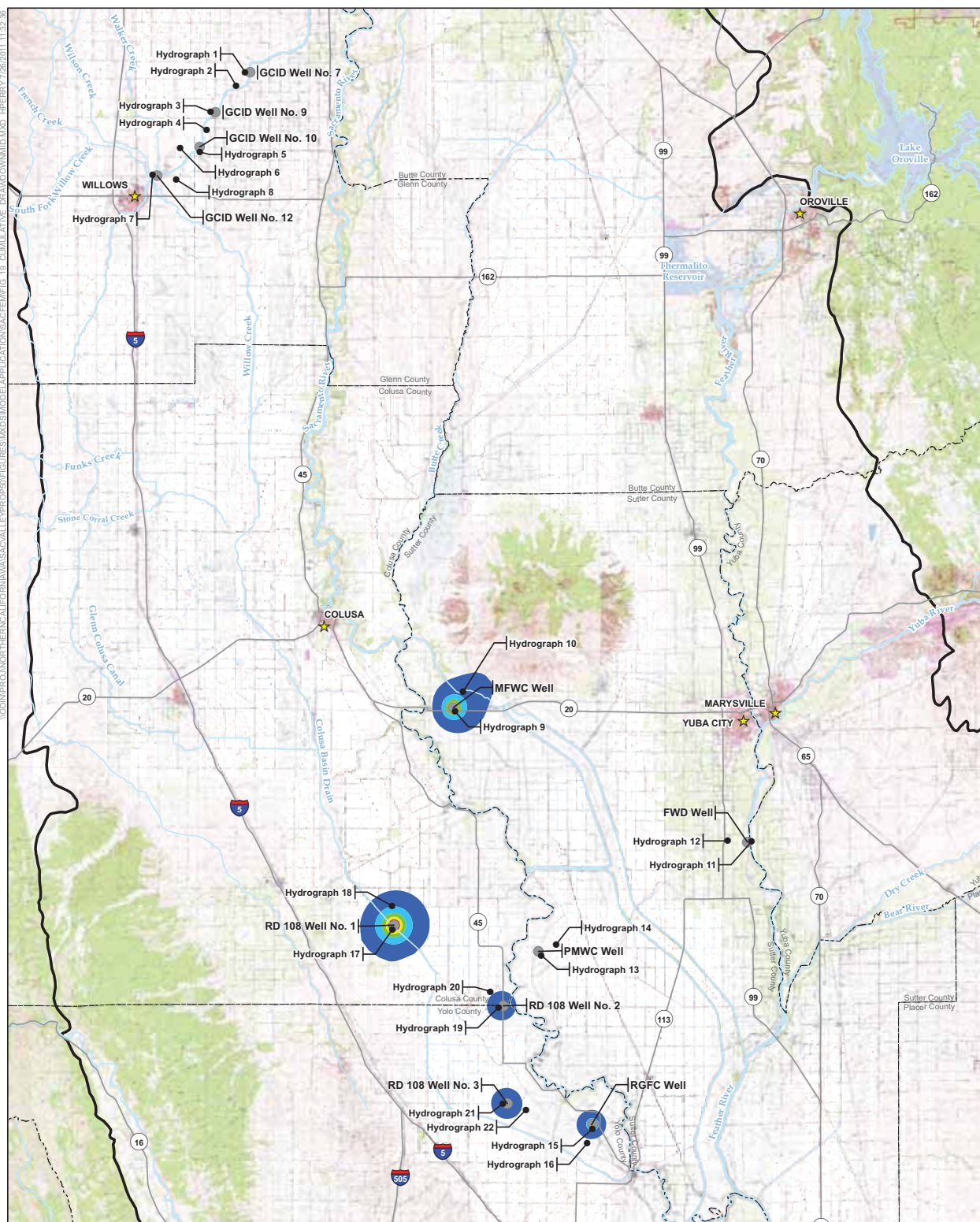


\\ODINPRO\NORTH\CA\NORTH\VALLEY\PROPS\FIGURES\WKS\MODELS\APPLICATIONS\SAFEM\FIG 19 CUMULATIVE DRAWDOWN\MDX HPERRY 7/26/2011 11:32:38



LEGEND

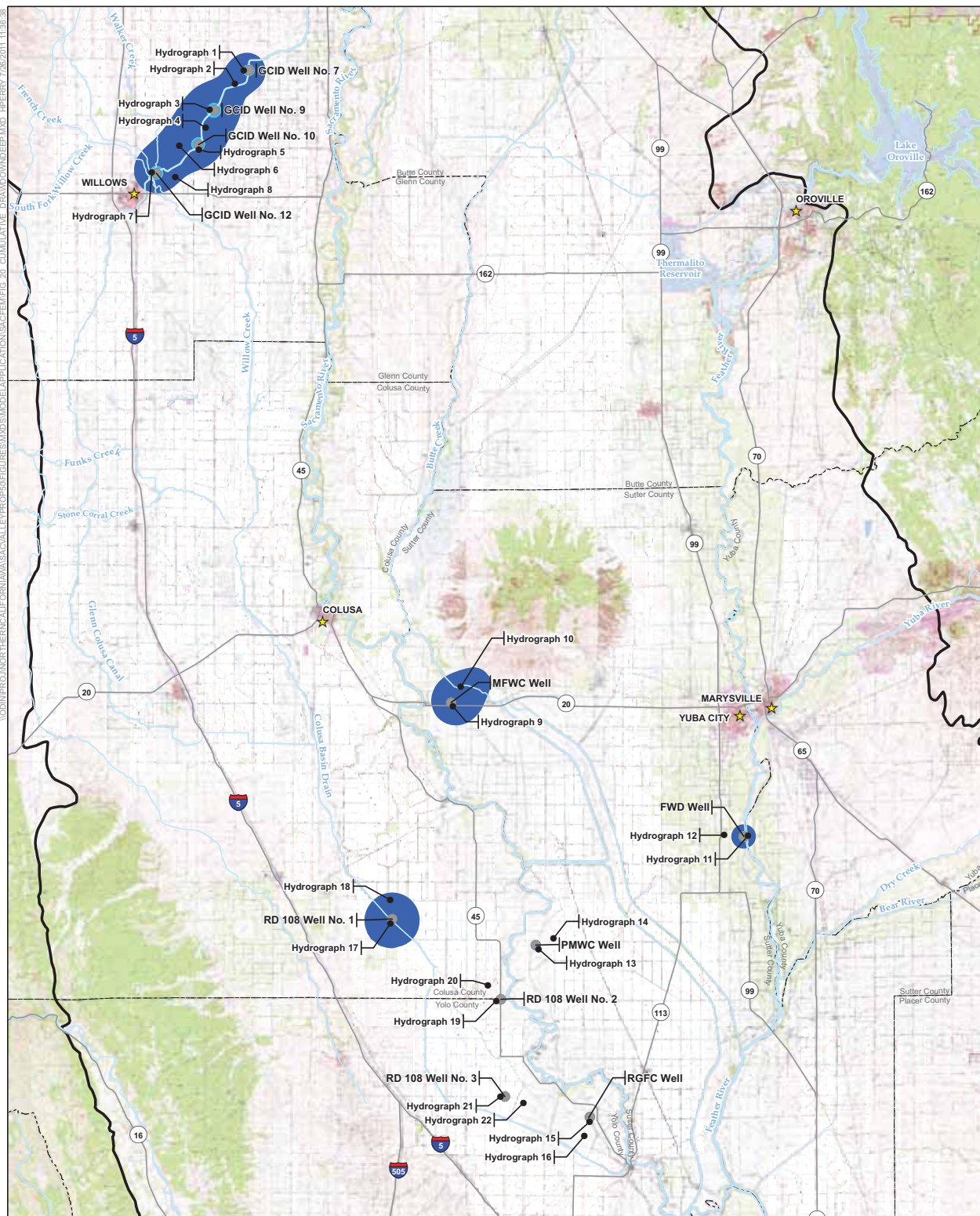
- 0.25-MILE BUFFER
 - ★ CITY
 - LOCATION OF FORECAST GROUNDWATER ELEVATION AND INCREMENTAL DRAWDOWN
 - MAJOR WATERWAY
 - - - COUNTY BOUNDARY
 - ▭ SACRAMENTO VALLEY GROUNDWATER BASIN
- | INCREMENTAL DRAWDOWN (feet) | |
|-----------------------------|----------|
| | 5 to 10 |
| | 10 to 15 |
| | 15 to 20 |
| | 20 to 25 |
| | 25 to 30 |

NOTES:

FWD = FEATHER WATER DISTRICT
 GCID = GLENN-COLUSA IRRIGATION DISTRICT
 PMWC = PELGER MUTUAL WATER COMPANY
 RD 108 = RECLAMATION DISTRICT 108
 RGFC = RIVER GARDEN FARMS COMPANY
 FORECAST HYDROGRAPHS SHOWN ON FIGURE C-21
 INCREMENTAL DRAWDOWNS SHOWN OCCUR NEAR THE END OF
 PREDICTIVE SIMULATION YEAR 23 (OCTOBER 1992)

FIGURE C-19
CUMULATIVE IMPACTS
FORECAST REGIONAL AQUIFER DRAWDOWN
MIDDLE PUMPING ZONE
 APPLICATION OF SAFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT

\\001PROJ\NORTHERNCALFORNIASACVALLEY\PROF50\FIGURES\MXD\APPLICATION\SACME\FIG 20_CUMULATIVE_DRAWDOWNDEEP\MXD HPERRY 7/26/2011 11:38:38



