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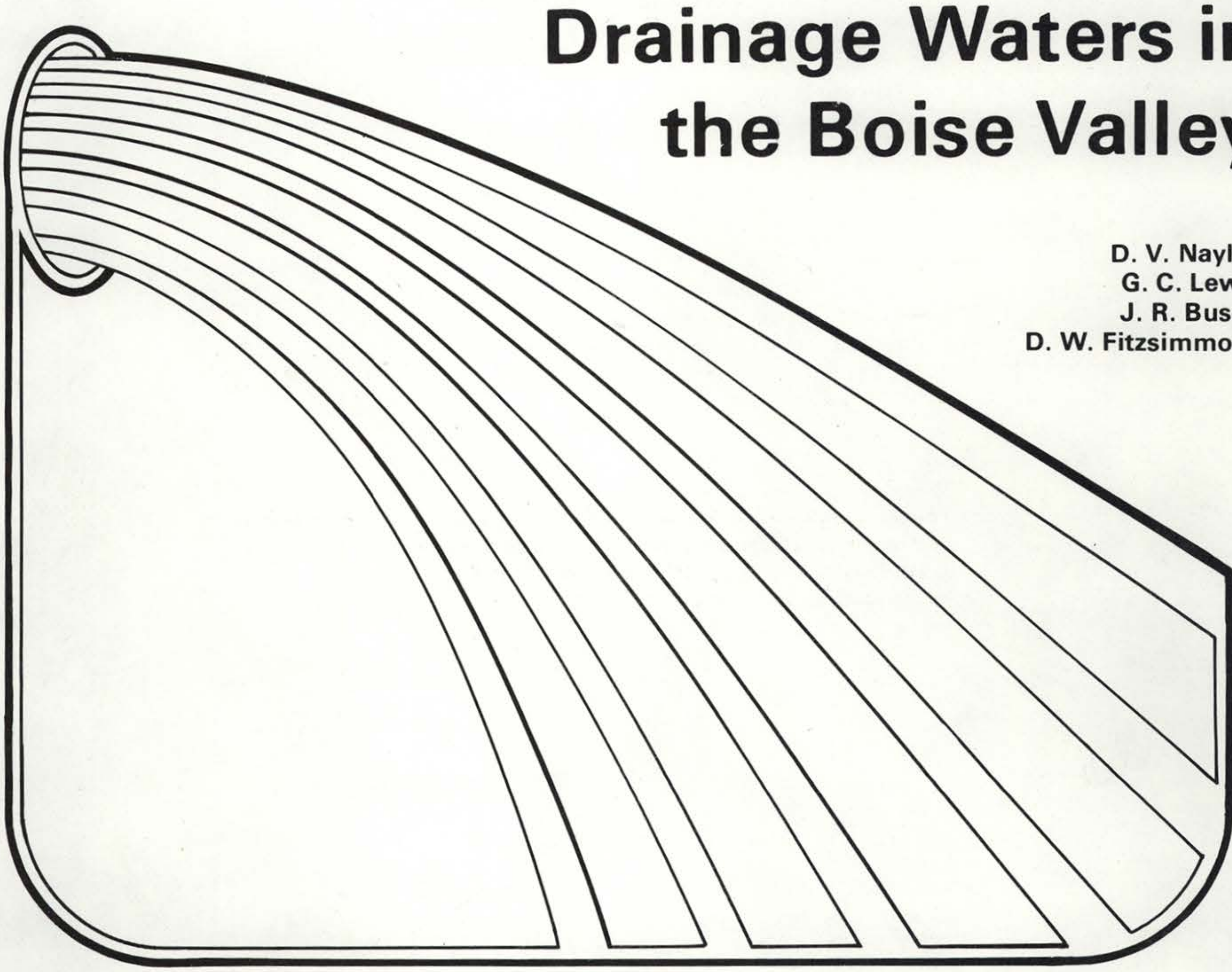
Quality of Irrigation and Drainage Waters in the Boise Valley



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Summary

1. NO_3-N concentrations were highest and had the largest seasonal fluctuations in the canals in the lower terraces because they contained large amounts of return flows from surface runoff, groundwater seepage and tile-drain or drainage well effluents.
2. NO_3-N concentrations in groundwater samples were generally higher than concentrations in surface runoff samples. NO_3-N concentrations in surface runoff samples were essentially the same as concentrations in headwater samples.
3. NH_3-N and organic-N concentrations were generally low in irrigation runoff with the exception of occasional high levels in isolated situations which were attributed to the addition of fertilizer materials directly to the irrigation water.
4. High levels of total phosphorus concentrations occurred with high levels of solids in the runoff, however, the amount of phosphorus per unit weight of solids varied with location and soils.
5. Total phosphorus concentrations correlated with total solids concentrations while soluble phosphorus concentrations did not.
6. Hydrolyzable phosphorus concentrations correlated with total phosphorus concentrations, however, soluble phosphorus concentrations did not.
7. The groundwater samples contained consistently higher concentrations of NO_3-N than the surface water samples.
8. The concentration of total solids varied widely with different sites and at different sampling times.

Quality of Irrigation and Drainage Waters in the Boise Valley

D. V. Naylor G. C. Lewis J. R. Busch D. W. Fitzsimmons

Irrigation is one of the more important practices used in producing food and fiber in arid and semi-arid areas. While beneficial in most respects, irrigation can have serious detrimental effects on water quality since irrigation return flows often contain many pollutants, including plant nutrients, dissolved salts, sediment and pesticides. The loss of these materials to receiving waters not only reduces the quality of these waters, but may also result in economic losses to the irrigator. Even though scientists know irrigation return flows contain pollutants, they know little about the kinds and amounts of pollutants in these irrigated areas. Also little information is available on the effects of various irrigation, fertilization and other cultural practices on the quality of return flows.

In 1970, the Idaho Agricultural Experiment Station studied the effects of irrigated agriculture on Boise Valley water quality in southwestern Idaho. During the first phase of this study, surface and ground waters in gravity irrigated areas in the valley were systematically sampled and analyzed to determine the kinds and amounts of pollutants in these waters. Data obtained from this phase of the study are presented and discussed in the following paragraphs. Other phases of this study, some of which are still in progress, have been concerned with quantifying the effects of irrigation and other practices on water quality in the Boise Valley.

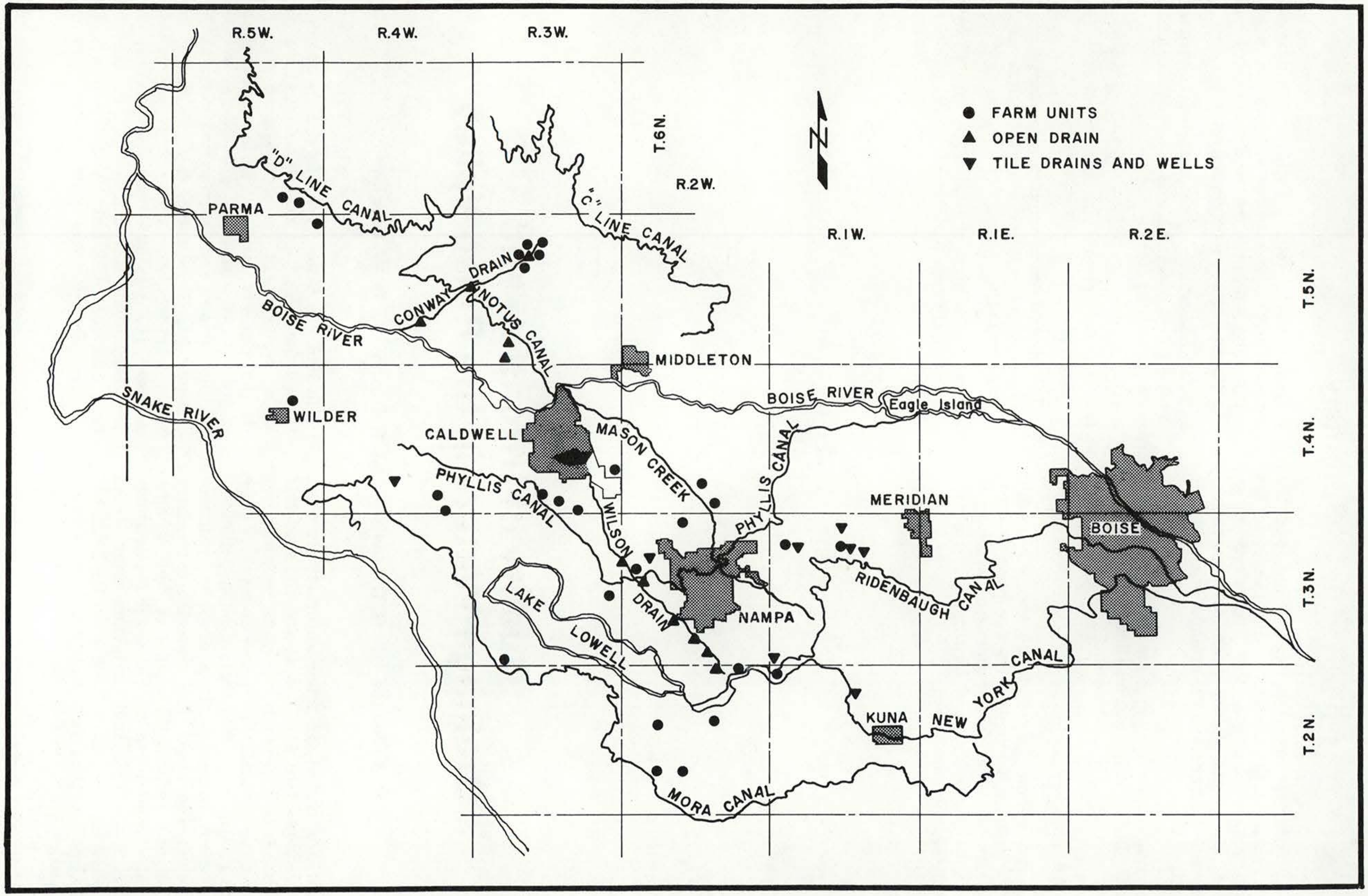

Fig. 1. Distribution of sampling sites in the study area.

Study Area and Sampling

The area selected for the study lies between the city of Boise and the Idaho-Oregon state line. It consists of an upland plain of unconsolidated lacustrine and fluvial materials that has been dissected by the Snake and Boise rivers. Terraces of stream-laid and lacustrine deposits rise stepwise above the Boise River. The area has a semi-arid to arid continental climate with average annual precipitation varying from 8 to 11 inches. The elevation of the irrigated valley areas ranges from 2200 to 2700 feet. Shallow water tables underly most of these areas.

The principle crops in the study area are alfalfa and clover for seed and hay, winter and spring wheat, field corn, sweet corn, hybrid sweet corn, sugar beets, potatoes, hops, onions, beans, barley and mint. Several other specialty crops are grown and some of the area is used for orchards. Water for irrigation is obtained mainly from the Boise and Payette rivers. In addition to a rather elaborate irrigation water distribution system, the area is served by a complex network of open ditch drains. These drains ultimately empty into the Boise River which flows into the Snake River. The soils of the area are highly variable and complex. Shallow soils generally are over basalt in the higher elevations and deeper soils cover alluvial materials in the lower areas. Duripans in many of the soils restrict the downward movement of water and plant roots. A detailed soil survey for a part of the area was published in 1972.

Authors selected sites for collection of samples, cooperating with personnel from the Nampa-Meridian, Pioneer and Black Canyon irrigation districts and the Boise Project Board of Control. They selected 20 sites within each district, totaling 80 sample sites in the study area. They emphasized obtaining samples of water before and after the water had passed over gravity-irrigated crop lands. Researchers selected few sampling sites on drain ditches, tile drains and drainage wells. Fig. 1 shows a map of the study area with the approximate locations of sampling sites. The locations of the sampling sites and the crops grown are described in Appendix I. The sampling network included 29 headwater sites, 30 surface runoff sites, 12 open drain ditch sites, 6 tile drains and 3 drainage wells. Water samples came from flows entering and leaving fields on 29 farms in the 4 irrigation districts.

Personnel from the irrigation districts collected the water samples at 2-week intervals during the irrigation season. After collecting water samples of approximately 800 ml in 1-liter polyethylene bottles, researchers put them on ice and transferred the samples to the University of Idaho Research and Extension Center at Caldwell. At Caldwell they were quick-frozen for storage and transferred to the laboratory at Moscow for analysis. Analysis started the same day the samples were thawed.

Methods of Analysis

The analytical methods and terminology used were modifications of those given in APHA standard methods and EPA methods. Nitrate-nitrogen was determined by the phenoldisulfonic acid method. Ammonia-nitrate was distilled into 1% boric acid using MgO and the distillate was analyzed by nesslerization. Organic-nitrogen was determined in the residue after ammonia distillation by the standard Kjeldahl method with nesslerization of the boric acid distillate.

The samples were filtered through 0.45 μ millipore filters for soluble phosphorus, digested with 10 N H_2SO_4 for hydrolyzable phosphorus and digested with H_2SO_4 and ammonium persulfate for total phosphorus. The phosphorus was determined colorimetrically in the filtrates and digestion mixtures by the amino-naphthol-sulfonic acid method. The digestion mixtures were not neutralized before developing the color. Instead, the acid strength of the molybdate solutions was adjusted for the acid in the digestion mixtures.

Solids were determined by weighing the residue left after drying a sample at 110°C. Electrical conductivity (E.C.) was read on the milliohm meter with a standard set of platinum electrodes and pH was measured using a pH meter equipped with glass reference electrodes.

Results and Discussion

Data obtained from this study are presented in Appendix II. Due to the many analyses run on the limited volume of each sample, no duplicate analyses were run. All the analyses except pH and E.C. are reported in ppm (parts per million) on a w/v basis which is equivalent to milligrams per liter or micrograms per milliliter. The blanks in the analytical results represent times when no flow was occurring at the sampling site or times when the volume of sample was insufficient to run all or some of the analyses.

Some of the main results of this study are summarized in the following discussion.

Nitrogen Forms

Nitrate-Nitrogen

The nitrate-nitrogen concentration data from the waters of 4 major canals in the study area are shown in Fig. 2. The Mora Canal contains water diverted from the Boise River and is essentially unaffected by agricultural return flow. Likewise, the D-Line Canal contains water which is diverted from the Payette River and is not influenced by return flows from agriculture. Conversely, the Notus and Phyllis Canals are on lower terraces, and they contain quantities of return flow water from higher irrigated lands.

