Figures

WMA/CMA Model Documentation

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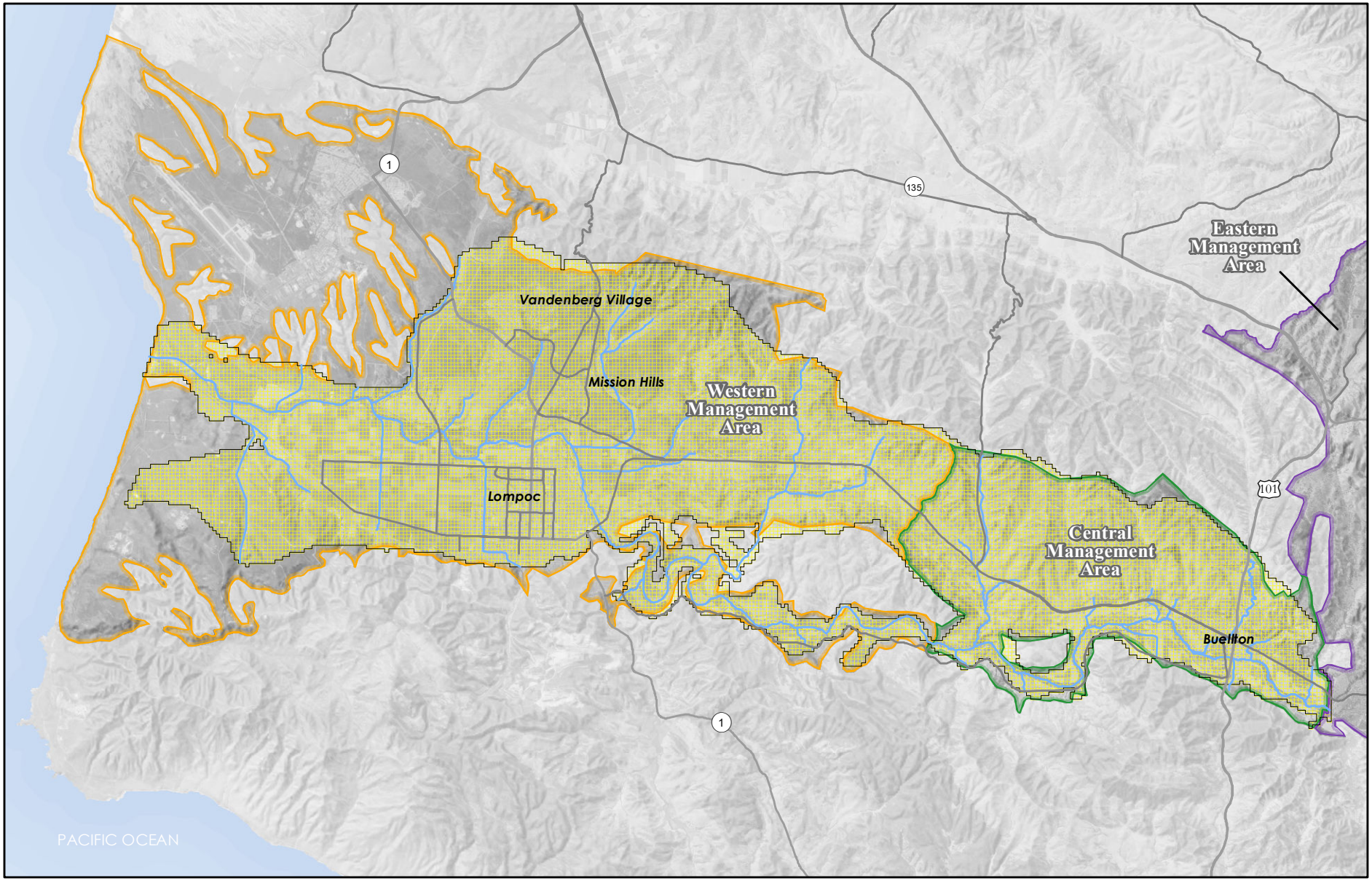

STETSON ENGINEERS INC.

Model Boundary
Model Cell
Western Management Area
Central Management Area
Eastern Management Area

Model Cells and Areal Extents
WMA/CMA Model

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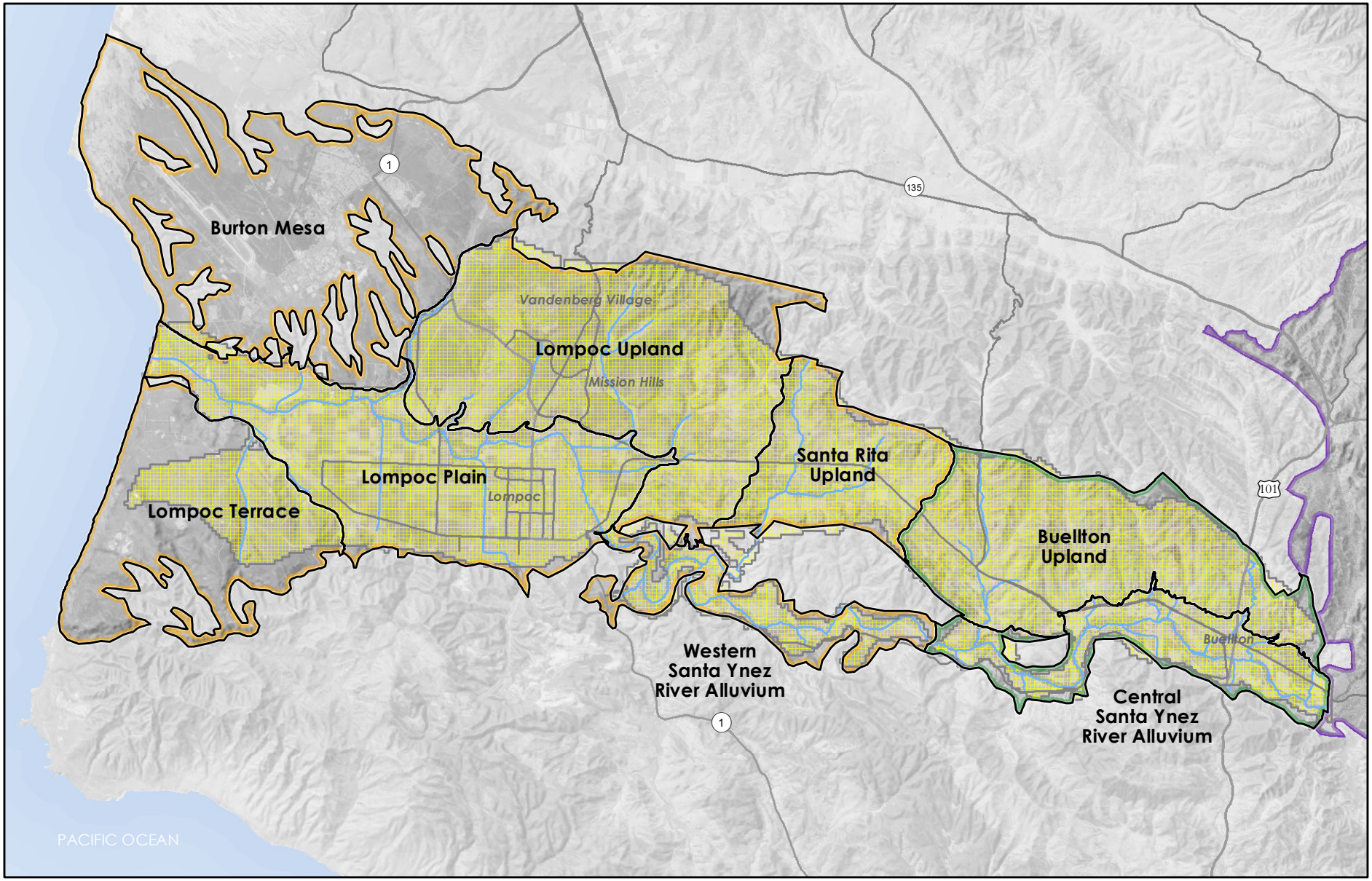
0 2 4 Miles

N

FIGURE 1

Document Path: J:\jn2710\SYR_Model_Documentation_Report_Subareas.mxd



STETSON ENGINEERS INC.

Model Cell
Subarea Boundary
Model Boundary
Western Management Area
Central Management Area
Eastern Management Area

7 SUBAREAS WITHIN MODEL DOMAIN
WMA/CMA Model

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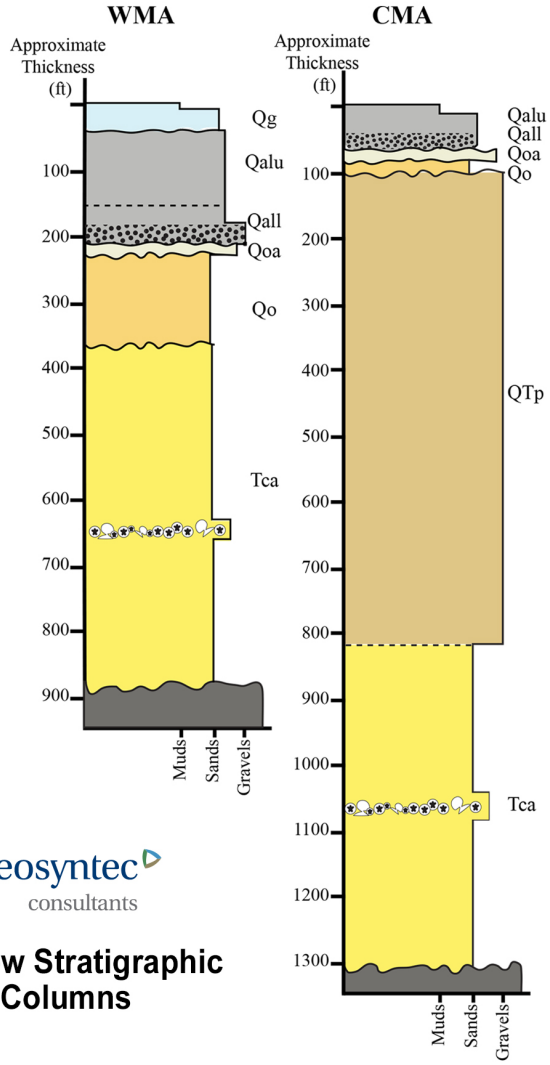
0 2 4 Miles

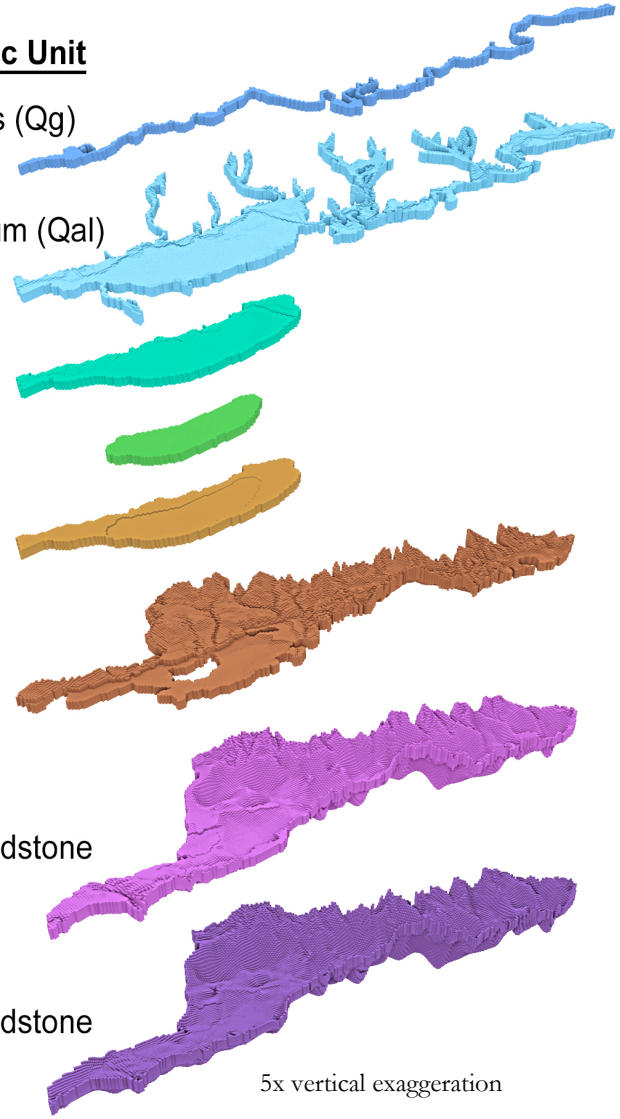
N

FIGURE 2



Geosyntec consultants

Shallow Stratigraphic Columns



STETSON ENGINEERS INC.

MODEL STRUCTURE AND GEOLOGIC LAYERING
WMA/CMA MODEL

FIGURE 3

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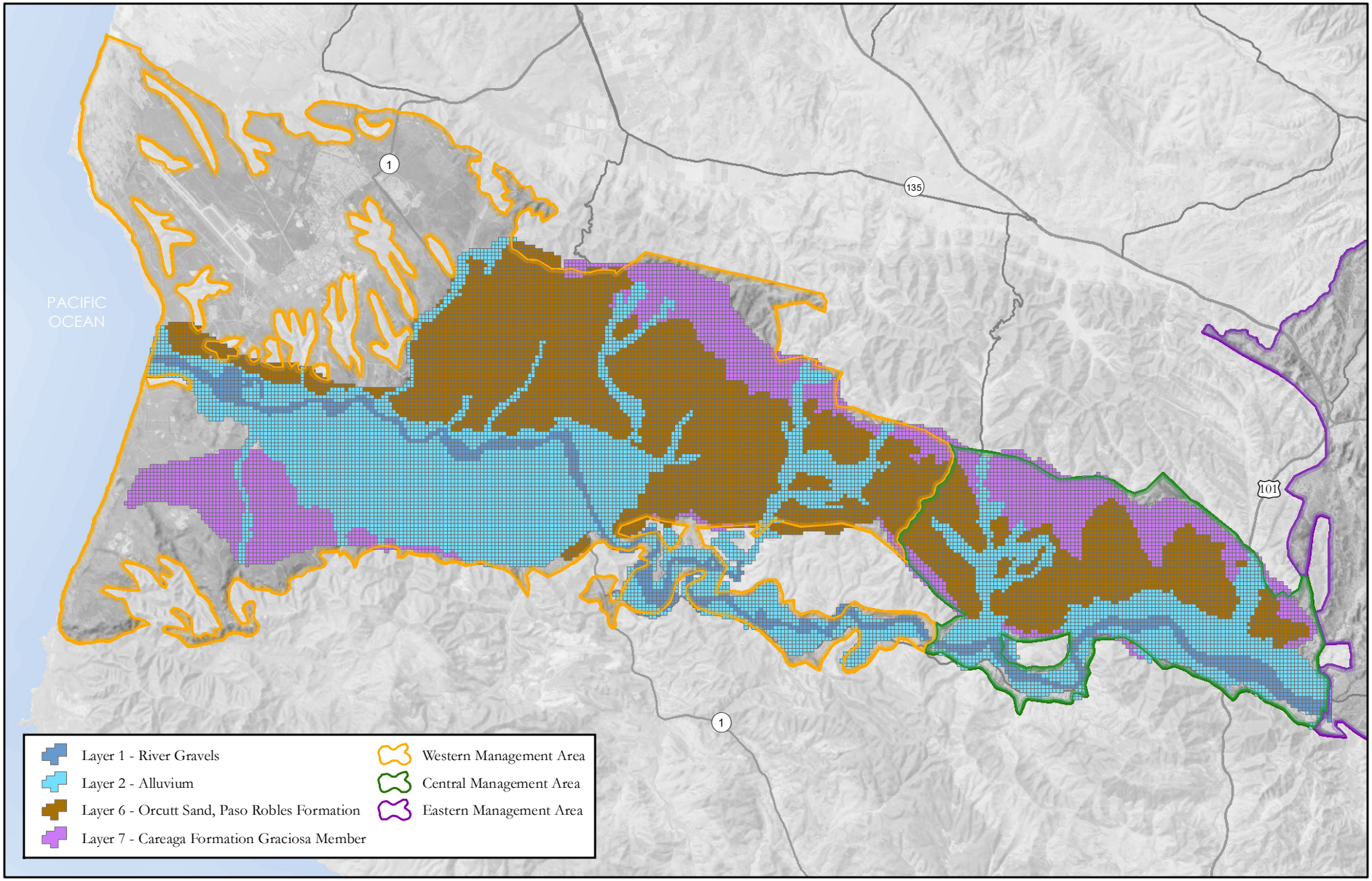

STETSON ENGINEERS INC.

