JASPER EQUIVALENT AQUIFER SYSTEM SUMMARY, 2012
AQUIFER SAMPLING AND ASSESSMENT PROGRAM

APPENDIX 14 TO THE 2012 TRIENNIAL SUMMARY REPORT
PARTIAL FUNDING PROVIDED BY THE CWA

Contents

BACKGROUND

The Louisiana Department of Environmental Quality's (LDEQ) Aquifer Sampling and Assessment (ASSET) Program is an ambient monitoring program established to determine and monitor the quality of groundwater produced from Louisiana's major freshwater aquifers. The ASSET Program samples approximately 200 water wells located in 14 aquifers and aquifer systems across the state. The sampling process is designed so that all 14 aquifers and aquifer systems and associated wells are monitored every three years.

In order to better assess the water quality of a particular aquifer, an attempt is made to sample all ASSET Program wells producing from it in a narrow time frame. To more conveniently and economically promulgate those data collected, a summary report on each aquifer is prepared separately. Collectively, these aquifer summaries will make up, in part, the ASSET Program's Triennial Summary Report for 2012.

Analytical and field data contained in this summary were collected from wells producing from the Jasper Equivalent aquifer system during the 2012 state fiscal year (July 1, 2011 - June 30, 2012). This summary will become Appendix 14 of the ASSET Program Triennial Summary Report for 2012.

These data show that in April 2012, 15 wells were sampled which produce from the Jasper Equivalent aquifer system. Of these 15 wells, twelve are classified as public supply, and one each of irrigation, industrial and domestic classification. The wells are located in nine parishes in southeast Louisiana.

Figure 14-1 shows the geographic locations of the Jasper Equivalent aquifer system and the associated wells, whereas Table 14-1 lists the wells monitored along with their total depths, use made of produced waters and date sampled.

Well data, including well location and aquifer assignment, for registered water wells were obtained from the Louisiana Department of Natural Resources' Water Well Registration Data file.

GEOLOGY

The Jasper Equivalent aquifer system is composed of the Miocene aged aquifers of the Florida Parishes and Pointe Coupee Parish. These Miocene 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 fine to coarse sand and gravel, with grain size increasing and sorting decreasing with depth.

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 Miocene 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 Jasper Equivalent aquifer system range from 500 to 3,200 feet below sea level. The range of thickness of the fresh water interval in the Jasper Equivalent aquifer system is 1,600 to 2,350 feet. The depths of the wells that were monitored in conjunction with the ASSET Program range from 960 to 2,700 feet below ground surface.

PROGRAM PARAMETERS

The field parameters checked at each ASSET well and the list of conventional parameters analyzed in the laboratory are shown in Table 14-2. The inorganic (total metals) parameters analyzed in the laboratory are listed in Table 14-3. These tables also show the field and analytical results determined for each analyte. For quality control, duplicate samples were taken for each parameter at EF-272 and WF-264.

In addition to the field, conventional and inorganic analytical parameters, the target analyte list includes three other categories of compounds: volatiles, semi-volatiles, and pesticides/PCBs. Due to the large number of analytes in these categories, tables were not prepared showing the analytical results for these compounds. A discussion of detections (if any), from any of these three categories, can be found in their respective sections. Tables 14-8, 14-9 and 14-10 list the target analytes for volatiles, semi-volatiles and pesticides/PCBs, respectively.

Tables 14-4 and 14-5 provide a statistical overview of field and conventional data and inorganic data for the Jasper Equivalent aquifer system, listing the minimum, maximum, and average results for these parameters collected in the FY 2012 sampling. Tables 14-6 and 14-7 compare these same parameter averages to historical ASSET-derived data for the Jasper Equivalent aquifer system, from fiscal years 1997, 2000, 2003, 2006, and 2009.

The average values listed in the above referenced tables are determined using all valid, reported results, including non-detects. Per Departmental policy concerning statistical analysis, one-half of the detection limit (DL) is used in place of zero when non-detects are encountered. However, the minimum value is reported as less than the DL, not one-half the DL. If all results for a particular analyte are reported as non-detect, then the minimum, maximum, and average values are all reported as less than the DL. One-half the DL is also used for contouring purposes, and in the figures and charts referenced below.

Figures 14-2, 14-3, and 14-4, respectively, represent the contoured data for pH, total dissolved solids, and chloride. The figure showing contoured data for iron, which is normally included, was omitted from this report because all data was non-detect. Charts 14-1 through 14-16 represent the trend of the graphed parameter, based on the averaged value of that parameter for each three-year reporting period. Discussion of historical data and related trends is found in the **Water Quality Trends and Comparison to Historical ASSET Data** section.

INTERPRETATION OF DATA

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, the ASSET Program uses the MCLs as a benchmark for further evaluation.

EPA has set secondary standards, which are defined as non-enforceable taste, odor, or appearance guidelines. Field and laboratory data contained in Tables 14-2 and 14-3 show that one secondary MCL (SMCL) was exceeded in 11 of the 14 wells sampled in the Jasper Equivalent aquifer system.

Field and Conventional Parameters

Table 14-2 shows the field and conventional parameters for which samples are collected at each well and the analytical results for those parameters. Table 14-6 provides an overview of field and conventional parameter data averages for the Jasper Equivalent aquifer system, including five previous sampling event averages.

Federal Primary Drinking Water Standards: A review of the analysis listed in Table 14-2 shows that no MCL was exceeded for field or conventional parameters for this reporting period.

Federal Secondary Drinking Water Standards: A review of the analysis listed in Table 14-2 shows that 11 wells exceeded the SMCL for pH. Following is a list of SMCL exceedances with well number and results:

pH (SMCL = 6.5 – 8.5 Standard Units):

EB-630 – 9.06 SU	EB-770 – 8.77 SU
EF-272 – 8.62 SU (Original and Duplicate)	LI-229 – 9.04 SU
PC-275 – 9.24 SU	SH-104 – 9.24 SU
ST-1135 – 8.97 SU	ST-FOLSOM – 9.01 SU
TA-560 – 8.56 SU	TA-826 – 9.03 SU
WA-248 – 8.76 SU (Original and Duplicate)	

Inorganic Parameters

Table 14-3 shows the inorganic (total metals) parameters for which samples are collected at each well and the analytical results for those parameters. Table 14-7 provides an overview of inorganic parameter data averages for the Jasper Equivalent aquifer system, including five previous sampling event averages.

Federal Primary Drinking Water Standards: A review of the analyses listed on Table 14-3 shows that no MCL was exceeded for total metals.

Federal Secondary Drinking Water Standards: Laboratory data contained in Table 14-3 shows that no SMCLs were exceeded.

Volatile Organic Compounds

Table 14-6 shows the volatile organic compound (VOC) parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; 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 2012 sampling of the Jasper Equivalent aquifer system.

Semi-Volatile Organic Compounds

Table 14-7 shows the semi-volatile organic compound (SVOC) parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; however any detection of a SVOC would be discussed in this section.

There were no confirmed SVOC detections at or above its detection limit during the FY 2012 sampling of the Jasper Equivalent aquifer system.

Pesticides and PCBs

Table 14-8 shows the pesticide and PCB parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; however any detection of a pesticide or PCB would be discussed in this section.

No pesticide or PCB was detected at or above its detection limit during the FY 2012 sampling of the Jasper Equivalent aquifer system.

WATER QUALITY TRENDS AND COMPARISON TO HISTORICAL ASSET DATA

Analytical and field data show that the quality and characteristics of groundwater produced from the Jasper Equivalent aquifer system show little change when comparing current data to that of the five previous sampling rotations (three, six, nine, twelve, and fifteen years prior). These comparisons can be found in Tables 14-6 and 14-7, and in Charts 14-1 to 14-16 of this summary. Over the fifteen-year period, seven analytes have shown a general increase in average concentration. These analytes are: alkalinity, ammonia, iron, pH, sulfate, TKN, and total phosphorus. For this same time period, six analytes have shown a general decrease. These analytes are: chloride, color, salinity, specific conductance (field and lab), temperature, and total dissolved solids. All other analyte averages have remained consistent or have been non-detect over this time period. The number of secondary exceedances in the Jasper Equivalent aquifer system has not changed from the previous sampling in FY 2009 with one SMCL exceedance (pH) in 11 wells.

SUMMARY AND RECOMMENDATIONS

In summary, the data show that the groundwater produced from this aquifer is soft[1] and is of good quality when considering short-term or long-term health risk guidelines. Laboratory data show that no ASSET well that was sampled during the Fiscal Year 2012 monitoring of the Jasper Equivalent aquifer system exceeded a Primary MCL. The data also show that this aquifer is of good quality when considering taste, odor, or appearance guidelines, with only one SMCL (pH) exceeded in 11 wells.

Comparison to historical ASSET-derived data shows little change in the quality or characteristics of the Jasper Equivalent aquifer system, with seven parameters showing consistent increases in average concentrations and six parameters decreasing in average concentration with the remainder of the analyte averages staying consistent over the previous fifteen year period.

It is recommended that the wells assigned to the Jasper Equivalent aquifer system be re-sampled as planned, in approximately three years. In addition, several wells should be added to the 15 currently in place to increase the well density for this aquifer.

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[1] Classification based on hardness scale from: Peavy, H. S. et al. *Environmental Engineering*. New York: McGraw-Hill, 1985.

