CYPRUS PLATEAU MINING CO.

WILLOW CREEK MINE

1997 Annual Hydrologic Report - March 1998

CYPRUS
Plateau Mining

WILLOW CREEK MINE 1997 HYDROLOGIC MONITORING REPORT

VOLUME 1 OF 1

ANNUAL REPORT

MARCH 1998

HANSEN ALLEN & LUCE INC.

HANSEN ALLEN & LUCE INC
CONSULTING ENGINEERS

Consulting Engineers Specializing in Water Resources,
Civil and Environmental Engineering

Mr. Johnny Pappas
Cyprus Plateau Mining Corp.
P.O. Drawer 7007
Price, Utah 84501

March 27, 1998

RE: 1997 Annual Water Monitoring Report for the Willow Creek Mine

Dear Mr. Pappas,

As requested we are have prepared the 1997 Annual Water Monitoring Report for the Willow Creek Mine. The Water Monitoring Report includes graphical time plots for flow, TDS, pH, major cations and anions including calcium, magnesium, chloride, bicarbonate and sulfate. The report also includes a summary of data trends.

We appreciate the opportunity to assist you with this report. Please call should you have any questions.

Sincerely,

HANSEN, ALLEN & LUCE, INC.

Ben Grimes, PLS
Office Manager

cc: file

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INTRODUCTION

The Willow Creek Mine, owned and operated by Cyprus Plateau Mining Corporation (CPMC) is located approximately 10 miles north of Price, Utah. The entries to underground mine workings are in the Willow Creek drainage approximately one mile above the confluence of Willow Creek and the Price River. The underground mine workings are located in the extreme northwest end the Book Cliffs. The surface facilities occupy approximately 133 acres which drain into sedimentation ponds. The sedimentation ponds drain into Willow Creek and Price River. Water from the mine workings is discharged into Sedimentation Pond No. 1, an NPDES permitted discharge point. The surface over the mine is drained by two major drainages, Willow Creek and the Price River. Several ephemeral drainages exist on the mine permit area including, Barn Canyon, Schoolhouse Canyon, Skinny Canyon, Hell Canyon, Dry Canyon, Panther Canyon, and Cordingly Canyon. One additional perennial stream in Mathis Canyon exists in the northeast corner of the permit area. In addition, there are many smaller ephemeral drainages throughout the permit area. The locations of all hydrologic monitoring stations are shown on the Monitoring Station Location Map, Figure 1 from the Mining and Reclamation Plan, Exhibit 12, located at the end of this text.

Water samples collected during 1997 were analyzed by ACZ Laboratories, Steamboat Springs, Colorado, and American West Analytical Laboratories, Salt Lake City, Utah.

Table A contains a list of the water quality sampling parameters for all monitoring stations. Data and plots for each station are shown as figures and tables in the appendices of this report.

This report contains a detailed analysis of monitoring data for major cations and anions for 4 stream monitoring stations, B6, Price River above the mine facilities, B5, Price River below the mine facilities, B151, Willow Creek above the mine facilities, and B3N, Willow Creek below the mine facilities. Since mining is in the initial phase, very little area has been mined and the only possible impacts to streams could be to Willow Creek and the Price River below the mine site. The analyses and findings presented here compare the upstream flow and quality with downstream flow and quality. A generalized summary of the trends for flow, TDS and pH is presented in this report. Since mining has not been conducted near any springs, a detailed analysis of major cations and anions is not presented at this time. This report has been prepared using the available data; in most cases the data set is small. Conclusions have been made about trends in data, however, the reader is cautioned against making strong conclusions about trends at this early stage in the monitoring program.

GROUND WATER MONITORING

Fifteen springs were monitored by CPMC during 1997. Springs B22 and B44 in Crandall Canyon were determined to be the same spring even though they are listed in the permit as separate sources. The geologic formations in the mine area are beginning with the lowest, the Mancos Shale, the Blackhawk Formation, the Price River Formation and the North Horn Formation. The Castlegate Sandstone is a member of the Price River Formation. A review of the surficial geology shows that one of the springs issues from the Mancos Shale, two from the Blackhawk Formation, two from the Price River Formation, and ten from the North Horn Formation.

The stations have been sampled according to the approved permit. In 1997 due to the extremely wet winter of 1996 - 1997, access to most of the springs was not possible until June. Monitoring was conducted in June according to the approved parameters list. Graphical plots have been prepared for flow, and TDS. Since no mining has been conducted near any of the springs to date no other parameters

TABLE A
(TABLE 3 in Exhibit 12 of the Mining & Reclamation Permit)
Water Quality Analytical Parameters[1]

Parameter	Baseline Monitoring[2]	Operational and Reclamation Monitoring[3]
Field Measurements		
Temperature	yes	yes
pH	yes	yes
Specific Conductivity	yes	yes
Dissolved Oxygen	yes	yes
Flow or Water Level[4]	yes	yes
Laboratory Analysis[5]		
pH	yes	yes
Specific Conductivity	yes	yes
Total Dissolved Solids[6]	yes	yes
Total Suspended Solids[6]	yes	yes
Nitrogen - ammonia	yes	
Nitrate	yes	
Nitrite	yes	
Oil and Grease[6]	yes	yes
Alkalinity	yes	yes
Bicarbonate	yes	yes
Carbonate	yes	yes
Chloride	yes	yes
Sulfate	yes	yes
Phosphate (Ortho)	yes	

Parameter	Baseline Monitoring[2]	Operational and Reclamation Monitoring[3]
Aluminum	yes	
Arsenic	yes	
Barium	yes	
Boron	yes	
Cadmium	yes	
Calcium	yes	yes
Copper	yes	
Total Hardness as $CaCO_3$	yes	yes
Iron (Total and Dissolved)	yes	yes
Lead	yes	
Magnesium	yes	yes
Manganese (Total and Dissolved)	yes	yes
Potassium	yes	yes
Selenium	yes	
Sodium	yes	yes
Zinc	yes	
Cation/Anion Balance	yes	yes

Notes:
1) Water quality analyte list for both ground water and surface water monitoring stations unless otherwise specified.
2) Parameter list for baseline monitoring as approved by UDOGM in letter dated November 31, 1994.
3) Operational and reclamation compliance monitoring list as provided by UDOGM, Coal Regulatory Program Directive Tech - 004, Water Monitoring Programs for Coal Mines, dated May 23, 1995.
4) Flow measurement for spring and stream monitoring locations, water level measurement for ground water monitoring wells.
5) Laboratory analysis of dissolved fraction unless noted otherwise.
6) Parameter applies to surface water monitoring stations only.

have been plotted at this time. The plots have been prepared from all available data to show variations over time. Sampling data for four of the springs, B161, B71, B41, and B22 began in 1992, with the rest

of the sampling data starting in 1994. Water quality plots and for each station can be found on Figures 1 through 16 in Appendix A; data can be found on Tables 1 through 16 in Appendix A.

It is possible that there may be a correlation between spring flows and precipitation. Plots were also prepared which compare recorded flows to annual precipitation records for local gaging stations over the period of record. The National Weather Service rainfall gaging station closest to the Willow Creek Mine area is located in Price which is about 10 miles south of the mine site. Table 35, Willow Creek Mine Precipitation in Appendix D, was assembled from three sources, a station in Price and one in Wellington to fill in missing data at the Price station. Data for 1997 were obtained from the PacifiCorp Carbon Power Plant. Since the power plant is located very near the mine site it was felt that data from as close to the site as possible should be used.

A generalized summary of the trends for flow and TDS for springs found within the geologic formations is provided in the following Tables B, C, D, and E. Note that the tables show whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

TABLE B
Summary for Mancos Shale Formation Springs

Station	Flow			TDS			pH		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B161	X			X					X

TABLE C
Summary for Blackhawk Formation Springs

Station	Flow			TDS			pH		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B71			X	X					X
B321	X					X	X		

TABLE D
Summary for Price River Formation Springs

Station	Flow			TDS			pH		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B41			X			X			X
B22 = B44	X					X	X		

TABLE E
Summary for North Horn Formation Springs

Station	Flow			TDS			pH		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B262			X		X				X
B271			X			X			X
B341			X	X					X
B342	X			X					X
B351	X					X			X
B352	X					X			X
B241			X			X			X
B261	X					X			X
B361	X			Not enough data			Not enough data		
B362	X			Not enough data			Not enough data		

The reader is referred to the data and graphs for additional details of water quality. Future monitoring reports will present additional analysis of major cations and anions. At this time mining has not reached the proximity of any springs and analysis is not justified for cations and anions.

Conclusions

Flows from springs are often high in the early part of the year, suggesting that flows increase due to the spring thaws. Some of the springs at higher elevations on the east side of the permit area have not

had flows early in the year since 1994. The initial baseline monitoring completed in 1994 was done with a helicopter when there was still some snow in the high country. Some of these springs may have resulted from show melt, and when the surficial snow melt water was depleted the area dried up. Monitoring since 1994 has been conducted later in the spring when the roads were passable, and as a result the snow melt has been over and these springs have been dry.

It is possible that there may be a correlation between spring flows and precipitation. Plots were prepared which compare recorded flows to annual precipitation records for local gaging stations over the period of record. The National Weather Service rainfall gaging station closest to the Willow Creek Mine area is located in Price which is about 10 miles south of the mine site. Table 35, Willow Creek Mine Precipitation in Appendix D, was assembled from three sources, a station in Price and one in Wellington to fill in missing data at the Price station. Data for 1997 were obtained from the PacifiCorp Carbon Power Plant. Since the power plant is located very near the mine site it was felt that data from as close to the site as possible should be used.

To few springs exist in the Mancos Shale, Blackhawk, and the Price River Formations to make strong conclusions as to overall trends in each formation. In the North Horn Formation, there are ten springs, and generally there is no strong trend in flow or TDS. Trends in Flow, TDS and pH have been shown in the tables above, however, in most cases, there are relatively few data points to draw strong conclusions on long term trends. The reader is cautioned against making strong conclusions about trends indicated by the data at this early stage in the monitoring program. Data collected over the next few years will be important in understanding the long term trends, and the potential mining impacts to the springs.

MONITORING WELLS

The well monitoring program consisted of monitoring eight wells, which are all in canyons scattered over the mine permit and the area possibly affected by mining. Two wells are located in Dry Canyon, one deep (B311), and one shallower (B311A). One well each are located in Panther Canyon (B51), Alrad Canyon (B121), Barn Canyon (BN251), Skinny Canyon (BN301), Price River Canyon (BW361), and one that was lost to mining activity in Willow Creek Canyon (BW311). Loss of well (BW361) was discussed in the Mining and Reclamation Plan and should be removed from the monitoring program. The wells are all monitored for water level only. Initial water samples were taken during well completion, however, the quality of the samples is suspect due to the deep nature of the wells and the drilling fluids used during drilling. The wells are all very deep and it is not feasible to monitor for water quality. There were no in-mine ground water monitoring wells in service in 1997. Data plots for each well can be found on Figures 27 through 34 in Appendix C.

A generalized summary of the trends for water level in the wells is provided in the following Table F. Note that the table shows whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

TABLE F
Summary for Wells

Well	Water Level		
	Down	Stable	Up
B331	X		
B331A		X	
B51			X
B121	X		
BN251	X		
BN301		X	
BW311 (Lost)			
B361	X		

Conclusion

Since development mining has not come within 3/4 mile of any monitoring well it not likely that the water levels have been impacted by mining to date. Only one well has an upward trend in its water level (B51 in Panther Canyon); the trend is only slight, so no importance can be associated with the trend. The two wells closest to mining are BN301 in Skinny Canyon, and BN251 in Barn Canyon. BN251 has exhibited a downward trend since 1995, however, the water level seemed to be turning upward near the end of 1997; BN301 has been stable since it was installed.

SURFACE WATER MONITORING

There are ten surface water monitoring stations. Mine surface facilities are located adjacent to Willow Creek and the Price River, both of which are perennial streams. Monitoring station B151 is located above the mine facilities in Willow Creek, and monitoring station B3N is located below the facilities and its discharge points at Sedimentation Ponds 001 and 002. Monitoring station B6 is located above the mine facilities in the Price River, and station B5 is located below the facilities. Monitoring station B26 is located in the ephemeral channel in Crandall Canyon below mine surface facilities. The remaining monitoring stations are located on streams which drain areas over and around future mine workings. The locations of all hydrologic monitoring stations are shown on the Monitoring Station Location Map, Figure 1 from the Mining and Reclamation Plan, Exhibit 12, located at the end of this text.

The stations have been sampled according to the approved permit. Graphical time plots have been prepared for flow, pH, TDS, and major cations and anions including calcium, magnesium, chloride,

bicarbonate, and sulfate for the surface water monitoring stations above and below mine surface facilities. Since mining is in the development stage and has not extended very far into the mountain where impacts could occur to other surface water stations, only stations B5, B6, B151, and B3N have been plotted for major cations and anions. The data have been plotted to show flow and quality variations as sequential time plots. The plots were used in the analyses of flow and water quality changes over time. Water quality plots for each station can be found on Figures 17 through 26B in Appendix B; data can be found on Tables 17 through 26 in Appendix B.

It is possible that there may be a correlation between surface water flows and precipitation. Plots were also prepared which compare recorded flows to annual precipitation records for local gaging stations over the period of record. The National Weather Service rainfall gaging station closest to the Willow Creek Mine area is located in Price which is about 10 miles south of the mine site. Table 35, Willow Creek Mine Precipitation in Appendix D, was assembled from three sources, a station in Price and one in Wellington to fill in missing data at the Price station. Data for 1997 were obtained from the PacifiCorp Carbon Power Plant. Since the power plant is located very near the mine site it was felt that data from as close to the site as possible should be used.

A summary of the general trend for major cations and anions is provided for stations B5, B6, B151, and B3N, and in the following Table G. A summary of the general trends for flow, TDS, and pH are shown in the summary Table H to follow.

PRICE RIVER CANYON

B6 - Above Mine Surface Facilities

Flow. From 1977 through 1997, the measured flow at this station has varied from 1.5 to a maximum of 638.4 cfs. The Price River is controlled to a major degree by Scofield Reservoir above the mine site. The River fluctuates considerably with precipitation, and with other factors. In late 1996 and through about May of 1997 the flow was increased by the Bureau of Reclamation to prevent letting Scofield Reservoir get above a specified level due to work on the dam. There appears to be a correlation between flow and precipitation, however, due to limited data, no strong conclusions can be reached.

TDS. TDS has shown a slight long term downward trend. The levels have generally varied from approximately 156 mg/l to 910 mg/l, with an average of 305 mg/l. The maximum value occurred in 1982, and is outside of the long term average, and could possibly be an error.

pH. From 1990 through 1997, measured pH varied from 7.3 to 9.3, with and average of 8.4. There is an apparent upward trend in the pH level as evidenced by the trend line on Figure 19A.

Major Cations and Anions. A generalized summary of the trends for major cations and anions for surface water stations B5, B6, B151, and B3N is found in the Table G

at the end of this report section. Note that Table G shows whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

The trend for magnesium is up, while calcium is stable. The trend for chloride is stable, while both bicarbonate and sulfate are trending down.

B5 - Below Mine Surface Facilities

Flow. From 1994 through 1997, the measured flow at this station has varied from 2.6 to a maximum of 638.4 cfs. A comparison of stations B5 and B6 cannot be made for flow or other parameters conclusively since data for station B5 are available since 1994. The Price River is controlled to a major degree by Scofield Reservoir above the mine site. The River fluctuates considerably with precipitation, and with other factors. There appears to be a correlation between flow and precipitation, however, due to limited data, no strong conclusions can be reached. In late 1996 and through about May of 1997 the flow was increased by the Bureau of Reclamation to prevent letting Scofield Reservoir get above a specified level due to work on the dam.

TDS. TDS has shown a slight long term upward trend. This trend is counter to the downward trend at station B6 above mine surface facilities. The sedimentation ponds at the mine site have not discharged since CPMC has been active at the site since 1993, and the upward trend has no apparent mine related cause. The levels have generally varied from approximately 200 mg/l to 570 mg/l, with an average of 291 mg/l. The maximum value occurred in December.

pH. From 1994 through 1997, measured pH varied from 7.4 to 9.3, with and average of 8.7 There is an apparent upward trend in the pH level as evidenced by the trend line on Figure 18A. This trend is consistent with station B6 above the mine surface facilities.

Major Cations and Anions. A generalized summary of the trends for major cations and anions for surface water stations B5, B6, B151, and B3N is found in Table G at the end of this report section. Note that Table G shows whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

The trend for magnesium is up as it is at station B6 above the mine site. The trend for calcium is up as compared to the stable trend at station B6 above the mine site. The trend for chloride is up compared to a stable trend at station B6 above the mine. Bicarbonate is also up compared to a downward trend at station B6 above the mine. Sulfate is up compared to a downward trend at station B6 above the mine site.

Four major cations and anions at station B5 are up compared to station B6 above the mine site. While this may seem significant, there is no evidence to indicate CPMC is causing the upward trends. The sedimentation ponds have not discharged into the Price River to impact the quality, and there is no overland flow from the mine site. Some possible causes of the upward trends may be as follows:

1. U.S. Highway 50/6 runs parallel to and on the west side of Price River. The Utah Department of Highways has a road salt stockpile near monitoring station B5; runoff from the stockpile area drains directly to station B6. White deposits are evident on the ground surface in a drainage ditch leading to station B5. It is very obvious that a high concentration of road salt is being deposited into the Price River at station B5, and is likely the cause of the increasing trends in major cations and anions.
2. The old Castle Gate Town existed adjacent to and on both sides of Price River throughout the length of river between stations B6 and B5. There is the possibility that leachate from the old town is causing an increasing trend in major cations and anions.

WILLOW CREEK

B151 - Above Mine Surface Facilities

Flow. From 1994 through 1997, the measured flow at this station has varied from 0 to a maximum of 150 cfs. Willow fluctuates considerably with precipitation.

TDS. TDS has shown a slight downward trend. The levels have generally varied from approximately 323 mg/l to 1170 mg/l, with an average of 526 mg/l. The maximum value occurred in 1996, and is outside of the long term average, and could possibly be an error.

pH. From 1994 through 1997, measured pH varied from 7.7 to 9.0, with and average of 8.5. There is an apparent upward trend in the pH level as evidenced by the trend line on Figure 21A.

Major Cations and Anions. A generalized summary of the trends for major cations and anions for surface water stations B5, B6, B151, and B3N is found in Table G at the end of this report section. Note that Table G shows whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

The trend for magnesium is down at station B151, calcium is trending up, chloride is trending up, bicarbonate is stable, and sulfate is trending down.

B3N - Below Mine Surface Facilities

Flow. From 1994 through 1997, the measured flow at this station has varied from 0 to a maximum of 36 cfs, however, when the flow is extremely high there is no safe way to measure the flow. The maximum flow since CPMC has been monitoring this site has been much higher than indicated by data. Willow Creek fluctuates considerably with precipitation. There appears to be a correlation between flow and precipitation, however, due to limited data, no strong conclusions can be reached.

TDS. TDS has shown a slight downward trend consistent with station B151 above the mine site. The levels have generally varied from approximately 360 mg/l to 750 mg/l, with an average of 492 mg/l.

pH. From 1994 through 1997, measured pH varied from 7.9 to 9.0, with and average of 8.7. There is an apparent upward trend in the pH level as evidenced by the trend line on Figure 17A, which is consistent with station B151 above the mine site.

Major Cations and Anions. A generalized summary of the trends for major cations and anions for surface water stations B5, B6, B151, and B3N is found in Table G at the end of this report section. Note that Table G shows whether the general trend (as evidenced by the graphs provided in figures) is "Down", "Stable", or "Up".

TABLE G
Summary of Major Cations and Anions For Stations B6, B5, B151 & B3N

Station	Mg			Ca			Cl			HCO_3			SO_4		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B6			X		X			X		X			X		
B5			X			X			X			X			X
B151	X					X			X		X		X		
B3N	X					X			X		X			X	

TABLE H
Summary for All Other Surface Water Stations

Station	Flow			TDS			pH		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
B131			X			X			X
B211			X	X			X		
B26			X	Not enough data			Not enough data		
B263			X	X					X
B353		X				X	X		
BN221			X			X			X

Magnesium is trending down at station B3N as it is above the mine site at station B151. Calcium is trending up at station B3N, as it is above the mine site at station B151. Chloride is trending up also as it is above the mine site. Bicarbonate is stable as it is above the mine site. Sulfate is stable at station B3N compared to trending down above the mine site at station B151

The reader is referred to the data and graphs for additional details of water quality. Future monitoring reports will present additional analysis of major cations and anions. At this time mining has not reached the proximity of any springs and further analysis is not justified. As discussed previously the increasing trends in major cations and anions at Price River station B5 are likely caused by UDOT road salt.

Conclusions

Major cations and anions appear to be increasing in the Price River below the mine site, however, there is no evidence that mining is causing the increase as discussed above. Any surface runoff from the mine site is channeled through sedimentation ponds prior to entering the Price River. There have been no sedimentation pond discharges during the past year to cause an increase in cations and anions.

Major cations and anions generally show the same trends below the mine site in Willow Creek at station B3N when compared to monitoring station B151 above the mine.

Generally, flows at most of the other monitoring sites other than Price River and Willow Creek are trending upward . This may be due to the high precipitation during the past couple of years. It is possible that there may be a correlation between stream flows and precipitation. Plots were prepared which compare recorded flows to annual precipitation records for local gaging stations over the period of record. The National Weather Service rainfall gaging station closest to the Willow Creek Mine area is located in Price which is about 10 miles south of the mine site. Table 35, Willow Creek Mine Precipitation in Appendix D, was assembled from three sources, a station in Price and one in Wellington to fill in missing data at the Price station. Data for 1997 were obtained from the PacifiCorp Carbon Power Plant. Since the power plant is located very near the mine site it was felt that data from as close to the site as possible should be used. Flow in the Price River stations, B5 and B6,and station B3N at the lower end of Willow Creek appear to exhibit a correlation with precipitation. The smaller stream stations do not seem to exhibit a correlation with precipitation. This may be due to the limited number of data points at these stations.

TDS does not show a consistent trend generally, with 3 trending up, and 2 trending down. The levels of pH do not show a consistent trend either, with 3 trending up and 2 trending down. There are only 2 data points for TDS and pH at monitoring station B26, which is not enough data to determine a trend.

The reader is cautioned against making strong conclusions about trends indicated by the data at this early stage in the monitoring program. Data collected over the next few years will be important in understanding the long term trends, and the potential mining impacts to the springs.

SEDIMENTATION PONDS DISCHARGES

There have been no discharges from any of the sedimentation ponds at the Willow Creek Mine during the past 4 years since CPMC has been active at the site. In December 1996 there was a breach at the coal preparation plant coal fines holding pond that discharged water into the Price River near monitoring station B5, however, the water entered on the east side of the river, and did not visually appear to reach the opposite bank where monitoring station B5 is located. Sampling at the time did not indicate a problem with the fishery. Quality sampling was not required after the incident by the State.

UNDERGROUND WATER ENCOUNTER

In July, 1997, water was encountered inside the mine issuing from an old coal drill hole. A portion of the mine flooded and the water had to be discharged out of the mine, and into the old mine workings below the current mine workings. The large source of discharge was temporary, and the water was discharged into Sedimentation Pond No. 1, however, the pond did not discharge into Willow Creek. Much of the discharged water was trucked to the coal preparation plant raw water supply pond, where it was recirculated into the preparation plant system.

The water in the old mine workings below the current mine workings needs to be removed, and is the subject of an ongoing investigation. This investigation is intended to determine the source, quality, and amount of water, in addition to determining how to dispose of the water.

There is no apparent impact to Willow Creek or Price River from the water discharged from the mine in Willow Creek Canyon.

PRECIPITATION DATA

Table 35, Willow Creek Mine Precipitation in Appendix D, presents precipitation data for the Willow Creek Mine area. The National Weather Service (NWS) rainfall gaging station closest to the Willow Creek Mine area is located in Price which is about 10 miles south of the mine site. Table 35, Willow Creek Mine Precipitation (Appendix D), was assembled from three sources, a NWS station in Price, and one NWS station in Wellington to fill in missing data at the Price station. Data for 1997 were obtained from the PacifiCorp Carbon Power Plant. Since the power plant is located very near the mine site it was felt that data from as close to the site as possible should be used.

APPENDIX A
SPRINGS

Figure 1
Spring B161

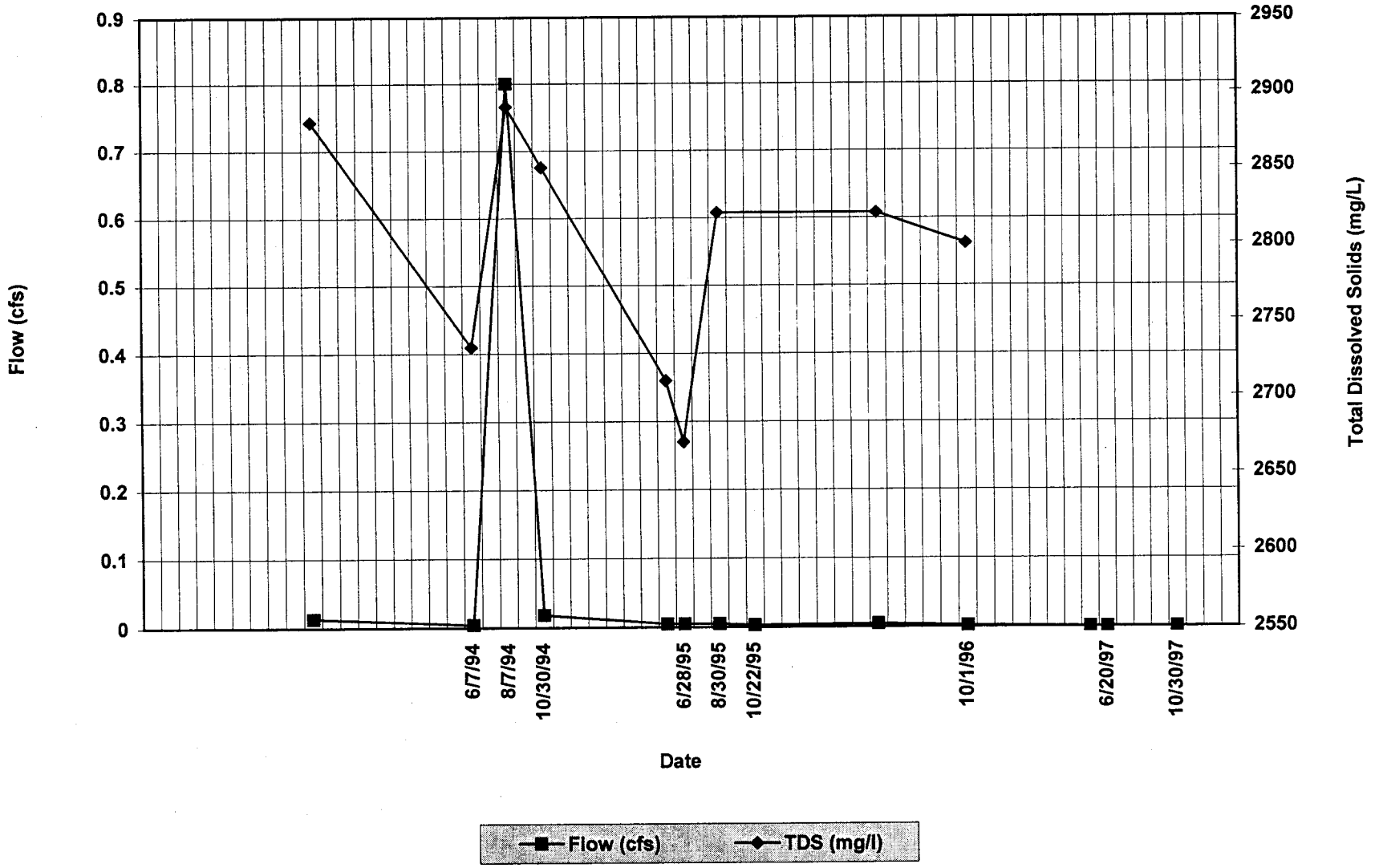


Figure 1A
Spring B161

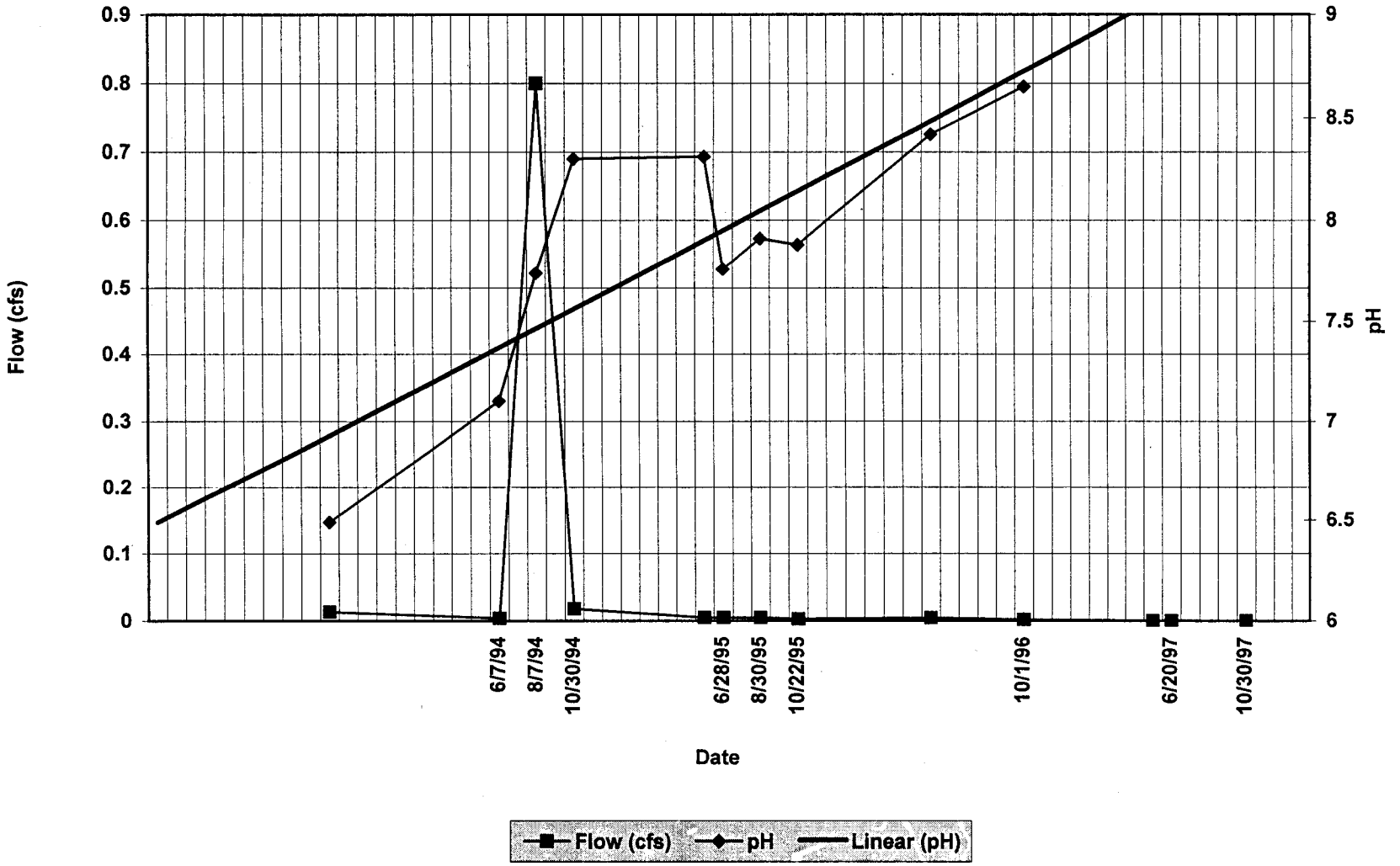


Figure 1B
Spring B161

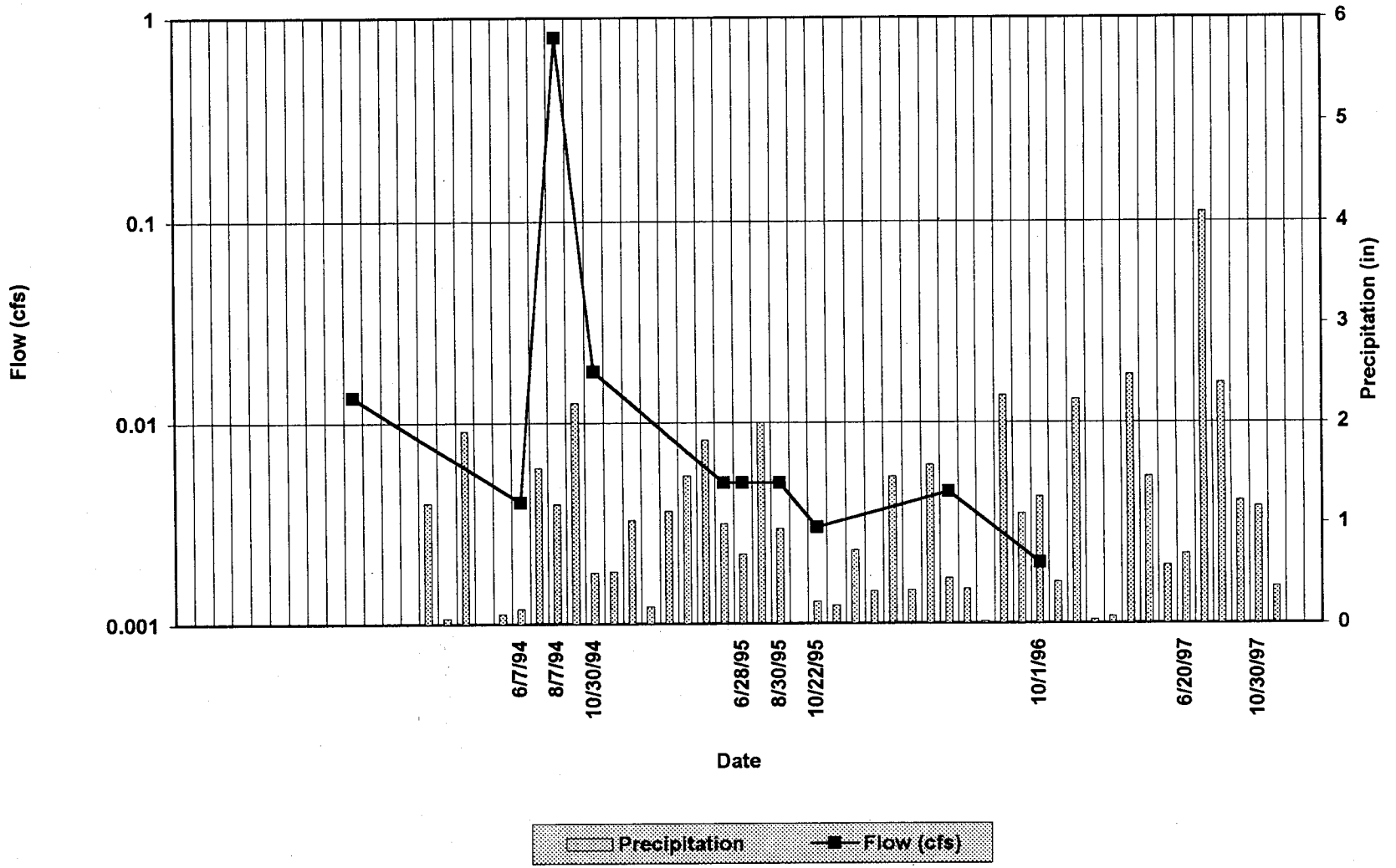


Table 1

Station: B161 | Property: Castle Gate | Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E | Sampling Frequency: Quarterly

Date Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)
		Field Measurements																		
92 1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9	9/22/92	0.0134	6.49	4060	11.9	2880		1054	647	842	212	174	1074	26	41	754	0.11	0.05	0.005 *	0.04
10																				
11																				
12																				
94 1																				
2																				
3																				
4																				
5																				
6	6/7/94	0.004	7.1	4100	11	2732	0.5 *	1054	561	914	21	140	1136	21	37	737	0.07	0.13	0.005 *	0.12
7																				
8	8/7/94	0.8	7.74	4000	15.5	2890	0.005 *	1172	654	1024	148	165	1152	27	40	783	0.05	0.05	0.06	0.06
9																				
10	10/30/94	0.018	8.3	4090	9.5	2850	17	1176	642	1064	112	175	1100	26	38	730	0.05			0.03
11																				
12																				
95 1																				
2																				
3																				
4																				
5	5/31/95	0.005	8.31	3390	15	2710	3		568	994	1 *	180	1200	21.6	38.6	757	0.025 *	0.1	0.005 *	0.1
6	6/28/95	0.005	7.76	4040	13.5	2670	1 *		577	1020	1 *	170	1150	22.2	43.5	765	0.09	0.1	0.005 *	0.1
7																				
8	8/30/95	0.005	7.91	3100	13	2820	1 *		649	1090	1 *	160	1140	26.2	39.4	758	0.025 *	0.07	0.005 *	0.07
9																				
10	10/22/95	0.003	7.88	3120	12															
11																				
12																				
96 1																				
2																				
3																				
4																				
5	5/30/96	0.0045	8.42	3380	12	2820			601	1020	1 *	180	1080	23.3	37.7	721				
6																				
7																				
8																				
9																				
10	10/1/96	0.002	8.65	4620	15	2800			712	1050	1 *	180	1110	29.9	42.5	820				
11																				
12																				
1997																				
2																				
3																				
4																				
5	5/30/97	0																		
6	6/20/97	0																		
7																				
8																				
9																				
10	10/30/97	0																		
11																				
12																				
Average		0.066	7.856	3790.000	12.840	2796.889	3.751	1114.000	623.444	1002.000	55.333	169.333	1126.889	24.800	39.744	758.333	0.060	0.083	0.014	0.074
Number of Entries		13	10	10	10	9	6	4	9	9	9	9	9	9	9	9	7	6	6	7
Max Value		0.8	8.65	4620	15.5	2890	17	1176	712	1090	212	180	1200	29.9	43.5	820	0.11	0.13	0.06	0.12
Min Value		0	6.49	3100	9.5	2670	0.005	1054	561	842	1	140	1074	21	37	721	0.025	0.05	0.005	0.03
Standard Dev.		0.221	0.651	506.360	1.935	76.923	6.570	69.301	49.953	77.807	60.841	13.048	39.951	2.945	2.223	29.850	0.032	0.032	0.022	0.034

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 1

Station: B161 — **Elevation: 5050**

Date Yr-Mo	Sample Date	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)
		Laboratory Measurements																
92 1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9	9/22/92	0.0025 *	0.025 *	0.001	6.51	0.0025 *	0.005 *	0.01 *	0.31	0.01 *	142	142		0.005 *	0.025 *	0.003	0.005 *	-1.38
10																		
11																		
12																		
94 1																		
2																		
3																		
4																		
5																		
6	6/7/94	0.0025 *	0.025 *	0.003	6.1	0.0025 *	0.005 *	0.06	0.27		124		0.005 *	0.005 *	0.005 *	0.0005 *		-4.85
7																		
8	8/7/94	0.0025 *	0.025 *	0.0005 *	6.84	0.0025 *	0.005 *	0.06	0.07	0.01 *			0.005 *	0.005 *	0.005 *	0.0005 *	0.005 *	-3.65
9																		
10	10/30/94	0.005	0.03	0.001	6.4	0.003	0.01	0.01	3	0.02	140		0.005	0.005	0.01	0.001	0.01	
11																		
12																		
95 1																		
2																		
3																		
4																		
5	5/31/95	0.071	0.015 *	0.0005 *	5.8	0.0015 *	0.005 *	0.005 *	1.79	0.01 *	125		0.0025 *	0.034	0.005 *	0.001 *	0.005 *	-4.7
6	6/28/95	0.0025 *	0.015 *	0.0005 *	5.98	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	127		0.0025 *	0.0025 *	0.005 *	0.001 *	0.005 *	-3.1
7																		
8	8/30/95	0.0025	0.015 *	0.0005 *	6.5	0.0015 *	0.01 *	0.01 *	0.08	0.02 *	142		0.005 *	0.01	0.01 *	0.001 *	0.01 *	-3
9																		
10	10/22/95																	
11																		
12																		
96 1																		
2																		
3																		
4																		
5	5/30/96							0.01 *	0.04		132		0.005 *					-3.7
6																		
7																		
8																		
9																		
10	10/1/96							0.01 *	0.03		155		0.005 *	0.005 *				2.1
11																		
12																		
1997																		
2																		
3																		
4																		
5	5/30/97																	
6	6/20/97																	
7																		
8																		
9																		
10	10/30/97																	
11																		
12																		
Average		0.013	0.021	0.001	6.30429	0.002143	0.006428571	0.02	0.621666667	0.0133333	135.875	142	0.004375	0.0089375	0.00928571	0.0011429	0.0066667	-2.785
Number of Entries		7	7	7	7	7	7	9	9	6	8	1	8	8	7	7	6	8
Max Value		0.071	0.03	0.003	6.84	0.003	0.01	0.06	3	0.02	155	142	0.005	0.034	0.025	0.003	0.01	2.1
Min Value		0.0025	0.015	0.0005	5.8	0.0015	0.005	0.005	0.005	0.01	124	142	0.0025	0.0025	0.005	0.0005	0.005	-4.85
Standard Dev.		0.026	0.006	0.001	0.360	0.001	0.002	0.023	1.055	0.005	10.763	#DIV/0!	0.001	0.010	0.007	0.001	0.003	2.252

* Below detection limit. Value

Table 1

Station: B151

Date Yr-Mo		Sample Date	Comments
92	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9	9/22/92	
	10		
	11		
	12		
94	1		
	2		
	3		
	4		
	5		
	6	6/7/94	Water is turbid.
	7		
	8	8/7/94	Water clear.
	9		
	10	10/30/94	
	11		
	12		
95	1		
	2		
	3		
	4		
	5	5/31/95	
	6	6/28/95	
	7		
	8	8/30/95	
	9		
	10	10/22/95	The lab data differed greatly from other analysis. It was not included.
	11		
	12		
96	1		
	2		
	3		
	4		
	5	5/30/96	
	6		
	7		
	8		
	9		
	10	10/1/96	
	11		
	12		
	1997		
	2		
	3		
	4		
	5	5/30/97	Damp, to low to monitor.
	6	6/20/97	Damp, to low to monitor.
	7		
	8		
	9		
	10	10/30/97	
	11		
	12		
Average			
Number of Entries			
Max Value			
Min Value			
Standard Dev.			

* Below detection limit. Value

Figure 2
Spring B71

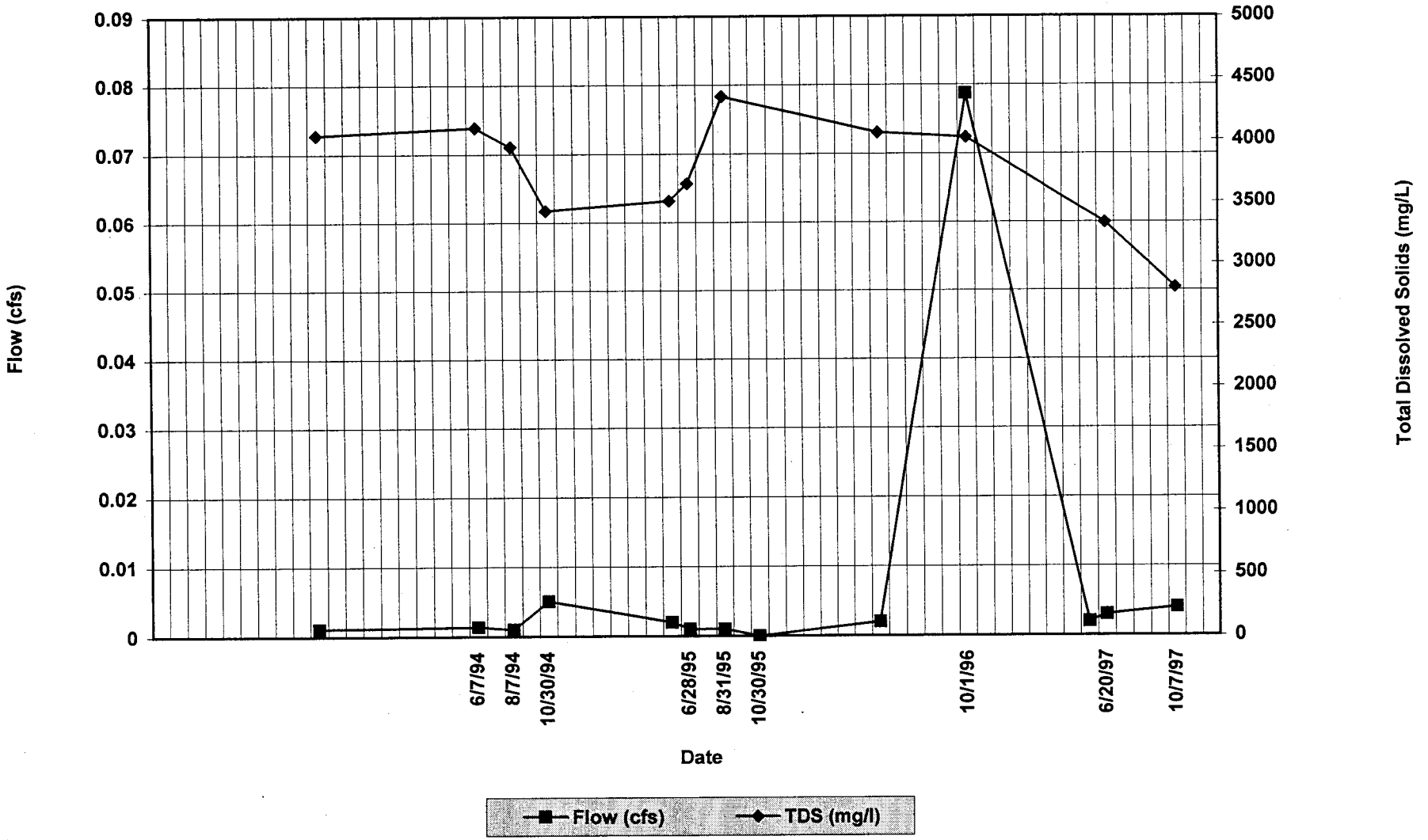


Figure 2A
Spring B71

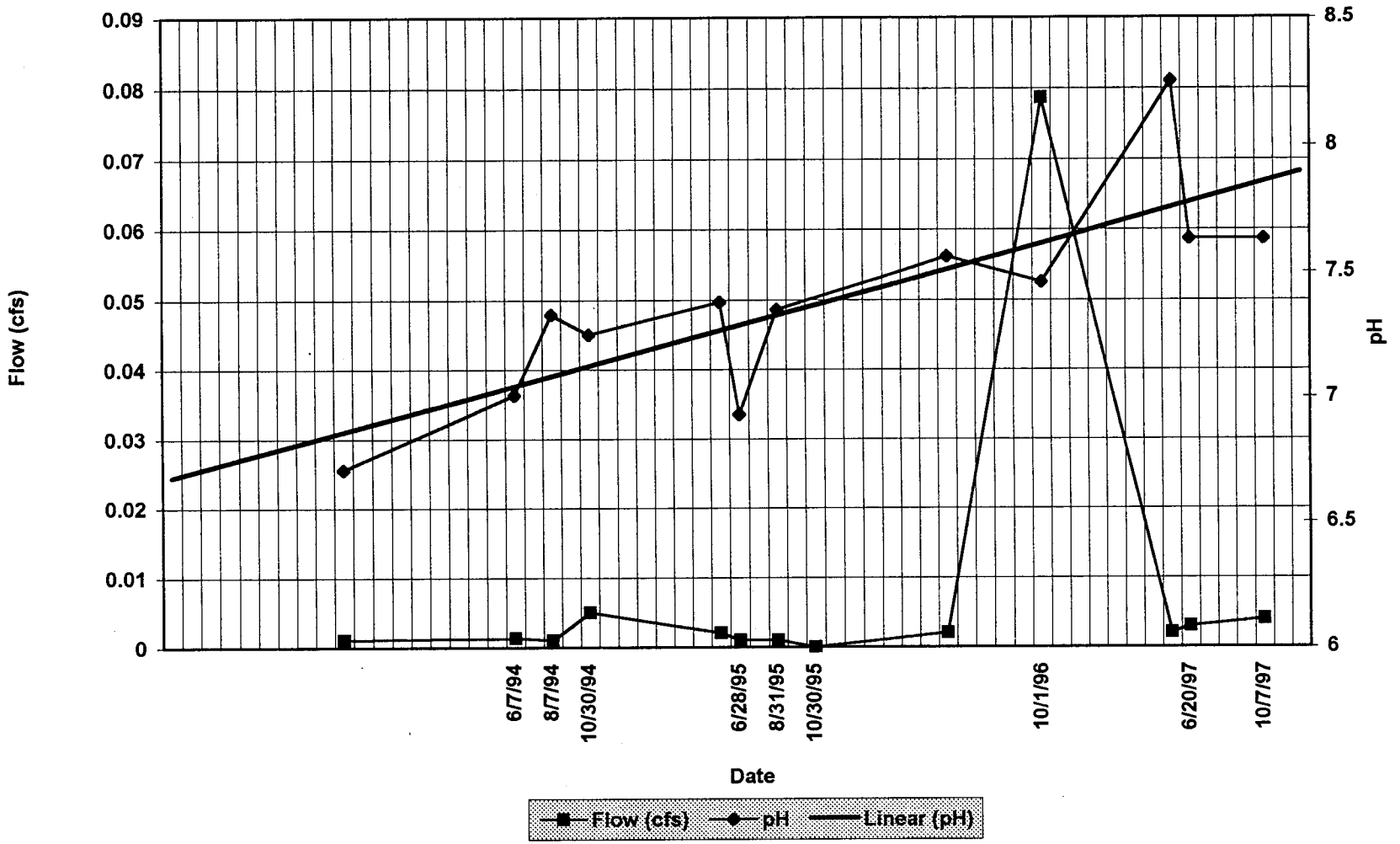


Figure 2B
Spring B71

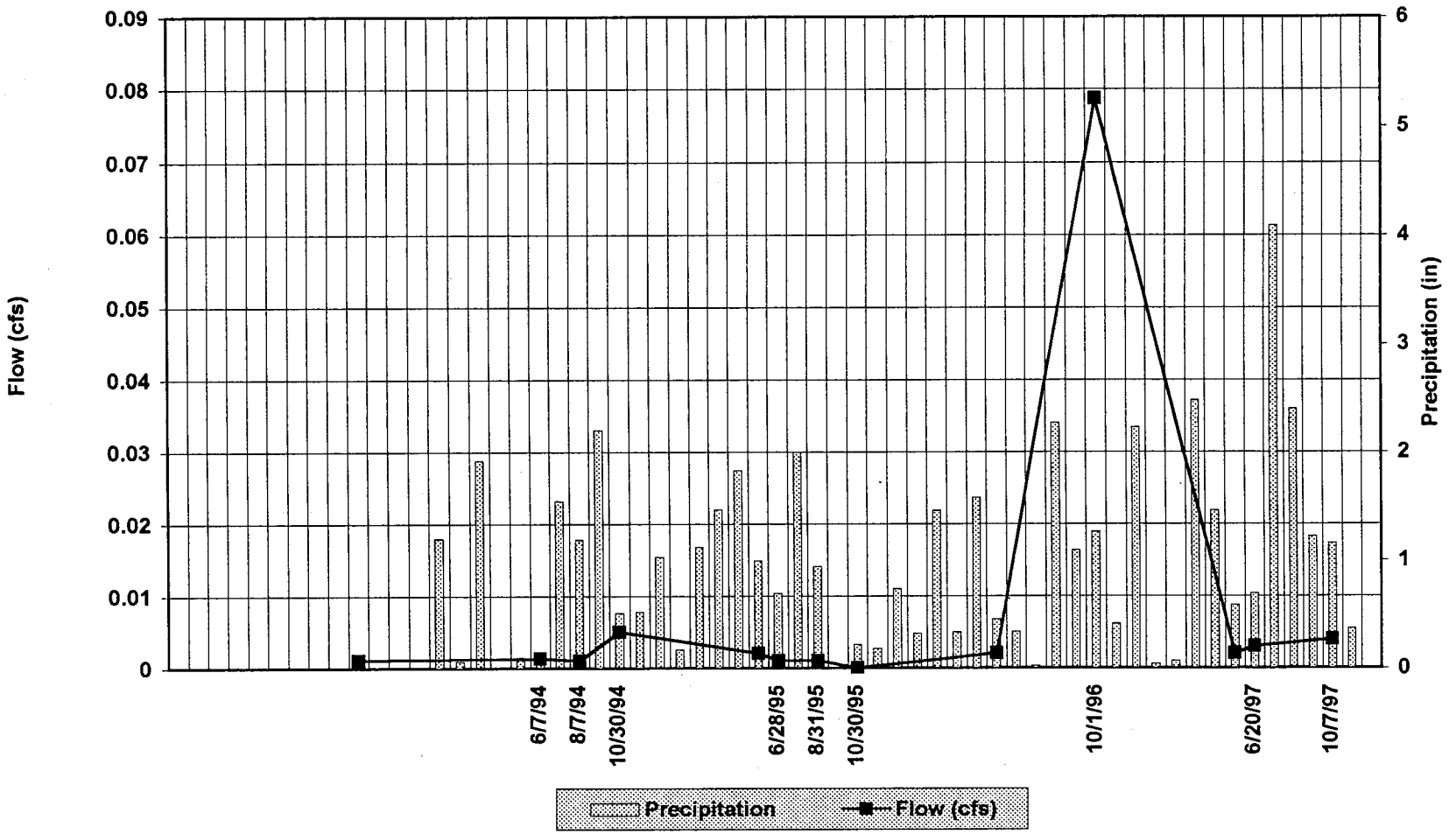


Table 2

Station: B71 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Field Measurements Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	Laboratory Measurements P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)
92 1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9	9/22/92	0.0011	6.71	4180	10.4	4042		454	2611	434	50	79	2400	277	42	119	0.54	5.61	0.005 *	5.6	0.01	0.025 *	0.0005 *	3.06
10																								
11																								
12																								
94 1																								
2																								
3																								
4																								
5																								
6	6/7/94	0.00135	7.01	4160	10	4104	0.5 *	534	2871	534	0	85	2437	302	45	133	0.16	5.83	0.01	5.84	0.0025 *	0.025 *	0.0005 *	3.4
7																								
8	8/7/94	0.001	7.33	4230	16.7	3948	0.5 *	520	2731	508	12	87	2531	284	45	129	0.44	6.35	0.005 *	6.35	0.0025 *	0.025 *	0.0005 *	3.31
9																								
10	10/30/94	0.005	7.25	3920	7.5	3430	4.2	577	2246	577	2	70	2017	236	43	101	0.38			7.7	0.005	0.03	0.001	2.9
11																								
12																								
95 1																								
2																								
3																								
4																								
5	5/31/95	0.002	7.38	3710	10	3510	1 *		2440	513	1 *	79	2200	261	44	116	0.24	6.9	0.005 *	6.9	0.01 *	0.015 *	0.0005 *	2.96
6	6/28/95	0.001	6.93	4150	13	3650	1 *		2350	495	1 *	80	1720	256	46.3	119	0.31	1.32	0.005 *	1.32	0.007	0.015 *	0.0005 *	2.86
7																								
8	8/31/95	0.001	7.35	3060	13	4350	1 *		4080	528	1 *	82	2270	276	45.8	121	0.19	5.6	0.005 *	5.6	0.0025 *	0.015 *	0.002	3.08
9																								
10	10/30/95	0																						
11																								
12																								
96 1																								
2																								
3																								
4																								
5	5/30/96	0.002	7.56	3390	10	4060			2660	528	1 *	80	2280	287	41.8	119								
6																								
7																								
8																								
9																								
10	10/1/96	0.0787	7.46	4500	9	4020			2780	526	1 *	85		312	40	130								
11																								
12																								
97 1																								
2																								
3																								
4																								
5	5/30/97	0.002	8.25	3450	9.6																			
6	6/20/97	0.003	7.63	3850	13	3330			2610	289	1 *	75	2170	281	45.6	120								
7																								
8																								
9																								
10	10/7/97	0.004	7.63	3070	10	2800		550	1900	550	5 *	55	1200	220	48	96								
11																								
12																								
Average		0.008	7.374	3805.833	11.017	3749.455	1.367	527.000	2661.727	498.364	6.818	77.909	2122.500	272.000	44.227	118.455	0.323	5.268	0.006	5.616	0.006	0.021	0.001	3.081
Number of Entries		13	12	12	12	11	6	5	11	11	11	11	10	11	11	11	7	6	6	7	7	7	7	7
Max Value		0.0787	8.25	4500	16.7	4350	4.2	577	4080	577	50	87	2531	312	48	133	0.54	6.9	0.01	7.7	0.01	0.03	0.002	3.4
Min Value		0.000	6.710	3060.000	7.500	2800.000	0.500	454.000	1900.000	289.000	0.000	55.000	1200.000	220.000	40.000	96.000	0.160	1.320	0.005	1.320	0.003	0.015	0.001	2.860
Standard Dev.		0.021	0.396	473.583	2.469	450.298	1.409	45.978	545.777	78.061	14.723	8.983	397.456	27.144	2.332	11.317	0.139	1.998	0.002	2.043	0.003	0.006	0.001	0.204

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 2

Station: B71 **Elevation: 6050**

Date Yr-Mo		Sample Date	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
92	1															
	2															
	3															
	4															
	5															
	6															
	7															
	8															
	9	9/22/92	0.0025 *	0.005 *	0.01 *	0.01 *	0.01 *	468	506		0.005 *	0.0025 *	0.005	0.01	-2.61	
	10															
	11															
	12															
94	1															
	2															
	3															
	4															
	5															
	6	6/7/94	0.0025 *	0.005 *	0.16	0.04		516		0.005 *	0.005 *	0.005 *	0.007		0.15	No rain past Saturday.
	7															
	8	8/7/94	0.0025 *	0.005 *	0.15	0.14	0.01 *	493		0.005 *	0.005 *	0.005 *	0.012		0.005	
	9															
	10	10/30/94	0.003	0.01	0.01	0.04	0.02	402		0.005	0.005	0.01	0.011	0.01		
	11															
	12															
95	1															
	2															
	3															
	4															
	5	5/31/95	0.0015 *	0.005 *	0.03	0.025 *	0.01 *	434		0.0025 *	0.0025 *	0.005 *	0.002	0.02	-3.7	
	6	6/28/95	0.0015 *	0.005 *	0.01 *	0.025 *	0.01 *	417		0.0025 *	0.0025 *	0.005 *	0.001 *	0.005 *	5	
	7															
	8	8/31/95	0.003	0.005 *	0.005 *	0.005 *	0.01 *	462		0.0025 *	0.0025 *	0.005 *	0.003	0.005 *	-2.3	Panther spring.
	9															
	10	10/30/95														Damp, too low to measure and sample.
	11															
	12															
96	1															
	2															
	3															
	4															
	5	5/30/96			0.01 *	0.01 *		473			0.005 *				-1.2	
	6															
	7															
	8															
	9															
	10	10/1/96			0.025 *	0.025 *		487		0.015 *	0.015 *				2.3	
	11															
	12															
97	1															
	2															
	3															
	4															
	5	5/30/97														Cows had water murky and fecies contamination - no sample taken.
	6	6/20/97			0.005 *	0.04		464		0.015 *	0.005 *				4.6	
	7															
	8															
	9															
	10	10/7/97			0.005 *	0.005 *		330		0.009	0.008				7.4	
	11															
	12															
Average			0.002	0.006	0.038	0.033	0.012	449.636	506.000	0.007	0.006	0.005	0.006	0.010	0.965	
Number of Entries			7	7	11	11	6	11	1	9	11	7	7	5	10	
Max Value			0.003	0.01	0.16	0.14	0.02	516	506	0.015	0.015	0.01	0.012	0.02	7.4	
Min Value			0.002	0.005	0.005	0.005	0.010	330.000	506.000	0.003	0.003	0.003	0.001	0.005	-3.700	
Standard Dev.			0.001	0.002	0.058	0.038	0.004	51.783	#DIV/0!	0.005	0.004	0.002	0.004	0.006	3.714	

* Below detection limit. Value er

Figure 3
Spring B41

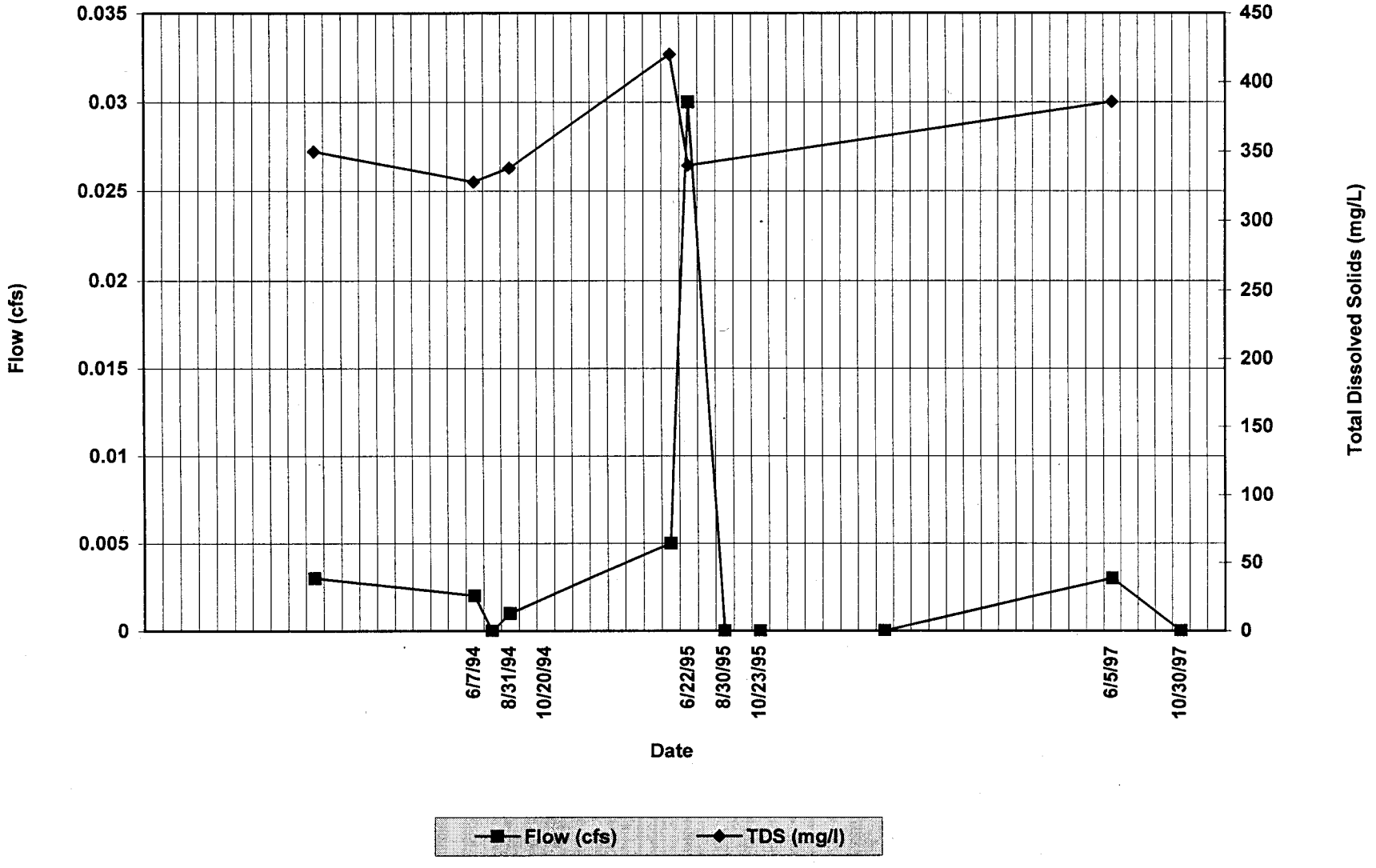


Figure 3A
Spring B41

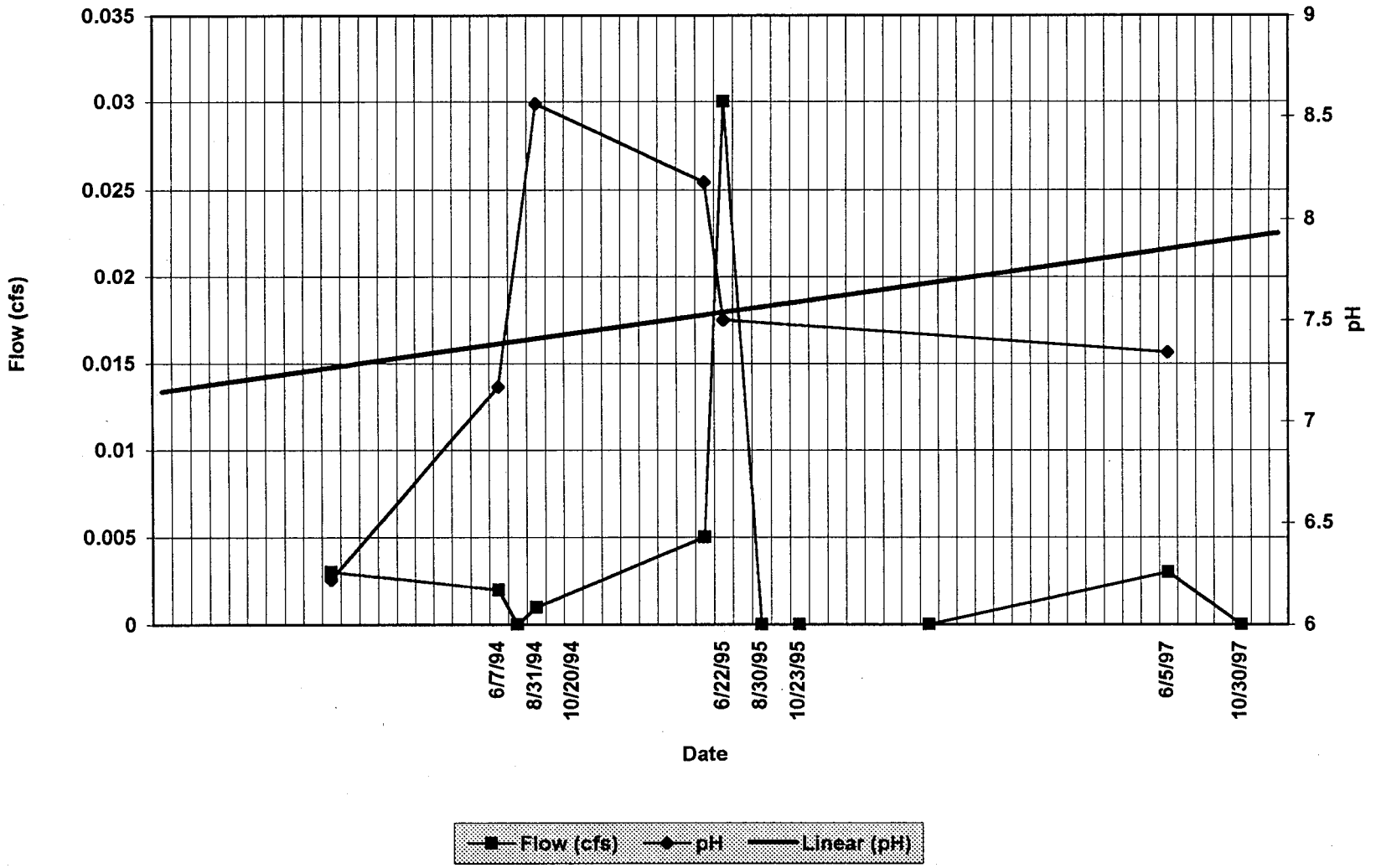


Figure 3B
Spring B41

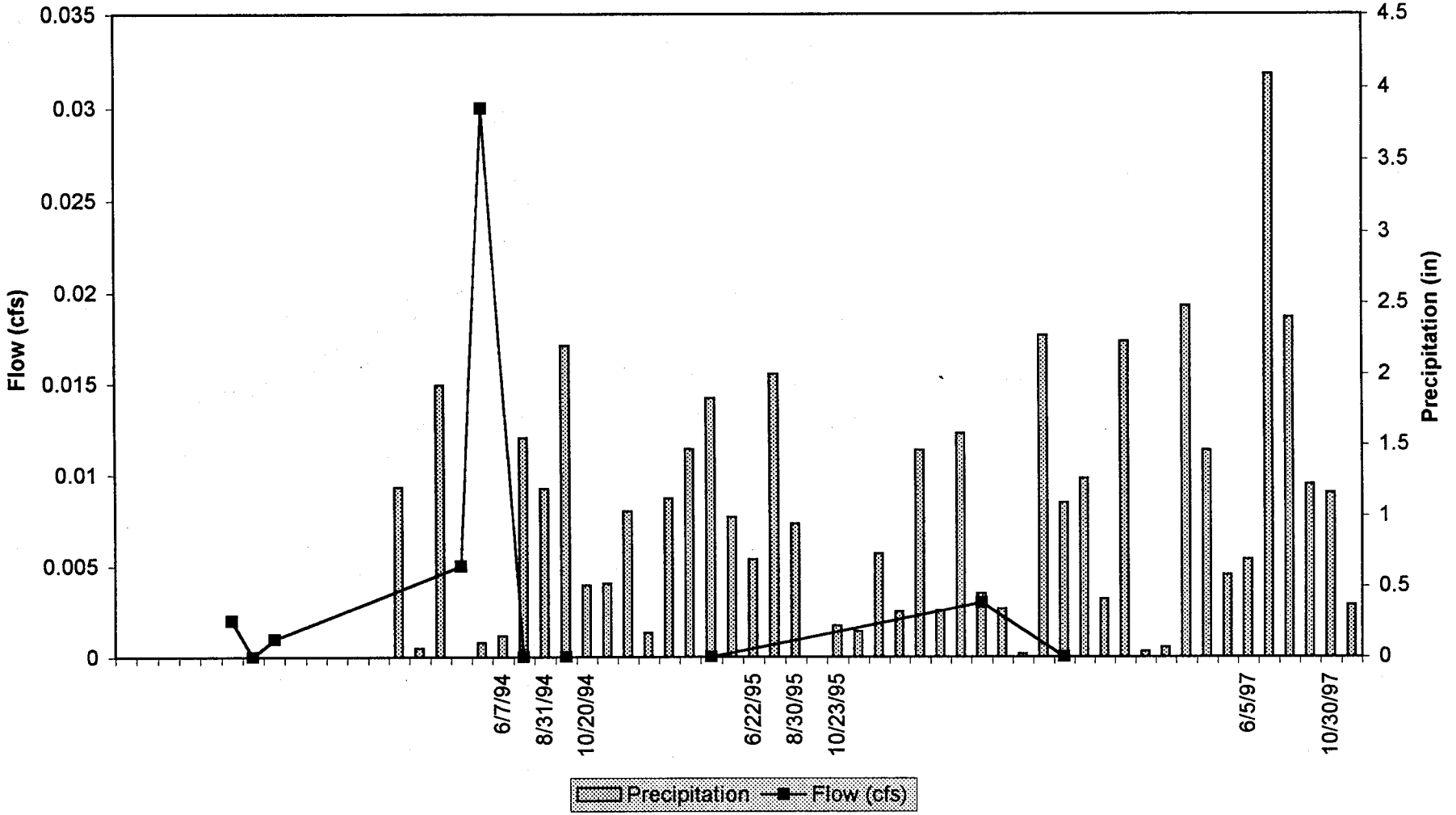


Table 3

Station: B41 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Station Type: River** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Field Measurements: Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	Laboratory Measurements: P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)
92 1																										
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9	9/22/92	0.003	6.22	555	9.1	350		190	299	174	16	11	91	67	2	12	0.07	0.98	0.005 *	0.97	0.007	0.0025 *	0.0005 *	0.03	0.0025 *	0.005
10																										
11																										
12																										
94 1																										
2																										
3																										
4																										
5																										
6	6/7/94	0.002	7.17	652	3.6	328	0.5 *	210	276	210	0	9	84	61	2	12	0.07	1.07	0.005 *	1.06	0.0025 *	0.0025 *	0.0005 *	0.04	0.0025 *	0.005
7																										
8	8/31/94	0.001	8.56	469	10.2	338	1 *	212	319	212	0	10	97	72	2	12	0.025 *	0.77	0.005 *	0.77	0.18	0.0025 *	0.0005 *	0.02	0.0025 *	0.005
9																										
10	10/20/94																									
11																										
12																										
95 1																										
2																										
3																										
4																										
5	5/9/95	0.005	8.18	717	0.6	420			354	199	1 *	19	130	77.1	1.7	17.2	0.85	1.11	0.005 *	1.11	0.01 *	0.015 *	0.0005 *	0.02	0.0015 *	0.005
6	6/22/95	0.03	7.5	665	5.7	340	1 *		331	235	1 *	12	90	73.2	1.8	13.1	0.08	0.91	0.005 *	0.91	0.007	0.015 *	0.0005 *	0.02	0.0015 *	0.005
7																										
8	8/30/95	0																								
9																										
10	10/23/95	0																								
11																										
12																										
96 1																										
2																										
3																										
4																										
5	5/31/96	0																								
6																										
7																										
8																										
9																										
10																										
11																										
12																										
97 1																										
2																										
3																										
4																										
5	5/30/97																									
6	6/5/97	0.003	7.34	525	8	386			333	229	1 *	14	110	74	1.6	13.5										
7																										
8																										
9																										
10	10/30/97	0																								
11																										
12																										
Average		0.004	7.495	597.167	6.200	360.333	0.833	204.000	318.667	209.833	3.167	12.500	100.333	70.717	1.850	13.300	0.219	0.968	0.005	0.964	0.041	0.008	0.001	0.026	0.002	0.005
Number of Entries		10	6	6	6	6	3	3	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5
Max Value		0.03	8.56	717	10.2	420	1	212	354	235	16	19	130	77.1	2	17.2	0.85	1.11	0.005	1.11	0.18	0.015	0.0005	0.04	0.0025	0.005
Min Value		0	6.22	469	0.6	328	0.5	190	276	174	0	9	84	61	1.6	12	0.025	0.77	0.005	0.77	0.0025	0.0025	0.0005	0.02	0.0015	0.005
Standard Dev.		0.009	0.820	95.269	3.634	35.449	0.289	12.166	27.616	21.940	6.306	3.619	17.002	5.789	0.176	2.018	0.353	0.135	0.000	0.133	0.078	0.007	0.000	0.009	0.001	0.000

* Below detection limit. Value entered is 1/2 of the detection limit

Table 3

Station: B41 — **Elevation: 605**

Date Yr-Mo		Sample Date	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
92	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	9	9/22/92	0.01 *	0.14	0.005 *	32	31		0.01	0.025 *	0.001	0.005 *	4.22	
	10													
	11													
	12													
94	1													
	2													
	3													
	4													
	5													
	6	6/7/94	0.01 *	0.1		30		0.005 *	0.01	0.005 *	0.0005 *		-1.06	Clear water. No cows.
	7													
	8	8/31/94	0.01 *	0.32	0.01 *	34		0.005 *	0.005 *	0.005 *	0.0005 *	0.01	3.03	No cows in area, clear water.
	9													
	10	10/20/94												Not accessible.
	11													
	12													
95	1													
	2													
	3													
	4													
	5	5/9/95	0.005 *	0.03	0.01 *	39.2		0.0025 *	0.0025 *	0.005 *	0.005 *	0.005 *	4	Snow drifts everywhere
	6	6/22/95	0.03	0.09	0.01 *	35.9		0.0025 *	0.0025 *	0.005 *	0.005 *	0.005 *	1.7	
	7													
	8	8/30/95												Damp, but no sample possible.
	9													
	10	10/23/95												
	11													
	12													
96	1													
	2													
	3													
	4													
	5	5/31/96												Damp, no sample possible.
	6													
	7													
	8													
	9													
	10													
	11													
	12													
97	1													
	2													
	3													
	4													
	5	5/30/97												Inaccessable due to snow, ice, and mud.
	6	6/5/97	0.01	0.16		35.9		0.0025 *	0.0025 *				0	
	7													
	8													
	9													
	10	10/30/97												
	11													
	12													
Average			0.013	0.140	0.009	34.500	31.000	0.004	0.005	0.009	0.002	0.006	1.982	
Number of Entries			6	6	4	6	1	5	6	5	5	4	6	
Max Value			0.03	0.32	0.01	39.2	31	0.005	0.01	0.025	0.005	0.01	4.22	
Min Value			0.005	0.03	0.005	30	31	0.0025	0.0025	0.005	0.0005	0.005	-1.06	
Standard Dev.			0.009	0.099	0.003	3.248	#DIV/0!	0.001	0.004	0.009	0.002	0.003	2.165	

