AGGREGATE PRODUCTION, PROCESSING AND STOCKPILING

The Owner has not conducted comprehensive aggregate production investigations on materials from the designated aggregate sources. Exact gradations and fracture from processing raw materials will vary based on the particular techniques and equipment used by the Contractor for processing. Washing of the aggregate will be required. Bidders are encouraged to inspect the site.

Laboratory mix designs included processing 10 cubic yards of raw material through a jaw crusher and then through a closed circuit roller cone crusher to a maximum size of 3 inches. Additionally, minus No. 4 material was processed through a ball mill.

AGGREGATE PRODUCTION SCHEDULE

Aggregate production and initial stockpiling shall begin and shall be producing acceptable material not earlier than September 1, 1987. It is the intent to produce aggregate during the fall or winter months. At least 50 percent of all RCC aggregates for construction of the dam shall be processed and stockpiled prior to November __, 1987, and 100% shall be processed by August 1, __, 1988.

AGGREGATE GRADATION AND STOCKPILES

The Contractor shall stockpile aggregates in at least the following two size groups. A separate stockpile for sand will not be required but may be used.

Group I - 100% passing the 2-inch sieve and at least 97% of the Group I material retained on the 3/4-inch sieve.

Group II - 97% passing the 3/4-inch sieve.

Group 2 Sieve Size	Percent Finer of Weight of Group 1 & 2 Combined
2 inches	100
1-1/2 inches	85-94
3/4 inch	56-63
3/8 inch	38-50
#4	30-40
#8	23-33
#16	18-28
#30	13-23
#50	10-18
#100	7-14
#200	4-7

The combined aggregate will contain a minimum of 35 percent of crushed material. Crusher fines and silty material will normally be accepted and clay fines will be rejected.

The liquid limit and plasticity index shall be determined on all material passing the No. 40 sieve. The plasticity index will not be allowed to exceed 6 and the liquid limit will not be allowed to exceed 30 as determined on all material passing the No. 40 sieve.

EXHIBIT G WATER INFORMATION

Table 11 (Continued)
Numeric water quality standards[31]
Yampa River from Bear River to Elkhead Creek