The NO_3-N concentrations in the canals on the lower terraces of the study areas were higher than in canals on the upper terraces and exhibited more of a seasonal variation. The higher NO_3-N concentrations in the Notus and Phyllis canals were probably due to flow of water from the upper to the lower terrace areas, such as surface runoff, groundwater seepage and drainage wells. While some scatter is in the data, a seasonal trend appears to be in the NO_3-N content in

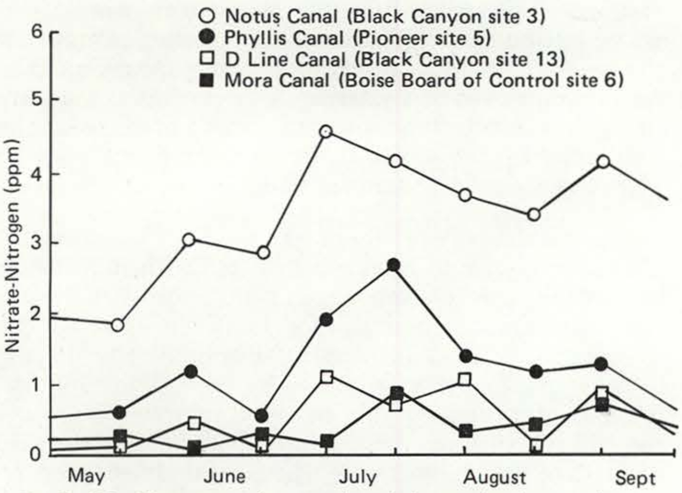

Fig. 2. NO_3-N concentrations at selected sites on 4 major canals.

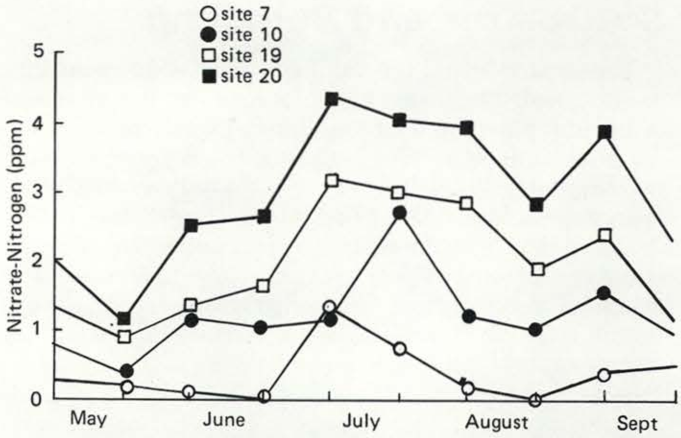

Fig. 3. NO_3-N concentrations at various sampling sites on the Conway Drain in the Black Canyon Irrigation District.

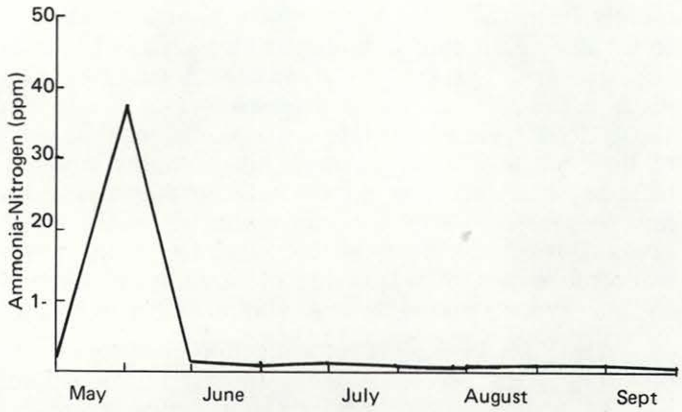

Fig. 4. NH_3-N concentration in the surface runoff at Black Canyon Irrigation District site 4.

the canals. The NO_3-N concentrations were lowest early in the irrigation season and gradually increased until about July, then decreased slightly throughout the remainder of the season. This seasonal trend in NO_3-N concentrations is most apparent in the Notus and Phyllis Canals which contained the largest concentrations of NO_3-N.

The seasonal changes in NO_3-N concentrations in the Conway Drain, an open drain ditch conveying both surface runoff and inflowing groundwater, were similar to those observed in the canals. The concentrations of NO_3-N at 4 sites on the Conway Drain are illustrated in Fig. 3. Site 7 was at the head of the drain ditch and sites 10, 19 and 20 were about 0.7 miles, 3.7 miles and 8 miles, respectively, downstream from site 7. As can be seen, the NO_3-N content increased with distance down the drain. The seasonal variations in NO_3-N concentrations in the Conway Drain also increased with distance down the drain. As with the canals, the maximum concentrations of NO_3-N in the drain occurred in July.

Each open drain in the area may be unique as to the source of its water, the amount of surface and subsurface flows which enter it and the factors which influence the quality of its water. The only other drain ditch sampled was the Wilson Drain, and there was neither the seasonal change nor the increase in NO_3N content in the water with distance down the Wilson Drain that occurred in the Conway Drain. Thus, caution must be used in extrapolating information obtained from one drain to another.

Samples varied only randomly in the NO_3-N concentrations from drainage wells and tile drains during the irrigation season with no general trends. Likewise, the NO_3-N concentration in tailwater samples differed little from the concentration in the headwater samples.

Ammonia and Organic Nitrogen

The concentrations of NH_3-N and organic N in the water samples from the study area showed little seasonal variation and were, in general, quite low. Occasionally an abnormally large concentration of NH_3-N and/or organic-N occurred in surface runoff from isolated events during the growing season. An example of this occurrence at a selected site is illustrated in Fig. 4. The late May sample at the site referred to in Fig. 4 contained a large concentration of NH_3-N, much more than any other sample taken at the site during the remainder of the season. This wide variation occurred infrequently at other sampling sites.

An agricultural practice in the area which might account for the infrequent high levels of NH_3-N and organic-N levels in the surface runoff is the addition of supplemental nitrogen fertilizer into the irrigation water applied to crops. Tanks used to add fertilizer nitrogen to irrigation water were present at the sites where high levels of nitrogen occurred at certain sampling times during the season. Ammonia fertilizer and its salts would appear as NH_3-N and urea fertilizer would appear as organic-N in the analytical results.

Mean Concentrations

The mean concentrations of the various nitrogen forms were calculated according to water source and are reported in Table 1. Because of wide ranges in concentrations of the nutrients at the various sites, these means must be used with caution. The data in Table 1 suggest that all forms of nitrogen were more concentrated in the surface runoff waters than in the headwaters. This was due, in part, to erosion which took place at some of the sites, particularly for ammonia and organic forms of nitrogen which are closely associated with sediment. The slightly higher mean concentration for NO_3-N in the surface runoff over the headwater was due to the infrequent high concentrations that occurred in isolated samples during the season as previously discussed and were credited to the addition of fertilizer material to the irrigation water. Some of the increase in ammonia and organic nitrogen concentration is also due to the isolated events which resulted in very high concentrations at certain sampling times during the season. These isolated events caused artificially high averages which do not reflect what the concentrations of these materials were during most of the season.

The concentrations of NO_3-N in the groundwater samples were more consistent and generally higher than the NO_3-N concentrations in the surface runoff samples. The concentrations of NO_3-N were different at different sites but were relatively constant throughout the season at each site.

The concentrations of NO_3-N in the open drains tended to reflect the source of their water. The NO_3-N concentrations in the open drains were generally higher than the concentrations in the surface runoff samples due to the groundwater influence but were not as high as the concentrations in the groundwater samples due to dilution of the drain flows by the surface runoff waters.

Phosphorus and Solids

As with NH_3-N and organic-N, amounts of the various forms of phosphorus in the water varied little at the sampling sites. Concentrations of phosphorus, as with nitrogen, fluctuated randomly in runoff water at various times during the season. However, the sharp increases in the concentration of phosphorus in runoff water did not coincide with those of nitrogen and were more frequent. High phosphorus concentrations appeared to be related more closely to the amount of total solids in the water samples. The concentrations of total phosphorus and solids at 2 sampling sites are shown in Figs. 5 and 6. These figures indicate that the total phosphorus content of the water samples was to a limited degree related to the solids content. When large amounts of sediment were present in the runoff water, large amounts of phosphorus were present and when less sediment was present in the samples, phosphorus presence was less. However, the amount of phosphorus present in the samples did not always increase or decrease in the same magnitude as the solids. Some of the soils in the study area contain less phosphorus per unit mass of soil particles. The concentrations of total solids and forms of phosphorus varied widely with location and time during the irrigation season.

Table 1. Mean concentrations of nitrogen forms in waters collected in the Boise Valley.

Source	Nitrate-N (ppm)	Ammonia-N (ppm)	Organic-N (ppm)
Headwater	1.04	0.41	0.64
Surface Runoff	1.21	2.02	1.88
Open Drains	3.19	0.87	1.16
Groundwater	4.92	0.35	0.73
All Sites	1.90	1.00	1.15

Phosphorus-Solids Relationships

To further examine the relationship between the solids and phosphorus content of the water samples, a statistical analysis was performed to determine the amount of variability in the various phosphorus forms that could be accounted for by variability in solids. The coefficients of determination (r^2) were calculated between concentrations of phosphorus forms and total solids and are reported in Table 2 for the various sources

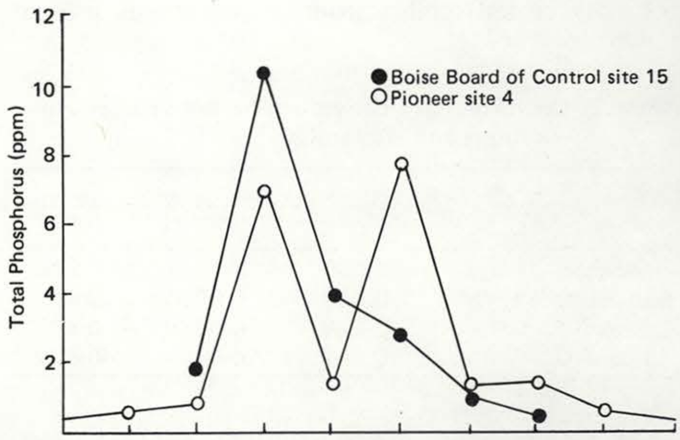

Fig. 5. Total phosphorus concentrations in surface runoff water at 2 sites.

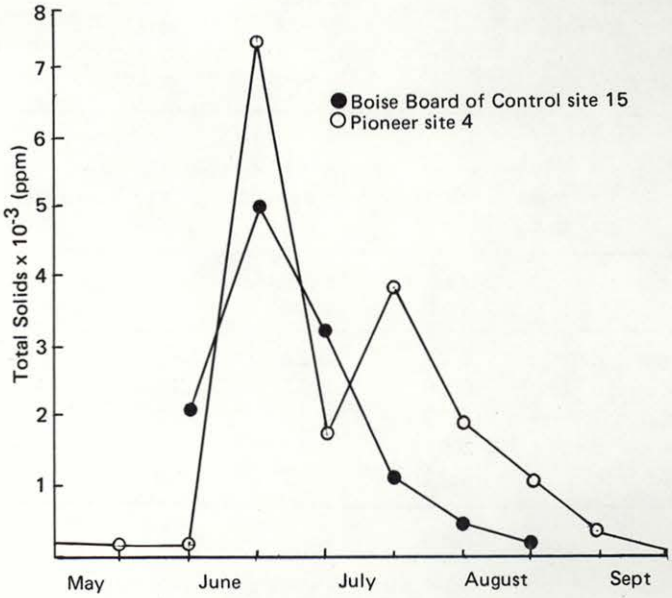

Fig. 6. Total solids concentrations in surface runoff at 2 sites.

of water samples. The higher the r^2 values, the more the variability in phosphorus can be accounted for by variability in solids. Table 2 shows that about 60 percent of the variation in hydrolyzable and total phosphorus, overall, can be accounted for by variations in total solids (r^2 values of approximately 0.60). However, less than 10 percent of the variability in the soluble phosphorus concentration values were accounted for by variations in solids (r^2 values less than 0.10).

Variability in Phosphorus Forms

Phosphorus chemistry measurements in soil and water systems are highly dependent on the procedure used to extract the phosphorus from the soil or water. Three forms of phosphorus were determined: soluble or orthophosphorus, hydrolyzable and total. The soluble or orthophosphorus is an estimate of the phosphorus that is not associated with the particulate material in the water while the hydrolyzable phosphorus is an estimate of that fraction which might become solubilized under favorable conditions. The total phosphorus is an estimate of the total amount of phosphorus present, irrespective of its form or solubility. The chemical analysis data were statistically analyzed to determine if the variability in soluble and hydrolyzable phosphorus forms could be accounted for by variability in total phosphorus values. The resulting r^2 values are presented in Table 3. The r^2 values for hydrolyzable phosphorus are all close to 1.0 which indicates that the variations in hydrolyzable phosphorus are accounted for by variations in total phosphorus. This suggests that a fairly consistent fraction of the total phosphorus in the water samples was present in a form which was acid hydrolyzable. However, the same was not true for soluble phosphorus. Soluble phosphorus concentrations did not vary with total phosphorus concentrations since the r^2 values are all quite small. This is the result of the variability of the soils in the study area to absorb phosphorus. Some soils absorb phosphorus more strongly than others and thus, contain more total and hydrolyzable phosphorus than soluble phosphorus.

Table 2. Coefficients of determination between phosphorus forms and total solids.

Source	Coefficients of Determination (r^2 values)		
	Soluble-P	Hydrolyzable-P	Total-P
Headwater	0.008	0.211	0.278
Surface Runoff	0.043	0.583	0.577
Drains	0.028	0.538	0.473
All Data	0.081	0.611	0.600

Table 3. Coefficients of determination between total phosphorus and other forms of phosphorus.

Source	Coefficients of Determinations (r^2 values)	
	Soluble-P	Hydrolyzable-P
Headwater	0.063	0.710
Surface Runoff	0.204	0.934
Drains	0.018	0.852
All Data	0.219	0.935

Table 4. Mean concentrations of phosphorus forms and total solids in waters collected in the Boise Valley.