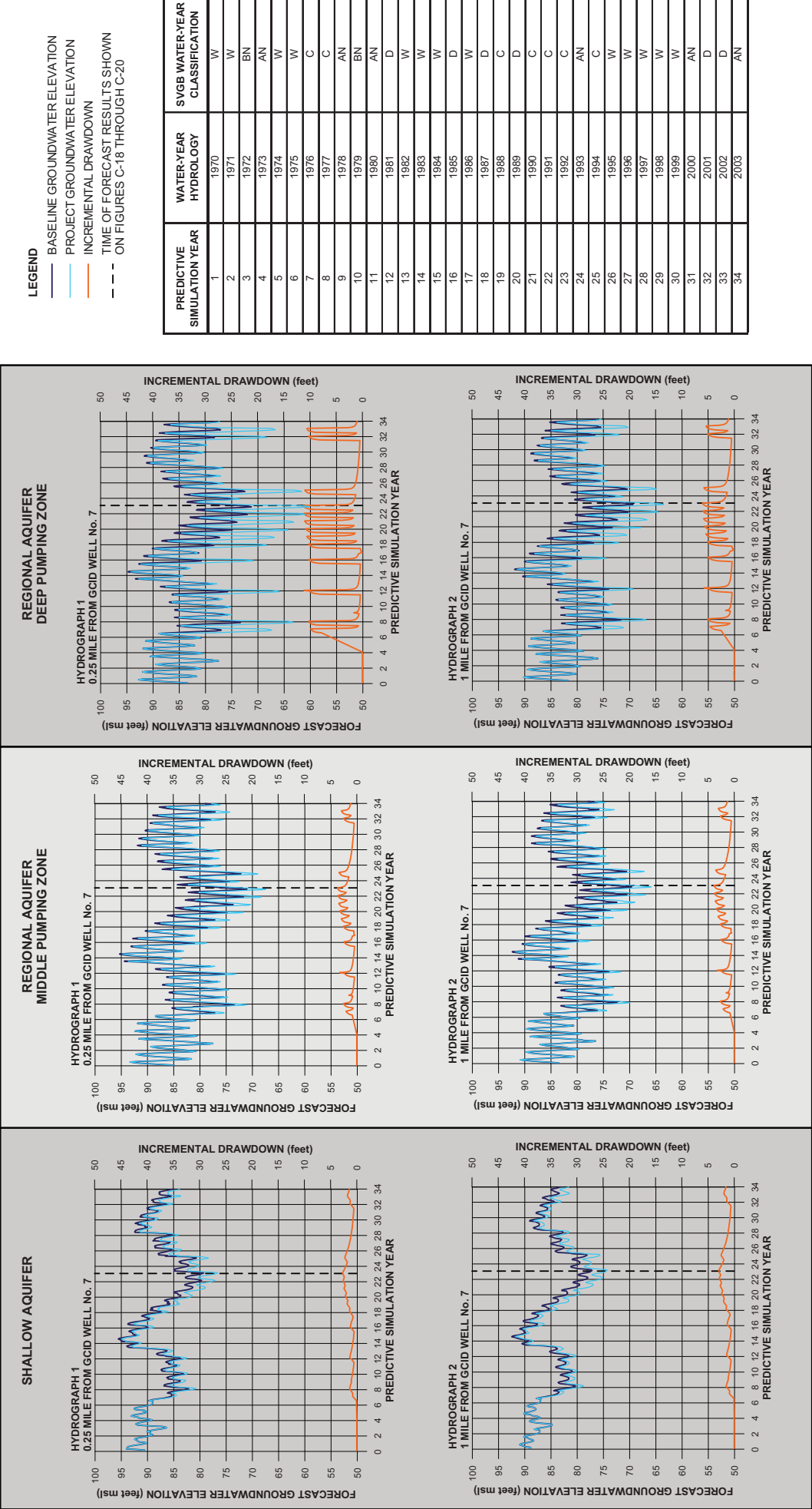
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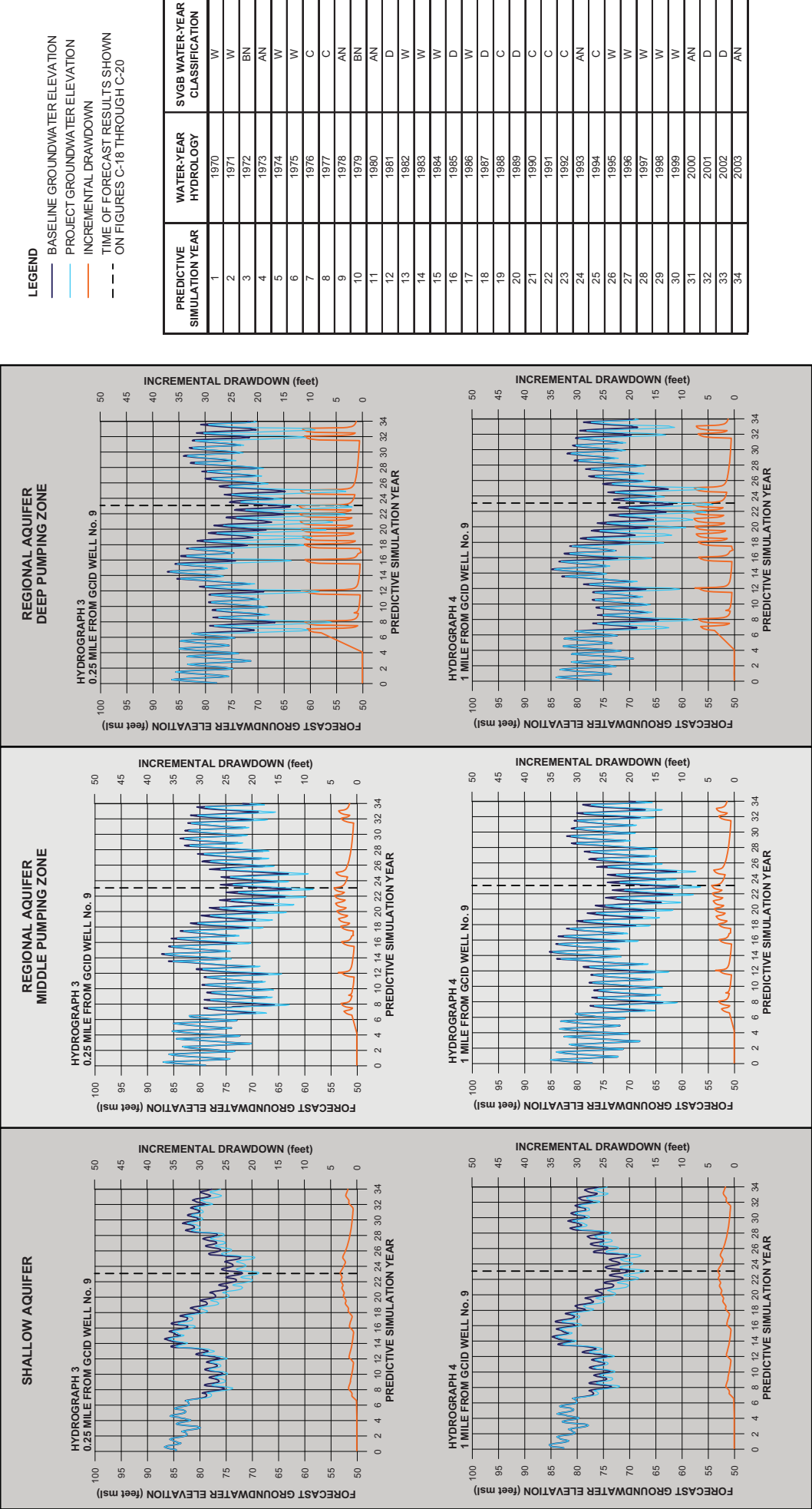
- 0.25-MILE BUFFER
 - ★ CITY
 - LOCATION OF FORECAST GROUNDWATER ELEVATION AND INCREMENTAL DRAWDOWN
 - MAJOR WATERWAY
 - - - COUNTY BOUNDARY
 - ▭ SACRAMENTO VALLEY GROUNDWATER BASIN
- | INCREMENTAL DRAWDOWN (feet) | |
|-----------------------------|----------|
| Blue | 5 to 10 |
| Light Blue | 10 to 15 |
| Green | 15 to 20 |
| Yellow | 20 to 25 |
| Red | 25 to 30 |

NOTES:

FWD = FEATHER WATER DISTRICT
 GCID = GLENN-COLUSA IRRIGATION DISTRICT
 PMWC = PELGER MUTUAL WATER COMPANY
 RD 108 = RECLAMATION DISTRICT 108
 RGFC = RIVER GARDEN FARMS COMPANY
 FORECAST HYDROGRAPHS SHOWN ON FIGURE C-21
 INCREMENTAL DRAWDOWNS SHOWN OCCUR NEAR THE END OF PREDICTIVE SIMULATION YEAR 23 (OCTOBER 1992)

FIGURE C-20
CUMULATIVE IMPACTS
FORECAST REGIONAL AQUIFER DRAWDOWN
DEEP PUMPING ZONE
 APPLICATION OF SACFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT





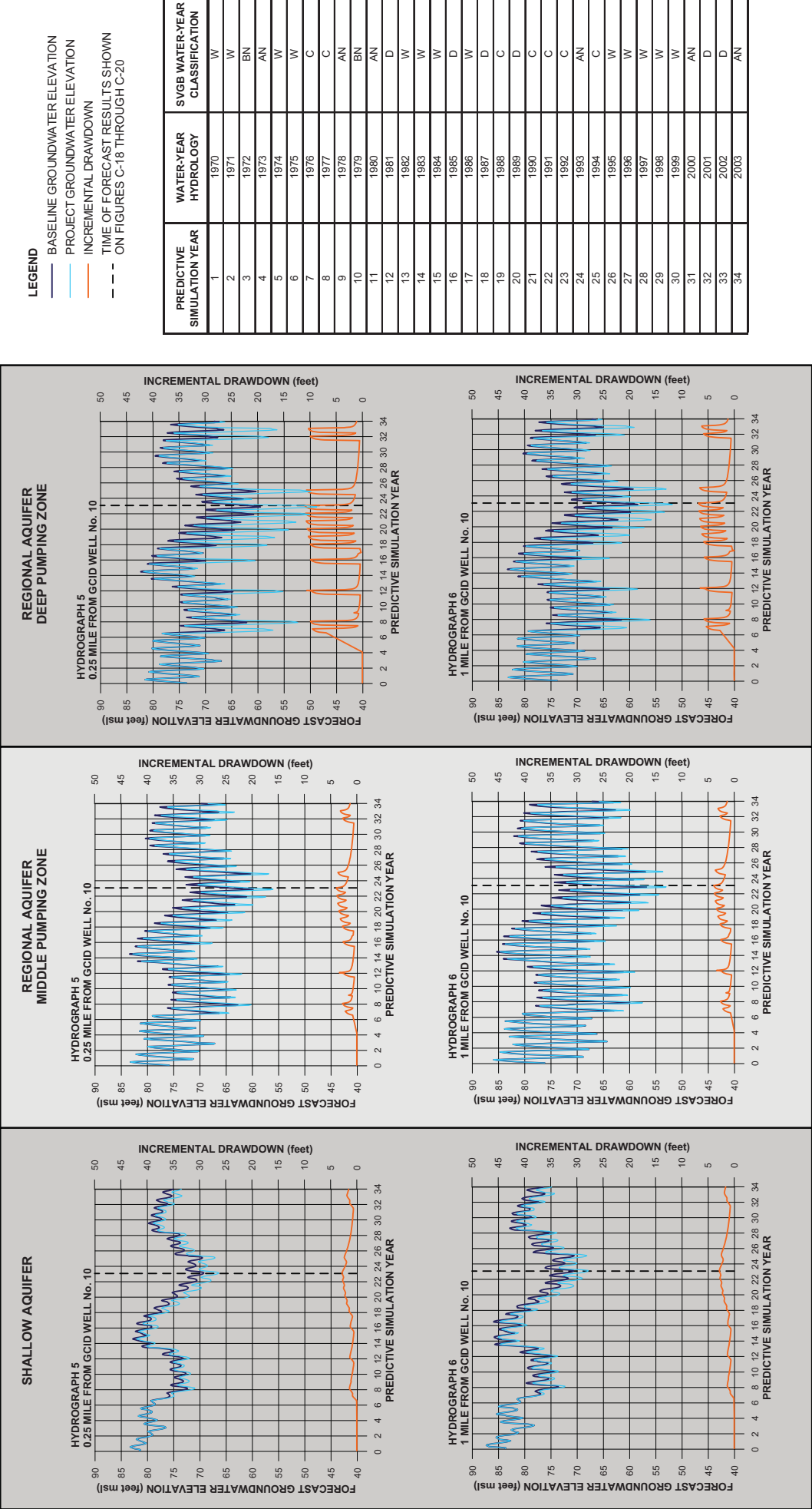
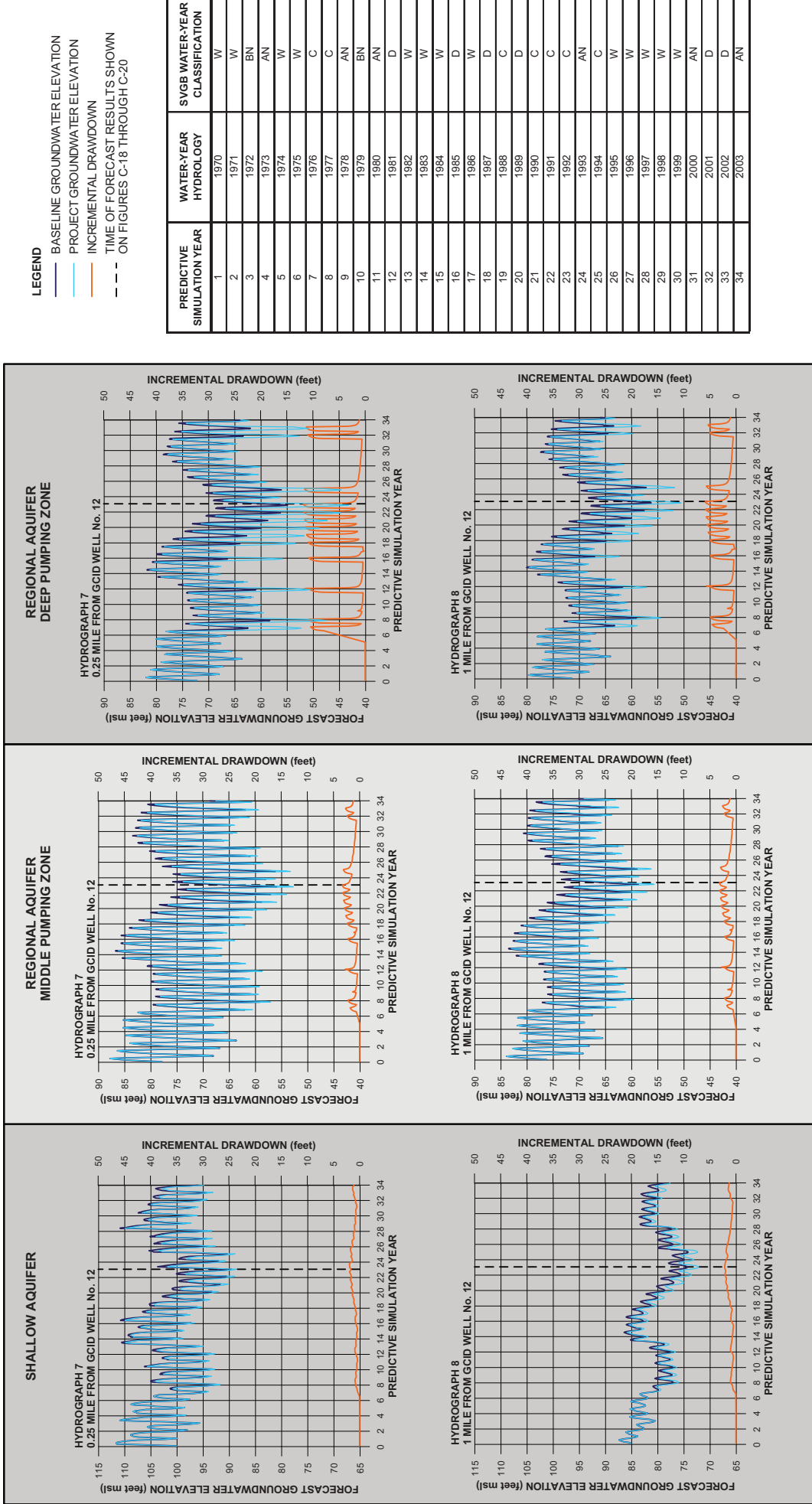


FIGURE C-21 (PAGE 3 OF 11)
CUMULATIVE IMPACTS
FORECAST GROUNDWATER ELEVATIONS
AND INCREMENTAL DRAWDOWN
APPLICATION OF SACFEM TO THE MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

NOTE:
1. HYDROGRAPH LOCATIONS SHOWN ON FIGURES C-18 THROUGH C-20
2. SVGB = SACRAMENTO VALLEY GROUNDWATER BASIN
3. GCID = GLENN-COLLUSA IRRIGATION DISTRICT
4. AN = ABOVE NORMAL WATER-YEAR HYDROLOGY
5. BN = BELOW NORMAL WATER-YEAR HYDROLOGY
6. C = CRITICAL WATER-YEAR HYDROLOGY
7. D = DRY WATER-YEAR HYDROLOGY
8. W = WET WATER-YEAR HYDROLOGY