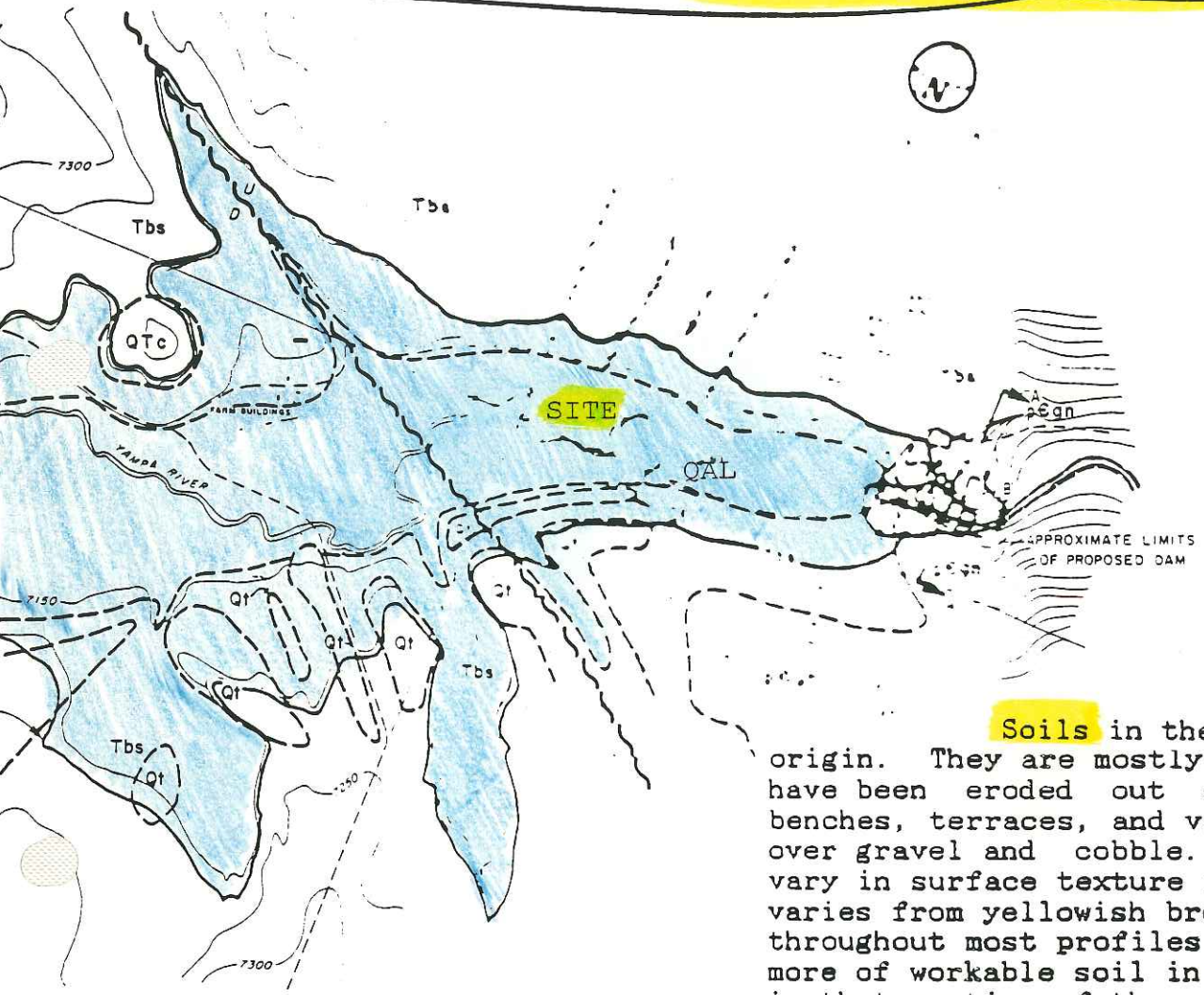
Parameter		Unit	Number	Mean	Maximum	Minimum
Stream	Stage	Feet	1	2.430000	2.43	2.43
Conductivity	At 25C	Micromho	12	353.2500	490	113
DO		mg/L	5	8.860000	10.3	7.6
pH		SU	10	8.290000	8.60	7.70
Lab	pH	SU	9	8.388900	8.6	8.1
CO_2		mg/L	3	3.300000	4.1	2.8
T ALK	$CACO_3$	mg/L	3	147.3300	195	104
HCO_3 ion	HCO_3	mg/L	3	179.6700	238	127
Total hard	$CACO_3$	mg/L	3	163.3300	210	120
NC hard	$CACO_3$	mg/L	3	16.66700	20	12
Dissolved	Nitrogen	mg/L N	2	.7150000	.92	.51
NH_3 + NH_4-	N Dissolved	mg/L	8	.0500000	.070	.040
NO_2-N	Dissolved	mg/L	7	.0100000	.010	.010
KJELDL N	Dissolved	mg/L	7	.5571400	.800	.300
NO_2 & NO_3	N-Dissolved	mg/L	5	.1220000	.2	.0
Phos-Tot		mg/L P	1	.5200000	.520	.520
Phos-Dis		mg/L P	7	.0300000	.050	.010
Phos-Dis	Ortho	mg/L P	3	.0266670	.040	.020
Water	Temp	Cent	159	8.342700	24.0	.0
Collect	Agency	Code	11	1028.000	1028	1028
Stream	Flow	cfs	3	178.6700	352	81
Stream	Flow	Inst-cfs	9	187.6700	375	0
Calcium	Ca, Dissolved	mg/L	12	58.75000	140.0	31.0
Magnesium	Mg, Dissolved	mg/L	12	20.62500	59.0	9.5
Sodium	Na, Dissolved	mg/L	10	17.15000	48.00	8.20
Sodium	Adsorbtion	Ratio	1	.3000000	.3	.3
NA & K		mg/L	2	9.200000	13.00	5.40
Potassium	K, Dissolved	mg/L	9	2.722200	9.30	.40
Chloride	Total	mg/L	11	4.336400	18	.2
Sulfate	SO_4-Tot	mg/L	12	87.41700	400	22
Fluoride	F, Dissolved	mg/L	9	.1666700	.30	.10
Silica	Dissolved	mg/L	11	17.04600	22.0	4.5
Arsenic	As, Dissolved	UG/L	2	1.000000	1	1
Barium	Ba, Dissolved	UG/L	2	52.50000	62	43
Beryllium	Be, Dissolved	UG/L	1	1.100000	1.10	1.10
Boron	B, Dissolved	UG/L	3	36.66700	70	10
Cadmium	Cd, Dissolved	UG/L	2	1.000000	1	1
Chromium	Cr, Dissolved	UG/L	2	1.000000	1	1
Cobalt	Co, Dissolved	UG/L	1	1.000000	1	1
Copper	Cu, Dissolved	UG/L	2	5.500000	6	5
Iron	Fe, Dissolved	UG/L	2	61.50000	71	52
Lead	Pb, Dissolved	UG/L	2	2.000000	3	1
Manganese	Mn, Dissolved	UG/L	2	19.00000	24.0	14.0
Molybdenum	Mo, Dissolved	UG/L	1	6.000000	6	6
Nickel	Ni, Dissolved	UG/L	2	4.000000	6	2
Silver	Ag, Dissolved	UG/L	2	1.000000	1.0	1.0
Strontium	Sr, Dissolved	UG/L	2	305.0000	370	240
Zinc	Zn, Dissolved	UG/L	2	13.50000	19	8
Mercury	Hg, Dissolved	UG/L	1	.2000000	.2	.2
Antimony	Sb, Dissolved	UG/L	2	1.000000	1	1
Aluminum	Al, Dissolved	UG/L	2	20.00000	30	10
Lithium	Li, Dissolved	UG/L	2	16.00000	17	15
Selenium	Se, Dissolved	UG/L	2	1.000000	1	1
Picloram	WHL SMPL	UG/L	1	.0100000	.010	.010
2,4-D	WHL SMPL	UG/L	1	.0200000	.020	.020
2,4,5-T	WHL SMPL	UG/L	1	.0100000	.010	.010
Silvex	WHL SMPL	UG/L	1	.0100000	.010	.010
2,4-DP	DICLPROP TOT	UG/L	1	.0100000	.01	.01
Banvel	Total	UG/L	1	.0100000	.01	.01

