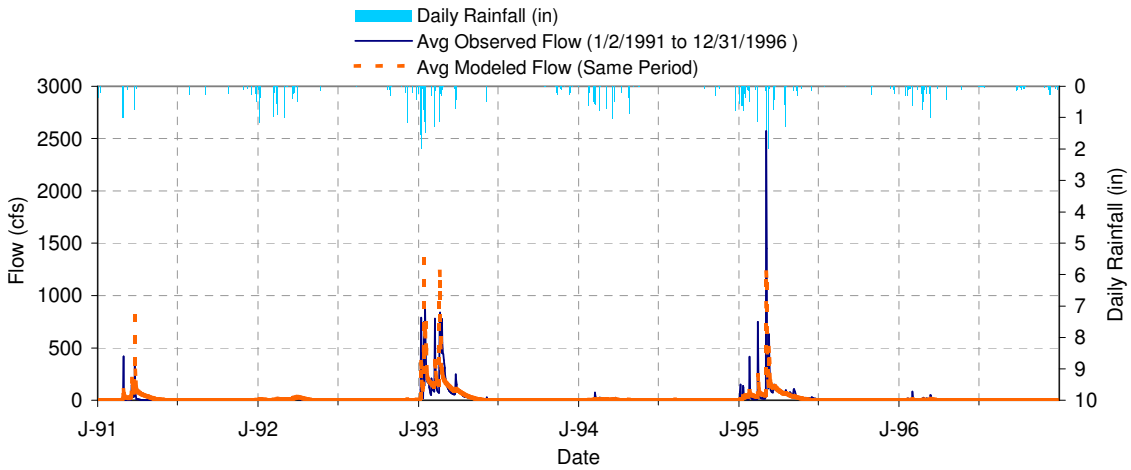
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1406 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11023340 LOS PENASQUITOS C NR POWAY CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°56'35", Longitude 117°07'15" NAD27 Drainage area 42.1 square miles		
Total Simulated In-stream Flow:	**4.68**	Total Observed In-stream Flow:		**5.10**
Total of simulated highest 10% flows:	**4.38**	Total of Observed highest 10% flows:		**3.95**
Total of Simulated lowest 50% flows:	**0.04**	Total of Observed Lowest 50% flows:		**0.38**
Simulated Summer Flow Volume (months 7-9):	**0.09**	Observed Summer Flow Volume (7-9):		**0.28**
Simulated Fall Flow Volume (months 10-12):	**0.45**	Observed Fall Flow Volume (10-12):		**0.67**
Simulated Winter Flow Volume (months 1-3):	**3.47**	Observed Winter Flow Volume (1-3):		**3.37**
Simulated Spring Flow Volume (months 4-6):	**0.67**	Observed Spring Flow Volume (4-6):		**0.78**
Total Simulated Storm Volume:	**4.39**	Total Observed Storm Volume:		**3.59**
Simulated Summer Storm Volume (7-9):	**0.04**	Observed Summer Storm Volume (7-9):		**0.10**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	9.91	15		
Error in storm volumes:	18.20	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11025500 (Appendix G, No. 3) (1 of 2).





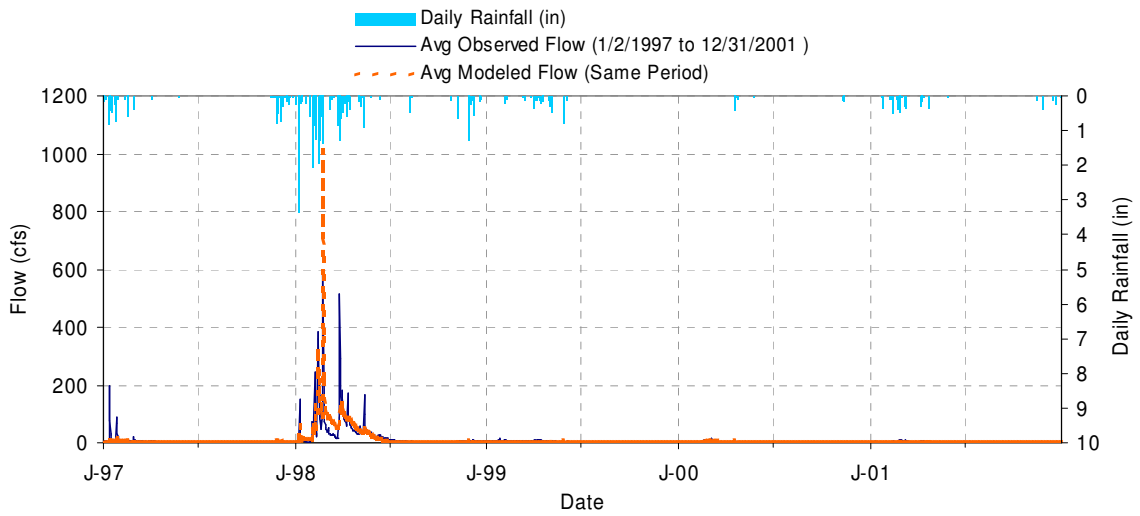




Summary statistics of wet weather model hydrology calibration to USGS gage 11025500 (Appendix G, No. 3) (2 of 2).

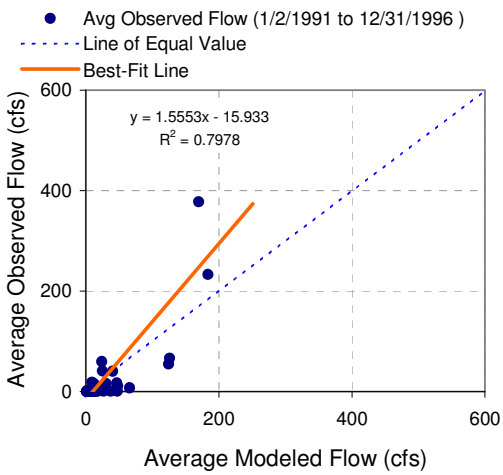
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1316 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11025500 SANTA YSABEL C NR RAMONA CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 33°06'25", Longitude 116°51'55" NAD27 Drainage area 112 square miles		
Total Simulated In-stream Flow:	**11.52**	Total Observed In-stream Flow:		**11.54**
Total of simulated highest 10% flows:	**9.86**	Total of Observed highest 10% flows:		**9.74**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.09**
Simulated Summer Flow Volume (months 7-9):	**0.00**	Observed Summer Flow Volume (7-9):		**0.13**
Simulated Fall Flow Volume (months 10-12):	**0.02**	Observed Fall Flow Volume (10-12):		**0.19**
Simulated Winter Flow Volume (months 1-3):	**9.39**	Observed Winter Flow Volume (1-3):		**9.22**
Simulated Spring Flow Volume (months 4-6):	**2.10**	Observed Spring Flow Volume (4-6):		**2.00**
Total Simulated Storm Volume:	**3.52**	Total Observed Storm Volume:		**5.06**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.02**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	1.20	15		
Error in storm volumes:	-43.75	20		

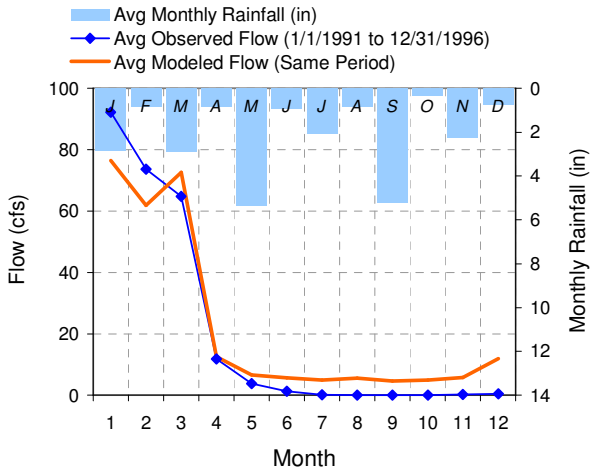
Summary statistics of wet weather model hydrology validation to USGS gage 11025500 (Appendix G, No. 3).