UNSTRUCTURED GRID SHOWING MODEL LAYERS EXPOSED AT LAND SURFACE WMA/CMA MODEL

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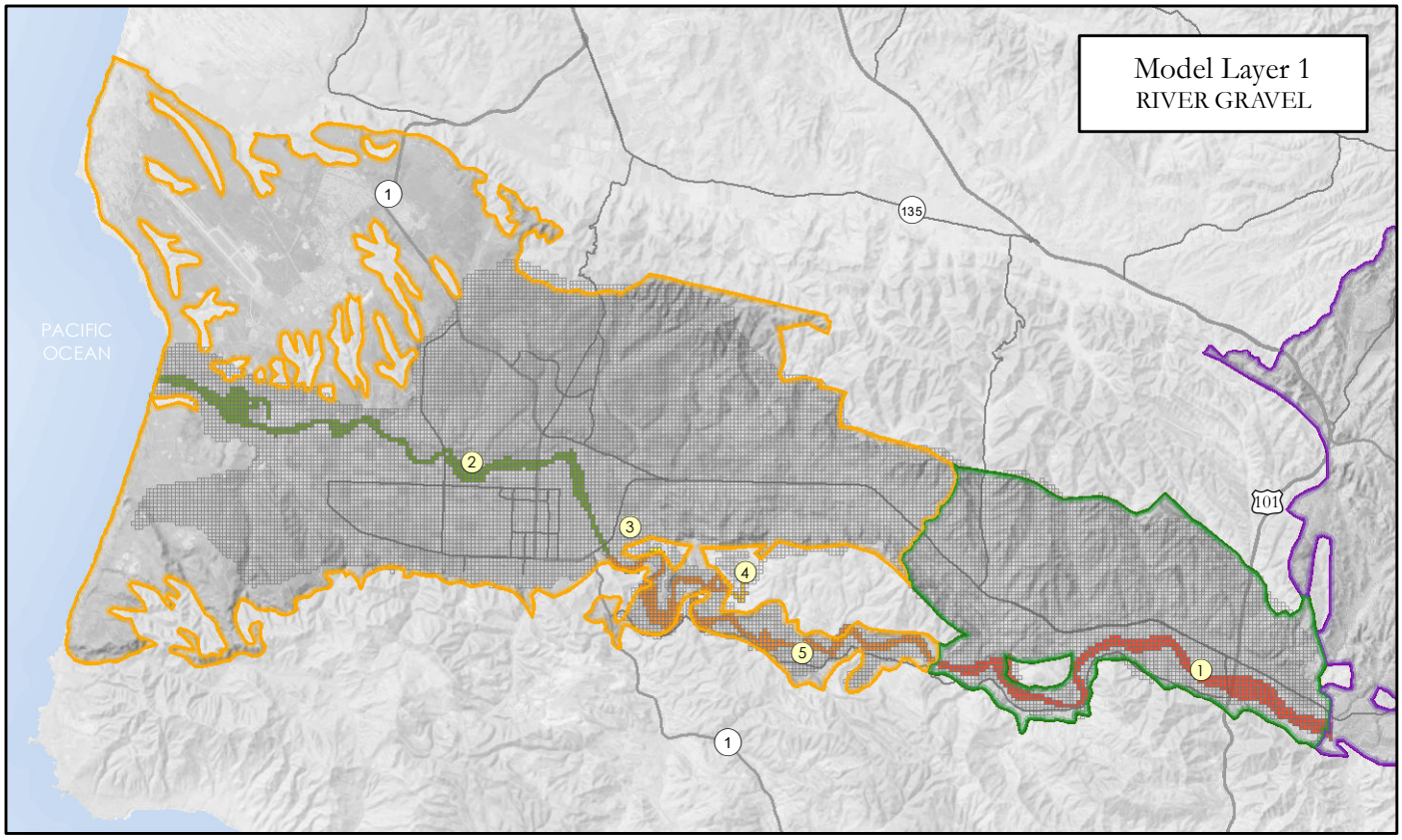
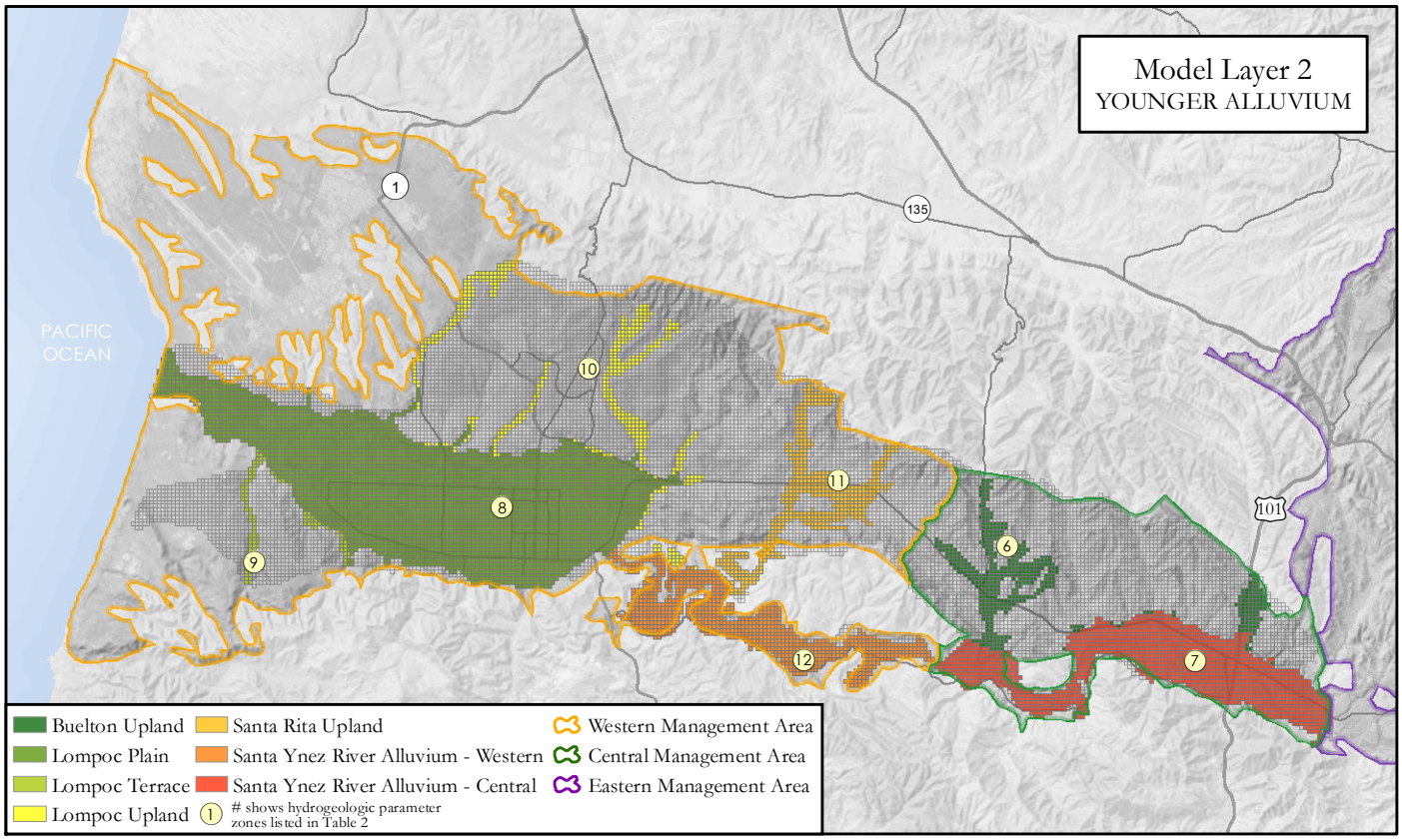
0 2 4 Miles

N

FIGURE 4





STETSON ENGINEERS INC.

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MODEL LAYERS 1 AND 2
HYDROGEOLOGIC PARAMETER ZONES AND SUBAREAS

N

0 2 4 Miles

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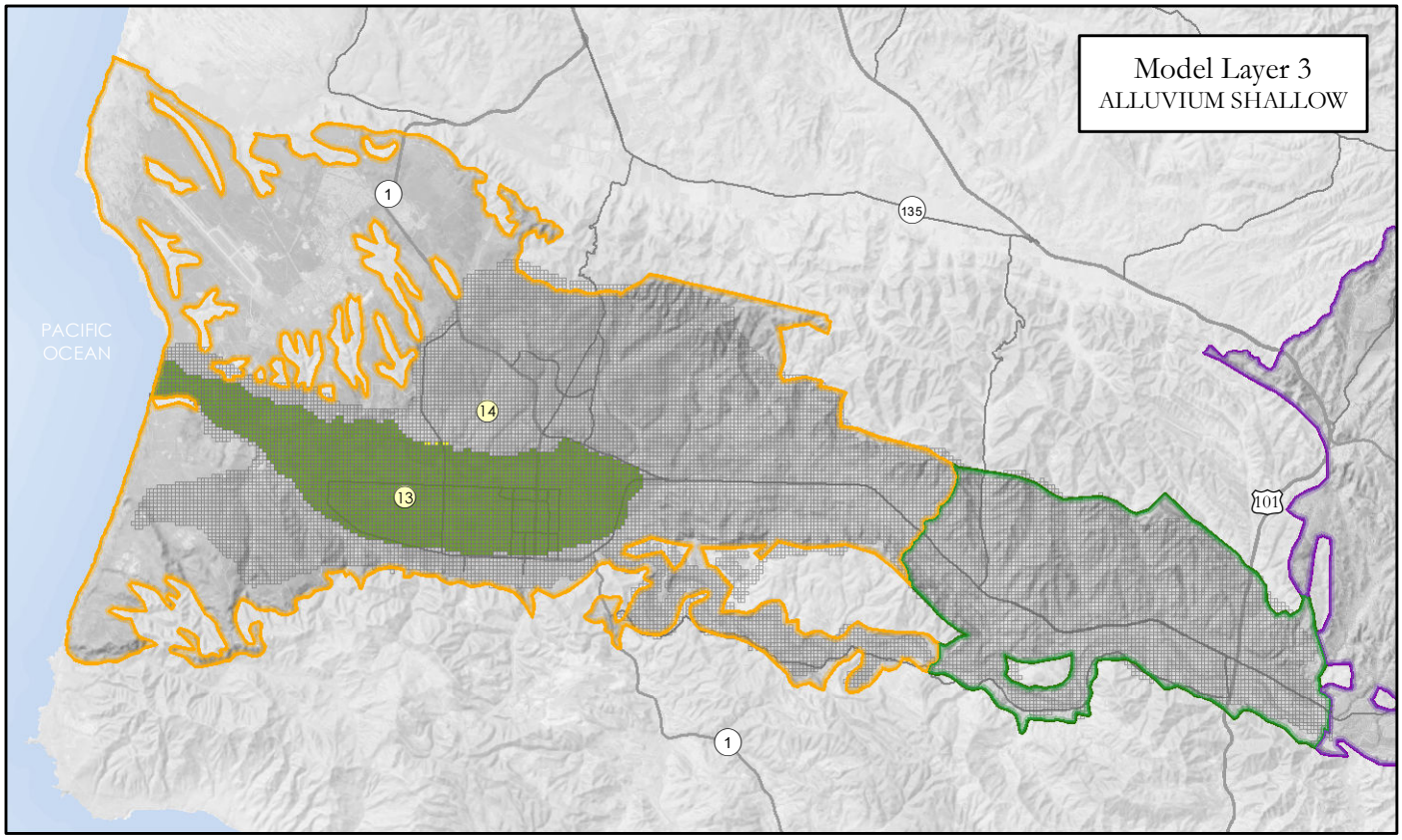

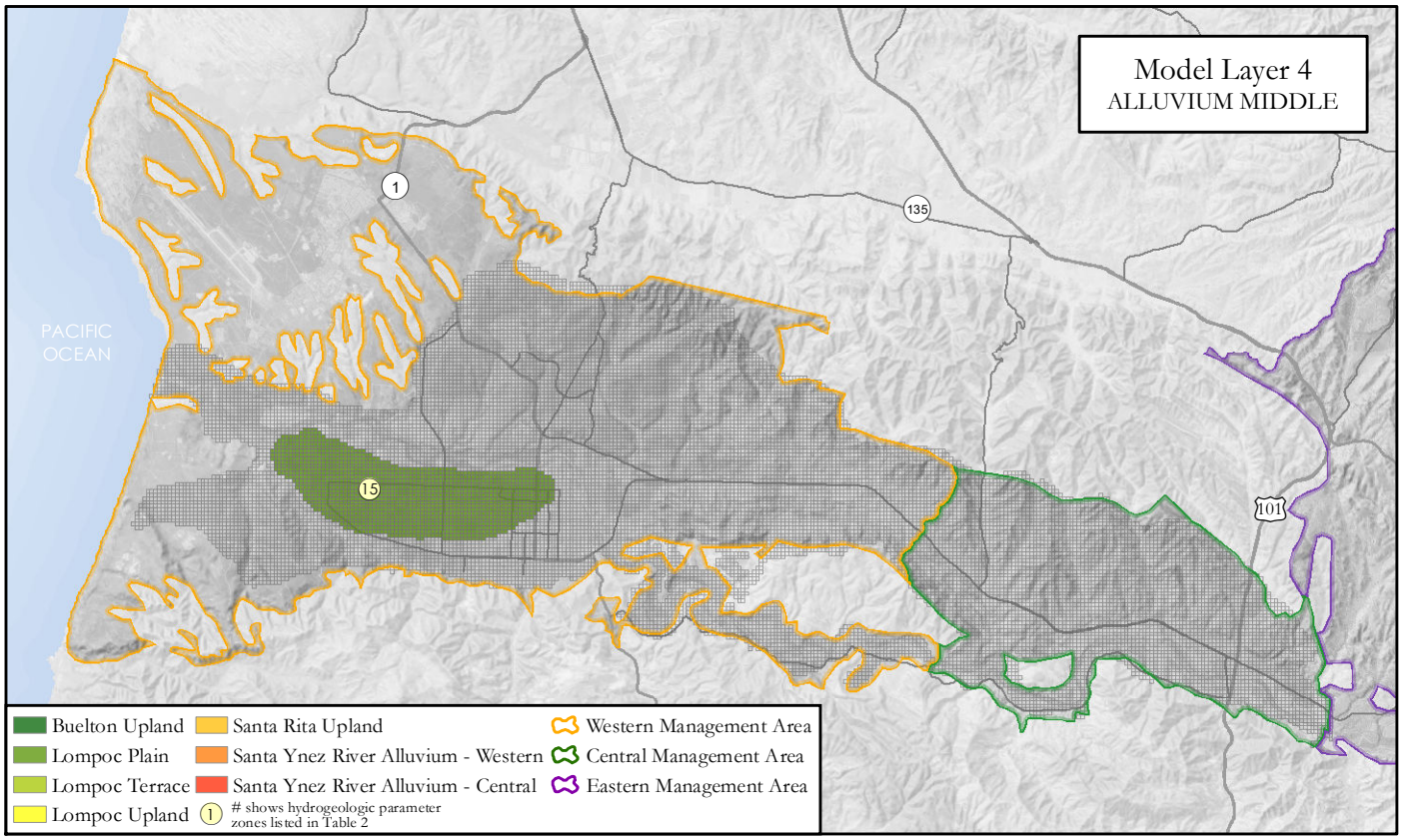

STETSON ENGINEERS INC.

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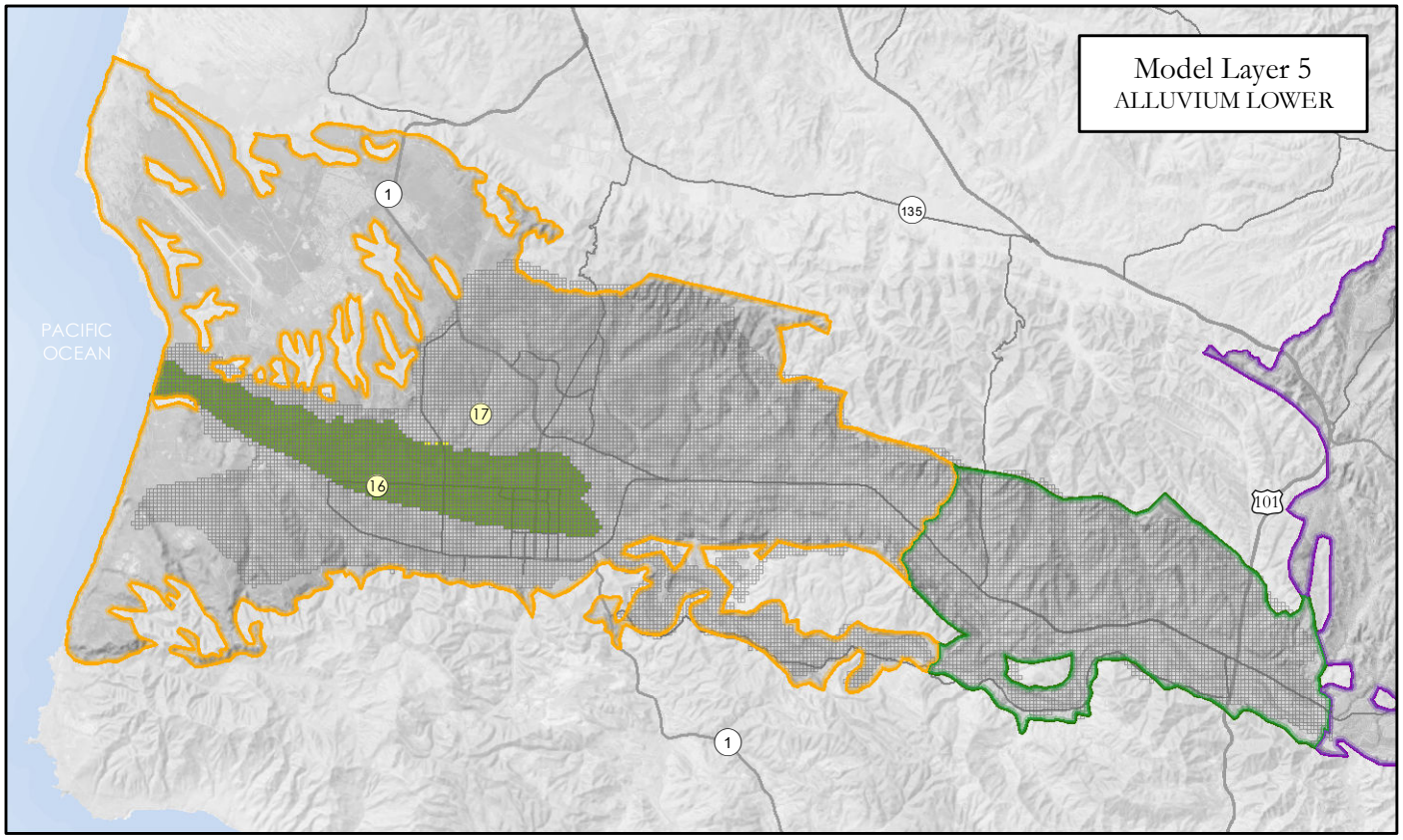
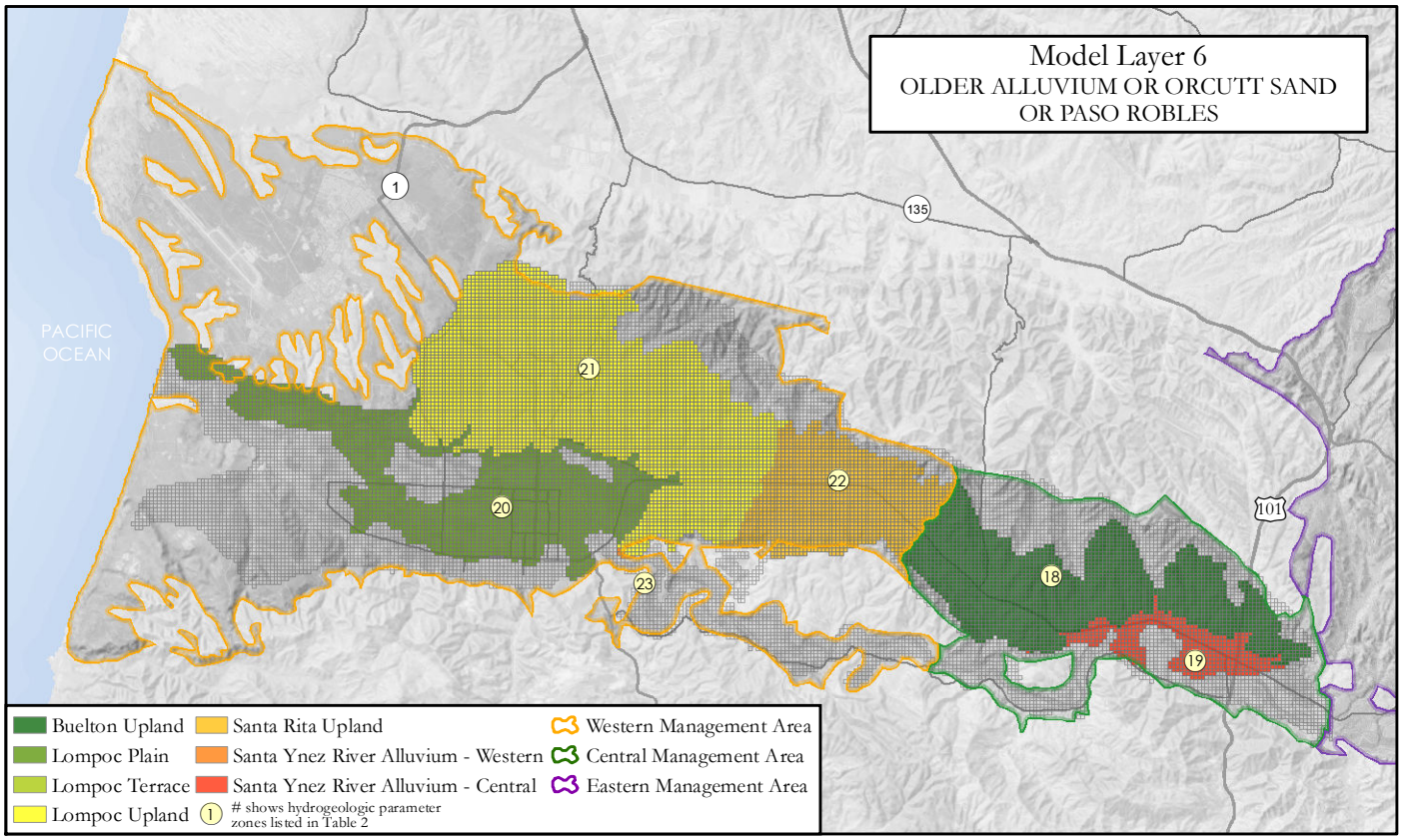
MODEL LAYERS 3 AND 4
HYDROGEOLOGIC PARAMETER ZONES AND SUBAREAS

N

0 2 4 Miles

Document Path: J:\jn2710\SYR_Model_Documentation_Report_13L4.mxd





STETSON ENGINEERS INC.