Table 14-1: List of Wells Sampled – FY 2012
Jasper Equivalent Aquifer System

Well ID	Parish	Date	Owner	Depth (Feet)	Well Use
1739 / EB-630	East Baton Rouge	4/25/2012	Baton Rouge Water Company	2253	Public Supply
1913 / EB-770	East Baton Rouge	4/20/2012	City of Zachary	2080	Public Supply
1915 / EF-272	East Feliciana	4/18/2012	Louisiana. War Vets Home	1325	Public Supply
1711 / LI-185	Livingston	4/25/2012	City of Denham Springs	2610	Public Supply
1916 / LI-229	Livingston	4/20/2012	Ward 2 Water District	1826	Public Supply
1918 / LI-257	Livingston	4/25/2012	Village of Albany	1842	Public Supply
1914 / PC-275	Point Coupee	4/18/2012	Private Owner	1912	Domestic
1917 / SH-104	St. Helena	4/20/2012	Cal Maine Foods	1652	Industrial
1906 / ST-995	St. Tammany	4/26/2012	Insta-Gator	2290	Irrigation
4284 / ST-1135	St. Tammany	4/26/2012	Lakeshore Estates	2605	Public Supply
1921 / ST-FOLSOM	St. Tammany	4/26/2012	Village of Folsom	2265	Public Supply
1820 / TA-560	Tangipahoa	4/25/2012	Town of Roseland	2032	Public Supply
1828 / TA-826	Tangipahoa	4/25/2012	City of Ponchatoula	2015	Public Supply
1919 / WA-248	Washington	4/26/2012	Town of Franklinton	2700	Public Supply
1885 / WF-264	West Feliciana	4/18/2012	West Feliciana Parish Utilities	960	Public Supply

Table 14-2: Summary of Field and Conventional Data – FY 2012

Jasper Equivalent Aquifer System

Well ID	pH SU	Sal. ppt	Sp. Cond. mmhos/cm	Temp Deg. C	TDS g/L	Alk mg/L	Cl mg/L	Color PCU	Sp. Cond. umhos/cm	SO4 mg/L	TDS mg/L	TSS mg/L	Turb. NTU	NH3 mg/L	Hard. mg/L	Nitrite-Nitrate (as N) mg/L	TKN mg/L	Tot. P mg/L
	LABORATORY DETECTION LIMITS →					2	1	5	1	1	10	4	0.1	0.1	5	0.05	0.5	0.05
	FIELD PARAMETERS					LABORATORY PARAMETERS												
EB-630	9.06	0.43	0.883	31.39	0.574	169	136.0	10	755	7.61	440	< 4	0.26	0.27	20	< 0.05	< 0.5	0.28
EB-770	8.77	0.15	0.316	26.06	0.205	169	5.6	< 5	284	8.62	210	< 4	0.42	< 0.1	< 5	< 0.05	0.62	0.47
EF-272	8.62	0.15	0.309	23.09	0.201	144	6.1	5	300	7.63	202	< 4	0.13	0.20	< 5	< 0.05	< 0.5	0.68
EF-272*	8.62	0.15	0.309	23.09	0.201	146	4.3	5	307	7.40	200	< 4	0.30	< 0.1	< 5	< 0.05	0.57	0.52
LI-185	8.41	0.12	0.262	28.46	0.170	113	5.4	5	238	7.75	202	< 4	0.25	< 0.1	12	< 0.05	< 0.5	0.36
LI-229	9.04	0.15	0.311	26.47	0.202	169	3.2	< 5	275	7.26	200	< 4	0.17	0.11	6	< 0.05	< 0.5	0.41
LI-257	8.35	0.11	0.243	27.49	0.158	98.9	3.6	5	198	8.38	158	< 4	0.11	< 0.1	8	< 0.05	< 0.5	0.45
PC-275	9.24	0.32	0.655	21.05	0.426	316	27.4	15	627	4.90	378	< 4	0.11	0.75	6	< 0.05	0.85	0.55
SH-104	9.24	0.19	0.404	24.44	0.263	225	3.8	5	360	7.09	225	< 4	0.30	0.15	< 5	< 0.05	0.55	0.72
ST-1135	8.97	0.24	0.511	36.08	0.332	203	10.0	5	438	11.30	272	< 4	< 0.1	0.43	10	< 0.05	< 0.5	0.36
ST-995	8.31	0.09	0.192	27.36	0.125	76	3.1	5	160	8.00	155	< 4	0.12	< 0.1	12	< 0.05	< 0.5	0.68
ST-FOLSOM	9.01	0.12	0.264	27.68	0.171	124	3.3	5	217	8.72	132	< 4	0.10	0.18	10	< 0.05	< 0.5	0.35
TA-560	8.56	0.10	0.224	26.98	0.145	113	3.5	5	199	7.83	175	< 4	0.29	0.12	< 5	< 0.05	< 0.5	0.66
TA-826	9.03	0.16	0.330	29.2	0.214	147	3.3	5	287	10.20	202	< 4	0.30	< 0.1	16	< 0.05	< 0.5	0.35
WA-248	8.76	0.17	0.366	28.61	0.238	169	8.8	10	312	8.11	208	< 4	0.10	0.37	10	< 0.05	< 0.5	0.70
WA-248*	8.76	0.17	0.366	28.61	0.238	147	8.8	10	326	7.83	202	< 4	< 0.1	0.45	10	< 0.05	< 0.5	0.75
WF-264	8.2	0.13	0.278	22.88	0.181	132	2.4	5	272	7.28	175	< 4	0.17	0.47	8	< 0.05	1.30	0.31

*Denotes Duplicate Sample

Shaded cells exceed EPA Secondary Standards

Table 14-3: Summary of Inorganic Data – FY 2012
Jasper Equivalent Aquifer System

Well Number	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron ug/L	Lead ug/L	Mercury ug/L	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L
Laboratory Detection Limits	**1**	**1**	**1**	**1**	**1**	**1**	**5**	**100**	**1**	**0.05**	**1**	**1**	**1**	**1**	**5**
EB-630	< 1	< 1	48.1	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
EB-770	< 1	< 1	5.5	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	10.6
EF-272	< 1	< 1	3.2	< 1	< 1	< 1	6.4	< 100	1.66	< 0.05	< 1	< 1	< 1	< 1	< 5
EF-272*	< 1	< 1	3.2	< 1	< 1	< 1	5.2	< 100	1.69	< 0.05	< 1	< 1	< 1	< 1	< 5
LI-185	< 1	< 1	15.8	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
LI-229	< 1	< 1	10.6	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
LI-257	< 1	< 1	6.9	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
PC-275	< 1	< 1	8.3	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
SH-104	< 1	< 1	2.7	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
ST-1135	< 1	< 1	14.7	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
ST-995	< 1	< 1	9.8	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
ST-FOLSOM	< 1	< 1	2.5	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
TA-560	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
TA-826	< 1	< 1	23.9	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
WA-248	< 1	< 1	5.0	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
WA-248*	< 1	< 1	4.6	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
WF-264	< 1	< 1	40.2	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5

*Denotes Duplicate Sample.

Table 14-4: FY 2012 Field and Conventional Statistics, ASSET Wells

	PARAMETER	MINIMUM	MAXIMUM	AVERAGE
FIELD	Temperature (^{O}C)	21.05	36.08	27.00
	pH (SU)	8.20	9.24	8.76
	Specific Conductance (mmhos/cm)	0.192	0.883	0.366
	Salinity (ppt)	0.09	0.43	0.17
	TDS (g/L)	0.125	0.574	0.238
LABORATORY	Alkalinity (mg/L)	76	316	156
	Chloride (mg/L)	2.4	136.0	14.0
	Color (PCU)	< 5	15	6
	Specific Conductance (µmhos/cm)	160	755	327
	Sulfate (mg/L)	4.90	11.30	7.99
	TDS (mg/L)	132	440	220
	TSS (mg/L)	< 4	< 4	< 4
	Turbidity (NTU)	< 0.1	0.42	0.19
	Ammonia, as N (mg/L)	< 0.1	0.75	0.22
	Hardness (mg/L)	< 5	20	8
	Nitrite - Nitrate, as N (mg/L)	< 0.05	< 0.05	< 0.05
	TKN (mg/L)	< 0.5	1.30	< 0.05
	Total Phosphorus (mg/L)	0.28	0.75	0.51

Table 14-5: FY 2012 Inorganic Statistics, ASSET Wells

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Antimony (µg/L)	< 1	< 1	< 1
Arsenic (µg/L)	< 1	< 1	< 1
Barium (µg/L)	< 1	48.1	12.1
Beryllium (µg/L)	< 1	< 1	< 1
Cadmium (µg/L)	< 1	< 1	< 1
Chromium (µg/L)	< 1	< 1	< 1
Copper (µg/L)	< 5	6.4	< 5
Iron (µg/L)	< 100	< 100	< 100
Lead (µg/L)	< 1	1.69	0.64
Mercury (µg/L)	< 0.05	< 0.05	< 0.05
Nickel (µg/L)	< 1	< 1	< 1
Selenium (µg/L)	< 1	< 1	< 1
Silver (µg/L)	< 1	< 1	< 1
Thallium (µg/L)	< 1	< 1	< 1
Zinc (µg/L)	< 5	10.6	3.0

Table 14-6: Triennial Field and Conventional Statistics, ASSET Wells

	PARAMETER	AVERAGE VALUES BY FISCAL YEAR					
		FY 1997	FY 2000	FY 2003	FY 2006	FY 2009	FY 2012
FIELD	Temperature (^{O}C)	29.00	28.84	28.13	29.16	27.62	27.00
FIELD	pH (SU)	7.64	Invalid Data	8.67	8.67	8.12	8.76
FIELD	Specific Conductance (mmhos/cm)	0.350	0.380	0.370	0.368	0.330	0.366
FIELD	Salinity (ppt)	0.17	0.18	0.17	0.18	0.16	0.17
FIELD	Total dissolved solids (g/L)	-	-	-	0.180	0.170	0.238
LABORATORY	Alkalinity (mg/L)	137	167	163	165	164	156
LABORATORY	Chloride (mg/L)	12.1	17.9	14.4	24.5	6.4	14.0
LABORATORY	Color (PCU)	8	6	10	9	2	6
LABORATORY	Specific Conductance (umhos/cm)	335	394	343	397	309	327
LABORATORY	Sulfate (mg/L)	8.80	7.30	8.10	8.30	9.43	7.99
LABORATORY	Total dissolved solids (mg/L)	258	251	221	250	279	220
LABORATORY	Total suspended solids (mg/L)	4.1	8.6	<4	<4	<4	< 4
LABORATORY	Turbidity (NTU)	<1	1.10	1.10	<1	<0.4	0.19
LABORATORY	Ammonia, as N (mg/L)	0.31	0.27	0.24	0.29	0.89	0.22
LABORATORY	Hardness (mg/L)	7	6	11	6	5	8
LABORATORY	Nitrite - Nitrate , as N (mg/L)	<0.05	<0.02	0.06	<0.05	<0.01	< 0.05
LABORATORY	TKN (mg/L)	0.19	0.47	0.33	0.43	1.55	< 0.05
LABORATORY	Total Phosphorus (mg/L)	0.20	0.28	0.32	0.26	0.41	0.51

