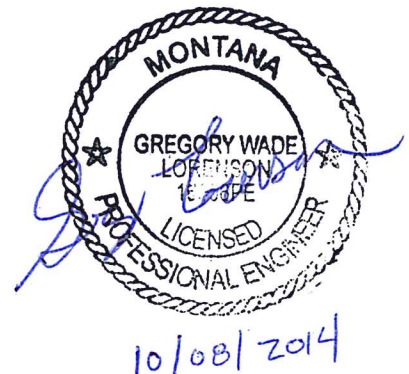

**OTTER CREEK MINE
EXHIBIT 315A - APPENDIX A
PONDS AND EMBANKMENTS
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT**

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LIST OF ATTACHMENTS

ATTACHMENT A	SEDCAD 4 OUTPUT
ATTACHMENT B	SEDIMENT TRAP AND POND CONFIGURATIONS

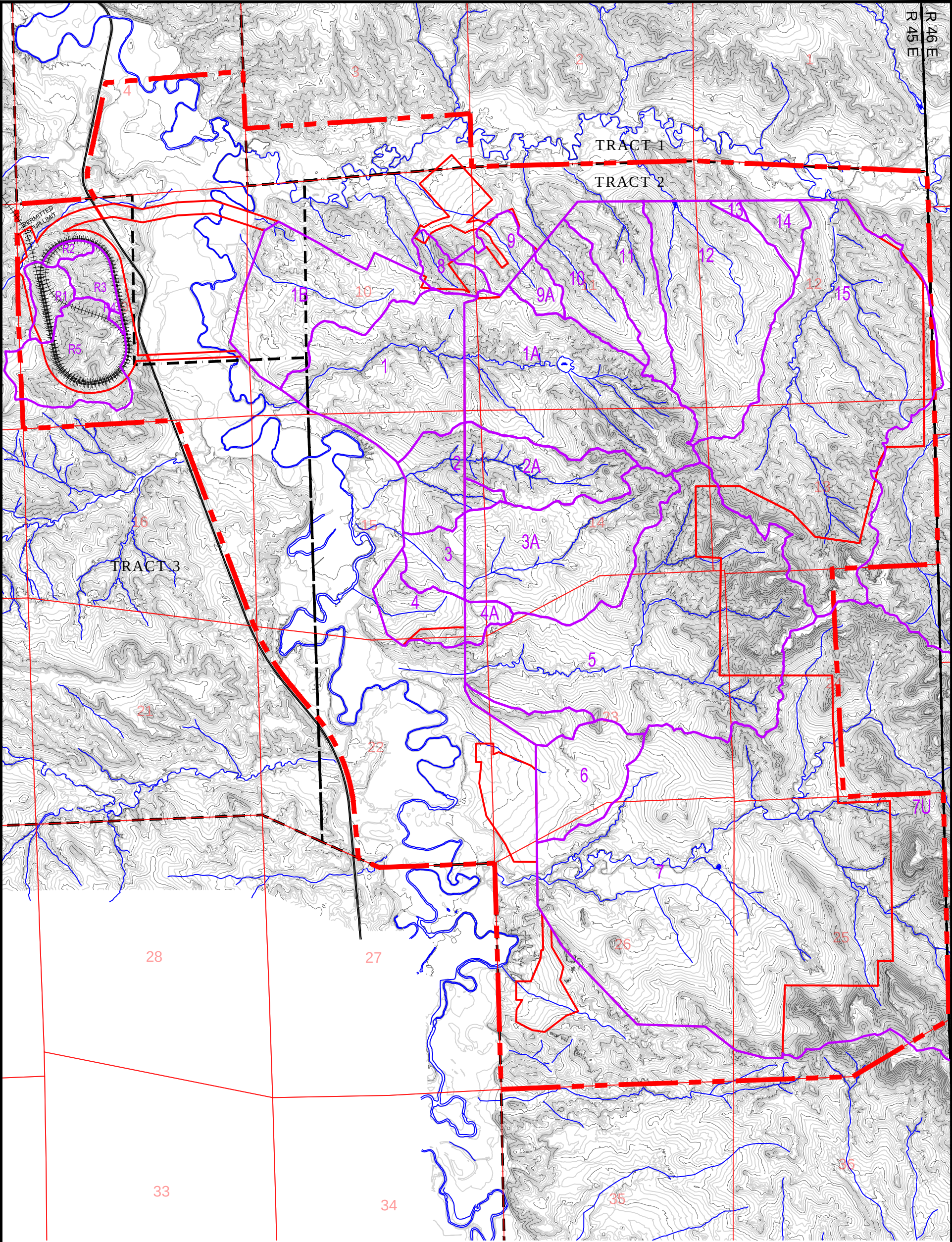
OTTER CREEK MINE
EXHIBIT 315A - APPENDIX A
PONDS AND EMBANKMENTS
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

1.0 PROJECT DESCRIPTION

This report provides guidance for the design of storm water collection ponds that intercept surface runoff and control sediment transport from watersheds impacted by mining activities at the proposed Otter Creek Mine. Areas disturbed by mining, soil storage, overburden stockpiles, and transportation facilities for the proposed Tract 2 area, including the rail loop west of Otter Creek, are addressed in this report. Figure 1-1 shows the pre-mine topography of watersheds discussed in this document.

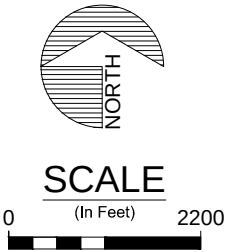
This report's hydrologic analysis addresses runoff from the 10-year, 24-hour storm event on the impacted watersheds. The sedimentology analysis includes average annual sediment yield (AASY) and storm derived sediment yield predictions for these watersheds. Both hydrology and sedimentology analyses for these watersheds were conducted for the existing conditions prior to mining (baseline) at the proposed Otter Creek Mine as well as the operational and post-mining phases. Additional runoff analysis for the 100-year, 24-hour storm was completed for watersheds within the coal removal area. Civil Software Design program SEDCAD 4 (SEDCAD, 1998) was used to model site hydrology and calculate runoff flow and volume as well as sediment yield.

The purpose of these analyses is to model baseline, operational, and post-mining runoff and sediment yield to serve as a basis for design of operational and post-mining storm water controls and in order to demonstrate compliance with 40CFR 434.80 Subpart H, the Effluent



LEGEND:

- | | | | |
|----------------------|-----|--------------------|-----|
| PERMIT BOUNDARY | --- | PRE-MINE WATERSHED | --- |
| TRACT BOUNDARY | --- | | |
| DISTURBANCE BOUNDARY | --- | | |



OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

PRE-MINE TOPOGRAPHY

FIGURE
1-1

Limitation Guidelines and Standards for the Western Alkaline Coal Mining Subcategory (U.S. EPA, 2001).

The report addresses items related to surface runoff from mine-impacted areas that include determination of the rainfall event to be used as a basis for design of surface runoff controls, evaluation of the peak flow and volume of surface runoff that may be generated, evaluation of the average annual sediment yield and storm derived sediment yield, and development of sizing criteria for construction of surface runoff control structures. Design details are included in the appendices of this report. Unless specified otherwise in this report, temporary and permanent erosion and sediment control best management practices will be constructed in accordance with the “State of Montana Department of Transportation Erosion and Sediment Control Best Management Practices” reference manual (MDT, 2004).

2.0 DESIGN SCENARIOS

The storm water runoff and sediment yield of a watershed can reasonably be predicted using standard modeling and analysis techniques based on topography, soil type, and vegetation cover. Modeled storm water runoff and sediment yield for baseline (pre-mining) conditions, operational phases, and post-mine conditions provide a basis for the design of detention, containment, and conveyance structures as part of the overall mine plan. Runoff containment ponds, sediment traps, and conveyance structures will be installed as operational controls during initial soil salvage disturbance and will remain in place until final grading is complete. All sediment ponds will be excavated ponds, identified by the prefix EP- and the watershed number (e.g., EP-1A for the excavated pond within subwatershed 1A). Ditches and culverts are designed to convey the peak storm water flow from a 10-year, 24-hour storm. Once final grading is complete and post-mining topography is established in a watershed, operational sediment ponds will be replaced by reclamation sediment ponds or traps sized to reduce sediment yield to or below baseline conditions, determined by modeling. Modeling presented in this report is also used to determine sediment control structure configurations during the operational and reclamation phases.

2.1 BASELINE CONDITIONS

Pre-mining conditions were modeled by analyzing existing soil, vegetation, and land characteristics and were used as the basis of comparison of runoff and sediment yield expected during reclamation. Soils data was obtained from the Baseline Report 304L (Westech, 2012b) and from the Natural Resource and Conservation Service (NRCS). Vegetation information was obtained from Baseline Report 304J (Westech, 2012a). The results of baseline models are used to demonstrate compliance with Western Alkaline standards once post-mining topography has been established and final grading is complete.

2.2 OPERATIONAL DRAINAGE CONTROL

Operational drainage control will progress dynamically as mining activities advance in order to provide appropriate hydrologic control. The mining sequence as it relates to operational drainage control has been broken up into two phases, as described below.

2.2.1 First Phase of Operational Drainage Control

The first phase of operational drainage control will begin upon disturbance of each watershed, including the construction of roads, the rail loop, and mine facilities or soil stripping. During the first phase of operational drainage control, sediment ponds will be established to contain runoff from the 10-year, 24-hour storm event plus three times the average annual sediment yield for the entire watershed. Watershed boundaries and the locations of first phase of operational drainage control structures are shown on Figure 2-1.

Initial disturbance will begin in watersheds 1, 1B, 2, 3, 4, 8 and 9 during the construction of the roads and mine facilities. Sediment ponds EP-1, EP-1B, EP-2, EP-3, EP-4, EP-8 and EP-9 will be constructed for the first phase of operational drainage control in watersheds 1, 1B, 2, 3, 4, 8 and 9 and will remain in place until final grading is complete. To size the sediment ponds, it was assumed that runoff and sediment from the entire watershed, including subwatersheds 1A, 2A, 3A, 4A and 9A will be captured by these structures. Areas of the watershed downgradient of the mine pit disturbance boundary that will eventually be disturbed as well as portions of watersheds impacted by the construction of the main haul road were modeled in the bare soil condition, while the remaining portions of the watersheds were modeled in the undisturbed condition. It is likely that the areas disturbed during the first phase will be much smaller than those assumed, making the sediment pond sizes calculated in this report conservative.

Watersheds 5, 6, 7, 10, 11, 12, 13, 14 and 15 will initially be disturbed by topsoil stripping ahead of the box cut. As soil stripping crosses the divide into a subsequent watershed, a first phase sediment pond will be excavated in each watershed. To size the sediment ponds, it was assumed that a disturbed area equal to two subsequent years of planned mining



CULVERT _____

PRE-MINE WATERSHED

PHASE ONE OPERATIONAL DRAINAGE CONTROL

2-1

activity within each watershed. For example, if the mining plan indicates a watershed will be disturbed in year six, the entire area impacted in years six and seven is assumed to be bare soil. The remainder of the watershed is modeled in the undisturbed state. This is a likely worst-case scenario before the mining cut affects the watershed. A disturbance area equal to three subsequent years of planned mining activity is assumed in watershed 15 since only a small portion of the watershed is disturbed within the first year of mining. Once soil has been salvaged, excavation of overburden will create a depression in the active mine pit, capturing all runoff from active mine workings in the pit and displacing the first phase sediment ponds.

2.2.1.1 Rail Loop Operational Drainage Control

Sediment ponds in the rail loop area are also designed to contain runoff from the 10-year, 24-hour storm plus three times the average annual sediment yield. The entire drainage area contributing to ponds EP-R1, EP-R2 and EP-R4 is modeled in the disturbed condition. For ponds EP-R3 and EP-R5, the areas impacted by the rail loop, conveyor, and soil stockpile are modeled as bare soil and the remaining drainage area is modeled as undisturbed.

2.2.2 Second Phase of Operational Drainage Control

The second phase of operational drainage control begins after the box cut is established in a watershed, intercepting storm water runoff upgradient of the pit. Pre-mining watersheds 4A and 13 do not include second phase of operational drainage control sediment ponds because runoff from watershed 4A is routed to EP-3A and watershed 13 becomes part of other watersheds as part of the proposed post-mine topography. During initial mining pit development the pit will capture all storm water runoff from the watershed and will need to be dewatered to conduct mining activities. A central sump will be constructed east of the pit to store water pumped from the active mine pit area. The sump storage capacity is based on the predicted pit dewatering volume for one year of mine operation.

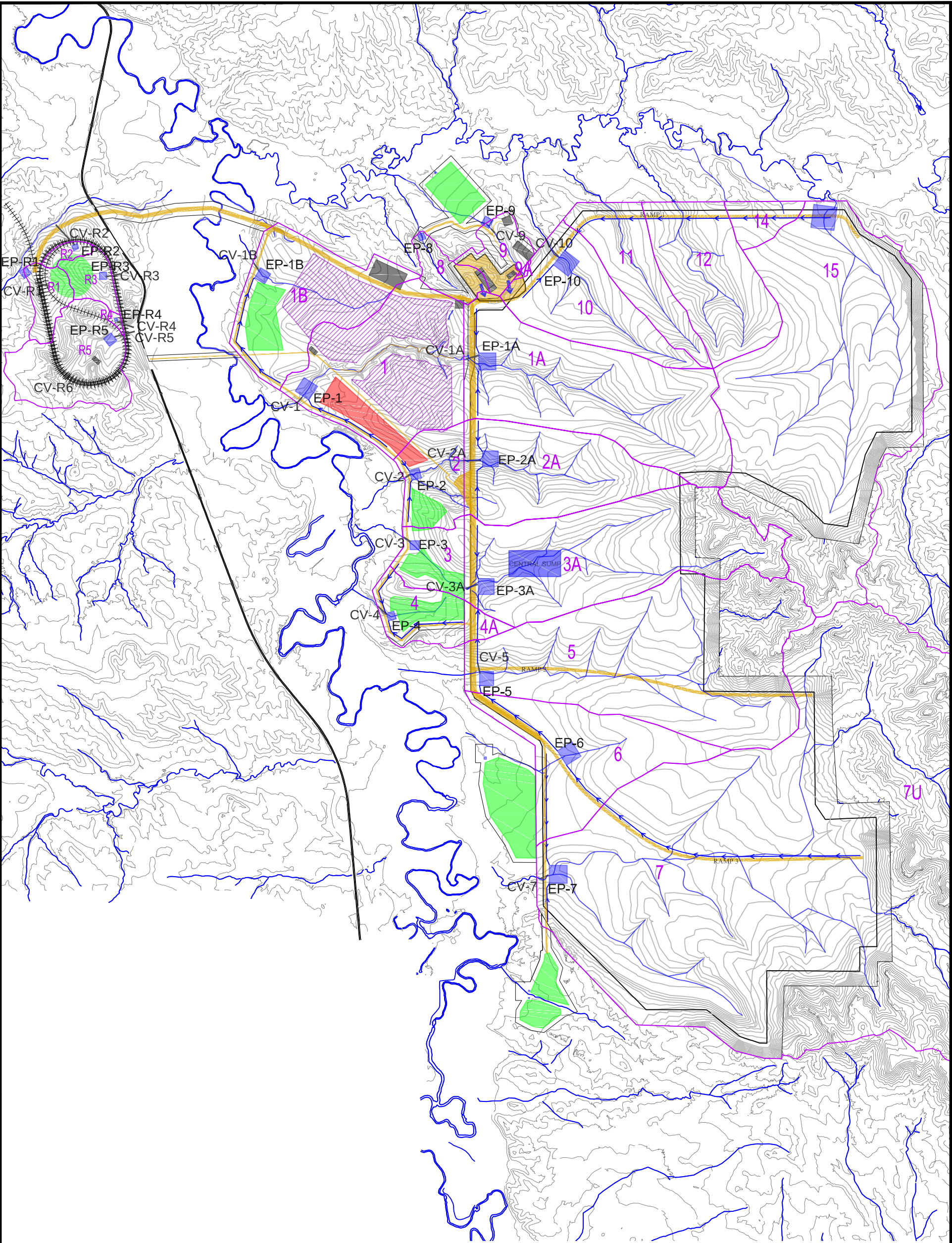
As the box cut advances upgradient and spoils are placed behind (downgradient of) the active cut, new excavated sediment ponds will be established within the former mine cut. These operational sediment ponds will be sized to provide full containment of runoff in the

watershed for all storm events up to and including the 100-year, 24-hour event plus sediment storage equal to three times the average annual sediment yield. Additional capacity is included in several second phase ponds for pit dewatering, replacing the central sump. Watershed boundaries and the location of second phase of operational drainage control structures are shown on Figure 2-2.

The contributing area and disturbance condition used to size second phase operational sediment ponds varies, depending on the mining and reclamation sequence of a given watershed. For most watersheds, the greatest runoff and sediment yield will occur once the final year of mining is completed within the watershed. Watersheds 10, 11, 12, 14 and 15 are managed differently. As the mine cut advances beyond each watershed, runoff from drainages 10, 11, 12 and a portion of 14 will be routed back along Ramp 1 to Pond EP-10 in a ditch sized to convey the peak flow from a 100-year, 24-hour storm. Runoff from watershed 15 and the remainder of watershed 14 will be contained in the pit until final grading. Pond EP-15 will be constructed during final pit closure as drainage is restored.

To simulate the worst-case runoff scenario for each pond, the reclaimed area from the previous three years is modeled as bare soil and the remaining reclaimed area is modeled in fair vegetative condition, since at least two years have passed since regrading was completed. Figure 2-3 shows the worst-case hydrologic conditions used to model operational drainage controls. Based on the proposed mine reclamation plan, a portion of watershed 12 will remain within the mine pit when the worst-case condition exists for pond EP-10.

Implementing the operational drainage controls described will result in zero discharge from the coal removal area unless the 100-year, 24-hour storm runoff volume is exceeded. If storm runoff exceeds the predicted 100-year, 24-hour storm runoff volume, runoff from ponds EP-1A, EP-2A and EP-3A is routed to sediment ponds EP-1, EP-2 and EP-3 before discharging off the mine property boundary at designated outfall locations. Designated outfalls are also located downgradient of ponds EP-7 and EP-10. Potential overflow from EP-6 is routed to EP-5, and during the second operational phase overflow from EP-5 is routed to EP-3A.



LEGEND:

- | | | | |
|----------------|-------|-------------------------|--|
| RAIL LOOP | +++++ | SOIL STORAGE | |
| ROADS | | TEMPORARY SPOIL STORAGE | |
| EXCAVATED POND | | SCORIA STOCKPILE | |
| RUNOFF ROUTING | | POST-MINE WATERSHED | |
| CULVERT | | | |



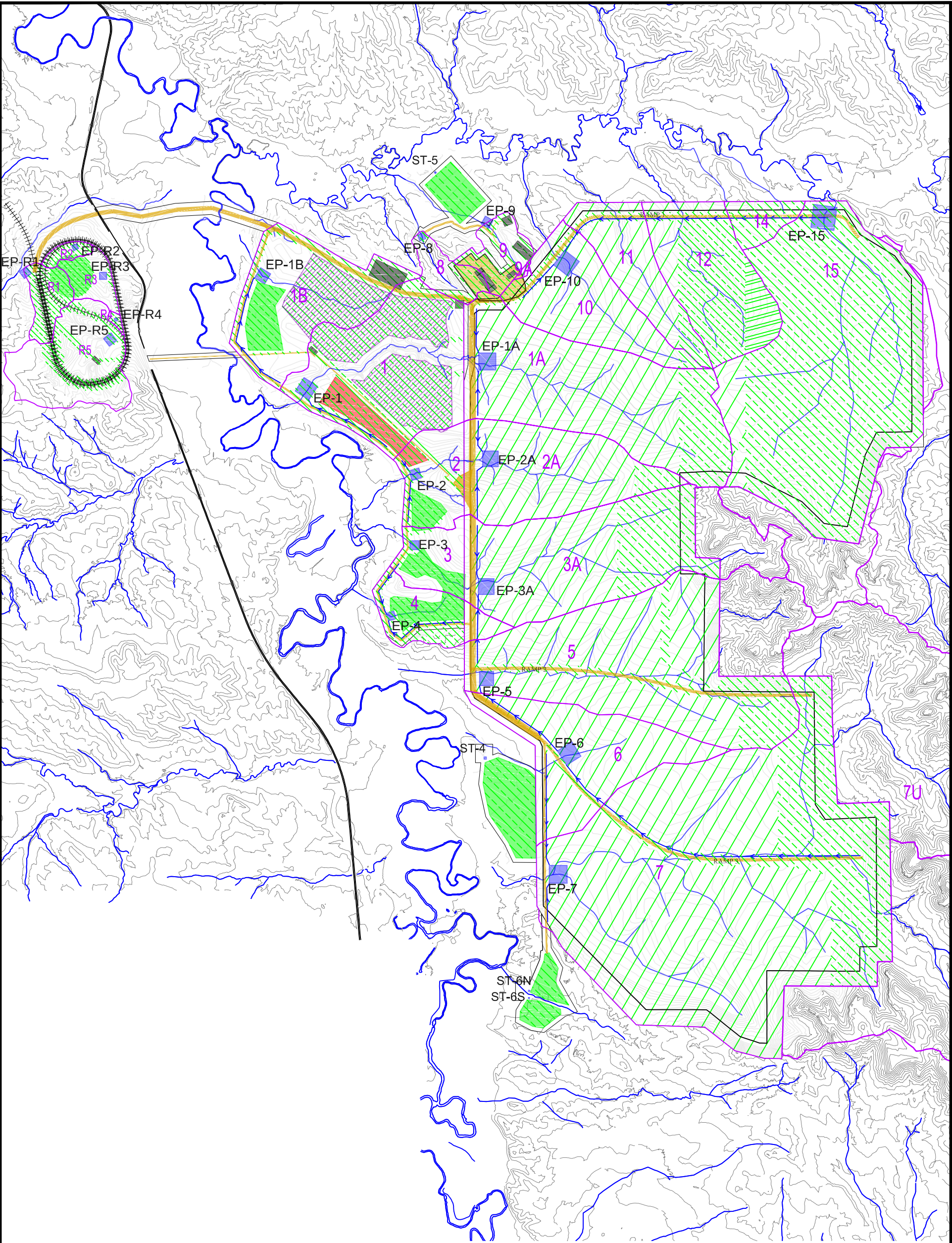
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0 (In Feet) 2200

CONTOUR INTERVALS
10' INSIDE DISTURBANCE BOUNDARY
25' OUTSIDE DISTURBANCE BOUNDARY

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

PHASE TWO OPERATIONAL DRAINAGE
CONTROL

FIGURE
2-2



LEGEND:

- | | | | |
|---------------------|-------|-------------------------------|--|
| RAIL LOOP | +++++ | DISTURBED HYDROLOGIC CONDITON | |
| ROADS | | FAIR HYDROLOGIC CONDITION | |
| EXCAVATED POND | | MINE PIT | |
| RUNOFF ROUTING | | | |
| POST-MINE WATERSHED | | | |



SCALE
0 (In Feet) 2200

CONTOUR INTERVALS
10' INSIDE DISTURBANCE BOUNDARY
25' OUTSIDE DISTURBANCE BOUNDARY

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

PHASE TWO OPERATIONAL
WORST-CASE HYDROLOGIC CONDITION

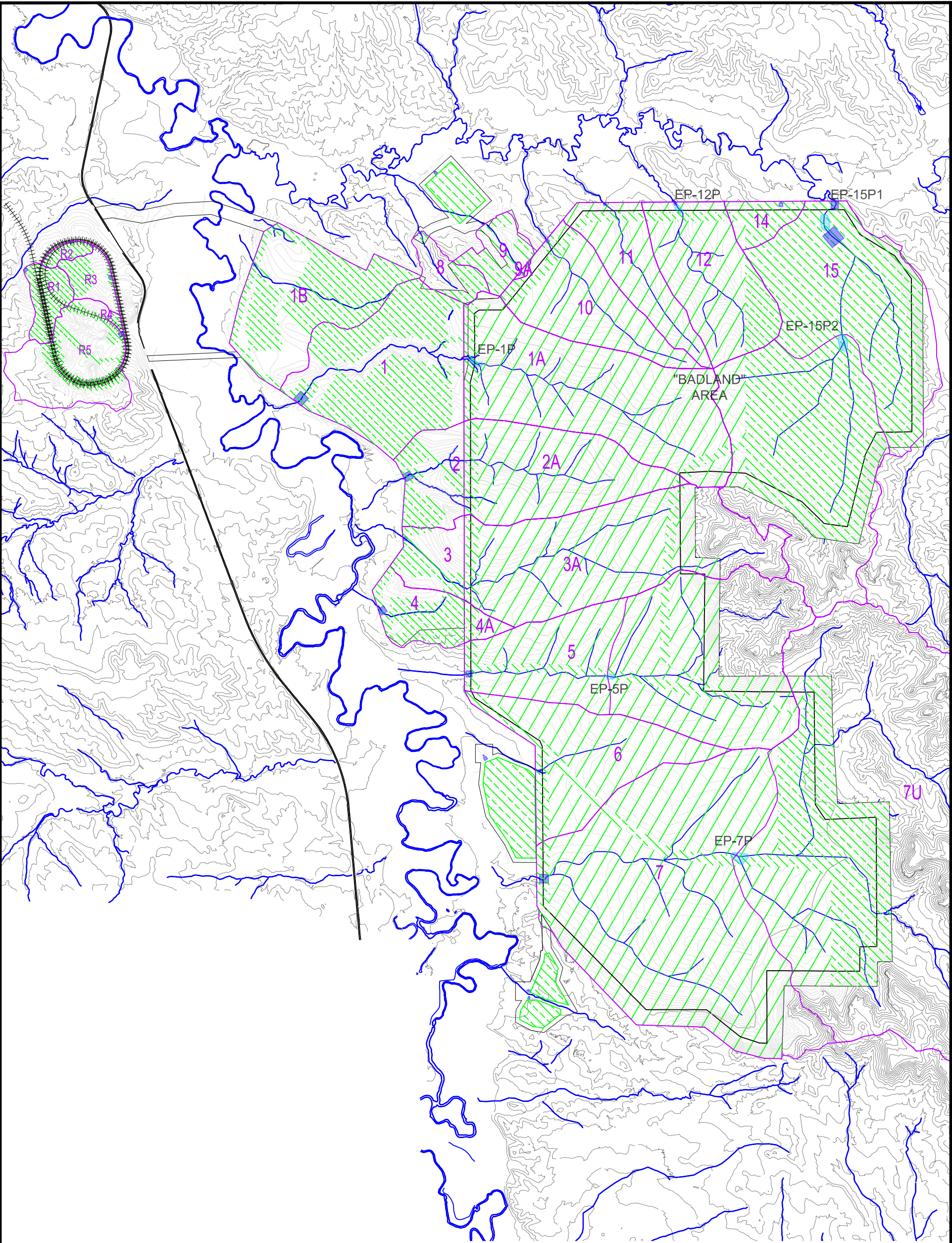
FIGURE
2-3

2.3 WESTERN ALKALINE DRAINAGE CONTROL

During the reclamation phase when final grading is complete within a watershed, sediment pond storage volume will be reduced to three times the average annual sediment yield for the worst-case scenario. In some watersheds, operational sediment ponds will remain in place for one year to allow initial vegetation regrowth before being reduced in size. Similar to the approach used for the second phase operational sediment ponds, the scenario conservatively models any area finish graded in the final three years in each watershed, including haul ramps and stockpiles, as bare soil. The remaining reclaimed area is modeled in fair vegetative condition, since at least two years have passed since regrading was completed. To represent vegetation regrowth, the area reclaimed in the last three years is modeled in poor condition the first year after final grading is complete in the watershed, fair condition the second year, and the entire watershed is modeled in good condition the third year. One exception is the “badland” area in the north end of Tract 2. Because vegetative regrowth will be limited by the steep terrain, this area is modeled in fair condition for the third and subsequent years of reclamation.

In accordance with Western Alkaline effluent limitations, post-mine sediment traps reduce sediment yield from the reclaimed area to or below pre-mining baseline levels while vegetation is reestablished. The effectiveness of sediment traps is validated by modeling disturbed watersheds with sediment traps in place. Final traps will be retained as vegetative and wildlife habitat diversity enhancement features. The traps will have a sediment storage depth of three feet when constructed. They will gradually fill with sediment, providing adequate time for the establishment of vegetation and precluding the need for disturbance in order to reclaim the structures. Post-mine sediment traps and final grading hydrologic condition are shown on Figure 2-4.

Areas in which the only disturbance is from topsoil stockpiles will also be managed to Western Alkaline standards during mine operations and reclamation. Sediment traps at the stockpiles are sized to retain four times the average annual sediment yield.



LEGEND:

- | | | | |
|--------------------------------|---|-------------------------------|---|
| RAIL LOOP | +++++ | DISTURBED HYDROLOGIC CONDTION |  |
| POST-RECLAMATION SEDIMENT TRAP |  | FAIR HYDROLOGIC CONDITION |  |
| PERMANENT POND |  | | |
| POST-MINE WATERSHED | — | | |



SCALE
0 (In Feet) 2200

CONTOUR INTERVALS
10' INSIDE DISTURBANCE BOUNDARY
25' OUTSIDE DISTURBANCE BOUNDARY

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

POST-RECLAMATION HYDROLOGIC
CONDITION AND SEDIMENT CONTROLS

FIGURE

2-4

Perimeter ditches will be constructed to route runoff to sediment traps. Sediment logs or similar sediment control measures will be used to control sediment as necessary until vegetation is established.

2.4 PERMANENT PONDS

Mining will displace six existing ponds within the mine disturbance boundary. Permanent ponds will be constructed during final reclamation to replace the existing ponds. The ponds will provide wetland and riparian habitat in the post-mine topography as well as sediment control during final reclamation. To eliminate the need for an embankment dam, the ponds will be excavated. Each pond will be constructed with 5:1 side slopes and will have a natural footprint that matches the surrounding topography.

Pond storage capacity is based on the runoff from the 2-year, 24-hour storm in the reclaimed hydrologic condition. In addition, each pond will have sediment storage capacity that includes the average annual sediment yield in the final grading condition plus 10 times the average annual sediment yield in the fully reclaimed condition. Permanent ponds will be constructed in ephemeral drainages and will receive water from precipitation runoff. Permanent ponds are shown on Figure 2-4.

3.0 SITE HYDROLOGY

A hydrologic analysis was conducted to model the runoff and sediment yield from undisturbed, operational, and reclaimed lands. Based on the inputs discussed below, SEDCAD 4 models for each drainage area are used to estimate runoff and sediment yield for the baseline, operational, and reclamation conditions.

3.1 PRECIPITATION

Rainfall data from National Oceanic & Atmospheric Administration (NOAA, 1973) Atlas 2, published by the National Weather Service, was used to determine precipitation quantities for 10-year, 24-hour and 100-year, 24-hour precipitation events. Total cumulative rainfalls of 1.3 inches for a 2-year, 24-hour storm, 2.1 inches for a 10-year, 24-hour storm and 3.3 inches for a 100-year, 24-hour storm were obtained from the NOAA Atlas 2. The U.S. Soil Conservation Service's (SCS, 1973) Type II Storm Distribution was used to determine rainfall intensity.

3.2 STORM RUNOFF

In addition to precipitation, prediction of basin runoff in the SEDCAD 4 model requires calculation of the drainage area, the weighted soil-cover complex curve number, and the time of concentration for each drainage.

3.2.1 Drainage Area

Pre-mining and post-mining drainage areas of each of the 15 watershed areas within the mining area are listed in Table 3-1. Pre-mining drainage areas were used to calculate baseline sediment yield and the first phase of operational sediment ponds. Post-mining drainage areas were used to design the second phase operational sediment ponds and post-mining ponds and sediment control structures. Disturbed soils were considered to be any area of bare soil, whether it is during mining or during soil replacement, soil preparation and seeding.

TABLE 3-1
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
DRAINAGE AREAS

Drainage	Pre-Mining Drainage Area (acres)	Post-Mining Drainage Area (acres)
1	245.5	251.9
1A	328.6	335.6
1B	199.8	186.8
2	70.2	72.3
2A	121.4	192.1
3	46.5	51.4
3A	247.3	341.9
4	62.0	60.4
4A	17.0	----
5	657.8	498.3
6	108.7	189.9
7	2093.1	2038.2
8	30.6	32.5
9	40.2	1.4
9A	23.2	40.9
10	78.5	147.8
11	106.3	101.6
12	285.6	166.0
13	4.7	----
14	35.1	31.0
15	651.6	715.6
R1	30.9	30.9
R2	9.0	9.0
R3	26.7	26.7
R4	2.2	2.2
R5	117.6	117.6
SS4	47.9	47.9
SS5	22.0	22.0
SS6N	11.2	11.2
SS6S	9.8	9.8

3.2.2 Curve Numbers

Curve Numbers for undisturbed (baseline), disturbed, and reclaimed land were assigned in accordance with the results of a detailed baseline soils and vegetation investigations conducted by Westech Environmental, Inc. and are listed in Table 3-2. Each disturbance state (undisturbed, disturbed, and subsequent reclamation years) required further analysis in order to calculate an appropriate weighted curve number.

A weighted curve number for undisturbed conditions was calculated for each drainage by first using the Soils Baseline Report to determine the proportion of hydrologic soil types (A, B, C or D) present in the drainage (Westech, 2012b). The Baseline Vegetation Inventory of the area was used for undisturbed curve numbers to determine the proportion of ground cover types present atop each soil type (Westech, 2012a). Ground cover types used in this analysis included Agricultural land (SR + CR good), rangeland (poor, <50% cover), rangeland (fair, 50-75% cover), rangeland (good, >75% cover), brush (fair, 50-75% cover), woods (poor, <50% cover woods, (fair, 50-75% cover), and woods (good, >75% cover). The weighted curve numbers for the undisturbed condition are presented in Table 3-3.

A weighted curve number for disturbed and reclamation conditions was calculated for each drainage by weighting the curve numbers presented in Table 3-2 for the hydrologic soil types present in the drainage prior to mining. It is assumed that soils removed from these drainages during topsoil stripping will be mixed and will therefore be a blend of soil types originally found in the area. The weighted curve numbers for disturbed and reclaimed watersheds presented in Table 3-3 were used in the SEDCAD 4 model.

3.2.3 Time of Concentration

Time of concentration was calculated for each drainage by combining the lag time for overland flow and the time for channel flow within each drainage. In areas without channels, the time of concentration is based only on the lag time for overland flow. The channel flow length and slope were assumed to be the length or slope of a defined stream channel within a watershed and were measured from a topographic map for pre-mining conditions

TABLE 3-2
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
CURVE NUMBERS

	Hydrologic Soil Group			
Undisturbed Areas	A	B	C	D
Agricultural Land (SR+CR good)	64	75	82	85
Rangeland (poor, <50% cover)	64	75	82	85
Rangeland (fair, 50-75% cover)	49	69	79	84
Rangeland (good, >75% cover)	39	61	74	80
Brush (fair, 50-75% cover)	35	56	70	77
Woods (poor, <50% cover)	57	73	82	86
Woods (fair, 50-75% cover)	43	65	76	82
Woods (good, >75% cover)	32	58	72	79
Disturbed Areas				
Bare	77	86	91	94
Reclaimed Areas				
Poor (<50% cover)	68	79	86	89
Fair (50-75% cover)	49	69	79	84
Good (>75% cover)	39	61	74	80

TABLE 3-3
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
WEIGHTED CURVE NUMBERS

Watershed	Undisturbed	Disturbed/Reclaimed Condition			
		Bare	Poor	Fair	Good
1	74.1	91.2	85.5	78.7	73.3
1A	74.1	91.2	85.5	78.7	73.3
1B	74.1	91.2	85.5	78.7	73.3
2	72.1	91.6	86.0	79.5	74.3
2A	72.1	91.6	86.0	79.5	74.3
3	63.3	88.5	82.2	73.8	67.1
3A	63.3	88.5	82.2	73.8	67.1
4	62.4	88.2	81.8	73.1	66.2
4A	62.4	----	----	----	----
5	67.5	89.6	83.6	75.8	69.7
6	67.6	89.7	84.0	76.3	70.4
7	70.0	89.7	84.1	76.4	70.5
8	62.8	88.1	81.6	72.9	65.9
9	73.5	92.6	87.2	81.3	76.6
10	74.6	92.7	87.4	81.6	77.0
11	69.8	91.0	85.3	78.4	72.9
12	73.2	92.4	87.0	81.0	76.2
13	56.0	----	----	----	----
14	66.4	89.7	83.6	75.9	69.7
15	74.7	92.3	87.1	80.9	76.2
Rail Loop	74.1	91.2	85.5	78.7	73.3
SS4	70.0	89.7	84.1	76.4	70.5
SS5	73.5	92.6	87.2	81.3	76.6
SS6	70.0	89.7	84.1	76.4	70.5

(Figure 1-1) and the proposed post mining topography map (Figure 2-2). Overland flow length and slope were determined by measuring the longest length and elevation change within a watershed from the edge of the drainage to the point where water would enter the channel described above or exit the mine disturbance boundary. The time of concentration calculation for channel flow was determined using the SEDCAD 4 software, and overland flow was calculated using the NRCS watershed lag method. A separate time of concentration was calculated for the upper portion of watershed 7 that remains undisturbed (7U). Table 3-4 presents the time of concentration values used in the SEDCAD 4 model.

TABLE 3-4
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
TIME OF CONCENTRATION VALUES

Watershed	Undisturbed	Disturbed/Reclaimed			
		Bare	Poor	Fair	Good
1	0.62	0.45	0.50	0.57	0.63
1A	0.50	0.45	0.49	0.54	0.59
1B	0.30	0.21	0.24	0.27	0.31
2	0.15	0.10	0.11	0.13	0.14
2A	0.25	0.41	0.46	0.52	0.57
3	0.32	0.19	0.22	0.26	0.30
3A	0.64	0.47	0.50	0.56	0.61
4	0.38	0.20	0.24	0.30	0.35
4A	0.30	----	----	----	----
5	0.74	0.56	0.58	0.60	0.61
6	0.30	0.42	0.50	0.61	0.70
7	1.17	0.76	0.78	0.81	0.83
7U	0.32	----	----	----	----
8	0.12	0.09	0.10	0.11	0.11
9	0.23	0.03	0.04	0.05	0.05
9A	0.13	0.10	0.11	0.12	0.13
10	0.38	0.38	0.43	0.50	0.55
11	0.65	0.39	0.47	0.56	0.64
12	0.61	0.33	0.37	0.42	0.47
13	0.25	----	----	----	----
14	0.39	0.11	0.13	0.17	0.19
15	0.77	0.71	0.74	0.77	0.79
R1	0.15	0.09	0.11	0.13	0.15
R2	0.08	0.05	0.06	0.07	0.08
R3	0.10	0.07	0.08	0.09	0.10
R4	0.07	0.04	0.05	0.06	0.07
R5	0.32	0.22	0.25	0.29	0.32
SS4	0.73	0.39	0.47	0.61	0.71
SS5	0.42	0.22	0.27	0.33	0.39
SS6N	0.26	0.14	0.17	0.22	0.26
SS6S	0.28	0.15	0.18	0.23	0.27

4.0 SEDIMENTOLOGY

The total amount of sediment that is liberated and transported from a watershed due to runoff is based on the soil type within the basin (erodibility factor (K)), the length and slope of overland flow (LS Factor), and the influence of cover material within the basin (C Factor). Based upon soils data for this area from the NRCS soil database, the following particle size distribution was used in the SEDCAD 4 model:

Particle Size (mm)	% Finer
4.76	100
2	100
0.42	85
0.074	75
0.003	0

4.1 ERODIBILITY FACTOR (K)

Soil's resistance to detachment and mobility by rainfall during a storm event affects the amount of soil that will be eroded from a basin. Soil erodibility factors (K factors) for each soil group were provided in the soil data obtained from the Soils Baseline Report (Westech, 2012b). K factors for soil types in this area ranged from 0.17 to 0.49. A baseline weighted average K factor was calculated based on the percentage of each soil type in the watershed prior to mining. Pre-mine K factors are shown in Table 4-1. During reclamation, K factors for individual drainages may change because surface soils will be mixed and blended during mining. Therefore, for the purposes of this modeling effort, a SEDCAD 4 derived K factor of 0.32 (silty clay or clay loam) was used for the mining and reclamation phases. This value is in close agreement with the site-wide pre-mine average K factor of 0.30.

TABLE 4-1
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
WEIGHTED UNDISTURBED K FACTORS

Pond	Weighted K Factor
1	0.30
1A	0.30
1B	0.30
2	0.34
2A	0.34
3	0.35
3A	0.35
4	0.36
4A	0.36
5	0.31
6	0.41
7	0.29
8	0.26
9	0.31
10	0.26
11	0.26
12	0.28
13	0.24
14	0.23
15	0.27
Rail Loop	0.29
SS4	0.41
SS5	0.31
SS6	0.29

4.2 C FACTOR

The cover material on the ground influences the C factor used in the SEDCAD model. For the undisturbed watershed, a weighted average C factor was calculated based upon the portion of the drainage vegetated with the ground cover materials listed in Table 4-2. The weighted average C factors for each drainage are presented in Table 4-3. Table 4-4 lists the C factors used for the other disturbance states, including disturbed (bare soil), first, second and subsequent years of reclamation revegetation. C factors for all conditions were obtained from the documentation included in the SEDCAD 4 model.

4.3 LS FACTOR

The length and slope of overland flow contribute to the LS Factor calculated by the SEDCAD 4 program. The LS factor is used to incorporate the effect topography has on sediment transport within a drainage. Input parameters for the SEDCAD model are the representative slope and representative length. An average representative slope and representative length for each watershed was found by measuring multiple lengths and slopes from the topographic map within each drainage. Table 4-5 presents the representative slopes and lengths for pre- and post-mining topography.

TABLE 4-2
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
C FACTORS FOR UNDISTURBED AREAS

Ag (SR+CR Good)	Range (Fair)	Range (Poor)	Brush (Fair)	Woods (Poor)	Woods (Fair)	Woods (Good)
0.013	0.07	0.13	0.038	0.09	0.04	0.008

TABLE 4-3
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
WEIGHTED UNDISTURBED C FACTORS

Pond	Weighted C-Factor
1	0.051
1A	0.051
1B	0.051
2	0.046
2A	0.046
3	0.039
3A	0.039
4	0.040
4A	0.040
5	0.039
6	0.039
7	0.046
8	0.038
9	0.038
10	0.039
11	0.039
12	0.039
13	0.038
14	0.038
15	0.040
Rail Loop	0.050
SS4	0.039
SS5	0.038
SS6	0.046

TABLE 4-4
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
DISTURBED AND RECLAIMED C FACTORS

	C Factor	% Ground Cover
Disturbed		
Bare Soil	0.45	0
Reclaimed		
1st Yr Revegetation	0.10	<50%
2nd Yr Revegetation	0.042	50% - 75%
3rd Yr Revegetation	0.020	>75%

TABLE 4-5
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
LS FACTORS

	Pre-Mine		Disturbed/Reclaimed	
Drainage	Slope (%)	Length (Ft)	Slope (%)	Length (Ft)
1	7.7	990	7.7	990
1A	12.3	760	7.2	907
1B	5.2	721	5.2	721
2	17.0	372	17.0	372
2A	14.5	786	7.1	973
3	9.6	759	9.6	759
3A	11.4	959	11.1	991
4	10.0	841	10.0	841
4A	10.5	723	----	----
5	12.0	998	9.7	819
6	8.0	986	3.1	976
7	13.5	881	8.5	867
7U	23.8	854	23.8	854
8	18.0	233	18.0	233
9	7.3	703	12.6	238
9A	11.7	300	11.7	300
10	8.2	895	4.6	925
11	7.4	864	5.0	952
12	9.9	984	6.0	851
13	6.4	350	----	----
14	9.5	777	7.0	589
15	16.4	808	15.6	936
R1	12.0	624	12.0	624
R2	11.3	354	11.3	354
R3	9.8	266	9.8	266
R4	11.7	281	11.7	281
R5	6.6	906	6.6	906
SS4	3.0	1225	3.0	1225
SS5	3.3	1257	3.3	1257
SS6N	5.0	780	5.0	780
SS6S	4.4	779	4.4	779

5.0 AVERAGE ANNUAL SEDIMENT YIELD

The average annual R method can be used to determine the average annual sediment yield from SEDCAD storm derived results. Based on the ratio of the average annual R factor to the calculated R storm value in SEDCAD, the average annual sediment yield can be calculated from the storm sediment yield using the following equation:

$$AASY = Y * (S * (R_a/R_s))$$

Where AASY = the average annual sediment yield, Y = number of years, S = predicted storm sediment yield, R_a = R annual factor, and R_s = the R storm value. SEDCAD calculates the R storm value as a function of the rainfall amount and storm distribution. The 10-year, 24-hour storm event was used for sediment yield calculations. The SEDCAD 4 derived R storm value for the 10-year, 24-hour storm is 21.00. The average annual R factor is equal to 19, derived from the United States Department of Agriculture Isoerodent Maps included in the SEDCAD documentation. In order to convert tons of sediment predicted by the model into a volume for pond sizing, a density of 93.6 pounds per cubic foot is assumed for sediment retained in ponds and traps.

6.0 OPERATIONAL DRAINAGE AND SEDIMENT CONTROL

As discussed in Section 2, operational drainage control will be established prior to mining during soil salvage and facility construction and will remain in place until final grading is complete and post-mining topography is established. The Civil Software Design SEDCAD 4 model was used for peak flow, runoff volume, and sediment yield predictions using the parameters discussed in Sections 3 and 4. Attachment A contains the output files generated from the SEDCAD model runs.

6.1 FIRST PHASE OF OPERATIONAL DRAINAGE CONTROL

Operational drainage controls will be established concurrently with initial soil salvage in each watershed. In the first phase of operational drainage control, sediment ponds will be constructed to contain runoff from the 10-year, 24-hour storm event plus three times the average annual sediment yield. The size of first phase operational sediment traps is based on pre-mining drainage acreage, topography, and configuration. First phase operational sediment traps capture all runoff and sediment during a 10-year, 24-hour storm, making the sediment trap efficiency 100% and preventing any discharge for storms up to the 10-year, 24-hour event.

The watersheds initially impacted are 1, 1B, 2, 3, 4, 8 and 9. During construction of the rail loop watersheds R1, R2, R3, R4 and R5 will be impacted and sediment ponds will be constructed. Sediment ponds will later be constructed in watershed 9A, 10, 11, 12, 13, 14 and 15 when soil stripping activities impact those drainages ahead of the mine pit. As described in Section 2, sediment ponds are sized by making conservative assumptions for the disturbed area within each watershed. The only size requirement for operational sediment traps is, the storage volume and dimensions can be tailored for each site. Table 6-1 provides the required operational sediment trap volumes for the first phase operational sediment ponds and their locations are shown on Figure 2-1.

TABLE 6-1
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
FIRST PHASE OPERATIONAL DRAINAGE CONTROL SEDIMENT PONDS

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-1	574.2	206.0	368.2	147.3	27.14	1.61	31.98
EP-1B	199.8	141.5	58.3	131.6	13.48	0.70	15.59
EP-2	191.7	47.6	144.1	65.0	8.12	0.92	10.89
EP-3	310.8	40.4	270.4	24.9	5.25	0.33	6.25
EP-4	62.0	48.8	13.2	35.5	3.54	0.40	4.75
EP-5	657.8	109.4	548.4	77.8	18.57	1.64	23.49
EP-6	108.7	41.2	67.5	37.3	4.22	0.29	5.10
EP-7	2093.1	35.2	2057.9	152.3	40.93	1.24	44.64
EP-8	30.6	12.5	18.1	15.5	1.28	0.14	1.70
EP-9	63.5	27.8	12.4	42.0	4.09	0.30	5.01
EP-9A	23.2	23.2	0.0	31.3	2.65	0.16	3.15
EP-10	78.5	16.8	61.7	25.3	3.26	0.13	3.65
EP-11	106.3	16.3	90.0	15.4	2.99	0.09	3.27
EP-12	285.6	43.4	242.2	58.2	9.90	0.48	11.33
EP-13	4.7	4.7	0.0	4.7	0.36	0.01	0.40
EP-14	35.1	31.6	3.5	25.5	2.50	0.24	3.24
EP-15	651.6	39.5	612.1	88.6	20.64	0.72	22.81
EP-R1	30.9	30.9	0.0	39.5	3.26	0.46	4.62
EP-R2	9.0	9.0	0.0	11.5	0.95	0.07	1.17
EP-R3	26.7	13.9	12.8	23.7	1.89	0.08	2.12
EP-R4	2.2	2.2	0.0	2.8	0.23	0.00	0.24
EP-R5	117.6	32.9	84.7	43.8	5.04	0.19	5.60

6.2 SECOND PHASE OF OPERATIONAL DRAINAGE CONTROL

The second phase of operational drainage control begins after the box cut is established in the coal removal area, as described in Section 2. Initially, a central sump will be constructed ahead of the box cut for pit dewatering storage. The central sump will be constructed when the mine pit is opened and prior to construction of the second phase operational sediment ponds. Pit water will be pumped to the sump until the pit has advanced to the point that sediment ponds can be constructed behind the pit, which is planned in the third year of mine operation. As the box cut advances and spoils are placed behind the active cut, second phase sediment ponds will be constructed to contain runoff, sediment, and pit water.

The central sump capacity is based on an average pit dewatering rate of 300 gallons per minute for 12 months, or 484 acre-feet, with the following reductions. Pit water will be used for road dust control at an estimated rate of 100,000 gallons per day for 200 days each year, for a total of 61 acre-feet of water use annually. Evaporation is estimated at 38 inches per year; therefore, based on a mid-depth surface area of 14 acres, the sump will lose 44 acre-feet per year to evaporation. The resulting designed storage capacity of the central sump is 379 acre-feet, which ignores infiltration losses.

In the second phase of operational drainage control, sediment ponds will be constructed to contain runoff from the 100-year, 24-hour storm plus three times the average annual sediment yield. The size of second phase operational sediment traps is based on post-mining drainage acreage, topography, and configuration in a worst-case hydrologic condition. Ponds EP-1A, EP-2A, EP-3A and EP-10 include an additional storage capacity of 32 acre-feet each, providing storage for approximately one month worth of pit water each. Ponds EP-5 and EP-6 do not include extra capacity for pit water storage. However, potential overflow from EP-5 and EP-6 is routed to EP-3A, so pit water may be pumped to these ponds as long as the total volume of pit water stored in all three ponds is no more than 32 acre-feet. Pit water will not be pumped to pond EP-7, and EP-15 will be constructed after final pit closure. Second phase operational sediment traps capture all runoff and sediment during a 100-year, 24-hour storm, making the sediment trap efficiency 100% and preventing any discharge for storms up

to the 100-year, 24-hour event. Table 6-2 provides the required volumes for the second phase operational sediment ponds, and their locations are shown on Figure 2-2.

Runoff from the area of watershed 7 north of Ramp 3 will be routed to EP-6, and runoff from the area of watershed 6 south of Ramp 3 will be routed to EP-7. Runoff from watersheds 10, 11, 12 and a portion of 14 will be routed to EP-10. Runoff from watershed 15 and the remainder of watershed 14 will be captured and managed in the pit until the pit is closed and drainage is restored, at which time runoff will be routed to EP-15.

6.3 SEDIMENT POND CONSTRUCTION AND MAINTENANCE

Operational sediment ponds will be excavated with a minimum storage capacity as shown in Tables 6-1 and 6-2. Storage capacity is measured to the bottom of an incised spillway, which will be constructed to allow for controlled discharge to the downstream channel in the event discharge occurs. Although spillways are not required on excavated ponds their construction will ensure that storm water flows greater than the design capacity of the pond is managed and routed without causing additional erosion or damage to the pond. The spillways have been designed to be one foot deep and are modeled as broad-crested weirs with a discharge coefficient of 3.1. Spillways are designed to pass the flow from a 10-year, 24-hour storm event when the pond is completely full. Ponds will be unlined with 3(H):1(V) side slopes. First phase sediment pond depths will range from 3 to 12 feet, and preliminary designs for second phase ponds are 30 feet deep. Since the only size requirement for operational sediment traps is the storage volume and side slope stability, pond dimensions (length and width) can be tailored for each site. Sediment must be removed from ponds when it exceeds 60% of the designed sediment storage depth in accordance with ARM 17.24.639(6). Preliminary maximum sediment storage depth and minimum spillway width for each pond is identified in Table 6-3, and Attachment B includes design information for individual ponds. Upon completion of construction, ponds will be surveyed as-built to verify the volume, establish a stage storage curve, and provide guidance as to when ponds need to be pumped out and/or sediment removed.

TABLE 6-2
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
SECOND PHASE OPERATIONAL DRAINAGE CONTROL SEDIMENT PONDS

Pond	Worst-Case Year	Drainage Area (acres)	Disturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-1A	16	324.3	63.4	242.5	34.10	0.37	32.0	67.22
EP-2A	14	183.1	13.5	152.8	18.45	0.08	32.0	50.69
EP-3A	13	342.9	94.6	198.2	29.23	1.19	32.0	64.81
EP-5	18	493.3	89.6	242.9	42.85	0.64	-	44.76
EP-6	20	1111.9	159.7	495.7	86.95	0.58	-	88.69
EP-7	20	1086.6	118.9	501.7	88.68	0.95	-	91.53
EP-10	19	426.7	174.0	372.6	49.47	0.86	32.0	84.06
EP-15	21	746.6	589.3	633.6	110.13	15.73	-	141.58

TABLE 6-3
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
OPERATIONAL DRAINAGE CONTROL SEDIMENT POND DETAILS

Pond	Drainage Control Phase	Pond Depth (ft)	Design Discharge (cfs)	Minimum Spillway Width (ft)	Maximum Sediment Storage Depth (ft)
EP-1	First	12	147.3	48	1.3
EP-1B	First	12	131.6	42	1.3
EP-2	First	12	65.0	21	2.5
EP-3	First	8	24.9	8	1.0
EP-4	First	8	35.5	11	1.6
EP-5	First	12	77.8	25	1.9
EP-6	First	6	37.3	12	0.7
EP-7	First	12	152.3	49	0.7
EP-8	First	4	15.5	5	0.7
EP-9	First	6	42.0	14	0.8
EP-9A	First	6	31.3	10	0.7
EP-10	First	6	25.3	8	0.5
EP-11	First	6	15.4	5	0.4
EP-12	First	10	58.2	19	1.0
EP-13	First	3	4.7	2	0.2
EP-14	First	6	25.5	8	1.0
EP-15	First	12	88.6	29	0.9
EP-R1	First	6	39.5	13	1.3
EP-R2	First	4	11.5	4	0.6
EP-R3	First	4	23.7	8	0.3
EP-R4	First	4	2.8	1	0.2
EP-R5	First	6	43.8	14	0.4
EP-1A	Second	30	100.9	33	18.6
EP-2A	Second	30	55.2	18	22.7
EP-3A	Second	30	78.1	25	19.8
EP-5	Second	30	93.9	30	1.8
EP-6	Second	30	160.3	52	0.6
EP-7	Second	30	168.1	54	1.0
EP-10	Second	30	174.9	56	15.8
EP-15	Second	30	336.3	108	5.7

Spillway discharge $Q = CLH^{1.5}$

6.4 SOIL STOCKPILE AREAS

Topsoil stockpiles located in areas that do not report to other sediment controls are managed under Western Alkaline effluent limitation guidelines. The four stockpiles meeting this description in Tract 2 are SS4, SS5, SS6N (north) and SS6S (south) and are shown on Figure 2-1. Soil stockpiles will be seeded with temporary vegetation, but for modeling purposes the entire stockpile is considered in the bare soil condition as a worst-case scenario.