Source	Soluble-P (ppm)	Hydrolyzable-P (ppm)	Total-P (ppm)	Total Solids (ppm)
Headwater	0.05	0.23	0.32	195
Surface Runoff	0.18	1.82	2.39	1549
Open Drains	0.12	0.51	0.67	586
Groundwater	0.11	0.41	0.58	420
All Sites	0.11	0.83	1.09	737

Mean Concentrations

The mean concentrations of the various phosphorus forms and solids were calculated according to water source and are reported in Table 4. More phosphorus and solids were in the surface runoff sources and receiving bodies of water than in the headwater sources. The concentrations of total solids and phosphorus varied widely with different sites and at different sampling times throughout the season. As an example, total solids concentration ranges are given in Table 5 for the 4 irrigation districts included in this study. In some cases, surface runoff from an irrigated field contained much sediment, particularly early in the irrigation season. At some sites, high solids concentrations occurred infrequently during the season. At others, however, the solids concentrations were relatively high most of the season. The slope of the land along with management practices and crops all appeared to influence the amount of solids in runoff. In general, the highest solids concentrations occurred in runoff from the steep, finer textured upland soils under row crops. Also, the concentrations of solids were greatest early in the season when the soils were being cultivated.

The solids in the open drains were a combination of suspended soils and salt while the solids in the runoff were mostly suspended solids. Almost all of the solids in the groundwater were salts.

Table 5. Mean concentrations of total solids and range for solids in the 4 irrigation districts.

Irrigation District	Mean Total Solids (ppm)	Range (ppm)
Black Canyon	561	41 - 8,825
Pioneer	669	76 - 7,390
Nampa - Meridian	431	51 - 3,901
Boise Board	1,300	11 - 24,717

APPENDIX I
Location of Sampling Sites and Crops Grown

Site No.	Source	Location: Quarter Section	Section	Township	Range	Crops Grown
Boise Board of Control						
1	Reed Drain	NW	10	2N	1W	Pasture
2	Headwater, Mora Canal	NE	22	2N	2W	
3	Surface Runoff	NE	22	2N	2W	Beets, Beans
4	Headwater, Mora Canal	NW	20	2N	2W	
5	Surface Runoff	NW	20	2N	2W	Beets
6	Headwater, Mora Canal	NE	32	2N	2W	
7	Surface Runoff	NE	32	2N	2W	Clover, Beets. Corn, Beans
8	Headwater, Mora Canal	NW	33	2N	2W	
9	Surface Runoff	NE	33	2N	2W	Beans, Beets
10	Headwater, Mora Canal	SE	6	2N	3W	
11	Surface Runoff	SE	6	2N	3W	Corn Grain, Beans
12	Surface Runoff	SW	5	2N	3W	Beets, Alfalfa
13	Surface Runoff	SW	5	2N	3W	Corn, Beets
14	Headwater, Deer Flat Lowline Canal	SE	2	3N	4W	
15	Surface Runoff	SE	2	3N	4W	Beets, Onions
16	Headwater, Deer Flat Lowline Canal	NE	2	3N	4W	
17	Surface Runoff	NE	2	3N	4W	Hops
18	Stephen Drain	SE	33	4N	4W	
19	Headwater, Simpson Lat.	SE	14	4N	5W	
20	Surface Runoff	SE	14	4N	5W	Beets, Onions
Nampa-Meridian Irrigation District						
1	Headwater, Ridenbaugh Canal	NE	18	3N	1W	
2	Drain Well	NE	18	3N	1W	
3	Surface Runoff	NE	18	3N	1W	Beets, Onions
4	Tile Drain	NW	9	3N	1W	Beans, Grain
5	Headwater, Ridenbaugh Canal	SE	16	3N	1W	Corn
6	Tile Drain	NE	16	3N	1W	
7	Surface Runoff	NE	16	3N	1W	Mint
8	Tile Drain	NW	14	3N	1W	Mint
9	Headwater, Ridenbaugh Canal	NW	7	2N	1W	Alfalfa
10	Drain Well	NW	7	2N	1W	
11	Surface Runoff	NW	7	2N	1W	
12	Headwater, Ridenbaugh Canal	NE	11	2N	2W	Corn
13	Surface Runoff	NE	11	2N	2W	
14	Patterson Well	NW	11	2N	2W	Grain, Beans
15	Headwater Deer Flat-Nampa Canal	SE	25	3N	3W	
16	Surface Runoff	NE	25	3N	3W	Barley, Corn, Beets, Beans
17	Wilson Drain	SE	3	2N	2W	
18	Wilson Drain	NW	3	2N	2W	
19	Wilson Drain	NW	3	2N	2W	
20	Wilson Drain	NW	33	3N	2W	

APPENDIX I (Con't)

Site No.	Source	Location: Quarter Section	Section	Township	Range	Crops Grown
Pioneer Irrigation District						
1	Headwater, Phyllis Canal	SE	11	3N	3W	
2	Surface Runoff	NW	2	3N	3W	Beans, Beets
3	Headwater, Phyllis Canal	SW	3	3N	3W	
4	Surface Runoff	NE	3	3N	3W	Beets
5	Headwater, Phyllis Canal	SW	3	3N	3W	
6	Surface Runoff	NE	4	3N	3W	Beans, Beets
7	Headwater, Phyllis Canal	SE	19	3N	2W	
8	Surface Runoff	NE	19	3N	2W	
9	Drain	NE	19	3N	2W	
10	Drain	NW	20	3N	2W	
11	Tile Drain	SW	17	3N	2W	Beans, Beets
12	Headwater, Lat. 13.3	SE	9	3N	2W	
13	Surface Runoff	NW	9	3N	2W	Grain
14	Headwater, Lat. 9.8	SE	2	3N	2W	
15	Surface Runoff	SE	3	3N	2W	Beans
16	Surface Runoff	NW	3	3N	2W	Alfalfa
17	Headwater	SW	27	4N	2W	
18	Surface Runoff	SW	34	4N	2W	Onions, Beets
19	Headwater, Caldwell High Line Canal	NW	31	4N	2W	
20	Surface Runoff	SE	25	4N	3W	Potatoes
Black Canyon Irrigation District						
1	Headwater, Notus Canal	NE	6	4N	3W	
2	Headwater, Notus Canal	SE	32	5N	3W	
3	Headwater, Notus Canal	SW	32	5N	3W	
4	Surface Drain	NE	5	4N	3W	Hops
5	Surface Drain	NW	5	4N	3W	Beets, Mint
6	Headwater, "C" Line Canal	NW	15	5N	3W	
7	Conway Drain	NW	15	5N	3W	
8	Surface Runoff	NE	16	5N	3W	Pasture, Alfalfa
9	Surface Runoff	NE	16	5N	3W	Beans, Grain
10	Conway Drain	NW	16	5N	3W	
11	Surface Runoff	NW	16	5N	3W	Pasture, Alfalfa
12	Surface Runoff	SW	16	5N	3W	Grain
13	Headwater, "D" Line Canal	SE	1	5N	5W	
14	Surface Runoff	SW	7	5N	4W	Beets
15	Headwater, "D" Line Canal	NW	1	5N	5W	
16	Surface Runoff	NW	2	5N	5W	Corn, Grain
17	Headwater, "D" Line Canal	NW	1	5N	5W	
18	Surface Runoff	NW	1	5N	5W	Alfalfa, Grain
19	Conway Drain	SW	19	5N	3W	
20	Conway Drain	NW	35	5N	4W	

APPENDIX II
Results of Analysis of Water Samples
Table 1. Boise Board of Control 1970 water quality data.

TABLE I. BOISE BOARD OF CONTROL

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 1	TILE DRAIN EFFLUENT									
	MAY 13	3.24	0.60	1.75	--	0.56	0.80	413	0.68	7.89
	MAY 28	4.40	0.10	0.45	0.08	0.38	0.24	500	0.65	8.07
	JUN 11	2.65	0.22	0.48	0.08	0.22	0.30	500	0.60	7.47
	JUN 24	4.05	0.38	0.60	0.16	0.48	0.46	510	0.50	8.07
	JUL 8	3.20	0.46	0.70	0.08	0.18	0.52	436	0.60	7.44
	JUL 22	4.30	0.08	0.66	0.08	0.28	0.40	422	0.60	7.86
	AUG 6	4.55	0.58	0.36	0.06	0.18	0.62	222	0.85	8.58
	AUG 18	4.40	0.30	0.20	0.10	0.38	0.62	410	0.45	7.96
	SEP 3	5.30	0.46	0.38	0.16	1.40	1.68	612	0.60	8.70
	SEP 16	3.70	0.10	0.64	0.18	0.42	0.42	526	0.60	8.02
SITE 2	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-A)									
	MAY 13	0.32	0.80	1.75	--	0.32	0.40	50	<.20	7.60
	MAY 28	0.25	1.45	0.02	0.01	0.14	0.06	100	<.20	7.74
	JUN 11	0.02	0.28	0.64	0.02	0.02	0.20	100	<.20	7.16
	JUN 24	0.30	0.38	0.66	0.02	0.18	0.22	133	<.20	8.62
	JUL 8	0.02	0.36	0.52	0.02	0.01	0.02	62	<.20	7.78
	JUL 22	0.65	0.46	0.66	0.01	0.18	0.32	208	<.20	8.33
	AUG 6	0.55	0.48	0.42	--	0.02	0.08	64	<.20	7.99
	AUG 18	0.35	0.28	0.06	0.01	0.06	0.14	186	<.20	6.68
	SEP 3	1.05	0.46	0.24	--	0.22	0.30	98	<.20	8.44
	SEP 16	0.15	0.16	0.24	0.02	0.10	0.14	68	<.20	8.24
SITE 3	SURFACE RUNOFF OR TAILWATER (UNIT 1-A)									
	MAY 13	0.16	0.55	3.30	--	0.52	0.64	297	<.20	7.94
	MAY 28	0.95	7.00	14.00	0.52	2.60	3.90	1124	<.20	8.27
	JUN 11	0.10	0.16	1.22	0.14	0.68	0.98	685	<.20	7.26
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	1.15	0.16	12.40	0.46	7.90	3.80	12272	<.20	8.10
	AUG 6	0.60	3.84	0.54	0.40	4.20	4.00	4120	<.20	8.21
	AUG 18	0.55	0.38	0.60	0.10	0.52	0.62	396	<.20	7.57
	SEP 3	1.70	0.80	4.40	0.16	8.10	8.10	7691	<.20	8.31
	SEP 16	0.20	0.06	1.24	0.02	0.78	0.86	854	<.20	8.41
SITE 4	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-B)									
	MAY 13	0.16	0.60	2.10	--	0.48	0.64	149	<.20	7.71
	MAY 28	0.75	0.25	0.15	0.02	0.18	0.12	165	<.20	7.48
	JUN 11	0.02	0.20	0.64	0.02	0.04	0.22	100	<.20	7.63
	JUN 24	0.15	1.46	0.30	0.02	0.40	0.36	171	<.20	8.71
	JUL 8	0.02	0.36	0.86	0.06	0.46	0.64	549	<.20	7.75
	JUL 22	1.05	0.01	1.08	0.01	0.46	0.76	710	<.20	7.74
	AUG 6	0.40	0.64	0.42	0.02	0.12	0.24	178	<.20	8.18
	AUG 18	0.15	0.28	0.22	--	0.12	0.18	106	<.20	8.27
	SEP 3	0.80	0.48	0.54	0.01	0.26	0.40	177	<.20	8.55
	SEP 16	0.05	0.20	0.52	0.02	0.18	0.18	128	<.20	8.53
SITE 5	SURFACE RUNOFF OR TAILWATER (UNIT 1-B)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.25	1.30	1.10	0.01	0.98	1.08	572	<.20	9.25
	JUL 8	0.02	0.52	0.62	0.04	0.60	0.28	136	<.20	7.60
	JUL 22	0.85	0.06	1.08	0.08	0.64	1.06	586	<.20	8.04
	AUG 6	0.80	1.00	0.46	0.08	0.84	1.00	539	<.20	8.23
	AUG 18	0.20	0.30	0.38	0.08	0.32	0.38	270	<.20	8.30
	SEP 3	0.65	0.48	0.70	0.32	1.06	1.08	186	<.20	8.53
	SEP 16	0.65	0.14	0.96	0.02	0.24	0.30	162	<.20	7.85
SITE 6	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-C)									
	MAY 13	0.16	0.90	1.80	--	0.32	0.48	61	<.20	7.66
	MAY 28	0.10	0.20	0.10	0.01	0.36	0.30	285	<.20	6.86
	JUN 11	0.02	0.36	0.64	0.02	0.02	0.18	60	<.20	6.94
	JUN 24	0.15	0.44	0.24	0.02	0.14	0.20	113	<.20	8.03
	JUL 8	0.10	0.54	0.66	0.04	0.04	0.22	56	<.20	7.66
	JUL 22	0.20	0.64	0.34	--	0.10	0.14	191	<.20	8.09
	AUG 6	0.20	0.64	0.34	--	0.10	0.14	191	<.20	8.09
	AUG 18	0.25	0.30	0.18	0.01	0.06	0.16	74	<.20	7.23
	SEP 3	0.65	0.44	0.30	0.01	0.38	0.38	88	<.20	8.68
	SEP 16	0.15	0.02	1.00	0.01	0.46	0.48	340	<.20	8.09
SITE 7	SURFACE RUNOFF OR TAILWATER (UNIT 1-C)									
	MAY 13	0.32	0.75	2.70	--	0.80	0.84	582	<.20	7.52
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.02	0.48	4.40	--	7.20	5.60	5352	<.20	8.60
	JUL 8	0.50	0.40	4.56	--	8.10	9.90	5849	<.20	7.92
	JUL 22	0.95	0.06	3.76	--	2.90	5.30	3869	<.20	8.21
	AUG 6	1.05	1.38	0.48	--	0.24	0.48	217	<.20	7.96
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--