Table 14-7: Triennial Inorganic Statistics, ASSET Wells

PARAMETER	AVERAGE VALUES BY FISCAL YEAR					
	FY 1997	FY 2000	FY 2003	FY 2006	FY 2009	FY 2012
Antimony (µg/L)	7.78	<5	<5	<50	<5	< 1
Arsenic (µg/L)	<5	<5	<5	<20	<4	< 1
Barium (µg/L)	24.2	11.6	22.2	14.3	13.6	12.1
Beryllium (µg/L)	<1	<1	<1	<1	<2	< 1
Cadmium (µg/L)	1.13	1.02	<1	<1	<2	< 1
Chromium (µg/L)	<5	<5	<5	<5	<4	< 1
Copper (µg/L)	<5	14.0	<5	<10	<2	< 5
Iron (µg/L)	28	28	86	31	<50	< 100
Lead (µg/L)	<10	<10	<10	<20	<1	0.64
Mercury (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.20	< 0.05
Nickel (µg/L)	<5	<5	<5	<5	7.79	< 1
Selenium (µg/L)	<5	<5	<5	<5	<5	< 1
Silver (µg/L)	<1	<1	<1	<2.5	<0.5	< 1
Thallium (µg/L)	<5	<5	<5	<5	<2	< 1
Zinc (µg/L)	<10	22.9	56.8	<10	10.3	3.0

Table 14-8: VOC Analytical Parameters

COMPOUND	METHOD	DETECTION LIMIT (µg/L)
1,1,1-TRICHLOROETHANE	624	0.5
1,1,2,2-TETRACHLOROETHANE	624	0.5
1,1,2-TRICHLOROETHANE	624	0.5
1,1-DICHLOROETHANE	624	0.5
1,1-DICHLOROETHENE	624	0.5
1,2,3-TRICHLOROBENZENE	624	1
1,2-DICHLOROBENZENE	624	0.5
1,2-DICHLOROETHANE	624	0.5
1,2-DICHLOROPROPANE	624	0.5
1,3-DICHLOROBENZENE	624	0.5
1,4-DICHLOROBENZENE	624	0.5
BENZENE	624	0.5
BROMODICHLOROMETHANE	624	0.5
BROMOFORM	624	0.5
BROMOMETHANE	624	0.5
CARBON TETRACHLORIDE	624	0.5
CHLOROBENZENE	624	0.5
CHLOROETHANE	624	0.5
CHLOROFORM	624	0.5
CHLOROMETHANE	624	0.5
CIS-1,3-DICHLOROPROPENE	624	0.5
DIBROMOCHLOROMETHANE	624	0.5
ETHYL BENZENE	624	0.5
METHYLENE CHLORIDE	624	0.5
O-XYLENE	624	1
STYRENE	624	1
TERT-BUTYL METHYL ETHER	624	0.5
TETRACHLOROETHYLENE	624	0.5
TOLUENE	624	0.5
TRANS-1,2-DICHLOROETHENE	624	0.5
TRANS-1,3-DICHLOROPROPENE	624	0.5
TRICHLOROETHYLENE	624	0.5
TRICHLOROFLUOROMETHANE	624	0.5
VINYL CHLORIDE	624	0.5
XYLENES, M & P	624	1

Table 14-9: SVOC Analytical Parameters

COMPOUND	METHOD	DETECTION LIMIT (µg/L)
1,2,4,5-TETRACHLOROBENZENE	625	10
1,2,4-TRICHLOROBENZENE	625	10
2,4,6-TRICHLOROPHENOL	625	10
2,4-DICHLOROPHENOL	625	10
2,4-DIMETHYLPHENOL	625	10
2,4-DINITROPHENOL	625	10
2,4-DINITROTOLUENE	625	10
2,6-DINITROTOLUENE	625	10
2-CHLORONAPHTHALENE	625	10
2-CHLOROPHENOL	625	10
2-NITROPHENOL	625	10
3,3'-DICHLOROBENZIDINE	625	20
4,6-DINITRO-2-METHYLPHENOL	625	10
4-BROMOPHENYL PHENYL ETHER	625	10
4-CHLORO-3-METHYLPHENOL	625	10
4-CHLOROPHENYL PHENYL ETHER	625	10
4-NITROPHENOL	625	10
ACENAPHTHENE	625	10
ACENAPHTHYLENE	625	10
ANTHRACENE	625	10
BENZIDINE	625	30
BENZO(A)ANTHRACENE	625	10
BENZO(A)PYRENE	625	10
BENZO(B)FLUORANTHENE	625	10
BENZO(G,H,I)PERYLENE	625	10
BENZO(K)FLUORANTHENE	625	10
BENZYL BUTYL PHTHALATE	625	10
BIS(2-CHLOROETHOXY) METHANE	625	10
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	625	10
BIS(2-CHLOROISOPROPYL) ETHER	625	10
BIS(2-ETHYLHEXYL) PHTHALATE	625	10
CHRYSENE	625	10
DIBENZ(A,H)ANTHRACENE	625	10
DIETHYL PHTHALATE	625	10
DIMETHYL PHTHALATE	625	10
DI-N-BUTYL PHTHALATE	625	10

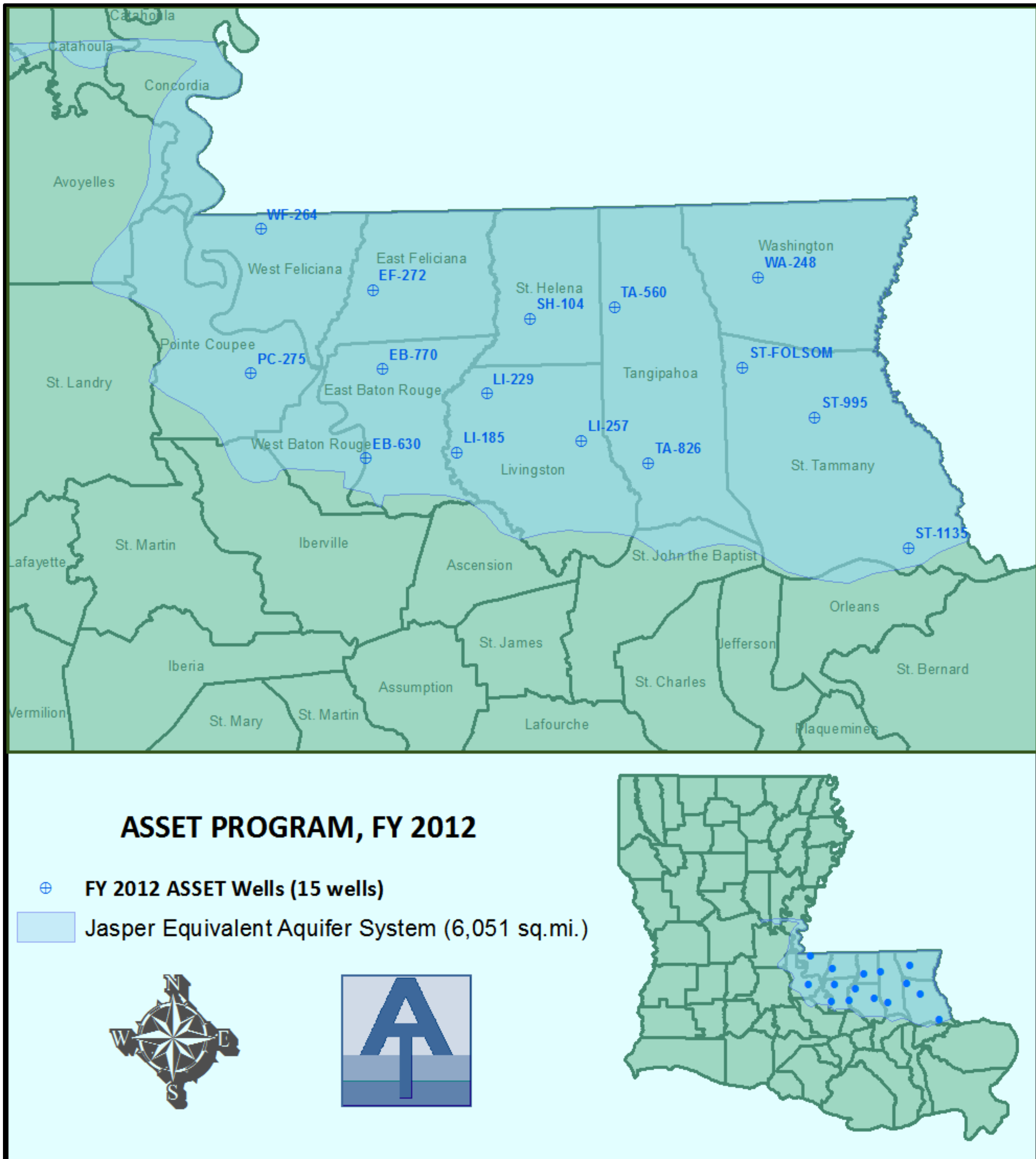
Table 14-9: SVOCs (Continued)

COMPOUND	METHOD	DETECTION LIMIT (µg/L)
DI-N-OCTYLPHTHALATE	625	10
FLUORANTHENE	625	10
FLUORENE	625	10
HEXACHLOROBENZENE	625	10
HEXACHLOROBUTADIENE	625	10
HEXACHLOROCYCLOPENTADIENE	625	10
HEXACHLOROETHANE	625	10
INDENO(1,2,3-C,D)PYRENE	625	10
ISOPHORONE	625	10
NAPHTHALENE	625	10
NITROBENZENE	625	10
N-NITROSODIMETHYLAMINE	625	10
N-NITROSODI-N-PROPYLAMINE	625	10
N-NITROSODIPHENYLAMINE	625	10
PENTACHLOROBENZENE	625	10
PENTACHLOROPHENOL	625	10
PHENANTHRENE	625	10
PHENOL	625	10
PYRENE	625	10

Table 14-10: Pesticides and PCBs

COMPOUND	METHOD	DETECTION LIMITS (µg/L)
ALDRIN	608	0.05
ALPHA BHC	608	0.05
ALPHA ENDOSULFAN	608	0.05
ALPHA-CHLORDANE	608	0.05
BETA BHC	608	0.05
BETA ENDOSULFAN	608	0.1
CHLORDANE	608	0.5
DELTA BHC	608	0.05
DIELDRIN	608	0.1
ENDOSULFAN SULFATE	608	0.1
ENDRIN	608	0.1
ENDRIN ALDEHYDE	608	0.1
ENDRIN KETONE	608	0.1
GAMMA BHC (LINDANE)	608	0.05
GAMMA-CHLORDANE	608	0.05
HEPTACHLOR	608	0.05
HEPTACHLOR EPOXIDE	608	0.05
METHOXYCHLOR	608	0.5
P,P'-DDD	608	0.1
P,P'-DDE	608	0.1
P,P'-DDT	608	0.1
PCB-1016 (AROCHLOR 1016)	608	1
PCB-1221 (AROCHLOR 1221)	608	1
PCB-1232 (AROCHLOR 1232)	608	1
PCB-1242 (AROCHLOR 1242)	608	1
PCB-1248 (AROCHLOR 1248)	608	1
PCB-1254 (AROCHLOR 1254)	608	1
PCB-1260 (AROCHLOR 1260)	608	1
TOXAPHENE	608	2

Figure 14-1: Location Plat, Jasper Equivalent Aquifer System



Aquifer Boundary digitized from Louisiana Hydrologic Map No. 2: Areal Extent of Freshwater In Major Aquifers of Louisiana, Smoot, 1986; USGS/LDOTD Report 86-4150.