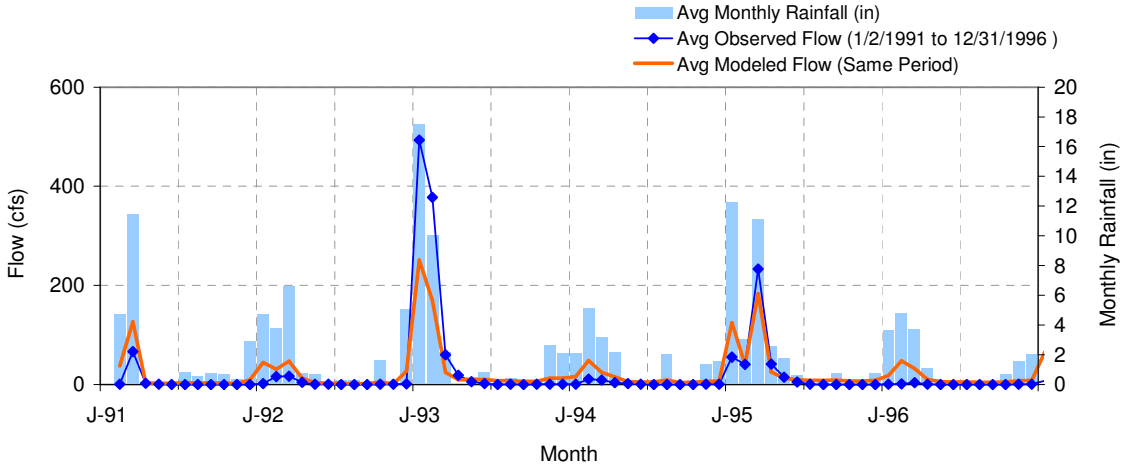


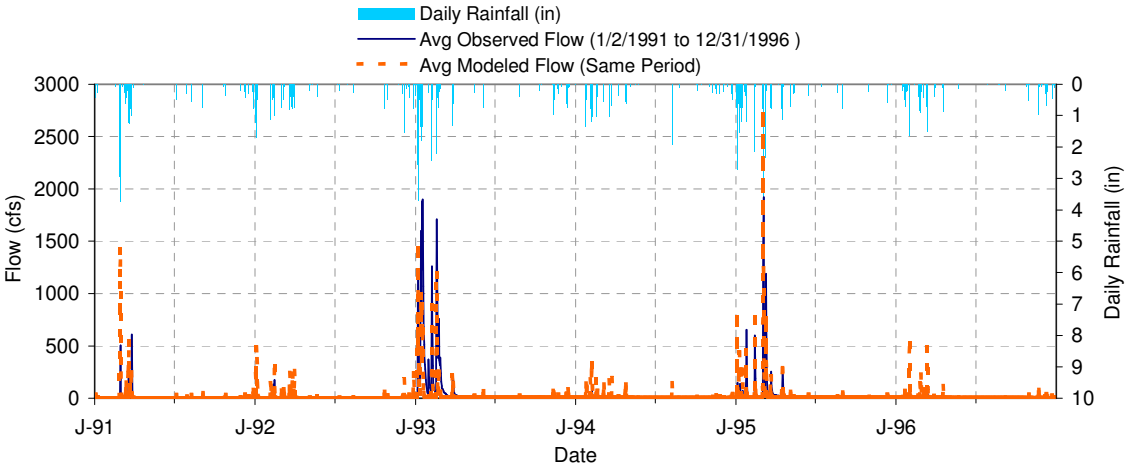
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1316 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11025500 SANTA YSABEL C NR RAMONA CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 33°06'25", Longitude 116°51'55" NAD27 Drainage area 112 square miles		
Total Simulated In-stream Flow:	**3.58**	Total Observed In-stream Flow:		**4.08**
Total of simulated highest 10% flows:	**3.45**	Total of Observed highest 10% flows:		**3.38**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.01**
Simulated Summer Flow Volume (months 7-9):	**0.00**	Observed Summer Flow Volume (7-9):		**0.08**
Simulated Fall Flow Volume (months 10-12):	**0.03**	Observed Fall Flow Volume (10-12):		**0.10**
Simulated Winter Flow Volume (months 1-3):	**2.33**	Observed Winter Flow Volume (1-3):		**2.44**
Simulated Spring Flow Volume (months 4-6):	**1.22**	Observed Spring Flow Volume (4-6):		**1.46**
Total Simulated Storm Volume:	**0.92**	Total Observed Storm Volume:		**1.59**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	2.02	15		
Error in storm volumes:	-73.39	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11028500 (Appendix G, No. 3) (1 of 2).





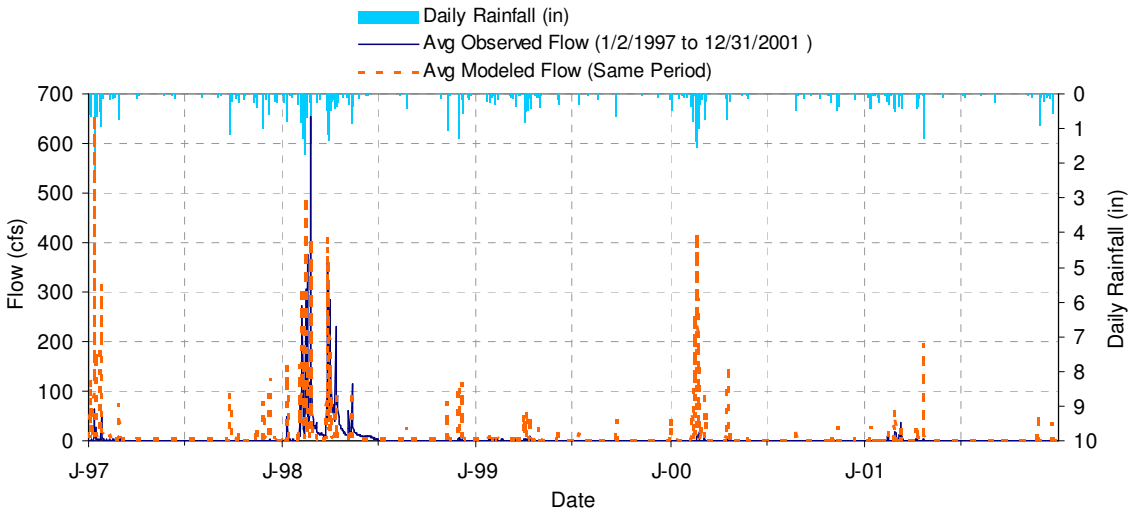




Summary statistics of wet weather model hydrology calibration to USGS gage 11028500 (Appendix G, No. 3) (2 of 2).

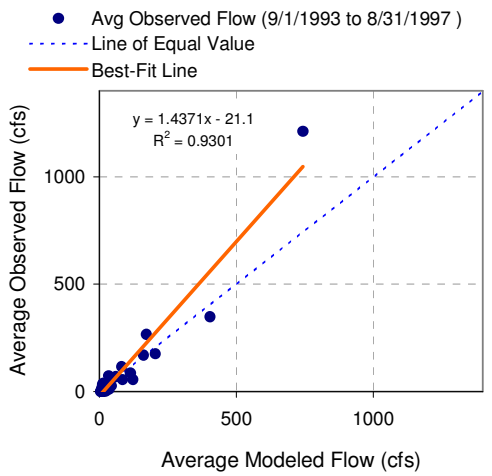
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1324 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11028500 SANTA MARIA C NR RAMONA CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 33°03'08", Longitude 116°56'41" NAD27 Drainage area 57.6 square miles		
Total Simulated In-stream Flow:	**13.43**	Total Observed In-stream Flow:		**12.15**
Total of simulated highest 10% flows:	**10.76**	Total of Observed highest 10% flows:		**11.48**
Total of Simulated lowest 50% flows:	**0.81**	Total of Observed Lowest 50% flows:		**0.02**
Simulated Summer Flow Volume (months 7-9):	**0.75**	Observed Summer Flow Volume (7-9):		**0.01**
Simulated Fall Flow Volume (months 10-12):	**1.13**	Observed Fall Flow Volume (10-12):		**0.04**
Simulated Winter Flow Volume (months 1-3):	**10.33**	Observed Winter Flow Volume (1-3):		**11.27**
Simulated Spring Flow Volume (months 4-6):	**1.21**	Observed Spring Flow Volume (4-6):		**0.83**
Total Simulated Storm Volume:	**9.56**	Total Observed Storm Volume:		**7.40**
Simulated Summer Storm Volume (7-9):	**0.12**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-6.62	15		
Error in storm volumes:	22.58	20		

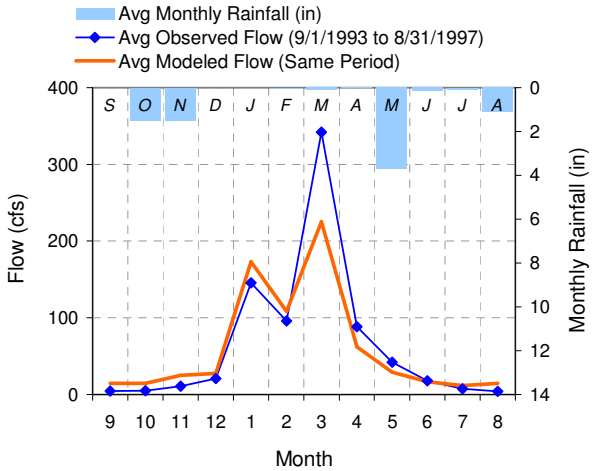
Summary statistics of wet weather model hydrology validation to USGS gage 11028500 (Appendix G, No. 3).