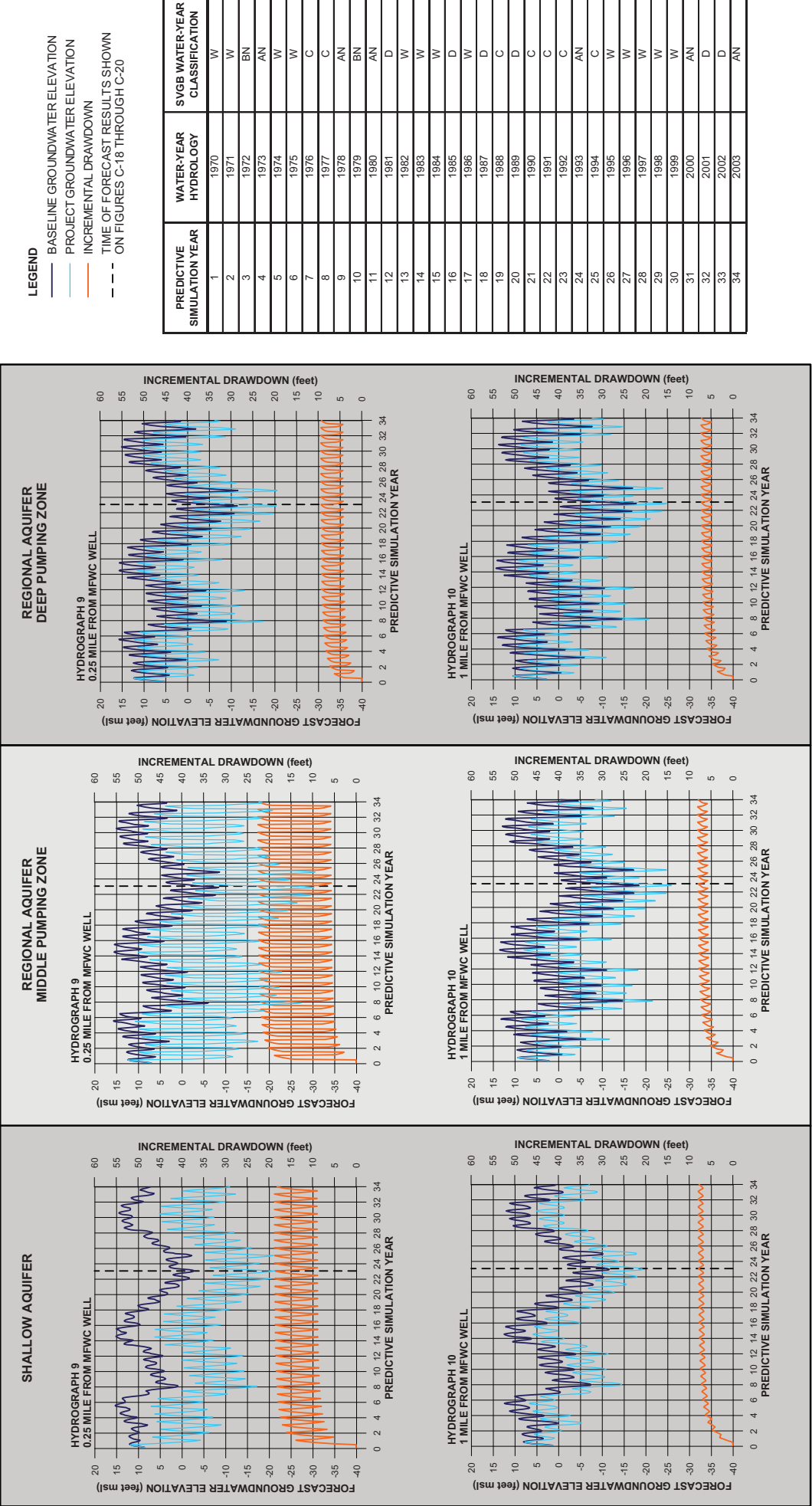
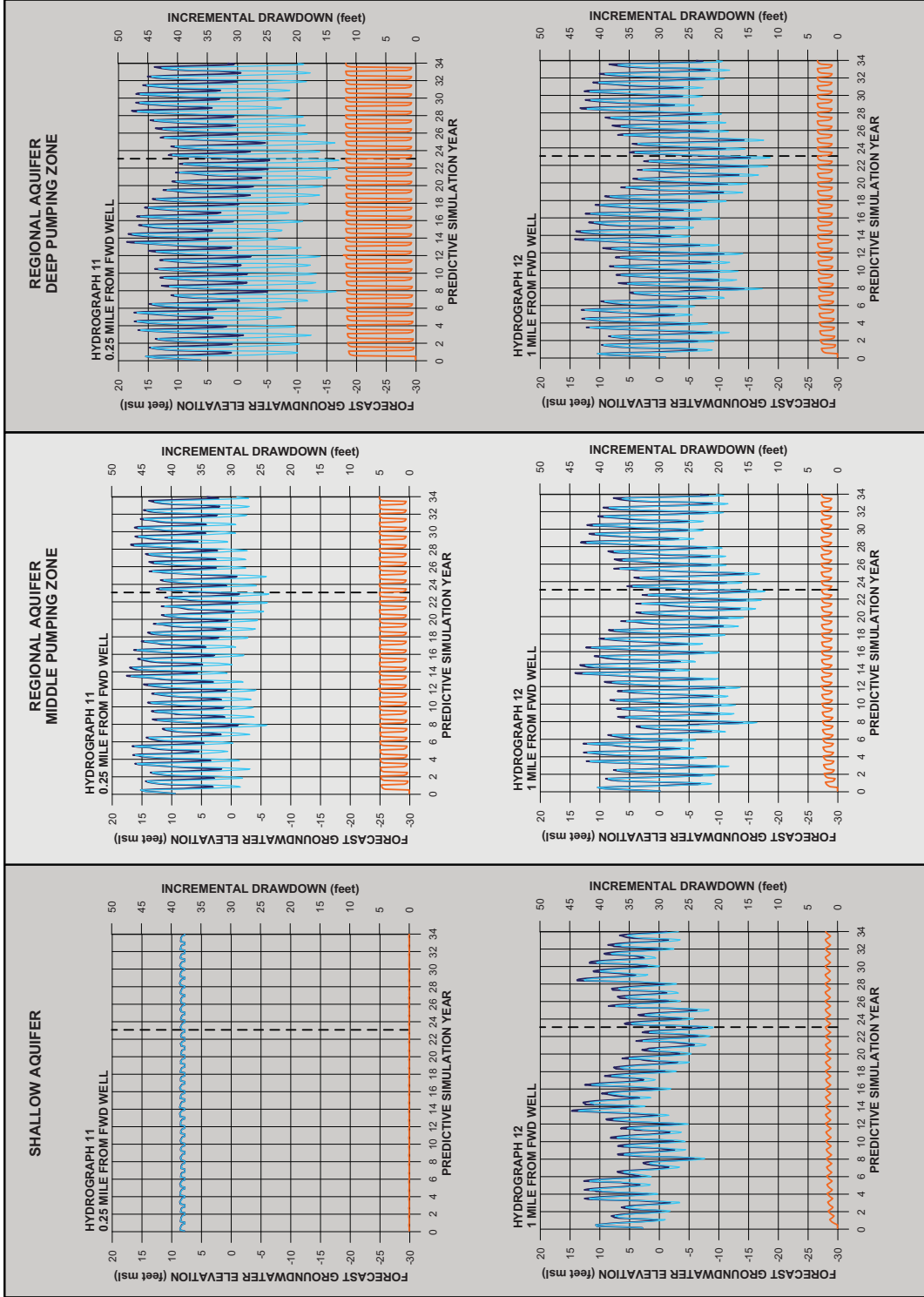


FIGURE C-21 (PAGE 5 OF 11)
CUMULATIVE IMPACTS
FORECAST GROUNDWATER ELEVATIONS
AND INCREMENTAL DRAWDOWN
APPLICATION OF SACFEM TO THE MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

NOTE:
1. HYDROGRAPH LOCATIONS SHOWN ON FIGURES C-18 THROUGH C-20
2. SVGB = SACRAMENTO VALLEY GROUNDWATER BASIN
3. MFWC = MERIDIAN FARMS WATER COMPANY
4. AN = ABOVE NORMAL WATER-YEAR HYDROLOGY
5. BN = BELOW NORMAL WATER-YEAR HYDROLOGY
6. C = CRITICAL WATER-YEAR HYDROLOGY
7. D = DRY WATER-YEAR HYDROLOGY
8. W = WET WATER-YEAR HYDROLOGY

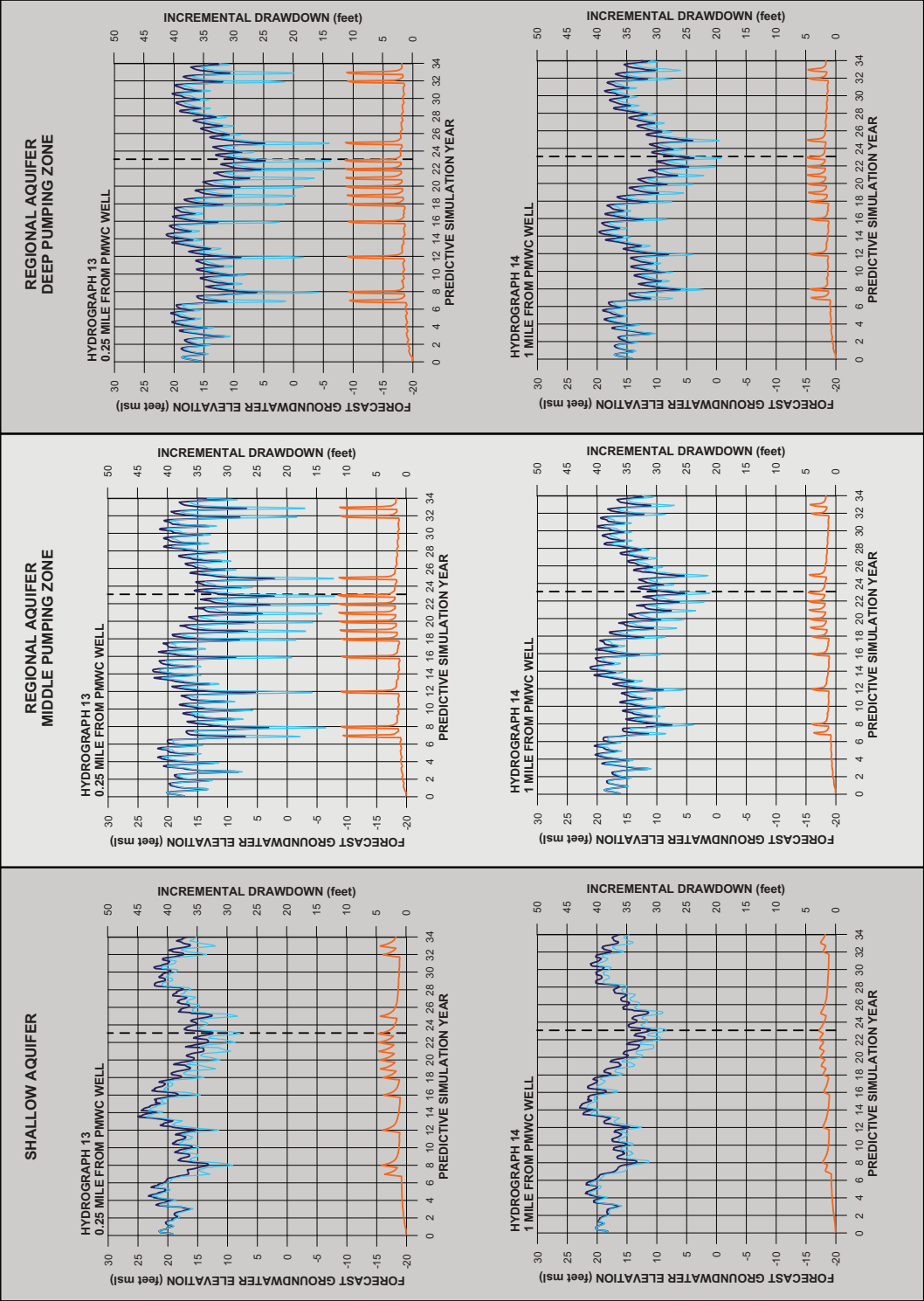
LEGEND

- BASELINE GROUNDWATER ELEVATION
- PROJECT GROUNDWATER ELEVATION
- INCREMENTAL DRAWDOWN
- TIME OF FORECAST RESULTS SHOWN
- ON FIGURES C-18 THROUGH C-20



- NOTE:
- 1. HYDROGRAPH LOCATIONS SHOWN ON FIGURES C-18 THROUGH C-20
 - 2. SVGB = SACRAMENTO VALLEY GROUNDWATER BASIN
 - 3. FWD = FEATHER WATER DISTRICT
 - 4. AN = ABOVE NORMAL WATER-YEAR HYDROLOGY
 - 5. BN = BELOW NORMAL WATER-YEAR HYDROLOGY
 - 6. C = CRITICAL WATER-YEAR HYDROLOGY
 - 7. D = DRY WATER-YEAR HYDROLOGY
 - 8. W = WET WATER-YEAR HYDROLOGY

FIGURE C-21 (PAGE 6 OF 11)
CUMULATIVE IMPACTS
FORECAST GROUNDWATER ELEVATIONS
AND INCREMENTAL DRAWDOWN
APPLICATION OF SACFEM TO THE MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