Figure 14-2: Map of pH Data

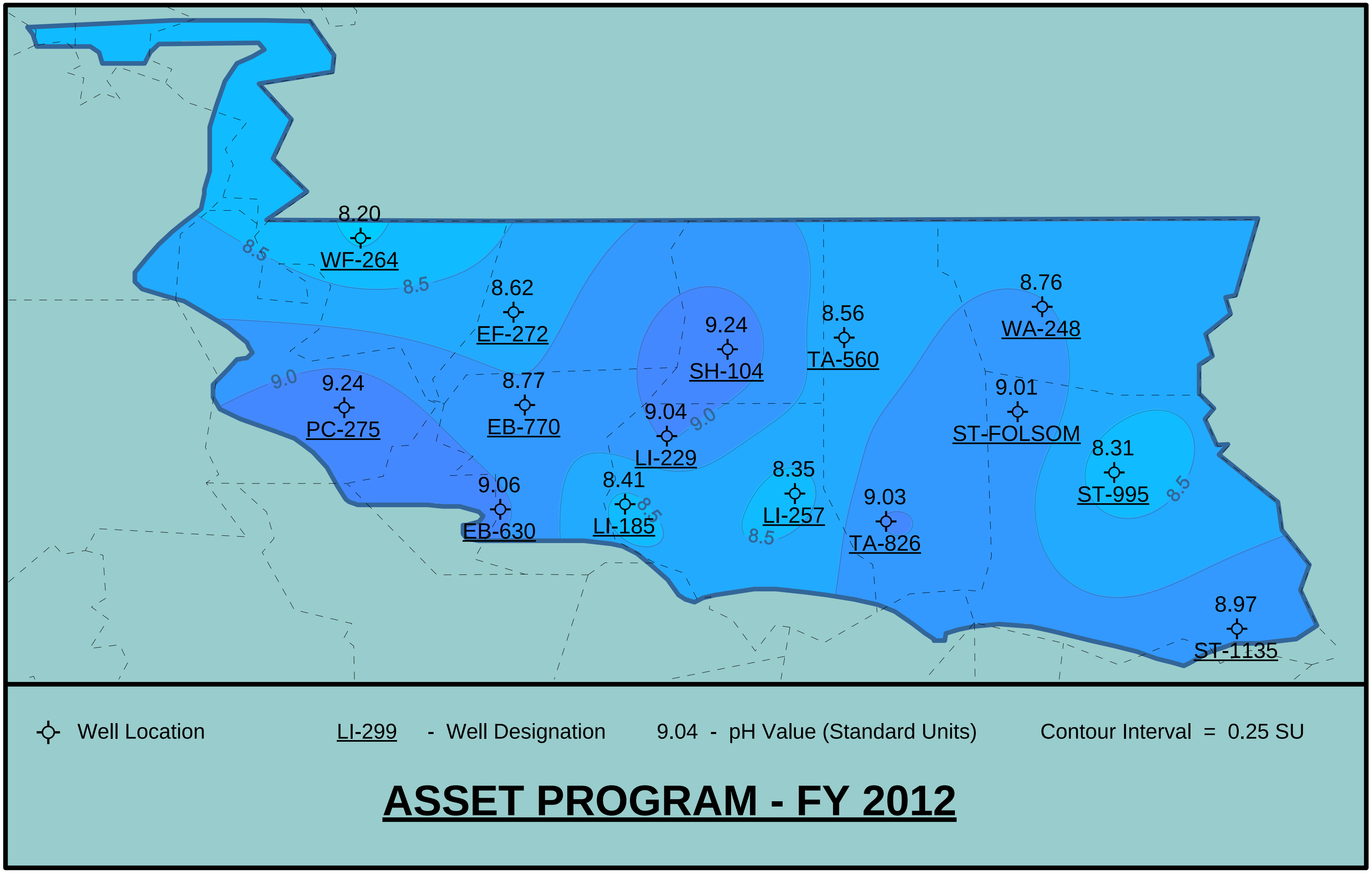


Figure 14-3: Map of TDS Lab Data

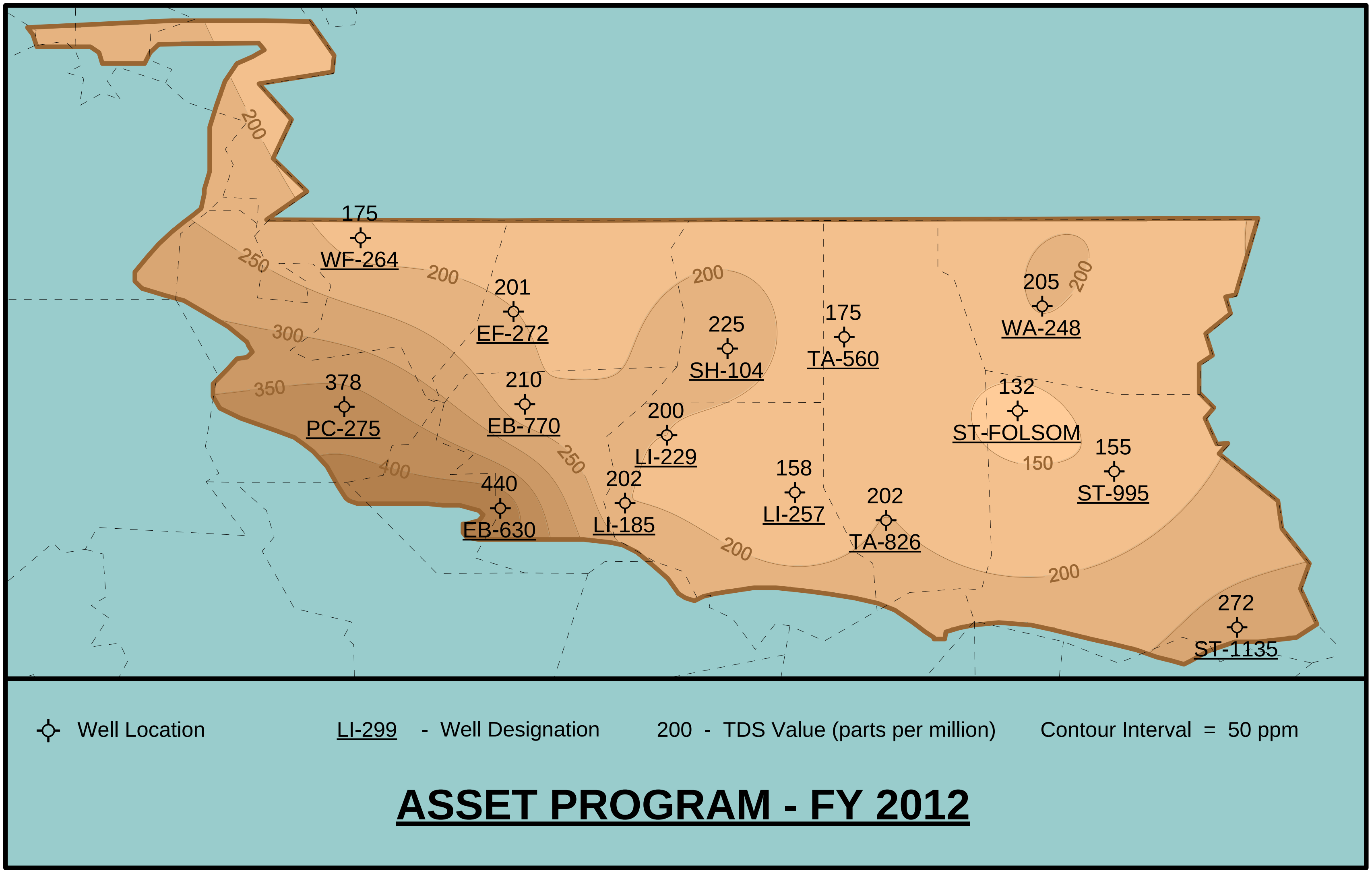


Figure 14-4: Map of Chloride Data

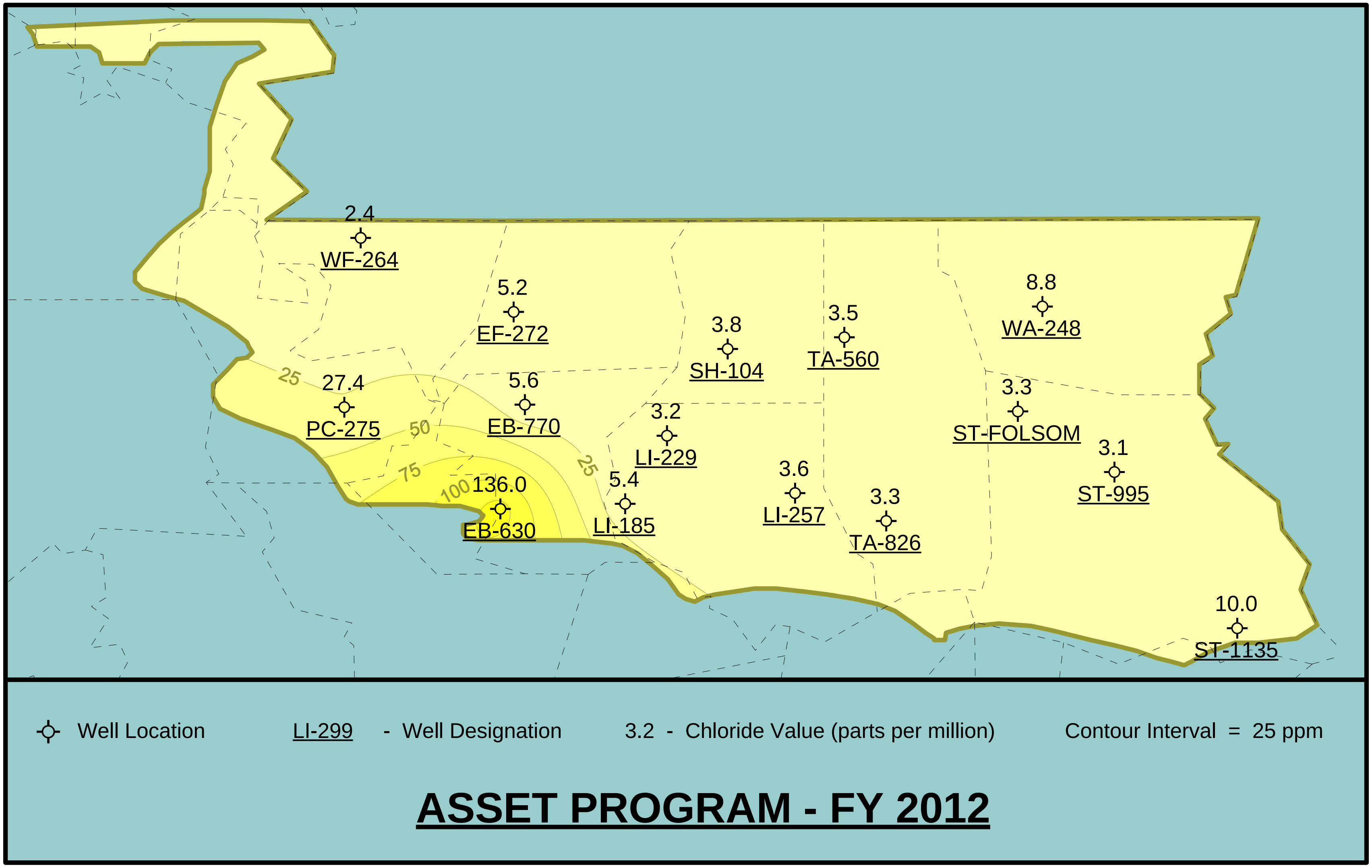


Chart 14-1: Temperature Trend