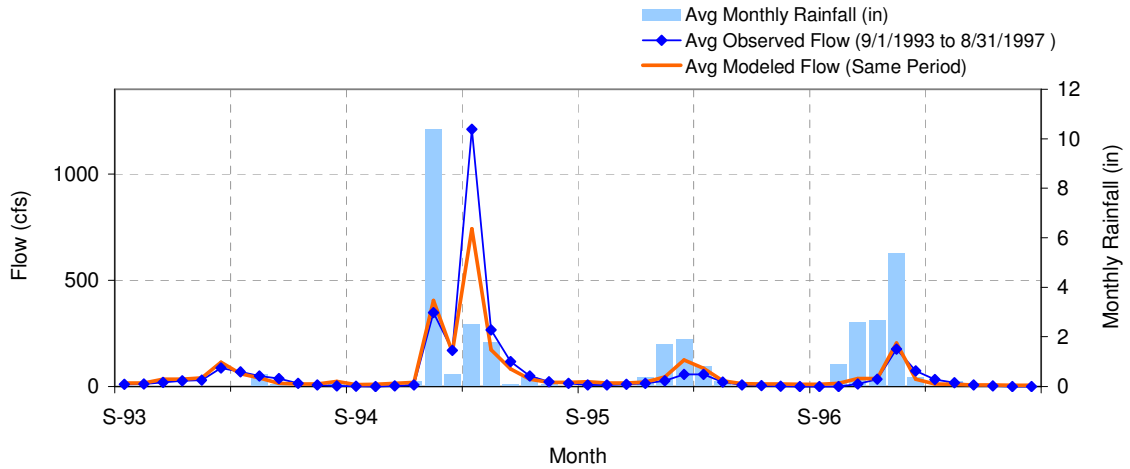


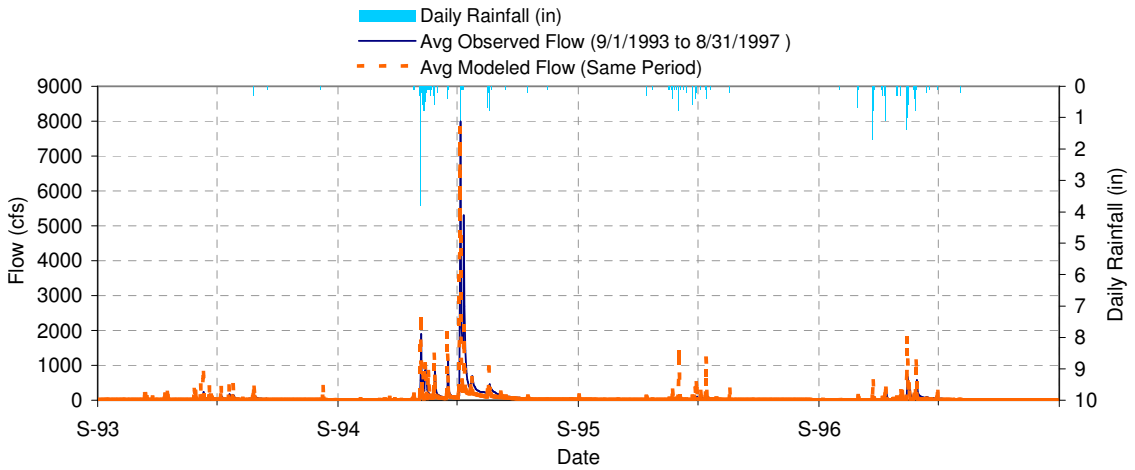
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1324 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11028500 SANTA MARIA C NR RAMONA CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 33°03'08", Longitude 116°56'41" NAD27 Drainage area 57.6 square miles		
Total Simulated In-stream Flow:	**4.28**	Total Observed In-stream Flow:		**2.68**
Total of simulated highest 10% flows:	**3.50**	Total of Observed highest 10% flows:		**2.55**
Total of Simulated lowest 50% flows:	**0.13**	Total of Observed Lowest 50% flows:		**0.00**
Simulated Summer Flow Volume (months 7-9):	**0.26**	Observed Summer Flow Volume (7-9):		**0.01**
Simulated Fall Flow Volume (months 10-12):	**0.49**	Observed Fall Flow Volume (10-12):		**0.02**
Simulated Winter Flow Volume (months 1-3):	**2.81**	Observed Winter Flow Volume (1-3):		**1.72**
Simulated Spring Flow Volume (months 4-6):	**0.72**	Observed Spring Flow Volume (4-6):		**0.93**
Total Simulated Storm Volume:	**3.19**	Total Observed Storm Volume:		**1.52**
Simulated Summer Storm Volume (7-9):	**0.09**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	27.19	15		
Error in storm volumes:	52.24	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11042000 (Appendix G, No. 3) (1 of 2).





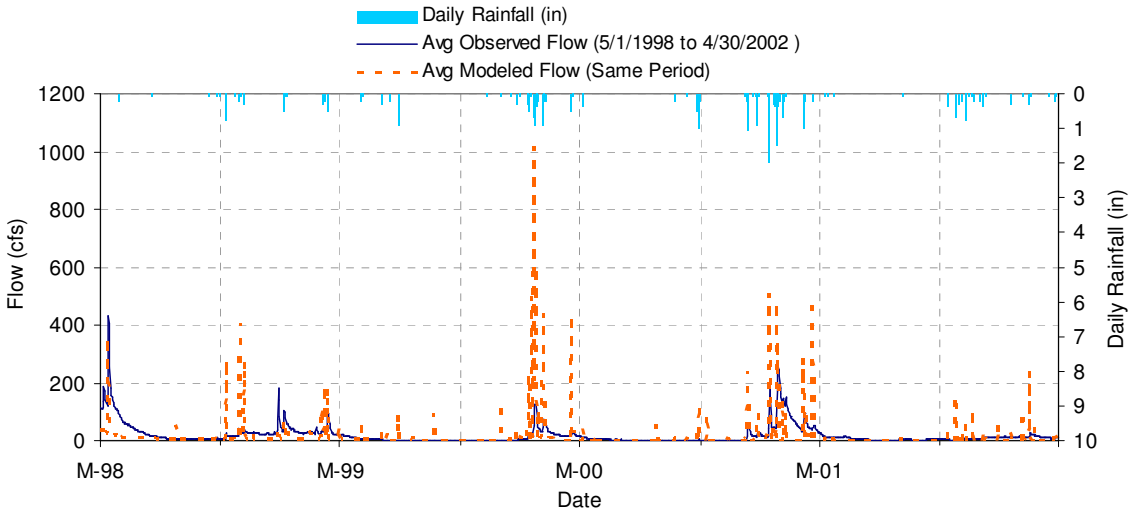




Summary statistics of wet weather model hydrology calibration to USGS gage 11042000 (Appendix G, No. 3) (2 of 2).

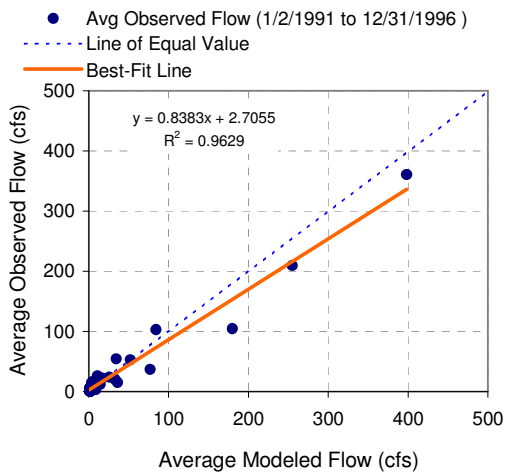
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 702 4-Year Analysis Period: 9/1/1993 - 8/31/1997 Flow volumes are (inches/year) for upstream drainage area		**USGS 11042000 SAN LUIS REY R A OCEANSIDE CA** San Diego County, California Hydrologic Unit Code 18070303 Latitude 33°13'05", Longitude 117°21'34" NAD27 Drainage area 557 square miles		
Total Simulated In-stream Flow:	**1.47**	Total Observed In-stream Flow:		**1.60**
Total of simulated highest 10% flows:	**1.07**	Total of Observed highest 10% flows:		**1.15**
Total of Simulated lowest 50% flows:	**0.12**	Total of Observed Lowest 50% flows:		**0.06**
Simulated Summer Flow Volume (months 7-9):	**0.08**	Observed Summer Flow Volume (7-9):		**0.03**
Simulated Fall Flow Volume (months 10-12):	**0.14**	Observed Fall Flow Volume (10-12):		**0.07**
Simulated Winter Flow Volume (months 1-3):	**1.03**	Observed Winter Flow Volume (1-3):		**1.19**
Simulated Spring Flow Volume (months 4-6):	**0.22**	Observed Spring Flow Volume (4-6):		**0.30**
Total Simulated Storm Volume:	**0.94**	Total Observed Storm Volume:		**0.77**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-7.69	15		
Error in storm volumes:	18.76	20		

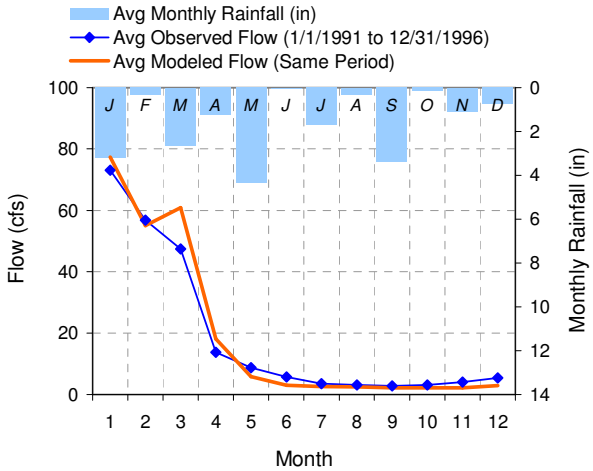
Summary statistics of wet weather model hydrology validation to USGS gage 11042000 (Appendix G, No. 3).