EXHIBIT H WILDLIFE INFORMATION

	Stagecoach Reservoir (recommended plan)
Area inundated (acres)	777
Agricultural lands	497±
Wetlands and riparian habitat	280
Government lands	None
Water use (acre-feet per year)	
Irrigation	4,000
Municipal	2,000
Industrial	9,000
Recreation	15,000
Dead storage	3,275
Total	33,275
Roads inundated (miles)	3.25
Roads relocated (miles)	3.00
Minimum flows in Yampa River downstream from dam	40 cfs or inflow
Recreation-days annually (first 5 years)	71,000
Fisherman days-annually	27,000
Effect on growth	Would be catalyst for more growth in area
Stream fishery (in reservoir site)	Loss of 5.2 miles of fishery
Downstream fishery	Would be improved
Reservoir fishery	Good
Effect on elk	
Migration routes	Loss of minor routes
Big game habitat (habitat units lost)4/	170
Feeding areas (by man)	Would inundate; alternate areas available
Ice crossings	May be subject to this danger
Increased harassment	Would be less in properly managed elk winter range area; may increase on nonproject lands
Effect on beaver and furbearers	Proportional to surface area
Effect on raptors	No nesting now; no habitat decrease
Effect on nongame animals	Destroy habitat in reservoir basin; no effect outside of basin
Effect on shorebirds and waterfowl	Beneficial; islands provided and new wetlands would be dedicated for wildlife
Effect on Federally-listed endangered species	Anticipate no jeopardy finding
Effect on candidate species	Beneficial to shorebirds; no effect on others

