0026

Document Information Form

Mine Number: C/007/0038

File Name: Willow Creek Mine

To: Incoming

From:

Person Dennis Vance

Company Plateau Mining Company

Date Received: 4/26/07

Explanation:

Randall Canyon Shaft info.

cc:

EARTHFAX ENGINEERING, INC.
ENGINEERS / SCIENTISTS

COMPUTED JWW DATE 26 Apr 2007
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PMC Crandall Canyon
Settling / Evap Pond Design

Existing ground surface slope (in pond area):

Sta	Distance (ft)	Elev. Diff (ft)	Slope (ft/ft)
0+00	52	10.4	0.20
0+50	55	11.0	0.20
1+00	62	13.4	0.22
1+50	63	12.6	0.20
2+00	72	11.2	0.16
2+50	78	11.0	0.14

Avg = 0.19

Max. est. quantity of water to be stored:

20' diameter shaft
130' of water w/ high TSS content - assumed condition

$$\text{Volume} = \left(\frac{\pi d^2}{4}\right)(h)$$

$$= \left[\frac{(\pi)(20)^2}{4}\right](130)$$

$$= 40{,}840 \text{ ft}^3 \quad (305{,}000 \text{ gal})$$

$$= 1510 \text{ yd}^3$$

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REGISTERED PROFESSIONAL ENGINEER
No. 166246
RICHARD B. WHITE
26 Apr 2007
STATE OF UTAH

Pond design criteria:

- Excavate into existing soil
- Min 1.5:1 inside slopes
- 1-2' freeboard
- Assume 50' surface width. Calculate required length.

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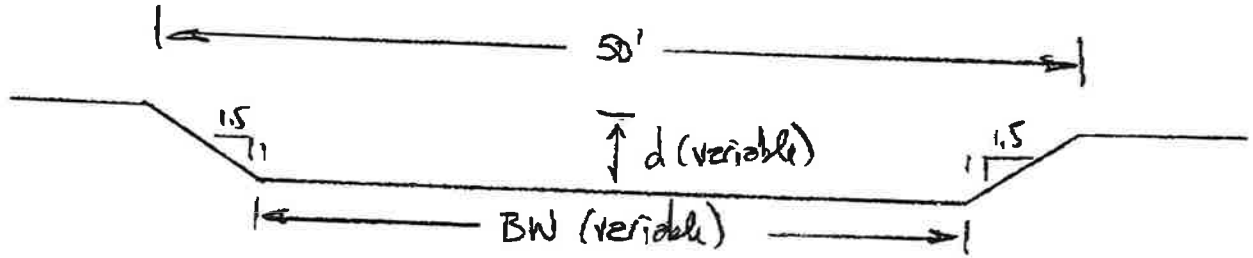

Depth (ft)	BW (ft)	Cumulative Volume: Thru Length (ft3/ft of L)	Cumulative Volume: Ends (ft3)	Actual Volumes (Total) For L=50' (ft3)	For L=50' (yd3)	For L=100' (ft3)	For L=100' (yd3)	For L=200' (ft3)	For L=200' (yd3)
1	47	48.5	75.0	2500	92.6	4925	182	9775	362
2	44	94.0	300.0	5000	185	9700	359	19,100	707
3	41	136.5	675.0	7500	278	14,325	531	27,975	1040
4	38	176.0	1200	10,000	370	18,800	696	36,400	1350
5	35	212.5	1875	12,500	463	23,125	856	44,375	1640
6	32	246.0	2700	15,000	556	27,300	1010	51,900	1920
7	29	276.5	3675	17,500	648	31,325	1160	58,975	2180
8	26	304.0	4800	20,000	741	35,200	1300	65,600	2430