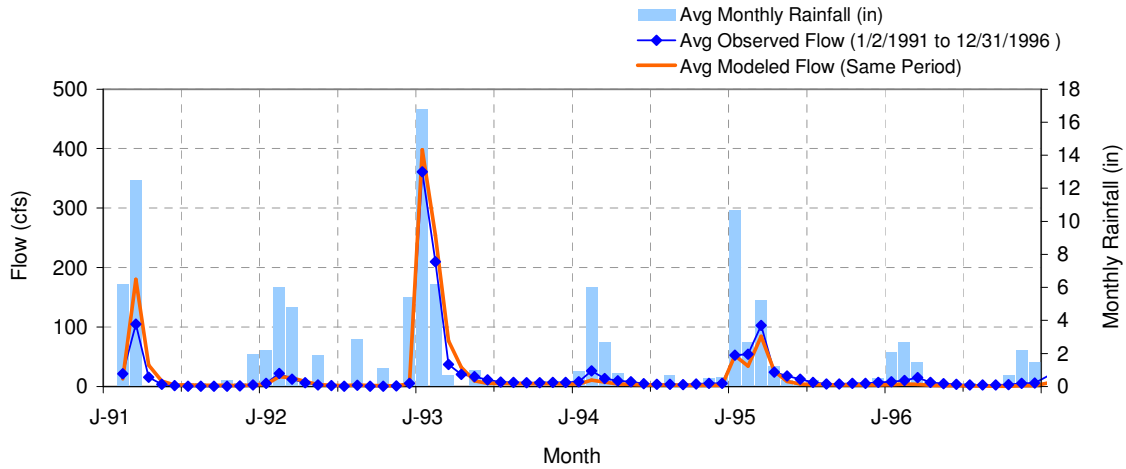


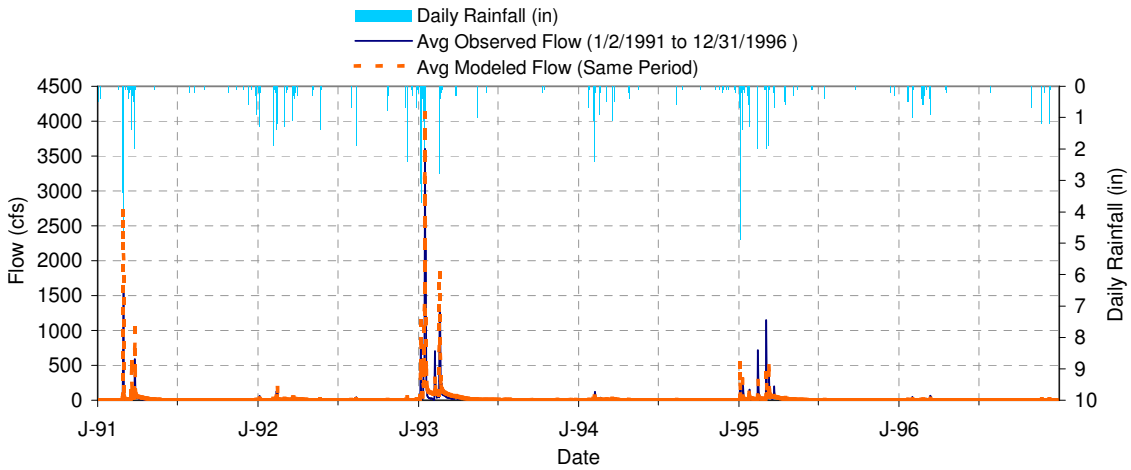
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 702 4-Year Analysis Period: 5/1/1998 - 4/30/2002 Flow volumes are (inches/year) for upstream drainage area		**USGS 11042000 SAN LUIS REY R A OCEANSIDE CA** San Diego County, California Hydrologic Unit Code 18070303 Latitude 33°13'05", Longitude 117°21'34" NAD27 Drainage area 557 square miles		
Total Simulated In-stream Flow:	**0.34**	Total Observed In-stream Flow:		**0.43**
Total of simulated highest 10% flows:	**0.27**	Total of Observed highest 10% flows:		**0.23**
Total of Simulated lowest 50% flows:	**0.01**	Total of Observed Lowest 50% flows:		**0.02**
Simulated Summer Flow Volume (months 7-9):	**0.03**	Observed Summer Flow Volume (7-9):		**0.02**
Simulated Fall Flow Volume (months 10-12):	**0.05**	Observed Fall Flow Volume (10-12):		**0.03**
Simulated Winter Flow Volume (months 1-3):	**0.17**	Observed Winter Flow Volume (1-3):		**0.20**
Simulated Spring Flow Volume (months 4-6):	**0.09**	Observed Spring Flow Volume (4-6):		**0.18**
Total Simulated Storm Volume:	**0.27**	Total Observed Storm Volume:		**0.11**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	12.00	15		
Error in storm volumes:	57.19	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11042400 (Appendix G, No. 3) (1 of 2).





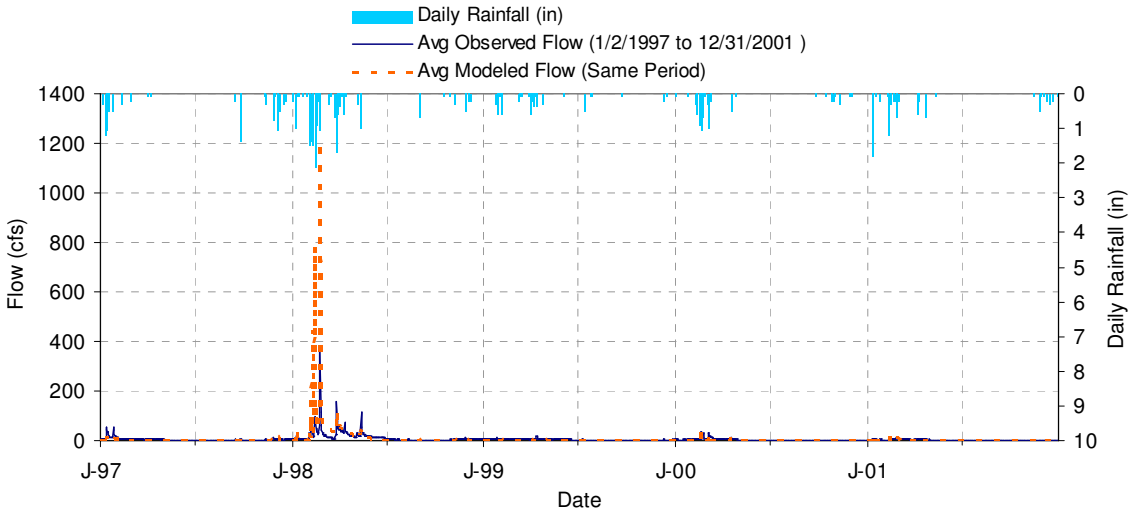




Summary statistics of wet weather model hydrology calibration to USGS gage 11042400 (Appendix G, No. 3) (2 of 2).

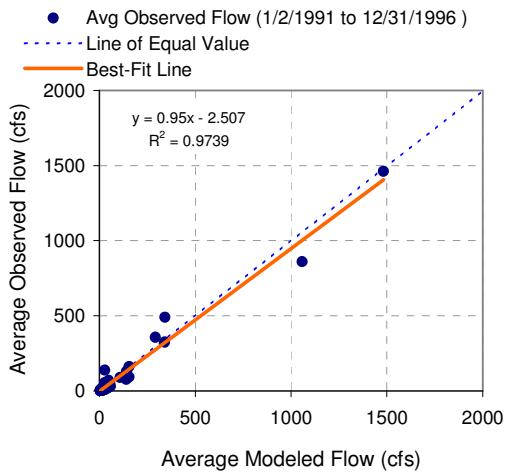
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 658 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11042400 TEMECULA C NR AGUANGA CA** Riverside County, California Hydrologic Unit Code 18070302 Latitude 33°27'33", Longitude 116°55'22" NAD27 Drainage area 131 square miles		
Total Simulated In-stream Flow:	**2.01**	Total Observed In-stream Flow:		**1.95**
Total of simulated highest 10% flows:	**1.64**	Total of Observed highest 10% flows:		**1.43**
Total of Simulated lowest 50% flows:	**0.08**	Total of Observed Lowest 50% flows:		**0.12**
Simulated Summer Flow Volume (months 7-9):	**0.06**	Observed Summer Flow Volume (7-9):		**0.08**
Simulated Fall Flow Volume (months 10-12):	**0.06**	Observed Fall Flow Volume (10-12):		**0.11**
Simulated Winter Flow Volume (months 1-3):	**1.66**	Observed Winter Flow Volume (1-3):		**1.51**
Simulated Spring Flow Volume (months 4-6):	**0.23**	Observed Spring Flow Volume (4-6):		**0.24**
Total Simulated Storm Volume:	**1.11**	Total Observed Storm Volume:		**1.19**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	12.78	15		
Error in storm volumes:	-7.18	20		

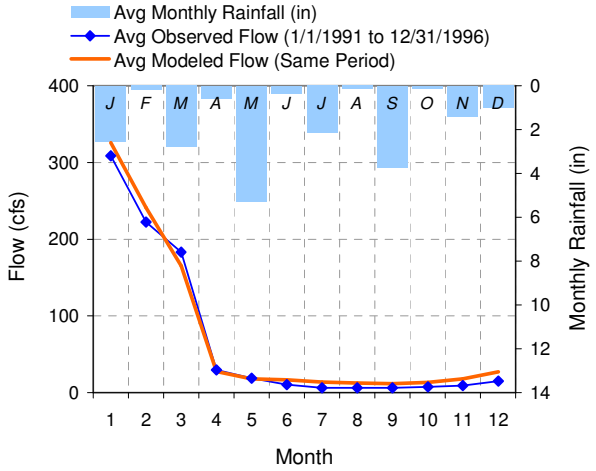
Summary statistics of wet weather model hydrology validation to USGS gage 11042400 (Appendix G, No. 3).

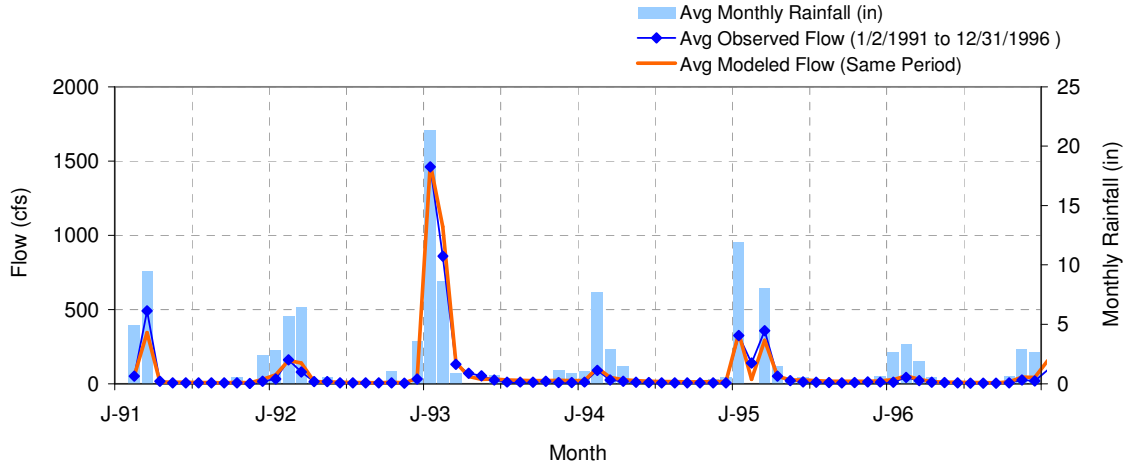


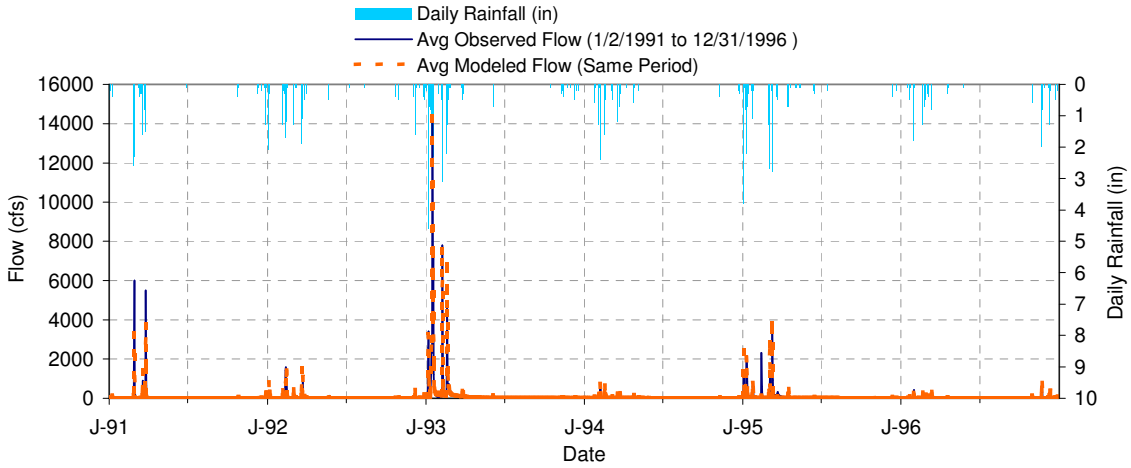
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 658 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11042400 TEMECULA C NR AGUANGA CA** Riverside County, California Hydrologic Unit Code 18070302 Latitude 33°27'33", Longitude 116°55'22" NAD27 Drainage area 131 square miles		
Total Simulated In-stream Flow:	**0.58**	Total Observed In-stream Flow:		**0.55**
Total of simulated highest 10% flows:	**0.52**	Total of Observed highest 10% flows:		**0.29**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.07**
Simulated Summer Flow Volume (months 7-9):	**0.01**	Observed Summer Flow Volume (7-9):		**0.04**
Simulated Fall Flow Volume (months 10-12):	**0.02**	Observed Fall Flow Volume (10-12):		**0.06**
Simulated Winter Flow Volume (months 1-3):	**0.43**	Observed Winter Flow Volume (1-3):		**0.27**
Simulated Spring Flow Volume (months 4-6):	**0.12**	Observed Spring Flow Volume (4-6):		**0.18**
Total Simulated Storm Volume:	**0.30**	Total Observed Storm Volume:		**0.16**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	43.86	15		
Error in storm volumes:	47.39	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11044300 (Appendix G, No. 3) (1 of 2).