Table 1 Cont'd

TABLE I. BOISE BOARD OF CONTROL

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 8	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-D)									
	MAY 13	0.16	0.95	2.00	--	0.32	0.40	134	<.20	7.11
	MAY 28	0.85	0.10	0.15	0.01	0.22	0.14	165	<.20	8.07
	JUN 11	0.10	0.18	0.66	0.02	0.02	0.20	90	<.20	6.87
	JUN 24	0.20	0.54	0.56	0.02	0.32	0.38	134	<.20	7.88
	JUL 8	0.10	0.42	0.64	0.02	0.04	0.08	46	<.20	7.86
	JUL 22	0.85	0.42	0.56	0.01	0.14	0.26	80	<.20	8.20
	AUG 6	0.30	0.58	0.28	--	0.02	0.08	79	<.20	8.07
	AUG 18	0.02	0.30	0.14	0.01	0.04	0.14	170	<.20	8.28
	SEP 3	0.65	0.40	0.40	0.01	0.26	0.30	124	<.20	8.57
	SEP 16	0.35	0.02	0.54	0.02	0.14	0.14	86	<.20	8.11
SITE 9	SURFACE RUNOFF OR TAILWATER (UNIT 1-D)									
	MAY 13	0.48	1.10	4.50	--	37.00	66.00	24717	<.20	8.23
	MAY 28	0.70	0.45	18.40	0.10	4.00	7.70	18715	<.20	8.22
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	1.30	0.02	1.00	0.02	0.22	0.40	189	<.20	7.98
	AUG 6	--	--	--	--	--	--	--	--	--
	AUG 18	0.02	0.32	0.86	0.16	0.34	0.32	197	<.20	7.73
	SEP 3	0.80	0.32	0.32	0.02	0.44	0.46	187	<.20	8.66
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 10	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-E)									
	MAY 13	0.40	0.60	1.90	--	0.36	0.40	175	<.20	7.74
	MAY 28	0.90	0.60	0.30	0.02	0.22	0.12	175	<.20	6.97
	JUN 11	0.10	0.14	0.58	0.01	0.02	0.20	65	<.20	6.99
	JUN 24	0.20	0.22	0.18	0.02	0.20	0.18	184	<.20	8.26
	JUL 8	0.10	0.44	0.54	0.02	0.02	0.06	58	<.20	8.19
	JUL 22	1.05	0.01	0.72	--	0.16	0.30	138	<.20	8.24
	AUG 6	0.15	0.66	0.40	0.01	0.06	0.18	116	<.20	7.61
	AUG 18	0.10	0.30	0.10	--	0.10	0.14	11	<.20	7.42
	SEP 3	0.80	0.28	0.24	0.02	0.28	0.38	131	<.20	8.62
	SEP 16	0.10	0.02	0.46	0.04	0.12	0.16	82	<.20	8.15
SITE 11	SURFACE RUNOFF OR TAILWATER (UNIT 1-E)									
	MAY 13	0.28	0.60	2.90	--	0.88	0.92	626	<.20	8.47
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	0.35	0.56	17.60	0.14	15.00	14.00	13914	<.20	8.11
	JUL 22	1.05	0.06	5.92	0.02	5.10	7.20	4766	<.20	8.01
	AUG 6	0.40	3.72	0.40	0.04	4.40	6.00	5680	<.20	8.21
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 12	SURFACE RUNOFF OR TAILWATER (UNIT 1-E)									
	MAY 13	0.20	0.75	3.00	--	0.80	0.88	419	<.20	8.55
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.30	0.72	0.34	0.02	0.32	0.40	184	<.20	8.18
	JUL 8	0.65	0.66	13.80	0.02	24.00	42.00	16632	<.20	8.16
	JUL 22	0.80	0.01	0.68	0.01	0.24	0.46	166	<.20	8.16
	AUG 6	0.45	1.86	0.46	0.04	1.92	3.16	1262	<.20	8.23
	AUG 18	0.02	0.30	0.24	0.04	0.48	0.52	118	<.20	7.25
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 13	SURFACE RUNOFF OR TAILWATER (UNIT 1-E)									
	MAY 13	0.32	1.20	2.15	--	0.88	0.52	192	<.20	7.97
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.20	0.54	0.24	0.02	0.30	0.38	244	<.20	7.53
	JUL 8	0.35	0.48	12.20	0.30	14.00	23.00	10979	<.20	8.07
	JUL 22	1.35	0.06	4.22	0.22	9.00	5.20	3297	<.20	8.17
	AUG 6	0.45	1.86	0.46	0.02	1.92	3.16	1262	<.20	8.23
	AUG 18	0.10	0.36	0.30	0.04	0.38	0.40	283	<.20	8.27
	SEP 3	1.65	0.54	4.00	0.20	5.40	6.60	3043	<.20	8.49
	SEP 16	1.80	0.22	2.32	0.10	1.10	1.68	882	<.20	8.13
SITE 14	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-F)									
	MAY 13	0.08	0.80	1.90	--	0.28	0.36	132	0.23	7.81
	MAY 28	0.45	0.02	1.00	--	0.06	0.02	135	0.20	7.48
	JUN 11	0.05	0.37	0.86	0.01	0.02	0.18	165	0.20	7.11
	JUN 24	0.25	0.46	0.48	--	0.14	0.06	139	<.20	8.19
	JUL 8	0.02	0.36	0.66	0.02	0.01	0.04	116	<.20	8.09
	JUL 22	1.00	0.08	0.66	--	0.14	0.32	127	0.20	7.93
	AUG 6	0.15	0.78	0.38	--	0.04	0.18	170	<.20	8.34
	AUG 18	0.50	0.36	0.48	0.01	0.18	0.18	132	0.20	8.10
	SEP 3	0.75	0.46	1.30	0.02	0.32	0.46	202	0.20	8.73
	SEP 16	0.10	0.38	1.22	0.06	0.28	0.32	268	<.20	8.30

Table 1
Cont'd

TABLE I. BOISE BOARD OF CONTROL

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 15	SURFACE RUNOFF OR TAILWATER (UNIT 1-F)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	0.02	0.24	1.64	0.08	1.82	1.92	2085	0.20	7.58
	JUN 24	0.35	1.27	1.80	0.38	10.20	10.40	5019	0.20	8.07
	JUL 8	0.10	0.44	2.08	0.26	3.24	3.96	3156	0.20	7.96
	JUL 22	0.80	0.18	2.28	0.18	1.96	2.90	1116	<.20	8.07
	AUG 6	0.45	1.16	0.38	--	0.60	1.20	481	0.20	8.36
	AUG 18	0.15	0.32	0.54	0.08	0.44	0.48	227	0.20	8.21
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 16	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-G)									
	MAY 13	0.16	0.75	1.80	--	0.24	0.28	166	0.22	8.33
	MAY 28	0.35	0.15	0.30	--	0.06	0.02	165	0.20	7.91
	JUN 11	0.02	0.36	0.78	0.01	0.04	0.20	175	<.20	7.81
	JUN 24	0.20	0.48	0.36	0.01	0.14	0.12	128	0.20	7.78
	JUL 8	0.02	0.38	0.72	0.01	0.02	0.08	106	<.20	8.07
	JUL 22	0.75	0.46	0.82	0.01	0.14	0.24	126	<.20	7.88
	AUG 6	0.35	0.74	0.38	--	0.06	0.22	145	<.20	8.36
	AUG 18	0.10	0.40	0.38	0.01	0.14	0.20	124	0.20	8.18
	SEP 3	0.70	0.52	1.10	0.02	0.40	0.48	258	0.20	8.88
	SEP 16	0.10	0.18	1.38	0.04	0.22	0.28	221	<.20	8.34
SITE 17	SURFACE RUNOFF OR TAILWATER (UNIT 1-G)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	0.20	0.10	2.30	0.48	1.28	1.36	570	0.25	7.84
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	2.90	1.04	1.80	1.92	36.40	44.00	9274	0.25	7.94
	JUL 8	0.10	0.64	1.72	0.04	0.86	1.52	1154	<.20	8.18
	JUL 22	1.00	26.00	2.68	0.40	1.88	2.16	1565	0.35	7.94
	AUG 6	0.90	1.56	0.40	0.14	0.98	1.88	1114	0.20	8.36
	AUG 18	0.10	0.36	0.58	0.01	0.10	0.22	132	<.20	9.35
	SEP 3	1.35	0.76	2.36	0.52	4.20	4.10	2356	0.20	8.60
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 18	TILE DRAIN EFFLUENT									
	MAY 13	2.44	0.80	1.75	--	0.40	0.52	228	0.35	7.94
	MAY 28	1.32	3.35	1.30	0.02	0.38	0.24	215	0.25	7.65
	JUN 11	1.80	0.16	0.66	0.06	0.16	0.43	270	0.35	7.72
	JUN 24	1.00	0.44	0.22	0.08	0.48	0.44	145	0.20	8.21
	JUL 8	1.00	0.44	0.68	0.06	0.18	0.24	179	0.20	8.16
	JUL 22	2.30	0.46	0.98	0.02	0.30	0.52	226	0.20	8.31
	AUG 6	1.80	0.66	0.22	0.02	0.24	0.64	276	0.30	8.59
	AUG 18	2.65	0.28	0.12	0.06	0.22	0.44	234	0.30	8.09
	SEP 3	2.45	0.44	0.30	0.12	0.78	0.98	279	0.35	8.81
	SEP 16	1.40	0.10	0.58	0.10	0.30	0.24	146	0.35	8.52
SITE 19	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 1-H)									
	MAY 13	0.96	0.90	2.15	--	0.32	0.40	219	0.29	7.81
	MAY 28	1.04	0.25	1.60	--	0.14	0.10	265	0.25	8.27
	JUN 11	0.85	0.46	2.25	--	0.14	0.20	210	0.20	8.10
	JUN 24	1.35	0.38	0.96	0.01	0.36	0.40	296	0.25	8.28
	JUL 8	0.85	0.36	0.72	0.08	0.04	0.50	217	0.20	8.18
	JUL 22	2.10	0.18	1.72	0.01	0.18	0.32	246	0.25	7.79
	AUG 6	0.40	0.86	0.40	0.02	0.10	0.32	244	0.25	8.35
	AUG 18	1.45	0.36	0.43	0.04	0.16	0.28	208	0.25	8.33
	SEP 3	2.55	0.38	1.10	0.02	0.40	0.54	324	0.30	8.94
	SEP 16	2.10	0.02	1.14	0.06	0.20	0.28	266	0.30	8.42
SITE 20	SURFACE RUNOFF OR TAILWATER (UNIT 1-H)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	1.60	0.30	3.90	0.36	3.10	6.20	1585	0.30	8.37
	JUN 11	0.75	0.38	2.68	0.36	1.60	3.10	1640	0.25	8.38
	JUN 24	1.15	0.54	1.18	0.14	5.30	11.20	2373	0.25	8.34
	JUL 8	1.50	0.38	2.08	0.44	3.36	3.24	1853	0.25	8.13
	JUL 22	3.10	3.44	3.12	0.32	2.80	3.30	2212	0.30	8.33
	AUG 6	1.95	1.10	0.26	0.02	0.26	0.44	281	0.25	8.48
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--

APPENDIX II
Results of Analysis of Water Samples
Table 2. Nampa-Meridian Irrigation District 1970 water quality data.

TABLE II. NAMPA-MERIDIAN IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 1	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 2-A)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.02	0.46	0.64	0.08	0.58	0.68	176	<.20	8.04
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	0.60	0.54	0.66	--	0.46	0.54	83	<.20	7.97
	AUG 6	0.50	0.36	0.52	0.04	0.16	0.26	76	<.20	8.21
	AUG 18	0.02	0.01	0.22	--	0.16	0.18	71	<.20	6.71
	SEP 3	1.15	0.20	0.28	0.14	0.46	0.16	50	<.20	8.84
	SEP 16	0.10	0.06	0.44	0.30	0.18	0.30	24	<.20	7.22
SITE 2	DRAINAGE WELL (UNIT 2-A)									
	MAY 13	0.24	0.03	1.00	--	0.24	0.28	82	<.20	7.18
	MAY 28	0.18	0.02	0.35	0.03	0.32	0.44	155	<.20	7.99
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	0.20	0.36	0.64	0.04	0.22	0.32	98	<.20	8.03
	JUL 22	--	--	--	--	--	--	--	--	--
	AUG 6	--	--	--	--	--	--	--	--	--
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	4.00	0.20	--	0.08	0.52	0.56	357	0.45	8.68
	SEP 16	1.25	0.06	0.48	0.06	0.08	0.16	20	0.45	7.47
SITE 3	SURFACE RUNOFF OR TAILWATER (UNIT 2-A)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	0.02	0.20	0.82	0.06	0.18	0.20	90	<.20	8.21
	JUN 24	3.60	1.92	23.20	0.48	4.80	6.90	3027	0.25	8.07
	JUL 8	22.80	3.56	16.60	0.46	3.44	4.00	2862	0.25	8.01
	JUL 22	22.00	1.80	13.80	0.14	0.62	0.76	388	<.20	7.85
	AUG 6	0.20	0.40	0.58	0.01	0.20	0.32	258	<.20	8.36
	AUG 18	0.02	0.02	0.22	--	0.14	0.18	150	<.20	7.88
	SEP 3	1.85	0.24	0.46	0.08	0.44	0.44	200	0.25	8.65
	SEP 16	0.55	0.18	0.46	0.10	0.16	0.24	41	0.25	8.13
SITE 4	TILE DRAIN EFFLUENT									
	MAY 13	18.40	0.55	2.15	--	0.40	0.64	600	0.60	7.10
	MAY 28	16.00	0.02	0.20	0.20	0.18	0.46	460	0.60	7.78
	JUN 11	11.40	0.28	0.76	0.10	0.28	0.32	345	0.45	7.47
	JUN 24	2.90	0.40	0.72	0.08	0.82	1.36	371	0.40	7.70
	JUL 8	10.60	0.36	0.64	0.08	0.30	0.36	406	0.50	7.76
	JUL 22	13.20	0.28	0.72	0.06	0.72	0.84	412	0.45	7.59
	AUG 6	9.60	0.38	0.64	0.14	0.40	0.96	426	0.50	7.55
	AUG 18	8.40	0.22	0.28	0.14	0.40	0.50	359	0.55	7.50
	SEP 3	11.00	0.18	--	0.16	0.78	1.02	460	0.50	8.69
	SEP 16	3.40	0.08	0.60	0.18	0.20	0.30	266	0.45	7.64
SITE 5	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 2-B)									
	MAY 13	0.16	0.03	0.73	--	0.04	0.16	129	<.20	7.20
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	0.50	0.24	0.80	0.02	0.08	0.60	90	<.20	4.26
	JUN 24	0.30	0.28	0.20	0.02	0.24	0.22	64	<.20	8.62
	JUL 8	0.20	0.30	0.64	0.02	0.08	0.14	71	<.20	8.12
	JUL 22	0.90	0.36	0.58	0.01	0.20	0.40	72	<.20	8.12
	AUG 6	0.15	0.30	0.62	--	0.10	0.20	525	<.20	8.01
	AUG 18	0.10	0.14	0.10	--	0.10	0.10	78	<.20	8.05
	SEP 3	0.95	0.20	0.24	0.01	0.16	0.20	72	<.20	8.64
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 6	TILE DRAIN EFFLUENT (UNIT 2-B)									
	MAY 13	0.24	0.03	0.73	--	0.10	0.20	36	<.20	7.00
	MAY 28	4.30	0.30	0.60	0.02	0.14	0.38	345	0.50	7.87
	JUN 11	4.20	0.22	0.70	0.14	0.28	0.28	315	0.45	7.58
	JUN 24	3.20	0.52	0.58	0.06	1.06	1.68	314	0.40	8.17
	JUL 8	4.05	0.32	0.58	0.12	0.24	0.20	358	0.50	7.97
	JUL 22	5.10	0.18	--	0.06	0.68	1.10	410	0.50	7.72
	AUG 6	4.70	0.42	0.70	0.14	0.42	0.92	380	0.50	8.38
	AUG 18	5.50	0.18	0.22	0.16	0.36	0.56	305	0.50	7.81
	SEP 3	7.50	0.18	0.28	0.14	0.76	0.88	442	0.50	8.75
	SEP 16	3.30	0.06	0.58	0.18	0.24	0.32	310	0.50	8.33
SITE 7	SURFACE RUNOFF OR TAILWATER (UNIT 2-B)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	5.40	0.36	1.22	0.10	0.38	0.38	545	<.20	7.84
	JUN 24	0.20	0.38	0.64	0.02	0.58	0.68	134	<.20	8.21
	JUL 8	0.35	0.38	0.58	0.10	0.24	0.48	121	<.20	8.24
	JUL 22	0.90	0.46	0.68	0.01	0.38	0.38	132	<.20	8.09
	AUG 6	0.95	0.40	1.06	1.08	1.50	1.60	171	<.20	8.31
	AUG 18	0.60	0.24	0.24	0.02	0.16	0.20	94	<.20	8.13
	SEP 3	1.55	0.22	0.58	0.06	0.60	0.60	156	<.20	8.72
	SEP 16	--	--	--	--	--	--	--	--	--

