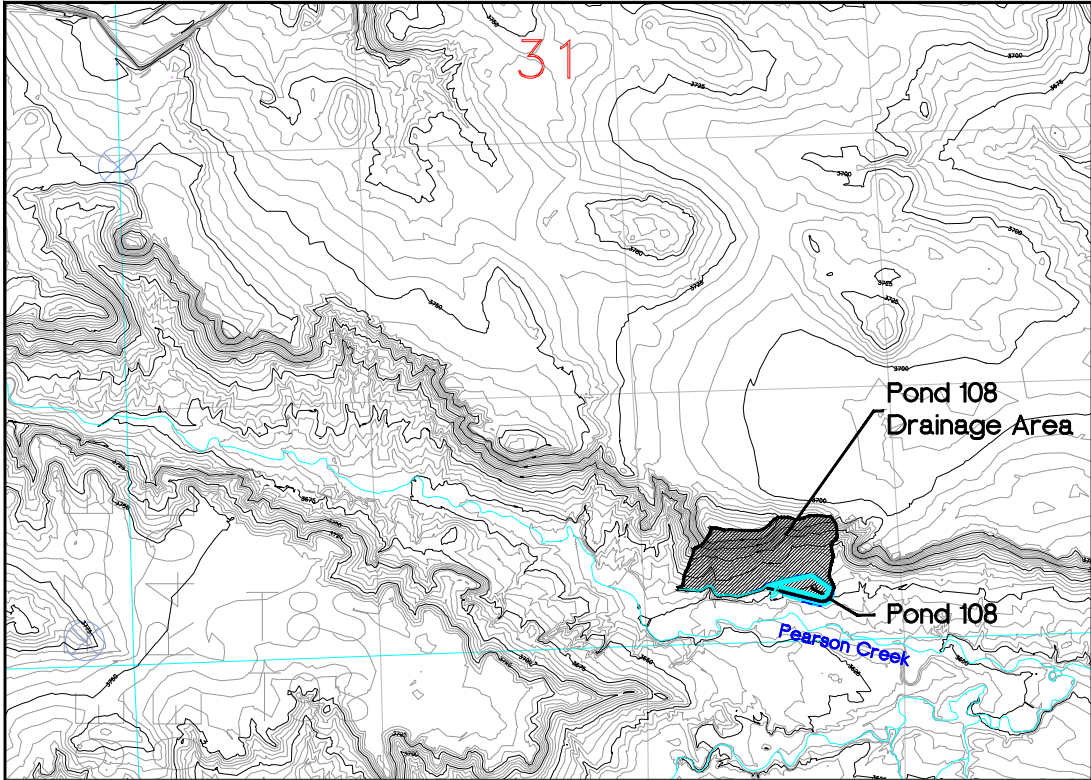
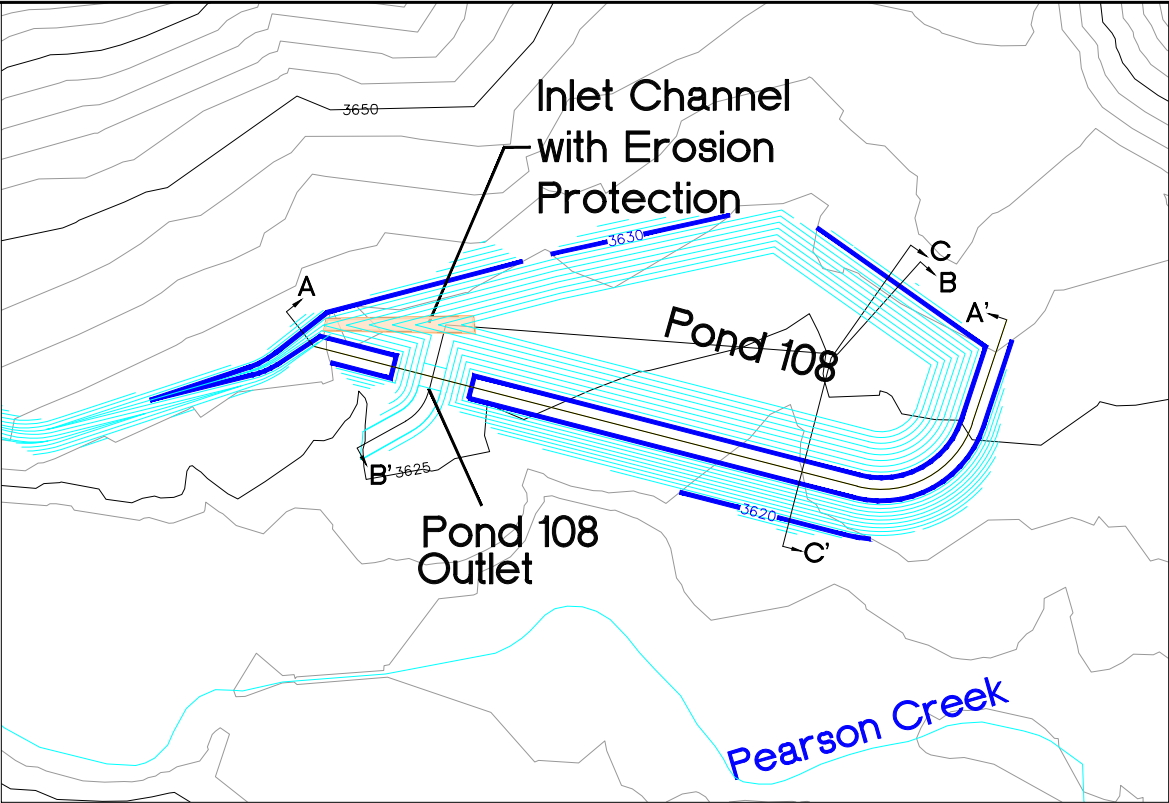




