

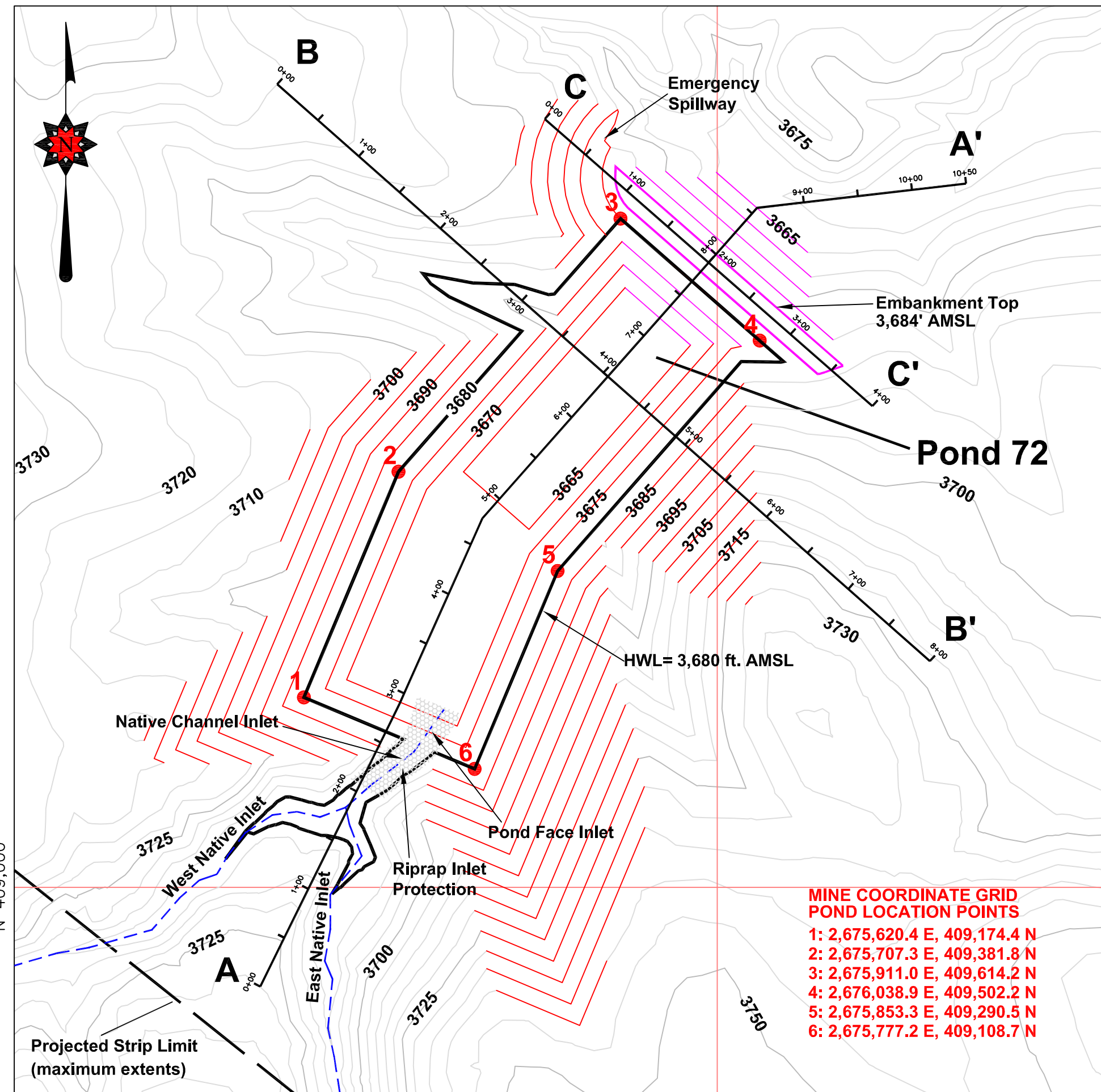
**LOCATION MAP**  
SCALE: 1"=1,000', C.I. = 5'

THE POND 72 EMBANKMENT CENTER IS LOCATED AT MINE COORDINATES 409,571 N, 2,675,994 E. THE POND IS LOCATED PRIMARILY IN THE SE ¼ OF THE NW ¼ OF SECTION 31, T40E, R8S.