1/ Estimated.
2/ Undetermined. Assumed to be about 40 cfs or inflow.
3/ Extrapolation based on size of Stagecoach Reservoir and alternatives.
4/ Would be mitigated by dedication of 1,305 acres for critical winter range

EXHIBIT I SOILS INFORMATION



LEGEND

Qal	ALLUVIUM: RIVER-DEPOSITED SILTY TO CLAYEY SAND AND GRAVEL, MAINLY MEDIUM DENSE TO DENSE, POORLY STRATIFIED, UNCONSOLIDATED.
Qt	TERRACE GRAVELS: GRANITE AND GNEISSIC COBBLES AND BOULDERS IN A SILTY SAND MATRIX, POORLY STRATIFIED, MEDIUM DENSE.
QTc	CROWNER FORMATION: VOLCANIC, CONGLOMERATIC SANDSTONE AND CONGLOMERATE, WITH INCLUSIONS OF BASALT, STRATIFIED AND MODERATELY CONSOLIDATED.
Tbs	BROWNS PARK SANDSTONE: FINE TO MEDIUM GRAINED, LOCALLY CROSS-BEDDED CONTAINING INTERBEDS OF WHITE SANDSTONE, LIMESTONE, AND CONGLOMERATE, POORLY EXPOSED THROUGH RESERVOIR AREA AND NOT EXPOSED AT THE DAMSITE.
Tbc	BROWNS PARK CONGLOMERATE: GRAVEL, COBBLES, AND BOULDERS OF IGNEOUS ORIGIN IN A SAND MATRIX, MODERATELY CONSOLIDATED AND STRATIFIED, POORLY EXPOSED IN RESERVOIR AREA.
pεgn	GNEISS: HARD, DENSE, MAINLY FRESH, POORLY BANDED WITH INCLUSIONS OF GRANITE, FINE TO MEDIUM GRAINED, MODERATE TO HIGHLY JOINTED AND FRACTURED.
	GEOLOGIC CONTACT, LOCATED APPROXIMATELY.
U D	FAULT ZONE, LOCATED APPROXIMATELY, CONCEALED BY OVERBURDEN DEPOSITS, INDICATING RELATIVE UP AND DOWN MOVEMENT.
	LANDSLIDE OR DEBRIS SLIDE.

Soils in the drainage are principally alluvial in origin. They are mostly reworked glacial outwash materials which have been eroded out and redeposited by stream actions as benches, terraces, and valley fills or bottoms, usually shallow over gravel and cobble. The soils are usually well-graded and vary in surface texture from a gravelly loam to clay loam. Color varies from yellowish brown to black. Small rock fragments occur throughout most profiles but there is from 6 inches to 5 feet or more of workable soil in those areas classified as arable. Soil in that portion of the service area adjacent to the Yampa River and its tributaries are very similar to those of Egeria Creek. They are alluvial soils eroded and redeposited as terraces, benches, fans, and valley bottoms by the many small tributaries to the Yampa River. Surface texture on the benches and terraces varies from sandy loam to clay loam. Soil color range from reddish brown to dark brown. The soils are usually underlain by gravel and cobble at varying depths but may be over 5 feet plus in depth. They have good permeability and moisture retention. The soils in the Stagecoach service area are well suited for irrigation under the meadow hay, small grain, and pasture economy practiced in the area.

EXHIBIT K - CLIMATE

CLIMATE:

Climatologically, the Stagecoach Project area is characterized by long, severe winters and relatively short mild summers. The mountains surrounding the area aford it some protection from the cyclical temperature extremes found at other locations in the Yampa Valley. Summer temperatures near the dam site range from 70 to 90 degrees Fahrenheit (21.1 to 32.2 degrees Celcius) during the day and from 35 to 50 degrees Fahrenheit (1.6 to 4 degrees Celcius) at night. Table I-1 shows the average climatic conditions at the Yampa reporting station.