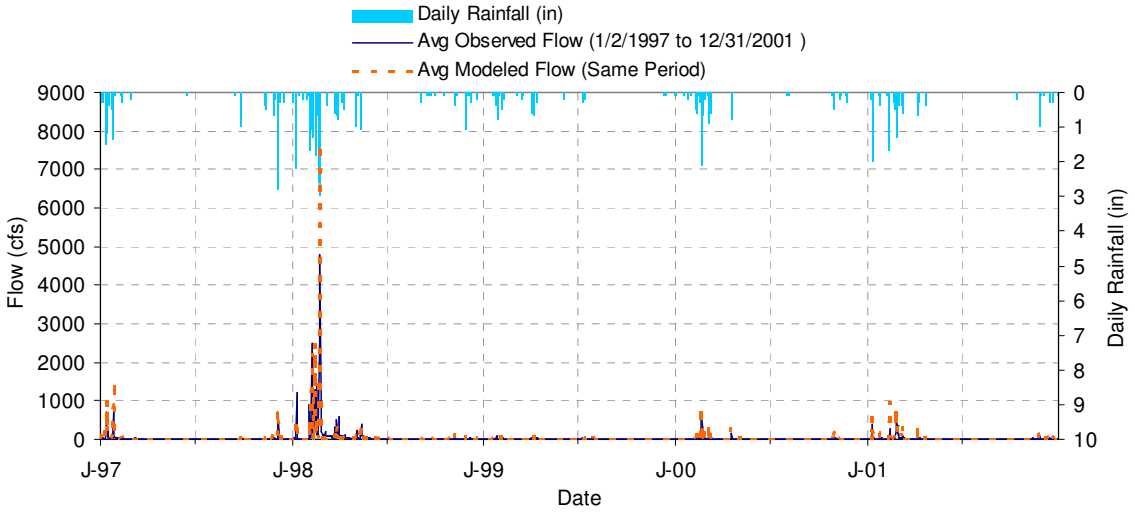




Summary statistics of wet weather model hydrology calibration to USGS gage 11044300 (Appendix G, No. 3) (2 of 2).

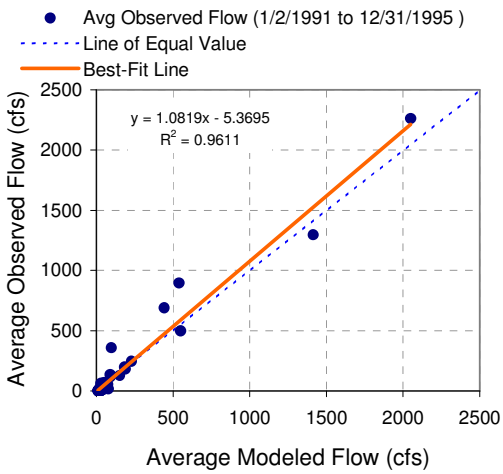
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 615 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11044300 SANTA MARGARITA R A FPUD SUMP NR FALLBROOK CA** San Diego County, California Hydrologic Unit Code 18070302 Latitude 33°24'49", Longitude 117°14'25" NAD27 Drainage area 620 square miles		
Total Simulated In-stream Flow:	**1.69**	Total Observed In-stream Flow:		**1.57**
Total of simulated highest 10% flows:	**1.40**	Total of Observed highest 10% flows:		**1.35**
Total of Simulated lowest 50% flows:	**0.10**	Total of Observed Lowest 50% flows:		**0.05**
Simulated Summer Flow Volume (months 7-9):	**0.07**	Observed Summer Flow Volume (7-9):		**0.03**
Simulated Fall Flow Volume (months 10-12):	**0.11**	Observed Fall Flow Volume (10-12):		**0.06**
Simulated Winter Flow Volume (months 1-3):	**1.39**	Observed Winter Flow Volume (1-3):		**1.36**
Simulated Spring Flow Volume (months 4-6):	**0.12**	Observed Spring Flow Volume (4-6):		**0.11**
Total Simulated Storm Volume:	**1.26**	Total Observed Storm Volume:		**1.22**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	3.57	15		
Error in storm volumes:	3.40	20		

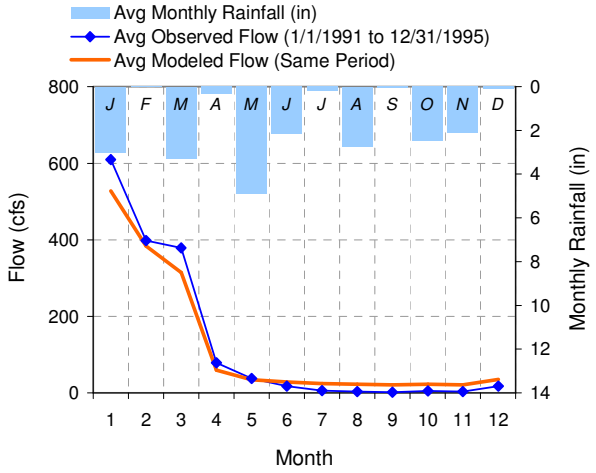
Summary statistics of wet weather model hydrology validation to USGS gage 11044300 (Appendix G, No. 3).

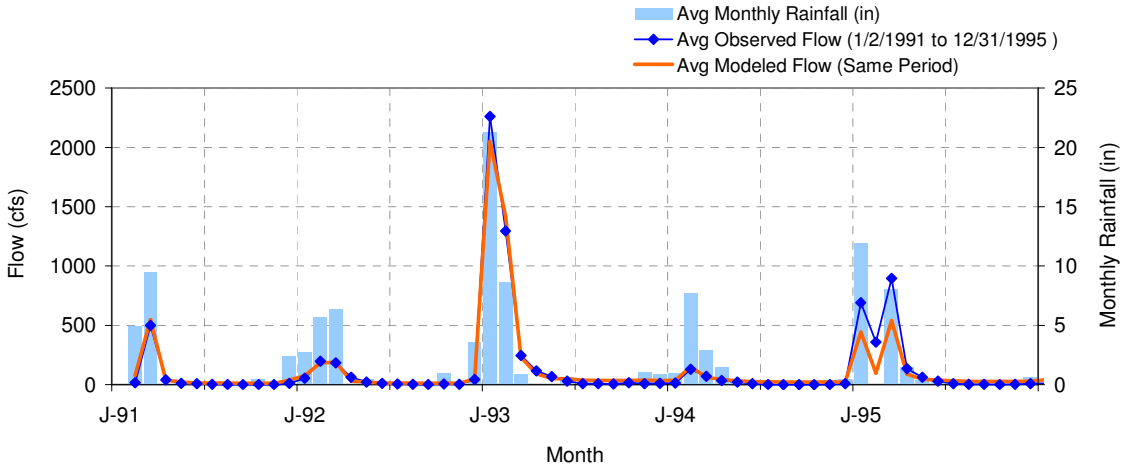


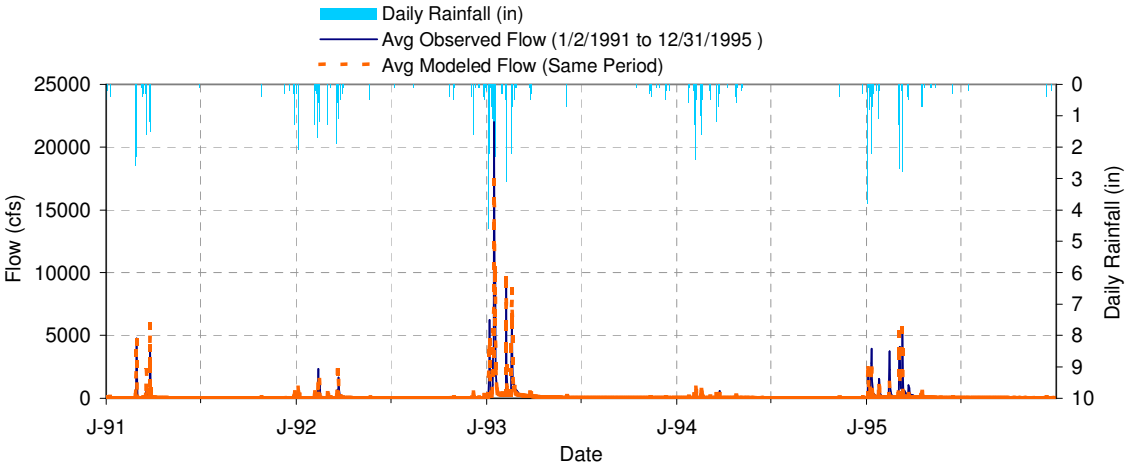
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 615 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11044300 SANTA MARGARITA R A FPUD SUMP NR FALLBROOK CA** San Diego County, California Hydrologic Unit Code 18070302 Latitude 33°24'49", Longitude 117°14'25" NAD27 Drainage area 620 square miles		
Total Simulated In-stream Flow:	**0.74**	Total Observed In-stream Flow:		**0.63**
Total of simulated highest 10% flows:	**0.55**	Total of Observed highest 10% flows:		**0.50**
Total of Simulated lowest 50% flows:	**0.07**	Total of Observed Lowest 50% flows:		**0.04**
Simulated Summer Flow Volume (months 7-9):	**0.06**	Observed Summer Flow Volume (7-9):		**0.03**
Simulated Fall Flow Volume (months 10-12):	**0.08**	Observed Fall Flow Volume (10-12):		**0.05**
Simulated Winter Flow Volume (months 1-3):	**0.51**	Observed Winter Flow Volume (1-3):		**0.47**
Simulated Spring Flow Volume (months 4-6):	**0.09**	Observed Spring Flow Volume (4-6):		**0.09**
Total Simulated Storm Volume:	**0.54**	Total Observed Storm Volume:		**0.47**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	8.70	15		
Error in storm volumes:	12.74	20		

Summary statistics of wet weather model hydrology calibration to USGS gage 11046000 (Appendix G, No. 3) (1 of 2).





