Sampling performed by Ken Clark (IASCD) and Eileen Rowan (ISCC). Bacteriological analysis performed by Anatek Laboratory. Nutrient and sediment analysis performed by University of Idaho Analytical Science Laboratory.

February 14, 2007

Idaho Association of Soil Conservation Districts (IASCD)
Idaho State Department of Agriculture (ISDA)
220 E. 5th Street, Room 212-A
Moscow, ID 83843
(208)892-1404
Attn: Ken Clark
kclark@agri.idaho.gov

Cattle Operation Water Quality Monitoring Project

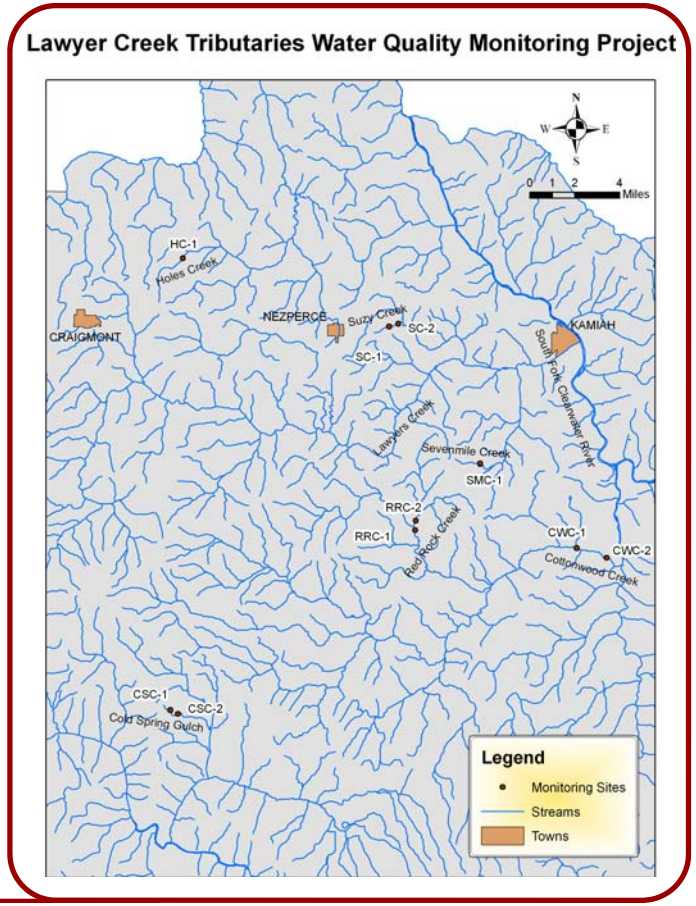

TABLE OF CONTENTS

Monitoring Sites

HOLES CREEK (HC-1)

- Flow was 0.55 cfs
- Total Phosphorus (TP) was 0.13 mg/L, slightly higher than the 0.1 mg/L recommended in the EPA Gold Book.
- Bacteria, Sediment, pH, Turbidity, and Nitrogen components were all within acceptable levels.

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
0.94 mg/L	<0.1 mg/L	0.084 mg/L	0.13 mg/L	9.2 mg/L	44.1 org/100mL

Cold Springs Creek Lower Site (CSC-2)

- Flow was 0.232 cfs
- TP was 0.68 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 2.6 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 65.0 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000).
- *E. coli* was measured at >2,419.2 org/100 mL, the maximum detectable limit. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
2.6 mg/L	0.5 mg/L	0.37 mg/L	0.68 mg/L	65.0 mg/L	>2,319.2 org/100mL

Cold Springs Creek Summary

- There was well over a 100,000.0% increase in *E. coli* levels from CSC-1 to CWC-2, and CWC-2 exceeded the instantaneous criterion of 576.0 org/100 mL.
- There was a 258.0% increase in TP from CSC-1 to CSC-2.
- There was a 767.0% increase in NO_2+NO_3 levels from CSC-1 to CSC-2. Ammonia levels were also significantly higher.
- There was a 76.0% increase in suspended sediment from CSC-1 to CSC-2.