Table 2
Cont'd

TABLE II. NAMPA-MERIDIAN IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 8	TILE DRAIN EFFLUENT									
	MAY 13	3.04	0.94	0.53	--	0.32	0.40	551	0.70	7.69
	MAY 28	4.50	0.02	10.40	0.08	0.30	0.42	565	0.80	7.82
	JUN 11	4.20	0.24	0.82	0.38	0.48	0.38	525	0.70	7.59
	JUN 24	4.80	0.44	0.74	0.16	0.92	1.02	525	0.65	7.70
	JUL 8	3.70	0.30	0.66	0.14	0.40	0.36	534	0.75	7.83
	JUL 22	5.70	0.18	0.76	0.14	1.00	1.12	592	0.75	7.55
	AUG 6	4.15	0.32	0.76	0.22	0.48	0.98	598	0.75	7.90
	AUG 18	3.60	0.22	0.36	0.20	0.52	0.66	558	0.70	7.56
	SEP 3	4.30	0.22	0.38	0.36	1.44	1.48	588	0.70	8.76
	SEP 16	2.25	0.02	0.62	0.24	0.38	0.50	452	0.70	7.70
SITE 9	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 2-C)									
	MAY 13	0.16	0.06	0.53	--	0.10	0.20	86	<.20	7.19
	MAY 28	0.90	0.40	0.20	0.18	0.04	0.14	135	<.20	8.06
	JUN 11	0.15	0.44	0.72	0.08	0.08	0.08	90	<.20	8.03
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	--	--	--	--	--	--	--	--	--
	AUG 6	0.35	0.24	0.66	--	0.10	0.18	81	<.20	8.05
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 10	DRAINAGE WELL (UNIT 2-C)									
	MAY 13	5.92	1.10	2.15	--	0.44	0.64	428	0.57	7.27
	MAY 28	6.60	0.02	0.20	0.18	0.06	0.26	415	0.50	8.00
	JUN 11	4.15	0.12	0.66	0.16	0.26	0.16	355	0.45	7.54
	JUN 24	2.40	0.46	0.18	0.06	0.56	0.84	360	0.40	7.95
	JUL 8	4.40	0.36	0.50	0.02	0.14	0.22	337	0.45	8.06
	JUL 22	5.70	0.02	0.58	0.06	0.82	0.80	386	0.50	7.78
	AUG 6	4.85	0.20	0.60	0.04	0.30	0.66	380	0.45	8.17
	AUG 18	5.70	0.18	0.24	0.02	0.22	0.44	442	0.50	7.78
	SEP 3	7.00	0.18	0.36	0.06	0.92	0.96	490	0.50	8.73
	SEP 16	4.60	0.01	0.58	0.06	0.10	0.24	520	0.50	7.80
SITE 11	SURFACE RUNOFF OR TAILWATER (UNIT 2-C)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	--	--	--	--	--	--	--	--	--
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	--	--	--	--	--	--	--	--	--
	AUG 6	--	--	--	--	--	--	--	--	--
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 12	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 2-D)									
	MAY 13	4.00	0.60	0.75	--	0.40	0.68	464	0.76	7.08
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	1.35	0.28	0.20	0.04	0.40	0.32	150	<.20	8.26
	JUL 8	0.20	0.30	0.48	0.02	0.08	0.10	54	<.20	8.25
	JUL 22	1.45	0.12	0.54	0.01	0.30	0.36	94	<.20	8.29
	AUG 6	--	--	--	--	--	--	--	--	--
	AUG 18	1.65	0.20	0.22	0.01	0.12	0.20	122	0.25	7.86
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 13	SURFACE RUNOFF OR TAILWATER (UNIT 2-D)									
	MAY 13	2.80	1.50	0.80	--	0.48	0.64	438	0.44	7.06
	MAY 28	1.40	0.02	0.55	0.18	0.30	0.42	195	0.20	8.21
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	1.45	0.46	0.64	0.16	0.98	1.04	332	0.20	8.31
	JUL 8	1.20	0.32	0.78	0.10	0.44	0.94	212	0.25	8.10
	JUL 22	2.25	0.18	1.22	0.01	0.64	0.78	318	0.25	7.89
	AUG 6	--	--	--	--	--	--	--	--	--
	AUG 18	0.90	0.26	0.88	0.22	0.76	0.74	746	0.25	8.37
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 14	HEADWATER OR SOURCE OF IRRIGATION WATER (ARTESIAN WELL)									
	MAY 13	5.20	0.95	0.95	--	0.40	0.60	646	0.88	7.29
	MAY 28	6.00	0.02	0.25	0.08	0.02	0.22	595	0.85	7.52
	JUN 11	3.95	0.28	1.08	0.06	0.14	0.20	555	0.70	7.52
	JUN 24	4.85	0.40	0.54	0.04	0.64	0.98	668	0.70	7.93
	JUL 8	4.80	0.32	0.64	0.06	0.10	0.24	554	0.75	7.87
	JUL 22	6.20	0.18	0.66	0.04	0.60	0.66	478	0.75	7.77
	AUG 6	4.85	0.28	0.66	0.02	0.22	0.62	622	0.75	8.16
	AUG 18	4.60	0.20	0.18	0.02	0.18	0.34	476	0.80	9.98
	SEP 3	6.30	0.22	0.30	0.06	0.48	0.60	634	0.70	8.50
	SEP 16	2.85	0.10	0.50	0.04	0.06	0.16	443	0.70	7.91

Table 2
Cont'd

TABLE II.. NAMPA-MERIDIAN IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 15	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 2-E)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	1.05	0.40	1.80	0.04	0.02	0.06	195	0.20	7.53
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.02	0.32	0.68	0.04	0.08	0.04	100	<.20	8.35
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	--	--	--	--	--	--	--	--	--
	AUG 6	0.35	0.36	0.72	0.01	0.06	0.18	131	0.20	7.81
	AUG 18	0.15	0.16	1.18	--	0.10	0.18	210	0.20	8.39
	SEP 3	0.80	0.30	0.72	0.01	0.40	0.58	299	0.25	8.48
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 16	SURFACE RUNOFF OR TAILWATER (UNIT 2-E)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	0.75	0.02	2.70	0.18	0.08	0.26	200	0.20	8.17
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.10	0.44	2.88	0.18	3.96	6.60	3902	<.20	8.30
	JUL 8	--	--	--	--	--	--	--	--	--
	JUL 22	--	--	--	--	--	--	--	--	--
	AUG 6	0.40	0.44	1.20	0.48	0.88	1.24	369	0.20	8.35
	AUG 18	0.02	0.18	1.10	--	0.16	0.20	251	0.20	8.42
	SEP 3	0.80	0.24	1.92	0.08	0.34	0.76	326	0.30	8.44
	SEP 16	--	--	--	0.10	--	--	--	--	--
SITE 17	OPEN DRAIN DITCH									
	MAY 13	5.12	0.60	0.50	--	0.40	0.68	554	0.81	6.94
	MAY 28	5.30	0.02	0.25	0.24	0.02	0.22	550	0.70	8.12
	JUN 11	4.40	0.30	0.46	0.20	0.02	0.08	515	0.70	7.74
	JUN 24	4.50	0.46	0.58	0.10	0.40	0.24	480	0.60	8.05
	JUL 8	4.60	0.30	0.60	0.06	0.16	0.70	508	0.70	7.97
	JUL 22	6.30	0.12	0.62	0.06	0.48	0.76	560	0.65	7.85
	AUG 6	5.10	0.24	0.64	0.02	0.24	0.68	568	0.70	8.20
	AUG 18	4.30	0.18	0.18	0.02	0.14	0.40	470	0.65	7.87
	SEP 3	5.80	0.20	0.32	0.10	0.72	0.96	584	0.70	8.60
	SEP 16	3.20	0.06	0.52	0.04	0.08	0.10	410	0.60	7.90
SITE 18	OPEN DRAIN DITCH									
	MAY 13	4.64	0.60	0.55	--	0.40	0.64	725	0.71	7.49
	MAY 28	5.60	0.50	0.25	0.22	0.02	0.34	555	0.75	8.00
	JUN 11	4.05	0.32	0.78	0.22	0.02	0.22	535	0.75	7.54
	JUN 24	4.55	0.46	0.30	0.12	0.36	0.46	1046	0.65	8.11
	JUL 8	4.65	0.44	0.82	0.08	0.30	0.44	517	0.65	7.98
	JUL 22	5.80	0.30	0.52	0.04	0.58	1.38	573	0.70	7.86
	AUG 6	5.00	0.34	0.68	0.04	0.22	0.52	516	0.70	8.23
	AUG 18	4.40	0.20	0.20	0.01	0.16	0.40	468	0.70	7.88
	SEP 3	5.70	0.18	0.34	0.08	0.94	1.08	653	0.70	8.66
	SEP 16	3.00	0.10	0.82	0.06	0.10	0.18	426	0.70	7.65
SITE 19	OPEN DRAIN DITCH									
	MAY 13	4.40	0.80	0.40	--	0.56	0.68	557	0.78	7.48
	MAY 28	5.80	0.45	0.55	0.26	0.06	0.40	560	0.75	8.07
	JUN 11	3.70	0.18	0.80	0.06	0.02	0.16	510	0.70	7.82
	JUN 24	4.80	0.40	0.88	0.08	0.42	0.44	506	0.65	8.14
	JUL 8	4.05	0.50	0.64	0.08	0.04	0.48	503	0.70	8.01
	JUL 22	6.00	0.01	0.60	0.04	0.54	0.64	570	0.70	7.91
	AUG 6	5.00	0.38	0.58	0.02	0.22	0.66	578	0.70	8.28
	AUG 18	4.80	0.10	0.18	0.02	0.20	0.40	464	0.60	7.94
	SEP 3	5.00	0.20	0.38	0.10	1.12	1.28	702	0.65	8.90
	SEP 16	2.30	0.08	0.64	0.08	0.08	0.22	413	0.65	7.66
SITE 20	OPEN DRAIN DITCH									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	4.60	0.44	0.82	0.08	0.42	0.26	564	0.65	8.15
	JUL 8	3.90	0.38	0.66	0.04	0.10	0.26	484	0.70	8.06
	JUL 22	5.70	0.24	0.66	0.04	0.60	0.68	540	0.70	7.95
	AUG 6	4.35	0.36	0.66	0.06	0.24	0.76	631	0.65	8.23
	AUG 18	5.00	0.14	0.30	--	0.26	0.40	520	0.70	7.88
	SEP 3	5.30	0.20	0.38	0.14	1.52	1.58	530	0.70	8.67
	SEP 16	2.85	0.08	0.72	0.08	0.10	0.22	397	0.65	7.80

APPENDIX II
Results of Analysis of Water Samples
Table 3. Pioneer Irrigation District 1970 water quality data.