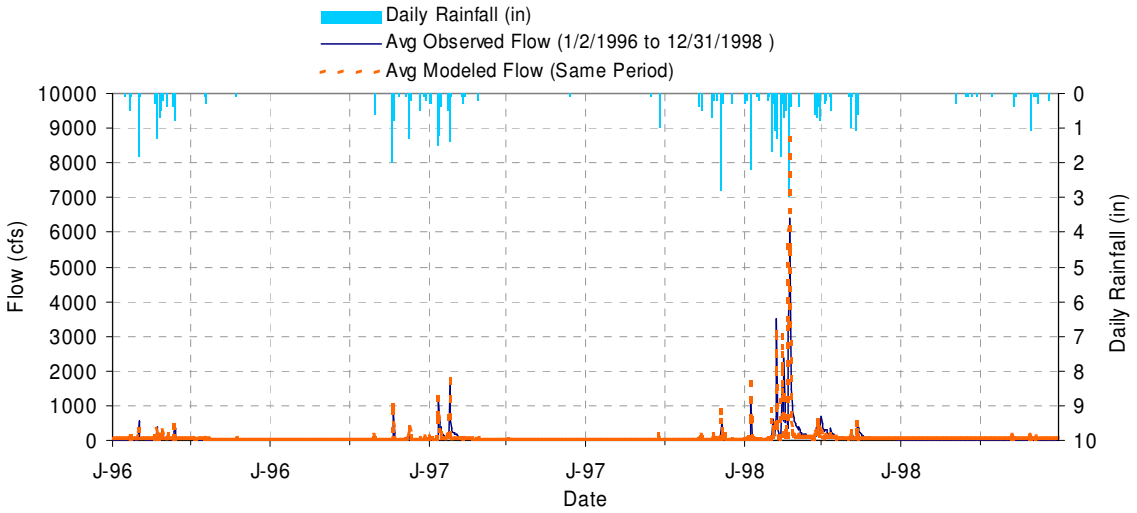




Summary statistics of wet weather model hydrology calibration to USGS gage 11046000 (Appendix G, No. 3) (2 of 2).

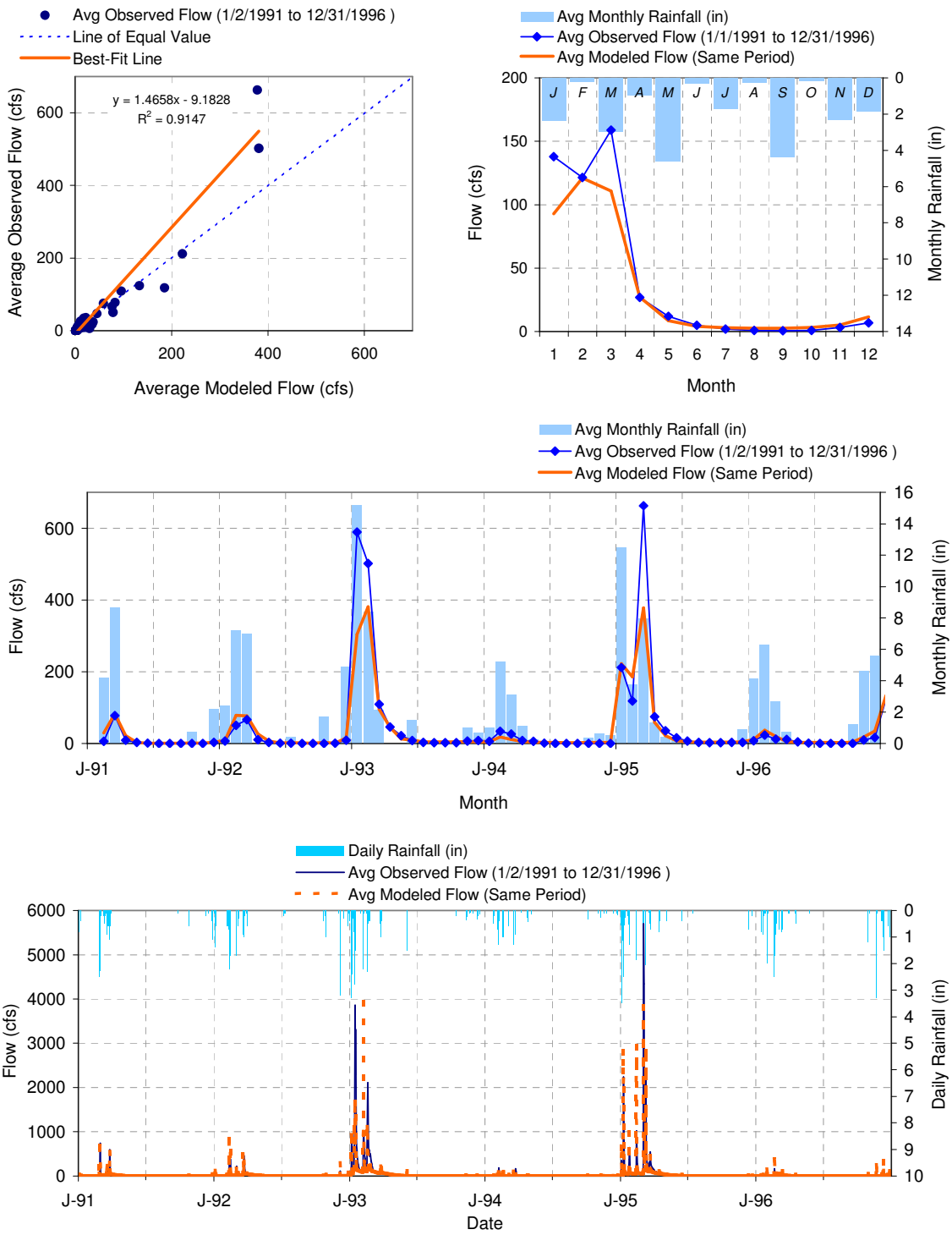
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 602 5-Year Analysis Period: 1/1/1991 - 12/31/1995 Flow volumes are (inches/year) for upstream drainage area		**USGS 11046000 SANTA MARGARITA R A YSIDORA CA** San Diego County, California Hydrologic Unit Code 18070302 Latitude 33°14'13", Longitude 117°23'14" NAD27 Drainage area 723 square miles		
Total Simulated In-stream Flow:	**2.32**	Total Observed In-stream Flow:		**2.42**
Total of simulated highest 10% flows:	**1.84**	Total of Observed highest 10% flows:		**2.05**
Total of Simulated lowest 50% flows:	**0.16**	Total of Observed Lowest 50% flows:		**0.04**
Simulated Summer Flow Volume (months 7-9):	**0.11**	Observed Summer Flow Volume (7-9):		**0.02**
Simulated Fall Flow Volume (months 10-12):	**0.13**	Observed Fall Flow Volume (10-12):		**0.04**
Simulated Winter Flow Volume (months 1-3):	**1.89**	Observed Winter Flow Volume (1-3):		**2.15**
Simulated Spring Flow Volume (months 4-6):	**0.19**	Observed Spring Flow Volume (4-6):		**0.21**
Total Simulated Storm Volume:	**1.63**	Total Observed Storm Volume:		**1.75**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-11.53	15		
Error in storm volumes:	-7.48	20		

Summary statistics of wet weather model hydrology validation to USGS gage 11046000 (Appendix G, No. 3).



LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 602 3-Year Analysis Period: 1/1/1996 - 12/31/1998 Flow volumes are (inches/year) for upstream drainage area		**USGS 11046000 SANTA MARGARITA R A YSIDORA CA** San Diego County, California Hydrologic Unit Code 18070302 Latitude 33°14'13", Longitude 117°23'14" NAD27 Drainage area 723 square miles		
Total Simulated In-stream Flow:	**1.28**	Total Observed In-stream Flow:		**1.29**
Total of simulated highest 10% flows:	**0.90**	Total of Observed highest 10% flows:		**1.03**
Total of Simulated lowest 50% flows:	**0.13**	Total of Observed Lowest 50% flows:		**0.02**
Simulated Summer Flow Volume (months 7-9):	**0.09**	Observed Summer Flow Volume (7-9):		**0.01**
Simulated Fall Flow Volume (months 10-12):	**0.17**	Observed Fall Flow Volume (10-12):		**0.09**
Simulated Winter Flow Volume (months 1-3):	**0.86**	Observed Winter Flow Volume (1-3):		**0.99**
Simulated Spring Flow Volume (months 4-6):	**0.16**	Observed Spring Flow Volume (4-6):		**0.20**
Total Simulated Storm Volume:	**0.85**	Total Observed Storm Volume:		**0.85**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-14.13	15		
Error in storm volumes:	0.84	20		

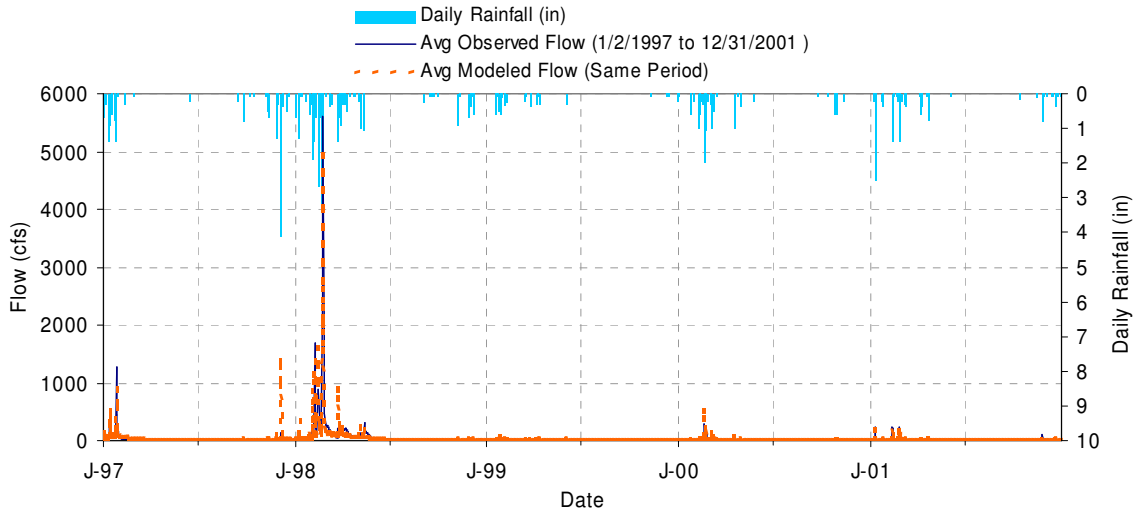
Summary statistics of wet weather model hydrology calibration to USGS gage 11046530 (Appendix G, No. 3) (1 of 2).



