

### LOCATION MAP

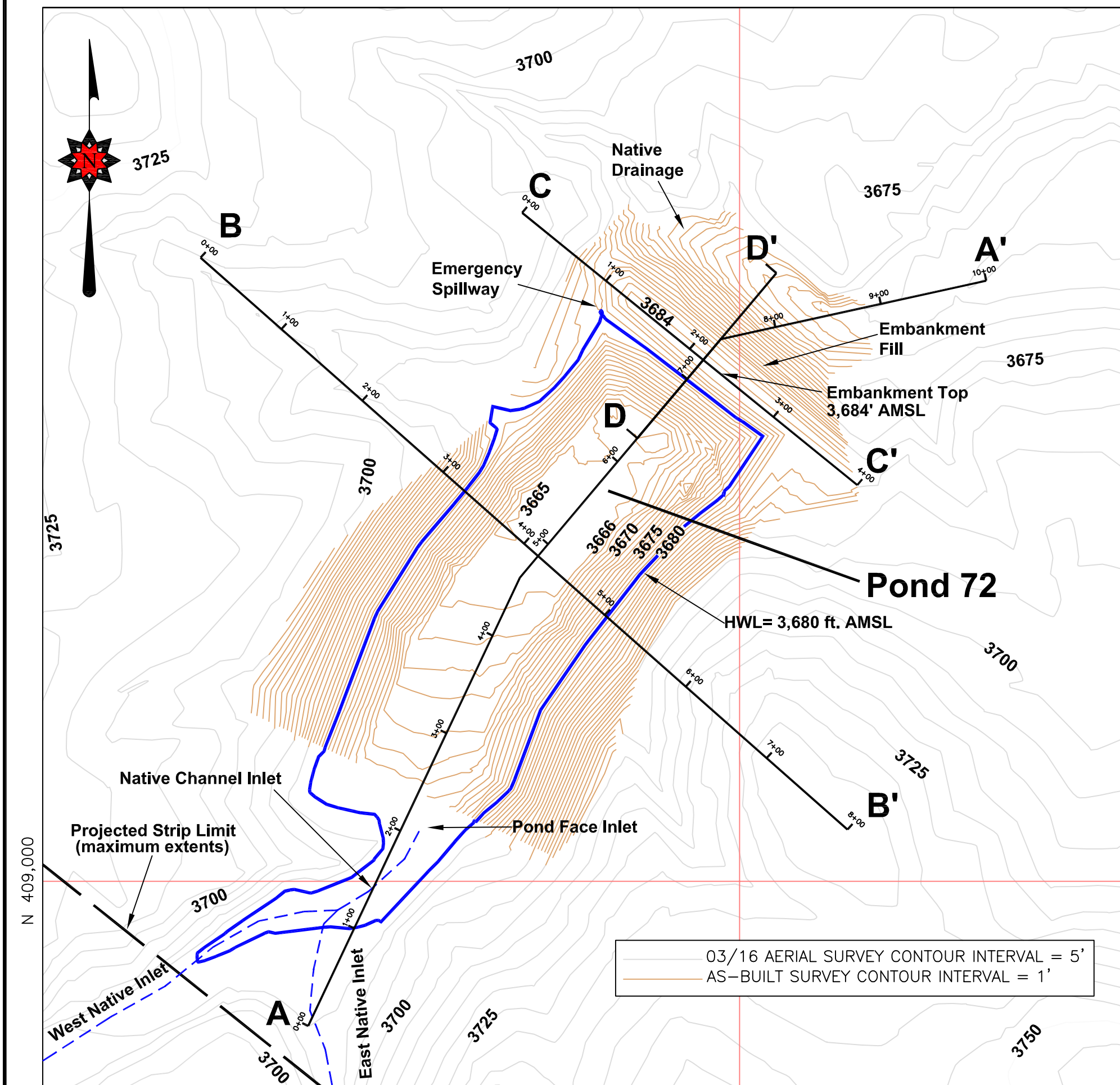
SCALE: 1"=1,000', C.I. = 5'

THE POND 72 EMBANKMENT CENTER IS LOCATED AT MINE COORDINATES 409,564 N, 2,675,996 E. THE POND IS LOCATED PRIMARILY IN THE SE ¼ OF THE NW ¼ OF SECTION 31, T40E, R8S.