* Below detection limit. Val

Figure 4
Spring B22

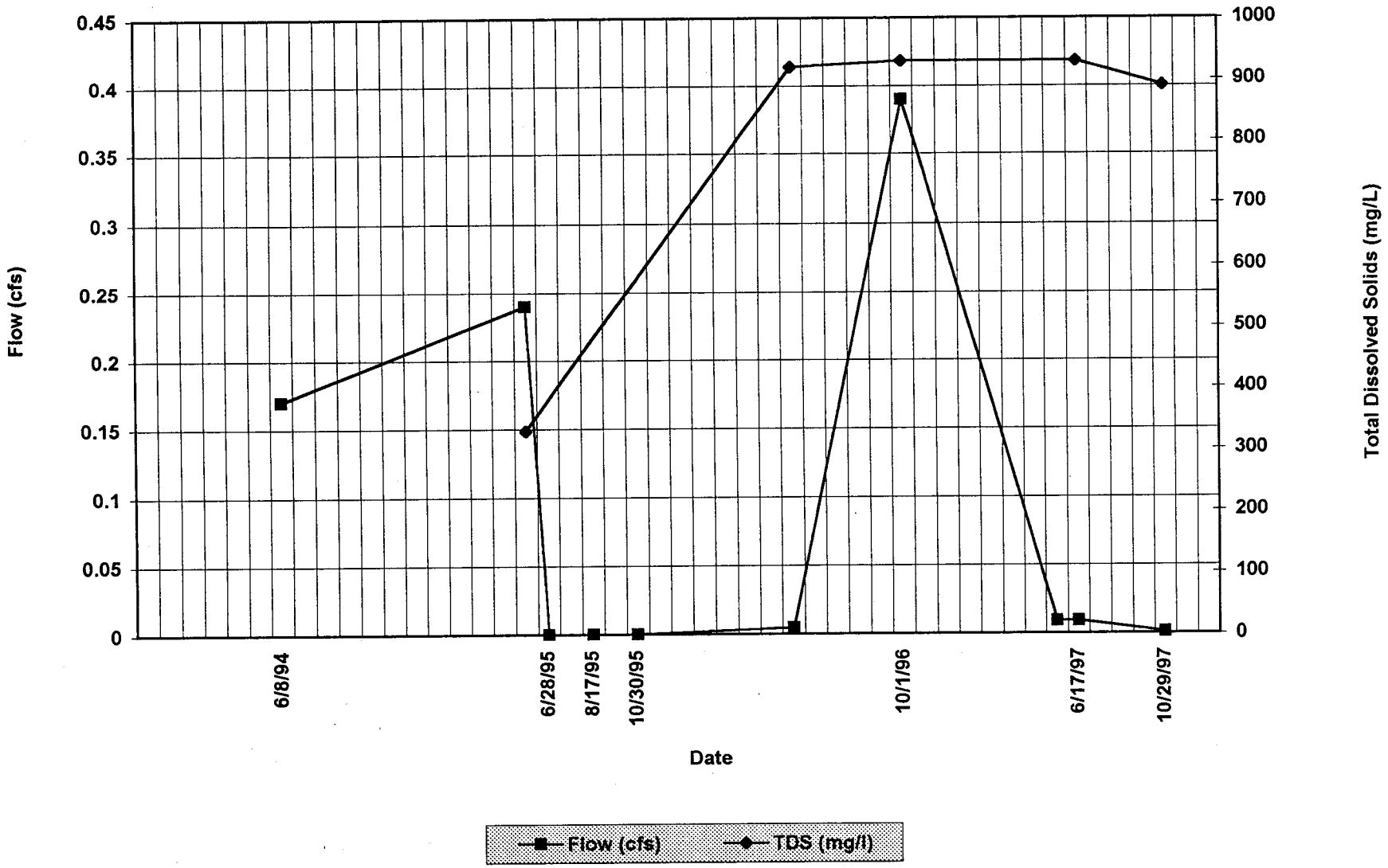


Figure 4A
Spring B22

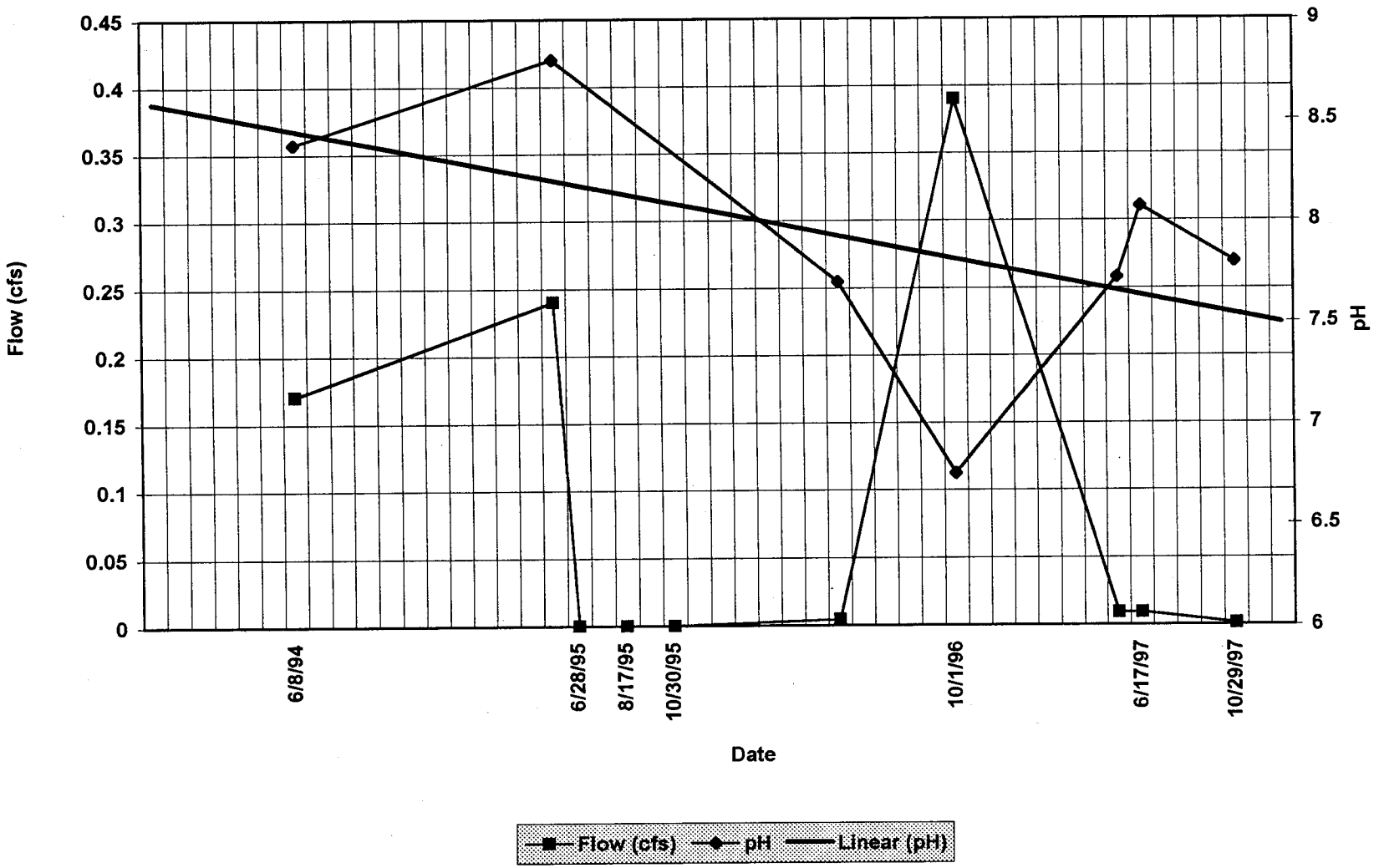


Figure 4B
Spring B22

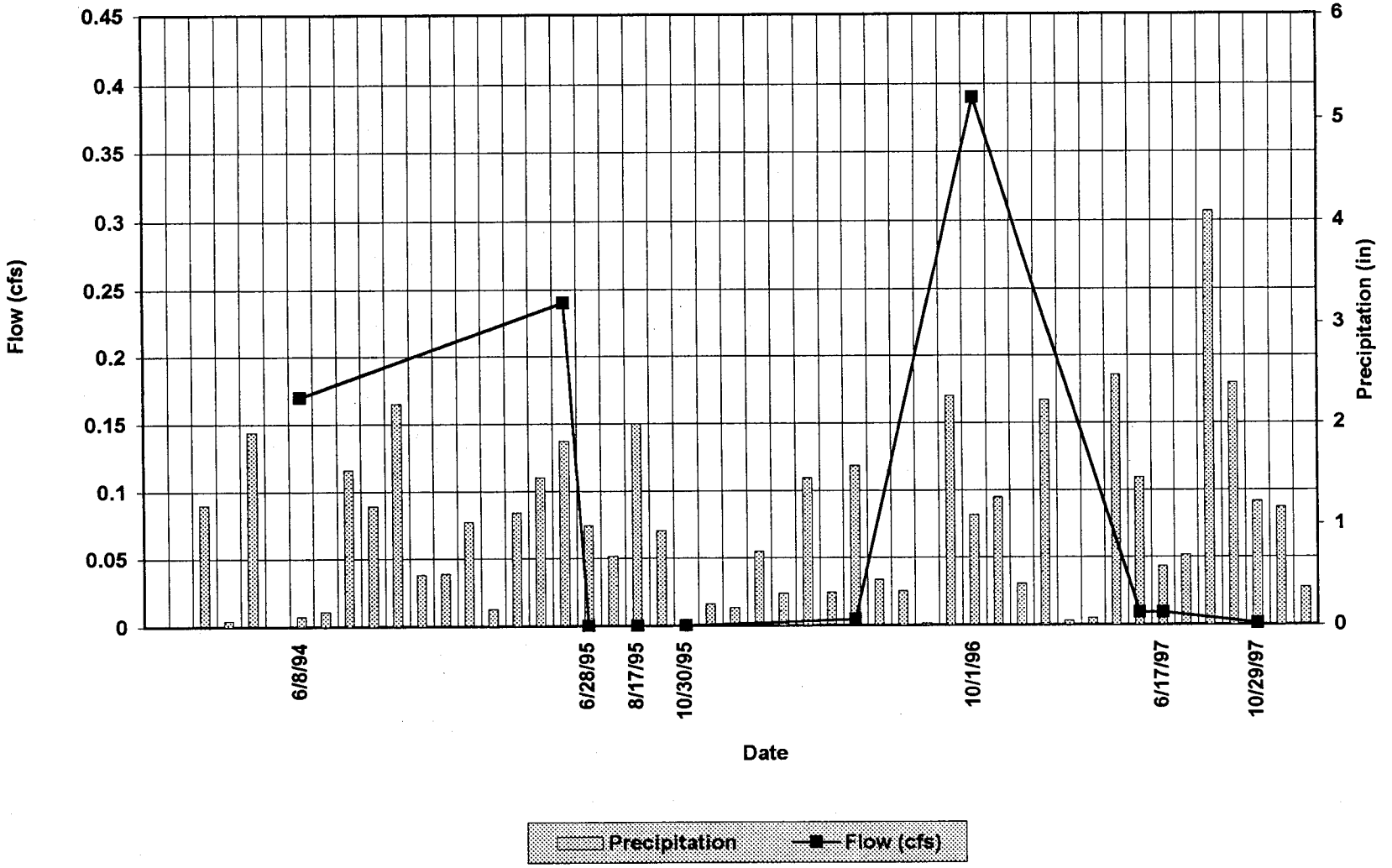


Table 4

Station: B22 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)
94 1																			
2																			
3																			
4																			
5																			
6	6/8/94	0.17	8.38	573	7.9														
7																			
8																			
9																			
10																			
11																			
12																			
95 1																			
2																			
3																			
4																			
5	5/29/95	0.24	8.8	580	8.7	9.1	330	1 *	343	262	16	4	50	46.1	2.2	6	0.025 *	0.06	0.03
6	6/28/95	0																	
7																			
8	8/17/95	0																	
9																			
10	10/30/95	0																	
11																			
12																			
96 1																			
2																			
3																			
4																			
5	5/30/96	0.0045	7.7	1126	10		920		752	452	1 *	25	320	147	6.3	25			
6																			
7																			
8																			
9																			
10	10/1/96	0.39	6.75	1540	12		930		774	448	1 *	28	330	152	6.2	28.3			
11																			
12																			
97 1																			
2																			
3																			
4																			
5	5/30/97	0.009	7.72	1115	10.1														
6	6/17/97	0.009	8.07	1258	18		930		841	417	1 *	26	350	162	7.3	27.9			
7																			
8																			
9																			
10	10/29/97	0.001	7.8	1370	5		890		730	460	5 *	27	300	150	5.6	25			
11																			
12																			
Average		0.082	7.889	1080.286	10.243	9.100	800.000	1.000	688.000	407.800	4.800	22.000	270.000	131.420	5.520	22.440	0.025	0.060	0.030
Number of Entries		10	7	7	7	1	5	1	5	5	5	5	5	5	5	5	1	1	1
Max Value		0.39	8.8	1540	18	9.1	930	1	841	460	16	28	350	162	7.3	28.3	0.025	0.06	0.03
Min Value		0	6.75	573	5	9.1	330	1	343	262	1	4	50	46.1	2.2	6	0.025	0.06	0.03
Standard Dev.		0.138	0.642	373.670	4.056	#DIV/0!	263.249	#DIV/0!	197.288	83.122	6.496	10.124	124.298	48.026	1.954	9.321	#DIV/0!	#DIV/0!	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 4

Station: B22 — Elevtion: 6050

Date Yr-Mo	Sample Date	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)
		Laboratory Measurements															
94 1																	
2																	
3																	
4																	
5																	
6	6/8/94																
7																	
8																	
9																	
10																	
11																	
12																	
95 1																	
2																	
3																	
4																	
5	5/29/95	0.09	0.049	0.05	0.0005 *	0.02	0.0015 *	0.005 *	0.08	0.55	0.01 *	55.5	0.006	0.027	0.005 *	0.002	0.005
6	6/28/95																
7																	
8	8/17/95																
9																	
10	10/30/95																
11																	
12																	
96 1																	
2																	
3																	
4																	
5	5/30/96								0.005 *	1.92		93.5	0.225				
6																	
7																	
8																	
9																	
10	10/1/96								0.005 *	3.17		95.9		0.289	0.263		
11																	
12																	
97 1																	
2																	
3																	
4																	
5	5/30/97								0.01	1.35		106	0.19	0.18			
6	6/17/97																
7																	
8																	
9									0.03	2.8		87	0.26	0.27			
10	10/29/97																
11																	
12																	
Average		0.090	0.049	0.050	0.001	0.020	0.002	0.005	0.026	1.958	0.010	87.580	0.170	0.192	0.134	0.002	0.005
Number of Entries		1	1	1	1	1	1	1	5	5	1	5	4	4	2	1	1
Max Value		0.09	0.049	0.05	0.0005	0.02	0.0015	0.005	0.08	3.17	0.01	106	0.26	0.289	0.263	0.002	0.005
Min Value		0.09	0.049	0.05	0.0005	0.02	0.0015	0.005	0.005	0.55	0.01	55.5	0.006	0.027	0.005	0.002	0.005
Standard Dev.		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.032	1.064	#DIV/0!	19.190	0.113	0.120	0.182	#DIV/0!	#DIV/0!

* Below detection limit. Va

Table 4

Station: B22

Date Yr-Mo		Sample Date		Cat/An (%)	Comments
94	1				
	2				
	3				
	4				
	5				
	6	6/8/94			
	7				
	8				
	9				
	10				
	11				
	12				
95	1				
	2				
	3				
	4				
	5	5/29/95	*	3.3	Spring assumed to be in the stream.
	6	6/28/95			Inundated by Willow Creek. Not found.
	7				
	8	8/17/95			
	9				
	10	10/30/95			
	11				
	12				
96	1				
	2				
	3				
	4				
	5	5/30/96		-0.5	
	6				
	7				
	8				
	9				
	10	10/1/96			
	11				
	12				
97	1				
	2				
	3				
	4				
	5	5/30/97			
	6	6/17/97		5.2	
	7				
	8				
	9				
	10	10/29/97			
	11				
	12				
Average				2.667	
Number of Entries				3	
Max Value				5.2	
Min Value				-0.5	
Standard Dev.				2.902	

* Below detection limit. Va

Figure 5
Spring B262

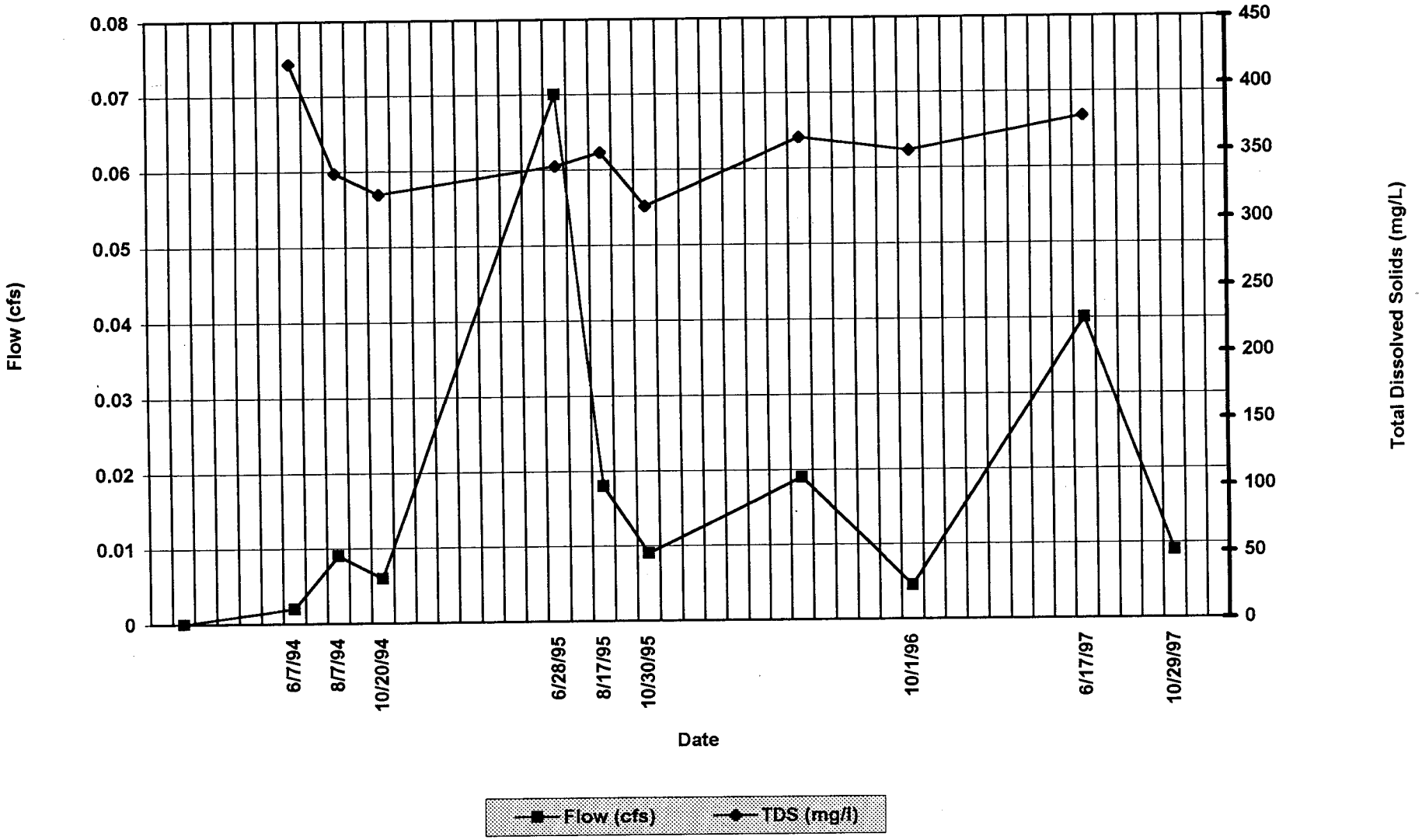


Figure 5A
Spring B262

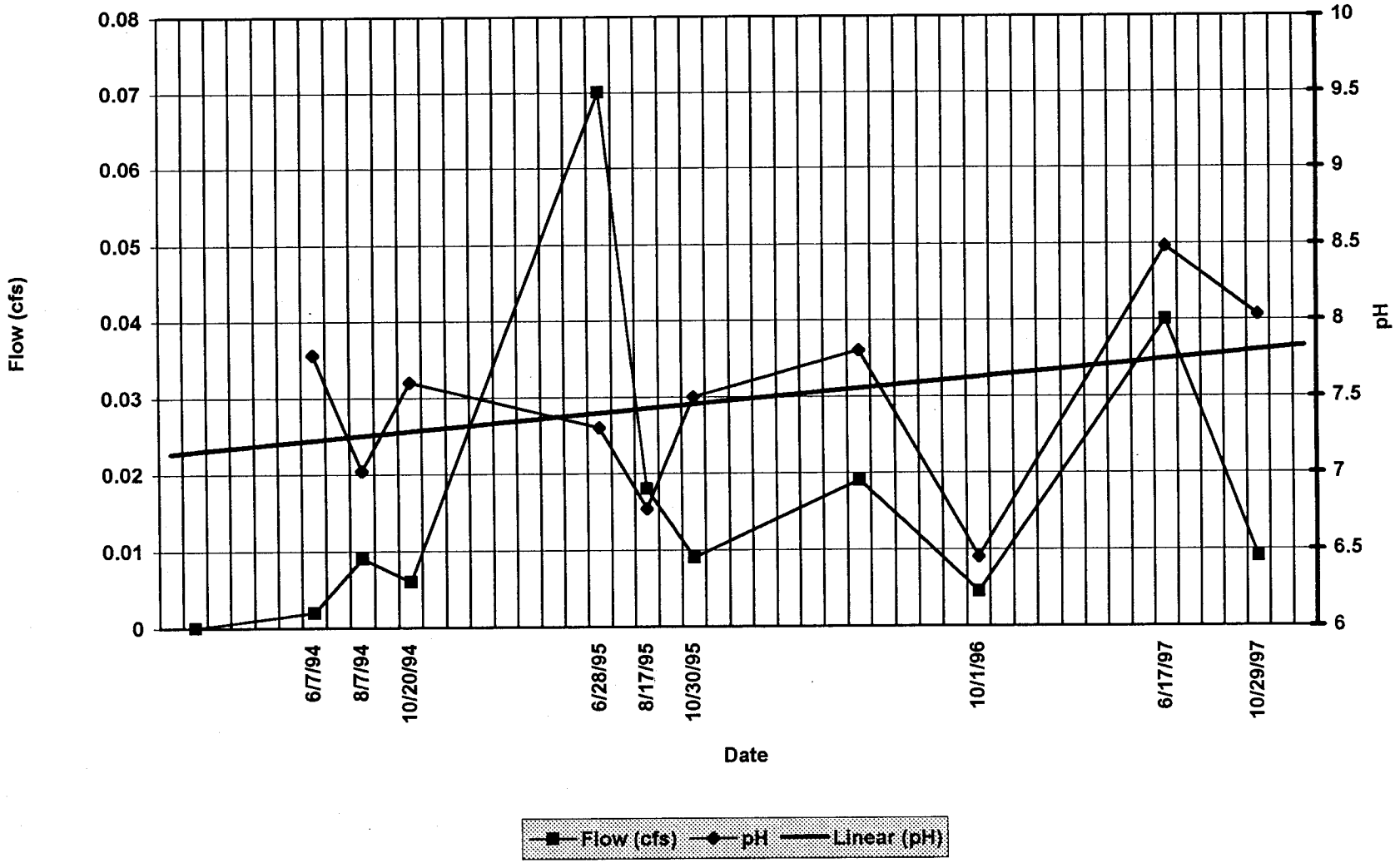


Figure 5B
Spring B262

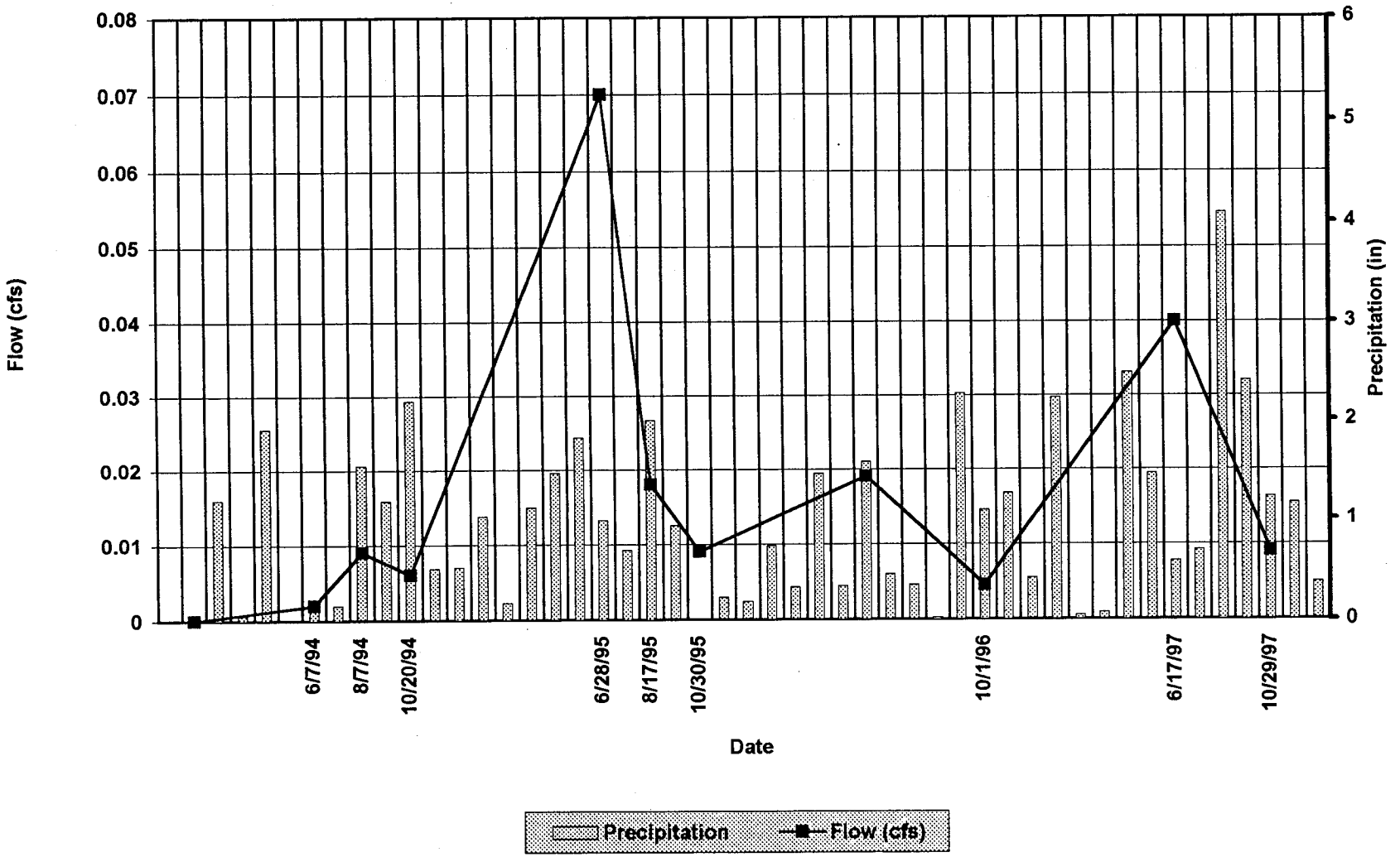


Table 5

Station: B262 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly** | Labor

Date Yr-Mo		Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)
94	1																				
	2																				
	3																				
	4																				
	5																				
	6	6/7/94	0.002	7.78	845	10.1	418	0.5 *	412	393	412	0	10	47	85	1	25	0.07	0.05	0.01	0.06
	7																				
	8	8/7/94	0.009	7.02	651	10.9	336	0.5 *	330	327	330	0	7	19	80	1	17	0.025 *	0.09	0.005 *	0.09
	9																				
	10	10/20/94	0.006	7.6	645	10	320	15	332	320	332	0	7	12	77	2	16	0.025 *	0.16	0.005 *	0.16
	11																				
	12																				
95	1																				
	2																				
	3																				
	4																				
	5	5/30/95																			
	6	6/28/95	0.07	7.3	576	7.5	340	1 *		311	347	1 *	9	30	69.2	1.2	23.5	0.13	0.06	0.005 *	0.06
	7																				
	8	8/17/95	0.018	6.77	710	9.5	350	1 *		336	352	1 *	4	30	80.2	1	13.3	0.0025 *	0.02	0.005 *	0.02
	9																				
	10	10/30/95	0.009	7.5	625	9	310	5		324	305	1 *	5	35	78.8	0.9	13	0.025 *	0.03	0.005 *	0.03
	11																				
	12																				
96	1																				
	2																				
	3																				
	4																				
	5	5/31/96	0.019	7.8	491	8	360			340	350	1 *	10	20	79.7	1.3	18.5				
	6																				
	7																				
	8																				
	9																				
	10	10/1/96	0.0045	6.45	789	9	350			349	341	1 *	9	20	85.7	1.3	15.8				
	11																				
	12																				
97	1																				
	2																				
	3																				
	4																				
	5	5/30/97																			
	6	6/17/97	0.04	8.48	746	9	375			322	342	1 *	10	20	82.6	1.3	19.4				
	7																				
	8																				
	9																				
	10	10/29/97	0.009	8.03	832	7															
	11																				
	12																				
Average			0.019	7.473	691.000	9.000	# 351.000	3.833	358.000	335.778	345.667	0.667	7.889	25.889	79.800	1.222	17.944	0.046	0.068	0.006	0.070
Number of Entries			10	10	10	10	0 9	6	3	9	9	9	9	9	9	9	9	6	6	6	6
Max Value			0.07	8.48	845	10.9	0 418	15	412	393	412	1	10	47	85.7	2	25	0.13	0.16	0.01	0.16
Min Value			0.002	6.45	491	7	0 310	0.5	330	311	305	0	4	12	69.2	0.9	13	0.0025	0.02	0.005	0.02
Standard Dev.			0.021	0.607	114.447	1.217	# 31.890	5.733	46.776	24.330	28.684	0.500	2.261	10.647	4.887	0.331	4.159	0.047	0.051	0.002	0.051

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 5

Station: B262 — **Elevation: 6050**

Date Yr-Mo		Sample Date	atory Measurements P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Communications
94	1																		
	2																		
	3																		
	4																		
	5																		
	6	6/7/94	0.011	0.06	0.0005 *	0.04	0.0025 *	0.005 *	0.03	1.14		44	0.005 *	0.04	0.005 *	0.0005 *		-2.87	Sample muddied
	7																		
	8	8/7/94	0.0025 *	0.025 *	0.0005 *	0.04	0.0025 *	0.005 *	0.01 *	0.07	0.01 *	31	0.005 *	0.005 *	0.005 *	0.0005 *	0.005 *		Lots of cow activity in area.
	9																		
	10	10/20/94	0.0025 *	0.025 *	0.0005 *	0.03	0.0025 *	0.005 *	0.01	0.01 *	0.01 *	31	0.005 *	0.005 *	0.005 *	0.002	0.005 *	0.42	6 in. of snow on ground.
	11																		
	12																		
95	1																		
	2																		
	3																		
	4																		
	5	5/30/95																	Not accessible, tried again 5/31-Same
	6	6/28/95	0.0025 *	0.015 *	0.0005 *	0.04	0.0015 *	0.005 *	0.005 *	0.02	0.01 *	33.5	0.0025 *	0.0025 *	0.005 *	0.001 *	0.005 *	-3.6	
	7																		
	8	8/17/95	0.0025 *	0.015 *	0.005 *	0.03	0.0015 *	0.005 *	0.005 *	0.51	0.01 *	33	0.017	0.007	0.005 *	0.002	0.02	-3	Lots of cow activity.
	9																		
	10	10/30/95	0.011	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *	0.16		30.9	0.009	0.012	0.005 *	0.001 *	0.005 *	0.7	
	11																		
	12																		
96	1																		
	2																		
	3																		
	4																		
	5	5/31/96							0.005 *	1.21		34.2	0.0025 *					-0.4	
	6																		
	7																		
	8																		
	9																		
	10	10/1/96							0.005 *	0.005 *		32.8	0.0025 *	0.0025 *				1.4	
	11																		
	12																		
97	1																		
	2																		
	3																		
	4																		
	5	5/30/97																	Inaccesable sue to snow, ice, and mud.
	6	6/17/97							0.005 *	0.01		36.6	0.0025 *	0.0025 *				3.1	
	7																		
	8																		
	9																		
	10	10/29/97																	Cows have mucked up - no sample.
	11																		
	12																		
Average			0.005	0.026	0.001	0.033	0.002	0.005	0.009	0.348	0.010	34.111	0.006	0.010	0.005	0.001	0.008	-0.531	
Number of Entries			6	6	6	6	6	6	9	9	4	9	9	8	6	6	5	8	
Max Value			0.011	0.06	0.005	0.04	0.0025	0.005	0.03	1.21	0.01	44	0.017	0.04	0.005	0.002	0.02	3.1	
Min Value			0.0025	0.015	0.0005	0.02	0.0015	0.005	0.005	0.005	0.01	30.9	0.0025	0.0025	0.005	0.0005	0.005	-3.6	
Standard Dev.			0.004	0.017	0.002	0.008	0.001	0.000	0.008	0.495	0.000	4.138	0.005	0.013	0.000	0.001	0.007	2.400	

* Below detection limit. Value en

Figure 6
Spring B321

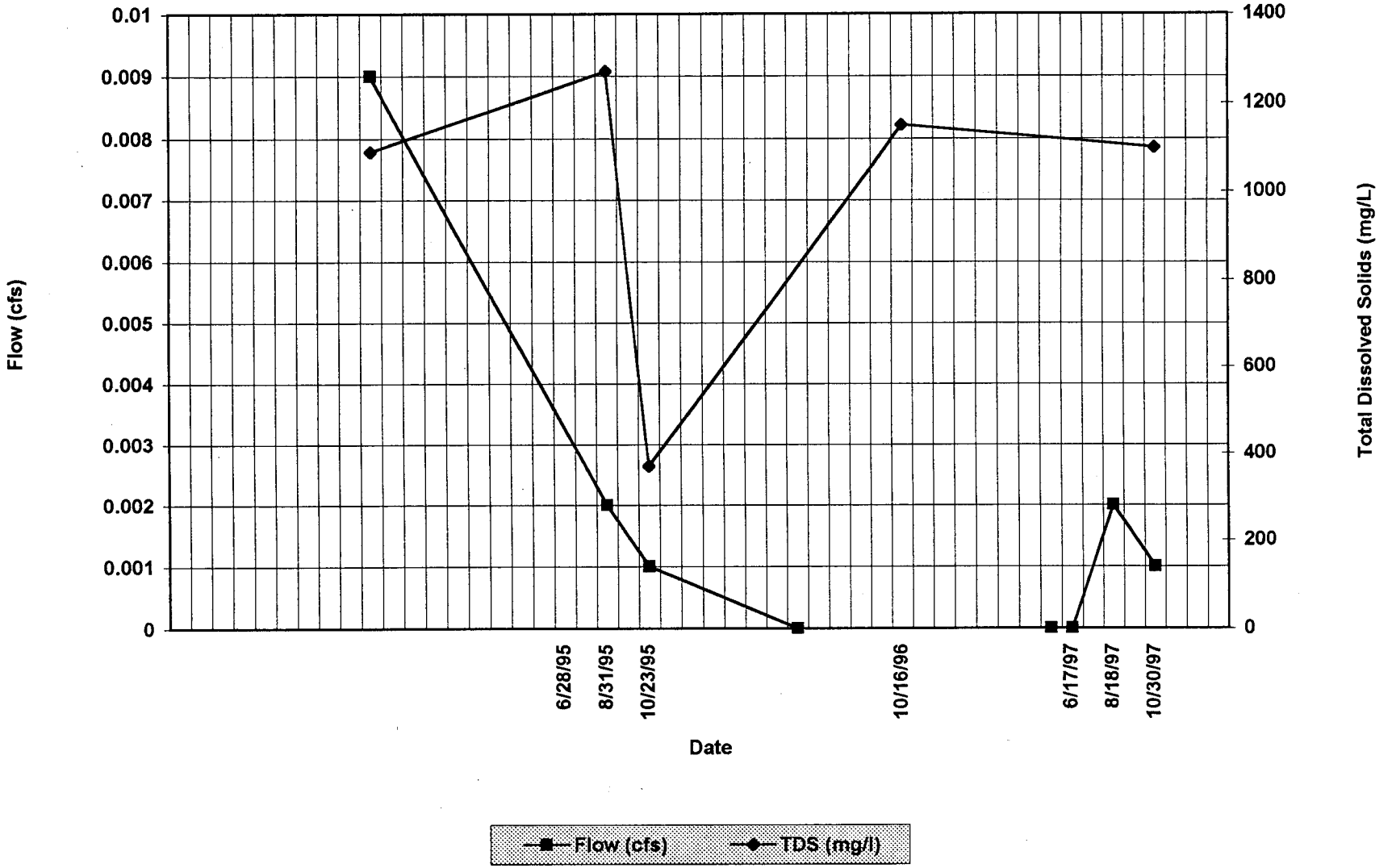


Figure 6A
Spring B321

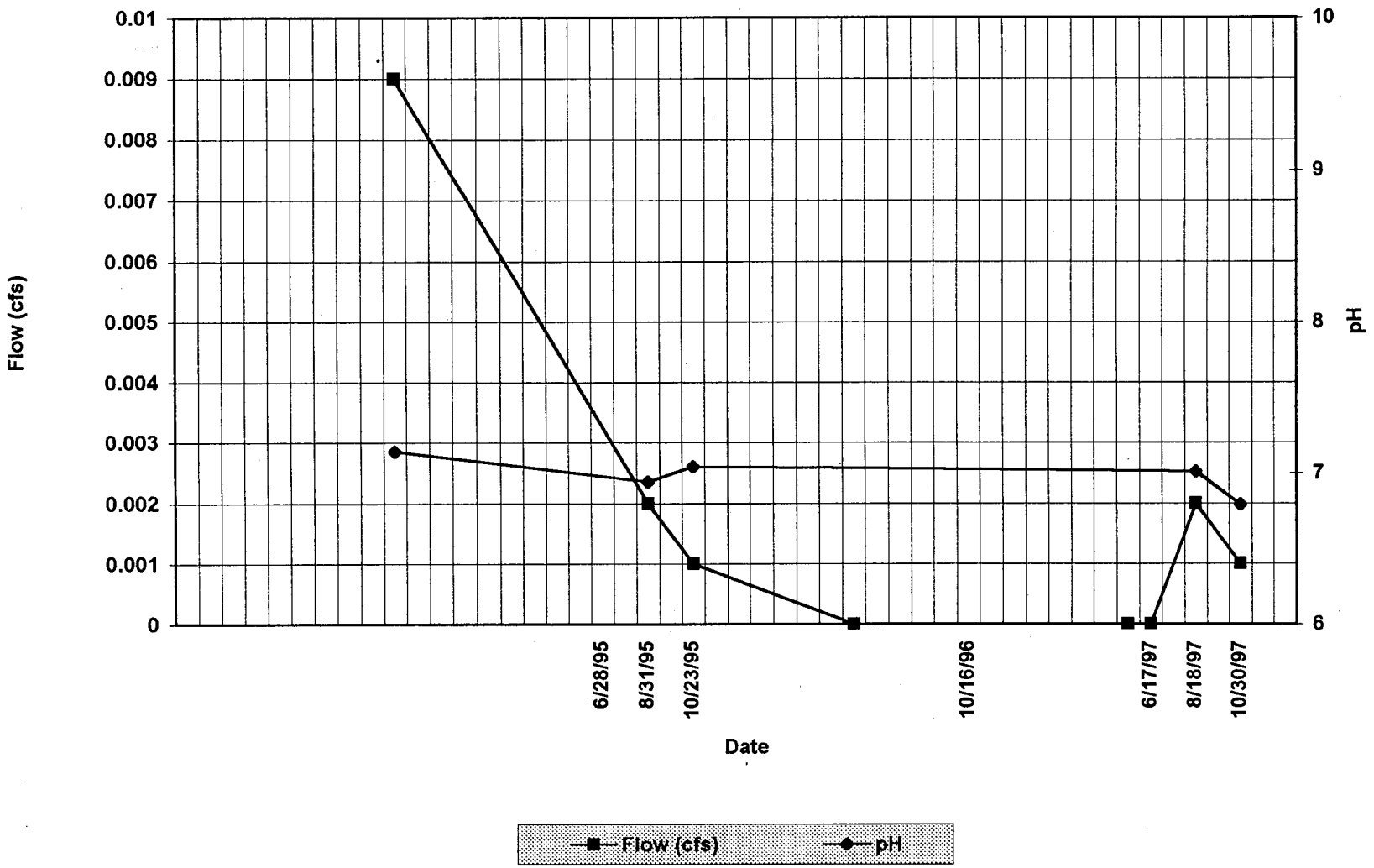


Figure 6B
Spring B321

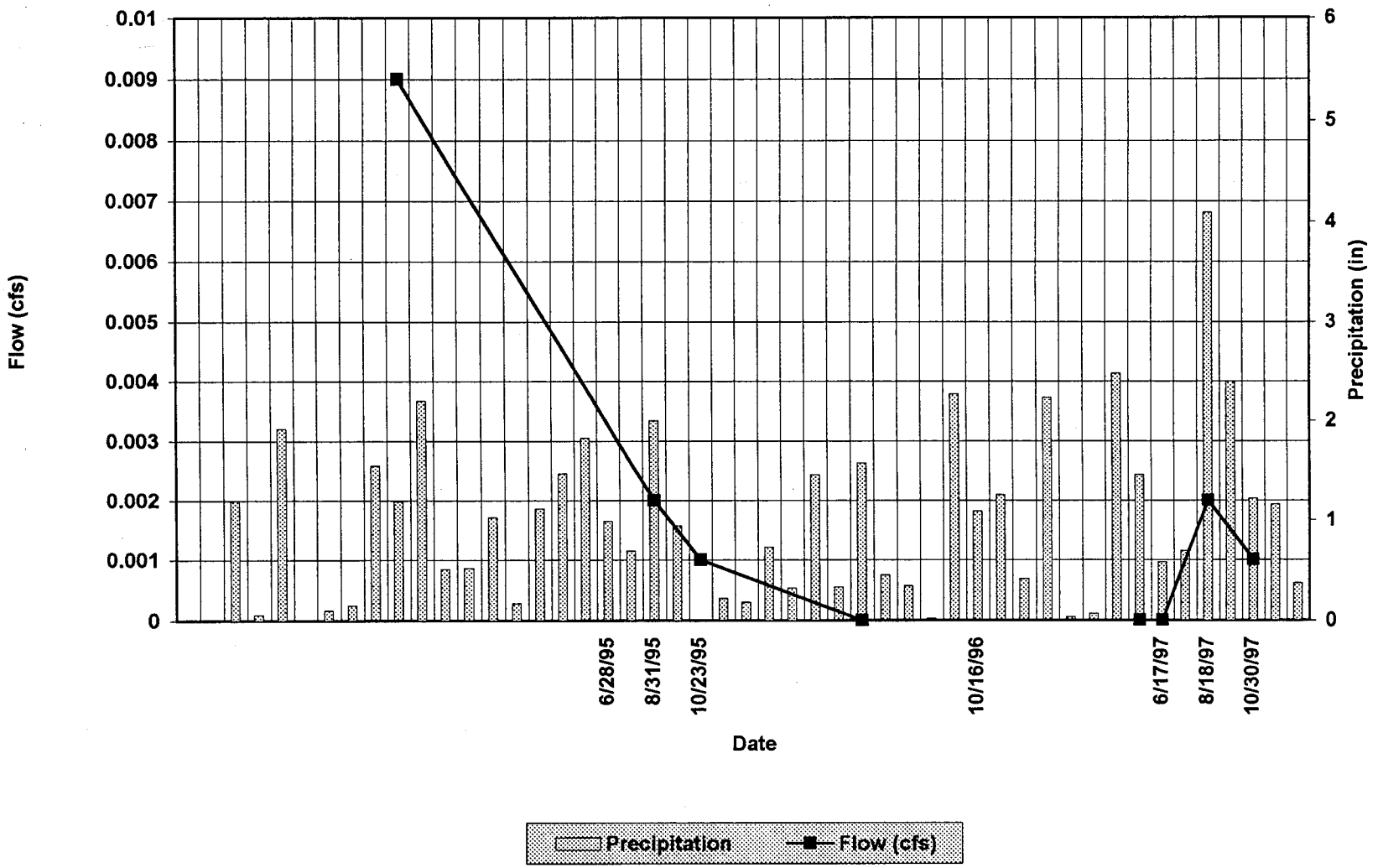


Table 6

Station: B321 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date	Sample Date	Field Measurements: Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Laboratory Measurements: TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)
94 1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9	9/30/94	0.009	7.14	1563	10	1090	0.5 *	350	821	350	0	45	463	156	9	59	0.24	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.001
10																							
11																							
12																							
95 1																							
2																							
3																							
4																							
5																							
6	6/28/95																						
7																							
8	8/31/95	0.002	6.94	1231	10.5	1270			824	390	1 *	47	490	162	8.7	58.4	0.13	0.03	0.005 *	0.03	0.0025 *	0.0015 *	0.0005 *
9																							
10	10/23/95	0.001	7.04	1375	9	370	1 *		810	384	1 *	51	492	160	8.3	55.7	0.21	0.01 *	0.005 *	0.01 *	0.0025 *	0.0015 *	0.001
11																							
12																							
96 1																							
2																							
3																							
4																							
5	5/31/96	0																					
6																							
7																							
8																							
9																							
10	10/16/96					1150			792	399	1 *	48	460	154	8.7	57.9							
11																							
12																							
97 1																							
2																							
3																							
4																							
5	5/30/97	0																					
6	6/17/97	0																					
7																							
8	8/18/97	0.002	7.01	1235	10.6																		
9																							
10	10/30/97	0.001	6.79	1413	10	1100		380	770	380	5 *	51	380	160	7.8	56							
11																							
12																							
Average		0.002	6.984	1363.400	10.020	996.000	0.750	365.000	803.400	380.600	1.600	48.400	457.000	158.400	8.500	57.400	0.193	0.017	0.005	0.017	0.003	0.009	0.001
Number of Entries		8	5	5	5	5	2	2	5	5	5	5	5	5	5	5	3	3	3	3	3	3	3
Max Value		0.009	7.14	1563	10.6	1270	1	380	824	399	5	51	492	162	9	59	0.24	0.03	0.005	0.03	0.0025	0.025	0.001
Min Value		0	6.79	1231	9	370	0.5	350	770	350	0	45	380	154	7.8	55.7	0.13	0.01	0.005	0.01	0.0025	0.0015	0.0005
Standard Dev.		0.003	0.130	138.249	0.634	357.183	0.354	21.213	22.490	18.542	1.949	2.608	45.519	3.286	0.464	1.471	0.057	0.012	0.000	0.012	0.000	0.014	0.000

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 6

Station: B321 — **Elevation: 6050**

Date	Sample Date	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISs (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1															
2															
3															
4															
5															
6															
7															
8															
9	9/30/94	0.08	0.0025 *	0.005 *	0.02	0.08	0.01 *	105	0.81	0.78	0.005 *	0.0005 *	0.005 *	3.39	Strong sulphur odor. At edge of Willow Creek
10															
11															
12															
95 1															
2															
3															
4															
5															
6	6/28/95														Pipe not flowing.
7															
8	8/31/95	0.08	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	102	0.782	0.773	0.005 *	0.001 *	0.005 *	-0.2	Strong sulfur odor.
9															
10	10/23/95	0.08	0.0015 *	0.005 *	0.005 *	0.01	0.01 *	99.7	0.774	0.79	0.005 *	0.001 *	0.005 *	-1.4	
11															
12															
96 1															
2															
3															
4															
5	5/31/96														Inundated by Willow Creek.
6															
7															
8															
9															
10	10/16/96				0.01	0.01 *		99.1	0.739	0.78				-0.9	
11															
12															
97 1															
2															
3															
4															
5	5/30/97														Inundated by Willow Creek flow.
6	6/17/97														Inundated by Willow Creek flow.
7															
8	8/18/97														
9															
10	10/30/97				0.02	0.03		89	0.75	0.74					
11															
12															
Average		0.080	0.002	0.005	0.012	0.027	0.010	98.960	0.771	0.773	0.005	0.001	0.005	0.223	
Number of Entries		3	3	3	5	5	3	5	5	5	3	3	3	4	
Max Value		0.08	0.0025	0.005	0.02	0.08	0.01	105	0.81	0.79	0.005	0.001	0.005	3.39	
Min Value		0.08	0.0015	0.005	0.005	0.005	0.01	89	0.739	0.74	0.005	0.0005	0.005	-1.4	
Standard Dev.		0.000	0.001	0.000	0.008	0.031	0.000	6.031	0.028	0.019	0.000	0.000	0.000	2.168	

* Below detection limit. Value ent

Figure 7
Spring B271

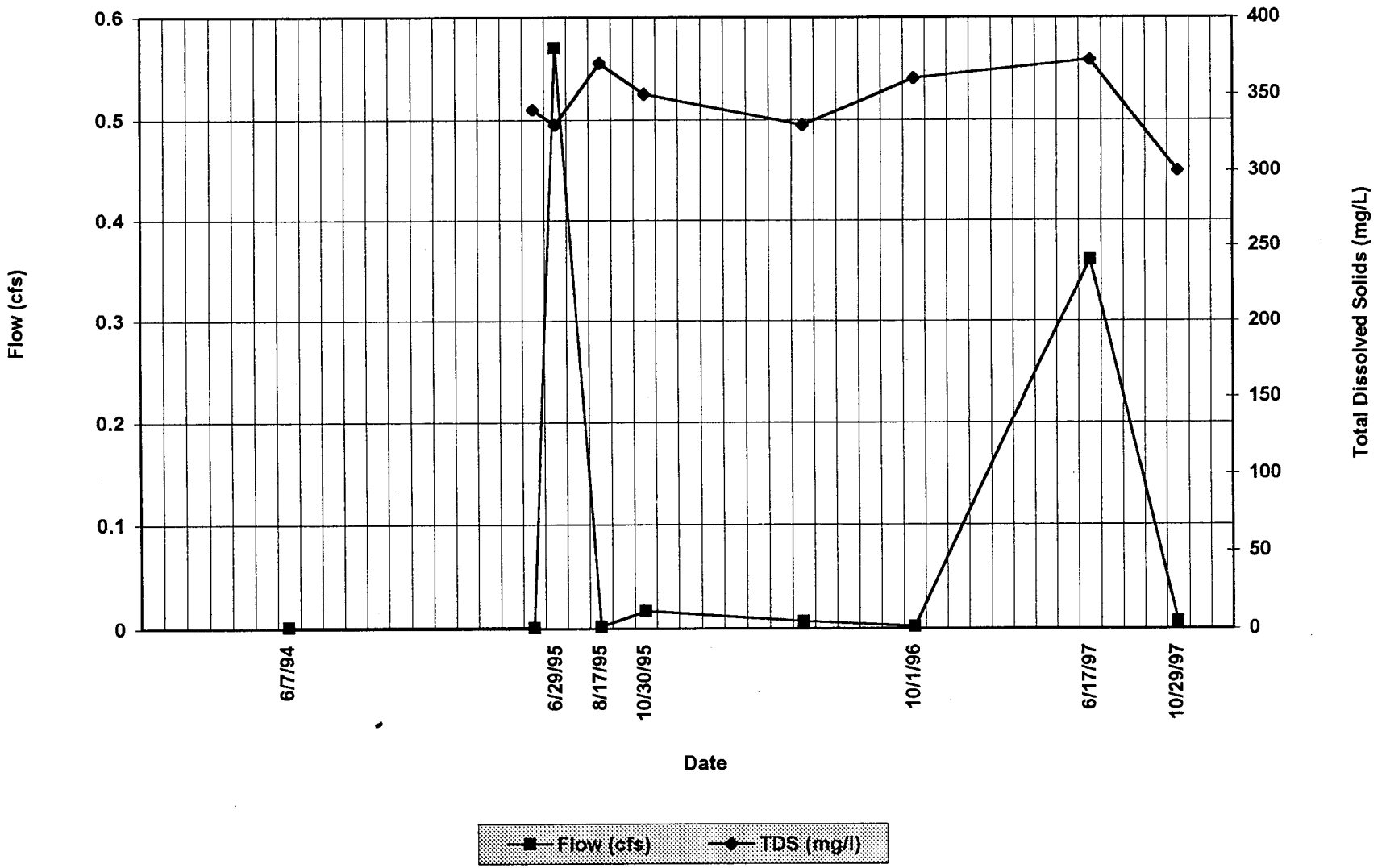


Figure 7A
Spring B271

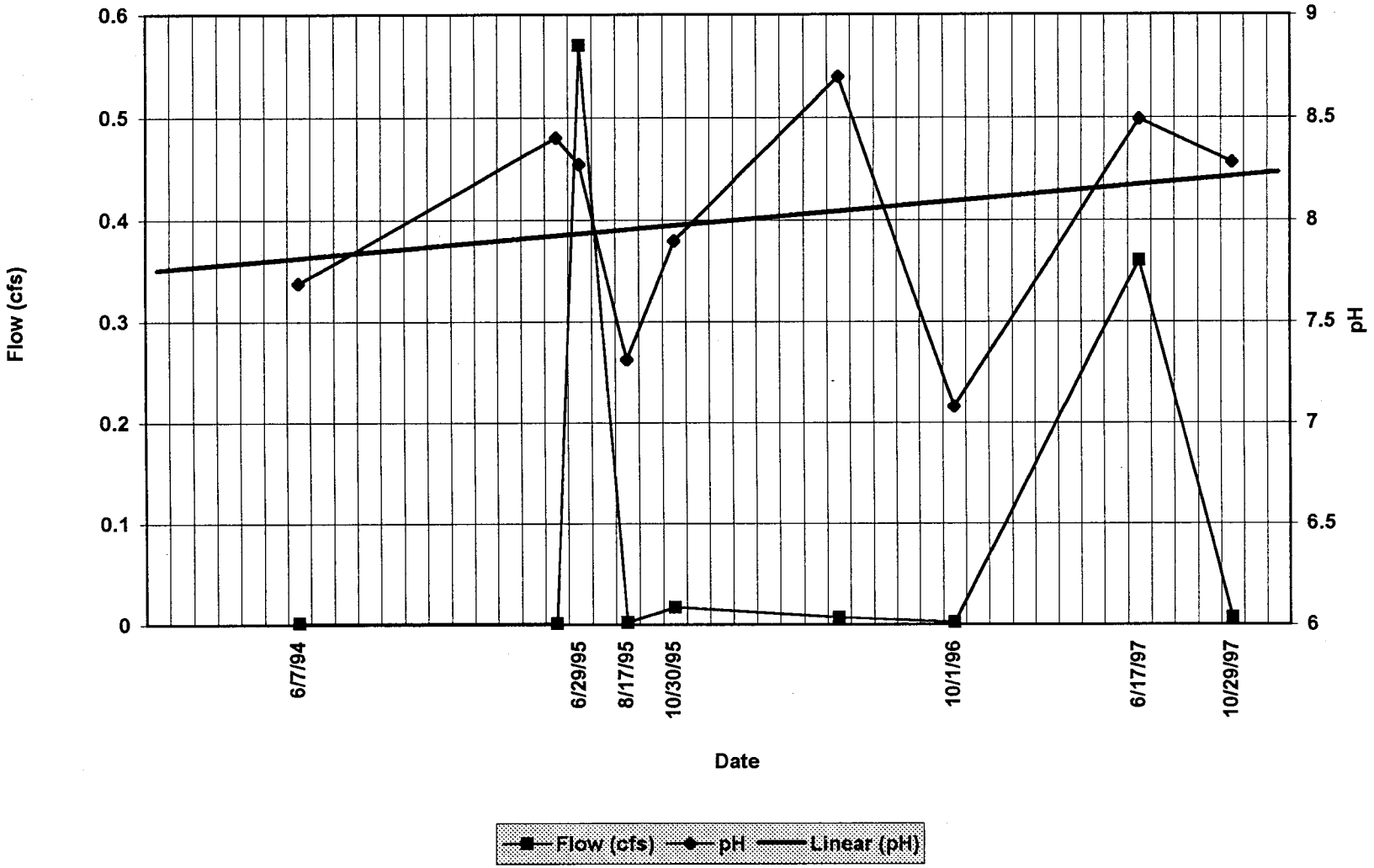


Figure 7B
Spring B271

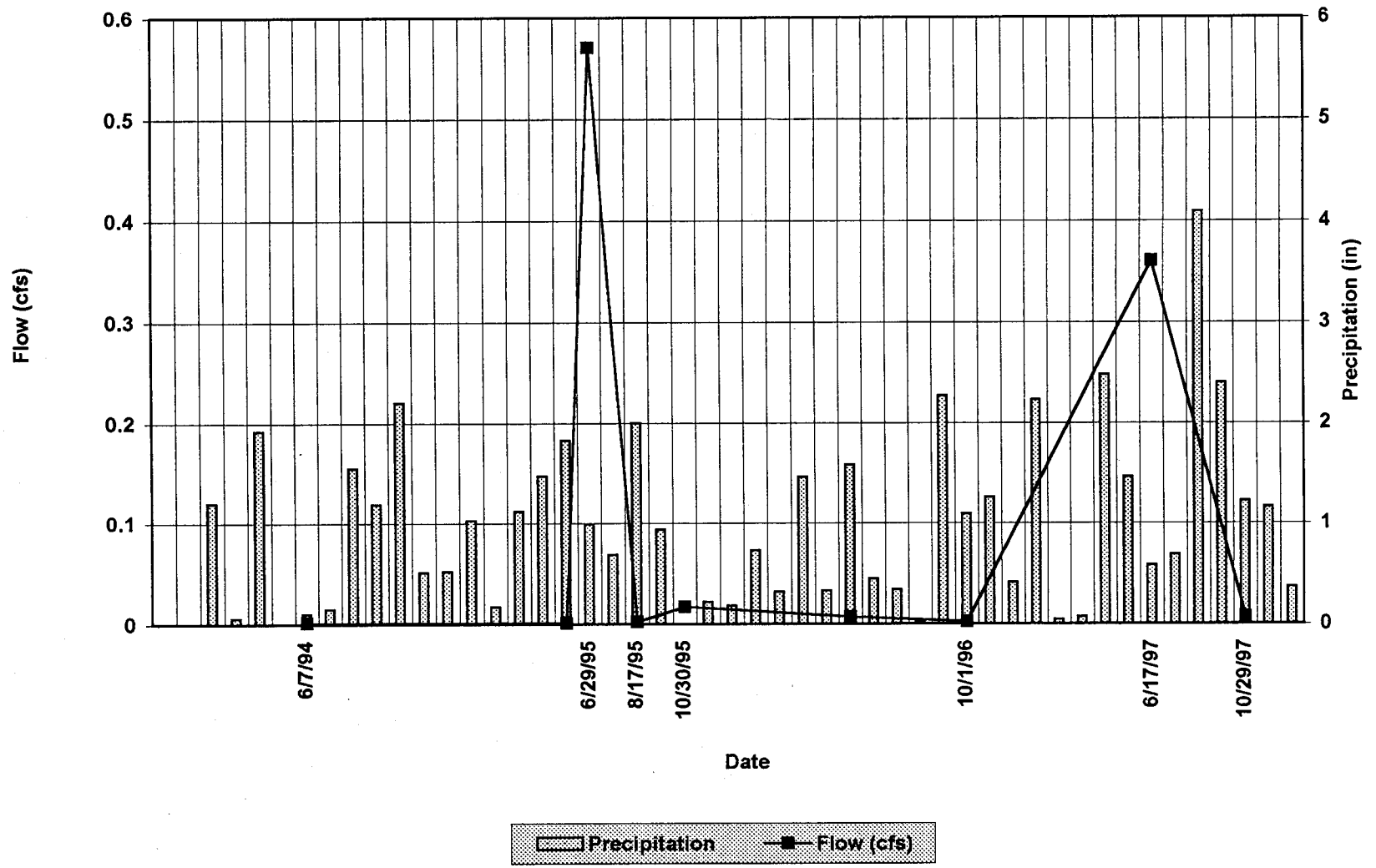


Table 7

Station: B271 | Property: Castle Gate | Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E | Sampling Frequency: Quarterly

Date Yr-Mo	Sample Date	Field Measurements: Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Laboratory Measurements: TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)
94 1																								
2																								
3																								
4																								
5																								
6	6/7/94	0	7.69	706	8.8																			
7																								
8																								
9																								
10																								
11																								
12																								
95 1																								
2																								
3																								
4																								
5	5/29/95	0	8.4	615	7	340			24		315	308	1 *	4	30	79.4	1.1	13.2	0.025 *	0.04	0.005 *	0.04	0.023	0.015
6	6/29/95	0.57	8.27	505	8.5	330			1 *		304	301	1 *	5	30	76.6	1	15.5	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015
7																								
8	8/17/95	0	7.31	620	10	370			11		354	307	1 *	10	22	80.1	1.4	19.4	0.025 *	0.09	0.005 *	0.09	0.0025 *	0.05
9																								
10	10/30/95	0.02	7.9	535	3.5	350	2.5 *	0.2 *	1 *			333	1 *	12	17	85.9	1.9	16.6	0.025 *	0.06	0.005 *	0.06	0.031	0.015
11																								
12																								
96 1																								
2																								
3																								
4																								
5	5/31/96	0.01	8.7	391	10	330					318	306	1 *	4	30	77.3	1	12.1						
6																								
7																								
8																								
9																								
10	10/1/96	0	7.08	741	7	360					356	333	1 *	5	30	85.5	1.3	16.3						
11																								
12																								
97 1																								
2																								
3																								
4																								
5	5/30/97																							
6	6/17/97	0.36	8.49	566	9	372					332	332	1 *	5	40	81.9	1	14.3						
7																								
8																								
9																								
10	10/29/97	0.01	8.28	780	4	300				310	310	310	5 *	5.7	29	76	1	13						
11																								
12																								
Average		0.108	8.013	606.556	7.533	344.000	2.500	0.200	9.250	310.000	327.000	316.250	1.500	6.338	28.500	80.338	1.213	15.050	0.025	0.050	0.005	0.050	0.015	0.024
Number of Entries		9	9	9	9	8	1	1	4	1	7	8	8	8	8	8	8	8	4	4	4	4	4	4
Max Value		0.57	8.7	780	10	372	2.5	0.2	24	310	356	333	5	12	40	85.9	1.9	19.4	0.025	0.09	0.005	0.09	0.031	0.05
Min Value		0	7.08	391	3.5	300	2.5	0.2	1	310	304	301	1	4	17	76	1	12.1	0.025	0.01	0.005	0.01	0.0025	0.015
Standard Dev.		0.210	0.555	123.411	2.403	24.190	#DIV/0!	#DIV/0!	10.905	#DIV/0!	20.968	13.833	1.414	2.980	6.719	3.836	0.318	2.390	0.000	0.034	0.000	0.034	0.015	0.018

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 7

Station: B271 **Elevation: 6050**

Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1																
2																
3																
4																
5																
6	6/7/94															
7																
8																
9																
10																
11																
12																
95 1																
2																
3																
4																
5	5/29/95	* 0.0005	* 0.02	0.0015	* 0.005	* 0.005	* 0.05	0.01	* 28.3	0.0025	* 0.0025	* 0.005	* 0.002	0.005	* 0	Snow melt/–.40 cfs in stream channel
6	6/29/95	* 0.0005	* 0.03	0.0015	* 0.005	* 0.005	* 0.005	* 0.01	* 27.3	0.0025	* 0.0025	* 0.005	* 0.001	* 0.005	* -0.1	
7																
8	8/17/95	0.0005	* 0.03	0.0015	* 0.005	* 0.06	0.06	0.01	* 37.4	0.006	0.019	0.005	* 0.001	* 0.005	* 7.3	
9																
10	10/30/95	* 0.001	0.03	0.0015	* 0.005	* 0.005	* 0.19	0.01	* 32.7	0.013	0.017	0.005	* 0.0005	* 0.005	* 2.6	
11																
12																
96 1																
2																
3																
4																
5	5/31/96					0.005	* 0.03		30.4	0.006					0.4	
6																
7																
8																
9																
10	10/1/96					0.005	* 0.09		34.7	0.0025	* 0.0025	*			2.9	
11																
12																
97 1																
2																
3																
4																
5	5/30/97															Inaccesable due to snow, ice, and mud.
6	6/17/97					0.01	0.02		31	0.0025	* 0.0025	*			-2.2	
7																
8																
9																
10	10/29/97					0.02	0.14		29	0.014	0.03					
11																
12																
Average		0.001	0.028	0.002	0.005	0.014	0.073	0.010	31.350	0.006	0.011	0.005	0.001	0.005	1.557	
Number of Entries		4	4	4	4	8	8	4	8	8	7	4	4	4	7	
Max Value		0.001	0.03	0.0015	0.005	0.06	0.19	0.01	37.4	0.014	0.03	0.005	0.002	0.005	7.3	
Min Value		0.0005	0.02	0.0015	0.005	0.005	0.005	0.01	27.3	0.0025	0.0025	0.005	0.0005	0.005	-2.2	
Standard Dev.		0.000	0.005	0.000	0.000	0.019	0.064	0.000	3.421	0.005	0.011	0.000	0.001	0.000	3.069	

* Below detection limit. Value ent

Figure 8
Spring B341

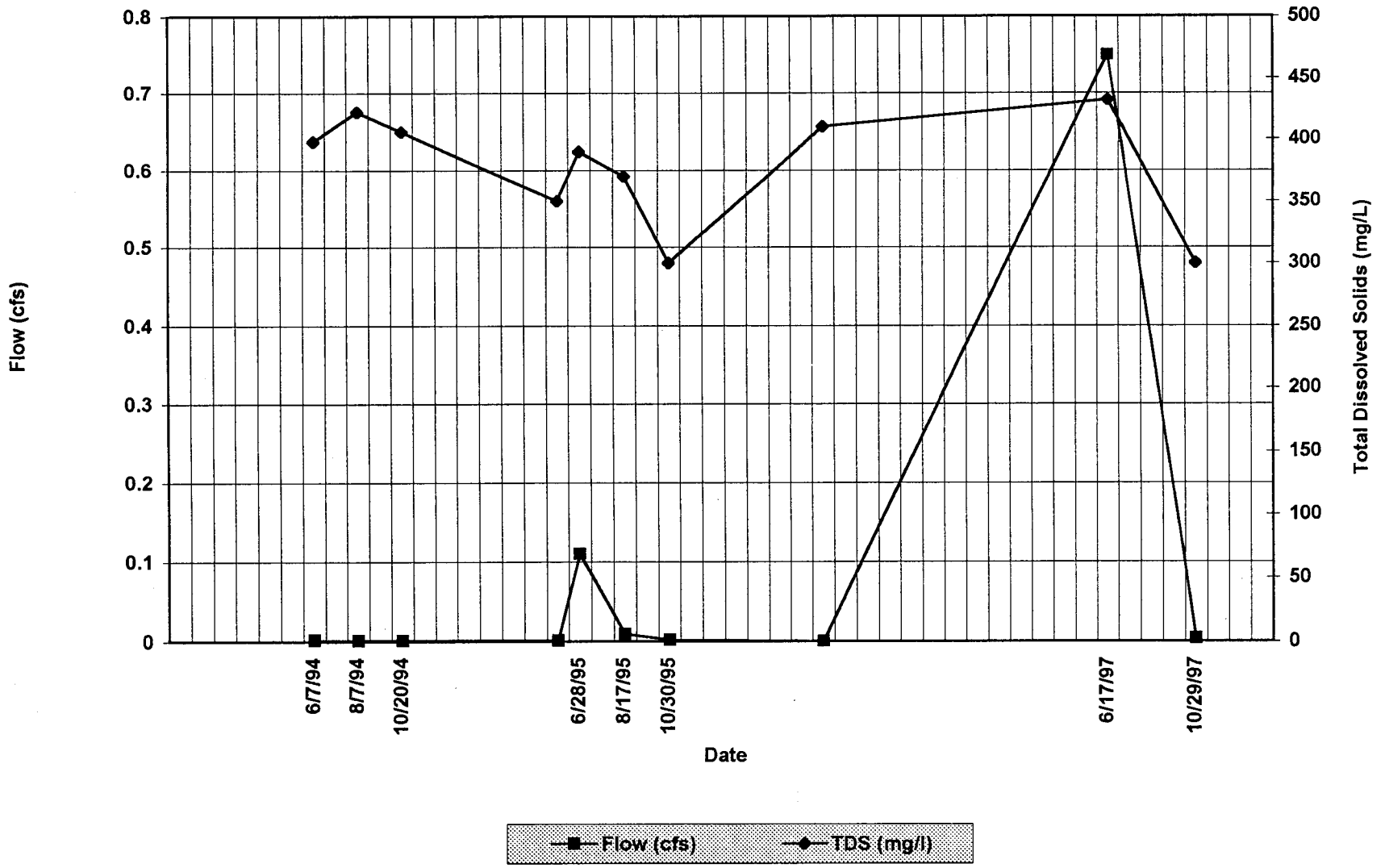


Figure 8A
Spring B341

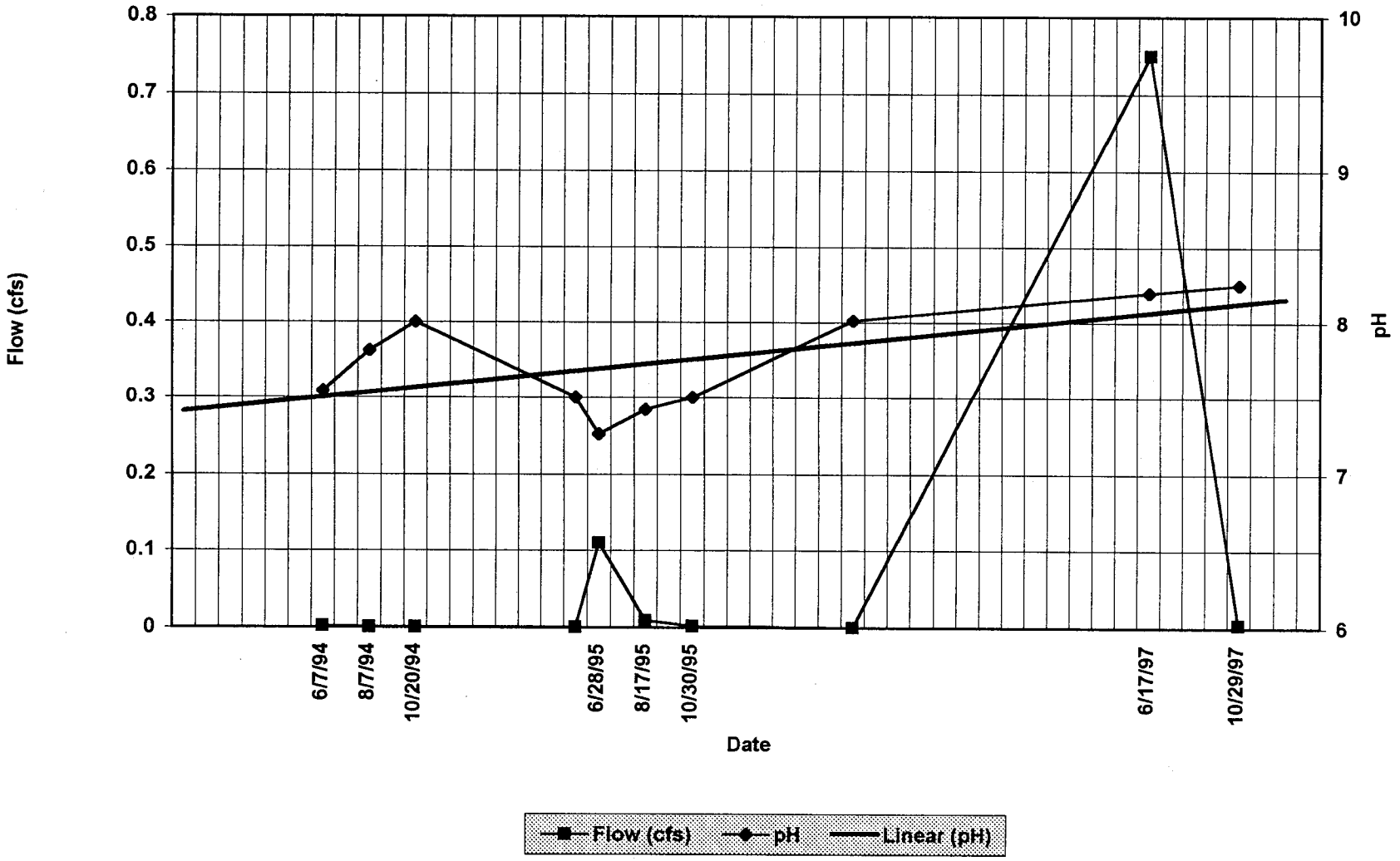


Figure 8B
Spring B341

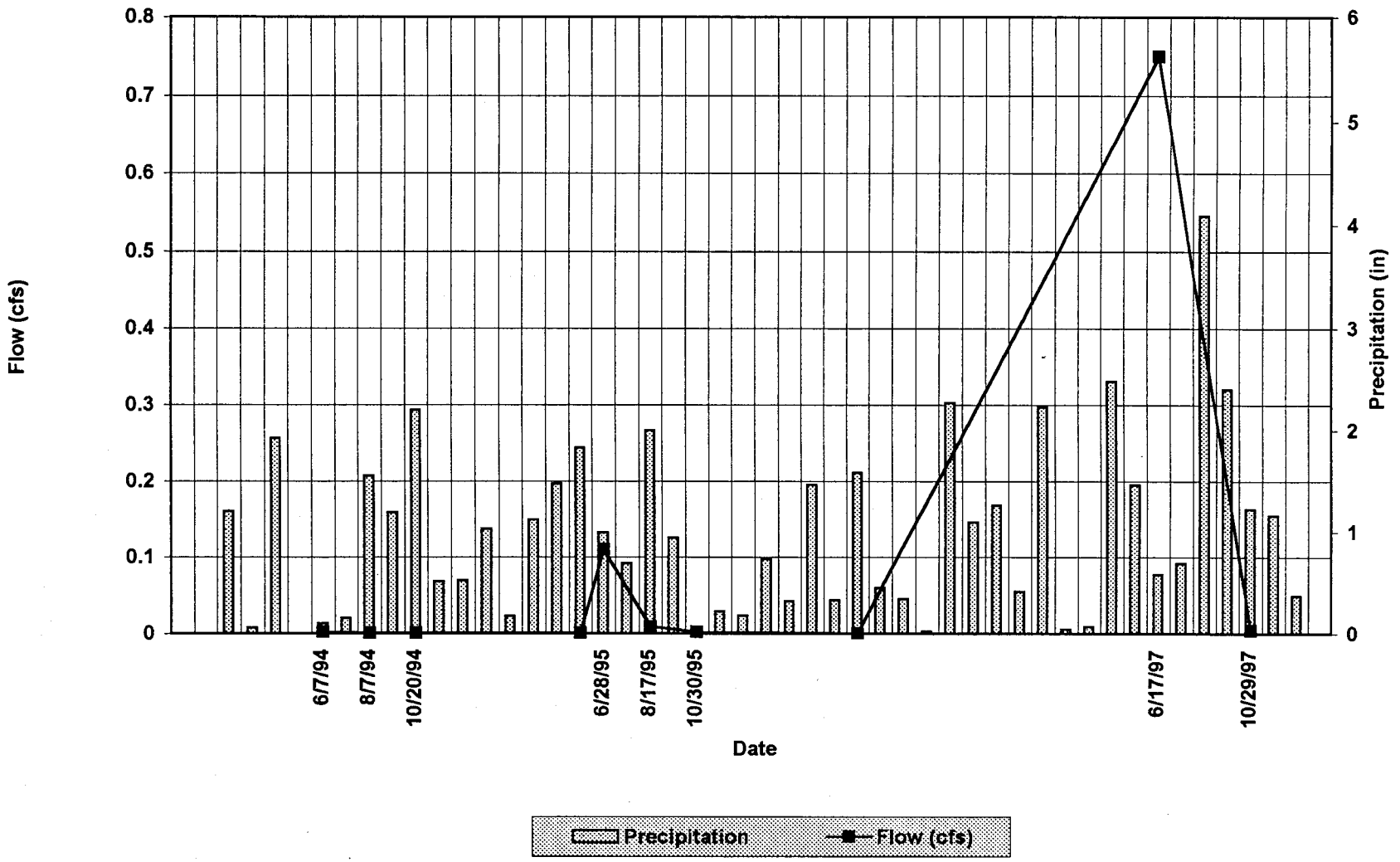


Table 8

Station: B341 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Field Measurements: Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	Laboratory Measurements: NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)
94 1																								
2																								
3																								
4																								
5																								
6	6/7/94	0.002	7.54	848	4.7	398			0.5 *	346	285	334	12	4	66	68	0.5 *	54	0.025 *	0.23	0.005 *	0.22	0.0025 *	0.025 *
7																								
8	8/7/94	0.001	7.81	810	8.2	422			0.5 *	322	311	322		5	74	75	0.5 *	63	0.025 *	0.13	0.005 *	0.13	0.0025 *	0.025 *
9																								
10	10/20/94	0.001	8	748	3	406			23	368	287	368		4	64	69	0.5 *	60	0.025 *	0.18	0.005 *	0.18	0.0025 *	0.025 *
11																								
12																								
95 1																								
2																								
3																								
4																								
5	5/29/95	0.001	7.5	650	7	350	30		14		341	303	1 *	4	30	90.1	0.7	12.9	0.025 *	0.12	0.005 *	0.12	0.0025 *	0.015 *
6	6/28/95	0.11	7.26	650	4	390			1 *		373	352	1 *	5	70	102	0.7	14.4	0.025 *	0.07	0.005 *	0.07	0.0025 *	0.015 *
7																								
8	8/17/95	0.009	7.42	740	9	370			9		350	337	1 *	5	40	86.4	0.8	26.8	0.025 *	0.09	0.005 *	0.09	0.0025 *	0.05
9																								
10	10/30/95	0.002	7.5	680	5	300	30	0.05 *	1 *			290	1 *	10	30	64.1	1.4	15.5	0.025 *	0.03	0.005 *	0.03	0.011	0.06
11																								
12																								
96 1																								
2																								
3																								
4																								
5	5/31/96	0.0001	8.01	517	6	410					304	353	1 *	5	50	73.3	0.9	52.8						
6																								
7																								
8																								
9																								
10																								
11																								
12																								
97 1																								
2																								
3																								
4																								
5	5/30/97																							
6	6/17/97	0.75	8.2	623	6.5	432					396	391	1 *	6	40	107	0.8	12.9						
7																								
8																								
9																								
10	10/29/97	0.004	8.25	1064	4.5	300				370	300	370	5 *	5.1	46	77	0.8	31						
11																								
12																								
Average		0.088	7.749	733.000	5.790	377.800	30.000	0.050	7.000	351.500	327.444	342.000	2.875	5.310	51.000	81.190	0.740	34.330	0.025	0.121	0.005	0.120	0.004	0.031
Number of Entries		10	10	10	10	10	2	1	7	4	9	10	8	10	10	10	10	10	7	7	7	7	7	7
Max Value		0.75	8.25	1064	9	432	30	0.05	23	370	396	391	12	10	74	107	1.4	63	0.025	0.23	0.005	0.22	0.011	0.06
Min Value		0.0001	7.26	517	3	300	30	0.05	0.5	322	285	290	1	4	30	64.1	0.5	12.9	0.025	0.03	0.005	0.03	0.0025	0.015
Standard Dev.		0.235	0.350	150.677	1.903	47.399	0.000	#DIV/0!	8.808	22.472	39.494	31.262	3.944	1.765	16.445	14.676	0.272	20.942	0.000	0.067	0.000	0.065	0.003	0.017