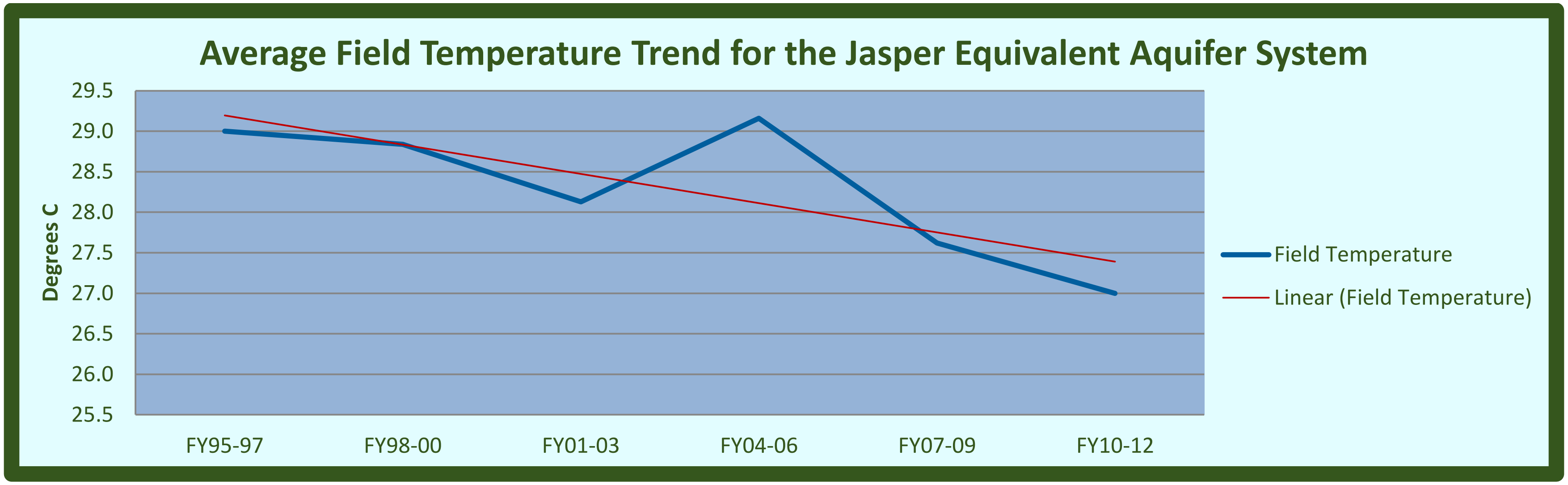


Chart 14-2: pH Trend

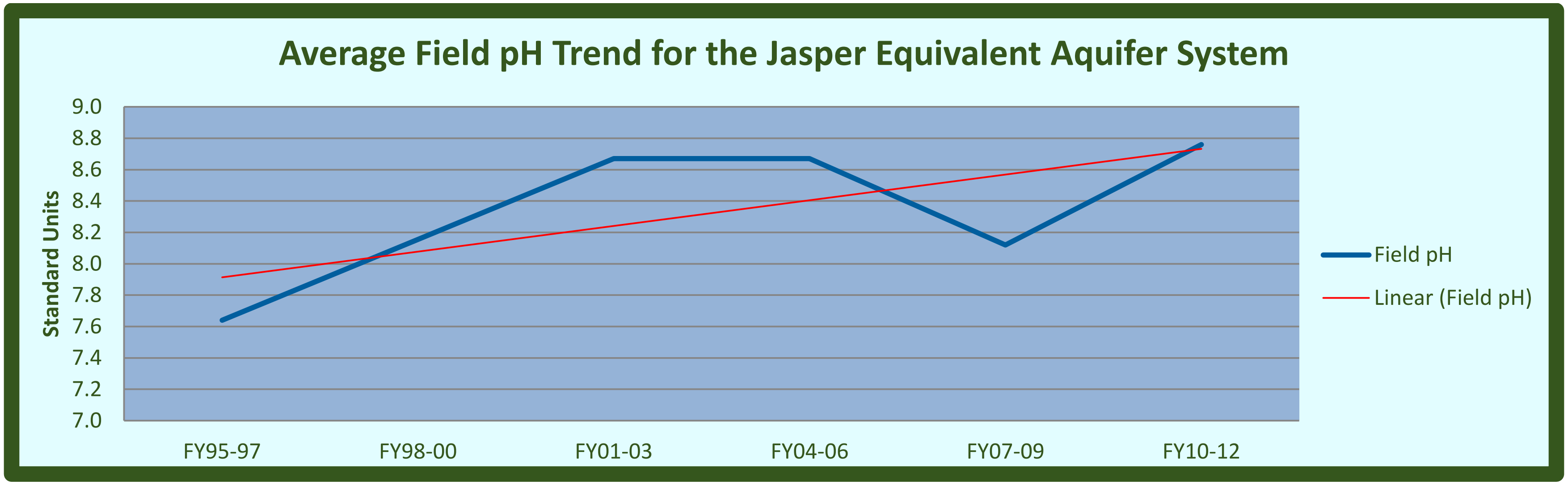


Chart 14-3: Field Specific Conductance Trend

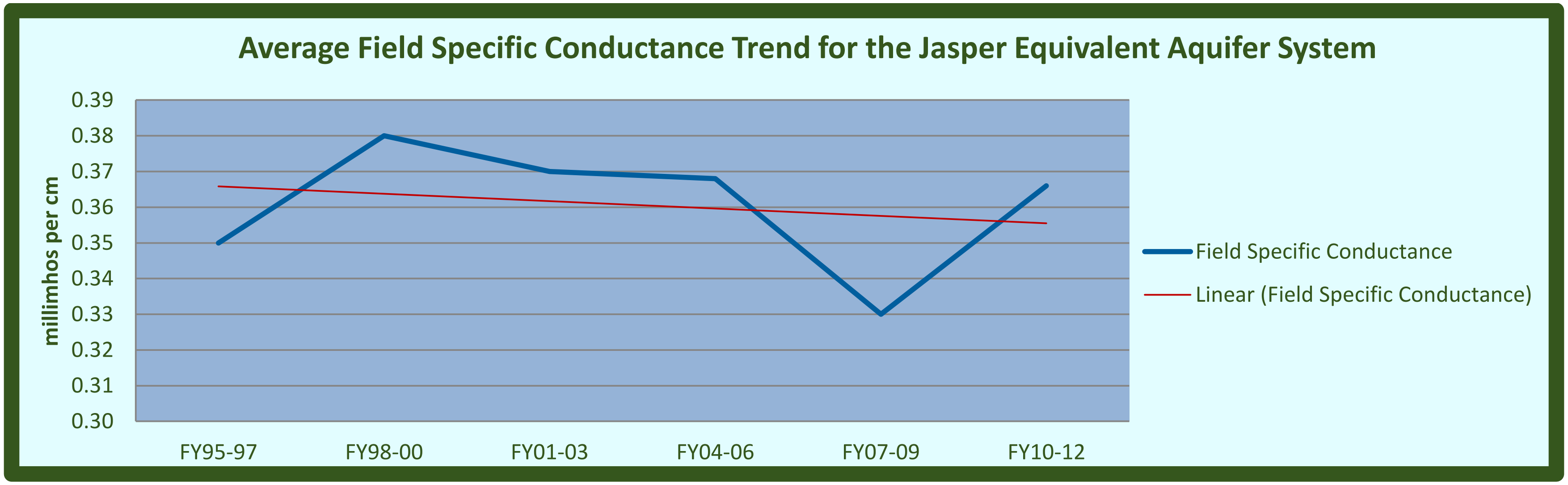


Chart 14-4: Lab Specific Conductance Trend

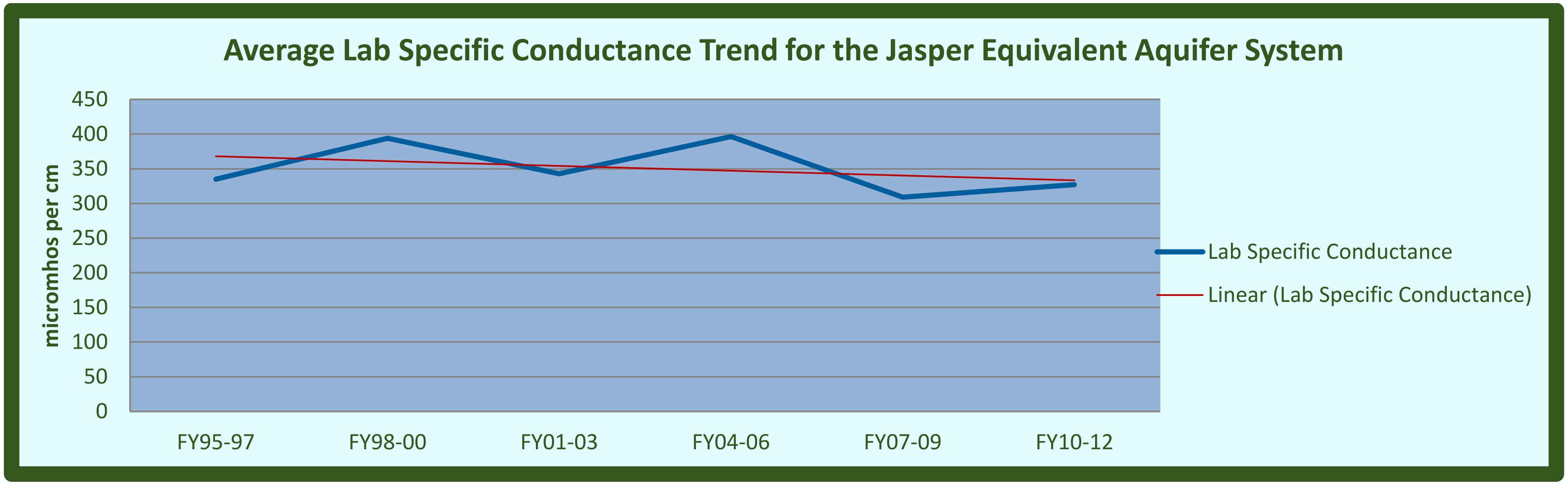