### POND 72 DESIGN CAPACITY

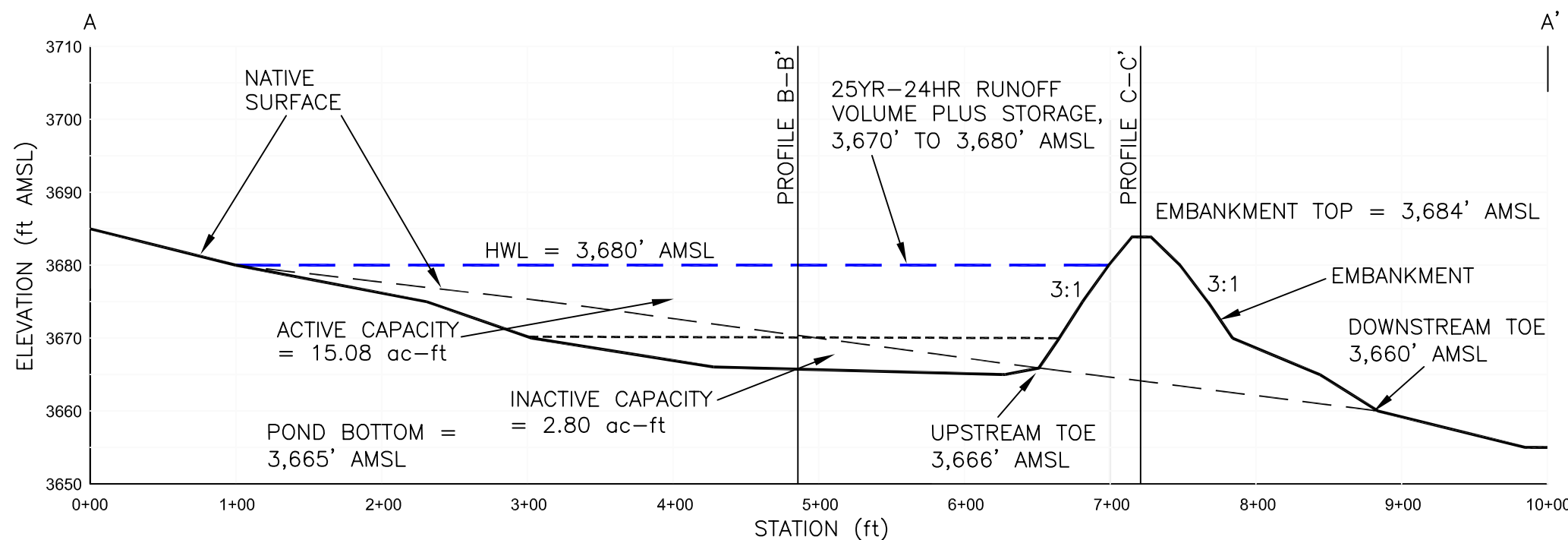
SEDIMENT CAPACITY (0.02 ac-ft per acre)	=	2.80 ac-ft
25YR-24HR RUNOFF VOLUME	=	14.59 ac-ft
TOTAL DESIGN CAPACITY	=	17.39 ac-ft

POND 72 RECEIVES SURFACE RUNOFF WATER FROM PIT STRIPPING AND NATIVE TERRAIN IN THE DRAINAGE AREA AS SHOWN. THE POND OUTLET (AS NEEDED) IS VIA THE EMERGENCY SPILLWAY AT THE NORTHWEST END OF THE POND EMBANKMENT, AT MINE COORDINATES 409,621 N AND 2,675,892 E, APPROXIMATELY 1,952 FEET SOUTHEAST OF THE NORTHWEST CORNER OF SECTION 31 AS SHOWN.