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 8

Station: B341 — **Elevation: 6050**

Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1																
2																
3																
4																
5																
6	6/7/94	0.0005 *	0.05	0.0025 *	0.005 *	0.01 *	0.02		28	0.006 *	0.005 *	0.005 *	0.005		-2.25	No cow activity. Barrel trough.
7																
8	8/7/94	0.0005 *	0.05	0.0025 *	0.005 *	0.01 *	0.01 *	0.01 *	30	0.005 *	0.005 *	0.005 *	0.003	0.005 *	4.86	
9																
10	10/20/94	0.0005 *	0.04	0.0025 *	0.005 *	0.01 *	0.01 *	0.01 *	28	0.005 *	0.005 *	0.005 *	0.005	0.005 *	-2.68	1 in. of snow.
11																
12																
95 1																
2																
3																
4																
5	5/29/95	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	28.1	0.0025 *	0.0025 *	0.005 *	0.003	0.005 *	4.1	Snow melt.
6	6/28/95	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	28.8	0.0026 *	0.0025 *	0.005 *	0.002	0.005 *	-3.2	
7																
8	8/17/95	0.0005 *	0.03	0.0015 *	0.005 *	0.09	0.74	0.01 *	32.6	0.0025 *	0.02	0.005 *	0.004	0.005 *	3	
9																
10	10/30/95	0.001	0.03	0.0015 *	0.005 *	0.08	0.63	0.01 *	30.2	0.037	0.052	0.005 *	0.0025 *	0.005 *	-2.3	
11																
12																
96 1																
2																
3																
4																
5	5/31/96					0.005 *	0.04		29.3	0.0025 *					1	
6																
7																
8																
9																
10																
11																
12																
97 1																
2																
3																
4																
5	5/30/97															Inaccesable due to snow, ice, and mud.
6	6/17/97					0.005 *	0.01		31.2	0.0025 *	0.0026 *				-1.9	
7																
8																
9																
10	10/29/97					0.005 *	0.12		27	0.0025 *	0.0025 *					
11																
12																
Average		0.001	0.036	0.002	0.005	0.023	0.159	0.010	29.320	0.007	0.011	0.005	0.004	0.005	0.070	
Number of Entries		7	7	7	7	10	10	6	10	10	9	7	7	6	9	
Max Value		0.001	0.05	0.0025	0.005	0.09	0.74	0.01	32.6	0.037	0.052	0.005	0.005	0.005	4.86	
Min Value		0.0005	0.02	0.0015	0.005	0.005	0.005	0.01	27	0.0025	0.0025	0.005	0.002	0.005	-3.2	
Standard Dev.		0.000	0.011	0.001	0.000	0.033	0.281	0.000	1.705	0.011	0.016	0.000	0.001	0.000	3.197	

* Below detection limit. Value entered i

Figure 9
Spring B342

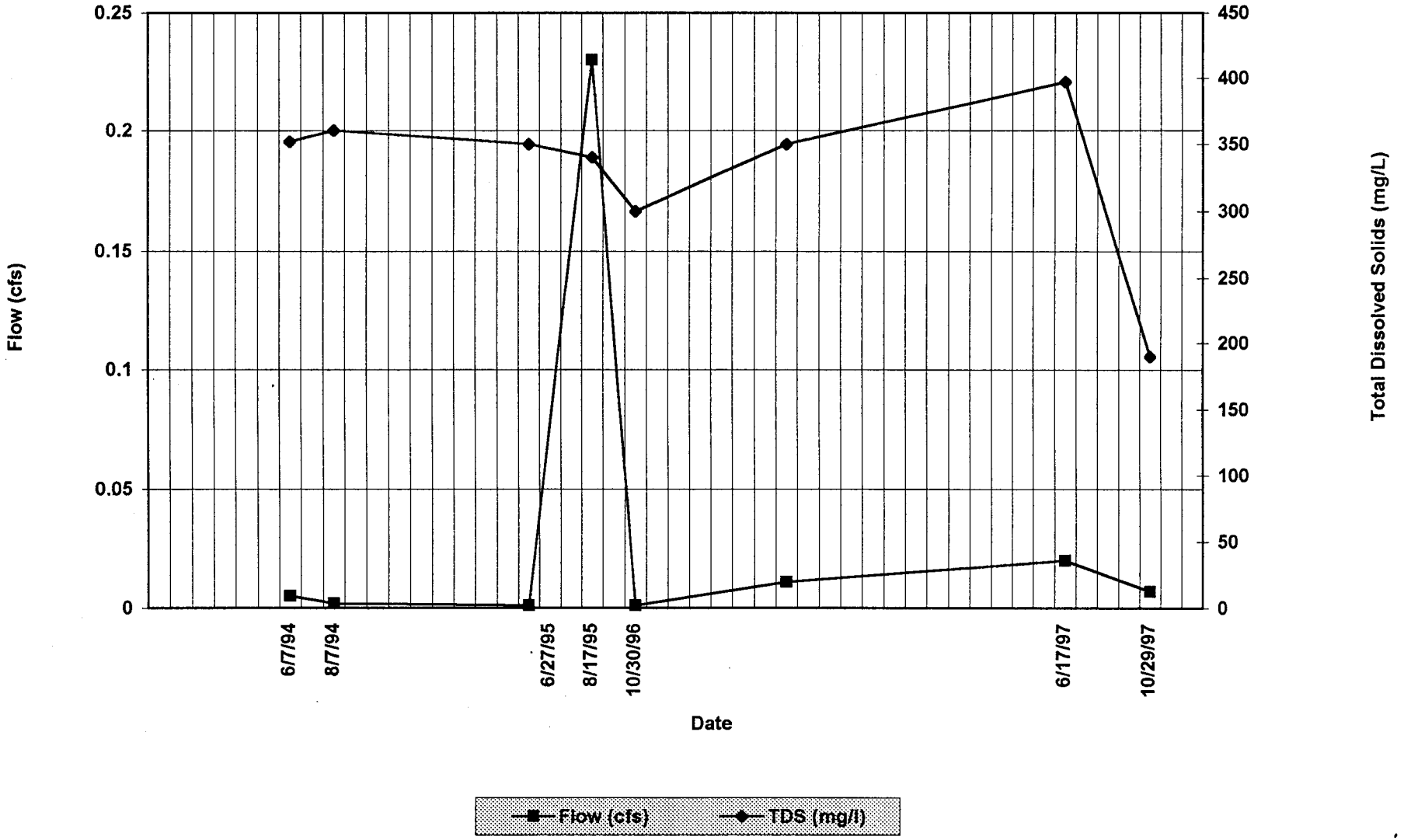


Figure 9A
Spring B342

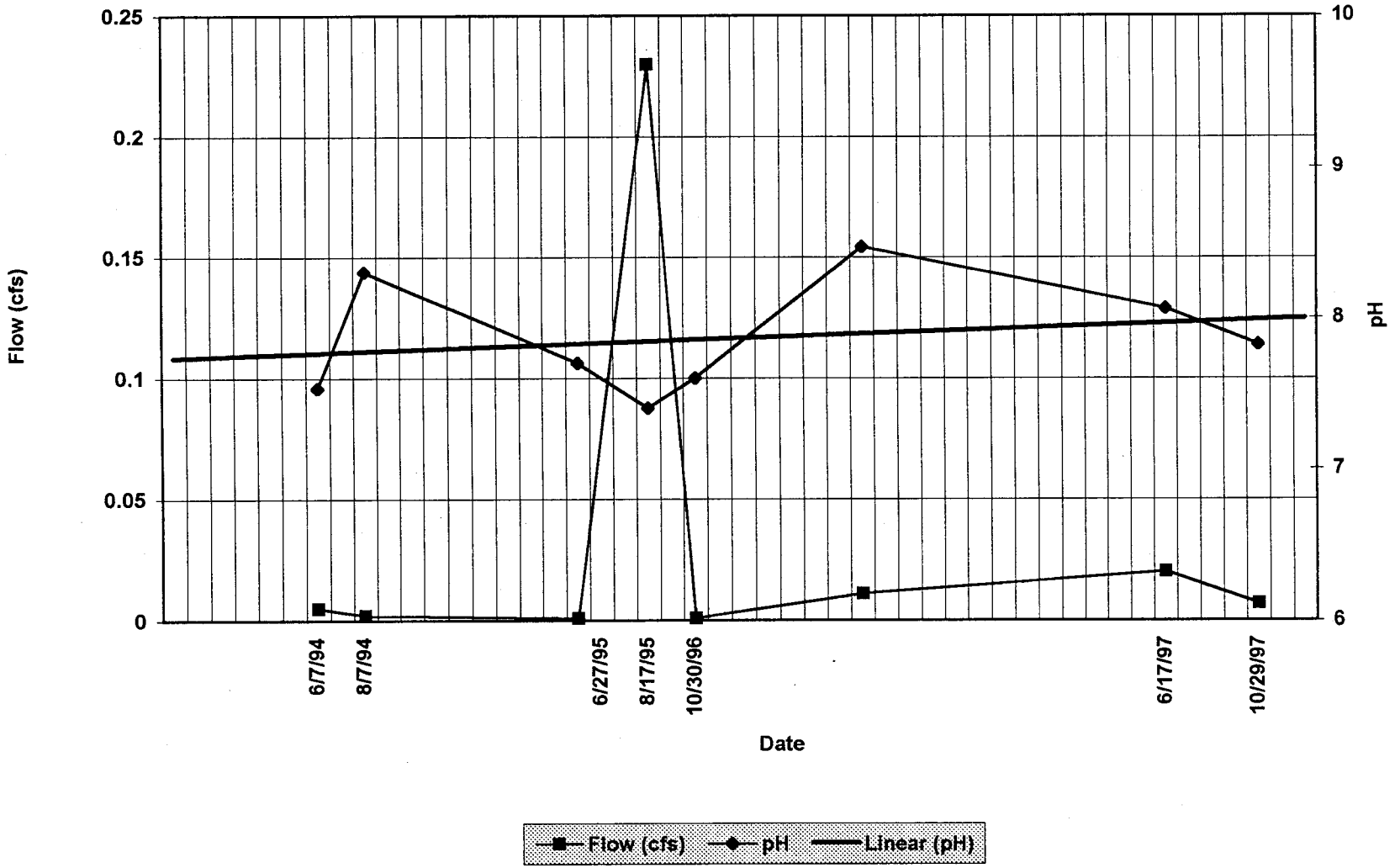


Figure 9B
Spring B342

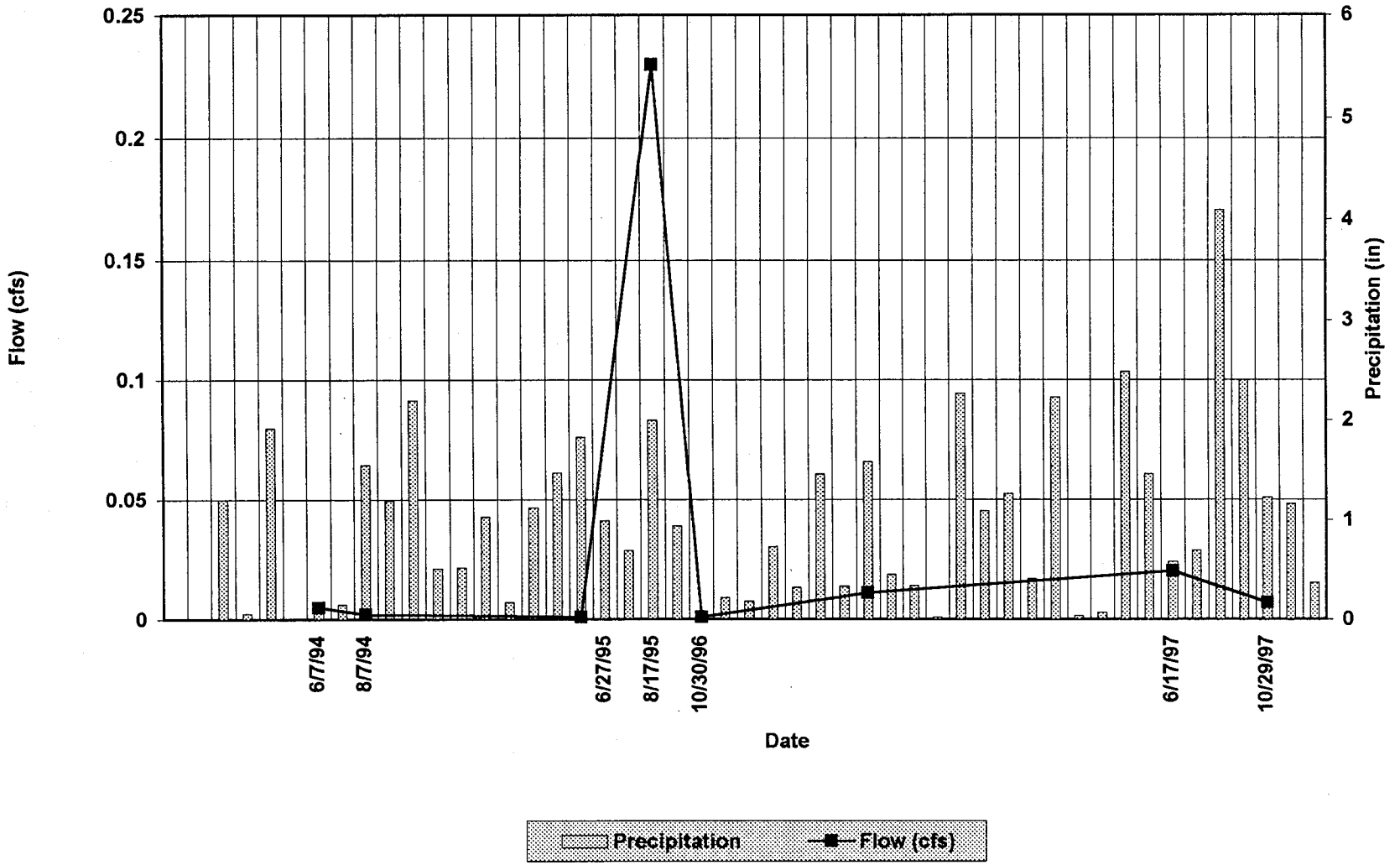


Table 9

Station: B342 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)
94 1																			
2																			
3																			
4																			
5																			
6	6/7/94	0.005	7.53	750	7	352			0.5 *	320	327	312	8	4	35	80	0.5 *	14	0.0025
7																			
8	8/7/94	0.002	8.3	842	13.1	360			0.5 *	300	336	280	20	5	47	82	1	16	0.05
9																			
10																			
11																			
12																			
95 1																			
2																			
3																			
4																			
5	5/29/95	0.001	7.7	651	5.3	350			1 *		342	308	1 *	4	30	87.9	0.9	14.4	0.025
6	8/27/95																		
7																			
8	8/17/95	0.23	7.4	645	14	340			1 *		341	307	1 *	4	30	81.8	1.1	13.5	0.025
9																			
10	10/30/96	0.001	7.6	638	5	300	2.5 *	0.5 *	1 *			269	1 *	5	38	68.1	1	9.6	0.025
11																			
12																			
96 1																			
2																			
3																			
4																			
5	5/31/96	0.011	8.47	441	7.5	350					337	307	1 *	4	30	84.5	0.8	13.8	
6																			
7																			
8																			
9																			
10																			
11																			
12																			
97 1																			
2																			
3																			
4																			
5	5/30/97																		
6	6/17/97	0.02	8.06	663	8	397					367	355	1 *	4	40	98	0.7	12.2	
7																			
8																			
9																			
10	10/29/97	0.007	7.82	809	5	190				330	270	330	5 *	2.6	20	70	0.6	12	
11																			
12																			
Average		0.035	7.860	679.875	8.113	329.875	2.500	0.500	0.800	316.667	331.429	308.500	4.750	4.075	33.750	81.538	0.825	13.188	0.026
Number of Entries		8	8	8	8	8	1	1	5	3	7	8	8	8	8	8	8	8	5
Max Value		0.23	8.47	842	14	397	2.5	0.5	1	330	367	355	20	5	47	98	1.1	16	0.05
Min Value		0.001	7.4	441	5	190	2.5	0.5	0.5	300	270	269	1	2.6	20	68.1	0.5	9.6	0.0025
Standard Dev.		0.079	0.382	124.800	3.555	62.419	#DIV/0!	#DIV/0!	0.274	15.275	29.759	26.764	6.692	0.748	8.155	9.536	0.212	1.919	0.017

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 9

Station: B342

Date Yr-Mo	Sample Date	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)
		Laboratory Measurements															
94 1																	
2																	
3																	
4																	
5																	
6	6/7/94	* 0.1	0.005	* 0.09	0.0025	* 0.025	* 0.0005	* 0.03	0.0025	* 0.005	* 0.01	* 0.11		31	0.005	* 0.005	* 0.005
7																	
8	8/7/94	0.08	0.005	* 0.08	0.0025	* 0.025	* 0.0005	* 0.04	0.0025	* 0.005	* 0.01	* 0.07	0.01	* 32	0.005	* 0.02	0.005
9																	
10																	
11																	
12																	
95 1																	
2																	
3																	
4																	
5	5/29/95	* 0.07	0.005	* 0.07	0.008	0.015	* 0.0005	* 0.02	0.0015	* 0.005	* 0.01	0.39	0.01	* 29.8	0.0025	* 0.01	0.005
6	6/27/95																
7																	
8	8/17/95	* 0.09	0.005	* 0.09	0.0025	* 0.015	* 0.0005	* 0.03	0.0015	* 0.005	* 0.05	0.05	0.01	* 33.3	0.021	0.017	0.005
9																	
10	10/30/96	* 0.07	0.005	* 0.07		0.015	* 0.0005	* 0.02	0.0015	* 0.005	* 0.005	* 0.2	0.01	* 33.1	0.0025	* 0.009	0.005
11																	
12																	
96 1																	
2																	
3																	
4																	
5	5/31/96										0.005	* 0.26		30.5	0.006		
6																	
7																	
8																	
9																	
10																	
11																	
12																	
97 1																	
2																	
3																	
4																	
5	5/30/97																
6	6/17/97										0.005	* 0.16		29.6	0.0025	* 0.0025	*
7																	
8																	
9																	
10	10/29/97										0.005	* 0.12		24	0.0025	* 0.021	
11																	
12																	
Average		0.082	0.005	0.080	0.004	0.019	0.001	0.028	0.002	0.005	0.013	0.170	0.010	30.413	0.006	0.012	0.005
Number of Entries		5	5	5	4	5	5	5	5	5	8	8	4	8	8	7	5
Max Value		0.1	0.005	0.09	0.008	0.025	0.0005	0.04	0.0025	0.005	0.05	0.39	0.01	33.3	0.021	0.021	0.005
Min Value		0.07	0.005	0.07	0.0025	0.015	0.0005	0.02	0.0015	0.005	0.005	0.05	0.01	24	0.0025	0.0025	0.005
Standard Dev.		0.013	0.000	0.010	0.003	0.005	0.000	0.008	0.001	0.000	0.015	0.112	0.000	2.942	0.006	0.007	0.000

* Below detection limit. Value entered

Table 9

Station: B342 **Elevation: 6050**

Date Yr-Mo		Sample Date	Se (mg/l)		Zn (mg/l)		Cat/An (%)	Comments
94	1							
	2							
	3							
	4							
	5							
	6	6/7/94	0.003				-0.83	
	7							
	8	8/7/94	0.002		0.005	*	2.19	Some cow activity but water is clear.
	9							
	10							
	11							
	12							
95	1							
	2							
	3							
	4							
	5	5/29/95	0.004		0.005	*	4.1	Pipe running low-.43 cfs
	6	6/27/95						Pipe not flowing. Flow in stream channel.
	7							
	8	8/17/95	0.001	*	0.005	*	3.9	
	9							
	10	10/30/96	0.0005	*	0.005	*	1.9	
	11							
	12							
96	1							
	2							
	3							
	4							
	5	5/31/96					3.3	
	6							
	7							
	8							
	9							
	10							
	11							
	12							
97	1							
	2							
	3							
	4							
	5	5/30/97						Inaccesable due to snow, ice, and mud.
	6	6/17/97					-1.1	
	7							
	8							
	9							
	10	10/29/97						
	11							
	12							
Average			0.002		0.005		1.923	
Number of Entries			5		4		7	
Max Value			0.004		0.005		4.1	
Min Value			0.0005		0.005		-1.1	
Standard Dev.			0.001		0.000		2.134	

* Below detection limit. Value entered

Figure 10
Spring B351

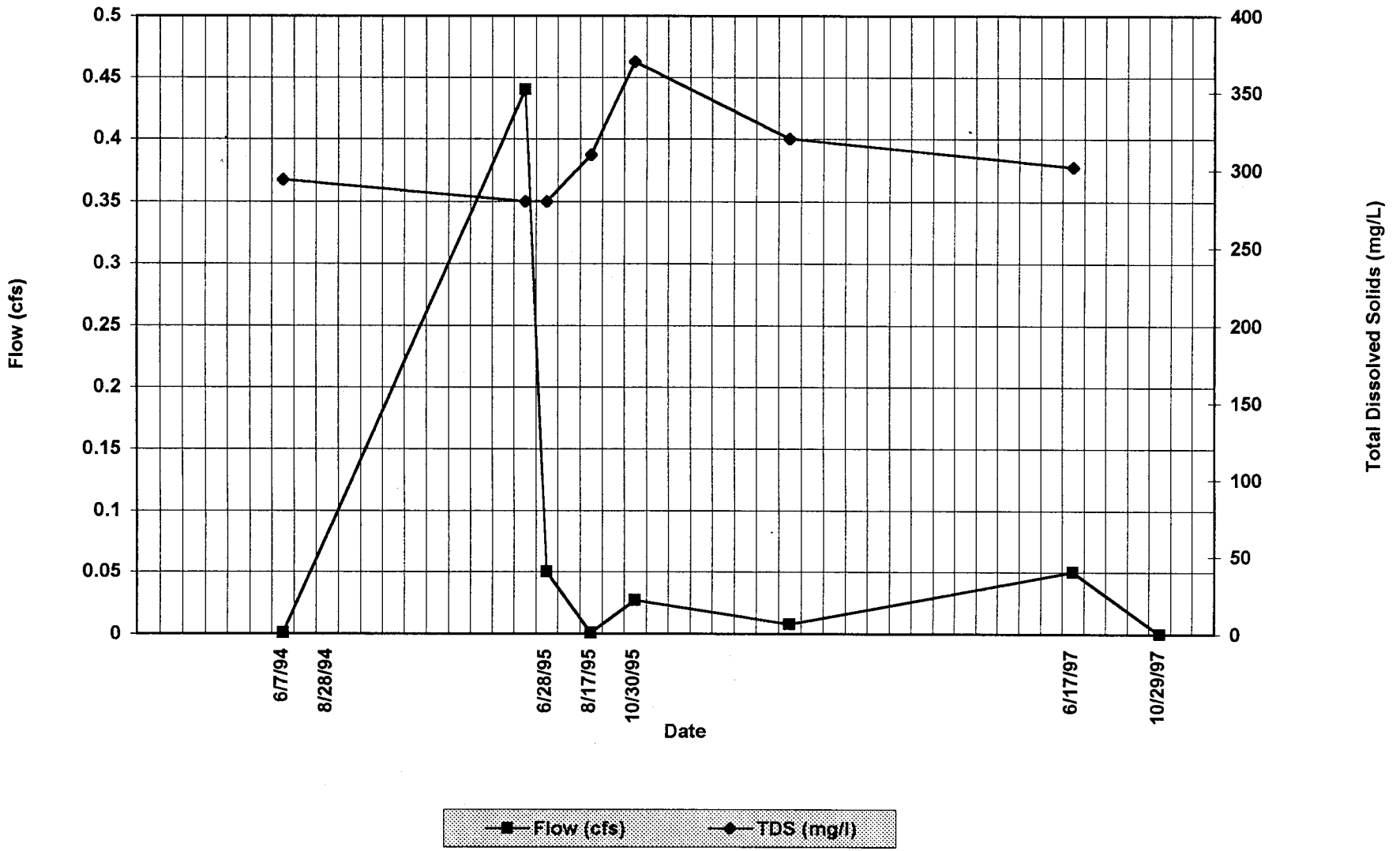


Figure 10A
Spring B351

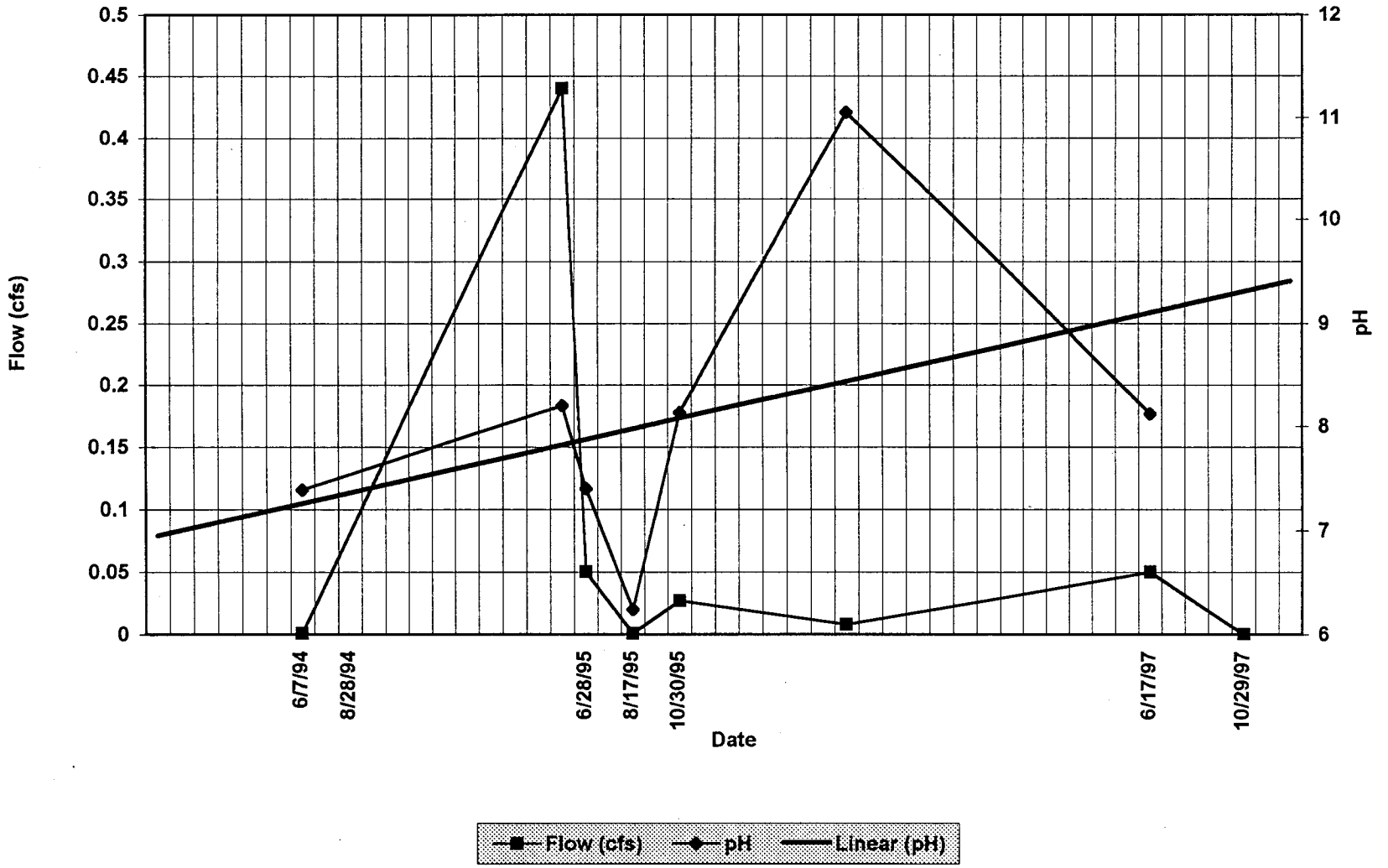


Figure 10B
Spring B351

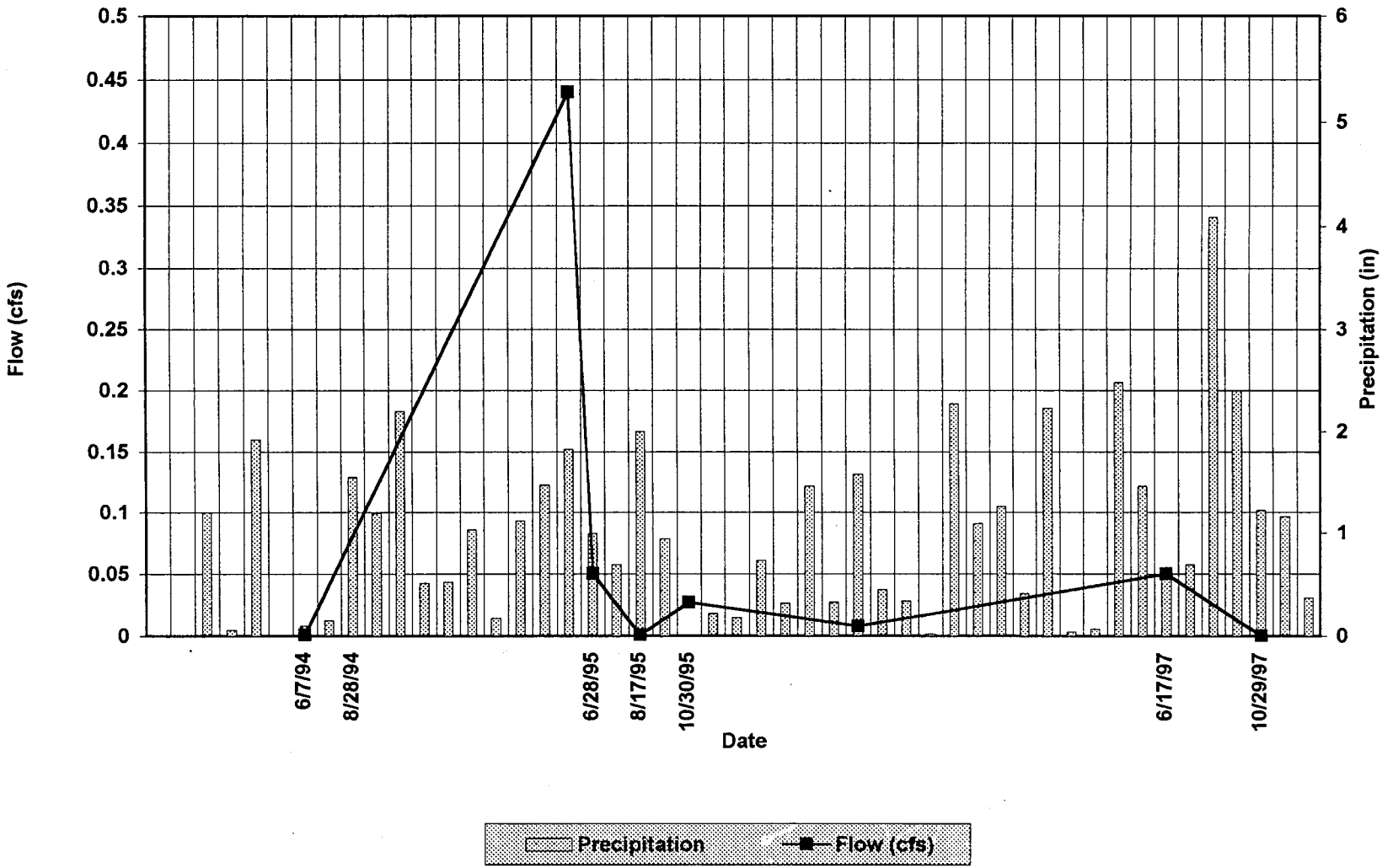


Table 10

Station: B351 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)
		Field Measurements				Laboratory Measurements															
94 1																					
2																					
3																					
4																					
5																					
6	6/7/94	0.001	7.39	643	9	294	0.05 *	284	291	284	0	3	29	72	1	8	0.06	0.94	0.005 *	0.93	0.0025 *
7																					
8	8/28/94																				
9																					
10																					
11																					
12																					
95 1																					
2																					
3																					
4																					
5	5/30/95	0.44	8.2	546	8	280	1 *		303	279	1 *	3	10	79.2	1.1	8	0.025 *	0.65	0.005 *	0.65	0.014
6	6/28/95	0.05	7.4	420	7.7	280			264			4	30	71.9	1.1	5.8	0.08	0.97	0.005 *	0.97	0.0025 *
7																					
8	8/17/95	0.001	6.24	626	12	310	1 *		342	307	1 *	3	20	82.7	0.9	9	0.025 *	0.09	0.005 *	0.09	0.0025 *
9																					
10	10/30/95	0.027	8.13	580	6	370	1 *		332	342	1 *	5	59	82.6	0.8	38.7	0.025 *	0.16	0.005 *	0.16	0.0025 *
11																					
12																					
96 1																					
2																					
3																					
4																					
5	5/31/96	0.008	11.05	393	10	320			318	299	1 *	3	40	76.1	0.7	9.6					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
97 1																					
2																					
3																					
4																					
5	5/30/97																				
6	6/17/97	0.05	8.12	549	7.1	302			302	280	1 *	3	20	80.1	0.7	5.2					
7																					
8																					
9																					
10	10/29/97	0																			
11																					
12																					
Average		0.072	8.076	536.714	8.543	308.000	0.763	284.000	307.429	298.500	0.833	3.429	29.714	77.800	0.900 #	12.043	0.043	0.562	0.005	0.560	0.005
Number of Entries		8	7	7	7	7	4	1	7	6	6	7	7	7	7 0	7	5	5	5	5	5
Max Value		0.44	11.05	643	12	370	1	284	342	342	1	5	59	82.7	1.1 0	38.7	0.08	0.97	0.005	0.97	0.014
Min Value		0	6.24	393	6	280	0.05	284	264	279	0	3	10	71.9	0.7 0	5.2	0.025	0.09	0.005	0.09	0.0025
Standard Dev.		0.150	1.481	96.311	1.993	31.070	0.475	#DIV/0!	26.191	24.073	0.408	0.787	16.028	4.576	0.173 #	11.863	0.026	0.419	0.000	0.417	0.005

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 10

Station: B351 — **Elevation: 6050**

Date Yr-Mo	Sample Date	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1																	
2																	
3																	
4																	
5																	
6	6/7/94	0.025 *	0.0005 *	0.02	0.0025 *	0.005 *	0.01 *	0.63		27	0.005 *	0.03	0.005 *	0.0005 *		-1.43	Down stream, increase in cow activity. Source in channe
7																	
8	8/28/94																Dry stream.
9																	
10																	
11																	
12																	
95 1																	
2																	
3																	
4																	
5	5/30/95	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.03	0.08	0.01 *	25.6	0.0025 *	0.01	0.005 *	0.001 *	0.005 *	4.2	Spring inundated by stream. Sampled stream
6	6/28/95	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *	0.69	0.01 *	20.6	0.0025 *	0.022	0.005 *	0.001 *	0.005 *	-4.6	
7																	
8	8/17/95	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *	0.07	0.01 *	32.8	0.036	0.033	0.005 *	0.001 *	0.03	4.3	Lots of cow activity
9																	
10	10/30/95	0.015 *	0.0005 *	0.04	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	30.6	0.0025 *	0.0025 *	0.005 *	0.004	0.03	0.8	
11																	
12																	
96 1																	
2																	
3																	
4																	
5	5/31/96						0.005 *	0.49		31.2	0.012					-0.7	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
97 1																	
2																	
3																	
4																	
5	5/30/97																Inaccesable due to snow, ice, and mud.
6	6/17/97						0.005 *	0.07		24.8	0.0025 *	0.005				1.5	
7																	
8																	
9																	
10	10/29/97																
11																	
12																	
Average		0.017	0.001	0.024	0.002	0.005	0.009	0.291	0.010	27.514	0.009	0.017	0.005	0.002	0.018	0.581	
Number of Entries		5	5	5	5	5	7	7	4	7	7	6	5	5	4	7	
Max Value		0.025	0.0005	0.04	0.0025	0.005	0.03	0.69	0.01	32.8	0.036	0.033	0.005	0.004	0.03	4.3	
Min Value		0.015	0.0005	0.02	0.0015	0.005	0.005	0.005	0.01	20.6	0.0025	0.0025	0.005	0.0005	0.005	-4.6	
Standard Dev.		0.004	0.000	0.009	0.000	0.000	0.009	0.299	0.000	4.285	0.012	0.013	0.000	0.001	0.014	3.171	

* Below detection limit. Value em

Figure 11
Spring B352

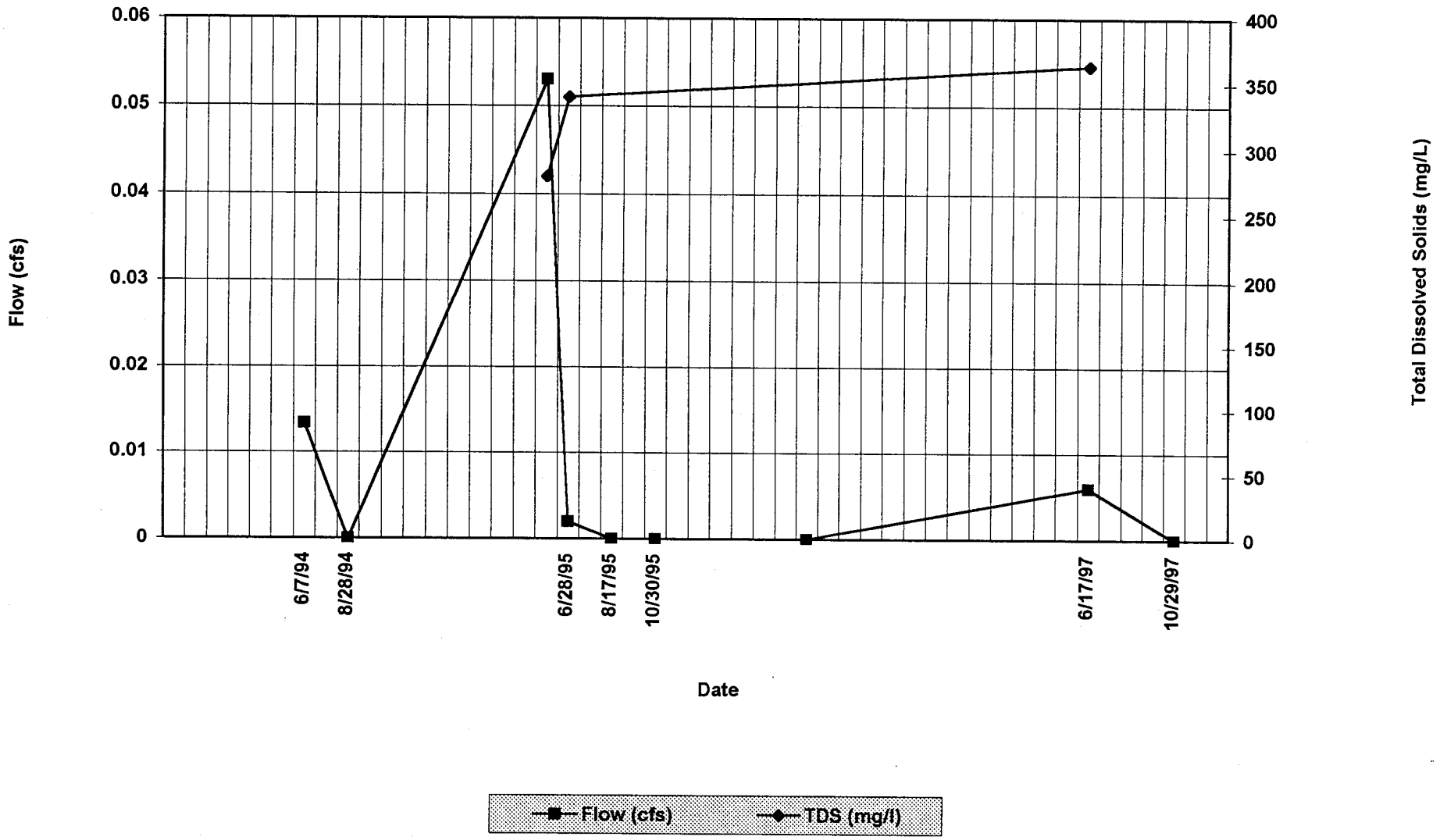


Figure 11A
Spring B352

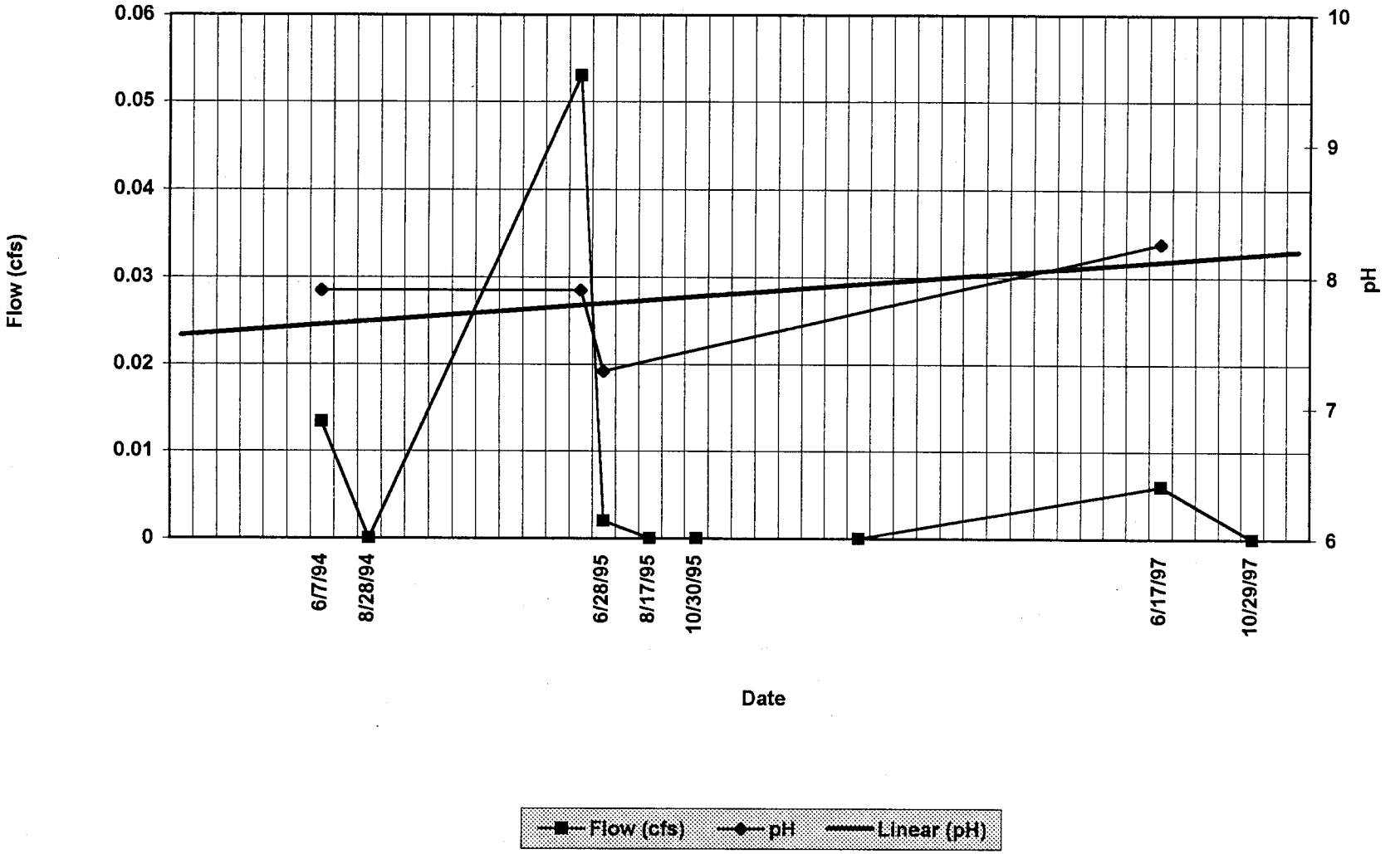


Figure 11B
Spring B352

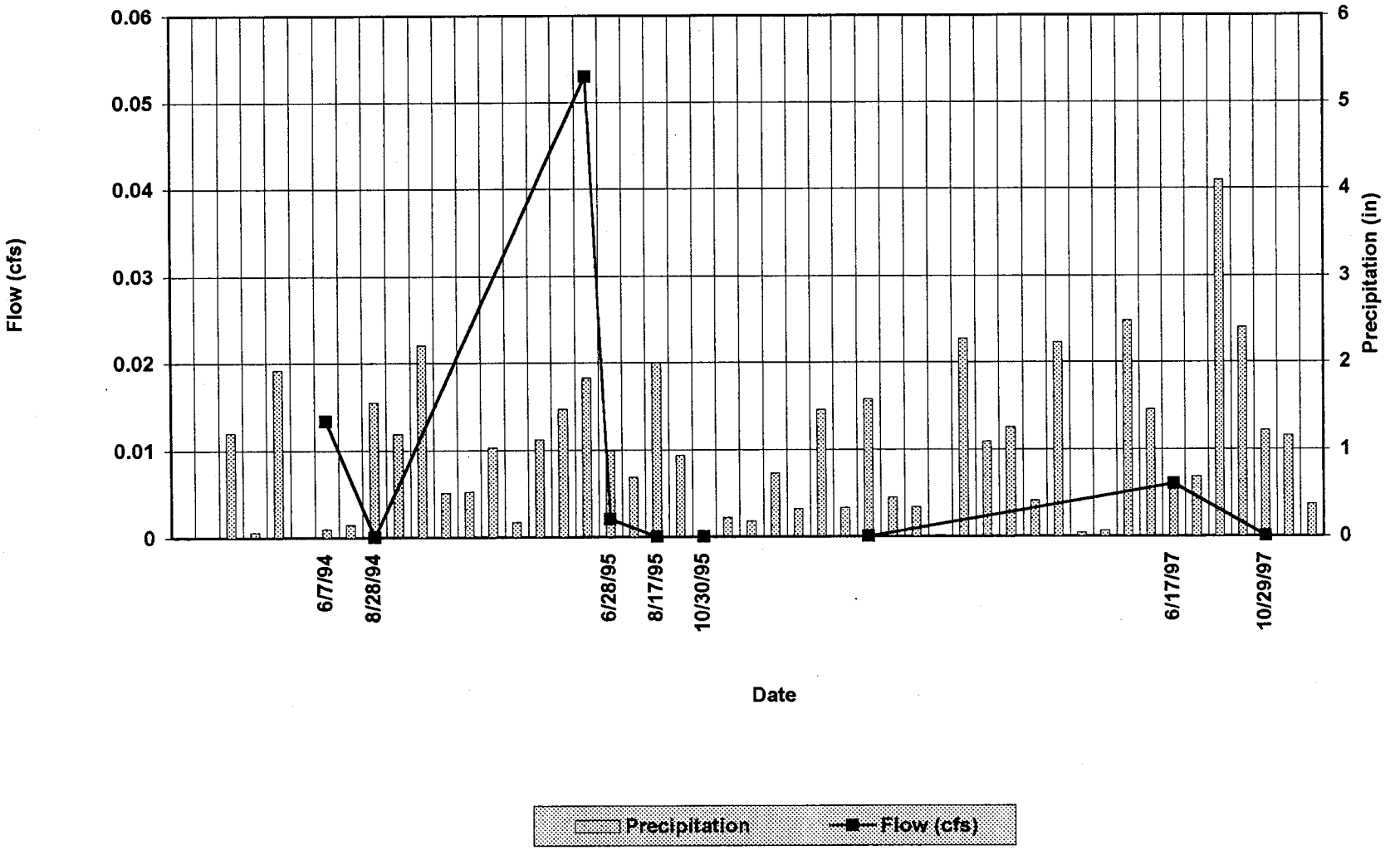


Table 11

Station: B352 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)
			Field Measurements							Laboratory Measurements									
94 1																			
2																			
3																			
4																			
5																			
6	6/7/94	0.0134	7.9	800	11.9														
7																			
8	8/28/94	0																	
9																			
10																			
11																			
12																			
95 1																			
2																			
3																			
4																			
5	5/30/95	0.053	7.9	549	8	280	1 *	282	277	1 *	6	10	69.1	0.15 *	16.8	0.025 *	0.29	0.005 *	0.29
6	6/28/95	0.002	7.28	542	8.5	340	1 *	308	306	1 *	10	30	72.4	1.4	18.9	0.025 *	0.2	0.005 *	0.02
7																			
8	8/17/95	0																	
9																			
10	10/30/95	0																	
11																			
12																			
96 1																			
2																			
3																			
4																			
5	5/31/96	0																	
6																			
7																			
8																			
9																			
10																			
11																			
12																			
97 1																			
2																			
3																			
4																			
5	5/30/97																		
6	6/17/97	0.006	8.26	537	10	364		333	310	1 *	12	30	82.9	1.3	21				
7																			
8																			
9																			
10	10/29/97	0																	
11																			
12																			
Average		0.008	7.835	607.000	9.600	328.000	1.000	307.667	297.667	1.000	9.333	23.333	74.800	0.950	18.900	0.025	0.245	0.005	0.155
Number of Entries		9	4	4	4	3	2	3	3	3	3	3	3	3	3	2	2	2	2
Max Value		0.053	8.26	800	11.9	364	1	333	310	1	12	30	82.9	1.4	21	0.025	0.29	0.005	0.29
Min Value		0	7.28	537	8	280	1	282	277	1	6	10	69.1	0.15	16.8	0.025	0.2	0.005	0.02
Standard Dev.		0.017	0.407	128.761	1.753	43.267	0.000	25.502	18.009	0.000	3.055	11.547	7.206	0.695	2.100	0.000	0.064	0.000	0.191

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 11

Station: B352 — Elevation: 6050

Date Yr-Mo	Sample Date	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1																		
2																		
3																		
4																		
5																		
6	6/7/94																	Seep, major cow activity. No sample taken
7																		
8	8/28/94																	Dry.
9																		
10																		
11																		
12																		
95 1																		
2																		
3																		
4																		
5	5/30/95	0.0025 *	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.12	0.01 *	26.5	0.0025 *	0.045	0.005 *	0.001 *	0.005 *	3.7	
6	6/28/95	0.0025 *	0.015 *	0.0005 *	0.05	0.0015 *	0.005 *	0.005 *	0.19	0.01 *	30.9	0.0025 *	0.007	0.005 *	0.001 *	0.005 *	-0.02	
7																		
8	8/17/95																	Damp, lots of cow activity.
9																		
10	10/30/95																	
11																		
12																		
96 1																		
2																		
3																		
4																		
5	5/31/96																	Damp, too low to monitor.
6																		
7																		
8																		
9																		
10																		
11																		
12																		
97 1																		
2																		
3																		
4																		
5	5/30/97																	Inaccesable due to snow, ice, and mud.
6	6/17/97							0.005 *	0.07		30.6							
7												0.009	0.006				3	
8																		
9																		
10	10/29/97																	
11																		
12																		
Average		0.003	0.015	0.001	0.040	0.002	0.005	0.005	0.127	0.010	29.333	0.005	0.019	0.005	0.001	0.005	2.227	
Number of Entries		2	2	2	2	2	2	3	3	2	3	3	3	2	2	2	3	
Max Value		0.0025	0.015	0.0005	0.05	0.0015	0.005	0.005	0.19	0.01	30.9	0.009	0.045	0.005	0.001	0.005	3.7	
Min Value		0.0025	0.015	0.0005	0.03	0.0015	0.005	0.005	0.07	0.01	26.5	0.0025	0.006	0.005	0.001	0.005	-0.02	
Standard Dev.		0.000	0.000	0.000	0.014	0.000	0.000	0.000	0.060	0.000	2.458	0.004	0.022	0.000	0.000	0.000	1.977	

* Below detection limit. Value en

Figure 12
Spring B241

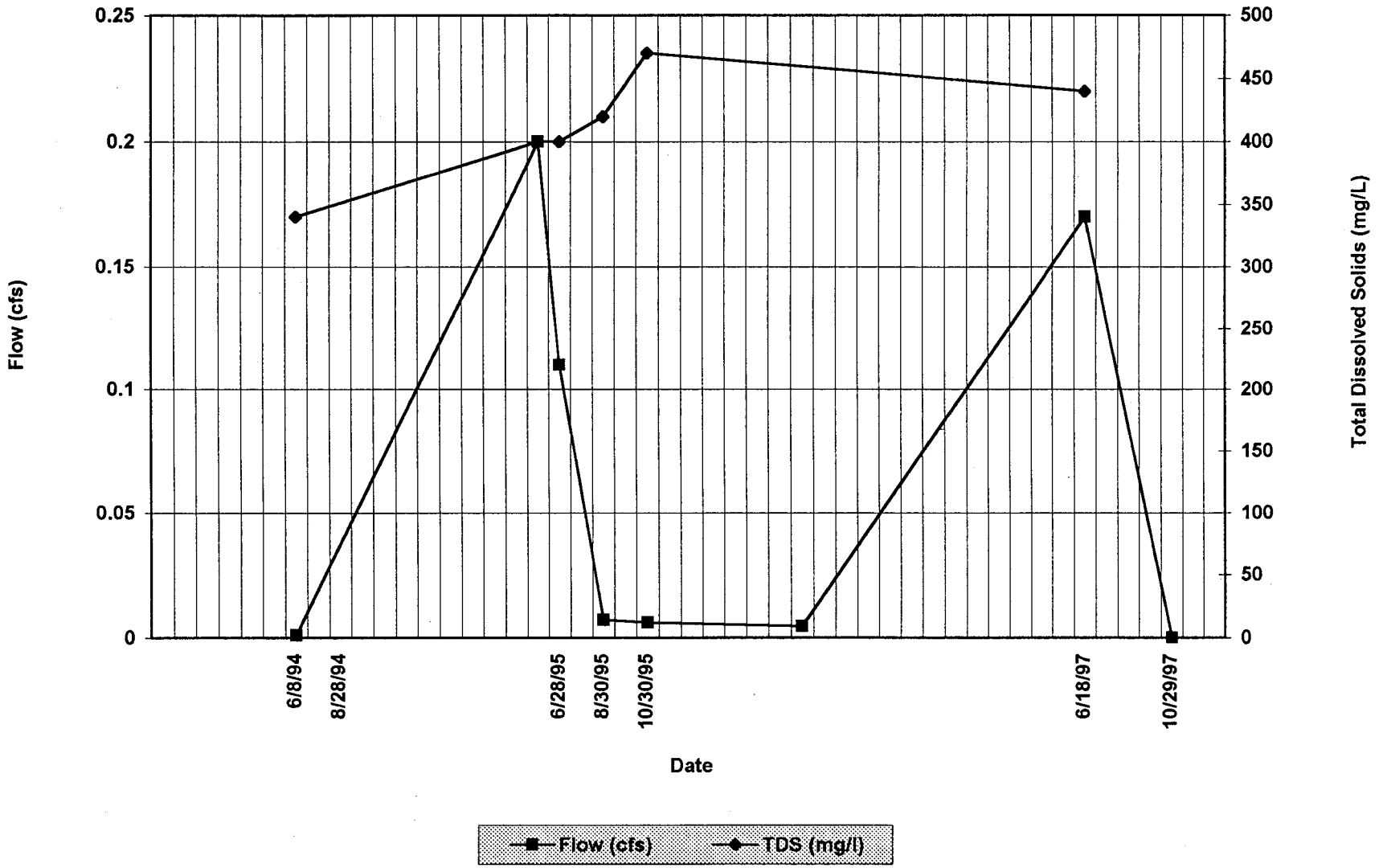


Figure 12A
Spring B241

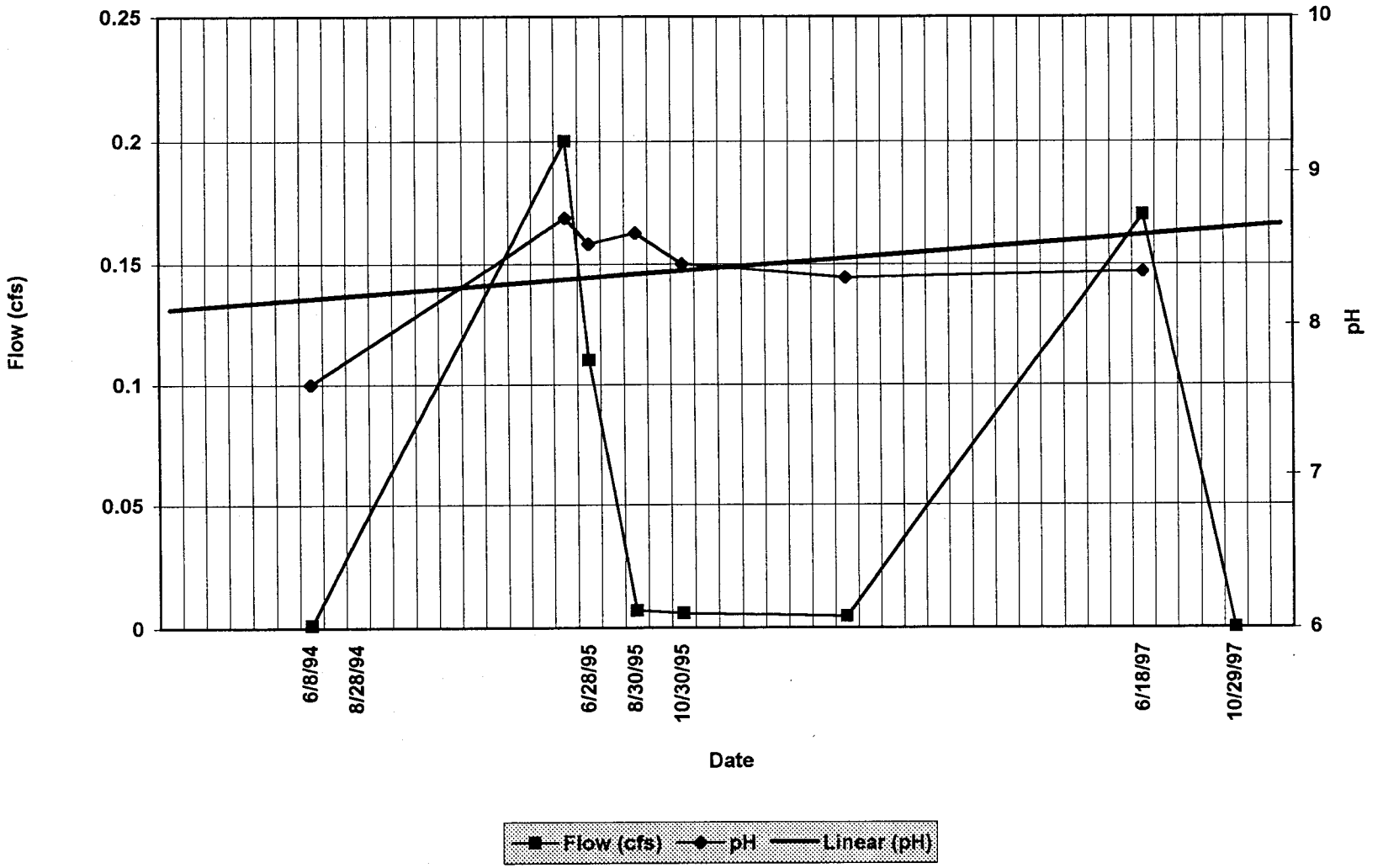


Figure 12B
Spring B241

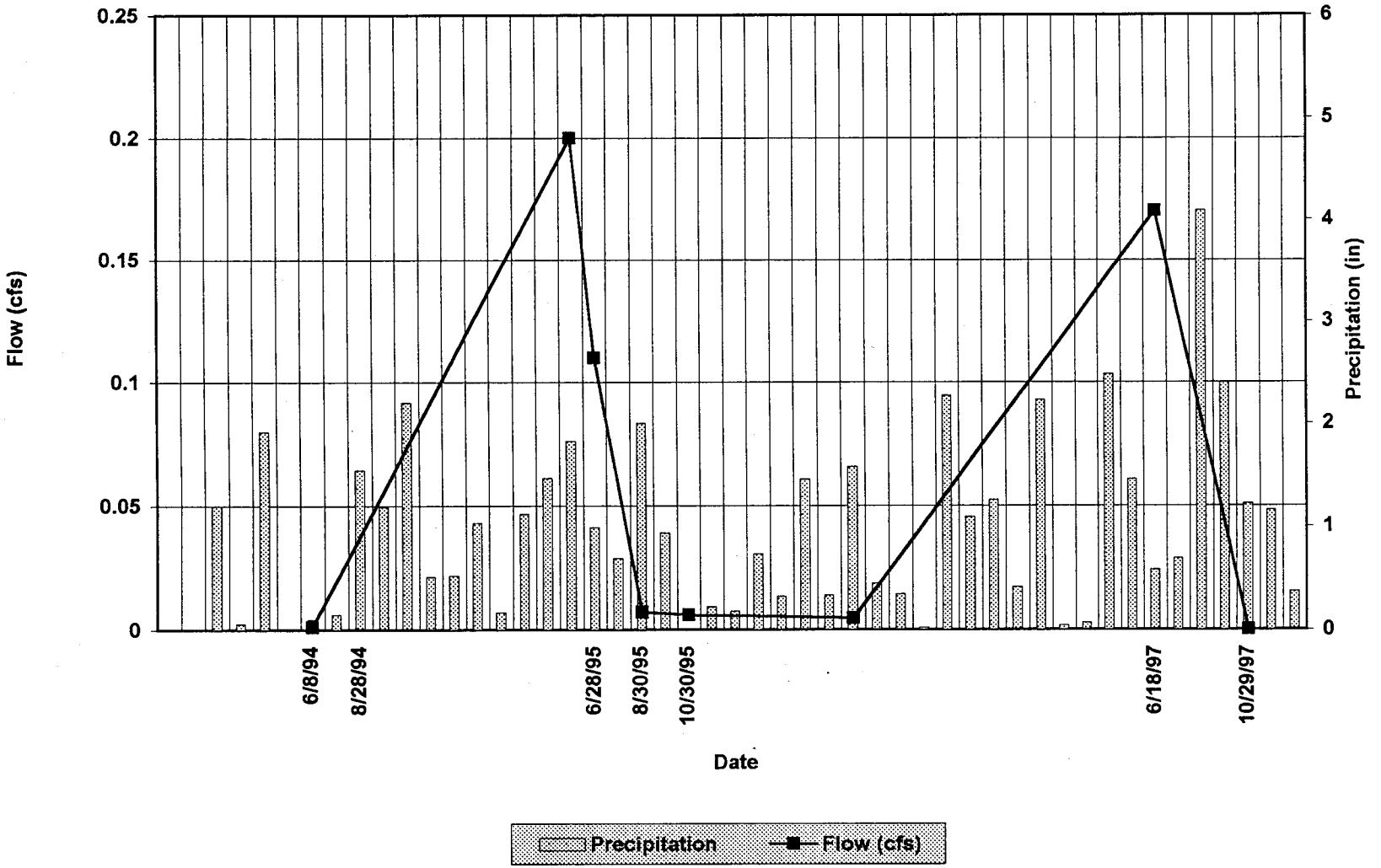


Table 12

Station: B241 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)
		Field Measurements																
94 1																		
2																		
3																		
4																		
5																		
6	6/8/94	0.001	7.6	688	8.5	340	0.5 *	300	279	300	0	12	29	64	2	30	0.025 *	0.04
7																		
8	8/28/94																	
9																		
10																		
11																		
12																		
95 1																		
2																		
3																		
4																		
5	5/30/95	0.2	8.7	669	13	400	1 *		344	330	1 *	21	20	78	3.1	28.3	0.025 *	0.04
6	6/28/95	0.11	8.53	773	18.8	400	1 *		348	337	1 *	29	80	78.4	2.9	36.8	0.06	0.04
7																		
8	8/30/95	0.007	8.6	542	20	420	7		357	320	21	30	40	71.6	3.2	37.7	0.1	0.09
9																		
10	10/30/95	0.006	8.4	742	8.5	470	1 *		404	386	1 *		41	88.8	5.2	35.1	0.09	0.04
11																		
12																		
96 1																		
2																		
3																		
4																		
5	5/29/96	0.0045	8.31	621	18				410	361	1 *	34	40	70.7	2.4	34		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
97 1																		
2																		
3																		
4																		
5	5/30/97																	
6	6/18/97	0.17	8.35	630	16	440			368	375	1 *	29	30	82.3	2.4	31.8	0.05	0.05
7																		
8																		
9																		
10	10/29/97	0																
11																		
12																		
Average		0.062	8.356	666.429	14.686	411.667	2.100	300.000	358.571	344.143	3.714	25.833	40.000	76.257	3.029	33.386	0.058	0.050
Number of Entries		8	7	7	7	6	5	1	7	7	7	6	7	7	7	7	6	6
Max Value		0.2	8.7	773	20	470	7	300	410	386	21	34	80	88.8	5.2	37.7	0.1	0.09
Min Value		0	7.6	542	8.5	340	0.5	300	279	300	0	12	20	64	2	28.3	0.025	0.04
Standard Dev.		0.085	0.361	77.903	4.783	44.008	2.748	#DIV/0!	43.695	31.013	7.631	7.985	19.244	8.209	1.050	3.498	0.032	0.020

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 12

Station: B241 — **Elevation: 6050**

Date Yr-Mo	Sample Date	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)
		Laboratory Measurements																		
94 1																				
2																				
3																				
4																				
5																				
6	6/8/94	0.005 *	0.04	0.147	0.025 *	0.0005 *	0.04	0.0025 *	0.005 *	0.01 *	0.73		29		0.005 *	0.005 *	0.005 *	0.003		0.07
7																				
8	8/28/94																			
9																				
10																				
11																				
12																				
95 1																				
2																				
3																				
4																				
5	5/30/95	0.005 *	0.04	0.091	0.015 *	0.002	0.04	0.003	0.005 *	0.005 *	0.14	0.01 *	36.2		0.016	0.018	0.005 *	0.001 *	0.005 *	3.7
6	6/28/95	0.005 *	0.04	0.094	0.015 *	0.002	0.05	0.0015 *	0.005 *	0.01	0.04	0.01 *	36.9		0.019	0.025	0.005 *	0.001 *	0.005 *	-3.3
7																				
8	8/30/95	0.005 *	0.09	0.083	0.015 *	0.004	0.06	0.0015 *	0.005 *	0.005 *	0.1	0.01 *	43.4		0.0025 *	0.016	0.02	0.001 *	0.02	2.2
9																				
10	10/30/95	0.005 *	0.04	0.049	0.015 *	0.003	0.06	0.0015 *	0.005 *	0.005 *	0.37	0.01 *	44.4		0.005	0.022	0.005 *	0.001 *	0.005 *	1.1
11																				
12																				
96 1																				
2																				
3																				
4																				
5	5/29/96									0.02	0.01			37.6		0.009				-4.8
6																				
7																				
8																				
9																				
10																				
11																				
12																				
97 1																				
2																				
3																				
4																				
5	5/30/97																			
6	6/18/97	0.005 *	0.05	0.087	0.015 *	0.003	0.05	0.0015 *	0.005 *	0.005 *	0.97	0.01 *	39.5		0.025	0.146		0.0005 *	0.01	-0.7
7																				
8																				
9																				
10	10/29/97																			
11																				
12																				
Average		0.005	0.050	0.092	0.017	0.002	0.050	0.002	0.005	0.009	0.337	0.010	38.233	37.600	0.012	0.034	0.008	0.001	0.009	-0.247
Number of Entries		6	6	6	6	6	6	6	6	7	7	5	6	1	6	7	5	6	5	7
Max Value		0.005	0.09	0.147	0.025	0.004	0.06	0.003	0.005	0.02	0.97	0.01	44.4	37.6	0.025	0.146	0.02	0.003	0.02	3.7
Min Value		0.005	0.04	0.049	0.015	0.0005	0.04	0.0015	0.005	0.005	0.01	0.01	29	37.6	0.0025	0.005	0.005	0.0005	0.005	-4.8
Standard Dev.		0.000	0.020	0.032	0.004	0.001	0.009	0.001	0.000	0.006	0.376	0.000	5.612	#DIV/0!	0.009	0.050	0.007	0.001	0.007	2.993

* Below detection limit. Value en

Table 12

Station: B241

Date Yr-Mo		Sample Date	Comments
94	1		
	2		
	3		
	4		
	5		
	6	6/8/94	
	7		
	8	8/28/94	Damp, not sampled, lots of cow activity.
	9		
	10		
	11		
	12		
95	1		
	2		
	3		
	4		
	5	5/30/95	
	6	6/28/95	
	7		
	8	8/30/95	
	9		
	10	10/30/95	
	11		
	12		
96	1		
	2		
	3		
	4		
	5	5/29/96	
	6		
	7		
	8		
	9		
	10		
	11		
	12		
97	1		
	2		
	3		
	4		
	5	5/30/97	Inaccesable due to snow, ice and mud.
	6	6/18/97	
	7		
	8		
	9		
	10	10/29/97	Damp, could not monitor.
	11		
	12		
Average			
Number of Entries			
Max Value			
Min Value			
Standard Dev.			