Summary statistics of wet weather model hydrology calibration to USGS gage 11046530 (Appendix G, No. 3) (2 of 2).

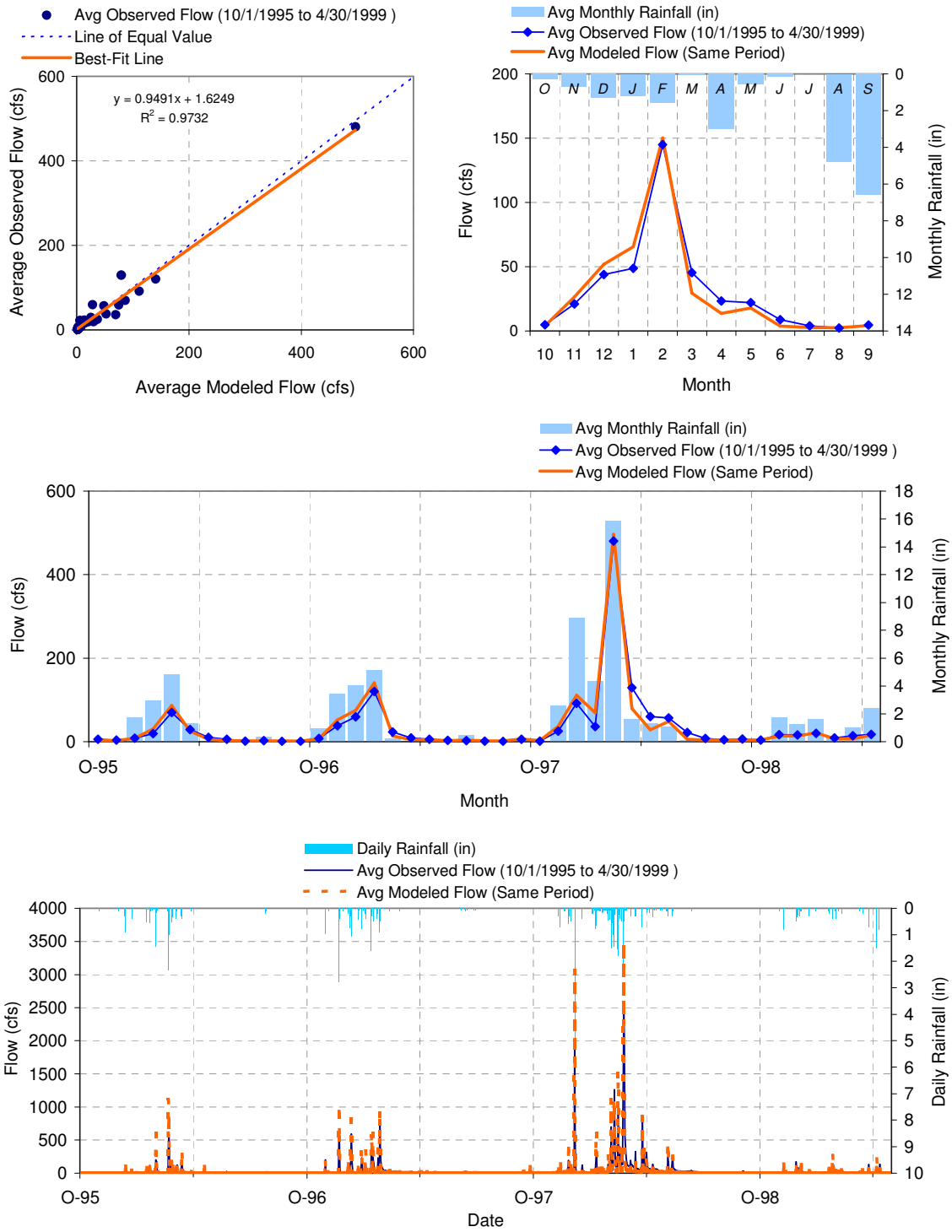
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 411 6-Year Analysis Period: 1/1/1991 - 12/31/1996 Flow volumes are (inches/year) for upstream drainage area		**USGS 11046530 SAN JUAN C AT LA NOVIA ST BR AT SAN JUAN CAPIS CA** Orange County, California Hydrologic Unit Code 18070301 Latitude 33°30'09", Longitude 117°38'50" NAD27 Drainage area 109 square miles		
Total Simulated In-stream Flow:	**4.02**	Total Observed In-stream Flow:		**4.90**
Total of simulated highest 10% flows:	**3.26**	Total of Observed highest 10% flows:		**4.22**
Total of Simulated lowest 50% flows:	**0.12**	Total of Observed Lowest 50% flows:		**0.05**
Simulated Summer Flow Volume (months 7-9):	**0.08**	Observed Summer Flow Volume (7-9):		**0.03**
Simulated Fall Flow Volume (months 10-12):	**0.21**	Observed Fall Flow Volume (10-12):		**0.11**
Simulated Winter Flow Volume (months 1-3):	**3.32**	Observed Winter Flow Volume (1-3):		**4.31**
Simulated Spring Flow Volume (months 4-6):	**0.41**	Observed Spring Flow Volume (4-6):		**0.45**
Total Simulated Storm Volume:	**2.59**	Total Observed Storm Volume:		**2.95**
Simulated Summer Storm Volume (7-9):	**0.00**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-29.36	15		
Error in storm volumes:	-13.85	20		

Summary statistics of wet weather model hydrology validation to USGS gage 11046530 (Appendix G, No. 3).



LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 411 5-Year Analysis Period: 1/1/1997 - 12/31/2001 Flow volumes are (inches/year) for upstream drainage area		**USGS 11046530 SAN JUAN C AT LA NOVIA ST BR AT SAN JUAN CAPIS CA** Orange County, California Hydrologic Unit Code 18070301 Latitude 33°30'09", Longitude 117°38'50" NAD27 Drainage area 109 square miles		
Total Simulated In-stream Flow:	**3.14**	Total Observed In-stream Flow:		**3.21**
Total of simulated highest 10% flows:	**2.57**	Total of Observed highest 10% flows:		**2.82**
Total of Simulated lowest 50% flows:	**0.12**	Total of Observed Lowest 50% flows:		**0.02**
Simulated Summer Flow Volume (months 7-9):	**0.09**	Observed Summer Flow Volume (7-9):		**0.03**
Simulated Fall Flow Volume (months 10-12):	**0.24**	Observed Fall Flow Volume (10-12):		**0.10**
Simulated Winter Flow Volume (months 1-3):	**2.39**	Observed Winter Flow Volume (1-3):		**2.51**
Simulated Spring Flow Volume (months 4-6):	**0.42**	Observed Spring Flow Volume (4-6):		**0.57**
Total Simulated Storm Volume:	**1.92**	Total Observed Storm Volume:		**1.93**
Simulated Summer Storm Volume (7-9):	**0.01**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-9.98	15		
Error in storm volumes:	-0.53	20		

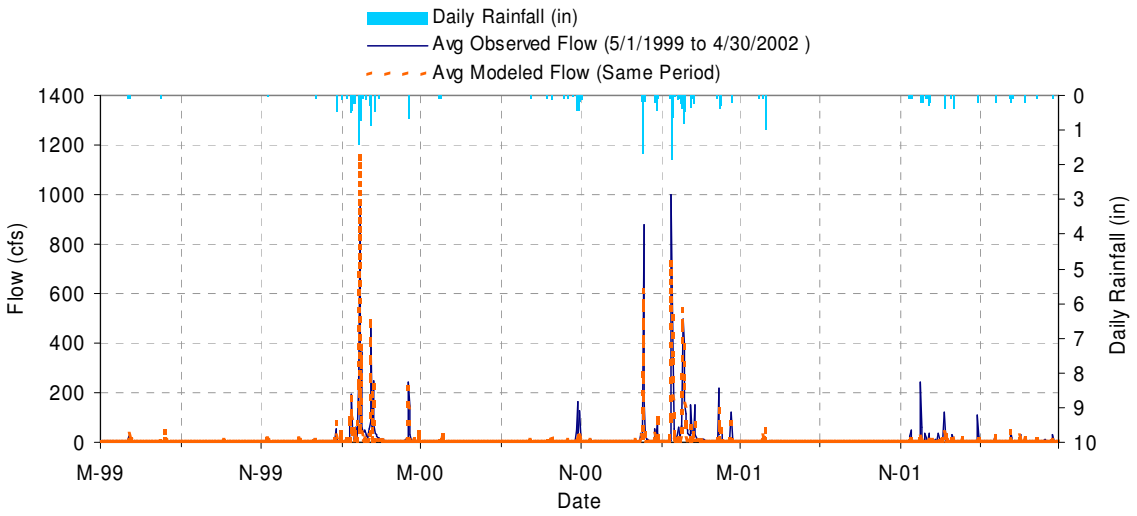
Summary statistics of wet weather model hydrology calibration to USGS gage 11047300 (Appendix G, No. 3) (1 of 2).



Summary statistics of wet weather model hydrology calibration to USGS gage 11047300 (Appendix G, No. 3) (2 of 2).