Month	Average Precipitation, (inches)	Average Temperature F (C)
January	1.19	21.6 (-5.8)
February	.73	21.6 (-5.8)
March	1.41	23.8 (-4.6)
April	.98	35.7 (2.1)
May	1.94	47.0 (8.3)
June	1.26	54.3 (12.4)
July	2.16	60.9 (16.1)
August	1.36	60.0 (15.5)
September	1.05	50.5 (10.3)
October	1.14	39.9 (4.4)
November	1.08	28.6 (-1.9)
December	1.12	20.9 (-6.2)
Annual	15.42	38.7 (3.7)

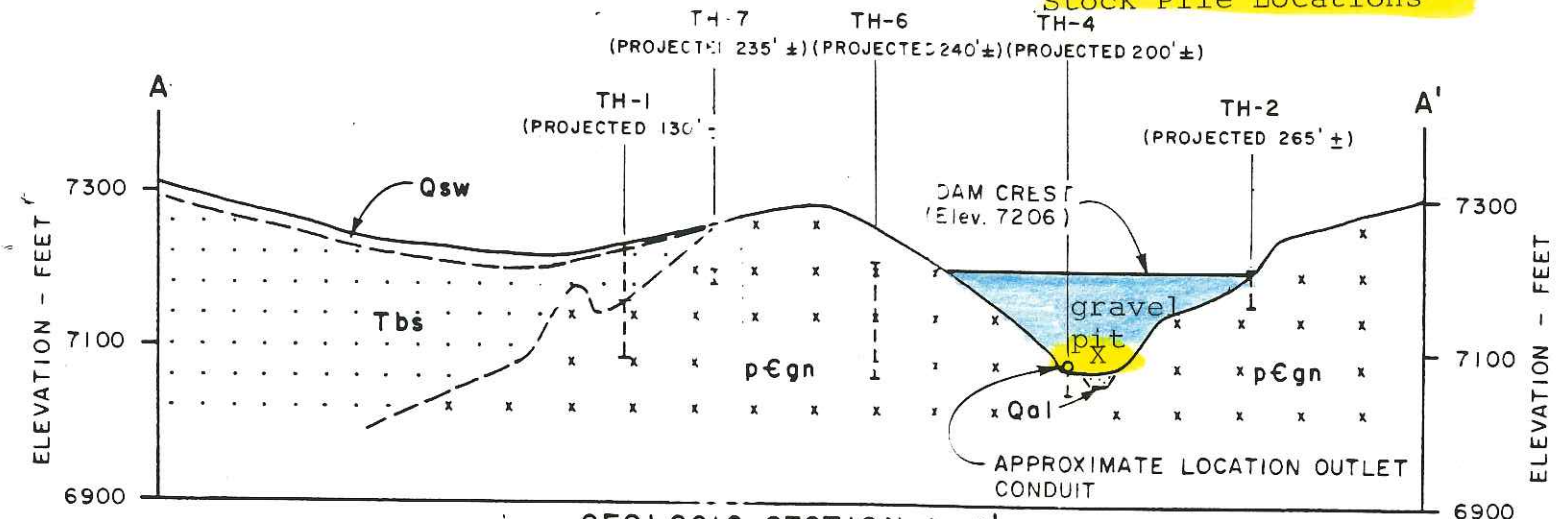
Average frost-free portion of the year is from June 19 to August 18, 60 days.

The highest recorded temperature in recent history is 89 (31.7).

The lowest recorded temperature in recent history is -33 (-36.1).

Source: Average precipitation and temperature values were derived from National Oceanic and Atmospheric Administration Climatological Data Annual Summary: Colorado 1974-83.