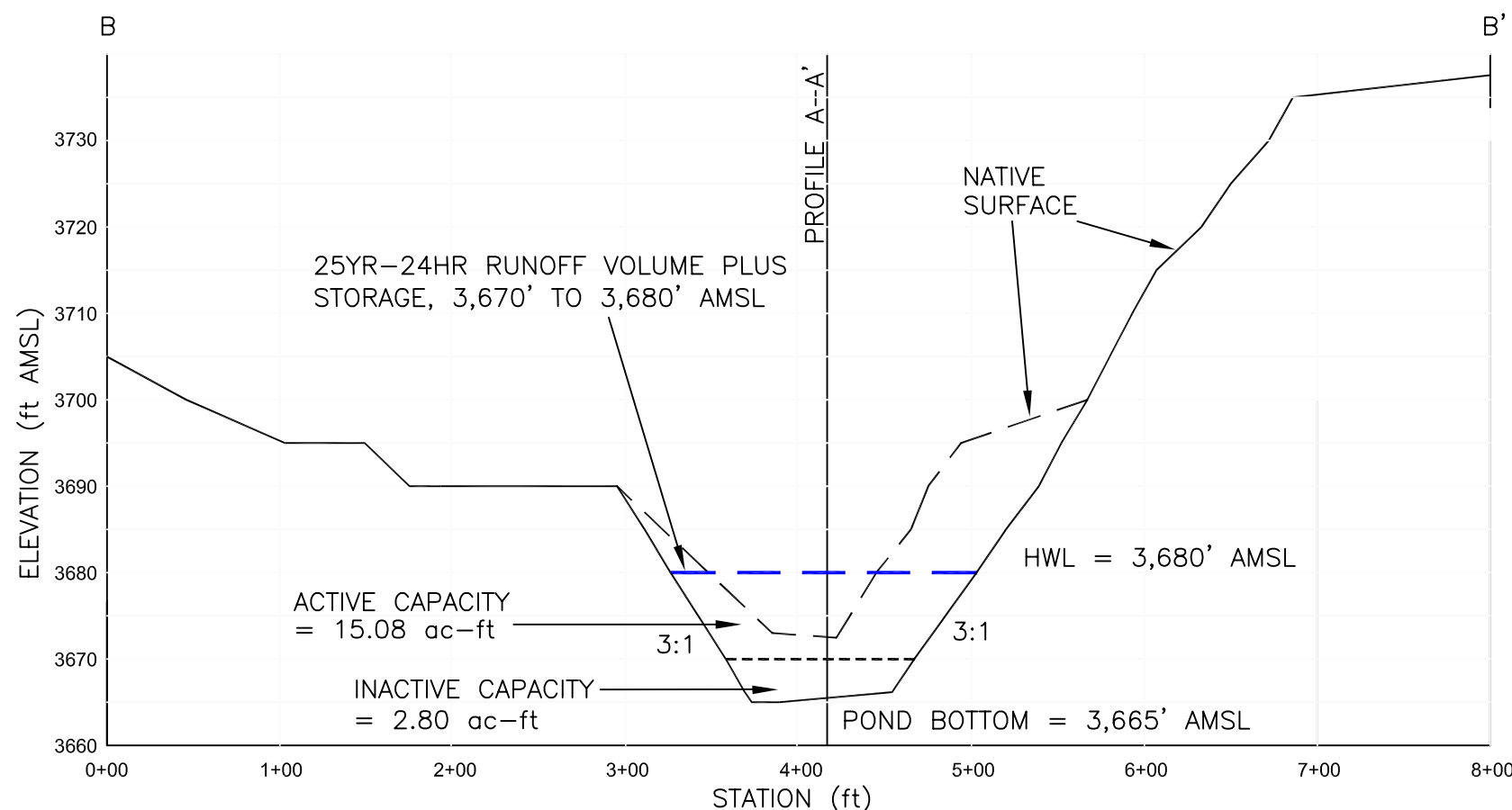
### PLAN VIEW

SCALE: 1"=100'