TABLE III. PIONEER IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 1	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-A)									
	MAY 13	0.68	0.90	1.30	--	0.32	0.52	180	<.20	7.91
	MAY 28	0.50	0.70	0.06	--	0.18	0.30	185	<.20	7.88
	JUN 11	0.85	0.30	0.02	0.06	0.24	0.22	160	<.20	7.97
	JUN 24	0.20	0.38	0.28	0.14	0.10	0.38	204	<.20	6.57
	JUL 8	2.75	1.08	1.04	--	0.52	0.60	306	0.20	7.03
	JUL 22	1.75	0.44	0.66	0.08	0.34	0.32	222	0.25	6.81
	AUG 6	1.50	0.05	0.78	--	0.24	0.32	222	0.25	8.20
	AUG 18	0.90	0.32	0.74	0.16	0.22	0.22	191	0.20	8.22
	SEP 3	1.90	0.10	0.14	0.14	0.32	0.44	210	0.25	7.05
	SEP 16	0.65	0.08	0.80	0.14	0.24	0.30	86	0.20	8.30
SITE 2	SURFACE RUNOFF OR TAILWATER (UNIT 3-A)									
	MAY 13	0.48	0.80	0.75	--	0.36	0.49	360	<.20	7.38
	MAY 28	0.70	0.80	0.18	--	0.14	0.42	170	<.20	8.16
	JUN 11	0.85	0.36	0.02	0.02	0.24	0.24	170	<.20	7.85
	JUN 24	0.15	0.24	0.36	0.48	0.84	1.06	828	0.20	7.32
	JUL 8	1.70	1.06	0.88	--	0.50	0.52	156	0.25	7.33
	JUL 22	2.60	0.28	0.96	0.10	0.52	0.50	298	0.30	6.92
	AUG 6	2.25	0.01	0.80	0.02	0.24	0.32	268	0.35	8.32
	AUG 18	0.95	0.40	2.00	0.88	0.19	2.30	1176	0.35	8.27
	SEP 3	1.45	0.06	0.20	0.16	0.32	0.36	258	0.25	8.18
	SEP 16	0.85	0.06	0.76	0.20	0.32	0.52	140	0.25	8.41
SITE 3	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-B)									
	MAY 13	0.48	0.60	0.90	--	0.36	0.44	439	<.20	7.80
	MAY 28	0.45	1.15	0.22	--	0.22	0.34	235	<.20	8.05
	JUN 11	0.75	0.32	0.04	0.02	0.32	0.18	215	<.20	8.01
	JUN 24	0.10	0.22	0.34	0.04	0.20	0.50	159	<.20	7.62
	JUL 8	1.55	0.48	0.78	--	0.48	0.64	290	0.20	7.43
	JUL 22	1.55	0.18	0.70	0.10	0.40	0.44	231	0.25	7.10
	AUG 6	1.50	0.01	0.76	0.06	0.28	0.30	290	0.25	8.15
	AUG 18	0.95	0.44	1.14	0.18	0.24	0.26	182	0.20	8.31
	SEP 3	1.50	0.08	0.30	0.12	0.30	0.38	219	0.25	7.13
	SEP 16	0.50	0.01	0.66	0.18	0.24	0.36	76	0.20	8.69
SITE 4	SURFACE RUNOFF OR TAILWATER (UNIT 3-B)									
	MAY 13	0.64	0.75	1.20	--	0.40	0.40	204	<.20	7.83
	MAY 28	0.45	1.15	0.78	--	0.56	0.60	180	<.20	8.11
	JUN 11	0.55	0.36	1.14	0.10	0.60	0.83	18135	<.20	7.59
	JUN 24	0.20	0.14	0.44	0.28	4.80	7.00	7390	<.20	7.95
	JUL 8	2.90	1.28	1.88	--	1.12	1.32	1697	0.25	7.48
	JUL 22	1.55	0.38	4.16	0.18	4.00	7.80	3848	0.25	7.09
	AUG 6	1.55	0.30	1.96	0.14	1.40	1.20	1837	0.25	8.33
	AUG 18	3.10	1.74	1.86	0.18	1.16	1.52	1146	0.25	8.36
	SEP 3	1.30	0.22	0.26	0.38	0.64	0.66	343	0.30	6.55
	SEP 16	0.55	0.01	1.56	0.28	0.38	0.38	116	0.20	8.62
SITE 5	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-C)									
	MAY 13	0.40	0.90	0.60	--	0.40	0.60	366	<.20	6.92
	MAY 28	0.50	1.20	0.16	--	0.40	0.50	245	<.20	7.87
	JUN 11	1.15	0.36	0.06	0.04	0.34	0.22	270	<.20	7.32
	JUN 24	0.40	0.12	0.30	0.06	0.24	0.50	237	<.20	7.96
	JUL 8	1.95	0.56	0.86	--	0.58	0.68	313	0.20	7.66
	JUL 22	2.65	0.06	--	0.06	0.22	0.38	228	0.20	7.20
	AUG 6	1.25	0.15	1.00	0.01	0.32	0.46	304	0.20	8.21
	AUG 18	1.05	0.38	0.78	0.14	0.24	0.24	229	0.20	8.34
	SEP 3	1.20	0.22	0.14	0.12	0.28	0.38	210	0.25	6.80
	SEP 16	0.50	0.06	0.80	0.08	0.22	0.30	96	0.20	8.53
SITE 6	SURFACE RUNOFF OR TAILWATER (UNIT 3-C)									
	MAY 13	0.40	0.80	1.45	--	0.88	1.04	469	0.28	7.18
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	0.65	0.36	0.76	0.02	0.40	0.28	280	0.20	7.58
	JUN 24	0.65	0.24	0.32	0.40	1.82	2.28	2331	<.20	8.01
	JUL 8	2.20	0.58	2.40	--	3.64	3.84	1741	0.25	7.73
	JUL 22	4.70	0.02	2.20	0.20	2.72	3.96	2430	0.35	7.41
	AUG 6	1.65	0.05	1.12	0.18	0.64	0.92	436	0.20	8.25
	AUG 18	0.45	0.40	0.92	0.20	0.36	0.36	204	0.25	8.40
	SEP 3	1.15	0.24	0.28	0.18	0.38	0.44	251	0.25	8.07
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 7	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-D)									
	MAY 13	0.40	0.60	0.60	--	0.36	0.48	158	<.20	7.11
	MAY 28	1.05	0.75	0.08	--	0.08	0.32	180	<.20	7.74
	JUN 11	1.35	0.34	0.06	0.08	0.28	0.18	135	<.20	7.37
	JUN 24	0.30	0.28	0.36	0.02	0.18	0.58	168	<.20	7.97
	JUL 8	2.25	0.48	0.70	0.01	0.48	0.52	150	<.20	7.73
	JUL 22	2.25	0.12	0.54	0.02	0.38	0.50	123	<.20	7.52
	AUG 6	2.00	0.30	0.76	0.02	0.28	0.40	180	<.20	8.22
	AUG 18	0.90	0.38	0.66	0.28	0.40	0.46	134	0.20	8.36
	SEP 3	1.50	0.24	0.22	0.18	0.32	0.60	196	0.25	7.41
	SEP 16	0.56	0.06	0.56	0.14	0.18	0.22	76	0.20	8.37

Table 3 Cont'd

TABLE III. PIONEER IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 8	SURFACE RUNOFF OR TAILWATER (UNIT 3-D)									
	MAY 13	--	--	--	--	--	--	--	--	--
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	--	--	--	--	--	--	--	--	--
	JUN 24	0.55	0.01	1.76	0.22	1.06	1.48	816	<.20	8.03
	JUL 8	2.10	5.60	3.20	--	4.90	5.00	2226	0.25	8.12
	JUL 22	1.55	0.14	1.58	0.26	2.00	2.90	161	<.20	7.76
	AUG 6	2.85	0.05	1.38	0.22	1.16	1.90	1180	<.20	8.09
	AUG 18	--	--	--	--	--	--	--	--	--
	SEP 3	--	--	--	--	--	--	--	--	--
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 9	OPEN DRAIN DITCH									
	MAY 13	2.40	1.10	1.50	--	0.56	0.64	561	0.56	7.00
	MAY 28	1.70	1.50	0.32	--	0.24	0.66	450	0.40	8.27
	JUN 11	4.65	0.38	1.10	0.10	0.20	0.32	540	0.65	7.79
	JUN 24	1.55	0.10	0.38	0.18	0.42	1.60	620	0.35	7.96
	JUL 8	3.65	0.82	1.04	--	0.90	1.06	513	0.35	8.02
	JUL 22	3.00	0.01	0.94	0.10	0.64	0.76	475	0.40	7.68
	AUG 6	3.40	0.01	1.10	0.06	0.40	0.64	394	0.35	8.19
	AUG 18	2.40	0.42	0.96	0.14	0.30	0.30	457	0.45	8.54
	SEP 3	5.00	0.32	0.48	0.20	0.48	0.48	543	0.60	7.55
	SEP 16	2.65	0.02	0.70	0.12	0.20	0.24	268	0.55	8.04
SITE 10	OPEN DRAIN DITCH									
	MAY 13	2.16	1.50	6.00	--	0.96	0.88	1052	0.53	7.12
	MAY 28	0.80	1.40	0.38	--	0.22	0.34	360	0.40	6.35
	JUN 11	5.70	0.48	0.12	0.24	1.64	1.62	2110	0.55	8.07
	JUN 24	1.15	0.40	0.38	0.18	0.62	1.06	582	0.40	7.99
	JUL 8	1.45	0.86	1.96	0.02	3.24	3.36	2046	0.35	8.17
	JUL 22	2.10	0.06	--	0.08	0.58	0.90	643	0.45	7.75
	AUG 6	2.95	0.35	4.00	0.20	2.00	2.00	2944	0.60	7.69
	AUG 18	1.50	0.32	1.38	0.08	0.76	0.82	1238	0.40	8.47
	SEP 3	2.55	0.26	0.40	0.08	0.26	0.48	384	0.45	8.11
	SEP 16	3.10	0.06	0.58	0.18	0.22	0.30	398	0.70	8.26
SITE 11	TILE DRAIN EFFLUENT									
	MAY 13	4.64	0.75	0.50	--	0.48	0.64	505	0.63	7.13
	MAY 28	3.90	1.35	0.06	0.08	0.14	0.30	440	0.50	7.86
	JUN 11	4.20	0.16	0.56	0.14	0.08	0.28	480	0.55	7.69
	JUN 24	4.05	0.12	0.38	0.10	0.14	0.32	442	0.55	7.24
	JUL 8	5.70	0.70	0.54	0.10	1.06	1.04	403	0.40	7.84
	JUL 22	5.50	0.01	--	0.10	0.56	0.82	446	0.50	7.59
	AUG 6	5.30	0.01	0.60	0.08	0.38	0.62	415	0.55	7.92
	AUG 18	3.65	0.36	0.62	0.08	0.20	0.24	399	0.55	8.53
	SEP 3	6.20	0.28	0.22	0.18	0.32	1.06	440	0.55	7.58
	SEP 16	4.35	0.02	0.52	0.24	0.20	0.20	310	0.55	7.98
SITE 12	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-E)									
	MAY 13	0.64	0.80	0.70	--	0.36	0.48	187	<.20	8.19
	MAY 28	0.80	0.95	0.10	--	0.18	0.30	220	<.20	8.04
	JUN 11	1.15	0.44	0.02	--	0.32	0.20	195	<.20	7.42
	JUN 24	0.65	0.24	0.28	0.08	0.12	0.30	180	<.20	7.03
	JUL 8	1.95	0.46	0.60	0.02	0.72	0.76	166	<.20	8.18
	JUL 22	1.65	0.12	0.58	0.08	0.30	0.38	138	<.20	7.88
	AUG 6	1.05	0.10	0.72	0.02	0.28	0.32	142	<.20	8.10
	AUG 18	0.85	0.42	0.64	0.04	0.24	0.26	108	<.20	8.39
	SEP 3	1.95	0.30	0.38	0.16	0.28	0.46	150	0.20	8.15
	SEP 16	0.60	0.02	0.60	0.18	0.20	0.22	97	0.20	8.40
SITE 13	SURFACE RUNOFF OR TAILWATER (UNIT 3-E)									
	MAY 13	0.32	3.80	1.15	--	0.48	0.48	168	<.20	7.37
	MAY 28	0.30	0.75	0.42	--	0.30	0.70	280	0.20	7.42
	JUN 11	1.45	0.38	0.08	0.14	0.43	0.32	240	<.20	8.10
	JUN 24	0.05	0.14	0.36	0.24	0.46	0.60	232	<.20	7.66
	JUL 8	1.75	0.64	0.84	--	0.98	1.00	278	<.20	8.10
	JUL 22	0.60	0.32	1.16	0.04	0.38	0.44	140	<.20	7.76
	AUG 6	0.80	0.15	1.34	0.36	1.04	1.64	1081	<.20	8.01
	AUG 18	1.45	0.36	1.04	0.22	0.52	0.52	428	0.20	8.40
	SEP 3	2.50	0.28	0.40	0.22	0.56	0.60	382	0.25	7.45
	SEP 16	--	--	--	--	--	--	--	--	--
SITE 14	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-F)									
	MAY 13	0.56	3.85	0.60	--	0.32	0.40	95	<.20	7.10
	MAY 28	0.50	1.20	0.10	--	0.10	0.30	175	<.20	7.73
	JUN 11	1.25	0.32	0.24	0.02	0.24	0.16	240	<.20	8.10
	JUN 24	0.65	0.18	0.32	0.02	0.10	0.30	137	<.20	7.76
	JUL 8	1.70	0.52	0.58	0.02	0.72	0.70	97	<.20	8.15
	JUL 22	2.05	0.08	0.54	0.08	0.30	0.34	111	<.20	7.81
	AUG 6	1.70	0.01	0.60	0.14	0.28	0.36	104	<.20	8.12
	AUG 18	0.65	0.38	0.76	0.14	0.20	0.24	136	<.20	8.29
	SEP 3	1.60	0.28	0.34	0.14	0.28	0.38	165	<.20	8.13
	SEP 16	0.60	0.06	0.66	0.18	0.22	0.38	85	<.20	8.43