Cold Springs Creek Upper Site (CSC-1)

- Flow was .105 cfs
- TP was 0.19 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 0.30 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 37.0 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000).
- *E. coli* was measured at 2.0 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
0.3 mg/L	<0.1 mg/L	0.068 mg/L	0.19 mg/L	37.0 mg/L	2.0 org/100mL

Suzy Creek Lower Site (SC-1)

- Flow was 0.37 cfs
- Total Phosphorus (TP) was 0.34 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 22.0 mg/L.. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 120.0 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000). Turbidity was also measured at 110 NTU, which is quite high.
- *E. coli* was measured at 816.4 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
22.0 mg/L	0.15 mg/L	0.13 mg/L	0.34 mg/L	120.0 mg/L	816.4 org/100mL

Suzy Creek Upstream (SC-2)

- Flow was 0.052 cfs
- Total Phosphorus (TP) was 0.23 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L..
- NO_2+NO_3 level was 13.0 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 7.5 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000). Turbidity was measured at 27.1 NTU.
- *E. coli* was measured at 8.5 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
13.0 mg/L	<0.1 mg/L	0.17 mg/L	0.23 mg/L	7.5 mg/L	8.5 org/100mL

Cottonwood Creek Upper Site (CWC-2)

- Flow was 39.09 cfs
- TP was 0.11 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 3.7 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 6.1 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000).
- *E. coli* was measured at 12.0 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
3.7 mg/L	<0.1 mg/L	0.074 mg/L	0.11 mg/L	6.1 mg/L	12.0 org/100mL

Cottonwood Creek Summary

- There was a 1,825.0% increase in *E. coli* levels from CWC-2 to CWC-1, although both were well under the instantaneous criterion.
- There was a negligible increase in TP from CWC-2 to CWC-1. B
- There was a slight decrease in NO_2+NO_3 levels from CWC-2 to CWC-1.
- There was a slight increase in suspended sediment from CWC-2 to CWC-1.

Cottonwood Creek Lower Site (CWC-1)

- Flow was 41.968 cfs
- TP was 0.12 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 3.6 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 9.7 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000).
- *E. coli* was measured at 231.0 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
3.6 mg/L	<0.1 mg/L	0.076 mg/L	0.12 mg/L	9.7 mg/L	231.0 org/100mL

Suzy Creek Summary

- SC-2 was directly above an animal feeding area, where cattle were being held in high concentrations. SC-1 was directly below the same area.
- There was a 9,500% increase in *E. coli* levels from SC-2 to SC-1.
- There was a 47% increase in TP levels from SC-2 to SC-1.
- There was a 69% increase in NO_2+NO_3 levels from SC-2 to SC-1.
- There was a 1,500% increase in SSC from SC-2 to SC-1.

Sevenmile Creek (SMC-1)

- Flow was 0.745 cfs
- Total Phosphorus (TP) was 0.34 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 13.0 mg/L.. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 100 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000). Turbidity was also measured at 111.0 NTU, which is quite high.
- *E. coli* was measured at 186.0 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
13.0 mg/L	<0.1 mg/L	0.13 mg/L	0.34 mg/L	100.0 mg/L	186.0 org/100mL

Red Rock Creek Upper Site (RRC-1)

- Flow was 2.098 cfs
- TP was 0.38 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 18.0 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 36.0 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000). Turbidity was also measured at 59.0 NTU.
- *E. coli* was measured at 57.3 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
18.0 mg/L	<0.1 mg/L	0.28 mg/L	0.38 mg/L	36.0 mg/L	57.3 org/100mL

Red Rock Creek Lower Site (RRC-2)

- Flow was 5.984 cfs
- TP was 0.48 mg/L. The EPA Gold Book recommends a level no higher than 0.1 mg/L.
- NO_2+NO_3 level was 16.0 mg/L. The EPA Gold Book cites Nitrate values in excess of 10 mg/L could be hazardous to young infants if ingested. Literature also suggests that values in excess of 0.30 mg/L can contribute to excessive plant production and possible eutrophication (Cline, C. 1973).
- Suspended sediment concentration (SSC) was 34.0 mg/L. Literature suggests that levels <25.0 mg/L are ideal for the protection of fisheries, and produce no harmful effects on fish or fisheries (DFO, 2000). Turbidity was also measured at 58.3 NTU, which is quite high.
- *E. coli* was measured at 206.3 org/100 mL. The State of Idaho criterion states that *E. coli* levels are not to exceed 576.0 organisms/100 mL at any time for secondary contact (IDAPA58.01.02.251.02.a).

NO2+NO3	NH3	OP	TP	SSC	*E. coli*
16.0 mg/L	<0.1 mg/L	0.36 mg/L	0.48 mg/L	34.0 mg/L	206.3 org/100mL

Red Rock Creek Summary

- RRC-1 was directly above an animal feeding area, where cattle were being held in high concentrations. RR-2 was directly below the same area.
- There was a 206.0% increase in *E. coli* levels from RRC-1 to RRC-2, although both were well under the instantaneous criterion.
- There was a 26% increase in TP levels from RRC-1 to RRC-2. At both sites, the organic portion (OP) of the total phosphorus amount was around 75%.
- There was a slight decrease in NO_2+NO_3 levels from RRC-1 to RRC-2.
- There was a slight decrease in suspended sediment from RRC-1 to RRC-2.