### POND PROFILE A-A'

SCALE: H: 1"=100', V: 1"=20'



### POND PROFILE B-B'

SCALE: H: 1"=100', V: 1"=20'

### NATIVE CHANNEL WEST INLET HYDRAULICS

BOTTOM WIDTH	=	5 feet
SIDE SLOPES	=	1.7:1
10YR-24HR PEAK FLOW	=	59.11 cfs
10YR-24HR PEAK FLOW DEPTH	=	0.99 feet
25YR-24HR PEAK FLOW	=	77.73 cfs
25YR-24HR PEAK FLOW DEPTH	=	1.15 feet
CHANNEL SLOPE	=	2.6%

### NATIVE CHANNEL EAST INLET HYDRAULICS

BOTTOM WIDTH	=	5 feet
SIDE SLOPES	=	2:1
10YR-24HR PEAK FLOW	=	36.36 cfs
10YR-24HR PEAK FLOW DEPTH	=	0.69 feet
25YR-24HR PEAK FLOW	=	49.61 cfs
25YR-24HR PEAK FLOW DEPTH	=	0.82 feet
CHANNEL SLOPE	=	3.3%

### POND 72 DRAINAGE AREA DATA

TOTAL DRAINAGE AREA	=	140.0 acres
LONGEST WATERCOURSE	=	3,646 ft.
Basin Relief	=	175 ft.
DISTURBED DRAINAGE AREA	=	117.9 acres
DISTURBED RCN	=	90 (100' within pond)
NATIVE DRAINAGE AREA	=	22.1 acres
NATIVE RCN	=	72
SOILS CONDITION	=	HYDROLOGIC SOILS GROUP C STRIPPED AND NATIVE

### RUNOFF ESTIMATES TO POND 72

RAINFALL DISTRIBUTION	=	SCS TYPE II
PRECIPITATION (10yr-24hr)	=	2.19 in.
PEAK Q (10yr-24hr.)	=	103.1 cfs
VOLUME (10yr-24hr.)	=	10.90 ac.-ft.
PRECIPITATION (25yr-24hr)	=	2.65 in.
PEAK Q (25yr-24hr.)	=	139.5 cfs
VOLUME (25yr-24hr.)	=	14.59 ac.-ft.
DESIGN METHOD	=	SCS RUNOFF CURVE # METHOD & SCS TRIANGULAR HYDROGRAPH METHOD -SEDCAD4

### NOTES:

POND 72 WAS CONSTRUCTED WITHIN NATIVE TOPOGRAPHY NORTHEAST OF PIT STRIPPING BY PLACING EMBANKMENT FILL ACROSS THE DRAINAGE AND EXCAVATING THE DRAINAGE SIDES AND BOTTOM UPSTREAM OF THE EMBANKMENT LOCATION AS SHOWN. THE POND BOTTOM WAS EXCAVATED TO AN ELEVATION OF 3,665' AMSL. THE EMBANKMENT CREST WAS CONSTRUCTED TO A HEIGHT OF 18 FEET FROM THE UPSTREAM EMBANKMENT TOE. THE APPROXIMATE EXCAVATION MADE TO COMPLETE THE POND WAS 50,000 BANK CUBIC YARDS. THE ESTIMATED FILL USED TO CONSTRUCT THE POND 72 EMBANKMENT WAS 12,300 LOOSE CUBIC YARDS.