Chart 14-5: Salinity Trend

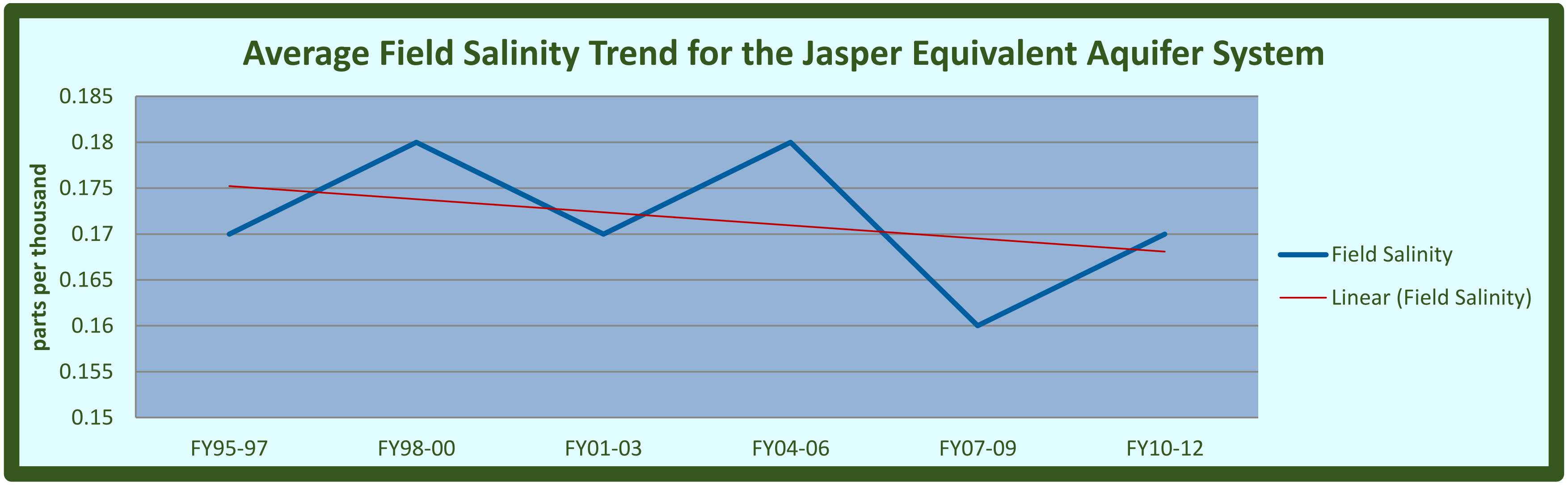


Chart 14-6: Chloride Trend

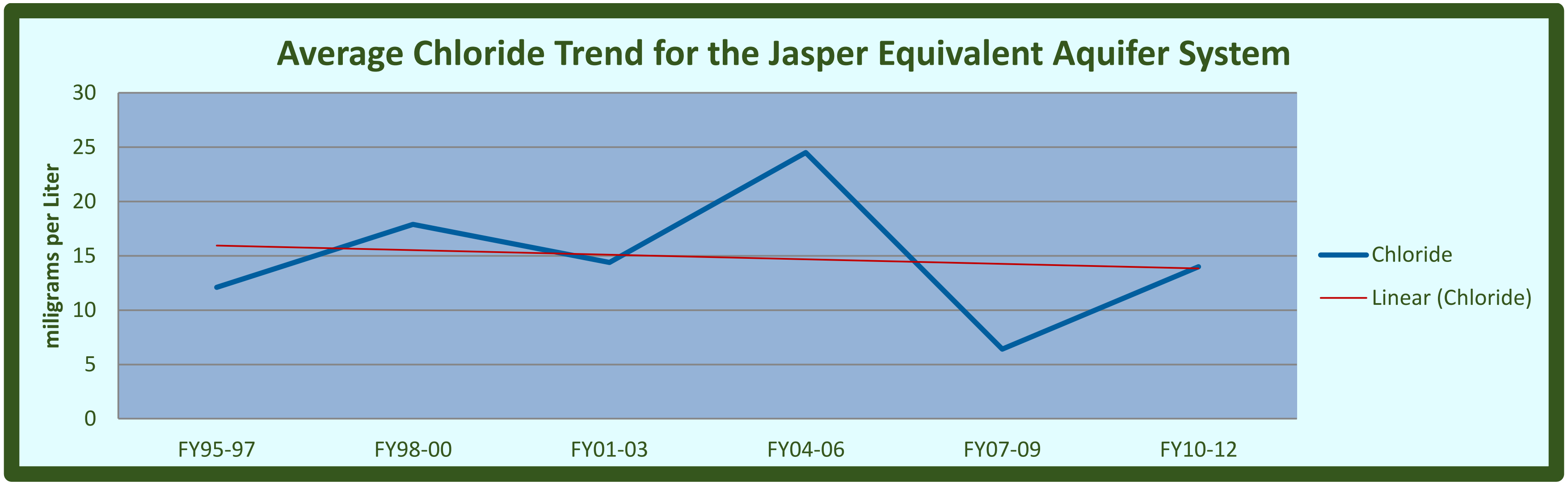


Chart 14-7: Alkalinity Trend

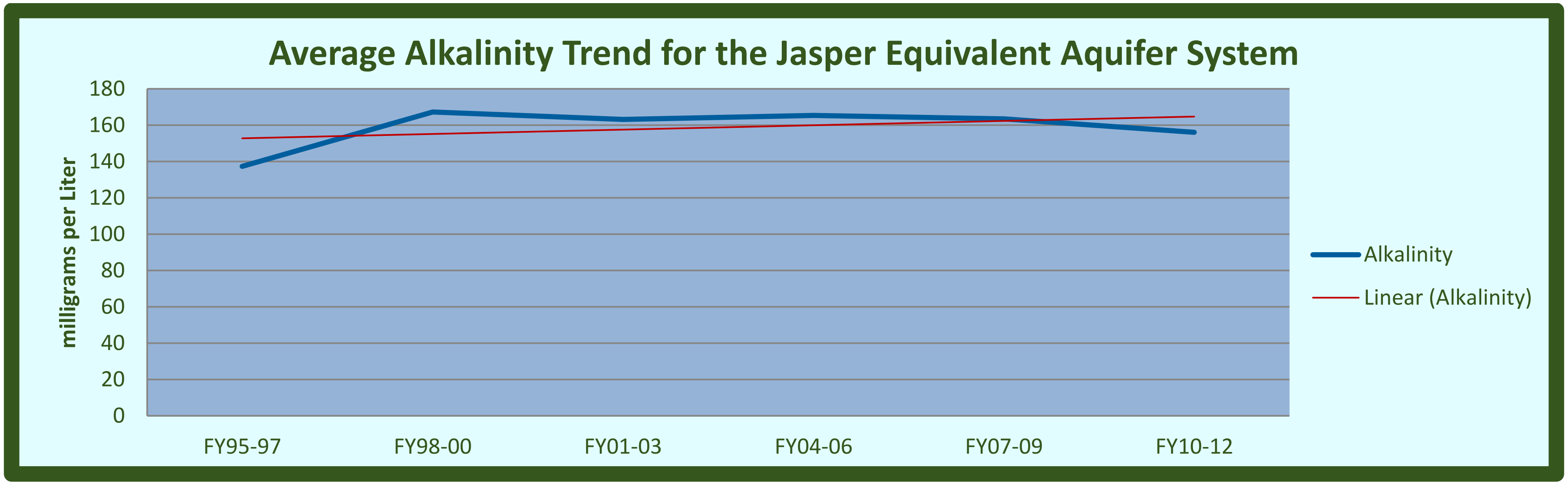


Chart 14-8: Color Trend

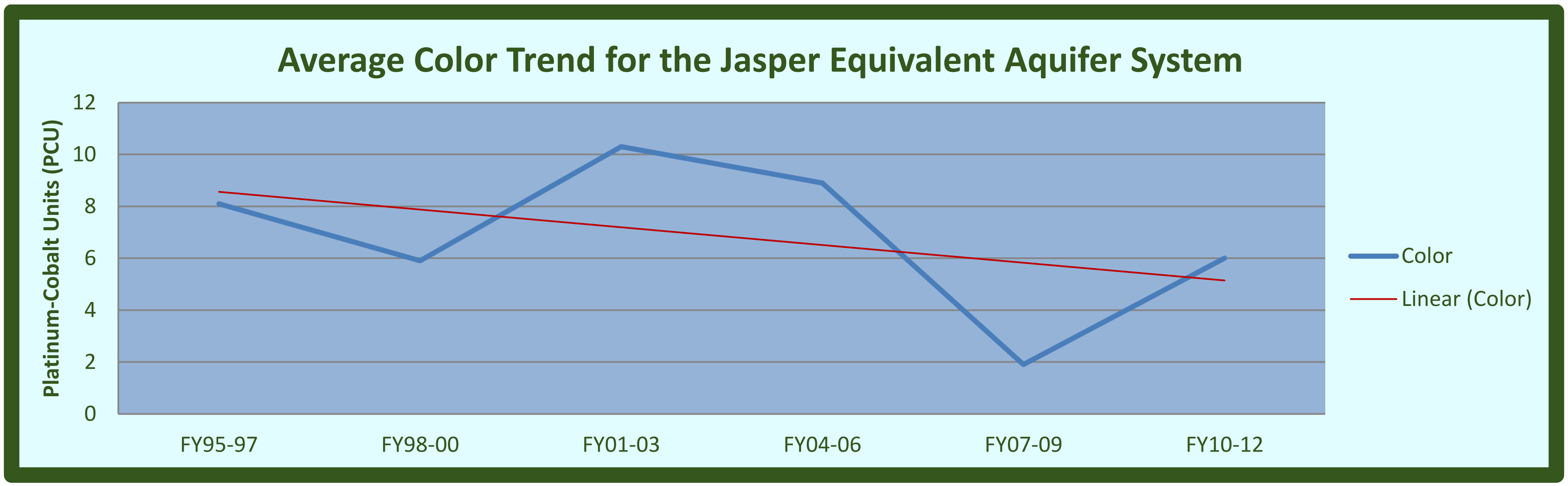