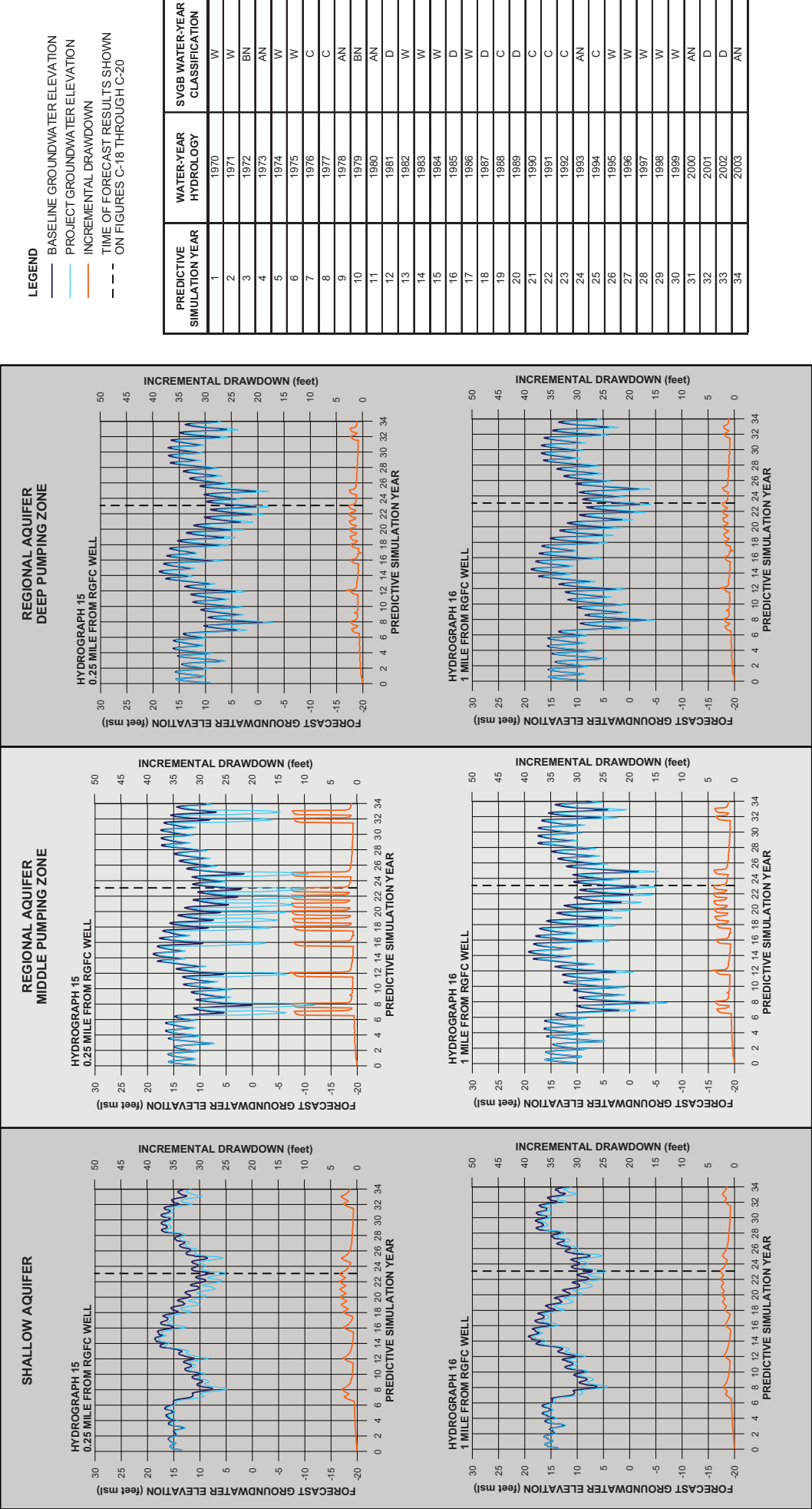


PREDICTIVE SIMULATION YEAR	WATER-YEAR HYDROLOGY	SVGB WATER-YEAR CLASSIFICATION
1	1970	W
2	1971	W
3	1972	BN
4	1973	AN
5	1974	W
6	1975	W
7	1976	C
8	1977	C
9	1978	AN
10	1979	BN
11	1980	AN
12	1981	D
13	1982	W
14	1983	W
15	1984	W
16	1985	D
17	1986	W
18	1987	D
19	1988	C
20	1989	D
21	1990	C
22	1991	C
23	1992	C
24	1993	AN
25	1994	C
26	1995	W
27	1996	W
28	1997	W
29	1998	W
30	1999	W
31	2000	AN
32	2001	D
33	2002	D
34	2003	AN

FIGURE C-21 (PAGE 7 OF 11)
CUMULATIVE IMPACTS
FORECAST GROUNDWATER ELEVATIONS
AND INCREMENTAL DRAWDOWN
APPLICATION OF SACFEM TO THE PMWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

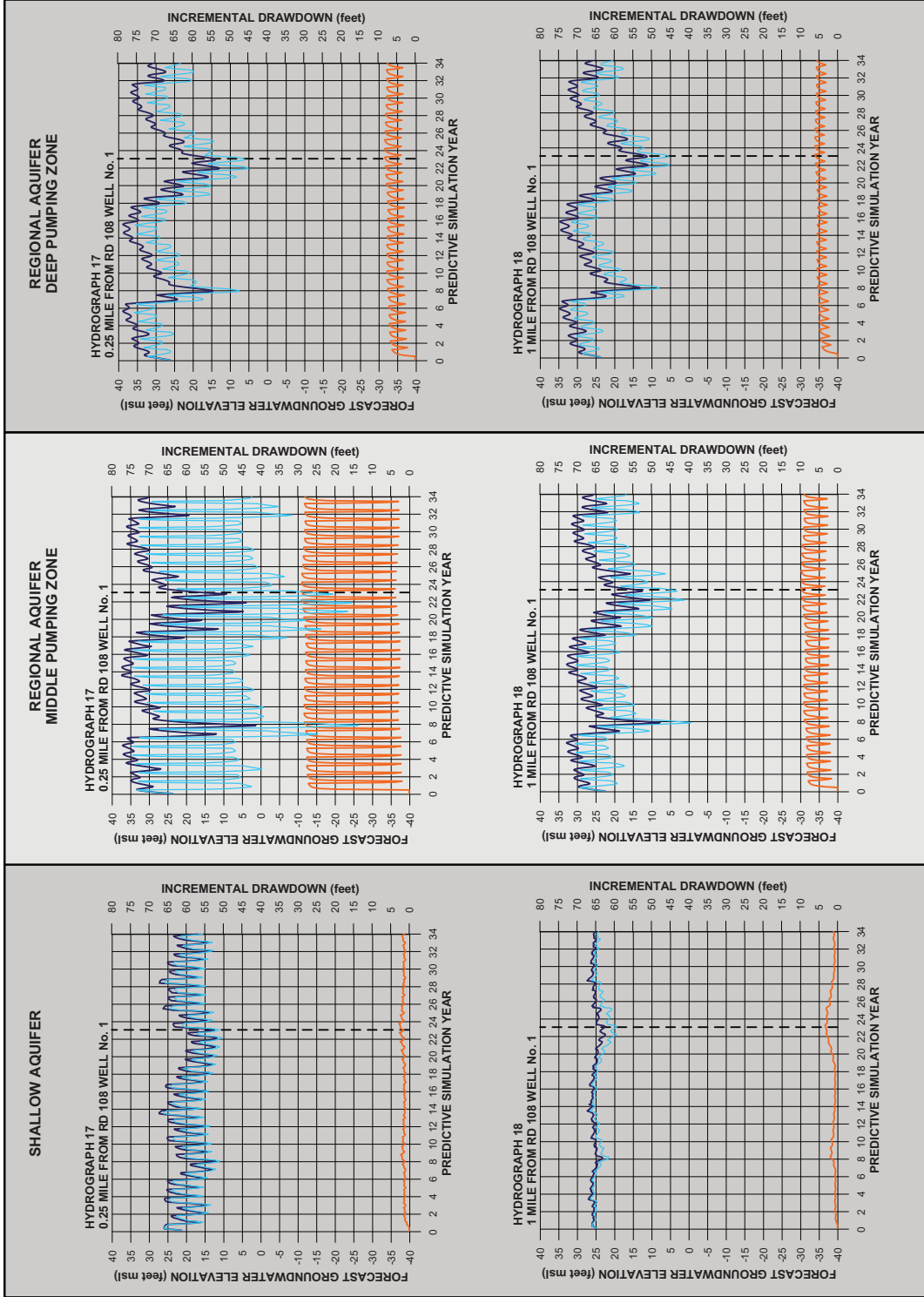
NOTE:

1. HYDROGRAPH LOCATIONS SHOWN ON FIGURES C-18 THROUGH C-20
2. SVGB = SACRAMENTO VALLEY GROUNDWATER BASIN
3. PMWC = PELGER MUTUAL WATER COMPANY
4. AN = ABOVE NORMAL WATER-YEAR HYDROLOGY
5. BN = BELOW NORMAL WATER-YEAR HYDROLOGY
6. C = CRITICAL WATER-YEAR HYDROLOGY
7. D = DRY WATER-YEAR HYDROLOGY
8. W = WET WATER-YEAR HYDROLOGY