* Below detection limit. Value en

Figure 13
Spring B261

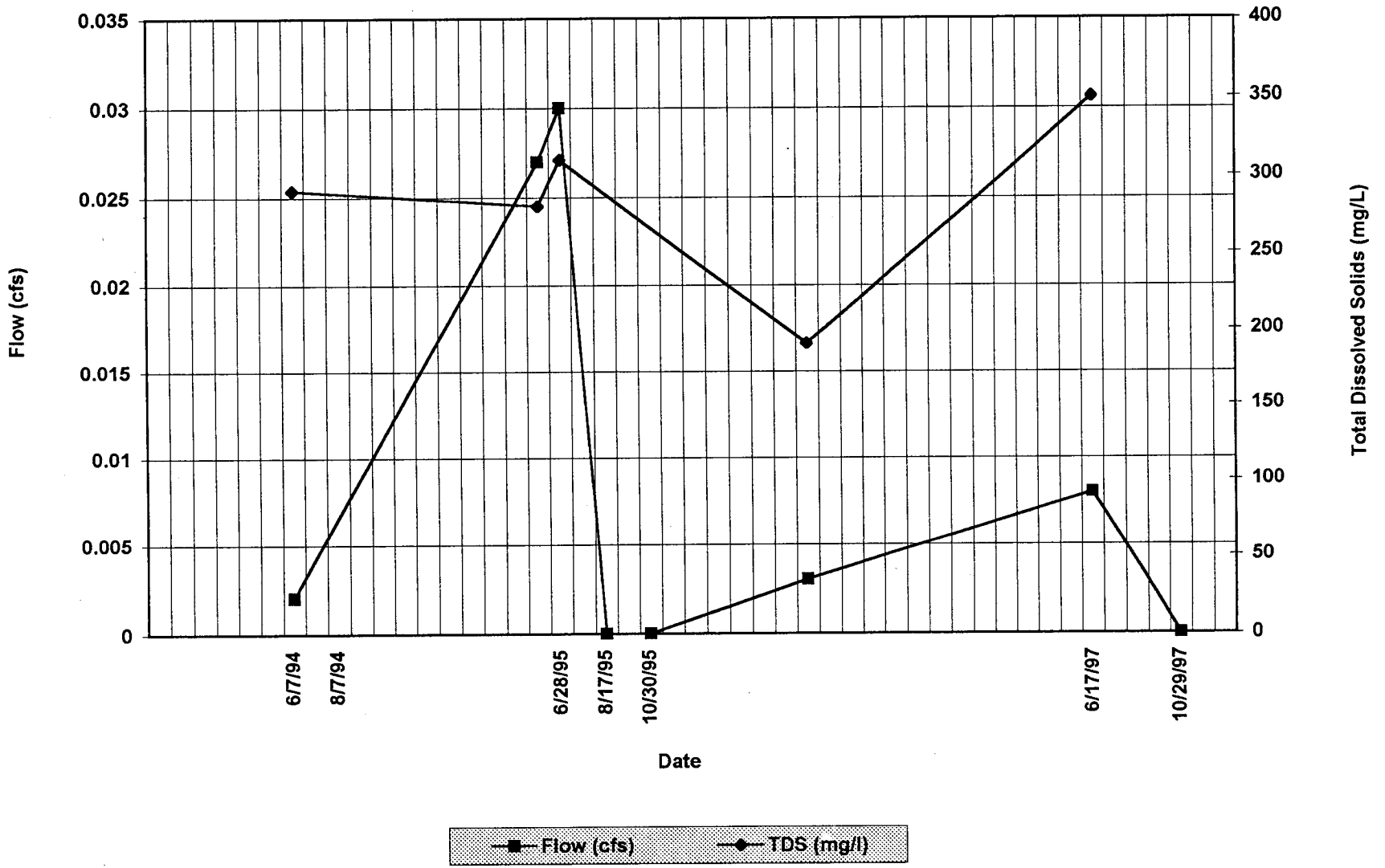


Figure 13A
Spring B261

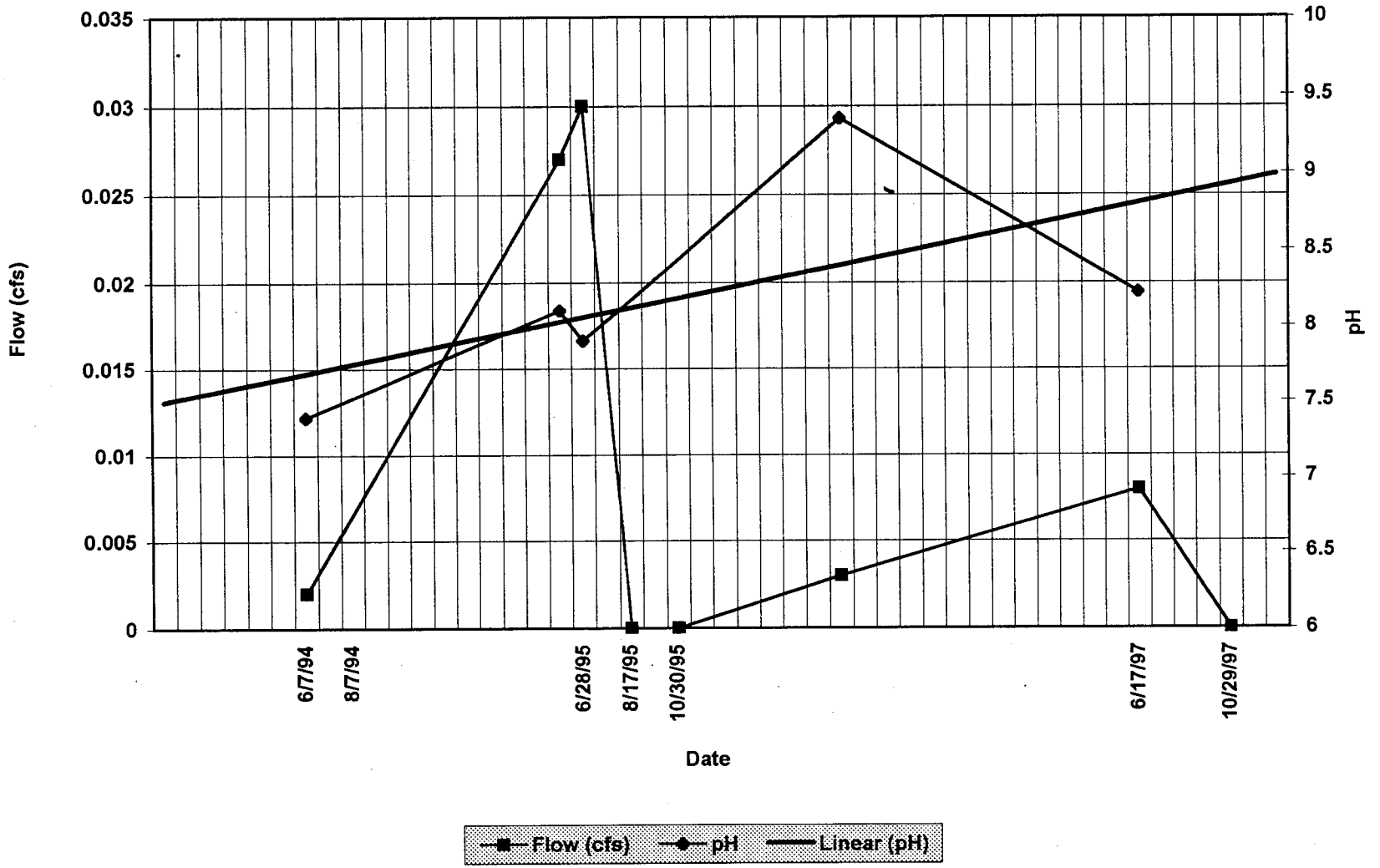


Figure 13B
Spring B261

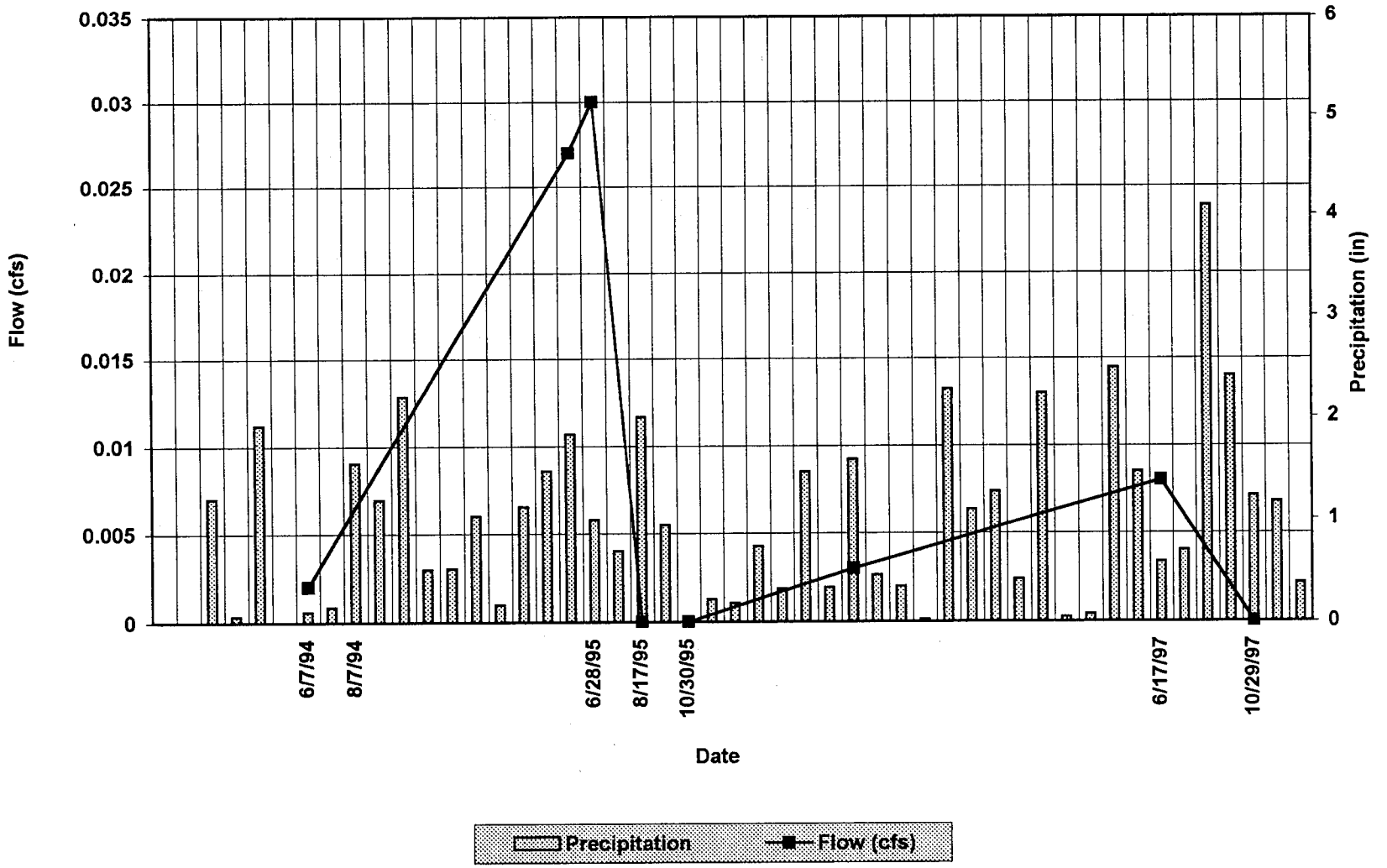


Table 13

Station: B261 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Field Measurements Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	Laboratory Measurements P (mg/l)	Al (mg/l)	As (mg/l)
94 1																							
2																							
3																							
4																							
5																							
6	6/7/94	0.002	7.39	630	8.8	290	0.5 *	300	309	300	0	3	6	81	1	8	0.06	0.35	0.5 *	0.34	0.053	0.025 *	0.0005 *
7																							
8	8/7/94																						
9																							
10																							
11																							
12																							
95 1																							
2																							
3																							
4																							
5	5/30/95	0.027	8.1	509	10	280	1 *		296	282	1 *	4	20	80.2	1.7	6.6	0.025 *	0.96	0.005 *	0.96	0.086	0.03	0.0005 *
6	6/28/95	0.03	7.9	456	10	310	1 *		289	301	1 *	4	10	78.6	1.6	7.8	0.05	0.09	0.005 *	0.09	0.068	0.015 *	0.0005 *
7																							
8	8/17/95	0																					
9																							
10	10/30/95	0																					
11																							
12																							
96 1																							
2																							
3																							
4																							
5	5/31/96	0.003	9.35	255	17	190			153	169	1 *	7	5 *	43.8	15.9	3.4							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
97 1																							
2																							
3																							
4																							
5	5/30/97																						
6	6/17/97	0.008	8.22	597	15	350			339	332	1 *	4	20	90.7	2	7							
7																							
8																							
9																							
10	10/29/97	0																					
11																							
12																							
Average		0.009	8.192	489.400	12.160	284.000	0.833	300.000	277.200	276.800	0.800	4.400	12.200	74.860	4.440	6.560	0.045	0.467	0.170	0.463	0.069	0.023	0.001
Number of Entries		8	5	5	5	5	3	1	5	5	5	5	5	5	5	5	3	3	3	3	3	3	3
Max Value		0.03	9.35	630	17	350	1	300	339	332	1	7	20	90.7	15.9	8	0.06	0.96	0.5	0.96	0.086	0.03	0.0005
Min Value		0	7.39	255	8.8	190	0.5	300	153	169	0	3	5	43.8	1	3.4	0.025	0.09	0.005	0.09	0.053	0.015	0.0005
Standard Dev.		0.012	0.721	148.146	3.609	58.992	0.289	#DIV/0!	72.022	62.886	0.447	1.517	7.362	17.999	6.417	1.857	0.018	0.447	0.286	0.448	0.017	0.008	0.000

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 13

Station: B261 **Elevation: 6050**

Date Yr-Mo	Sample Date	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1															
2															
3															
4															
5															
6	6/7/94	0.02	0.0025 *	0.005 *	0.01 *	0.07		26	0.19	0.22	0.005 *	0.0005 *		2.74	No rain since past Saturday. Spring below pace pond.
7															
8	8/7/94														Dry.
9															
10															
11															
12															
95 1															
2															
3															
4															
5	5/30/95	0.02	0.0015 *	0.005 *	0.03	0.03	0.01 *	23.3	0.01	0.006	0.005 *	0.001 *	0.005 *	0.2	Pipe plugged-measured stream
6	6/28/95	0.04	0.0015 *	0.005 *	0.005 *	0.13	0.01 *	22.5	0.037	0.054	0.005 *	0.001 *	0.005 *	-1.05	
7															
8	8/17/95														Damp, lots of cow activity.
9															
10	10/30/95														
11															
12															
96 1															
2															
3															
4															
5	5/31/96				0.16	1.42		10.7	0.229					2.3	
6															
7															
8															
9															
10															
11															
12															
97 1															
2															
3															
4															
5	5/30/97														Inaccesable due to snow, ice, and mud.
6	6/17/97				0.005 *	0.03		27.2	0.009	0.029				-0.3	
7															
8															
9															
10	10/29/97														Damp, to low to monitor.
11															
12															
Average		0.027	0.002	0.005	0.042	0.336	0.010	21.940	0.095	0.077	0.005	0.001	0.005	0.778	
Number of Entries		3	3	3	5	5	2	5	5	4	3	3	2	5	
Max Value		0.04	0.0025	0.005	0.16	1.42	0.01	27.2	0.229	0.22	0.005	0.001	0.005	2.74	
Min Value		0.02	0.0015	0.005	0.005	0.03	0.01	10.7	0.009	0.006	0.005	0.0005	0.005	-1.05	
Standard Dev.		0.012	0.001	0.000	0.067	0.607	0.000	6.570	0.106	0.097	0.000	0.000	0.000	1.659	

* Below detection limit. Value en

Figure 14
Spring 361

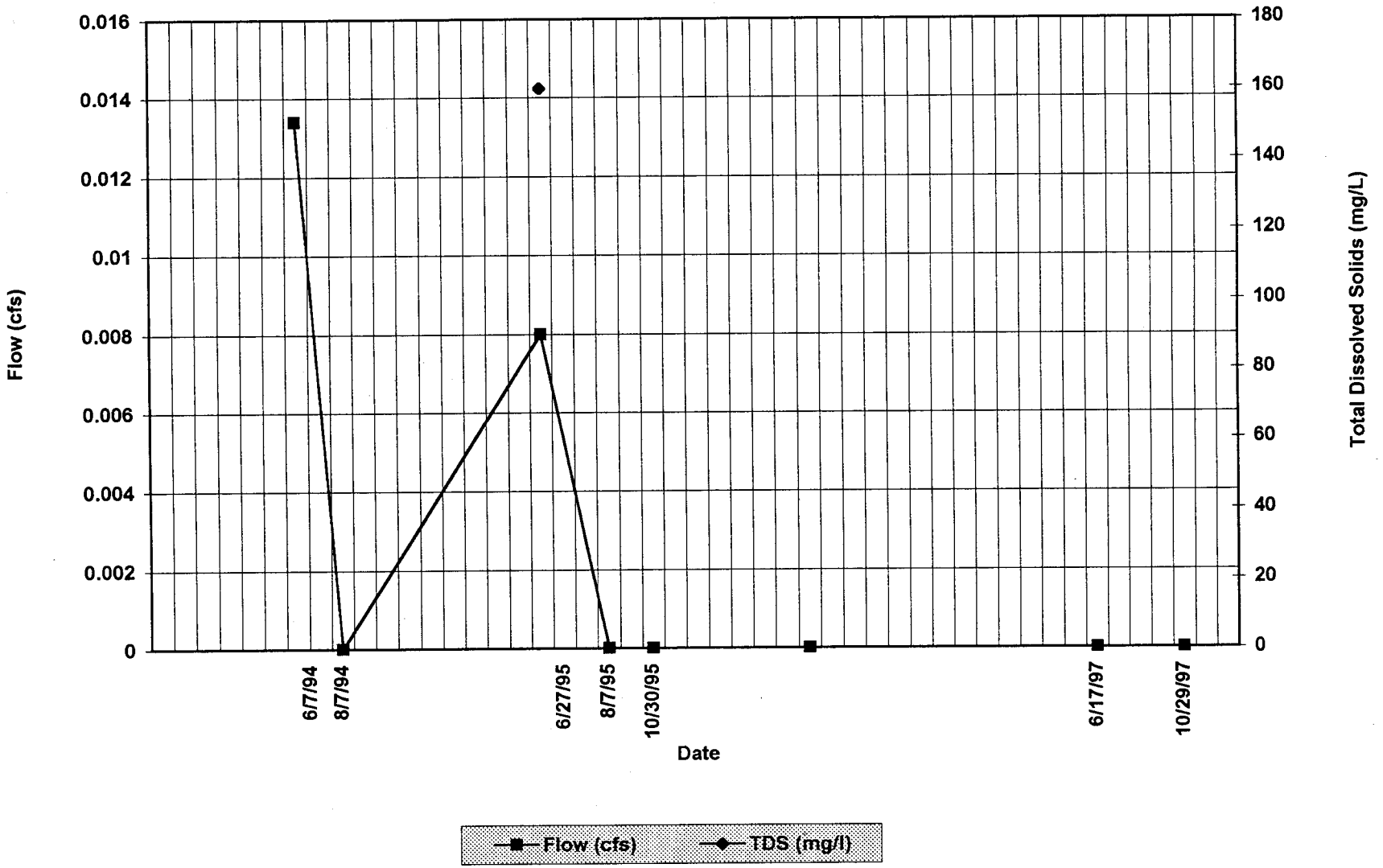


Figure 14A
Spring 361

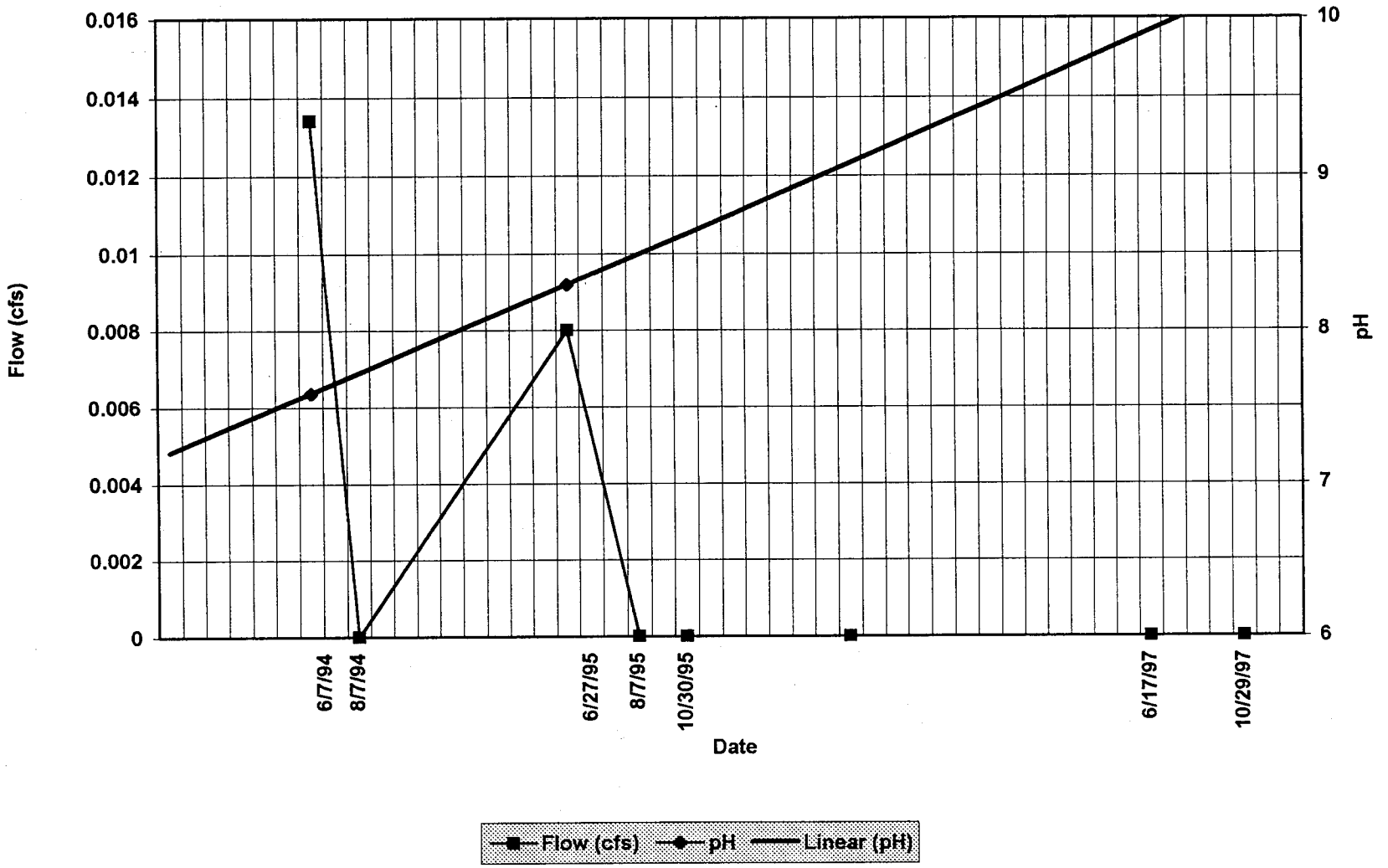


Figure 14B
Spring 361

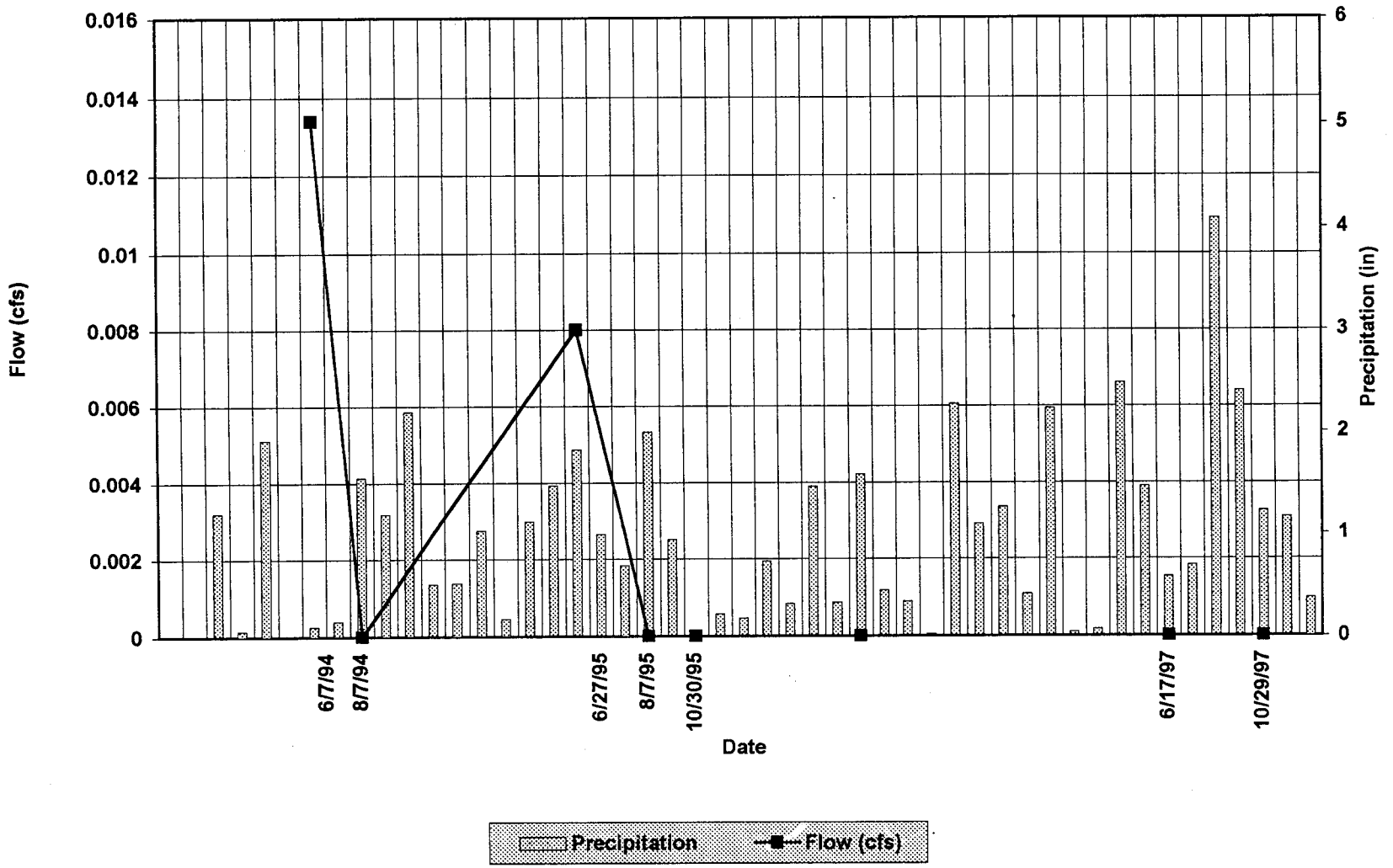


Table 14

Station: B361 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Station Type: Spring** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Laboratory Measurements TDS (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)
94 1																						
2																						
3																						
4																						
5																						
6	6/7/94	0.0134	7.59	726	17.7																	
7																						
8	8/7/94	0																				
9																						
10																						
11																						
12																						
95 1																						
2																						
3																						
4																						
5	5/30/95	0.008	8.3	311	10	160	168		173	1 *	2	5 *	51.7	6.9	2.4	0.025 *	0.05	0.005 *	0.05	0.325	0.015 *	0.002
6	6/27/95																					
7																						
8	8/7/95	0																				
9																						
10	10/30/95	0																				
11																						
12																						
96 1																						
2																						
3																						
4																						
5	5/31/96	0																				
6																						
7																						
8																						
9																						
10																						
11																						
12																						
97 1																						
2																						
3																						
4																						
5	5/30/97																					
6	6/17/97	0																				
7																						
8																						
9																						
10	10/29/97	0																				
11																						
12																						
Average		0.003	7.945	518.500	13.850	160.000	168.000	#DIV/0!	173.000	1.000	2.000	5.000	51.700	6.900	2.400	0.025	0.050	0.005	0.050	0.325	0.015	0.002
Number of Entries		8	2	2	2	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Max Value		0.0134	8.3	726	17.7	160	168	0	173	1	2	5	51.7	6.9	2.4	0.025	0.05	0.005	0.05	0.325	0.015	0.002
Min Value		0	7.59	311	10	160	168	0	173	1	2	5	51.7	6.9	2.4	0.025	0.05	0.005	0.05	0.325	0.015	0.002
Standard Dev.		0.005	0.502	293.449	5.445	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 14

Station: B361 — Elevation: 6050

Yr-Mo	Sample Date	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1															
2															
3															
4															
5															
6	6/7/94														Seep, minor cow activity.
7															
8	8/7/94														Dry.
9															
10															
11															
12															
95 1															
2															
3															
4															
5	5/30/95	0.03	0.0015 *	0.005 *	0.005 *	0.08	0.005 *	9.5		0.007	0.024	0.001 *	0.005 *	1.8	Wet meadow flow-sampled at outlet of pond-not possible to get above pond.
6	6/27/95														Seep. Cows mucked up so no sample possible.
7															
8	8/7/95														Dry, not even damp.
9															
10	10/30/95														
11															
12															
96 1															
2															
3															
4															
5	5/31/96														
6															
7															
8															
9															
10															
11															
12															
97 1															
2															
3															
4															
5	5/30/97														Inaccessable due to snow, ice, and mud.
6	6/17/97														Damp, to low to monitor.
7															
8															
9															
10	10/29/97														
11															
12															
Average		0.030	0.002	0.005	0.005	0.080	0.005	9.500	#DIV/0!	0.007	0.024	0.001	0.005	1.800	
Number of Entries		1	1	1	1	1	1	1	0	1	1	1	1	1	
Max Value		0.03	0.0015	0.005	0.005	0.08	0.005	9.5	0	0.007	0.024	0.001	0.005	1.8	
Min Value		0.03	0.0015	0.005	0.005	0.08	0.005	9.5	0	0.007	0.024	0.001	0.005	1.8	
Standard Dev.		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

* Below detection limit. Value entr

Figure 15
Spring B362

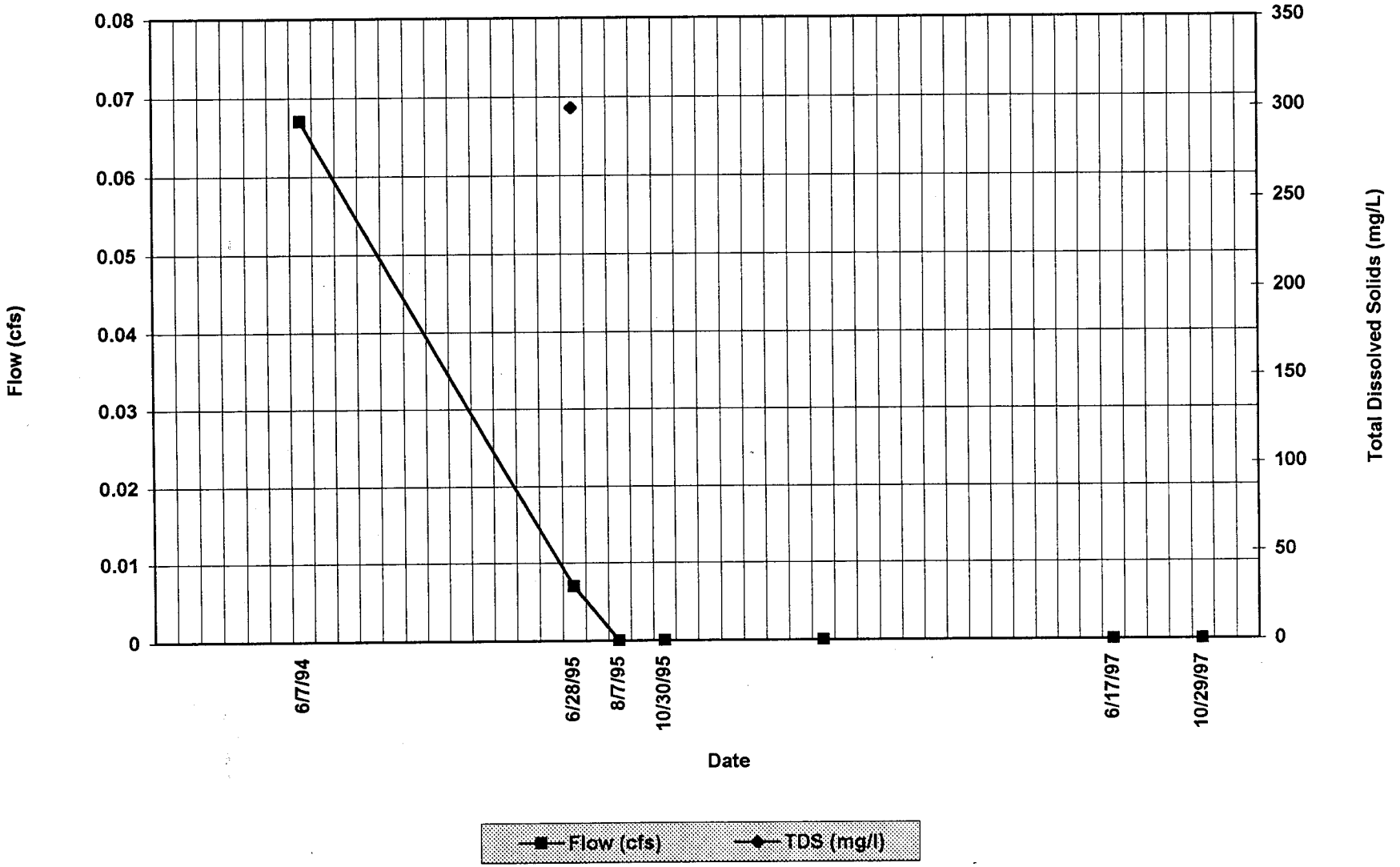


Figure 15A
Spring B362

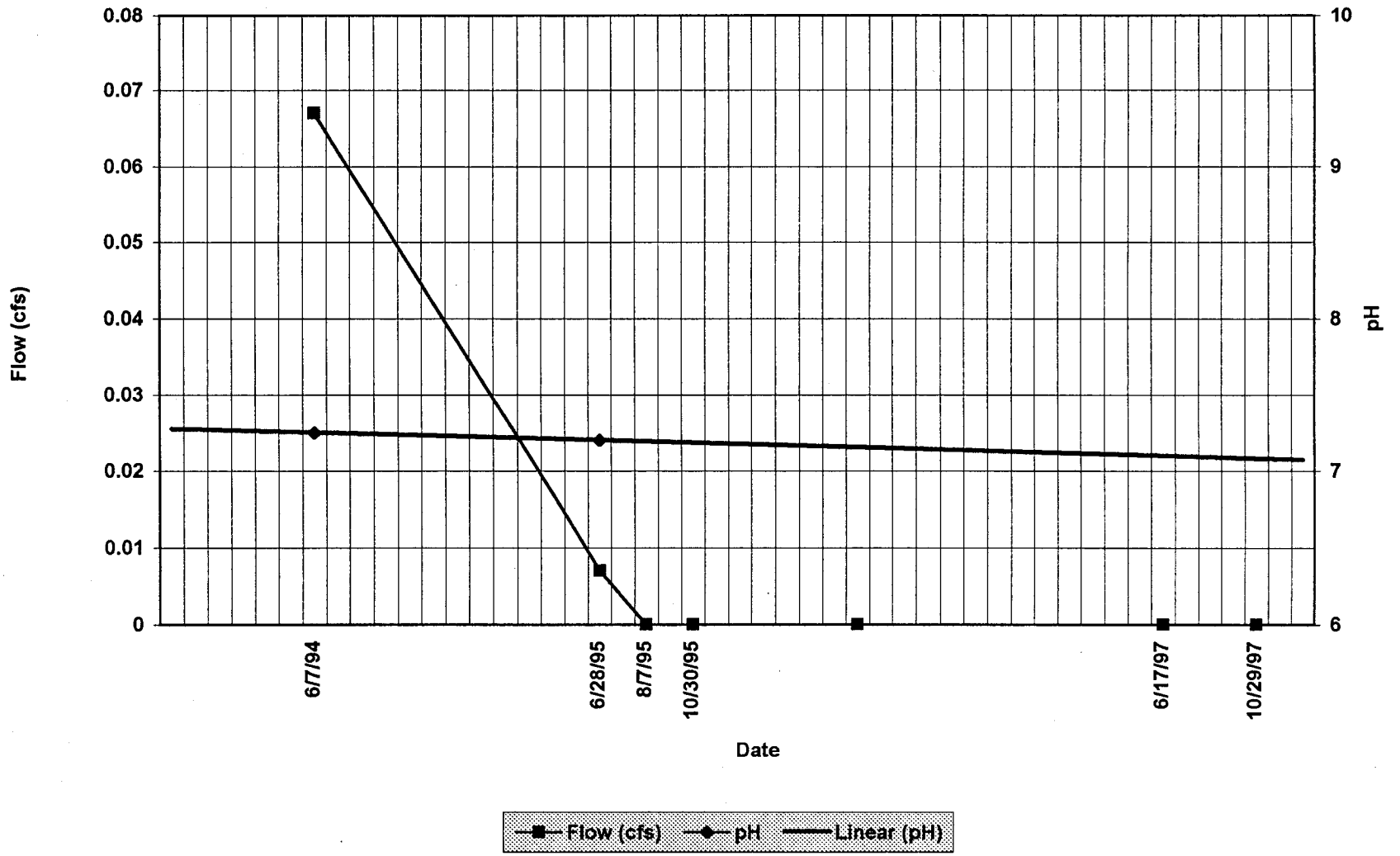


Figure 15B
Spring B362

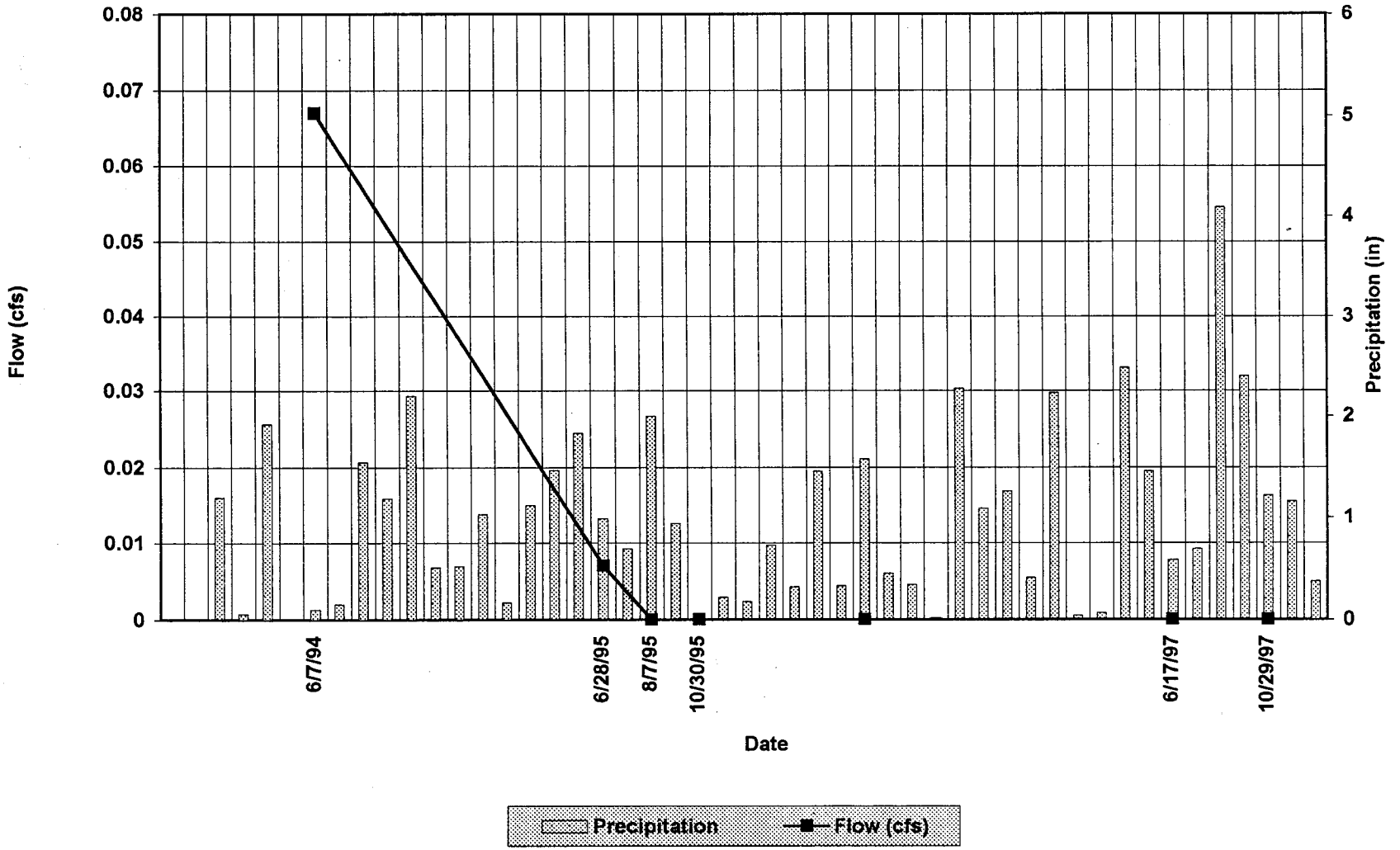


Table 15

Station: B362 | **Property: Castle Gate** | **Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E** | **Sampling Frequency: Quarterly**

Date Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)
		Field Measurements																	Lab
94 1																			
2																			
3																			
4																			
5																			
6	6/7/94	0.067	7.25	575	16.4														
7																			
8																			
9																			
10																			
11																			
12																			
95 1																			
2																			
3																			
4																			
5	5/30/95																		
6	6/28/95	0.007	7.2	479	6	300	1 *	279	275	1 *	5	10	76.1	1	0.025 *	0.46	0.005 *	0.46	0.026
7																			
8	8/7/95	0																	
9																			
10	10/30/95	0																	
11																			
12																			
96 1																			
2																			
3																			
4																			
5	5/31/96	0																	
6																			
7																			
8																			
9																			
10																			
11																			
12																			
97 1																			
2																			
3																			
4																			
5	5/30/97																		
6	6/17/97	0																	
7																			
8																			
9																			
10	10/29/97	0																	
11																			
12																			
Average		0.011	7.225	527.000	11.200	300.000	1.000	279.000	275.000	1.000	5.000	10.000	76.100	1.000	0.025	0.460	0.005	0.460	0.026
Number of Entries		7	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Max Value		0.067	7.25	575	16.4	300	1	279	275	1	5	10	76.1	1	0.025	0.46	0.005	0.46	0.026
Min Value		0	7.2	479	6	300	1	279	275	1	5	10	76.1	1	0.025	0.46	0.005	0.46	0.026
Standard Dev.		0.025	0.035	67.882	7.354	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 15

Station: B362 **Elevation: 6050**

Date Yr-Mo	Sample Date	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (meg/l)	Comments
		oratory Measurements															
94 1																	
2																	
3																	
4																	
5																	
6	6/7/94																Lg seep area. Cow activity. Diffuse flow.
7																	
8																	
9																	
10																	
11																	
12																	
95 1																	
2																	
3																	
4																	
5	5/30/95																Not accessable/extremely slick
6	6/28/95	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.005 *	0.01 *	21.5	0.0025 *	0.0025 *	0.05 *	0.001 *	0.005 *	0.6	
7																	
8	8/7/95																Dried up.
9																	
10	10/30/95																
11																	
12																	
96 1																	
2																	
3																	
4																	
5	5/31/96																
6																	
7																	
8																	
9																	
10																	
11																	
12																	
97 1																	
2																	
3																	
4																	
5	5/30/97																Inaccessable due to snow, ice, and mud.
6	6/17/97																Damp, to low to monitor.
7																	
8																	
9																	
10	10/29/97																
11																	
12																	
Average		0.015	0.001	0.030	0.002	0.005	0.005	0.005	0.010	21.500	0.003	0.003	0.050	0.001	0.005	0.600	
Number of Entries		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Max Value		0.015	0.0005	0.03	0.0015	0.005	0.005	0.005	0.01	21.5	0.0025	0.0025	0.05	0.001	0.005	0.6	
Min Value		0.015	0.0005	0.03	0.0015	0.005	0.005	0.005	0.01	21.5	0.0025	0.0025	0.05	0.001	0.005	0.6	
Standard Dev.		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

* Below detection limit. Valu

Figure 16
Spring B44

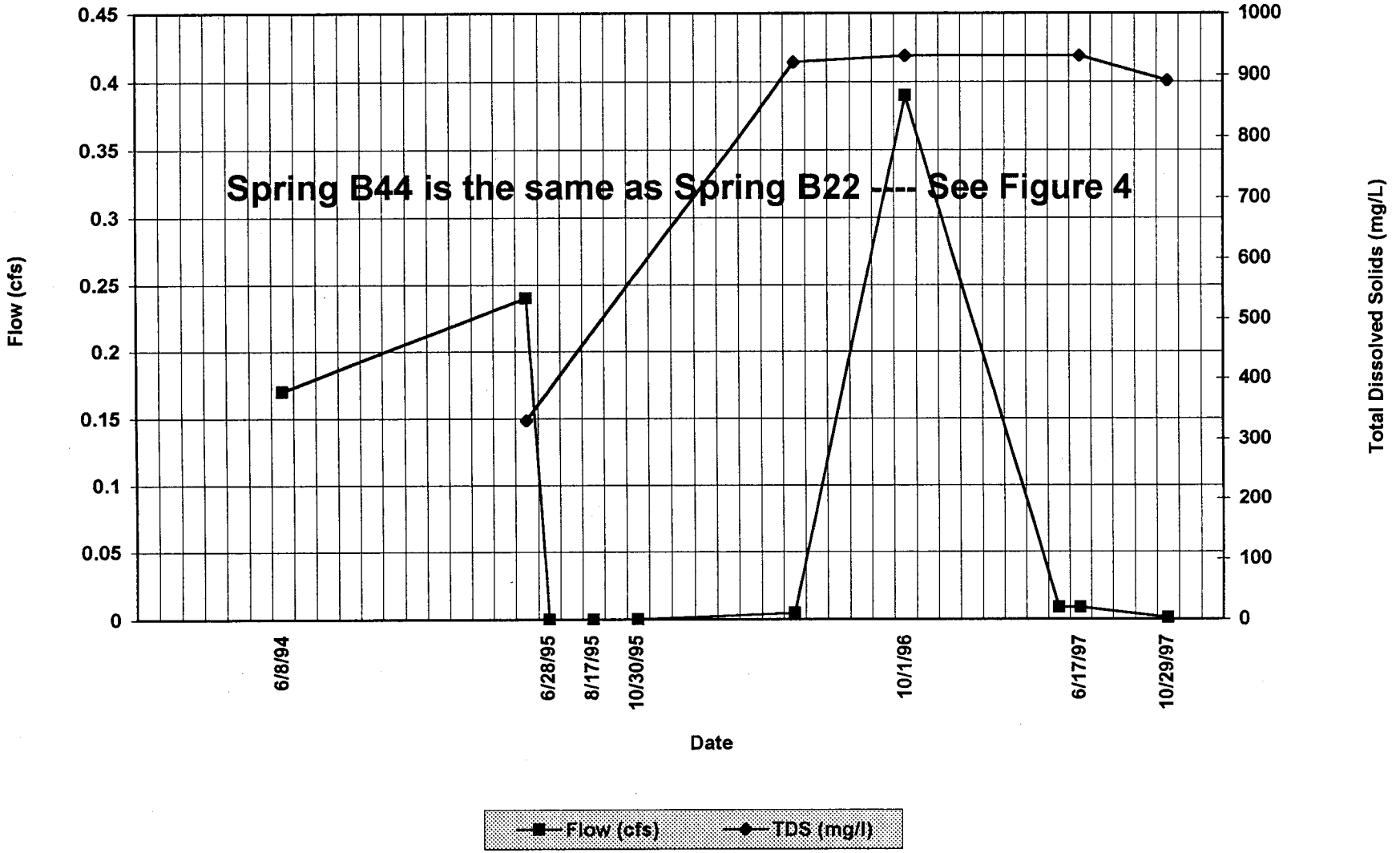


Table 16

Station: B44 *** Spring | Property: Castle Gate | Location: SE1/4, NE1/4, Sec 35, T12 S, R9 E | Sampling Frequency: Quarterly

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)
94 1																			
2																			
3																			
4																			
5																			
6	6/8/94	0.17	8.38	573	7.9														
7																			
8																			
9																			
10																			
11																			
12																			
95 1																			
2																			
3																			
4																			
5	5/29/95	0.24	8.8	580	8.7	9.1	330	1 *	343	262	16	4	50	46.1	2.2	6	0.025 *	0.06	0.03
6	6/28/95	0																	
7																			
8	8/17/95	0																	
9																			
10	10/30/95	0																	
11																			
12																			
96 1																			
2																			
3																			
4																			
5	5/30/96	0.0045	7.7	1126	10		920		752	452	1 *	25	320	147	6.3	25			
6																			
7																			
8																			
9																			
10	10/1/96	0.39	6.75	1540	12		930		774	448	1 *	28	330	152	6.2	28.3			
11																			
12																			
97 1																			
2																			
3																			
4																			
5	5/30/97	0.009	7.72	1115	10.1														
6	6/17/97	0.009	8.07	1258	18		930		841	417	1 *	26	350	162	7.3	27.9			
7																			
8																			
9																			
10	10/29/97	0.001	7.8	1370	5		890		730	460	5 *	27	300	150	5.6	25			
11																			
12																			
Average		0.082	7.889	1080.286	10.243	9.100	800.000	1.000	688.000	407.800	4.800	22.000	270.000	131.420	5.520	22.440	0.025	0.060	0.030
Number of Entries		10	7	7	7	1	5	1	5	5	5	5	5	5	5	5	1	1	1
Max Value		0.39	8.8	1540	18	9.1	930	1	841	460	16	28	350	162	7.3	28.3	0.025	0.06	0.03
Min Value		0	6.75	573	5	9.1	330	1	343	262	1	4	50	46.1	2.2	6	0.025	0.06	0.03
Standard Dev.		0.138	0.642	373.670	4.056	#DIV/0!	263.249	#DIV/0!	197.288	83.122	6.496	10.124	124.298	48.026	1.954	9.321	#DIV/0!	#DIV/0!	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 16

Station: B44 * Spring** — **Elevtion: 6050**

Date Yr-Mo		Sample Date	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)
			Laboratory Measurements															
94	1																	
	2																	
	3																	
	4																	
	5																	
	6	6/8/94																
	7																	
	8																	
	9																	
	10																	
	11																	
	12																	
95	1																	
	2																	
	3																	
	4																	
	5	5/29/95	0.09	0.049	0.05	0.0005 *	0.02	0.0015 *	0.005 *	0.08	0.55	0.01 *	55.5	0.006	0.027	0.005 *	0.002	0.0
	6	6/28/95																
	7																	
	8	8/17/95																
	9																	
	10	10/30/95																
	11																	
	12																	
96	1																	
	2																	
	3																	
	4																	
	5	5/30/96								0.005 *	1.92		93.5	0.225				
	6																	
	7																	
	8																	
	9																	
	10	10/1/96								0.005 *	3.17		95.9		0.289	0.263		
	11																	
	12																	
97	1																	
	2																	
	3																	
	4																	
	5	5/30/97																
	6	6/17/97								0.01	1.35		106	0.19	0.18			
	7																	
	8																	
	9																	
	10	10/29/97								0.03	2.8		87	0.26	0.27			
	11																	
	12																	
Average			0.090	0.049	0.050	0.001	0.020	0.002	0.005	0.026	1.958	0.010	87.580	0.170	0.192	0.134	0.002	0.0
Number of Entries			1	1	1	1	1	1	1	5	5	1	5	4	4	2	1	
Max Value			0.09	0.049	0.05	0.0005	0.02	0.0015	0.005	0.08	3.17	0.01	106	0.26	0.289	0.263	0.002	0.0
Min Value			0.09	0.049	0.05	0.0005	0.02	0.0015	0.005	0.005	0.55	0.01	55.5	0.006	0.027	0.005	0.002	0.0
Standard Dev.			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.032	1.064	#DIV/0!	19.190	0.113	0.120	0.182	#DIV/0!	#DIV/0

* Below detection limit. Va

Table 16

Station: B44 * Spring**

Date Yr-Mo		Sample Date		Cat/An (%)	Comments
94	1				
	2				
	3				
	4				
	5				
	6	6/8/94			
	7				
	8				
	9				
	10				
	11				
	12				
95	1				
	2				
	3				
	4				
	5	5/29/95	*	3.3	Spring assumed to be in the stream.
	6	6/28/95			Inundated by Willow Creek. Not found.
	7				
	8	8/17/95			
	9				
	10	10/30/95			
	11				
	12				
96	1				
	2				
	3				
	4				
	5	5/30/96		-0.5	
	6				
	7				
	8				
	9				
	10	10/1/96			
	11				
	12				
97	1				
	2				
	3				
	4				
	5	5/30/97			
	6	6/17/97		5.2	
	7				
	8				
	9				
	10	10/29/97			
	11				
	12				
Average				2.667	
Number of Entries				3	
Max Value				5.2	
Min Value				-0.5	
Standard Dev.				2.902	
* Below detection limit. Va					

APPENDIX B
SURFACE WATER

Figure 17
Stream B3N

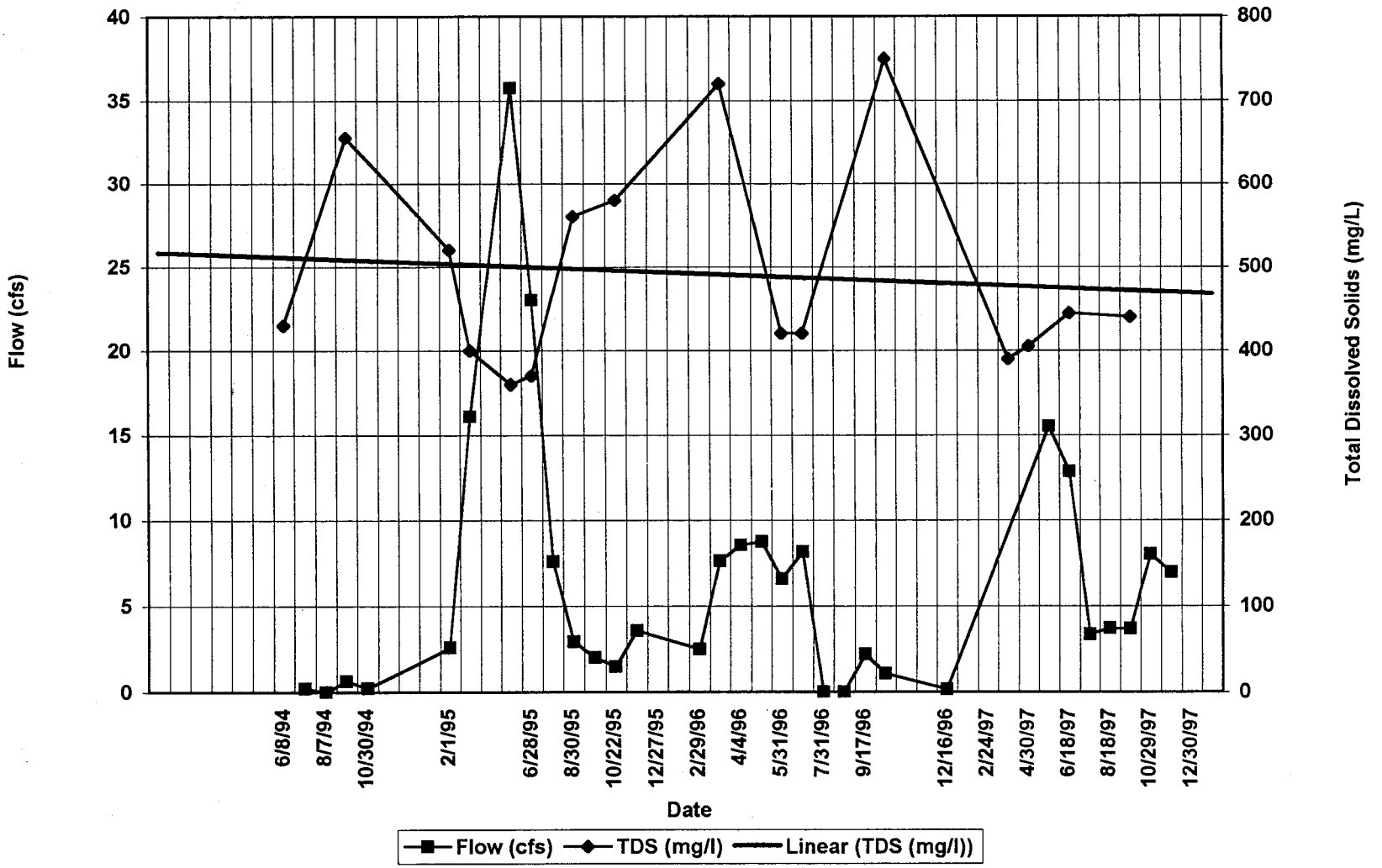


Figure 17 A
Stream B3N

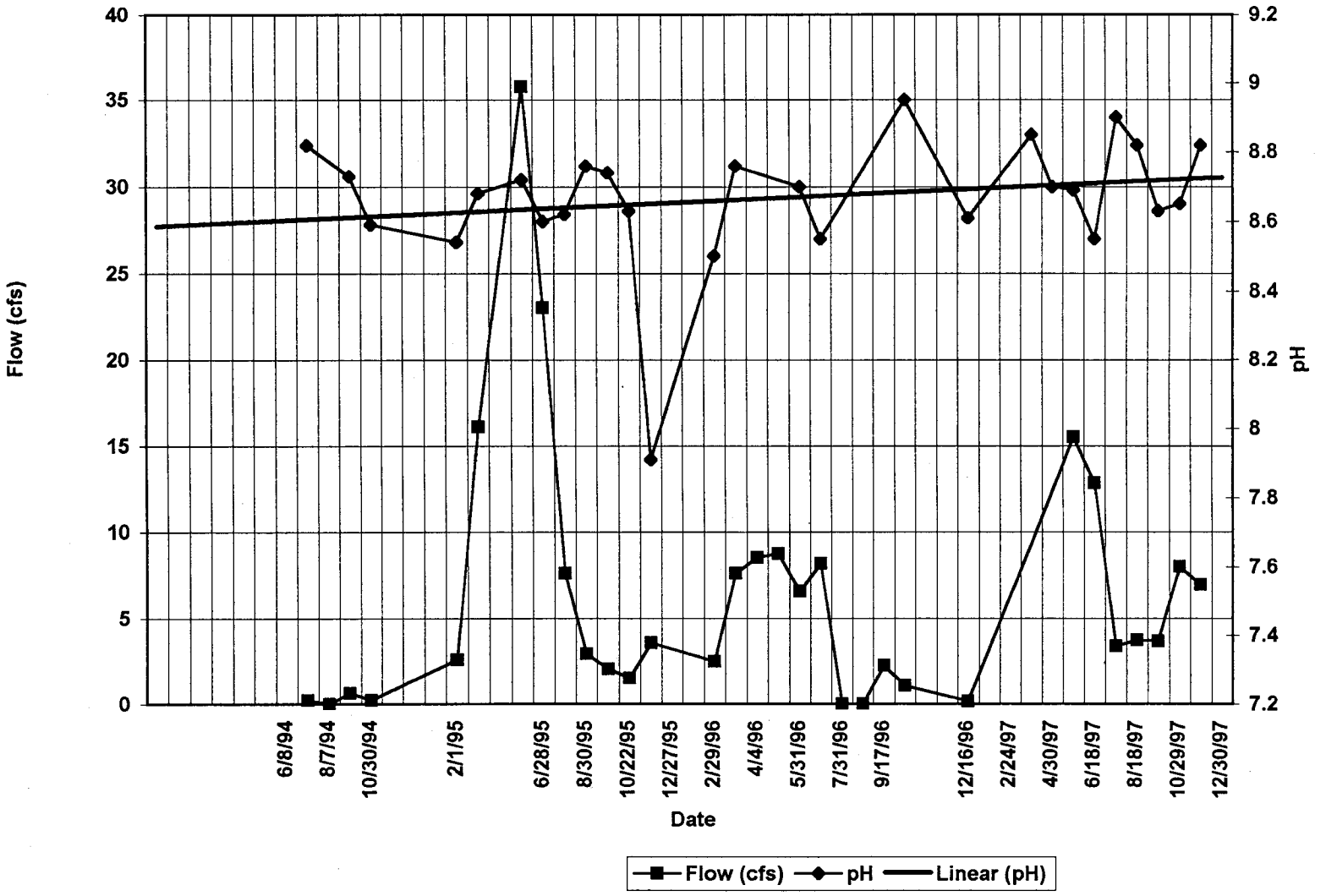


Figure 17 B
Stream B3N

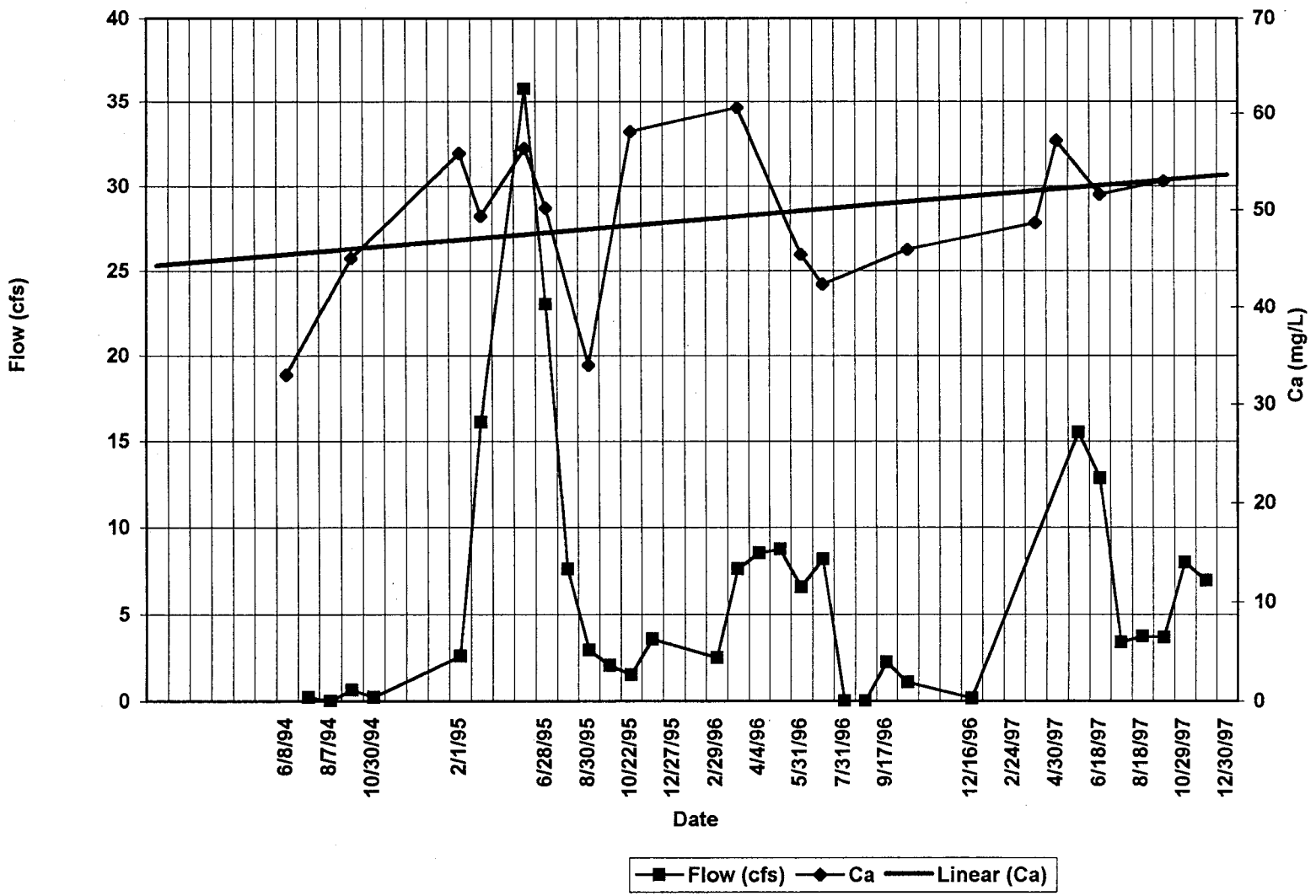


Figure 17 C
Stream B3N

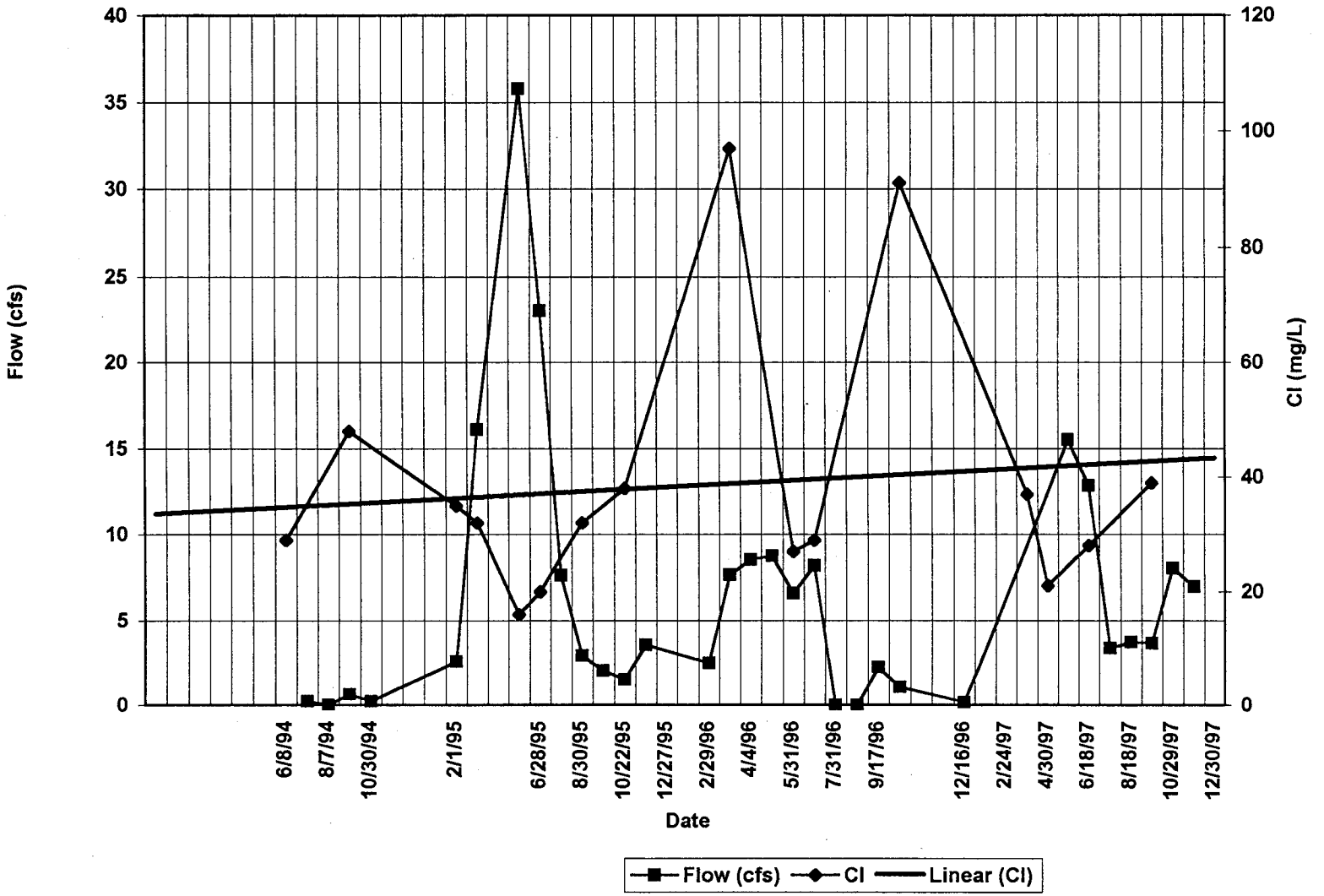


Figure 17 D
Stream B3N

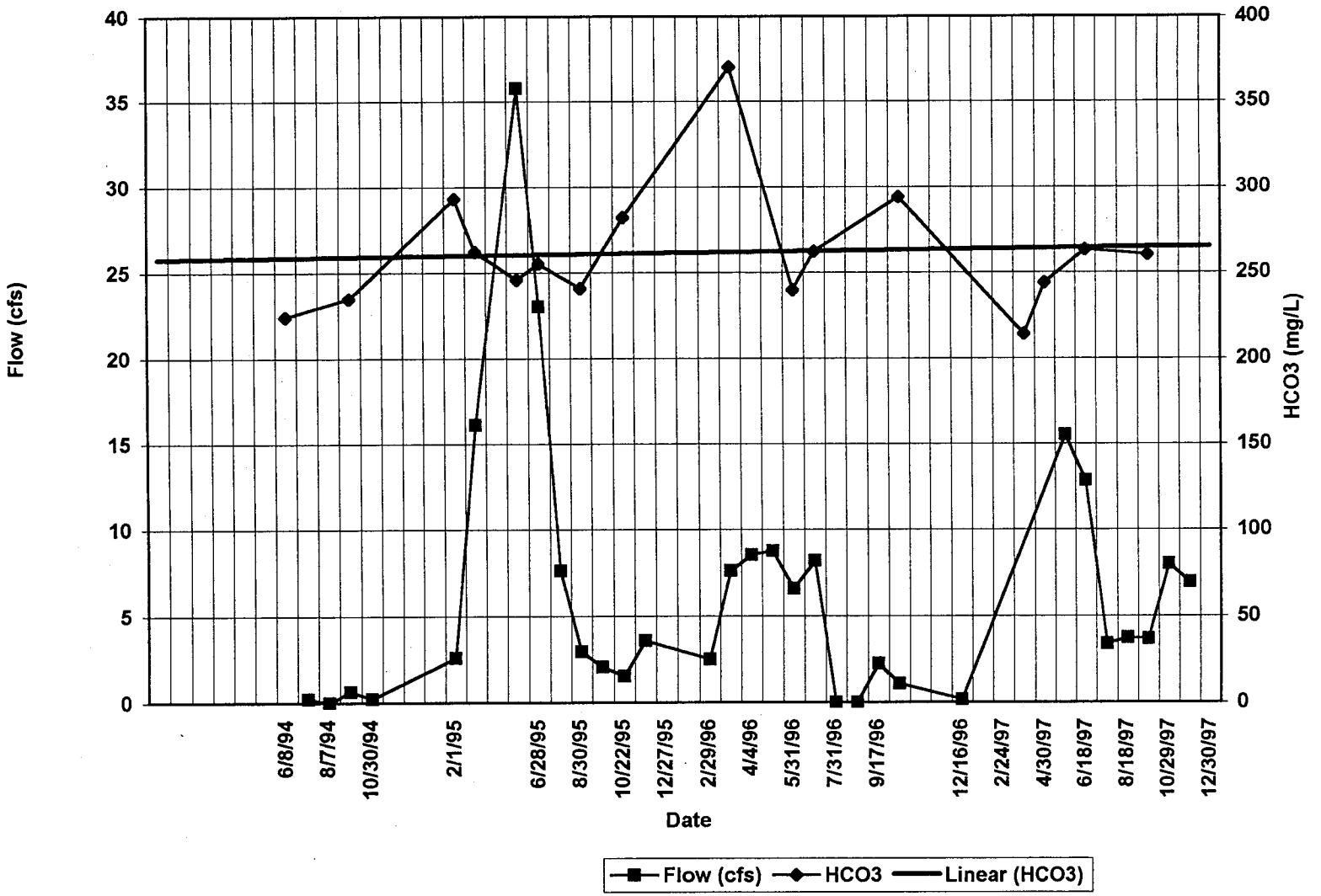


Figure 17 E
Stream B3N

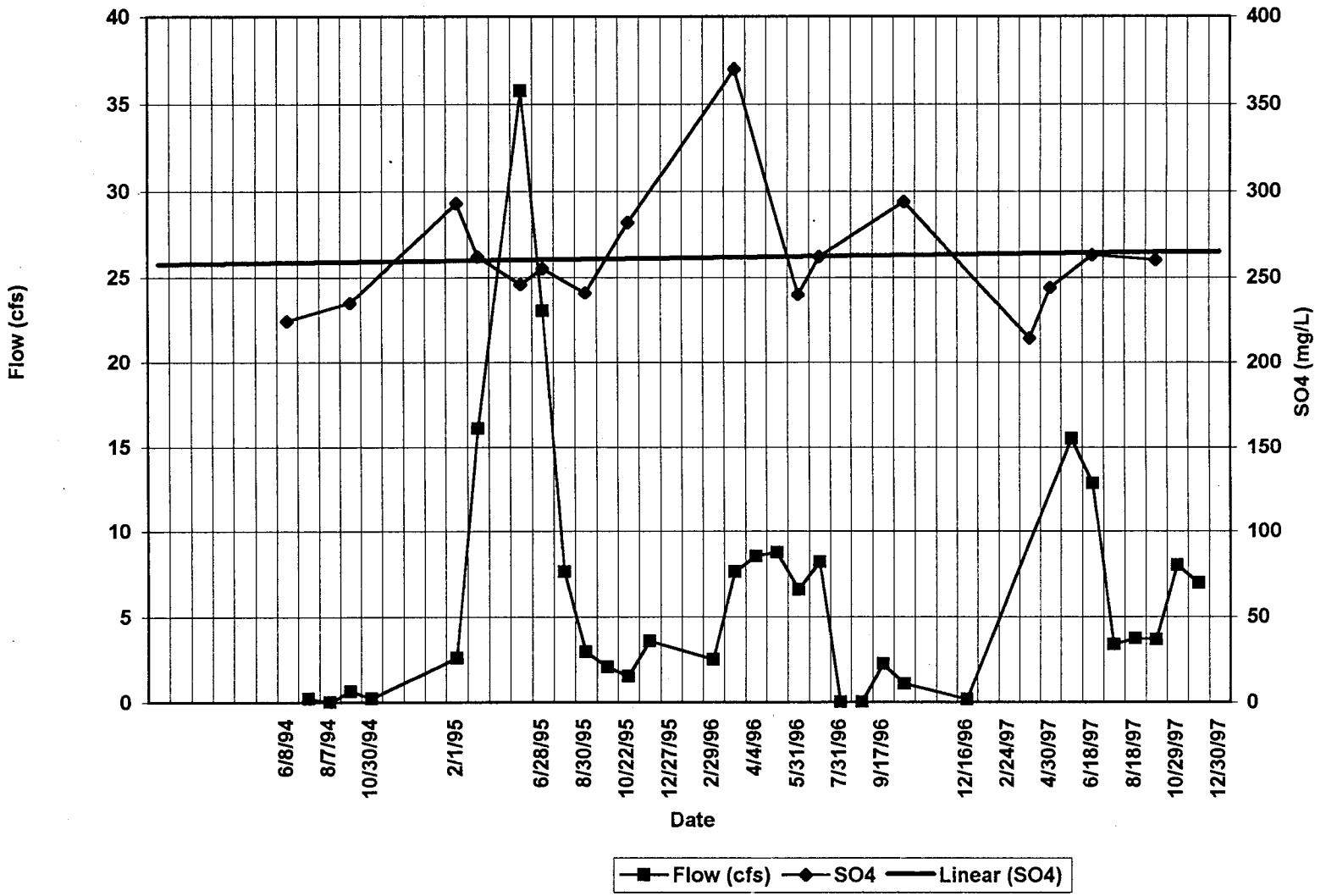


Figure 17 F
Stream B3N

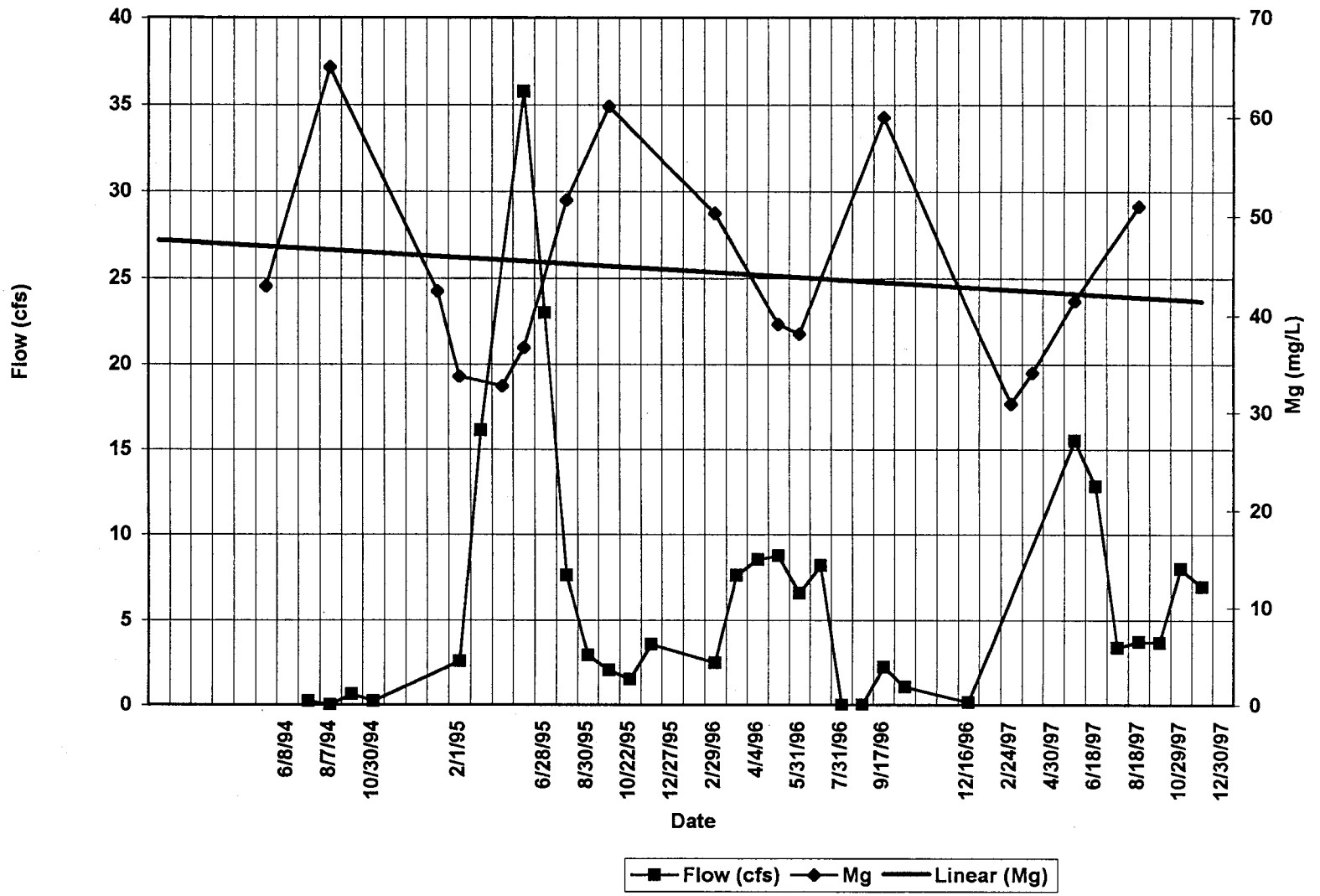


Figure 17G
Stream B3N

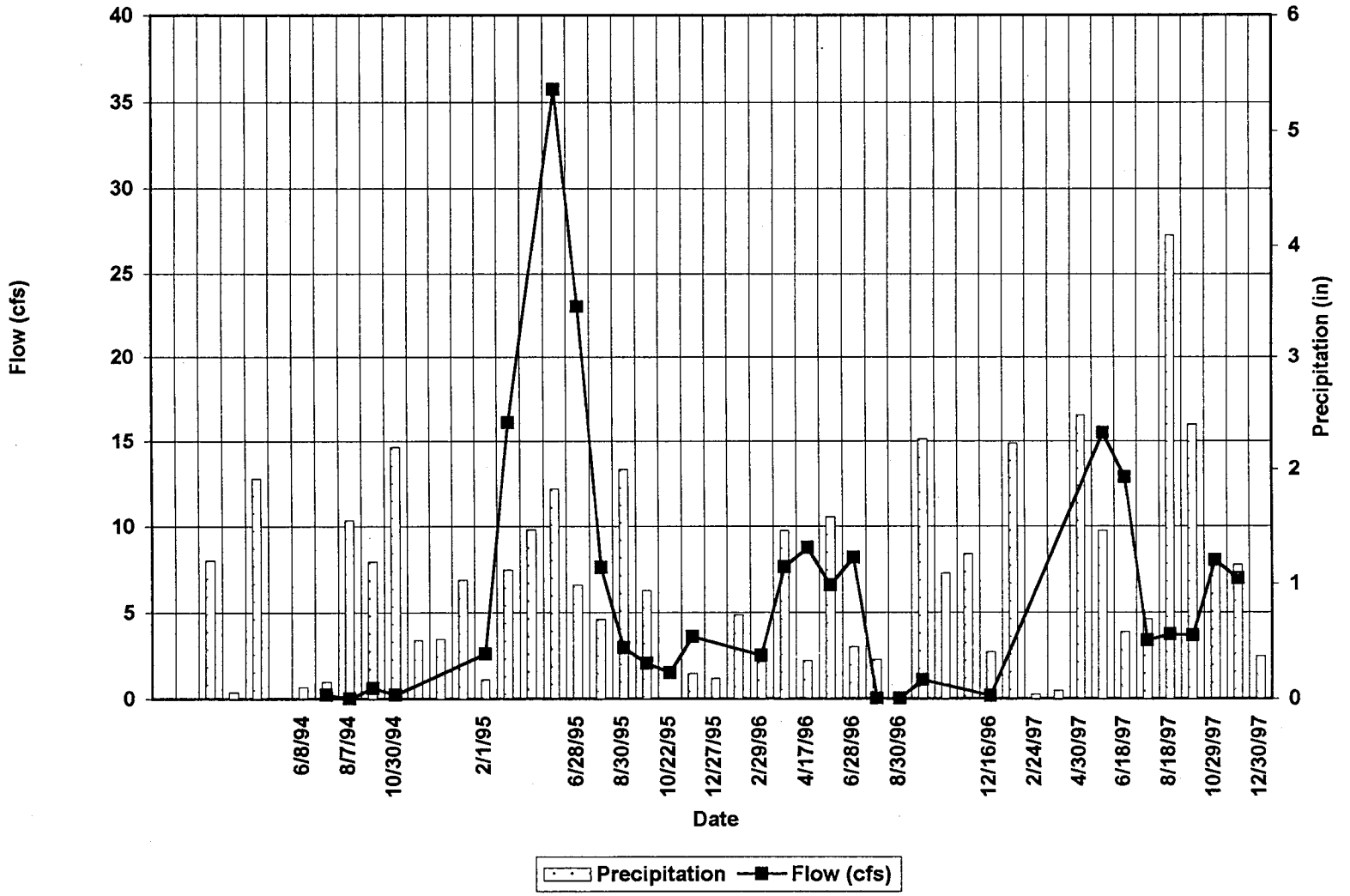


Table 17

Station: B3N **Property: Willow Creek** **Location: NW1/4,SW1/4,SW1/4,NE1/4,SEC 35, T13S,R9E** **Station Type: River**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (ml/l)		O&G (mg/l)		Laboratory Measurements Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)		Cl (mg/l)	SO4 (mg/l)
94 1																				
2																				
3																				
4																				
5																				
6	6/8/94						430	6			0.5	*	248	259		224	24		29	152
7	7/9/94	0.221	8.82	929	18.8	8.1														
8	8/7/94	0																		
9	9/23/94	0.624	8.73	1011	12	6.7	656	0.2	0.05	*	1		255	379		235	20		48	255
10	10/30/94	0.213	8.59	1059	5	6.8		1150												
11																				
12																				
95 1																				
2	2/1/95	2.6	8.54	1152	1	7.9	520	330	0.2	*	4					293	1	*	35	160
3	3/19/95	16.1	8.68	707	0	6.2	400	485	0.4							262	1	*	32	168
4																				
5	5/31/95	35.76	8.72	573	13.2	8.2	360	98	0.05	*	1	*				246	1	*	16	70
6	6/28/95	23	8.6	701	12	9.2	370	30	0.05	*	1	*				255	1	*	20	120
7	7/20/95	7.6	8.62	630	19.6	8.8														
8	8/30/95	2.93	8.76	591	17.9	6.9	560	2.5	0.05	*	9					241	19		32	140
9	9/19/95	2.04	8.74	750	10.5	8.8														
10	10/22/95	1.5	8.63	942	6.8	9.6	580	2.5	0.05	*	1	*				282	22		38	184
11	11/28/95	3.58	7.91	1288	0	11.1														
12	12/27/95																			
96 1																				
2	2/29/96	2.5	8.5	1230	0	6.7														
3	3/27/96	7.62	8.76	1189	6.5	9.2	720	54	0.05	*	1	*				370	1	*	97	180
4	4/4/96	8.53																		
4	4/17/96	8.74																		
5	5/31/96	6.57	8.7	817	20.2	6.8	420	18	0.05	*	1	*		274		240	17		27	110
6	6/28/96	8.17	8.55	549	13	9.3	420	555	1.5		9			263		262	1	*	29	120
7	7/31/96	0																		
8	8/30/96	0																		
9	9/17/96	2.23						308	0.1	*										
9	9/29/96	1.08	8.95	1038	5.8	9.9	750	2.5			1	*		361		294	15		91	260
10																				
11																				
12	12/16/96	0.16	8.61	812	-0.4	16.2														
97 1																				
2	2/24/97																			
3	3/20/97		8.85	816	3.9	10.8	390				1	*		249		214	1	*	37	90
4	4/30/97		8.7	640	9.4	8.4	405				1	*		283		244	18		21	80
5	5/30/97	15.5	8.69	650	10.2	8.6														
6	6/18/97	12.85	8.55	555	15	9.5	444							300		263	12		28	100
7	7/31/97	3.37	8.9	814	22	9.7														
8	8/18/97	3.71	8.82	890	21	9.2														
9	9/30/97	3.66	8.63	811	13.8	8.1	440	35			2.5	*	270	340		260	5	*	39	110
10	10/29/97	8	8.65	1126	5	9.4														
11	11/19/97	6.95	8.82	1056	0.4	12.2														
12	12/30/97																			
Average		6.32	8.667	863.926	9.726	8.974	491.563	205.113	0.232		2.429		257.667	300.889	#DIV/0!	261.563	9.938		38.688	143.688
Number of Entries		31	27	27	27	27	16	15	11		14		3	9	0	16	16		16	16
Max Value		35.76	8.95	1288	22	16.2	750	1150	1.5		9		270	379	0	370	24		97	260
Min Value		0	7.91	549	-0.4	6.2	360	0.2	0.05		0.5		248	249	0	214	1		16	70
Standard Dev.		7.76	0.190	222.753	7.272	2.043	125.581	322.210	0.434		2.921		11.240	47.659	#DIV/0!	36.590	9.147		23.015	56.256