Table 3
Cont'd

TABLE III. PIONEER IRRIGATION DISTRICT

1970 WATER QUALITY DATA

DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 15 SURFACE RUNOFF OR TAILWATER (UNIT 3-F)									
MAY 13	--	--	--	--	--	--	--	--	--
MAY 28	0.75	0.90	0.48	--	1.14	1.16	325	0.20	8.45
JUN 11	--	--	--	--	--	--	--	--	--
JUN 24	0.30	--	0.26	0.32	0.98	1.04	1362	0.25	9.98
JUL 8	1.70	0.54	2.76	--	3.80	3.96	3779	<.20	8.20
JUL 22	2.15	0.14	--	0.22	2.80	3.44	2560	<.20	7.83
AUG 6	1.55	0.01	1.06	0.10	0.66	1.02	594	<.20	8.21
AUG 18	0.75	0.36	0.96	0.24	0.58	0.58	536	<.20	8.30
SEP 3	3.20	0.32	0.86	0.36	0.44	0.34	238	0.20	8.80
SEP 16	--	--	--	--	--	--	--	--	--
SITE 16 SURFACE RUNOFF OR TAILWATER (UNIT 3-F)									
MAY 13	0.48	1.80	2.40	--	1.48	1.84	1715	<.20	7.01
MAY 28	0.20	0.70	0.36	--	0.70	0.82	420	<.20	8.61
JUN 11	0.85	0.28	0.90	0.16	0.30	0.46	340	0.20	7.69
JUN 24	0.60	0.40	0.38	0.18	0.84	1.28	1129	<.20	7.17
JUL 8	2.25	0.62	2.32	--	1.84	2.40	2342	0.25	7.96
JUL 22	2.00	0.08	0.96	0.16	1.40	1.62	516	<.20	7.78
AUG 6	1.85	0.01	1.30	0.14	0.98	0.94	968	<.20	8.06
AUG 18	1.50	0.44	0.70	0.26	0.38	0.46	270	0.25	8.44
SEP 3	1.85	0.28	0.46	0.14	0.52	0.36	402	0.20	7.43
SEP 16	--	--	--	--	--	--	--	--	--
SITE 17 HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-G)									
MAY 13	0.56	1.00	0.60	--	0.32	0.40	296	<.20	7.98
MAY 28	0.55	0.75	0.16	0.02	0.08	0.22	140	<.20	8.40
JUN 11	0.85	0.20	0.72	0.04	0.08	0.16	230	<.20	7.52
JUN 24	0.65	0.26	0.36	0.02	0.10	0.18	160	<.20	7.72
JUL 8	2.15	0.58	0.58	--	0.74	0.72	128	<.20	8.29
JUL 22	1.10	0.06	--	0.01	0.44	0.46	132	<.20	7.79
AUG 6	0.85	0.01	0.70	--	0.28	0.36	128	<.20	8.17
AUG 18	0.75	0.34	0.62	0.12	0.20	0.24	126	<.20	8.29
SEP 3	1.70	0.28	0.28	0.18	0.32	0.50	184	<.20	7.41
SEP 16	0.65	0.02	0.64	0.10	0.24	0.40	83	0.20	8.21
SITE 18 SURFACE RUNOFF OR TAILWATER (UNIT 3-G)									
MAY 13	0.48	1.10	1.45	--	0.40	0.46	184	<.20	8.00
MAY 28	0.70	1.20	0.06	--	0.18	0.36	225	<.20	8.37
JUN 11	1.30	0.46	0.04	0.30	1.12	0.74	640	<.20	8.03
JUN 24	3.70	0.36	0.24	0.26	0.74	1.32	599	0.35	7.94
JUL 8	4.35	1.02	1.54	0.02	0.62	0.66	276	<.20	8.16
JUL 22	4.40	0.06	0.82	0.16	0.84	0.96	558	0.35	7.84
AUG 6	0.75	0.01	0.78	0.14	0.38	0.50	164	<.20	8.54
AUG 18	3.00	0.32	0.70	0.24	0.38	0.40	205	0.25	8.40
SEP 3	1.10	0.24	0.52	0.32	0.56	0.78	196	0.20	8.54
SEP 16	2.50	0.01	0.86	0.18	0.30	0.48	276	0.40	8.26
SITE 19 HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 3-H)									
MAY 13	1.60	2.70	1.80	--	0.28	0.52	337	0.31	8.48
MAY 28	2.15	1.75	0.30	--	0.30	0.48	340	0.30	7.12
JUN 11	1.70	0.36	0.02	0.08	0.44	0.22	325	0.25	8.06
JUN 24	2.15	0.36	0.30	0.10	0.40	0.56	358	0.30	7.19
JUL 8	3.05	0.56	0.88	0.10	0.92	0.94	344	0.35	8.07
JUL 22	2.65	0.22	1.00	0.10	0.40	0.58	273	0.30	7.74
AUG 6	2.15	0.01	0.82	0.02	0.36	0.44	297	0.35	8.22
AUG 18	2.05	0.38	0.66	0.18	0.30	0.38	299	0.35	8.55
SEP 3	2.60	0.24	0.36	0.18	0.36	0.48	290	0.35	8.20
SEP 16	1.20	0.04	0.64	0.14	0.30	0.44	188	0.30	8.39
SITE 20 SURFACE RUNOFF OR TAILWATER (UNIT 3-H)									
MAY 13	--	--	--	--	--	--	--	--	--
MAY 28	4.30	3.10	0.56	--	0.66	1.02	300	0.35	8.72
JUN 11	0.10	0.36	0.02	0.92	1.44	1.24	610	0.30	8.19
JUN 24	2.10	0.54	0.40	0.34	2.48	3.08	4262	0.30	8.02
JUL 8	3.65	0.64	1.56	0.52	2.44	2.72	2060	0.35	8.18
JUL 22	--	--	--	--	--	--	--	--	--
AUG 6	3.15	0.01	2.24	0.40	3.80	5.60	2860	0.35	7.92
AUG 18	--	--	--	--	--	--	--	--	--
SEP 3	4.30	0.24	0.50	0.16	0.40	0.44	324	0.35	7.12
SEP 16	--	--	--	--	--	--	--	--	--

APPENDIX II

Results of Analysis of Water Samples

Table 4. Black Canyon Irrigation District 1970 water quality data.

TABLE IV. BLACK CANYON IRRIGATION DISTRICT

1970 WATER QUALITY DATA

SITE	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 1	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-A)									
	MAY 13	2.00	1.88	1.33	—	0.24	0.32	406	0.45	8.09
	MAY 28	2.48	0.02	2.60	0.08	0.48	0.38	440	0.55	6.74
	JUN 11	2.85	0.30	0.06	0.06	0.20	0.32	425	0.40	7.79
	JUN 24	2.85	0.22	0.22	0.02	0.38	0.66	575	0.45	8.04
	JUL 8	4.55	0.58	0.76	0.04	0.88	0.96	399	0.50	8.07
	JUL 22	4.15	0.38	0.70	0.04	0.36	0.46	420	0.55	7.07
	AUG 6	3.70	0.01	0.84	0.02	0.28	0.56	356	0.55	8.12
	AUG 18	3.50	0.30	0.88	0.02	0.30	0.30	472	0.50	8.52
	SEP 3	3.55	0.36	0.40	0.08	0.36	0.48	470	0.55	8.40
	SEP 16	3.10	0.20	0.76	0.08	0.30	0.42	421	0.55	7.93
SITE 2	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-A)									
	MAY 13	2.12	0.75	1.60	—	0.22	0.40	569	0.45	8.10
	MAY 28	1.36	0.10	1.90	0.08	0.38	0.42	445	0.50	8.12
	JUN 11	3.10	0.30	0.06	0.08	0.28	0.54	425	0.40	7.94
	JUN 24	2.85	0.14	0.12	0.08	0.32	0.52	461	0.45	8.07
	JUL 8	4.60	0.52	0.72	0.06	0.82	0.88	472	0.55	7.92
	JUL 22	4.65	0.06	1.44	0.04	0.32	0.46	427	0.50	7.39
	AUG 6	3.60	0.05	0.84	0.04	0.28	0.38	362	0.55	7.93
	AUG 18	3.65	0.32	0.66	0.01	0.24	0.38	411	0.50	8.57
	SEP 3	4.00	0.46	0.38	0.04	0.38	0.52	456	0.55	8.01
	SEP 16	3.30	0.22	0.68	0.04	0.30	0.46	432	0.55	7.65
SITE 3	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-A)									
	MAY 13	1.84	1.25	1.73	—	0.22	0.38	430	0.45	7.93
	MAY 28	1.76	0.02	1.55	0.08	0.46	0.38	435	0.50	8.19
	JUN 11	3.05	0.30	0.08	0.08	0.32	0.32	480	0.40	7.74
	JUN 24	2.80	0.32	0.40	0.08	0.46	0.54	578	0.50	8.05
	JUL 8	4.55	0.88	0.78	0.06	0.82	1.02	349	0.50	8.07
	JUL 22	4.10	0.02	0.78	0.06	0.34	0.48	442	0.55	7.40
	AUG 6	3.60	0.01	1.00	0.01	0.28	0.56	478	0.50	8.04
	AUG 18	3.30	0.24	0.70	0.01	0.24	0.44	389	0.50	8.55
	SEP 3	4.05	0.36	0.42	0.08	0.40	0.48	499	0.50	7.98
	SEP 16	3.45	0.20	0.72	0.04	0.32	0.48	422	0.50	7.90
SITE 4	OPEN DRAIN DITCH (UNIT 4-A)									
	MAY 13	2.52	1.38	1.46	—	0.22	0.36	569	0.70	7.83
	MAY 28	1.60	38.00	37.20	0.14	0.84	0.70	760	1.00	7.26
	JUN 11	4.35	0.36	1.10	0.14	1.34	1.42	1400	0.65	8.02
	JUN 24	3.20	0.24	1.44	0.14	2.96	3.96	1703	0.60	7.57
	JUL 8	5.70	0.58	0.72	0.02	0.88	0.84	555	0.75	7.99
	JUL 22	5.50	0.02	--	0.06	0.38	0.56	566	0.75	7.64
	AUG 6	4.40	0.01	1.16	0.20	0.72	0.80	704	0.70	8.18
	AUG 18	4.05	0.22	0.60	0.06	0.32	0.52	604	0.85	8.68
	SEP 3	4.15	0.46	0.44	0.22	0.46	0.80	609	0.85	8.09
	SEP 16	3.00	0.12	0.60	0.16	0.44	0.64	573	0.80	7.88
SITE 5	OPEN DRAIN DITCH (UNIT 4-A)									
	MAY 13	3.12	0.50	2.13	—	0.50	0.72	917	0.60	8.31
	MAY 28	2.72	11.80	2.70	0.16	1.20	1.32	1060	0.80	8.53
	JUN 11	5.10	0.48	0.12	0.16	1.76	1.80	1780	0.85	8.14
	JUN 24	3.60	0.70	1.20	0.08	1.64	1.68	1371	0.65	7.83
	JUL 8	4.90	0.66	0.76	0.14	1.00	0.98	697	0.75	8.13
	JUL 22	5.70	0.22	0.86	0.08	0.40	0.56	694	1.00	7.84
	AUG 6	4.60	0.01	0.92	0.14	0.56	0.90	803	0.80	8.00
	AUG 18	3.90	0.32	1.00	0.01	0.48	0.56	710	0.75	8.67
	SEP 3	4.65	0.32	0.46	0.22	0.56	0.72	705	1.00	8.22
	SEP 16	4.20	0.18	1.00	0.20	0.44	0.48	664	0.80	7.76
SITE 6	HEADWATER OR SOURCE OF IRRIGATION WATER									
	MAY 13	0.04	0.03	0.67	--	0.04	0.14	85	<.20	7.11
	MAY 28	0.16	0.10	1.15	0.06	0.10	--	70	<.20	6.83
	JUN 11	0.15	0.24	0.14	0.02	0.08	0.18	115	<.20	7.73
	JUN 24	0.02	0.46	0.54	0.02	0.22	0.18	86	<.20	8.03
	JUL 8	1.80	0.66	0.58	—	0.30	0.28	94	<.20	8.49
	JUL 22	0.60	0.02	0.58	0.01	0.14	0.26	41	<.20	8.33
	AUG 6	0.30	0.01	0.64	—	0.06	0.10	52	<.20	8.02
	AUG 18	0.02	0.22	0.54	—	0.06	0.06	47	<.20	8.07
	SEP 3	0.60	0.40	0.28	0.02	0.06	0.16	64	<.20	8.75
	SEP 16	0.30	0.22	0.44	0.01	0.08	0.12	52	<.20	7.94
SITE 7	OPEN DRAIN DITCH									
	MAY 13	0.32	0.31	1.27	—	0.28	0.58	122	<.20	7.00
	MAY 28	0.24	1.00	2.40	0.66	1.20	1.24	260	<.20	6.83
	JUN 11	0.15	0.36	0.08	0.14	0.28	0.38	95	<.20	7.38
	JUN 24	0.01	0.64	0.96	0.32	0.78	0.66	179	<.20	7.71
	JUL 8	1.35	1.84	0.52	0.04	0.38	0.38	102	<.20	8.32
	JUL 22	0.75	0.72	0.66	0.02	0.28	0.40	64	<.20	7.63
	AUG 6	0.20	0.15	1.06	0.22	0.98	0.98	912	<.20	8.05
	AUG 18	0.02	0.28	0.76	0.01	0.24	0.22	177	<.20	7.98
	SEP 3	0.40	0.40	0.54	0.02	0.20	0.40	108	<.20	8.08
	SEP 16	0.50	0.22	0.76	0.14	0.28	0.32	77	<.20	6.78