Runoff from these stockpiles will be managed by perimeter ditches and sediment traps. Sediment logs or similar sediment control measures will be utilized around stockpiles disturbance boundary as necessary. Sediment traps are sized to retain four times the average annual sediment yield from the bare soil condition. Typical sediment trap configuration is shown in Attachment B. Sediment logs or similar sediment control measures will be installed at the sediment trap outlet to further reduce sediment transport. Sediment will be removed from traps when less than one foot of storage depth remains. Table 6-4 presents model results for the soil stockpiles and required sediment trap volumes. Model output is included in Attachment A. Section 8 discusses sediment control after stockpiles are removed during final reclamation.

TABLE 6-4
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
OPERATIONAL SOIL STOCKPILE SEDIMENT TRAPS

Stockpile	Undisturbed AASY (tons/acre/year)	Stockpile with Silt Fence AASY (tons/acre/year)	Stockpile with BMPs AASY (tons/acre/year)	Sediment Trap Volume (acre-feet)	Sediment Trap Surface Area (acres)
SS4	0.04	1.72	0.03	0.161	0.075
SS5	0.07	1.00	0.02	0.043	0.026
SS6N	0.09	1.87	0.02	0.041	0.025
SS6S	0.09	1.35	0.07	0.026	0.018

7.0 DRAINAGE CONTROL CONVEYANCE STRUCTURES

During the operational phase of mining, ditches and culverts will be constructed to convey potential runoff to sediment ponds and outfalls.

7.1 CULVERTS

Culverts are used to convey flow under roadways and the railroad loop. Culverts are identified by the CV- prefix and are shown on Figures 2-1 and 2-2 and mine Map 11. Culvert capacity, with the exception of the Otter Creek Crossing, is based on the anticipated peak runoff from a 10-year, 24-hour storm event in accordance with ARM 17.24.605(4). Required culvert capacity was based on the largest peak 10-year, 24-hour storm water flow from either the first phase (pre-mine watershed configuration) or second phase (post-mine watershed configuration) watershed modeling. In most cases sediment ponds upstream of culverts will contain runoff from either the 10-year or 100-year, 24-hour storm, depending on the mining phase, but culverts are nevertheless included to convey runoff exceeding pond capacities under road embankments. Culverts will be used as sampling points for outfalls in the event discharge occurs. Table 7-1 compares peak flows for the two design scenarios, including routing runoff from multiple watersheds where applicable. Runoff is routed through second phase operational sediment ponds with the conservative assumption that only two feet of freeboard are available in each pond prior to the 10-year, 24-hour storm event. Routing through first phase operational sediment ponds is ignored, assuming that the pond is completely full and all runoff is conveyed by the culvert.

The maximum flows from Table 7-1 and existing drainage topography were used to determine culvert sizes. All culverts were modeled as corrugated metal pipe (CMP) with a Manning's n of 0.024, typical of annular ½-inch CMP for all diameters (AIS, 1980). The exception is the Otter Creek crossing on the main access road, which is modeled as three reinforced 96 inches by 48 inches concrete box culverts with a Manning's n of 0.012, typical of finished concrete culverts flowing partially full (Chow, 1959). The Otter Creek crossing is designed to pass a 100-year flood discharge of 818 cfs, which was estimated for the

TABLE 7-1
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
PEAK CULVERT DISCHARGES

Culvert	Peak Discharge (cfs)	
	First Phase	Second Phase
CV-1	147.3	132.4
CV-1A	64.3	34.5
CV-1B	131.6	131.6
CV-2	65.0	48.0
CV-2A	31.8	5.1
CV-3	24.9	175.0
CV-3A	14.0	178.3
CV-4	35.5	35.5
CV-5	-	166.1
CV-7	-	128.9
CV-9	42.0	42.0
CV-10	-	113.9
CV-R1	39.5	39.5
CV-R2	11.5	11.5
CV-R3	23.7	23.7
CV-R4	2.8	2.8
CV-R5	43.8	43.8
CV-R6	11.2	11.2

downstream Ashland gaging site by the USGS (Parrett, 2004). The maximum flow observed at the Ashland gaging site with a 31-year period of record is 425 cfs (USGS, 2014), which is approximately equal to the 25-year flood discharge. Culvert headwater elevation is limited to two and a half feet above the top of the culvert inlet. For roads with designed profiles, the headwater is also at least three feet below the road elevation. Culvert design data is shown in Table 7-2. Culvert calculations were completed using the HY-8 model (FHWA, 2012). Culvert inlets are modeled with a conventional projecting edge and the outlet channels are modeled as a triangular ditch with a slope matching the culvert.

Culverts CV-5, CV-7, CV-9 and CV-10 cross roads that do not have designed profiles. CV-5 crosses Ramp 2 and routes overflow to EP-3A, CV-7 crosses the drainage control service road at the south end of Tract 2, CV-9 crosses the explosive magazine access road, and CV-10 crosses Ramp 1 as an emergency overflow. Since design information is not available, conservative lengths and slopes were assumed. Culverts CV-5, CV-7 and CV-10 will not need to be constructed until the second operational phase. The shop area will drain directly to watershed 1A, with the road along the south edge of the shop area superelevated to allow flow and precluding the need for a culvert. Culverts at the rail loop have a minimum diameter of 24 inches, based on BNSF requirements for culverts maintained by the customer (BNSF, 2011). Culverts are also discussed in Exhibit 321A – Transportation Facilities.

7.2 CONVEYANCE DITCHES

Roadside ditches include adequate capacity to handle runoff from the 10-year, 24-hour storm event. The main access road and main haul road have been designed with trapezoidal ditches along the shoulders, while the drainage control service roads have been designed with v-ditches along the shoulders. Both ditch configurations will have a depth of three feet and 2(H):1(V) side slopes, and the trapezoidal ditch bottom width is four feet. Manning's equation was used to calculate ditch flow capacity:

$$Q = (1.486/n) A R_h^{2/3} S^{1/2}$$

TABLE 7-2
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
CULVERT DESIGN DATA

Culvert ID	Design Flow (cfs)	Minimum Size (in)	Road Elevation (ft)	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Slope (%)	Headwater Elevation (ft)
CV-1	147.3	60	3064	132	3054.7	3050.0	3.58	3060.9
CV-1A	64.3	42	3133.6	283	3117.0	3105.0	4.24	3121.6
CV-1B	131.6	54	3060.3	169	3050.0	3045.0	2.95	3056.5
CV-2	65.0	42	3088.3	113	3079.0	3075.0	3.56	3083.7
CV-2A	31.8	30	3153.0	419	3111.0	3100.0	2.62	3114.8
CV-3	175.0	60	3095.0	189	3084.4	3080.0	2.33	3091.8
CV-3A	178.3	60	3131.8	277	3116.5	3105.5	3.98	3124.0
CV-4	35.5	30	3083.4	279	3072.9	3065.0	2.83	3077.3
CV-5	166.1	60	-	250	-	-	1.0	-
CV-7	128.9	60	-	200	-	-	0.7	-
CV-9	42.0	36	-	120	-	-	0.7	-
CV-10	113.9	54	-	250	-	-	0.7	-
CV-R1	39.5	36	3134	302	3129.0	3119.9	4.92	3134.0
CV-R2	11.5	24	3134	619	3119.9	3079.2	6.6	3121.9
CV-R3	23.7	24	3134	332	3090.0	3077.4	3.77	3094.3
CV-R4	2.8	24	3134	402	3099.8	3053.9	11.48	3100.6
CV-R5	43.8	36	3134	477	3065.0	3053.8	2.35	3069.0
CV-R6	11.2	24	3134	175	3129.9	3121.2	4.93	3131.8
CV-OC	818	3 box, 96" x 48"	3040.86	192	3025.0	3024.5	0.26	3030.6

The table below shows the capacity of each ditch for a range of slopes, based on a Manning's n of 0.025, which is representative of an excavated channel that is either weathered and clean of vegetation or contains short grass and few weeds (Chow, 1959). Ditches are also discussed in Exhibit 321A – Transportation Facilities.

Slope (%)	V-Ditch Capacity (cfs)	Trapezoidal Ditch Capacity (cfs)	Ramp 1 & 3 Trapezoidal Ditch Capacity (cfs)
0.3	71	140	344
0.5	92	181	444
1	130	256	628
1.5	159	314	769
2	184	362	888

In some cases, ditches will route runoff between watersheds. Specifically, runoff will be routed from watershed 6 to 5 and 5 to 3A after roads are constructed. Conservatively assuming overflow from second phase operational sediment ponds results in worst-case 10-year, 24-hour peak flows of 134 cfs from watershed 6 to 5 and 166 cfs from watershed 5 to 3A. A trapezoidal ditch with a slope greater than 0.4% will therefore be constructed along this section of road. Other ditches will convey much lower 10-year, 24-hour flows from portions of watersheds. For example, peak runoff from the area of watershed 6 south of Ramp 3 routed to pond EP-7 is 5 cfs. The standard ditches are sufficient to convey such flows.

Ditches along Ramp 1 and Ramp 3 will route runoff from the 100-year, 24-hour storm to second phase operational sediment ponds EP-10 and EP-6. The Ramp 1 ditch must convey a peak flow of 315 cfs while the Ramp 3 ditch will route up to 476 cfs. To convey the potential flows, trapezoidal ditches along Ramp 1 and Ramp 3 will have an increased depth of 4.5 feet and a minimum slope of 0.6%. Ditch size may be modified based on the actual slope of constructed ramps.

8.0 RECLAMATION SEDIMENT CONTROL

Western Alkaline standards become applicable in the reclamation phase when final grading is complete. Western Alkaline effluent limitation guidelines require average annual sediment yields at or below the pre-mine baseline levels. In this reclamation phase, operational sediment ponds are reduced in volume when final grading is completed in each watershed.

8.1 BASELINE AND RECLAMATION SEDIMENT YIELD

A baseline model of each watershed estimates average annual sediment yield based on the pre-mine topography, soils, and vegetation conditions. Models of each watershed after final grading is complete are used to compare the reclamation and baseline sediment yields. The year final grading is complete is modeled by assuming any area regraded in the last three years is in the bare soil condition, and the remainder of the watershed is in fair vegetative condition. To represent vegetation regrowth, the area regraded in the last three years is modeled in poor condition the first year after final grading is complete, fair condition the second year, and good condition the third and subsequent years. Vegetation in the “badland” area in the north end of Tract 2 is modeled in fair condition at best. Model results for the reclamation stages can be compared to the baseline scenario to estimate when sediment yields return to pre-mining levels and sediment control structures are no longer needed in each watershed. The sediment model results for each scenario are shown in Table 8-1. The area weighted average annual sediment yield for all watersheds is 0.58 tons per acre per year for the baseline condition. After three or more years of vegetation regrowth the predicted weighted average annual sediment yield is 0.21 tons per acre per year. The post-reclamation sediment yield is much lower than the baseline yield, but this is primarily from the inclusion of permanent ponds in post-mine sediment models. For comparison, the post-reclamation sediment yield without permanent ponds is approximately 0.44 tons per acre per year, or 76% of the baseline sediment yield.

TABLE 8-1
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
PREDICTED AVERAGE ANNUAL SEDIMENT YIELD

Watershed	Pre-Mine Area (acres)	Baseline AASY (tons/acre/year)	Post-Mine Area (acres)	Final 3 Years Disturbed Area (acres)	Final Grading AASY (tons/acre/year)	1st Year of Revegetation AASY (tons/acre/year)	2nd Year of Revegetation AASY (tons/acre/year)	3rd Year of Revegetation AASY (tons/acre/year)
1	574.2	0.59	587.5	219.0	5.45	0.92	0.34	0.11
1B	199.8	0.27	186.8	130.4	7.01	1.10	0.32	0.14
2	191.7	0.79	264.3	52.0	6.41	1.34	0.59	0.23
3	293.7	0.11	393.3	60.7	3.22	0.84	0.51	0.11
4	79.1	0.06	73.7	48.0	11.28	1.58	0.32	0.06
5	657.8	0.25	498.3	50.4	1.27	0.39	0.27	0.06
6	108.7	0.19	189.9	36.5	0.65	0.16	0.10	0.02
7	2093.1	0.82	2038.2	279.8	1.45	0.56	0.42	0.28
8	30.6	0.13	32.5	14.4	10.37	1.56	0.37	0.13
9	63.5	0.29	42.2	29.2	15.07	2.53	0.79	0.26
10	78.5	0.27	147.8	17.0	1.27	0.49	0.40	0.14
11	106.3	0.12	101.6	7.9	0.83	0.36	0.31	0.10
12	285.6	0.35	166.0	36.5	2.80	0.79	0.55	0.25
13	4.7	0.00	0.0	----	----	----	----	----
14	35.1	0.08	31.0	24.9	9.06	1.12	0.30	0.07
15	651.6	0.95	715.6	567.6	28.88	4.23	1.03	0.35
R1	30.9	0.72	30.9	0.0	30.07	4.75	0.94	0.27
R2	9.0	0.56	9.0	0.0	16.90	2.67	0.69	0.21
R3	26.7	0.39	26.7	0.0	5.80	1.06	0.40	0.24
R4	2.2	0.45	2.2	0.0	2.91	2.05	0.53	0.16
R5	117.6	0.33	117.6	0.0	3.23	0.67	0.33	0.26
SS4	47.9	0.04	47.9	47.9	3.22	0.46	0.09	0.02
SS5	22.0	0.07	22.0	22.0	4.29	0.65	0.17	0.05
SS6N	11.2	0.09	11.2	11.2	6.92	1.05	0.23	0.06
SS6S	9.8	0.09	9.8	9.8	7.04	1.07	0.22	0.06

8.2 RECLAMATION SEDIMENT CONTROL

To achieve Western Alkaline standards, sediment traps are constructed based on the predicted average annual sediment yield for the reclamation conditions. Adequate sediment control is achieved by implementing a variety of sediment trap sizes, depending on the predicted baseline and reclamation sediment yields. Models results are used to validate the effectiveness of traps at reducing sediment yield to pre-mine baseline levels. Final sediment traps will gradually fill in over time and will not require additional reclamation. Several drainage areas will also include permanent ponds. Typical sediment trap configurations are included in Attachment B.

8.2.1 Permanent Ponds

Watersheds 1, 5, 7, 12 and 15 will include six permanent ponds intended to replace existing ponds that will be removed by mining. The ponds will provide some sediment control as well as habitat diversity in the post-mine topography. Ponds are designed to fill with the runoff from a 2-year, 24-hour storm in the fully reclaimed condition. Each pond's storage capacity also includes the average annual sediment yield in the final grading condition and 10 times the average annual sediment yield in the fully reclaimed condition. Preliminary design information for permanent ponds is shown in Table 8-2 and Attachment B, and pond locations are shown on Figure 2-4.

8.2.2 Temporary Sediment Traps

In general, sediment traps are sized to contain three times the average annual sediment yield for the year final grading is complete. Alternate trap sizes are used when standard traps will not adequately reduce sediment yield or when a standard trap would have a surface area larger three acres. Standard traps will be used in watersheds 1, 2, 5, 6, 7, 10, 11, 12, 15, R3, R4 and R5.

Modeling predicts baseline sediment yields less than 0.1 tons per acre per year for watersheds 4 and 14 and soil stockpile areas SS4, SS5, SS6N and SS6S, which cannot be achieved through the use of a standard sediment trap. In these watersheds a pair of sediment traps will

TABLE 8-2
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
PERMANENT POND STORAGE VOLUMES

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-1P	335.6	0.21	0.02	1.73	2.16
EP-5P	349.9	0.25	0.02	0.80	1.25
EP-7P	1371.2	2.32	0.66	3.90	12.85
EP-12P	166.0	0.23	0.02	1.48	1.91
EP-15P1	715.6	8.48	0.09	2.43	11.84
EP-15P2	406.5	7.06	0.15	3.16	11.70

be constructed in series to effectively reduce sediment yield. The upper trap is sized to contain four times the average annual sediment yield for the year final grading is complete. The lower trap is sized to contain four times the predicted sediment yield discharged from the upper trap. Both traps will be allowed to fill with sediment and require no further reclamation.

Baseline sediment yield in watersheds 1B, 3, 8, 9, R1 and R2 cannot be achieved immediately after final reclamation with a standard sediment trap. In these watersheds, operational sediment ponds will be left in place for one year after final grading is complete to allow for initial vegetation regrowth. After one year, the ponds will be reduced in size to a sediment trap sized to contain two times the average annual sediment yield for the first year of revegetation.

Permanent ponds in watersheds 1, 5, 7, 12 and 15 are included in reclamation sediment models. Each of these watersheds also has a standard sediment trap located at the disturbance boundary. An additional sediment trap sized to retain the average annual sediment yield from the final grading condition is located immediately upstream of pond EP-15P1. The trap is included to reduce downstream sediment yield since most of watershed 15 will be in the disturbed condition when final grading is complete.

8.2.3 Reclamation Sediment Yield

Table 8-3 presents required sediment trap sizes and predicted sediment yield with the designated sediment controls in place. Multiple trap sizes are listed for a watershed where appropriate. The plan for reclamation sediment control is intended to meet Western Alkaline standards while minimizing the need for additional disturbance after final grading is complete.

Sediment yields for all mine areas increase due to disturbances from mining and reclamation activities. Implementation of sediment traps is effective in reducing sediment yield to or below baseline conditions in order to protect water quality. Modeling demonstrates that

TABLE 8-3
OTTER CREEK MINE - EXHIBIT 315A APPENDIX A
RECLAMATION SEDIMENT TRAP MODEL RESULTS

Watershed	Baseline AASY (tons/acre/year)	Modeled Sediment Trap Volume (acre-feet)	Modeled Sediment Trap Surface Area (acres)	AASY with Sediment Trap in Place (tons/acre/year)
1	0.59	4.52	1.613	0.46
1B	0.27	0.20	0.091	0.19
2	0.79	2.49	0.911	0.42
3	0.11	0.32	0.137	0.11
4	0.06	1.63 & 0.054	0.608 & 0.031	0.06
5	0.25	0.59	0.237	0.13
6	0.19	0.18	0.083	0.10
7	0.82	0.95	0.367	0.09
8	0.13	0.05	0.029	0.11
9	0.29	0.10	0.052	0.21
10	0.27	0.28	0.119	0.14
11	0.12	0.12	0.060	0.12
12	0.35	0.10	0.051	0.11
14	0.08	0.55 & 0.013	0.222 & 0.011	0.05
15	0.95	8.48 & 1.95	2.97 & 0.722	0.43
R1	0.72	0.14	0.068	0.63
R2	0.56	0.02	0.016	0.54
R3	0.39	0.23	0.101	0.32
R4	0.45	0.01	0.009	0.33
R5	0.33	0.56	0.225	0.19
SS4	0.04	0.30 & 0.016	0.130 & 0.012	0.04
SS5	0.07	0.19 & 0.009	0.084 & 0.008	0.07
SS6N	0.09	0.15 & 0.009	0.071 & 0.009	0.08
SS6S	0.09	0.13 & 0.004	0.064 & 0.005	0.05

revegetation is expected to reduce sediment yields to pre-mining levels by the time reclamation traps fill with sediment. The prescribed controls will be installed to comply with Western Alkaline effluent limitations.

9.0 REFERENCES

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ATTACHMENT A

SEDCAD 4 OUTPUT

PRE-MINING BASELINE CONDITION

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)	
#1	1	1	245.500	0.620	0.000	0.000	74.100	M	35.10	6.530
	1A	2	328.700	0.500	0.349	0.335	74.100	M	53.41	8.757
Σ		574.200						77.80	15.287	

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.300	990.00	7.70	0.0510	1.0000	1	101.7	20,217	10.20	5.74
	2	0.300	760.00	12.30	0.0510	1.0000	1	327.2	48,751	24.60	13.68
Σ								372.2	33,043	16.68	8.96

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	199.800	0.300	0.000	0.000	74.100	M	41.92	5.333
Σ		199.800						41.92	5.333

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.300	721.00	5.20	0.0510	1.0000	1	58.7	15,910	8.03	4.07
Σ								58.7	15,910	8.03	4.07

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	2	1	70.200	0.150	0.000	72.100	M	14.76	1.609
	2A	2	121.400	0.250	0.102	72.100	M	21.84	2.750
	Σ	191.600						30.90	4.359

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.340	372.00	17.00	0.0460	1.0000	1	61.1	58,113	29.33	13.90
	2	0.340	786.00	14.50	0.0460	1.0000	1	133.3	69,848	35.25	17.67
	Σ							168.0	54,157	27.33	14.10

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.940	0.102
#1	2	Muskingum K:					0.102

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	3	1	46.500	0.320	0.000	63.300	M	1.17	0.406
	3A	2	247.300	0.640	0.148	63.300	M	5.21	2.155
	Σ	293.800						6.06	2.562

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.350	759.00	9.60	0.0390	1.0000	1	3.4	9,612	4.85	3.12
	2	0.350	959.00	11.40	0.0390	1.0000	1	37.5	18,698	9.44	6.43
	Σ							36.9	15,481	7.81	5.32

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.280	0.148
#1	2	Muskingum K:					0.148

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	4	1	62.000	0.380	0.000	62.400	M	1.13	0.476
	4A	2	17.000	0.300	0.093	62.400	M	0.33	0.131
Σ		79.000						1.46	0.607

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.360	841.00	10.00	0.0400	1.0000	1	4.3	9,698	4.08	2.81
	2	0.360	723.00	10.50	0.0400	1.0000	1	1.3	10,971	4.61	3.11
Σ								5.3	9,329	3.92	2.69

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	3.21	58.00	1,809.00	5.370	0.093
#1	2	Muskingum K:					0.093

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area	Time of Conc	Musk K	Musk X	Curve	UHS	Peak Discharge	Runoff Volume
	Watershed	(ac)	(hrs)	(hrs)		Number		(cfs)	(ac-ft)
#1	5	1	498.600	0.740	0.000	0.000	67.500	M	24.14
	5A	2	159.100	0.740	0.625	0.359	67.500	M	7.70
Σ		657.700						26.02	9.484

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	998.00	12.00	0.0390	1.0000	1	169.2	27,712	13.99	8.66
	2	0.310	998.00	12.00	0.0390	1.0000	1	47.1	24,113	12.17	7.56
	Σ							182.3	23,383	11.80	7.09

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	2.10	205.00	9,766.00	4.340	0.625
#1	2	Muskingum K:					0.625

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)	
#1	7	1	1,060.700	1.170	0.000	0.000	70.000	M	59.82	19.661
	7U	2	1,032.400	0.320	1.135	0.327	70.000	M	123.11	19.210
	Σ	2,093.100						147.31	38.871	

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	881.00	13.50	0.0460	1.0000	1	590.9	34,007	17.16	11.04
	2	0.290	854.00	23.80	0.0460	1.0000	1	1,677.5	110,338	55.69	31.44
	Σ							1,900.1	69,906	35.28	17.83

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.14	149.00	13,076.00	3.200	1.135
#1	2	Muskingum K:					1.135

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	30.600	0.120	0.000	0.000	62.800	M	2.67	0.312
Σ		30.600						2.67	0.312

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	4.3	25,320	14.55	5.75
Σ								4.3	25,320	14.55	5.75

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)	
#1	9	1	23.200	0.230	0.067	0.381	73.500	M	5.09	0.593
	9A	2	40.200	0.130	0.000	0.000	73.500	M	9.92	1.038
	Σ	63.400							13.90	1.631

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	703.00	7.30	0.0380	1.0000	1	5.5	13,786	6.96	3.44
	2	0.310	300.00	11.70	0.0380	1.0000	1	15.7	23,291	11.75	5.59
	Σ							20.1	19,093	9.64	4.55

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	3.33	44.00	1,323.00	5.470	0.067
#1	1	Muskingum K:					0.067

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area	Time of Conc	Musk K	Musk X	Curve	UHS	Peak Discharge	Runoff Volume	
	Watershed	(ac)	(hrs)	(hrs)		Number		(cfs)	(ac-ft)	
#1	6	1	108.700	0.300	0.000	0.000	67.600	M	8.94	1.589
	10	2	78.500	0.380	0.000	0.000	74.600	M	15.60	2.175
	11	3	106.300	0.650	0.000	0.000	69.800	M	8.26	1.935
	12	4	285.600	0.610	0.000	0.000	73.200	M	36.95	7.055
	13	5	4.700	0.250	0.000	0.000	56.000	M	0.01	0.010
	14	6	35.100	0.390	0.000	0.000	66.400	M	1.95	0.449
Σ		618.900						67.38	13.214	

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.410	986.00	8.00	0.0390	1.0000	1	23.1	20,579	10.39	5.37
	2	0.260	895.00	8.20	0.0390	1.0000	1	23.7	15,258	7.70	4.02
	3	0.260	864.00	7.40	0.0390	1.0000	1	13.6	8,897	4.49	2.61
	4	0.280	984.00	9.90	0.0390	1.0000	1	111.9	20,595	10.39	5.85
	5	0.240	350.00	6.40	0.0380	1.0000	1	0.0	826	0.45	0.43
	6	0.230	777.00	9.50	0.0380	1.0000	1	3.1	8,970	4.53	2.54
Σ								175.4	17,414	8.79	4.90

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	557.000	0.770	0.000	0.000	74.700	M	75.12	15.562
	2	94.500	0.770	0.611	0.353	74.700	M	12.74	2.640
	Σ	651.500						76.74	18.202

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	808.00	16.40	0.0400	1.0000	1	684.0	54,498	27.50	16.06
	2	0.320	808.00	16.40	0.0400	1.0000	1	93.8	43,724	22.07	13.02
	Σ							684.1	47,776	24.11	13.76

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.84	165.00	8,960.00	4.070	0.611
#1	2	Muskingum K:					0.611

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Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)	
#1	1	1	186.500	0.450	0.000	0.000	91.200	M	128.39	15.684
	1	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	1A	3	19.500	0.400	0.349	0.335	91.200	M	14.06	1.644
	1A	4	309.200	0.500	0.349	0.335	74.100	M	50.24	8.238
Σ								574.200		
								147.30	27.135	

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	990.00	7.70	0.4500	1.0000	1	3,229.1	248,499	125.41	70.83
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	8.61	4.85
	3	0.320	760.00	12.30	0.4500	1.0000	1	571.0	390,121	196.89	113.91
	4	0.300	760.00	12.30	0.0510	1.0000	1	305.5	48,402	24.43	13.58
	Σ							3,637.5	210,556	106.26	47.02

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.32	57.00	4,332.00	3.440	0.349
#1	3	Muskingum K:					0.349
#1	4	8. Large gullies, diversions, and low flowing streams	1.32	57.00	4,332.00	3.440	0.349
#1	4	Muskingum K:					0.349

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	141.500	0.210	0.000	0.000	91.200	M	120.99	11.924
	2	58.300	0.300	0.000	0.000	74.100	M	12.23	1.556
	Σ	199.800						131.62	13.480

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.4500	1.0000	1	1,569.9	168,940	88.17	48.01
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.8	13,736	6.93	3.51
	Σ							1,584.7	157,065	81.94	43.01

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	2	1	33.700	0.100	0.000	91.600	M	43.73	3.637
	2	2	36.600	0.150	0.000	72.100	M	7.70	0.839
	2A	3	13.900	0.190	0.102	91.600	M	12.41	1.208
	2A	4	107.500	0.250	0.102	72.100	M	19.34	2.435
Σ		191.700						64.97	8.120

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	372.00	17.00	0.4500	1.0000	1	1,454.7	444,030	255.11	145.14
	2	0.340	372.00	17.00	0.0460	1.0000	1	29.5	53,838	27.17	12.87
	3	0.320	786.00	14.50	0.4500	1.0000	1	563.7	508,889	267.58	152.54
	4	0.340	786.00	14.50	0.0460	1.0000	1	116.3	68,864	34.75	17.42
Σ								2,081.8	401,367	222.17	92.57

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.940	0.102
#1	3	Muskingum K:					0.102
#1	4	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.940	0.102
#1	4	Muskingum K:					0.102

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	4A 1	6.700	0.140	0.148	0.329	88.200	M	5.08	0.480
	4A 2	10.300	0.300	0.148	0.329	62.400	M	0.20	0.079
	Σ	17.000						4.97	0.560
#1	3 1	19.100	0.190	0.000	0.000	88.500	M	14.35	1.381
	3 2	27.400	0.320	0.000	0.000	63.300	M	0.69	0.239
	3A 3	14.600	0.380	0.148	0.329	88.500	M	9.05	1.045
	3A 4	232.700	0.640	0.148	0.329	63.300	M	4.91	2.028
	Σ	310.800						24.94	5.254

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	723.00	10.50	0.4500	1.0000	1	125.4	314,495	164.75	91.23
	2	0.360	723.00	10.50	0.0400	1.0000	1	0.8	10,303	5.20	3.52
	Σ							114.2	286,517	144.60	69.51
#1	1	0.320	759.00	9.60	0.4500	1.0000	1	291.0	260,636	135.60	74.40
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.9	9,023	4.55	2.93
	3	0.320	959.00	11.40	0.4500	1.0000	1	359.6	388,649	196.14	113.01
	4	0.350	959.00	11.40	0.0390	1.0000	1	35.1	18,563	9.37	6.38
	Σ							750.1	267,621	136.68	49.77

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.280	0.148
#1	3	Muskingum K:					0.148
#1	4	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.280	0.148
#1	4	Muskingum K:					0.148

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	48.800	0.200	0.000	0.000	88.200	M	35.50	3.441
	2	13.200	0.380	0.000	0.000	62.400	M	0.24	0.101
	Σ	62.000						35.52	3.543

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	841.00	10.00	0.4500	1.0000	1	904.3	317,287	164.23	90.68
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.8	8,061	4.07	2.80
	Σ							905.1	317,188	164.17	88.22

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	548.400	0.740	0.000	0.000	67.500	M	26.55	7.908
	2	159.100	0.740	0.625	0.359	67.500	M	7.70	2.294
	3	109.400	0.680	0.000	0.000	89.600	M	55.65	8.368
Σ		816.900						77.76	18.570

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	998.00	12.00	0.0390	1.0000	1	188.2	28,026	14.14	8.76
	2	0.310	998.00	12.00	0.0390	1.0000	1	47.1	24,113	12.17	7.56
	3	0.320	998.00	12.00	0.4500	1.0000	1	3,501.5	442,109	223.12	134.68
Σ								3,697.7	360,383	181.88	67.17

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	2.10	205.00	9,766.00	4.340	0.625
#1	2	Muskingum K:					0.625

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	67.500	0.300	0.000	0.000	67.600	M	5.55	0.987
	2	41.200	0.170	0.000	0.000	89.700	M	33.95	3.230
	Σ	108.700						37.34	4.217

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.410	986.00	8.00	0.0390	1.0000	1	13.6	19,444	9.81	5.08
	2	0.320	986.00	8.00	0.4500	1.0000	1	648.4	248,907	130.88	71.88
	Σ							661.9	235,617	123.79	56.59

Subwatershed Hydrology Detail:

Stru #	SWS #	Watershed	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	7	1	1,025.500	1.170	0.000	0.000	70.000	M	57.83	19.008
	7U	2	1,032.400	0.320	1.135	0.327	70.000	M	123.11	19.210
	7	3	35.200	1.100	0.000	0.000	89.700	M	13.52	2.706
Σ			2,093.100						152.26	40.925

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	881.00	13.50	0.0460	1.0000	1	569.0	33,872	17.09	11.00
	2	0.290	854.00	23.80	0.0460	1.0000	1	1,677.5	110,338	55.69	31.44
	3	0.320	881.00	13.50	0.4500	1.0000	1	913.6	352,310	177.80	111.89
Σ								2,789.2	141,580	71.45	24.66

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.14	149.00	13,076.00	3.200	1.135
#1	2	Muskingum K:					1.135

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	12.500	0.090	0.000	0.000	88.100	M	13.91	1.095
	Σ	30.600						15.49	1.280

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	13.67	5.40
	2	0.320	233.00	18.00	0.4500	1.0000	1	316.2	345,233	198.35	109.06
	Σ							318.6	332,395	190.97	94.50

Subwatershed Hydrology Detail:

Stru #	SWS # Watershed	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	9A 1	23.200	0.230	0.067	0.381	73.500	M	5.09	0.593
	9 2	12.400	0.130	0.000	0.000	73.500	M	3.06	0.320
	9 3	27.800	0.100	0.000	0.000	92.600	M	37.52	3.181
	Σ	63.400						41.99	4.094

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	703.00	7.30	0.0380	1.0000	1	5.5	13,786	6.96	3.44
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.2	20,250	10.22	4.86
	3	0.320	300.00	11.70	0.4500	1.0000	1	676.1	256,000	147.08	82.50
	Σ							685.8	243,001	139.37	65.28

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	23.200	0.120	0.000	0.000	92.600	M	31.31	2.654
Σ		23.200						31.31	2.654

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	703.00	7.30	0.4500	1.0000	1	370.3	174,134	100.04	55.68
Σ								370.3	174,134	100.04	55.68

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	61.700	0.380	0.000	0.000	74.600	M	12.26	1.710
	2	16.800	0.250	0.000	0.000	92.700	M	14.93	1.554
	Σ	78.500						25.28	3.264

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	895.00	8.20	0.0390	1.0000	1	21.5	17,657	8.91	4.65
	2	0.320	895.00	8.20	0.4500	1.0000	1	270.3	217,044	112.59	62.07
	Σ							291.8	169,544	87.78	32.59

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	90.000	0.650	0.000	0.000	69.800	M	7.00	1.639
	2	16.300	0.370	0.000	0.000	91.000	M	11.91	1.356
	Σ	106.300						15.39	2.994

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	864.00	7.40	0.0390	1.0000	1	11.3	8,722	4.40	2.56
	2	0.320	864.00	7.40	0.4500	1.0000	1	194.6	180,324	91.01	50.46
	Σ							205.9	157,143	79.31	24.55

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	242.200	0.610	0.000	0.000	73.200	M	31.34	5.983
	2	43.400	0.450	0.000	0.000	92.400	M	32.05	3.915
	Σ	285.600						58.20	9.898

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.280	984.00	9.90	0.0390	1.0000	1	93.0	20,195	10.19	5.74
	2	0.320	984.00	9.90	0.4500	1.0000	1	979.8	296,636	149.71	84.76
	Σ							1,072.8	209,417	105.69	38.16

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	4.700	0.110	0.000	0.000	86.000	M	4.72	0.362
Σ		4.700						4.72	0.362

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	350.00	6.40	0.4500	1.0000	1	27.0	101,309	58.21	30.57
Σ								27.0	101,309	58.21	30.57

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	3.500	0.390	0.000	0.000	66.400	M	0.19	0.045
	2	31.600	0.190	0.000	0.000	89.700	M	25.44	2.456
	Σ	35.100						25.49	2.501

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.230	777.00	9.50	0.0380	1.0000	1	0.2	6,810	3.44	1.93
	2	0.320	777.00	9.50	0.4500	1.0000	1	551.3	275,307	143.84	79.21
	Σ							551.5	274,846	143.59	77.86

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	517.600	0.770	0.000	0.000	74.700	M	69.81	14.461
	2	39.500	0.680	0.495	0.346	92.300	M	23.64	3.541
	3	94.500	0.770	0.611	0.353	74.700	M	12.74	2.640
	Σ	651.600						88.60	20.643

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.270	808.00	16.40	0.0400	1.0000	1	531.6	45,743	23.09	13.47
	2	0.320	808.00	16.40	0.4500	1.0000	1	1,758.0	506,684	255.71	155.88
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.1	36,994	18.67	11.01
	Σ							1,625.1	129,962	65.59	28.25

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.62	110.00	6,801.00	3.810	0.495
#1	2	Muskingum K:					0.495

SECOND PHASE OF OPERATIONAL DRAINAGE CONTROL

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	63.400	0.450	0.288	0.367	91.200	M	81.22	9.982
	2	260.900	0.540	0.000	0.000	78.700	M	176.59	24.121
	Σ	324.300						242.50	34.103

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.45	119.00	4,864.00	4.690	0.288
#1	1	Muskingum K:					0.288
#1	2	8. Large gullies, diversions, and low flowing streams	0.00	0.00	0.00	0.000	0.000
#1	2	Muskingum K:					0.000

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	63.400	0.450	0.288	0.367	91.200	M	43.64	5.332
	2	260.900	0.540	0.000	0.000	78.700	M	65.43	9.867
	Σ	324.300						102.75	15.199

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.4500	1.0000	1	865.5	198,710	83.57	47.28
	2	0.320	907.00	7.20	0.0420	1.0000	1	143.1	19,126	8.04	4.46
	Σ							838.4	85,705	36.04	16.67

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.45	119.00	4,864.00	4.690	0.288
#1	1	Muskingum K:					0.288

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	13.500	0.410	0.175	0.363	91.600	M	18.18	2.165
	2	169.500	0.520	0.000	0.000	79.500	M	122.00	16.286
	Σ	183.000						139.09	18.450

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.28	65.00	2,855.00	4.520	0.175
#1	1	Muskingum K:					0.175

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	13.500	0.410	0.175	0.363	91.600	M	9.88	1.165
	2	169.500	0.520	0.000	0.000	79.500	M	46.59	6.793
	Σ	183.000						56.15	7.958

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	973.00	7.10	0.4500	1.0000	1	164.0	175,386	73.76	41.29
	2	0.320	973.00	7.10	0.0420	1.0000	1	98.0	19,061	8.02	4.44
	Σ							176.7	32,698	13.75	6.80

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.28	65.00	2,855.00	4.520	0.175
#1	1	Muskingum K:					0.175

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	94.600	0.470	0.214	0.356	88.500	M	107.56	13.389
	2	184.800	0.560	0.000	0.000	73.800	M	91.94	13.406
	3	63.500	0.640	0.302	0.378	63.300	M	12.33	2.433
	Σ	342.900						198.21	29.228

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.09	177.00	5,730.00	5.270	0.302
#1	3	Muskingum K:					0.302

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	94.600	0.470	0.214	0.356	88.500	M	53.96	6.780
	2	184.800	0.560	0.000	0.000	73.800	M	27.10	4.799
	3	63.500	0.640	0.302	0.378	63.300	M	1.34	0.553
Σ		342.900						79.47	12.132

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	991.00	11.10	0.4500	1.0000	1	2,736.6	439,864	184.99	108.50
	2	0.320	991.00	11.10	0.0420	1.0000	1	143.2	39,084	16.44	9.13
	3	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,898	6.69	4.55
Σ								2,690.4	303,691	127.72	62.79

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.09	177.00	5,730.00	5.270	0.302
#1	3	Muskingum K:					0.302

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	89.600	0.560	0.360	0.349	89.600	M	97.93	13.242
	2	307.900	0.600	0.000	0.000	75.800	M	167.19	24.755
	3	95.800	0.740	0.337	0.366	67.500	M	25.47	4.857
	Σ	493.300						242.86	42.854

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.72	88.00	5,103.00	3.930	0.360
#1	1	Muskingum K:					0.360
#1	3	8. Large gullies, diversions, and low flowing streams	2.42	137.00	5,665.00	4.660	0.337
#1	3	Muskingum K:					0.337

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	89.600	0.560	0.360	0.349	89.600	M	50.48	6.854
	2	307.900	0.600	0.000	0.000	75.800	M	54.55	9.389
	3	95.800	0.740	0.337	0.366	67.500	M	4.64	1.381
Σ		493.300						94.52	17.624

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.4500	1.0000	1	1,530.8	260,174	109.42	63.77
	2	0.320	819.00	9.70	0.0420	1.0000	1	177.9	24,741	10.41	5.82
	3	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,744	9.57	5.93
Σ								1,431.0	130,023	54.68	24.27

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.72	88.00	5,103.00	3.930	0.360
#1	1	Muskingum K:					0.360
#1	3	8. Large gullies, diversions, and low flowing streams	2.42	137.00	5,665.00	4.660	0.337
#1	3	Muskingum K:					0.337

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	159.700	0.760	0.490	0.326	89.700	M	148.39	23.695
	2	301.000	0.610	0.100	0.336	76.300	M	166.84	24.795
	3	651.200	0.320	0.788	0.325	70.000	M	322.45	38.463
	Σ	1,111.900						495.70	86.953

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.35	17.00	1,257.00	3.480	0.100
#1	2	Muskingum K:					0.100
#1	3	8. Large gullies, diversions, and low flowing streams	1.11	100.00	8,969.00	3.160	0.788
#1	3	Muskingum K:					0.788

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	159.700	0.760	0.490	0.326	89.700	M	76.76	12.288
	2	301.000	0.610	0.100	0.336	76.300	M	55.71	9.534
	3	651.200	0.320	0.788	0.325	70.000	M	77.65	12.117
Σ		1,111.900						162.66	33.939

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.4500	1.0000	1	528.6	52,882	22.24	13.09
	2	0.320	976.00	3.10	0.0420	1.0000	1	35.8	4,907	2.06	1.16
	3	0.290	854.00	23.80	0.0460	1.0000	1	1,001.2	106,209	44.67	24.83
Σ								1,304.1	55,363	23.28	11.72

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.35	17.00	1,257.00	3.480	0.100
#1	2	Muskingum K:					0.100
#1	3	8. Large gullies, diversions, and low flowing streams	1.11	100.00	8,969.00	3.160	0.788
#1	3	Muskingum K:					0.788

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	118.900	0.760	0.537	0.346	89.700	M	110.48	17.641
	2	586.700	0.810	0.000	0.000	76.400	M	277.22	48.530
	3	381.100	0.320	0.538	0.370	70.000	M	188.70	22.510
	Σ	1,086.700						501.70	88.681

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.62	120.00	7,393.00	3.820	0.537
#1	1	Muskingum K:					0.537
#1	3	8. Large gullies, diversions, and low flowing streams	2.63	248.00	9,425.00	4.860	0.538
#1	3	Muskingum K:					0.538

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	118.900	0.760	0.537	0.346	89.700	M	57.15	9.149
	2	586.700	0.810	0.000	0.000	76.400	M	92.39	18.710
	3	381.100	0.320	0.538	0.370	70.000	M	45.44	7.091
Σ		1,086.700						170.53	34.950

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.4500	1.0000	1	1,620.5	204,302	85.92	51.45
	2	0.320	867.00	8.50	0.0420	1.0000	1	295.6	19,753	8.31	4.86
	3	0.290	854.00	23.80	0.0460	1.0000	1	549.4	102,730	43.20	23.32
Σ								2,139.7	90,820	38.20	18.48

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.62	120.00	7,393.00	3.820	0.537
#1	1	Muskingum K:					0.537
#1	3	8. Large gullies, diversions, and low flowing streams	2.63	248.00	9,425.00	4.860	0.538
#1	3	Muskingum K:					0.538

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	17.700	0.380	0.000	0.000	92.700	M	25.32	2.952
	2	130.100	0.500	0.000	0.000	81.600	M	106.01	13.751
	3	19.700	0.390	0.168	0.312	91.000	M	26.42	3.081
	4	81.900	0.560	0.168	0.312	78.400	M	53.55	7.466
	5	108.100	0.330	0.300	0.316	92.400	M	158.80	17.901
	6	30.200	0.420	0.300	0.316	81.000	M	25.75	3.113
	7	5.300	0.110	0.469	0.322	89.700	M	11.49	0.986
	8	2.600	0.170	0.469	0.322	75.900	M	2.27	0.214
Σ		395.600						372.56	49.465

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	0.00	0.00	0.00	0.000	0.000
#1	2	Muskingum K:					0.000
#1	3	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.09	2.810	0.168
#1	3	Muskingum K:					0.168
#1	4	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.00	2.810	0.168
#1	4	Muskingum K:					0.168
#1	5	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	5	Muskingum K:					0.300
#1	6	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	6	Muskingum K:					0.300
#1	7	8. Large gullies, diversions, and low flowing streams	1.06	55.00	5,207.00	3.080	0.469
#1	7	Muskingum K:					0.469

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	17.700	0.380	0.000	0.000	92.700	M	14.14	1.624
	2	130.100	0.500	0.000	0.000	81.600	M	43.83	6.023
	3	19.700	0.390	0.168	0.312	91.000	M	14.15	1.639
	4	81.900	0.560	0.168	0.312	78.400	M	19.60	3.032
	5	108.100	0.330	0.300	0.316	92.400	M	88.25	9.789
	6	30.200	0.420	0.300	0.316	81.000	M	10.51	1.345
	7	5.300	0.110	0.469	0.322	89.700	M	6.35	0.511
	8	2.600	0.170	0.469	0.322	75.900	M	0.81	0.081
Σ		395.600						178.39	24.044

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.4500	1.0000	1	156.1	124,168	52.22	28.65
	2	0.320	925.00	4.60	0.0420	1.0000	1	57.1	12,572	5.29	2.92
	3	0.320	952.00	5.00	0.4500	1.0000	1	172.1	133,162	56.00	31.21
	4	0.320	952.00	5.00	0.0420	1.0000	1	27.2	11,767	4.95	2.77
	5	0.320	851.00	6.00	0.4500	1.0000	1	1,464.8	186,422	78.86	43.99
	6	0.320	851.00	6.00	0.0420	1.0000	1	13.7	13,534	5.69	3.13
	7	0.320	589.00	7.00	0.4500	1.0000	1	54.7	138,228	66.18	36.08
	8	0.320	589.00	7.00	0.0420	1.0000	1	0.6	11,356	4.78	2.45
Σ								1,945.8	114,588	48.58	24.42

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	0.00	0.00	0.00	0.000	0.000
#1	2	Muskingum K:					0.000
#1	3	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.09	2.810	0.168
#1	3	Muskingum K:					0.168
#1	4	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.00	2.810	0.168
#1	4	Muskingum K:					0.168

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	5	Muskingum K:					0.300
#1	6	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	6	Muskingum K:					0.300
#1	7	8. Large gullies, diversions, and low flowing streams	1.06	55.00	5,207.00	3.080	0.469
#1	7	Muskingum K:					0.469

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	23.200	0.110	0.000	0.000	89.700	M	50.30	4.317
	2	7.900	0.170	0.000	0.000	75.900	M	6.89	0.650
	Σ	31.100						56.51	4.967
#1	1	566.100	0.710	0.000	0.000	92.300	M	601.19	92.934
	2	33.400	0.770	0.474	0.358	80.900	M	20.85	3.417
	3	116.000	0.770	0.474	0.358	74.700	M	50.98	8.815
	Σ	746.600						633.58	110.133

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.47	9.00	614.00	3.630	0.046
#1	1	Muskingum K:					0.000
#1	3	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.09	2.810	0.168
#1	3	Muskingum K:					0.474

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	23.200	0.110	0.000	0.000	89.700	M	27.78	2.238
	2	7.900	0.170	0.000	0.000	75.900	M	2.47	0.247
	Σ	31.100						29.78	2.486
#1	1	566.100	0.710	0.000	0.000	92.300	M	330.55	50.720
	2	33.400	0.770	0.474	0.358	80.900	M	8.34	1.473
	3	116.000	0.770	0.474	0.358	74.700	M	15.64	3.241
	Σ	746.600						341.80	57.919

10-year, 24-hour storm

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	589.00	7.00	0.4500	1.0000	1	285.6	163,294	78.18	42.67
	2	0.320	589.00	7.00	0.0420	1.0000	1	2.2	13,696	5.76	2.80
	Σ							287.9	153,719	73.53	38.78
#1	1	0.320	936.00	15.60	0.4500	1.0000	1	35,144.0	656,297	276.02	171.11
	2	0.320	936.00	15.60	0.0420	1.0000	1	57.6	48,098	20.23	11.92
	3	0.270	808.00	16.40	0.0400	1.0000	1	99.6	37,966	15.97	9.40
	Σ							35,432.1	640,910	269.85	153.71

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.47	9.00	614.00	3.630	0.046
#1	1	Muskingum K:					0.000
#1	3	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.09	2.810	0.168
#1	3	Muskingum K:					0.474

SECOND PHASE CONVEYANCE STRUCTURE MODELS

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	63.400	0.450	0.288	0.367	91.200	M	43.64	5.332
	2	260.900	0.540	0.000	0.000	78.700	M	65.43	9.867
	Σ	324.300						102.75	15.199
#3	Σ	324.300						34.48	8.112
#2	1	186.500	0.450	0.000	0.000	91.200	M	128.39	15.684
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	Σ	569.800						134.41	25.365
#4	Σ	569.800						132.35	25.365

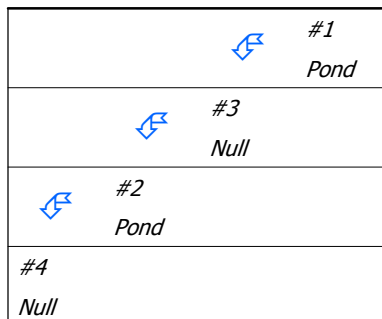
10-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.45	119.00	4,864.00	4.690	0.288
#1	1	Muskingum K:					0.288

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#3	0.000	0.000	EP-1A
Pond	#2	==>	#4	0.000	0.000	EP-1
Null	#3	==>	#2	0.349	0.355	CV-1A
Null	#4	==>	End	0.000	0.000	CV-1



Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	13.500	0.410	0.175	0.363	91.600	M	9.88	1.165
	2	169.500	0.520	0.000	0.000	79.500	M	46.59	6.793
	Σ	183.000						56.15	7.958
#3	Σ	183.000						5.13	2.290
#2	1	33.700	0.100	0.000	0.000	91.600	M	43.73	3.637
	2	36.600	0.150	0.000	0.000	72.100	M	7.70	0.839
	Σ	253.300						49.30	6.766
#4	Σ	253.300						47.96	6.766

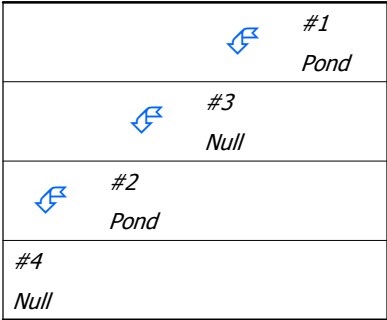
10-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	2.28	65.00	2,855.00	4.520	0.175
#1	1	Muskingum K:					0.175

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#3	0.000	0.000	EP-2A
Pond	#2	==>	#4	0.000	0.000	EP-2
Null	#3	==>	#2	0.102	0.349	CV-2A
Null	#4	==>	End	0.000	0.000	CV-2



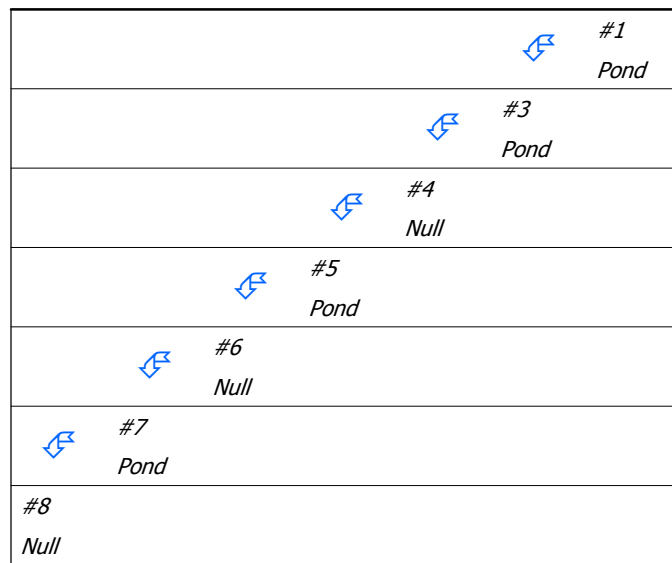
Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	159.700	0.760	0.490	0.326	89.700	M	76.76	12.288
	2	301.000	0.610	0.100	0.336	76.300	M	55.71	9.534
	3	651.200	0.320	0.788	0.325	70.000	M	77.65	12.117
	Σ	1,111.900						162.66	33.939
#3	1	89.600	0.560	0.360	0.349	89.600	M	50.48	6.854
	2	307.900	0.600	0.000	0.000	75.800	M	54.55	9.389
	3	95.800	0.740	0.337	0.366	67.500	M	4.64	1.381
	Σ	1,605.200						169.52	42.666
#4	Σ	1,605.200						166.08	37.550
#5	1	94.600	0.470	0.214	0.356	88.500	M	53.96	6.780
	2	184.800	0.560	0.000	0.000	73.800	M	27.10	4.799
	3	63.500	0.640	0.302	0.378	63.300	M	1.34	0.553
	Σ	1,948.100						180.98	49.682
#6	Σ	1,948.100						178.27	42.797
#7	1	19.100	0.190	0.000	0.000	88.500	M	14.35	1.381
	2	27.400	0.320	0.000	0.000	63.300	M	0.69	0.239
	Σ	1,994.600						176.06	44.418
#8	Σ	1,994.600						175.02	44.418

10-year, 24-hour storm

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#3	0.093	0.404	EP-6
Pond	#3	==>	#4	0.000	0.000	EP-5
Null	#4	==>	#5	0.208	0.277	CV-5
Pond	#5	==>	#6	0.000	0.000	EP-3A
Null	#6	==>	#7	0.148	0.329	CV-3A
Pond	#7	==>	#8	0.000	0.000	EP-3
Null	#8	==>	End	0.000	0.000	CV-3