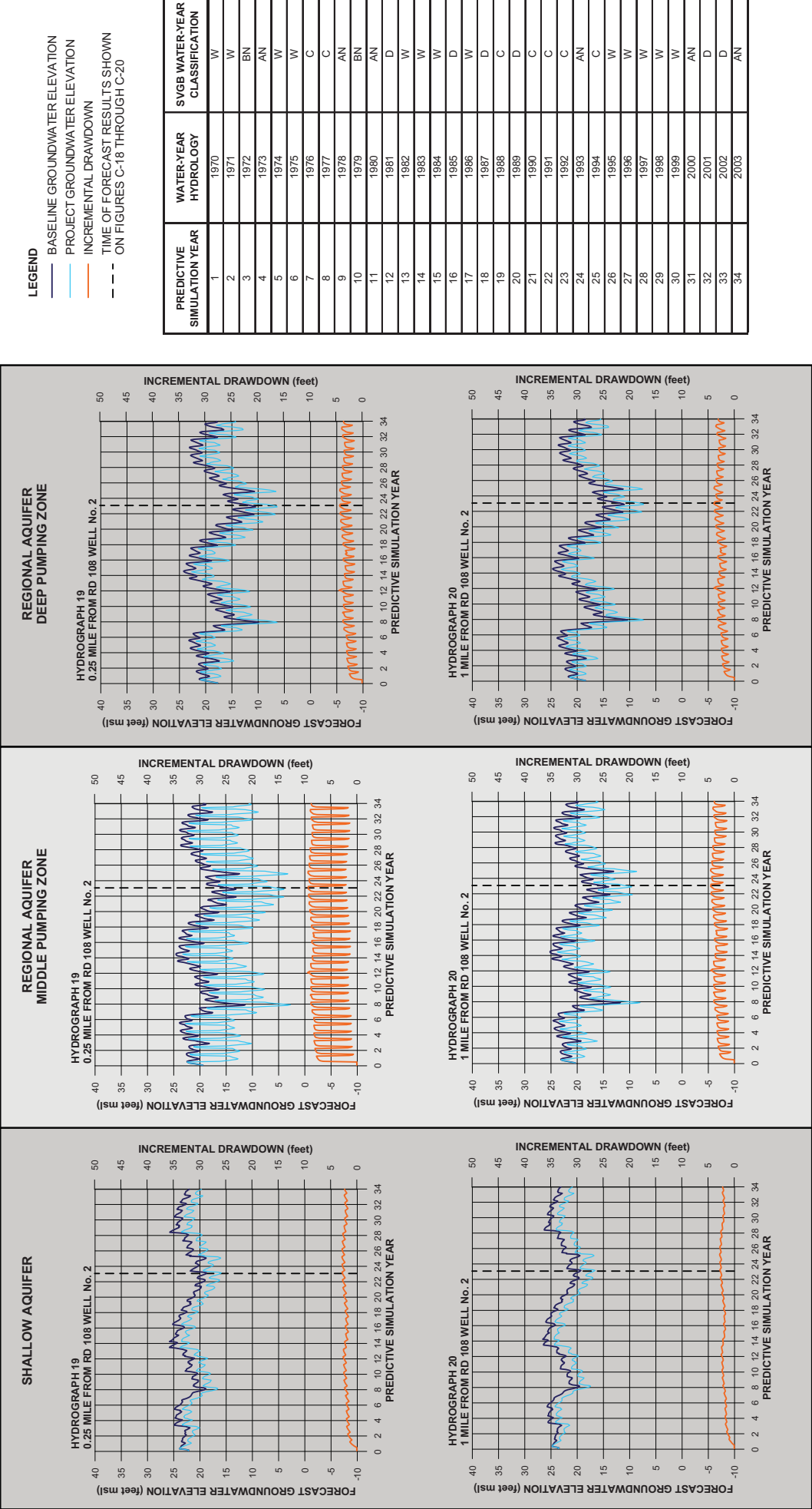
LEGEND

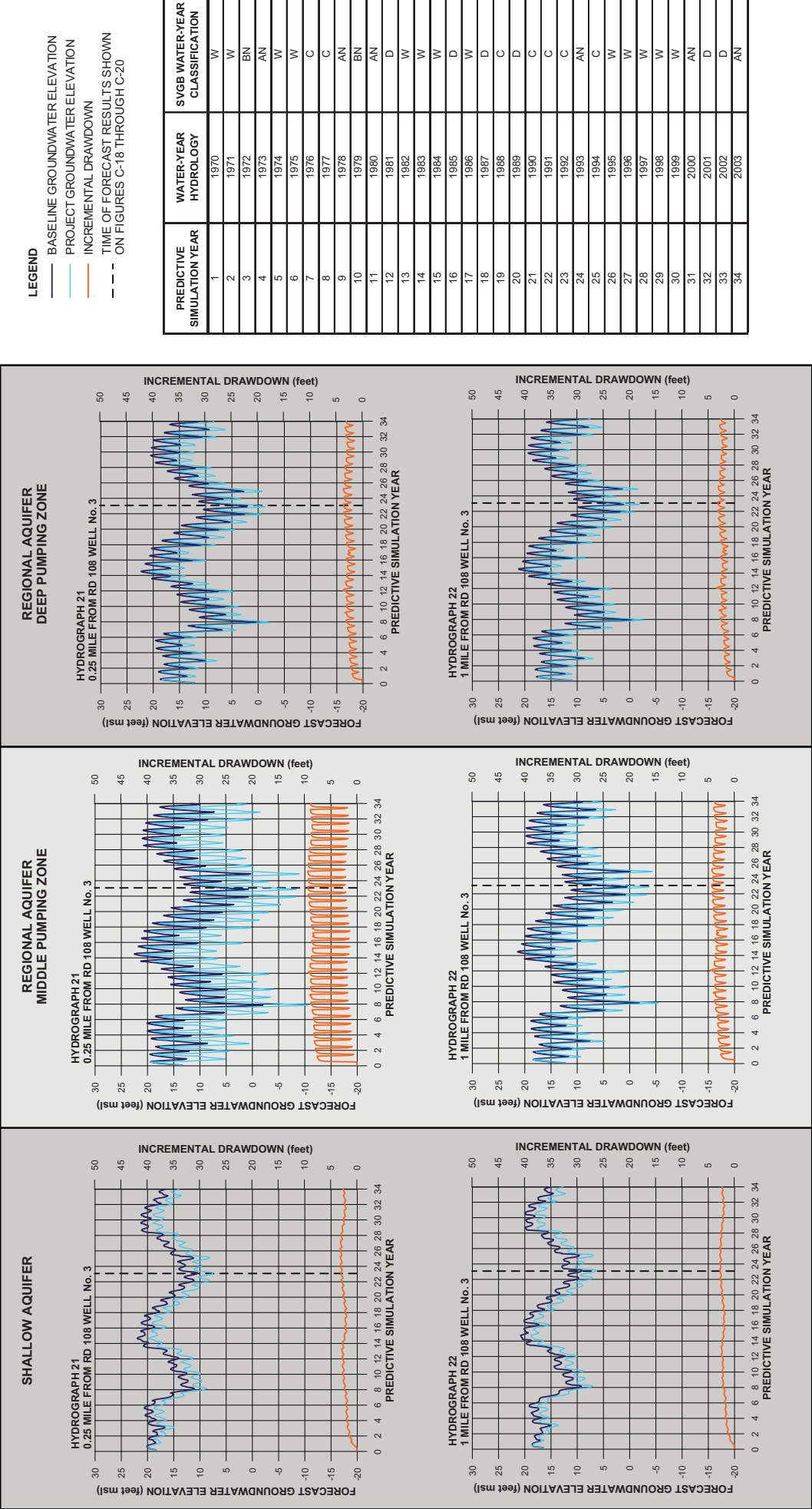
- BASELINE GROUNDWATER ELEVATION
- PROJECT GROUNDWATER ELEVATION
- INCREMENTAL DRAWDOWN
- TIME OF FORECAST RESULTS SHOWN
- ON FIGURES C-18 THROUGH C-20

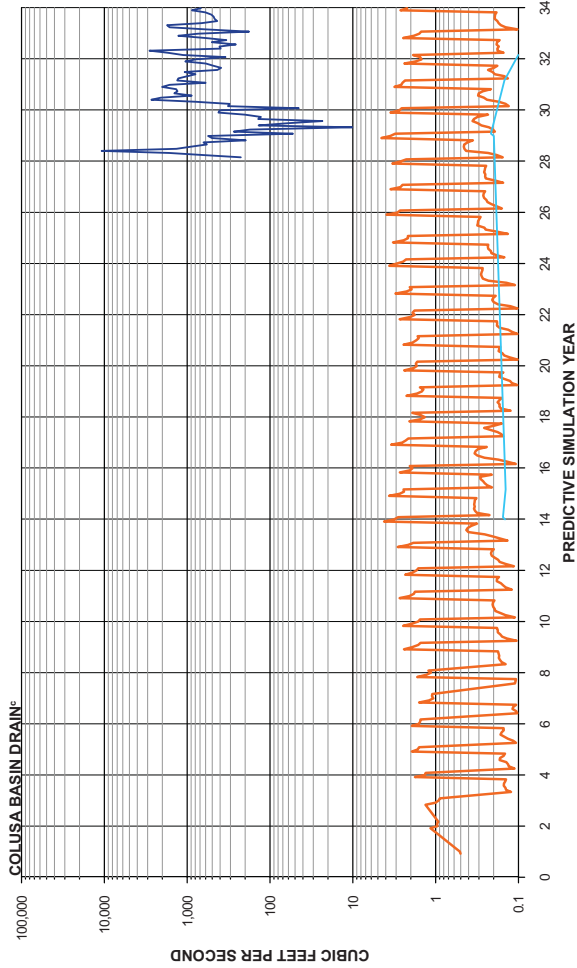
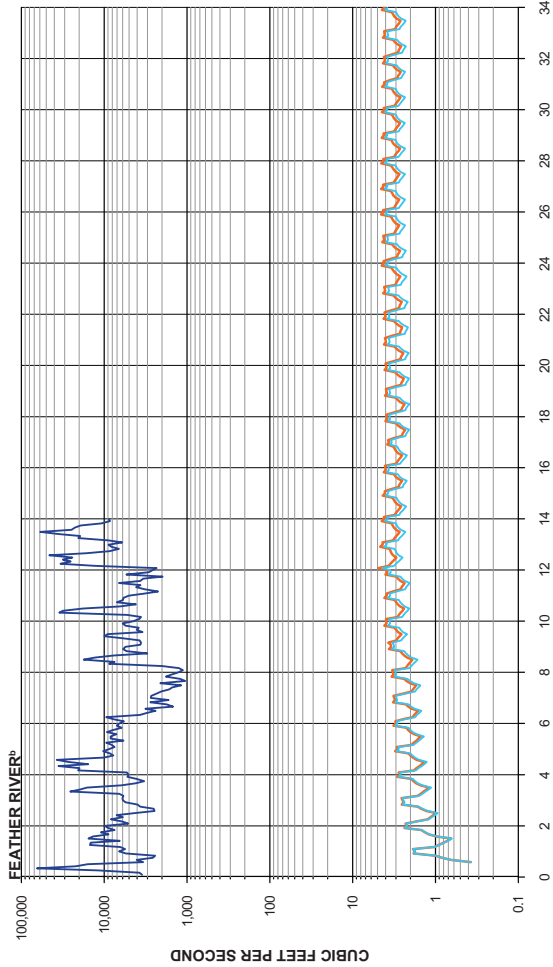
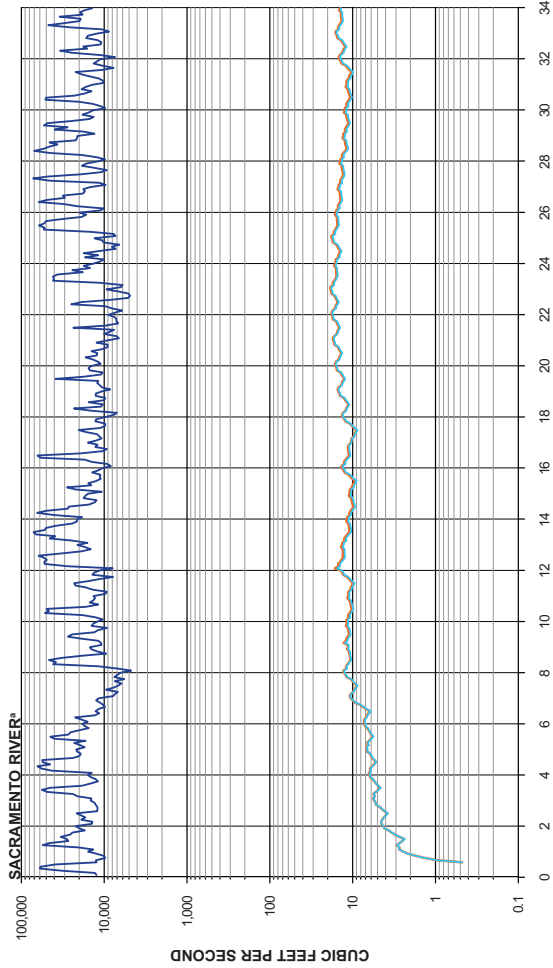