Note: L = bottom length of pond

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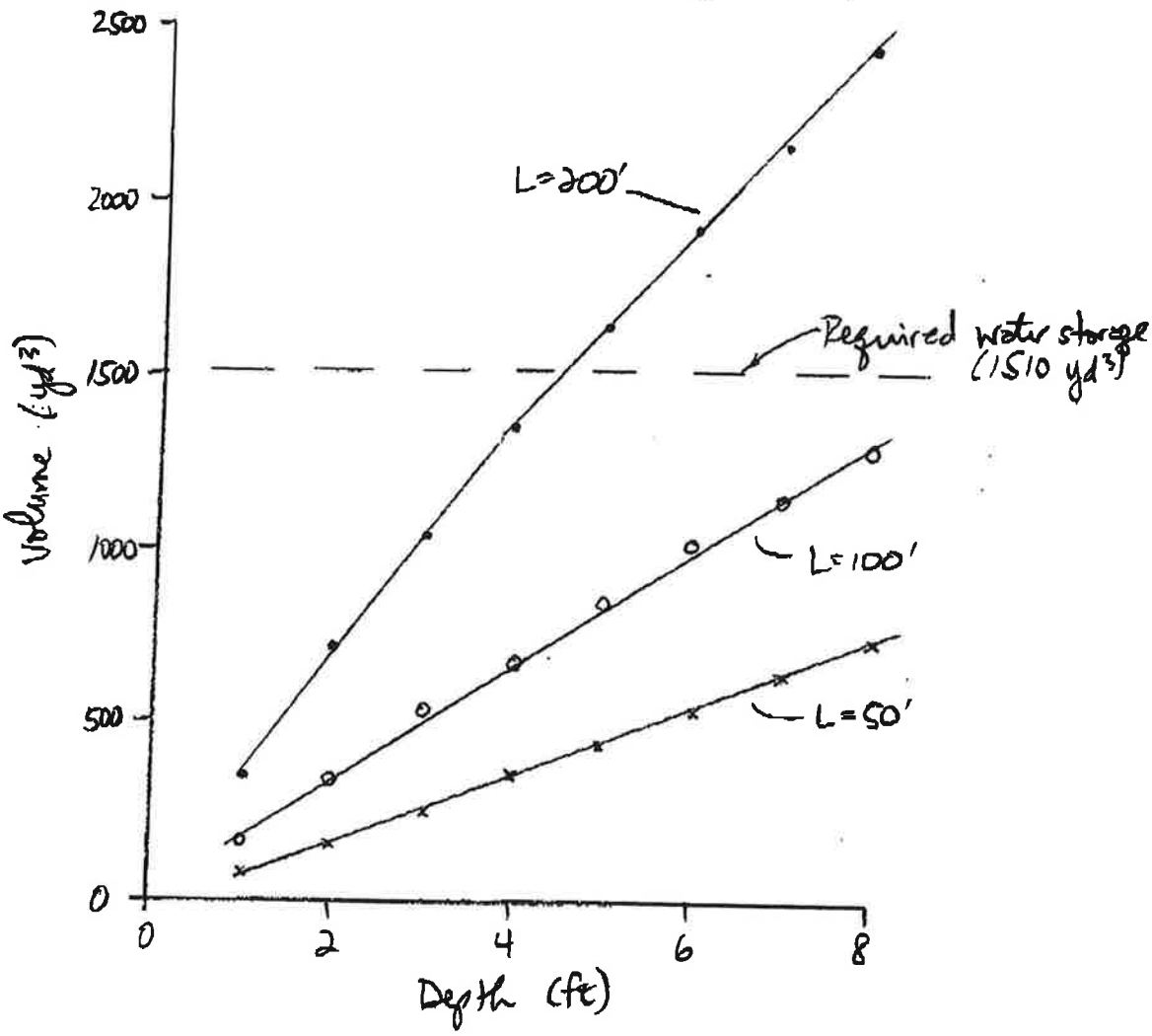
Pond Stage-Capacity Curves



At L= 200', required water storage occurs at d= 4.5'.

For pond constructed at 6' depth (i.e., 1.5' freeboard),

Total surface area = (50 ft)(200 ft + (9)(2) ft)

= (50 ft)(218 ft)

= 10,900 ft²

= 0.25 ac

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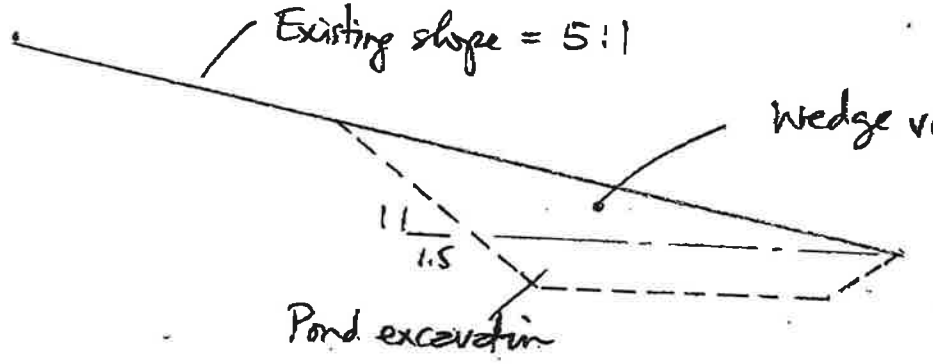
SCALE: 1" = 20'



Wedge volume $= (\frac{1}{2} bh)(L)$
$= (\frac{1}{2})(50)(12)(220)$
$= 66{,}000\ ft^3$
$= 2440\ yd^3$

Total volume of excavated material (available for backfilling shaft) → $(1920\ yd^3 + 2440\ yd^3)$ − topsoil

Topsoil → Assume 1.5' avg depth

$(64\ ft)(220\ ft)(1.5\ ft) = 21{,}120\ ft^3$
$\doteq 780\ yd^3$

Total volume available to backfill shaft $= (1920\ yd^3 + 2440\ yd^3) - 780\ yd^3$
$= \underline{\underline{3580\ yd^3}}$

Required shaft backfill = 20 ft diameter by 450 ft depth
$= 141{,}400\ ft^3$
$= \underline{\underline{5240\ yd^3}}$

Offsite fill needed → $\underline{\underline{1660\ yd^3}}$

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