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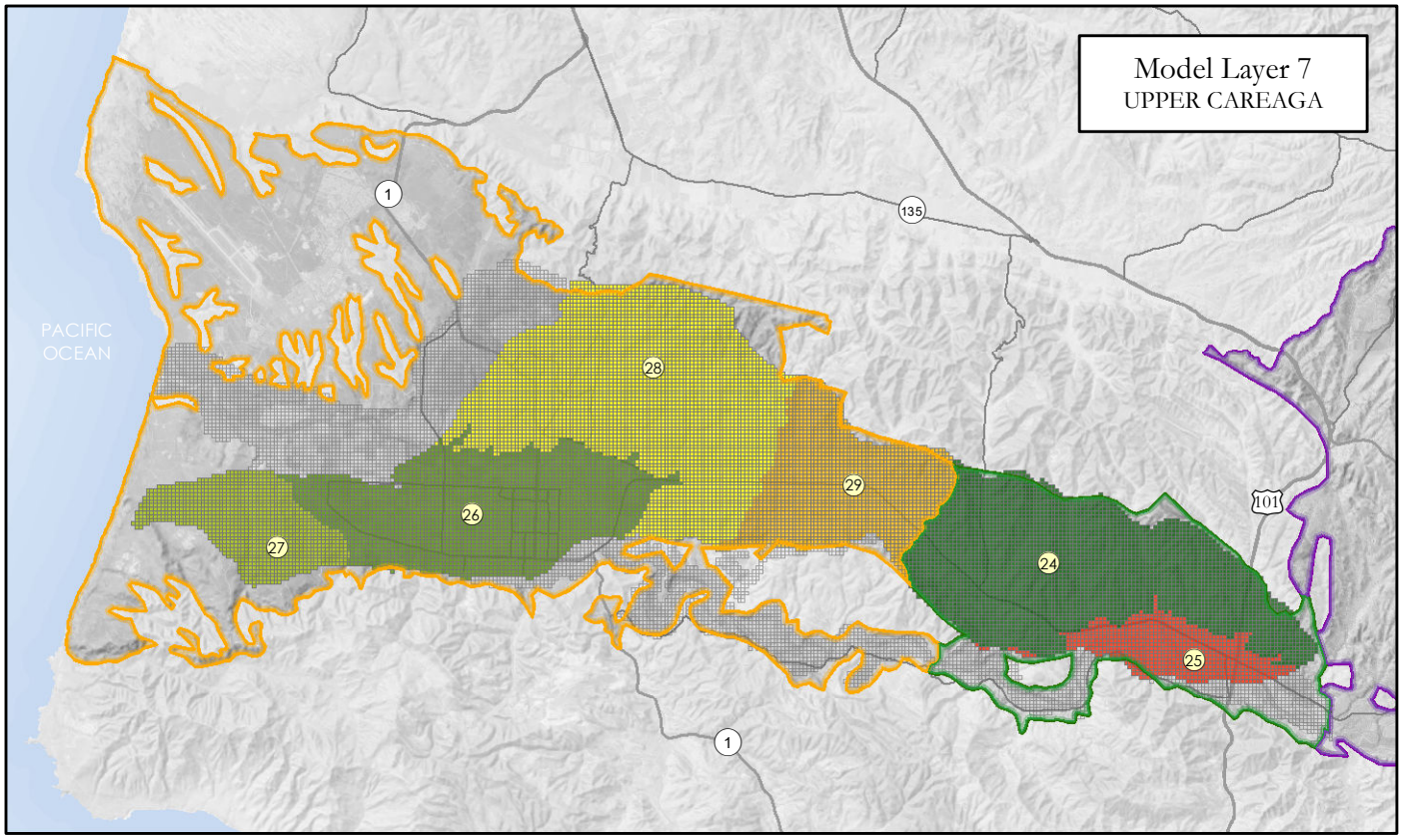
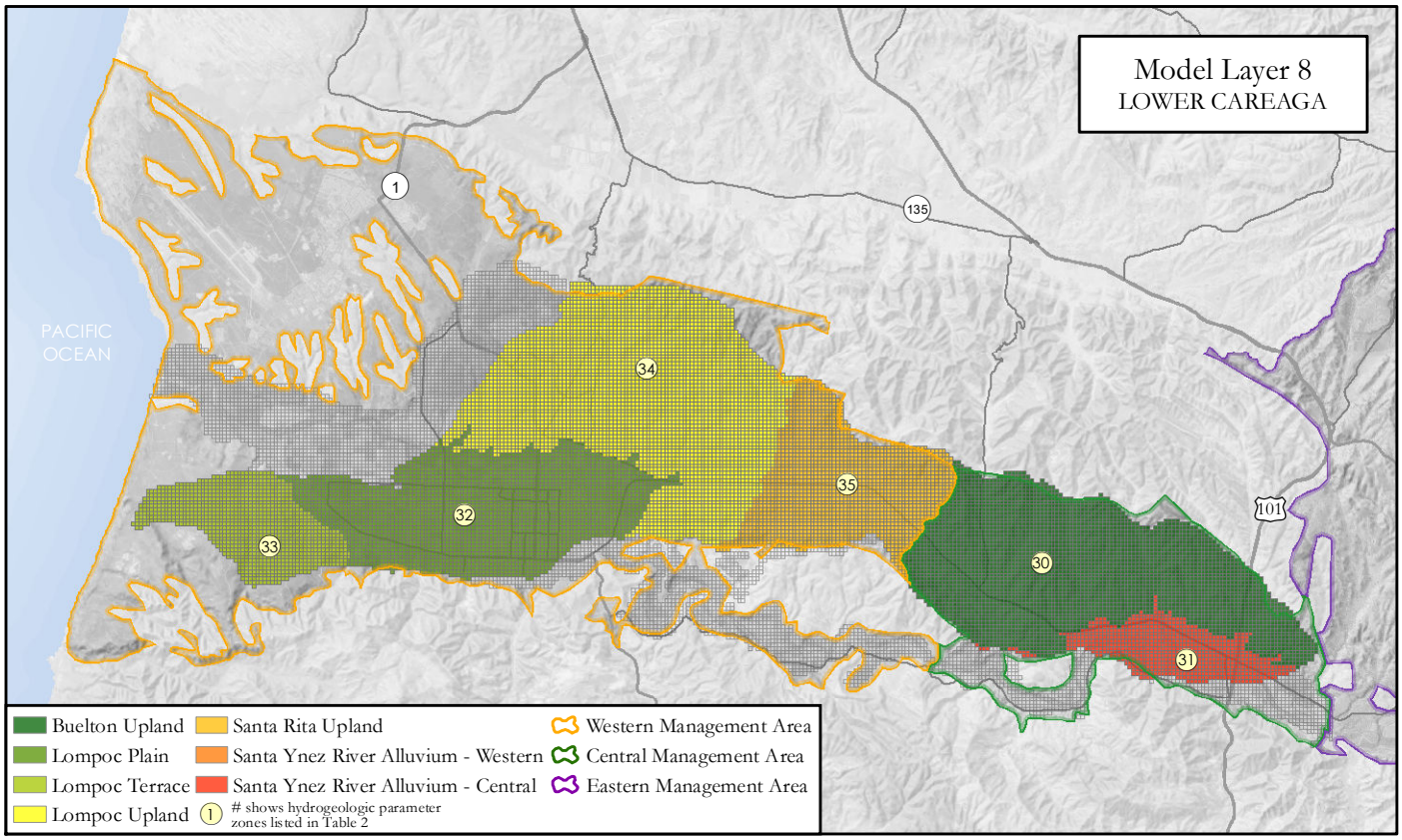
MODEL LAYERS 5 AND 6
HYDROGEOLOGIC PARAMETER ZONES AND SUBAREAS

N

0 2 4 Miles

Document Path: J:\jn2710\SYR_Model_Documentation_Report_15L6.mxd





STETSON ENGINEERS INC.

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MODEL LAYERS 7 AND 8
HYDROGEOLOGIC PARAMETER ZONES AND SUBAREAS

N

0 2 4 Miles

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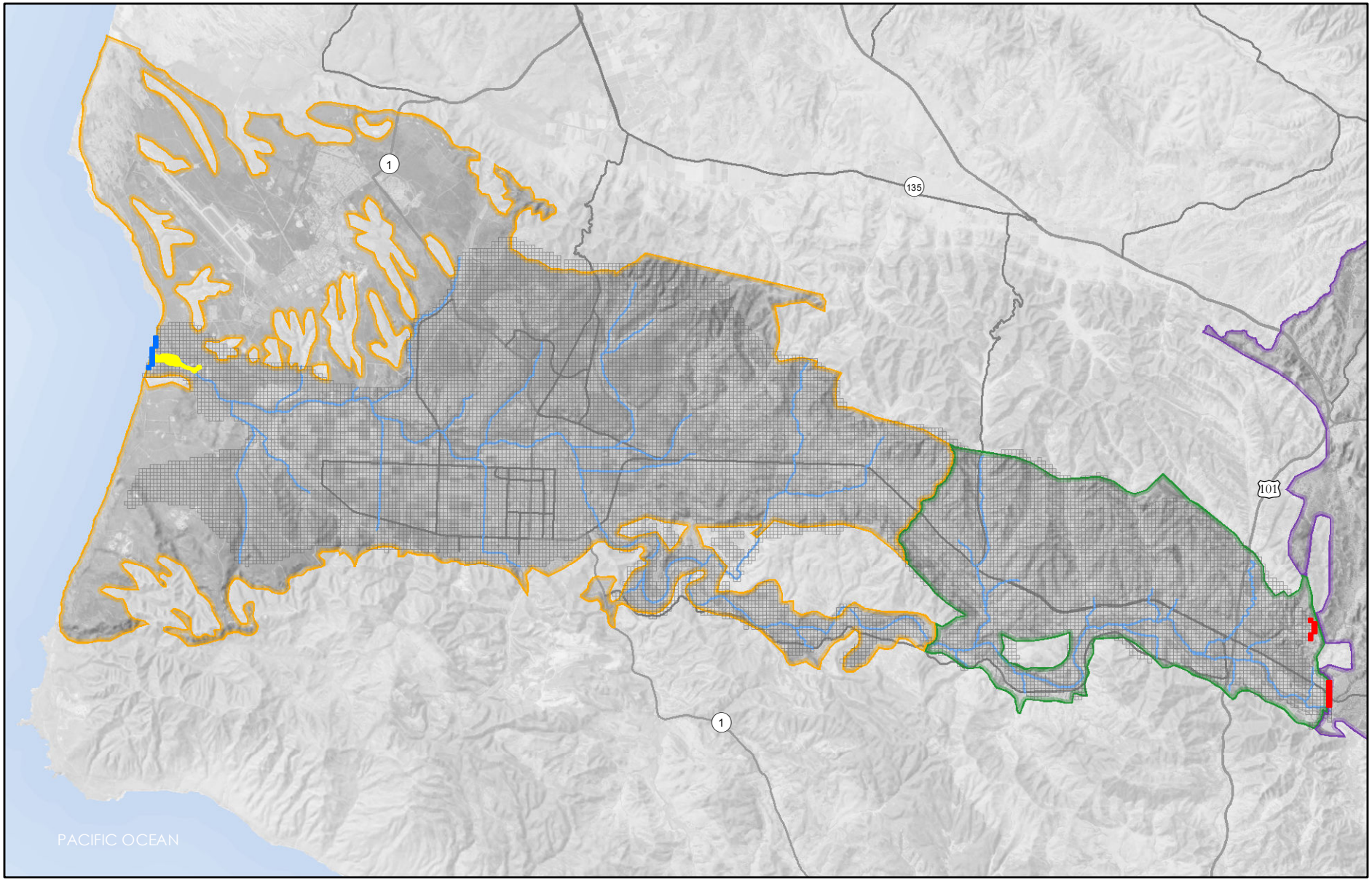

STETSON ENGINEERS INC.

Coast Constant Head

Lagoon Constant Head

Eastern Constant Head

CONSTANT HEAD BOUNDARY
WMA/CMA MODEL

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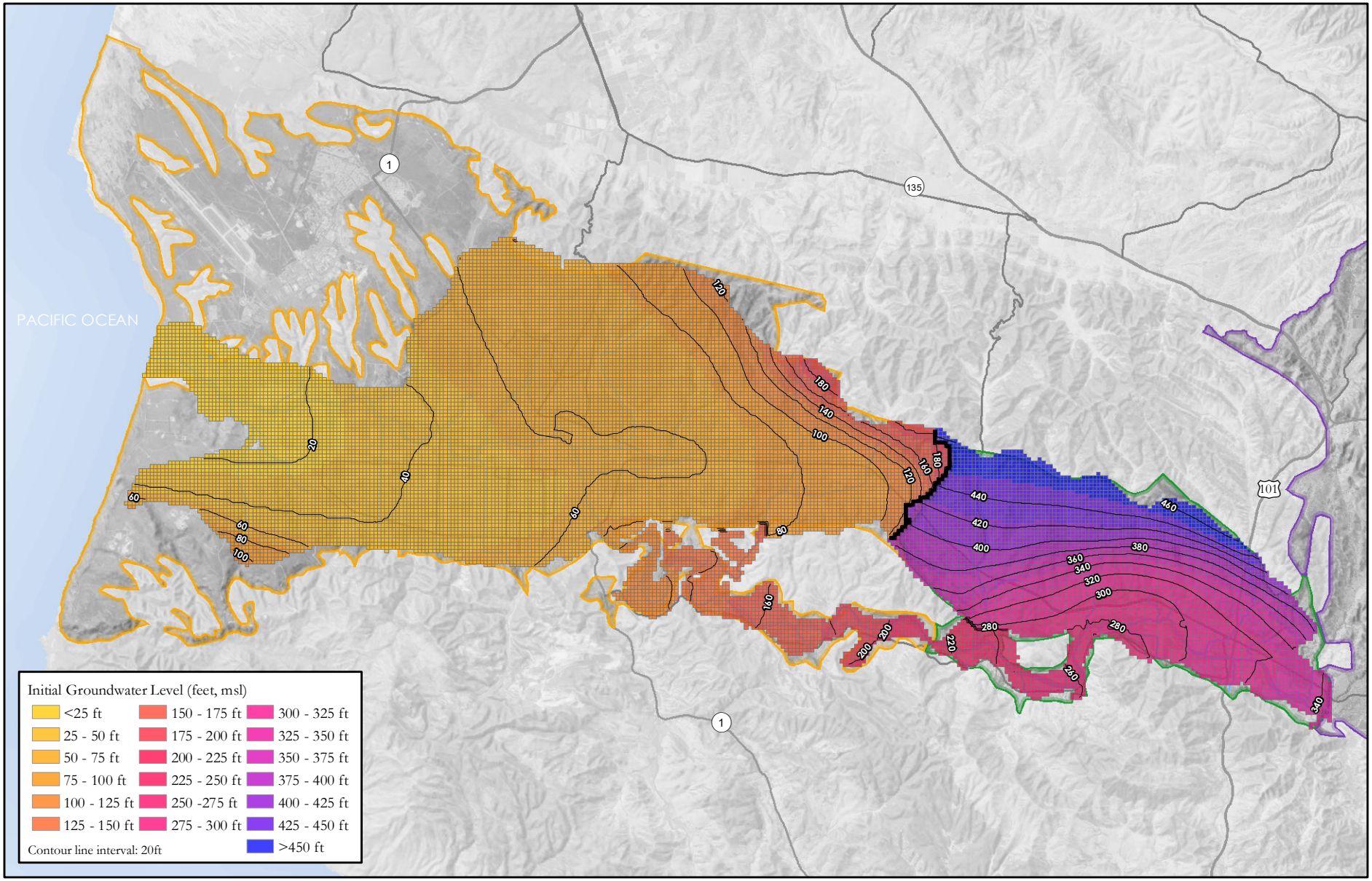
0 2 4 Miles

N

FIGURE 9

Document Path: J:\jn2710\SYR_Model_Documentation_Report_ConstantHead2.mxd



STETSON ENGINEERS INC.