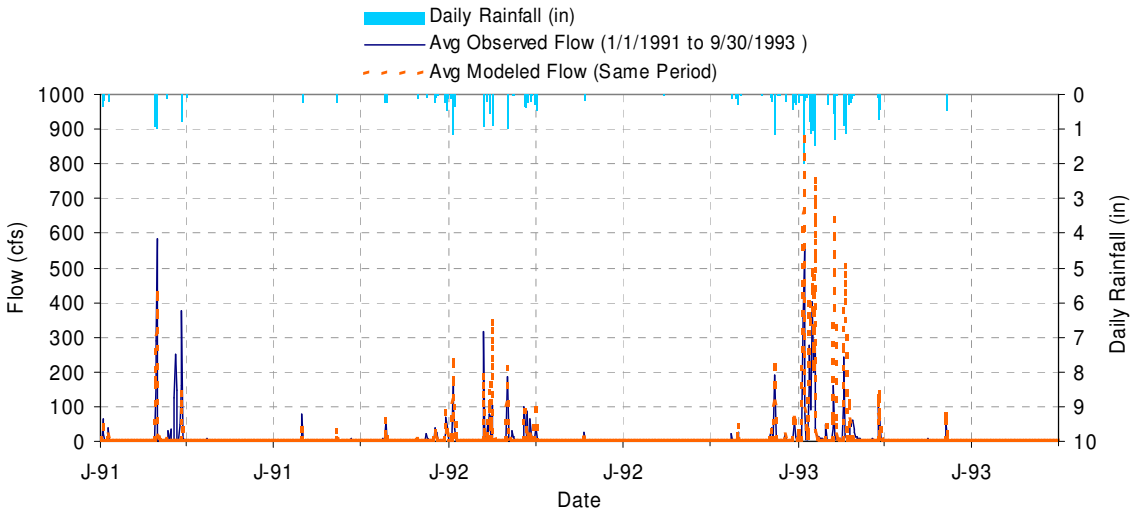
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 403 3.58-Year Analysis Period: 10/1/1995 - 4/30/1999 Flow volumes are (inches/year) for upstream drainage area		**USGS 11047300 ARROYO TRABUCO A SAN JUAN CAPISTRANO CA** Orange County, California Hydrologic Unit Code 18070301 Latitude 33°29'54", Longitude 117°39'54" NAD27 Drainage area 54.1 square miles		
Total Simulated In-stream Flow:	**8.31**	Total Observed In-stream Flow:		**8.28**
Total of simulated highest 10% flows:	**7.15**	Total of Observed highest 10% flows:		**6.32**
Total of Simulated lowest 50% flows:	**0.28**	Total of Observed Lowest 50% flows:		**0.36**
Simulated Summer Flow Volume (months 7-9):	**0.16**	Observed Summer Flow Volume (7-9):		**0.19**
Simulated Fall Flow Volume (months 10-12):	**1.94**	Observed Fall Flow Volume (10-12):		**1.63**
Simulated Winter Flow Volume (months 1-3):	**5.51**	Observed Winter Flow Volume (1-3):		**5.39**
Simulated Spring Flow Volume (months 4-6):	**0.70**	Observed Spring Flow Volume (4-6):		**1.08**
Total Simulated Storm Volume:	**7.07**	Total Observed Storm Volume:		**5.72**
Simulated Summer Storm Volume (7-9):	**0.03**	Observed Summer Storm Volume (7-9):		**0.06**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	11.71	15		
Error in storm volumes:	18.99	20		

Summary statistics of wet weather model hydrology validation to USGS gage 11047300 (Appendix G, No. 3).



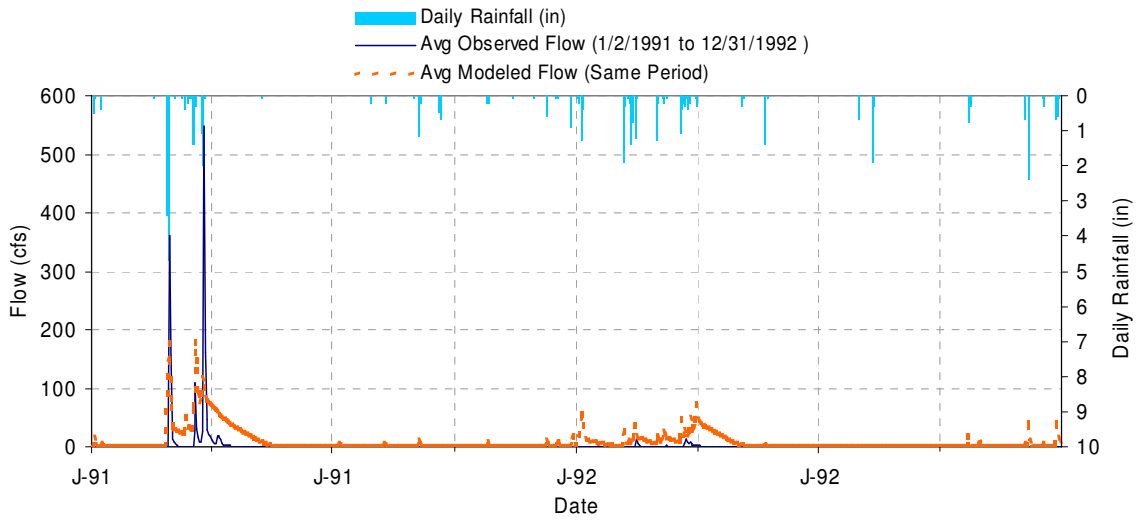
LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 403 3-Year Analysis Period: 5/1/1999 - 4/30/2002 Flow volumes are (inches/year) for upstream drainage area		**USGS 11047300 ARROYO TRABUCO A SAN JUAN CAPISTRANO CA** Orange County, California Hydrologic Unit Code 18070301 Latitude 33°29'54", Longitude 117°39'54" NAD27 Drainage area 54.1 square miles		
Total Simulated In-stream Flow:	**2.28**	Total Observed In-stream Flow:		**3.35**
Total of simulated highest 10% flows:	**1.93**	Total of Observed highest 10% flows:		**2.57**
Total of Simulated lowest 50% flows:	**0.13**	Total of Observed Lowest 50% flows:		**0.23**
Simulated Summer Flow Volume (months 7-9):	**0.11**	Observed Summer Flow Volume (7-9):		**0.10**
Simulated Fall Flow Volume (months 10-12):	**0.15**	Observed Fall Flow Volume (10-12):		**0.45**
Simulated Winter Flow Volume (months 1-3):	**1.71**	Observed Winter Flow Volume (1-3):		**2.32**
Simulated Spring Flow Volume (months 4-6):	**0.30**	Observed Spring Flow Volume (4-6):		**0.47**
Total Simulated Storm Volume:	**1.91**	Total Observed Storm Volume:		**2.33**
Simulated Summer Storm Volume (7-9):	**0.02**	Observed Summer Storm Volume (7-9):		**0.01**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	-33.27	15		
Error in storm volumes:	-21.87	20		

Summary statistics of wet weather model hydrology validation to USGS gage 11022350 (Appendix G, No. 3).



LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 1843 2.75-Year Analysis Period: 1/1/1991 - 9/30/1993 Flow volumes are (inches/year) for upstream drainage area		**USGS 11022350 FORESTER C A EL CAJON CA** San Diego County, California Hydrologic Unit Code 18070304 Latitude 32°49'16", Longitude 116°58'32" NAD27 Drainage area 21.3 square miles		
Total Simulated In-stream Flow:	**6.50**	Total Observed In-stream Flow:		**5.96**
Total of simulated highest 10% flows:	**6.37**	Total of Observed highest 10% flows:		**5.32**
Total of Simulated lowest 50% flows:	**0.03**	Total of Observed Lowest 50% flows:		**0.13**
Simulated Summer Flow Volume (months 7-9):	**0.07**	Observed Summer Flow Volume (7-9):		**0.13**
Simulated Fall Flow Volume (months 10-12):	**0.50**	Observed Fall Flow Volume (10-12):		**0.55**
Simulated Winter Flow Volume (months 1-3):	**5.77**	Observed Winter Flow Volume (1-3):		**4.96**
Simulated Spring Flow Volume (months 4-6):	**0.16**	Observed Spring Flow Volume (4-6):		**0.32**
Total Simulated Storm Volume:	**5.58**	Total Observed Storm Volume:		**4.87**
Simulated Summer Storm Volume (7-9):	**0.05**	Observed Summer Storm Volume (7-9):		**0.07**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	16.45	15		
Error in storm volumes:	12.64	20		

Summary statistics of wet weather model hydrology validation to USGS gage 11039800 (Appendix G, No. 3).



LSPC Simulated Flow		Observed Flow Gage		
REACH OUTFLOW FROM SUBBASIN 711 2-Year Analysis Period: 1/1/1991 - 12/31/1992 Flow volumes are (inches/year) for upstream drainage area		**USGS 11039800 SAN LUIS REY R A COUSER CYN BR NR PALA CA** San Diego County, California Hydrologic Unit Code 18070303 Latitude 33°20'26", Longitude 117°07'50" NAD27 Drainage area 364 square miles		
Total Simulated In-stream Flow:	**4.77**	Total Observed In-stream Flow:		**1.48**
Total of simulated highest 10% flows:	**3.30**	Total of Observed highest 10% flows:		**1.48**
Total of Simulated lowest 50% flows:	**0.00**	Total of Observed Lowest 50% flows:		**0.00**
Simulated Summer Flow Volume (months 7-9):	**0.03**	Observed Summer Flow Volume (7-9):		**0.00**
Simulated Fall Flow Volume (months 10-12):	**0.23**	Observed Fall Flow Volume (10-12):		**0.00**
Simulated Winter Flow Volume (months 1-3):	**2.75**	Observed Winter Flow Volume (1-3):		**1.36**
Simulated Spring Flow Volume (months 4-6):	**1.77**	Observed Spring Flow Volume (4-6):		**0.12**
Total Simulated Storm Volume:	**1.41**	Total Observed Storm Volume:		**1.24**
Simulated Summer Storm Volume (7-9):	**0.03**	Observed Summer Storm Volume (7-9):		**0.00**
Errors (Simulated-Observed)	*Current Run (n)*	*Recommended Criteria*	*Run (n-1)*	*Run (n-2)*
Error in 10% highest flows:	55.14	15		
Error in storm volumes:	11.54	20		