EXHIBIT Q Cross Section
Stock Pile Locations



GEOLOGIC SECTION A-A'

SCALE 1" = 200'

LEGEND

Qsw — SLOPEWASH AND TALUS: SILTY, CLAYEY SAND AND GRAVEL DEBRIS RAVELLED FROM BEDROCK EXPOSURES, CONTAINING ANGULAR FRAGMENTS OF BASALT, METAMORPHIC AND GRANITIC ROCKS, UP TO 2 FEET IN DIAMETER, LOOSE TO MEDIUM DENSE, NON-STRATIFIED.

Qal — ALLUVIUM: RIVER-DEPOSITED SILTY TO CLAYEY SAND AND GRAVEL MAINLY MEDIUM DENSE TO DENSE, POORLY STRATIFIED, WITH NUMEROUS COBBLES AND BOULDERS.

Tbs — BROWNS PARK SANDSTONE: FINE TO MEDIUM GRAINED, LOCALLY CROSS-BEDDED CONTAINING INTERBEDS OF WHITE SANDSTONE, LIMESTONE, AND CONGLOMERATE, POORLY EXPOSED THROUGH RESERVOIR AREA AND NOT EXPOSED AT THE DAMSITE.

p€gn — GNEISS: HARD, DENSE, MAINLY FRESH, POORLY BANDED, WITH INCLUSIONS OF GRANITE, FINE TO MEDIUM GRAINED, MODERATELY TO HIGHLY JOINTED AND FRACTURED.

GEOLOGIC CONTACT, LOCATED APPROXIMATELY.

TH-1 — TEST HOLE, AND IDENTIFYING NUMBER.

ST-1 — SEISMIC TRAVERSE, AND IDENTIFYING NUMBER.

NOTE: TEST HOLE LOCATIONS FOR TH-3 THROUGH TH-7 ARE SHOWN APPROXIMATELY TO SCALE. LOCATION DATA WILL BE PROVIDED BY NELSON, HALEY, PATTERSON, & QUIRK.

WOODWARD-CLEVENGER & ASSOC., INC.
Consulting Engineers & Geologists
Denver, Colorado

GEOLOGIC MAP
AND CROSS SECTION
STAGECOACH DAM
ROUTT COUNTY, COLORADO

Prepared by: MLC

FIGURE 8

Exhibit R

CLEARING AND DEMOLITION

3-1 GENERAL

The reservoir areas below elevation 7200 shall be cleared of all trees, stumps and brush 5 feet or more in height regardless of diameter, and 2 inches or more in diameter, regardless of height. Trees and stumps in the reservoir area shall either be uprooted or cut off so that the maximum allowable stump height shall be 6 inches as measured on the uphill side of the stump. Brush in the reservoir area shall be cut off approximately flush with the ground level. All down timber, branches, and other stackable and combustible material 5 feet or more in length, regardless of diameter, and 2 inches more in diameter, regardless of length, shall be cleared. All areas under, and within 20 feet, of the dam shall be similarly cleared. Clearing shall also be performed along the access road alignments. All clearing upstream of the dam shall be delayed until as late as practical in the second construction season.

All trees and shrubbery which are not specifically required to be cleared or removed for permanent construction purposes shall be preserved and shall be protected from any damages that may be caused by the contractors, construction operations and equipment.

Existing buildings, fences and other structures located in the reservoir area below Elevation 7210 shall be removed and disposed of in an area approved by the Owner. The buildings to be demolished shall be considered the Contractor's and any salvage value therein. The buildings will be occupied until June 1, 1987 and cannot be demolished before that date. The Contractor is responsible for maintaining the safety of the residents and any cattle from the ranching operation and should consider constructing fences to restrict cattle from the site and access road.

Burning will be permitted only if the Contractor secures the proper permits for doing so. The Contractor shall coordinate with the Owner in obtaining permits. All materials to be wasted shall be suitably disposed of by the Contractor by burning or burial in an area agreed to by the Owner. Burial of organic material in the reservoir area will be prohibited. Waste material, such as rocks, soils, etc., will be spread out and blended into the surrounding area as shown in the Plans or directed by the Owner.