- NOTE:
1. HYDROGRAPH LOCATIONS SHOWN ON FIGURES C-18 THROUGH C-20
 2. SVGB = SACRAMENTO VALLEY GROUNDWATER BASIN
 3. RD 108 = RECLAMATION DISTRICT 108
 4. AN = ABOVE NORMAL WATER-YEAR HYDROLOGY
 5. C = CRITICAL WATER-YEAR HYDROLOGY
 6. C = CRITICAL WATER-YEAR HYDROLOGY
 7. D = DRY WATER-YEAR HYDROLOGY
 8. W = WET WATER-YEAR HYDROLOGY

FIGURE C-21 (PAGE 9 OF 11)
CUMULATIVE IMPACTS
FORECAST GROUNDWATER ELEVATIONS
AND INCREMENTAL DRAWDOWN
 APPLICATION OF SACFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT







LEGEND

- MEAN MONTHLY MEASURED STREAMFLOW
- FORECAST STREAMFLOW REDUCTION - UPSTEAM OF GAGE
- FORECAST STREAMFLOW REDUCTION - ENTIRE STREAM

^aMEASURED STREAMFLOW AT USGS GAGE No. 11425500, SACRAMENTO RIVER AT VERONA, CALIFORNIA

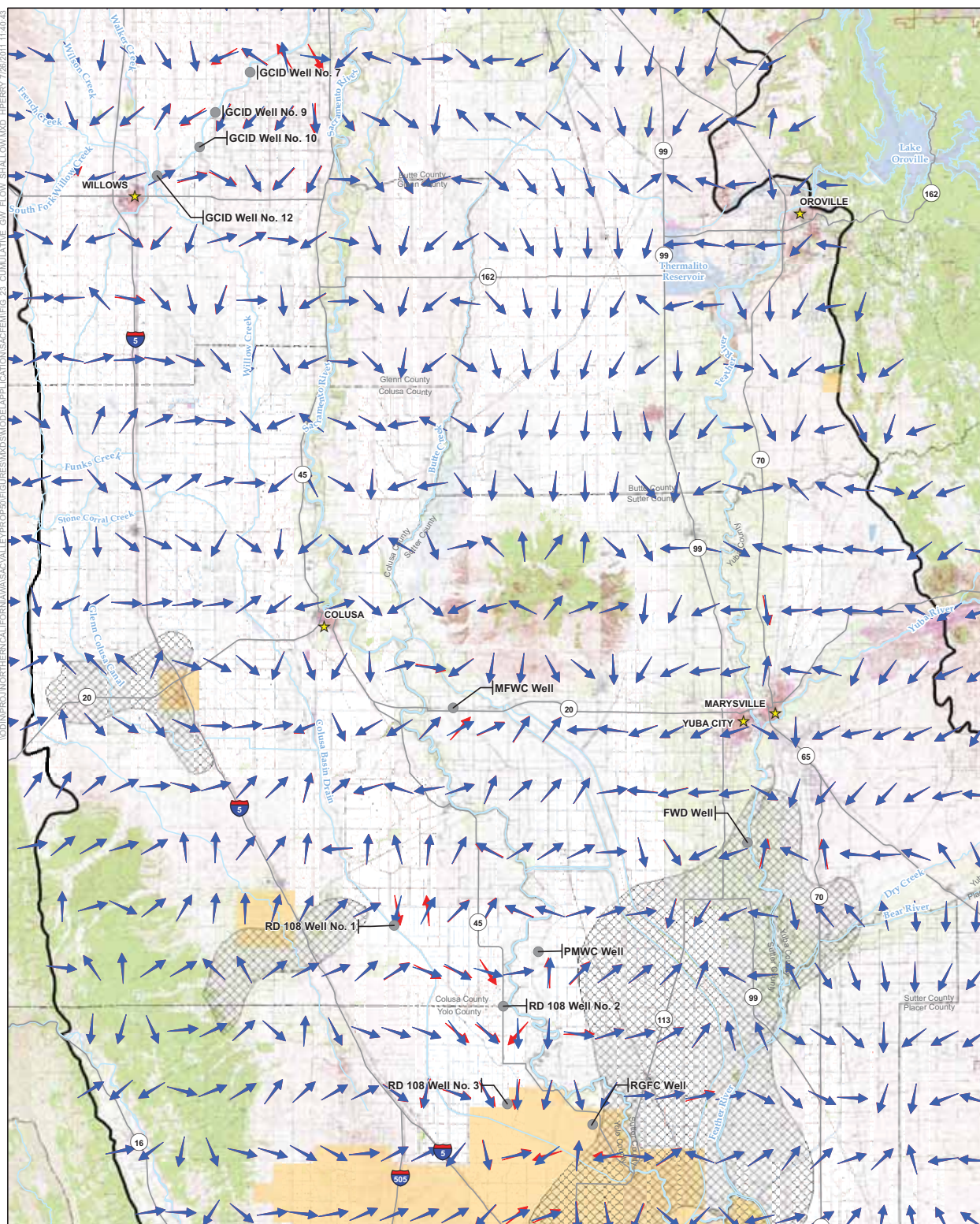
^bMEASURED STREAMFLOW AT USGS GAGE No. 11425000, FEATHER RIVER NEAR NICOLAUS, CALIFORNIA

^cMEASURED STREAMFLOW AT DWR GAGE CDR, COLUSA BASIN DRAIN NEAR HIGHWAY 20.

PREDICTIVE SIMULATION YEAR	WATER-YEAR HYDROLOGY	PREDICTIVE SIMULATION YEAR	WATER-YEAR HYDROLOGY
1	1970	18	1987
2	1971	19	1988
3	1972	20	1989
4	1973	21	1990
5	1974	22	1991
6	1975	23	1992
7	1976	24	1993
8	1977	25	1994
9	1978	26	1995
10	1979	27	1996
11	1980	28	1997
12	1981	29	1998
13	1982	30	1999
14	1983	31	2000
15	1984	32	2001
16	1985	33	2002
17	1986	34	2003

FIGURE C-22
CUMULATIVE IMPACTS
FORECAST STREAM IMPACTS
 APPLICATION OF SAGFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT
CH2MHILL

\\001PROJ\NORTH\CA\FORNA\WASAC\VALLEY\PROF\FIGURES\SUMO\MODEL\APPLICATION\SACFEM\FIG_23_CUMULATIVE_GW_FLOW_SHALLOW\MXD HPERRY 7/26/2011 11:40:43



- LEGEND**
- 0.25-MILE BUFFER
 - ★ CITY
 - MAJOR WATERWAY
 - - - COUNTY BOUNDARY
 - ▭ SACRAMENTO VALLEY GROUNDWATER BASIN
 - ▨ TDS CONCENTRATION GREATER THAN 500 mg/L
 - ▨ BORON CONCENTRATION GREATER THAN 0.75 mg/L
 - BASELINE SIMULATION GROUNDWATER FLOW DIRECTION
 - PROJECT SIMULATION GROUNDWATER FLOW DIRECTION

NOTES:
 FWD = FEATHER WATER DISTRICT
 GCID = GLENN-COLUSA IRRIGATION DISTRICT
 PMWC = PELGER MUTUAL WATER COMPANY
 RD 108 = RECLAMATION DISTRICT 108
 RGFC = RIVER GARDEN FARMS COMPANY
 GROUNDWATER FLOW DIRECTIONS SHOWN OCCUR NEAR THE END OF PREDICTIVE SIMULATION YEAR 23 (OCTOBER 1992)

DATA SOURCES:
 BERTOLDI, 1991; BERTOLDI, 1976;
 EVENSON, 1985; FOGELMAN, 1978;
 FOGELMAN, 1979; AND JOHNSON, 1985.