Table 4 Cont'd

TABLE IV. BLACK CANYON IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 8	SURFACE RUNOFF OR TAILWATER									
	MAY 13	0.16	1.00	3.60	--	1.48	2.80	90	<.20	8.31
	MAY 28	--	--	--	--	--	--	--	--	--
	JUN 11	0.15	0.34	0.60	0.04	0.24	0.28	205	<.20	7.56
	JUN 24	0.20	0.52	0.80	0.04	0.78	0.66	508	<.20	7.80
	JUL 8	0.75	0.70	0.60	0.01	0.40	0.40	137	<.20	8.25
	JUL 22	0.75	0.72	0.66	0.06	0.24	0.38	64	<.20	7.63
	AUG 6	0.20	0.05	0.82	--	0.14	0.24	102	<.20	7.69
	AUG 18	0.02	0.38	0.60	--	0.08	0.08	73	<.20	7.92
	SEP 3	0.75	0.44	0.38	0.02	0.10	0.26	82	<.20	7.49
	SEP 16	0.10	0.22	0.72	0.14	0.26	0.30	58	<.20	7.46
SITE 9	SURFACE RUNOFF OR TAILWATER									
	MAY 13	0.16	0.03	2.40	--	0.54	0.68	625	<.20	7.30
	MAY 28	0.16	0.25	2.00	0.16	0.60	0.66	330	0.20	8.07
	JUN 11	0.20	0.32	0.08	0.16	0.44	0.66	395	<.20	7.47
	JUN 24	0.30	1.38	0.72	0.24	0.78	0.50	184	<.20	7.69
	JUL 8	1.50	0.44	1.26	0.14	1.02	1.58	1815	<.20	8.24
	JUL 22	0.55	0.02	0.88	0.04	0.42	0.58	529	<.20	7.57
	AUG 6	1.30	0.01	1.00	0.02	0.58	0.64	745	<.20	8.10
	AUG 18	0.02	0.26	0.86	0.06	0.22	0.20	111	<.20	8.08
	SEP 3	1.00	0.32	0.46	0.06	0.24	0.24	177	<.20	7.74
	SEP 16	0.30	0.22	0.72	0.06	0.20	0.28	79	<.20	7.01
SITE 10	OPEN DRAIN DITCH									
	MAY 13	0.68	0.25	1.27	--	0.22	0.37	345	0.35	7.68
	MAY 28	0.40	0.10	2.00	0.08	0.38	0.56	330	0.20	8.07
	JUN 11	1.20	0.38	0.16	0.06	0.36	0.40	335	0.35	7.83
	JUN 24	1.05	1.66	0.32	0.16	0.66	0.58	328	0.30	7.45
	JUL 8	1.25	0.36	0.80	0.02	0.58	0.72	460	0.30	7.77
	JUL 22	2.75	0.14	0.88	0.04	0.30	0.48	478	0.60	7.44
	AUG 6	1.25	0.01	0.86	0.12	0.38	0.54	434	0.45	8.15
	AUG 18	1.05	0.34	1.10	0.18	0.40	0.58	532	0.35	8.38
	SEP 3	1.55	0.46	0.86	0.24	1.36	1.40	1728	0.45	6.93
	SEP 16	1.00	0.32	1.80	0.22	1.54	1.92	2134	0.45	8.31
SITE 11	SURFACE RUNOFF OR TAILWATER									
	MAY 13	0.96	0.03	1.20	--	0.20	0.32	409	0.50	8.38
	MAY 28	1.60	0.45	1.75	0.06	0.24	0.40	345	0.40	7.85
	JUN 11	2.55	0.40	0.06	0.06	0.38	0.52	735	0.85	7.95
	JUN 24	1.05	0.40	0.40	0.08	0.58	0.48	276	0.40	7.81
	JUL 8	2.25	0.44	0.68	0.04	0.48	0.58	386	0.40	8.08
	JUL 22	2.05	0.02	0.86	0.04	0.32	0.48	385	0.55	7.53
	AUG 6	2.40	0.35	0.82	0.16	0.36	0.64	492	0.60	8.36
	AUG 18	2.10	0.30	1.18	0.06	0.38	0.92	1274	0.85	8.63
	SEP 3	2.90	0.28	0.48	0.08	0.46	0.54	673	0.90	7.90
	SEP 16	2.90	0.22	0.76	0.20	0.40	0.46	880	1.00	8.19
SITE 12	SURFACE RUNOFF OR TAILWATER									
	MAY 13	0.24	0.06	7.27	--	0.16	0.20	131	<.20	7.22
	MAY 28	0.08	0.02	1.40	0.02	0.08	0.18	135	<.20	7.85
	JUN 11	0.20	0.40	0.08	0.06	0.24	0.30	205	<.20	7.45
	JUN 24	0.65	0.44	0.36	0.14	0.48	0.44	153	<.20	7.82
	JUL 8	0.50	0.54	0.72	0.02	0.52	0.52	88	<.20	8.21
	JUL 22	0.55	0.02	0.86	0.16	0.40	0.56	104	<.20	7.66
	AUG 6	0.80	0.01	0.76	0.06	0.18	0.24	76	<.20	8.03
	AUG 18	0.02	0.08	0.64	--	0.16	0.18	100	<.20	8.24
	SEP 3	0.95	0.48	0.42	0.01	0.12	0.20	95	<.20	8.41
	SEP 16	0.15	0.34	1.76	0.20	0.60	0.66	626	<.20	7.59
SITE 13	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-B)									
	MAY 13	0.04	5.88	1.00	--	0.08	0.08	344	<.20	7.20
	MAY 28	0.08	0.02	0.90	0.02	0.02	0.08	85	<.20	7.08
	JUN 11	0.35	0.30	0.08	0.04	0.20	0.14	110	<.20	7.44
	JUN 24	0.02	0.34	0.32	0.02	0.08	0.18	122	<.20	8.25
	JUL 8	1.05	0.38	0.70	--	0.32	0.38	92	<.20	8.26
	JUL 22	0.60	0.06	0.58	0.02	0.16	0.30	86	<.20	7.60
	AUG 6	0.95	0.20	0.78	0.08	0.28	0.32	79	<.20	7.93
	AUG 18	0.02	0.30	0.46	--	0.06	0.06	532	<.20	8.06
	SEP 3	0.80	0.22	0.28	--	0.04	0.10	72	<.20	8.36
	SEP 16	0.10	0.20	0.54	0.02	0.08	0.14	74	<.20	8.22
SITE 14	SURFACE RUNOFF OR TAILWATER (UNIT 4-B)									
	MAY 13	1.12	1.50	2.87	--	0.52	0.58	227	<.20	7.49
	MAY 28	0.36	0.10	1.40	0.04	1.02	1.36	1195	<.20	8.16
	JUN 11	1.40	0.40	0.02	0.28	0.76	0.78	530	<.20	7.39
	JUN 24	0.50	4.24	1.66	0.40	4.40	5.20	2919	<.20	8.88
	JUL 8	1.30	0.48	1.44	0.12	0.92	1.20	1154	<.20	7.89
	JUL 22	0.95	0.01	0.66	0.02	0.24	0.40	134	<.20	7.84
	AUG 6	1.05	0.01	0.52	--	0.06	0.08	64	<.20	8.13
	AUG 18	0.50	0.30	0.98	0.10	0.56	0.54	532	<.20	8.06
	SEP 3	0.95	0.54	0.72	0.28	0.64	0.76	174	<.20	7.99
	SEP 16	--	--	--	--	--	--	--	--	--

Table 4
Cont'd

TABLE IV. BLACK CANYON IRRIGATION DISTRICT

1970 WATER QUALITY DATA

	DATE	NO3-N (PPM)	NH3-N (PPM)	ORG-N (PPM)	SOL-P (PPM)	HYD-P (PPM)	TOT-P (PPM)	SOLIDS (PPM)	E.C. (MMHOS/CM)	PH
SITE 15	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-C)									
	MAY 13	0.08	2.19	1.00	--	0.08	0.08	40	<.20	7.39
	MAY 28	0.08	0.02	0.95	0.06	0.04	0.30	125	<.20	6.82
	JUN 11	0.20	0.28	0.40	0.06	0.10	0.14	90	<.20	7.61
	JUN 24	0.02	0.34	0.28	0.01	0.18	0.22	92	<.20	8.28
	JUL 8	0.60	0.58	0.50	0.01	0.30	0.30	91	<.20	8.09
	JUL 22	0.90	0.01	0.56	0.02	0.16	0.32	80	<.20	7.86
	AUG 6	1.45	0.02	0.68	--	0.06	0.10	55	<.20	7.91
	AUG 18	0.02	0.28	0.70	0.02	0.10	0.12	64	<.20	7.94
	SEP 3	0.60	0.08	0.30	--	0.06	0.22	122	<.20	8.29
	SEP 16	0.15	0.20	0.44	0.01	0.08	0.14	60	<.20	8.04
SITE 16	SURFACE RUNOFF OR TAILWATER (UNIT 4-C)									
	MAY 13	0.04	3.25	8.00	--	2.51	3.20	7378	<.20	8.42
	MAY 28	0.12	0.02	2.15	0.02	1.68	1.90	2335	<.20	8.49
	JUN 11	0.20	0.30	0.02	0.02	0.24	0.24	340	<.20	7.48
	JUN 24	0.20	0.46	0.82	0.04	1.20	1.42	789	<.20	8.12
	JUL 8	1.30	0.44	2.52	0.14	3.60	3.70	5304	<.20	8.21
	JUL 22	0.65	0.18	1.46	0.22	1.64	2.12	1672	<.20	7.59
	AUG 6	1.10	0.01	0.76	--	0.20	0.24	170	<.20	8.11
	AUG 18	0.10	0.30	0.68	0.06	0.18	0.18	54	<.20	7.90
	SEP 3	0.55	0.38	0.38	--	0.10	0.48	92	<.20	8.00
	SEP 16	0.60	0.22	1.04	0.08	0.34	0.38	124	<.20	8.22
SITE 17	HEADWATER OR SOURCE OF IRRIGATION WATER (UNIT 4-D)									
	MAY 13	0.02	0.03	1.00	--	0.08	0.08	107	<.20	7.29
	MAY 28	0.16	0.02	1.65	0.04	0.05	0.18	495	<.20	7.95
	JUN 11	0.30	0.28	0.42	0.04	0.08	0.14	135	<.20	7.52
	JUN 24	0.20	0.28	0.28	0.02	0.14	0.16	101	<.20	8.27
	JUL 8	1.35	0.96	0.58	0.01	0.30	0.28	67	<.20	8.20
	JUL 22	0.65	0.12	0.62	0.02	0.16	0.30	83	<.20	7.64
	AUG 6	1.15	0.02	0.58	--	0.06	0.12	66	<.20	8.11
	AUG 18	0.02	0.28	0.54	--	0.06	0.06	54	<.20	7.90
	SEP 3	0.60	0.08	0.24	0.01	0.06	0.26	71	<.20	8.17
	SEP 16	0.35	0.18	0.48	0.10	0.10	0.12	45	<.20	6.95
SITE 18	SURFACE RUNOFF OR TAILWATER (UNIT 4-D)									
	MAY 13	0.04	0.03	1.07	--	0.18	0.20	181	<.20	7.31
	MAY 28	0.08	0.02	1.65	0.06	0.40	0.60	495	<.20	7.95
	JUN 11	0.20	0.52	0.10	0.16	0.44	0.48	135	<.20	7.52
	JUN 24	0.10	0.54	0.40	0.24	7.00	7.00	8825	<.20	7.64
	JUL 8	0.60	0.72	3.84	0.36	4.40	5.90	6292	<.20	7.97
	JUL 22	1.30	0.02	1.08	0.06	0.56	0.66	508	<.20	7.48
	AUG 6	0.30	0.55	2.76	0.58	0.76	0.76	324	<.20	6.83
	AUG 18	0.02	0.30	0.98	0.20	0.38	0.38	155	<.20	7.89
	SEP 3	0.75	0.28	0.54	0.22	0.40	0.72	98	<.20	8.99
	SEP 16	0.02	0.24	0.96	0.24	0.56	0.60	139	<.20	7.88
SITE 19	OPEN DRAIN DITCH									
	MAY 13	1.28	0.75	0.80	--	0.26	0.28	439	0.60	8.08
	MAY 28	0.84	0.02	1.65	0.16	0.28	0.38	470	0.45	8.37
	JUN 11	1.35	0.30	0.06	0.16	0.44	0.52	415	0.40	7.92
	JUN 24	3.20	0.58	0.68	--	0.92	1.00	455	0.60	8.09
	JUL 8	1.65	0.28	0.28	0.06	0.66	0.46	428	0.55	7.92
	JUL 22	3.00	0.01	0.72	0.06	0.40	0.54	498	0.70	7.64
	AUG 6	2.85	0.01	0.92	0.18	0.38	0.40	528	0.65	8.26
	AUG 18	1.90	0.30	0.84	0.10	0.28	0.26	422	0.65	8.56
	SEP 3	2.40	0.06	0.46	0.16	0.44	0.66	463	0.60	7.98
	SEP 16	1.20	0.22	0.76	0.06	0.36	0.38	413	0.55	8.09
SITE 20	OPEN DRAIN DITCH									
	MAY 13	2.00	1.25	1.53	--	0.32	0.32	546	0.55	8.00
	MAY 28	1.12	0.20	1.75	0.06	0.46	0.80	740	0.50	8.53
	JUN 11	2.50	0.30	0.04	0.22	0.54	0.60	525	0.45	7.74
	JUN 24	2.65	0.28	1.14	0.14	0.76	0.68	787	0.60	8.01
	JUL 8	4.40	0.44	0.88	0.04	0.82	1.02	728	0.65	8.01
	JUL 22	4.05	0.01	0.92	0.16	0.52	0.70	696	0.70	7.81
	AUG 6	3.95	0.01	1.04	0.16	0.46	0.58	594	0.65	8.23
	AUG 18	2.85	0.30	0.74	0.08	0.36	0.52	494	0.65	8.62
	SEP 3	3.90	0.24	0.44	0.10	0.48	0.46	493	<.20	8.00
	SEP 16	2.30	0.22	0.70	0.14	0.38	0.38	444	0.55	8.13

The State is truly our campus. We desire to work for all citizens of the State striving to provide the best possible educational and research information and its application through Cooperative Extension in order to provide a high quality food supply, a strong economy for the State and a quality of life desired by all.

Auttis M. Mullins
Dean, College of Agriculture
University of Idaho

TEACHING RESEARCH SERVICE

SERVING THE STATE

This is the three-fold charge of the College of Agriculture at your state Land-Grant institution, the University of Idaho. To fulfill this charge, the College extends its faculty and resources to all parts of the state.

Service ... The Cooperative Extension Service has active programs in 42 of Idaho's 44 counties. Current organization places major emphasis on county office contact and multi-county specialists to better serve all the people. These College of Agriculture faculty members are supported cooperatively by federal, state and county funding to work with agriculture, home economics, youth and community development.

Research ... Agricultural Research scientists are located at the campus in Moscow, at Research and Extension Centers near Aberdeen, Caldwell, Parma, Sandpoint, Tetonia, Twin Falls and at the U.S. Sheep Experiment Station, Dubois and the USDA/ARS Soil and Water Laboratory at Kimberly. Their work includes research on every major agricultural program in Idaho and on economic and community development activities that apply to the state as a whole.

Teaching ... Centers of College of Agriculture teaching are the University classrooms and laboratories where agriculture students can earn bachelor of science degrees in any of 20 major fields, or work for master's and Ph.D. degrees in their specialties. And beyond these are the variety of workshops and training sessions developed throughout the state for adults and youth by College of Agriculture faculty.