### POND 72 DESIGN CAPACITY

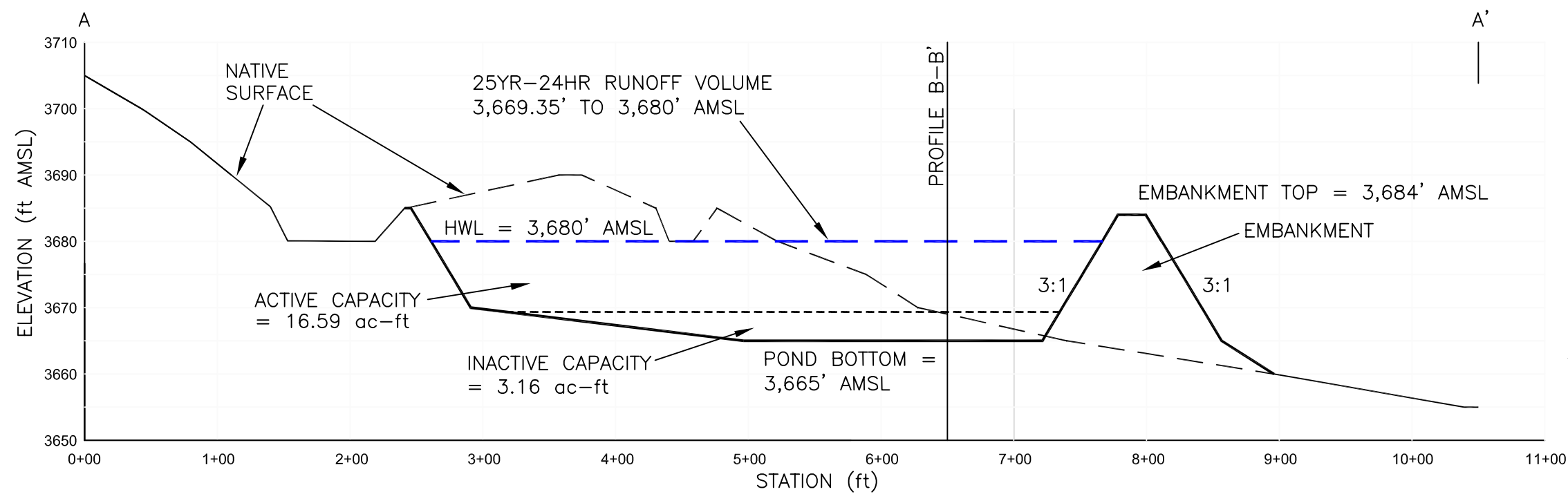
SEDIMENT CAPACITY (0.02 ac-ft per acre)	=	3.16 ac-ft
25YR-24HR RUNOFF VOLUME	=	16.59 ac-ft
TOTAL DESIGN CAPACITY	=	19.75 ac-ft

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 409,607 N AND 2,675,904 E, APPROXIMATELY 1,942 FEET SOUTHEAST OF THE NORTHWEST CORNER OF SECTION 31 AS SHOWN.