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	9. Small streams flowing bankfull	0.63	15.00	2,400.00	7.11	0.093
#1	Muskingum K:					0.093
#4	8. Large gullies, diversions, and low flowing streams	0.50	8.00	1,590.00	2.12	0.208
#4	Muskingum K:					0.208
#6	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.28	0.148
#6	Muskingum K:					0.148

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	118.900	0.760	0.537	0.346	89.700	M	57.15	9.149
	2	586.700	0.810	0.000	0.000	76.400	M	92.39	18.710
	3	381.100	0.320	0.538	0.370	70.000	M	45.44	7.091
	Σ	1,086.700						170.53	34.950
#2	Σ	1,086.700						128.87	25.854

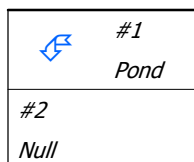
10-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.62	120.00	7,393.00	3.820	0.537
#1	1	Muskingum K:					0.537
#1	3	8. Large gullies, diversions, and low flowing streams	2.63	248.00	9,425.00	4.860	0.538
#1	3	Muskingum K:					0.538

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	EP-7
Null	#2	==>	End	0.000	0.000	CV-7



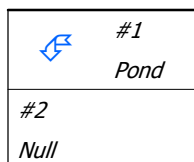
Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	17.700	0.380	0.000	0.000	92.700	M	14.14	1.624
	2	130.100	0.500	0.000	0.000	81.600	M	43.83	6.023
	3	19.700	0.390	0.168	0.312	91.000	M	14.15	1.639
	4	81.900	0.560	0.168	0.312	78.400	M	19.60	3.032
	5	108.100	0.330	0.300	0.316	92.400	M	88.25	9.789
	6	30.200	0.420	0.300	0.316	81.000	M	10.51	1.345
	7	5.300	0.110	0.469	0.322	89.700	M	6.35	0.511
	8	2.600	0.170	0.469	0.322	75.900	M	0.81	0.081
	Σ	395.600						178.39	24.044
#2	Σ	395.600						113.90	15.561

10-year, 24-hour storm

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	EP-10
Null	#2	==>	End	0.000	0.000	CV-10



Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	159.700	0.760	0.490	0.326	89.700	M	148.39	23.695
	2	226.600	0.610	0.100	0.336	76.300	M	125.60	18.666
	3	651.200	0.320	0.788	0.325	70.000	M	322.45	38.463
	Σ	1,037.500						475.73	80.824

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	1.35	17.00	1,257.00	3.480	0.100
#1	2	Muskingum K:					0.100
#1	3	8. Large gullies, diversions, and low flowing streams	1.11	100.00	8,969.00	3.160	0.788
#1	3	Muskingum K:					0.788

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	8.900	0.380	0.000	0.000	92.700	M	12.73	1.484
	2	65.100	0.500	0.000	0.000	81.600	M	53.05	6.881
	3	19.700	0.390	0.168	0.312	91.000	M	26.42	3.081
	4	81.900	0.560	0.168	0.312	78.400	M	53.55	7.466
	5	108.100	0.330	0.300	0.316	92.400	M	158.80	17.901
	6	30.200	0.420	0.300	0.316	81.000	M	25.75	3.113
	7	5.300	0.110	0.469	0.322	89.700	M	11.49	0.986
	8	2.600	0.170	0.469	0.322	75.900	M	2.27	0.214
Σ		321.800						315.33	41.127

100-year, 24-hour storm

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	0.00	0.00	0.00	0.000	0.000
#1	2	Muskingum K:					0.000
#1	3	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.09	2.810	0.168
#1	3	Muskingum K:					0.168
#1	4	8. Large gullies, diversions, and low flowing streams	0.88	15.00	1,706.00	2.810	0.168
#1	4	Muskingum K:					0.168
#1	5	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	5	Muskingum K:					0.300
#1	6	8. Large gullies, diversions, and low flowing streams	0.95	30.00	3,154.24	2.920	0.300
#1	6	Muskingum K:					0.300
#1	7	8. Large gullies, diversions, and low flowing streams	1.06	55.00	5,207.00	3.080	0.469
#1	7	Muskingum K:					0.469

FINAL GRADING

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	25.000	0.450	0.000	0.000	91.200	M	17.21	2.102
	2	310.600	0.540	0.000	0.000	78.700	M	77.89	11.746
EP-1P	Σ	335.600						93.86	13.849
#2	1	193.000	0.450	0.000	0.000	91.200	M	132.86	16.231
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	Σ	587.600						166.37	31.649

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.4500	1.0000	1	305.2	180,523	91.11	51.04
	2	0.320	907.00	7.20	0.0420	1.0000	1	173.9	19,527	9.85	5.46
	Σ							479.1	53,725	27.11	12.65
#2	1	0.320	990.00	7.70	0.4500	1.0000	1	3,355.4	249,421	125.88	71.11
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	8.61	4.85
	Σ							3,538.2	225,643	113.88	39.23

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	130.400	0.210	0.000	0.000	91.200	M	111.50	10.989
	2	56.400	0.300	0.000	0.000	74.100	M	11.83	1.505
	Σ	186.800						121.78	12.494

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.4500	1.0000	1	1,432.6	167,403	72.80	39.63
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.2	13,682	5.75	2.91
	Σ							1,446.9	155,095	67.43	35.33

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	15.000	0.410	0.000	0.000	91.600	M	10.98	1.295
	2	177.100	0.520	0.000	0.000	79.500	M	48.68	7.097
2A	Σ	192.100						59.01	8.392
#2	1	37.000	0.100	0.000	0.000	91.600	M	48.01	3.994
	2	35.300	0.150	0.000	0.000	72.100	M	7.42	0.809
2	Σ	264.400						75.51	13.195

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	973.00	7.10	0.4500	1.0000	1	184.6	178,514	75.08	41.78
	2	0.320	973.00	7.10	0.0420	1.0000	1	103.0	19,161	8.06	4.46
	Σ							287.5	52,968	22.28	10.44
#2	1	0.320	372.00	17.00	0.4500	1.0000	1	1,615.2	448,138	214.56	122.13
	2	0.340	372.00	17.00	0.0460	1.0000	1	28.3	53,610	22.55	10.68
	Σ							1,872.9	401,644	189.09	44.01

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	33.200	0.470	0.000	0.000	88.500	M	18.94	2.379
	2	245.200	0.560	0.000	0.000	73.800	M	35.96	6.368
	3	63.500	0.640	0.000	0.000	63.300	M	1.34	0.553
3A	Σ	341.900						53.77	9.300
#2	1	27.500	0.190	0.000	0.000	88.500	M	20.66	1.989
	2	23.900	0.320	0.000	0.000	63.300	M	0.60	0.209
3	Σ	393.300						60.10	11.498

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	991.00	11.10	0.4500	1.0000	1	847.0	397,768	167.29	97.13
	2	0.320	991.00	11.10	0.0420	1.0000	1	196.5	40,411	17.00	9.44
	3	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,945	6.71	4.55
	Σ							1,051.7	210,476	88.52	33.20
#2	1	0.320	759.00	9.60	0.4500	1.0000	1	437.6	271,024	117.50	64.55
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.6	8,876	3.73	2.40
	Σ							1,398.5	240,233	102.01	35.86

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	5.600	0.200	0.000	0.000	88.200	M	4.07	0.395
	2	7.600	0.300	0.000	0.000	73.100	M	1.42	0.187
4A	Σ	13.200						5.21	0.581
#1	1	48.000	0.200	0.000	0.000	88.200	M	34.92	3.385
	2	12.400	0.380	0.000	0.000	62.400	M	0.23	0.095
4	Σ	73.600						39.02	4.061

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	841.00	10.00	0.4500	1.0000	1	80.0	252,027	130.45	71.48
	2	0.320	841.00	10.00	0.0420	1.0000	1	2.7	21,148	10.67	5.39
	Σ							82.8	213,576	110.46	50.90
#1	1	0.320	841.00	10.00	0.4500	1.0000	1	887.7	316,737	163.94	90.52
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.7	8,001	4.04	2.78
	Σ							918.2	294,191	152.15	78.69

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	29.100	0.560	0.000	0.000	89.600	M	16.39	2.226
	2	225.000	0.600	0.000	0.000	75.800	M	39.87	6.861
	3	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
EP-5P	Σ	349.900						58.06	10.468
#2	1	21.300	0.560	0.000	0.000	89.600	M	12.00	1.629
	2	127.100	0.600	0.000	0.000	75.800	M	22.52	3.876
	Σ	498.300						81.95	15.973

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.4500	1.0000	1	434.4	231,907	97.53	56.24
	2	0.320	819.00	9.70	0.0420	1.0000	1	125.2	23,836	10.02	5.61
	3	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							572.4	89,250	37.54	16.51
#2	1	0.320	819.00	9.70	0.4500	1.0000	1	306.3	224,149	94.27	54.31
	2	0.320	819.00	9.70	0.0420	1.0000	1	66.0	22,271	9.37	5.24
	Σ							696.8	95,787	40.29	13.20

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	3	Muskingum K:					0.130

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	36.500	0.420	0.000	0.000	89.700	M	23.57	2.817
	2	153.400	0.610	0.000	0.000	76.300	M	28.39	4.859
	Σ	189.900						48.91	7.675

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.4500	1.0000	1	119.4	55,613	23.39	12.90
	2	0.320	976.00	3.10	0.0420	1.0000	1	16.8	4,542	1.91	1.07
	Σ							136.2	32,442	13.64	5.44

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	249.900	0.760	0.000	0.000	89.700	M	120.11	19.229
	2	116.600	0.810	0.000	0.000	76.400	M	18.36	3.718
	3	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
EP-7P	Σ	1,371.100						244.44	41.640
#2	1	29.900	0.760	0.000	0.000	89.700	M	14.37	2.301
	2	609.500	0.810	0.000	0.000	76.400	M	95.98	19.437
	3	27.700	0.320	0.287	0.354	70.000	M	3.30	0.515
	Σ	2,038.200						316.54	63.893

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.4500	1.0000	1	3,723.5	223,555	94.02	55.91
	2	0.320	867.00	8.50	0.0420	1.0000	1	48.4	16,294	6.85	4.01
	3	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	48.96	26.11
	Σ							5,238.3	170,635	71.76	37.11
#2	1	0.320	867.00	8.50	0.4500	1.0000	1	345.3	176,833	74.37	43.99
	2	0.320	867.00	8.50	0.0420	1.0000	1	308.5	19,843	8.35	4.88
	3	0.290	854.00	23.80	0.0460	1.0000	1	29.2	76,917	32.35	17.15
	Σ							3,273.0	79,073	33.26	15.55

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.88	80.00	4,247.00	4.110	0.287
#1	3	Muskingum K:					0.287

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	14.400	0.090	0.000	0.000	88.100	M	16.02	1.262
	Σ	32.500						17.60	1.446

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	13.67	5.40
	2	0.320	233.00	18.00	0.4500	1.0000	1	370.6	350,316	201.27	110.73
	Σ							372.9	337,723	194.03	97.65

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	1.400	0.030	0.060	0.384	92.600	M	1.89	0.160
	2	13.000	0.130	0.000	0.000	73.500	M	3.21	0.336
	3	27.800	0.100	0.000	0.000	92.600	M	37.52	3.181
	Σ	42.200						41.81	3.676

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	238.00	12.60	0.4500	1.0000	1	22.9	178,388	102.49	57.15
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.4	20,364	10.28	4.89
	3	0.320	300.00	11.70	0.4500	1.0000	1	676.1	256,000	147.08	82.50
	Σ							703.4	240,876	138.28	74.52

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	3.51	43.00	1,224.00	5.620	0.060
#1	1	Muskingum K:					0.060

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	122.300	0.500	0.000	0.000	81.600	M	41.20	5.662
	2	8.500	0.500	0.000	0.000	81.600	M	2.86	0.393
	3	17.000	0.380	0.000	0.000	92.700	M	13.58	1.560
Σ		147.800						56.72	7.615

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.0420	1.0000	1	53.3	12,480	6.30	3.48
	2	0.320	840.00	7.70	0.0420	1.0000	1	4.2	14,098	7.11	3.93
	3	0.320	925.00	4.60	0.4500	1.0000	1	149.2	123,597	62.38	34.22
Σ								206.7	41,822	21.11	9.96

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	85.000	0.560	0.000	0.000	78.400	M	20.35	3.146
	2	8.700	0.560	0.000	0.000	78.400	M	2.08	0.322
	3	7.900	0.390	0.000	0.000	91.000	M	5.68	0.657
Σ		101.600						27.17	4.125

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	952.00	5.00	0.0420	1.0000	1	28.4	11,896	5.00	2.78
	2	0.320	900.00	7.20	0.0420	1.0000	1	3.0	12,452	5.24	2.91
	3	0.320	952.00	5.00	0.4500	1.0000	1	61.9	121,009	50.89	28.08
Σ								93.3	42,077	17.70	6.92

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	105.900	0.420	0.000	0.000	81.000	M	36.87	4.717
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	3	36.500	0.330	0.000	0.000	92.400	M	29.80	3.305
EP-10P	Σ	166.000						73.29	9.073

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0420	1.0000	1	55.7	15,939	6.70	3.64
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	3	0.320	851.00	6.00	0.4500	1.0000	1	434.2	166,727	70.53	38.86
	Σ							513.2	85,062	35.95	17.17

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	24.900	0.110	0.000	0.000	89.700	M	29.81	2.402
	2	6.100	0.170	0.000	0.000	75.900	M	1.90	0.191
	Σ	31.000						31.36	2.593

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	589.00	7.00	0.4500	1.0000	1	309.2	164,593	78.80	43.01
	2	0.320	589.00	7.00	0.0420	1.0000	1	1.7	13,280	5.59	2.72
	Σ							310.9	157,507	75.36	40.11

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	278.000	0.710	0.000	0.000	92.300	M	162.32	24.907
	2	33.300	0.770	0.000	0.000	80.900	M	8.32	1.469
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
EP-15P2	Σ	406.500						177.41	29.036
#2	1	289.500	0.710	0.000	0.000	92.300	M	169.04	25.938
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
EP-15P1	Σ	715.600						322.35	55.521

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.4500	1.0000	1	15,846.8	615,848	259.01	159.68
	2	0.320	936.00	15.60	0.0420	1.0000	1	57.4	48,479	20.39	11.91
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							15,904.2	578,933	243.48	140.32
#2	1	0.320	936.00	15.60	0.4500	1.0000	1	16,582.8	618,107	259.96	160.32
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							22,842.6	452,796	190.43	110.96

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

**FIRST YEAR AFTER FINAL GRADING
(POOR CONDITION)**

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	25.000	0.500	0.000	0.000	85.500	M	11.34	1.490
	2	310.600	0.540	0.000	0.000	78.700	M	77.89	11.746
	Σ	335.600						88.97	13.237
#2	1	193.000	0.500	0.000	0.000	85.500	M	87.58	11.505
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	Σ	587.600						140.52	26.311

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.1000	1.0000	1	44.3	38,735	19.55	10.90
	2	0.320	907.00	7.20	0.0420	1.0000	1	173.9	19,527	9.85	5.46
	Σ							218.2	21,958	11.08	6.08
#2	1	0.320	990.00	7.70	0.1000	1.0000	1	486.7	54,797	27.66	15.45
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	8.61	4.85
	Σ							595.4	47,295	23.87	8.31

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	130.400	0.240	0.000	0.000	85.500	M	77.03	7.839
	2	56.400	0.300	0.000	0.000	74.100	M	11.83	1.505
	Σ	186.800						87.32	9.344

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.1000	1.0000	1	213.4	37,116	18.79	10.02
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.2	13,682	6.90	3.50
	Σ							227.6	34,273	17.34	8.98

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	15.000	0.460	0.000	0.000	86.000	M	7.32	0.922
	2	177.100	0.520	0.000	0.000	79.500	M	48.68	7.097
	Σ	192.100						56.00	8.019
#2	1	37.000	0.110	0.000	0.000	86.000	M	37.13	2.850
	2	35.300	0.150	0.000	0.000	72.100	M	7.42	0.809
	Σ	264.400						65.88	11.678

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	973.00	7.10	0.1000	1.0000	1	27.1	38,551	16.21	8.98
	2	0.320	973.00	7.10	0.0420	1.0000	1	103.0	19,161	8.06	4.46
	Σ							130.0	21,713	9.13	4.98
#2	1	0.320	372.00	17.00	0.1000	1.0000	1	257.4	121,627	58.23	30.64
	2	0.340	372.00	17.00	0.0460	1.0000	1	28.3	53,610	22.55	10.68
	Σ							390.7	100,284	46.03	11.05

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	33.200	0.500	0.000	0.000	82.200	M	11.75	1.600
	2	245.200	0.560	0.000	0.000	73.800	M	35.96	6.368
	3	63.500	0.640	0.000	0.000	63.300	M	1.34	0.553
	Σ	341.900						47.77	8.521
#2	1	27.500	0.220	0.000	0.000	82.200	M	13.17	1.332
	2	23.900	0.320	0.000	0.000	63.300	M	0.60	0.209
	Σ	393.300						52.02	10.061

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	991.00	11.10	0.1000	1.0000	1	115.3	92,363	38.84	21.71
	2	0.320	991.00	11.10	0.0420	1.0000	1	196.5	40,411	17.00	9.44
	3	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,945	6.71	4.55
	Σ							320.1	52,500	22.08	11.45
#2	1	0.320	759.00	9.60	0.1000	1.0000	1	60.5	62,416	26.25	13.80
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.6	8,876	3.73	2.40
	Σ							364.7	49,613	20.87	11.06

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	5.600	0.240	0.000	0.000	81.800	M	2.54	0.265
	2	7.600	0.300	0.000	0.000	73.100	M	1.42	0.187
	Σ	13.200						3.89	0.452
#1	1	48.000	0.240	0.000	0.000	81.800	M	21.81	2.271
	2	12.400	0.380	0.000	0.000	62.400	M	0.23	0.095
	Σ	73.600						25.05	2.818

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	841.00	10.00	0.1000	1.0000	1	10.9	56,438	28.48	15.01
	2	0.320	841.00	10.00	0.0420	1.0000	1	2.7	21,148	10.67	5.39
	Σ							13.6	44,678	22.55	11.05
#1	1	0.320	841.00	10.00	0.1000	1.0000	1	120.7	72,551	36.62	19.33
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.7	8,001	4.04	2.78
	Σ							128.5	66,746	33.69	16.62

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	29.100	0.580	0.000	0.000	83.600	M	10.64	1.537
	2	225.000	0.600	0.000	0.000	75.800	M	39.87	6.861
	3	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
	Σ	349.900						52.63	9.780
#2	1	21.300	0.580	0.000	0.000	83.600	M	7.79	1.125
	2	127.100	0.600	0.000	0.000	75.800	M	22.52	3.876
	Σ	498.300						73.84	14.780

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.1000	1.0000	1	61.6	51,221	21.54	12.20
	2	0.320	819.00	9.70	0.0420	1.0000	1	125.2	23,836	10.02	5.61
	3	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							198.7	27,079	11.39	6.24
#2	1	0.320	819.00	9.70	0.1000	1.0000	1	43.4	49,376	20.77	11.76
	2	0.320	819.00	9.70	0.0420	1.0000	1	66.0	22,271	9.37	5.24
	Σ							213.5	25,478	10.72	4.44

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	3	Muskingum K:					0.130

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	36.500	0.500	0.000	0.000	84.000	M	14.85	1.978
	2	153.400	0.610	0.000	0.000	76.300	M	28.39	4.859
	Σ	189.900						42.42	6.837

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.1000	1.0000	1	16.8	11,232	4.72	2.62
	2	0.320	976.00	3.10	0.0420	1.0000	1	16.8	4,542	1.91	1.07
	Σ							33.6	6,851	2.88	1.52

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	249.900	0.780	0.000	0.000	84.100	M	80.07	13.614
	2	116.600	0.810	0.000	0.000	76.400	M	18.36	3.718
	3	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
Σ		1,371.100						207.88	36.025
#2	1	29.900	0.780	0.000	0.000	84.100	M	9.58	1.629
	2	609.500	0.810	0.000	0.000	76.400	M	95.98	19.437
	3	27.700	0.320	0.287	0.354	70.000	M	3.30	0.515
Σ		2,038.200						277.51	57.606

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.1000	1.0000	1	543.5	49,276	20.72	12.17
	2	0.320	867.00	8.50	0.0420	1.0000	1	48.4	16,294	6.85	4.01
	3	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	48.96	26.11
Σ								2,095.7	78,189	32.88	17.63
#2	1	0.320	867.00	8.50	0.1000	1.0000	1	50.4	38,363	16.13	9.46
	2	0.320	867.00	8.50	0.0420	1.0000	1	308.5	19,843	8.35	4.88
	3	0.290	854.00	23.80	0.0460	1.0000	1	29.2	76,917	32.35	17.15
Σ								1,263.3	27,204	11.44	6.73

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.88	80.00	4,247.00	4.110	0.287
#1	3	Muskingum K:					0.287

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	14.400	0.100	0.000	0.000	81.600	M	11.34	0.835
	Σ	32.500						12.92	1.019

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	13.67	5.40
	2	0.320	233.00	18.00	0.1000	1.0000	1	53.8	92,643	53.23	26.54
	Σ							56.2	86,336	49.60	22.73

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	1.400	0.040	0.060	0.384	87.200	M	1.49	0.116
	2	13.000	0.130	0.000	0.000	73.500	M	3.21	0.336
	3	27.800	0.110	0.000	0.000	87.200	M	29.62	2.306
Σ		42.200						33.50	2.758

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	238.00	12.60	0.1000	1.0000	1	3.7	43,823	25.18	13.40
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.4	20,364	10.28	4.89
	3	0.320	300.00	11.70	0.1000	1.0000	1	109.9	64,970	37.33	19.75
Σ								118.1	60,686	34.71	17.68

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	122.300	0.500	0.000	0.000	81.600	M	41.20	5.662
	2	8.500	0.500	0.000	0.000	81.600	M	2.86	0.393
	3	17.000	0.430	0.000	0.000	87.400	M	9.37	1.141
Σ		147.800						53.10	7.196

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.0420	1.0000	1	53.3	12,480	6.30	3.48
	2	0.320	840.00	7.70	0.0420	1.0000	1	4.2	14,098	7.11	3.93
	3	0.320	925.00	4.60	0.1000	1.0000	1	22.6	26,197	13.22	7.29
Σ								80.1	14,904	7.52	4.11

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	85.000	0.560	0.000	0.000	78.400	M	20.35	3.146
	2	8.700	0.560	0.000	0.000	78.400	M	2.08	0.322
	3	7.900	0.470	0.000	0.000	85.300	M	3.64	0.465
Σ		101.600						25.82	3.933

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	952.00	5.00	0.0420	1.0000	1	28.4	11,896	5.00	2.78
	2	0.320	900.00	7.20	0.0420	1.0000	1	3.0	12,452	5.24	2.91
	3	0.320	952.00	5.00	0.1000	1.0000	1	8.8	25,030	10.53	5.83
Σ								40.2	13,671	5.75	3.15

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	105.900	0.420	0.000	0.000	81.000	M	36.87	4.717
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	3	36.500	0.370	0.000	0.000	87.000	M	20.71	2.388
Σ		166.000						65.03	8.156

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0420	1.0000	1	55.7	15,939	6.70	3.64
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	3	0.320	851.00	6.00	0.1000	1.0000	1	65.7	36,618	15.40	8.42
Σ								144.8	24,143	10.15	5.45

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	24.900	0.130	0.000	0.000	83.600	M	14.28	1.340
	2	6.100	0.170	0.000	0.000	75.900	M	1.90	0.191
	Σ	31.000						16.18	1.531

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	589.00	7.00	0.1000	1.0000	1	36.8	38,361	16.53	8.62
	2	0.320	589.00	7.00	0.0420	1.0000	1	1.7	13,280	5.59	2.72
	Σ							38.5	35,436	15.26	7.88

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	278.000	0.740	0.000	0.000	87.100	M	114.32	18.280
	2	33.300	0.770	0.000	0.000	80.900	M	8.32	1.469
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
	Σ	406.500						129.73	22.408
#2	1	289.500	0.740	0.000	0.000	87.100	M	119.05	19.036
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
	Σ	715.600						230.61	41.992

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.1000	1.0000	1	2,432.7	158,113	66.50	39.25
	2	0.320	936.00	15.60	0.0420	1.0000	1	57.4	48,479	20.39	11.91
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							2,499.1	141,454	59.49	33.10
#2	1	0.320	936.00	15.60	0.1000	1.0000	1	2,545.7	158,834	66.80	39.43
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							3,345.3	104,126	43.79	23.96

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

**SECOND YEAR AFTER FINAL GRADING
(FAIR CONDITION)**

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	335.600	0.540	0.000	0.000	78.700	M	84.16	12.692
Σ		335.600						84.16	12.692
#2	1	193.000	0.570	0.000	0.000	78.700	M	47.05	7.303
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
Σ		587.600						119.50	21.564

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.0420	1.0000	1	189.7	19,708	9.95	5.51
Σ								189.7	19,708	9.95	5.51
#2	1	0.320	990.00	7.70	0.0420	1.0000	1	112.0	20,086	10.14	5.66
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	8.61	4.85
Σ								223.8	20,462	10.33	3.84

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	130.400	0.270	0.000	0.000	78.700	M	44.18	4.957
	2	56.400	0.300	0.000	0.000	74.100	M	11.83	1.505
Σ		186.800						55.66	6.463

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.0420	1.0000	1	50.9	14,498	7.32	3.79
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.2	13,682	6.90	3.50
Σ								65.1	14,287	7.21	3.73

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	37.000	0.130	0.000	0.000	79.500	M	15.81	1.511
	2	35.300	0.150	0.000	0.000	72.100	M	7.42	0.809
	3	192.100	0.520	0.102	0.349	79.500	M	52.80	7.698
	Σ	264.400						61.32	10.018

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	372.00	17.00	0.0420	1.0000	1	52.7	50,078	21.27	10.75
	2	0.340	372.00	17.00	0.0460	1.0000	1	28.3	53,610	22.55	10.68
	3	0.320	973.00	7.10	0.0420	1.0000	1	112.8	19,281	8.11	4.51
	Σ							173.0	27,819	11.74	5.32

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.940	0.102
#1	3	Muskingum K:					0.102

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	27.500	0.260	0.000	0.000	73.800	M	5.93	0.718
	2	23.900	0.320	0.000	0.000	63.300	M	0.60	0.209
	3	278.400	0.560	0.148	0.329	73.800	M	40.83	7.230
	4	63.500	0.640	0.148	0.329	63.300	M	1.34	0.553
Σ		393.300						43.69	8.710

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	759.00	9.60	0.0420	1.0000	1	11.5	23,514	9.89	4.93
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.6	8,876	3.73	2.40
	3	0.320	991.00	11.10	0.0420	1.0000	1	226.6	40,659	17.10	9.58
	4	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,901	6.69	4.55
Σ								220.8	34,139	14.36	7.77

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.280	0.148
#1	3	Muskingum K:					0.148

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	13.200	0.300	0.000	0.000	73.100	M	2.47	0.324
Σ		13.200						2.47	0.324
#1	1	48.000	0.300	0.000	0.000	73.100	M	8.99	1.179
	2	12.400	0.380	0.000	0.000	62.400	M	0.23	0.095
Σ		73.600						11.18	1.599

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	841.00	10.00	0.0420	1.0000	1	5.1	22,583	11.40	5.75
Σ								5.1	22,583	11.40	5.75
#1	1	0.320	841.00	10.00	0.0420	1.0000	1	21.5	26,327	13.29	6.71
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.7	8,001	4.04	2.78
Σ								26.0	24,294	12.26	6.00

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	254.100	0.600	0.000	0.000	75.800	M	45.02	7.749
	2	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
	Σ	349.900						47.25	9.130
#2	1	148.400	0.600	0.000	0.000	75.800	M	26.29	4.525
	Σ	498.300						65.89	13.655

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.0420	1.0000	1	143.5	24,183	10.17	5.69
	2	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							144.0	20,187	8.49	4.85
#2	1	0.320	819.00	9.70	0.0420	1.0000	1	78.6	22,685	9.54	5.33
	Σ							149.4	18,178	7.65	3.37

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	36.500	0.610	0.000	0.000	76.300	M	6.76	1.156
	2	153.400	0.610	0.000	0.000	76.300	M	28.39	4.859
	Σ	189.900						35.15	6.015

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.0420	1.0000	1	3.4	3,825	1.61	0.90
	2	0.320	976.00	3.10	0.0420	1.0000	1	16.8	4,542	1.91	1.07
	Σ							20.2	4,404	1.85	1.04

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	366.500	0.810	0.000	0.000	76.400	M	57.71	11.688
	2	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
	Σ	1,371.100						169.09	30.381
#2	1	639.400	0.810	0.000	0.000	76.400	M	100.69	20.391
	2	27.700	0.320	0.287	0.354	70.000	M	3.30	0.515
	Σ	2,038.200						235.93	51.287

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.0420	1.0000	1	174.5	18,677	7.85	4.59
	2	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	48.96	26.11
	Σ							1,632.3	76,244	32.07	16.30
#2	1	0.320	867.00	8.50	0.0420	1.0000	1	325.5	19,956	8.39	4.91
	2	0.290	854.00	23.80	0.0460	1.0000	1	29.2	76,917	32.35	17.15
	Σ							939.7	22,440	9.44	5.63

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	14.400	0.110	0.000	0.000	72.900	M	6.06	0.434
	Σ	32.500						7.64	0.619

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	13.67	5.40
	2	0.320	233.00	18.00	0.0420	1.0000	1	11.0	43,237	24.84	10.63
	Σ							13.4	39,240	22.54	9.07

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	1.400	0.050	0.060	0.384	81.300	M	1.08	0.079
	2	13.000	0.130	0.000	0.000	73.500	M	3.21	0.336
	3	27.800	0.120	0.000	0.000	81.300	M	21.50	1.579
Σ		42.200						24.95	1.995

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	238.00	12.60	0.0420	1.0000	1	1.1	19,588	11.25	5.58
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.4	20,364	10.28	4.89
	3	0.320	300.00	11.70	0.0420	1.0000	1	31.2	29,267	16.81	8.28
Σ								36.7	27,746	15.71	7.61

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	139.300	0.500	0.000	0.000	81.600	M	46.92	6.449
	2	8.500	0.500	0.000	0.000	81.600	M	2.86	0.393
	Σ	147.800						49.79	6.842

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.0420	1.0000	1	61.7	12,675	6.40	3.54
	2	0.320	840.00	7.70	0.0420	1.0000	1	4.2	14,098	7.11	3.93
	Σ							65.9	12,757	6.44	3.56

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	92.900	0.560	0.000	0.000	78.400	M	22.24	3.439
	2	8.700	0.560	0.000	0.000	78.400	M	2.08	0.322
	Σ	101.600						24.32	3.761

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	952.00	5.00	0.0420	1.0000	1	31.4	12,022	6.07	3.37
	2	0.320	900.00	7.20	0.0420	1.0000	1	3.0	12,452	6.28	3.49
	Σ							34.4	12,059	6.09	3.38

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	142.400	0.420	0.000	0.000	81.000	M	49.57	6.342
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
Σ		166.000						57.79	7.394

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0420	1.0000	1	77.7	16,512	6.94	3.77
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
Σ								101.0	18,401	7.74	4.20

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	31.000	0.170	0.000	0.000	75.900	M	9.68	0.970
Σ		31.000						9.68	0.970

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	589.00	7.00	0.0420	1.0000	1	10.4	16,122	6.78	3.30
Σ								10.4	16,122	6.78	3.30

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	311.300	0.770	0.000	0.000	80.900	M	77.76	13.730
	2	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
	Σ	406.500						85.91	16.390
#2	1	289.500	0.770	0.000	0.000	80.900	M	72.31	12.769
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
	Σ	715.600						147.14	29.706

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.0420	1.0000	1	701.4	63,017	26.50	15.51
	2	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							719.4	55,449	23.32	13.36
#2	1	0.320	936.00	15.60	0.0420	1.0000	1	646.6	62,484	26.28	15.38
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							818.4	39,215	16.49	8.44

**THIRD AND SUBSEQUENT YEARS AFTER FINAL GRADING
(GOOD CONDITION)**

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	297.200	0.590	0.000	0.000	73.300	M	39.70	7.410
	2	38.400	0.540	0.000	0.000	78.700	M	9.63	1.452
	Σ	335.600						49.02	8.862
#2	1	193.000	0.630	0.000	0.000	73.300	M	24.81	4.804
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	Σ	587.600						72.01	15.235

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.0200	1.0000	1	43.8	7,766	3.92	2.19
	2	0.320	520.00	7.70	0.0420	1.0000	1	13.5	12,306	6.21	3.44
	Σ							57.4	8,591	4.34	2.40
#2	1	0.320	990.00	7.70	0.0200	1.0000	1	29.5	7,973	4.02	2.27
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	8.61	4.85
	Σ							72.9	8,963	4.52	1.77

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	130.400	0.240	0.000	0.000	85.500	M	77.03	7.839
	2	56.400	0.300	0.000	0.000	74.100	M	11.83	1.505
	Σ	186.800						87.32	9.344

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.1000	1.0000	1	213.4	37,116	18.79	10.02
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.2	13,682	6.90	3.50
	Σ							227.6	34,273	17.34	8.98

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	37.000	0.140	0.000	0.000	74.300	M	9.93	1.021
	2	35.300	0.150	0.000	0.000	72.100	M	7.42	0.809
	3	192.100	0.570	0.102	0.349	74.300	M	29.61	5.199
Σ		264.400						36.11	7.029

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	372.00	17.00	0.0200	1.0000	1	15.5	23,225	9.77	4.68
	2	0.340	372.00	17.00	0.0460	1.0000	1	28.3	53,610	22.55	10.68
	3	0.320	973.00	7.10	0.0200	1.0000	1	31.2	7,909	3.33	1.85
Σ								68.5	23,751	9.99	3.00

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.940	0.102
#1	3	Muskingum K:					0.102

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	27.500	0.300	0.000	0.000	67.100	M	2.05	0.381
	2	23.900	0.320	0.000	0.000	63.300	M	0.60	0.209
	3	278.400	0.610	0.148	0.329	67.100	M	13.79	3.847
	4	63.500	0.640	0.148	0.329	63.300	M	1.34	0.553
Σ		393.300						16.47	4.990

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	759.00	9.60	0.0200	1.0000	1	2.1	7,854	3.30	1.72
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.6	8,876	3.73	2.40
	3	0.320	991.00	11.10	0.0200	1.0000	1	41.3	12,924	5.44	3.30
	4	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,901	6.69	4.55
Σ								49.1	11,441	4.81	3.03

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.20	21.00	1,752.00	3.280	0.148
#1	3	Muskingum K:					0.148

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	13.200	0.350	0.000	0.000	66.200	M	0.74	0.166
Σ		13.200						0.74	0.166
#1	1	48.000	0.350	0.000	0.000	66.200	M	2.71	0.602
	2	12.400	0.380	0.000	0.000	62.400	M	0.23	0.095
Σ		73.600						3.46	0.863

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	841.00	10.00	0.0200	1.0000	1	0.8	6,787	3.43	1.89
Σ								0.8	6,787	3.43	1.89
#1	1	0.320	841.00	10.00	0.0200	1.0000	1	3.6	7,921	4.00	2.20
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.7	8,001	4.04	2.78
Σ								4.9	7,329	3.70	2.12

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	254.100	0.610	0.000	0.000	69.700	M	20.19	4.581
	2	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
	Σ	349.900						23.01	5.963
#2	1	148.400	0.610	0.000	0.000	69.700	M	11.79	2.675
	Σ	498.300						32.02	8.638

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.0200	1.0000	1	32.5	9,055	3.81	2.19
	2	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							45.3	8,709	3.66	2.34
#2	1	0.320	819.00	9.70	0.0200	1.0000	1	17.8	8,491	3.57	2.05
	Σ							34.8	5,715	2.40	1.24

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	189.900	0.700	0.000	0.000	70.400	M	15.49	3.657
Σ		189.900						15.49	3.657

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.0200	1.0000	1	4.9	1,674	0.70	0.41
Σ								4.9	1,674	0.70	0.41

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	366.500	0.830	0.000	0.000	70.500	M	27.42	7.127
	2	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
	Σ	1,371.100						138.09	25.820
#2	1	639.400	0.830	0.000	0.000	70.500	M	47.83	12.433
	2	27.700	0.320	0.287	0.354	70.000	M	3.30	0.515
	Σ	2,038.200						171.10	38.769

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.0200	1.0000	1	41.5	7,103	2.99	1.80
	2	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	48.96	26.11
	Σ							1,494.0	86,290	36.29	17.52
#2	1	0.320	867.00	8.50	0.0200	1.0000	1	77.4	7,593	3.19	1.92
	2	0.290	854.00	23.80	0.0460	1.0000	1	29.2	76,917	32.35	17.15
	Σ							620.0	17,482	7.35	4.92

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	14.400	0.110	0.000	0.000	65.900	M	2.60	0.218
	Σ	32.500						4.18	0.402

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	13.67	5.40
	2	0.320	233.00	18.00	0.0200	1.0000	1	2.2	19,786	11.37	4.30
	Σ							4.6	21,301	12.24	4.81

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	1.400	0.050	0.060	0.384	76.600	M	0.79	0.057
	2	13.000	0.130	0.000	0.000	73.500	M	3.21	0.336
	3	27.800	0.130	0.000	0.000	76.600	M	9.31	0.919
Σ		42.200						12.79	1.311

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	238.00	12.60	0.0200	1.0000	1	0.4	9,819	5.64	2.59
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.4	20,364	10.28	4.89
	3	0.320	300.00	11.70	0.0200	1.0000	1	7.7	12,589	6.35	3.10
Σ								12.2	14,003	7.07	3.43

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	139.300	0.550	0.000	0.000	77.000	M	29.39	4.651
	2	8.500	0.500	0.000	0.000	81.600	M	2.86	0.393
	Σ	147.800						32.09	5.045

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.0200	1.0000	1	18.8	5,388	2.72	1.50
	2	0.320	840.00	7.70	0.0420	1.0000	1	4.2	14,098	7.11	3.93
	Σ							23.0	6,126	3.09	1.69

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	92.900	0.640	0.000	0.000	72.900	M	11.27	2.237
	2	8.700	0.560	0.000	0.000	78.400	M	2.08	0.322
	Σ	101.600						13.23	2.559

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	952.00	5.00	0.0200	1.0000	1	8.0	4,647	2.35	1.33
	2	0.320	900.00	7.20	0.0420	1.0000	1	3.0	12,452	6.28	3.49
	Σ							11.1	5,828	2.94	1.60

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	142.400	0.470	0.000	0.000	76.200	M	30.15	4.479
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	Σ	166.000						37.79	5.530

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0200	1.0000	1	23.1	7,008	2.95	1.59
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	Σ							46.4	12,007	5.05	2.58

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	31.000	0.190	0.000	0.000	69.700	M	4.49	0.564
Σ		31.000						4.49	0.564

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	589.00	7.00	0.0200	1.0000	1	2.4	6,557	2.76	1.31
Σ								2.4	6,557	2.76	1.31

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	240.800	0.790	0.000	0.000	76.200	M	37.68	7.562
	2	70.500	0.770	0.000	0.000	80.900	M	17.61	3.109
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
	Σ	406.500						64.35	13.331
#2	1	289.500	0.790	0.000	0.000	76.200	M	45.30	9.091
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
	Σ	715.600						103.80	22.969

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.0200	1.0000	1	159.5	26,387	11.10	6.47
	2	0.320	340.00	19.10	0.0420	1.0000	1	92.2	36,980	15.55	9.07
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							314.8	28,570	12.02	7.24
#2	1	0.320	936.00	15.60	0.0200	1.0000	1	196.0	26,970	11.34	6.62
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							276.6	16,374	6.89	3.71

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

FINAL RECLAMATION SEDIMENT TRAPS

Subwatershed Hydrology Detail:

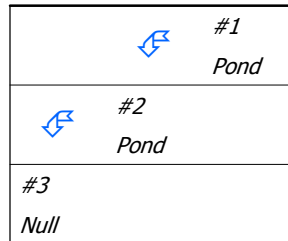
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	25.000	0.450	0.000	0.000	91.200	M	17.21	2.102
	2	310.600	0.540	0.000	0.000	78.700	M	77.89	11.746
	Σ	335.600						93.86	13.849
#2	1	193.000	0.450	0.000	0.000	91.200	M	132.86	16.231
	2	59.000	0.620	0.000	0.000	74.100	M	8.44	1.569
	Σ	587.600						138.89	29.608
#3	Σ	587.600						138.79	29.608

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.4500	1.0000	1	305.2	180,523	75.92	42.53
	2	0.320	907.00	7.20	0.0420	1.0000	1	173.9	19,527	8.21	4.55
	Σ							479.1	53,725	22.60	10.54
#2	1	0.320	990.00	7.70	0.4500	1.0000	1	3,355.4	249,421	104.90	59.25
	2	0.300	990.00	7.70	0.0510	1.0000	1	20.6	17,059	7.17	4.04
	Σ							3,393.0	240,146	101.00	33.27
#3	Σ							296.1	29,200	12.28	5.99

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.349	0.335	EP-1AP
Pond	#2	==>	#3	0.000	0.000	1 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	1.32	57.00	4,332.29	3.44	0.349
#1	Muskingum K:					0.349

Subwatershed Hydrology Detail:

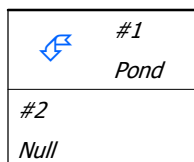
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	130.400	0.240	0.000	0.000	85.500	M	77.03	7.839
	2	56.400	0.300	0.000	0.000	74.100	M	11.83	1.505
	Σ	186.800						87.32	9.344
#2	Σ	186.800						87.18	9.344

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	721.00	5.20	0.1000	1.0000	1	213.4	37,116	15.66	8.35
	2	0.300	721.00	5.20	0.0510	1.0000	1	14.2	13,682	5.75	2.91
	Σ							227.6	34,273	14.45	7.48
#2	Σ							39.7	6,867	2.89	2.01

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	1B Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

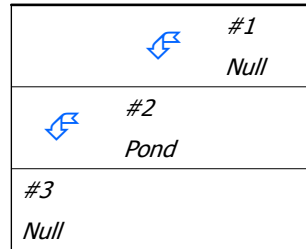
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	15.000	0.410	0.000	0.000	91.600	M	10.98	1.295
	2	177.100	0.520	0.000	0.000	79.500	M	48.68	7.097
	Σ	192.100						59.01	8.392
#2	1	37.000	0.100	0.000	0.000	91.600	M	48.01	3.994
	2	35.300	0.150	0.000	0.000	72.100	M	7.42	0.809
	Σ	264.400						75.51	13.195
#3	Σ	264.400						71.34	13.195

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	973.00	7.10	0.4500	1.0000	1	184.6	178,514	75.08	41.78
	2	0.320	973.00	7.10	0.0420	1.0000	1	103.0	19,161	8.06	4.46
	Σ							287.5	52,968	22.28	10.44
#2	1	0.320	372.00	17.00	0.4500	1.0000	1	1,615.2	448,138	214.56	122.13
	2	0.340	372.00	17.00	0.0460	1.0000	1	28.3	53,610	22.55	10.68
	Σ							1,872.9	401,644	189.09	44.01
#3	Σ							122.9	56,785	23.88	11.26

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.102	0.349	2A
Pond	#2	==>	#3	0.000	0.000	2 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	1.73	25.00	1,447.00	3.94	0.102
#1	Muskingum K:					0.102

Subwatershed Hydrology Detail:

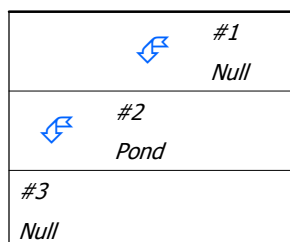
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	33.200	0.500	0.000	0.000	82.200	M	11.75	1.600
	2	245.200	0.560	0.000	0.000	73.800	M	35.96	6.368
	3	63.500	0.640	0.000	0.000	63.300	M	1.34	0.553
	Σ	341.900						47.77	8.521
#2	1	27.500	0.220	0.000	0.000	82.200	M	13.17	1.332
	2	23.900	0.320	0.000	0.000	63.300	M	0.60	0.209
	Σ	393.300						52.02	10.061
#3	Σ	393.300						52.01	10.061

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	991.00	11.10	0.1000	1.0000	1	115.3	92,363	38.84	21.71
	2	0.320	991.00	11.10	0.0420	1.0000	1	196.5	40,411	17.00	9.44
	3	0.350	959.00	11.40	0.0390	1.0000	1	8.2	15,945	6.71	4.55
	Σ							320.1	52,500	22.08	11.45
#2	1	0.320	759.00	9.60	0.1000	1.0000	1	60.5	62,416	26.25	13.80
	2	0.350	759.00	9.60	0.0390	1.0000	1	1.6	8,876	3.73	2.40
	Σ							364.7	49,613	20.87	11.06
#3	Σ							49.2	8,938	3.76	2.50

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.148	0.329	3A
Pond	#2	==>	#3	0.000	0.000	3 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

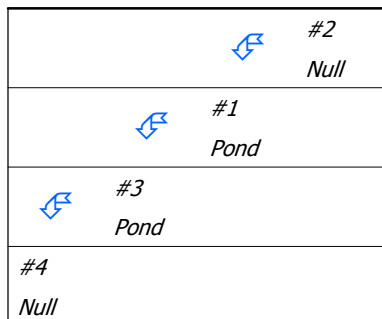
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	5.600	0.200	0.000	0.000	88.200	M	4.07	0.395
	2	7.600	0.300	0.000	0.000	73.100	M	1.42	0.187
	Σ	13.200						5.21	0.581
#1	1	48.000	0.200	0.000	0.000	88.200	M	34.92	3.385
	2	12.400	0.380	0.000	0.000	62.400	M	0.23	0.095
	Σ	73.600						39.02	4.061
#3	Σ	73.600						39.05	4.061
#4	Σ	73.600						39.01	4.061

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#2	1	0.320	841.00	10.00	0.4500	1.0000	1	80.0	252,027	108.71	59.57
	2	0.320	841.00	10.00	0.0420	1.0000	1	2.7	21,148	8.89	4.49
	Σ							82.8	213,576	92.05	42.41
#1	1	0.320	841.00	10.00	0.4500	1.0000	1	887.7	316,737	136.62	75.43
	2	0.360	841.00	10.00	0.0400	1.0000	1	0.7	8,001	3.36	2.32
	Σ							918.2	294,191	126.79	65.57
#3	Σ							30.5	19,187	8.07	3.49
#4	Σ							5.1	3,701	1.56	0.56

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#3	0.000	0.000	4 Trap 1
Null	#2	==>	#1	0.098	0.366	4A
Pond	#3	==>	#4	0.000	0.000	4 Trap 2
Null	#4	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	29.100	0.560	0.000	0.000	89.600	M	16.39	2.226
	2	225.000	0.600	0.000	0.000	75.800	M	39.87	6.861
	3	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
	Σ	349.900						58.06	10.468
#2	1	21.300	0.560	0.000	0.000	89.600	M	12.00	1.629
	2	127.100	0.600	0.000	0.000	75.800	M	22.52	3.876
	Σ	498.300						78.77	14.903
#3	Σ	498.300						78.36	14.903

Subwatershed Sedimentology Detail:

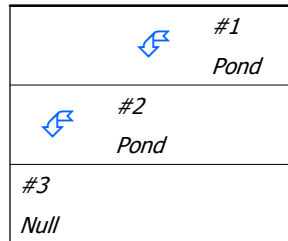
Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.4500	1.0000	1	434.4	231,907	97.53	56.24
	2	0.320	819.00	9.70	0.0420	1.0000	1	125.2	23,836	10.02	5.61
	3	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							572.4	89,250	37.54	16.51
#2	1	0.320	819.00	9.70	0.4500	1.0000	1	306.3	224,149	94.27	54.31
	2	0.320	819.00	9.70	0.0420	1.0000	1	66.0	22,271	9.37	5.24
	Σ							445.4	115,441	48.55	9.03
#3	Σ							71.6	22,424	9.43	3.52

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	3	Muskingum K:					0.130

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.246	0.343	EP-5P
Pond	#2	==>	#3	0.000	0.000	5 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	1.52	50.00	3,285.00	3.70	0.246
#1	Muskingum K:					0.246

Subwatershed Hydrology Detail:

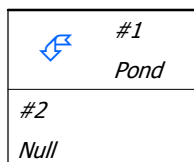
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	36.500	0.420	0.000	0.000	89.700	M	23.57	2.817
	2	153.400	0.610	0.000	0.000	76.300	M	28.39	4.859
	Σ	189.900						48.91	7.675
#2	Σ	189.900						48.78	7.675

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	976.00	3.10	0.4500	1.0000	1	119.4	55,613	23.39	12.90
	2	0.320	976.00	3.10	0.0420	1.0000	1	16.8	4,542	1.91	1.07
	Σ							136.2	32,442	13.64	5.44
#2	Σ							21.4	6,680	2.81	1.52

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	6 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	249.900	0.760	0.000	0.000	89.700	M	120.11	19.229
	2	116.600	0.810	0.000	0.000	76.400	M	18.36	3.718
	3	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
	Σ	1,371.100						244.44	41.640
#2	1	29.900	0.760	0.000	0.000	89.700	M	14.37	2.301
	2	609.500	0.810	0.000	0.000	76.400	M	95.98	19.437
	3	27.700	0.320	0.287	0.354	70.000	M	3.30	0.515
	Σ	2,038.200						217.40	53.323
#3	Σ	2,038.200						217.13	53.323

Subwatershed Sedimentology Detail:

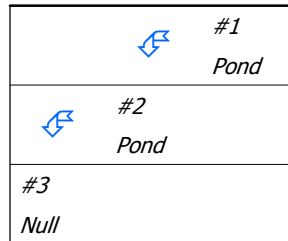
Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.4500	1.0000	1	3,723.5	223,555	94.02	55.91
	2	0.320	867.00	8.50	0.0420	1.0000	1	48.4	16,294	6.85	4.01
	3	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	48.96	26.11
	Σ							5,238.3	170,635	71.76	37.11
#2	1	0.320	867.00	8.50	0.4500	1.0000	1	345.3	176,833	74.37	43.99
	2	0.320	867.00	8.50	0.0420	1.0000	1	308.5	19,843	8.35	4.88
	3	0.290	854.00	23.80	0.0460	1.0000	1	29.2	76,917	32.35	17.15
	Σ							714.4	55,197	23.21	4.10
#3	Σ							202.7	18,275	7.69	2.05

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.88	80.00	4,247.00	4.110	0.287
#1	3	Muskingum K:					0.287

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.341	0.344	EP-7P
Pond	#2	==>	#3	0.000	0.000	7 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	1.58	73.00	4,624.00	3.76	0.341
#1	Muskingum K:					0.341

Subwatershed Hydrology Detail:

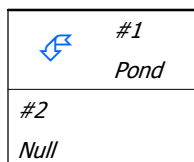
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	18.100	0.120	0.000	0.000	62.800	M	1.58	0.184
	2	14.400	0.100	0.000	0.000	81.600	M	11.34	0.835
	Σ	32.500						12.92	1.019
#2	Σ	32.500						12.80	1.019

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.260	233.00	18.00	0.0380	1.0000	1	2.4	23,789	11.39	4.50
	2	0.320	233.00	18.00	0.1000	1.0000	1	53.8	92,643	44.36	22.11
	Σ							56.2	86,336	41.34	18.94
#2	Σ							4.0	8,287	3.49	2.12

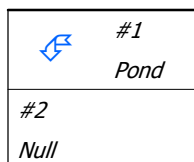
Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	8 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	8 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

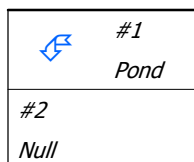
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	1.400	0.040	0.060	0.384	87.200	M	1.49	0.116
	2	13.000	0.130	0.000	0.000	73.500	M	3.21	0.336
	3	27.800	0.110	0.000	0.000	87.200	M	29.62	2.306
	Σ	42.200						33.50	2.758
#2	Σ	42.200						33.28	2.758

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	238.00	12.60	0.1000	1.0000	1	3.7	43,823	20.98	11.16
	2	0.310	300.00	11.70	0.0380	1.0000	1	4.4	20,364	8.56	4.07
	3	0.320	300.00	11.70	0.1000	1.0000	1	109.9	64,970	31.11	16.45
	Σ							118.1	60,686	28.92	14.73
#2	Σ							9.9	8,979	3.78	0.28

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	9 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

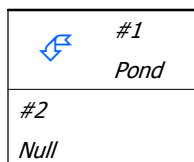
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	122.300	0.500	0.000	0.000	81.600	M	41.20	5.662
	2	8.500	0.500	0.000	0.000	81.600	M	2.86	0.393
	3	17.000	0.380	0.000	0.000	92.700	M	13.58	1.560
	Σ	147.800						56.72	7.615
#2	Σ	147.800						56.73	7.615

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	925.00	4.60	0.0420	1.0000	1	53.3	12,480	5.25	2.90
	2	0.320	840.00	7.70	0.0420	1.0000	1	4.2	14,098	5.93	3.28
	3	0.320	925.00	4.60	0.4500	1.0000	1	149.2	123,597	51.98	28.52
	Σ							206.7	41,822	17.59	8.30
#2	Σ							23.2	6,791	2.86	1.84

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	10 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

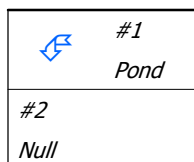
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	85.000	0.560	0.000	0.000	78.400	M	20.35	3.146
	2	8.700	0.560	0.000	0.000	78.400	M	2.08	0.322
	3	7.900	0.390	0.000	0.000	91.000	M	5.68	0.657
	Σ	101.600						27.17	4.125
#2	Σ	101.600						27.14	4.125

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	952.00	5.00	0.0420	1.0000	1	28.4	11,896	5.00	2.78
	2	0.320	900.00	7.20	0.0420	1.0000	1	3.0	12,452	5.24	2.91
	3	0.320	952.00	5.00	0.4500	1.0000	1	61.9	121,009	50.89	28.08
	Σ							93.3	42,077	17.70	6.92
#2	Σ							11.0	7,969	3.35	1.73

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	11 Trap
Null	#2	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