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 17

Station: B3N — **Sampling Frequency: Quarterly**

Date Yr-Mo		Sample Date	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)
94	1														
	2														
	3														
	4														
	5														
	6	6/8/94	33	2	74	0.025 *	0.05	0.005 *	0.05	0.0025 *	0.025 *	0.001	2.11	0.0025 *	0.005 *
	7	7/9/94													
	8	8/7/94													
	9	9/23/94	45	4	102	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.0005 *	0.12	0.0025 *	0.005 *
	10	10/30/94													
	11														
	12														
95	1														
	2	2/1/95	55.9	2.4	77.1	0.61	0.06	0.005 *	0.06	0.0025 *	0.015 *	0.001	0.08	0.0015 *	0.005 *
	3	3/19/95	49.4	2.8	65.9	0.07	0.07	0.005 *	0.07	0.016	0.015 *	0.002	0.06	0.0015 *	0.005 *
	4														
	5	5/31/95	56.4	1.4	39.5	0.025 *	0.04	0.005 *	0.04	0.0025 *	0.06	0.003	0.06	0.0015 *	0.005 *
	6	6/28/95	50.2	1.8	52.7	0.06	0.16	0.005 *	0.16	0.006	0.015 *	0.002	0.07	0.0015 *	0.005 *
	7	7/20/95													
	8	8/30/95	34	2.3	75.9	0.025 *	0.03	0.005 *	0.03	0.0025 *	0.015 *	0.002	0.11	0.0015 *	0.005 *
	9	9/19/95													
	10	10/22/95	58.1	2.8	78.3	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *	0.003	0.11	0.0015 *	0.005 *
	11	11/28/95													
	12	12/27/95													
96	1														
	2	2/29/96													
	3	3/27/96	60.6	4.1	151		0.01 *	0.005 *	0.01 *	0.007					
	4	4/4/96													
	4	4/17/96													
	5	5/31/96	45.4	1.5	57.4										
	6	6/28/96	42.4	2.1	65.4										
	7	7/31/96													
	8	8/30/96													
	9	9/17/96													
	9	9/29/96	45.9	4.4	151										
	10														
	11														
	12	12/16/96													
97	1														
	2	2/24/97													
	3	3/20/97	48.7	2.8	52.6										
	4	4/30/97	57.2	2	46.1										
	5	5/30/97													
	6	6/18/97	51.6	1.5	51.9										
	7	7/31/97													
	8	8/18/97													
	9	9/30/97	53	3.4	90										
	10	10/29/97													
	11	11/19/97													
	12	12/30/97													
Average			49.175	2.581	76.925	0.108	0.049	0.005	0.049	0.005	0.023	0.002	0.340	0.002	0.005
Number of Entries			16	16	16	8	9	9	9	9	8	8	8	8	8
Max Value			60.6	4.4	151	0.61	0.16	0.005	0.16	0.016	0.06	0.003	2.11	0.0025	0.005
Min Value			33	1.4	39.5	0.025	0.01	0.005	0.01	0.0025	0.015	0.0005	0.06	0.0015	0.005
Standard Dev.			8.058	0.959	33.243	0.204	0.047	0.000	0.047	0.005	0.016	0.001	0.716	0.000	0.000

* Below detection limit. Value er

Table 17

Station: B3N **Property: Willow Creek** **Location: NW1/4,SW1/4,SW1/4,NE1/4,SEC 35, T13S,R9E** **Station Type: River**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (ml/l)		O&G (mg/l)		Laboratory Measurements Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)		Cl (mg/l)	SO4 (mg/l)
94 1																				
2																				
3																				
4																				
5																				
6	6/8/94						430	6			0.5	*	248	259		224	24		29	152
7	7/9/94	0.221	8.82	929	18.8	8.1														
8	8/7/94	0																		
9	9/23/94	0.624	8.73	1011	12	6.7	656	0.2	0.05	*	1		255	379		235	20		48	255
10	10/30/94	0.213	8.59	1059	5	6.8		1150												
11																				
12																				
95 1																				
2	2/1/95	2.6	8.54	1152	1	7.9	520	330	0.2	*	4					293	1	*	35	160
3	3/19/95	16.1	8.68	707	0	6.2	400	485	0.4							262	1	*	32	168
4																				
5	5/31/95	35.76	8.72	573	13.2	8.2	360	98	0.05	*	1	*				246	1	*	16	70
6	6/28/95	23	8.6	701	12	9.2	370	30	0.05	*	1	*				255	1	*	20	120
7	7/20/95	7.6	8.62	630	19.6	8.8														
8	8/30/95	2.93	8.76	591	17.9	6.9	560	2.5	0.05	*	9					241	19		32	140
9	9/19/95	2.04	8.74	750	10.5	8.8														
10	10/22/95	1.5	8.63	942	6.8	9.6	580	2.5	0.05	*	1	*				282	22		38	184
11	11/28/95	3.58	7.91	1288	0	11.1														
12	12/27/95																			
96 1																				
2	2/29/96	2.5	8.5	1230	0	6.7														
3	3/27/96	7.62	8.76	1189	6.5	9.2	720	54	0.05	*	1	*				370	1	*	97	180
4	4/4/96	8.53																		
4	4/17/96	8.74																		
5	5/31/96	6.57	8.7	817	20.2	6.8	420	18	0.05	*	1	*		274		240	17		27	110
6	6/28/96	8.17	8.55	549	13	9.3	420	555	1.5		9			263		262	1	*	29	120
7	7/31/96	0																		
8	8/30/96	0																		
9	9/17/96	2.23						308	0.1	*										
9	9/29/96	1.08	8.95	1038	5.8	9.9	750	2.5			1	*		361		294	15		91	260
10																				
11																				
12	12/16/96	0.16	8.61	812	-0.4	16.2														
97 1																				
2	2/24/97																			
3	3/20/97		8.85	816	3.9	10.8	390				1	*		249		214	1	*	37	90
4	4/30/97		8.7	640	9.4	8.4	405				1	*		283		244	18		21	80
5	5/30/97	15.5	8.69	650	10.2	8.6														
6	6/18/97	12.85	8.55	555	15	9.5	444							300		263	12		28	100
7	7/31/97	3.37	8.9	814	22	9.7														
8	8/18/97	3.71	8.82	890	21	9.2														
9	9/30/97	3.66	8.63	811	13.8	8.1	440	35			2.5	*	270	340		260	5	*	39	110
10	10/29/97	8	8.65	1126	5	9.4														
11	11/19/97	6.95	8.82	1056	0.4	12.2														
12	12/30/97																			
Average		6.32	8.667	863.926	9.726	8.974	491.563	205.113	0.232		2.429		257.667	300.889	#DIV/0!	261.563	9.938		38.688	143.688
Number of Entries		31	27	27	27	27	16	15	11		14		3	9	0	16	16		16	16
Max Value		35.76	8.95	1288	22	16.2	750	1150	1.5		9		270	379	0	370	24		97	260
Min Value		0	7.91	549	-0.4	6.2	360	0.2	0.05		0.5		248	249	0	214	1		16	70
Standard Dev.		7.76	0.190	222.753	7.272	2.043	125.581	322.210	0.434		2.921		11.240	47.659	#DIV/0!	36.590	9.147		23.015	56.256

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 17

Station: B3N **Sampling Frequency: Quarterly**

Date Yr-Mo		Sample Date	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)
94	1														
	2														
	3														
	4														
	5														
	6	6/8/94	33	2	74	0.025 *	0.05	0.005 *	0.05	0.0025 *	0.025 *	0.001	2.11	0.0025 *	0.005 *
	7	7/9/94													
	8	8/7/94													
	9	9/23/94	45	4	102	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.0005 *	0.12	0.0025 *	0.005 *
	10	10/30/94													
	11														
	12														
95	1														
	2	2/1/95	55.9	2.4	77.1	0.61	0.06	0.005 *	0.06	0.0025 *	0.015 *	0.001	0.08	0.0015 *	0.005 *
	3	3/19/95	49.4	2.8	65.9	0.07	0.07	0.005 *	0.07	0.016	0.015 *	0.002	0.06	0.0015 *	0.005 *
	4														
	5	5/31/95	56.4	1.4	39.5	0.025 *	0.04	0.005 *	0.04	0.0025 *	0.06	0.003	0.06	0.0015 *	0.005 *
	6	6/28/95	50.2	1.8	52.7	0.06	0.16	0.005 *	0.16	0.006	0.015 *	0.002	0.07	0.0015 *	0.005 *
	7	7/20/95													
	8	8/30/95	34	2.3	75.9	0.025 *	0.03	0.005 *	0.03	0.0025 *	0.015 *	0.002	0.11	0.0015 *	0.005 *
	9	9/19/95													
	10	10/22/95	58.1	2.8	78.3	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *	0.003	0.11	0.0015 *	0.005 *
	11	11/28/95													
	12	12/27/95													
96	1														
	2	2/29/96													
	3	3/27/96	60.6	4.1	151		0.01 *	0.005 *	0.01 *	0.007					
	4	4/4/96													
	4	4/17/96													
	5	5/31/96	45.4	1.5	57.4										
	6	6/28/96	42.4	2.1	65.4										
	7	7/31/96													
	8	8/30/96													
	9	9/17/96													
	9	9/29/96	45.9	4.4	151										
	10														
	11														
	12	12/16/96													
97	1														
	2	2/24/97													
	3	3/20/97	48.7	2.8	52.6										
	4	4/30/97	57.2	2	46.1										
	5	5/30/97													
	6	6/18/97	51.6	1.5	51.9										
	7	7/31/97													
	8	8/18/97													
	9	9/30/97	53	3.4	90										
	10	10/29/97													
	11	11/19/97													
	12	12/30/97													
Average			49.175	2.581	76.925	0.108	0.049	0.005	0.049	0.005	0.023	0.002	0.340	0.002	0.005
Number of Entries			16	16	16	8	9	9	9	9	8	8	8	8	8
Max Value			60.6	4.4	151	0.61	0.16	0.005	0.16	0.016	0.06	0.003	2.11	0.0025	0.005
Min Value			33	1.4	39.5	0.025	0.01	0.005	0.01	0.0025	0.015	0.0005	0.06	0.0015	0.005
Standard Dev.			8.058	0.959	33.243	0.204	0.047	0.000	0.047	0.005	0.016	0.001	0.716	0.000	0.000

* Below detection limit. Value er

Table 17

Station: B3N **Elevation: 6100**

Date Yr-Mo		Sample Date	IRON-DISS (mg/l)		IRON-TOTAL (mg/l)	Pb (mg/l)		Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)		Mn-TOTAL (mg/l)		Mo (mg/l)		Se (mg/l)		Zn (mg/l)		Cat/An (%)	Comments
94	1																				
	2																				
	3																				
	4																				
	5																				
	6	6/8/94	0.03		0.2			43		0.005	*	0.005	*	0.0005	*	0.0005	*			-2.75	
	7	7/9/94																			
	8	8/7/94																			Stream dry.
	9	9/23/94	0.01	*	0.09	0.01	*	65		0.005	*	0.005	*	0.0005	*	0.0005	*	0.005	*	154	Stream dried up for 3 weeks in July-Aug. Flowing since
	10	10/30/94																			
	11																				
	12																				
95	1																				
	2	2/1/95	0.005	*	12.2	0.01	*	42.5		0.02		0.251		0.005	*	0.001		0.005	*		Some melting snow.
	3	3/19/95	0.005	*	23.4	0.01	*	33.7		0.012		0.516		0.005	*	0.001		0.005	*		Run-off very silt.
	4																				
	5	5/31/95	0.11		3.01	0.01	*	32.7		0.01		0.09		0.005	*	0.001		0.005	*	3.2	Snow melt time. Turbid
	6	6/28/95	0.05		1.25	0.01	*	36.7		0.006		0.035		0.005	*	0.001		0.005	*	-1.9	
	7	7/20/95																			
	8	8/30/95	0.005	*	0.08	0.01	*	51.6		0.0025	*	0.008		0 01		0.0005	*	0.005	*	1.6	
	9	9/19/95																			
	10	10/22/95	0.005	*	0.12	0.01	*	61.1		0.008		0.008		0.005	*	0.007		0.005	*	1.9	
	11	11/28/95																			Considerable ice.
	12	12/27/95																			Frozen, not possible to monitor.
96	1																				
	2	2/29/96																			Flow up considerable from 2-3 weekends ago. Flow est
	3	3/27/96	0.13		1.68			50.3		0.04		0.065		0.005	*	0.0005	*	0.005	*	0.1	Snow melting.
	4	4/4/96																			Run-off in progress.
	4	4/17/96																			Settleable solids.
	5	5/31/96	0.06		0.44			39.1		0.011		0.024								-1	
	6	6/28/96	0.01		8.48			38.1		0.0025	*	0.42								-2.4	Rain yesterday and last night.
	7	7/31/96																			
	8	8/30/96																			
	9	9/17/96																			Flow Only.
	9	9/29/96	0.005	*	0.04			60		0.0025	*	0.005	*					0.005	*	-0.8	Water very clear.
	10																				
	11																				
	12	12/16/96																			
97	1																				Frozen Up
	2	2/24/97																			Frozen Up
	3	3/20/97	0.005	*	11.4			30.9		0.02		0.351								1	Flow over weir, unsafe to measure
	4	4/30/97	0.005	*	4.73			34.1		0.006		0.178								1.5	Frozen up. pH meter acting up- doubt reading
	5	5/30/97																			Flow estimated - full weir + 3cfs
	6	6/18/97	0.005	*	0.62			41.5		0.0025	*	0.027								-0.5	
	7	7/31/97																			
	8	8/18/97																			
	9	9/30/97	0.005	*	1.7			51		0.0025	*	0.033								10	
	10	10/29/97																			
	11	11/19/97																			
	12	12/30/97																			Frozen Up
Average			0.028		4.340	0.010		44.456	#DIV/0!	0.010		0.126		0.005		0.001		0.005		11.711	
Number of Entries			16		16	7		16	0	16		16		9		9		9		14	
Max Value			0.13		23.4	0.01		65	0	0.04		0.516		0.01		0.007		0.005		154	
Min Value			0.005		0.04	0.01		30.9	0	0.0025		0.005		0.0005		0.0005		0.005		-2.75	
Standard Dev.			0.040		6.513	0.000		10.824	#DIV/0!	0.010		0.168		0.003		0.002		0.000		41.076	

* Below detection limit. Value er

Figure 18
Price River Monitoring Site B5

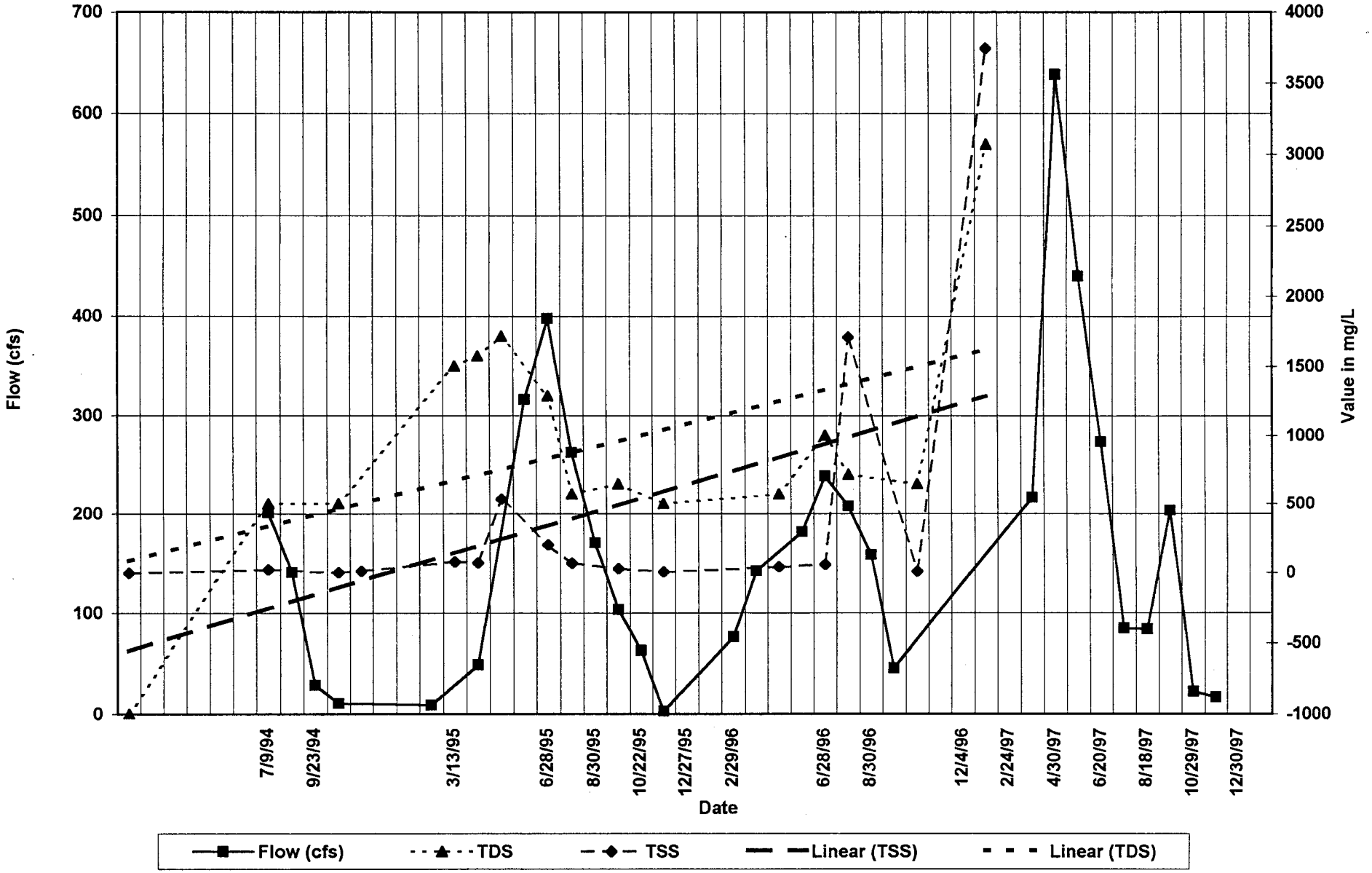


Figure 18 A
Price River Monitoring Site B5

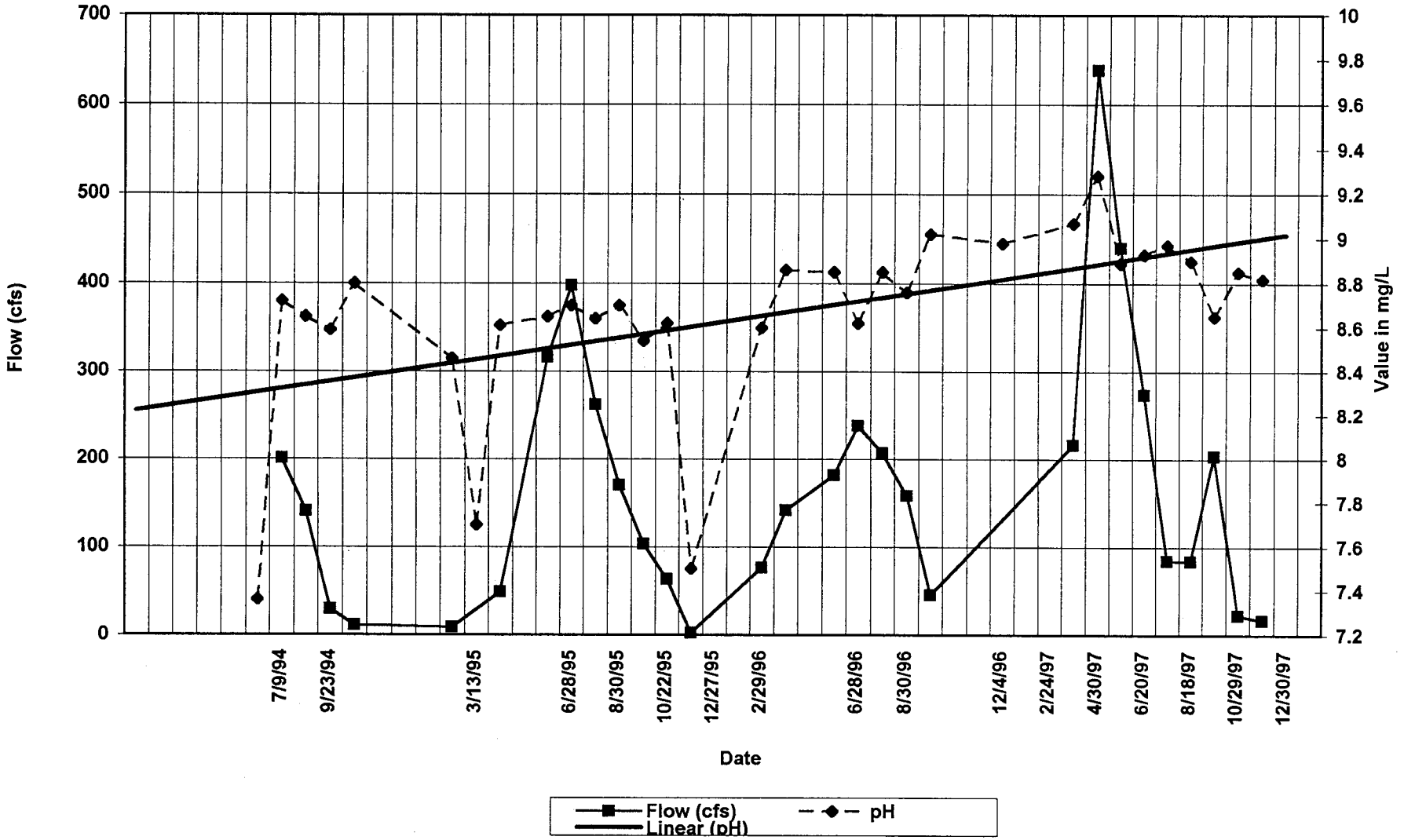


Figure 18 B
Price River Monitoring Site B5

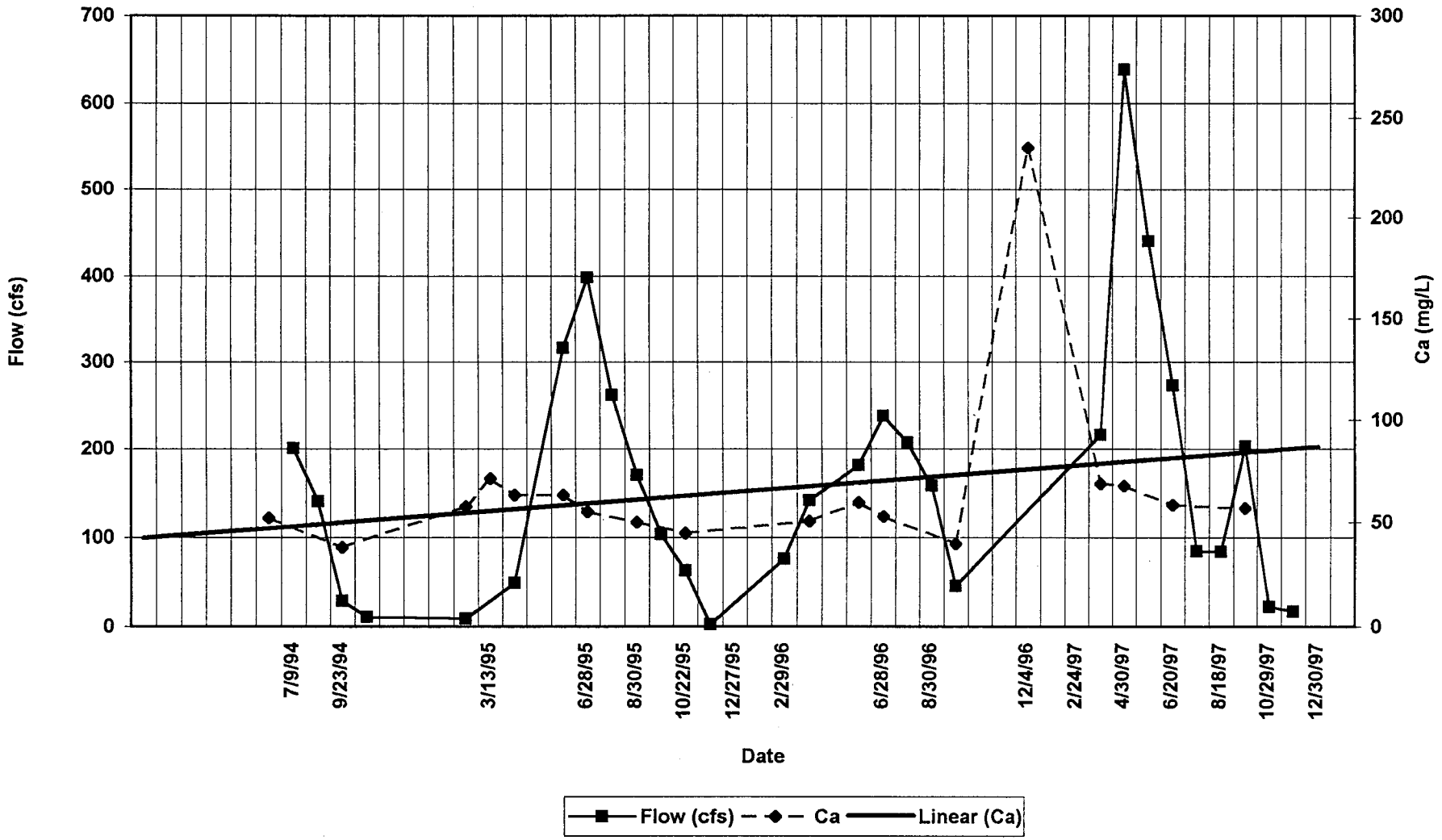


Figure 18 C
Price River Monitoring Site B5

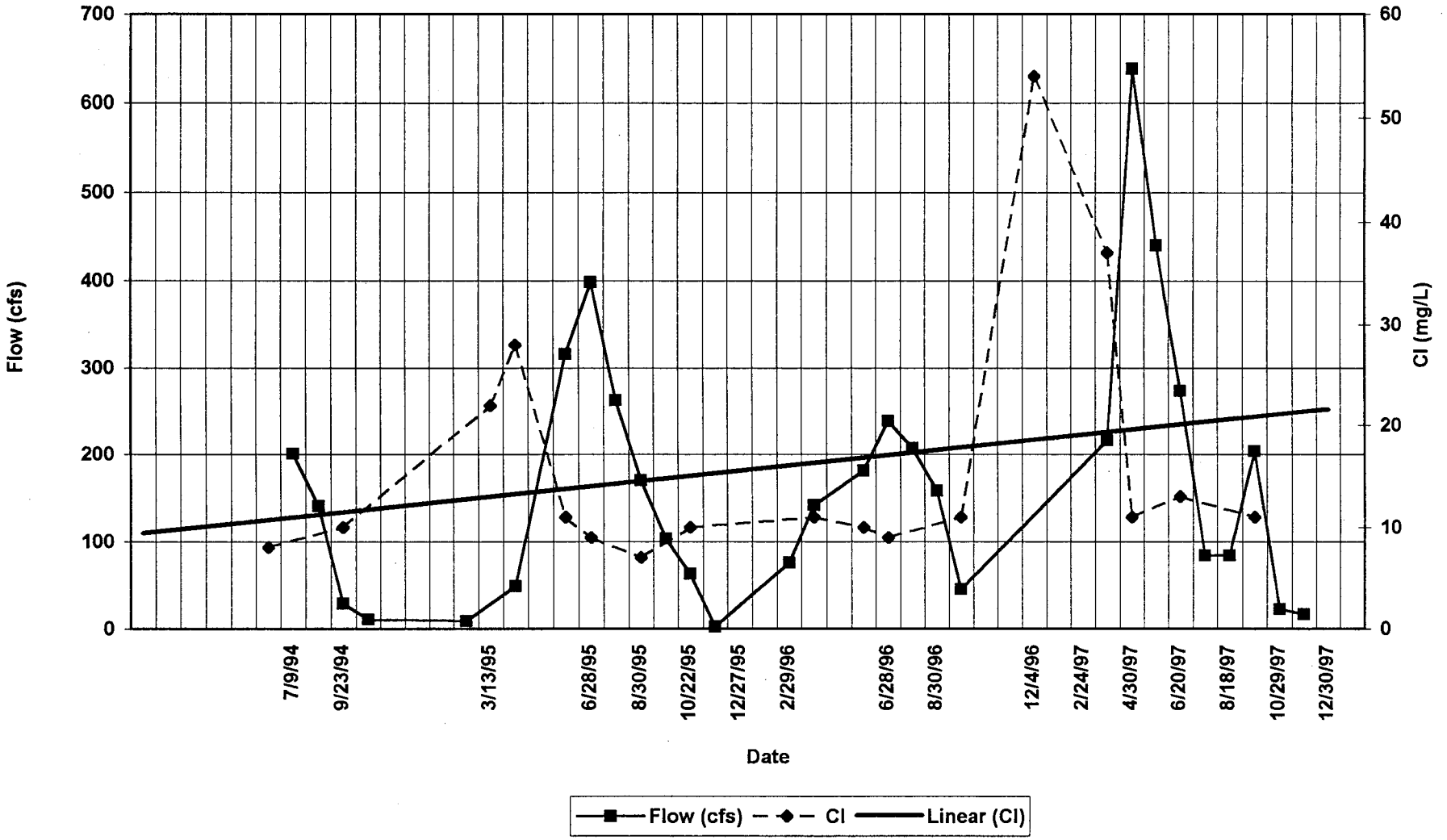


Figure 18 D
Price River Monitoring Site B5

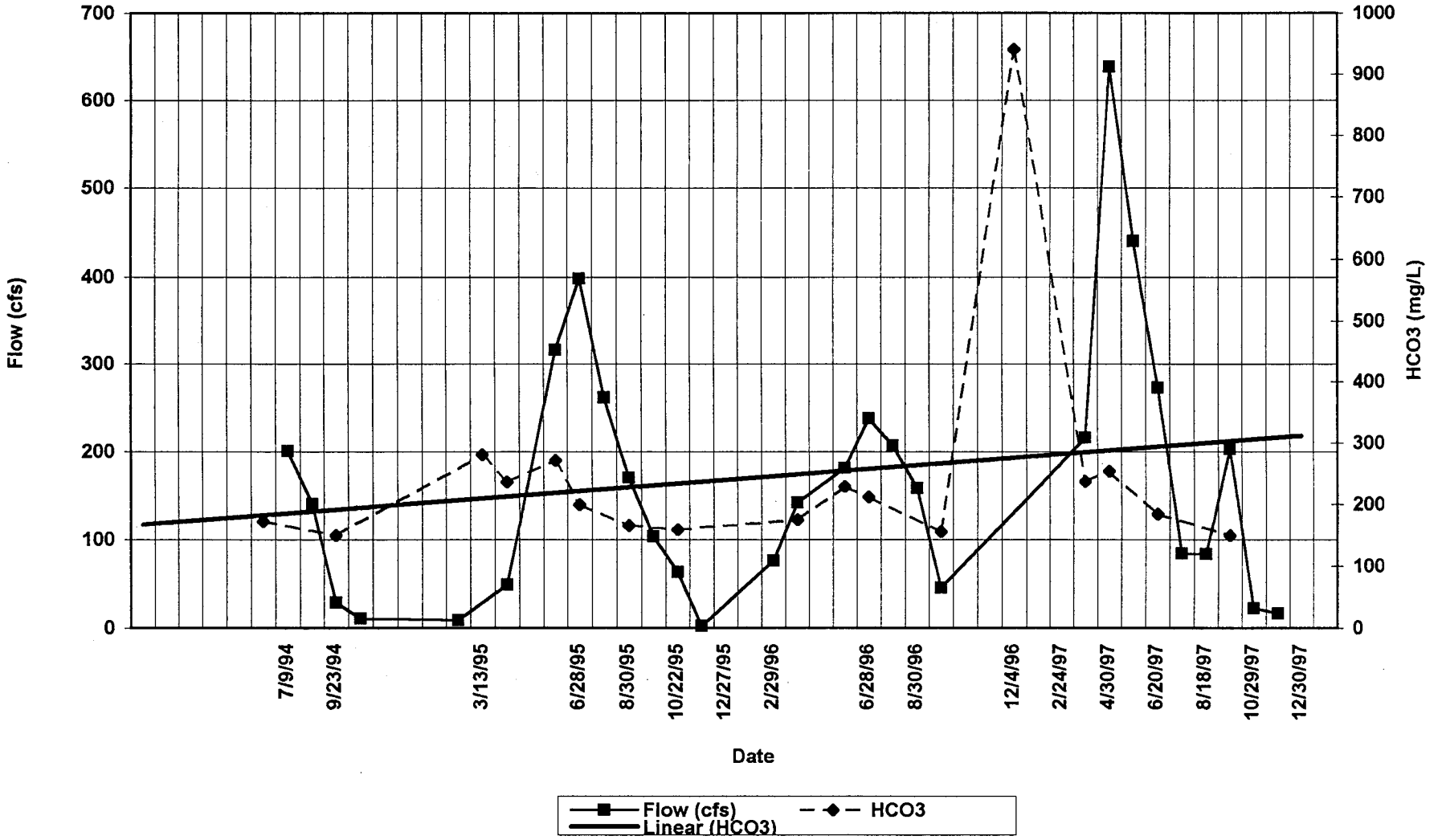


Figure 18 E
Price River Monitoring Site B5

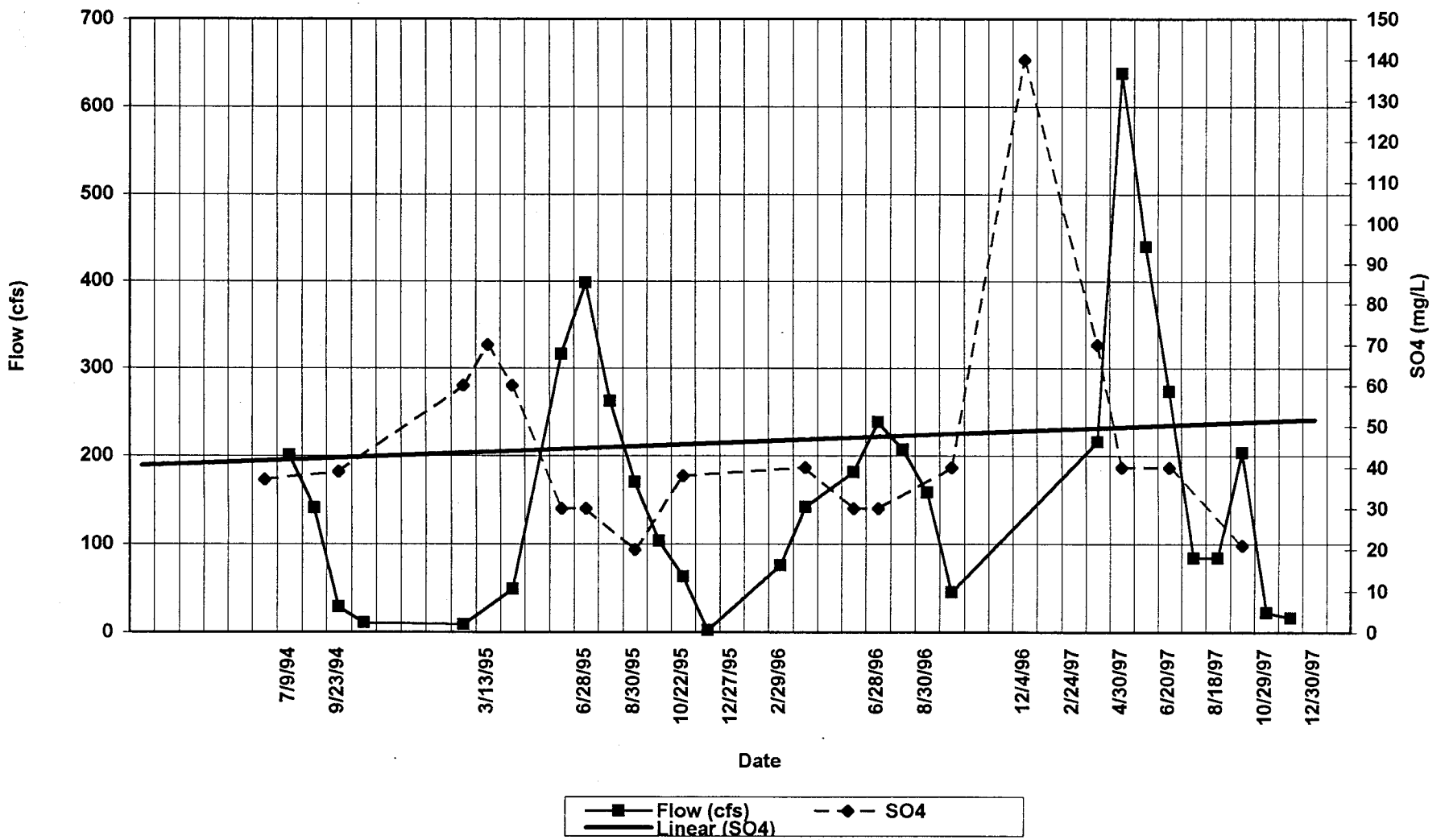


Figure 18 F
Price River Monitoring Site B5

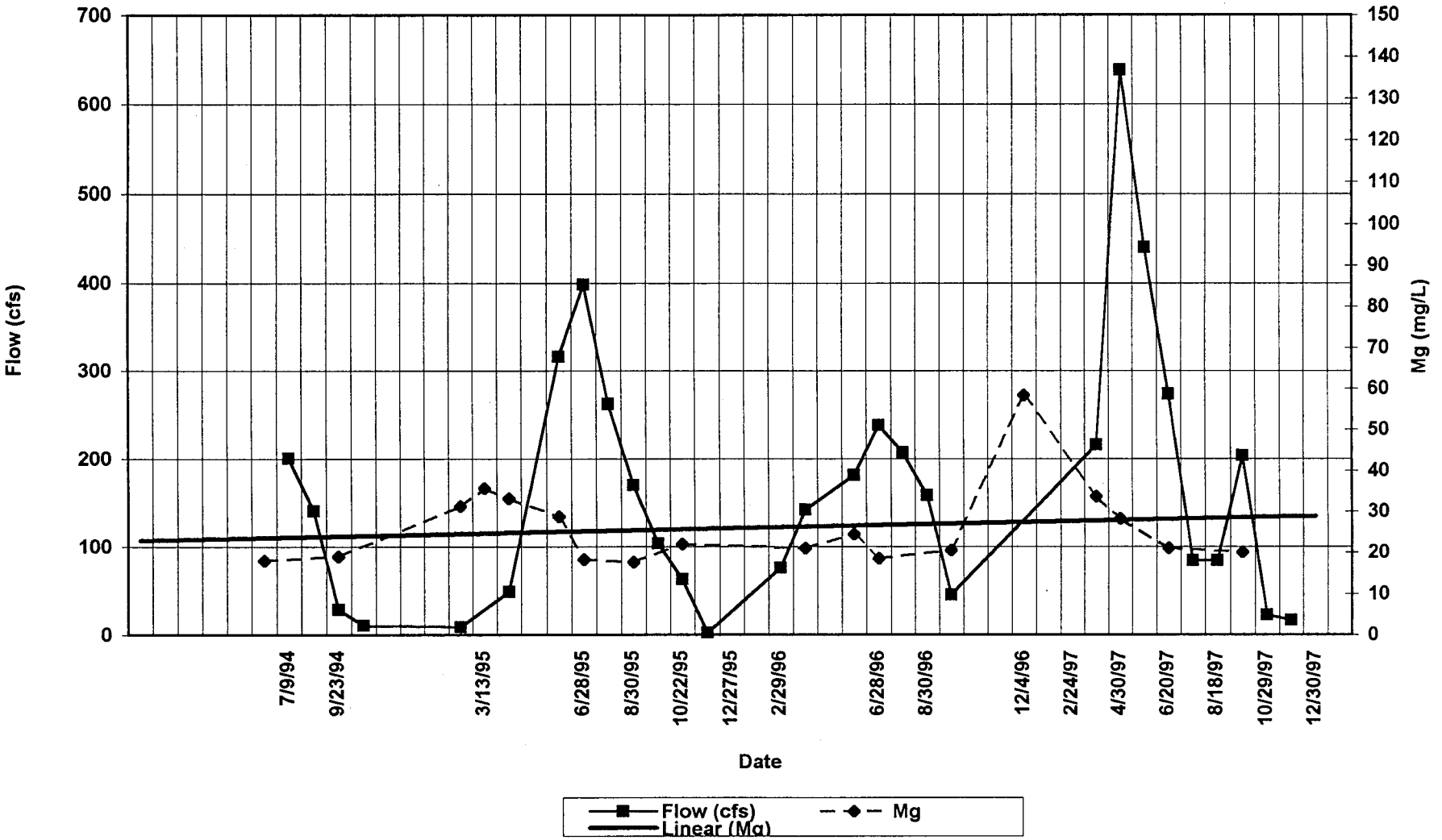


Figure 18G
Price River Monitoring Site B5

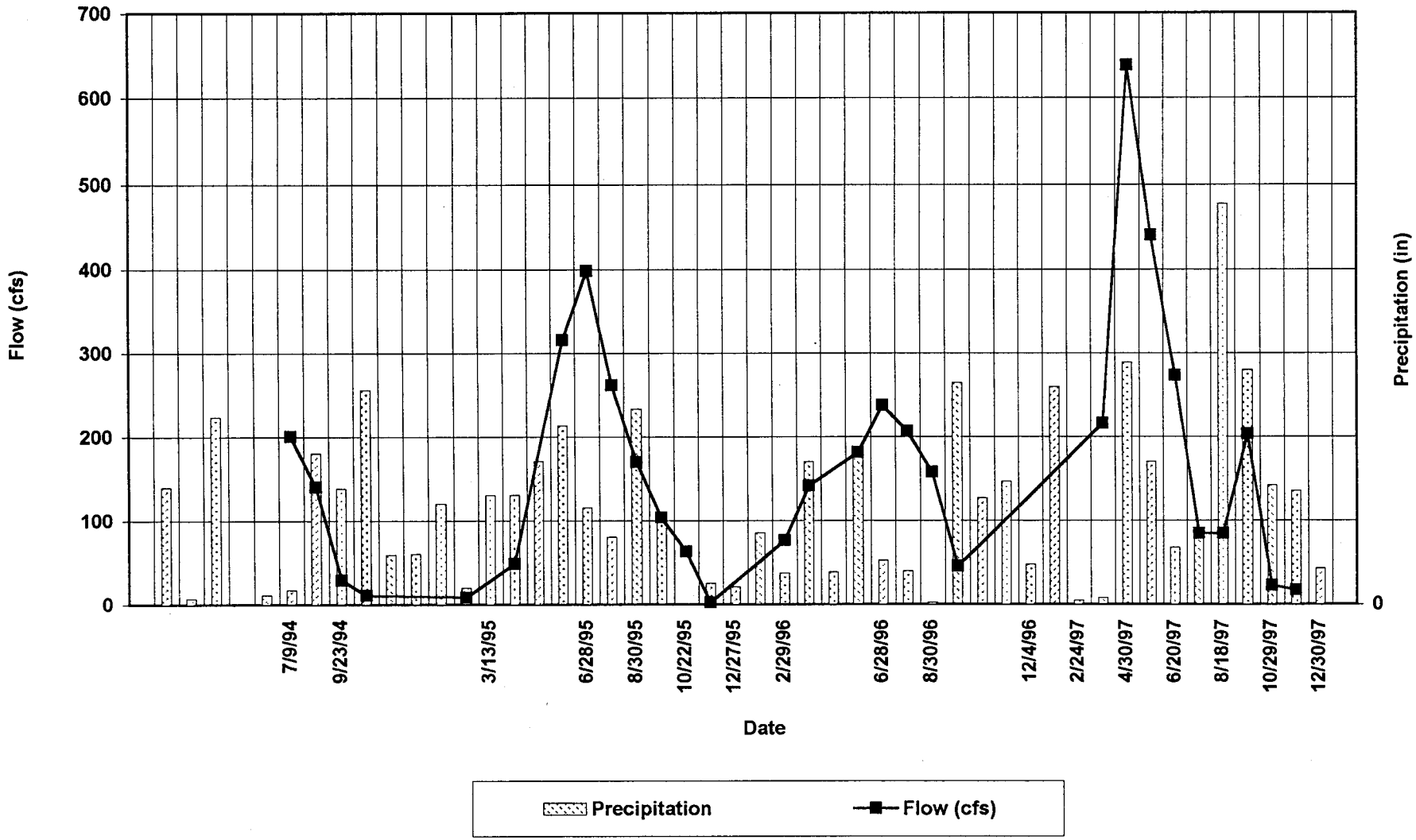


Table 18

Station: B5 | **Property: Willow Creek** | **Location:** | **Station Type: Stream** | **Sampling Frequency: Monthly**

Date	Sample	Field Measurements: Flow	pH	Sp. Cond.	Temp.	Diss. O	Laboratory Measurements: TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al	As	B	Cd	Cu
Yr-Mo	Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
94 1																														
2																														
3																														
4																														
5																														
6	6/6/94		7.36	638	19.1	3.9	210	24		0.5 *	180	204		172	8	8	37	52	2	12	0.025 *	0.03	0.005 *	0.03	0.0025 *	0.025 *	0.0005 *	0.03	0.0025 *	0.005 *
7	7/9/94	200.78	8.72	406	20.4	7.8																								
8	8/7/94	140.4	8.65	346	20	7.8																								
9	9/23/94	29.02	8.59	360	9.7	4.9	210	4	0.05	0.5 *	150	173		150	0	10	39	38	1	13	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.002	0.03	0.0025 *	0.005 *
10	10/30/94	10.7	8.8	438	7.5	7.6		12																						
11																														
12																														
95 1																														
2	2/28/95	8.77	8.46	616	2	7.8	350	80	0.2	1 *							60	67.6	1.8	37.1	0.17	0.2	0.005 *	0.2	0.0025 *	0.015 *	0.001	0.06	0.0015 *	0.005 *
3	3/13/95		7.7				360	72	0.2	1 *		324		281	1 *	22	70	71.1	1.7	37										
3	3/19/95	48.68	8.61	622	0	5.8	380	535	0.6					236	1 *	28	60	63.2	2	39.2	0.05	0.14	0.02	0.16	0.027	0.015 *	0.003	0.06	0.0015 *	0.005 *
4																														
5	5/31/95	316	8.65	551	11.9	9	320	202	0.2	2				272	1 *	11	30	63.1	1.1	20.6	0.025 *	0.25	0.005 *	0.25	0.007	0.015 *	0.004	0.05	0.0015 *	0.005 *
6	6/28/95	398.01	8.7	440	16	8.2	220	68	0.2	1 *				199	1 *	9	30	55.2	1.5	13.4	0.025 *	0.07	0.005 *	0.07	0.0025 *	0.05	0.002	0.03	0.0015 *	0.005 *
7	7/20/95	262.1	8.64	351	18.8	9.3																								
8	8/30/95	170.25	8.7	280	17	7.7	230	30	0.2	9				166	8	7	20	50.1	1.2	10.7	0.08	0.08	0.005 *	0.08	0.0025 *	0.015 *	0.002	0.02	0.0015 *	0.005 *
9	9/19/95	103.41	8.54	330	14.5	8.6																								
10	10/22/95	62.9	8.62	387	7.4	9.5	210	6	0.05	1 *				159	6	10	38	44.8	1.4	12.2	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *	0.002	0.03	0.0015 *	0.005 *
11	11/28/95	2.57	7.5	613	1.2	10.7																								
12	12/27/95																													
96 1																														
2	2/29/96	76.02	8.6	625	8	6.2																								
3	3/27/96	141.64	8.86	425	4.5	9.9	220	44	0.05	1 *				175	8	11	40	50.5	1.6	15.7		0.07	0.005 *	0.07	0.007					
4																														
5	5/30/96	181.45	8.85	433	9.5	11	280	60	0.05	1 *		249		229	1 *	10	30	59.6	1.2	16.9										
6	6/28/96	238.03	8.62	338	15	8	240	1710	3	1 *		208		212	1 *	9	30	52.8	1.7	12.4										
7	7/31/96	207.12	8.85	390	19.5	7.5																								
8	8/30/96	158.1	8.76	358	17.2	7.9																								
9	9/29/96	45.34	9.02	323	6.3	9.6	230	10		1 *		184		156	4	11	40	39.8	1.2	16										
10																														
11																														
12	12/4/96		8.98	796	0.2	11.1	570	3740		0	940	827		940	0	54	140	235	7.5	120										
97 1																														
2	2/24/97																													
3	3/20/97	216	9.07	762	7.1	9.8	400			1 *		310		237	8	37	70	68.6	2	38.6										
4	4/30/97	638.4	9.28	402	5.4	9.6	340			1 *		285		254	18	11	40	67.8	1.8	20.9										
5	5/30/97	440	8.89	408	11.7	8.5																								
6	6/20/97	273.35	8.93	436	15.2	8.2	259			1 *		232		184	1 *	13	40	58.3	1.3	14.5										
7	7/31/97	84.38	8.97	435	19.2	10.8																								
8	8/18/97	83.85	8.9	450	19.5	9.8																								
9	9/30/97	203.24	8.65	343	15	7.8	200	100		2.5 *	160	220		150	5 *	11	21	57	2.3	13										
10	10/29/97	22.34	8.85	680	5	8.8																								
11	11/19/97	16.75	8.62	705	6	8.9																								
12	12/30/97																													
Average		164.814	8.561	473.742	11.284	8.452	290.500	418.563	0.436	1.500	357.500	292.364	#DIV/0!	245.412	4.235	16.000	46.389	65.806	1.906	25.733	0.053	0.096	0.007	0.098	0.006	0.022	0.002	0.039	0.002	0.005
Number of Entries		29	32	31	31	31	18	16	11	17	4	11	0	17	17	17	18	18	18	18	8	9	9	9	9	8	8	8	8	8
Max Value		638.4	9.28	796	20.4	11.1	570	3740	3	9	940	827	0	940	18	54	140	235	7.5	120	0.17	0.25	0.02	0.25	0.027	0.05	0.004	0.06	0.0025	0.005
Min Value		2.57	7.36	280	0	3.9	200	4	0.05	0	150	173	0	150	0	7	20	38	1	10.7	0.025	0.01	0.005	0.01	0.0025	0.015	0.0005	0.02	0.0015	0.005
Standard Dev.		147.652	0.414	142.924	6.564	1.682	96.515	982.145	0.865	2.006	388.534	184.087	#DIV/0!	184.101	4.737	12.624	27.696	43.226	1.444	25.657	0.051	0.085	0.005	0.086	0.008	0.012	0.001	0.016	0.000	0.000

Table 18

Station: B5 | **Elevation: 6050**

Date Yr-Mo	Sample Date	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1													
2													
3													
4													
5													
6	6/6/94	0.05	0.5		18		0.02	0.04	0.005 *	0.0005 *		0.65	
7	7/9/94												
8	8/7/94												No rain lately.
9	9/23/94	0.01 *	0.24	0.01 *	19		0.005 *	0.02	0.005 *	0.0005 *	0.005 *	-0.49	Decreasing flow.
10	10/30/94												
11													
12													
95 1													
2	2/28/95	0.005 *	3.26	0.01 *	31.2		0.0025 *	0.085	0.005 *	0.0005 *	0.005 *		Very low flow. Coudy water.
3	3/13/95		3.03		35.7			0.09					
3	3/19/95	0.005 *	18.7	0.01 *	33.2		0.006	0.428	0.005 *	0.001	0.005 *		Run-off very silty
4													
5	5/31/95	0.005 *	6.17	0.01 *	28.8		0.0025 *	0.217	0.005 *	0.0005 *	0.005 *	0.4	High and turbid
6	6/26/95	0.11	0.96	0.01 *	18.3		0.014	0.057	0.005 *	0.0005 *	0.005 *	0.4	
7	7/20/95												
8	8/30/95	0.005 *	0.54	0.01 *	17.6		0.0025 *	0.045	0.005 *	0.0005 *	0.005 *	4.1	
9	9/19/95												
10	10/22/95	0.02	0.26	0.01 *	22		0.007	0.019	0.005 *	0.007	0.005 *	2.7	
11	11/28/95												
12	12/27/95						.						Frozen, not possible to monitor.
96 1													
2	2/29/96												
3	3/27/96	0.13	0.77		21		0.054	0.096	0.005 *	0.0005 *	0.005 *	1.8	
4													
5	5/30/96	0.21	1.44		24.4		0.018	0.079				2.5	
6	6/28/96	0.05 *	14.8		18.5		0.0025 *	1.05				-3.8	
7	7/31/96												
8	8/30/96												Hot. Scofield dam causing high flow.
9	9/29/96	0.09	0.13		20.5		0.01	0.014			0.005 *	0.7	
10													
11													
12	12/4/96				58.3		1.19	1.41			1.1	-1	
97 1		12.7	56.4										
2	2/24/97												Frozen cound not monitor
3	3/20/97	0.005 *	7.73		33.6		0.019	0.62				3.5	Flow high- turbid.
4	4/30/97	0.005 *	7.79		28.2		0.0025 *	0.39				0.6	-Unknown Willow Creek Flow(frozen)
5	5/30/97												-Unknown Willow Creek Flow(frozen)
6	6/20/97	0.08	0.58		21		0.012	0.043				4.2	
7	7/31/97												
8	8/18/97												
9	9/30/97	0.03	1.4		20		0.005	0.11				13	
10	10/29/97												
11	11/19/97												
12	12/30/97												Frozen, could not monitor.
Average		0.795	6.928	0.010	26.072	#DIV/0!	0.081	0.267	0.005	0.001	0.115	1.951	
Number of Entries		17	18	7	18	0	17	18	9	9	10	15	
Max Value		12.7	56.4	0.01	58.3	0	1.19	1.41	0.005	0.007	1.1	13	
Min Value		0.005	0.13	0.01	17.6	0	0.0025	0.014	0.005	0.0005	0.005	-3.8	
Standard Dev.		3.068	13.440	0.000	10.060	#DIV/0!	0.286	0.393	0.000	0.002	0.346	3.710	