Chart 14-9: Sulfate Trend

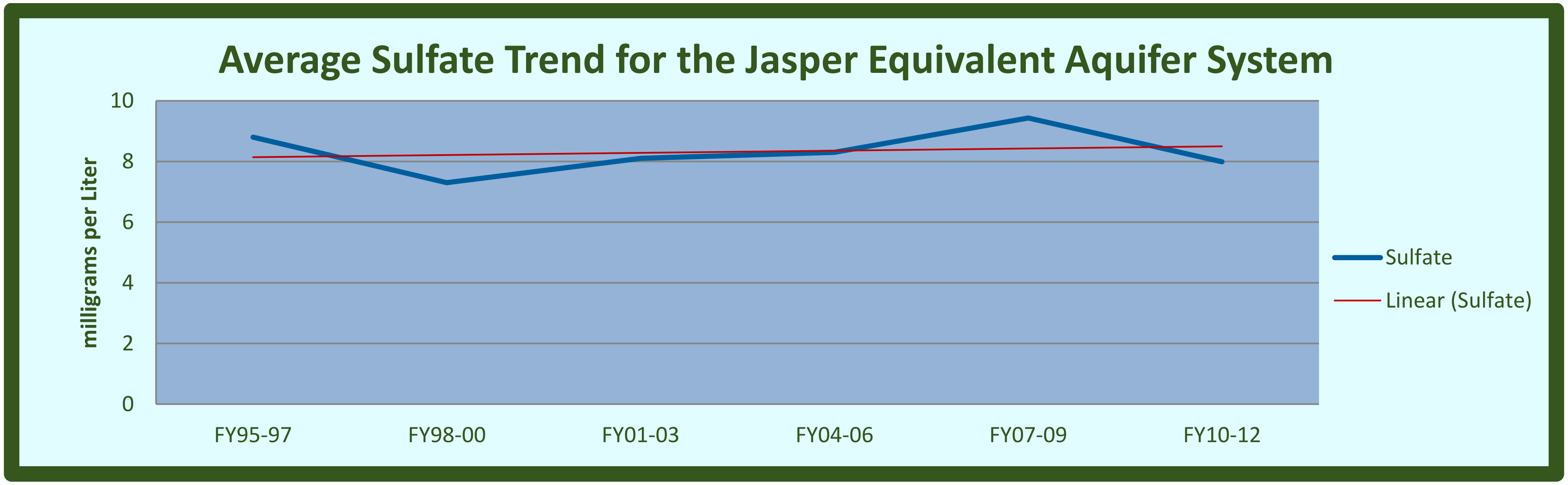


Chart 14-10: Total Dissolved Solids Trend

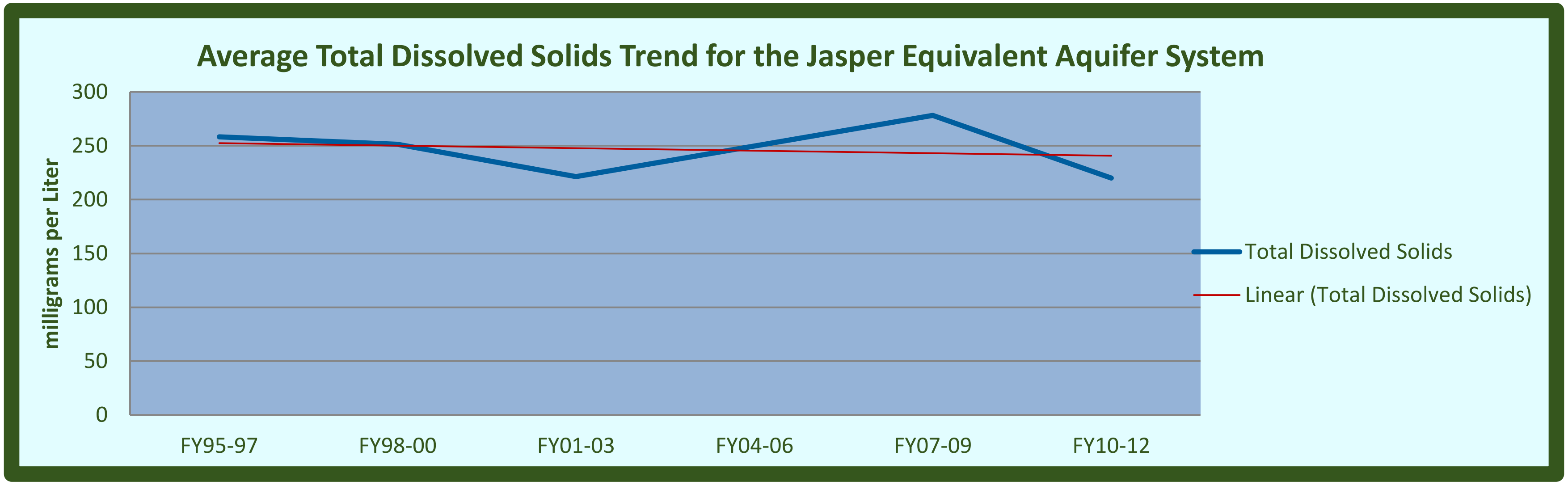


Chart 14-11: Ammonia Trend

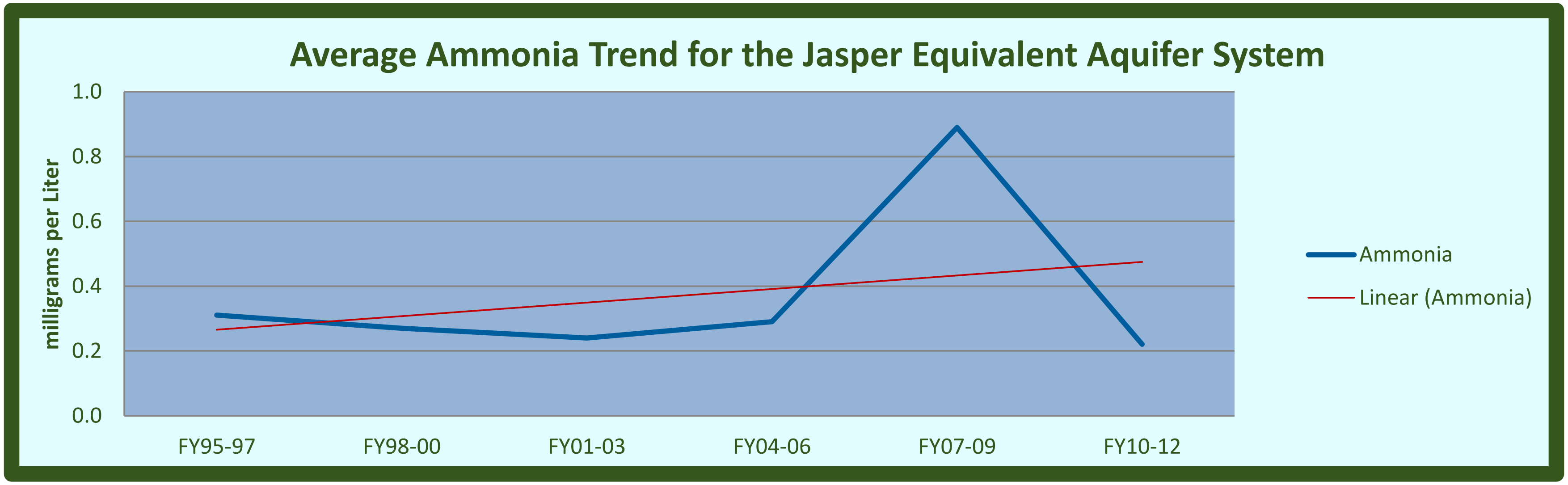


Chart 14-12: Hardness Trend