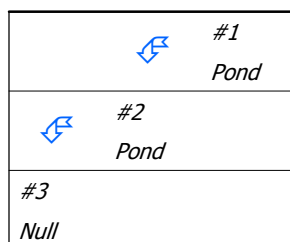
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	105.900	0.420	0.000	0.000	81.000	M	36.87	4.717
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	3	36.500	0.330	0.000	0.000	92.400	M	29.80	3.305
	Σ	166.000						73.29	9.073
#2	Σ	166.000						84.42	7.388
#3	Σ	166.000						83.91	7.388

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0420	1.0000	1	55.7	15,939	6.70	3.64
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	3	0.320	851.00	6.00	0.4500	1.0000	1	434.2	166,727	70.53	38.86
	Σ							513.2	85,062	35.95	17.17
#2	Σ							76.4	22,514	9.47	5.80
#3	Σ							20.1	6,665	2.80	1.98

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	EP-12P
Pond	#2	==>	#3	0.000	0.000	12 Trap
Null	#3	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

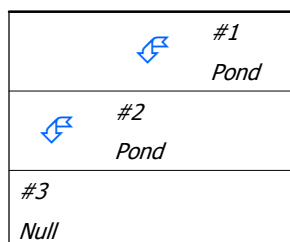
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	24.900	0.110	0.000	0.000	89.700	M	29.81	2.402
	2	6.100	0.170	0.000	0.000	75.900	M	1.90	0.191
	Σ	31.000						31.36	2.593
#2	Σ	31.000						31.09	2.593
#3	Σ	31.000						30.95	2.593

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	589.00	7.00	0.4500	1.0000	1	309.2	164,593	78.80	43.01
	2	0.320	589.00	7.00	0.0420	1.0000	1	1.7	13,280	5.59	2.72
	Σ							310.9	157,507	75.36	40.11
#2	Σ							7.1	7,359	3.10	0.05
#3	Σ							1.7	3,697	1.55	0.03

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	14 Trap 1
Pond	#2	==>	#3	0.000	0.000	14 Trap 2
Null	#3	==>	End	0.000	0.000	Outfall



Subwatershed Hydrology Detail:

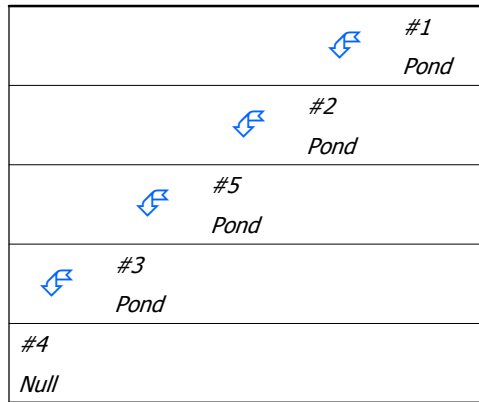
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	278.000	0.710	0.000	0.000	92.300	M	162.32	24.907
	2	33.300	0.770	0.000	0.000	80.900	M	8.32	1.469
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
	Σ	406.500						177.41	29.036
#2	1	289.500	0.710	0.000	0.000	92.300	M	169.04	25.938
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
	Σ	715.600						313.57	50.812
#5	Σ	715.600						308.48	50.812
#3	Σ	715.600						308.34	50.812
#4	Σ	715.600						309.34	50.812

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.4500	1.0000	1	15,846.8	615,848	259.01	159.68
	2	0.320	936.00	15.60	0.0420	1.0000	1	57.4	48,479	20.39	11.91
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							15,904.2	578,933	243.48	140.32
#2	1	0.320	936.00	15.60	0.4500	1.0000	1	16,582.8	618,107	259.96	160.32
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							19,101.5	635,860	267.42	99.39
#5	Σ							2,248.4	119,416	50.22	19.56
#3	Σ							1,384.8	44,939	18.90	8.33
#4	Σ							528.4	20,203	8.50	4.33

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.217	0.350	EP-15P2
Pond	#2	==>	#5	0.000	0.000	EP-15P1 Upstream Trap
Pond	#3	==>	#4	0.000	0.000	15 Trap
Null	#4	==>	End	0.000	0.000	Outfall
Pond	#5	==>	#3	0.000	0.000	EP-15P1



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	1.77	55.00	3,110.00	3.98	0.217
#1	Muskingum K:					0.217

PERMANENT PONDS

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	25.000	0.450	0.000	0.000	91.200	M	17.21	2.102
	2	310.600	0.540	0.000	0.000	78.700	M	77.89	11.746
	Σ	335.600						93.86	13.849

10-year, 24-hour storm

Final Grading

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.4500	1.0000	1	305.2	180,523	75.92	42.53
	2	0.320	907.00	7.20	0.0420	1.0000	1	173.9	19,527	8.21	4.55
	Σ							479.1	53,725	22.60	10.54

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	335.600	0.590	0.000	0.000	73.300	M	44.83	8.367
Σ		335.600						44.83	8.367

10-year, 24-hour storm

Fully Reclaimed

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	907.00	7.20	0.0200	1.0000	1	50.2	7,879	3.31	1.85
Σ								50.2	7,879	3.31	1.85

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	335.600	0.590	0.000	0.000	73.300	M	4.11	1.729
Σ		335.600						4.11	1.729

2-year, 24-hour storm

Fully Reclaimed

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	29.100	0.560	0.000	0.000	89.600	M	16.39	2.226
	2	225.000	0.600	0.000	0.000	75.800	M	39.87	6.861
	3	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
Σ		349.900						58.06	10.468

10-year, 24-hour storm

Final Grading

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.4500	1.0000	1	434.4	231,907	97.53	56.24
	2	0.320	819.00	9.70	0.0420	1.0000	1	125.2	23,836	10.02	5.61
	3	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
Σ								572.4	89,250	37.54	16.51

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	3	Muskingum K:					0.130

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	254.200	0.610	0.000	0.000	69.700	M	20.20	4.583
	2	95.800	0.740	0.130	0.383	67.500	M	4.64	1.381
	Σ	350.000						23.02	5.964

10-year, 24-hour storm

Fully Reclaimed

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	819.00	9.70	0.0200	1.0000	1	32.5	9,056	3.81	2.19
	2	0.310	998.00	12.00	0.0390	1.0000	1	26.7	22,766	9.57	5.93
	Σ							45.3	8,708	3.66	2.34

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	2	Muskingum K:					0.130

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	254.100	0.610	0.000	0.000	69.700	M	0.89	0.655
	2	95.800	0.740	0.130	0.383	67.500	M	0.18	0.140
	Σ	349.900						1.01	0.795

2-year, 24-hour storm

Fully Reclaimed

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	2	8. Large gullies, diversions, and low flowing streams	3.42	89.00	2,599.00	5.550	0.130
#1	2	Muskingum K:					0.130

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	249.900	0.760	0.000	0.000	89.700	M	120.11	19.229
	2	116.600	0.810	0.000	0.000	76.400	M	18.36	3.718
	3	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
Σ		1,371.100						244.44	41.640

10-year, 24-hour storm

Final Grading

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.4500	1.0000	1	3,723.5	223,555	112.82	67.10
	2	0.320	867.00	8.50	0.0420	1.0000	1	48.4	16,294	8.22	4.81
	3	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	58.75	31.33
Σ								5,238.3	170,635	86.12	44.54

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	1.88	80.00	4,247.00	4.110	0.287
#1	3	Muskingum K:					0.287

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	366.600	0.830	0.000	0.000	70.500	M	27.43	7.129
	2	1,004.600	0.320	0.287	0.354	70.000	M	119.79	18.693
Σ		1,371.200						138.10	25.822

10-year, 24-hour storm
Fully Reclaimed

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	867.00	8.50	0.0200	1.0000	1	41.5	7,104	3.59	2.16
	2	0.290	854.00	23.80	0.0460	1.0000	1	1,627.0	116,417	58.75	31.33
Σ								1,494.0	86,286	43.55	21.02

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	366.600	0.830	0.000	0.000	70.500	M	1.60	1.123
	2	1,004.600	0.320	0.287	0.354	70.000	M	4.28	2.775
	Σ	1,371.200						5.83	3.898

2-year, 24-hour storm
Fully Reclaimed

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	105.900	0.420	0.000	0.000	81.000	M	36.87	4.717
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	3	36.500	0.330	0.000	0.000	92.400	M	29.80	3.305
Σ		166.000						73.29	9.073

10-year, 24-hour storm

Final Grading

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0420	1.0000	1	55.7	15,939	6.70	3.64
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	3	0.320	851.00	6.00	0.4500	1.0000	1	434.2	166,727	70.53	38.86
Σ								513.2	85,062	35.95	17.17

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	142.400	0.470	0.000	0.000	76.200	M	30.15	4.479
	2	23.600	0.420	0.000	0.000	81.000	M	8.22	1.051
	Σ	166.000						37.79	5.530

10-year, 24-hour storm
Fully Reclaimed

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	851.00	6.00	0.0200	1.0000	1	23.1	7,008	2.95	1.59
	2	0.320	570.00	11.40	0.0420	1.0000	1	23.3	29,738	12.51	6.80
	Σ							46.4	12,007	5.05	2.58

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	142.400	0.470	0.000	0.000	76.200	M	4.44	1.136
	2	23.600	0.420	0.000	0.000	81.000	M	2.15	0.342
	Σ	166.000						6.39	1.478

2-year, 24-hour storm
Fully Reclaimed

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	278.000	0.710	0.000	0.000	92.300	M	162.32	24.907
	2	33.300	0.770	0.000	0.000	80.900	M	8.32	1.469
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
EP-15P2	Σ	406.500						177.41	29.036
#2	1	289.500	0.710	0.000	0.000	92.300	M	169.04	25.938
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
EP-15P1	Σ	715.600						313.57	50.812

10-year, 24-hour storm

Final Grading

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.4500	1.0000	1	15,846.8	615,848	259.01	159.68
	2	0.320	936.00	15.60	0.0420	1.0000	1	57.4	48,479	20.39	11.91
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							15,904.2	578,933	243.48	140.32
#2	1	0.320	936.00	15.60	0.4500	1.0000	1	16,582.8	618,107	259.96	160.32
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							19,101.5	635,860	267.42	99.39

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	240.800	0.790	0.000	0.000	74.700	M	31.98	6.723
	2	70.500	0.770	0.000	0.000	80.900	M	17.61	3.109
	3	95.200	0.770	0.262	0.363	74.700	M	12.84	2.660
EP-15P2	Σ	406.500						58.68	12.492
#2	1	289.500	0.790	0.000	0.000	76.200	M	45.30	9.091
	2	19.600	0.770	0.000	0.000	74.700	M	2.64	0.548
EP-15P1	Σ	715.600						47.94	17.422

10-year, 24-hour storm

Fully Reclaimed

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	936.00	15.60	0.0200	1.0000	1	136.2	25,321	10.65	6.22
	2	0.320	936.00	15.60	0.0420	1.0000	1	132.9	52,948	22.27	13.02
	3	0.270	808.00	16.40	0.0400	1.0000	1	79.8	37,259	15.67	9.18
	Σ							334.1	33,121	13.93	8.19
#2	1	0.320	936.00	15.60	0.0200	1.0000	1	196.0	26,970	11.34	6.62
	2	0.270	808.00	16.40	0.0400	1.0000	1	13.6	31,068	13.07	7.61
	Σ							209.6	27,193	11.44	3.70

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	240.800	0.790	0.000	0.000	74.700	M	3.98	1.545
	2	70.500	0.770	0.000	0.000	80.900	M	4.45	1.006
	3	95.200	0.770	0.262	0.363	74.700	M	1.59	0.611
EP-15P2	Σ	406.500						9.21	3.162
#2	1	289.500	0.790	0.000	0.000	76.200	M	6.93	2.306
	2	19.600	0.770	0.000	0.000	74.700	M	0.33	0.126
EP-15P1	Σ	715.600						7.25	2.432

2-year, 24-hour storm

Fully Reclaimed

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	3	8. Large gullies, diversions, and low flowing streams	2.25	96.00	4,258.00	4.500	0.262
#1	3	Muskingum K:					0.262

SOIL STOCKPILE AREAS

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	47.900	0.730	0.000	0.000	70.000	M	3.58	0.889
Disturbed	2	47.900	0.390	0.000	0.000	89.700	M	31.78	3.691
Poor	3	47.900	0.470	0.000	0.000	84.100	M	20.21	2.612
Fair	4	47.900	0.610	0.000	0.000	76.400	M	8.96	1.529
Good	5	47.900	0.710	0.000	0.000	70.500	M	3.93	0.931
Σ		239.500						63.51	9.651

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	1,225.00	3.00	0.0460	1.0000	1	2.1	2,938	1.48	0.88
	2	0.320	1,225.00	3.00	0.4500	1.0000	1	170.7	60,850	30.71	16.86
	3	0.320	1,225.00	3.00	0.1000	1.0000	1	24.3	12,335	6.23	3.44
	4	0.320	1,225.00	3.00	0.0420	1.0000	1	4.8	4,114	2.08	1.16
	5	0.320	1,225.00	3.00	0.0200	1.0000	1	1.1	1,471	0.74	0.43
Σ								203.0	36,863	18.60	7.73

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	47.900	0.355	0.000	0.000	87.500	M	28.50	3.240
	Σ	47.900						28.50	3.240
#2	Σ	47.900						17.39	3.240
#3	Σ	47.900						17.38	3.240
#4	Σ	47.900						17.32	3.240

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	150.00	33.00	0.4500	1.0000	1	1,462.2	490,365	206.23	119.24
	Σ						Stockpile	1,462.2	490,365	206.23	119.24
#2	Σ						Stockpile with silt fence	90.8	106,311	44.71	8.52
#3	Σ						Sediment trap outlet	4.6	11,998	5.05	0.14
#4	Σ						Sediment trap with silt fence	1.6	2,915	1.23	0.16

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	47.900	0.390	0.000	0.000	89.700	M	31.78	3.691
	Σ	47.900						31.78	3.691
#2	Σ	47.900						31.66	3.691
#3	Σ	47.900						31.67	3.691

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	1,225.00	3.00	0.4500	1.0000	1	170.7	60,850	25.59	14.05
	Σ						Final grading	170.7	60,850	25.59	14.05
#2	Σ						Upper sediment trap outlet	8.9	8,289	3.49	0.11
#3	Σ						Lower sediment trap outlet	2.2	2,198	0.92	0.22

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	22.000	0.420	0.000	0.000	73.500	M	3.67	0.559
Disturbed	2	22.000	0.220	0.000	0.000	92.600	M	20.07	2.019
Poor	3	22.000	0.270	0.000	0.000	87.200	M	14.00	1.463
Fair	4	22.000	0.330	0.000	0.000	81.300	M	8.65	1.001
Good	5	22.000	0.390	0.000	0.000	76.600	M	5.31	0.714
Σ		110.000						49.71	5.756

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	1,257.00	3.34	0.0380	1.0000	1	1.6	4,005	2.02	1.07
	2	0.320	1,257.00	3.34	0.4500	1.0000	1	104.5	69,072	36.14	19.50
	3	0.320	1,257.00	3.34	0.1000	1.0000	1	15.9	14,767	7.45	4.00
	4	0.320	1,257.00	3.34	0.0420	1.0000	1	4.1	5,665	2.86	1.52
	5	0.320	1,257.00	3.34	0.0200	1.0000	1	1.2	2,408	1.22	0.64
Σ								127.3	35,613	18.52	8.37

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	22.000	0.240	0.000	0.000	87.500	M	14.77	1.497
	Σ	22.000						14.77	1.497
#2	Σ	22.000						10.72	1.497
#3	Σ	22.000						10.71	1.497
#4	Σ	22.000						10.61	1.497

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	150.00	33.00	0.4500	1.0000	1	654.5	485,042	206.33	117.10
	Σ				Stockpile			654.5	485,042	206.33	117.10
#2	Σ				Stockpile with silt fence			24.4	52,815	22.21	5.82
#3	Σ				Sediment trap outlet			2.8	9,902	4.16	1.69
#4	Σ				Sediment trap with silt fence			0.6	2,064	0.87	0.13

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	22.000	0.219	0.000	0.000	92.600	M	20.09	2.019
	Σ	22.000						20.09	2.019
#2	Σ	22.000						19.98	2.019
#3	Σ	22.000						19.95	2.019

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	1,257.00	3.34	0.4500	1.0000	1	104.5	69,133	30.15	16.26
	Σ						Final grading	104.5	69,133	30.15	16.26
#2	Σ						Upper sediment trap outlet	4.8	6,321	2.66	0.05
#3	Σ						Lower sediment trap outlet	1.8	2,363	0.99	0.29

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	11.200	0.260	0.000	0.000	70.000	M	1.48	0.209
Disturbed	2	11.200	0.140	0.000	0.000	89.700	M	9.26	0.879
Poor	3	11.200	0.170	0.000	0.000	84.100	M	6.60	0.622
Fair	4	11.200	0.220	0.000	0.000	76.400	M	3.34	0.360
Good	5	11.200	0.260	0.000	0.000	70.500	M	1.60	0.219
Σ		56.000						21.90	2.288

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	780.00	5.00	0.0380	1.0000	1	1.1	8,073	4.07	2.01
	2	0.320	780.00	5.00	0.4500	1.0000	1	85.7	127,489	67.09	36.34
	3	0.320	780.00	5.00	0.1000	1.0000	1	13.0	29,143	15.07	7.88
	4	0.320	780.00	5.00	0.0420	1.0000	1	2.8	11,305	5.71	2.84
	5	0.320	780.00	5.00	0.0200	1.0000	1	0.7	4,492	2.27	1.12
Σ								103.3	72,281	37.89	17.05

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	11.200	0.160	0.000	0.000	87.500	M	8.17	0.770
	Σ	11.200						8.17	0.770
#2	Σ	11.200						7.19	0.770
#3	Σ	11.200						7.18	0.770
#4	Σ	11.200						7.01	0.770

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	150.00	33.00	0.4500	1.0000	1	321.9	470,636	205.08	115.19
	Σ				Stockpile			321.9	470,636	205.08	115.19
#2	Σ				Stockpile with silt fence			23.2	53,491	22.50	11.51
#3	Σ				Sediment trap outlet			1.3	4,620	1.94	0.10
#4	Σ				Sediment trap with silt fence			0.3	1,208	0.51	0.11

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	11.200	0.140	0.000	0.000	89.700	M	9.26	0.879
	Σ	11.200						9.26	0.879
#2	Σ	11.200						9.27	0.879
#3	Σ	11.200						9.28	0.879

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	780.00	5.00	0.4500	1.0000	1	85.7	127,489	55.91	30.28
	Σ						Final grading	85.7	127,489	55.91	30.28
#2	Σ						Upper sediment trap outlet	5.2	16,355	6.88	2.48
#3	Σ						Lower sediment trap outlet	1.0	2,356	0.99	0.55

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	11.200	0.260	0.000	0.000	70.000	M	1.48	0.209
Disturbed	2	11.200	0.140	0.000	0.000	89.700	M	9.26	0.879
Poor	3	11.200	0.170	0.000	0.000	84.100	M	6.60	0.622
Fair	4	11.200	0.220	0.000	0.000	76.400	M	3.34	0.360
Good	5	11.200	0.260	0.000	0.000	70.500	M	1.60	0.219
Σ		56.000						21.90	2.288

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.310	778.00	4.40	0.0380	1.0000	1	1.0	7,149	3.61	1.78
	2	0.320	778.00	4.40	0.4500	1.0000	1	75.9	113,525	59.74	32.31
	3	0.320	778.00	4.40	0.1000	1.0000	1	11.5	25,834	13.36	6.98
	4	0.320	778.00	4.40	0.0420	1.0000	1	2.4	10,013	5.05	2.52
	5	0.320	778.00	4.40	0.0200	1.0000	1	0.6	3,978	2.01	0.99
Σ								91.4	64,200	33.65	15.13

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	9.800	0.200	0.000	0.000	87.500	M	6.83	0.662
	Σ	9.800						6.83	0.662
#2	Σ	9.800						6.03	0.662
#3	Σ	9.800						6.03	0.662
#4	Σ	9.800						5.93	0.662

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	150.00	33.00	0.4500	1.0000	1	270.3	461,084	198.36	111.47
	Σ						Stockpile	270.3	461,084	198.36	111.47
#2	Σ						Stockpile with silt fence	14.5	40,408	16.99	8.57
#3	Σ						Sediment trap outlet	2.8	10,141	4.26	2.38
#4	Σ						Sediment trap with silt fence	0.8	3,312	1.39	0.39

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	11.200	0.140	0.000	0.000	89.700	M	9.26	0.879
	Σ	11.200						9.26	0.879
#2	Σ	11.200						9.27	0.879
#3	Σ	11.200						9.27	0.879

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	778.00	4.40	0.4500	1.0000	1	75.9	113,525	49.79	26.92
	Σ						Final grading	75.9	113,525	49.79	26.92
#2	Σ						Upper sediment trap outlet	2.5	8,178	3.44	0.05
#3	Σ						Lower sediment trap outlet	0.5	1,650	0.69	0.21

RAIL LOOP

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	30.900	0.150	0.000	0.000	74.100	M	8.13	0.839
Disturbed	2	30.900	0.090	0.000	0.000	91.200	M	39.45	3.258
Poor	3	30.900	0.110	0.000	0.000	85.500	M	30.22	2.307
Fair	4	30.900	0.130	0.000	0.000	78.700	M	12.39	1.192
Good	5	30.900	0.150	0.000	0.000	73.300	M	7.46	0.785
Σ		154.500						92.16	8.381

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	624.00	12.00	0.0500	1.0000	1	24.7	44,628	22.52	10.80
	2	0.290	624.00	12.00	0.4500	1.0000	1	1,025.6	364,108	209.19	117.74
	3	0.290	624.00	12.00	0.1000	1.0000	1	161.9	96,019	55.17	28.80
	4	0.290	624.00	12.00	0.0420	1.0000	1	32.0	38,990	19.81	9.92
	5	0.290	624.00	12.00	0.0200	1.0000	1	9.1	17,824	9.00	4.27
Σ								1,253.3	235,574	134.50	58.43

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	30.900	0.110	0.000	0.000	85.500	M	30.22	2.307
	Σ	30.900						30.22	2.307
#2	Σ	30.900						30.02	2.307

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	624.00	12.00	0.1000	1.0000	1	161.9	96,019	45.97	24.00
	Σ					Final grading		161.9	96,019	45.97	24.00
#2	Σ					Sediment trap outlet		21.6	16,618	6.99	4.73

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	9.000	0.080	0.000	0.000	74.100	M	4.20	0.300
Disturbed	2	9.000	0.050	0.000	0.000	91.200	M	11.49	0.949
Poor	3	9.000	0.060	0.000	0.000	85.500	M	8.80	0.672
Fair	4	9.000	0.070	0.000	0.000	78.700	M	5.91	0.427
Good	5	9.000	0.080	0.000	0.000	73.300	M	3.92	0.281
Σ		45.000						34.32	2.628

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	354.00	11.30	0.0500	1.0000	1	5.6	31,222	17.94	7.83
	2	0.290	354.00	11.30	0.4500	1.0000	1	168.9	219,815	126.29	70.04
	3	0.290	354.00	11.30	0.1000	1.0000	1	26.7	55,218	31.72	16.49
	4	0.290	354.00	11.30	0.0420	1.0000	1	6.9	25,103	14.42	6.83
	5	0.290	354.00	11.30	0.0200	1.0000	1	2.1	12,659	7.27	3.12
Σ								210.2	125,922	72.35	32.60

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	9.000	0.060	0.000	0.000	85.500	M	8.80	0.672
	Σ	9.000						8.80	0.672
#2	Σ	9.000						8.80	0.672

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	354.00	11.30	0.1000	1.0000	1	26.7	55,218	26.44	13.74
	Σ					Final grading		26.7	55,218	26.44	13.74
#2	Σ					Sediment trap outlet		5.4	13,541	5.69	4.20

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	26.700	0.010	0.000	0.000	74.100	M	12.46	0.891
Σ		26.700						12.46	0.891

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.77	0.0500	1.0000	1	11.4	21,472	12.34	5.38
Σ								11.4	21,472	12.34	5.38

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.800	0.010	0.000	0.000	74.100	M	5.97	0.427
	2	13.900	0.070	0.000	0.000	91.200	M	17.74	1.465
	Σ	26.700						23.72	1.892

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.80	0.0500	1.0000	1	5.0	19,761	11.35	4.95
	2	0.290	266.00	9.80	0.4500	1.0000	1	166.0	144,484	83.01	45.70
	Σ							171.0	122,476	70.37	36.72

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.800	0.010	0.000	0.000	74.100	M	5.97	0.427
	2	13.900	0.080	0.000	0.000	85.500	M	13.60	1.038
	Σ	26.700						19.57	1.465

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.80	0.0500	1.0000	1	5.0	19,761	11.35	4.95
	2	0.290	266.00	9.80	0.1000	1.0000	1	26.2	35,418	20.35	10.55
	Σ							31.2	30,660	17.61	8.92

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.800	0.010	0.000	0.000	74.100	M	5.97	0.427
	2	13.900	0.090	0.000	0.000	78.700	M	9.12	0.659
	Σ	26.700						15.09	1.086

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.80	0.0500	1.0000	1	5.0	19,761	11.35	4.95
	2	0.290	266.00	9.80	0.0420	1.0000	1	6.8	16,031	9.21	4.36
	Σ							11.8	17,508	10.06	4.59

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.800	0.010	0.000	0.000	74.100	M	5.97	0.427
	2	13.900	0.100	0.000	0.000	73.300	M	6.06	0.434
	Σ	26.700						12.03	0.861

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.80	0.0500	1.0000	1	5.0	19,761	11.35	4.95
	2	0.290	266.00	9.80	0.0200	1.0000	1	2.0	8,070	4.64	1.99
	Σ							7.1	13,887	7.98	3.46

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.800	0.010	0.000	0.000	74.100	M	5.97	0.427
	2	13.900	0.070	0.000	0.000	91.200	M	17.74	1.465
	Σ	26.700						23.72	1.892
#2	Σ	26.700						23.54	1.892

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	266.00	9.80	0.0500	1.0000	1	5.0	19,761	9.46	4.12
	2	0.290	266.00	9.80	0.4500	1.0000	1	166.0	144,484	69.18	38.08
	Σ					Final grading		171.0	122,476	58.64	30.60
#2	Σ					Sediment trap outlet		9.5	13,401	5.64	0.27

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
Baseline	1	2.200	0.070	0.000	0.000	74.100	M	1.03	0.073
Disturbed	2	2.200	0.040	0.000	0.000	91.200	M	2.81	0.232
Poor	3	2.200	0.050	0.000	0.000	85.500	M	2.15	0.164
Fair	4	2.200	0.060	0.000	0.000	78.700	M	1.44	0.104
Good	5	2.200	0.070	0.000	0.000	73.300	M	0.96	0.069
Σ		11.000						8.39	0.642

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	281.00	11.70	0.0500	1.0000	1	1.1	24,144	13.87	6.05
	2	0.290	281.00	11.70	0.1000	1.0000	1	7.1	40,636	23.35	12.75
	3	0.290	281.00	11.70	0.1000	1.0000	1	5.0	42,799	24.59	12.77
	4	0.290	281.00	11.70	0.0420	1.0000	1	1.3	19,404	11.15	5.28
	5	0.290	281.00	11.70	0.0200	1.0000	1	0.4	9,774	5.62	2.41
Σ								14.9	32,050	18.41	9.68

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	2.200	0.040	0.000	0.000	91.200	M	2.81	0.232
	Σ	2.200						2.81	0.232
#2	Σ	2.200						2.82	0.232

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	281.00	11.70	0.1000	1.0000	1	7.1	40,636	19.46	10.62
	Σ					Final grading		7.1	40,636	19.46	10.62
#2	Σ					Sediment trap outlet		0.8	7,904	3.32	1.53

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	117.600	0.320	0.000	0.000	74.100	M	23.98	3.139
Σ		117.600						23.98	3.139

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	42.7	19,470	9.83	5.02
Σ								42.7	19,470	9.83	5.02

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	84.700	0.320	0.000	0.000	74.100	M	17.27	2.261
	2	32.900	0.220	0.000	0.000	91.200	M	27.91	2.783
	Σ	117.600						43.79	5.044

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	29.5	18,724	9.45	4.82
	2	0.290	906.00	6.62	0.4500	1.0000	1	390.0	178,689	93.04	50.83
	Σ							419.5	136,213	70.77	30.61

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	84.700	0.320	0.000	0.000	74.100	M	17.27	2.261
	2	32.900	0.250	0.000	0.000	85.500	M	19.20	1.975
	Σ	117.600						35.54	4.236

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	29.5	18,724	9.45	4.82
	2	0.290	906.00	6.62	0.1000	1.0000	1	57.9	39,891	20.13	10.76
	Σ							87.5	30,086	15.18	7.60

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	84.700	0.320	0.000	0.000	74.100	M	17.27	2.261
	2	32.900	0.290	0.000	0.000	78.700	M	10.88	1.247
	Σ	117.600						27.65	3.508

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	29.5	18,724	9.45	4.82
	2	0.290	906.00	6.62	0.0420	1.0000	1	13.7	15,465	7.81	4.07
	Σ							43.3	17,312	8.74	4.55

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	84.700	0.320	0.000	0.000	74.100	M	17.27	2.261
	2	32.900	0.320	0.000	0.000	73.300	M	6.13	0.822
	Σ	117.600						23.40	3.083

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	29.5	18,724	9.45	4.82
	2	0.290	906.00	6.62	0.0200	1.0000	1	3.8	6,596	3.33	1.69
	Σ							33.3	15,559	7.85	3.99

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	84.700	0.320	0.000	0.000	74.100	M	17.27	2.261
	2	32.900	0.220	0.000	0.000	91.200	M	27.91	2.783
	Σ	117.600						43.79	5.044
#2	Σ	117.600						43.79	5.044

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.290	906.00	6.62	0.0500	1.0000	1	29.5	18,724	7.87	4.02
	2	0.290	906.00	6.62	0.4500	1.0000	1	390.0	178,689	77.54	42.36
	Σ					Final grading		419.5	136,213	58.98	25.51
#2	Σ					Sediment trap outlet		25.3	15,691	6.60	3.58

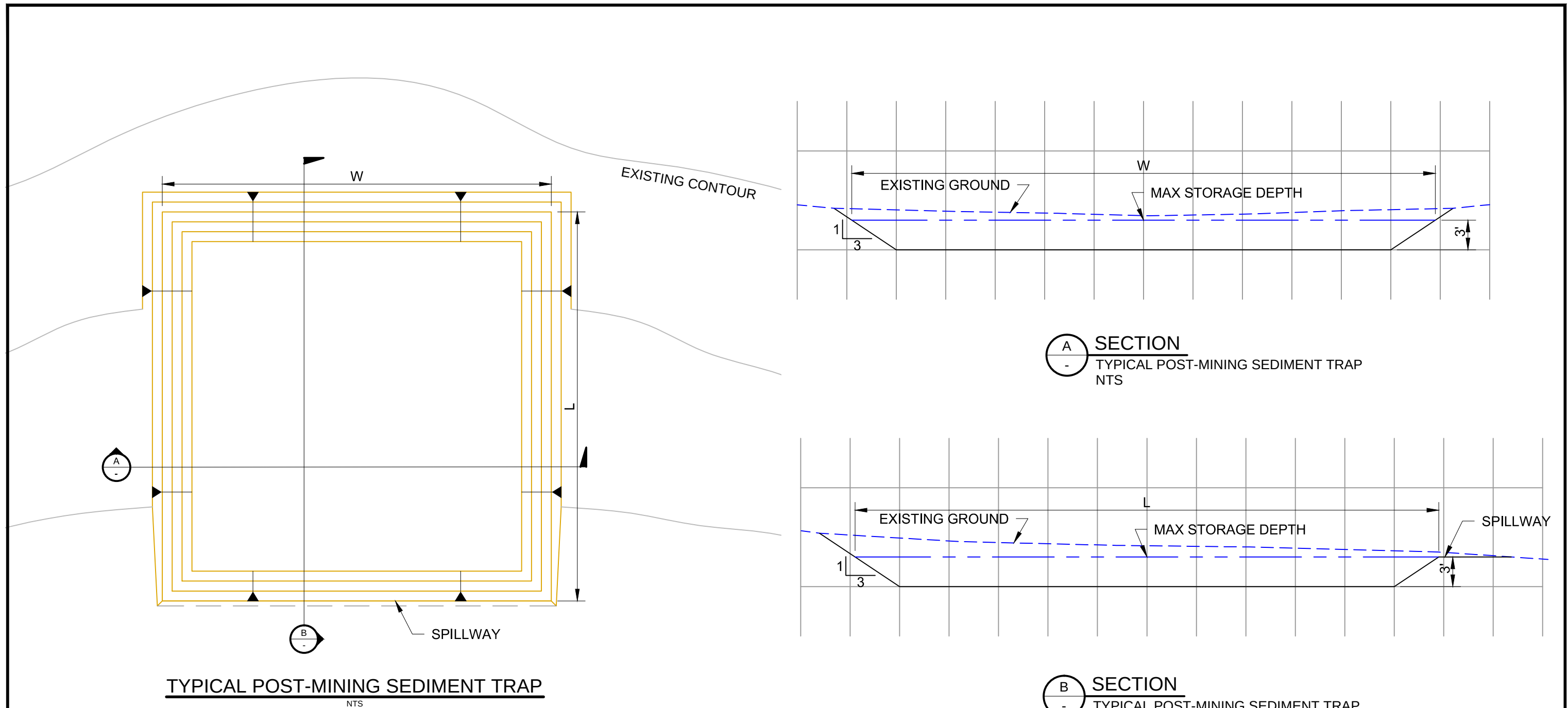
Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	47.700	0.230	0.000	0.000	74.100	M	11.17	1.281
Σ		47.700						11.17	1.281

CV-6 flow calculation

ATTACHMENT B

SEDIMENT TRAP AND POND CONFIGURATIONS



TYPICAL POST-MINING SEDIMENT TRAP
NTS

SECTION A
TYPICAL POST-MINING SEDIMENT TRAP
NTS

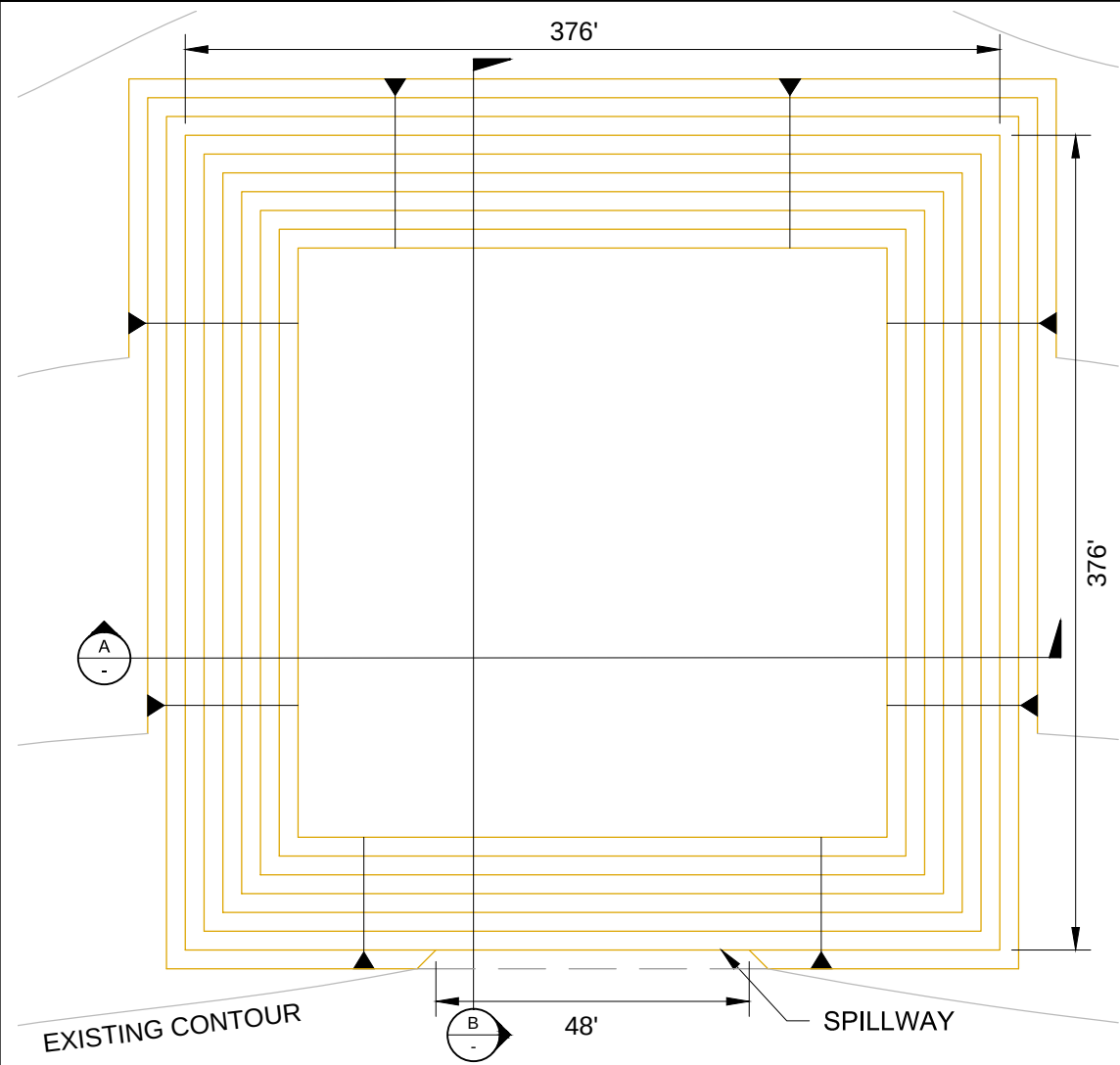
SECTION B
TYPICAL POST-MINING SEDIMENT TRAP
NTS

NOTES:

1. CONSTRUCT SEDIMENT TRAPS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. MAXIMUM STORAGE DEPTH IS 3'. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. OPERATIONAL SOIL STOCKPILES MANAGED TO WESTERN ALKALINE STANDARDS (SS-4, SS-5, & SS-6) USE TYPICAL SEDIMENT TRAPS WITH SILT FENCE INSTALLED BELOW SPILLWAY OUTFALL.
4. SEDIMENT TRAP SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME AND SURFACE AREA REQUIREMENTS ARE MET. LENGTH MUST BE GREATER THAN OR EQUAL TO WIDTH.

TO CALCULATE TRAP DIMENSIONS FROM SURFACE AREA FOR A SQUARE TRAP, USE THE RELATIONSHIP:
 $L = W = \text{SQRT}(43560 \cdot A)$
 WHERE
 A = REQUIRED SURFACE AREA (ACRES)
 L = W = TOP DIMENSION (FEET) OF SEDIMENT TRAP STORAGE AREA

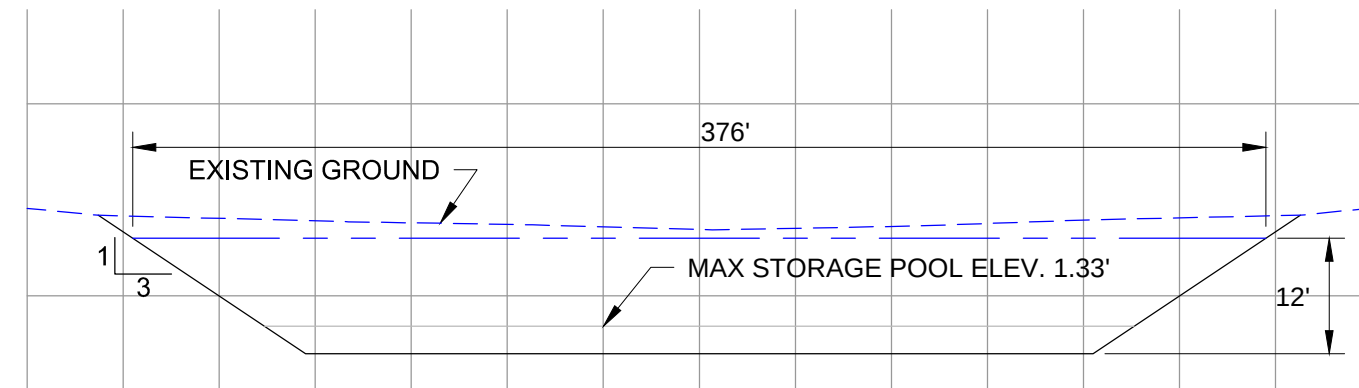
STORAGE VOLUME CALCULATED USING PRISMOIDAL FORMULA:
 $V = (L \cdot W + 4(L-9)(W-9) + (L-18)(W-18)) / 2$



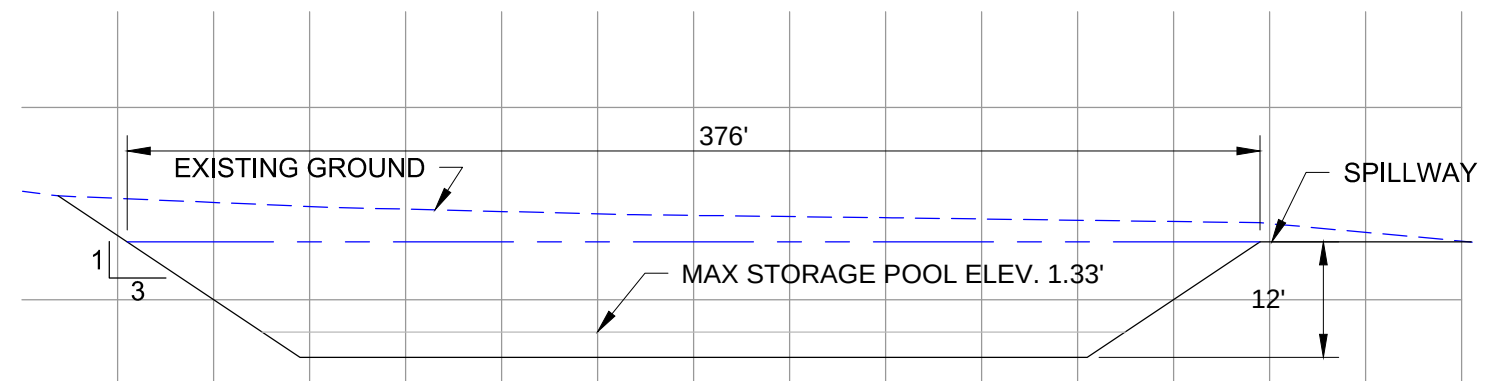
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
1	245.5	74.1	91.2	0.30	0.051	7.7	990
1A	328.7	74.1	91.2	0.30	0.050	12.3	760

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	4.4
4.00	9.2
6.00	14.4
8.00	19.9
10.00	25.8
12.00	32.2

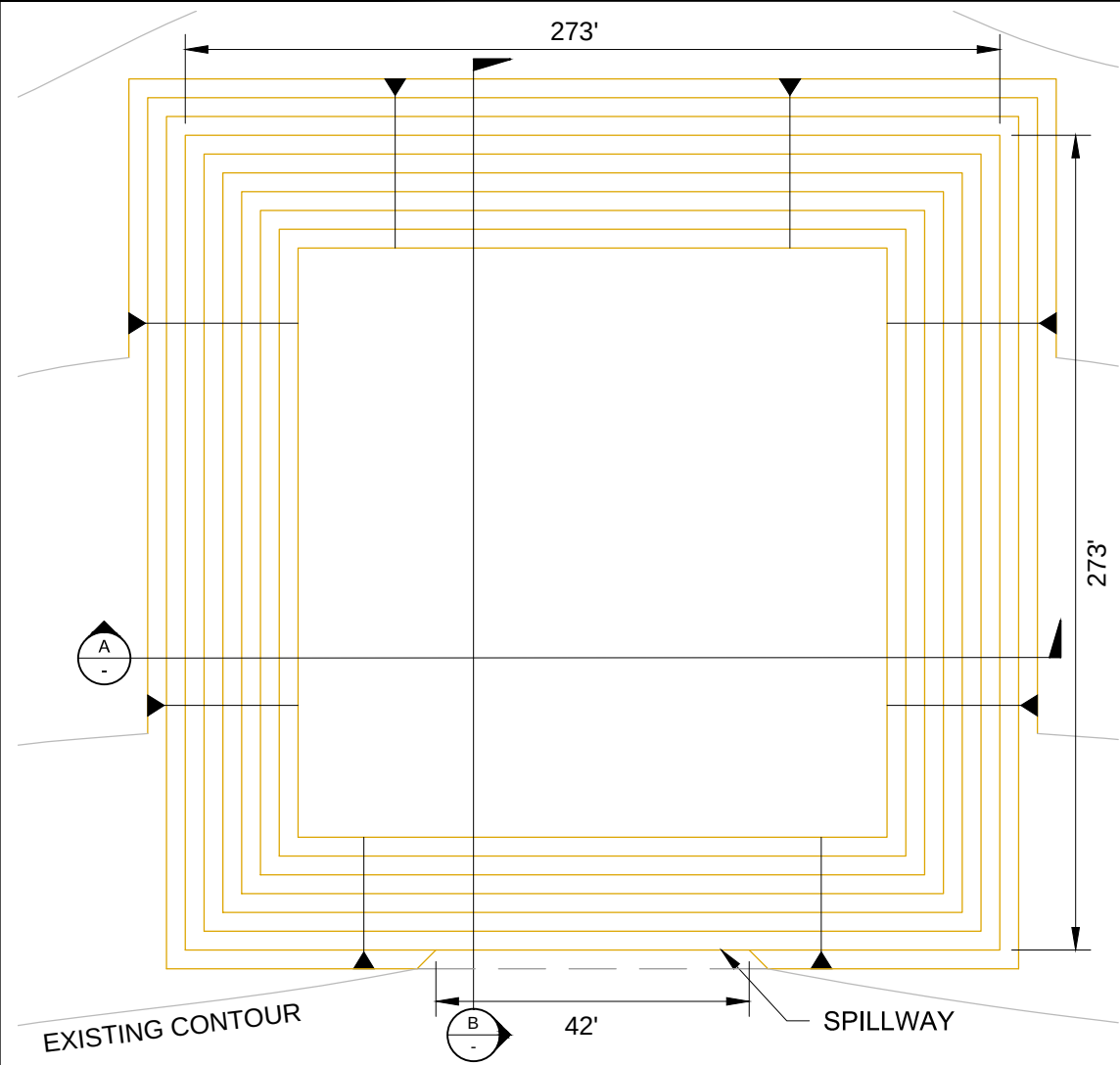
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-1	574.2	206.0	368.2	147.3	27.14	1.61	31.98

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

**FIRST PHASE OPERATIONAL DRAINAGE
CONTROL SEDIMENT POND
EP-1 CONFIGURATION**

FIGURE

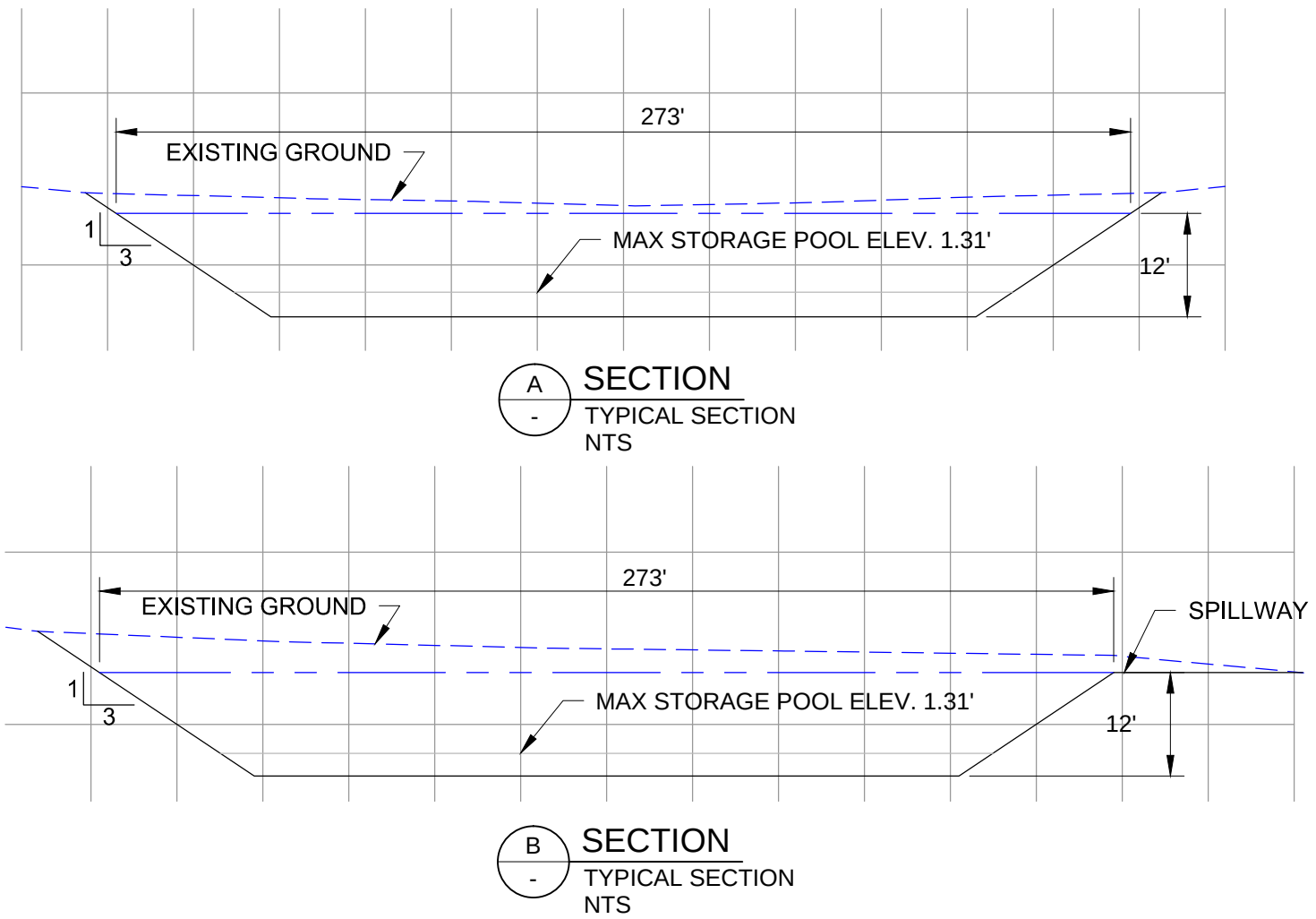
B-2



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
1B	199.8	74.1	91.2	0.30	0.051	5.2	721

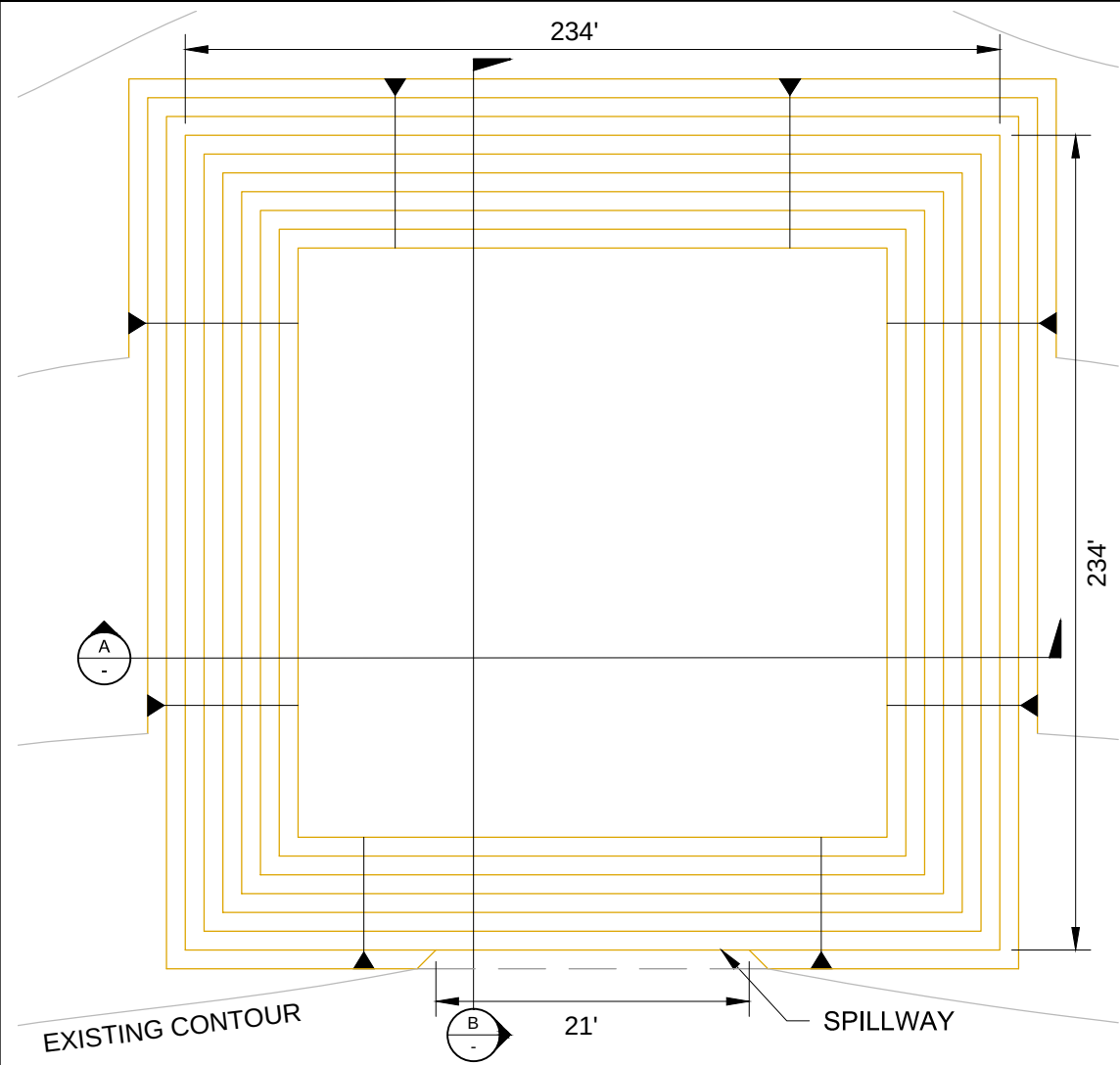
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	2.0
4.00	4.2
6.00	6.6
8.00	9.3
10.00	12.3
12.00	15.6

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-1B	199.8	141.5	58.3	131.6	13.48	0.70	15.59