LOCATION MAP

SCALE: 1" = 1,000', C.I. = 5'
POND IS LOCATED IN SWSE SECTION 31, T8S, R40E.



PLAN MAP

SCALE: 1" = 100', POND C.I. = 1', OUTER C.I. = 5'

AREA-ELEVATION-CAPACITY TABLE				
ELEVATION (FT AMSL)	AREA (ACRES)	INCREMENTAL CAPACITY (ACRE-FEET)	CUMULATIVE CAPACITY (ACRE-FEET)	USE
3,622.00	0.26		0.00	INACTIVE CAPACITY VOLUME = 0.12 AC-FT. sediment storage
3,622.43	0.27	0.11	0.11	
		0.16		ACTIVE CAPACITY VOLUME = 0.83 AC-FT. 10-YEAR / 24-HOUR RUNOFF VOLUME = 0.56 AC-FT.
3,623.00	0.30	0.32	0.28	
3,624.00	0.34	0.36	0.59	
3,625.00	0.38		0.95	
HIGH WATER LINE = 3,625.00 FT. AMSL, TOTAL CAPACITY = 0.95 AC-FT.				

POND 108 DRAINAGE AREA DATA

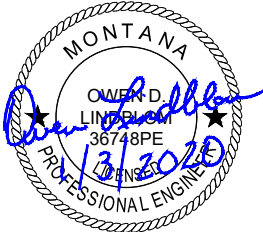
TOTAL DRAINAGE AREA = 6.09 acres
LONGEST WATERCOURSE = 879 ft
AVERAGE LAND SLOPE = 32.72%
CURVE NUMBER = 87 (Disturbed Mine Land)
SOILS = Hydrologic Soils Group C
TIME OF CONCENTRATION = 0.05 Hours
RUNOFF ESTIMATE TO POND 108
RAINFALL DISTRIBUTION = SCS TYPE II
PRECIPITATION (10YR-24HR) = 2.19 in
PEAK Q (10YR-24HR) = 9.75 cfs
VOLUME (10YR-24HR) = 0.56 ac-ft
DESIGN METHOD = SCS RUNOFF CURVE NUMBER METHOD AND SCS TRIANGULAR HYDROGRAPH METHOD (TRIHYDRO)