EXHIBIT S

2-2 SEDIMENT CONTROL

Stormwater runoff from all borrow areas, soil stockpiles and other disturbed areas must be intercepted and diverted into sediment settling ponds. The Contractor will construct all diking, piping, cofferdams and channels for interception and erosion control. The Contractor shall not interrupt nor interfere with the flow of the Yampa River past the damsite without written approval of the Owner. Excavated materials shall not be stockpiled or deposited near or on streambanks, steep slopes, wetlands or other stream perimeters where they could be washed away by high water or storm runoff. An undisturbed buffer zone 50 feet wide on each side of the stream channel shall be maintained, except areas of the permanent construction. Construction equipment shall operate from the streambanks, not in streams, to the maximum extent practical. The Contractor shall repair, at his own expense, any damage resulting from the use of the facilities for diversion purposes.

To maintain water quality, runoff from disturbed areas shall be routed to collection and retention ponds. It shall be the Contractor's responsibility to operate and maintain the diversion and sediment control facilities and to control the quality of the water leaving the construction area. Within 30 days of the receipt of notice to proceed, the Contractor shall submit a plan for review and approval by the Owner for sediment control that complies with all applicable federal, state, county and local permits and regulations and that is consistent with the Contractor's work.

Construction shall not begin until the Contractor has developed an acceptable sediment control and oil and hazardous substances pollution contingency plan. The plans shall be updated with approved changes in the work and as directed by the Owner.

2-3 TEMPORARY DIVERSION

The principal items of work consist of design, all of the construction, installation and maintenance, and the subsequent removal and disposal where required of: temporary diversion works and channels to control and divert the Yampa River; a diversion conduit in the right abutment including plugging after streamflow is rediverted to the penstock; structures, pumps, and facilities for unwatering the work site and continued control of seepage, springs, leakage, and drainage into the work site; temporary channels and embankments for controlling the Yampa River and smaller drainages within the work areas; temporary structures and equipment for collecting, removal, and disposal of floating objects, trees, trash, and debris; structures, pumps, ponds, and facilities for care and disposal of water used or encountered during excavation; temporary structures, ditches, and facilities to control springs, creeks, ponds, and surface runoff during construction. A 72-inch diameter concrete conduit (with 9 feet x 9 feet concrete encasement) has been designed at the base of the right abutment for use by the Contractor in his diversion.

EXHIBIT T

10-5.1 General - The Contractor shall select the type of concrete batch plant for RCC production to be used and shall determine its layout. The plant and layout shall be submitted for review and approval in accordance with paragraph 10-3. The concrete plant shall be on-site, in-place and in operating condition at least 14 days prior to the start of RCC mixing and placing for the test section. The plant may be the conventional concrete batch type, a continuous mix rotating tilt drum, or a pugmill designed specifically for continuous operation with the harsh, large aggregate RCC mix specified. The plant(s) shall have a peak capacity of at least 200 cubic yards per hour. The plant shall be located within the reservoir area with consideration for potential flooding. The Contractor shall permit access by the Owner, at any time, to the plant and ancillary equipment.

The batch plant shall include fully automatic or semi-automatic facilities for the accurate measurement and control of each of the materials entering each batch of the concrete. The weighing equipment shall conform to the applicable requirements of NBS Handbook 44 except that the accuracy can vary by up to 0.3 percent over the working range. The Contractor shall provide standard test weights and any other auxiliary equipment required for checking the operating performance of each scale or measuring device. Tests shall be made in the presence of the Owner prior to the start-up of RCC placement and at least monthly thereafter. Calibrations up to once per day or when problems are suspected may be required. Each weighing unit shall be provided with a digital readout located within the plant control house and accessible by the Owner which is capable of showing all scale weights and providing a printout of each batch showing the time of batching, mix time and total weight of each ingredient entering the mixer.