THE POND WILL BE OPERATED WITH AN INACTIVE CAPACITY OF 2.80 AC-FT. THE INACTIVE CAPACITY WILL BE USED FOR STORAGE OF A SEDIMENT VOLUME EQUAL TO 0.02 AC-FT FOR EACH ACRE WITHIN THE POND DRAINAGE AREA. THE 25YR-24HR STORM EVENT RUNOFF IS MODELED TO BE 14.59 AC-FT. THE DESIGN CAPACITY OF THE RESERVOIR IS 17.39 AC-FT. ACTIVE CAPACITY WILL BE USED TO CONTAIN AND MANAGE UP TO THE 25YR-24HR STORM EVENT RUNOFF WATER VOLUME.

WHERE EXCAVATED, THE POND 72 INTERIOR SIDE SLOPES ARE 3:1 TO DAYLIGHT WITH NATIVE SLOPES. THE EMBANKMENT SLOPES ARE 3:1 ON BOTH UPSTREAM AND DOWNSTREAM FACES.

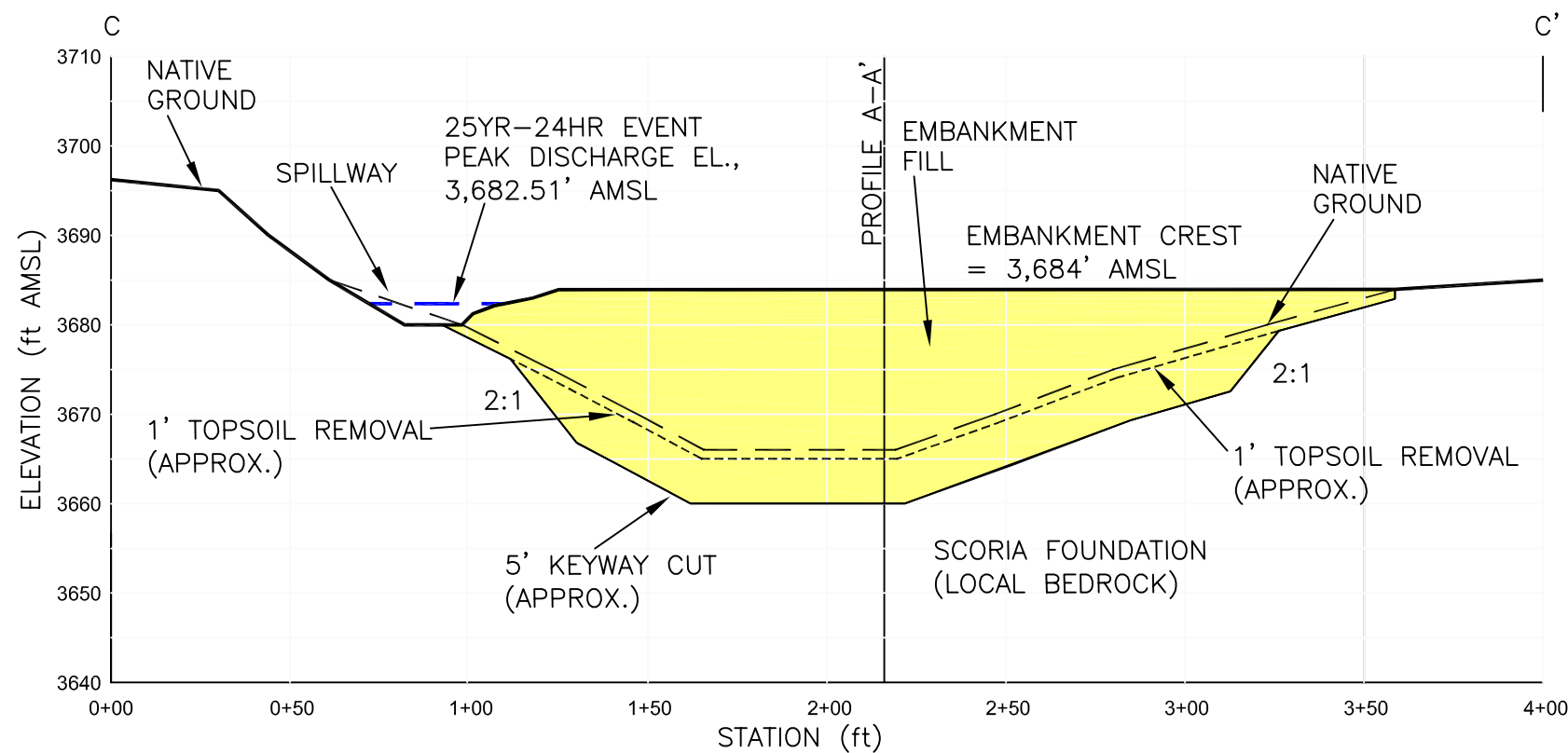
THE PRIMARY POND INLET THROUGH NATIVE CHANNELS AT THE SOUTH OF THE POND IS EXCAVATED WITHIN NATIVE SCORIA BEDROCK, WHICH PROVIDES INLET STABILIZATION.