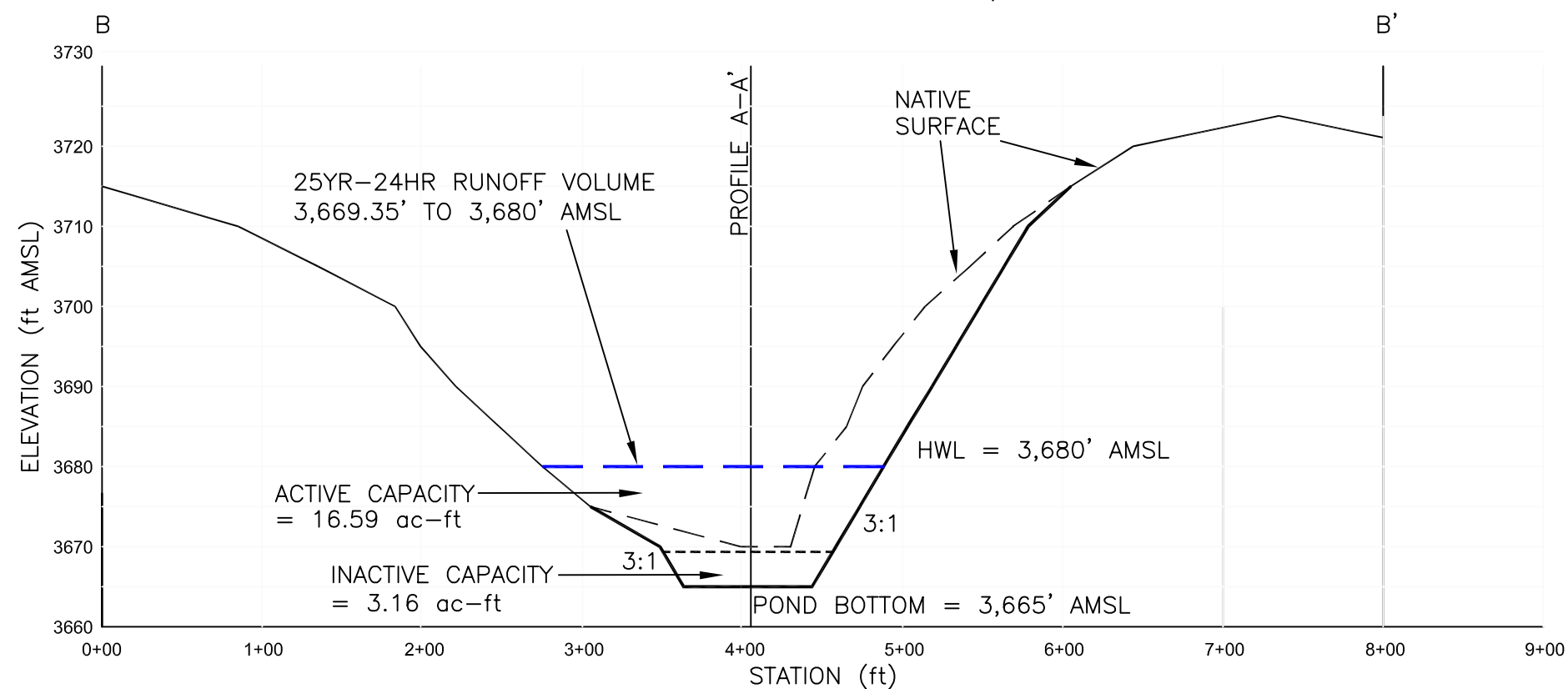


**PLAN VIEW**  
SCALE: 1"=100', C.I. = 5'

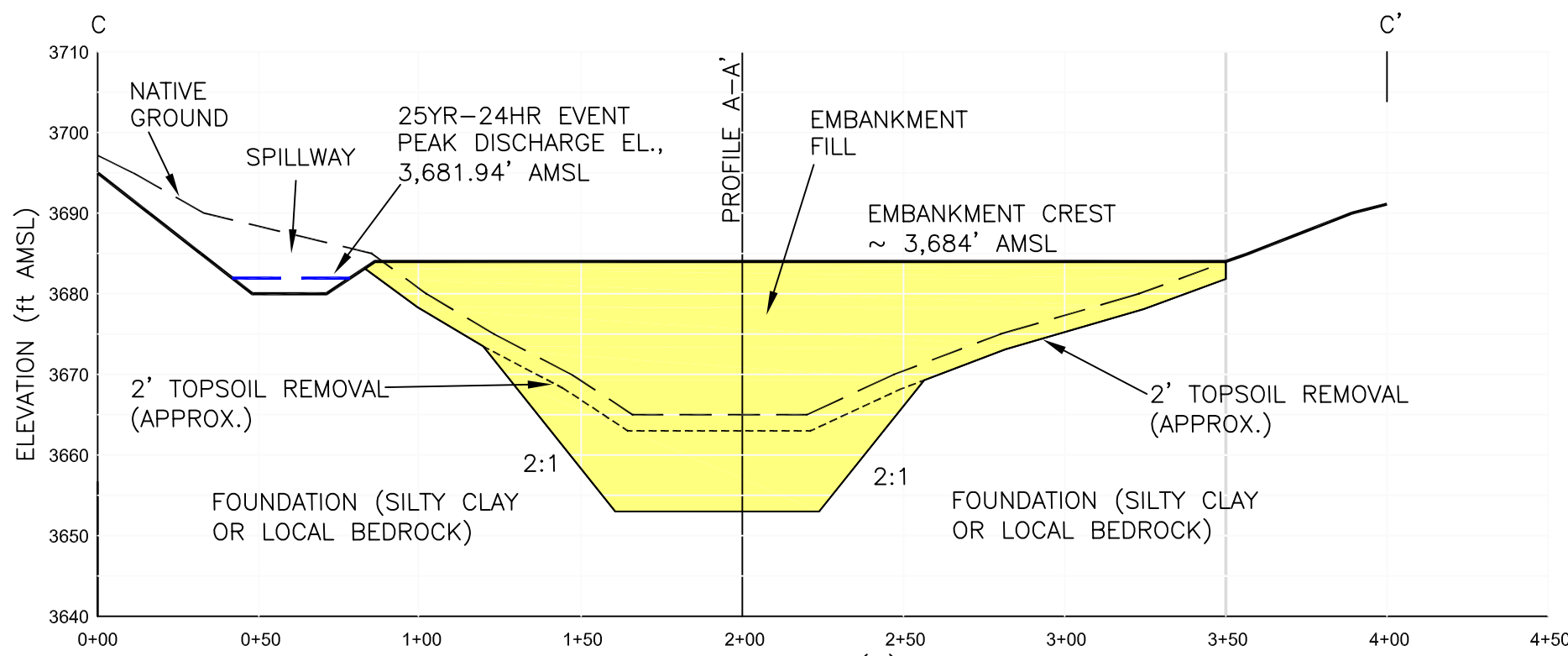
**MINE COORDINATE GRID  
POND LOCATION POINTS**  
1: 2,675,620.4 E, 409,174.4 N  
2: 2,675,707.3 E, 409,381.8 N  
3: 2,675,911.0 E, 409,614.2 N  
4: 2,676,038.9 E, 409,502.2 N  
5: 2,675,853.3 E, 409,290.5 N  
6: 2,675,777.2 E, 409,108.7 N