INITIAL GROUNDWATER LEVELS
REPRESENTING OCTOBER 1981 CONDITIONS
WMA/CMA MODEL

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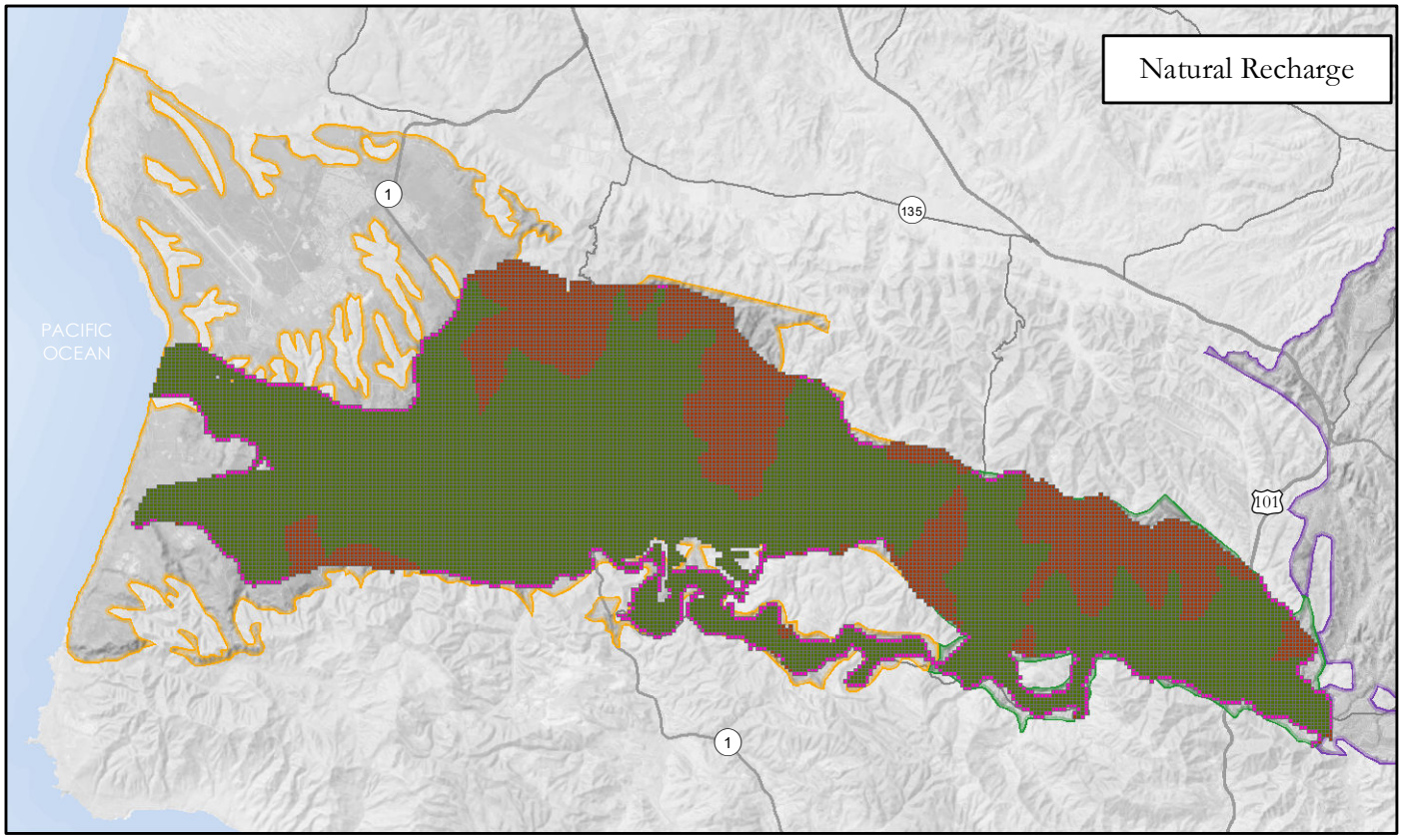
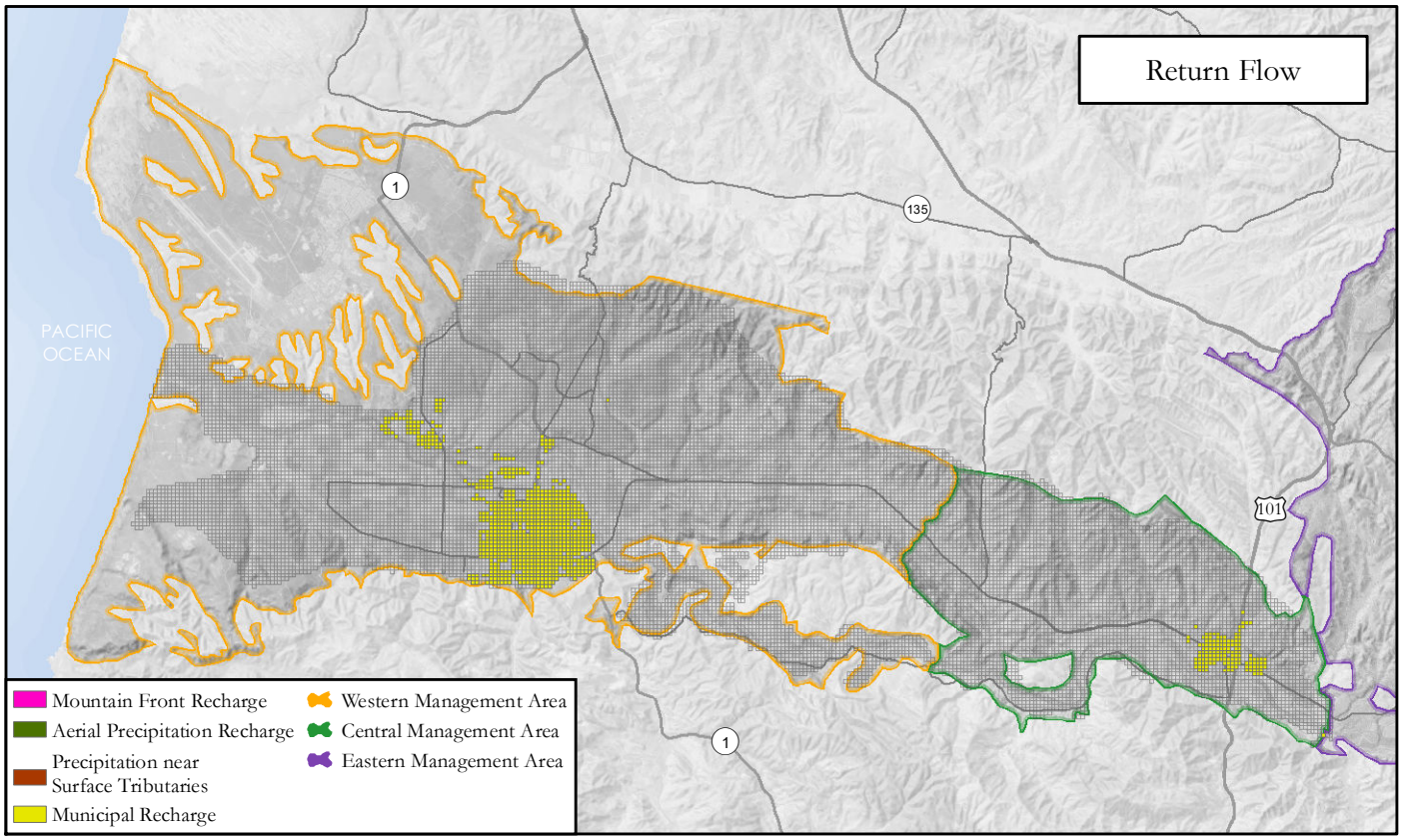
0 2 4 Miles

N

FIGURE 10





STETSON ENGINEERS INC.

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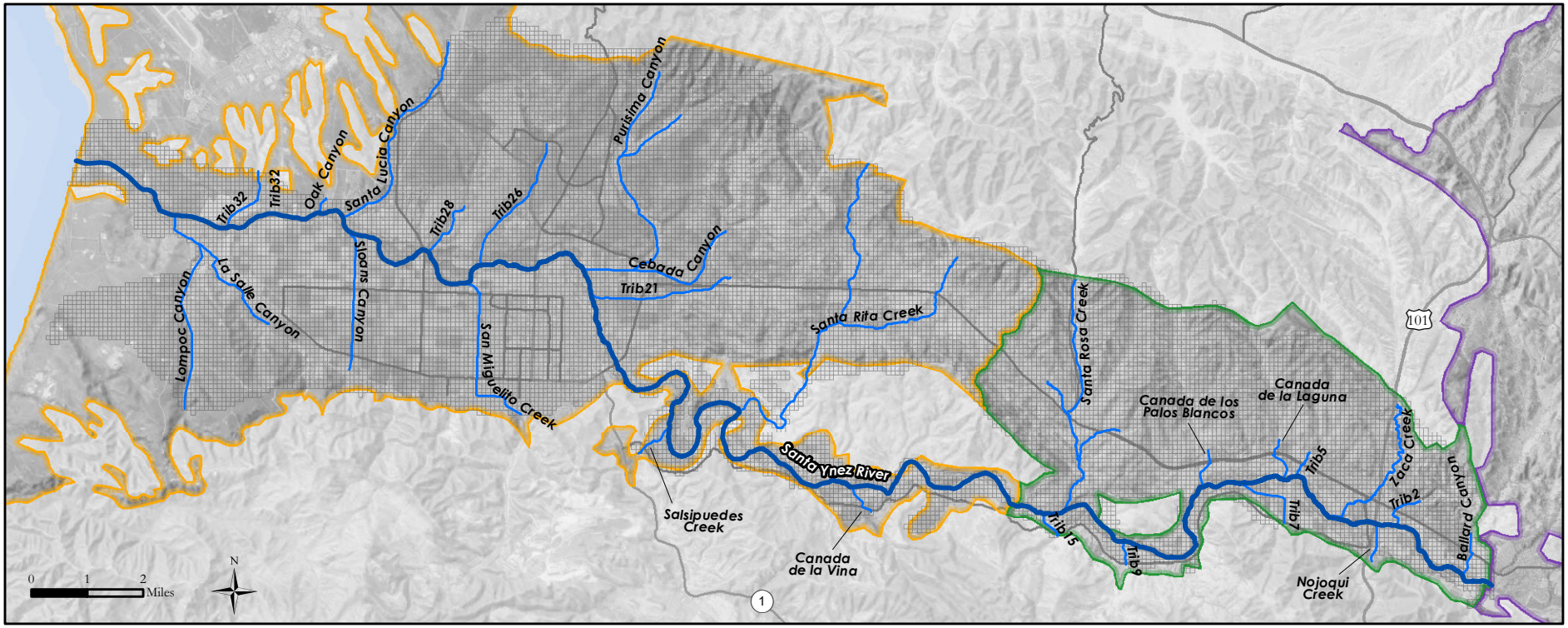
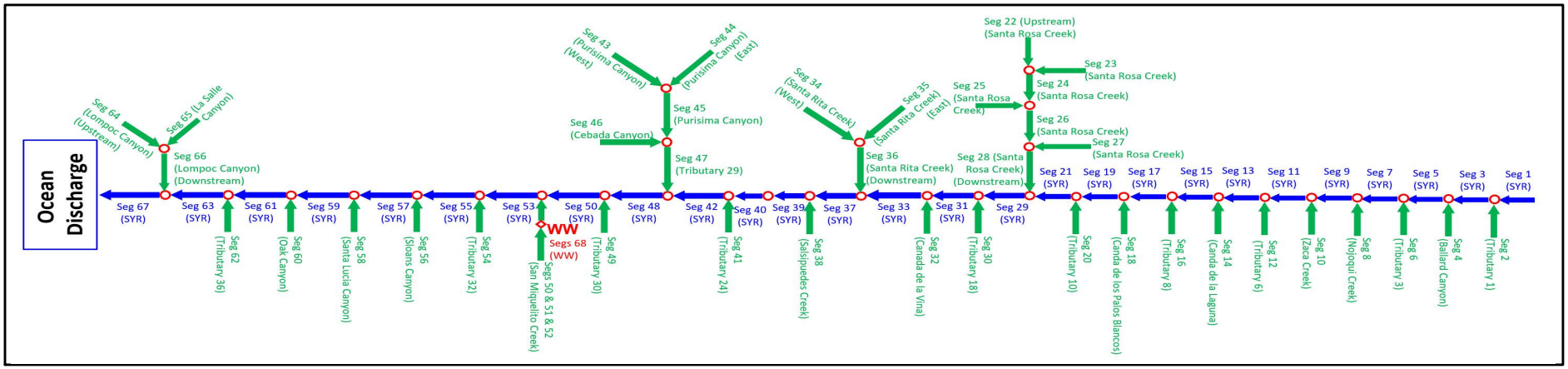
NATURAL RECHARGE AND RETURN FLOW ASSIGNED TO UPPERMOST LAYER WMA/CMA MODEL

N

0 2 4 Miles

Document Path: J:\jn2710\SYR_Model_Documentation_Report_Rechargemxd





STETSON ENGINEERS INC.

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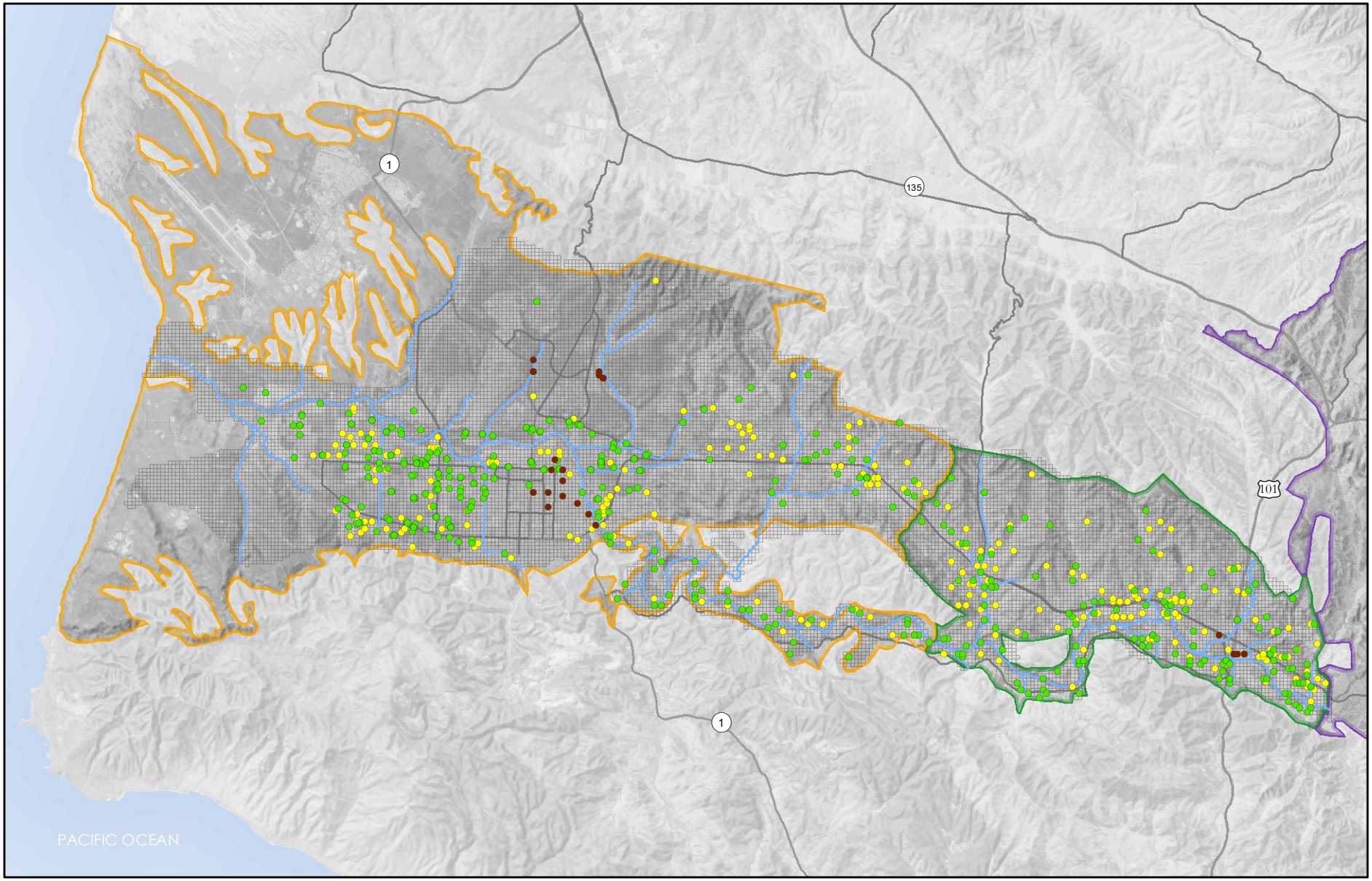
SANTA YNEZ RIVER AND TRIBUTARY SYSTEM SIMULATED IN THE WMA/CMA MODEL

FIGURE 12

Document Path: J:\jn2710\SYR_Model_Documentation_Report_wells.mxd



STETSON ENGINEERS INC.

- Municipal Well
- Agriculture Well
- Domestic Well

AGRICULTURAL, MUNICIPAL, AND DOMESTIC WELLS SIMULATED IN THE WMA/CMA MODEL

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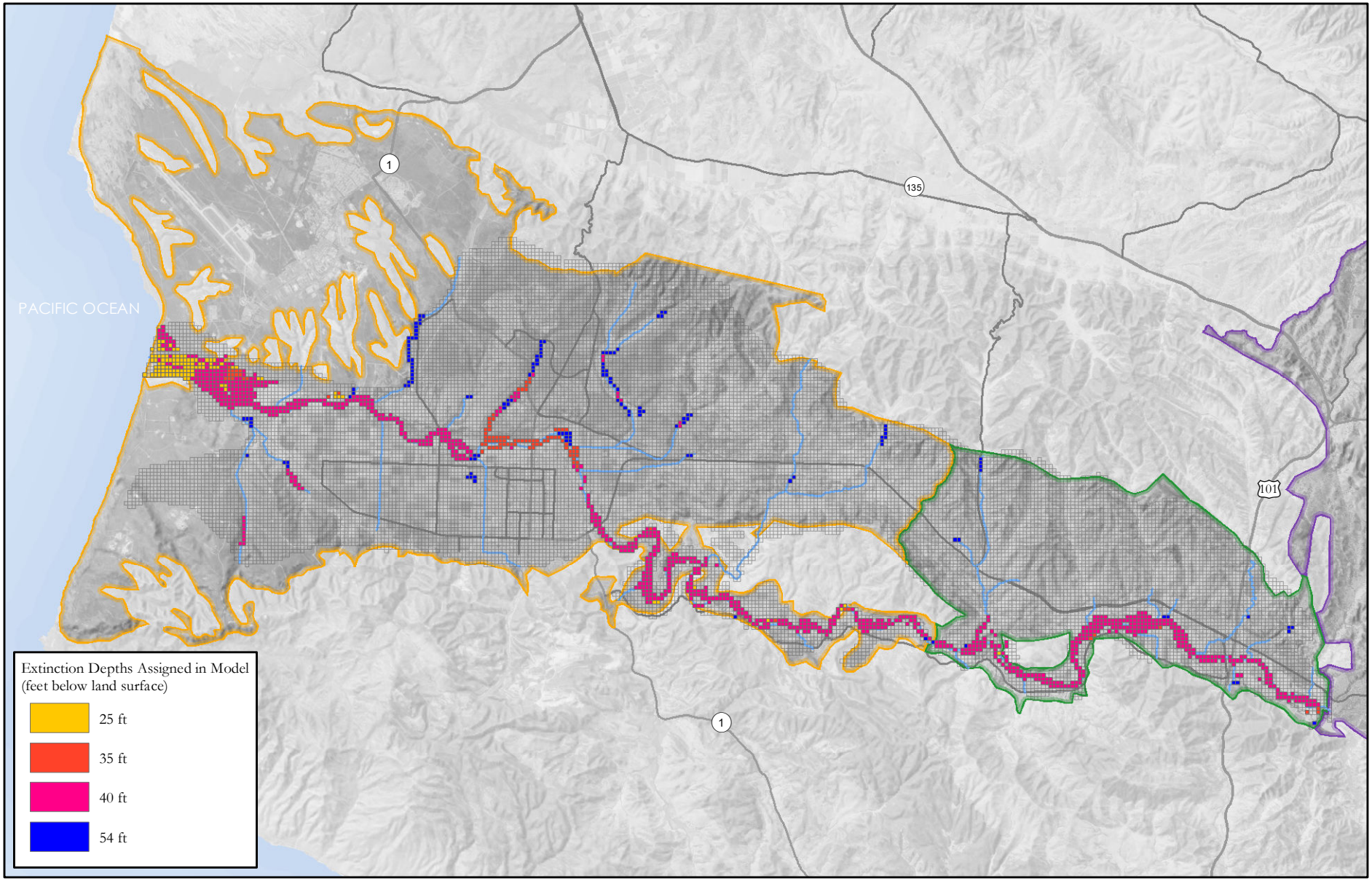
0 2 4 Miles

N

FIGURE 13

Document Path: J:\jn2710\SYR_Model_Documentation_Report_ET.mxd



STETSON ENGINEERS INC.

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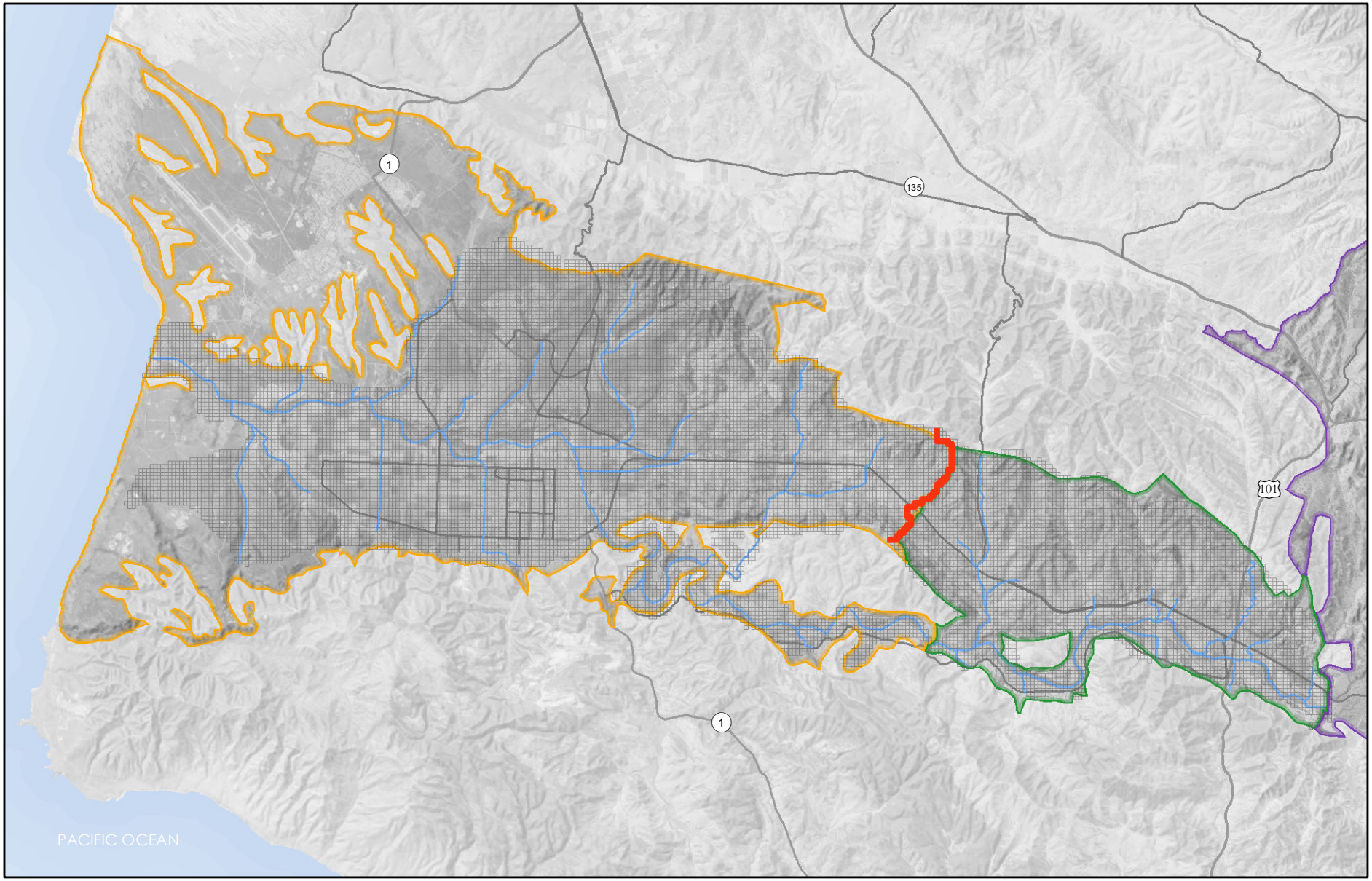
EVAPOTRANSPIRATION
ASSIGNED TO UPPERMOST LAYER IN WMA/CMA MODEL

0 2 4 Miles

N

FIGURE 14

Document Path: J:\jn2710\SYR_Model_Documentation_Report_FlowBar.mxd



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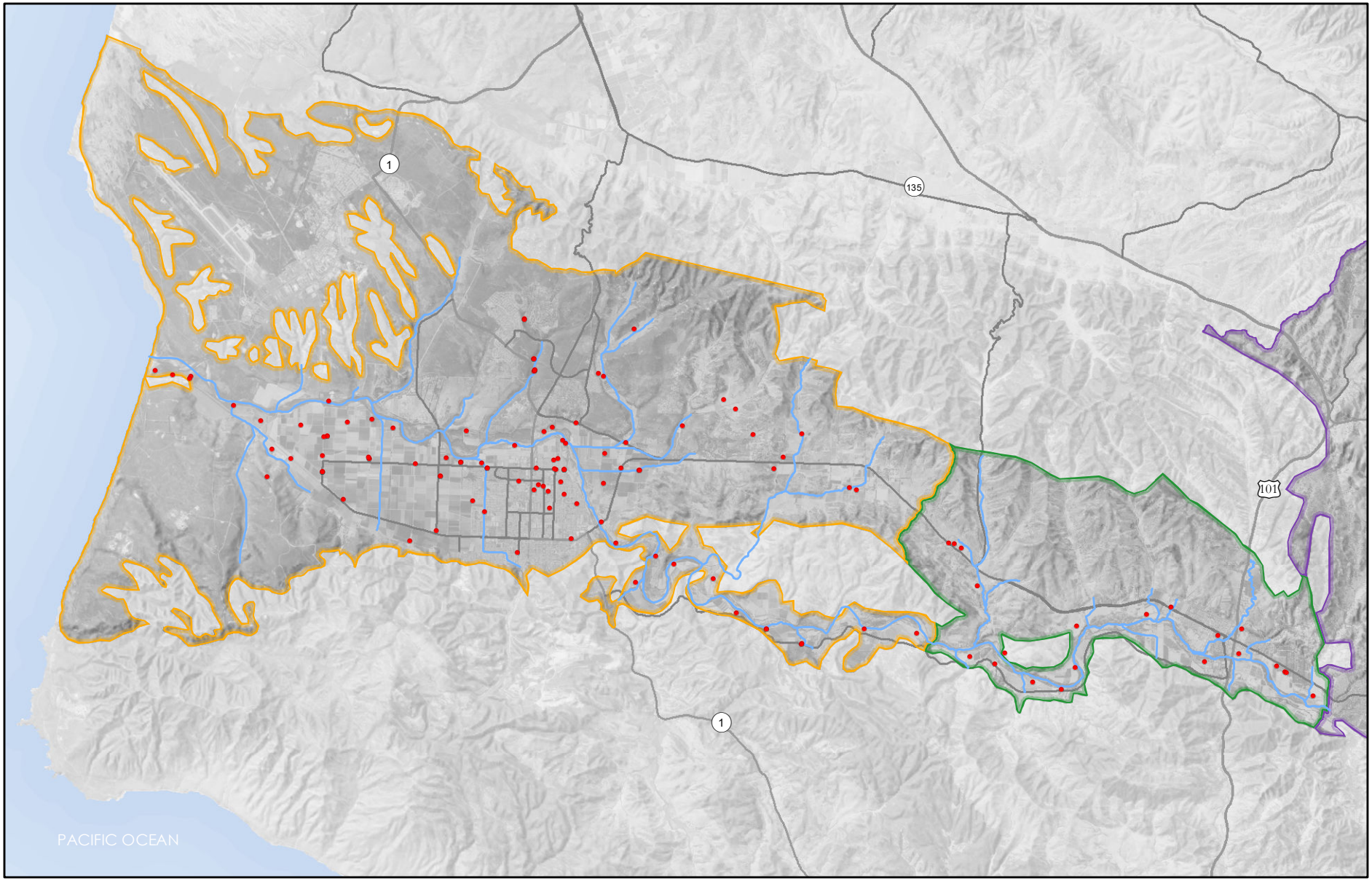
GROUNDWATER FLOW BARRIER
BETWEEN BUELTON AND SANTA RITA UPLAND
WMA/CMA MODEL

0 2 4 Miles

N

FIGURE 15

Document Path: J:\jn2710\SYR_Model_Documentation_Report_CalWells.mxd



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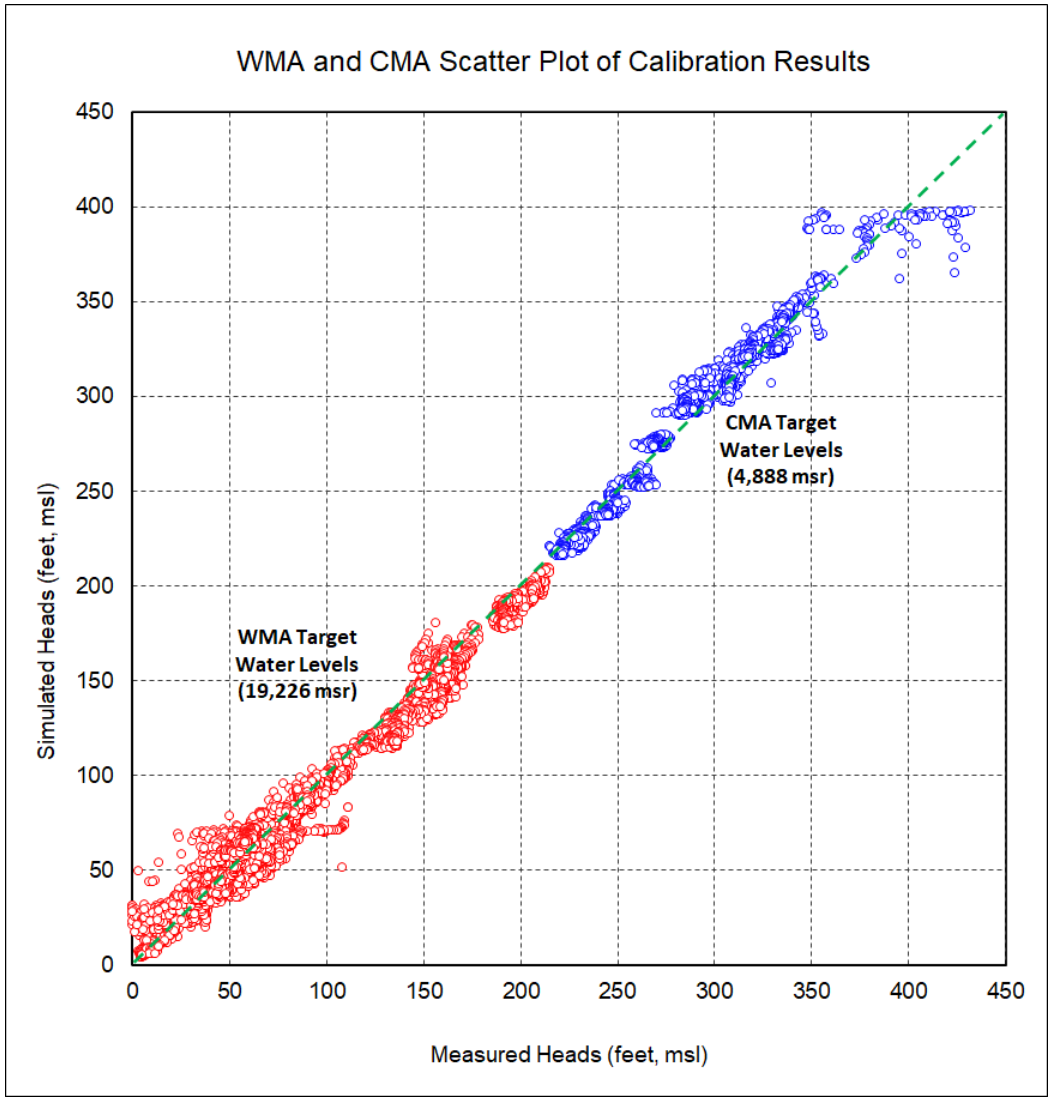
TARGET WELL LOCATION FOR MODEL CALIBRATION
WMA/CMA MODEL

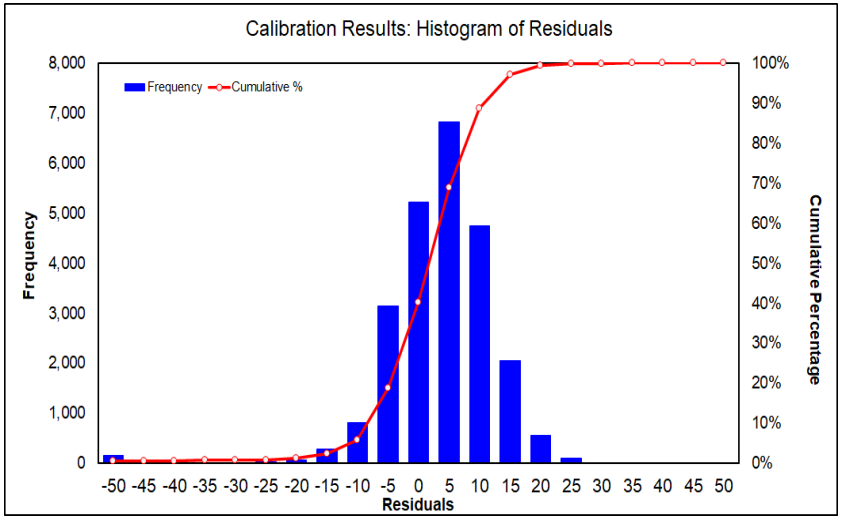
0 2 4 Miles

N

FIGURE 16



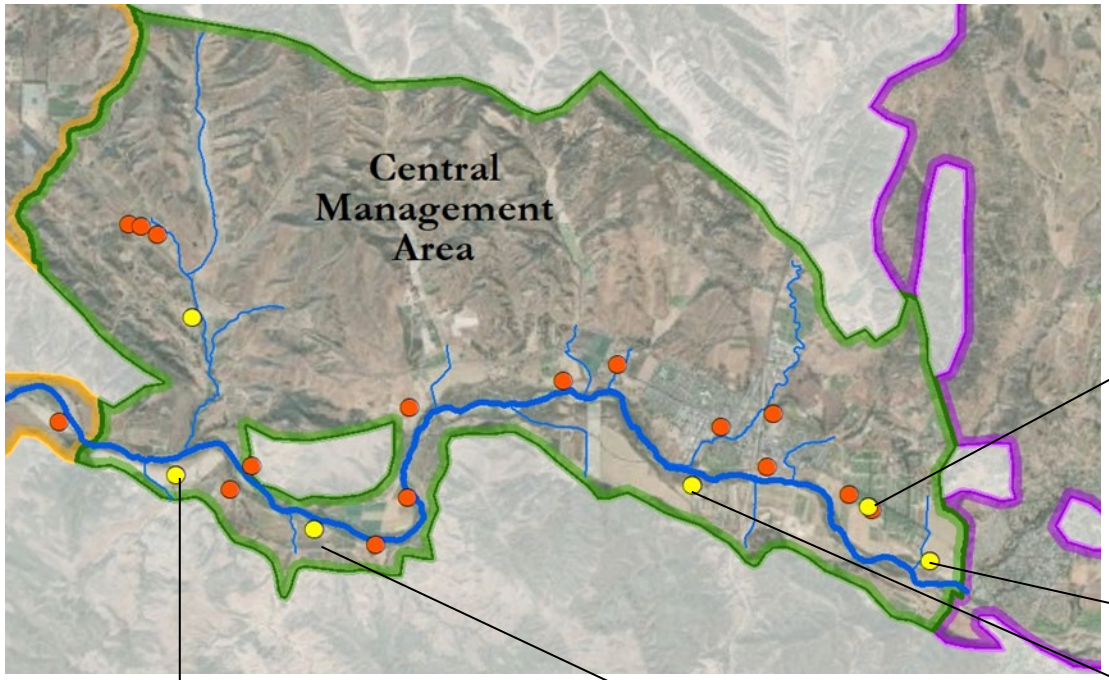
Residual (msr-sim) Statistics	ALL	WMA	CMA
Mean	0.99	1.40	-0.62
Standard Error	0.06	0.07	0.10
Median	1.70	2.09	-0.20
Mode	3.00	7.50	-6.50
Standard Deviation	9.63	10.13	7.10
Sample Variance	92.67	102.59	50.40
Kurtosis	22.30	22.92	4.96
Skewness	-3.05	-3.36	0.14
Range	138.26	135.92	102.00
Minimum	-79.56	-79.56	-43.30
Maximum	58.70	56.36	58.70
Sum	23,795	26,827	-3,032
Count	24,114	19,226	4,888
Confidence Level (95.0%)	0.12	0.14	0.20

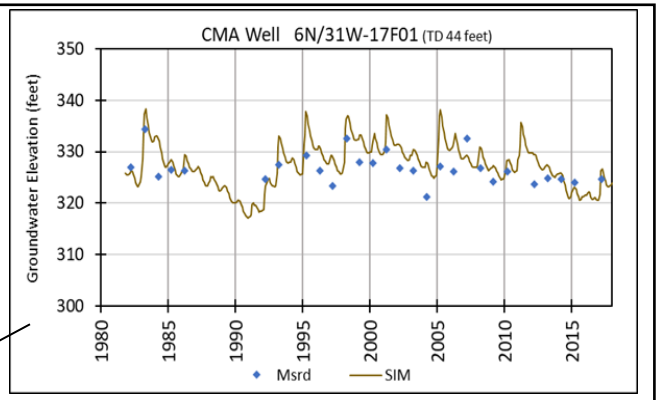


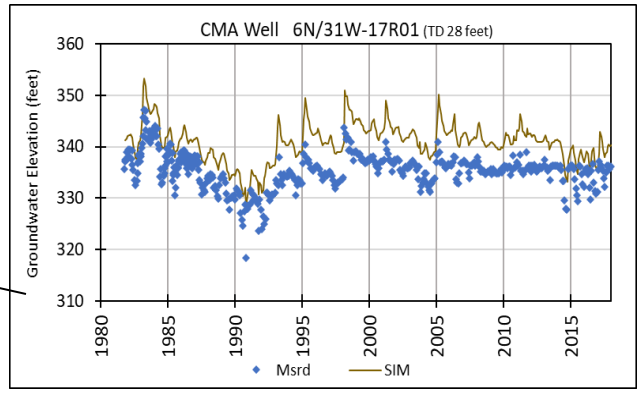
STETSON
ENGINEERS INC.