Figure 19
Stream B6

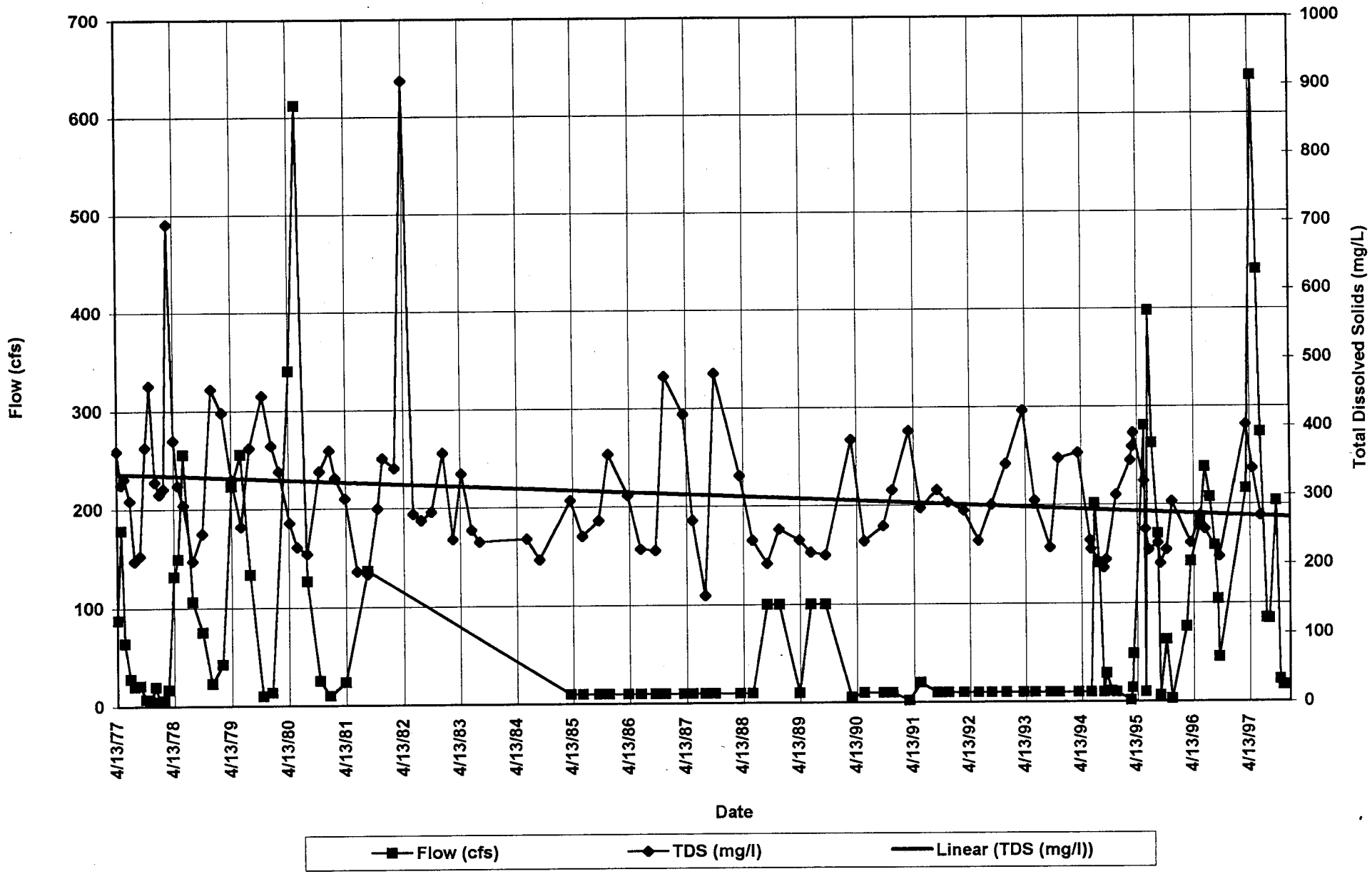


Figure 19 A
Stream B6

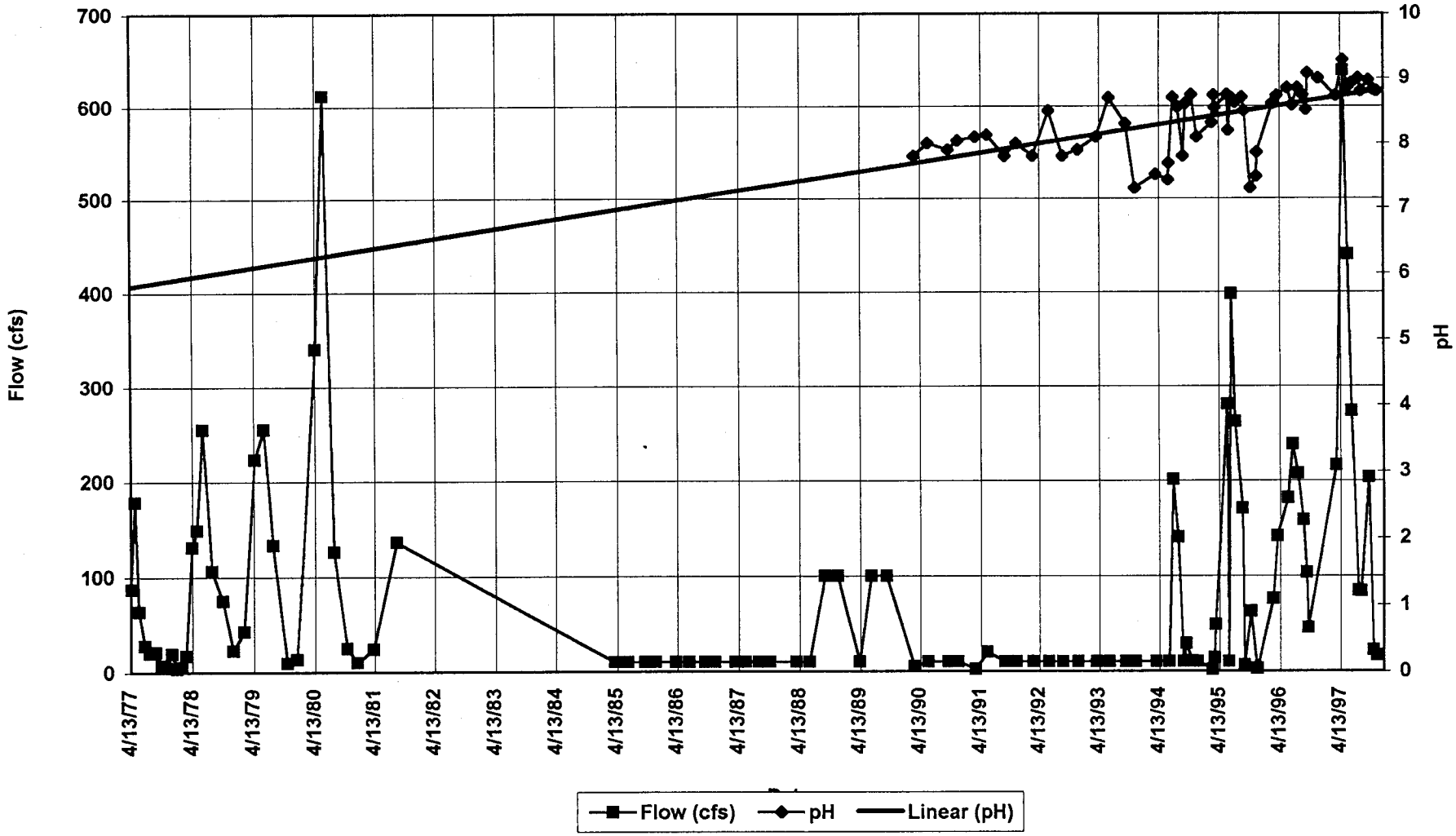


Figure 19 B
Stream B6

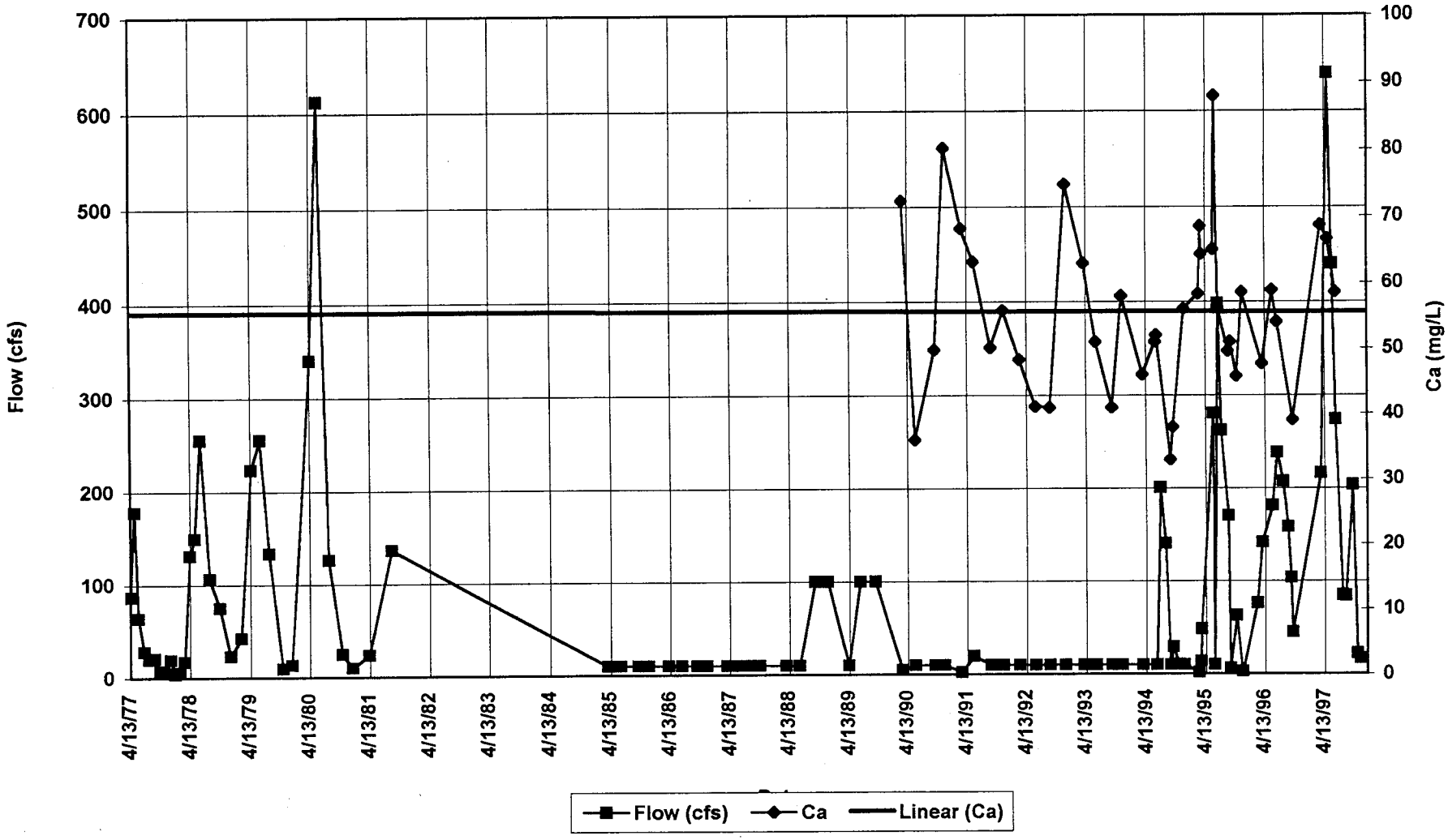


Figure 19 C
Stream B6

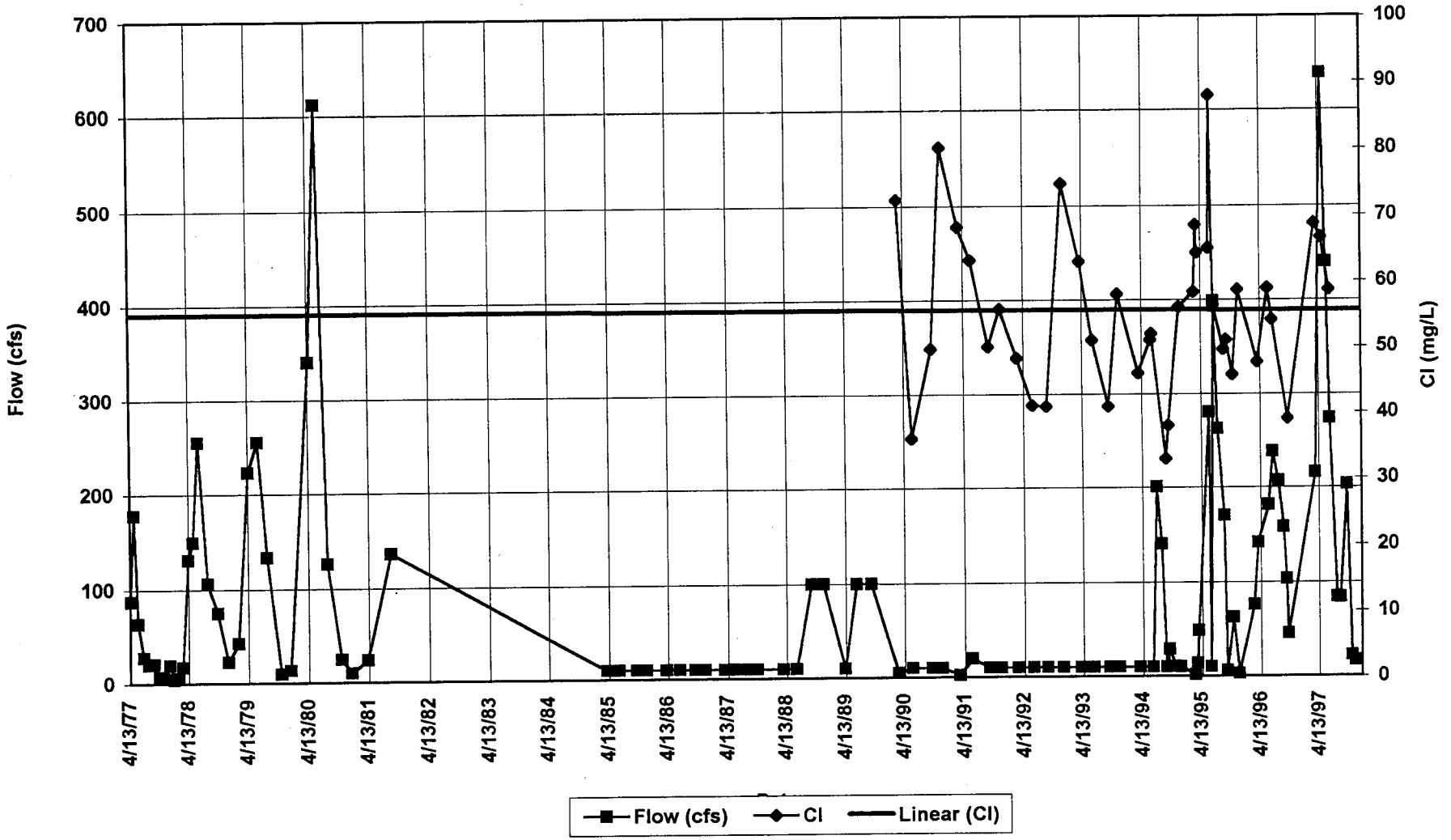


Figure 19 D
Stream B6

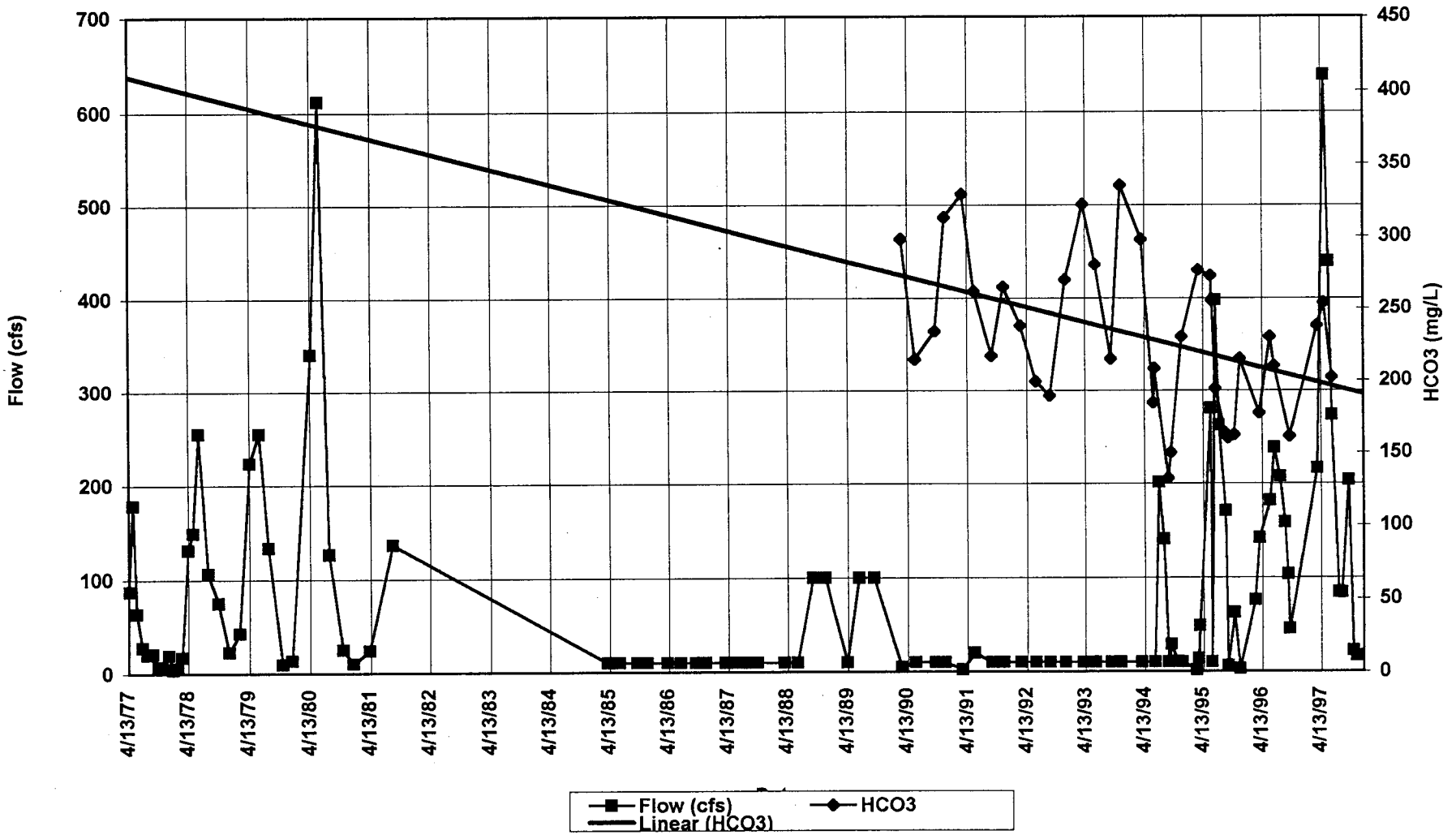


Figure 19 E
Stream B6

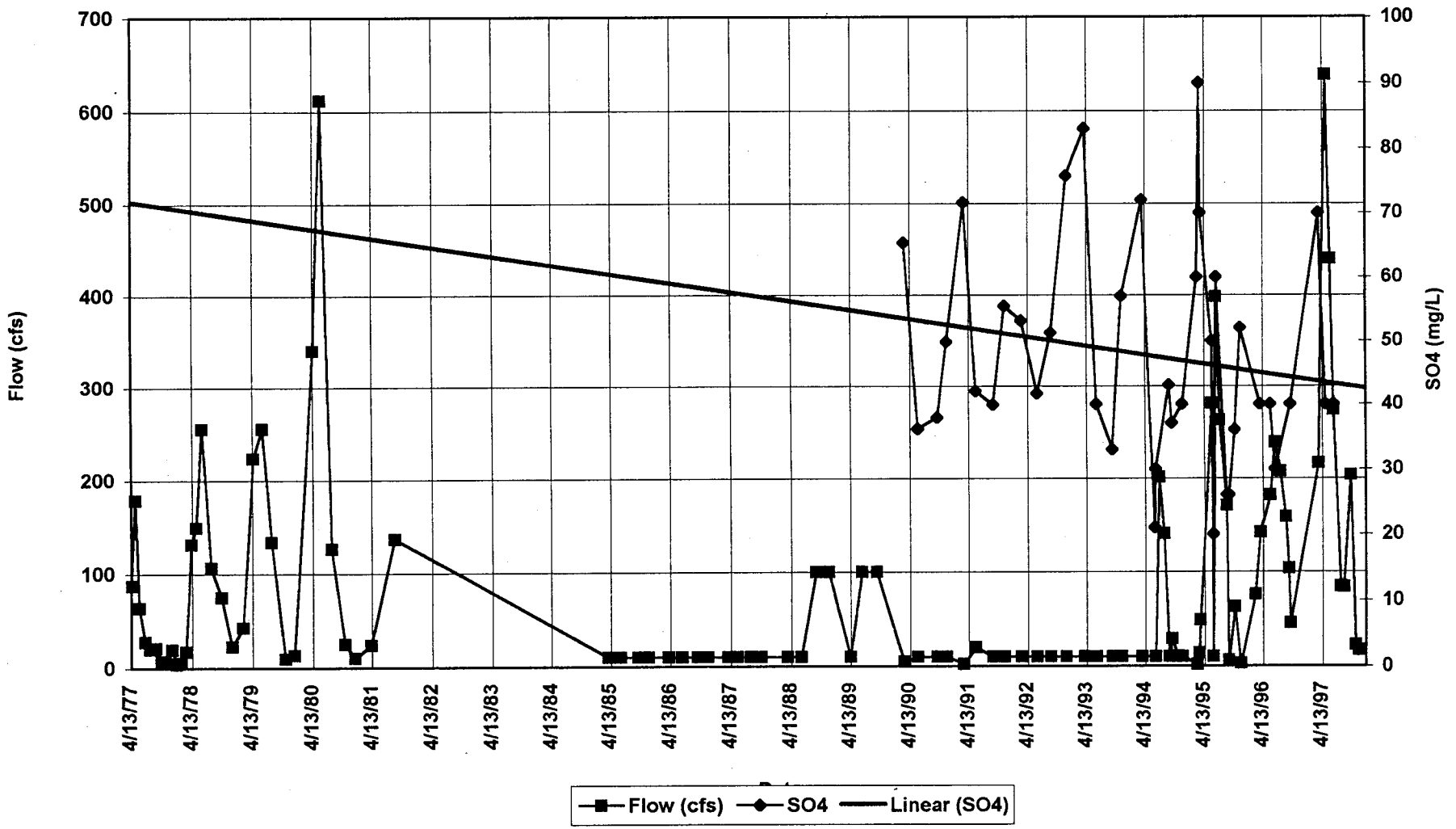


Figure 19 F
Stream B6

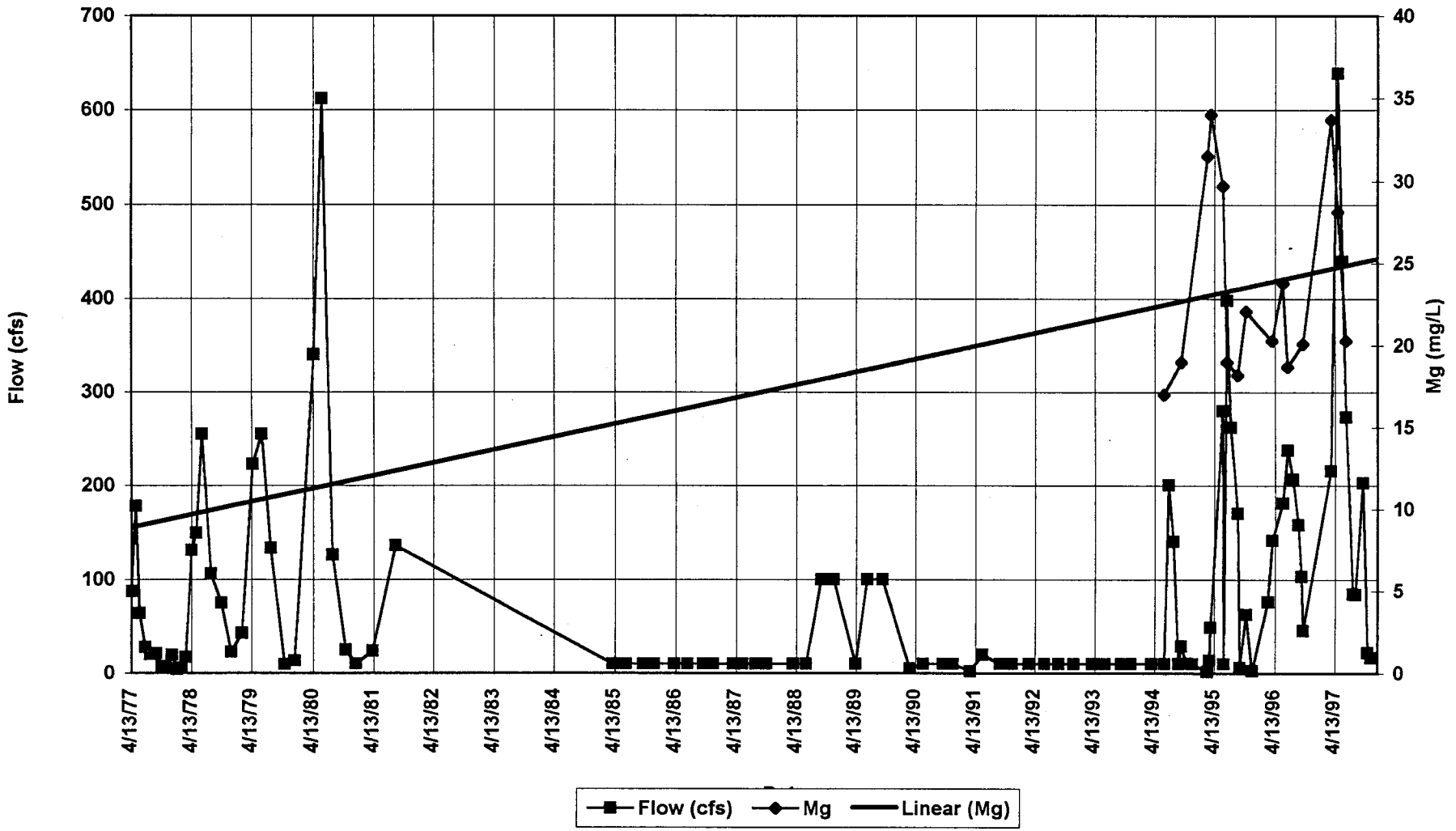


Figure 19 G
Stream B6

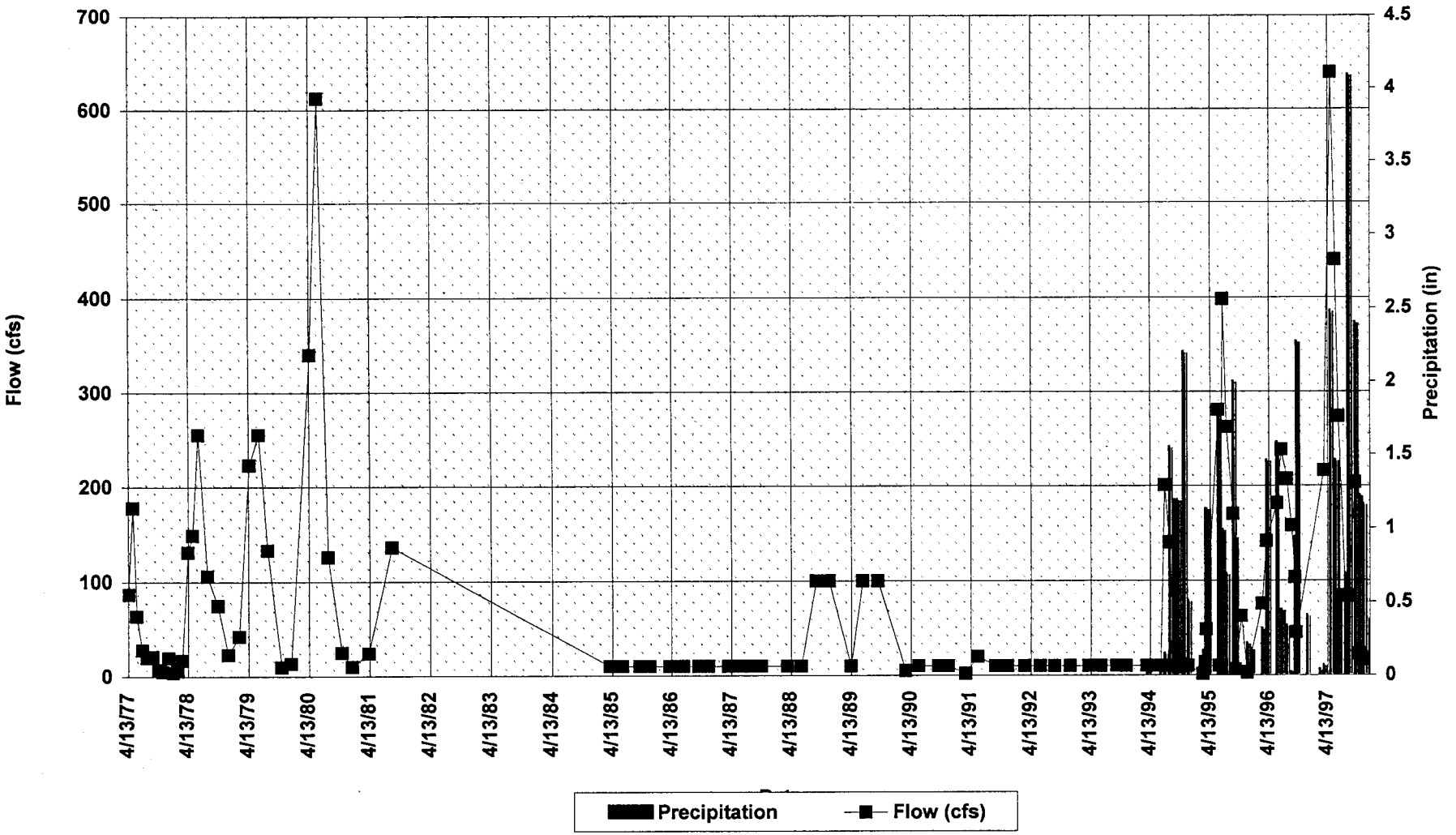


Table 19

Station: B6 **Property:** Willow Creek **Location:** NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E **Station Type:** Stream

Date		Sample	Flow	pH	Sp. Cond.	Temp.	Diss. O	TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al
			Field Measurements																				Laboratory Measurements				
Yr-Mo		Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
77	1																											
	2																											
	3																											
	4	4/13/77	87					370																				
	5	5/9/77	178					321																				
	6	6/1/77	64					330																				
	7	7/6/77	28					298																				
	8	8/3/77	20					210																				
	9	9/8/77	21					218																				
	10	10/12/77	7					375																				
	11	11/9/77	5					465																				
	12	12/14/77	19.6					325																				
78	1	1/11/78	4					307																				
	2	2/8/78	5.7					315																				
	3	3/8/78	17					701																				
	4	4/12/78	131					385																				
	5	5/10/78	149					320																				
	6	6/14/78	255					291																				
	7																											
	8	8/9/78	106					210																				
	9																											
	10	10/11/78	75					250																				
	11																											
	12	12/13/78	23					460																				
79	1																											
	2	2/15/79	42.5					426																				
	3																											
	4	4/18/79	223					328																				
	5																											
	6	6/13/79	255					260																				
	7																											
	8	8/8/79	133					374																				
	9																											
	10	10/30/79	9.6					450																				
	11																											
	12	12/26/79	13.3					377																				
80	1																											
	2	2/13/80						340																				
	3																											
	4	4/17/80	340					265																				
	5																											
	6	6/5/80	612					230																				
	7																											
	8	8/7/80	126					220																				
	9																											
	10	10/28/80	25					340																				
	11																											

Figure 19 G
Stream B6

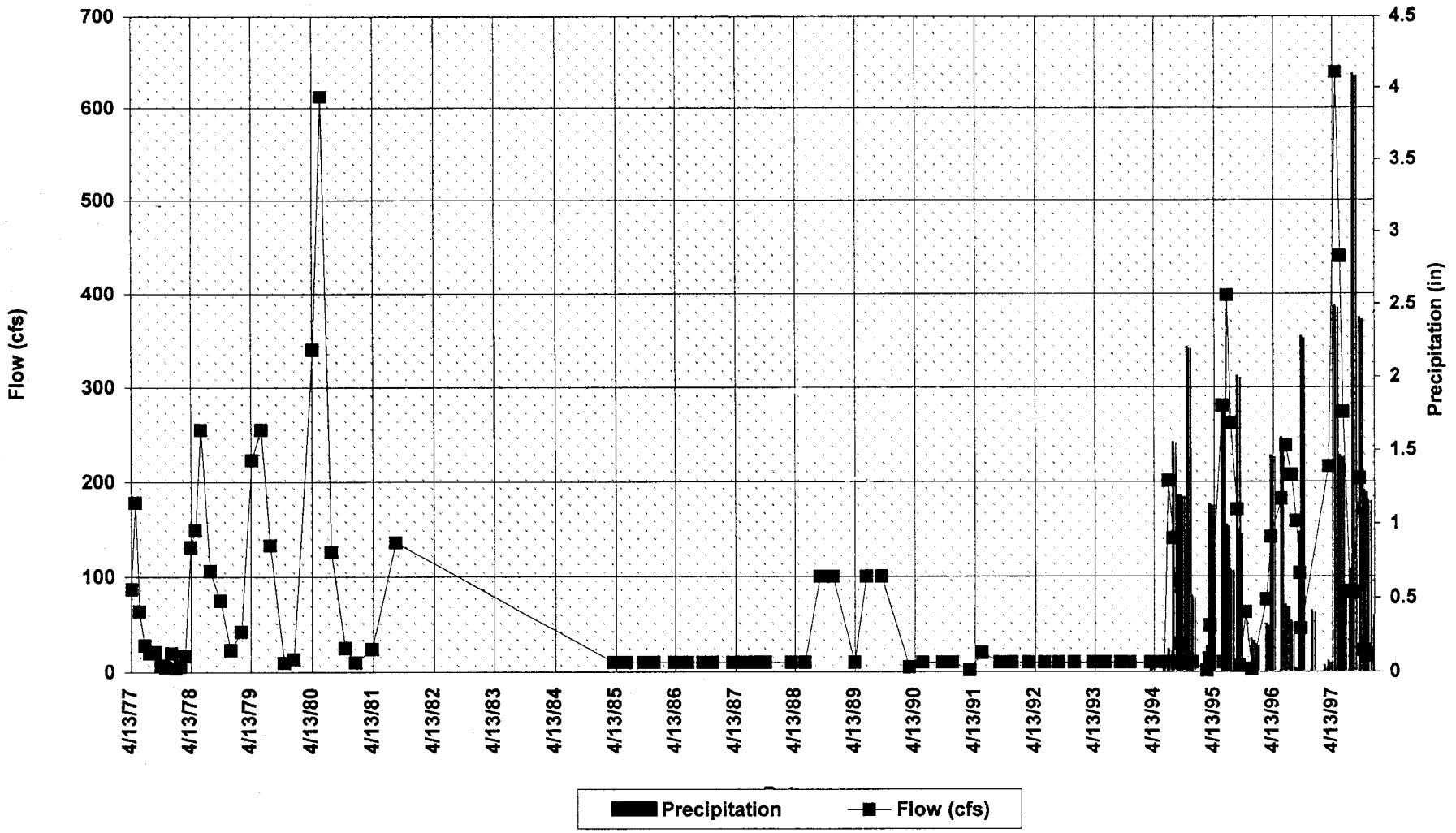


Table 19

Station: B6 | **Property:** Willow Creek | **Location:** NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E | **Station Type:** Stream

Date		Sample	Field Measurements					Laboratory Measurements																				
Yr-Mo		Date	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)
77	1																											
	2																											
	3																											
	4	4/13/77	87					370																				
	5	5/9/77	178					321																				
	6	6/1/77	64					330																				
	7	7/6/77	28					298																				
	8	8/3/77	20					210																				
	9	9/8/77	21					218																				
	10	10/12/77	7					375																				
	11	11/9/77	5					465																				
	12	12/14/77	19.6					325																				
78	1	1/11/78	4					307																				
	2	2/8/78	5.7					315																				
	3	3/8/78	17					701																				
	4	4/12/78	131					385																				
	5	5/10/78	149					320																				
	6	6/14/78	255					291																				
	7																											
	8	8/9/78	106					210																				
	9																											
	10	10/11/78	75					250																				
	11																											
	12	12/13/78	23					460																				
79	1																											
	2	2/15/79	42.5					426																				
	3																											
	4	4/18/79	223					328																				
	5																											
	6	6/13/79	255					260																				
	7																											
	8	8/8/79	133					374																				
	9																											
	10	10/30/79	9.6					450																				
	11																											
	12	12/26/79	13.3					377																				
80	1																											
	2	2/13/80						340																				
	3																											
	4	4/17/80	340					265																				
	5																											
	6	6/5/80	612					230																				
	7																											
	8	8/7/80	126					220																				
	9																											
	10	10/28/80	25					340																				
	11																											

Station: B6 | **Property: Willow Creek** | **Location: NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E** | **Station Type: Stream**

		Field Measurements																										Laboratory Measurements
Date	Sample	Flow	pH	Sp. Cond.	Temp.	Diss. O	TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al
Yr-Mo	Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
12	12/29/80	10					370																			
81 1																										
2	2/4/81						330																			
3																										
4	4/7/81	24					300																			
5																										
6	6/23/81						194																			
7																										
8	8/27/81	136					190																			
9																										
10	10/29/81						285																			
11																										
12	12/3/81						358																			
82 1																										
2	2/15/82						344																			
3																										
4	4/14/82						910																			
5																										
6	6/14/82						277																			
7																										
8	8/3/82						268																			
9																										
10	10/7/82						280																			
11																										
12	12/21/82						365																			
83 1																										
2	2/24/83						240																			
3																										
4	4/21/83						335																			
5																										
6	6/28/83						253																			
7																										
8	8/17/83						236																			
9																										
10	10/18/83																									
11																										
12																										
84 1																										
2																										
3																										
4																										
5																										
6	6/19/84						240																			
7																										
8																										
9	9/7/84						209																			
10																										
11																										

Station: B6	Property: Willow Creek	Location: NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E	Station Type: Stream	S

		Field Measurements																													Laboratory Measurements
Date	Sample	Flow	pH	Sp. Cond.	Temp.	Diss. O	TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al
Yr-Mo	Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
12																										
85 1																										
2																										
3	3/30/85	10					295																			
4																										
5																										
6	6/15/85	10					243																			
7																										
8																										
9	9/30/85	10					266																			
10																										
11	11/30/85	10					362																			
12																										
86 1																										
2																										
3																										
4	4/3/86	10					302																			
5																										
6	6/23/86	10					224																			
7																										
8																										
9	9/25/86	10					222																			
10																										
11	11/24/86	10					475																			
12																										
87 1																										
2																										
3	3/26/87	10					420																			
4																										
5	5/22/87	10					265																			
6																										
7																										
8	8/10/87	10					156																			
9																										
10	10/13/87	10					479																			
11																										
12																										
88 1																										
2																										
3	3/22/88	10					330																			
4																										
5																										
6	6/13/88	10					236																			
7																										
8	9/14/88	100					202																			
9																										
10																										
11	11/30/88	100					252																			

Station: B6 **Property:** Willow Creek **Location:** NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E **Station Type:** Stream S

Date		Sample	Field Measurements									Laboratory Measurements																
Yr-Mo		Date	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)
	12																											
89	1																											
	2																											
	3																											
	4	4/10/89	10					236																				
	5																											
	6	6/21/89	100					218																				
	7																											
	8																											
	9	9/21/89	100					214																				
	10																											
	11																											
	12																											
90	1																											
	2																											
	3	3/9/90	5	7.8	1250	2	9	381	17			244.48	288.41	0	298.3	0	36.4	65.4	72.4									
	4																											
	5	5/30/90	10	8	540	3	10	234	101		5	191	210.84	0	214.4	9.2	12.6	36.2	36.1									
	6																											
	7																											
	8																											
	9	9/29/90	10	7.9	410	5	9	256	54			192	213	0	234	0	14.7	37.9	49.8									
	10																											
	11	11/26/90	10	8.04	490	2.4	9	308	30		5	257	281	0	313	0	18.4	49.8	80.3									
	12																											
91	1																											
	2																											
	3	3/13/91	2	8.1	700	2	9	394	3		5	270	306	0	329	0	23.5	71.6	68.2									
	4																											
	5	5/26/91	20	8.13	635	55	9	282	244		5	215	245	0	262	0	7.91	42	63.2									
	6																											
	7																											
	8																											
	9	9/11/91	10	7.8	450	12	9	308	638		5	178	198	0	217	0	8.78	39.9	50.1									
	10																											
	11	11/22/91	10	8	640	1	9	290	19		5	217	231	0	265	0	13.5	55.4	55.8									
	12																											
92	1																											
	2																											
	3	3/4/92	10	7.8	600	1	8	278	244		0.3	195	208	0	238	0	17.7	53.1	48.3									
	4																											
	5																											
	6	6/8/92	10	8.5	464	8	8	234	205		0.25	164	191	0	199	0	11.1	41.6	41.1									
	7																											
	8																											

Station: B6 | **Property:** Willow Creek | **Location:** NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E | **Station Type:** Stream

		Field Measurements																	Laboratory Measurements								
Date	Sample	Flow	pH	Sp. Cond.	Temp.	Diss. O	TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al
Yr-Mo	Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
9	9/3/92	10	7.8	940	9	9	286	21		0.25	155	196	0	189	0	13	51.2	41								
10																										
11																										
12	12/7/92	10	7.9	690	0	8	345	54		0.25	221	274	0	270		15.7	75.7	74.8								
93 1																										
2																										
3	3/30/93	10	8.1	740	1	8	423	760		0.71	264	302		322	0	40	83	63								
4																										
5																										
6	6/14/93	10	8.7	300	11	7.8	292	62		0.25	230	227		281	0	12	40	51								
7																										
8																										
9	9/20/93	10	8.3	570	9	7.8	224	20		0.3	176	196		215	0	5.2	33	41								
10																										
11	11/17/93	10	7.3	612	0.5	6	353	11		0.26	284	279		335	5.8	6.2	57	58								
12																										
94 1																										
2																										
3	3/24/94	10	7.52	1780	2	7.6	361	64		0.03	244	277		298	0	21	72	46								
4																										
5	6/8/94		7.43	596	19	3.4	234	22		0.5 *	188	197		184	4	8	21	51	1	11	0.025 *	0.07	0.005 *	0.07	0.0025 *	0.025 *
6	6/14/94	10	7.69	470	14	8	221	12			170	199		208	0	8.2	30	52								
7	7/9/94	200.78	8.71	411	16.1	7.8																				
8	8/7/94	140.4	8.56	350	19.1	7.6																				
9	9/7/94	10	7.8	403	13	8.2	194	32		1	132	152		132	0	9	43	33								
9	9/23/94	29.02	8.61	376	9.7	7.8	206	6	0.05	0.5 *	150	173		150	0	10	37	38	1	14	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *
10	10/30/94	10.7	8.75	490	7	7.7		72																		
11	11/29/94	10	8.1	710	0	7	300			2	230	251		230	0	14	40	56								
12																										
95 1																										
2	2/28/95	1.5	8.32	945	0	7.9	350	48	0.05	1 *							60	58.3	1.8	37.5	0.3	0.16	0.005 *	0.16	0.0025 *	0.015 *
3	3/13/95	14	8.74	2430	4	9.8	370	82		1 *	277	318		277	1 *	21	90	68.5								
3	3/19/95	48.68	8.55	649	0	5.7	390	360	0.3							26	70	64.3	1.9	38.1	0.025 *	0.12	0.005 *	0.12	0.24	0.015 *
3																										
4																										
5	5/31/95	280.24	8.75	539	11.3	9.1	320	192		4				273	1 *	11	50	65	1.3	21.5	0.025 *	0.25	0.005 *	0.25	0.007	0.24
6	6/7/95	10	8.2	780	7	8	250	182		0	256	325		256	1 *	9	20	87.9								
6	6/28/95	398.01	8.7	436	15.7	8.4	220	62	0.05	1 *				194	1 *	8	60	56.3	1.5	26	0.11	0.04	0.005 *	0.04	0.0025 *	0.015 *
7	7/20/95	262.1	8.63	358	18.8	8.9																				
8	8/30/95	170.24	8.71	279	17.5	7.2	230	24	0.05	1 *				163	6	7	26	49.6	1.4	13.7	0.025 *	0.11	0.005 *	0.11	0.0025 *	0.015 *
9	9/13/95	6	8.5	560	9	9	200	22		2	170	197		160	10	8	26	51								
9	9/19/96	103.41	8.52	325	14	8.7																				
10	10/22/95	62.9	7.3	380	7.3	9.5	220	2.5	0.05	1 *				162	4	10	36	45.8	1.5	12.2	0.0025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *
11	11/27/95	3	7.49	600	4	6	290				220	262		215	5	14	52	58.6								
11	11/28/95	2.57	7.86	602	1	11.3																				
12	12/27/95																									
96 1																										
2	2/29/96	76.02	8.61	628	8	6.4																				

Station: B6 **Property:** Willow Creek **Location:** NE1/4,NE1/4,SW1/4,NE1/4,SEC 35,T12S,R9E **Station Type:** Stream

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)		Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)		Laboratory Measurements Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)		NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)
3	3/27/96	141.64	8.73	462	3.6	10	230	40	0.05	1	*				177	6		12	40	47.7	1.7	15.5		0.07	0.005	*	0.07	0.009	
4																													
5	5/30/96	181.45	8.85	417	9.8	11	270	74	0.05	1	*		245		230	1	*	10	40	58.9	1.2	16.4							
6	6/28/96	238.03	8.59	331	15	7.9	250	2340	2.5	1	*		212		210	1	*	9	30	54.1	1.7	12.5							
7	7/31/96	207.12	8.85	388	19.3	7.6																							
8	8/30/96	158.1	8.74	354	18	7.9																							
9	9/29/96	45.34	9.08	327	4.9	9.8	210	6		1	*		180		161	1	*	11	40	39.1	1.1	15.6							
10																													
11																													
12	12/4/96		9	795	0.3	11.2																							
97 1																													
2	2/24/97																												
3	3/20/97	216	8.73	740	6.9	9.7	402			1	*		310		238	10		37	70	68.7	1.9	38.2							
4	4/30/97	638.4	9.29	409	5.2	9.5	338			1	*		282		254	18		11	40	66.6	1.7	20.7							
5	5/30/97	440	8.86	412	11.6	8.4																							
6	6/20/97	273.35	8.92	432	14.1	8.2	269			1	*		230		202	1	*	13	40	58.6	1.2	14.5							
7	7/31/97	84.38	9	439	19.3	10.9																							
8	8/18/97	83.85	8.8	452	19.2	9.6																							
9	9/30/97	203.24	8.97	379	15.2	7.7																							
10	10/29/97	22.34	8.83	680	5	9																							
11	11/19/97	16.75	8.8	710	6	8.8																							
12	12/30/97																												
Average		84.090	8.368	597.364	9.324	8.433	305.236	175.014	0.350	1.606		211.172	239.258	0.000	231.235	2.389		14.313	47.841	55.618	1.460	20.493	0.067	0.093	0.005		0.093	0.030	0.046
Number of Entries		103	55	55	55	55	106	35	9	34		26	32	12	37	36		38	39	39	15	15	8	9	9		9	9	8
Max Value		638.4	9.29	2430	55	11.3	910	2340	2.5	5		284	325	0	335	18		40	90	87.9	1.9	38.2	0.3	0.25	0.005		0.25	0.24	0.24
Min Value		1.5	7.3	279	0	3.4	156	2.5	0.05	0		132	152	0	132	0		5.2	20	33	1	11	0.0025	0.01	0.005		0.01	0.0025	0.015
Standard Dev.		122.09	0.507	354.388	8.912	1.399	101.307	413.141	0.810	1.748		42.806	47.474	0.000	53.616	4.049		8.440	17.105	12.390	0.316	9.844	0.099	0.077	0.000		0.077	0.079	0.079

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 19

Station: B6 ampling Frequency: Monthly **Elevation: 6050**

Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
77 1																	
2																	
3																	
4	4/13/77																
5	5/9/77																
6	6/1/77																
7	7/6/77																
8	8/3/77																
9	9/8/77																
10	10/12/77																
11	11/9/77																
12	12/14/77																
78 1	1/11/78																
2	2/8/78																
3	3/8/78																
4	4/12/78																
5	5/10/78																
6	6/14/78																
7																	
8	8/9/78																
9																	
10	10/11/78																
11																	
12	12/13/78																
79 1																	
2	2/15/79																
3																	
4	4/18/79																
5																	
6	6/13/79																
7																	
8	8/8/79																
9																	
10	10/30/79																
11																	
12	12/26/79																
80 1																	
2	2/13/80																
3																	
4	4/17/80																
5																	
6	6/5/80																
7																	
8	8/7/80																
9																	
10	10/28/80																
11																	

Station: B6 ampling Frequency: Monthly **Elevation: 6050**

Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
12	12/29/80																
81 1																	
2	2/4/81																
3																	
4	4/7/81																
5																	
6	6/23/81																
7																	
8	8/27/81																
9																	
10	10/29/81																
11																	
12	12/3/81																
82 1																	
2	2/15/82																
3																	
4	4/14/82																
5																	
6	6/14/82																
7																	
8	8/3/82																
9																	
10	10/7/82																
11																	
12	12/21/82																
83 1																	
2	2/24/83																
3																	
4	4/21/83																
5																	
6	6/28/83																
7																	
8	8/17/83																
9																	
10	10/18/83																
11																	
12																	
84 1																	
2																	
3																	
4																	
5																	
6	6/19/84																
7																	
8																	
9	9/7/84																
10																	
11																	

Station: B6 ampling Frequency: Monthly **Elevation: 6050**

Date		Sample	As	B	Cd	Cu	IRON-DISS	IRON-TOTAL	Pb	Mg-DISS	Mg-TOTAL	Mn-DISS.	Mn-TOTAL	Mo	Se	Zn	Cat/An	Comments
Yr	Mo	Date	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(%)	
	12																	
85	1																	
	2																	
	3	3/30/85																
	4																	
	5																	
	6	6/15/85																
	7																	
	8																	
	9	9/30/85																
	10																	
	11	11/30/85																
	12																	
86	1																	
	2																	
	3																	
	4	4/3/86																
	5																	
	6	6/23/86																
	7																	
	8																	
	9	9/25/86																
	10																	
	11	11/24/86																
	12																	
87	1																	
	2																	
	3	3/26/87																
	4																	
	5	5/22/87																
	6																	
	7																	
	8	8/10/87																
	9																	
	10	10/13/87																
	11																	
	12																	
88	1																	
	2																	
	3	3/22/88																
	4																	
	5																	
	6	6/13/88																
	7																	
	8	9/14/88																
	9																	
	10																	
	11	11/30/88																

Station: B6 ampling Frequency: Monthly **Elevation: 6050**

Date		Sample	As	B	Cd	Cu	IRON-DISS	IRON-TOTAL	Pb	Mg-DISS	Mg-TOTAL	Mn-DISS.	Mn-TOTAL	Mo	Se	Zn	Cat/An	Comments
Yr	Mo	Date	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(%)	
	12																	
89	1																	
	2																	
	3																	
	4	4/10/89																
	5																	
	6	6/21/89																
	7																	
	8																	
	9	9/21/89																
	10																	
	11																	
	12																	
90	1																	
	2																	
	3	3/9/90																
	4																	
	5	5/30/90																
	6																	
	7																	
	8																	
	9	9/29/90																
	10																	
	11	11/26/90																
	12																	
91	1																	
	2																	
	3	3/13/91																
	4																	
	5	5/26/91																
	6																	
	7																	
	8																	
	9	9/11/91																
	10																	
	11	11/22/91																
	12																	
92	1																	
	2																	
	3	3/4/92																
	4																	
	5																	
	6	6/8/92																
	7																	
	8																	

Station: B6	ampling Frequency: Monthly															Elevation: 6050
Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
9	9/3/92																
10																	
11																	
12	12/7/92																
93 1																	
2																	
3	3/30/93																
4																	
5																	
6	6/14/93																
7																	
8																	
9	9/20/93																
10																	
11	11/17/93																
12																	
94 1																	
2																	
3	3/24/94																
4																	
5	6/8/94	0.001	0.03	0.025 *	0.005 *	0.04	0.49		17		0.02	0.04	0.005 *	0.0005 *		0.23	
6	6/14/94																
7	7/9/94																
8	8/7/94																
9	9/7/94																
9	9/23/94	0.002	0.03	0.025 *	0.005 *	0.01 *	0.2	0.01 *	19		0.005	0.01	0.005 *	0.0005 *	0.005 *	0.49	
10	10/30/94																
11	11/29/94																
12																	
95 1																	
2	2/28/95	0.0005 *	0.06	0.0015 *	0.005 *	0.005 *	2.77	0.01 *	31.5		0.0025	0.068	0.005 *	0.001	0.005 *		Very low flow. Cloudy water.
3	3/13/95															3.7	
3	3/19/95	0.003	0.06	0.0015 *	0.005 *	0.005 *	16.3	0.01 *	34		0.005	0.419	0.005 *	0.0005 *	0.005 *	2.5	Run-off very silty.
3																	
4																	
5	5/31/95	0.004	0.05	0.0015 *	0.005 *	0.44	6.22	0.01 *	29.7		0.017	0.192	0.005	0.0005 *	0.005 *	-0.9	High and turbid.
6	6/7/95																
6	6/28/95	0.0005 *	0.06	0.0015 *	0.005 *	0.03	1.1	0.01 *	19		0.008	0.071	0.005 *	0.0005 *	0.005 *	1.8	
7	7/20/95																
8	8/30/95	0.002	0.04	0.0015 *	0.005 *	0.005 *	0.6	0.01 *	18.2		0.0025	0.047	0.005 *	0.0005 *	0.005 *	5.5	
9	9/13/95																
9	9/19/96																
10	10/22/95	0.002	0.03	0.0015 *	0.005 *	0.03	0.26	0.01 *	22.1		0.009	0.02	0.005 *	0.012	0.005 *	3.6	
11	11/27/95																
11	11/28/95																
12	12/27/95																Frozen, not possible to monitor.
96 1																	
2	2/29/96																

Station: B6 ampling Frequency: Monthly **Elevation: 6050**

Date Yr-Mo	Sample Date	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
3	3/27/96					0.02	0.79		20.3		0.028	0.086	0.005 *	0.0005 *	0.005 *	-0.8	
4																	
5	5/30/96					0.2	1.63		23.8		0.018	0.079				-0.5	
6	6/28/96					0.005 *	0.005 *		18.7		0.0025	1.15				-2.5	
7	7/31/96																
8	8/30/96																Hot. Scofield dam causing high flow.
9	9/29/96					0.08	0.39		20.1		0.009	0.03			0.005 *	-0.5	
10																	
11																	
12	12/4/96																
97 1																	
2	2/24/97																Frozen could not monitor
3	3/20/97					0.005 *			33.7		0.026	0.276				3	Flow high- turbid.
4	4/30/97					0.005 *	8.23		28.1		0.0025	0.393				0	Need to subtract Willow Creek flow but don't kn
5	5/30/97																-B3N flow (frozen up)
6	6/20/97					0.005 *	0.55		20.3		0.0025	0.047				0.2	
7	7/31/97																
8	8/18/97																
9	9/30/97																
10	10/29/97																
11	11/19/97																
12	12/30/97																Frozen, could not monitor.
Average		0.002	0.045	0.007	0.005	0.059	2.824	0.010	23.700	#DIV/0!	0.011	0.195	0.005	0.002	0.005	1.068	
Number of Entries		8	8	8	8	15	14	7	15	0	15	15	9	9	9	15	
Max Value		0.004	0.06	0.025	0.005	0.44	16.3	0.01	34	0	0.028	1.15	0.005	0.012	0.005	5.5	
Min Value		0.0005	0.03	0.0015	0.005	0.005	0.005	0.01	17	0	0.0025	0.01	0.005	0.0005	0.005	-2.5	
Standard Dev.		0.001	0.014	0.011	0.000	0.117	4.589	0.000	6.007	#DIV/0!	0.009	0.296	0.000	0.004	0.000	2.180	

* Below detectior

Figure 20
Stream B131

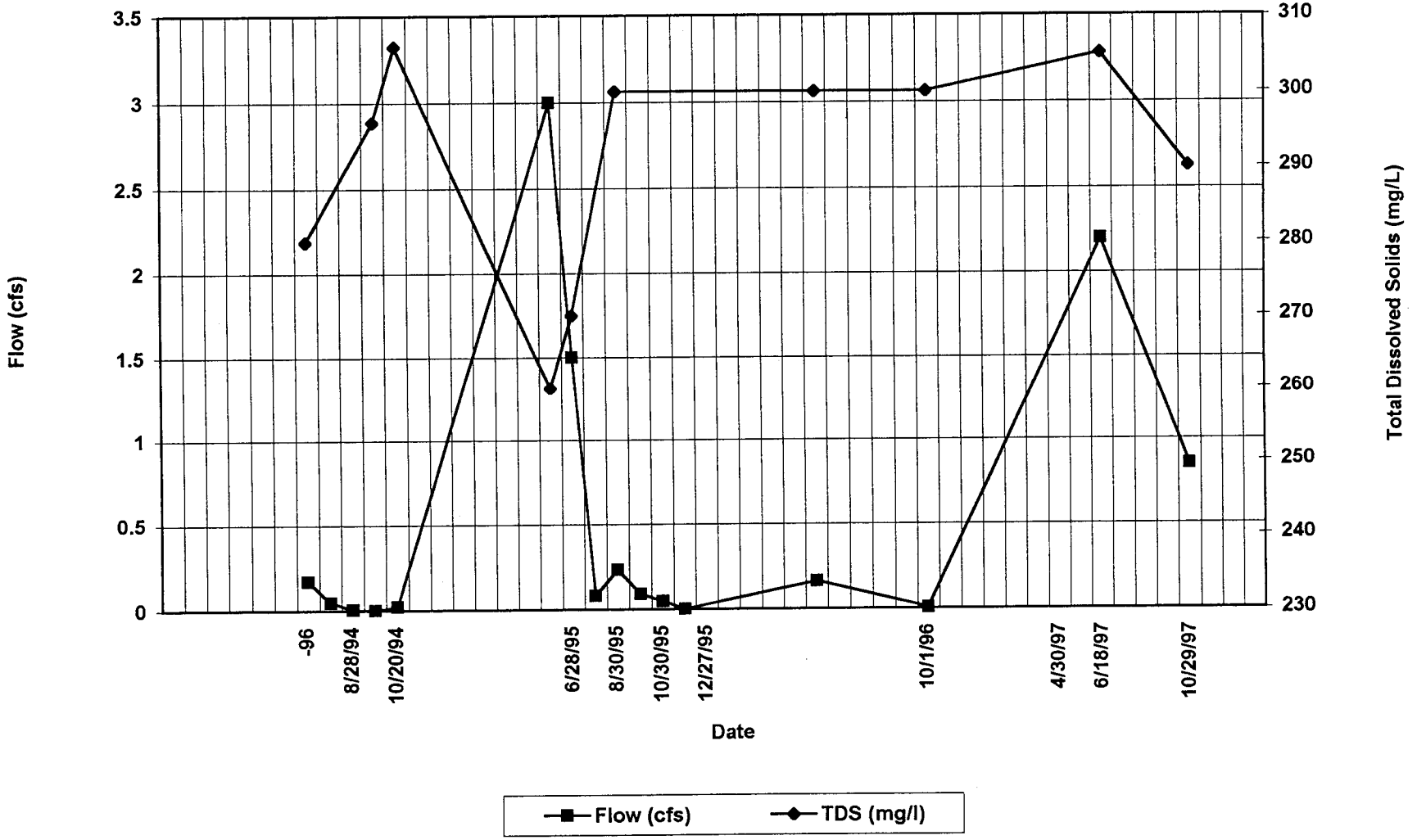


Figure 20A
Stream B131

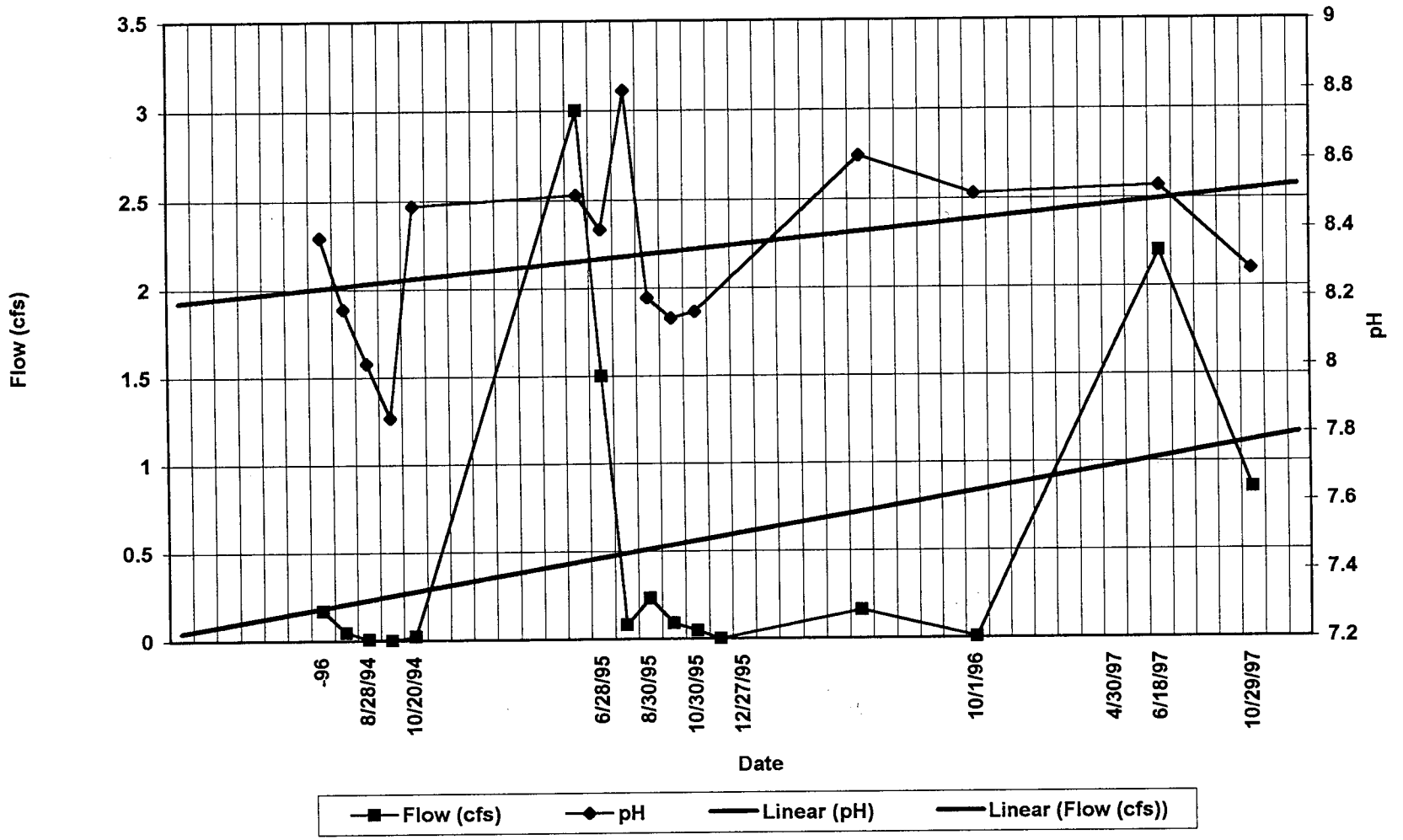


Figure 20B
Stream B131

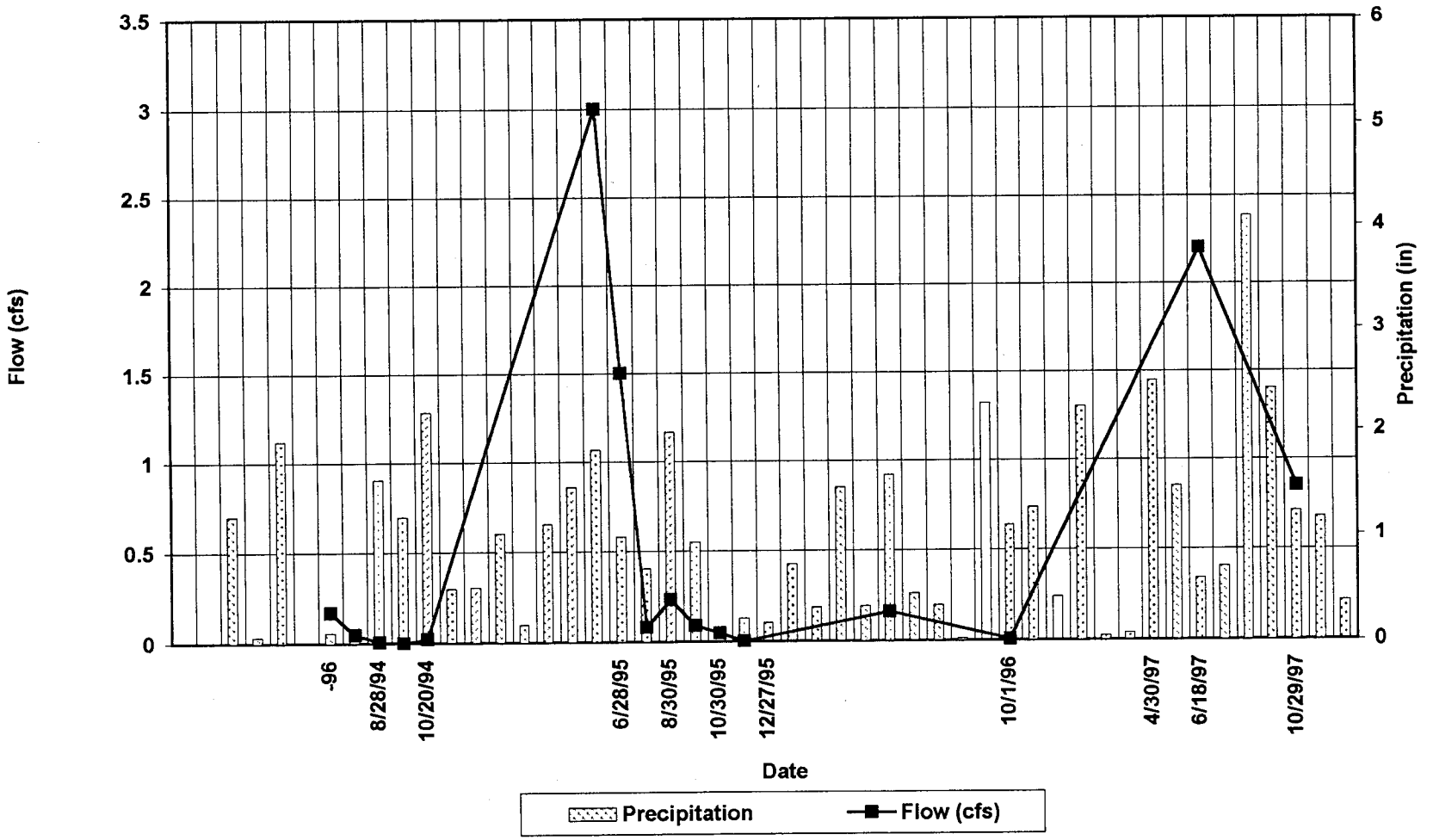


Table 20

Station: B131 | Property: Castle Gate | Location: SE1/4 NE1/4, Sec 35, T12S,R9E

Date Yr-Mo		Sample Date	Flow (cfs)	Field Measurements Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (m/l/l/hr)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)
94	1													
	2													
	3													
	4													
	5													
	6	-96	0.17	8.38	573	7.9		280	96		1	290	263	
	7	7/9/94	0.047	8.17	552	22.9	6.8							
	8	8/28/94	0.005	8.01	554	17.7	5.6							
	9	9/27/94	0.0003	7.85	650	17.8	5.1	296	50	0.2	1	295	290	
	10	10/20/94	0.022	8.47	545	12	7.1	306	2.5 *	0.2 *	19	260	279	
	11													
	12													
95	1													
	2													
	3													
	4													
	5	5/30/95	3	8.5	515	10.5	8.8	260	2.5 *	0.05 *	1 *			
	6	6/28/95	1.5	8.4	596	12.6	9	270	2.5 *	0.05 *	1 *			
	7	7/20/95	0.08	8.8	690	16.9	8.8							
	8	8/30/95	0.23	8.2	385	20.9	6.7	300	36	0.05 *	4			
	9	9/19/95	0.089	8.14	425	18	6.8							
	10	10/30/95	0.045	8.16	516	8.8	8.4							
	11	11/28/95	0											
	12	12/27/95												
96	1													
	2													
	3	3/27/96												
	4													
	5	5/29/96	0.16	8.61	429	15.2	8.9	300	30	0.05 *	1 *		273	
	6													
	7													
	8													
	9													
	10	10/1/96	0.0056	8.5	671	14.5		300	6	30	6		284	
	11													
	12													
97	1													
	2													
	3	3/20/97												
	4	4/30/97												
	5													
	6	6/18/97	2.2	8.52	711	14	9.1	305			8		303	
	7													
	8													
	9													
	10	10/29/97	0.85	8.28	626	5.5	8.6	290	10		2.5 *	300	280	
	11													
	12													
Average			0.525	8.333	562.533	14.347	7.669	290.700	26.167	4.371	4.450	286.250	281.714	#DIV/0!
Number of Entries			16	15	15	15	13	10	9	7	10	4	7	0
Max Value			3	8.8	711	22.9	9.1	306	96	30	19	300	303	0
Min Value			0.000	7.850	385.000	5.500	5.100	260.000	2.500	0.050	1.000	260.000	263.000	0.000
Standard Dev.			0.914	0.248	98.613	4.884	1.383	15.678	31.433	11.301	5.679	17.970	12.672	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 20

Station: B131 | **Station Type: River** | **Sampling Frequency: Quarterly**

Date Yr-Mo		Sample Date	HCO3 (mg/l)	Laboratory Measurements CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)
94	1													
	2													
	3													
	4													
	5													
	6	-96	290	0	6	10	69	1	10	0.06	0.01 *	0.005 *	0.01 *	0.006
	7	7/9/94												
	8	8/28/94												
	9	9/27/94	295	0	8	12	65	2	23	0.12	0.02	0.005 *	0.02	0.006
	10	10/20/94	260	0	9	23	64	2	20	0.025 *	0.05	0.005 *	0.05	0.0025 *
	11													
	12													
95	1													
	2													
	3													
	4													
	5	5/30/95	256	1 *	6	5 *	77.52	1	9.8	0.025 *	0.03	0.005 *	0.03	0.008
	6	6/28/95	281	1 *	8	60	78.6	1.5	13.1	0.025 *	0.12	0.005 *	0.12	0.017
	7	7/20/95												
	8	8/30/95	273	1 *	8	17	53.5	2.2	21.6	0.025 *	0.04	0.005 *	0.04	0.0025 *
	9	9/19/95												
	10	10/30/95												
	11	11/28/95												
	12	12/27/95												
96	1													
	2													
	3	3/27/96												
	4													
	5	5/29/96	273	1 *	7	10	66.9	1.2	12.7					
	6													
	7													
	8													
	9													
	10	10/1/96	287	1 *	11		59.2	1.4	23.6					
	11													
	12													
97	1													
	2													
	3	3/20/97												
	4	4/30/97												
	5													
	6	6/18/97	284	1 *	8	10	77.2	1	11.7					
	7													
	8													
	9													
	10	10/29/97	300	5 *	8.7	16	66	1.2	14					
	11													
	12													
Average			279.900	1.100	7.970	18.111	67.692	1.450	15.950	0.047	0.045	0.005	0.045	0.007
Number of Entries			10	10	10	9	10	10	10	6	6	6	6	6
Max Value			300	5	11	60	78.6	2.2	23.6	0.12	0.12	0.005	0.12	0.017
Min Value			256.000	0.000	6.000	5.000	53.500	1.000	9.800	0.025	0.010	0.005	0.010	0.003
Standard Dev.			14.395	1.449	1.471	16.549	8.203	0.460	5.481	0.039	0.039	0.000	0.039	0.005

* Below detection limit. Value e

Table 20

Station: B131

Date Yr-Mo		Sample Date	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISC (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISC (mg/l)	Mg-TOTAL (mg/l)	Mn-DISC. (mg/l)	Mn-TOTAL (mg/l)
94	1													
	2													
	3													
	4													
	5													
	6	-96	0.05	0.0005 *	0.02	0.0025 *	0.005 *	0.05	2.71		22		0.005 *	0.09
	7	7/9/94												
	8	8/28/94												
	9	9/27/94	0.025 *	0.001	0.03	0.0025 *	0.005 *	0.01 *	1.38	0.02	31		0.15	0.13
	10	10/20/94	0.025 *	0.0005 *	0.03	0.0025 *	0.005 *	0.01 *	0.4	0.01 *	29		0.005 *	0.04
	11													
	12													
95	1													
	2													
	3													
	4													
	5	5/30/95	0.05	0.001	0.02	0.0015 *	0.005 *	0.04	0.21	0.01 *	22.9		0.017	0.034
	6	6/28/95	0.015 *	0.001	0.03	0.0015 *	0.005 *	0.02	0.42	0.01 *	25.1		0.021	0.041
	7	7/20/95												
	8	8/30/95	0.015 *	0.002	0.08	0.0015 *	0.005 *	0.005 *	1.11	0.01 *	32.3		0.0025 *	0.063
	9	9/19/95												
	10	10/30/95												
	11	11/28/95												
	12	12/27/95												
96	1													
	2													
	3	3/27/96												
	4													
	5	5/29/96						0.01	0.46		25.7		0.012	0.036
	6													
	7													
	8													
	9													
	10	10/1/96						0.01	0.05		33		0.021	0.02
	11													
	12													
97	1													
	2													
	3	3/20/97												
	4	4/30/97												
	5													
	6	6/18/97						0.005 *	0.33		26.7		0.015	0.029
	7													
	8													
	9													
	10	10/29/97						0.005 *	0.01		27		0.009	0.022
	11													
	12													
Average			0.030	0.001	0.035	0.002	0.005	0.017	0.708	0.012	27.470	#DIV/0!	0.026	0.051
Number of Entries			6	6	6	6	6	10	10	5	10	0	10	10
Max Value			0.05	0.002	0.08	0.0025	0.005	0.05	2.71	0.02	33	0	0.15	0.13
Min Value			0.015	0.001	0.020	0.002	0.005	0.005	0.010	0.010	22.000	0.000	0.003	0.020
Standard Dev.			0.016	0.001	0.023	0.001	0.000	0.016	0.828	0.004	3.787	#DIV/0!	0.044	0.035

* Below detection limit. Value e

Table 20

Station: B131 | **Elevation: 6050**

Date Yr-Mo		Sample Date	Mo (mg/l)		Se (mg/l)		Zn (mg/l)		Cat/An (%)	Comments
94	1									
	2									
	3									
	4									
	5									
	6	-96	0.01		0.001				-3.87	
	7	7/9/94								
	8	8/28/94								Heavy cow activity in area.
	9	9/27/94	0.005	*	0.0005	*	0.005	*	3.63	Lots of cow activity, sample muddy
	10	10/20/94	0.005	*	0.001		0.005	*	4.58	
	11									
	12									
95	1									
	2									
	3									
	4									
	5	5/30/95	0.005	*	0.001		0.005	*	8.1	Mildly turbid
	6	6/28/95	0.005	*	0.0005	*	0.005	*	-3.7	Cows in the area
	7	7/20/95								Turbid, cow activity.
	8	8/30/95	0.005	*	0.0005	*	0.005	*	2.3	
	9	9/19/95								
	10	10/30/95								
	11	11/28/95								Frozen, no monitoring possible.
	12	12/27/95								Frozen, not possible to monitor.
96	1									
	2									
	3	3/27/96								Inaccessible.
	4									
	5	5/29/96							1.5	
	6									
	7									
	8									
	9									
	10	10/1/96							0.5	
	11									
	12									
97	1									
	2									
	3	3/20/97								Inaccessable deep snow
	4	4/30/97								Inaccessable deep snow
	5									
	6	6/18/97							3.8	Runoff - lots of cows in area
	7									
	8									
	9									
	10	10/29/97							-3.3	
	11									
	12									
Average			0.006		0.001		0.005		1.354	
Number of Entries			6		6		5		10	
Max Value			0.01		0.001		0.005		8.1	
Min Value			0.005		0.001		0.005		-3.870	
Standard Dev.			0.002		0.000		0.000		3.989	