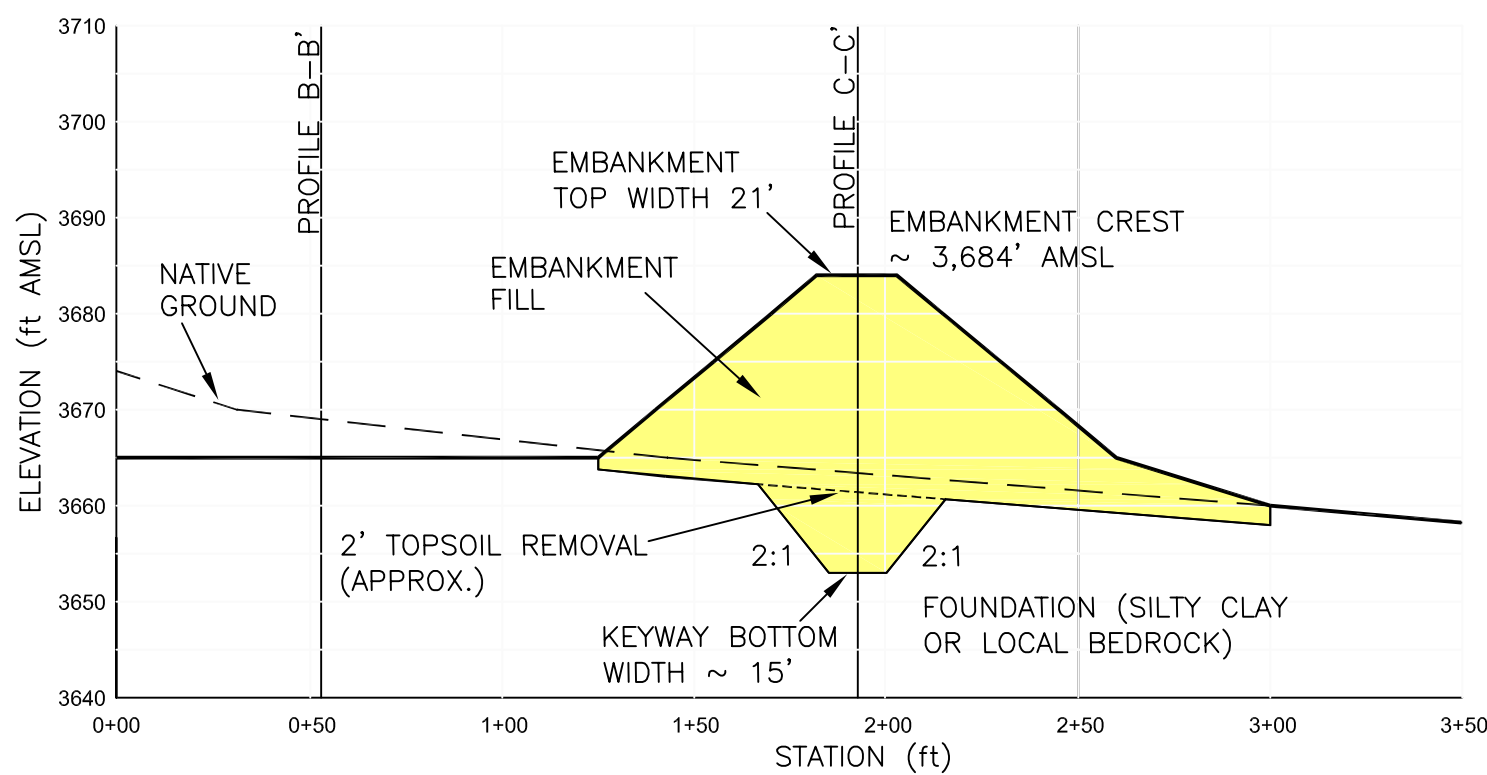
**POND PROFILE A-A'**  
SCALE: H: 1"=100', V: 1"=20'