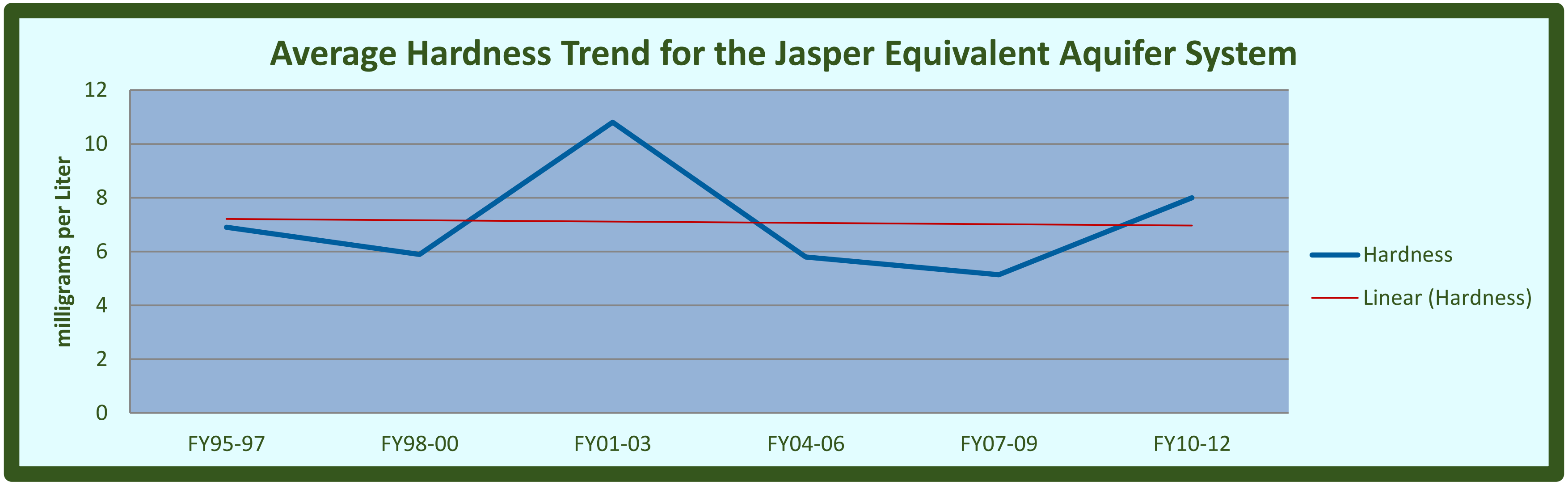


Chart 14-13: Nitrite-Nitrate Trend

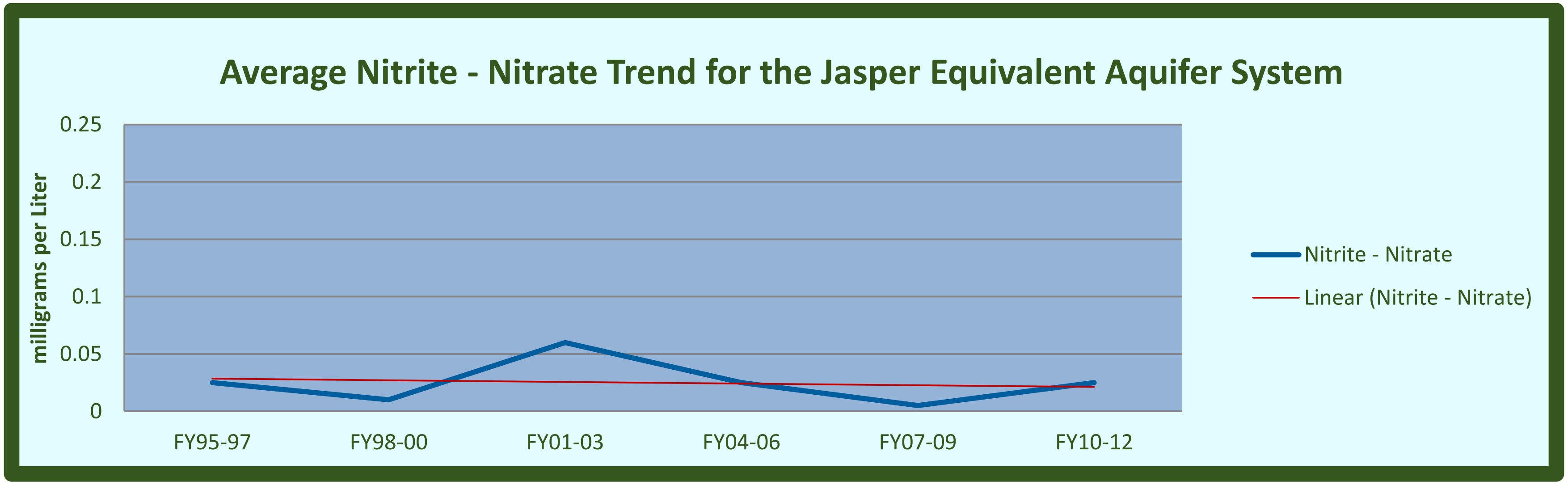


Chart 14-14: TKN Trend

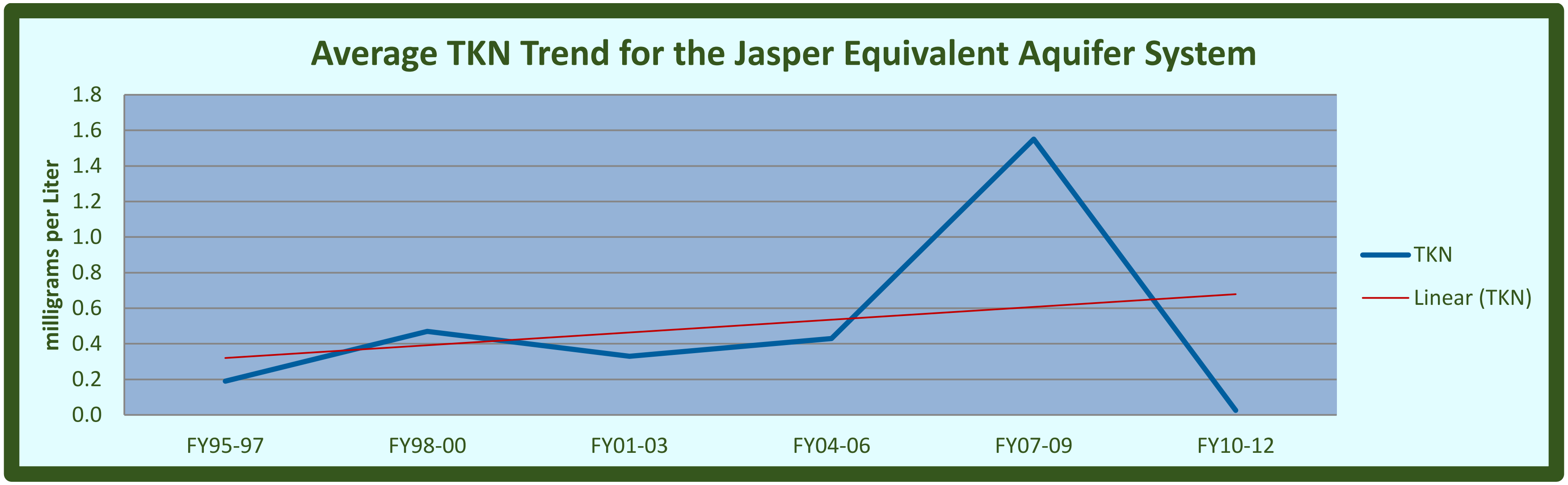


Chart 14-15: Total Phosphorus Trend

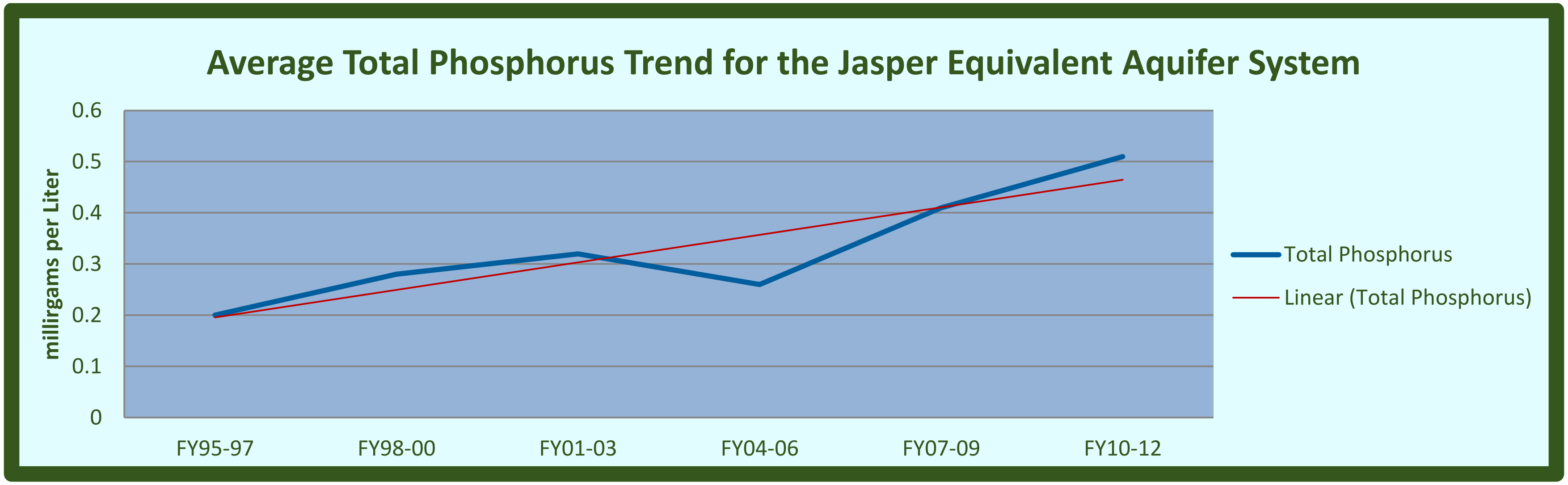


Chart 14-16: Iron Trend