POND 108 DESIGN CAPACITY

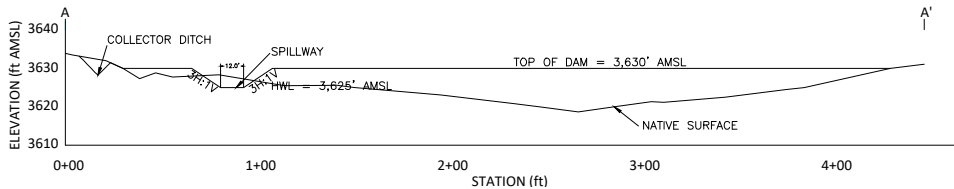
SEDIMENT CAPACITY (0.02 ac-ft per acre) = 0.12 ac-ft
10YR-24HR RUNOFF VOLUME = 0.56 ac-ft
SURPLUS VOLUME = 0.27 ac-ft
TOTAL DESIGN CAPACITY = 0.95 ac-ft

CERTIFICATE OF ENGINEER

I, Owen Lindblom, hereby certify that this map and drawings were prepared by myself or under my direct supervision and that they correctly represent the facilities and conditions described in the accompanying application.

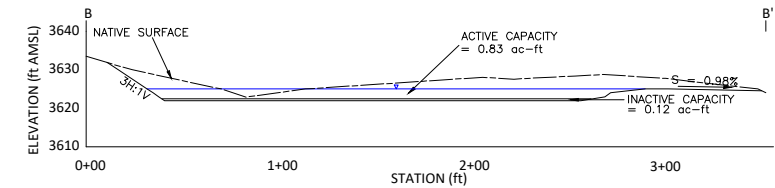


OWEN LINDBLOM, P.E. No. 36748PE



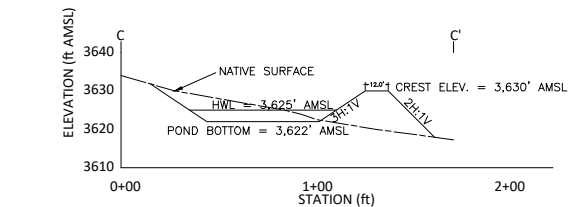
PROFILE A-A'

SCALE: H: 1" = 100'
V: 1" = 50'



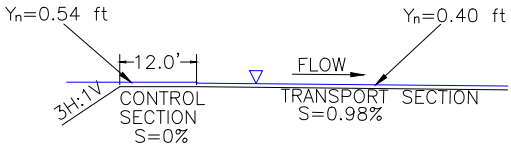
PROFILE B-B'

SCALE: H: 1" = 100'
V: 1" = 50'

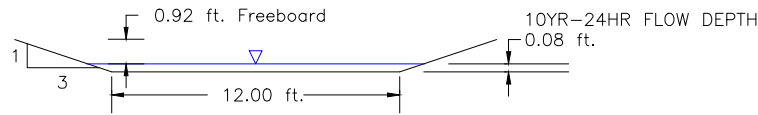


PROFILE C-C'

SCALE: H: 1" = 100'
V: 1" = 50'



EMERGENCY SPILLWAY DETAILS
NOT TO SCALE



Trapezoidal Channel
Equal Side Slopes
Channel Lining: NAG Erosion Control Blanket C350 or Equivalent

INLET CHANNEL AND EROSION PROTECTION
NOT TO SCALE

SPILLWAY CONTROL
SECTION HYDRAULICS

$Q = CLH^{3/2}$
 $Q_{25-24} = 12.97 \text{ cfs}$
 $C = 2.71$
 $L = 12 \text{ ft}$
 $H = 0.54 \text{ ft}$
 $V = 1.99 \text{ ft/s}$