**POND PROFILE B-B'**  
SCALE: H: 1"=100', V: 1"=20'



**EMBANKMENT PROFILE C-C'**  
SCALE: H: 1"=50', V: 1"=20'



**EMBANKMENT SECTION**  
SCALE: H: 1"=50', V: 1"=20'

### SPILLWAY HYDRAULICS

BOTTOM WIDTH	=	20 feet
SIDE SLOPES	=	3:1
10YR-24HR PEAK FLOW	=	116.7 cfs
10YR-24HR PEAK FLOW DEPTH	=	1.63 feet
25YR-24HR PEAK FLOW	=	157.7 cfs
25YR-24HR PEAK FLOW DEPTH	=	1.94 feet
CHANNEL SLOPE	=	0.1%
25YR-24HR MIN. FREEBOARD	=	2.06 feet

### POND 72 DRAINAGE AREA DATA

TOTAL DRAINAGE AREA	=	157.9 acres
LONGEST WATERCOURSE	=	3,646 ft.
BASEIN RELIEF	=	175 ft.
DISTURBED DRAINAGE AREA	=	135.8 acres
DISTURBED RCN	=	90 (100 within pond)
NATIVE DRAINAGE AREA	=	22.1 acres
NATIVE RCN	=	3,646 ft.
SOILS	=	HYDROLOGIC SOILS GROUP C
VEGETATION	=	STRIPPED AND NATIVE

### RUNOFF ESTIMATES TO POND 72

RAINFALL DISTRIBUTION	=	SCS TYPE II
PRECIPITATION (10yr-24hr)	=	2.19 in.
PEAK Q (10yr-24hr.)	=	116.74 cfs
VOLUME (10yr-24hr.)	=	12.41 ac.-ft.
PRECIPITATION (25yr-24hr)	=	2.65 in.
PEAK Q (25yr-24hr.)	=	157.7 cfs
VOLUME (25yr-24hr.)	=	16.59 ac.-ft.
DESIGN METHOD	=	SCS RUNOFF CURVE # METHOD & SCS TRIANGULAR HYDROGRAPH METHOD - SEDCAD4

### NATIVE CHANNEL WEST INLET HYDRAULICS

BOTTOM WIDTH	=	5 feet
SIDE SLOPES	=	1.7:1
10YR-24HR PEAK FLOW	=	74.02 cfs
10YR-24HR PEAK FLOW DEPTH	=	1.06 feet
25YR-24HR PEAK FLOW	=	97.33 cfs
25YR-24HR PEAK FLOW DEPTH	=	1.24 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	=	0.66 feet
25YR-24HR PEAK FLOW	=	49.61 cfs
25YR-24HR PEAK FLOW DEPTH	=	0.78 feet
CHANNEL SLOPE	=	3.3%