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

**FIRST PHASE OPERATIONAL DRAINAGE
CONTROL SEDIMENT POND
EP-1B CONFIGURATION**

FIGURE
B-3

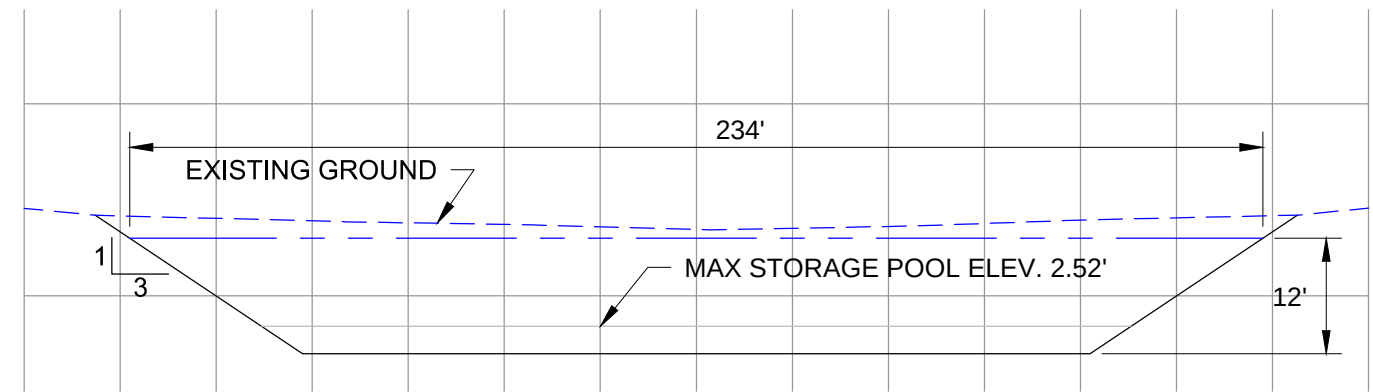


TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

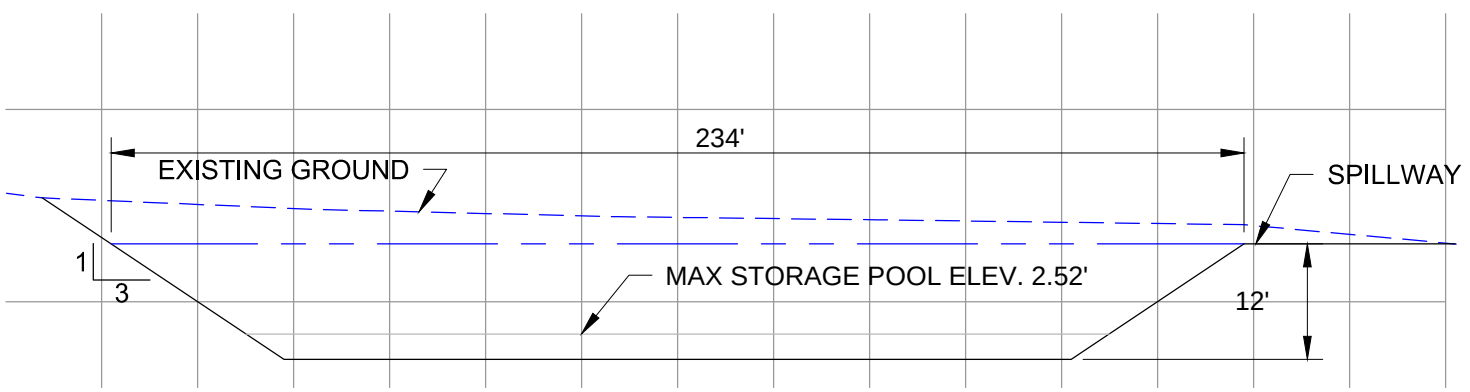
NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.3
4.00	2.8
6.00	4.5
8.00	6.4
10.00	8.5
12.00	10.9



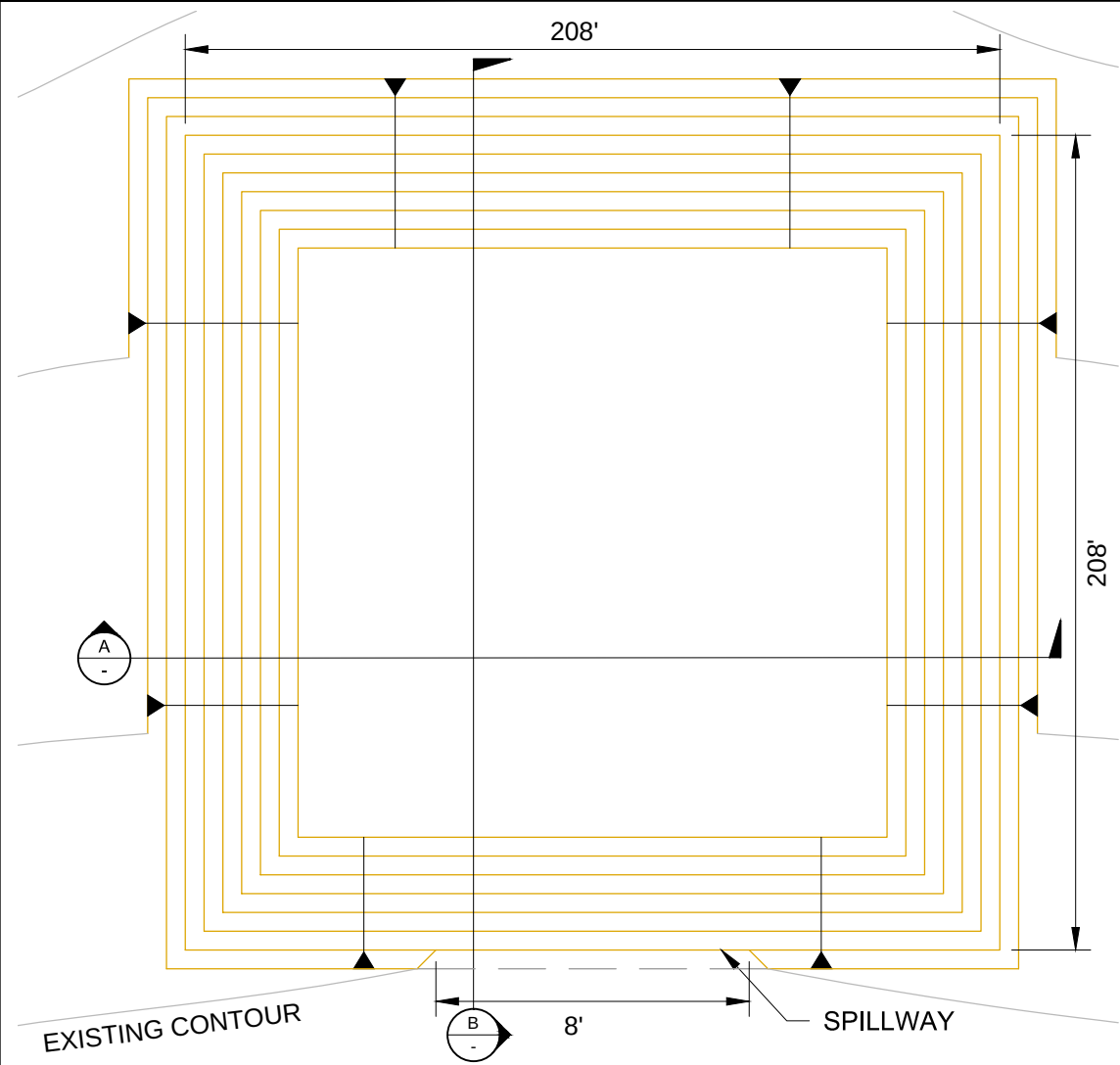
SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
2	70.3	72.1	91.6	0.34	0.046	17.0	372
2A	121.4	72.1	91.6	0.34	0.046	14.5	786

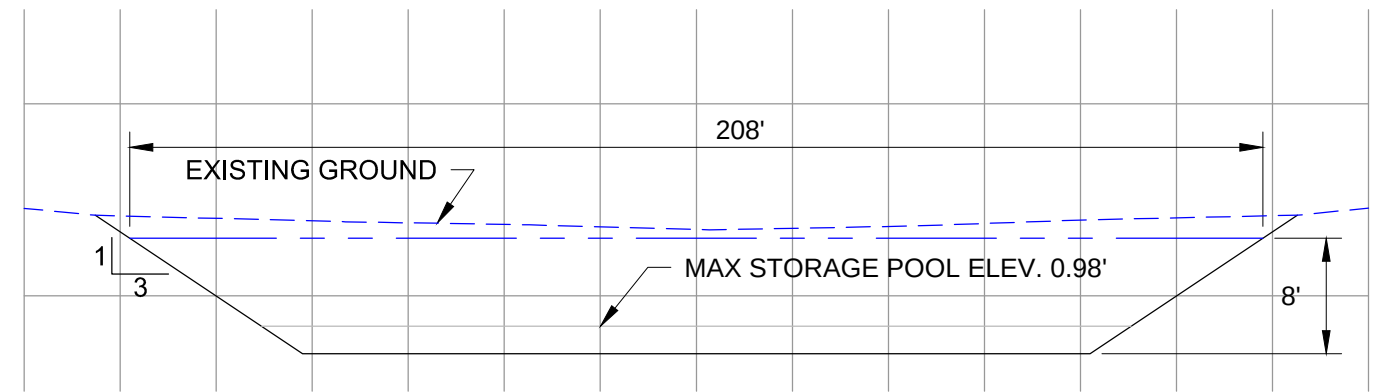
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-2	191.7	47.6	144.1	65.0	8.12	0.92	10.89



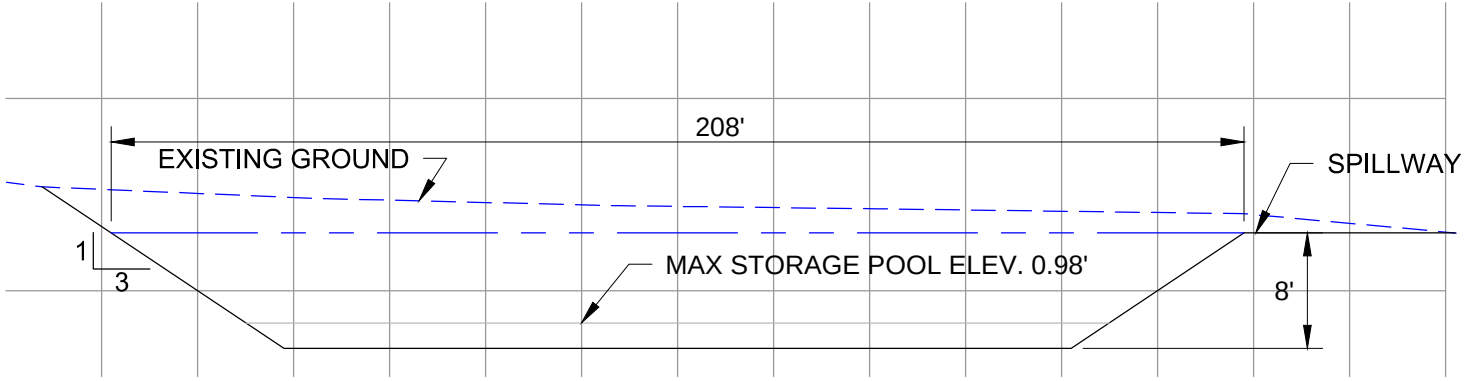
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
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SECTION A
TYPICAL SECTION
NTS

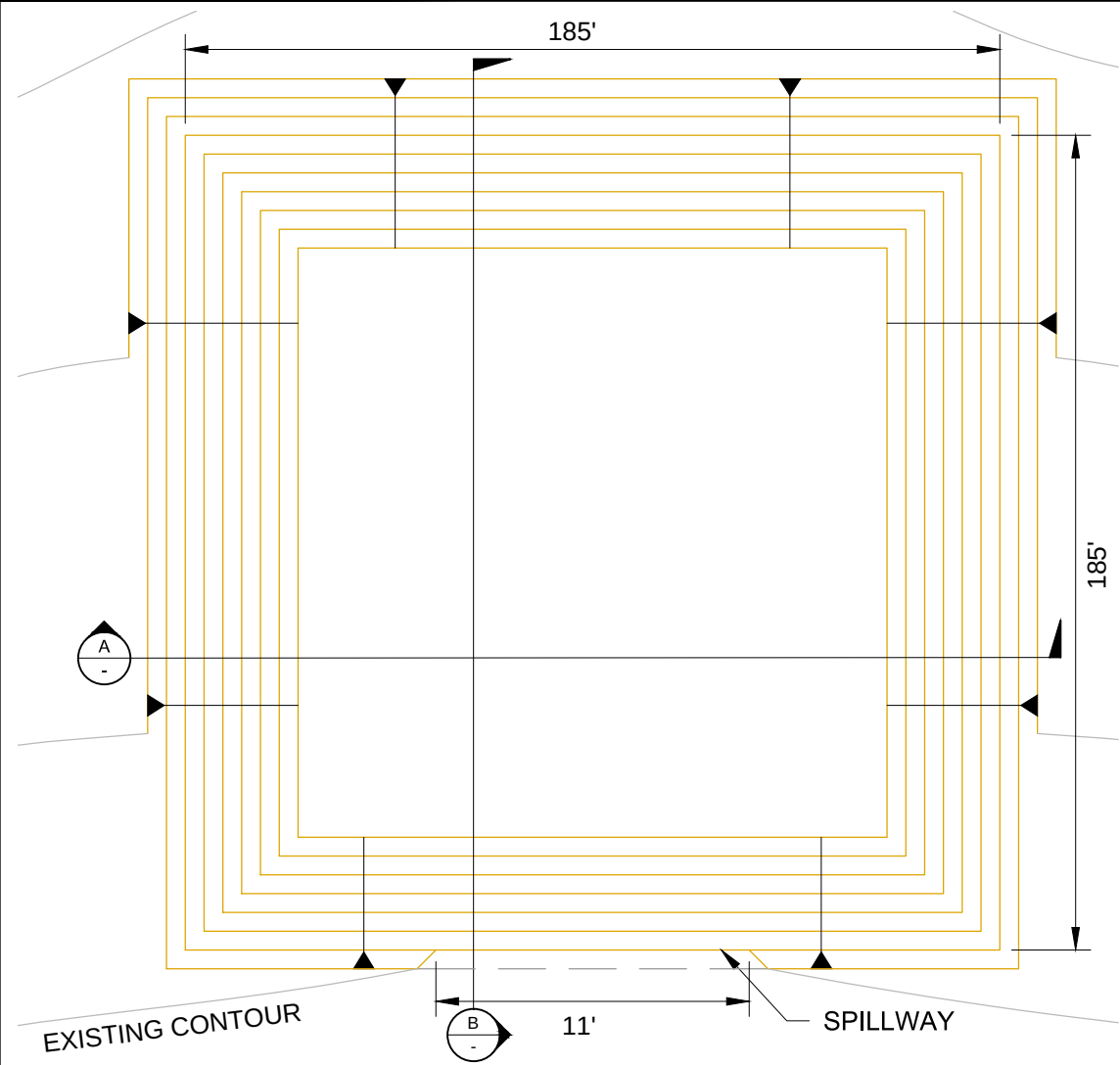


SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
3	46.5	63.3	88.5	0.35	0.039	9.6	759
3A	247.3	63.3	88.5	0.35	0.039	11.4	959
4A	17.0	62.4	88.2	0.36	0.040	10.5	723

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.3
4.00	2.7
6.00	4.4
8.00	6.3

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-3	310.8	33.7	260.0	24.9	5.25	0.33	6.25

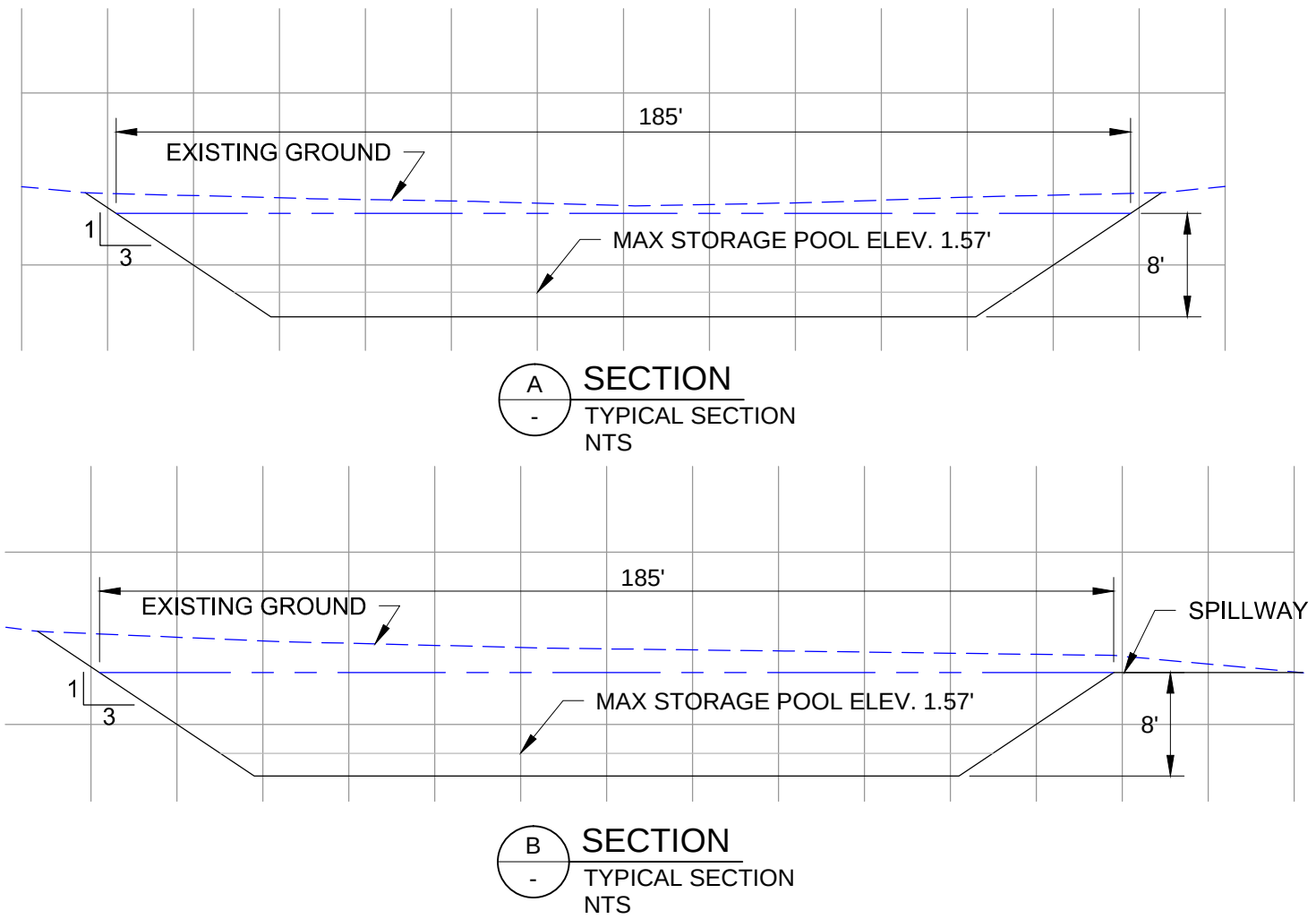


TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

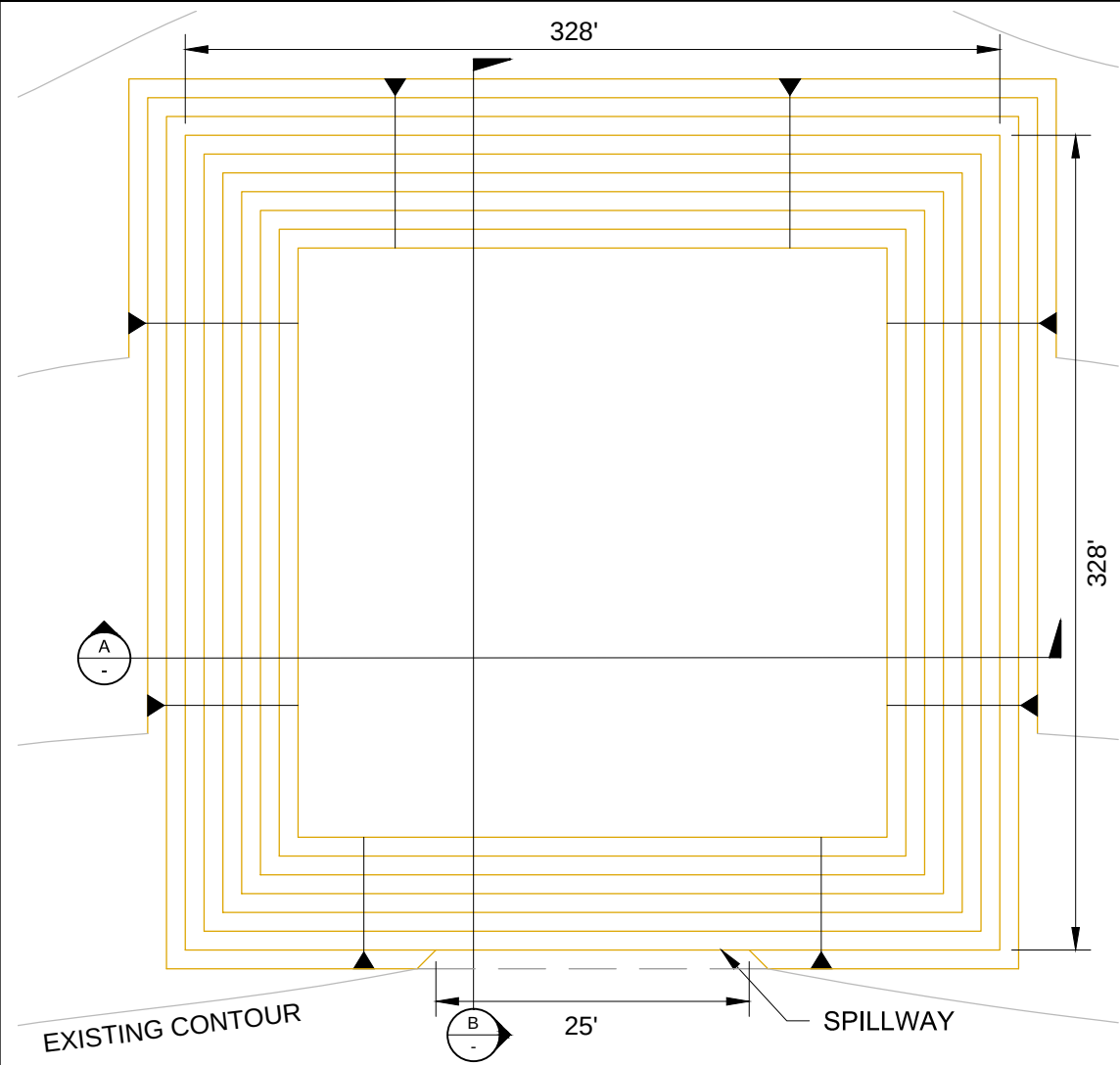
1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
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4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.9
4.00	2.0
6.00	3.3
8.00	4.8



Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
4	62.0	62.4	88.2	0.36	0.040	10.0	841

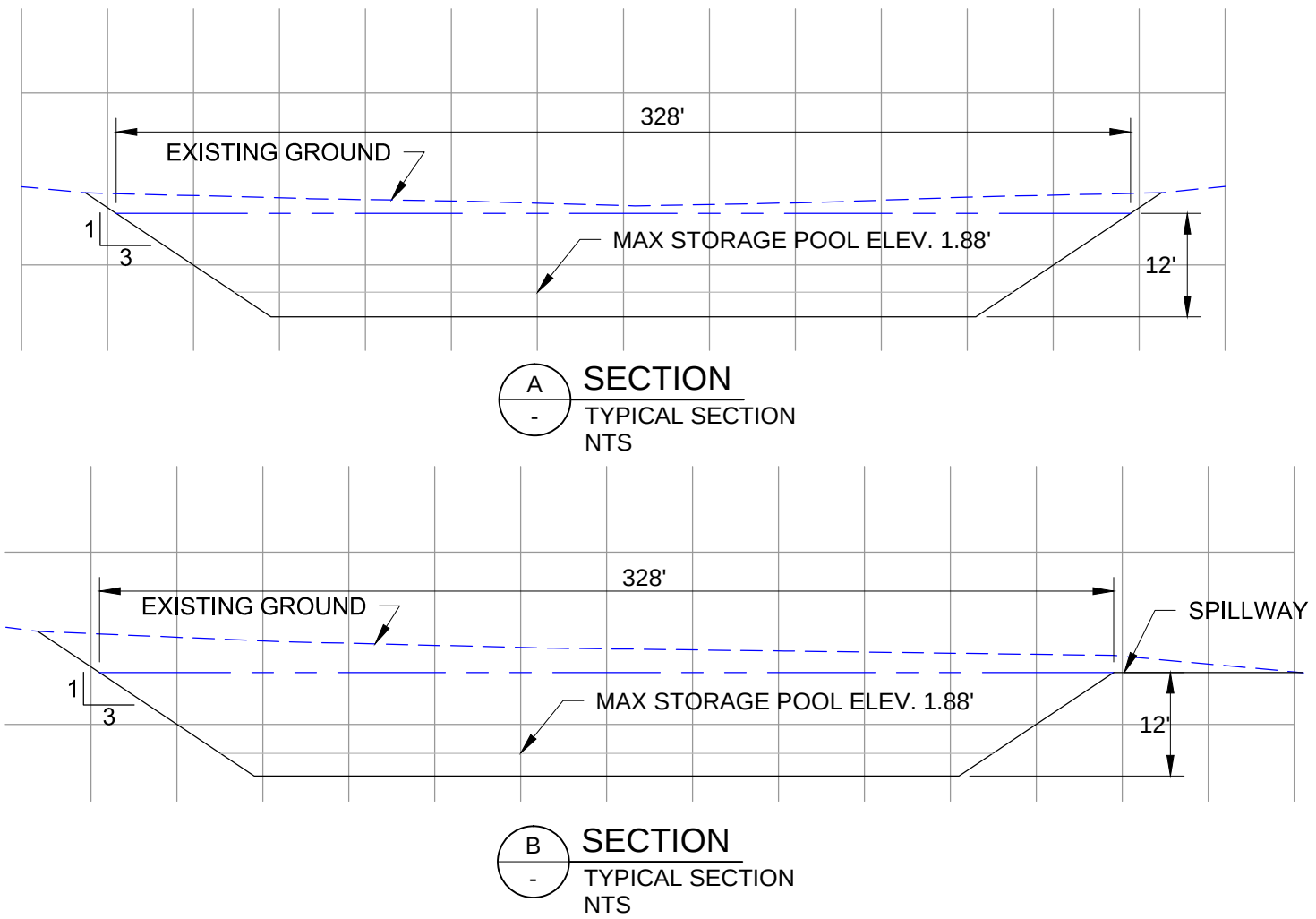
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-4	62.0	55.5	23.5	35.5	3.54	0.40	4.75



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

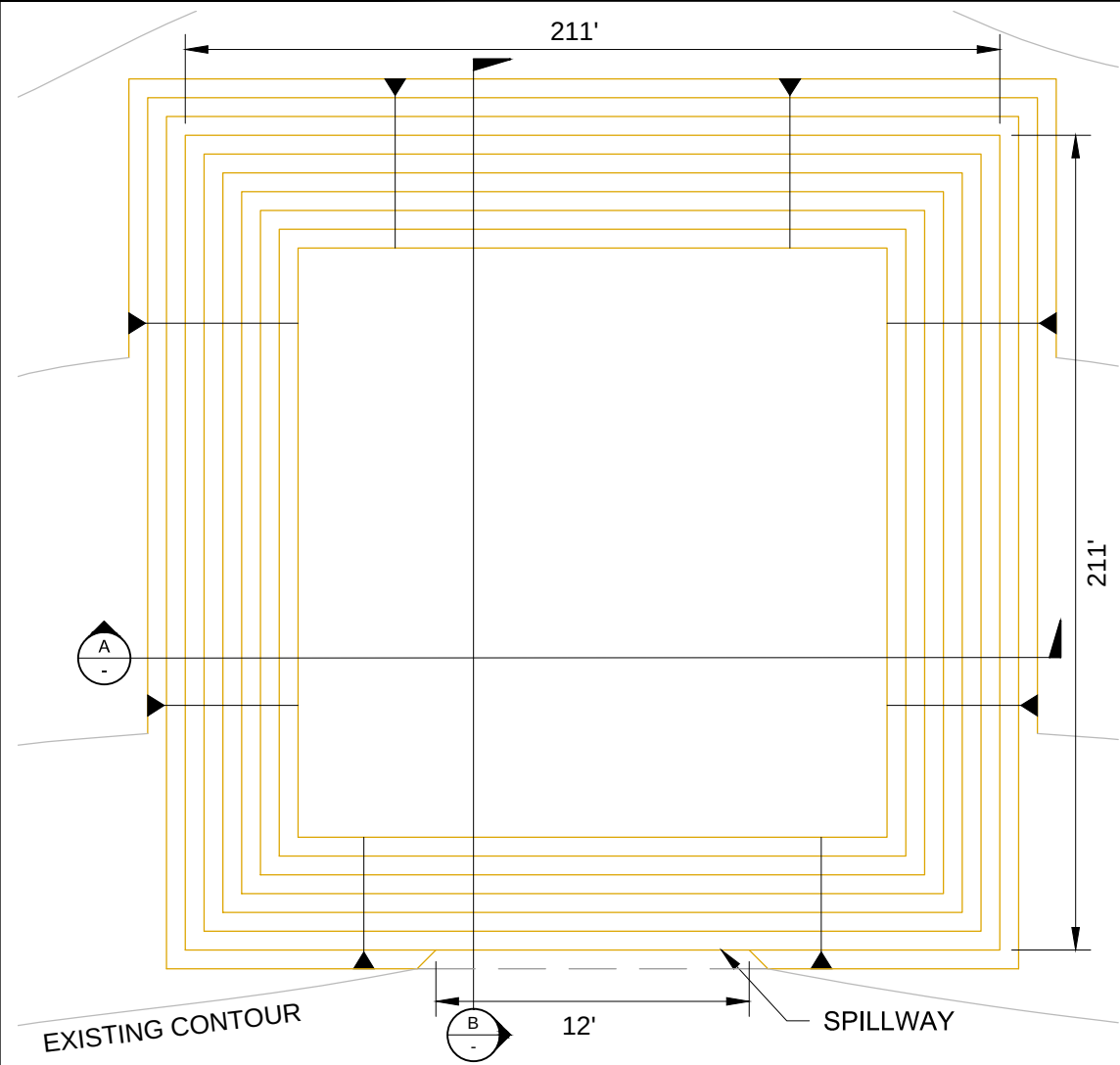
1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
5	816.9	67.5	89.6	0.31	0.039	12.0	998

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	3.2
4.00	6.6
6.00	10.4
8.00	14.4
10.00	18.8
12.00	23.6

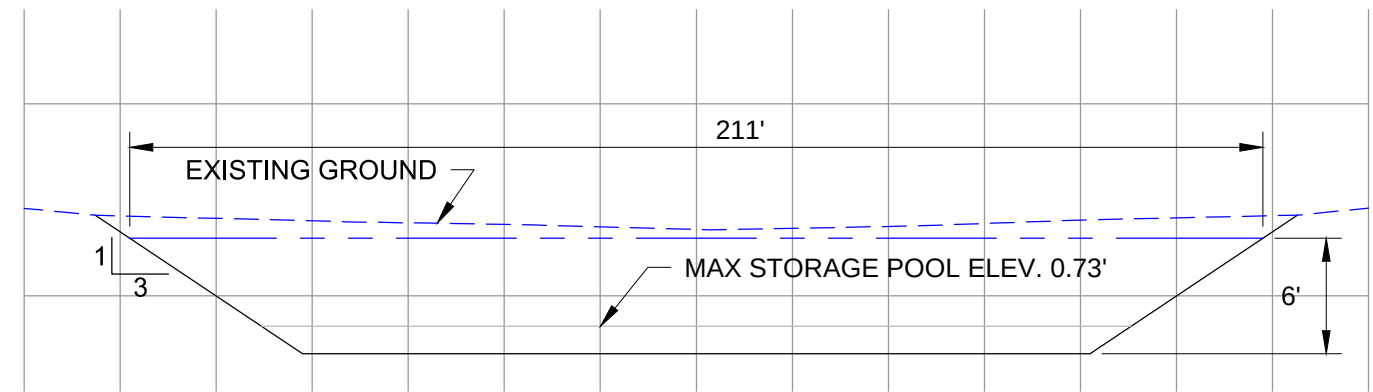
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-5	657.8	109.4	548.4	77.8	18.57	1.64	23.49



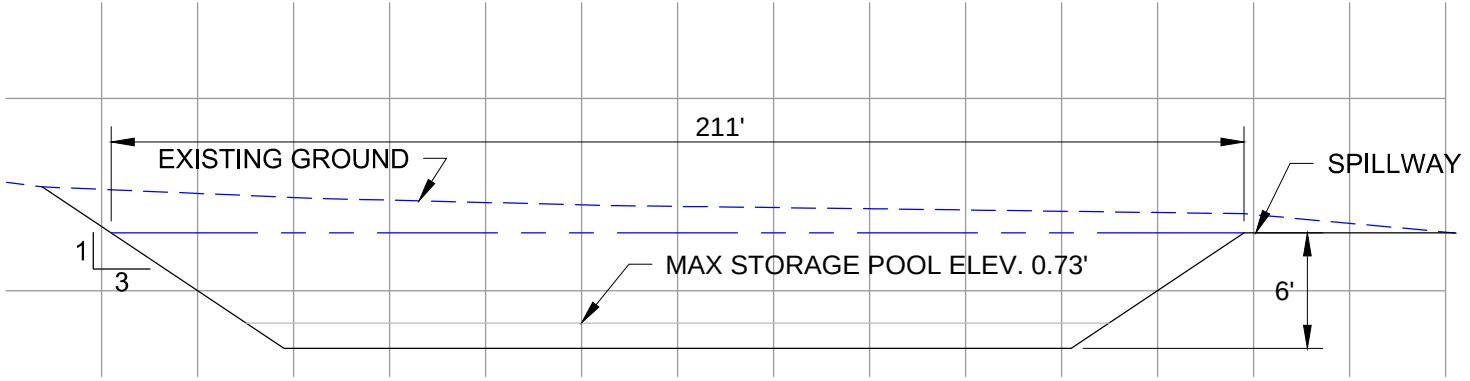
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
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SECTION A
TYPICAL SECTION
NTS

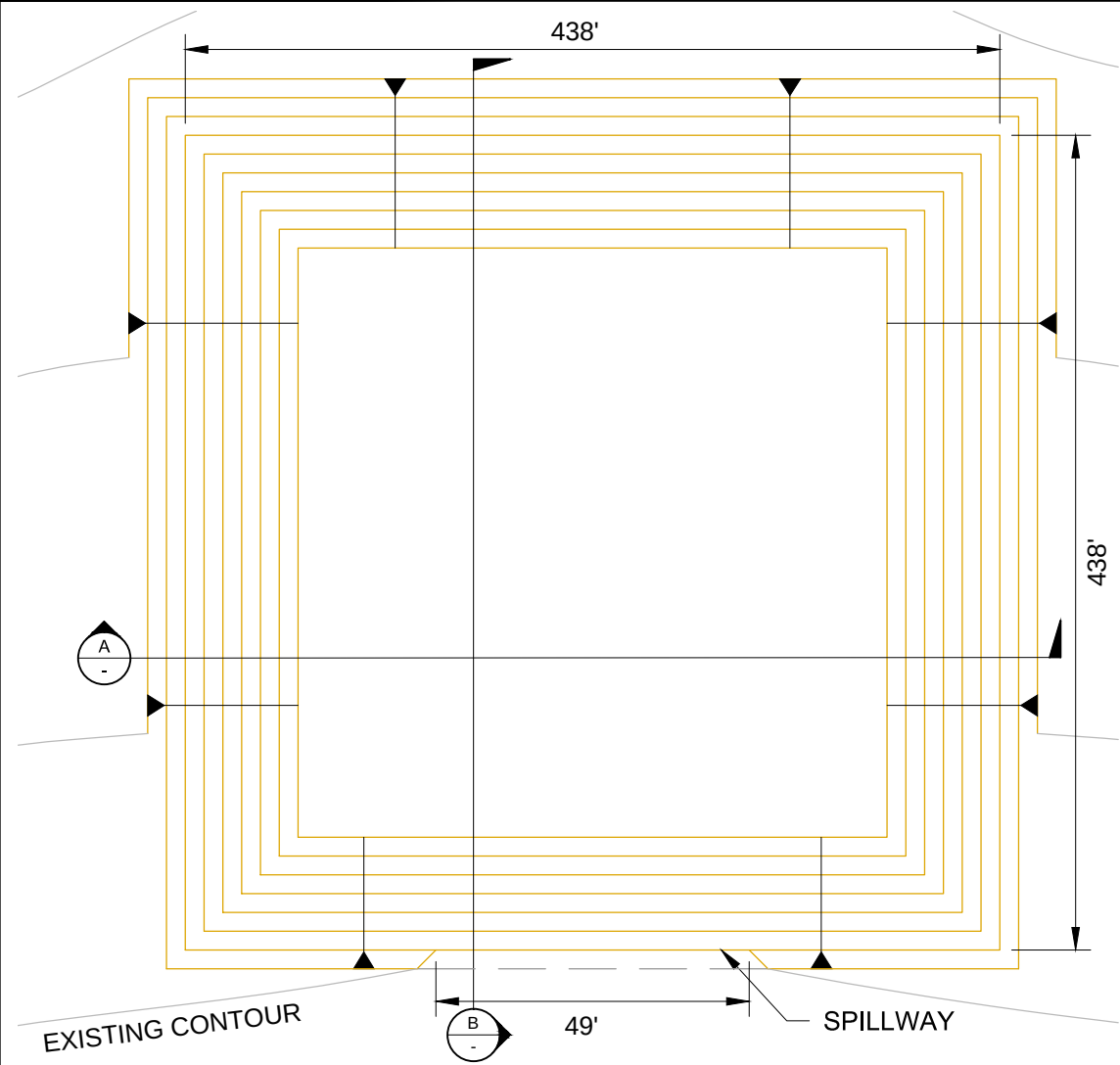


SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
6	108.7	67.6	89.7	0.41	0.039	8.0	986

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.5
4.00	3.2
6.00	5.1

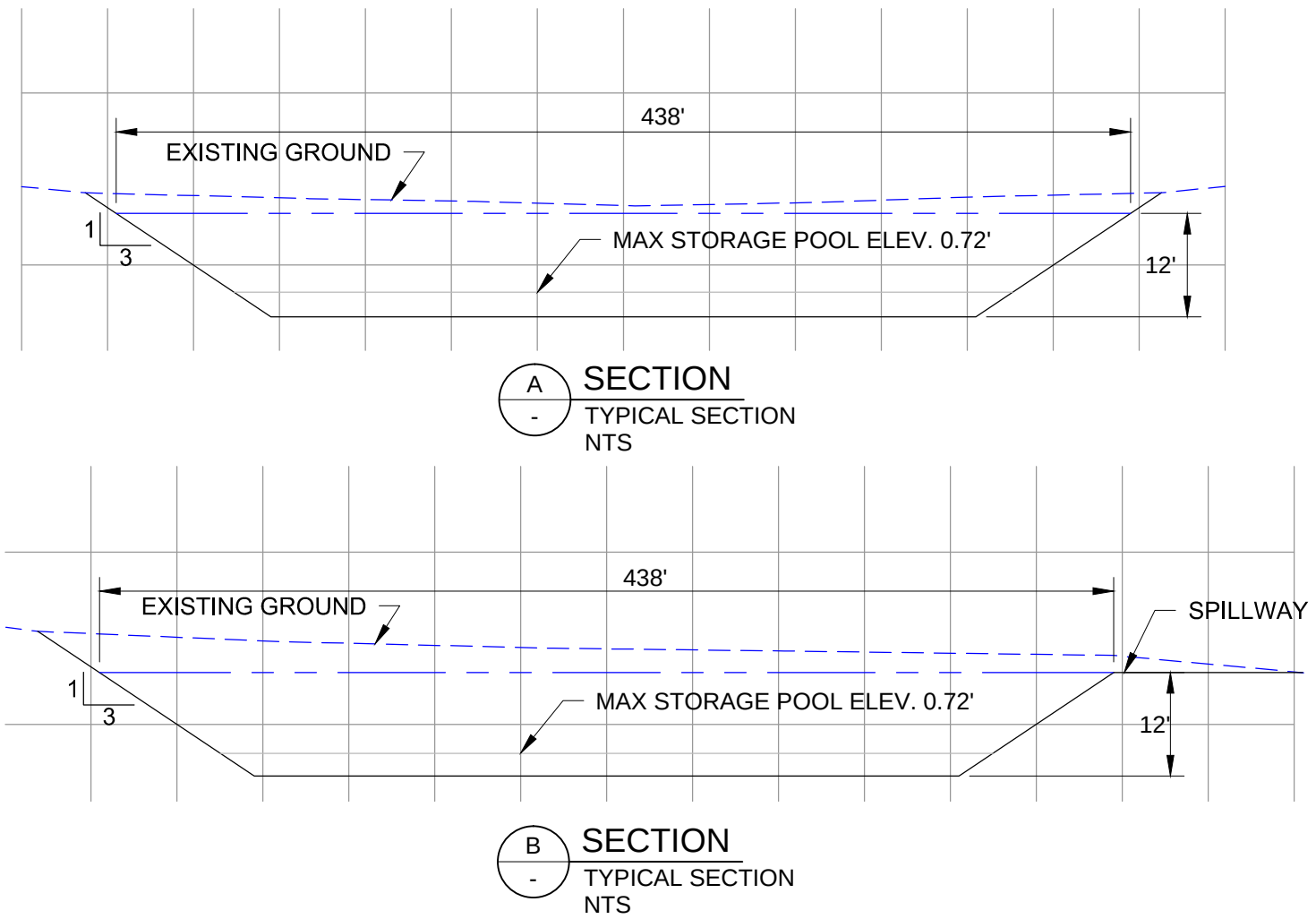
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-6	108.7	41.2	67.5	37.3	4.22	0.29	5.10



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
7	1060.7	70.0	89.7	0.29	0.046	13.5	881
7U	1032.4	70.0	89.7	0.29	0.046	23.8	854

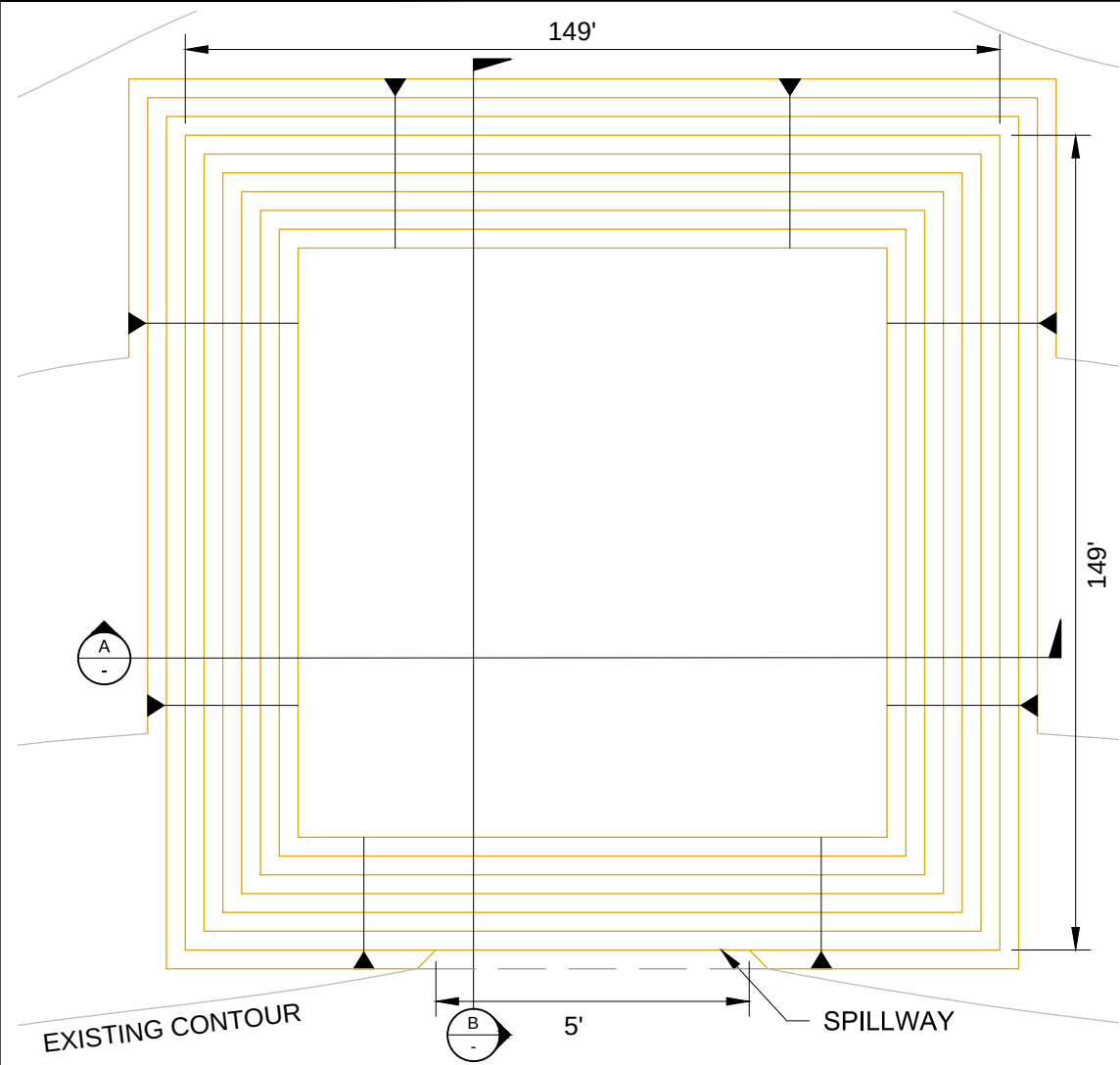
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	6.4
4.00	13.1
6.00	20.3
8.00	28.0
10.00	36.1
12.00	44.6

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-7	2093.1	35.2	2057.9	152.3	40.93	1.24	44.64

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

**FIRST PHASE OPERATIONAL DRAINAGE
CONTROL SEDIMENT POND
EP-7 CONFIGURATION**

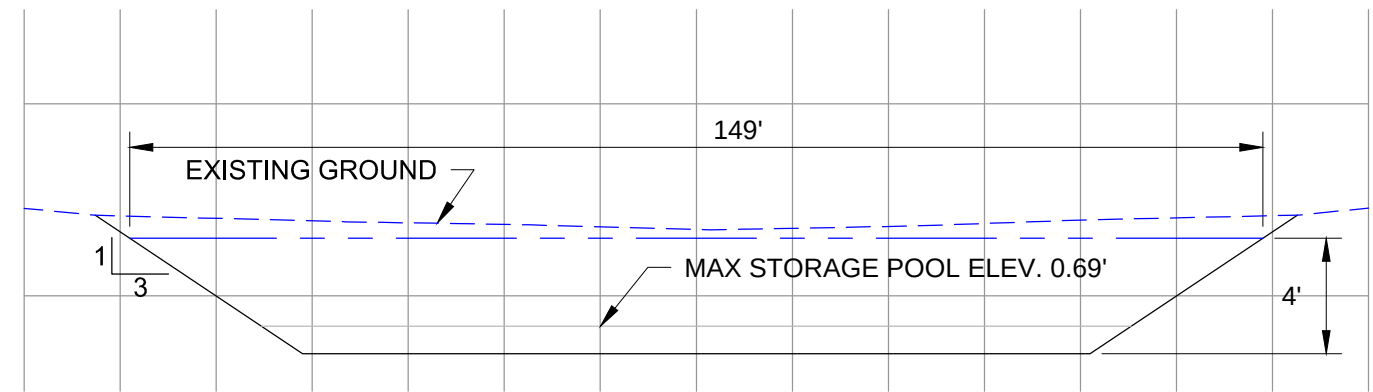
FIGURE
B-9



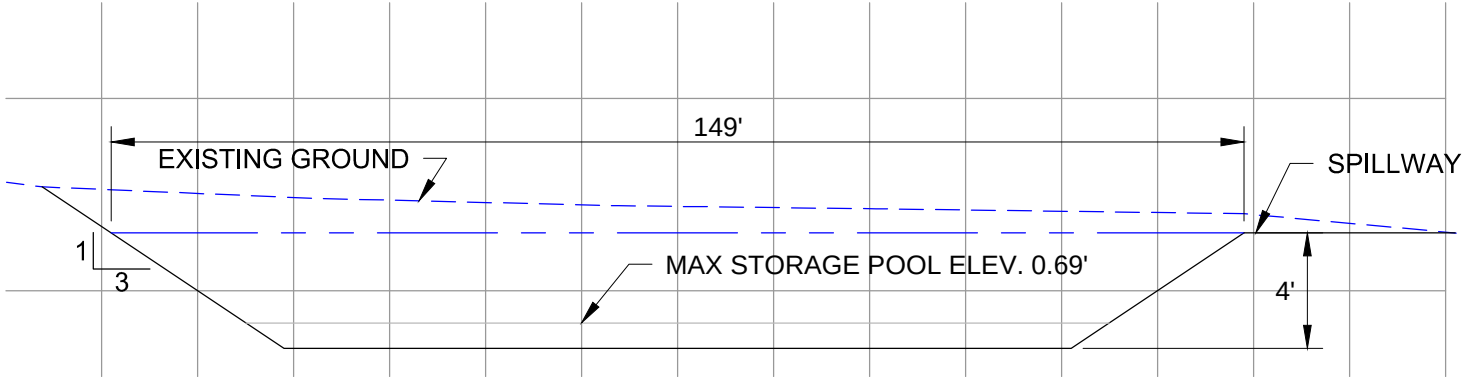
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

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A SECTION
- TYPICAL SECTION
NTS

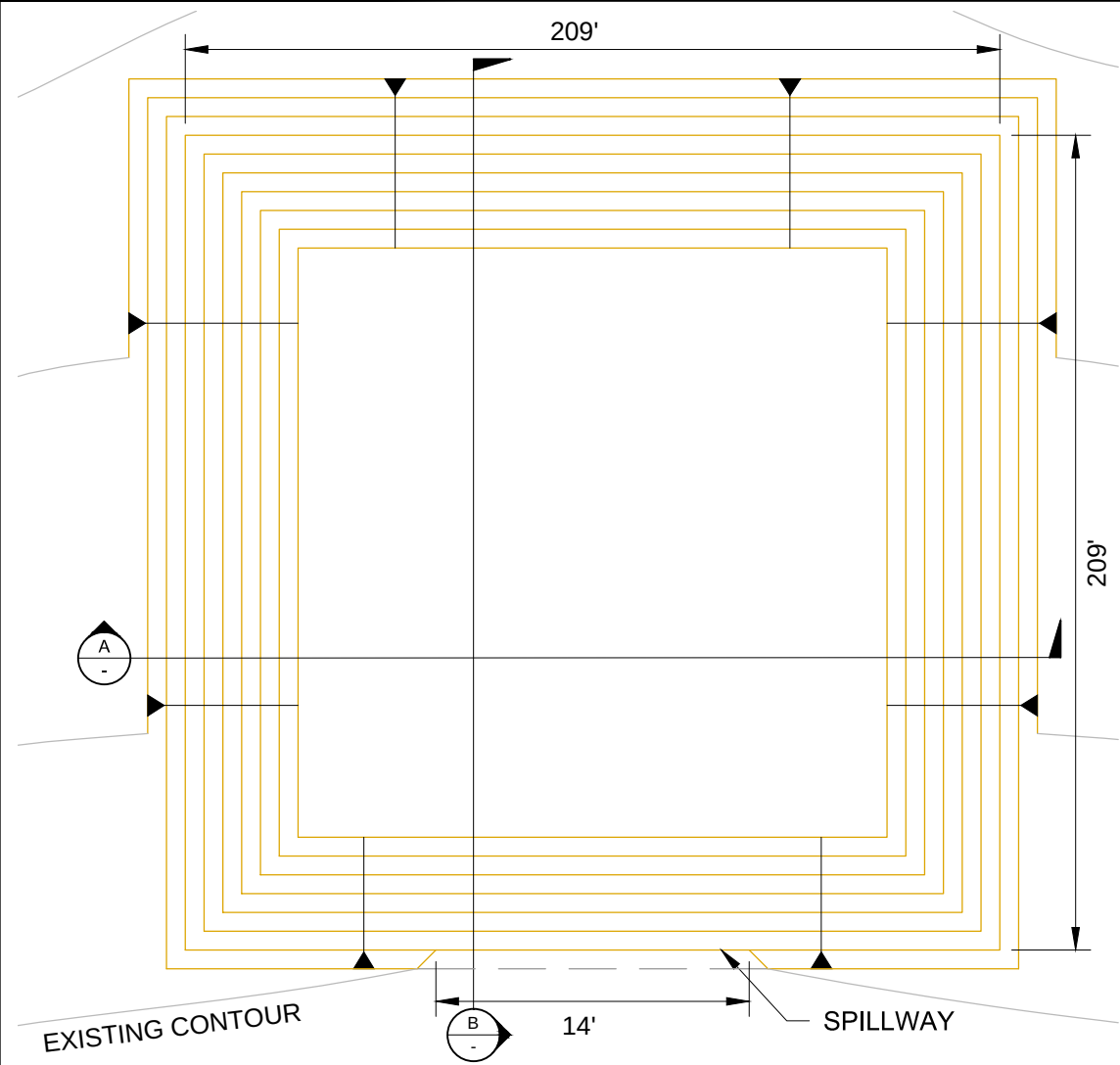


B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
8	30.6	62.8	88.1	0.26	0.038	18.0	233