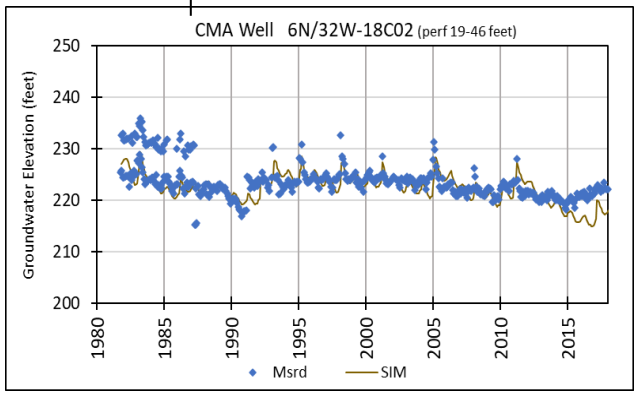
GROUNDWATER LEVEL CALIBRATION STATISTICS
WMA/CMA MODEL

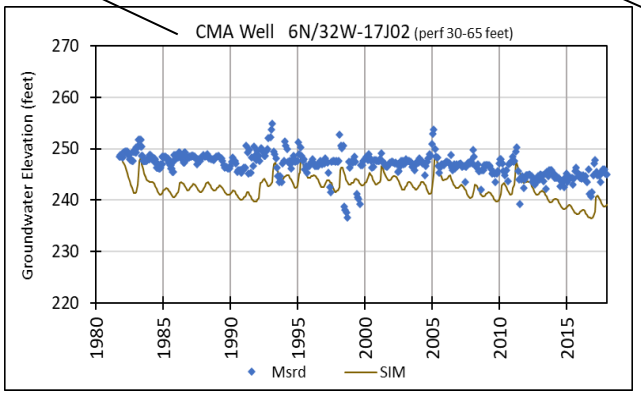
FIGURE 17

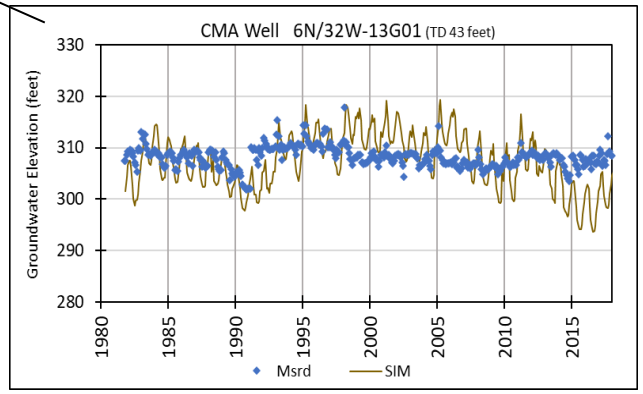








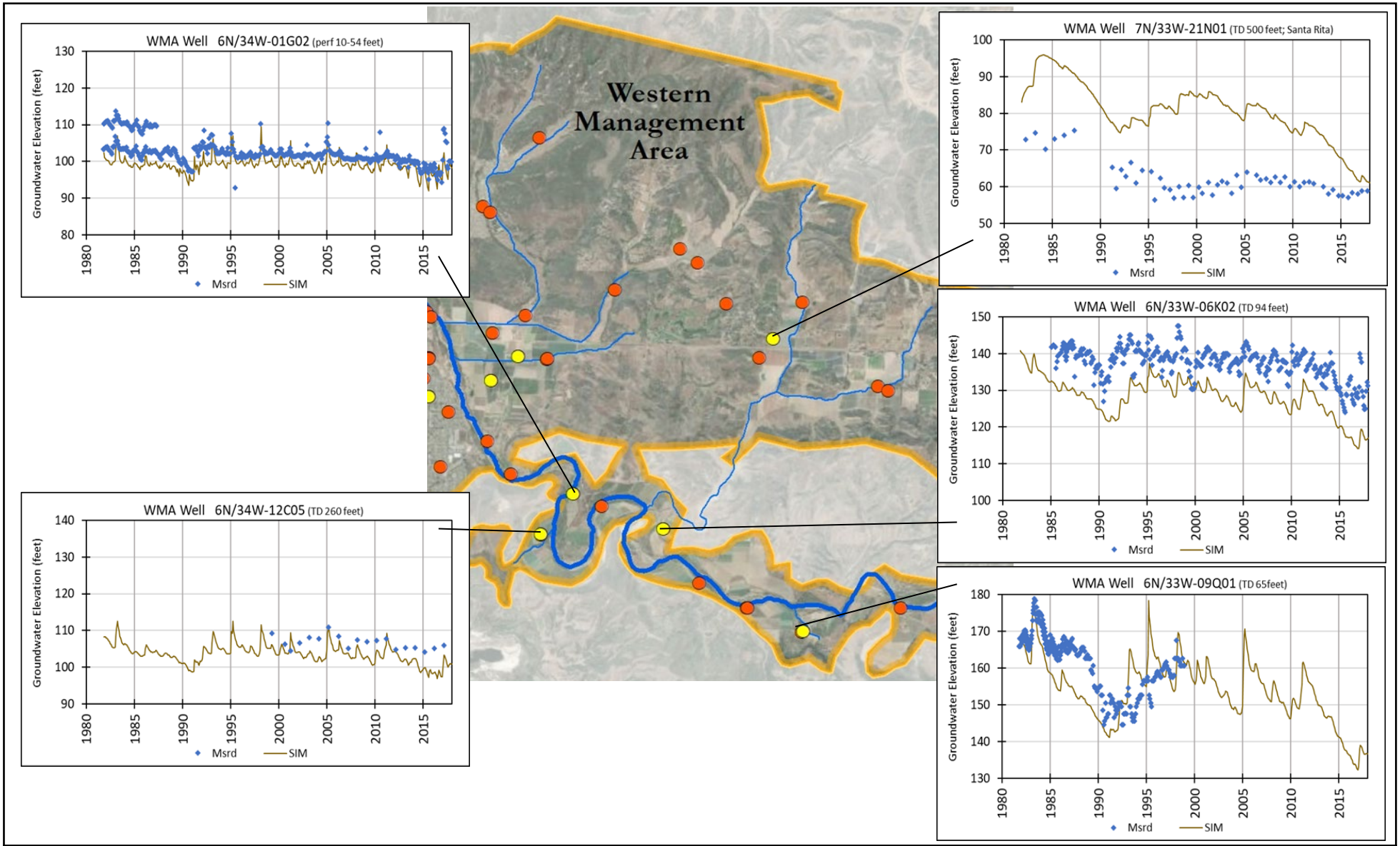




STETSON
ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (1 OF 6)
WMA/CMA MODEL

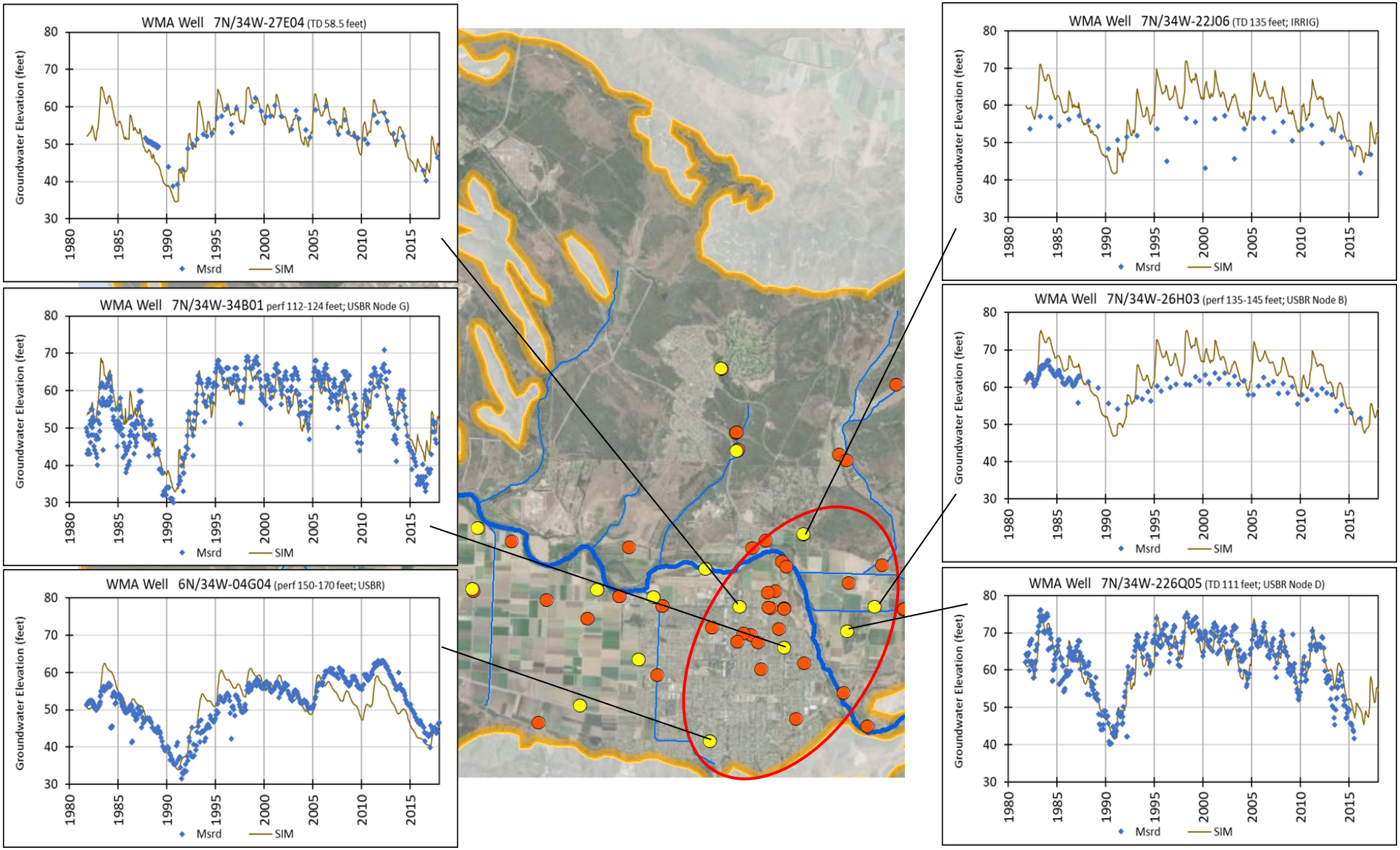
FIGURE 18



STETSON ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (2 OF 6)
WMA/CMA MODEL

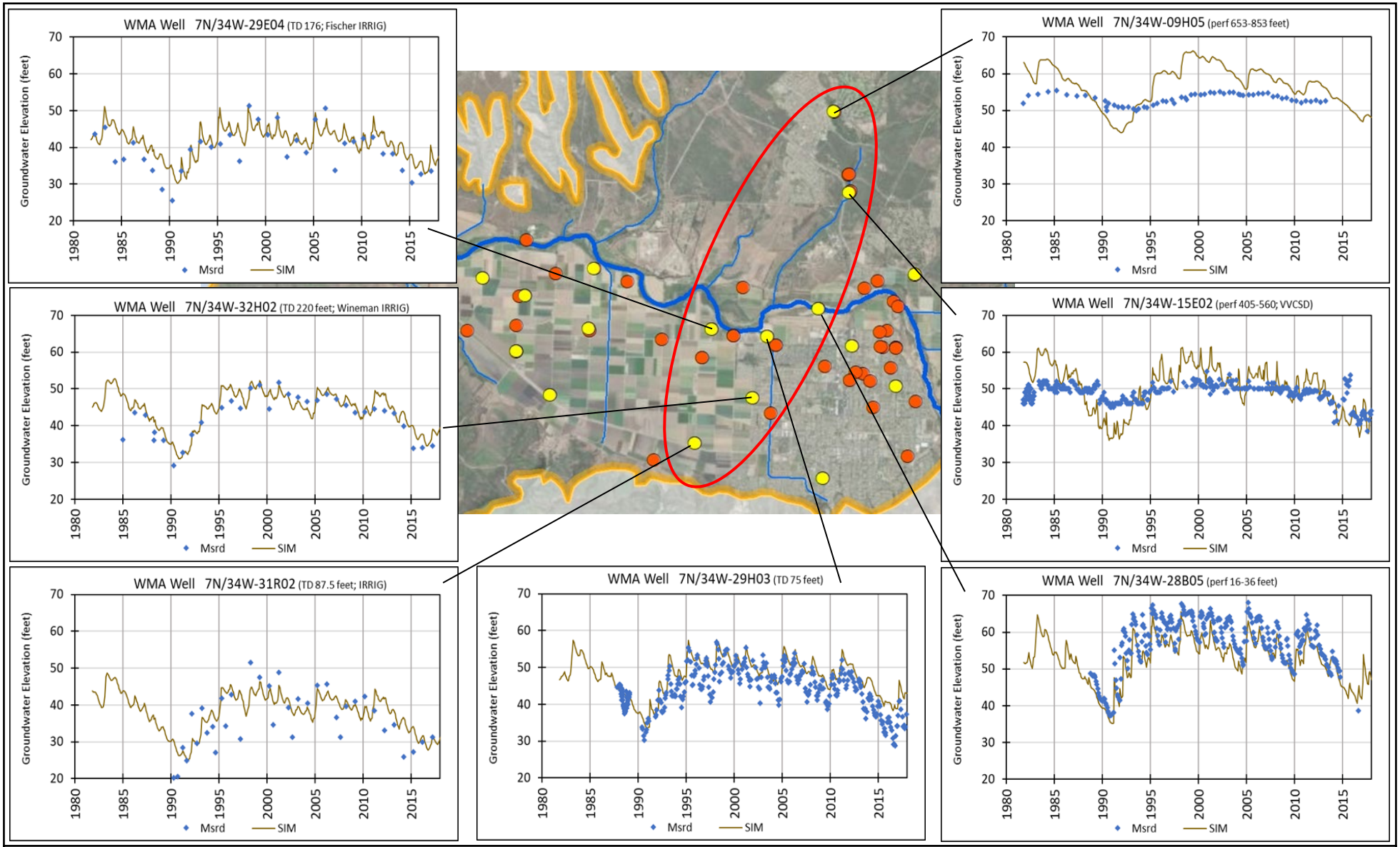
FIGURE 19



STETSON ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (3 OF 6)
WMA/CMA MODEL

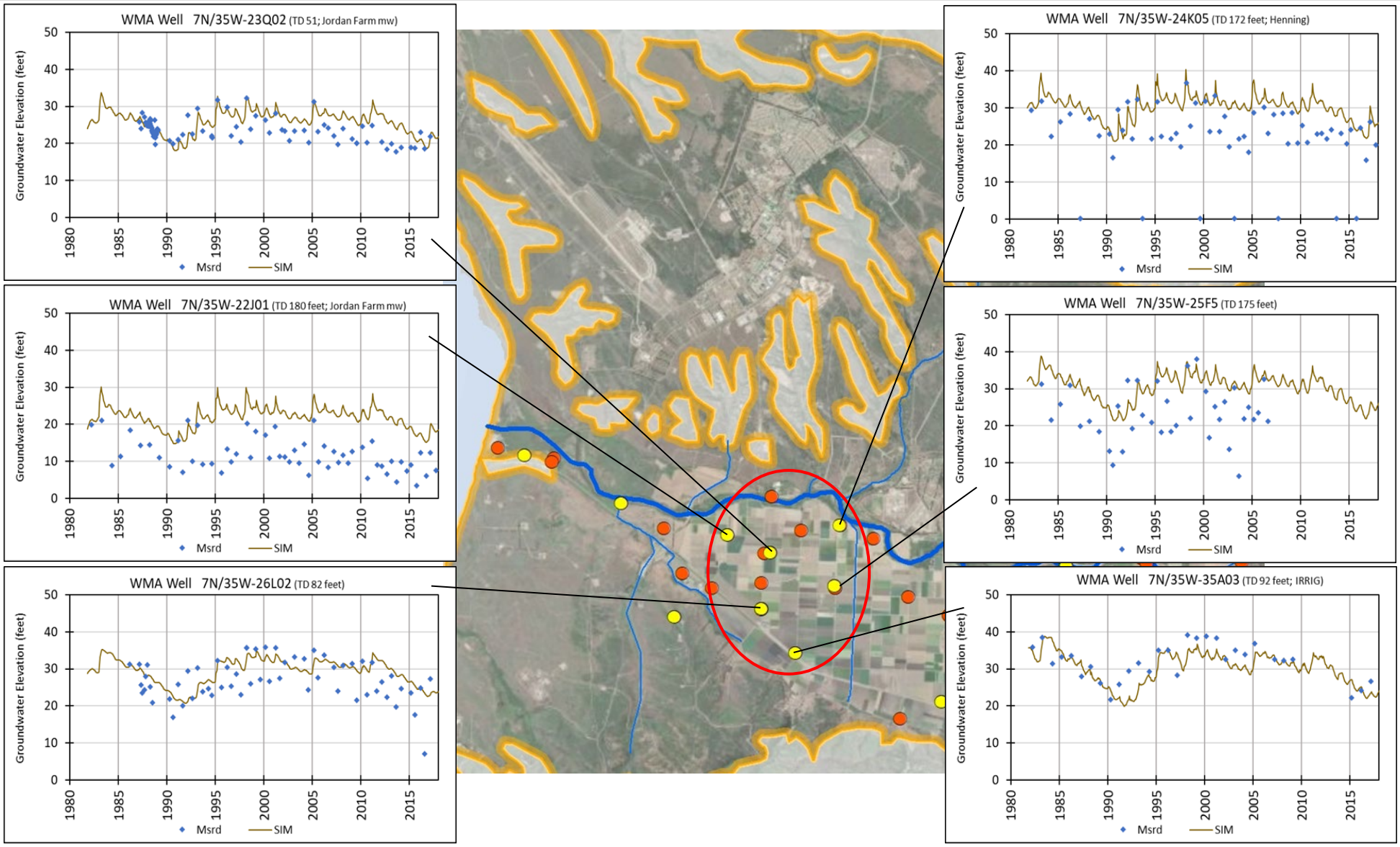
FIGURE 20



STETSON ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (4 OF 6)
WMA/CMA MODEL

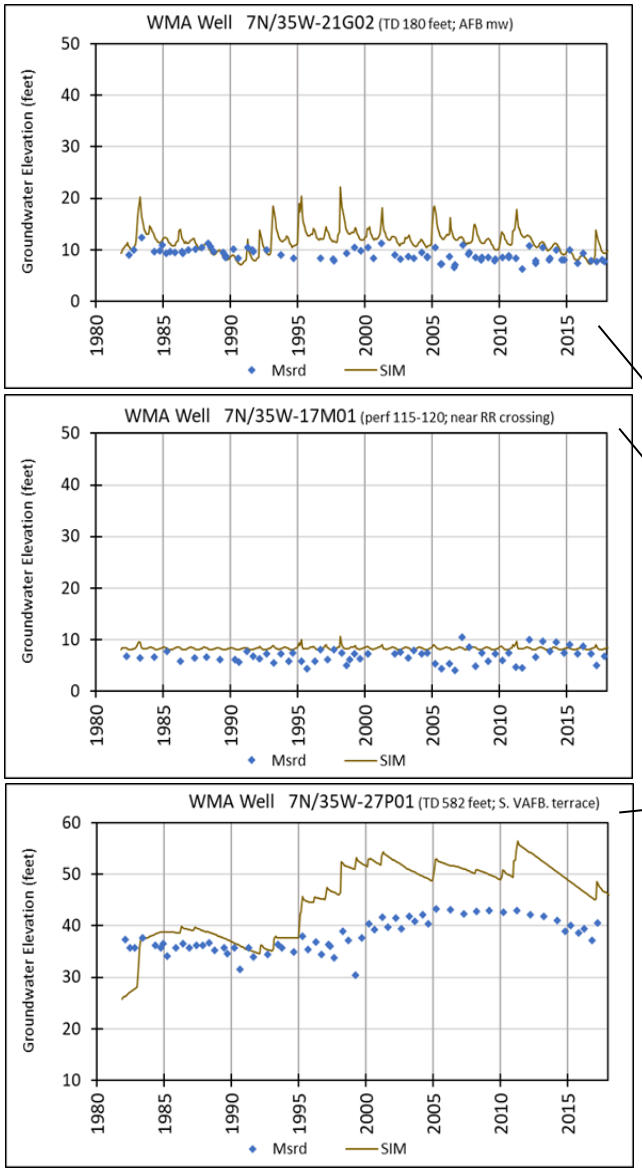
FIGURE 21

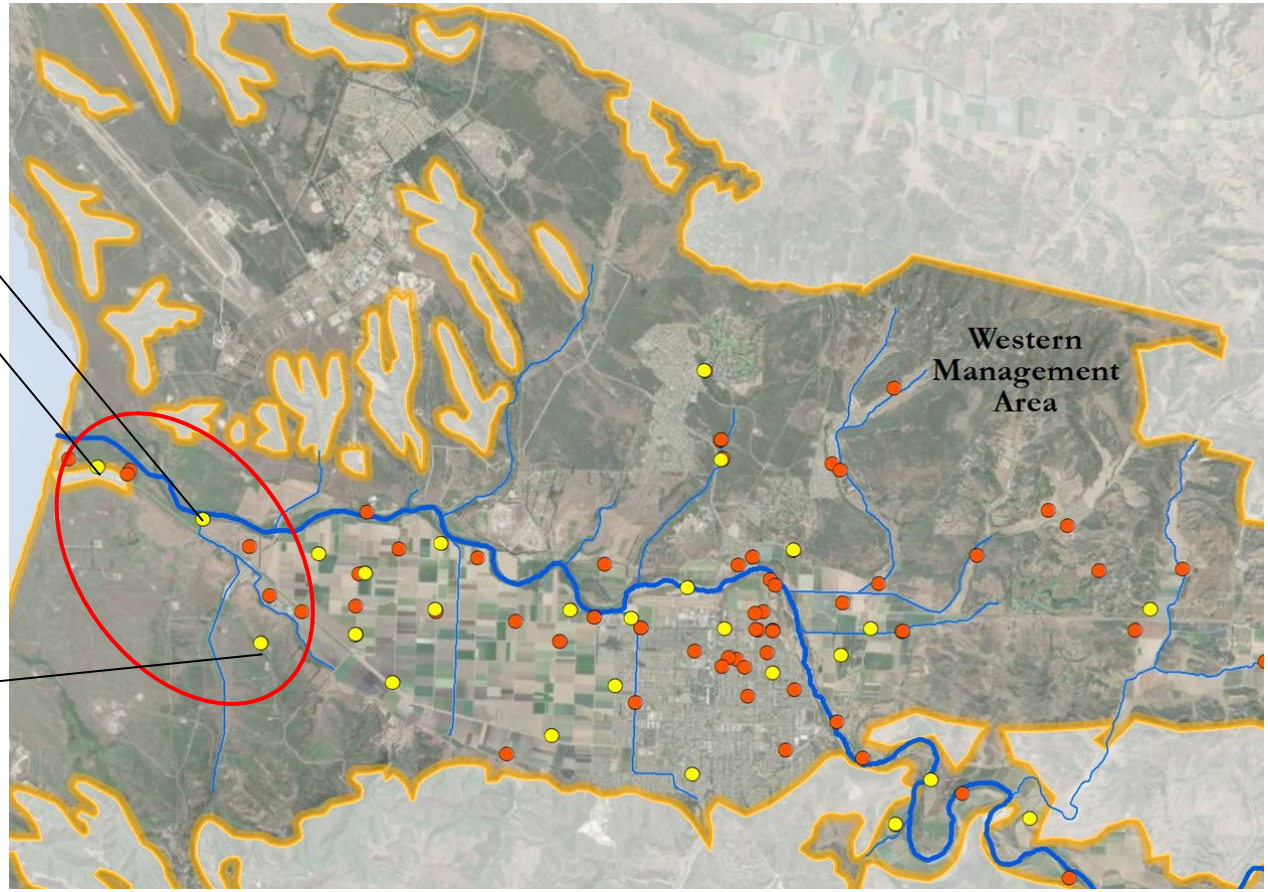


STETSON ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (5 OF 6)
WMA/CMA MODEL