TOPSOIL WAS REMOVED BELOW THE EMBANKMENT FILL PLACEMENT TO A DEPTH AVERAGING 1 FEET (AVERAGE DEPTH TO SCORIA BEDROCK). THE EMBANKMENT KEYWAY WITH A BASE WIDTH OF 12 FEET WAS CUT A MINIMUM OF 4 FEET INTO THE SCORIA BEDROCK. EMBANKMENT FILL MATERIAL CONSISTED OF CLAY SOILS OBTAINED FROM PIT OVERBURDEN MATERIALS, FREE OF ROCKS AND GRAVELS. EMBANKMENT FILL WAS PLACED IN 8 INCH LIFTS FROM THE BASE OF THE KEYWAY TO THE CREST ELEVATION. THE FILL WAS MACHINE COMPACTED USING SCRAPERS AND A SHEEPSFOOT COMPACTOR, AND COMPACTION TESTED TO MEET 95% OF THE MAXIMUM DRY DENSITY (STANDARD PROCTOR) OF 108.5 PCF AND A MOISTURE CONTENT WITHIN 2% OF THE OPTIMUM OF 14.7%.

THE POND 72 EMERGENCY SPILLWAY WAS CUT AT A 0.1% GRADE PARTIALLY WITHIN SCORIA BEDROCK FROM THE SPILLWAY INLET TO DISCHARGE IN THE NATIVE DRAINAGE NORTH OF THE EMBANKMENT. THE SCORIA WITHIN THE SPILLWAY CHANNEL PROVIDES PROTECTION FROM EROSION THROUGH MUCH OF THE EMBANKMENT. FOLLOWING CONSTRUCTION THE EMBANKMENT AND SPILLWAY WAS TOPSOILED AND SEEDED TO ESTABLISH VEGETATIVE COVER FOR PROTECTION AND EROSIONAL STABILITY.