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.8
4.00	1.7

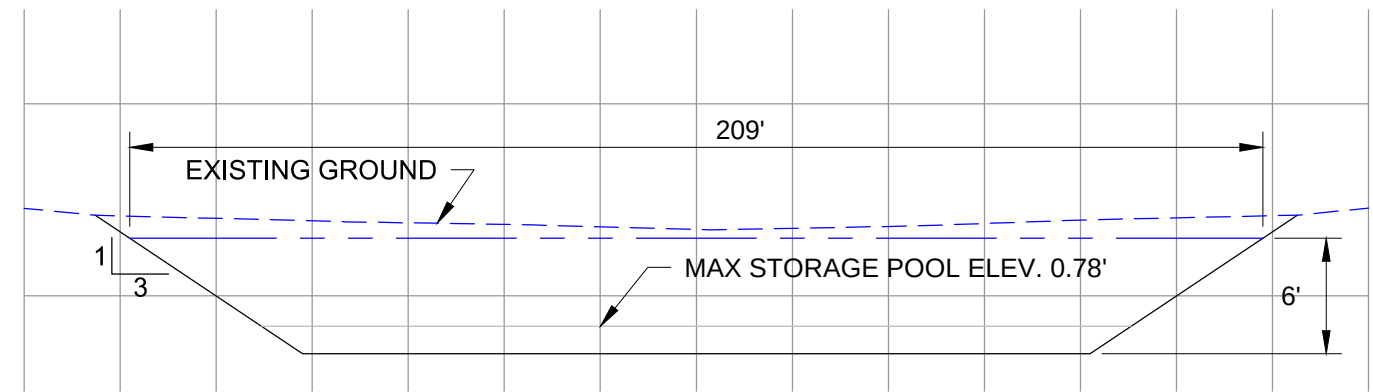
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-8	30.6	12.5	18.1	15.5	1.28	0.14	1.70



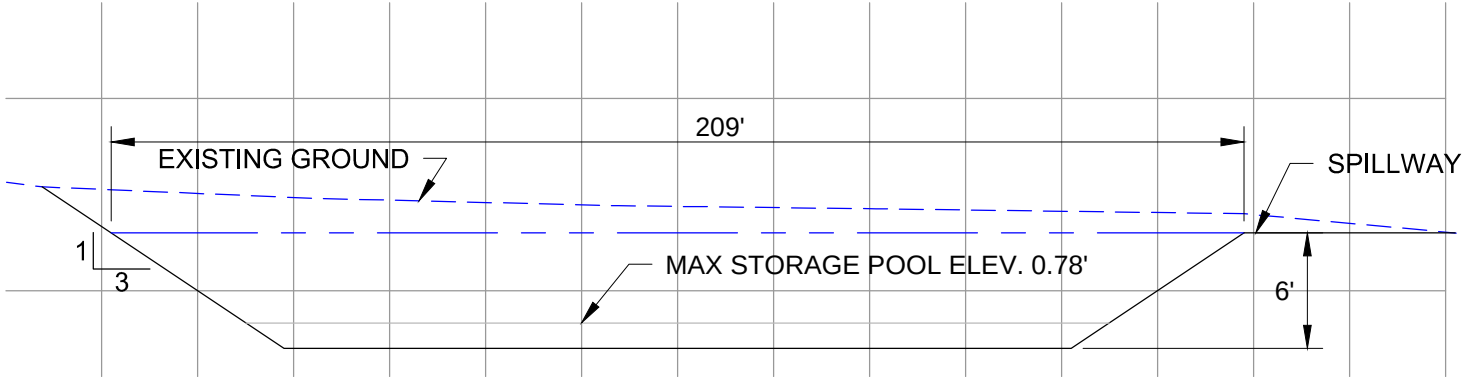
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

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SECTION A
TYPICAL SECTION
NTS

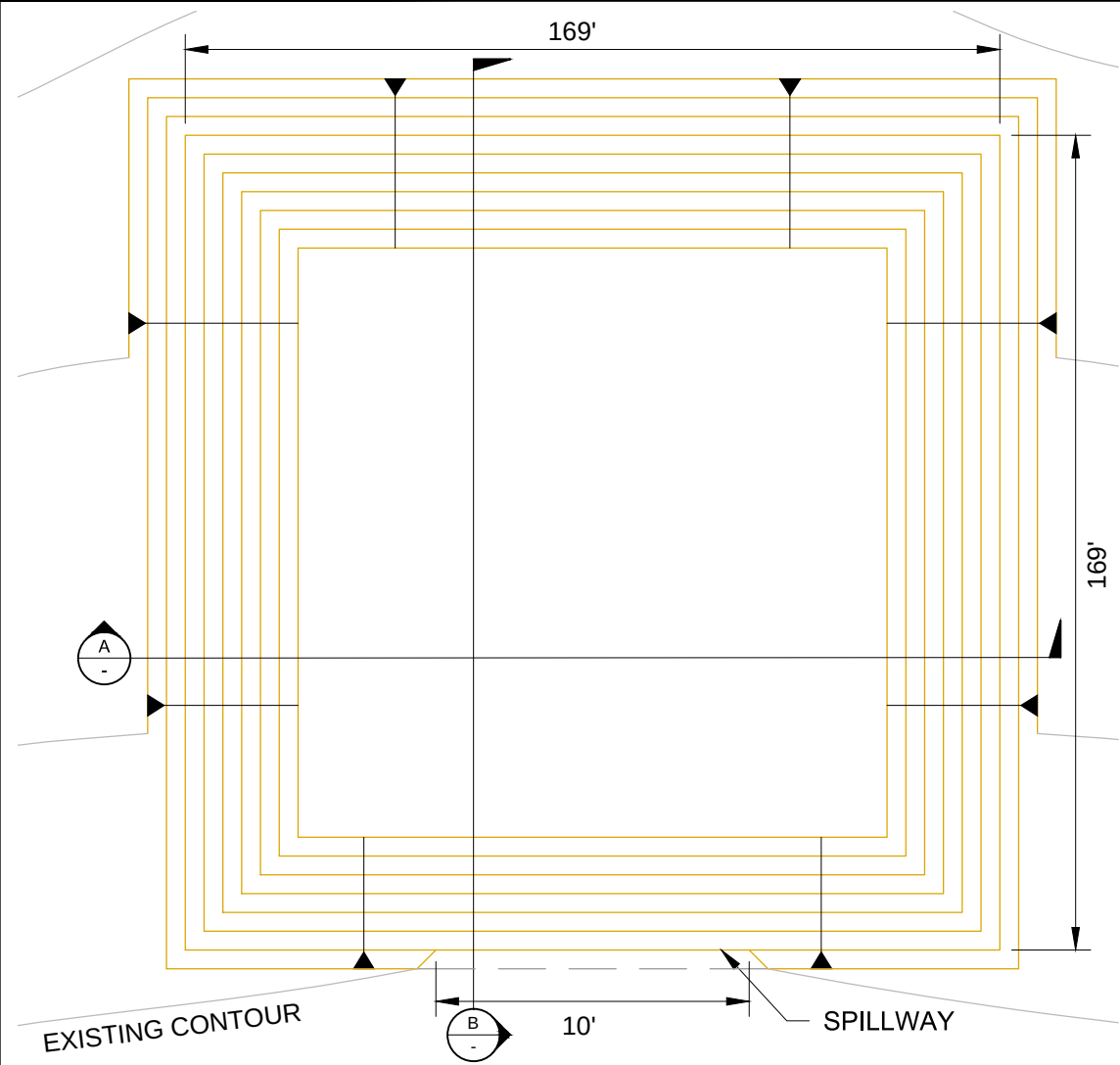


SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
9	40.2	73.5	92.6	0.31	0.038	11.7	300
9A	23.2	73.5	92.6	0.31	0.038	7.3	703

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.5
4.00	3.1
6.00	5.0

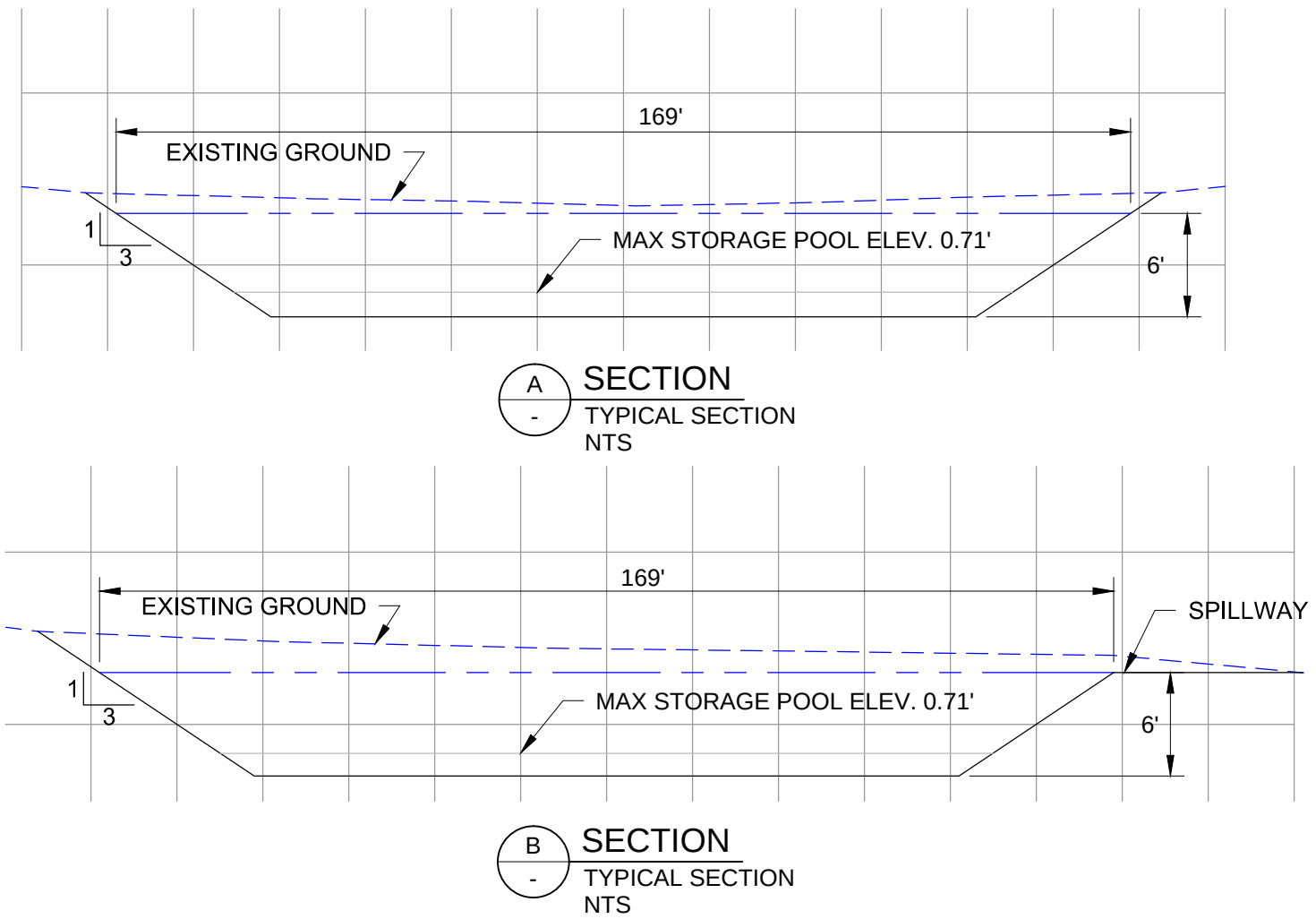
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-9	63.5	27.8	12.4	42.0	4.09	0.30	5.01



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

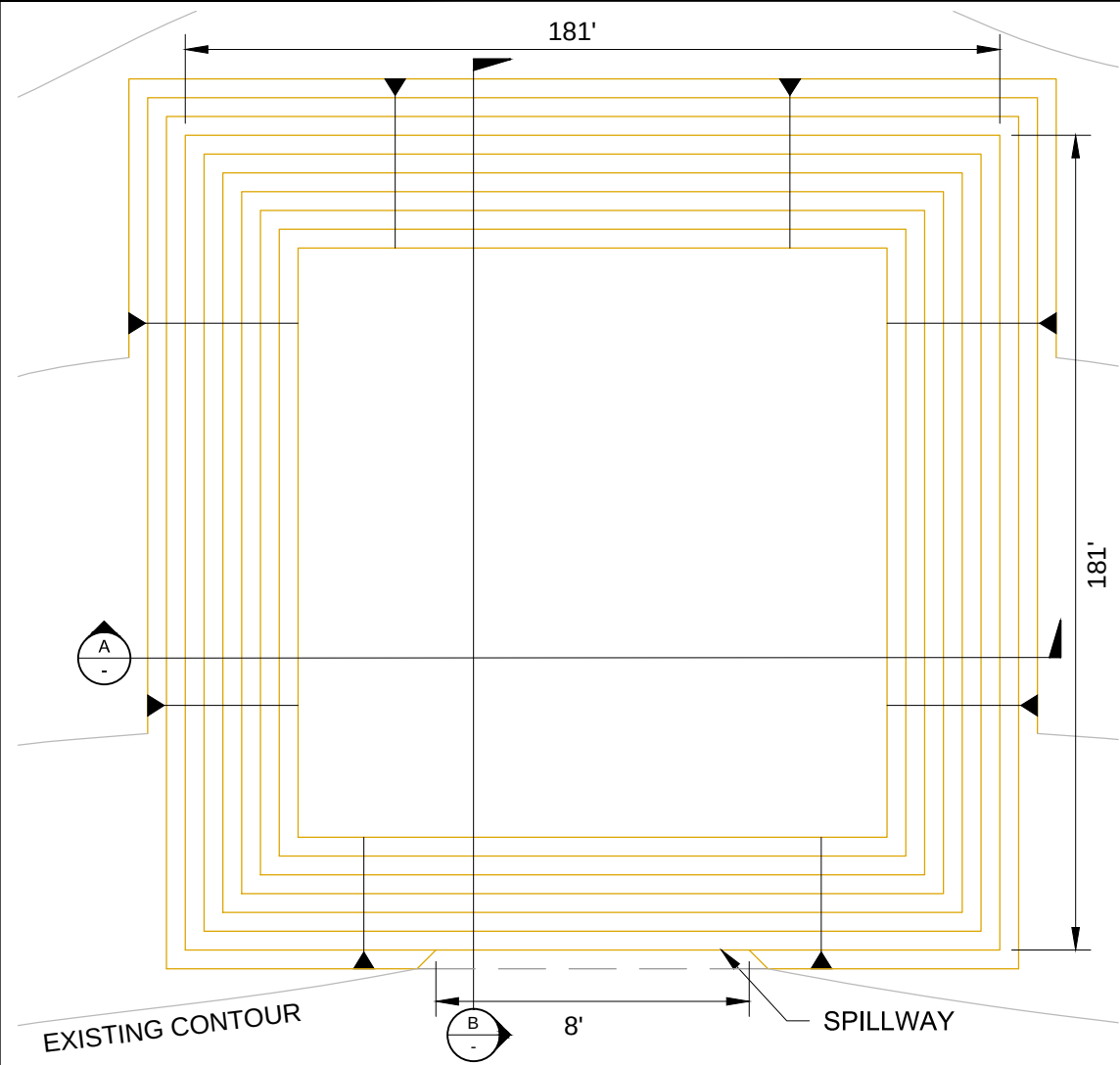
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
9A	23.2	73.5	92.6	0.31	0.038	7.3	703

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.9
4.00	1.9
6.00	3.2

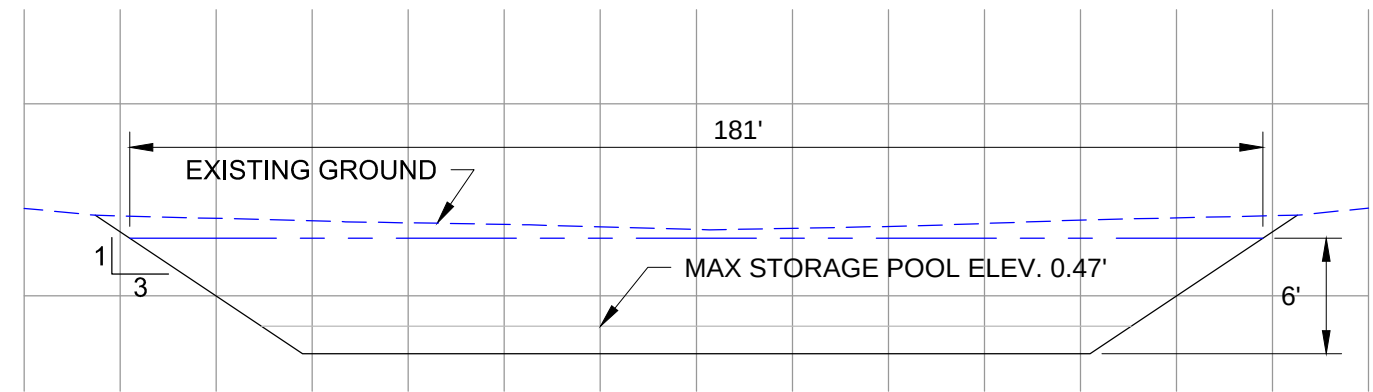
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-9A	23.2	23.2	0.0	31.3	2.65	0.16	3.15



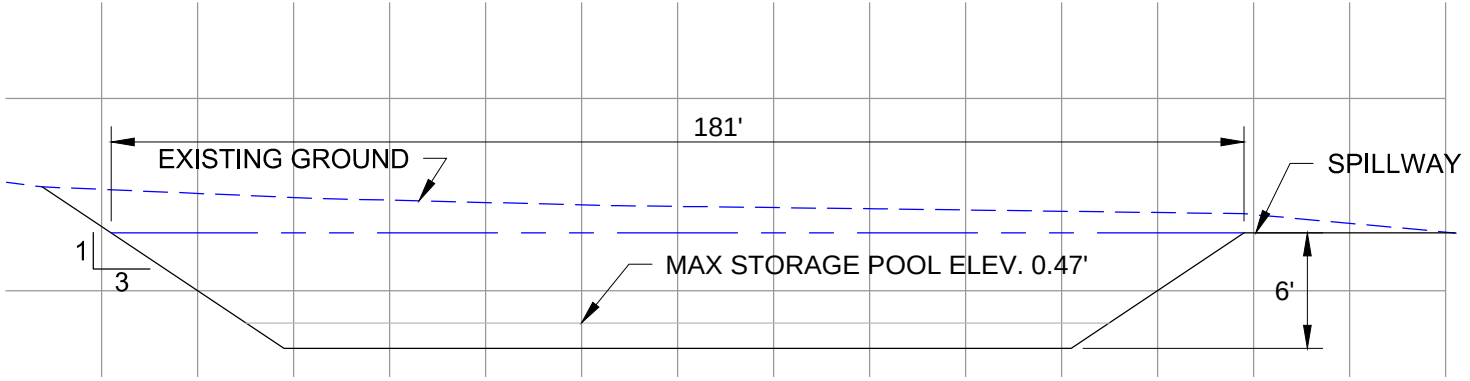
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

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SECTION A
TYPICAL SECTION
NTS

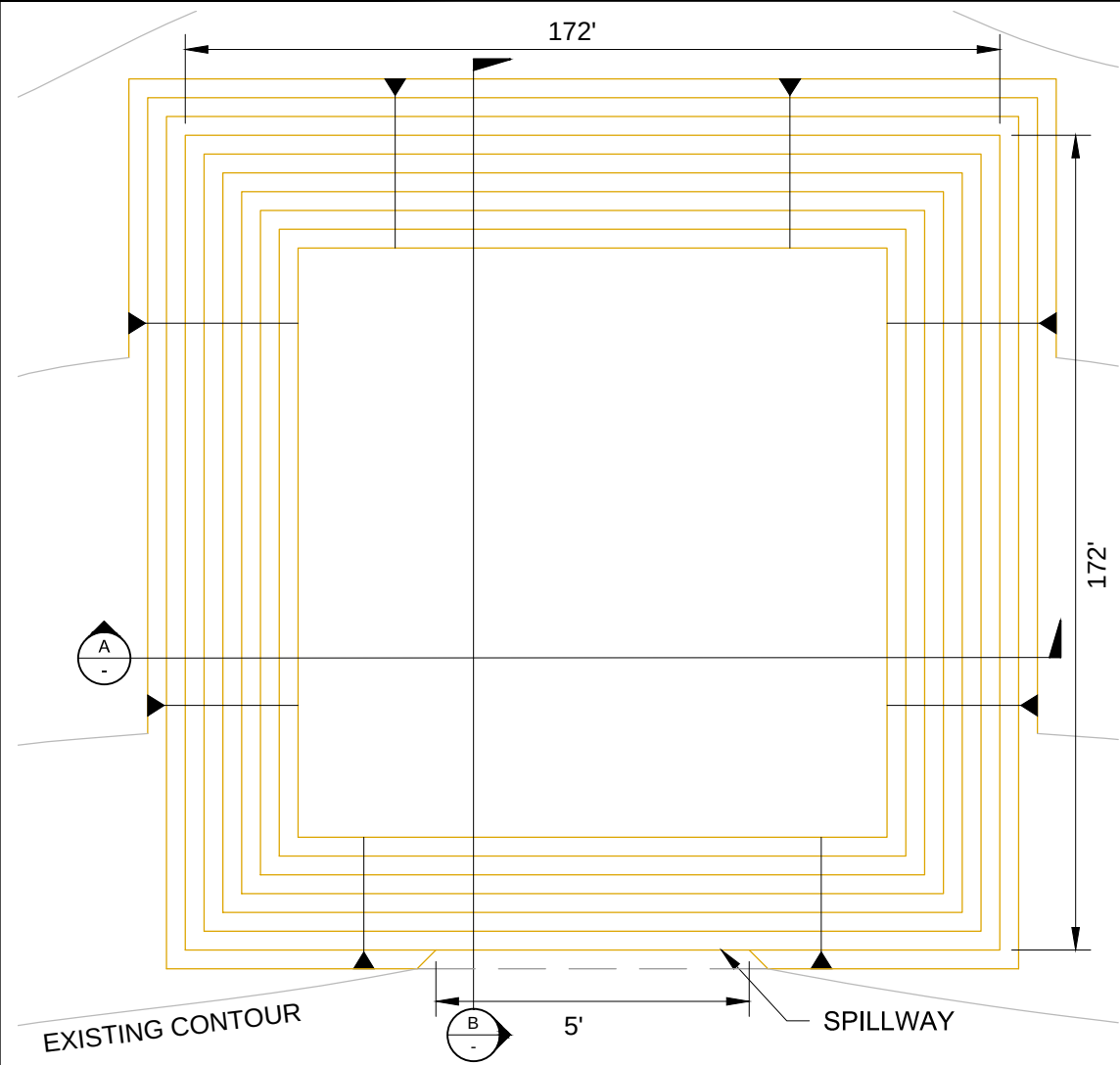


SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
10	78.5	74.6	92.7	0.26	0.039	8.2	895

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.0
4.00	2.3
6.00	3.7

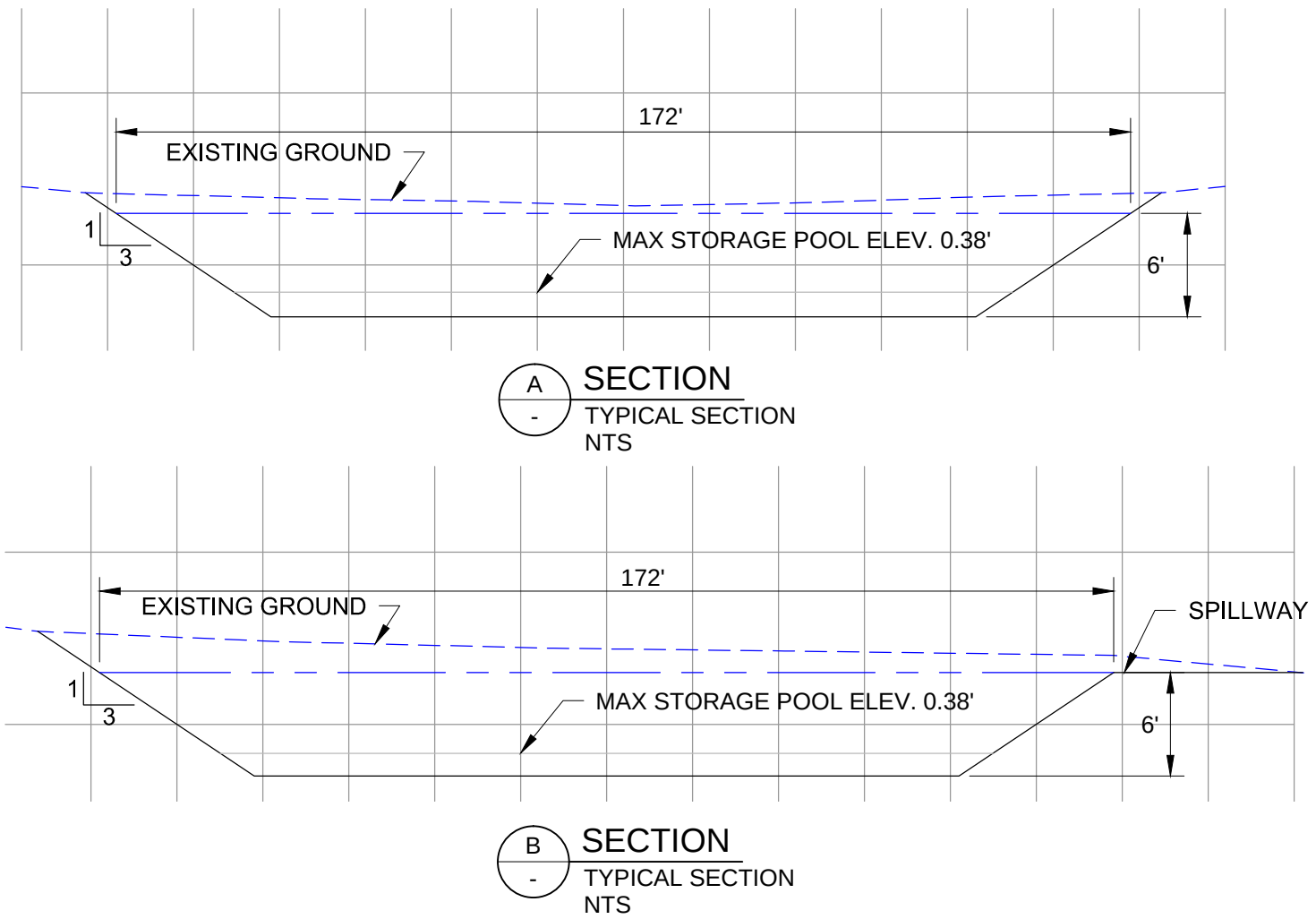
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-10	78.5	16.8	61.7	25.3	3.26	0.13	3.65



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

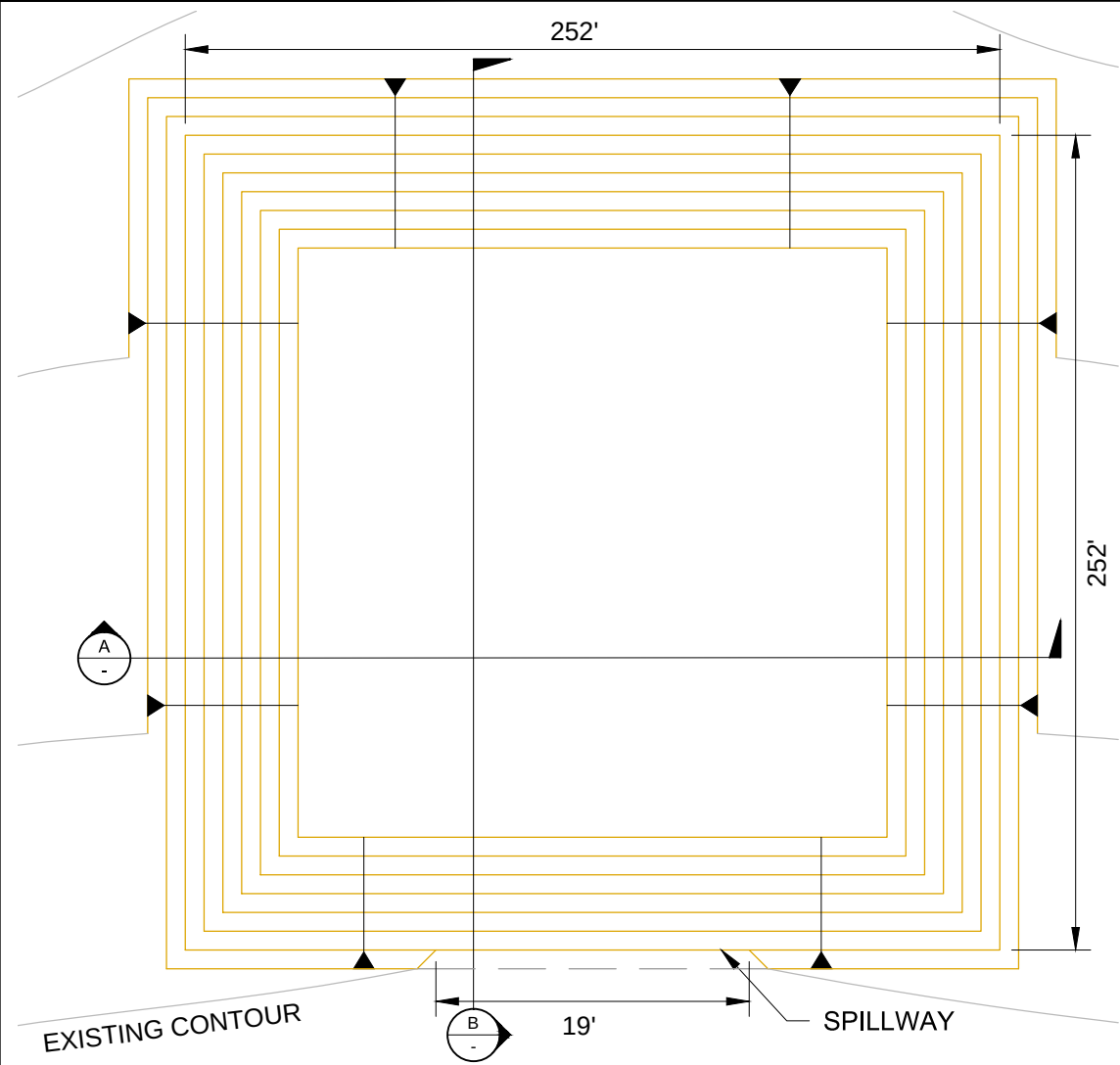
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
11	106.3	69.8	91.0	0.26	0.039	7.4	864

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.9
4.00	2.0
6.00	3.3

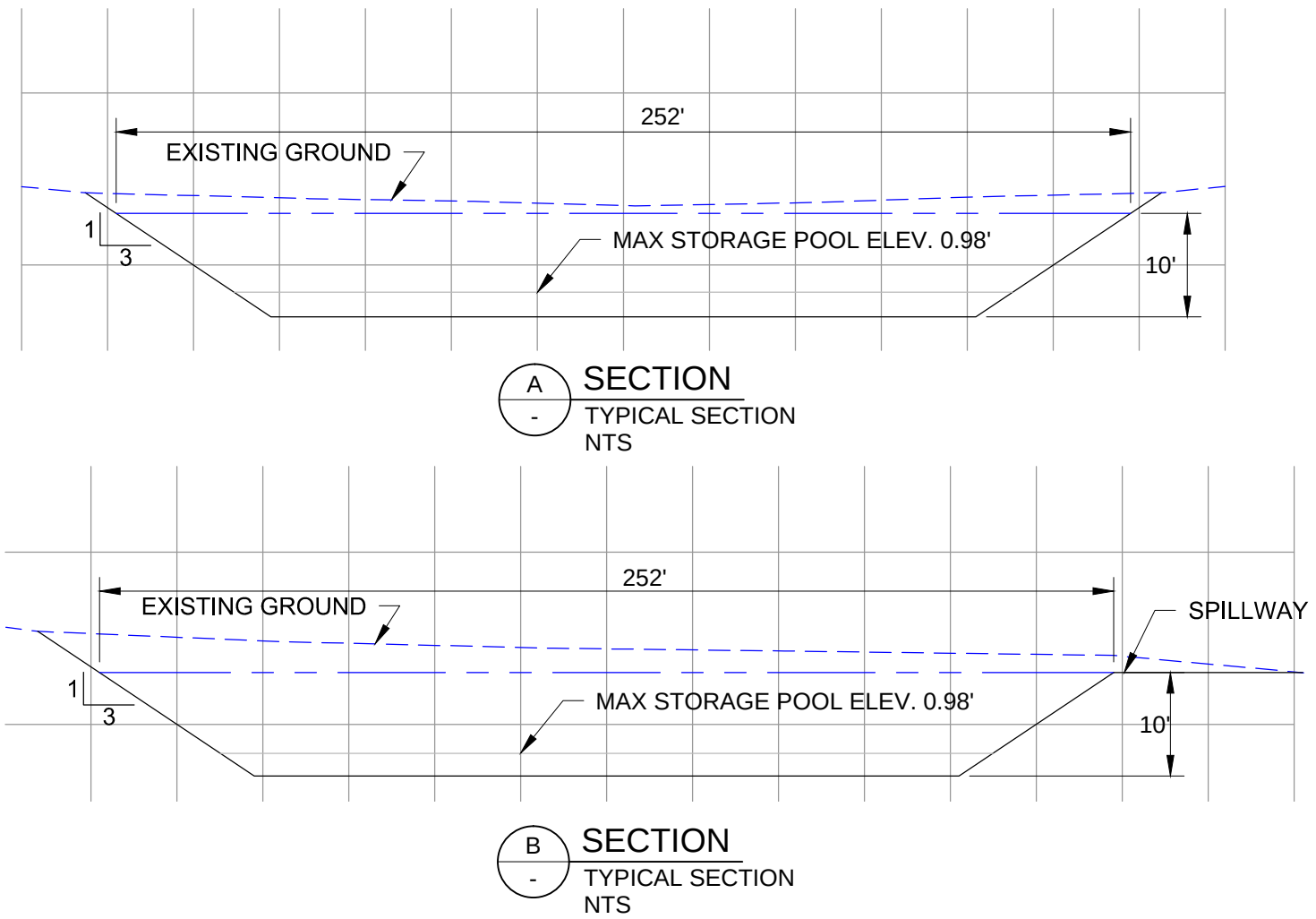
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-11	106.3	16.3	90.0	15.4	2.99	0.09	3.27



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

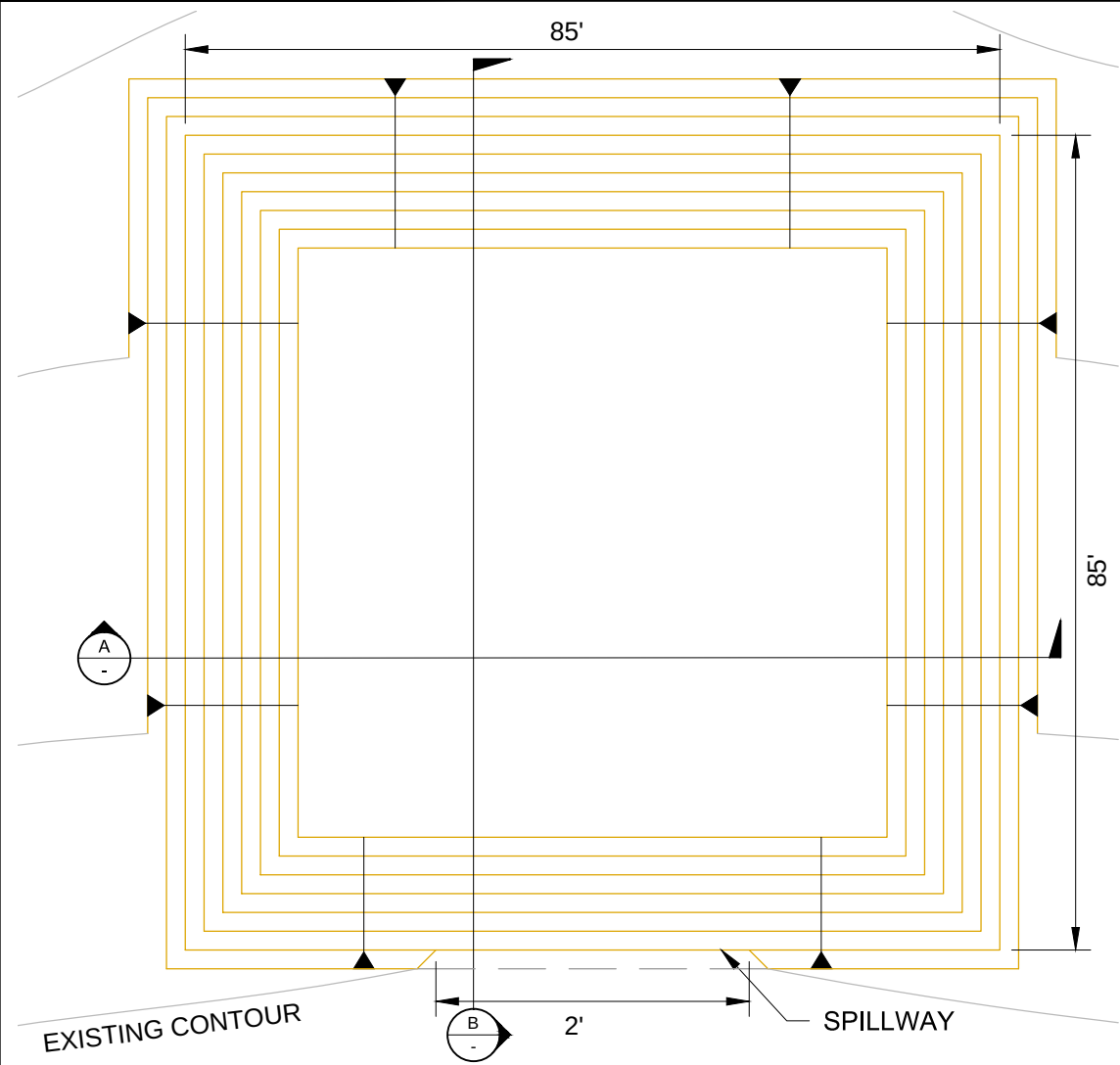
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
12	285.6	73.2	92.4	0.28	0.039	9.9	984

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.8
4.00	3.8
6.00	6.1
8.00	8.6
10.00	11.4

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-12	285.6	43.4	242.2	58.2	9.90	0.48	11.33

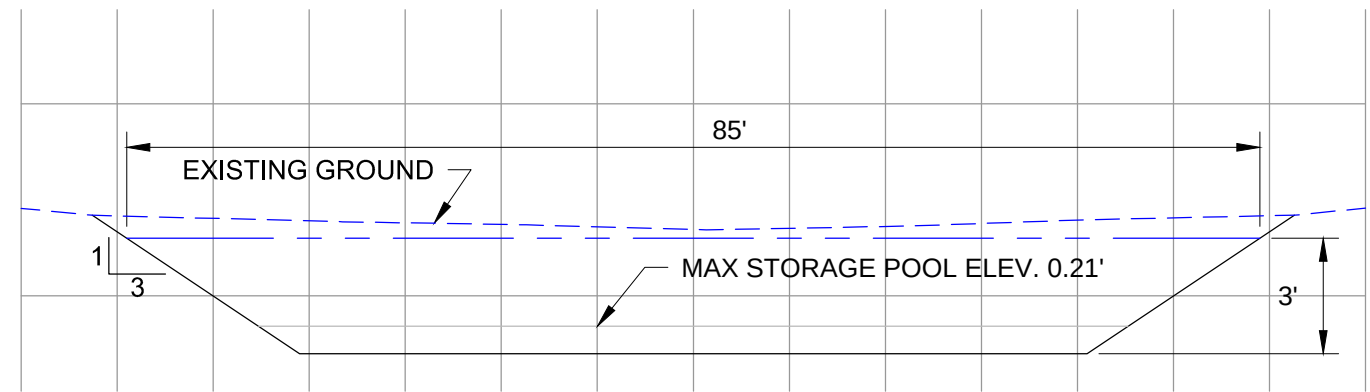


TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

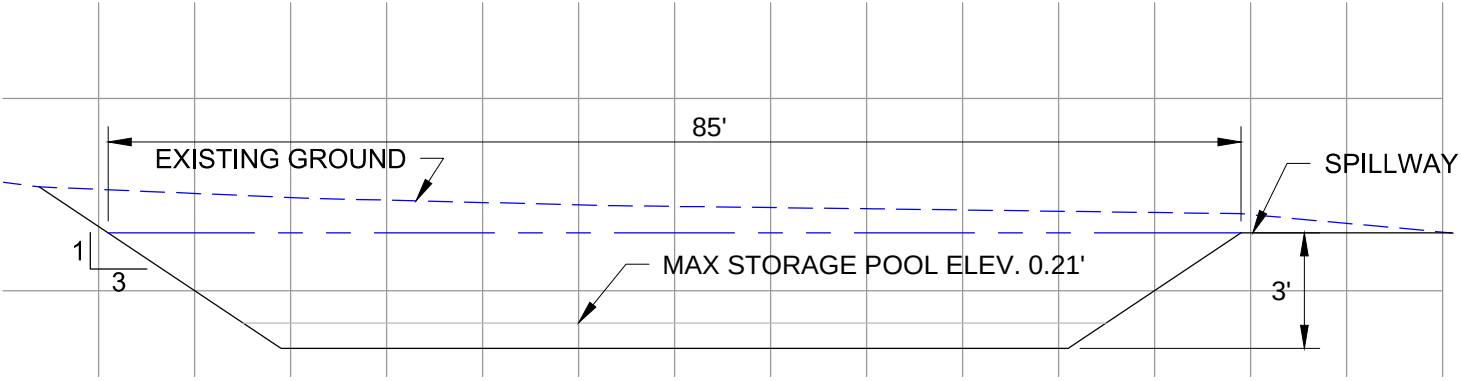
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POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
1.00	0.1
2.00	0.2
3.00	0.4



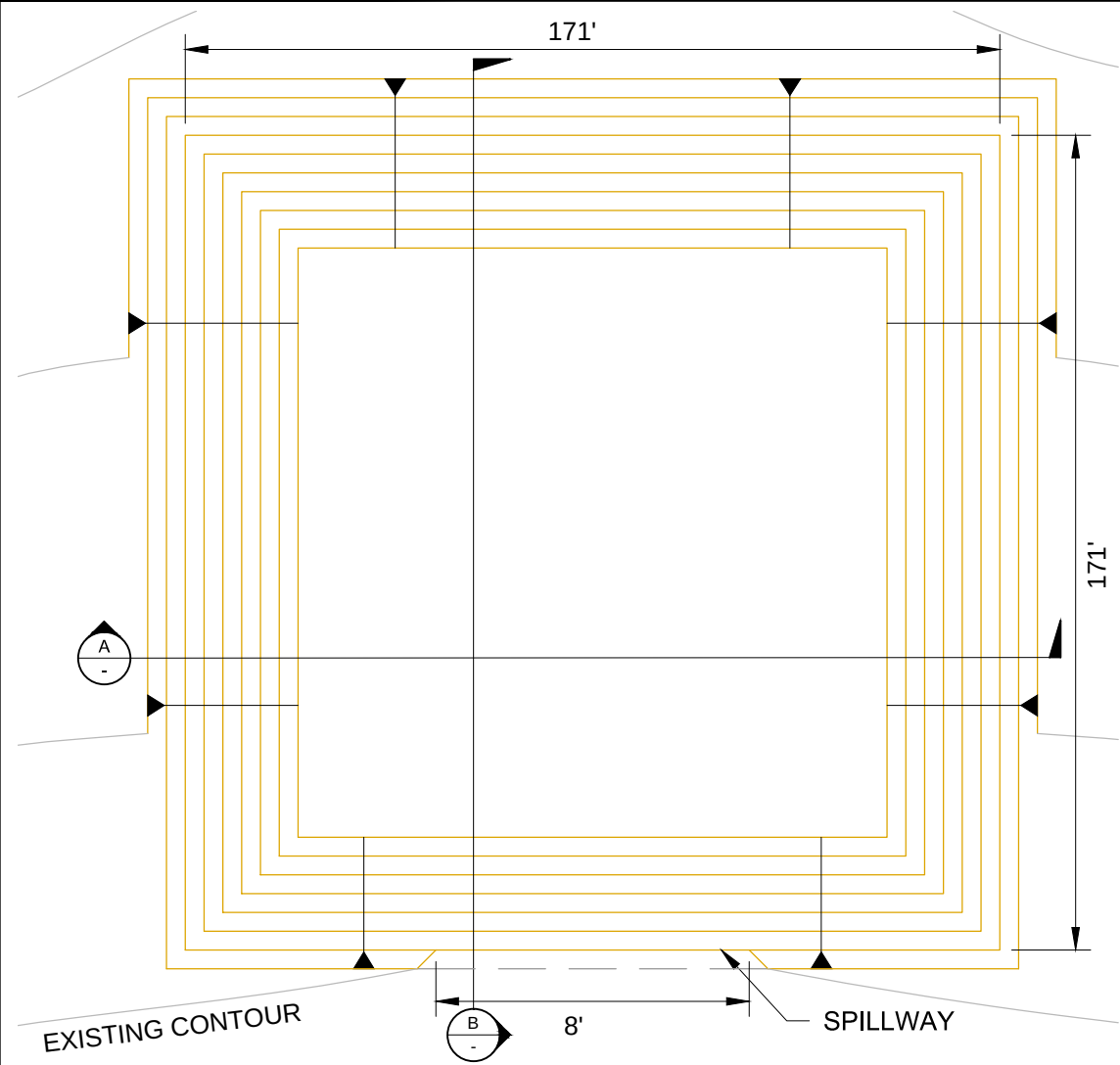
A SECTION
TYPICAL SECTION
NTS



B SECTION
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
13	4.7	56.0	----	0.24	0.038	6.4	350

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-13	4.7	4.7	0.0	4.7	0.36	0.01	0.40

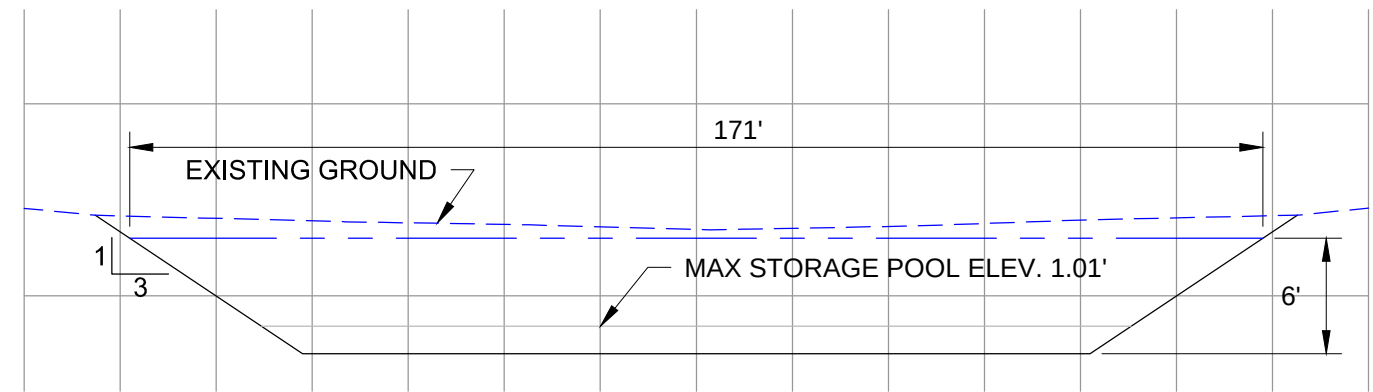


TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

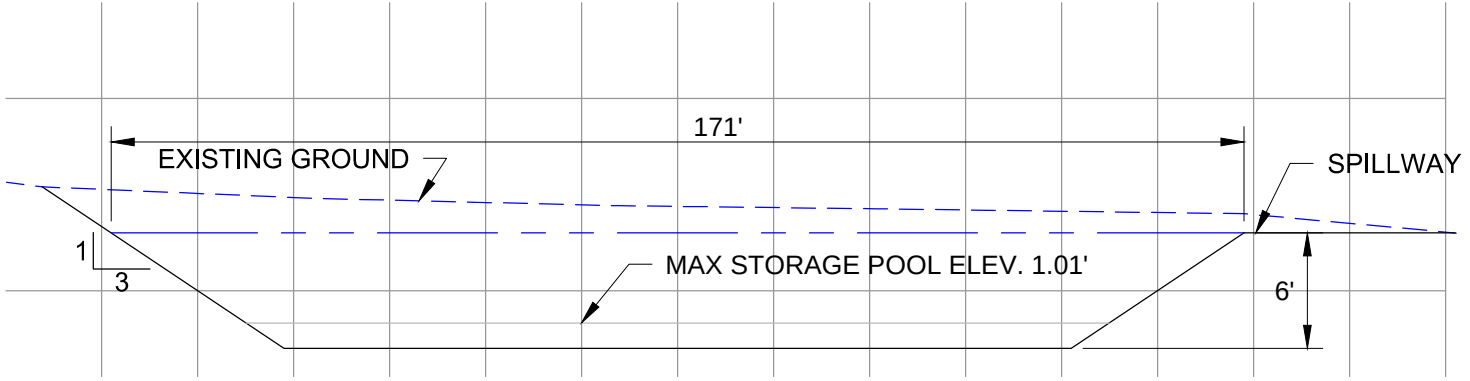
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POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.9
4.00	2.0
6.00	3.2



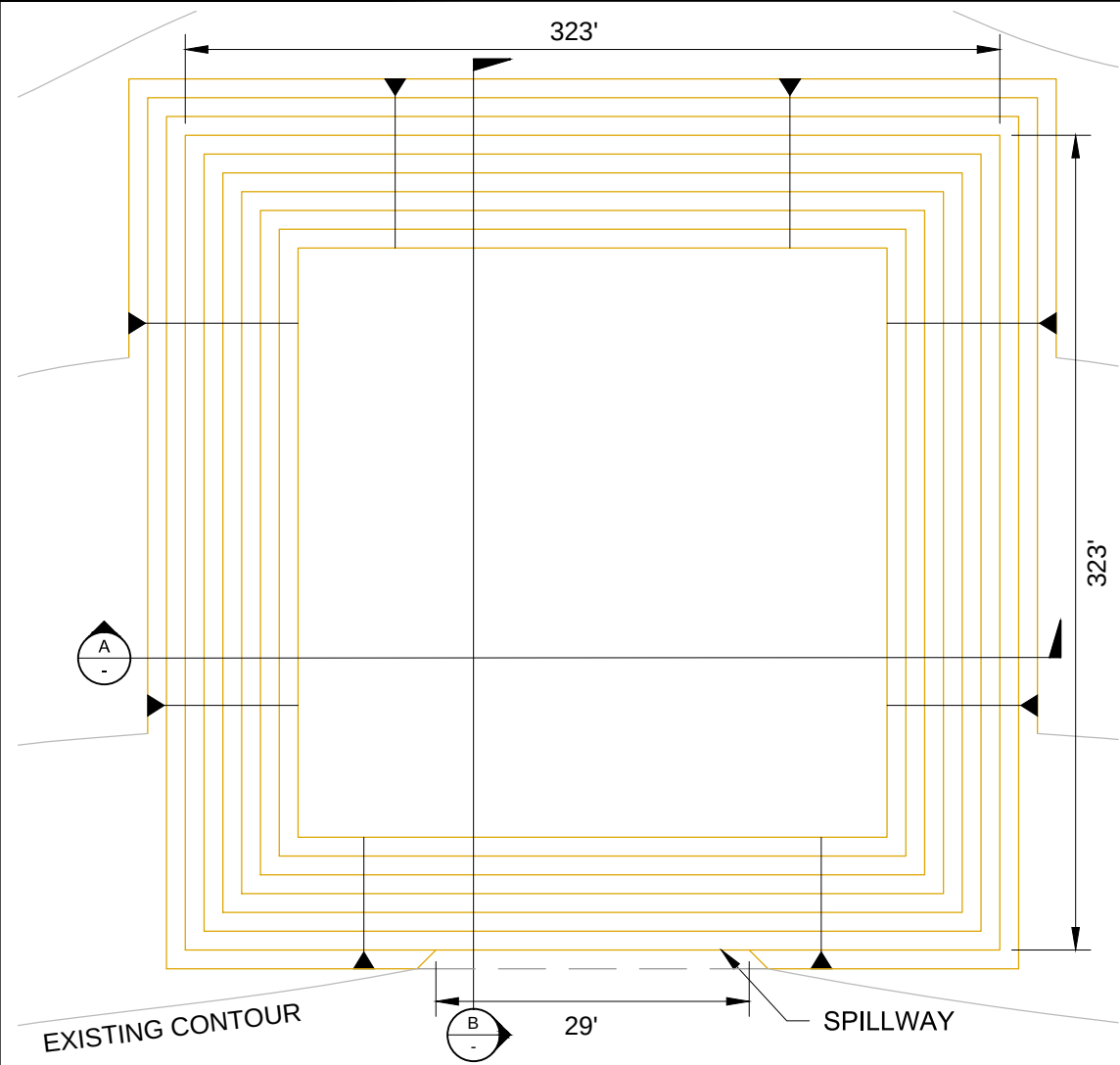
SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
14	35.1	66.4	89.7	0.23	0.038	9.5	777

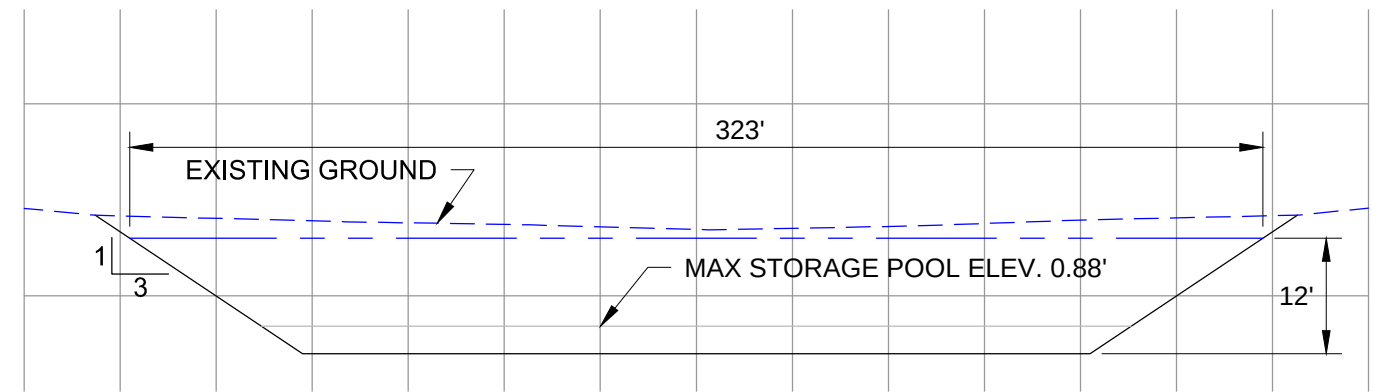
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-14	35.1	31.6	3.5	25.5	2.50	0.24	3.24