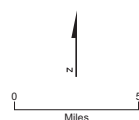
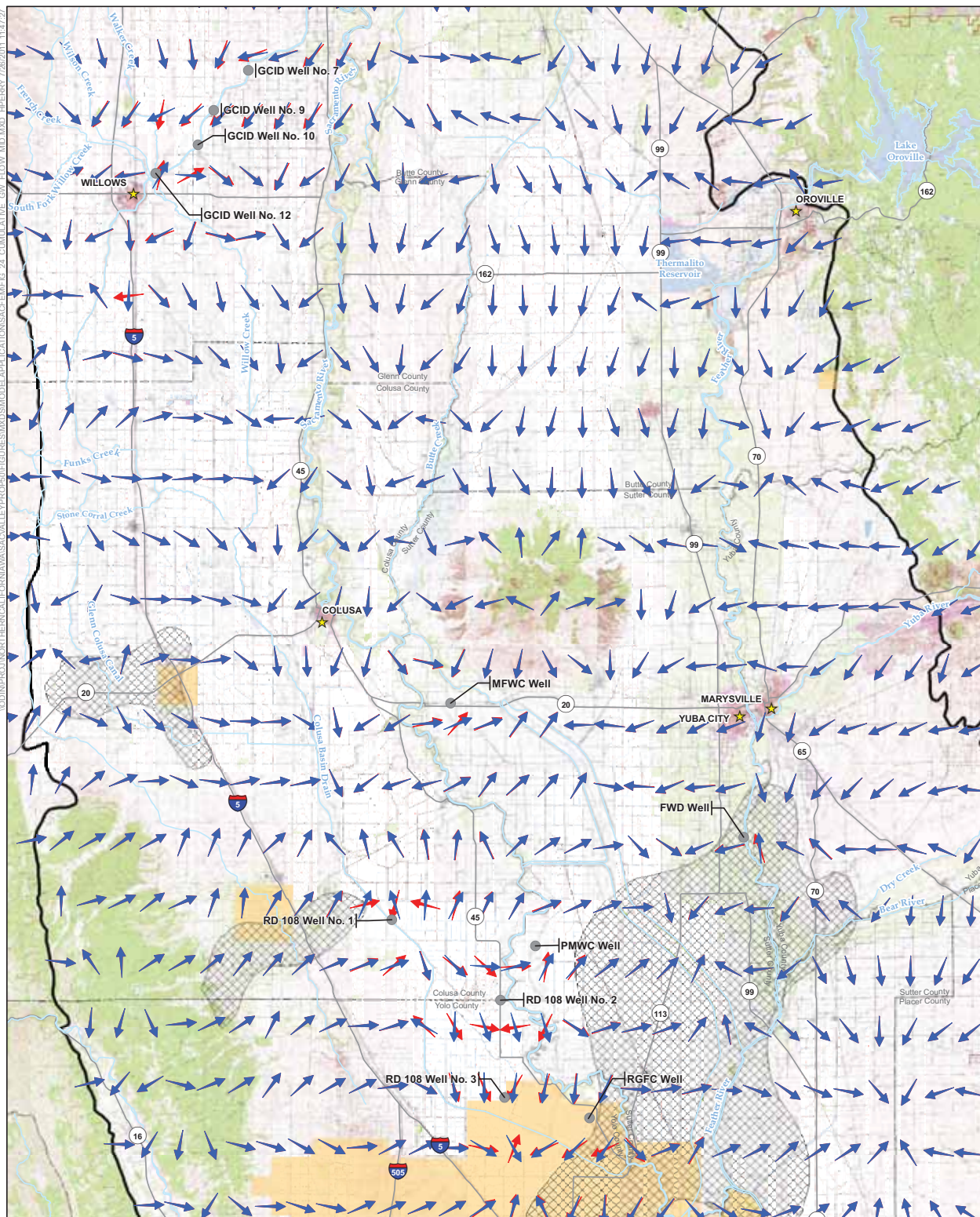


FIGURE C-23
CUMULATIVE IMPACTS
FORECAST TEMPORARY GROUNDWATER FLOW
DIRECTIONS IN THE SHALLOW AQUIFER
 APPLICATION OF SACFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT

\\ODINPRO\NORTH\CALIFORNIA\SAC\VALLEY\FIGURES\FIGURES\MODEL\APPLICATION\SACFEM\FIG 24 CUMULATIVE GW FLOW MID AND HPERRY 7/26/2011 11:47:27



- LEGEND**
- 0.25-MILE BUFFER
 - ★ CITY
 - MAJOR WATERWAY
 - - - COUNTY BOUNDARY
 - ▭ SACRAMENTO VALLEY GROUNDWATER BASIN
 - ▨ TDS CONCENTRATION GREATER THAN 500 mg/L
 - ▨ BORON CONCENTRATION GREATER THAN 0.75 mg/L
 - BASELINE SIMULATION GROUNDWATER FLOW DIRECTION
 - PROJECT SIMULATION GROUNDWATER FLOW DIRECTION

NOTES:
 FWD = FEATHER WATER DISTRICT
 GCID = GLENN-COLUSA IRRIGATION DISTRICT
 PMWC = PELGER MUTUAL WATER COMPANY
 RD 108 = RECLAMATION DISTRICT 108
 RGFC = RIVER GARDEN FARMS COMPANY
 GROUNDWATER FLOW DIRECTIONS SHOWN OCCUR NEAR THE END OF PREDICTIVE SIMULATION YEAR 23 (OCTOBER 1992)

DATA SOURCES:
 BERTOLDI, 1991; BERTOLDI, 1976;
 EVENSON, 1985; FOGELMAN, 1978;
 FOGELMAN, 1979; AND JOHNSON, 1985.

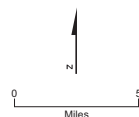
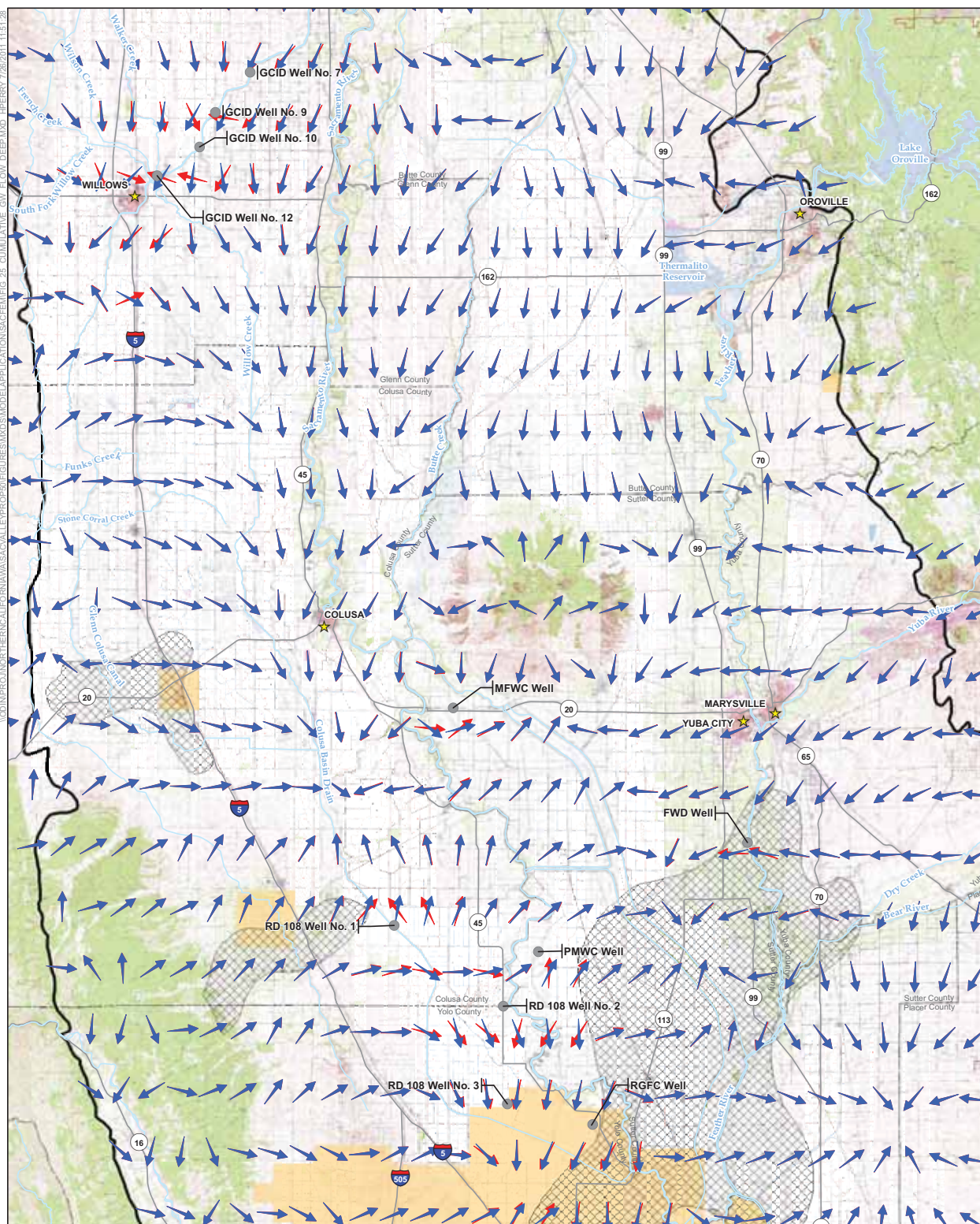


FIGURE C-24
CUMULATIVE IMPACTS
FORECAST TEMPORARY GROUNDWATER FLOW
DIRECTIONS REGIONAL AQUIFER - MIDDLE PUMPING ZONE
 APPLICATION OF SACFEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT

J:\ODIN\PROJ\NORTHERN CALIFORNIA VALLEY PROPOSED FIGURES\MODELS\APPLICATIONS\SAFCEM\FIG 25 CUMULATIVE GW FLOW DEEP AND HPERRY 7/26/2011 11:51:28



- LEGEND**
- 0.25-MILE BUFFER
 - ★ CITY
 - MAJOR WATERWAY
 - - - COUNTY BOUNDARY
 - ▭ SACRAMENTO VALLEY GROUNDWATER BASIN
 - ▨ TDS CONCENTRATION GREATER THAN 500 mg/L
 - ▨ BORON CONCENTRATION GREATER THAN 0.75 mg/L
 - BASELINE SIMULATION GROUNDWATER FLOW DIRECTION
 - PROJECT SIMULATION GROUNDWATER FLOW DIRECTION

NOTES:
 FWD = FEATHER WATER DISTRICT
 GCID = GLENN-COLUSA IRRIGATION DISTRICT
 PMWC = PELGER MUTUAL WATER COMPANY
 RD 108 = RECLAMATION DISTRICT 108
 RGFC = RIVER GARDEN FARMS COMPANY
 GROUNDWATER FLOW DIRECTIONS SHOWN OCCUR NEAR THE END OF PREDICTIVE SIMULATION YEAR 23 (OCTOBER 1992)

DATA SOURCES:
 BERTOLDI, 1991; BERTOLDI, 1976;
 EVENSON, 1985; FOGELMAN, 1978;
 FOGELMAN, 1979; AND JOHNSON, 1985.

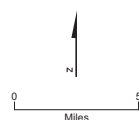


FIGURE C-25
CUMULATIVE IMPACTS
FORECAST TEMPORARY GROUNDWATER FLOW
DIRECTIONS REGIONAL AQUIFER - DEEP PUMPING ZONE
 APPLICATION OF SAFCEM TO THE MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT