EVANGELINE EQUIVALENT AQUIFER SYSTEM SUMMARY

BASELINE MONITORING PROJECT, FY 2003

APPENDIX 13

OF THE

TRIENNIAL SUMMARY REPORT, 2003

FOR THE

ENVIRONMENTAL EVALUATION DIVISION

OF

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PARTIAL FUNDING PROVIDED THROUGH 106 CWA

EVANGELINE EQUIVALENT AQUIFER SYSTEM SUMMARY
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BACKGROUND

In order to better assess the water quality of a particular aquifer at a given point in time, an attempt was made during the project year to sample all Baseline Monitoring Project (Project or BMP) wells producing from a common aquifer in a narrow time frame. Also, to more conveniently and economically promulgate those data collected from a particular aquifer, a summary report on each aquifer sampled was prepared separately. Collectively, these aquifer summaries will make up part of the Project Triennial Summary Report.

Figure 13-1 shows the geographic locations of the Evangeline Equivalent Aquifer System and the associated project wells, whereas Table 13-2 lists the wells in the aquifer along with their total depths and the use made of produced waters and the date sampled.

These data show that in January, February, and in April of 2003, fifteen project wells were sampled which produce from the Evangeline Equivalent Aquifer System. Of these fifteen wells, six are classified as domestic wells, five are classified as public supply wells, three are classified as industrial wells, and one is classified as irrigation well. The wells are located in eleven parishes in southeast and south central Louisiana.

Well data for registered project water wells were obtained from the Louisiana Department of Transportation and Development's Water Well Registration Data file.

GEOLOGY

The Evangeline Equivalent aquifer system is composed of the Pliocene aged aquifers of the Baton Rouge area and St. Tammany, Tangipahoa, and Washington Parishes. These Pliocene sediments outcrop in southwestern Mississippi. The sedimentary sequences that make up the aquifer system are subdivided into several aquifer units separated by confining beds. Northward within southeast Louisiana, fewer units are recognized because some younger units pinch out updip and some clay layers present to the south disappear. Where clay layers are discontinuous or disappear, aquifer units coalesce. The aquifers consist of moderately to well sorted, fine to medium grained sands, with interbedded coarse sand, silt, and clay.

HYDROGEOLOGY

The deposits that constitute the individual aquifers are not readily differentiated at the surface and act as one hydraulic system that can be subdivided into several hydrologic zones in the subsurface. A zone or ridge of saline water occurs within the Pliocene sediments beneath the Mississippi River alluvial valley. Recharge occurs primarily by the direct infiltration of rainfall in interstream, upland outcrop areas, and by the movement of water between aquifers. The hydraulic conductivity varies between 10-200 feet/day. The maximum depths of occurrence of freshwater in the Evangeline Equivalent range from 0 to 2,500 feet below sea level. The range of thickness of the fresh water interval in the Evangeline Equivalent is 50 to 1,500 feet. The depths of the Evangeline Equivalent wells that were monitored in conjunction with the BMP range from 160 to 1900 feet.

INTERPRETATION OF DATA

Field, Water Quality, and Nutrients Parameters

Table 13-3 lists the field parameters that are checked and the water quality and nutrients parameters that are sampled for at each well. It also shows the field results and the water quality and nutrients analytical results for each well. Table 13-5 lists the minimum, maximum, and average results for the field data, water quality data, and nutrients data for the Evangeline Equivalent Aquifer Aystem.

Federal Primary Drinking Water Standards

Under the Federal Safe Drinking Water Act, EPA has established maximum contaminant levels (MCLs) for pollutants that may pose a health risk in public drinking water. An MCL is the highest level of a contaminant that EPA allows in public drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. While not all wells sampled were public supply wells, this Office does use the MCLs as a benchmark for further evaluation.

A review of the analyses listed on Table 13-3 shows that no primary MCL was exceeded for field, water quality, or nutrients parameters. Those project wells reporting turbidity levels greater than 1.0 NTU, do not exceed the Primary MCL of 1.0, as this standard applies to public supply surface water systems only.

Federal Secondary Drinking Water Standards

EPA has set secondary standards that are defined as non-enforceable taste, odor, or appearance guidelines.

Field and laboratory data contained in Table 13-3 show that the following secondary MCLs (SMCL)s were exceeded.

Color – SMCL = 15 PCU

ST-6711Z – 39 PCU

pH – SMCL = 6.5 – 8.5 S.U.

ST-532 – 9.10 S.U.
AV-5304Z – 8.94 S.U.
WBR-181 – 9.45 S.U.
EB-1003 – 9.12 S.U.
WF-DELEE – 9.05 S.U.
ST-6711Z – 9.06 S.U.
PC-325 – 8.99 S.U.
LI-299 – 9.08 S.U.
SL-679 – 8.78 S.U.

Comparison to Historical Data

Table 13-7 lists the current field, water quality, and nutrients data averages alongside those parameters' data averages for the two previous sampling rotations (three and six years prior). A

comparison shows that the averages for pH and sulfate have increased while chloride and color averages have decreased. Most other analyte values have been consistent with only slight fluctuations.

Inorganic Parameters

Table 13-4 shows the inorganic (total metals) parameters that are sampled for and the analytical results for those parameters for each well. Table 13-6 lists the minimum, maximum, and average results for the inorganic data for the Evangeline Equivalent Aquifer System.

Federal Primary Drinking Water Standards

Further review of the analyses listed on Table 13-4 shows that no primary MCL was exceeded for inorganic parameters.

Federal Secondary Drinking Water Standards

Laboratory data contained in Table 13-4 show that the following secondary SMCL was exceeded.

Iron – SMCL = 300 ppb

WA-241 – 1801 ppb
WBR-181 – 302 ppb
WA-5210Z – 630 ppb
WF-DELEE – 499 ppb

Comparison to Historical Data

Table 13-8 lists the current inorganic data averages alongside the inorganic data averages for the two previous sampling rotations (three and six years prior). A comparison shows that iron has steadily increased while the other averages have been consistent, with only slight fluctuations.

Volatile Organic Compounds

Table 13-9 shows the volatile organic compound (VOC) parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a VOC would be discussed in this section.

No VOCs were detected at or above their respective detection limits during the FY 2003 sampling of the Evangeline Equivalent Aquifer System.

Semivolatile Organic Compounds

Table 13-10 shows the semivolatile organic compound parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a semivolatile would be discussed in this section.

Laboratory data show that five of the Evangeline Equivalent Aquifer System wells that were sampled during FY 2003 exhibited values for bis(2-ethylhexyl)phthalate above the MCL of 6

ppb. However, based on information contained in the EPA guidance document "Guidance For Data Usability In Risk Assessment, EPA 1992," it is the opinion of this Office that the BEHP concentration above the MCL for is due to field/laboratory contamination. It will therefore be considered a false positive.

Taking into consideration the invalid phthalate concentrations, no semivolatile organic compounds were detected during the FY 2003 sampling of the Evangeline Equivalent Aquifer System.

Pesticides and PCBs

Table 13-11 shows the pesticide and PCB parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a pesticide or PCB would be discussed in this section.

No pesticide or PCB was detected during the 2003 sampling of the Evangeline Equivalent Aquifer System.

Common Water Characteristics

Table 13-1 below highlights some of the more common water characteristics that are considered when studying ground water quality. The minimum, maximum, and average values that were found during the current sampling of the Evangeline Equivalent Aquifer System for Chloride, Field pH, Hardness, Iron, Nitrite/Nitrate (as N) are listed in the table. Figures 13-2, 13-3, 13-4, and 13-5 respectively, represent the contoured data for pH, TDS, chloride, and iron. The data values that are contoured and reported in the contour mps are derived from the initial current sampling of each well with any duplicate samples or re-samples averaged into them. The data average for hardness show that the ground water produced from this aquifer is soft[1]

SUMMARY AND RECOMMENDATIONS

In summary, the data show that the ground water produced from the Evangeline Equivalent Aquifer System is soft and that no primary MCLs were exceeded. Furthermore, this aquifer is of good quality when considering taste, odor, or appearance guidelines. Also, a comparison of present and historical BMP data averages shows that for the most part the data averages are fairly consistent, with chloride and color averages decreasing and pH, iron and sulfate averages increasing.

It is recommended that the Project wells assigned to the Evangeline Equivalent Aquifer System be resampled as planned in approximately three years. In addition, several wells should be added to those currently in place to increase the well density for this aquifer.

[1] Classification based on hardness scale from: *Peavey, H. S. et all. Environmental Engineering, 1985.*

Table 13-1 Common Water Characteristics

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Chloride (ppm)	2.7	54.5	7.3
Field pH (SU)	6.61	9.45	8.41
Hardness (ppm)	<5.0	37.1	10.6
Iron (ppb)	<20.0	1801.0	204.1
Nitrates/Nitrites (ppm)	<0.05	0.72	0.17
TDS (ppm)	42.0	410.0	169.5

Table 13-2 List of Project Wells Sampled

BMP SITE NAME	PARISH	DOTD WELL NAME	DATE SAMPLED	OWNER	DEPTH (IN FEET)	WELL USE
200007	AVOYELLES	AV-5304Z	2/10/2003	PRIVATE OWNER	547	DOMESTIC
198608	E BATON ROUGE	EB-1003	2/11/2003	BATON ROUGE WATER WORKS	1430	PUBLIC SUPPLY
200011	E FELICIANA	EF-5045Z	2/11/2003	PRIVATE OWNER	160	DOMESTIC
200010	LIVINGSTON	LI-299	2/11/2003	WARD 2 WATER DISTRICT	1417	PUBLIC SUPPLY
200006	POINTE COUPEE	PC-325	2/10/2003	ALMA PLANTATION LTD	1252	INDUSTRIAL
200008	ST LANDRY	SL-679	2/18/2003	VALERO ENERGY CORPORATION	1152	INDUSTRIAL
198819	ST TAMMANY	ST-532	1/13/2003	SE LOUISIANA STATE HOSPITAL	1520	PUBLIC SUPPLY
200001	ST TAMMANY	ST-6711Z	1/13/2003	PRIVATE OWNER	860	DOMESTIC
199403	TANGIPAHOA	TA-284	1/13/2003	CITY OF PONCHATOULA	608	PUBLIC SUPPLY
198618	TANGIPAHOA	TA-286	1/14/2003	TOWN OF KENTWOOD	640	PUBLIC SUPPLY
200003	TANGIPAHOA	TA-6677Z	1/13/2003	PRIVATE OWNER	495	DOMESTIC
199705	WASHINGTON	WA-241	1/14/2003	PRIVATE OWNER	400	IRRIGATION
200002	WASHINGTON	WA-5210Z	1/14/2003	PRIVATE OWNER	752	DOMESTIC
200004	W BATON ROUGE	WBR-181	2/10/2003	PORT OF GREATER BATON ROUGE	1900	INDUSTRIAL
200009	W FELICIANA	WF-DELEE	4/8/2003	PRIVATE OWNER	240	DOMESTIC

Table 13-3 Summary of Water Quality Data

WELL NAME	PH SU	SALINITY PPT	SP. COND. (FIELD) MMHOS/CM	TEMP. DEG. C	ALK. PPM	NH3 PPM	CL PPM	COLOR PCU	HARD. PPM	NITRITE-NITRATE (AS N) PPM	TKN PPM	TOT. P PPM	SP. COND. (LAB) UMHOS/CM	SO4 PPM	TDS PPM	TSS PPM	TURBIDITY NTU
	FIELD PARAMETERS				CONVENTIONAL PARAMETERS												
TA-6677Z	7.16	0.05	0.101	18.97	44.6	<0.1	3.9	<5	18.9	<0.05	<0.1	<0.05	97.4	3.8	99.3	<4	<1
TA-284	7.84	0.12	0.258	23.03	134	0.16	2.7	5	<5	<0.05	0.16	0.25	252	14	182	<4	<1
ST-532	9.10	0.15	0.324	25.68	164	0.22	2.8	6	<5	<0.05	0.25	0.32	310	15.7	205	<4	<1
ST-6711Z	9.06	0.31	0.632	21.15	340	0.38	21.1	39	<5	<0.05	0.48	0.41	632	3.5	410	<4	<1
TA-286	7.70	0.02	0.048	20.95	14.8	<0.1	2.8	5	9.7	<0.05	<0.1	0.07	45.6	3	42.7	<4	<1
TA-286*	7.70	0.02	0.048	20.95	15	<0.1	2.8	5	9.8	<0.05	0.14	0.07	44.8	2.9	50	<4	<1
WA-241	7.09	0.04	0.079	19.45	24.3	<0.1	2.7	5	17	<0.05	0.11	0.09	76.1	14.6	91.3	<4	<1
WA-5210Z	6.61	0.07	0.143	21.79	61.8	0.18	3.3	5	37.1	<0.05	0.37	0.21	143	9.6	137	<4	<1
AV-5304Z	8.94	0.30	0.611	18.47	237	0.31	54.5	14	19.9	0.49	0.51	0.15	571	2	348	<4	<1
PC-325	8.99	0.13	0.271	24.93	139	0.17	3.1	<5	<5	0.57	0.46	0.27	249	8.7	192	<4	<1
WBR-181	9.45	0.13	0.283	26.77	143	0.12	2.8	<5	<5	0.56	0.33	0.24	256	8.7	189	<4	<1
EF-5045Z	7.82	0.02	0.470	15.11	14.8	<0.1	3.7	<5	9.7	<0.05	<0.1	<0.05	44	<1.3	42	<4	1.2
LI-299	9.08	0.12	0.256	25.77	130	0.11	3.4	<5	<5	<0.05	0.16	0.6	252	7.7	185	<4	1.2
EB-1003	9.12	0.13	0.277	27.56	141	0.14	3	<5	6.2	<0.05	0.18	0.2	270	9.3	179	<4	<1
EB-1003*	9.12	0.13	0.277	27.56	141	0.14	3.2	<5	6.3	<0.05	0.19	0.22	266	9.3	184	<4	<1
SL-679	8.78	0.17	0.352	26.52	177	0.12	3.7	10	<5	<0.05	0.3	0.3	340	11	234	<4	6
SL-679*	8.78	0.17	0.352	26.52	176	0.13	3.6	9	<5	<0.05	0.28	0.32	338	10.9	230	<4	<1
WF-DELEE	9.05	0.04	0.077	18.06	21.3	<0.1	8.5	<5	16	0.72	<0.1	0.08	72.6	<1.25	50.7	<4	1.1

*Denotes duplicate sample.

Table 13-4 Summary of Inorganic Data

WELL NAME	ANTIMONY PPB	ARSENIC PPB	BARIUM PPB	BERYLLIUM PPB	CADMIUM PPB	CHROMIUM PPB	COPPER PPB	IRON PPB	LEAD PPB	MERCURY PPB	NICKEL PPB	SELENIUM PPB	SILVER PPB	THALLIUM PPB	ZINC PPB
TA-6677Z	<5	<5	111	<1	<1	<5	15.4	<20	<10	<0.05	<5	<5	<1	<5	16.3
TA-284	<5	<5	16.5	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
ST-532	<5	<5	6.3	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
ST-6711Z	<5	<5	12.1	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
TA-286	<5	<5	62.6	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
TA-286*	<5	<5	63.5	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
WA-241	<5	<5	83.1	<1	<1	<5	<5	1801	<10	<0.05	<5	<5	<1	<5	10.5
WA-5210Z	<5	<5	67.9	<1	<1	<5	<5	630	<10	<0.05	<5	<5	<1	<5	<10
AV-5304Z	<5	<5	106	<1	<1	<5	<5	49.3	<10	<0.05	<5	<5	<1	<5	<10
PC-325	<5	<5	7	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
WBR-181	<5	<5	2	<1	<1	<5	<5	302	<10	<0.05	<5	<5	<1	<5	<10
EF-5045Z	<5	<5	69.5	<1	<1	<5	10.7	<20	<10	<0.05	<5	<5	<1	<5	<10
LI-299	<5	<5	4.3	<1	<1	<5	<5	54.7	<10	<0.05	<5	<5	<1	<5	<10
EB-1003	<5	<5	17	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
EB-1003*	<5	<5	16.8	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
SL-679	<5	<5	15.3	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
SL-679*	<5	<5	15.5	<1	<1	<5	<5	117	<10	<0.05	<5	<5	<1	<5	<10
WF-DELEE	<5	<5	42	<1	<1	<5	20.1	499	<10	<0.05	<5	<5	<1	<5	36

* Denotes duplicate sample.

Table 13-5 Current Year Water Quality Statistics

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Field Temperature (Deg. C.)	15.11	27.56	22.74
Field pH (SU)	6.61	9.45	8.41
Field Sp. Conductivity (mmhos/cm)	0.048	0.632	0.27
Field Salinity (ppt)	0.02	0.31	0.12
Alkalinity (ppm)	14.8	340	117.70
Chloride (ppm)	2.7	54.5	7.31
Color (PCU)	5	39	7.94
Specific Conductance (umhos/cm)	44	632	236.64
Sulfate (ppm)	1.25	15.7	7.63
TDS (ppm)	42	410	169.50
TSS (ppm)	4	4	4.00
Turbidity (NTU)	1	6	1.31
Ammonia (ppm)	0.1	0.38	0.15
Hardness (ppm)	5	37.1	10.59
Nitrogen, Nitrite + Nitrate (ppm)	0.05	0.72	0.17
TKN (ppm)	0.1	0.51	0.24
Phophorus as P (ppm)	0.05	0.6	0.22

Table 13-6 Current Year Inorganic Statistics

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Antimony (ppb)	<5	<5	<5
Arsenic (ppb)	<5	<5	<5
Barium (ppb)	<2	111	39.9
Beryllium (ppb)	<1	<1	<1
Cadmium (ppb)	<1	<1	<1
Chromium (ppb)	<5	<5	<5
Copper (ppb)	<5	20.1	6.73
Iron (ppb)	<20	1801	204.1
Lead (ppb)	<10	<10	<10
Mercury (ppb)	<0.05	<0.05	<0.05
Nickel (ppb)	<5	<5	<5
Selenium (ppb)	<5	<5	<5
Silver (ppb)	<1	<1	<1
Thallium (ppb)	<5	<5	<5
Zinc (ppb)	<10	36	11.8

Table 13-7 Three-year Water Quality Statistics

PARAMETER	FY 1997 AVERAGE	FY 2000 AVERAGE	FY 2003 AVERAGE
Field Temperature (Deg. C.)	25.17	22.73	22.74
Field pH (SU)	7.45	8.02	8.41
Field Sp. Conductivity (mmhos/cm)	0.33	0.24	0.27
Field Salinity (ppt)	0.14	0.12	0.12
Alkalinity (ppm)	125.37	110.34	117.70
Chloride (ppm)	13.71	8.26	7.31
Color (PCU)	14.29	7.67	7.94
Specific Conductance (umhos/cm)	276.67	249.73	236.64
Sulfate (ppm)	5.83	6.45	7.63
TDS (ppm)	232.56	162.61	169.50
TSS (ppm)	<4.00	4.71	<4.00
Turbidity (NTU)	1.57	2.02	1.31
Ammonia (ppm)	0.30	0.13	0.15
Hardness (ppm)	10.22	12.74	10.59
Nitrogen, Nitrite + Nitrate (ppm)	0.04	0.10	0.17
TKN (ppm)	1.14	0.27	0.24
Phophorus as P (ppm)	0.19	0.27	0.22

Table 13-8 Three-year Inorganic Statistics

PARAMETER	FY 1997 AVERAGE	FY 2000 AVERAGE	FY 2003 AVERAGE
Antimony (ppb)	11.53	<5.00	<5.00
Arsenic (ppb)	<5.00	<5.00	<5.00
Barium (ppb)	29.06	41.00	39.91
Beryllium (ppb)	<1.00	<1.00	<1.00
Cadmium (ppb)	<2.00	<2.00	<1.00
Chromium (ppb)	<5.00	<5.00	<5.00
Copper (ppb)	12.93	8.99	6.73
Iron (ppb)	331.43	942.93	204.06
Lead (ppb)	<10.00	<10.00	<10.00
Mercury (ppb)	<0.05	<0.05	<0.05
Nickel (ppb)	<5.00	<5.00	<5.00
Selenium (ppb)	<5.00	<5.00	<5.00
Silver (ppb)	<2.00	<1.00	<1.00
Thallium (ppb)	<2.00	<5.00	<5.00
Zinc (ppb)	141.60	177.97	11.82

Table 13-9 List of VOC Analytical Parameters
BASELINE MONITORING PROJECT
VOLATILE ORGANICS BY EPA METHOD 624

COMPOUND	PQL (ppb)
CHLOROMETHANE	2
VINYL CHLORIDE	2
BROMOMETHANE	2
CHLOROETHANE	2
TRICHLOROFLUOROMETHANE	2
1,1-DICHLOROETHENE	2
METHYLENE CHLORIDE	2
TRANS-1,2-DICHLOROETHENE	2
METHYL-t-BUTYL ETHER	2
1,1-DICHLOROETHANE	2
CHLOROFORM	2
1,1,1-TRICHLOROETHANE	2
CARBON TETRACHLORIDE	2
BENZENE	2
1,2-DICHLOROETHANE	2
TRICHLOROETHENE	2
1,2-DICHLOROPROPANE	2
BROMODICHLOROMETHANE	2
CIS-1,3-DICHLOROPROPENE	2
TOLUENE	2
TRANS-1,3-DICHLOROPROPENE	2
1,1,2-TRICHLOROETHANE	2
TETRACHLOROETHENE	2
DIBROMOCHLOROMETHANE	2
CHLOROBENZENE	2
ETHYLBENZENE	2
P&M XYLENE	4
O-XYLENE	2
STYRENE	2
BROMOFORM	2
1,1,2,2-TETRACHLOROETHANE	2
1,3-DICHLOROBENZENE	2
1,4-DICHLOROBENZENE	2
1,2-DICHLOROBENZENE	2

PQL = Practical Quantitation Limit
ppb = parts per billion

Table 13-10 List of Semivolatile Analytical Parameters

BASELINE MONITORING PROJECT

SEMIVOLATILE ORGANICS BY EPA METHOD 8270

COMPOUND	PQL (ppb)
Acenaphthene	10
Acenaphthylene	10
Anthracene	10
Benzidine	30
Benzo(a)anthracene	10
Benzo(b)fluoranthene	10
Benzo(k)fluoranthene	10
Benzo(g,h,i)perylene	10
Benzo(a)Pyrene	10
4-Bromophenyl phenyl ether	10
Butylbenzylphthalate	10
Bis(2-chloroethoxy)methane	10
Bis(2-chloroethyl)ether	10
2,2-Oxybis(1-chloropropane)	10
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	10
2-Chloronaphthalene	10
2-Chlorophenol (o-Chlorophenol)	10
4-Chlorophenyl phenyl ether	10
Chrysene	10
Dibenz(a,h)anthracene	10
Di-n-butylphthalate	10
1,2-Dichlorobenzene (o-Dichlorobenzene)	10
1,3-Dichlorobenzene (m-Dichlorobenzene)	10
1,4-Dichlorobenzene (p-Dichlorobenzene)	10
3,3'-Dichlorobenzidine	20
2,4-Dichlorophenol	10
Diethylphthalate	10
2,4-Dimethylphenol	10
Dimethylphthalate	10
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	25
2,4-Dinitrophenol	25
2,4-Dinitrotoluene	10
2,6-Dinitrotoluene	10
Di-n-octylphthalate	10
1,2-Diphenylhydrazine (as azobenzene)	10
Bis(2-ethylhexyl)phthalate	10
Fluoranthene	10
Fluorene	10
Hexachlorobenzene	10
Hexachlorobutadiene	10

Table 13-10 (Cont'd)
Semivolatile Parameters

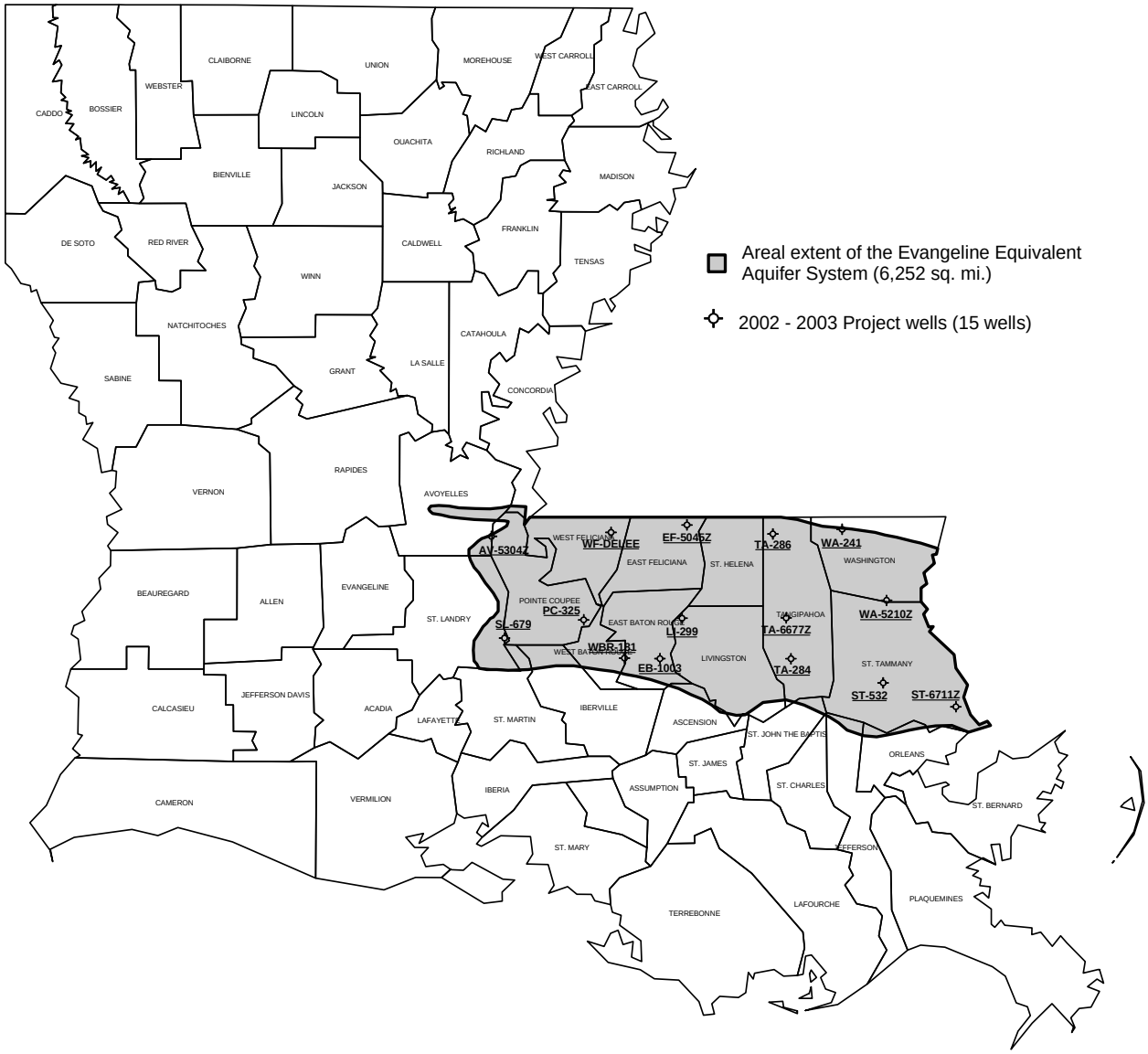
COMPOUND	PQL (ppb)
Hexachlorocyclopentadiene	10
Hexachloroethane	10
Indeno(1,2,3-cd)pyrene	10
Isophorone	10
Naphthalene	20
Nitrobenzene	10
2-Nitrophenol (o-Nitrophenol)	10
4-Nitrophenol (p-Nitrophenol)	25
N-Nitrosodiphenylamine	10
N-Nitroso-di-n-propylamine	10
N-Nitrosodiphenylamine (Diphenylamine)	10
Pentachlorophenol	25
Phenathrene	10
Phenol	10
Pyrene	10
1,2,4-Trichlorobenzene	10
2,4,6-Trichlorophenol	10

Table 13-11 List of Pesticide and PCB Analytical Parameters

EPA METHOD 8080

COMPOUND	PQL (ppb)
Aldrin	0.0500
Alpha BHC	0.0500
Beta BHC	0.0500
Delta BHC	0.0500
Gamma BHC (Lindane)	0.0500
Chlordane (technical)	0.500
4,4'-DDD (p,p'-DDD)	0.100
4,4'-DDE (p,p'-DDE)	0.100
4,4'-DDT (p,p'-DDT)	0.100
Dieldrin	0.100
Endosulfan I (alpha-Endosulfan)	0.0500
Endosulfan II (beta-Endosulfan)	0.100
Endosulfan Sulfate	0.100
Endrin	0.100
Endrin Aldehyde	0.100
Heptachlor	0.0500
Heptachlor epoxide	0.0500
Toxaphene	5.00
Aroclor-1016	1.00
Aroclor-1221	1.00
Aroclor-1232	1.00
Aroclor-1242	1.00
Aroclor-1248	1.00
Aroclor-1254	1.00
Aroclor-1260	1.00

BASELINE MONITORING PROJECT WELLS OF THE EVANGELINE EQUIVALENT AQUIFER SYSTEM



Aquifer boundary digitized from Louisiana Hydrologic Map No. 2: Areal Extent of Freshwater in Major Aquifers of Louisiana. Smoot, 1988; USGS/LDOTD Report 86-4150

Figure 13-1 Location Plat, Evangeline Equivalent Aquifer System

EVANGELINE EQUIVALENT AQUIFER SYSTEM - pH (SU)

Baseline Monitoring Project, FY2001-2004

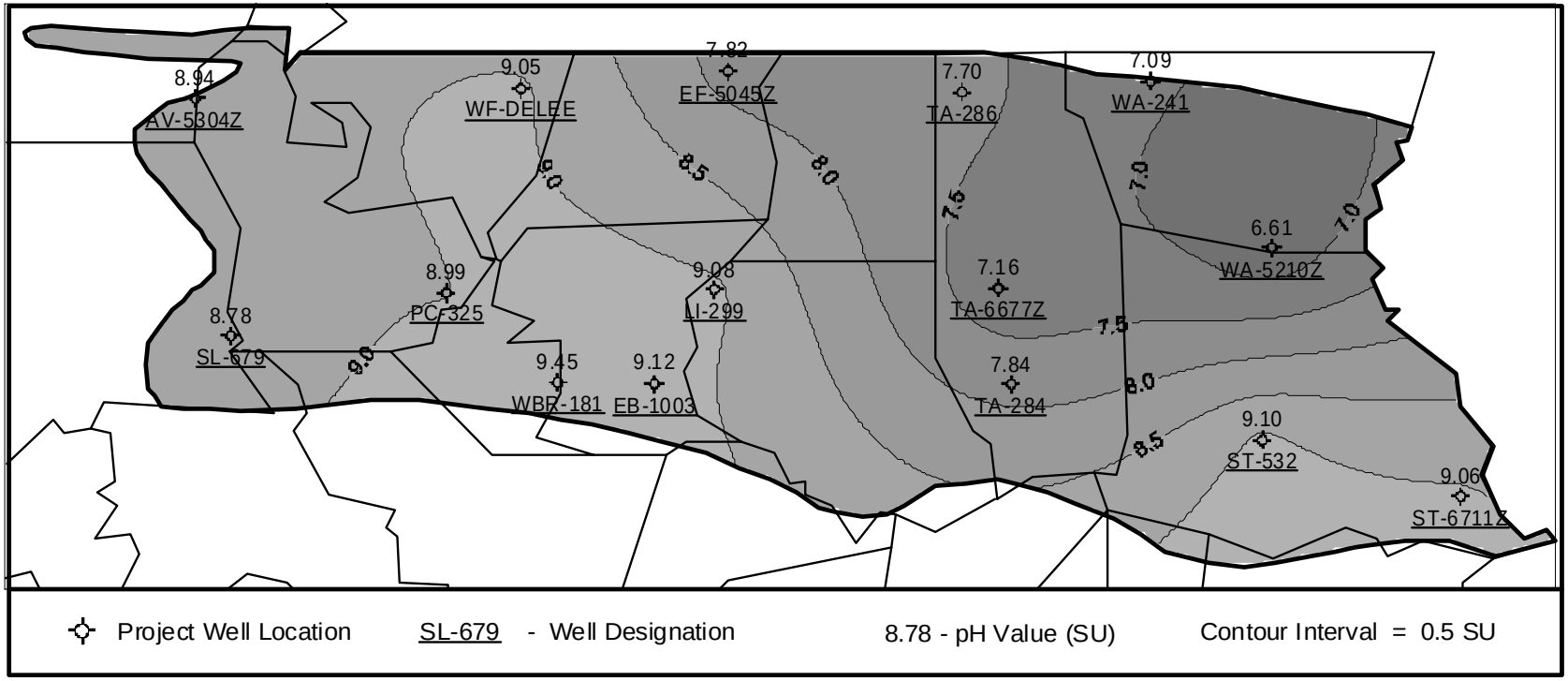


Figure 13-2 Map of pH Data

EVANGELINE EQUIVALENT AQUIFER SYSTEM - TDS (ppm)

Baseline Monitoring Project, FY2001-2004

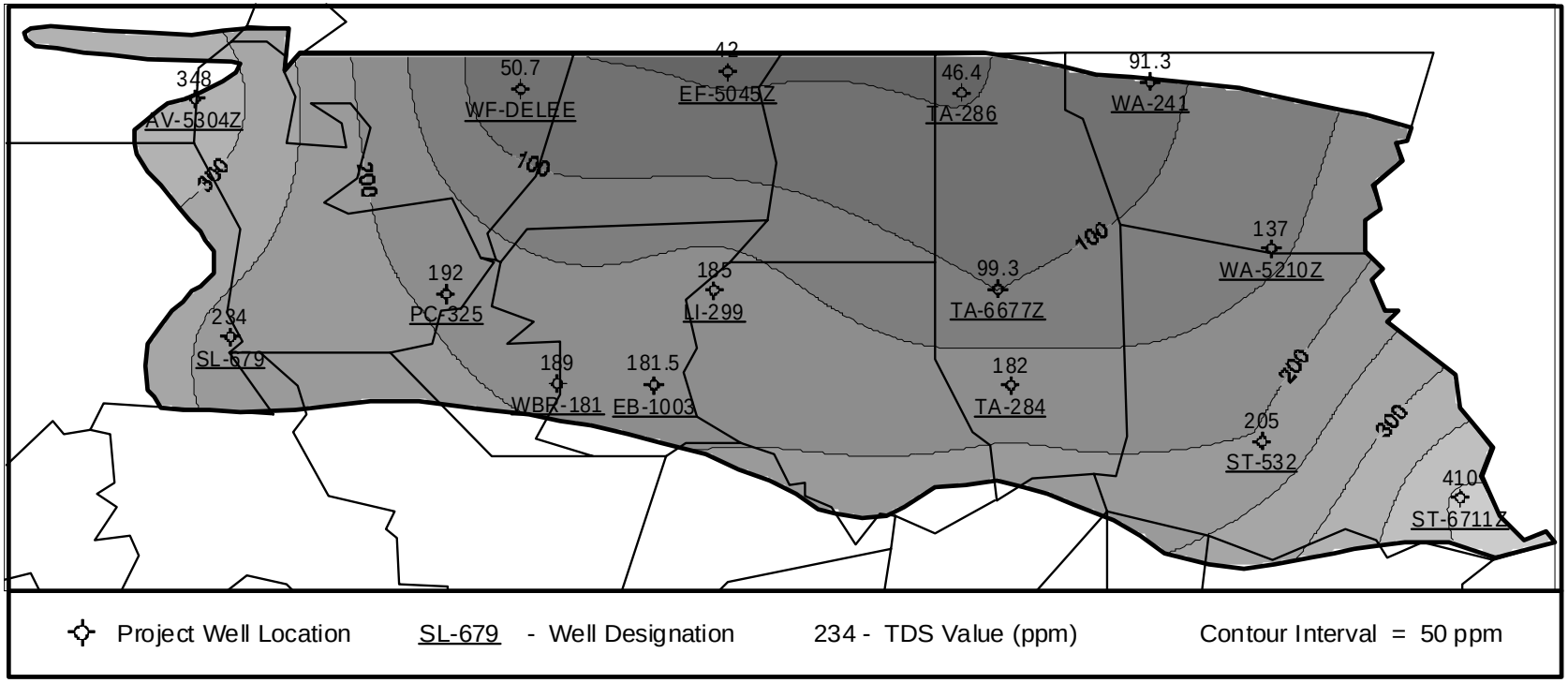


Figure 13-3 Map of TDS Data

EVANGELINE EQUIVALENT AQUIFER SYSTEM - CHLORIDE (ppm)