### NOTES:

POND 72 IS TO BE CONSTRUCTED BY PLACING EMBANKMENT FILL ACROSS THE DRAINAGE AND EXCAVATING THE DRAINAGE SIDES AND BOTTOM UPSTREAM OF THE EMBANKMENT LOCATION AS SHOWN, WITHIN NATIVE TOPOGRAPHY NORTHEAST OF PIT STRIPPING. THE POND BOTTOM WILL BE EXCAVATED TO AN APPROXIMATE ELEVATION OF 3,665' AMSL. THE EMBANKMENT CREST WILL BE CONSTRUCTED TO A MAXIMUM HEIGHT OF 19 FEET FROM THE UPSTREAM EMBANKMENT TOE. THE ESTIMATED EXCAVATION TO COMPLETE THE POND IS 50,000 BANK CUBIC YARDS. THE ESTIMATED FILL REQUIRED TO CONSTRUCT THE POND 72 EMBANKMENT IS 12,300 LOOSE CUBIC YARDS.

THE POND WILL BE OPERATED WITH AN INACTIVE CAPACITY OF 3.16 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 16.59 AC.-FT. THE DESIGN CAPACITY OF THE RESERVOIR IS 19.75 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 HAS 3:1 SLOPES ON BOTH UPSTREAM AND DOWNSTREAM FACES.

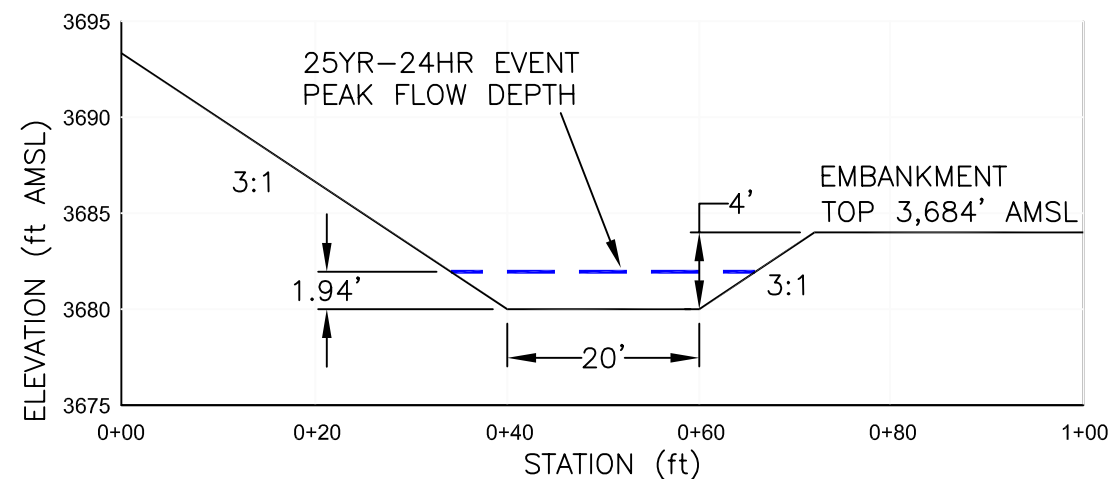
THE PRIMARY POND INLET THROUGH NATIVE CHANNELS AT THE SOUTH OF THE POND WILL BE PROTECTED USING RIPRAP FROM WHERE THE WEST AND EAST NATIVE CHANNELS MERGE, THROUGH THE 33% POND INTERIOR SLOPE. RIPRAP WILL BE PLACED AT THE SPECIFICATIONS SHOWN TO PROVIDE CHANNEL PROTECTION FROM EROSION FOR UP TO A 25YR-24HR EVENT INFLOW.

TOPSOIL WILL BE REMOVED BELOW THE EMBANKMENT FILL PLACEMENT TO A DEPTH OF 2 FEET. EMBANKMENT FILL MATERIALS AND PLACEMENT METHODS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON SOIL MATERIALS ENCOUNTERED AND WILL BE SPECIFIED BY THE ENGINEER BEFORE EMBANKMENT CONSTRUCTION BEGINS. THE FINISHED EMBANKMENT AND SPILLWAY WILL BE SEEDED USING AN APPROPRIATE MIX TO ESTABLISH VEGETATION FOR EROSION PROTECTION AND SURFACE STABILITY.