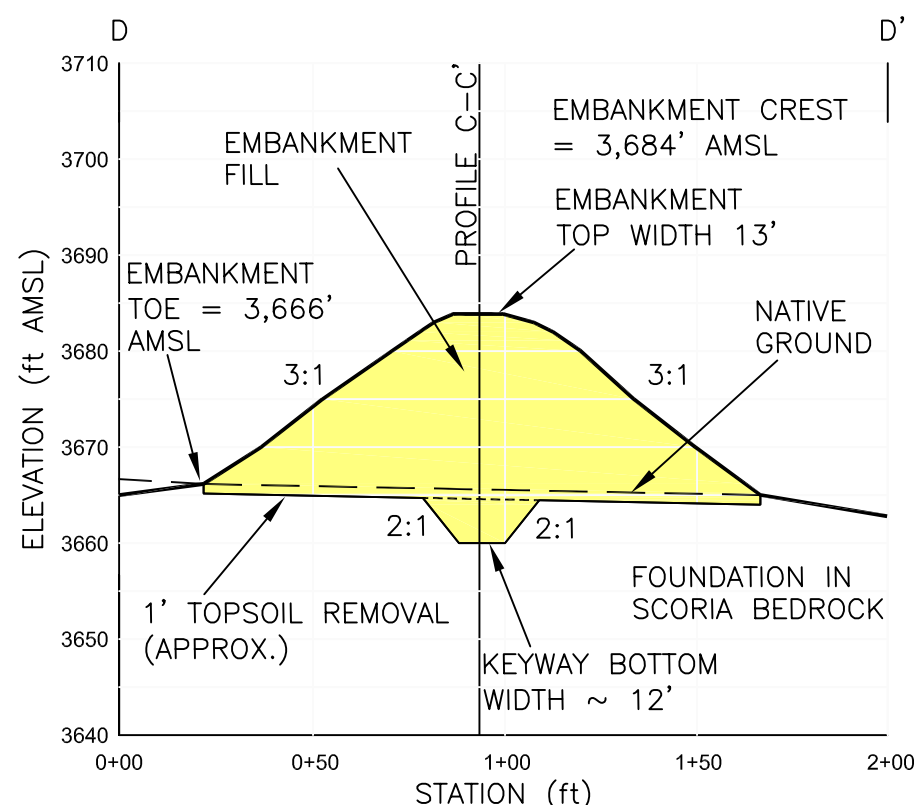
THE PRE-CONSTRUCTION POND 72 CAPACITY WAS APPROVED TO BE 19.75 AC-FT FOR A TOTAL DRAINAGE AREA OF 157.9 ACRES. PIT ADVANCEMENT PRIOR TO COMPLETION OF POND 72 CONSTRUCTION RESULTED IN A DRAINAGE AREA REDUCTION TO 140 ACRES (AS-BUILT CONDITION). THE DESIGN CAPACITY FOR THE AS-BUILT CONDITION WAS REVIEWED AND FOUND TO BE 17.39 AC-FT AS SHOWN.

THE POND 72 DRAINAGE AREA WILL CONTINUE TO BE REDUCED IN SIZE AS A RESULT OF OPEN MINE PIT ADVANCEMENT DURING THE STRUCTURE LIFE RESULTING IN A VERY CONSERVATIVE POND CAPACITY FOR THE FINAL REMAINING RUNOFF AREA. THE FINAL PMT DRAINAGE AREA TO THE POND IS ESTIMATED TO BE 119.5 ACRES.



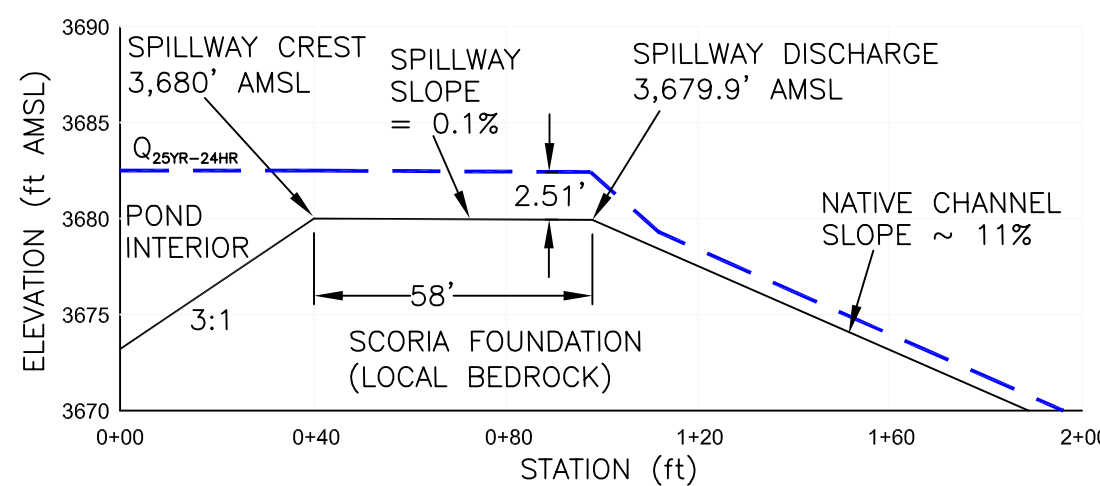
### EMBANKMENT PROFILE C-C'