SPILLWAY TRANSPORT
SECTION HYDRAULICS

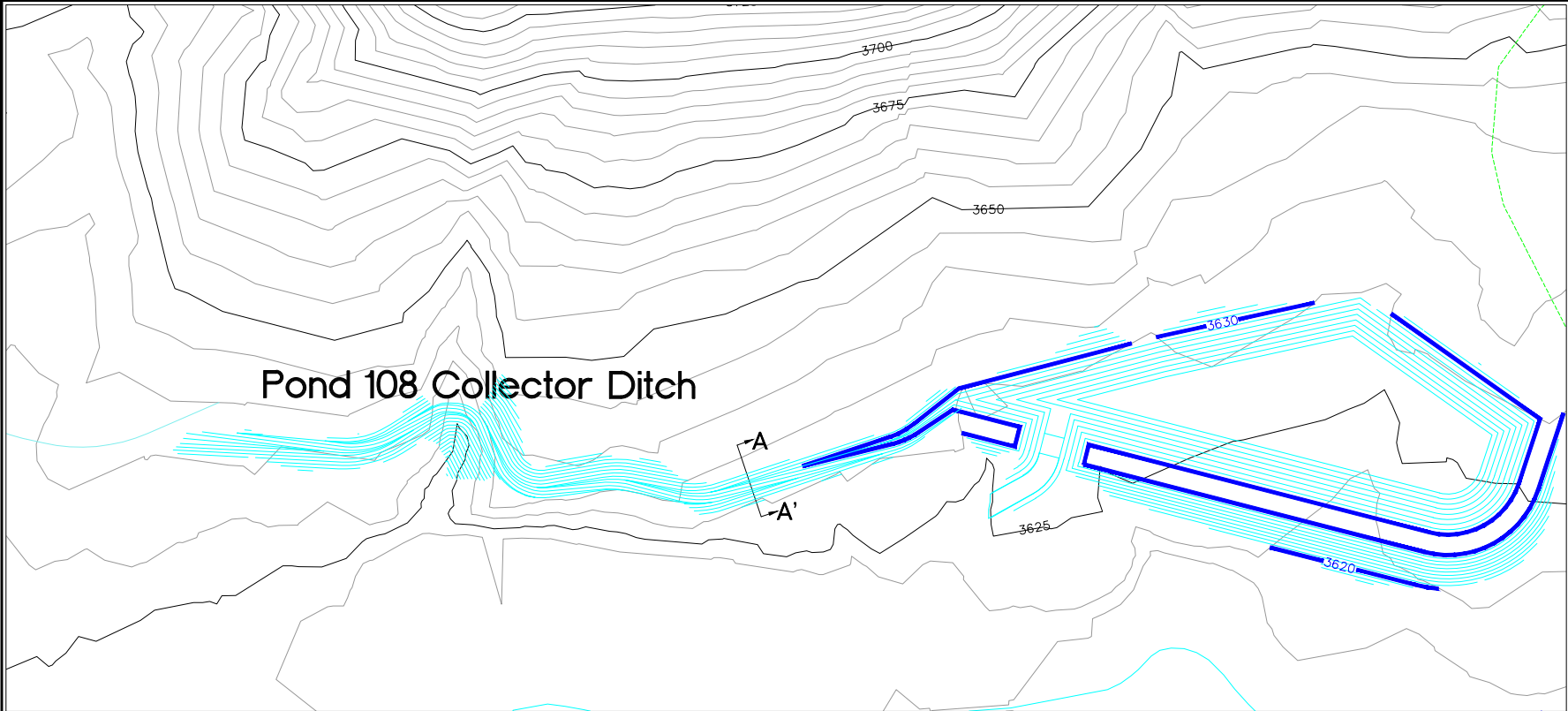
$Q_{25-24} = \frac{1.487}{n} AR^{2/3} S^{1/2}$
 $Q_{25-24} = 12.97 \text{ cfs}$
 $n = 0.03$
 $S = 0.010 \text{ ft/ft}$
 $Z = 3H:1V$
 $b = 12 \text{ ft}$
 $A = 5.22 \text{ ft}^2$
 $WP = 14.50 \text{ ft}$
 $R = 0.36 \text{ ft}$
 $V = 2.48 \text{ ft/s}$
 $Y_n = 0.40 \text{ ft}$