Baseline Monitoring Project, FY2001-2004

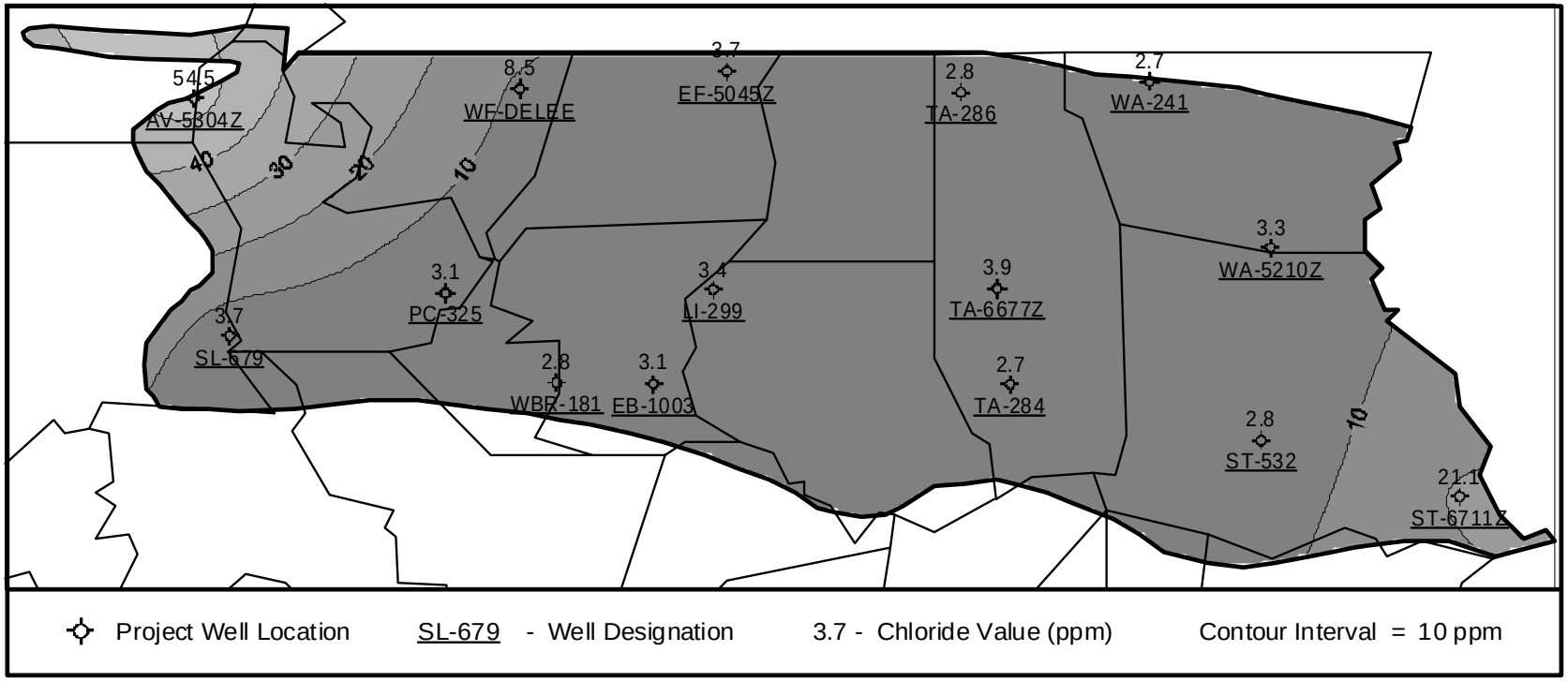


Figure 13-4 Map of Chloride Data

EVANGELINE EQUIVALENT AQUIFER SYSTEM - Iron (ppb)

Baseline Monitoring Project, FY2001-2004

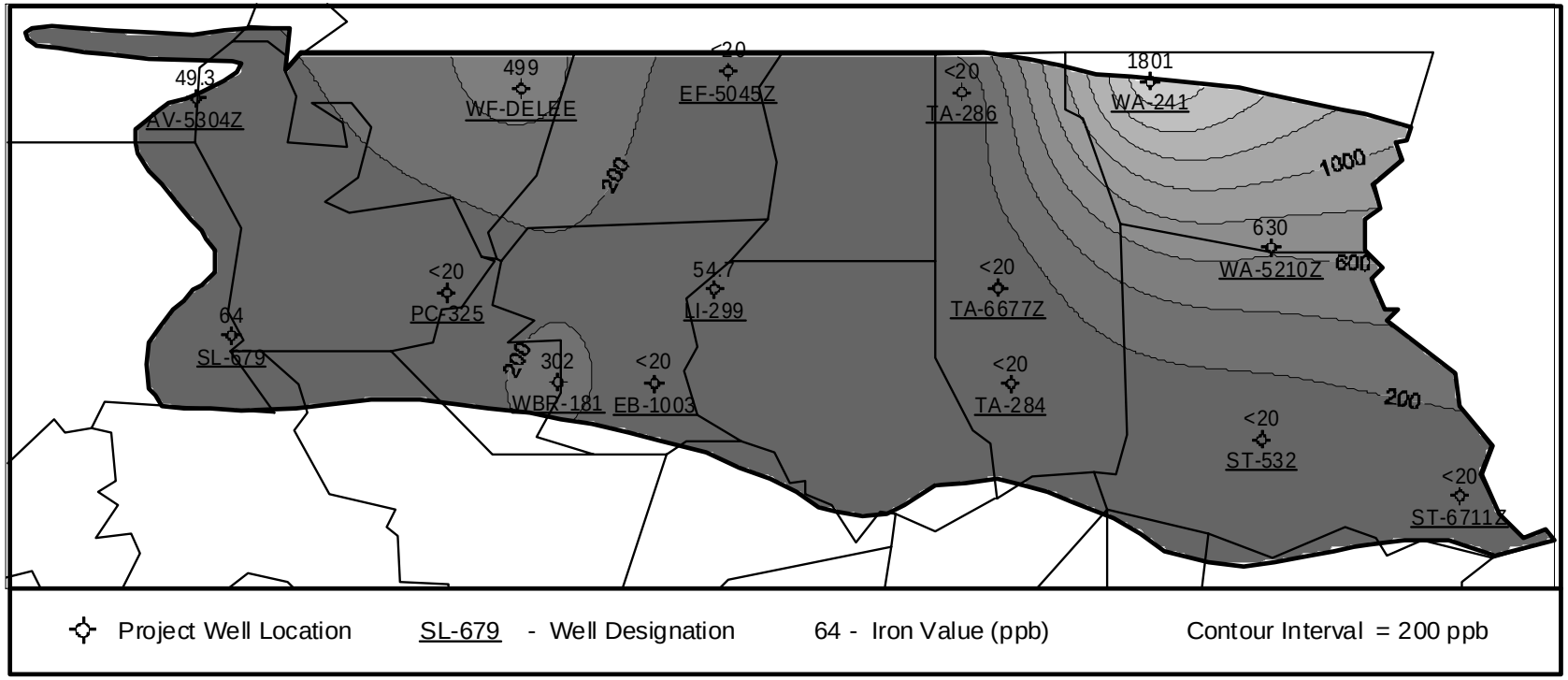


Figure 13-5 Map of Iron Data