FIGURE 22

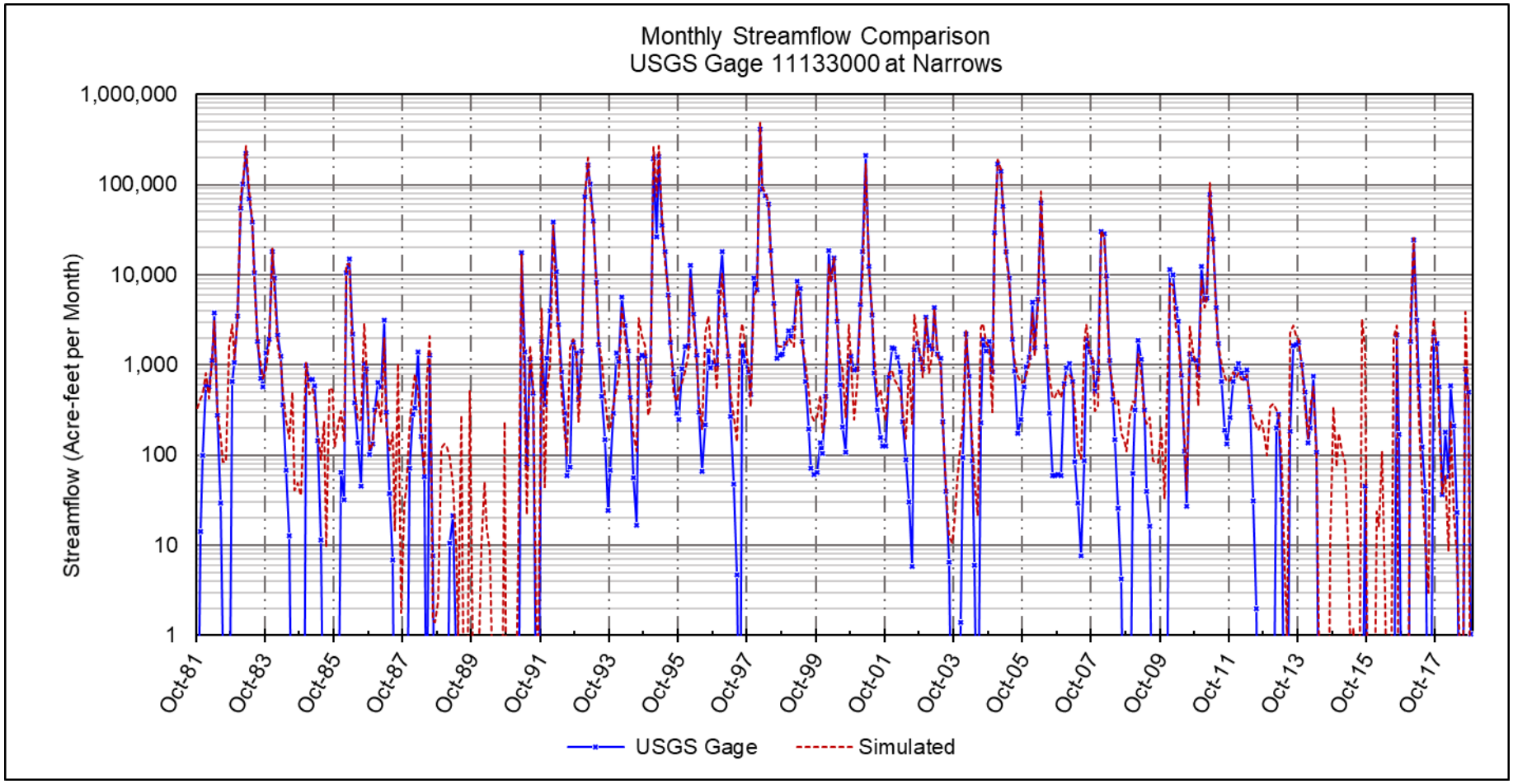




STETSON
ENGINEERS INC.

GROUNDWATER LEVEL CALIBRATION
MEASURED AND SIMULATED HYDROGRAPHS (6 OF 6)
WMA/CMA MODEL

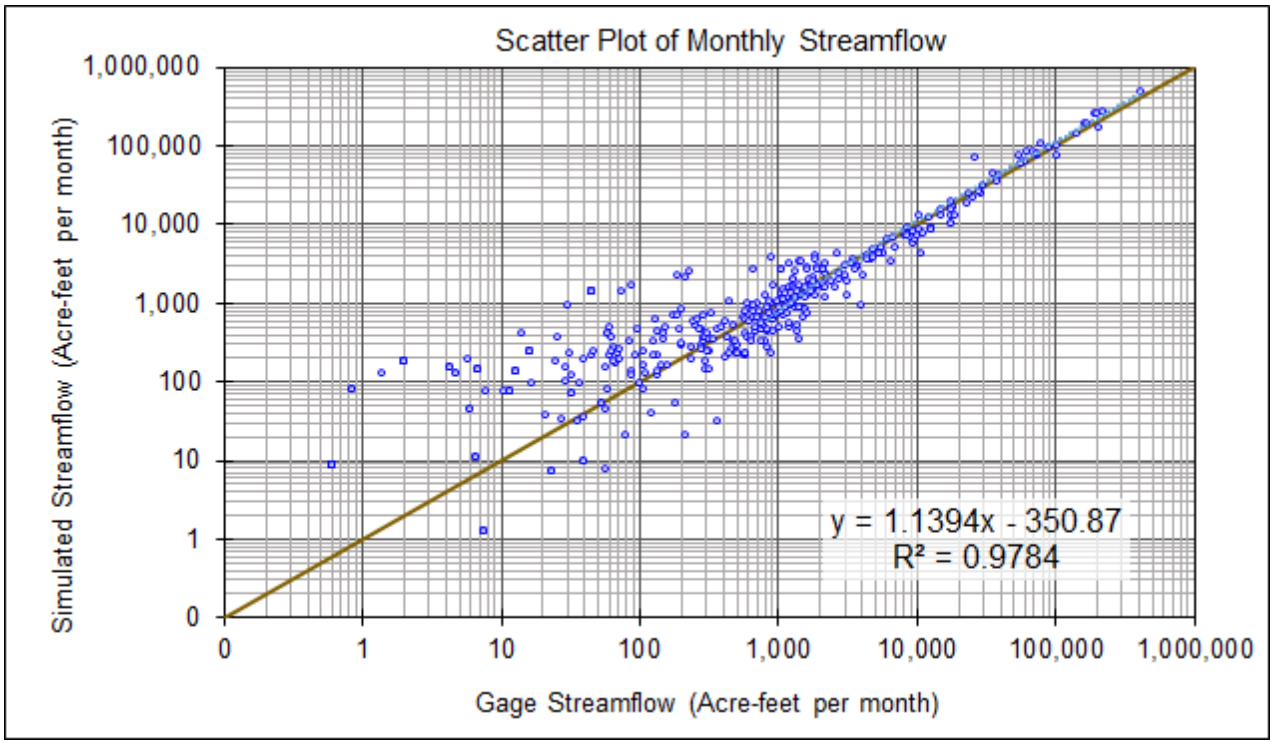
FIGURE 23

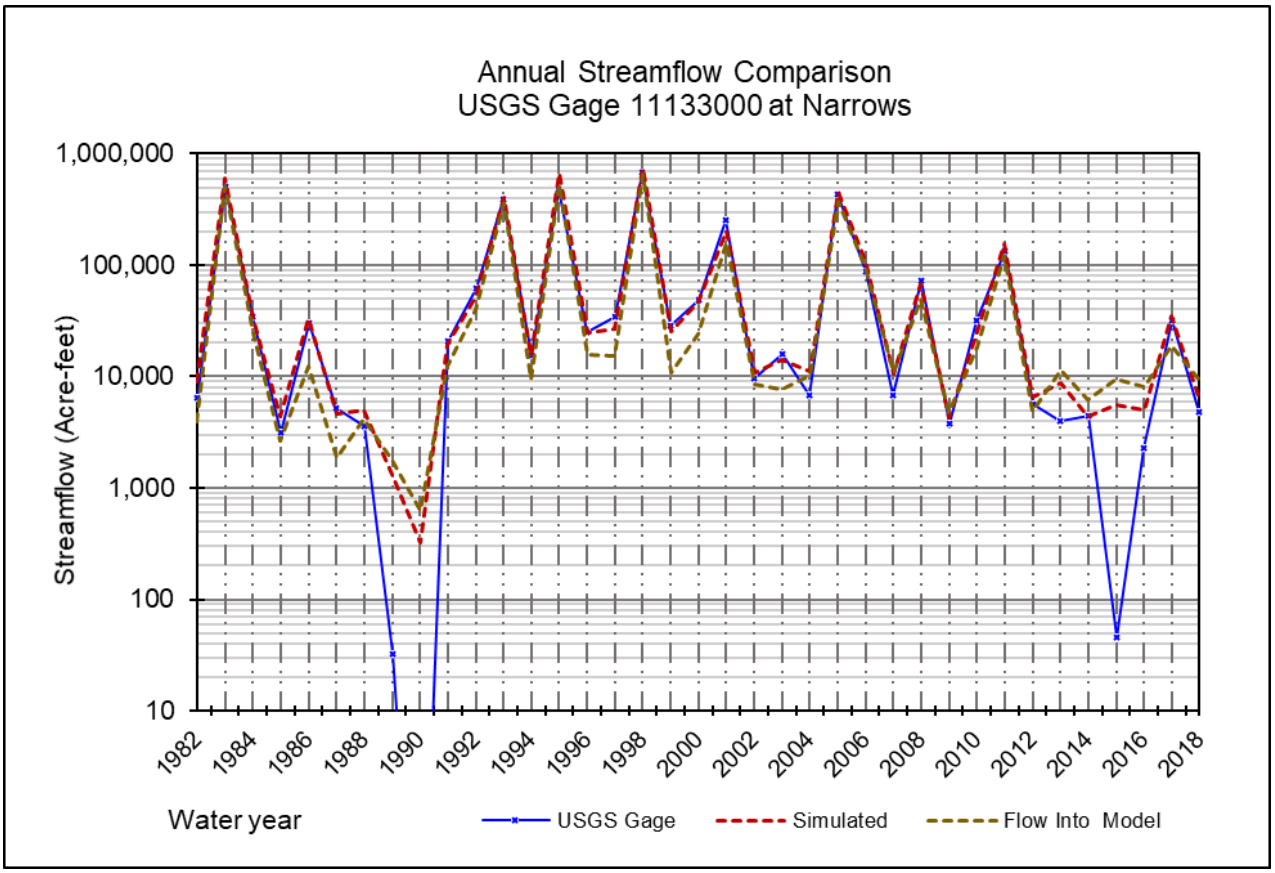


STETSON ENGINEERS INC.

STREAMFLOW CALIBRATION
USGS GAGE 1133000 NARROWS MEASURED AND SIMULATED HYDROGRAPH
WMA/CMA MODEL

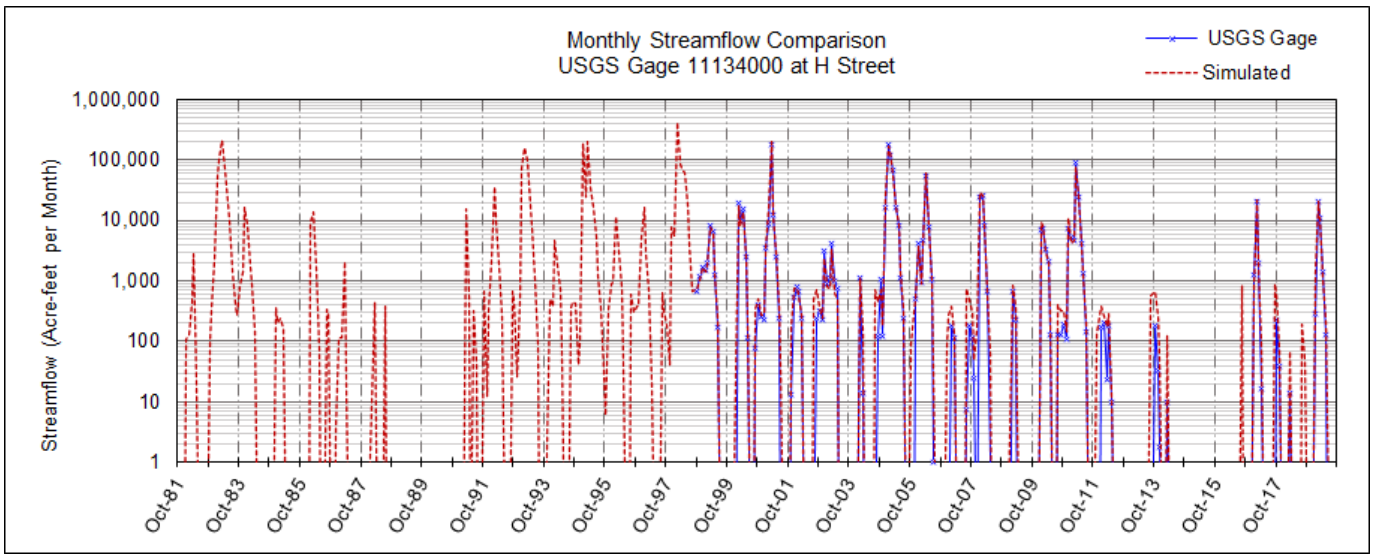
FIGURE 24

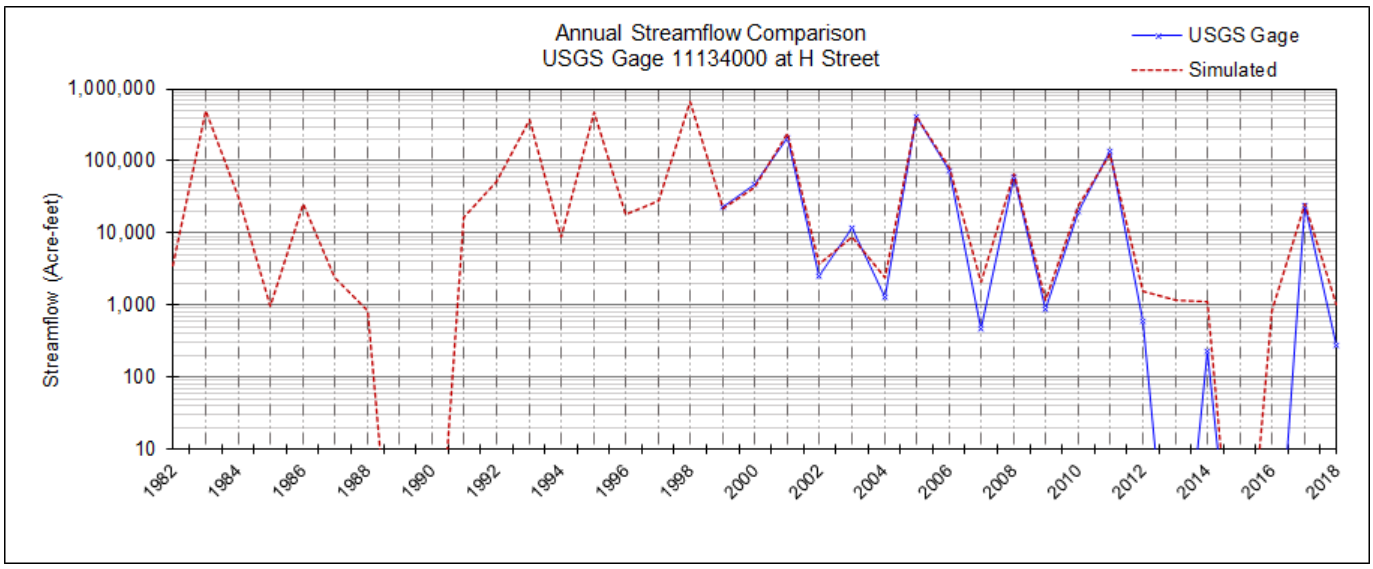


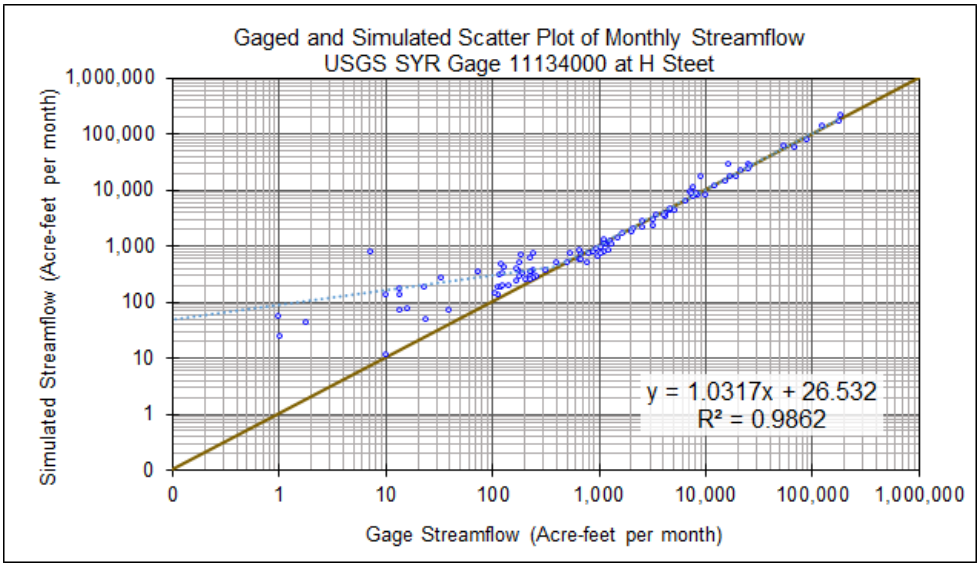


STETSON ENGINEERS INC.