INLET CHANNEL HYDRAULICS

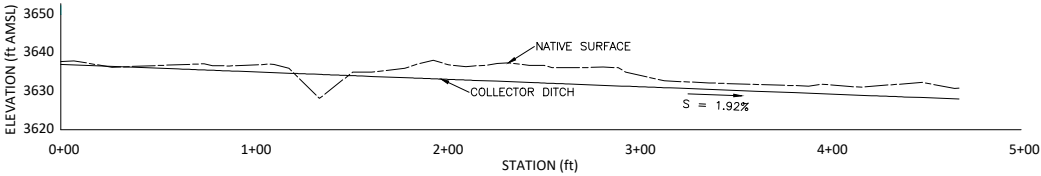
CHANNEL TYPE	=	TRAPEZOIDAL, EQUAL SIDE SLOPES	RETARDANCE CLASS	=	C
BOTTOM WIDTH	=	12 ft	VEGETATION TYPE	=	BUNCH TYPE
SIDE SLOPES	=	3H:1V	VEGETATION DENSITY	=	FAIR (50-75%)
MAXIMUM SLOPE	=	33% (POND FACE SLOPE)	SOIL TYPE	=	SILT LOAM
10YR-24HR PEAK FLOW	=	3.94 cfs	VELOCITY	=	4.04 ft/s
CHANNEL LINING	=	N.A.G. C350 EROSION CONTROL BLANKET (PERMANENT) WITH VEGETATION	NORMAL DEPTH	=	0.08 ft
			MANNING'S N	=	0.039
			PERMISSABLE SHEAR STRESS	=	12.0 lbs/ft ²
			CALCULATED SHEAR STRESS	=	1.65 lbs/ft ²



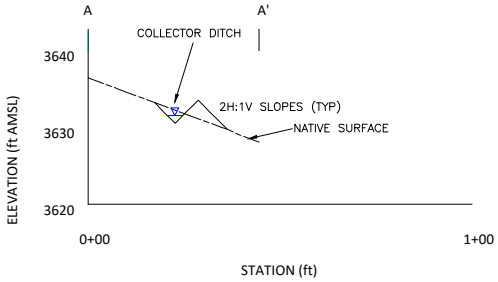
		SPRING CREEK MINE P.O. BOX 67, DECKER, MT 59025 PHONE: (406) 757-2581	
DATE	REVISION	Sediment Control Pond 108 Design	
BY			
DESIGN	ODL	DRAWN	ODL
DATE	01/03/2020	SHEET	1 OF 2
SCALE	As Shown	CONTOUR INTERVAL	As Shown
FILE NUMBER	Pond 108.dwg		



COLLECTOR DITCH PLAN VIEW
SCALE: 1" = 100', POND C.I. = 1', OUTER C.I. = 5'



POND 108 COLLECTOR DITCH PROFILE
SCALE: H: 1" = 100'
V: 1" = 50'



SECTION A-A'
SCALE: H: 1" = 50'
V: 1" = 25'

POND 108 COLLECTOR DITCH

DRAINAGE AREA DATA

TOTAL DRAINAGE AREA	= 2.30 acres
LONGEST WATERCOURSE	= 645 ft
AVERAGE LAND SLOPE	= 33.62%
CURVE NUMBER	= 87 (Disturbed Mine Land)
SOILS	= Hydrologic Soils Group C
TIME OF CONCENTRATION	= 0.04 Hours

RUNOFF ESTIMATE TO POND 108

RAINFALL DISTRIBUTION	= SCS TYPE II
PRECIPITATION (10YR-24HR)	= 2.19 in
PEAK Q (10YR-24HR)	= 3.94 cfs
PEAK Q (25YR-24HR)	= 5.23 cfs
DESIGN METHOD	= SCS RUNOFF CURVE NUMBER METHOD AND SCS TRIANGULAR HYDROGRAPH METHOD (TRIHYDRO)

COLLECTOR DITCH

HYDRAULICS

$$Q_{25-24} = \frac{1.487}{n} AR^{2/3} S^{1/2}$$

$Q_{25-24} = 5.23 \text{ cfs}$	$A = 1.45 \text{ ft}^2$
$n = 0.03$	$WP = 3.81 \text{ ft}$
$S = 0.019 \text{ ft/ft}$	$R = 0.38 \text{ ft}$
$Z = 2H:1V$	$V = 3.61 \text{ ft/s}$
$b = 0 \text{ ft}$	$Y_n = 0.85 \text{ ft}$



		SPRING CREEK MINE P.O. BOX 67, DECKER, MT 59025 PHONE: (406) 757-2581	
DATE	REVISION	Sediment Control Pond 108 Design	
BY			
DESIGN	ODL	DRAWN	ODL
DATE	01/03/2020	SHEET	2 OF 2
SCALE	As Shown	CONTOUR INTERVAL	As Shown
FILE NUMBER	Pond_108.dwg		