SCALE: H: 1"=50', V: 1"=20'



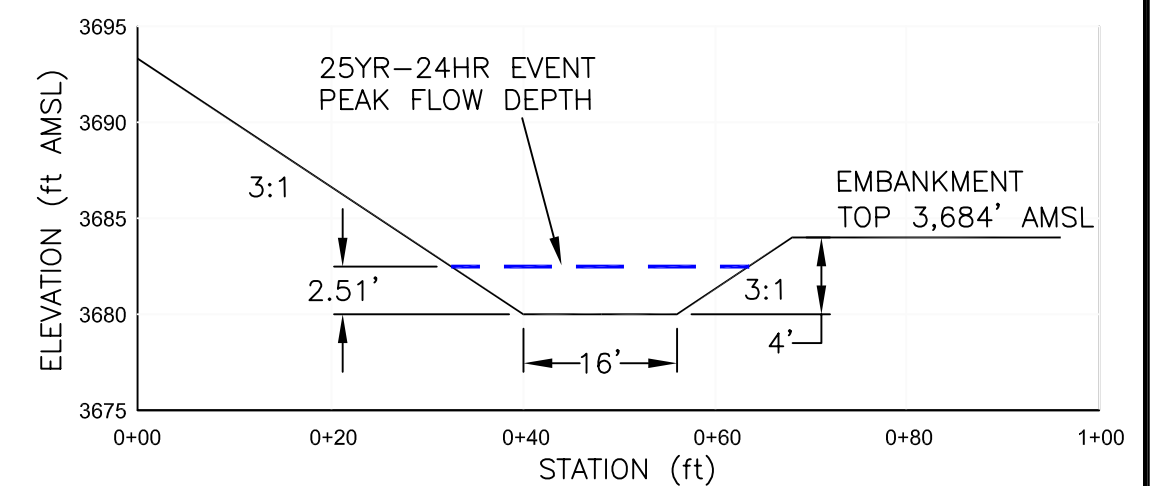
### EMBANKMENT SECTION D-D'

SCALE: H: 1"=50', V: 1"=20'



### TYPICAL SPILLWAY PROFILE

SCALE: H: 1"=40', V: 1"=10'



### TYPICAL SPILLWAY SECTION

SCALE: H: 1"=20', V: 1"=10'

### SPILLWAY HYDRAULICS

BOTTOM WIDTH	=	16 feet
SIDE SLOPES	=	3:1
10YR-24HR PEAK FLOW	=	103.1 cfs
10YR-24HR PEAK FLOW DEPTH	=	2.00 feet
25YR-24HR PEAK FLOW	=	139.5 cfs
25YR-24HR PEAK FLOW DEPTH	=	2.51 feet
CHANNEL SLOPE	=	0.1%
25YR-24HR MIN. FREEBOARD	=	1.49 feet

### CERTIFICATE OF ENGINEER

I, Bruce N. Nelson of Sheridan, Wyoming, hereby certify that this map and drawings were prepared by myself or under my direct supervision using topographic base maps prepared for Spring Creek Mine LLC dated March 2016 and that they correctly represent the facilities and conditions described in the accompanying application.



BRUCE N. NELSON, P.E. No. 8663 E

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SPRING CREEK MINE  
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DATE	REVISION
BY	

Sediment Control  
Pond 72 As-Built

DESIGN	RWH	DRAWN	RWH	DATE	07/11/16	SHEET	1	OF	1
SCALE	as shown	CONTOUR INTERVAL	as shown	FILE NUMBER		SP-72 Pond.dwg			