* Below detection limit. Value e

Figure 21
Stream B151

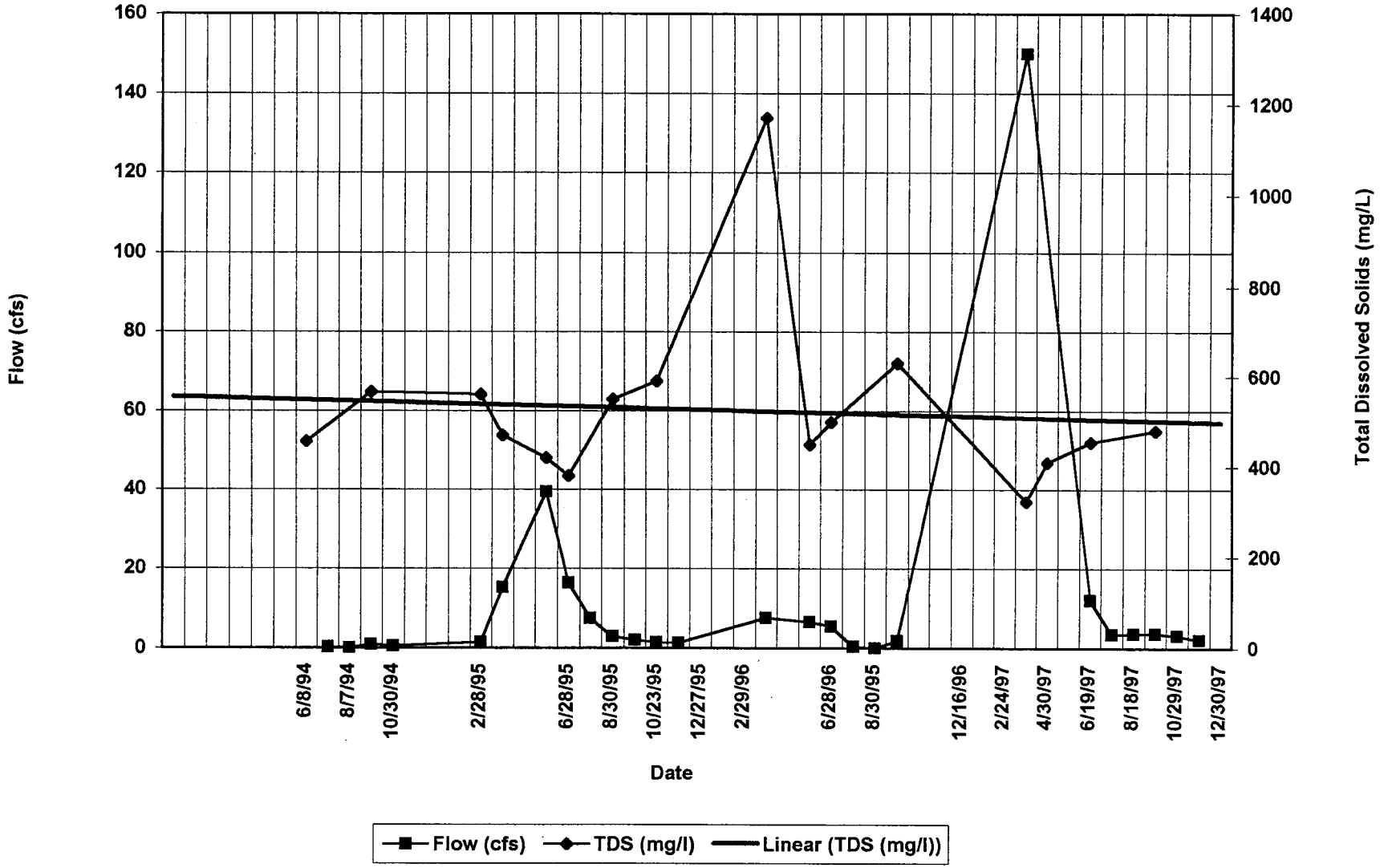


Figure 21 A
Stream B151

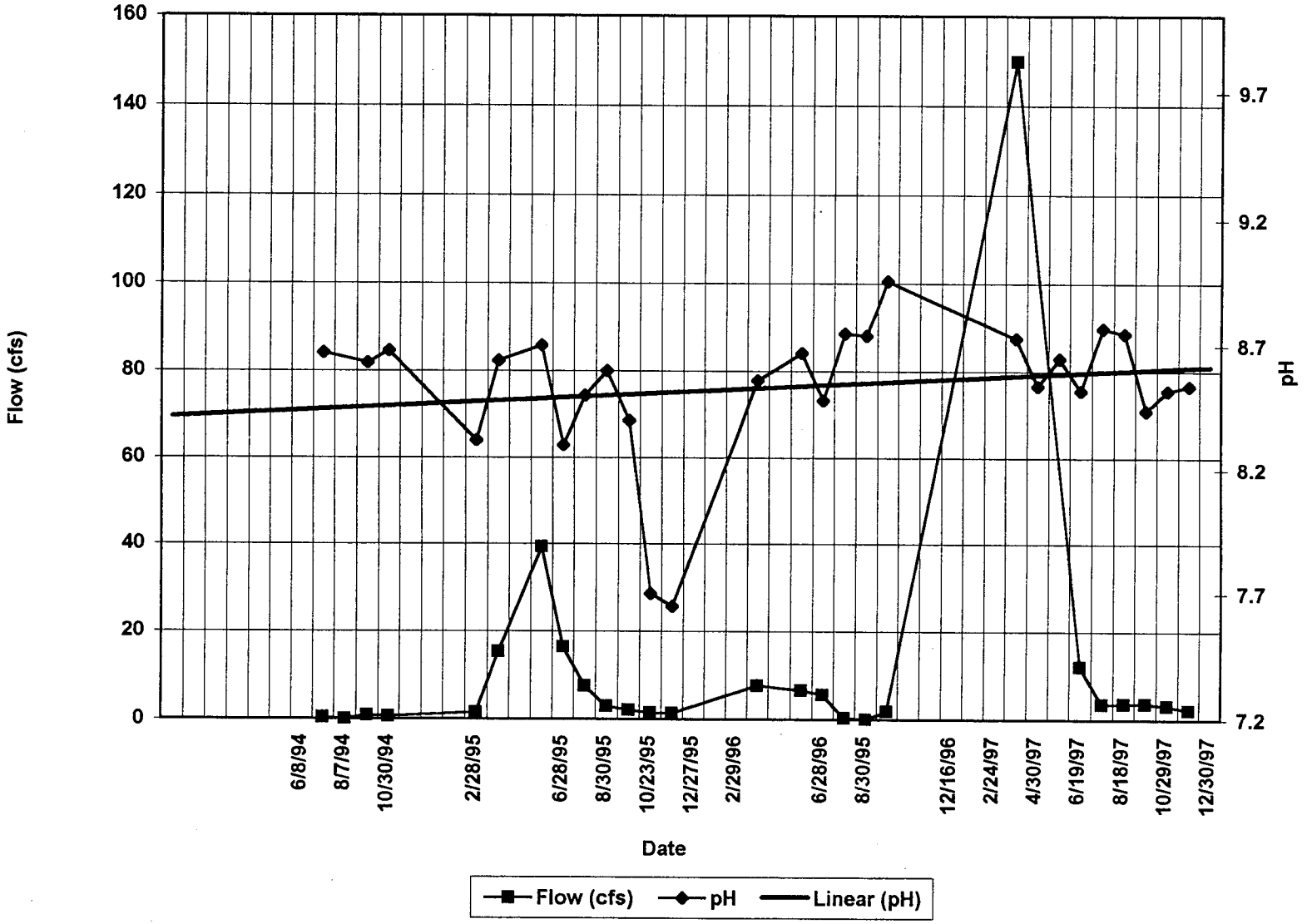


Figure 21 B
Stream B151

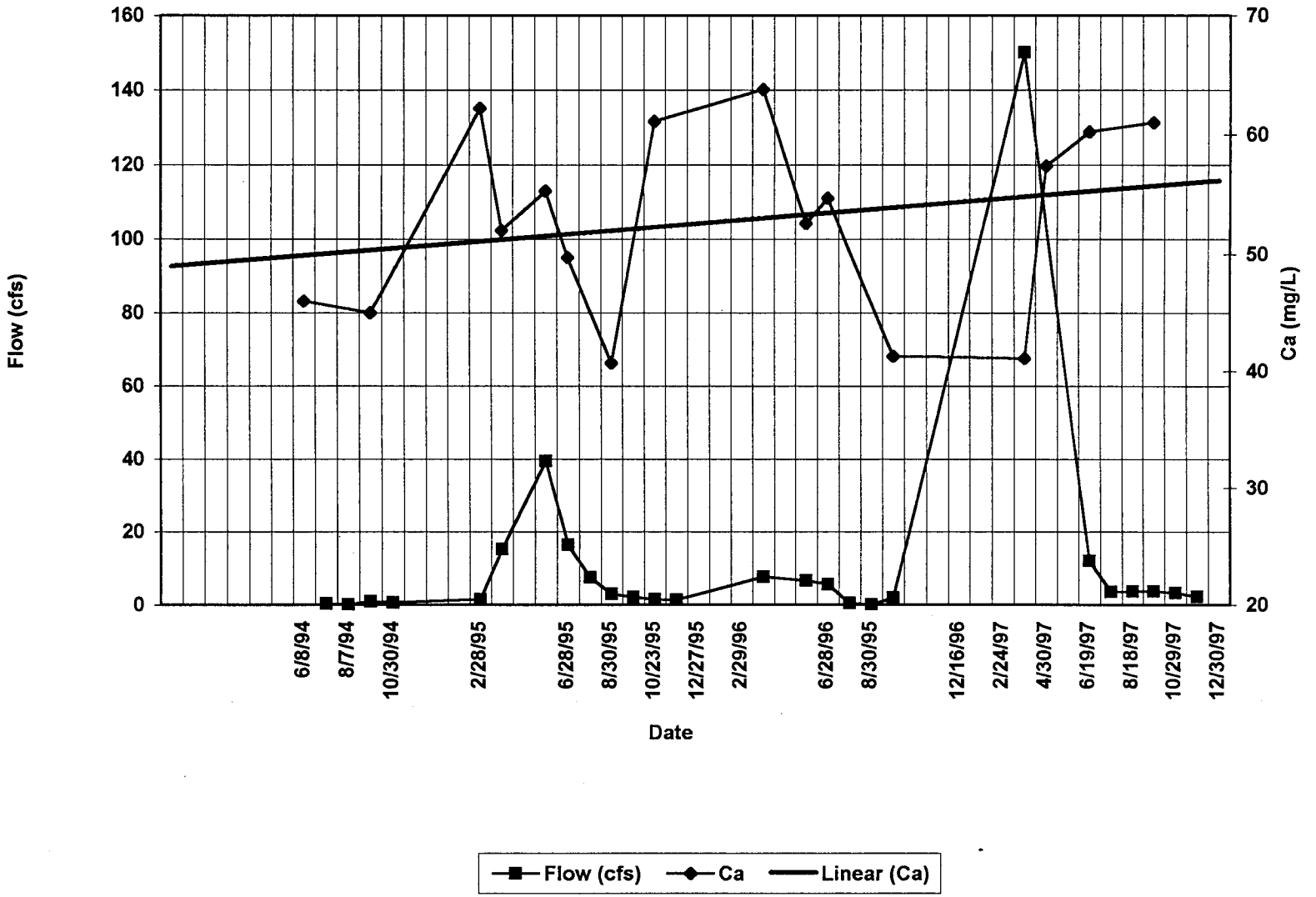


Figure 21 C
Stream B151

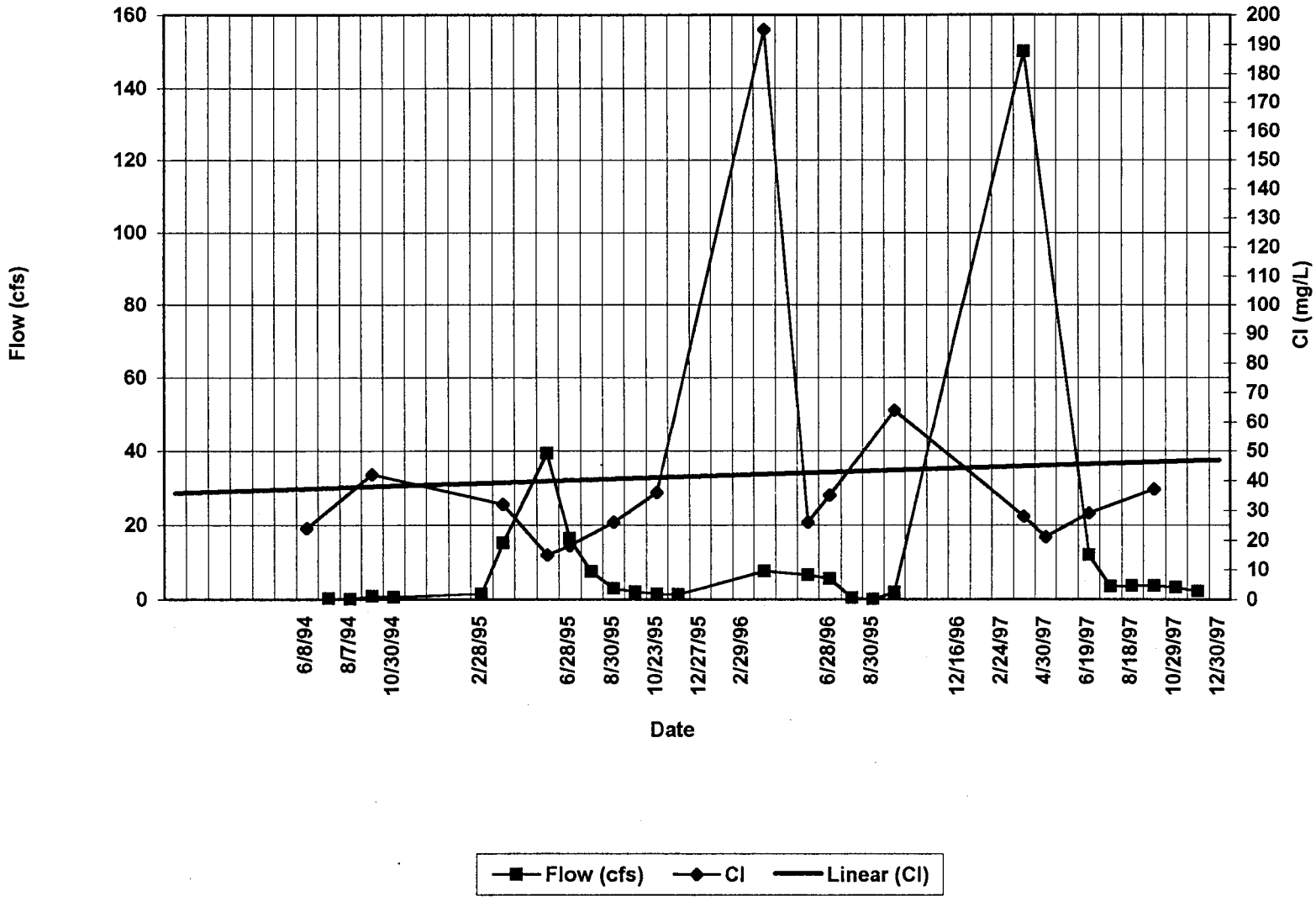


Figure 21 D
Stream B151

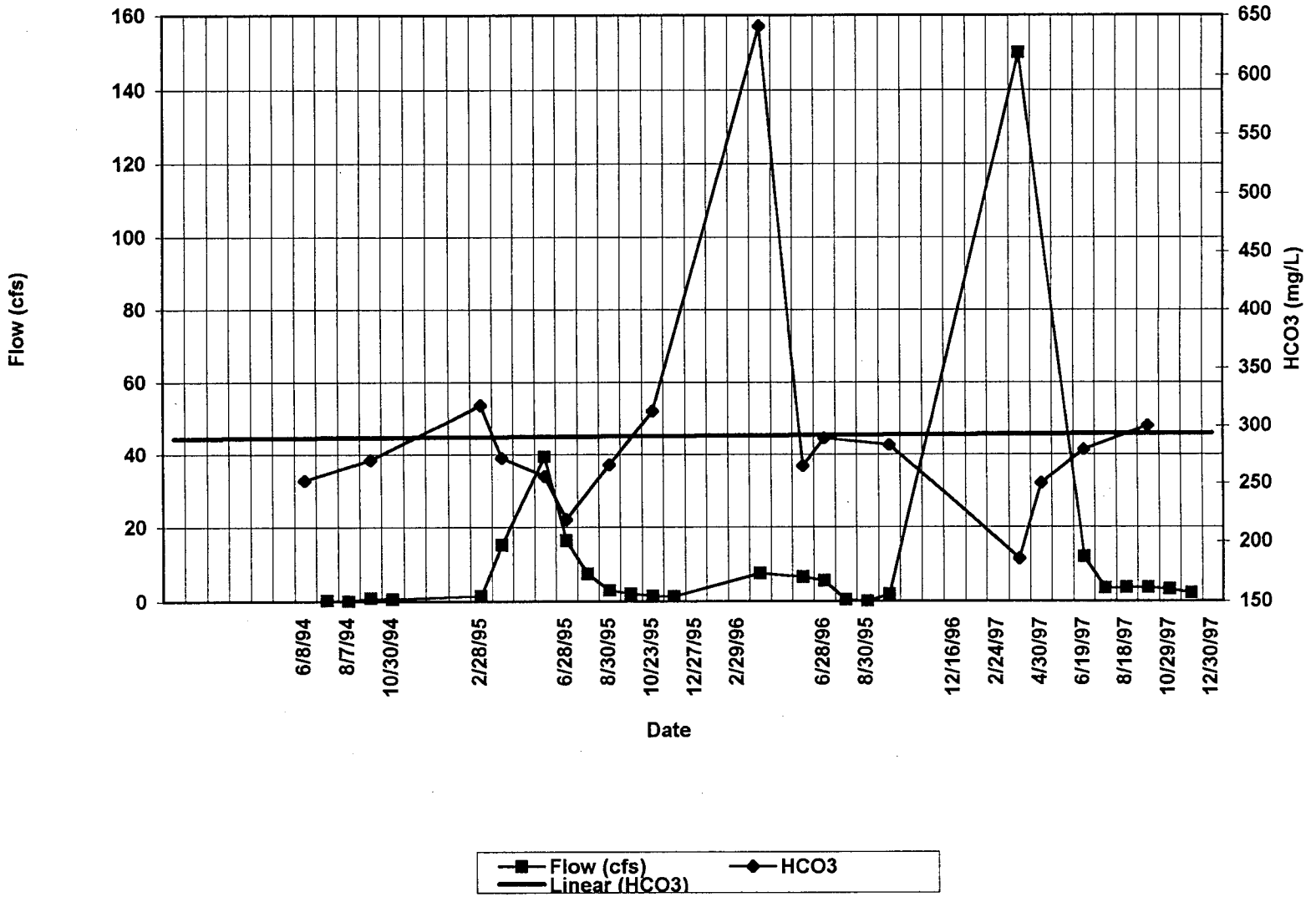


Figure 21 E
Stream B151

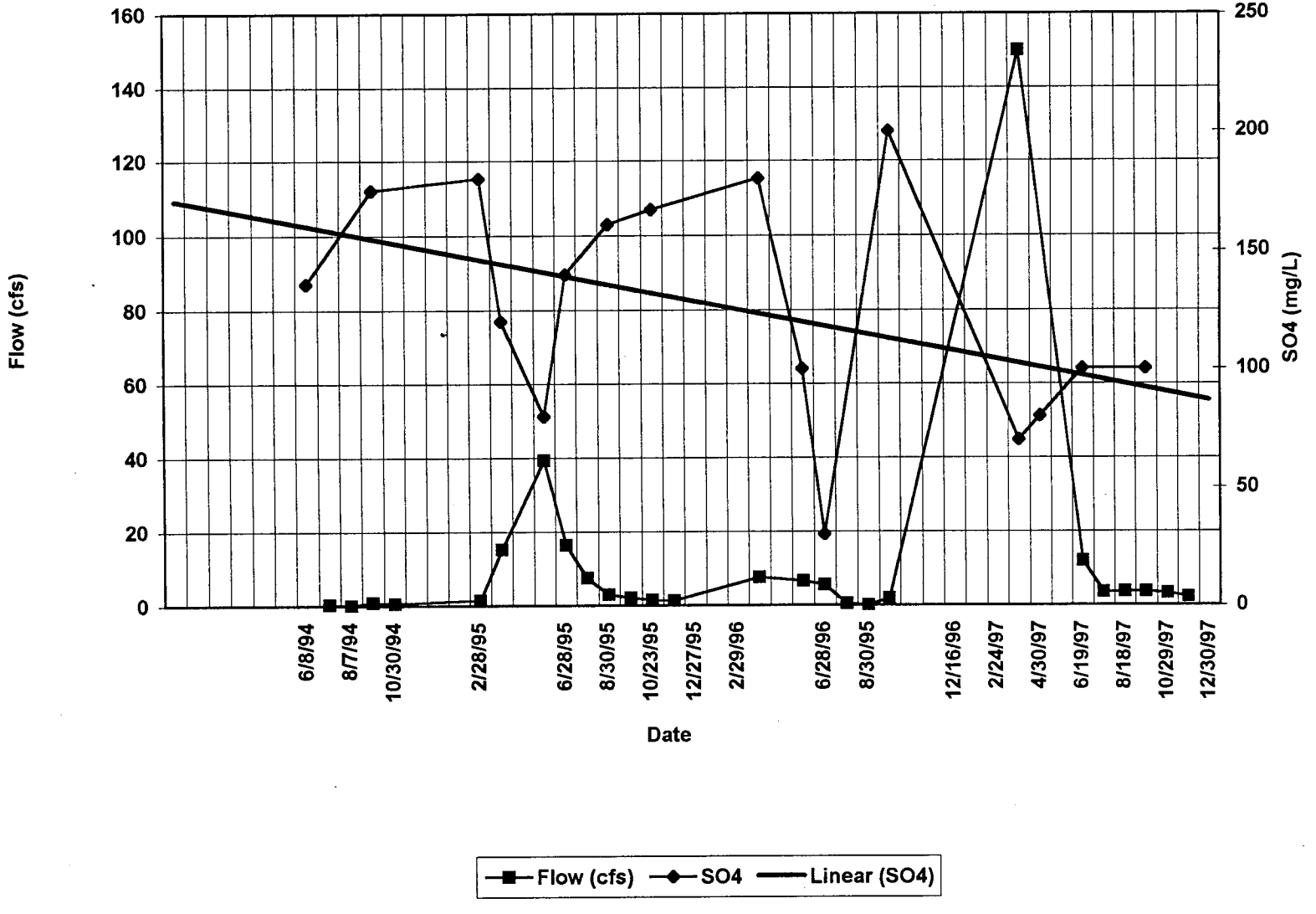


Figure 21 F
Stream B151

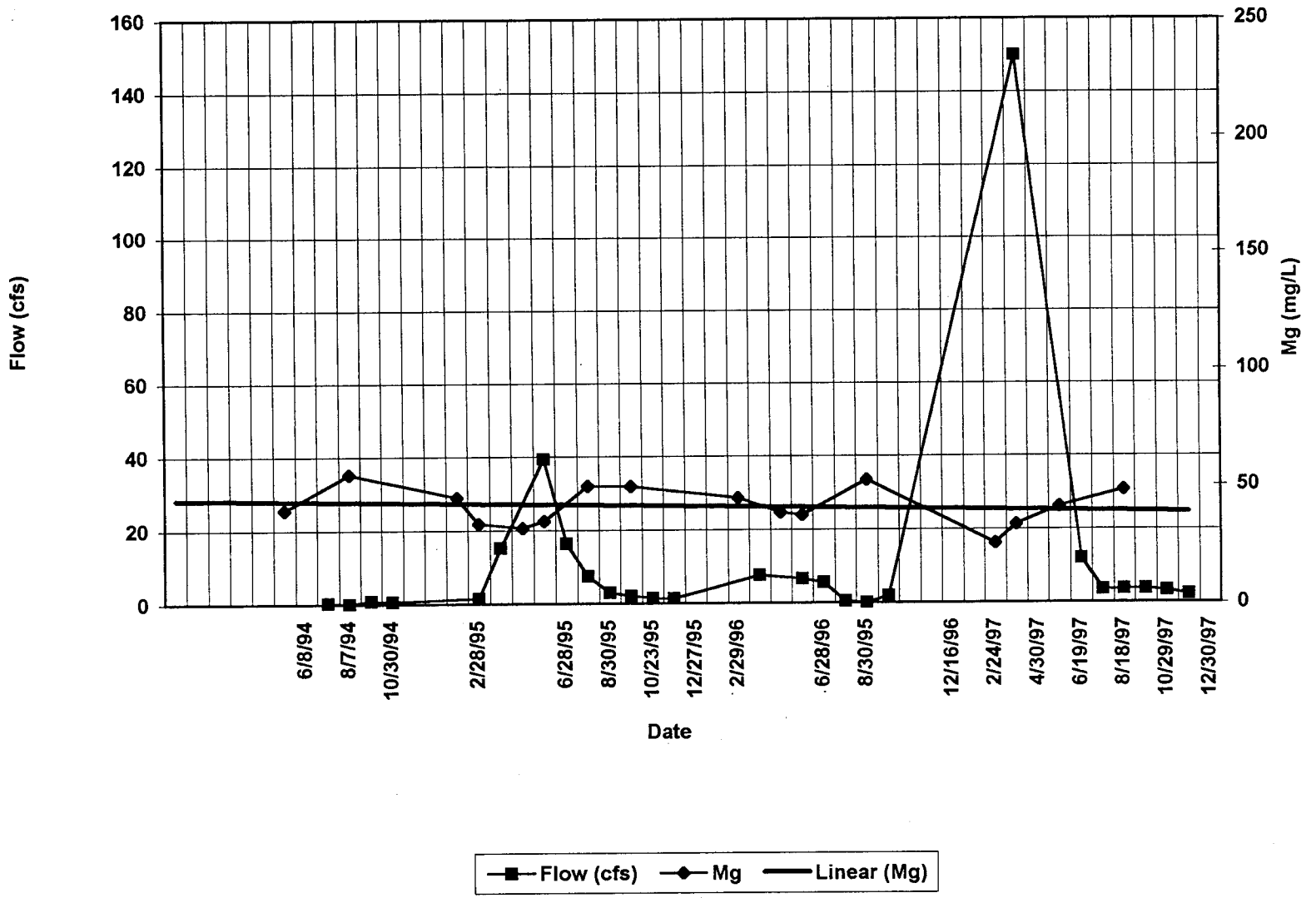


Figure 21 G
Stream B151

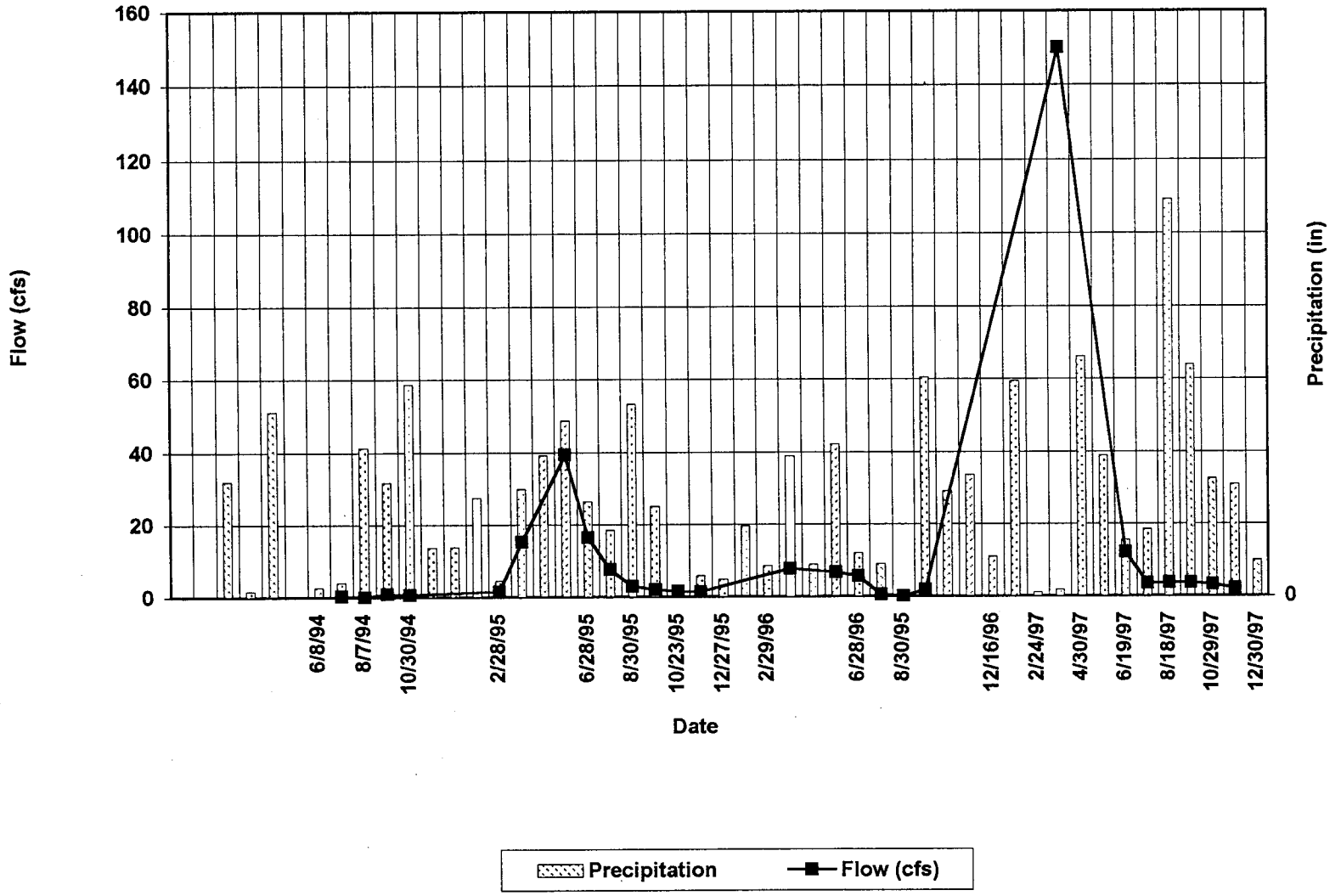


Table 21

Station: B151 | **Property: Castle Gate** | **Location: SW1/4,SW1/4,SE1/4,SW1/4,S15,T12S,R10E** | **Station Type: River**

Date Yr-Mo		Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (m/l/l/hr)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)
94	1																		
	2																		
	3																		
	4																		
	5																		
	6	6/8/94						456	4		0.5 *	264	279		252	12	24	136	46
	7	7/9/94	0.309	8.67	935	22.5	7.7												
	8	8/7/94	0																
	9	9/27/94	0.884	8.63	1050	18.3	6.8	566	2	0.05 *	0.5 *	280	338		270	10	42	175	45
	10	10/30/94	0.57	8.68	935	8	6.7		1510										
	11																		
	12																		
95	1																		
	2	2/28/95	1.5	8.32	945	0	8	560	78	0.1 *					318	1 *		180	62.2
	3	3/19/95	15.21	8.64	703	0	9.5	470	420	0.4					272	1 *	32	120	52
	4																		
	5	5/29/95	39.3	8.7	612	11.3	9.1	420	106	0.1 *	1 *				256	1 *	15	80	55.3
	6	6/28/95	16.4	8.3	668	19.8	7.4	380	38	0.1 *	1 *				219	1 *	18	140	49.7
	7	7/20/95	7.49	8.5	657	19.2	9.3												
	8	8/30/95	2.91	8.6	636	18.9	7.3	550	2.5 *	0.05 *	1 *				266	15	26	161	40.7
	9	9/19/95	2.02	8.4	700	11.2	7.8												
	10	10/23/95	1.5	7.7	930	4.1	8.2	590	2.5 *	0.05 *	1 *				313	5	36	167	61.1
	11	11/28/95	1.3	7.65	1383	0	10.8												
	12	12/27/95																	
96	1																		
	2	2/29/96																	
	3	3/27/96	7.58	8.56	2650	0.5	11.1	1170	116	0.1	1 *				641	1 *	195	180	63.8
	4																		
	5	5/29/96	6.59	8.67	619	18.4	8	450	14	0.05 *	.1 *		290		265	1 *	26	100	52.6
	6	6/28/96	5.52	8.48	622	13	9.5	500	1020	3.3			291		289	1 *	35	30	54.7
	7	7/24/96	0.39	8.75	1013	22.5													
	8	8/30/95	0.013	8.74	1503	24.4	8.4												
	9	9/29/96	1.85	8.96	868	5.4	8.4	630	16		1 *		318		283	12	64	200	41.3
	10																		
	11																		
	12	12/16/96																	
97	1																		
	2	2/24/97																	
	3	3/20/97	150	8.73	699	2.4	10.6	323			1 *		207		186	1 *	28	70	41.1
	4	4/30/97		8.54	666	9.8	8.5	410			1 *		280		250	20	21	80	57.4
	5	5/30/97		8.65	640	9.7	8.2												
	6	6/19/97	12	8.52	620	19.3	9.7	455			1 *		318		279	1 *	29	100	60.2
	7	7/31/97	3.52	8.77	812	23	9.6												
	8	8/18/97	3.62	8.75	820	20	9.4												
	9	9/30/97	3.6	8.44	786	12.4	8.6	480	42		2.5 *	300	350		300	5 *	37	100	61
	10	10/29/97	3.18	8.52	925	7.9	10												
	11	11/19/97	2.14	8.54	932	5.2	9.2												
	12	12/30/97																	
Average			11.131	8.534	901.074	12.119	8.762	525.625	240.786	0.430	1.038	281.333	296.778	#DIV/0!	291.188	5.500	41.867	126.188	52.756
Number of Entries			26	27	27	27	26	16	14	10	13	3	9	0	16	16	15	16	16
Max Value			150	8.96	2650	24.4	11.1	1170	1510	3.3	2.5	300	350	0	641	20	195	200	63.8
Min Value			0.000	7.650	612.000	0.000	6.700	323.000	2.000	0.050	0.500	264.000	207.000	0.000	186.000	1.000	15.000	30.000	40.700
Standard Dev.			29.483	0.287	414.708	8.103	1.175	190.060	457.391	1.014	0.477	18.037	42.086	#DIV/0!	98.909	6.261	43.956	48.688	8.017

Table 21

Station: B151 **Sampling Frequency: Quarterly**

Date Yr-Mo		Sample Date	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)
			Laboratory Measurements																
94	1																		
	2																		
	3																		
	4																		
	5																		
	6	6/8/94	2	69	0.07	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.002	0.09	0.0025 *	0.005 *	0.04	0.19		40	
	7	7/9/94																	
	8	8/7/94																	
	9	9/27/94	2	104	0.09	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.002	0.13	0.0025 *	0.005 *	0.01 *	0.2	0.01 *	55	
	10	10/30/94																	
	11																		
	12																		
95	1																		
	2	2/28/95	2.1	83.7	0.08	0.08	0.005 *	0.08	0.0025 *	0.015 *	0.0005 *	0.09	0.0015 *	0.005 *	0.005 *	3.36	0.01 *	45.1	
	3	3/19/95	2.7	65.5	0.06	0.14	0.06	0.2	0.114	0.015 *	0.003	0.06	0.0015 *	0.005 *	0.005 *	22.8	0.01 *	34	
	4																		
	5	5/29/95	1.3	42.3	0.11	0.05	0.01	0.06	0.016	0.015 *	0.003	0.06	0.0015 *	0.005 *	0.005 *	1.07	0.01 *	32.1	
	6	6/28/95	1.8	54.1	0.025 *	0.07	0.005 *	0.07	0.006	0.015 *	0.002	0.08	0.0015 *	0.005 *	0.005 *	3.35	0.01 *	35.2	
	7	7/20/95																	
	8	8/30/95	2.1	82.4	0.025 *	0.09	0.005 *	0.09	0.0025 *	0.015 *	0.003	0.11	0.0015 *	0.005 *	0.005 *	0.13	0.01 *	50	
	9	9/19/95																	
	10	10/23/95	2	78.9	0.05	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *	0.002	0.1	0.0015 *	0.005 *	0.005 *	0.11	0.01 *	49.7	
	11	11/28/95																	
	12	12/27/95																	
96	1																		
	2	2/29/96																	
	3	3/27/96	7.2	319		0.01 *	0.005 *	0.01 *	0.021						0.19	2.62		44.8	
	4																		
	5	5/29/96	1.5	59.9											0.005 *	0.38		38.5	
	6	6/28/96	3.3	82.3											0.01	14.1		37.5	
	7	7/24/96																	
	8	8/30/95																	
	9	9/29/96	2.7	119											0.05	0.27		52.3	
	10																		
	11																		
	12	12/16/96																	
97	1																		
	2	2/24/97																	
	3	3/20/97	2.7	44.1											0.01	16.1		25.4	
	4	4/30/97	1.9	46.1											0.005 *	5		33.3	
	5	5/30/97																	
	6	6/19/97	1.6	56											0.005 *	0.54		40.8	
	7	7/31/97																	
	8	8/18/97																	
	9	9/30/97	3.1	81											0.005 *	1.2		48	
	10	10/29/97																	
	11	11/19/97																	
	12	12/30/97																	
Average			2.500	86.706	0.064	0.052	0.012	0.060	0.019	0.018	0.002	0.090	0.002	0.005	0.023	4.464	0.010	41.356	#DIV/0!
Number of Entries			16	16	8	9	9	9	9	8	8	8	8	8	16	16	7	16	0
Max Value			7.2	319	0.11	0.14	0.06	0.2	0.114	0.025	0.003	0.13	0.0025	0.005	0.19	22.8	0.01	55	0
Min Value			1.300	42.300	0.025	0.010	0.005	0.010	0.003	0.015	0.001	0.060	0.002	0.005	0.005	0.110	0.010	25.400	0.000
Standard Dev.			1.375	65.507	0.030	0.047	0.018	0.062	0.036	0.005	0.001	0.024	0.000	0.000	0.047	6.912	0.000	8.337	#DIV/0!

Table 21

Station: B151 | **Elevation: 6050**

Date Yr-Mo		Sample Date	Mn-DISS (mg/l)		Mn-TOTAL (mg/l)		Mo (mg/l)		Se (mg/l)		Zn (mg/l)		Cat/An (%)	Comments
94	1													
	2													
	3													
	4													
	5													
	6	6/8/94	0.01		0.01		0.005	*	0.0005	*			-0.8	
	7	7/9/94												
	8	8/7/94												Stream dry.
	9	9/27/94	0.005	*	0.005	*	0.005	*	0.0005	*	0.0005	*	4.3	Stream dried up for 3 weeks. Flowing since storm on Aug. 9.
	10	10/30/94												
	11													
	12													
95	1													
	2	2/28/95	0.021		0.085		0.005	*	0.001		0.005	*		Lots of ice & snow. Some melting
	3	3/19/95	0.012		0.436		0.005	*	0.002		0.005	*		Run-off. Very Silty.
	4													
	5	5/29/95	0.006		0.098		0.005	*	0.002		0.005	*	0.5	Snow melt time. Turbid
	6	6/28/95	0.006		0.098		0.005	*	0.0005		0.005	*	-0.02	
	7	7/20/95												
	8	8/30/95	0.0025	*	0.011		0.005	*	0.0005		0.005	*	0.5	
	9	9/19/95												
	10	10/23/95	0.007		0.011		0.005	*	0.0005		0.005	*	-1	
	11	11/28/95												Lots of ice.
	12	12/27/95												Frozen, not possible to monitor.
96	1													
	2	2/29/96												Frozen not possible to monitor.
	3	3/27/96	0.109		0.179		0.005	*	0.001		0.01		-2.2	Snow Melting.
	4													
	5	5/29/96	0.014		0.032								2	
	6	6/28/96	0.008		0.621								-0.9	Rain yesterday and last night. O&G bottle broke in shipment.
	7	7/24/96												
	8	8/30/95												Hot.
	9	9/29/96	0.0025	*	0.02						0.005	*	-1	Active beaver just above site. Water is turbid.
	10													
	11													
	12	12/16/96												Frozen, not possible to monitor.
97	1													
	2	2/24/97												Frozen could not monitor
	3	3/20/97	0.031		0.77								1.5	Estimated flow, high runoff
	4	4/30/97	0.008		0.201								0.1	Ice to dangerouse to mesure flow
	5	5/30/97												Ice to dangerouse to mesure flow
	6	6/19/97	0.01		0.032								2.1	
	7	7/31/97												New bever dam 50 feet up streem
	8	8/18/97												
	9	9/30/97	0.015		0.045								7.5	
	10	10/29/97												
	11	11/19/97												
	12	12/30/97												Fozen, not possible to monitor.
Average			0.017		0.166		0.005		0.001		0.005		0.899	
Number of Entries			16		16		9		9		9		14	
Max Value			0.109		0.77		0.005		0.002		0.01		7.5	
Min Value			0.003		0.005		0.005		0.001		0.001		-2.200	
Standard Dev.			0.026		0.236		0.000		0.001		0.002		2.525	

Figure 22
Stream B211

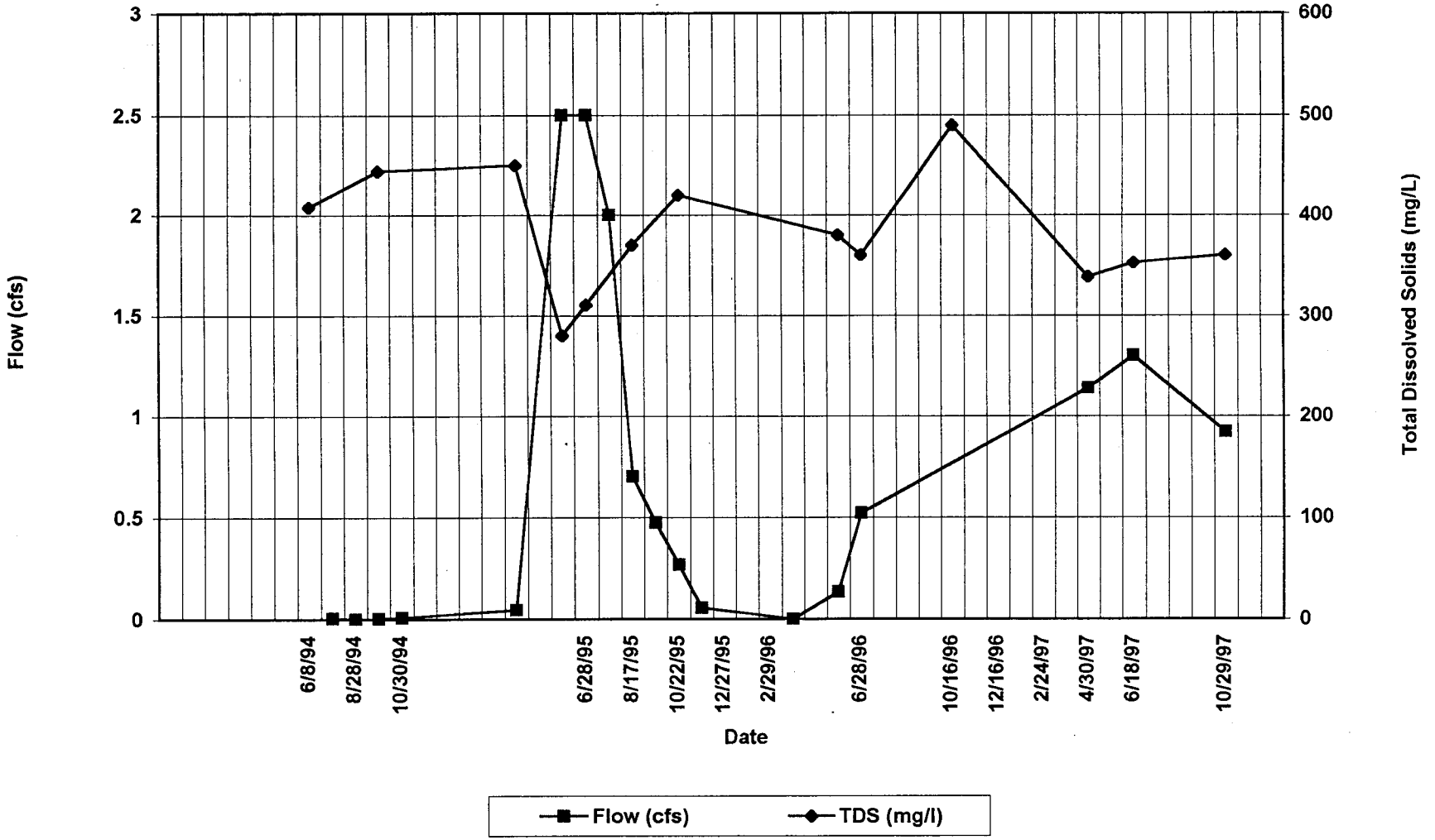


Figure 22A
Stream B211

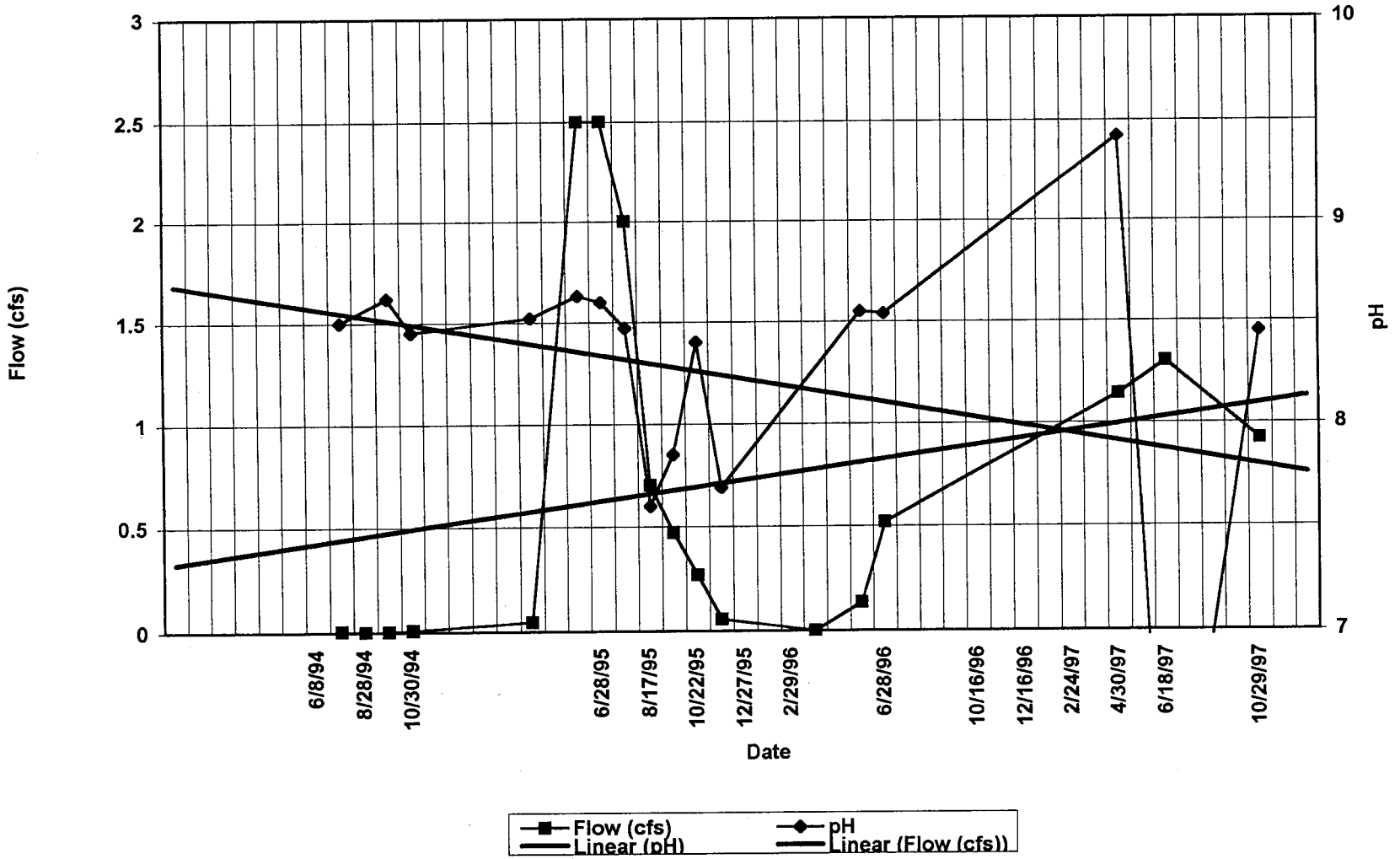


Figure 22B
Stream B211

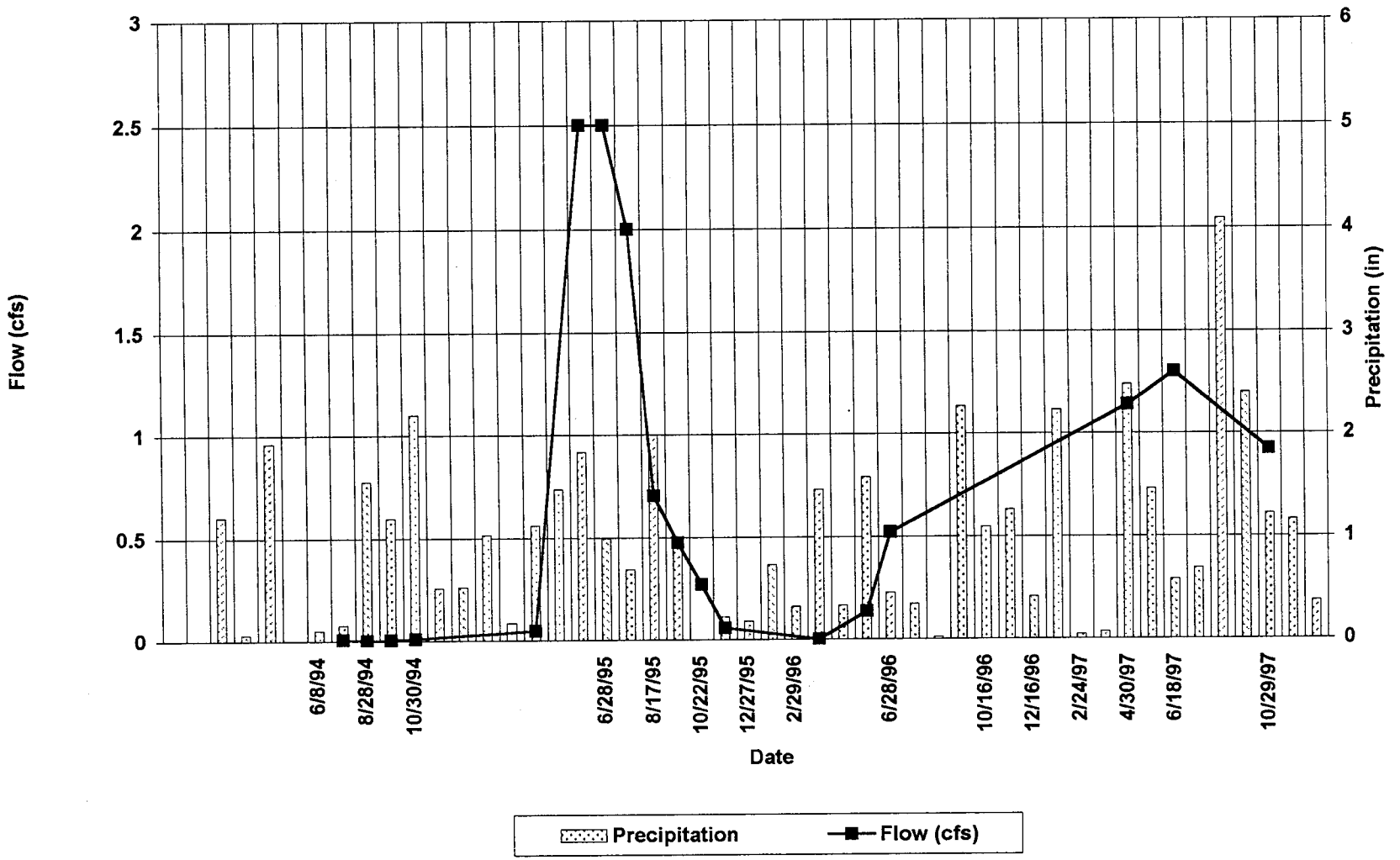


Table 22

Station: B211 | **Property: Castle Gate** | **Location: NE1/4,SE1/4,SW1/4,NE1/4,SEC 21, T12S,R10** | **Station Type: RIVER** | **Sampling Frequency: Qua**

Date		Sample Date	Flow (cfs)	Field Measurements: Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (m/l/l/hr)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	Laboratory Measurements: CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)
94	1																			
	2																			
	3																			
	4																			
	5																			
	6	6/8/94						408	2		0.5 *	330	261		314	16	9	86	51	2
	7	7/9/94	0.005	8.5	705	25.1	5.9													
	8	8/28/94	0																	
	9	9/23/94	0.002	8.62	714	16.3	7	444	2	0.05 *	0.5 *	325	372		305	20	13	99	44	2
	10	10/30/94	0.007	8.45	910	1.5	6.7													
	11																			
	12																			
95	1																			
	2																			
	3	3/19/95	0.045	8.52	768	0	9	450	2.5 *	0.05 *	1 *					1 *	12	80	49.5	1.2
	4																			
	5	5/30/95	2.5	8.63	568	8.6	9.2	280	2.5 *	0.05 *	1 *				272	1 *	6	20	58	1.2
	6	6/28/95	2.5	8.6	652	14.3	8.4	310	2.5 *	0.05 *	1 *				296	1 *	8	70	55.7	1.7
	7	7/20/95	2	8.47	512	17.1	9													
	8	8/17/95	0.7	7.6	700	11.4	9	370	2.5 *	0.05 *	1 *				302	10	7	59	60.1	1.5
	9	9/19/95	0.473	7.85	675	10.2	9													
	10	10/22/95	0.267	8.4	664	6.4	9.2	420	2.5 *	0.05 *	3				322	17	9	67	63.8	1.5
	11	11/28/95	0.056	7.69	772	1.5	10.9													
	12	12/27/95																		
96	1																			
	2	2/29/96																		
	3	3/27/97	0																	
	4																			
	5	5/31/96	0.134	8.55	517	6.6	11.3	380	2.5 *	0.05 *	1 *		364		334	1 *	9	60	58.6	1.4
	6	6/28/96	0.52	8.54	527	13	10.2	360	150	0.05 *	1 *		339		313	1 *		60	56.1	1.7
	7																			
	8																			
	9																			
	10	10/16/96						490	10		9		419		368	10	14	100	57.5	1.8
	11																			
	12	12/16/96																		
97	1																			
	2	2/24/97																		
	3	3/20/97																		
	4	4/30/97	1.14	9.42	586	6.3	9.3	338			1 *		290		262	17	4	50	53.1	1.5
	5																			
	6	6/18/97	1.3	5.54	535	17	10.6	352			4		315		296	1 *	8	50	52.7	1.2
	7																			
	8																			
	9																			
	10	10/29/97	0.921	8.45	720	5	9.1	360	7		2.5 *	330	330		330	5 *	8.2	65	56	1.1
	11																			
	12																			
Average			0.698	8.239	######	10.019	8.988	381.692	16.909	0.050	2.038	328.333	336.250	#DIV/0!	309.500	7.769	8.933	66.615	55.085	1.523
Number of Entries			18	16	16	16	16	13	11	8	13	3	8	0	12	13	12	13	13	13
Max Value			2.5	9.42	910	25.1	11.3	490	150	0.05	9	330	419	0	368	20	14	100	63.8	2
Min Value			0	5.54	512	0	5.9	280	2	0.05	0.5	325	261	0	262	1	4	20	44	1.1
Standard Dev.			0.862	0.836	######	6.862	1.468	59.013	44.215	0.000	2.340	2.887	49.563	#DIV/0!	28.180	7.529	2.870	21.608	5.086	0.303

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 22

Station: B211

Date		Sample Date	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)
94	1																		
	2																		
	3																		
	4																		
	5																		
	6	6/8/94	26	0.06	0.02	0.005 *	0.02	0.0025 *	0.25 *	0.0005 *	0.05	0.0025 *	0.005 *	0.01 *	0.03		57		0.005 *
	7	7/9/94																	
	8	8/28/94																	
	9	9/23/94	36	0.025 *	0.06	0.005 *	0.06	0.0025 *	0.025 *	0.001	0.05	0.0025 *	0.005 *	0.01 *	0.08	0.01 *	64		0.005 *
	10	10/30/94																	
	11																		
	12																		
95	1																		
	2																		
	3	3/19/95	28.1	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.07	0.01 *	52.9		0.0025 *
	4																		
	5	5/30/95	16.9	0.025 *	0.05	0.005 *	0.05	0.0025 *	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.2	0.01 *	39.6		0.0025 *
	6	6/28/95	42.9	0.025 *	0.05	0.005 *	0.05	0.0025 *	0.015 *	0.0005 *	0.09	0.0015 *	0.005 *	0.005 *	0.13	0.01 *	44.6		0.006
	7	7/20/95																	
	8	8/17/95	20.2	0.025 *	0.1	0.005 *	0.1	0.0025 *	0.015 *	0.0005 *	0.04	0.0015 *	0.005 *	0.02	0.07	0.01 *	53.2		0.007
	9	9/19/95																	
	10	10/22/95	20.1	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.0015 *	0.002	0.04	0.0015 *	0.005 *	0.005 *	0.01	0.01 *	60.9		0.0025 *
	11	11/28/95																	
	12	12/27/95																	
96	1																		
	2	2/29/96																	
	3	3/27/97																	
	4																		
	5	5/31/96	22.3											0.03	0.08		53		0.005
	6	6/28/96	20.1											0.21	2.99		48.3		0.012
	7																		
	8																		
	9																		
	10	10/16/96	35.8											0.03	0.19		67		0.007
	11																		
	12	12/16/96																	
97	1																		
	2	2/24/97																	
	3	3/20/97																	
	4	4/30/97	17.1											0.01	0.29		38.2		0.008
	5																		
	6	6/18/97	18.1											0.005 *	0.06		44.6		0.0025 *
	7																		
	8																		
	9																		
	10	10/29/97	20											0.005 *	0.05		47		0.0025 *
	11																		
	12																		
Average			24.892	0.030	0.043	0.005	0.043	0.003	0.048	0.001	0.047	0.002	0.005	0.027	0.327	0.010	51.562	#DIV/0!	0.005
Number of Entries			13	7	7	7	7	7	7	7	7	7	7	13	13	6	13	0	13
Max Value			42.9	0.06	0.1	0.005	0.1	0.0025	0.25	0.002	0.09	0.0025	0.005	0.21	2.99	0.01	67	0	0.012
Min Value			16.9	0.025	0.01	0.005	0.01	0.0025	0.0015	0.0005	0.03	0.0015	0.005	0.005	0.01	0.01	38.2	0	0.0025
Standard Dev.			8.404	0.013	0.033	0.000	0.033	0.000	0.089	0.001	0.021	0.000	0.000	0.056	0.804	0.000	8.974	#DIV/0!	0.003

* Below detection limit. Va

Table 22

Station: B211 **Elevation: 6050**

Date		Sample Date	Mn-TOTAL (mg/l)		Mo (mg/l)		Se (mg/l)	Zn (mg/l)		Cat/An (%)	Comments
94	1										
	2										
	3										
	4										
	5										
	6	6/8/94	0.005	*	0.005	*	0.001			-1.41	
	7	7/9/94									
	8	8/28/94									Dry.
	9	9/23/94	0.005	*	0.005	*	0.001	0.005	*	0.78	
	10	10/30/94									
	11										
	12										
95	1										
	2										
	3	3/19/95	0.006		0.005	*	0.007	0.005	*	-3.6	Clear water. Snow melt. Drifts above site.
	4										
	5	5/30/95	0.015		0.005	*	0.002	0.005	*	6.9	Snow melt time. Clear
	6	6/28/95	0.0025	*	0.005	*	0.004	0.005	*	4.2	
	7	7/20/95									
	8	8/17/95	0.007		0.005	*	0.003	0.005	*	3.8	
	9	9/19/95									
	10	10/22/95	0.0025	*	0.005	*	0.007	0.005	*	3.8	
	11	11/28/95									Lots of ice, frozen over.
	12	12/27/95									Frozen, not possible to monitor.
96	1										
	2	2/29/96									Frozen, not possible to monitor.
	3	3/27/97									Frozen solid.
	4										
	5	5/31/96	0.0025	*						0.6	
	6	6/28/96	0.071							-0.4	Cloudy.
	7										
	8										
	9										
	10	10/16/96	0.011							-0.3	Frozen could not monitor
	11										
	12	12/16/96									Frozen, not possible to monitor.
97	1										
	2	2/24/97									Frozen, could not monitor.
	3	3/20/97									Frozen, could not monitor.
	4	4/30/97	0.012							-1.2	pH meter acting up- doubt reading
	5										
	6	6/18/97	0.0025	*						-0.5	
	7										
	8										
	9										
	10	10/29/97	0.007							-4	
	11										
	12										
Average			0.011		0.005		0.004	0.005		0.667	
Number of Entries			13		7		7	6		13	
Max Value			0.071		0.005		0.007	0.005		6.9	
Min Value			0.0025		0.005		0.001	0.005		-4	
Standard Dev.			0.018		0.000		0.003	0.000		3.191	

* Below detection limit. Va

Figure 23
Stream B26

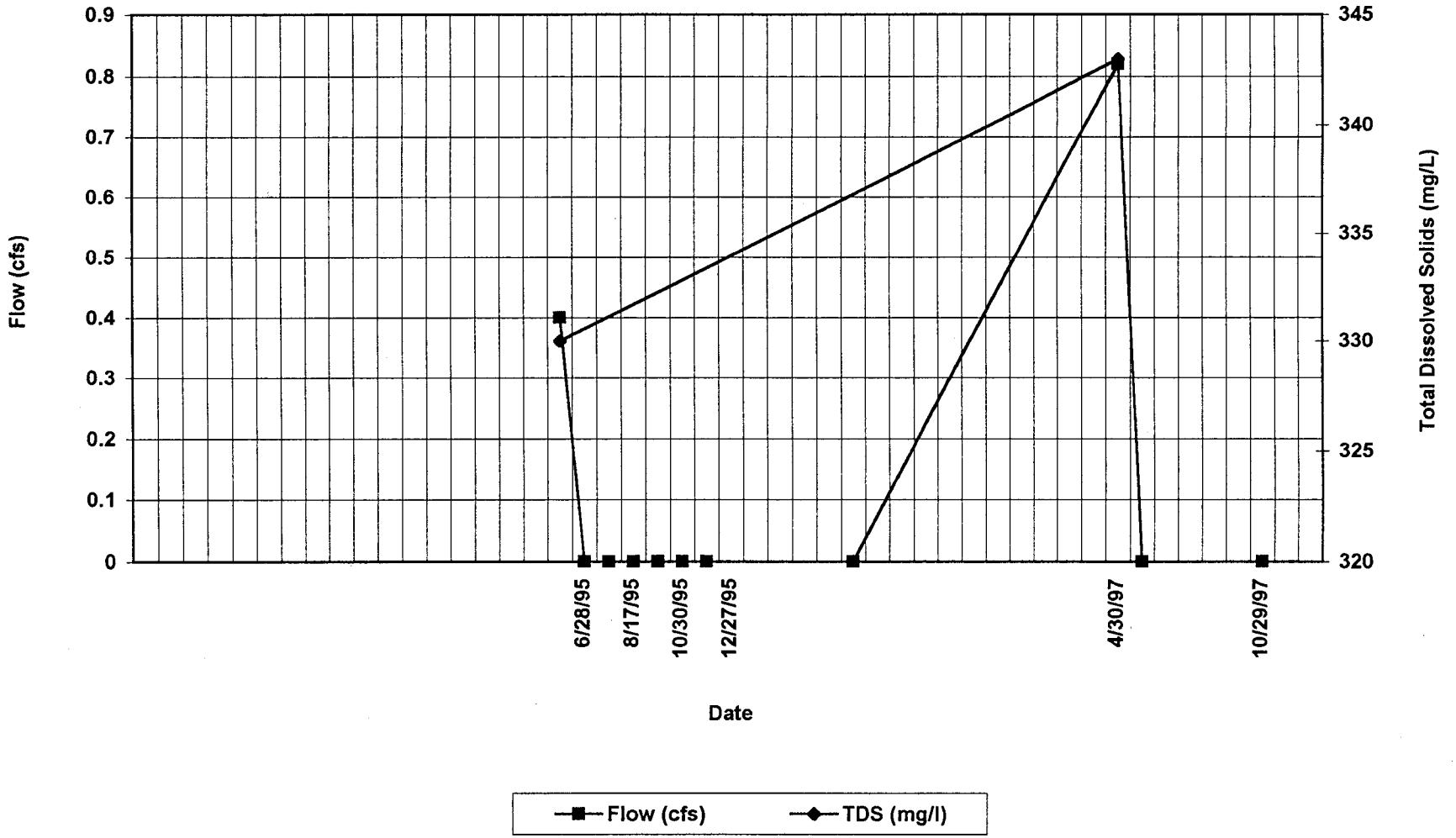


Figure 23A
Stream B26

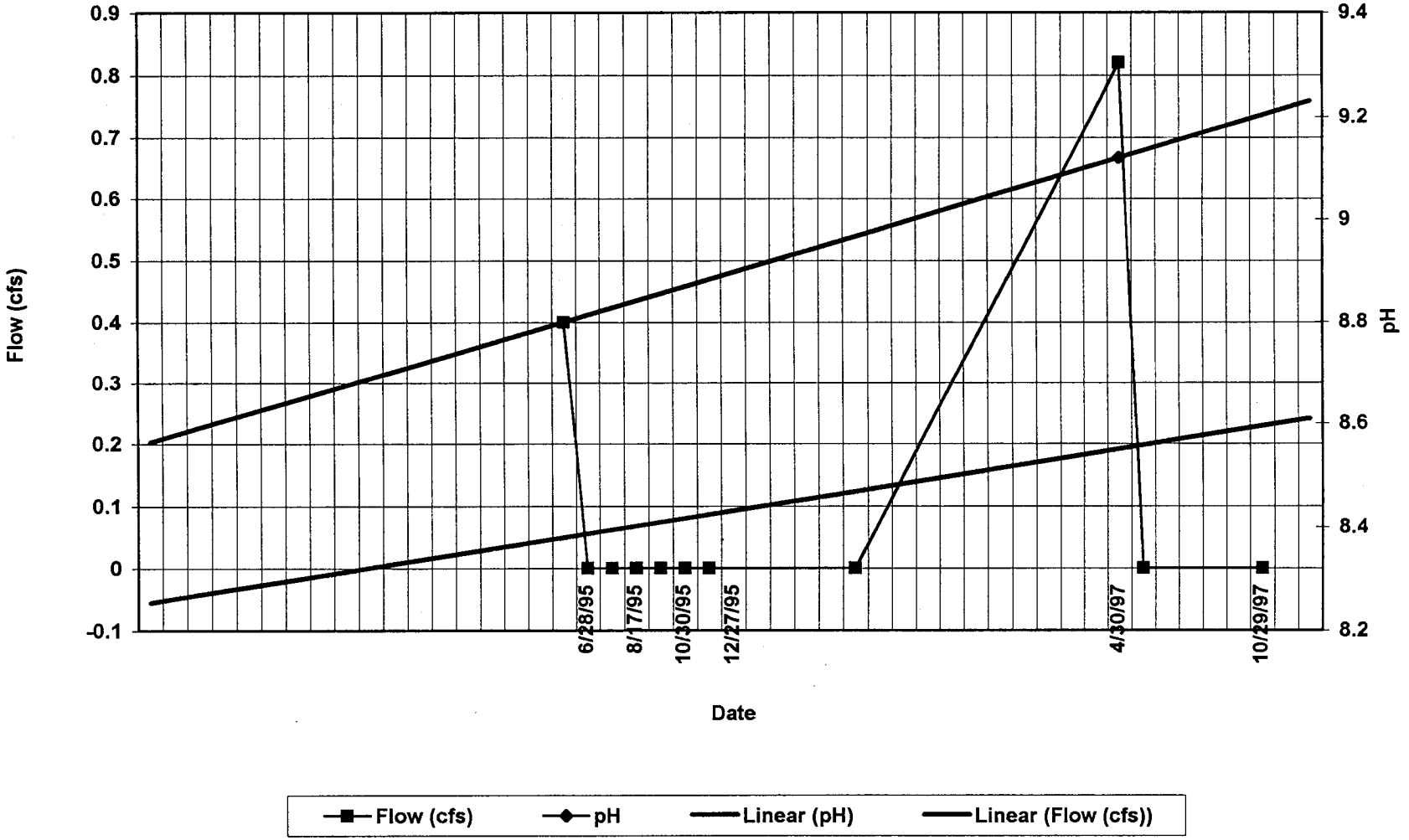


Figure 23B
Stream B26

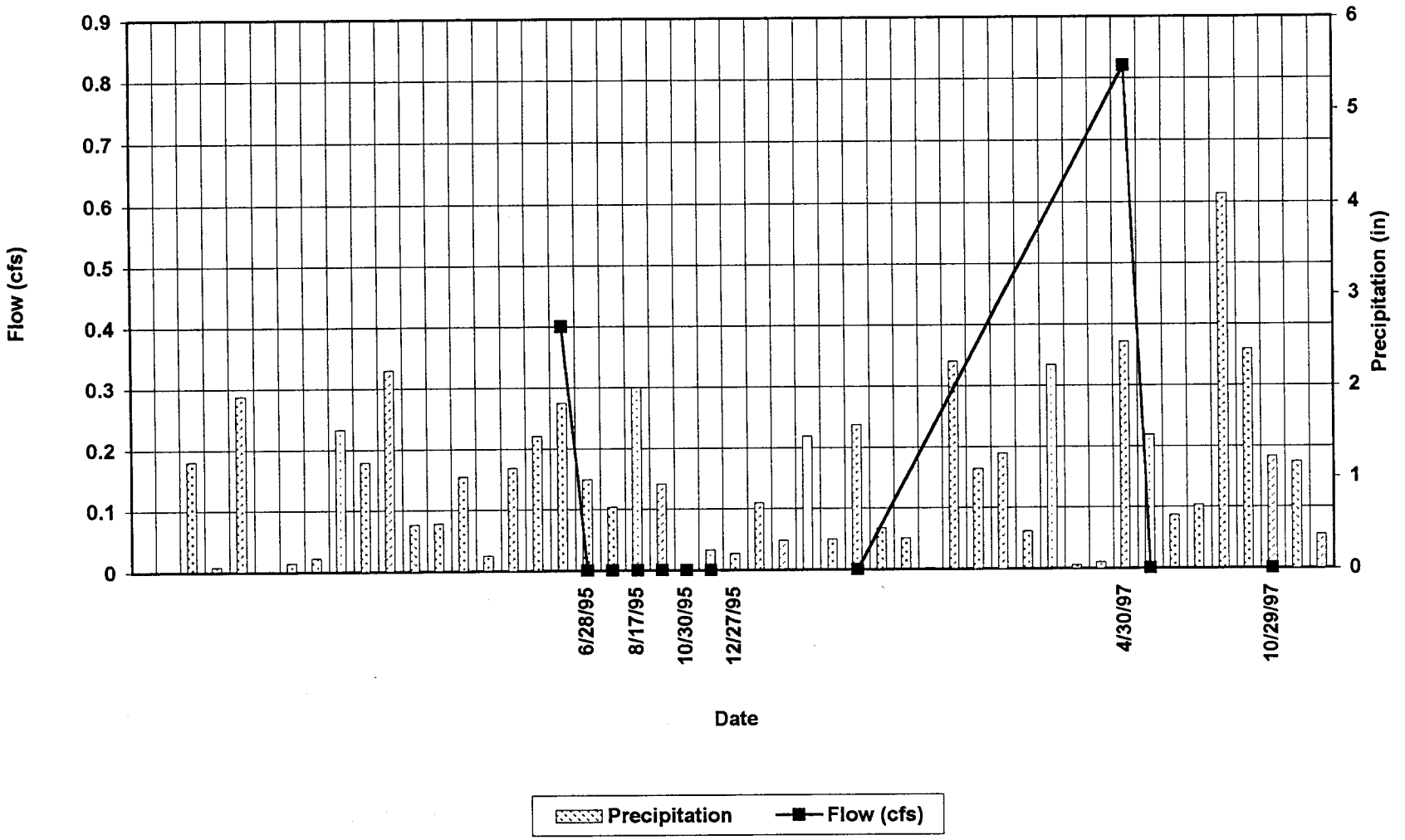


Table 23

Station: B26 | **Property: Willow Creek** | **Location: NW1/4,SE1/4,NE1/4,SE1/4,SEC 28, T12S, R9E** | **Station Type: Stream**

Date Yr-Mo	Sample Date	Field Measurements Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	Laboratory Measurements TDS (mg/l)	TSS (mg/l)	SS (mg/l)	O&G (mg/l)	Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)
94 1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
95 1																								
2																								
3																								
4																								
5	5/29/95	0.4	8.8	543	7.7	9.6	330	92	0.2	1				267	15	4	40	45.8	2.1	6	0.07	0.05	0.02	0.07
6	6/28/95	0																						
7	7/21/95	0																						
8	8/17/95	0																						
9	9/19/95	0																						
10	10/30/95	0																						
11	11/28/95	0																						
12	12/27/95																							
96 1																								
2																								
3	3/27/96																							
4																								
5	5/29/96	0																						
6																								
7																								
8																								
9																								
10																								
11																								
12																								
97 1																								
2																								
3	3/20/97																							
4	4/30/97	0.82	9.12	429	2..5	10..1	343			1		344		280	19	4	40	50.8	2.2	5.9				
5	6/20/97	0																						
6																								
7																								
8																								
9																								
10	10/29/97	0																						
11																								
12																								
Average		0.111	8.960	486.000	7.700	9.600	336.500	92.000	0.200	1.000	#DIV/0!	344.000	#DIV/0!	273.500	17.000	4.000	40.000	48.300	2.150	5.950	0.070	0.050	0.020	0.07
Number of Entries		11	2	2	1	1	2	1	1	2	0	1	0	2	2	2	2	2	2	2	1	1	1	
Max Value		0.82	9.12	543	7.7	9.6	343	92	0.2	1	0	344	0	280	19	4	40	50.8	2.2	6	0.07	0.05	0.02	0.0
Min Value		0	8.8	429	7.7	9.6	330	92	0.2	1	0	344	0	267	15	4	40	45.8	2.1	5.9	0.07	0.05	0.02	0.0
Standard Dev.		0.264	0.226	80.610	#DIV/0!	#DIV/0!	9.192	#DIV/0!	#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	9.192	2.828	0.000	0.000	3.536	0.071	0.071	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

* Below detection limit. Value entered is 1/2 of the detection limit.

Table 23

Station: B26 **Sampling Frequency: Quarterly** **Elevation: 6050**

Date Yr-Mo	Sample Date	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)
		Laboratory Measurements															
94 1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
95 1																	
2																	
3																	
4																	
5	5/29/95	0.022	0.015 *	0.001	0.02	0.0015 *	0.005 *	0.005 *	3.18	0.01 *	54.8	0.0025	0.053	0.005 *	0.003	0.0005 *	3.7
6	6/28/95																
7	7/21/95																
8	8/17/95																
9	9/19/95																
10	10/30/95																
11	11/28/95																
12	12/27/95																
96 1																	
2																	
3	3/27/96																
4																	
5	5/29/96																
6																	
7																	
8																	
9																	
10																	
11																	
12																	
97 1																	
2																	
3	3/20/97																
4	4/30/97							0.005 *	2.77		52.7	0.0025	0.075				1.7
5	6/20/97																
6																	
7																	
8																	
9																	
10	10/29/97																
11																	
12																	
Average		0.022	0.015	0.001	0.020	0.002	0.005	0.005	2.975	0.010	53.750	0.003	0.064	0.005	0.003	0.001	2.700
Number of Entries		1	1	1	1	1	1	2	2	1	2	2	2	1	1	1	2
Max Value		0.022	0.015	0.001	0.02	0.0015	0.005	0.005	3.18	0.01	54.8	0.0025	0.075	0.005	0.003	0.0005	3.7
Min Value		0.022	0.015	0.001	0.02	0.0015	0.005	0.005	2.77	0.01	52.7	0.0025	0.053	0.005	0.003	0.0005	1.7
Standard Dev.		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.000	0.290	#DIV/0!	1.485	0.000	0.016	#DIV/0!	#DIV/0!	#DIV/0!	1.414

* Below detection lim

Table 23

Station: B26

Date Yr-Mo		Sample Date	Comments
94	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
95	1		
	2		
	3		
	4		
	5	5/29/95	Snow Melt
	6	6/28/95	No Flow
	7	7/21/95	
	8	8/17/95	
	9	9/19/95	
	10	10/30/95	
	11	11/28/95	
	12	12/27/95	Frozen, not possible to monitor.
96	1		
	2		
	3	3/27/96	Frozen, not possible to monitor.
	4		
	5	5/29/96	Dry
	6		
	7		
	8		
	9		
	10		
	11		
	12		
97	1		
	2		
	3	3/20/97	Frozen, could not monitor.
	4	4/30/97	Snow melting. pH meter acting up - doubt reading
	5	6/20/97	
	6		
	7		
	8		
	9		
	10	10/29/97	
	11		
	12		
Average			
Number of Entries			
Max Value			
Min Value			
Standard Dev.			