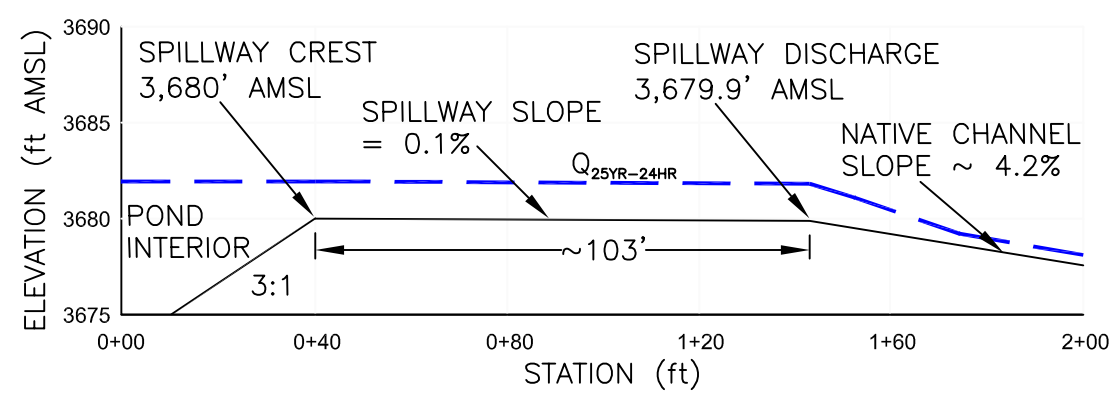
THE POND 72 DRAINAGE AREA WILL BE SIGNIFICANTLY REDUCED IN SIZE AS A RESULT OF OPEN MINE PIT ADVANCEMENT DURING THE STRUCTURE LIFE, RESULTING IN A VERY CONSERVATIVE POND CAPACITY FOR THE REMAINING RUNOFF AREA.

### RIPRAP INLET CHANNEL HYDRAULICS

BOTTOM WIDTH	=	14.7 ft (pond face)
BOTTOM WIDTH	=	4.5 ft (channel)
SIDE SLOPES	=	3:1 (channel & pond)
MAXIMUM SLOPE	=	33% (pond face)
CHANNEL SLOPE	=	2.5%
10YR-24HR PEAK FLOW	=	116.7 cfs
10YR-24HR PEAK FLOW DEPTH	=	0.74 ft (pond face)
10YR-24HR PEAK FLOW DEPTH	=	1.80 ft (channel)
25YR-24HR PEAK FLOW	=	157.7 cfs
25YR-24HR PEAK FLOW DEPTH	=	0.85 ft (pond face)
25YR-24HR PEAK FLOW DEPTH	=	2.15 ft (channel)
25YR-24HR MAXIMUM VELOCITY	=	10.70 fps
RIPRAP METHOD	=	PADER SEDCAD-4
RIPRAP Dmin	=	5 in.
RIPRAP D50	=	9 in.
RIPRAP Dmax	=	12 in.



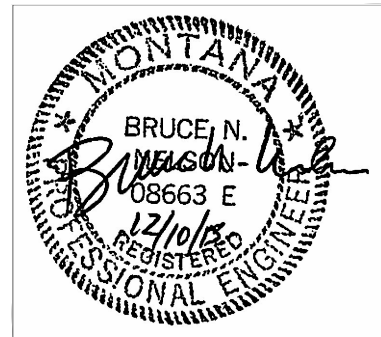
**SPILLWAY CROSS SECTION**  
SCALE: H: 1"=20', V: 1"=10'



**SPILLWAY PROFILE**  
SCALE: H: 1"=40', V: 1"=10'

### 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 10/13 and that they correctly represent the facilities and conditions described in the accompanying application.



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

Prepared by:



23 N. Scott Street, Suite 27, Sheridan WY  
PHONE: (307) 672-3793



**SPRING CREEK MINE**  
P.O. BOX 67, DECKER, MT 59025  
PHONE: (406) 757-2581

DATE	REVISION
BY	

**Sediment Control  
Pond 72**

DESIGN	RWH	DRAWN	RWH	DATE	12/09/13	SHEET	1	OF	1
SCALE	as shown	CONTOUR INTERVAL	as shown	FILE NUMBER					SP-72_Pond.dwg