STREAMFLOW CALIBRATION
USGS GAGE 11133000 AT NARROWS
WMA/CMA MODEL







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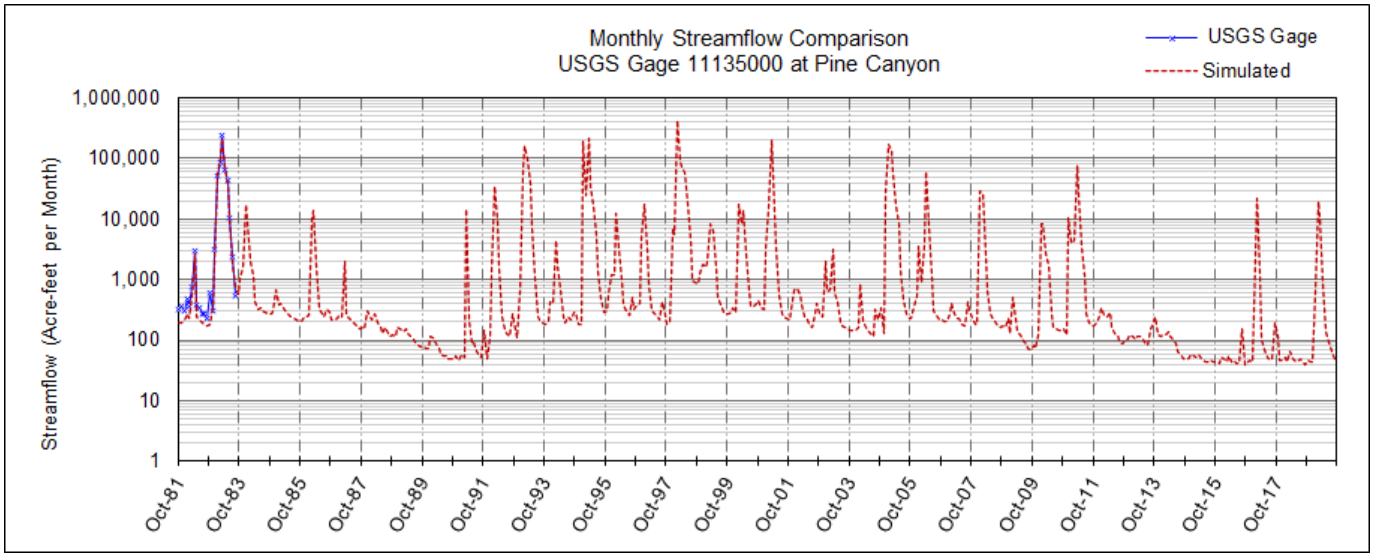
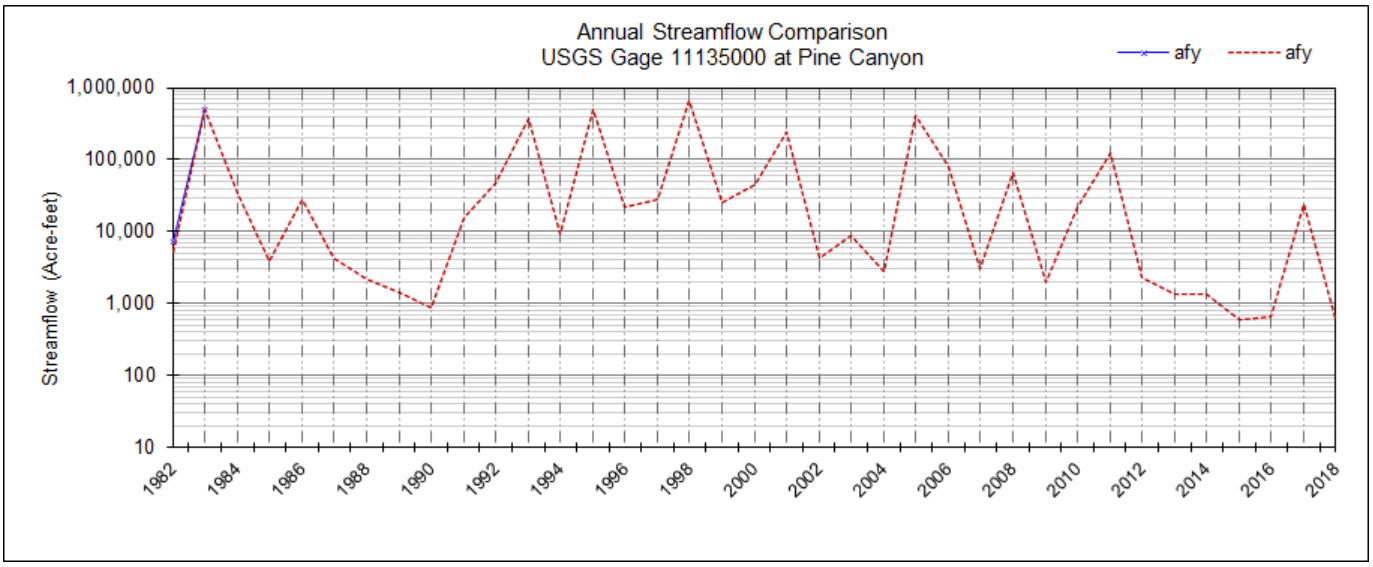
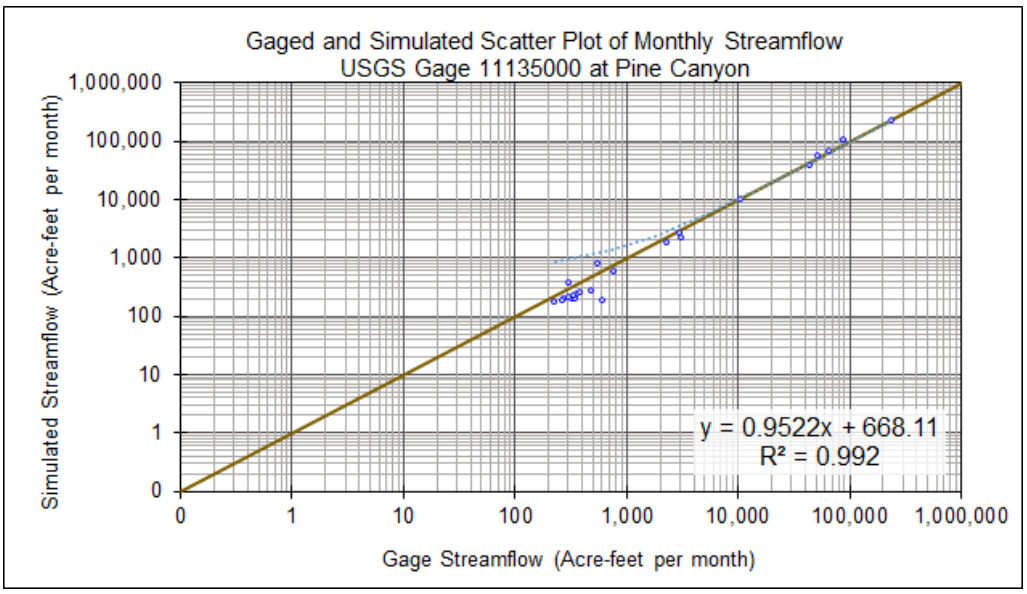
STREAMFLOW CALIBRATION
USGS GAGE 11134000 AT H Street
WMA/CMA MODEL







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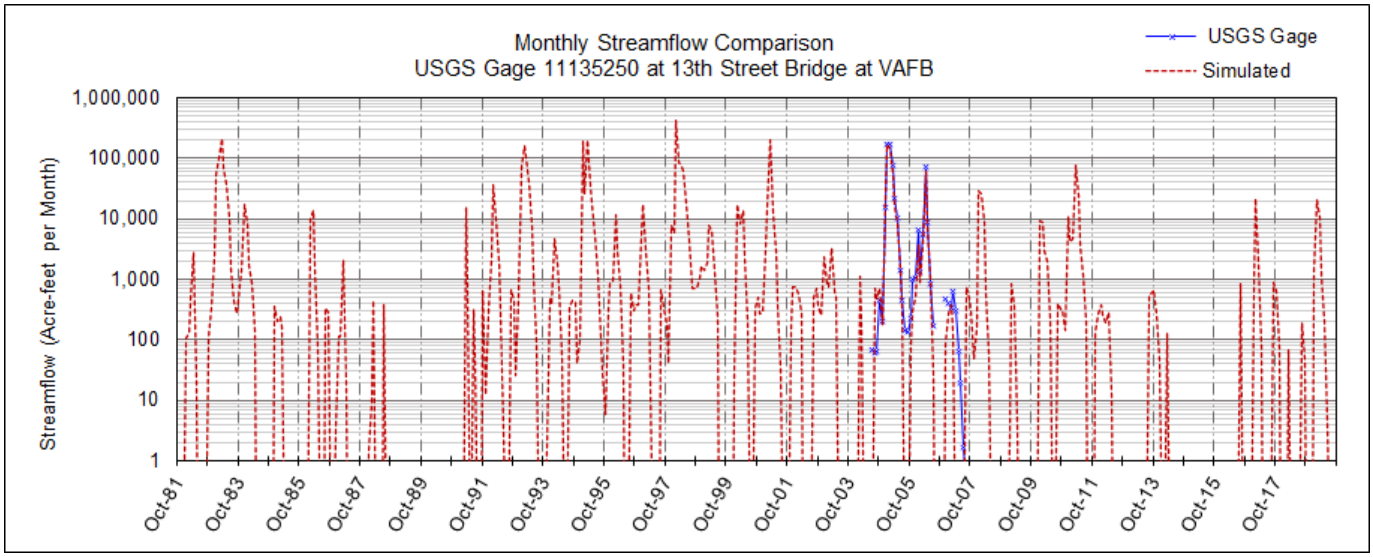
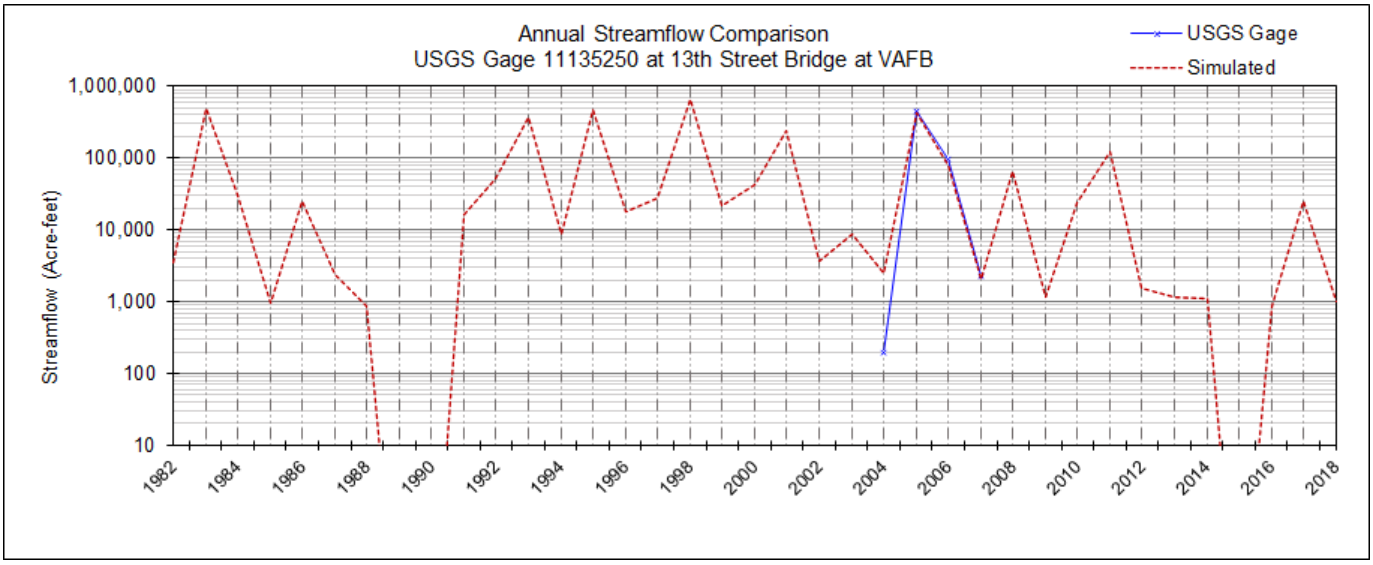
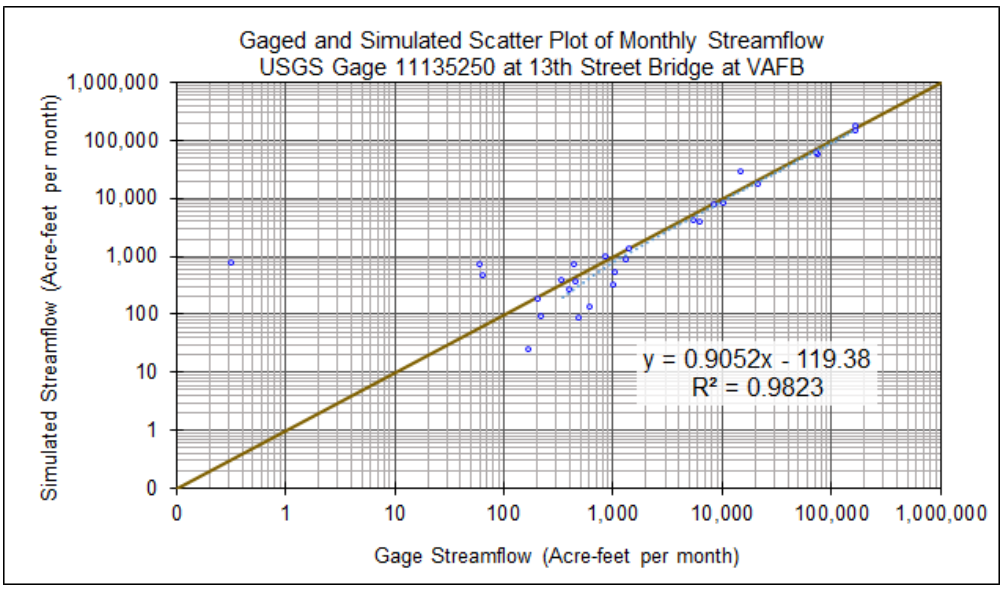
STREAMFLOW CALIBRATION
USGS GAGE 11135000 AT Pine Canyon
WMA/CMA MODEL







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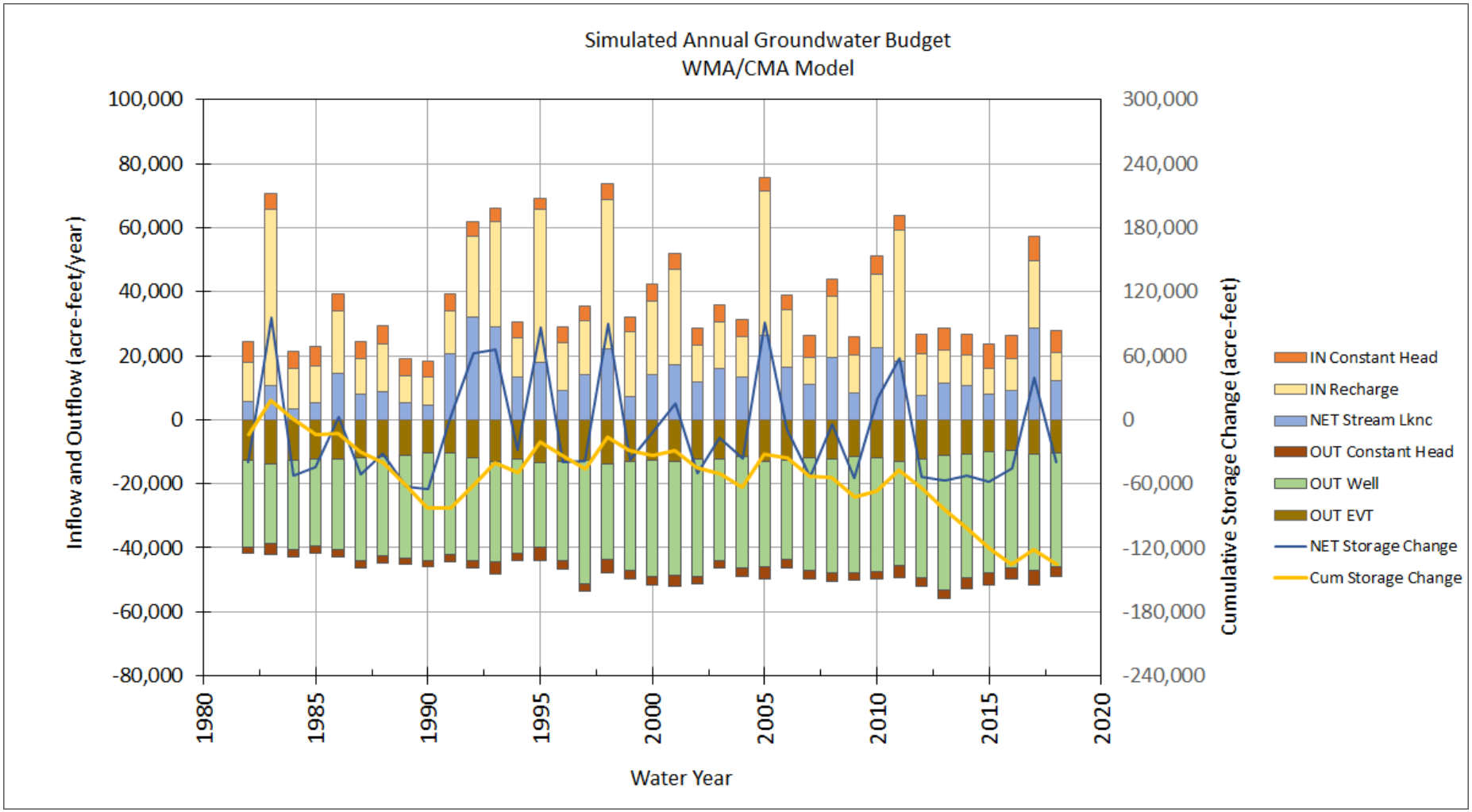
STREAMFLOW CALIBRATION
USGS GAGE 11135250 AT 13th Street Bridge near VAFB
WMA/CMA MODEL



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SIMULATED ANNUAL GROUNDWATER BUDGET HISTORICAL CALIBRATION MODEL RUN, WY 1982 to 2018
WMA/CMA MODEL

FIGURE 29