* Below detection lim

Figure 24
Stream B263

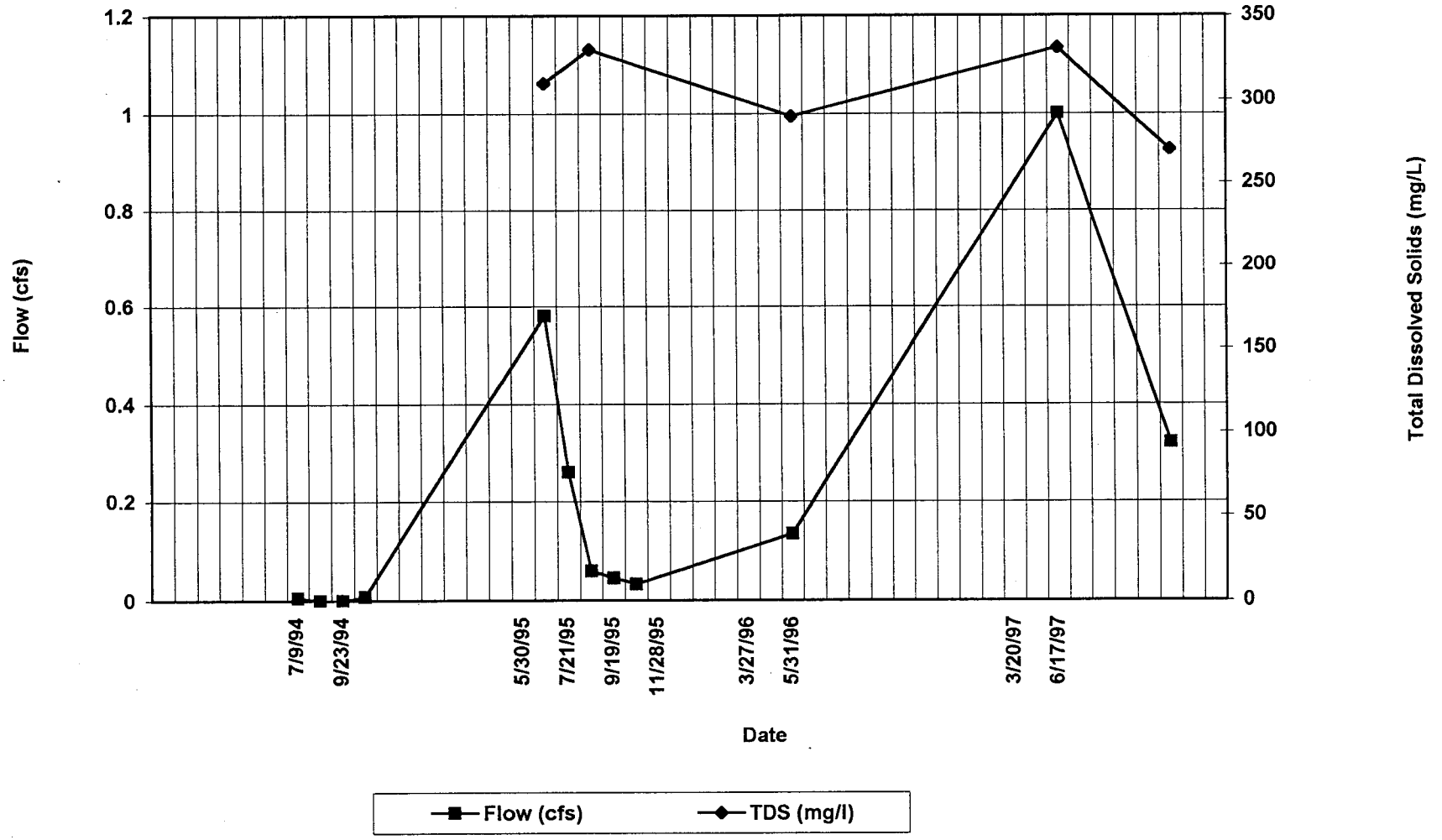


Figure 24A
Stream B263

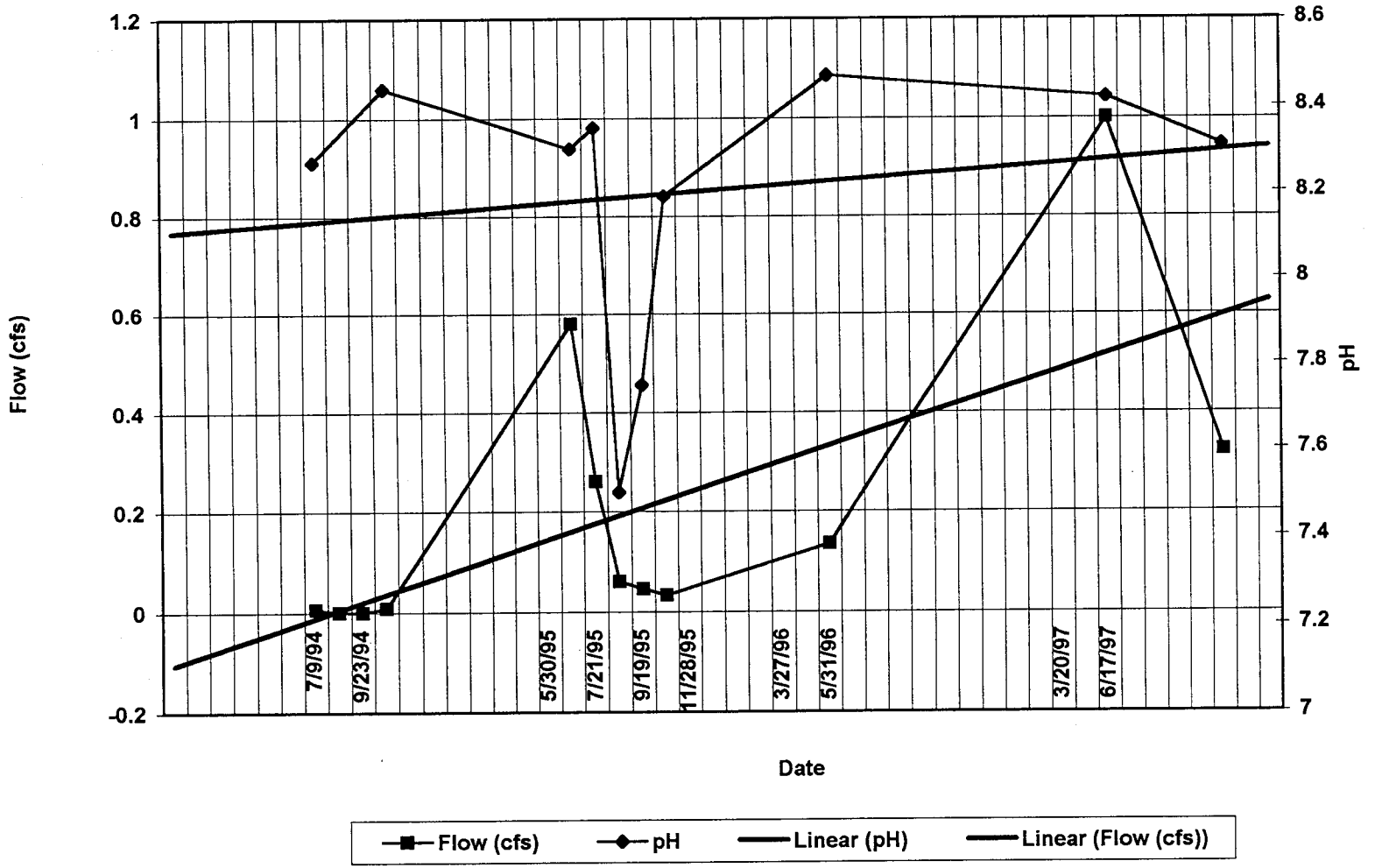


Figure 24B
Stream B263

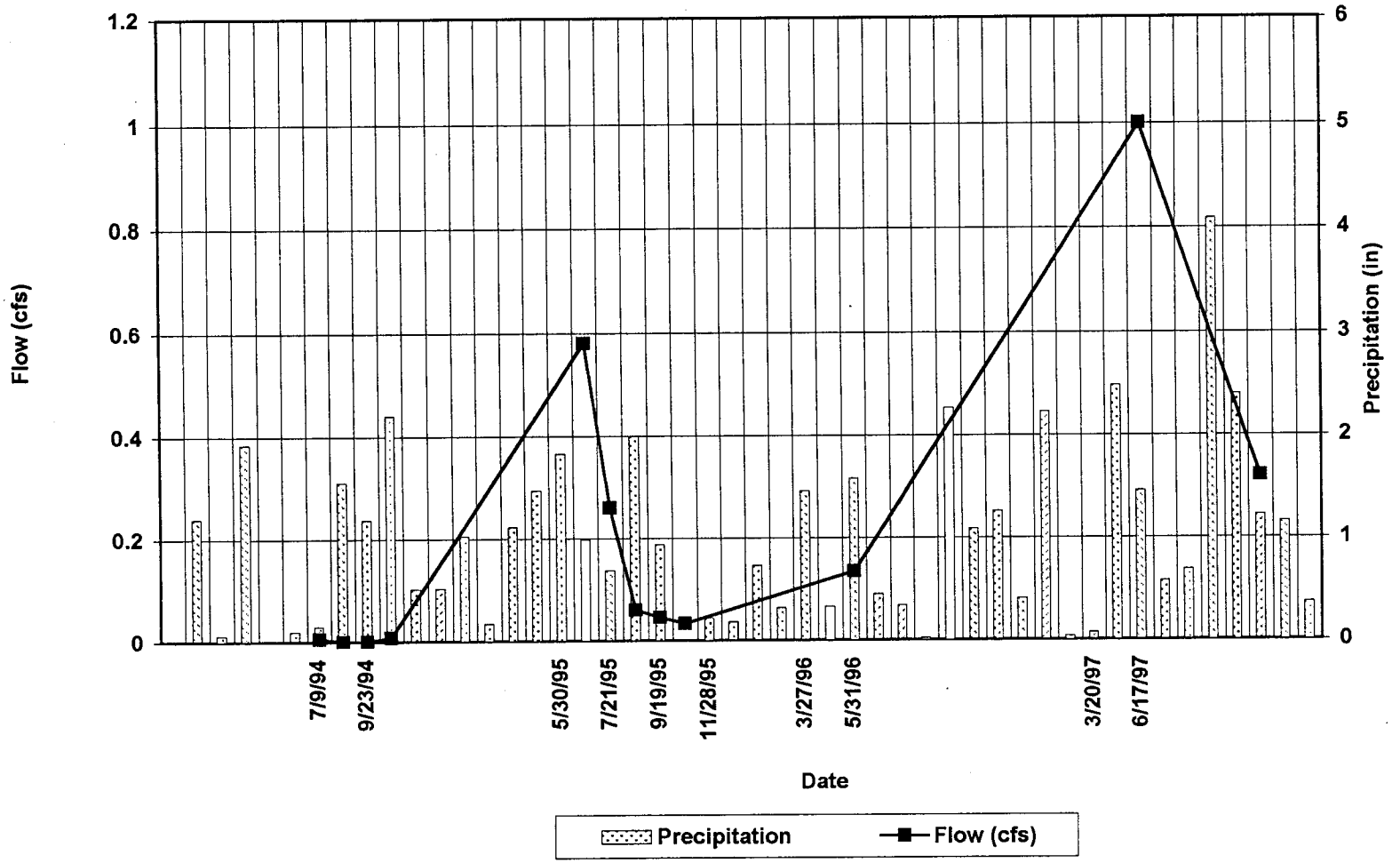


Table 24

Station: B263 | Property: Willow Creek | Location: | Station Type: Stream | Sampling Frequency: Quarterly

Date Yr-Mo		Sample Date	Field Measurements Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	Laboratory Measurements TDS (mg/l)	TSS (mg/l)	SS (ml/l)	O&G (mg/l)		Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)		Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)
94	1																						
	2																						
	3																						
	4																						
	5																						
	6																						
	7	7/9/94	0.006	8.27	548	21.1	5.8																
	8	8/7/94	0																				
	9	9/23/94	0																				
	10	10/20/94	0.008	8.44	513	1	6																
	11																						
	12																						
95	1																						
	2																						
	3																						
	4																						
	5	5/30/95																					
	6	6/28/95	0.58	8.3	468	15.6	6.9	310	38	0.05	1	*				286	1	*	9	50	75.9	1.8	14.4
	7	7/21/95	0.26	8.35	470	18.3	8.3																
	8	8/17/95	0.06	7.5	592	22.5	7	330	140	0.1	1	*				296	10		9	11	77.2	2.6	15.4
	9	9/19/95	0.045	7.75	605	14	8.5																
	10	10/30/95	0.033	8.19	626	4	10																
	11	11/28/95																					
	12	12/27/95																					
96	1																						
	2																						
	3	3/27/96																					
	4																						
	5	5/31/96	0.134	8.47	401	11.1	8.1	290	72	0.05	1	*		289		290	1	*	7	10	71.9	1.8	12.3
	6																						
	7																						
	8																						
	9																						
	10																						
	11																						
	12																						
97	1																						
	2																						
	3	3/20/97																					
	4	4/30/97																					
	5	6/17/97	1	8.42	469	12	10.2	331			1	*		290		314	1	*	9	20	71.3	2.5	12.7
	6																						
	7																						
	8																						
	9																						
	10	10/29/97	0.32	8.31	916	3.5		270	15		2.5	*	320	300		320	5	*	9.9	13	75	1.6	14
	11																						
	12																						
Average			0.204	8.200	560.800	12.310	7.867	306.200	66.250	0.067	1.300		320.000	293.000	#DIV/0!	301.200	3.600		8.780	20.800	74.260	2.060	13.760
Number of Entries			12.000	10.000	10.000	10.000	9.000	5.000	4.000	3.000	5.000		1.000	3.000	0.000	5.000	5.000		5.000	5.000	5.000	5.000	5.000
Max Value			1.000	8.470	916.000	22.500	10.200	331.000	140.000	0.100	2.500		320.000	300.000	0.000	320.000	10.000		9.900	50.000	77.200	2.600	15.400
Min Value			0.000	7.500	401.000	1.000	5.800	270.000	15.000	0.050	1.000		320.000	289.000	0.000	286.000	1.000		7.000	10.000	71.300	1.600	12.300
Standard Dev.			0.306	0.320	143.996	7.504	1.584	26.310	54.457	0.029	0.671		#DIV/0!	6.083	#DIV/0!	15.007	3.975		1.069	16.784	2.560	0.456	1.266

Table 24

Station: B263

Date Yr-Mo		Sample Date	NH3 (mg/l)	NO3asN (mg/l)	NO2asN (mg/l)	NO3/NO2asN (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)
94	1																	
	2																	
	3																	
	4																	
	5																	
	6																	
	7	7/9/94																
	8	8/7/94																
	9	9/23/94																
	10	10/20/94																
	11																	
	12																	
95	1																	
	2																	
	3																	
	4																	
	5	5/30/95																
	6	6/28/95	0.05	0.03	0.005 *	0.03	0.022	0.12	0.001	0.04	0.0015 *	0.005 *	0.09	0.83	0.01 *	25.9	0.029	0.047
	7	7/21/95																
	8	8/17/95	0.025 *	0.08	0.005 *	0.08	0.027	0.68	0.001	0.03	0.009	0.005 *	0.53	3.86	0.01 *	30.5	0.093	0.122
	9	9/19/95																
	10	10/30/95																
	11	11/28/95																
	12	12/27/95																
96	1																	
	2																	
	3	3/27/96																
	4																	
	5	5/31/96											0.005 *	1.97		26.5	0.006	0.085
	6																	
	7																	
	8																	
	9																	
	10																	
	11																	
	12																	
97	1																	
	2																	
	3	3/20/97																
	4	4/30/97																
	5	6/17/97											0.01	0.22		27.1	0.016	0.028
	6																	
	7																	
	8																	
	9																	
	10	10/29/97											0.005 *	0.13		27	0.008	0.18
	11																	
	12																	
Average			0.038	0.055	0.005	0.055	0.025	0.400	0.001	0.035	0.005	0.005	0.128	1.402	0.010	27.400	0.030	0.092
Number of Entries			2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	5.000	5.000	2.000	5.000	5.000	5.000
Max Value			0.050	0.080	0.005	0.080	0.027	0.680	0.001	0.040	0.009	0.005	0.530	3.860	0.010	30.500	0.093	0.180
Min Value			0.025	0.030	0.005	0.030	0.022	0.120	0.001	0.030	0.002	0.005	0.005	0.130	0.010	25.900	0.006	0.028
Standard Dev.			0.018	0.035	0.000	0.035	0.004	0.396	0.000	0.007	0.005	0.000	0.228	1.558	0.000	1.797	0.036	0.061

Table 24

Station: B263 Elevation:

Date Yr-Mo		Sample Date	Mo (mg/l)		Se (mg/l)		Zn (mg/l)		Cat/An (meg/l)	Comments
94	1									
	2									
	3									
	4									
	5									
	6									
	7	7/9/94								
	8	8/7/94								Dry.
	9	9/23/94								Damp, no measurement possible.
	10	10/20/94								Probably snow melt.
	11									
	12									
95	1									
	2									
	3									
	4									
	5	5/30/95								Not accessable/extremely slick roads\storm moving in. Tried again 5/31 with same results
	6	6/28/95	0.005	*	0.0005	*	0.005	*	-2.9	Slightly turbid.
	7	7/21/95								
	8	8/17/95	0.005	*	0.0005	*	0.005	*	4.4	
	9	9/19/95								
	10	10/30/95								
	11	11/28/95								Road impassible. Too dangerous to get there.
	12	12/27/95								Inaccessable.
96	1									
	2									
	3	3/27/96								Inaccessible.
	4									
	5	5/31/96							1.2	
	6									
	7									
	8									
	9									
	10									
	11									
	12									
97	1									
	2									
	3	3/20/97								Inaccessable deep snow
	4	4/30/97								Inaccessable deep snow
	5	6/17/97							-4	
	6									
	7									
	8									
	9									
	10	10/29/97							-2.5	
	11									
	12									
Average			0.005		0.001		0.005		-0.760	
Number of Entries			2.000		2.000		2.000		5.000	
Max Value			0.005		0.001		0.005		4.400	
Min Value			0.005		0.001		0.005		-4.000	
Standard Dev.			0.000		0.000		0.000		3.485	

Figure 25
Stream B353

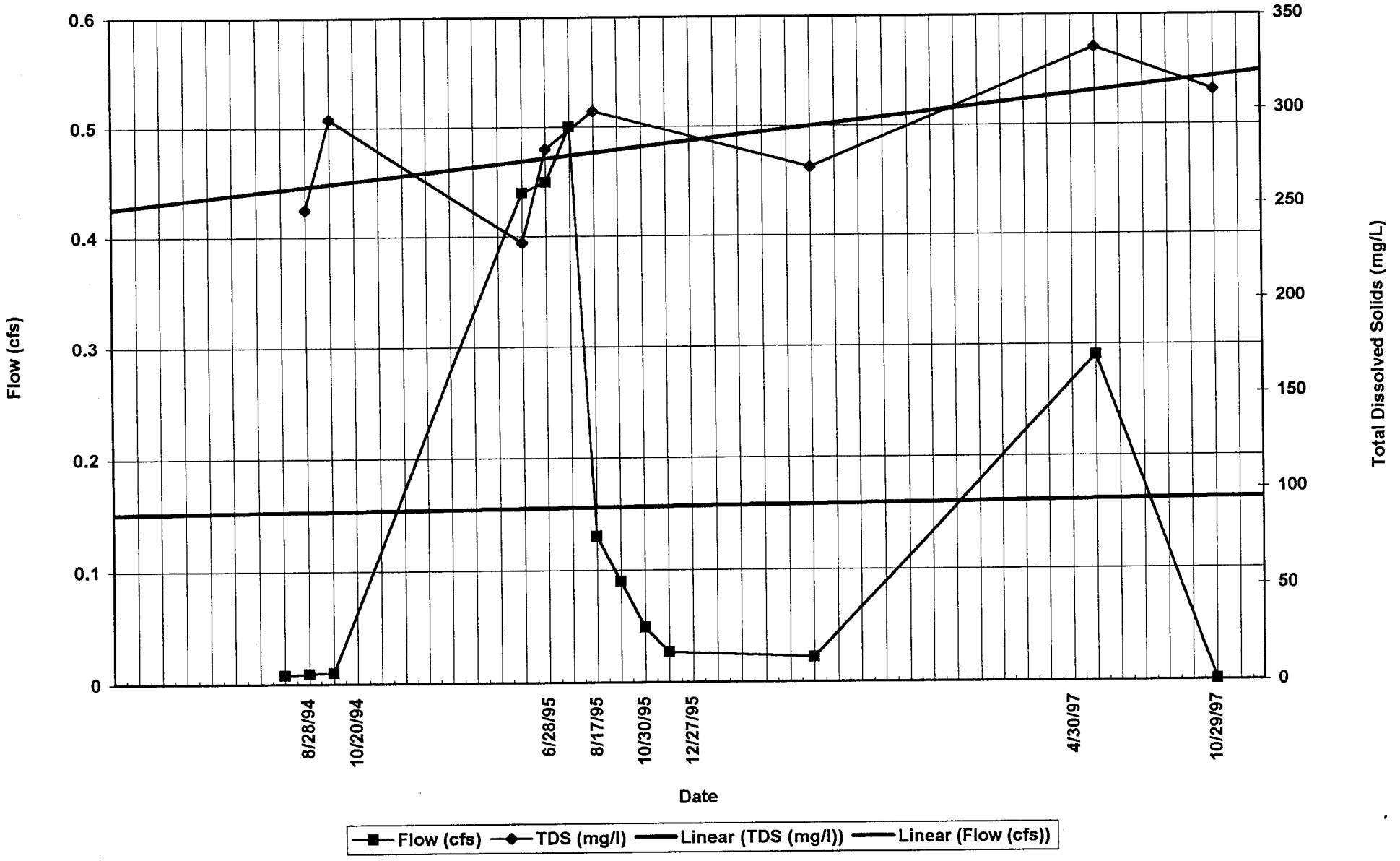


Figure 25A
Stream B353

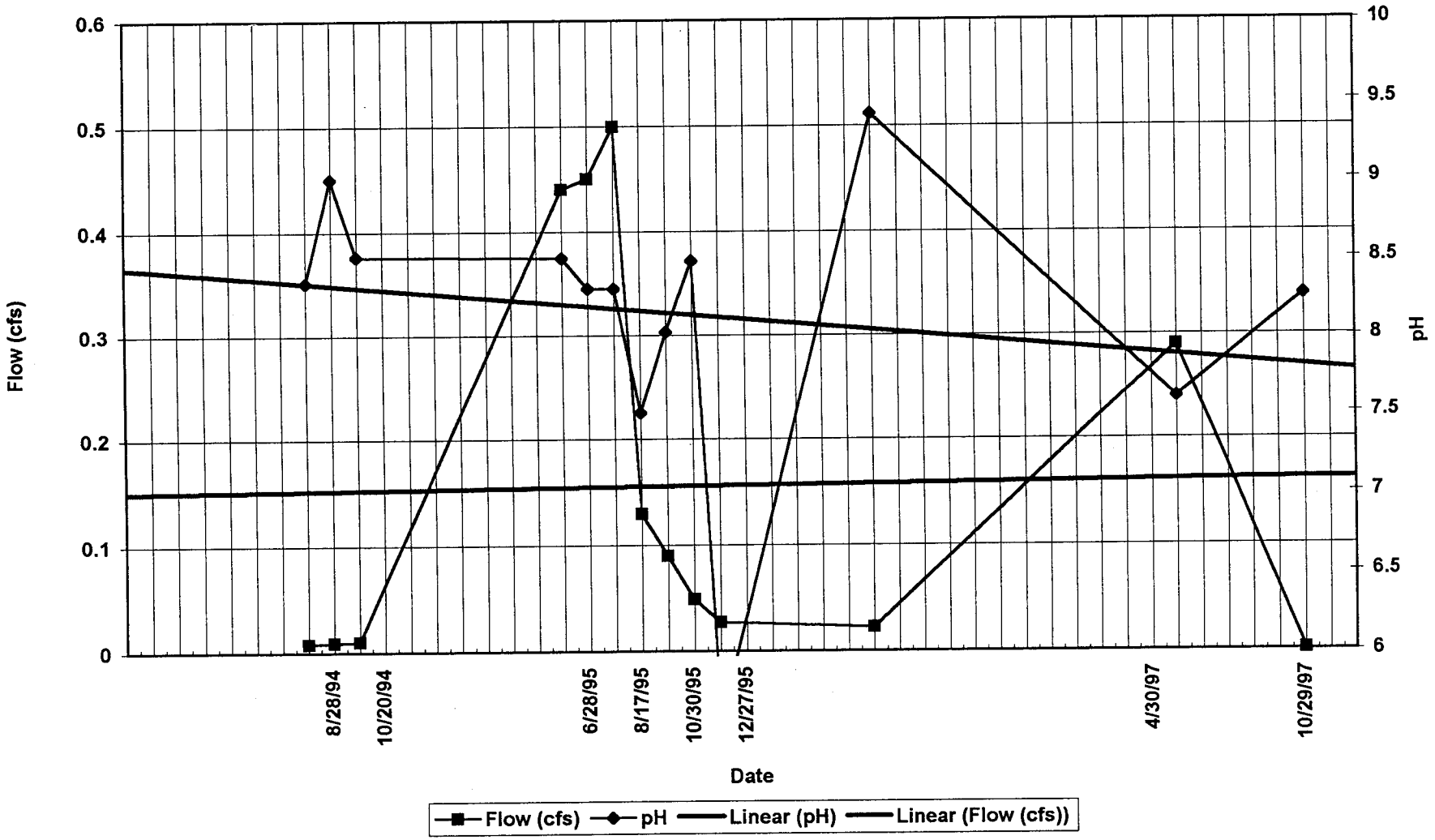


Figure 25B
Stream B353

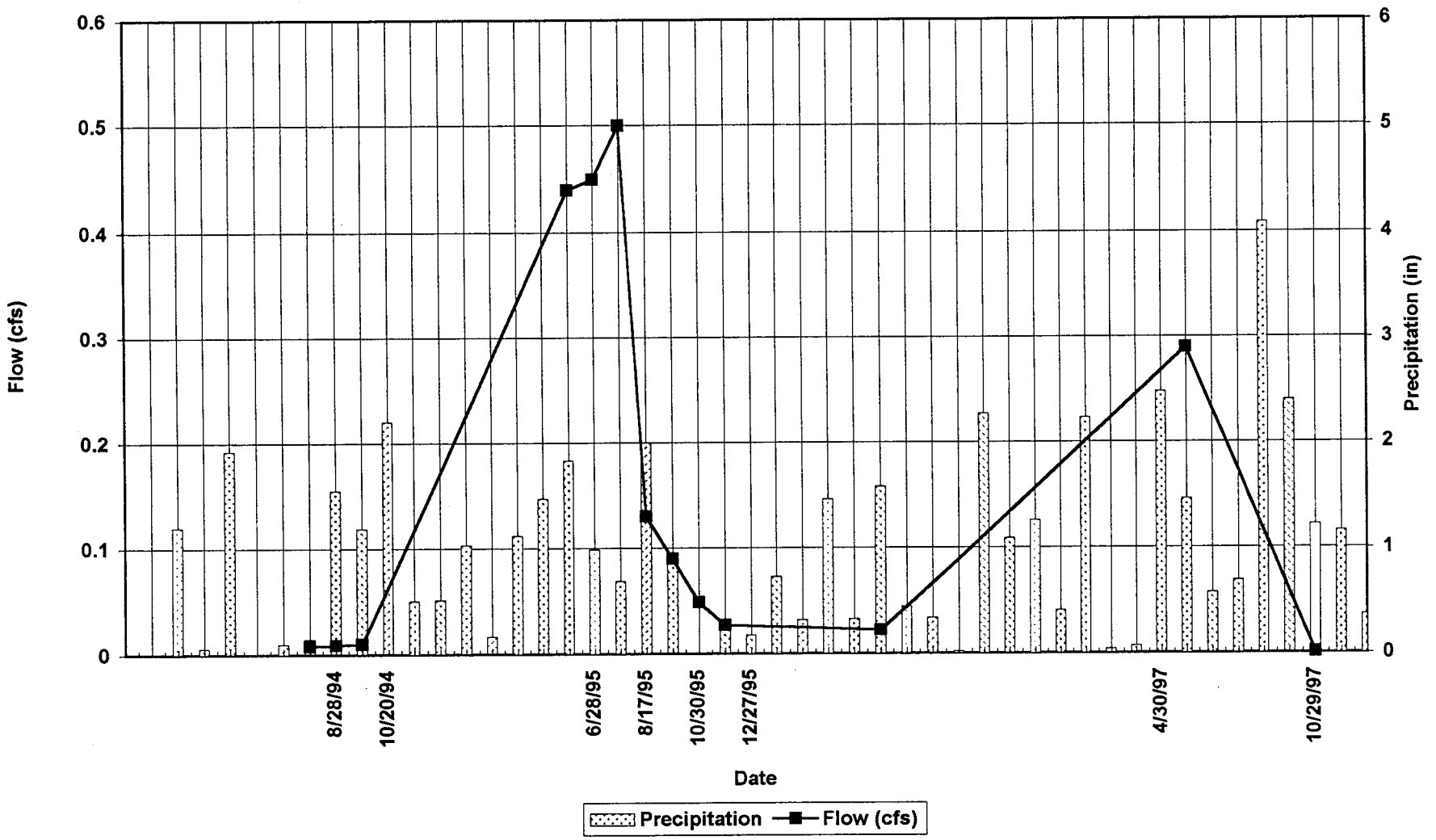


Table 25

Station: B353 **Property:** Willow Creek **Location:** SE 1/4, NE 1/4, Sec. 35, T12S, R9E **Station Type:** Stream

Date	Sample	Field Measurements					Laboratory Measurements																								
		Flow	Ph	Sp. Cond.	Temp.	Diss. O	TDS	TSS	SS	O&G	Al-CaCO3	Hd-CaCO3	Ac-CaCO3	HCO3	CO3	Cl	SO4	Ca	K	Na	NH3	NO3asN	NO2asN	NO3/NO2asN	P	Al	As	B	Cd	Cu	IRON-DISS
Yr-Mo	Date	(cfs)	(units)	(ohms)	(C)	(ppm)	(mg/l)	(mg/l)	(ml/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
94 1																															
2																															
3																															
4																															
5																															
6																															
7	7/9/94	0.008	8.34	501	20.6	7																									
8	8/28/94	0.009	9	508	13.5		248			2	250	290		250	0	5	31	62	2	11	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.001	0.03	0.0025 *	0.005 *	0.02
9	9/23/94	0.01	8.51	573	9.3	7.4	296	1 *	0.05 *	2	275	304		275	0	4	29	66	2	11	0.025 *	0.01 *	0.005 *	0.01 *	0.0025 *	0.025 *	0.002	0.02	0.0025 *	0.005 *	0.01 *
10	10/20/94																														
11																															
12																															
95 1																															
2																															
3																															
4																															
5	5/30/95	0.44	8.5	566	6.1	9.8	230	2.5 *	0.2 *	1 *				275	1 *	4	10	75.9	1.1	8.1	0.025 *	0.4	0.005 *	0.4	0.0025 *	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.03
6	6/28/95	0.45	8.3	468	9.6	9	280	18	0.05 *	1 *				281	1 *	4	40	70.2	0.9	8.9	0.025 *	0.21	0.005 *	0.21	0.0025 *	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *
7	7/20/95	0.5	8.3	488	11.1	10.7																									
8	8/17/95	0.13	7.5	575	11.6	8.4	300	24	0.05	1 *				281	1 *	3	26	73.6	1.1	9.6	0.025 *	0.06	0.005 *	0.06	0.0025 *	0.015 *	0.0005 *	0.02	0.0015 *	0.005 *	0.005 *
9	9/19/95	0.09	8.02	555	10.2	8.6																									
10	10/30/95	0.049	8.48	549	4.8	9.9																									
11	11/28/95	0.027	5.57	650	0	10.8																									
12	12/27/95																														
96 1																															
2																															
3																															
4																															
5	5/31/96	0.022	9.41	354	10.1	8.2	270	2.5 *	0.05 *	1 *		274		253	1 *	3	30	60.1	1	9											0.01
6																															
7																															
8																															
9																															
10																															
11																															
12																															
97 1																															
2																															
3	3/20/97																														
4	4/30/97																														
5	6/17/97	0.29	7.6	523	6.1	12	333			1 *		310		308	1 *	5	30	72.1	0.9	8.8											0.005 *
6																															
7																															
8																															
9																															
10	10/29/97	0.001	8.26	666	4		310	0.5 *		2.5 *	360	290		360	5 *	3.6	32	70	1	9											0.005 *
11																															
12																															
Average		0.156	8.14	536.615	9.000	9.255	283.4	8.083	0.08	1.438	295.000	293.600	#DIV/0!	285.375	1.250	3.950	28.500	68.738	1.250	9.425	0.025	0.138	0.005	0.138	0.003	0.019	0.001	0.022	0.002	0.005	0.011
Number of Entries		13	13	13	13	11	8	6	5	8	3	5	0	8	8	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	8
Max Value		0.5	9.41	666	20.6	12	333	24	0.2	2.5	360	310	0	360	5	5	40	75.9	2	11	0.025	0.4	0.005	0.4	0.0025	0.025	0.002	0.03	0.0025	0.005	0.03
Min Value		0.001	5.57	354.000	0.000	7.000	230.00	0.50	0.05	1.000	250.000	274.000	0.000	250.000	0.000	3.000	10.000	60.100	0.900	8.100	0.025	0.010	0.005	0.010	0.003	0.015	0.001	0.020	0.002	0.005	0.005
Standard Dev.		0.192	0.92	79.813	5.079	1.536	33.59	10.21	0.07	0.623	57.663	14.029	#DIV/0!	35.120	1.581	0.769	8.485	5.574	0.469	1.054	0.000	0.168	0.000	0.168	0.000	0.005	0.001	0.004	0.001	0.000	0.009

Table 25

Station: B353 **Elevation: 6050**

Date Yr-Mo	Sample Date	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS. (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)	Comments
94 1												
2												
3												
4												
5												
6												
7	7/9/94											
8	8/28/94	0.29	0.01 *	33		0.005 *	0.02	0.005 *	0.005 *		4.53	Heavy cow activity, recent rain, water clear.
9	9/23/94	0.08	0.01 *	34		0.01	0.005 *	0.005 *	0.0005 *	0.005 *	3.12	No recent cow activity.
10	10/20/94											Not accessible.
11												
12												
95 1												
2												
3												
4												
5	5/30/95	0.16	0.01 *	27.6		0.006	0.015	0.005 *	0.0005 *	0.005 *	4.8	Snow melt time. Turbid
6	6/28/95	0.22	0.01 *	25.9		0.009	0.018	0.005 *	0.0005 *	0.005 *	-4.3	
7	7/20/95											
8	8/17/95	0.43	0.01 *	34		0.008	0.02	0.005 *	0.001 *	0.005 *	5.1	
9	9/19/95											
10	10/30/95											
11	11/28/95											
12	12/27/95											Frozen, not possible to monitor.
96 1												
2												
3												
4												
5	5/31/96	0.09		30		0.005	0.0025 *				1	
6												
7												
8												
9												
10												
11												
12												
97 1												
2												
3	3/20/97											Inaccessible deep snow.
4	4/30/97											Inaccessible deep snow.
5	6/17/97	0.21		31.5		0.0025 *	0.011				-2.4	
6												
7												
8												
9												
10	10/29/97	0.06		29		0.0025 *	0.0025 *				-12	
11												
12												
Average		0.193	0.010	30.625	#DIV/0!	0.006	0.012	0.005	0.002	0.005	-0.019	
Number of Entries		8	5	8	0	8	8	5	5	4	8	
Max Value		0.43	0.01	34	0	0.01	0.02	0.005	0.005	0.005	5.1	
Min Value		0.060	0.010	25.900	0.000	0.003	0.003	0.005	0.001	0.005	-12.00	
Standard Dev.		0.125	0.000	3.017	#DIV/0!	0.003	0.008	0.000	0.002	0.000	5.959	

Figure 26
BN221

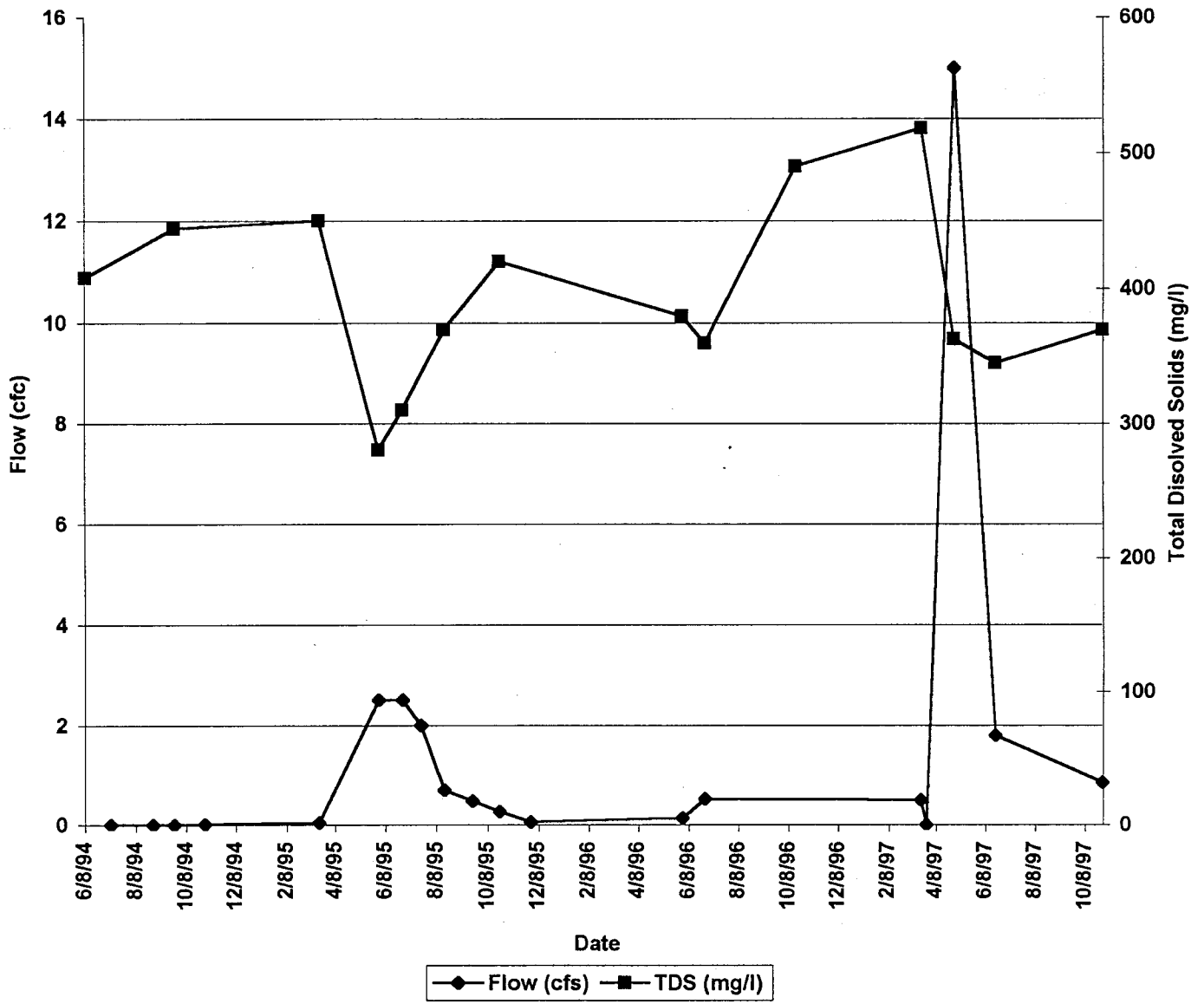


Figure 26A
BN221

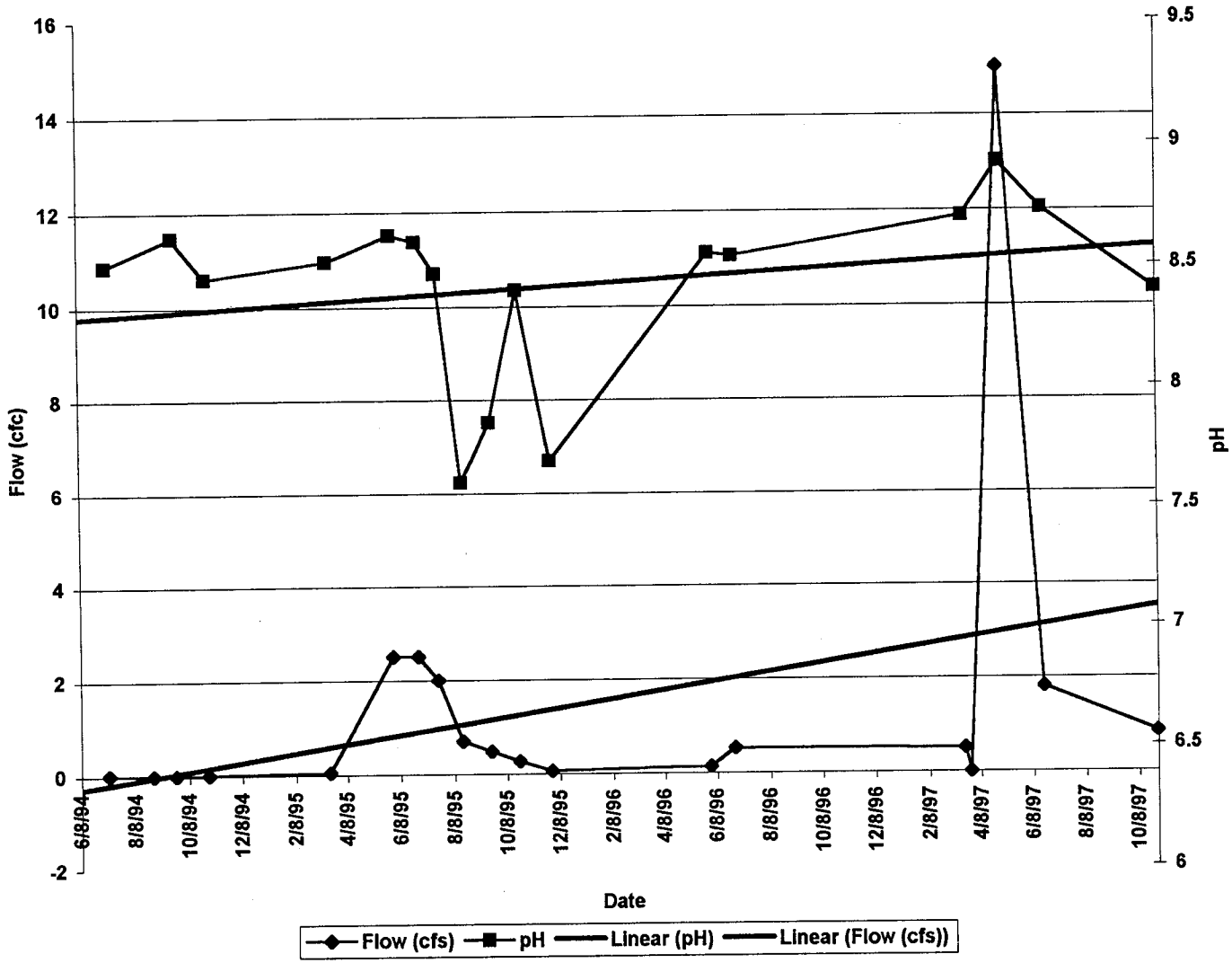


Figure 26B
BN221

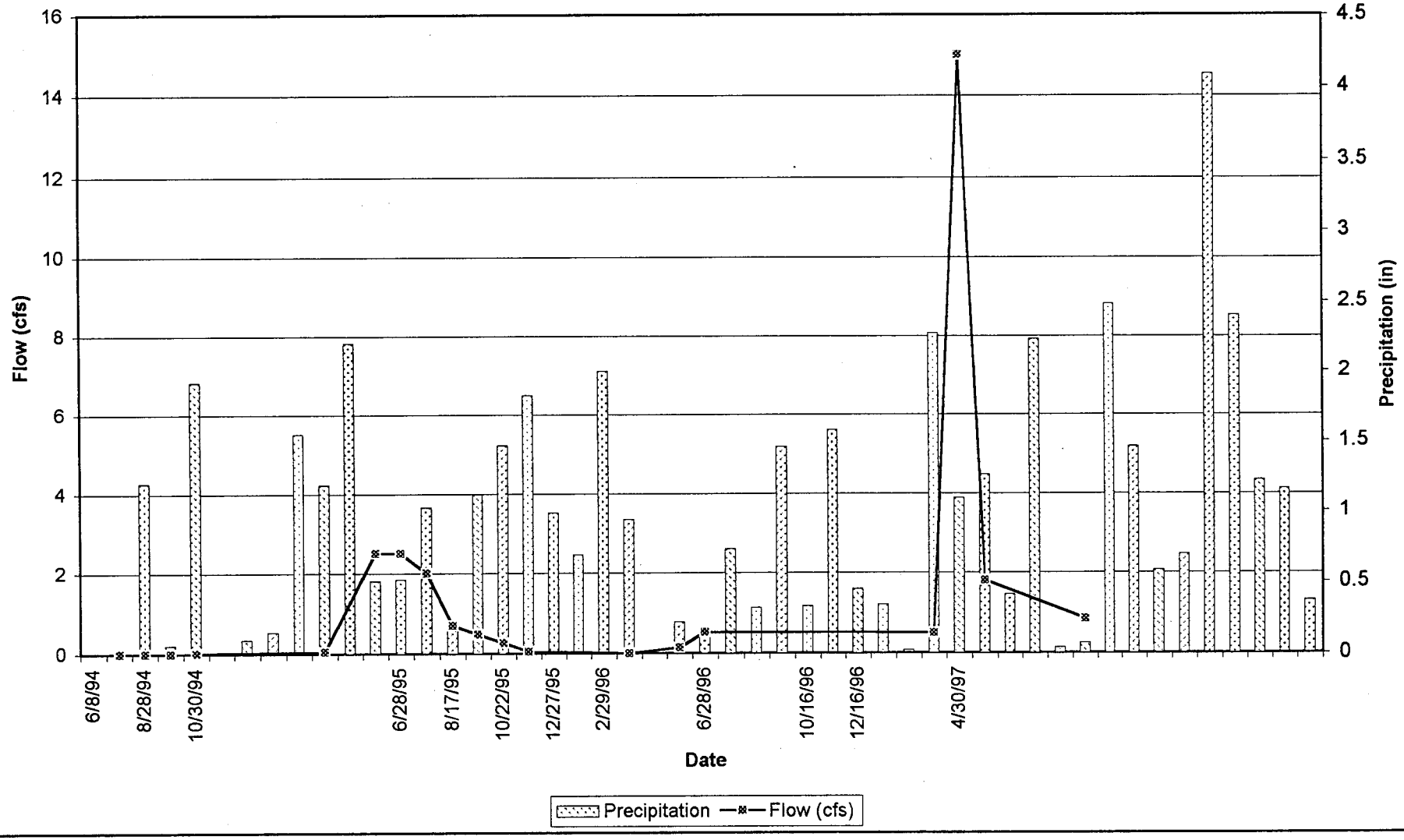


Table 26

Station: BN221 | Property: Willow Creek | Location: | Quarterly

Yr-Mo	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Diss. O (ppm)	TDS (mg/l)	TSS (mg/l)	SS (m/l/l/hr)	O&G (mg/l)		Al-CaCO3 (mg/l)	Hd-CaCO3 (mg/l)	Ac-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)		Cl (mg/l)	SO4 (mg/l)	Ca (mg/l)	K (mg/l)	Na (mg/l)	NH3 (mg/l)		NO3asN (mg/l)		NO2asN (mg/l)	
94	1																											
2																												
3																												
4																												
5																												
6	6/8/94						408	2		0.5	*	330	261		314	16		9	86	51	2	26	0.06		0.02		0.005	*
7	7/9/94	0.005	8.5	705	25.1	5.9																						
8	8/28/94	0																										
9	9/23/94	0.002	8.62	714	16.3	7	444	2	0.05	0.5	*	325	372		305	20		13	99	44	2	36	0.025	*	0.06		0.005	*
10	10/30/94	0.007	8.45	910	1.5	6.7																						
11																												
12																												
95	1																											
2																												
3	3/19/95	0.045	8.52	768	0	9	450	2.5	0.05	1	*					1	*	12	80	49.5	1.2	28.1	0.025	*	0.01	*	0.005	*
4																												
5	5/30/95	2.5	8.63	568	8.6	9.2	280	2.5	0.05	1	*				272	1	*	6	20	58	1.2	16.9	0.025	*	0.05		0.005	*
6	6/28/95	2.5	8.6	652	14.3	8.4	310	2.5	0.05	1	*				296	1	*	8	70	55.7	1.7	42.9	0.025	*	0.05		0.005	*
7	7/20/95	2	8.47	512	17.1	9																						
8	8/17/95	0.7	7.6	700	11.4	9	370	2.5	0.05	1	*				302	10		7	59	60.1	1.5	20.2	0.025	*	0.1		0.005	*
9	9/19/95	0.473	7.85	675	10.2	9																						
10	10/22/95	0.267	8.4	664	6.4	9.2	420	2.5	0.05	3					322	17		9	67	63.8	1.5	20.1	0.025	*	0.01	*	0.005	*
11	11/28/95	0.056	7.69	772	1.5	10.9																						
12	12/27/95																											
96	1																											
2	2/29/96																											
3	3/27/97	0																										
4																												
5	5/31/96	0.134	8.55	517	6.6	11.3	380	2.5	0.05	1	*		364		334	1	*	9	60	58.6	1.4	22.3						
6	6/28/96	0.52	8.54	527	13	10.2	360	150	0.05	1	*		339		313	1	*		60	56.1	1.7	20.1						
7																												
8																												
9																												
10	10/16/96						490	10		9			419		368	10		14	100	57.5	1.8	35.8						
11																												
12	12/16/96																											
97	1																											
2																												
3	3/20/97	0.5	8.7	917	8	9.4	518			1	*		360		291	7		35	120	64.4	2.1	66						
4	4/30/97	15	8.92	457	3.2	9.6	363			1	*		316		271	17		16	40	77.1	2.6	17.9						
5	6/20/97	1.8	8.73	579	16.5	7.6	345			1	*		305		246	1	*	23	50	55.9	1.8	26.1						
6																												
7																												
8																												
9	10/29/97	0.85	8.4	862	3	9.2	370	10		2.5	*	310	310		310	5	*	27	60	57	1.6	39						
10																												
11																												
12																												
Average		1.440	8.422	676.412	9.571	8.859	393.429	17.182	0.050	1.750		321.667	338.44	#DIV/0!	303.385	7.714		14.462	69.357	57.764	1.721	29.814	0.030		0.043		0.005	
Number of Entries		19	17	17	17	17	14	11	8	14		3	9	0	13	14		13	14	14	14	14	7		7		7	
Max Value		15	8.92	917	25.1	11.3	518	150	0.05	9		330	419	0	368	20		35	120	77.1	2.6	66	0.06		0.1		0.005	
Min Value		0	7.6	457	0	5.9	280	2	0.05	0.5		310	261	0	246	1		6	20	44	1.2	16.9	0.025		0.01		0.005	
Standard Dev.		3.394	0.364	139.666	6.878	1.411	66.224	44.157	0.000	2.199		10.408	46.32	#DIV/0!	30.615	7.237		8.762	26.049	7.722	0.377	13.350	0.013		0.033		0.000	

Table 26

Station: BN221 — Elevation: 6050

Yr-Mo	Sample Date	NO3/NO2as (mg/l)	P (mg/l)	Al (mg/l)	As (mg/l)	B (mg/l)	Cd (mg/l)	Cu (mg/l)	IRON-DISS (mg/l)	IRON-TOTAL (mg/l)	Pb (mg/l)	Mg-DISS (mg/l)	Mg-TOTAL (mg/l)	Mn-DISS (mg/l)	Mn-TOTAL (mg/l)	Mo (mg/l)	Se (mg/l)	Zn (mg/l)	Cat/An (%)
94	1																		
2																			
3																			
4																			
5																			
6	6/8/94	0.02	0.0025 *	0.25 *	0.0005 *	0.05	0.0025 *	0.005 *	0.01 *	0.03		57		0.005 *	0.005 *	0.005 *	0.001		-1.41
7	7/9/94																		
8	8/28/94																		
9	9/23/94	0.06	0.0025 *	0.025 *	0.001	0.05	0.0025 *	0.005 *	0.01 *	0.08	0.01 *	64		0.005 *	0.005 *	0.005 *	0.001	0.005 *	0.78
10	10/30/94																		
11																			
12																			
95	1																		
2																			
3	3/19/95	0.01 *	0.0025 *	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.07	0.01 *	52.9		0.0025 *	0.006	0.005 *	0.007	0.005 *	-3.6
4																			
5	5/30/95	0.05	0.0025 *	0.015 *	0.0005 *	0.03	0.0015 *	0.005 *	0.005 *	0.2	0.01 *	39.6		0.0025 *	0.015	0.005 *	0.002	0.005 *	6.9
6	6/28/95	0.05	0.0025 *	0.015 *	0.0005 *	0.09	0.0015 *	0.005 *	0.005 *	0.13	0.01 *	44.6		0.006	0.0025 *	0.005 *	0.004	0.005 *	4.2
7	7/20/95																		
8	8/17/95	0.1	0.0025 *	0.015 *	0.0005 *	0.04	0.0015 *	0.005 *	0.02	0.07	0.01 *	53.2		0.007	0.007	0.005 *	0.003	0.005 *	3.8
9	9/19/95																		
10	10/22/95	0.01 *	0.0025 *	0.0015 *	0.002	0.04	0.0015 *	0.005 *	0.005 *	0.01	0.01 *	60.9		0.0025 *	0.0025 *	0.005 *	0.007	0.005 *	3.8
11	11/28/95																		
12	12/27/95																		
96	1																		
2	2/29/96																		
3	3/27/97																		
4																			
5	5/31/96								0.03	0.08		53		0.005	0.0025 *				0.6
6	6/28/96								0.21	2.99		48.3		0.012	0.071				-0.4
7																			
8																			
9																			
10	10/16/96								0.03	0.19		67		0.007	0.011				-0.3
11																			
12	12/16/96																		
97	1																		
2																			
3	3/20/97								0.01	0.06		48.4		0.007	0.01				3.5
4	4/30/97								0.005 *	1.77		30.1		0.014	0.115				0.9
5	6/20/97								0.01	0.28		40.3		0.014	0.028				4.9
6																			
7																			
8																			
9	10/29/97								0.005 *	1.8		40		0.022	0.032				-2.1
10																			
11																			
12																			
Average		0.043	0.003	0.048	0.001	0.047	0.002	0.005	0.026	0.554	0.010	49.950	#DIV/0!	0.008	0.022	0.005	0.004	0.005	1.541
Number of Entries		7	7	7	7	7	7	7	14	14	6	14	0	14	14	7	7	6	14
Max Value		0.1	0.0025	0.25	0.002	0.09	0.0025	0.005	0.21	2.99	0.01	67	0	0.022	0.115	0.005	0.007	0.005	6.9
Min Value		0.01	0.0025	0.0015	0.0005	0.03	0.0015	0.005	0.005	0.01	0.01	30.1	0	0.0025	0.0025	0.005	0.001	0.005	-3.6
Standard Dev.		0.033	0.000	0.089	0.001	0.021	0.000	0.000	0.054	0.929	0.000	10.427	#DIV/0!	0.006	0.032	0.000	0.003	0.000	3.020

Table 26

Station: BN221

Yr-Mo	Sample Date	Comments
94	1	
2		
3		
4		
5		
6	6/8/94	
7	7/9/94	
8	8/28/94	Dry.
9	9/23/94	
10	10/30/94	
11		
12		
95	1	
2		
3	3/19/95	Clear water. Snow melt. Drifts above site.
4		
5	5/30/95	Snow melt time. Clear
6	6/28/95	
7	7/20/95	
8	8/17/95	
9	9/19/95	
10	10/22/95	
11	11/28/95	Lots of ice, frozen over.
12	12/27/95	Frozen, not possible to monitor.
96	1	
2	2/29/96	Frozen, not possible to monitor.
3	3/27/97	Frozen solid.
4		
5	5/31/96	
6	6/28/96	Cloudy.
7		
8		
9		
10	10/16/96	
11		
12	12/16/96	Frozen, not possible to monitor.
97	1	
2		
3	3/20/97	
4	4/30/97	To high to measure. pH meter acting up - doubt reading.
5	6/20/97	
6		
7		
8		
9	10/29/97	
10		
11		
12		
Average		
Number of Entries		
Max Value		
Min Value		
Standard Dev.		

APPENDIX C
WELLS

Figure 27
Monitor Well B331

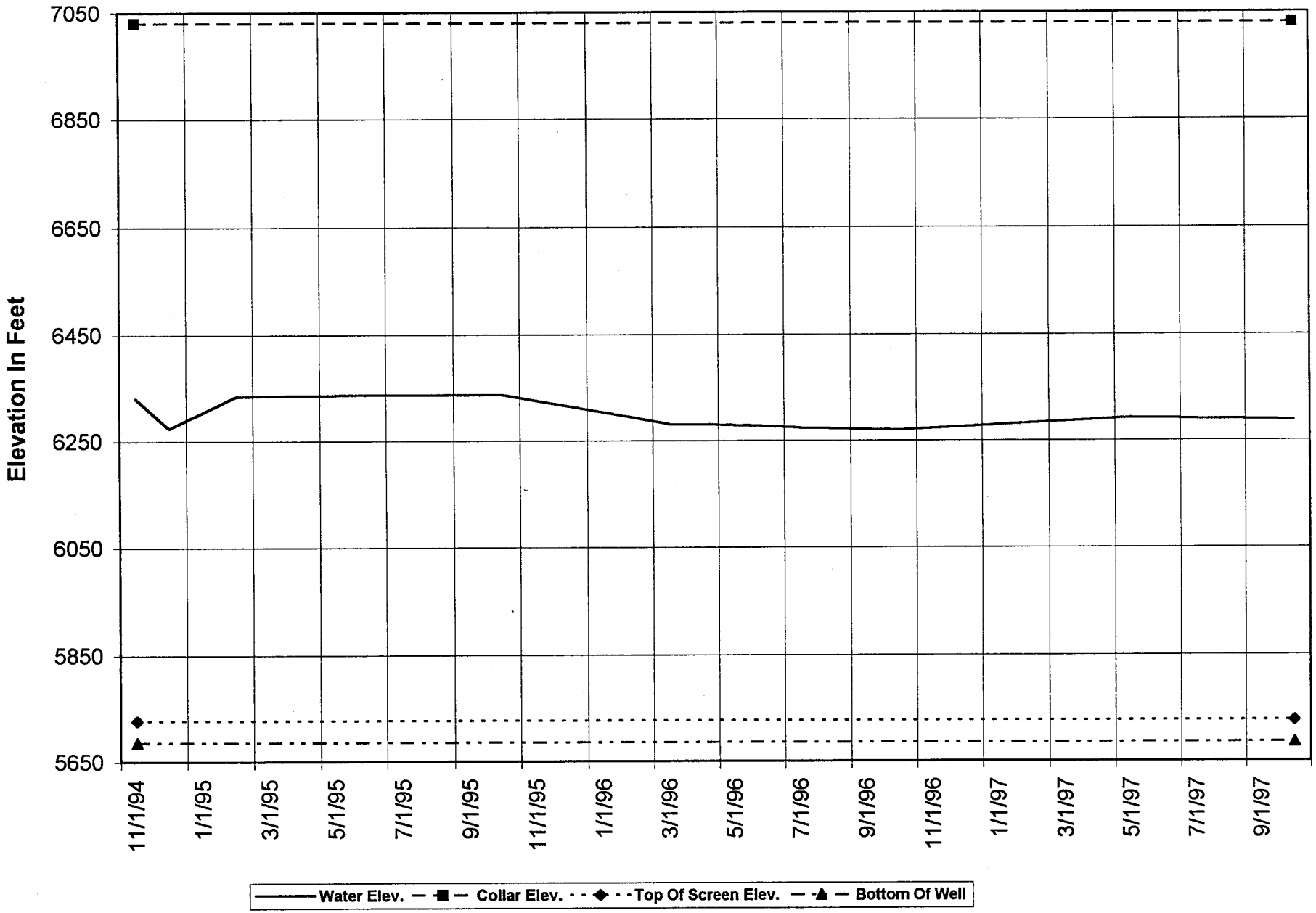


Figure 28
Monitor Well B331A

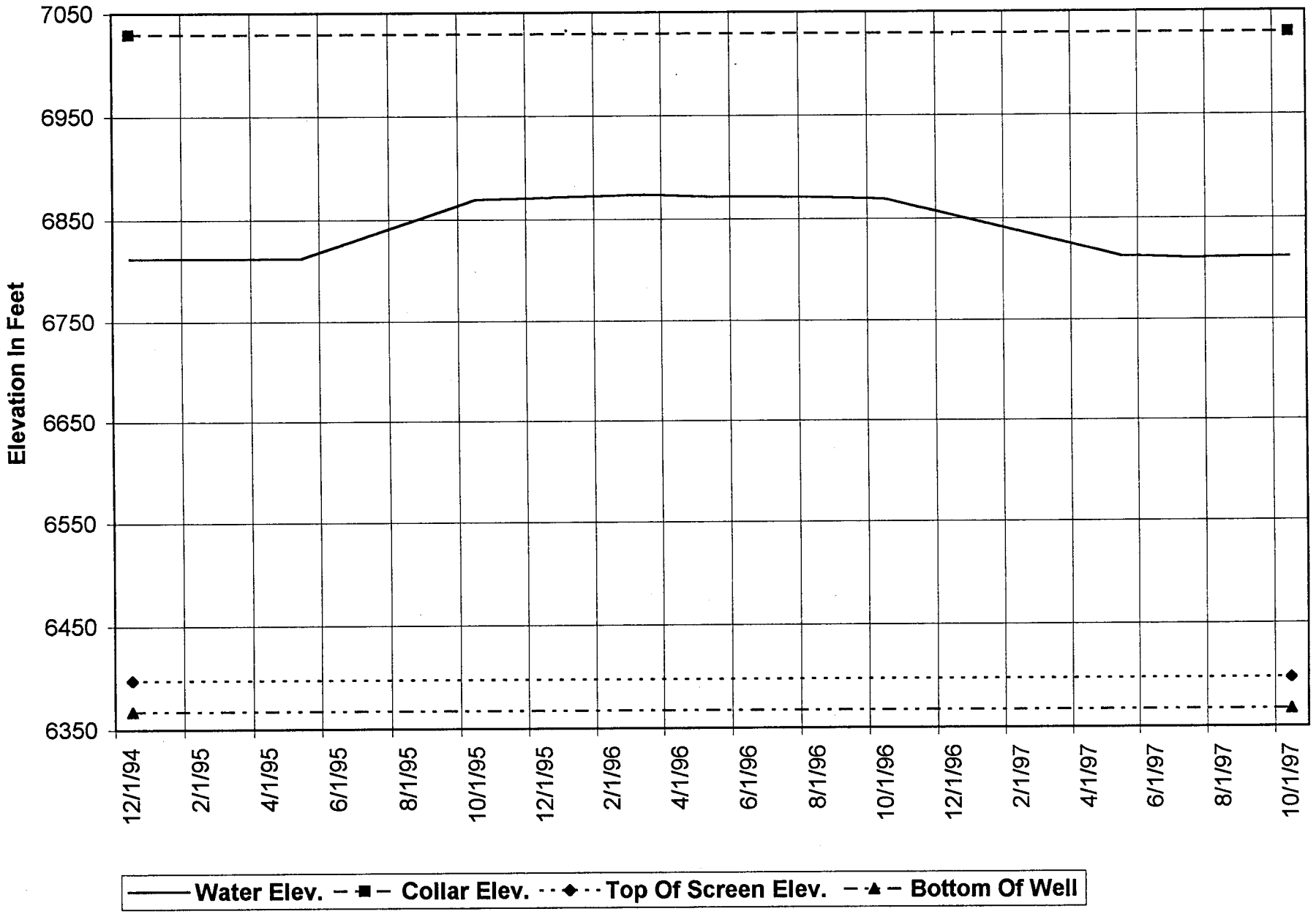


Figure 29
Monitor Well B51

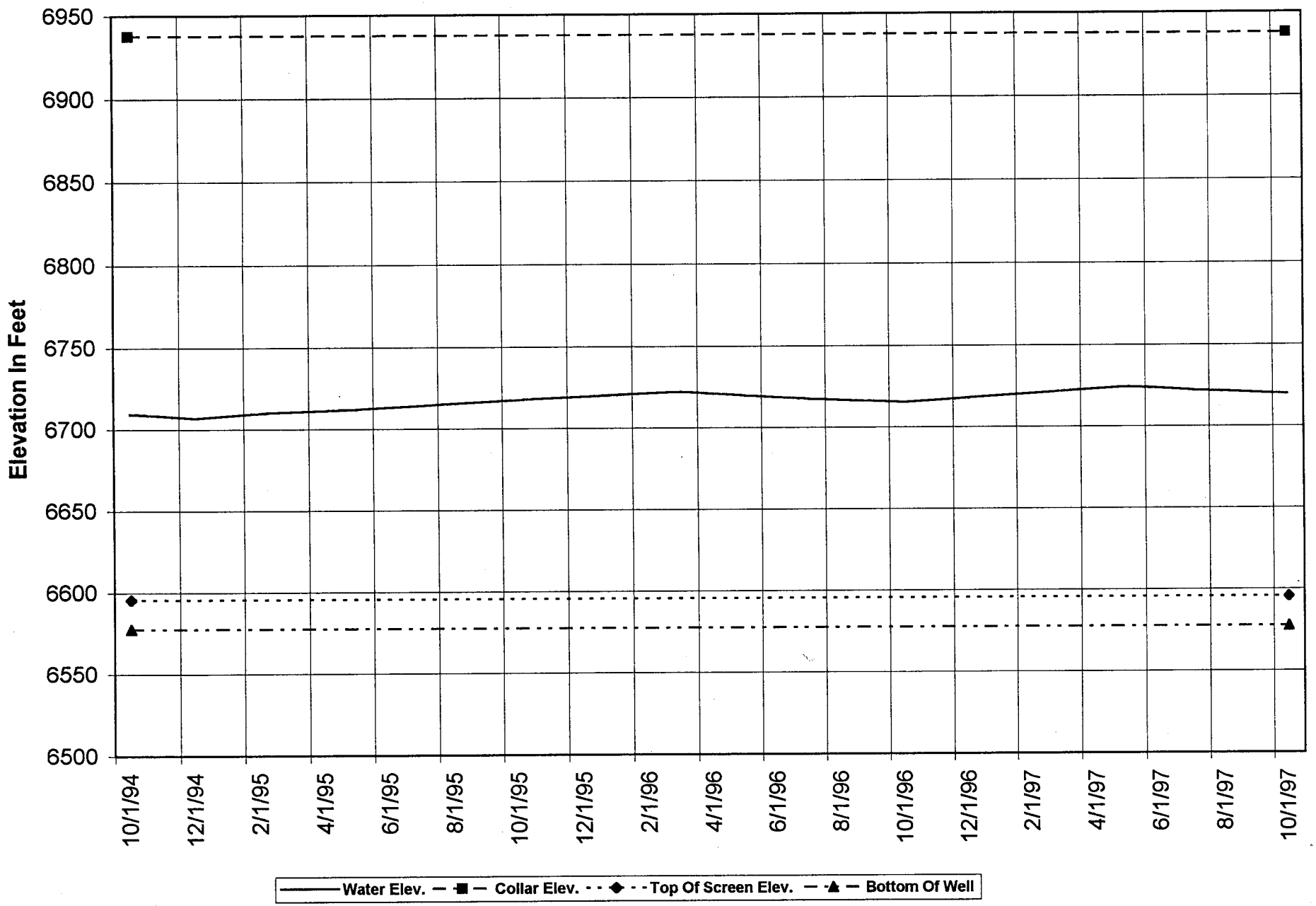


Figure 30
Monitor Well B121

Figure 31
Monitor Well BN251

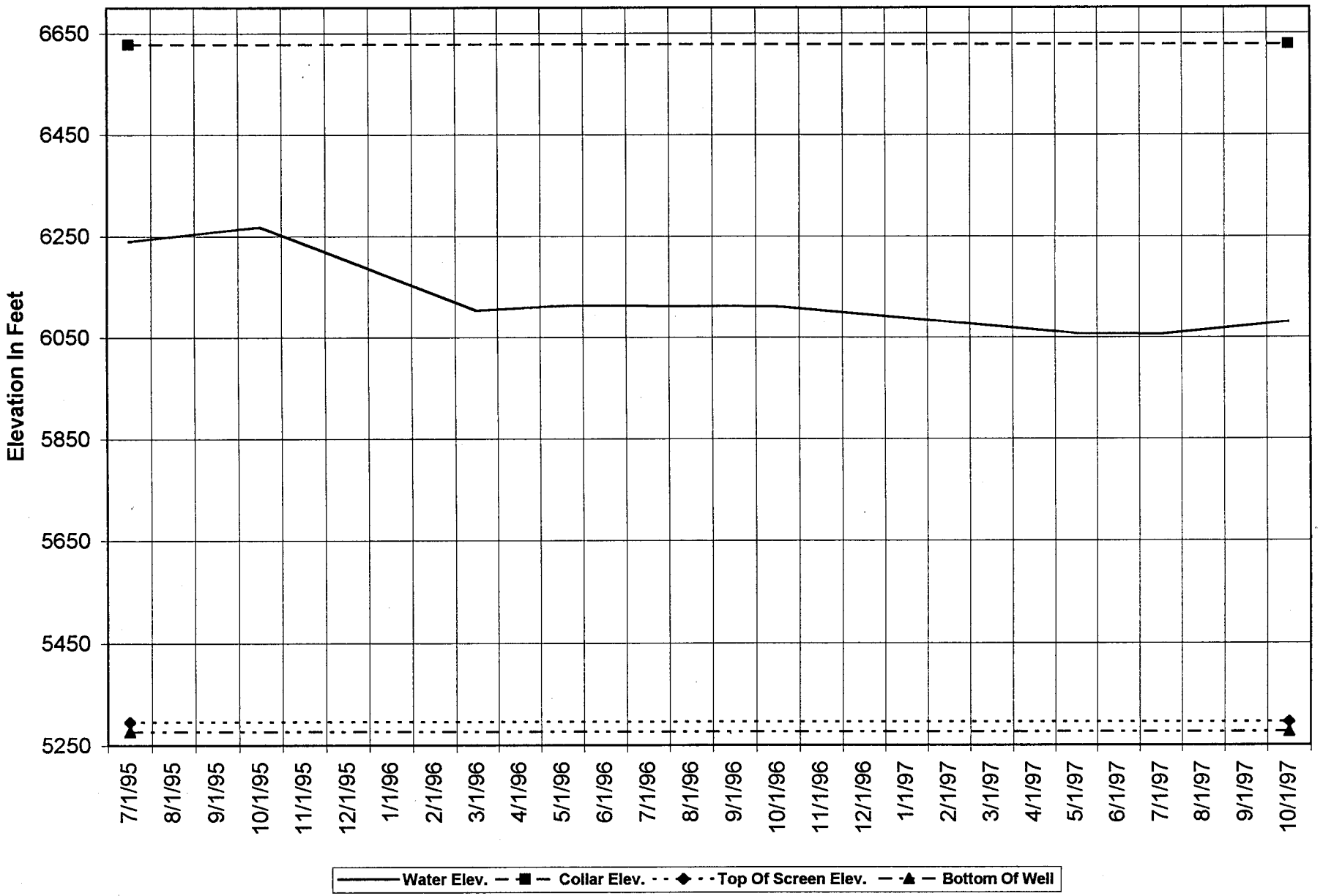


Figure 32
Monitor Well BN301

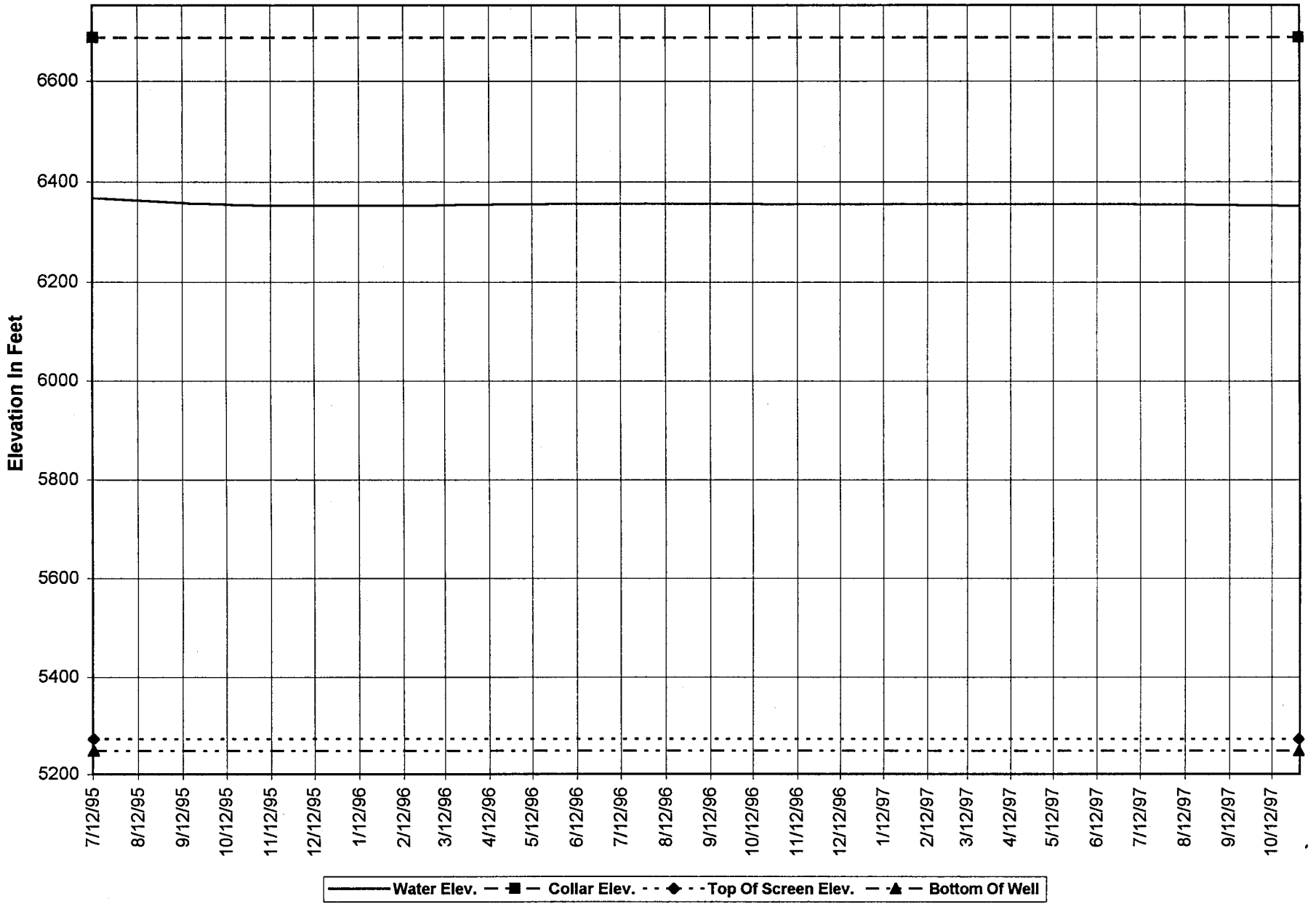


Figure 33
Monitor Well BW311

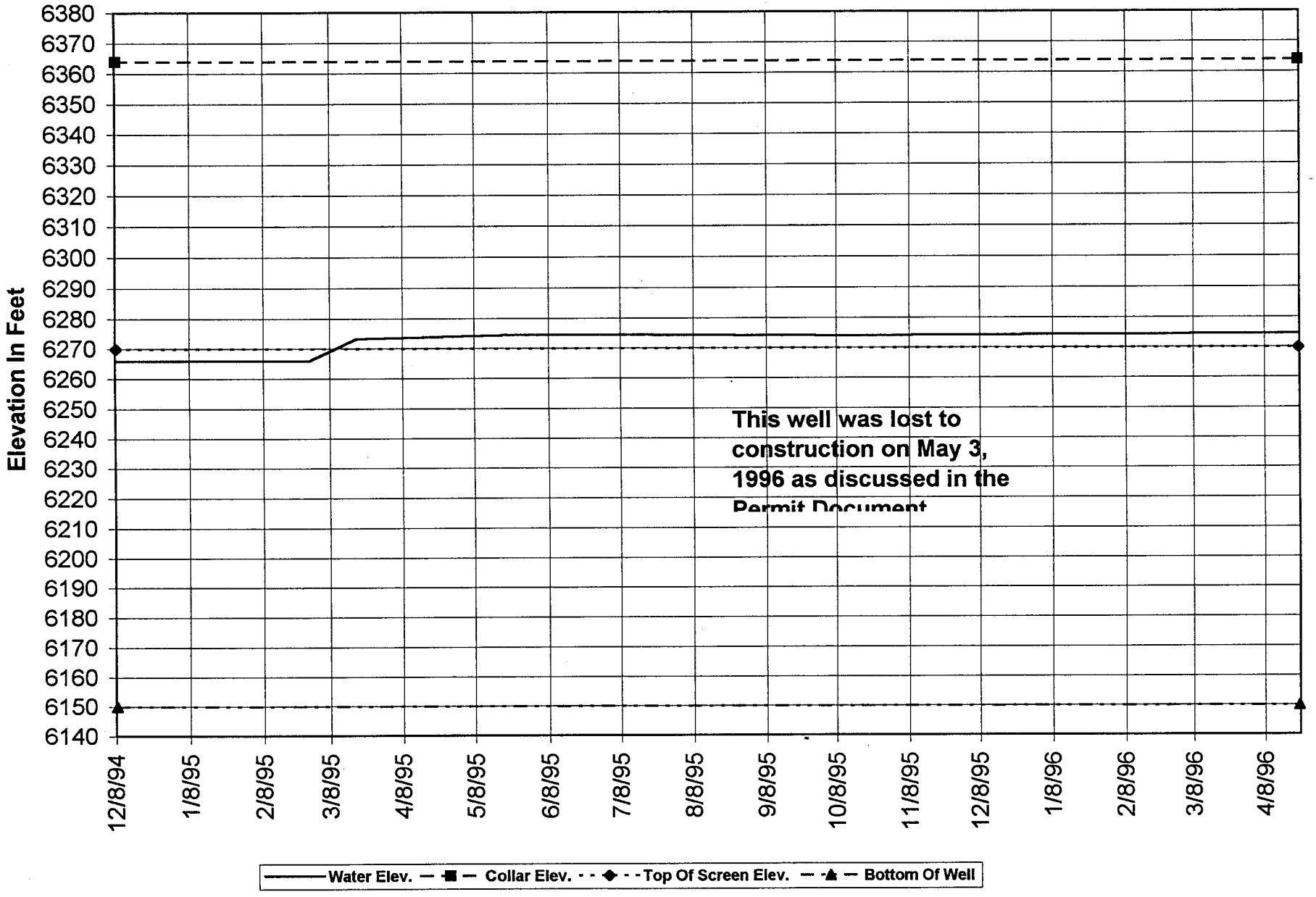
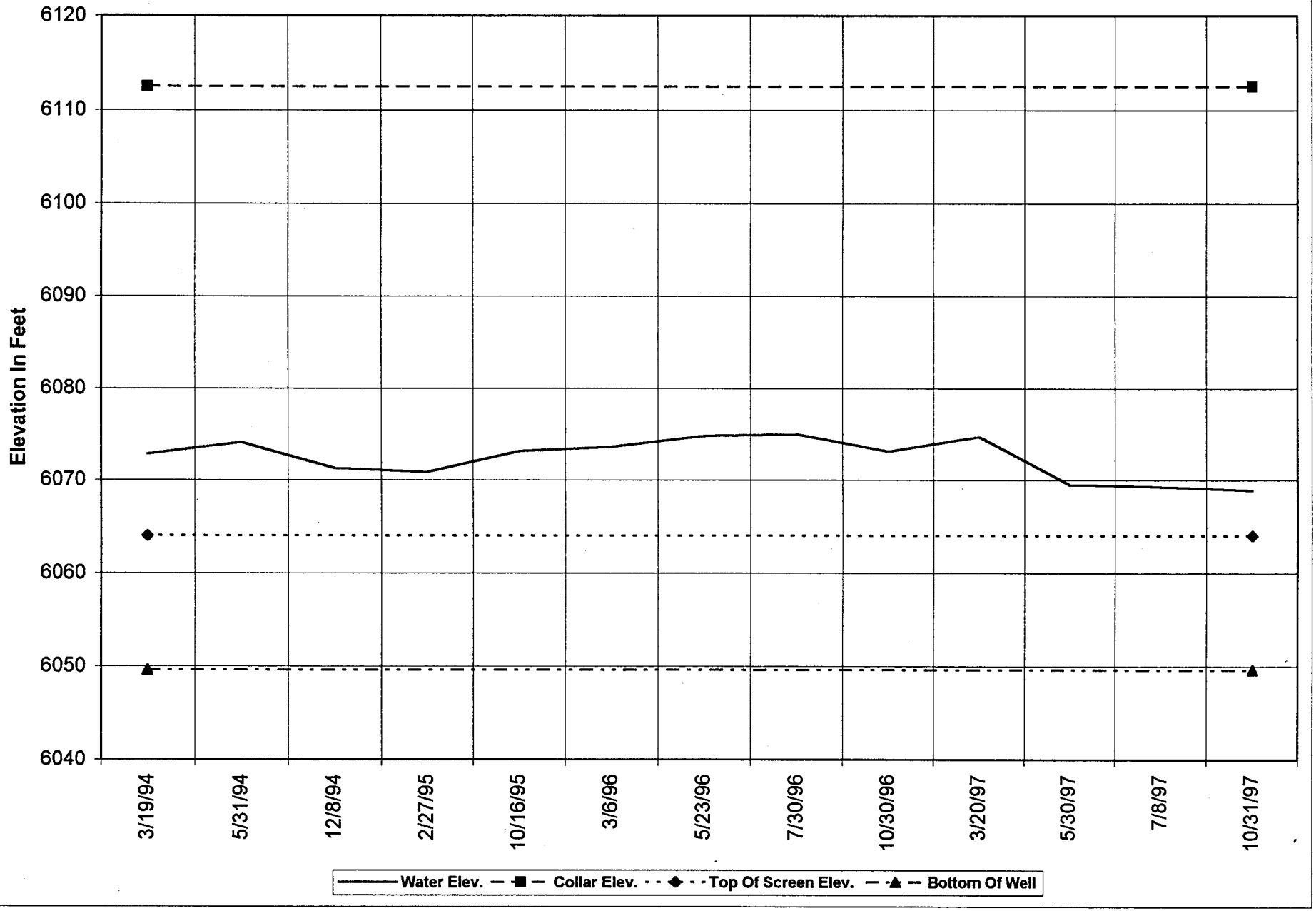


Figure 34
Monitor Well B361



APPENDIX D
PRECIPITATION

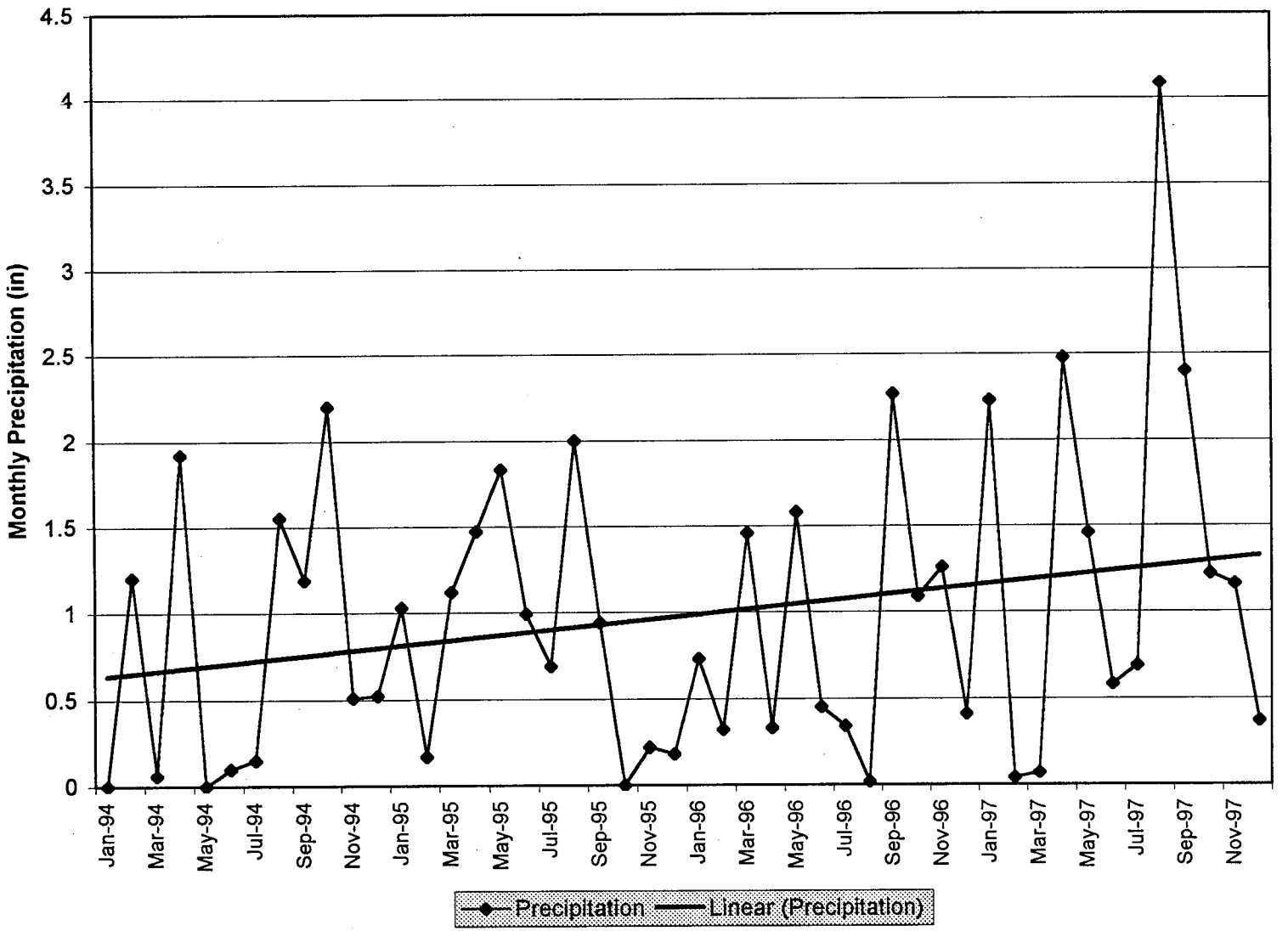



Figure 35
Willow Creek Mine Precipitation