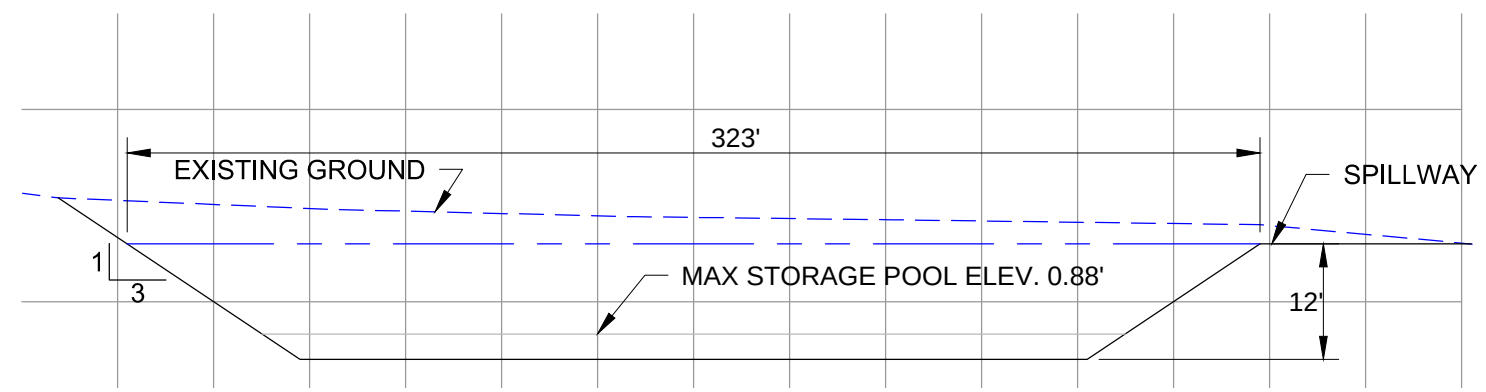
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

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A SECTION
- TYPICAL SECTION
NTS



B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
15	651.6	74.7	92.3	0.27	0.040	16.4	808

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	3.0
4.00	6.4
6.00	10.0
8.00	13.9
10.00	18.2
12.00	22.8

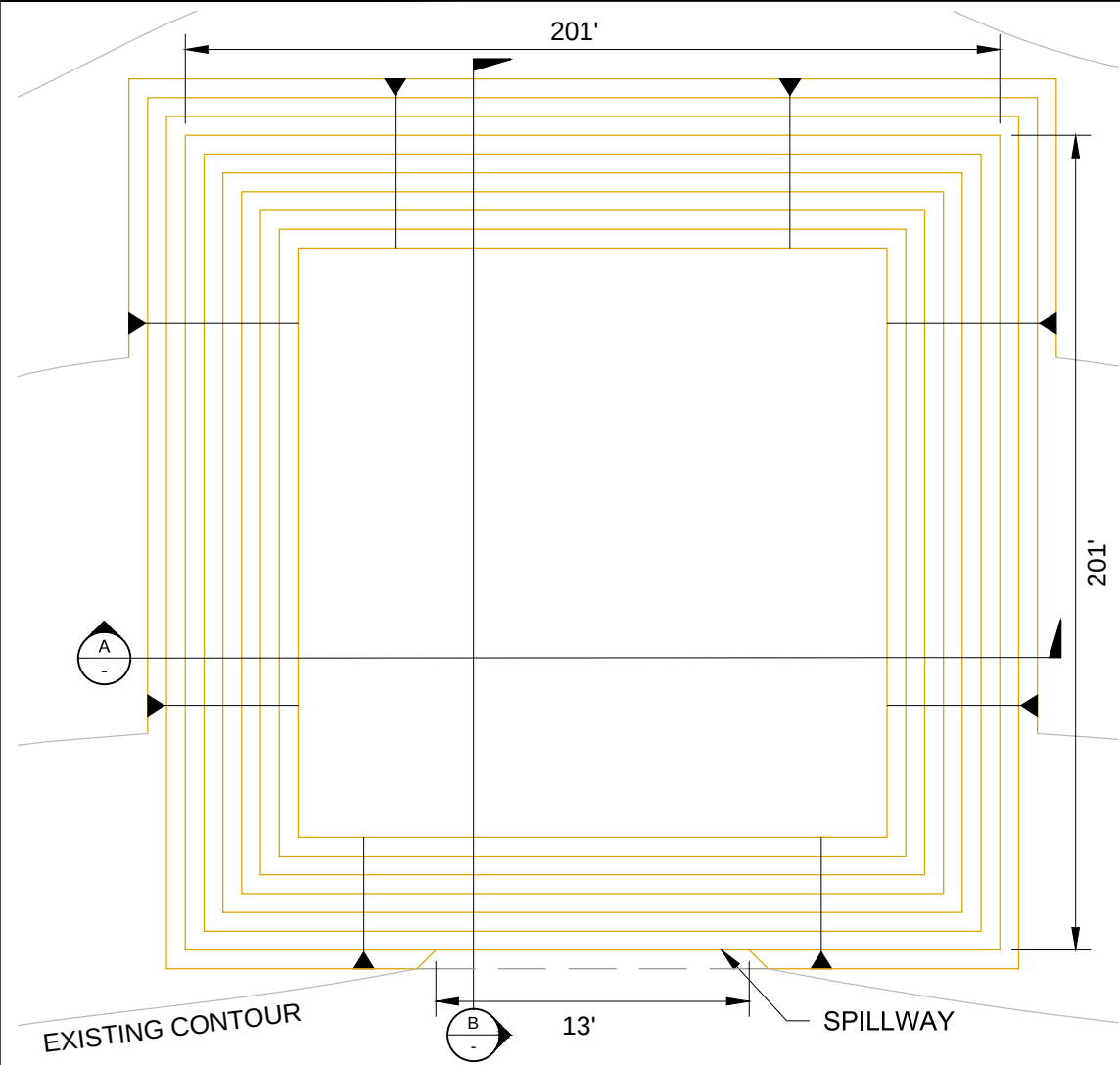
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-15	651.6	39.5	612.1	88.6	20.64	0.72	22.81

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

FIRST PHASE OPERATIONAL DRAINAGE
CONTROL SEDIMENT POND
EP-15 CONFIGURATION

FIGURE

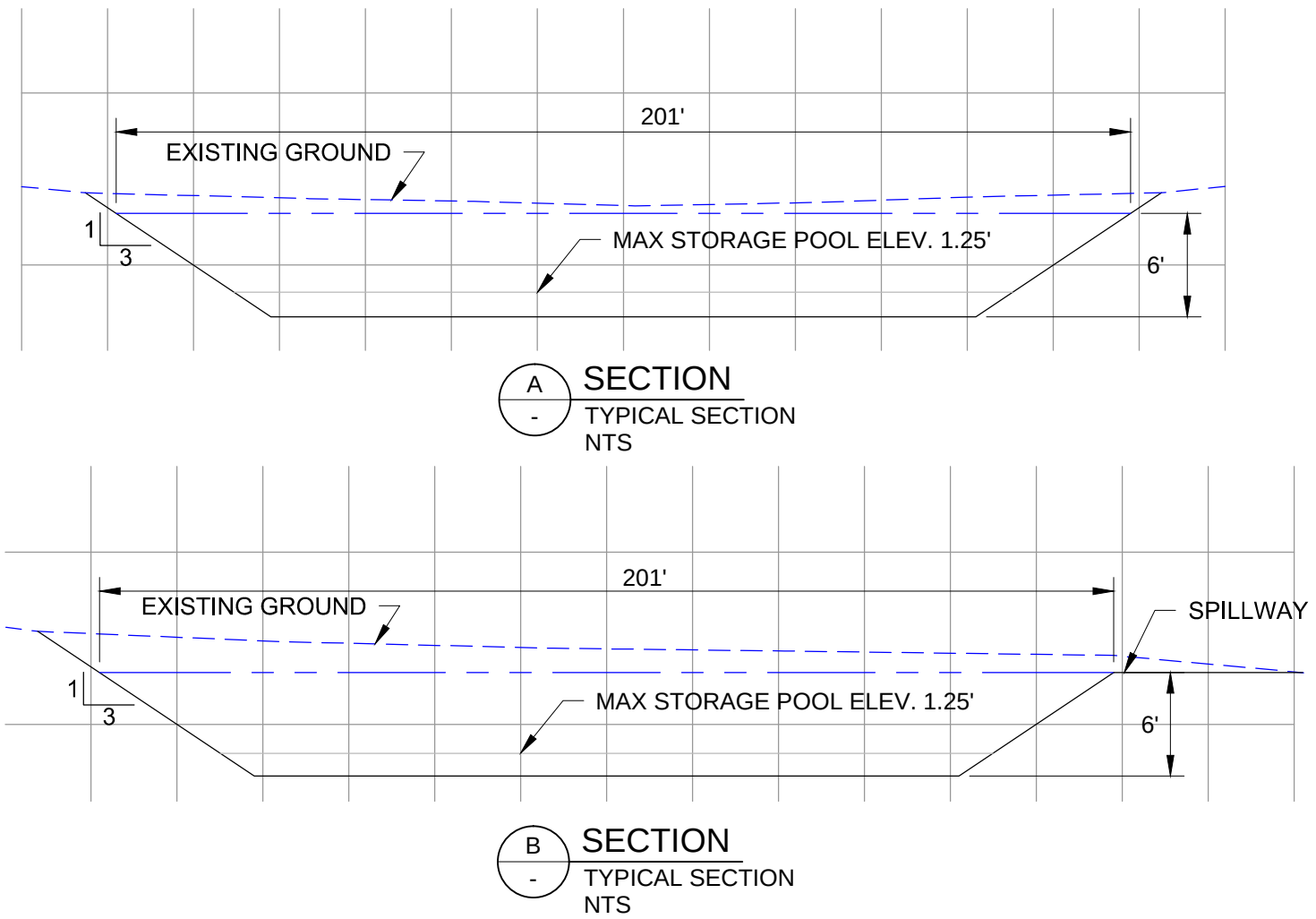
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TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

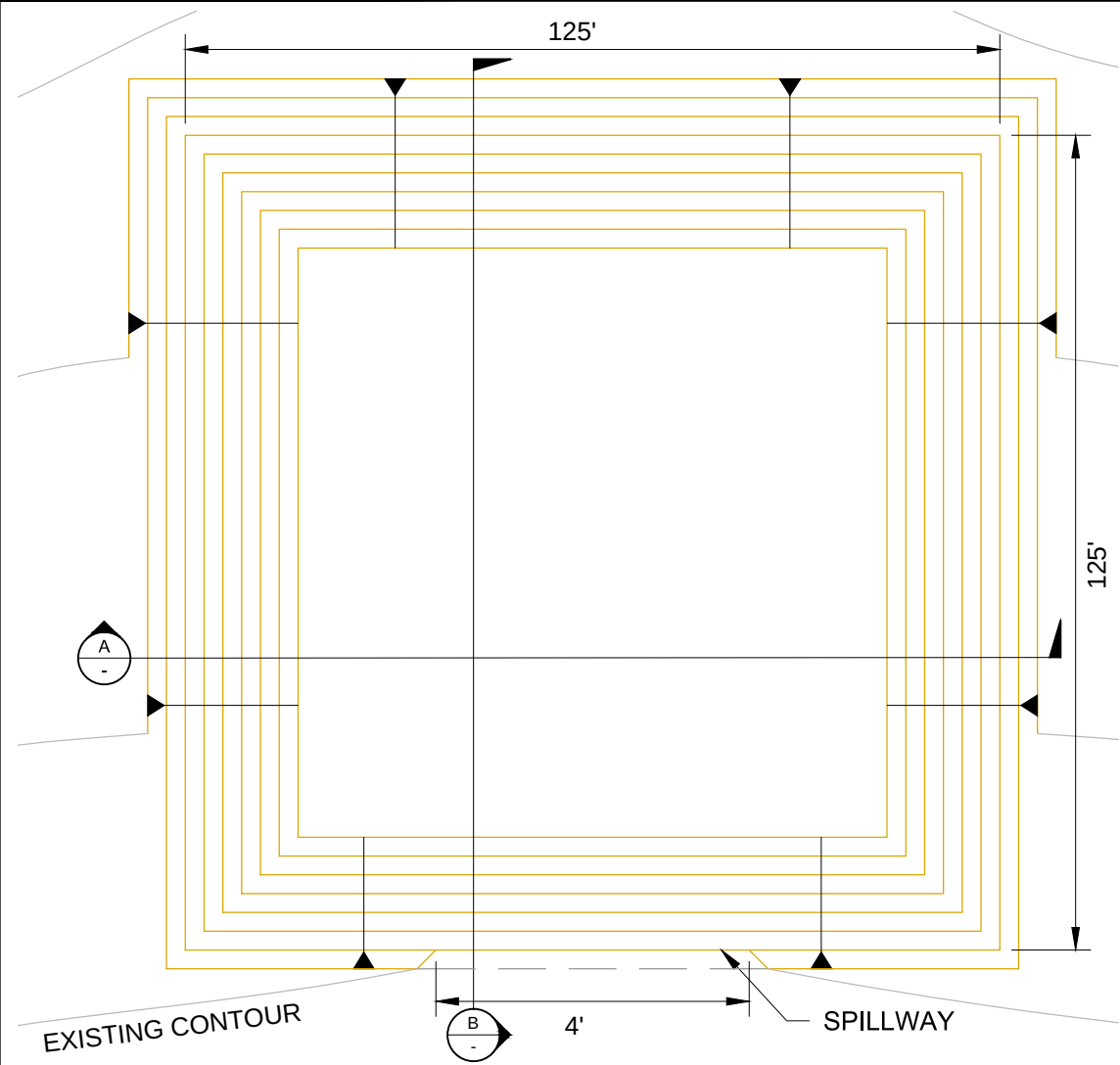
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
R1	30.9	74.1	91.2	0.29	0.050	12.0	624

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.3
4.00	2.9
6.00	4.6

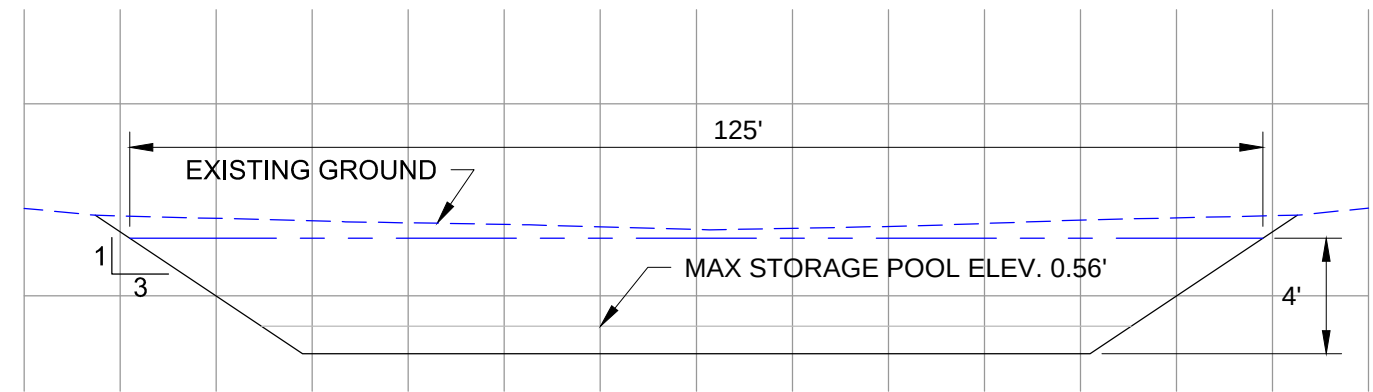
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-R1	30.9	30.9	0.0	39.5	3.26	0.46	4.62



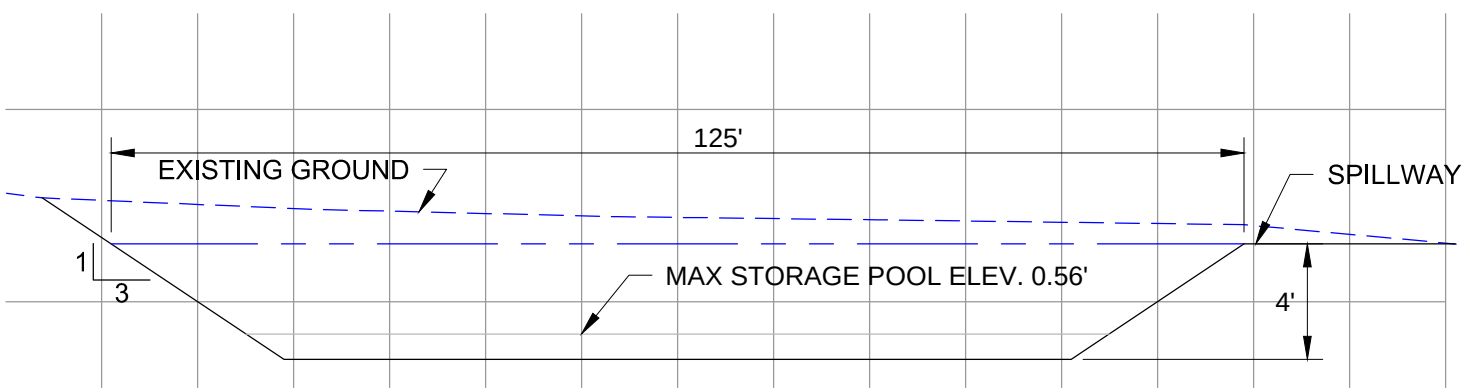
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



SECTION A
TYPICAL SECTION
NTS

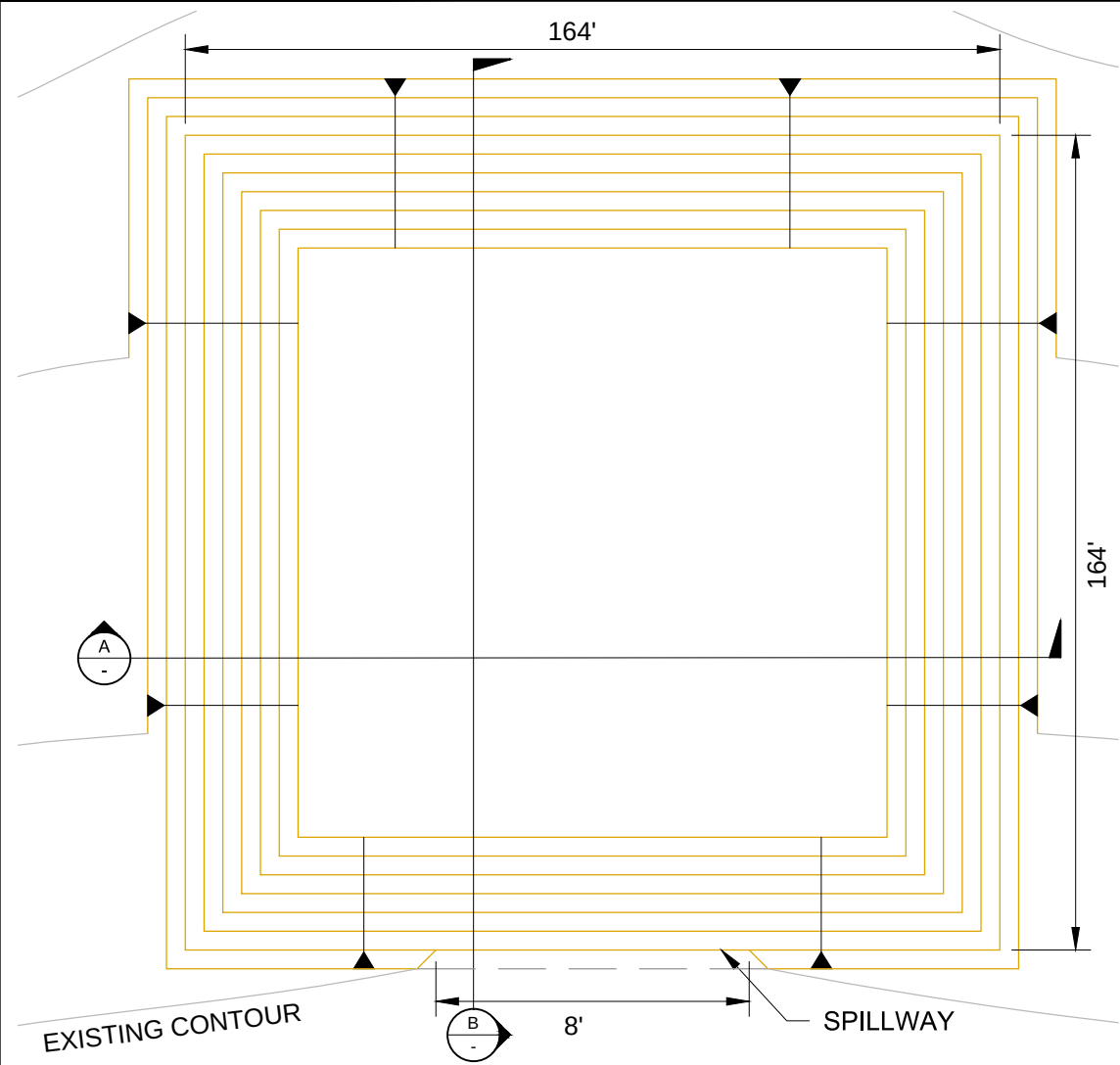


SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
R2	9.0	74.1	91.2	0.29	0.050	11.3	354

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.5
4.00	1.2

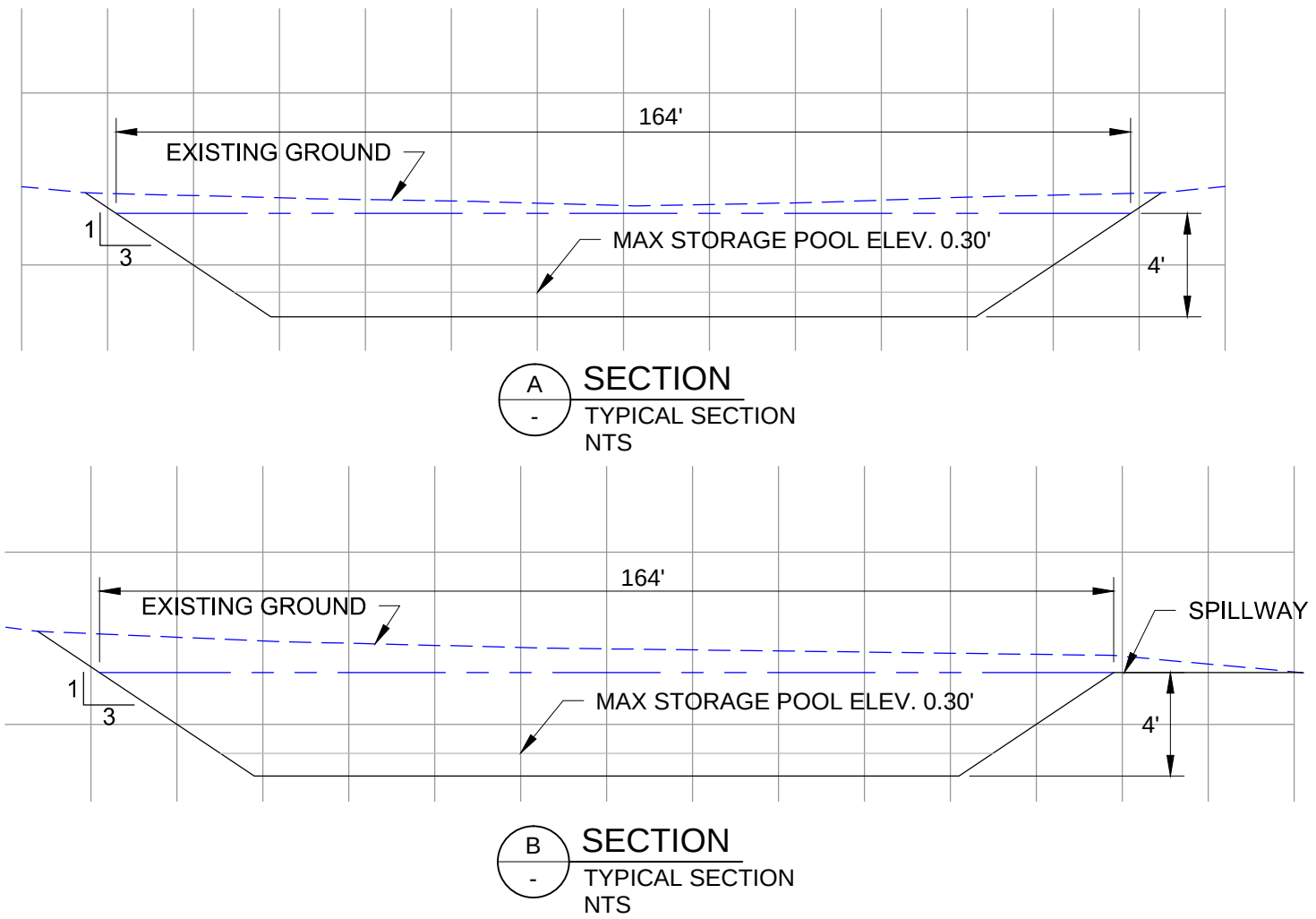
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-R2	9.0	9.0	0.0	11.5	0.95	0.07	1.17



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

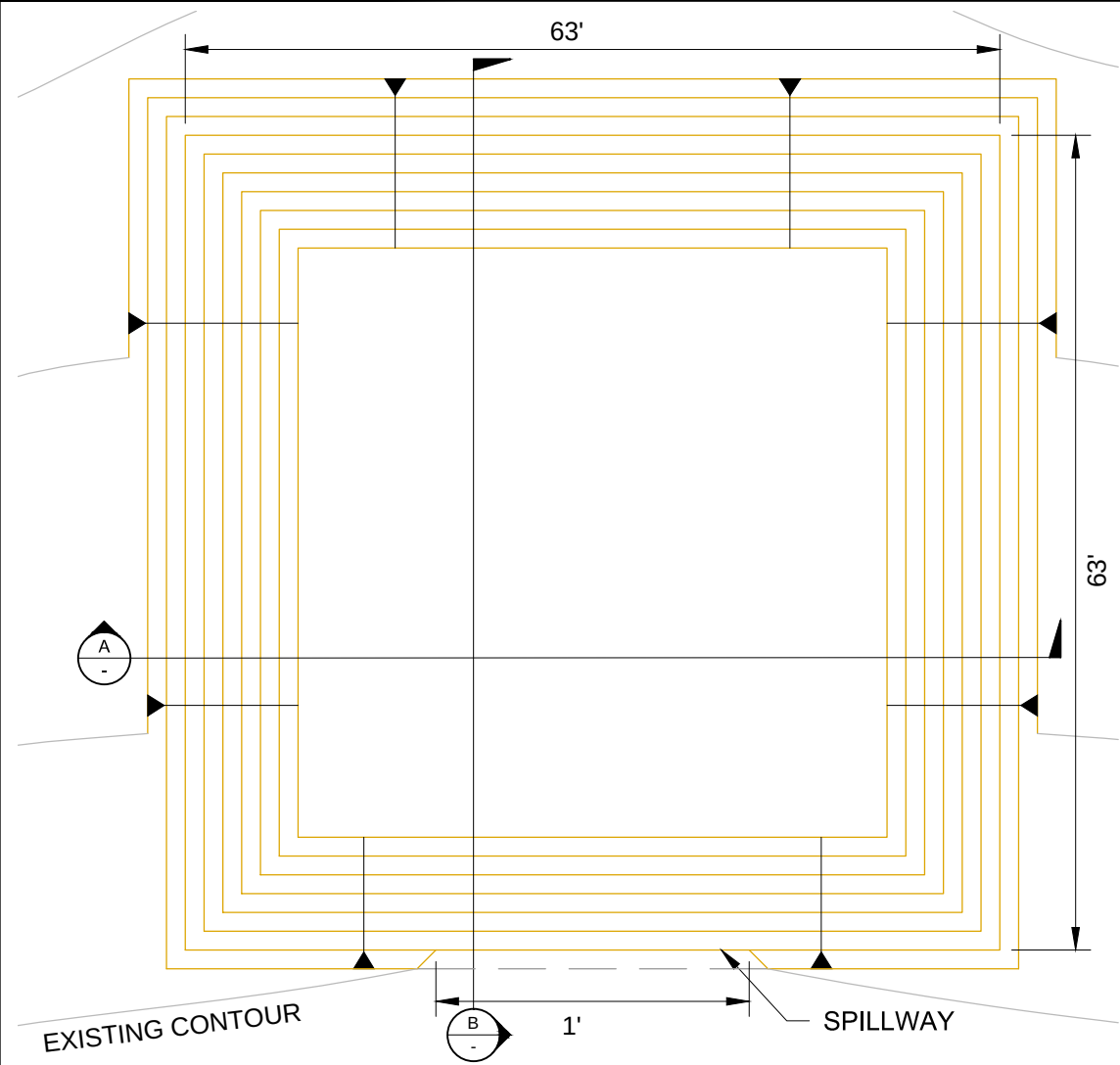
1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
R3	26.7	74.1	91.2	0.29	0.050	9.8	266

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.0
4.00	2.1

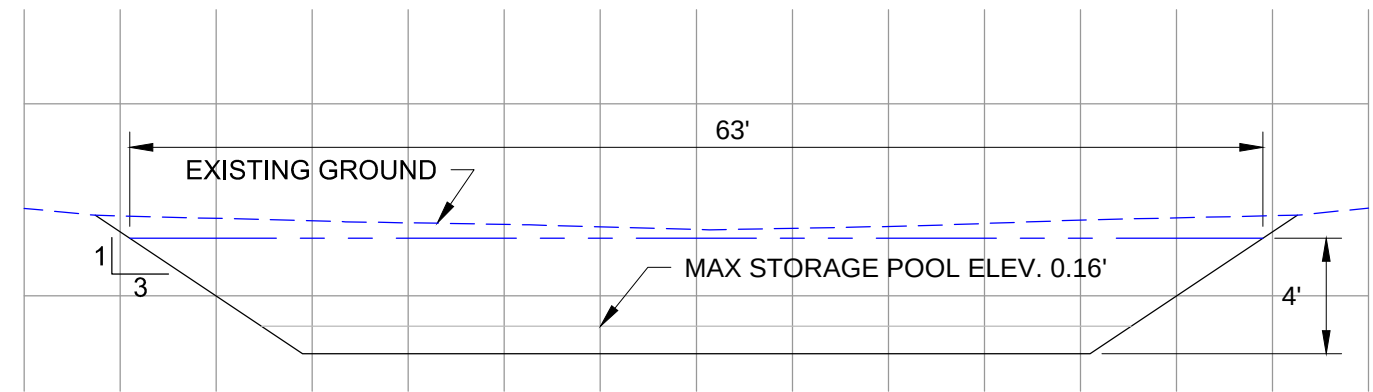
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-R3	26.7	13.9	12.8	23.7	1.89	0.08	2.12



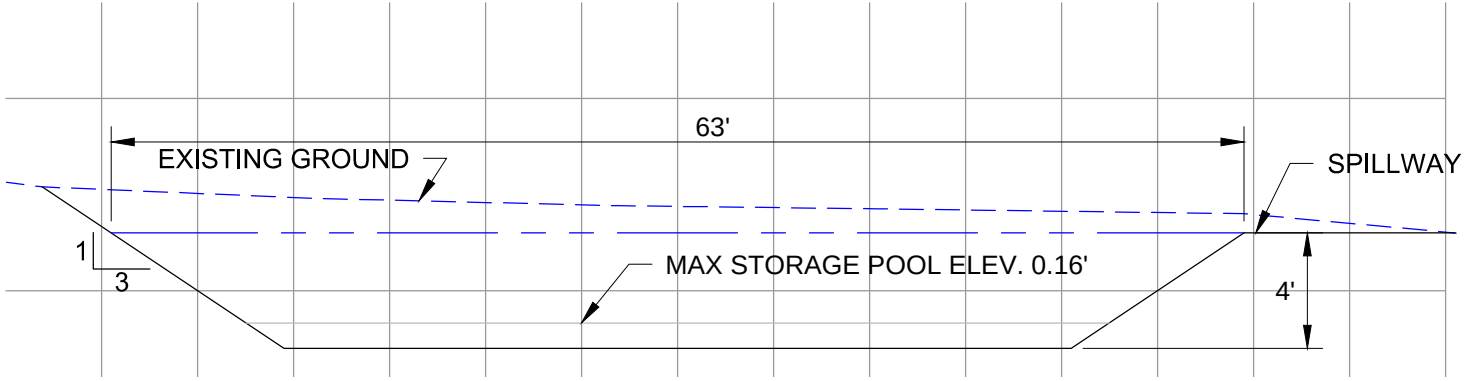
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
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A SECTION
- TYPICAL SECTION
NTS

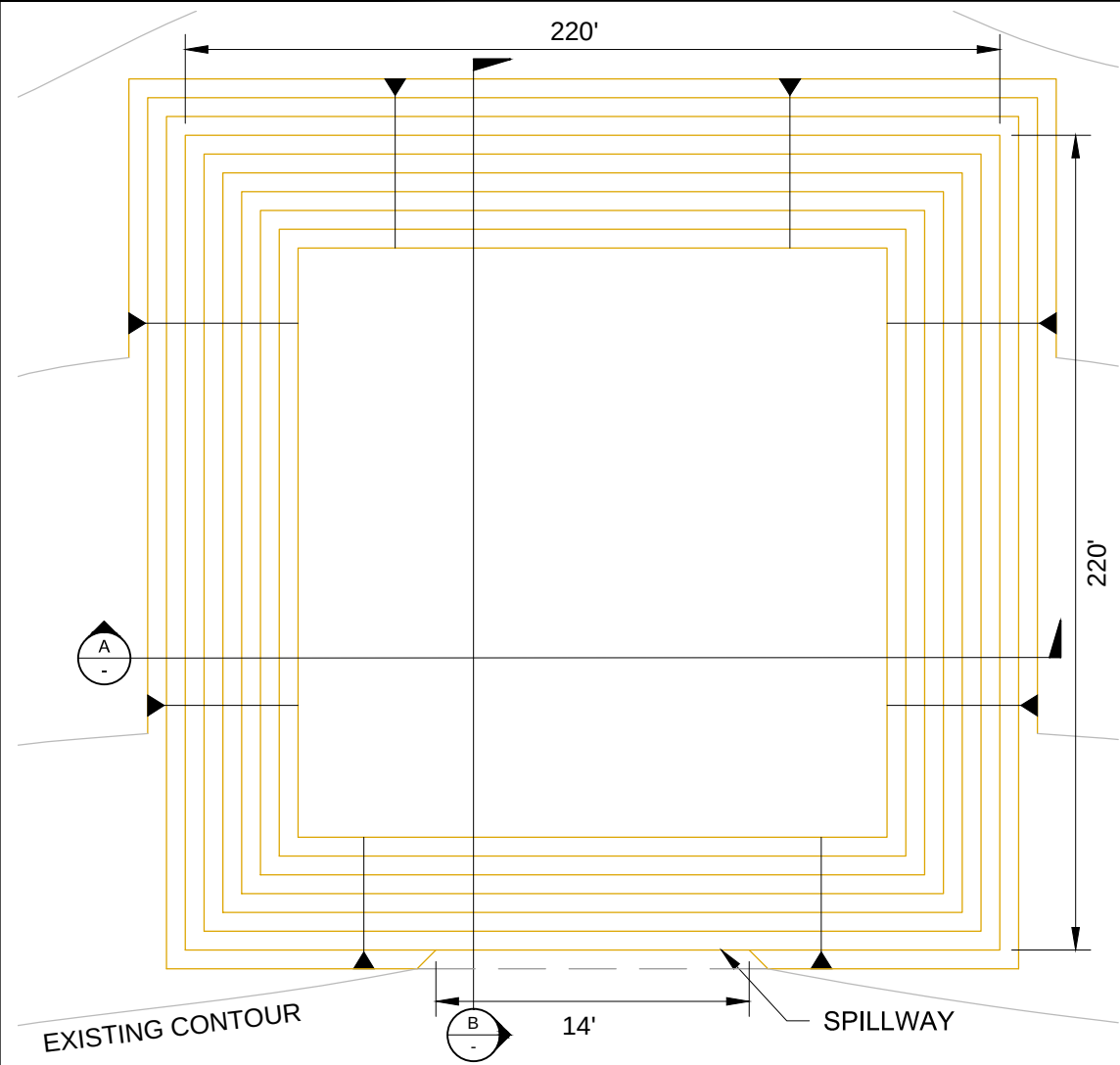


B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
R4	2.2	74.1	91.2	0.29	0.050	11.7	281

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	0.1
4.00	0.2

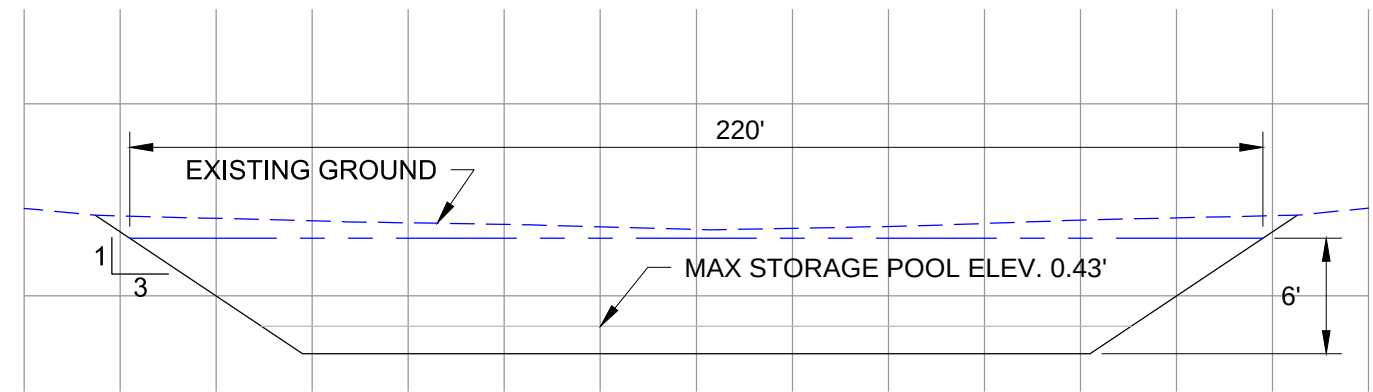
Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-R4	2.2	2.2	0.0	2.8	0.23	0.00	0.24



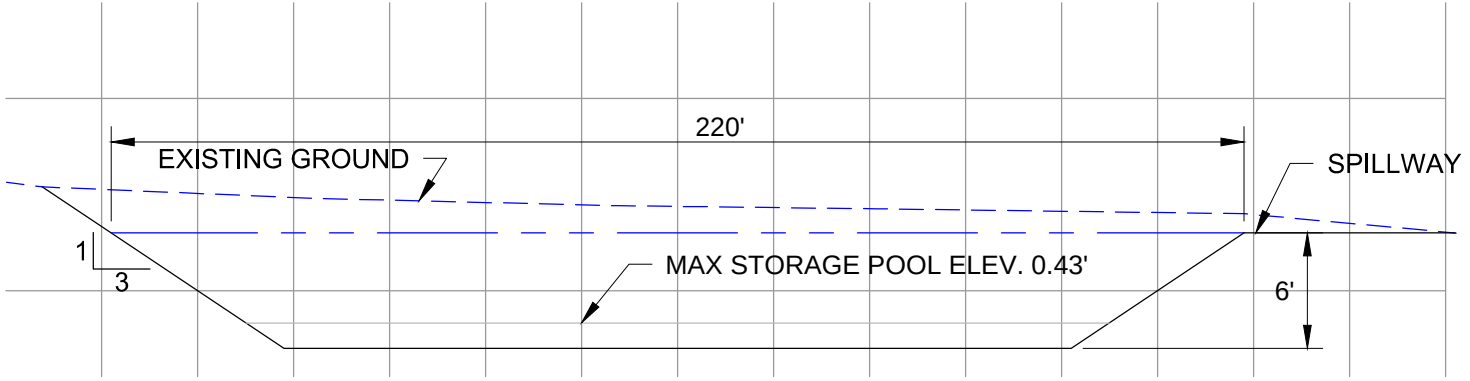
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
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A SECTION
TYPICAL SECTION
NTS



B SECTION
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Weighted K Factor	Weighted C Factor	Slope (%)	Length (Ft)
R5	117.6	74.1	91.2	0.29	0.050	6.6	906

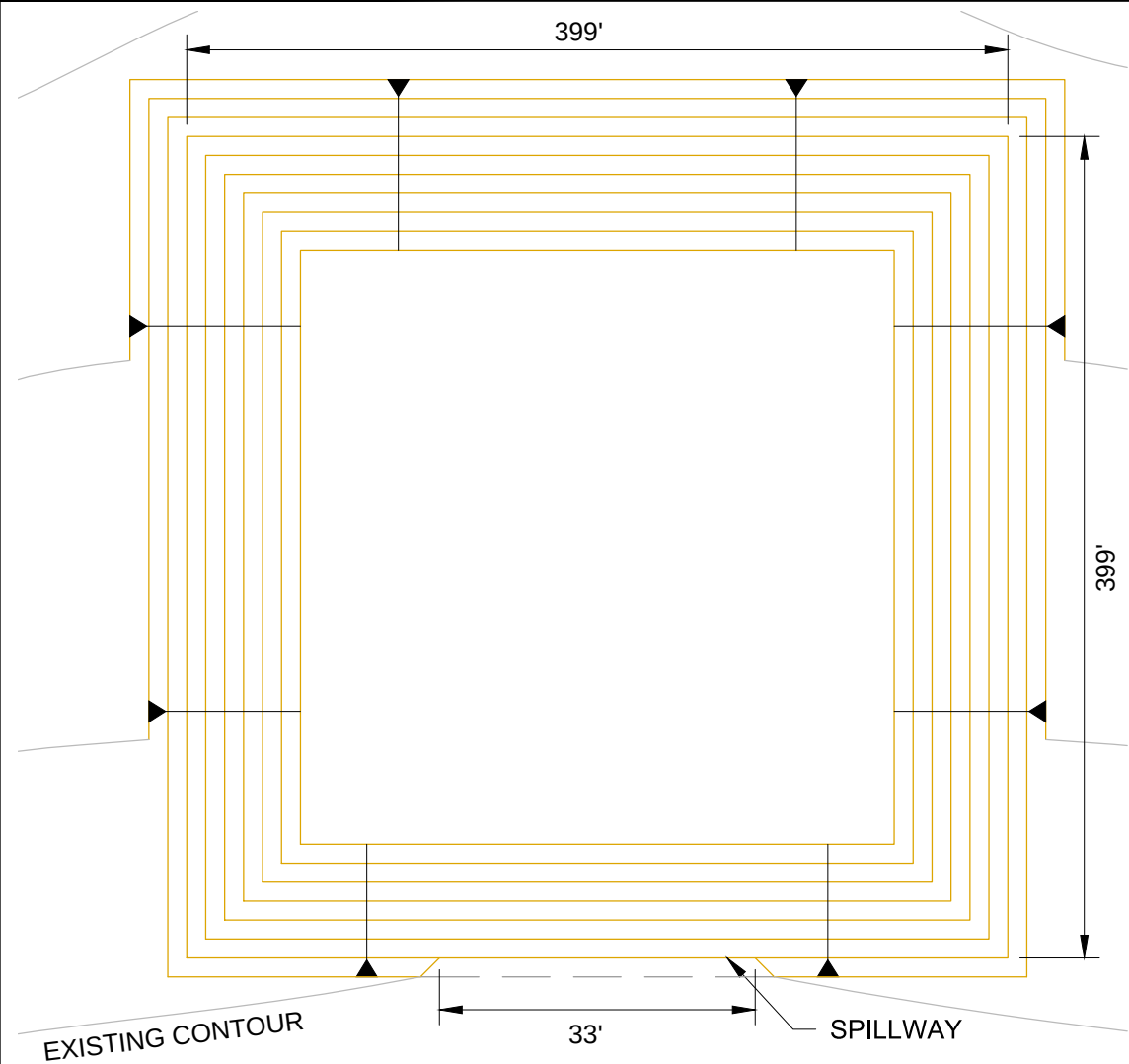
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
2.00	1.7
4.00	3.5
6.00	5.6

Pond	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Required Pond Volume (acre-feet)
EP-R5	117.6	32.9	84.7	43.8	5.04	0.19	5.60

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

FIRST PHASE OPERATIONAL DRAINAGE
CONTROL SEDIMENT POND
EP-R5 CONFIGURATION

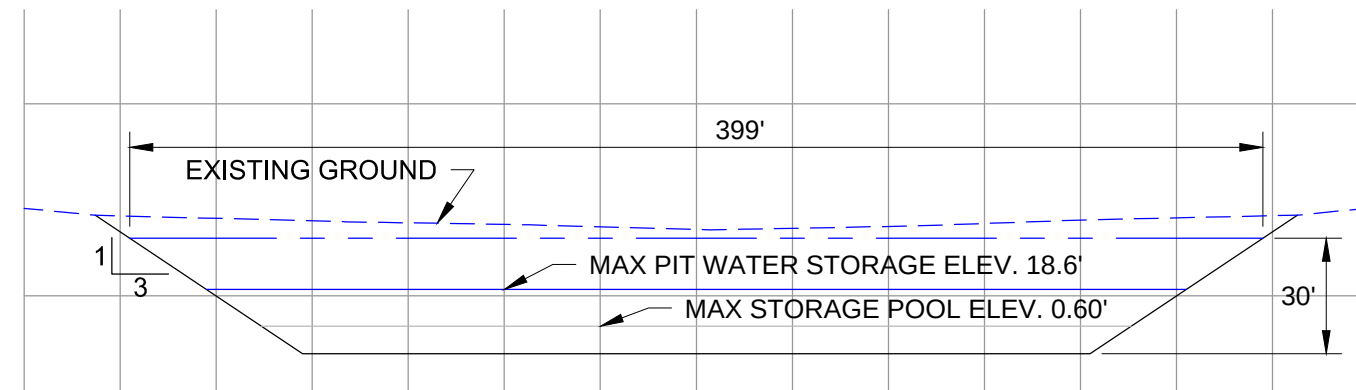
FIGURE
B-23



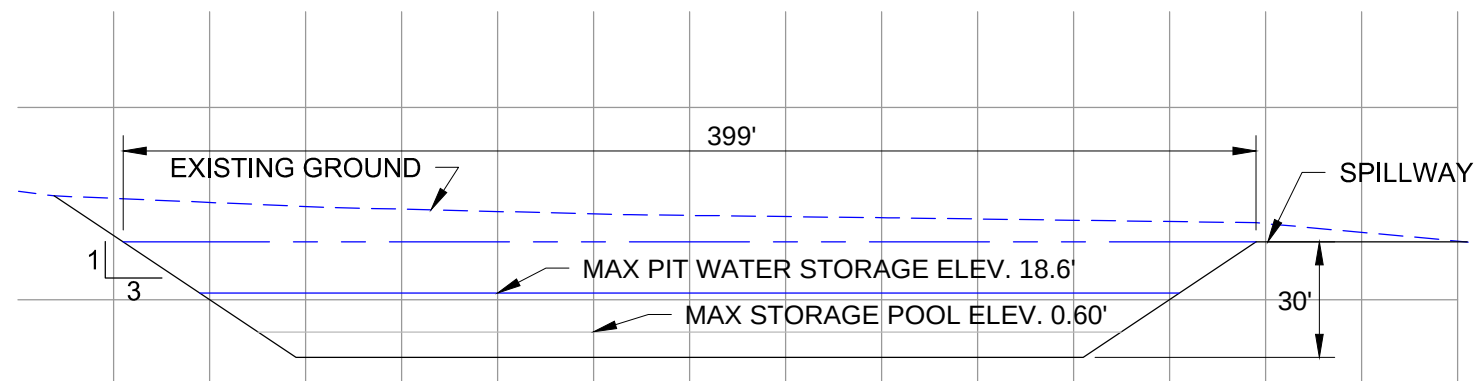
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
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5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
1A	324.3	74.1	91.2	78.7	0.32	--	0.45	0.042	7.2	907

Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-1A	16	324.3	63.4	--	260.9	242.5	34.10	0.37	32	67.2

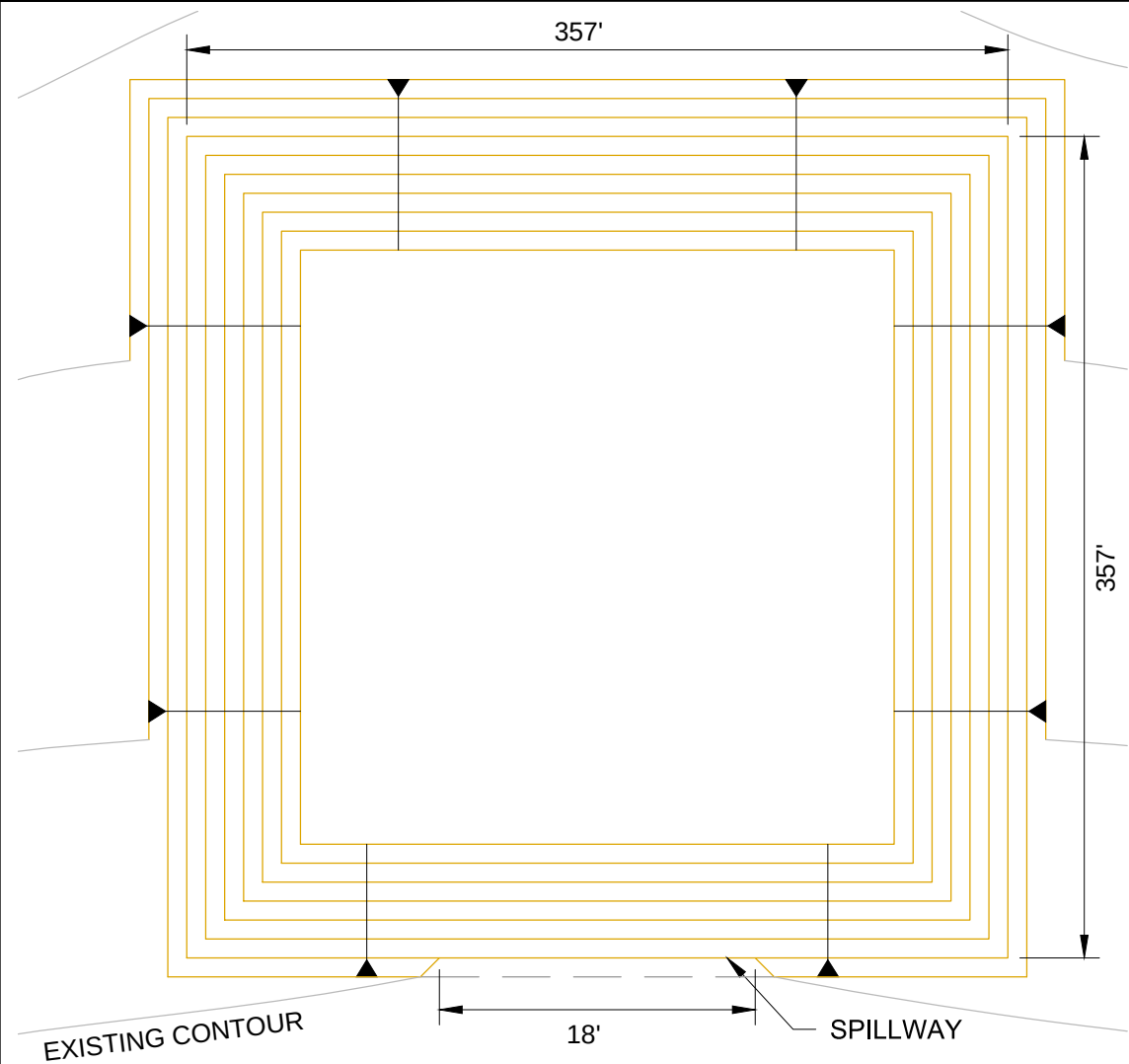
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	6.3
10.00	14.3
15.00	24.2
20.00	36.3
25.00	50.7
30.00	67.6

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

**SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-1A CONFIGURATION**

FIGURE

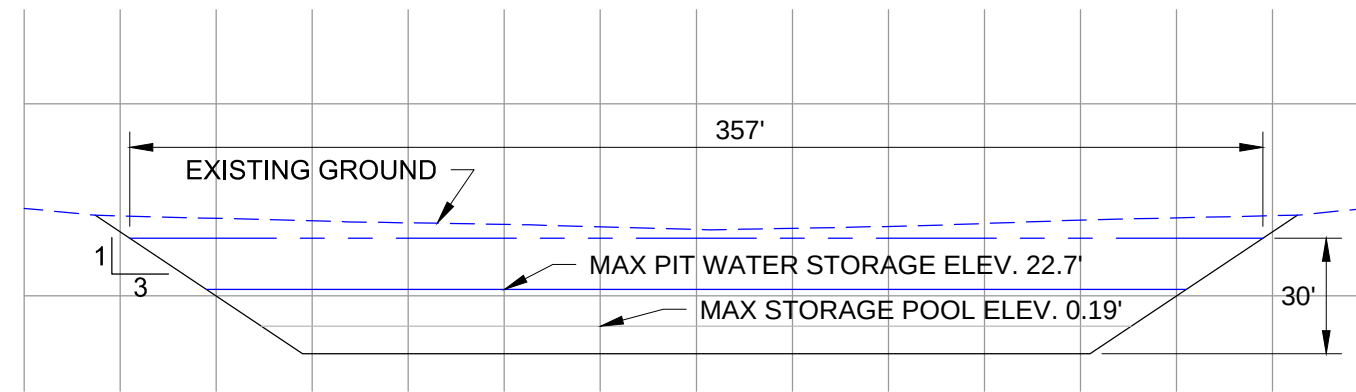
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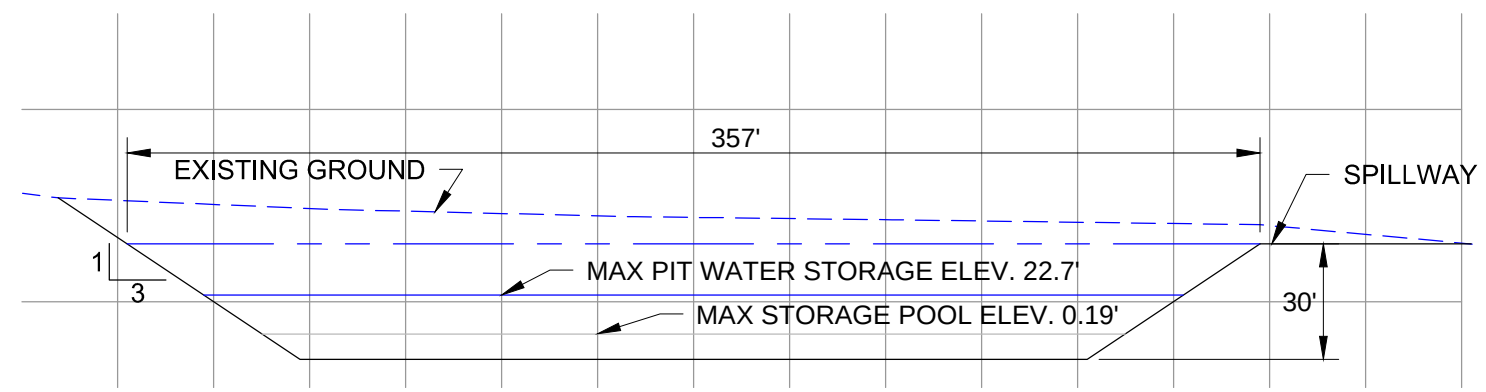
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
2A	183.1	72.1	91.6	79.5	0.32	--	0.45	0.042	7.1	973

Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-2A	14	183.1	13.5	--	169.6	152.8	18.45	0.08	32	50.7

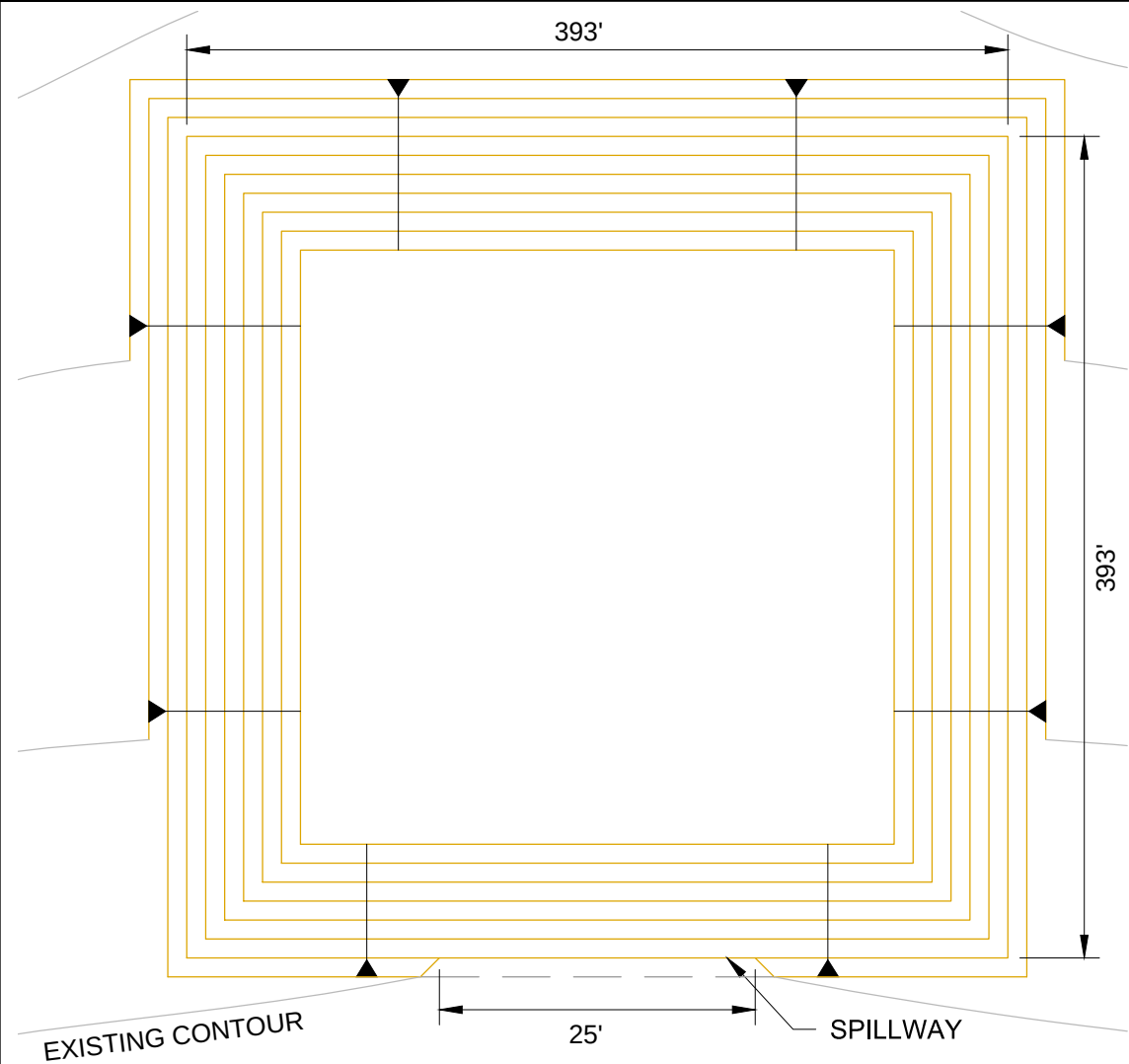
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	4.2
10.00	9.9
15.00	17.2
20.00	26.3
25.00	37.5
30.00	51.0

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

**SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-2A CONFIGURATION**

FIGURE

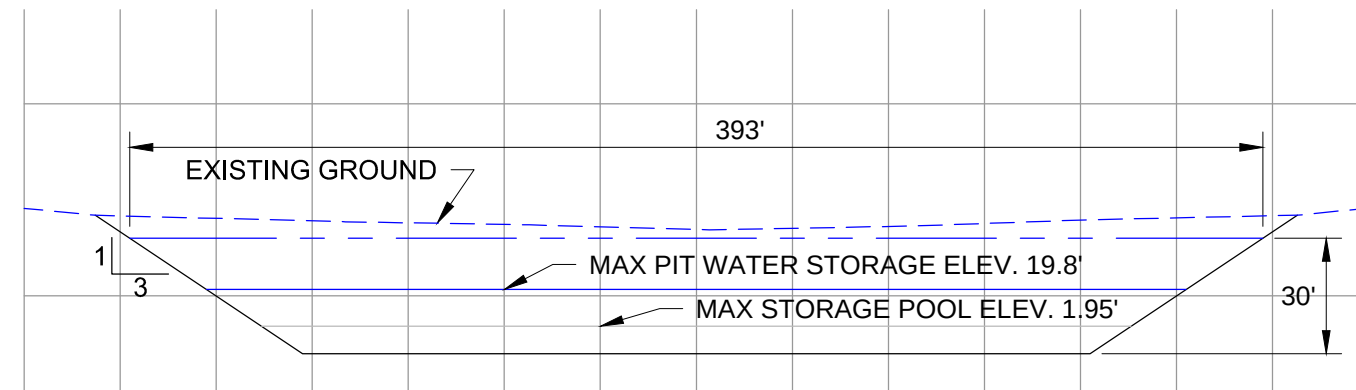
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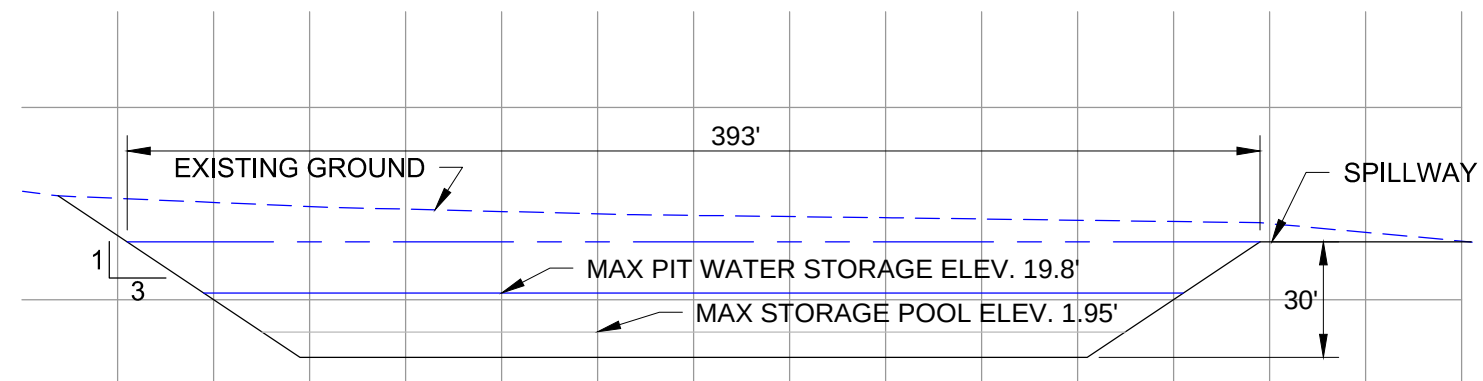
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



A SECTION
- TYPICAL SECTION
NTS



B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
3A/4A	342.9	63.3	88.5	73.8	0.32	0.039	0.45	0.042	11.1	991

Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-3A	13	342.9	94.6	63.5	184.8	198.2	29.23	1.19	32	64.8

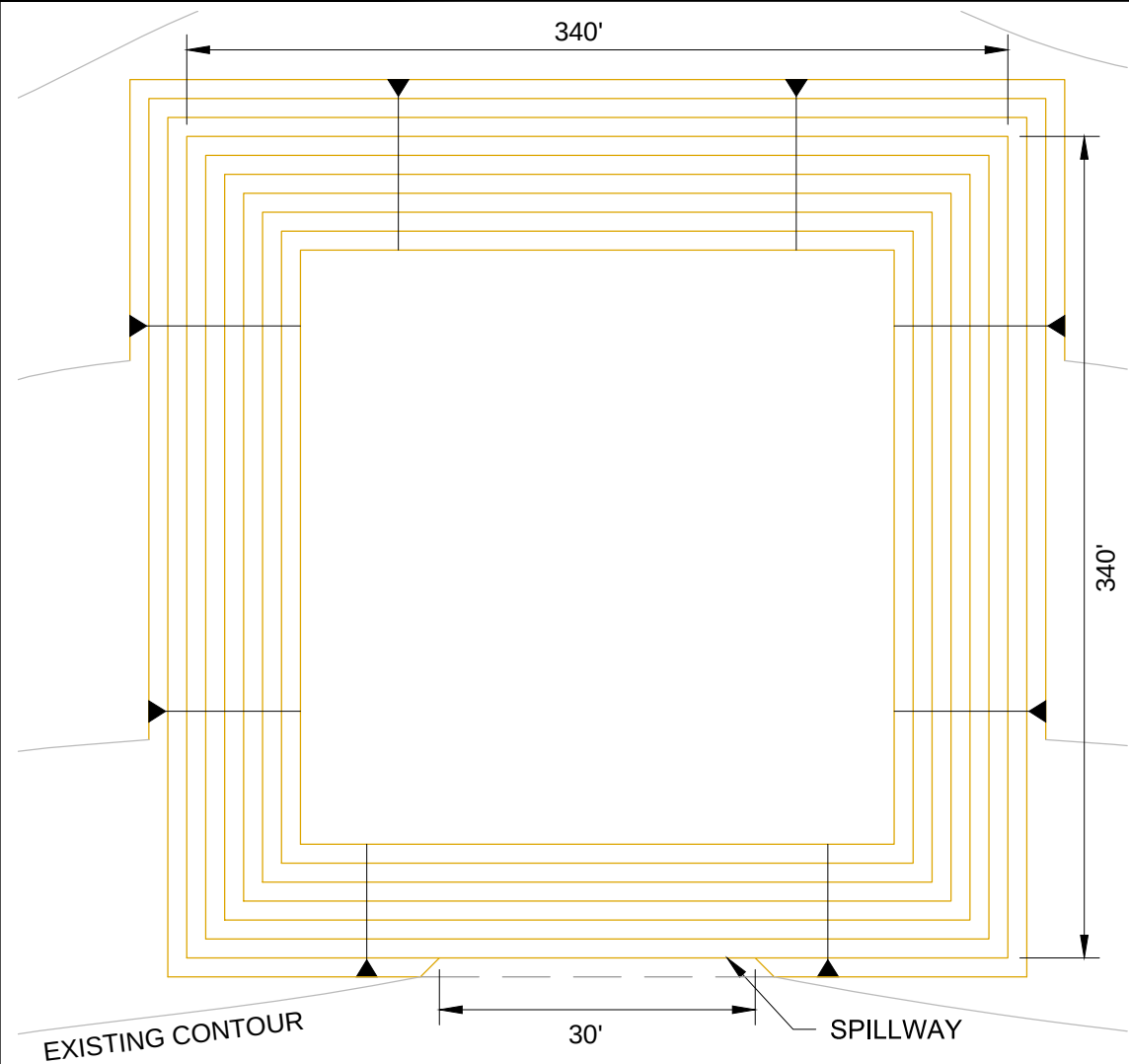
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	6.0
10.00	13.6
15.00	23.2
20.00	34.8
25.00	48.7
30.00	65.1

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-3A CONFIGURATION

FIGURE

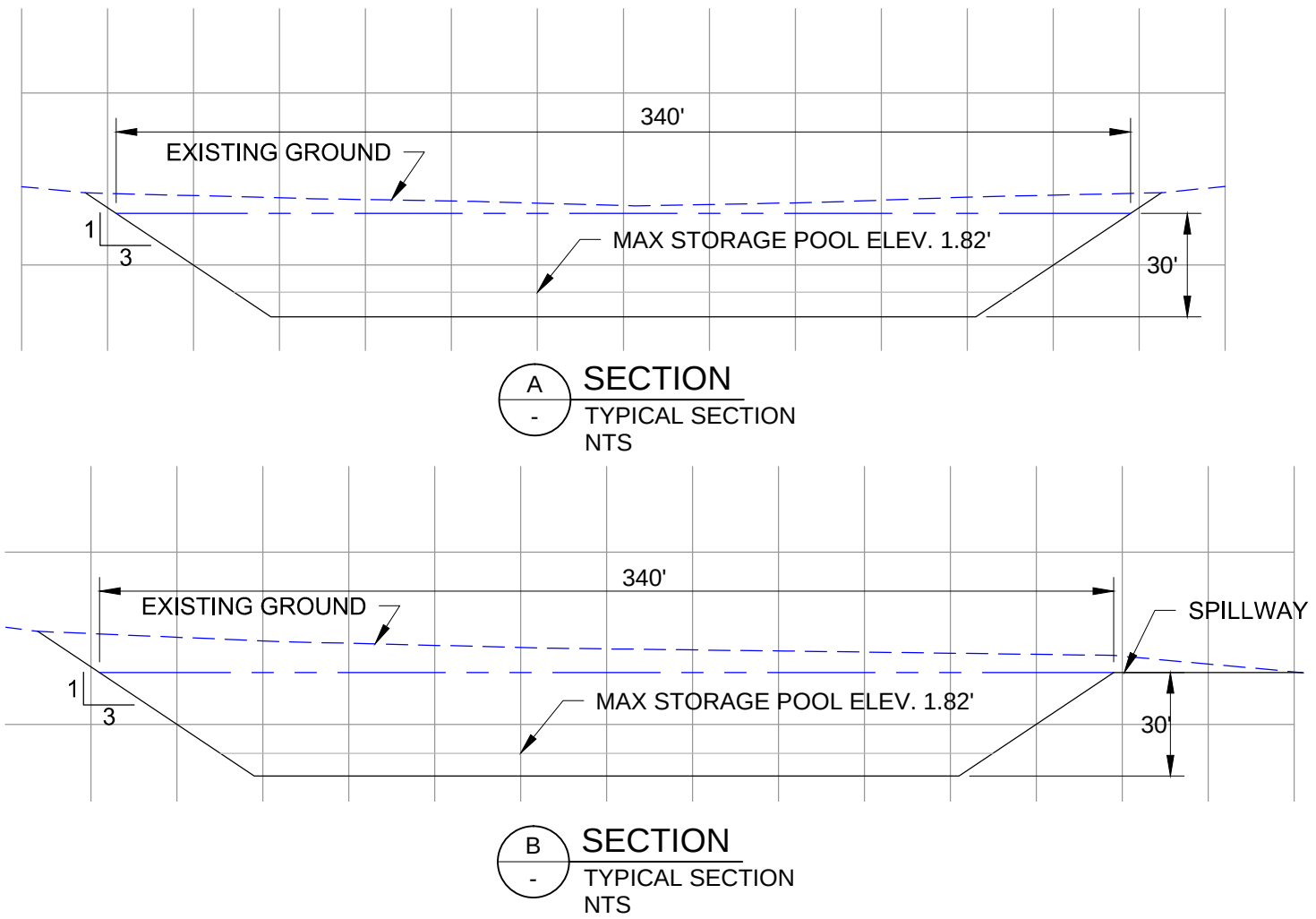
B-26



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

- 1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
- 2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
5	493.3	67.5	89.6	75.8	0.32	0.039	0.45	0.042	9.7	819

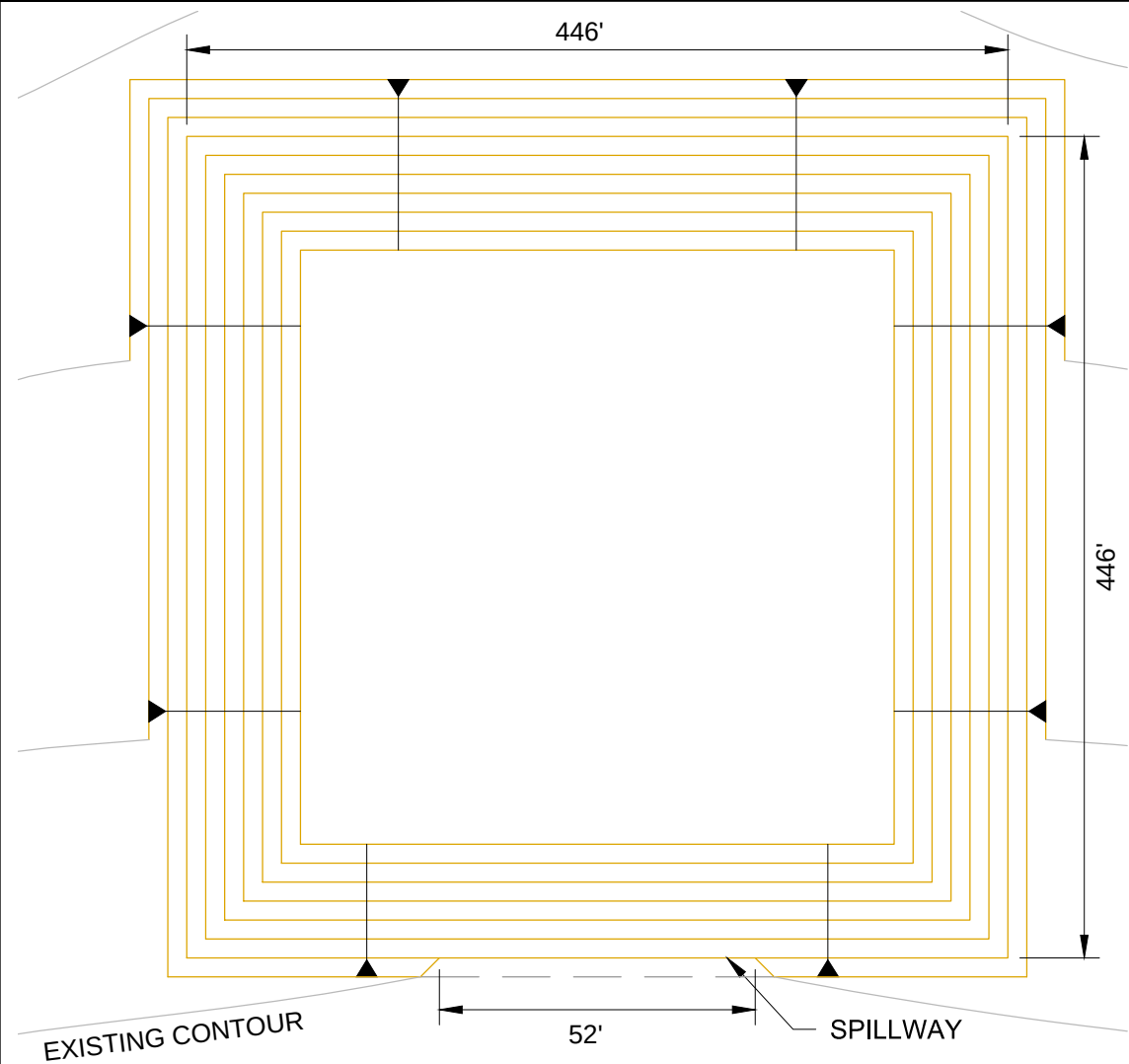
Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-5	18	493.3	89.6	95.8	307.9	242.9	42.85	0.64	-	44.8

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	3.5
10.00	8.4
15.00	14.7
20.00	22.8
25.00	32.8
30.00	44.9

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-5 CONFIGURATION

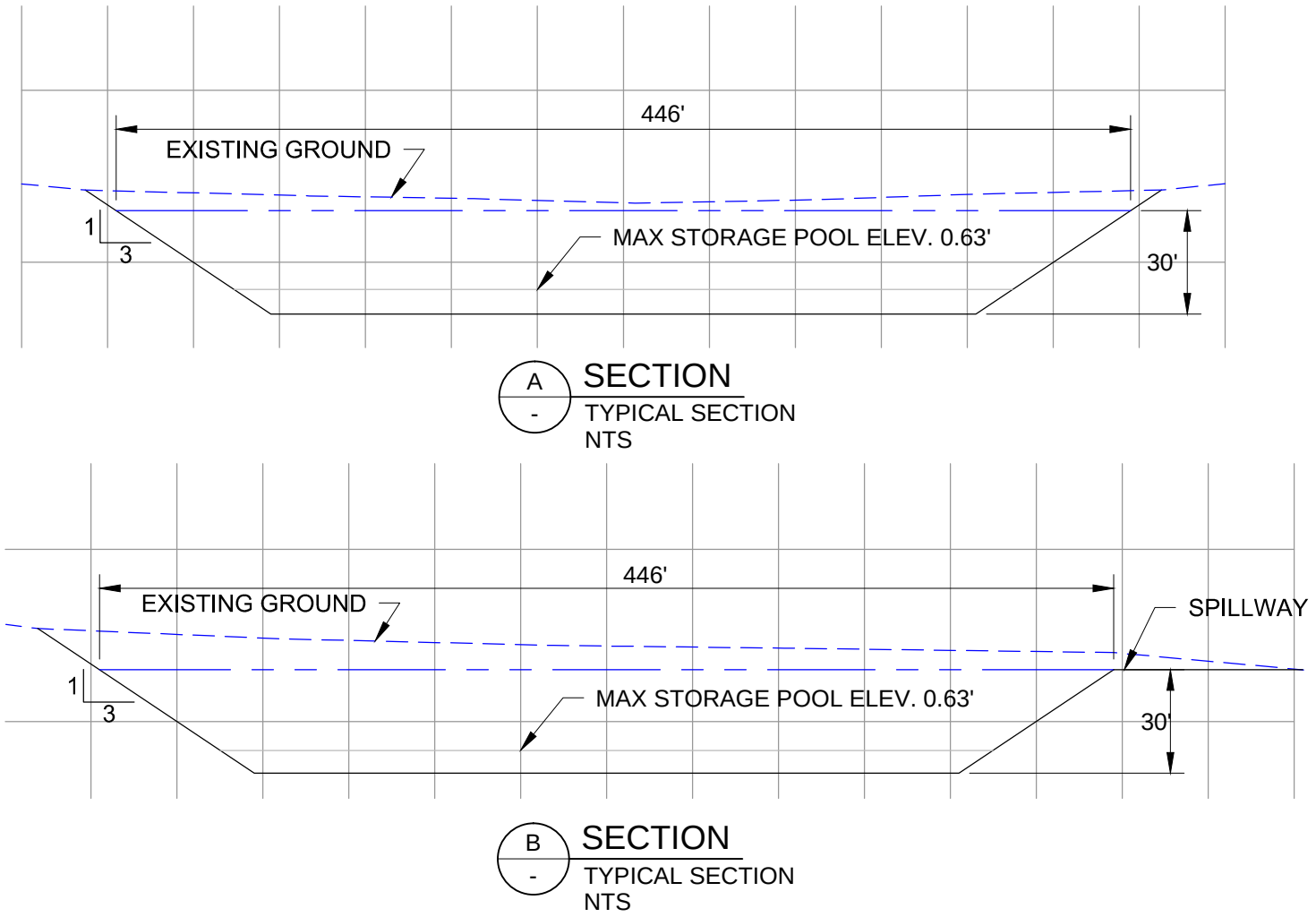
FIGURE
B-27



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
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Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
6/7	460.7	67.6	89.7	76.3	0.32	--	0.45	0.042	3.1	976
7U	651.2	70.0	--	--	0.32	0.046	--	--	23.8	854

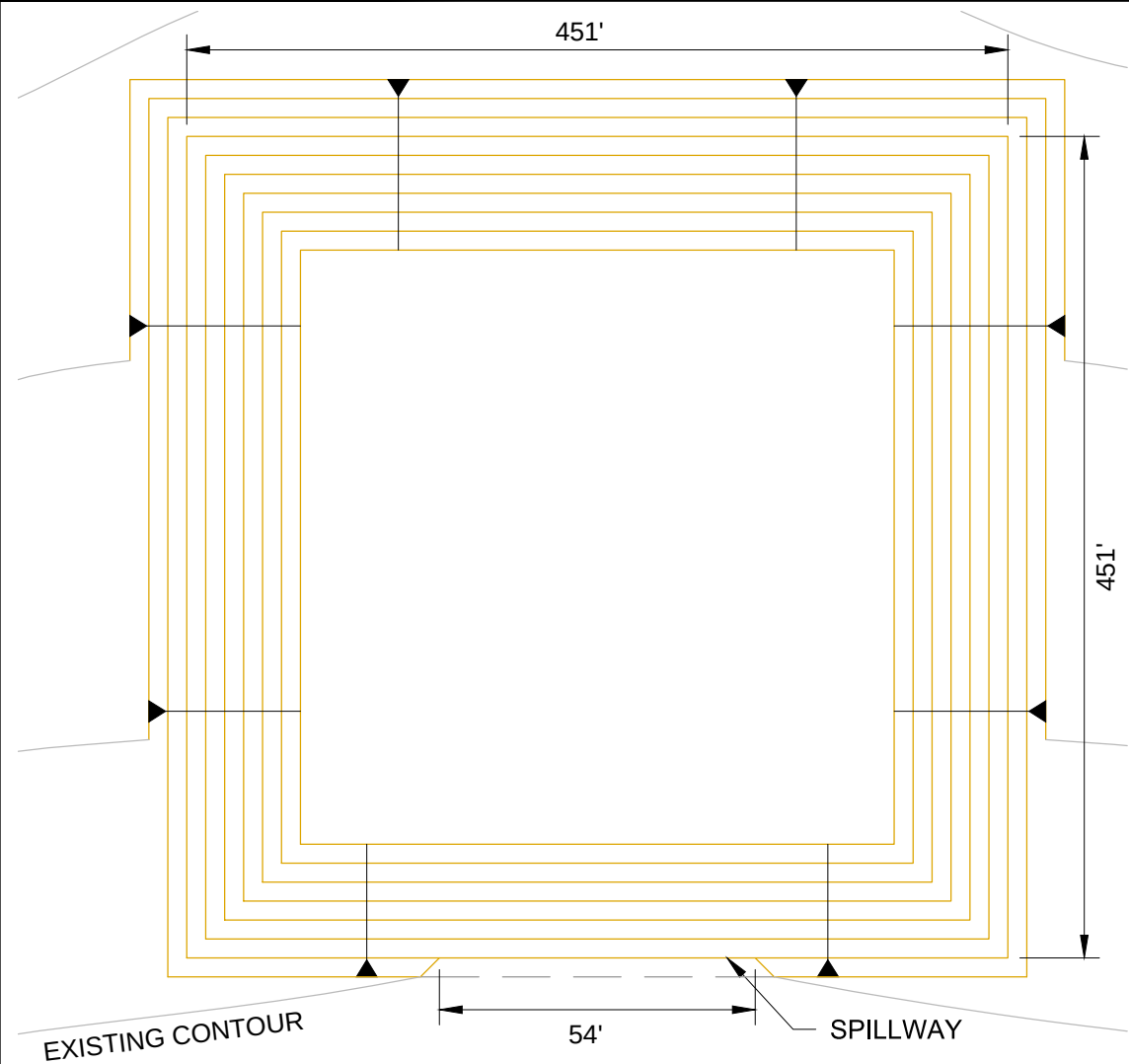
Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-6	20	1111.9	159.7	301	651.2	501.7	86.95	0.58	-	88.7

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	9.1
10.00	20.2
15.00	33.5
20.00	49.3
25.00	67.8
30.00	89.1

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

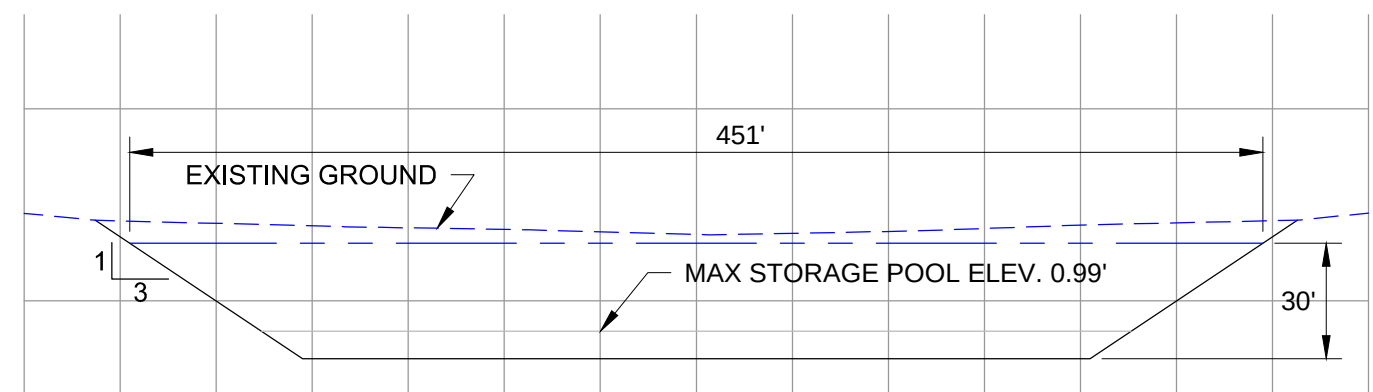
SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-6 CONFIGURATION

FIGURE
B-28

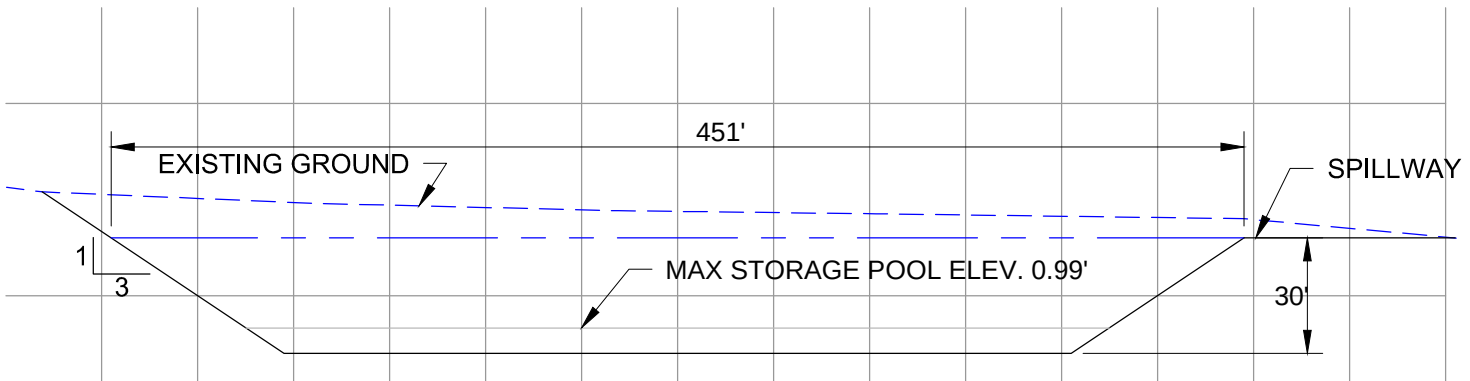


TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

- NOTES:**
1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
 2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
 3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
 4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
 5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



A SECTION
- TYPICAL SECTION
NTS

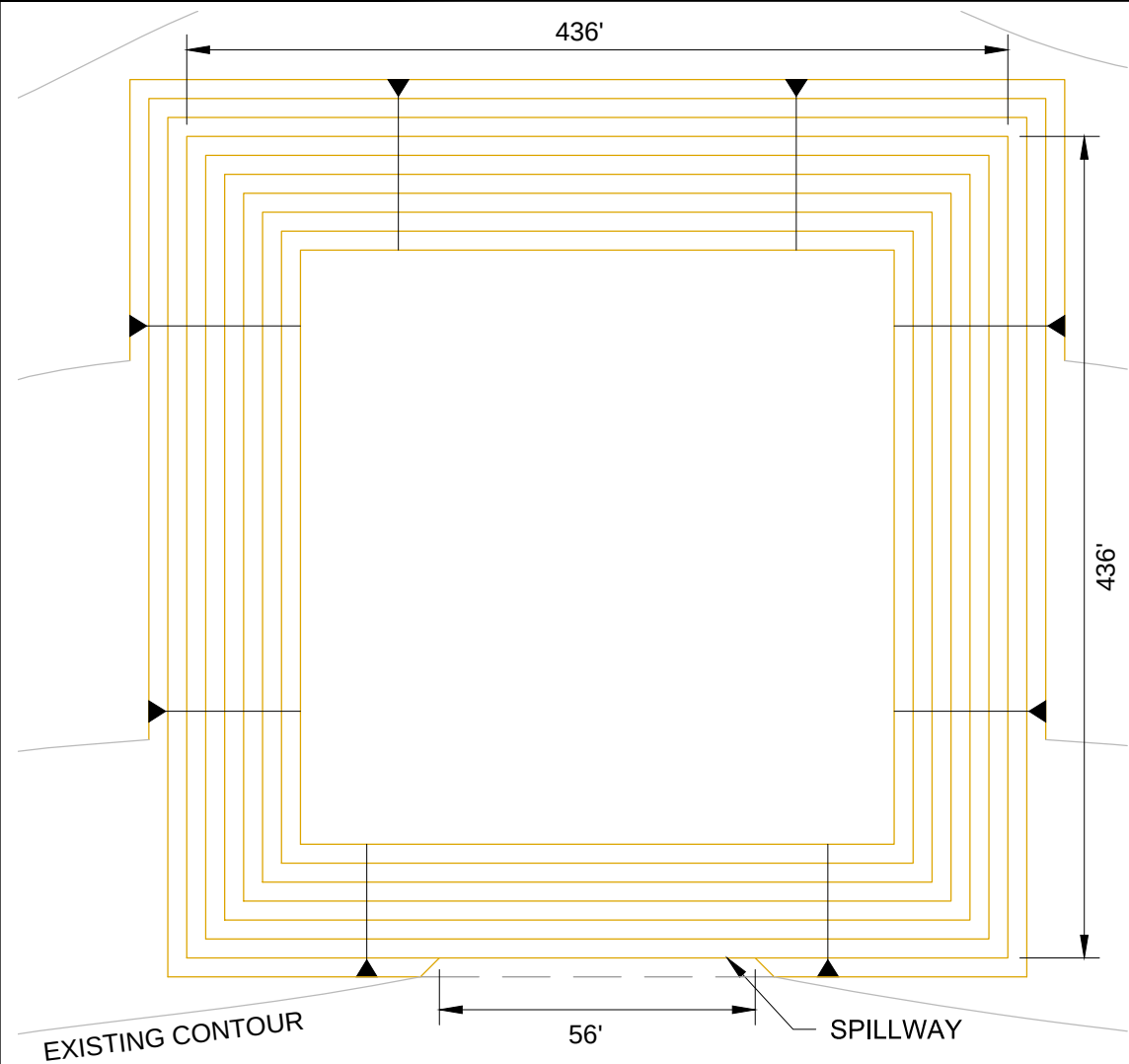


B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area a (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
7	705.5	70.0	89.7	76.4	0.32	--	0.45	0.042	8.5	867
7U	381.1	70.0	--	--	0.29	0.046	--	--	23.8	854

Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-7	20	1086.6	118.9	381.1	586.6	501.7	88.68	0.95	-	91.5

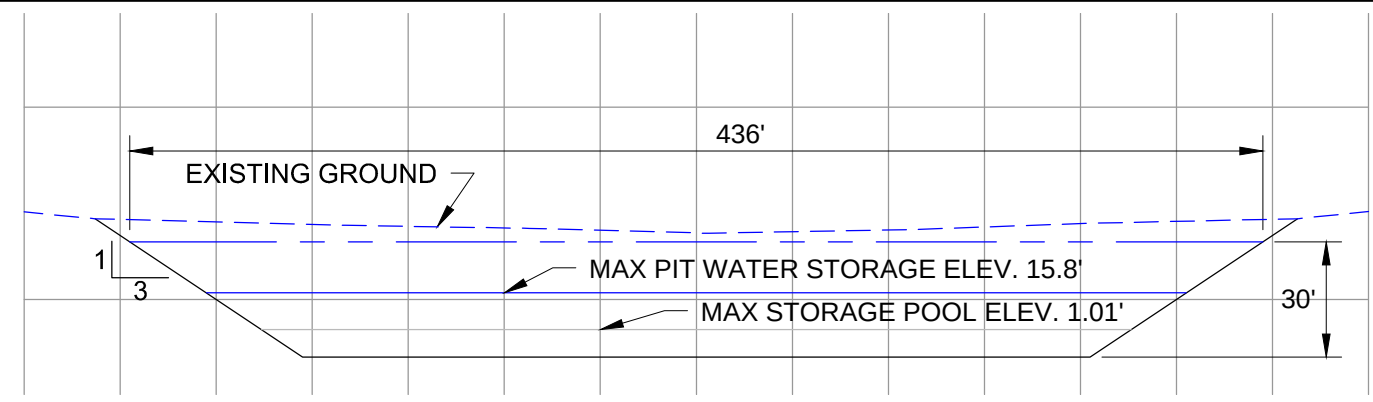
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	9.4
10.00	20.9
15.00	34.6
20.00	50.9
25.00	69.8
30.00	91.6



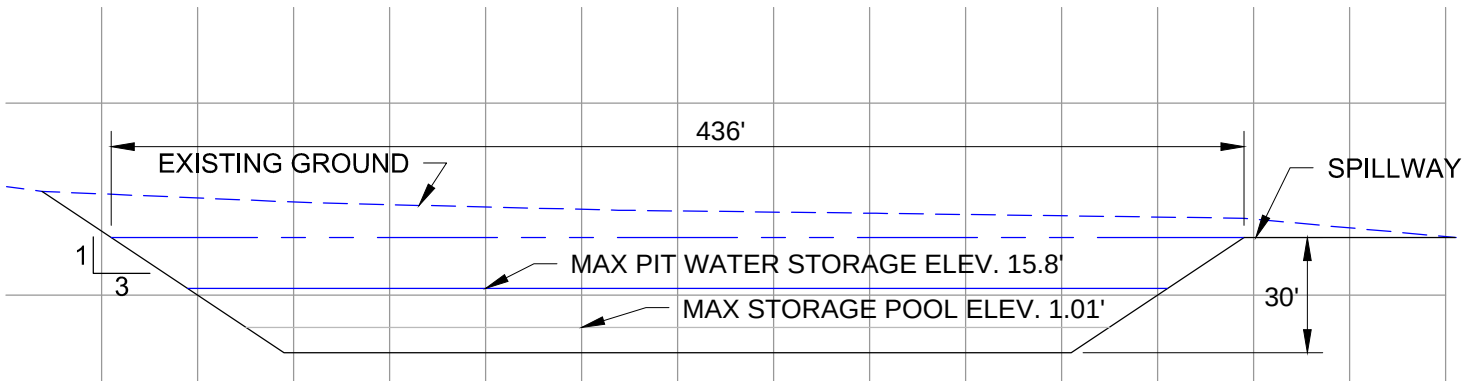
TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



A SECTION
- TYPICAL SECTION
NTS

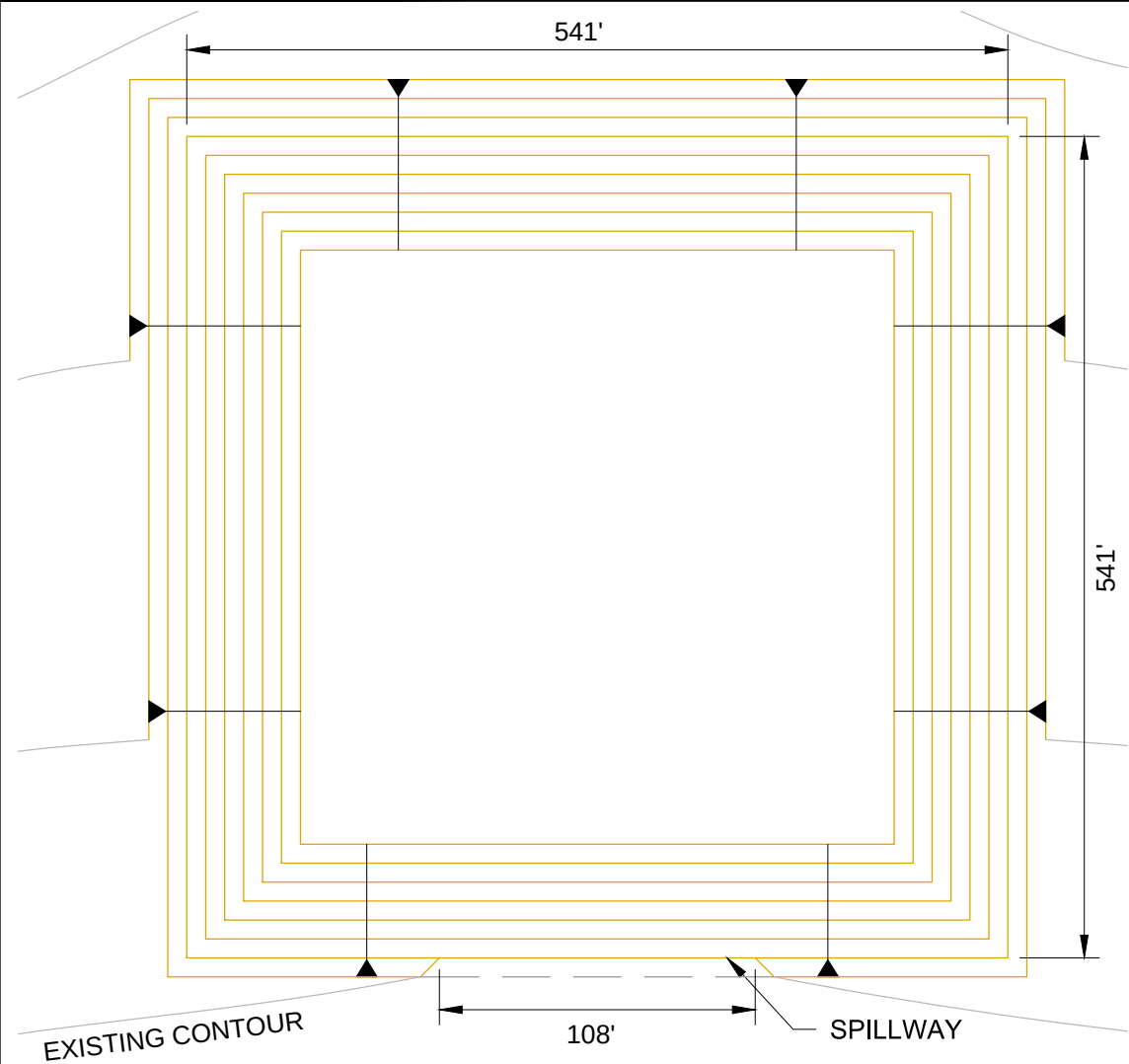


B SECTION
- TYPICAL SECTION
NTS

Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
10	147.8	74.6	92.7	81.6	0.32	--	0.45	0.042	7.2	925
11	101.6	69.8	91.0	78.4	0.32	--	0.45	0.042	5.0	952
12	138.3	73.2	92.4	81.0	0.32	--	0.45	0.042	6.0	851
14	7.9	66.4	89.7	75.9	0.32	--	0.45	0.042	7.0	589

Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-10	16	395.6	150.9	--	244.7	372.6	49.47	0.86	32	84.1

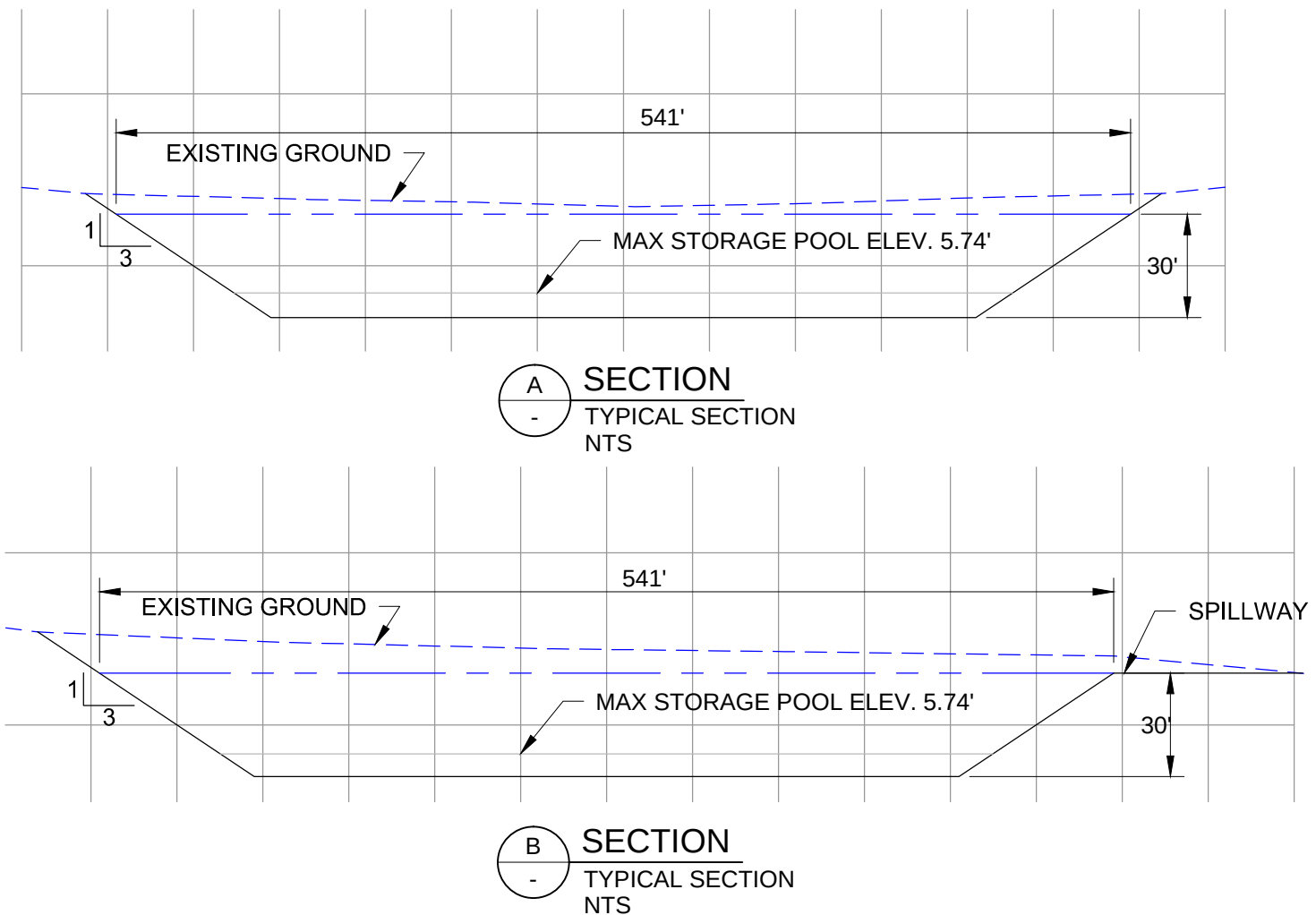
POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	8.4
10.00	18.8
15.00	31.4
20.00	46.4
25.00	64.0
30.00	84.3



TYPICAL EXCAVATED SEDIMENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT SEDIMENT PONDS WITH 3(H):1(V) SIDE SLOPES. EXTEND 3:1 SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. SEDIMENT POND SHOWN WITH SQUARE GEOMETRY. RECTANGULAR TRAPS MAY BE USED AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. WHEN POND REACHES MAX STORAGE POOL ELEVATION, EQUAL TO 60% OF THE DESIGN SEDIMENT STORAGE CAPACITY, THE POND MUST BE CLEANED OUT.
5. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT TO MEET THE REQUIREMENTS OF ARM 17.24.640(28)(b) AND 17.24.639(1)(d).



Watershed	Drainage Area (acres)	Undisturbed Weighted CN	Bare Weighted CN	Fair Weighted CN	K Factor	Weighted C Factor	Bare C Factor	Fair C Factor	Slope (%)	Length (Ft)
14	31.0	--	89.7	75.9	0.32	--	0.45	0.042	7.0	589
15	715.6	74.7	92.3	80.9	0.32	0.040	0.45	0.042	15.6	936

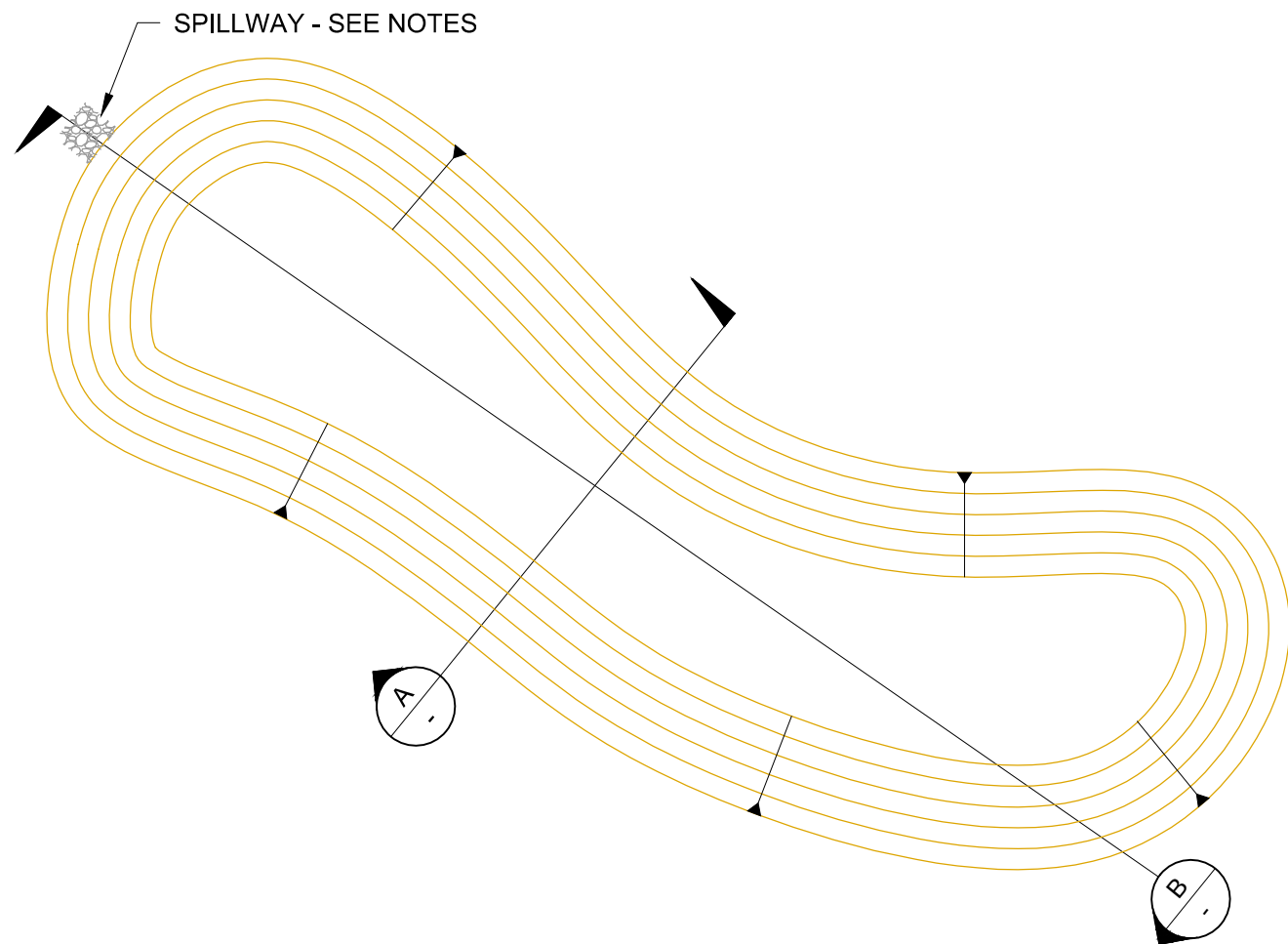
Pond	Worst-Case Year	Total Area (acres)	Disturbed Area (acres)	Undisturbed Area (acres)	Reclaimed Area (acres)	Peak Flow (cfs)	Runoff Volume (acre-feet)	Average Annual Sediment Yield (acre-feet)	Pit Water Storage (acre-feet)	Required Pond Volume (acre-feet)
EP-6	21	746.6	589.3	116.0	41.3	633.6	110.13	15.73	--	141.6

POND DEPTH (FT)	VOLUME (ACRE-FT)
0.00	0.0
5.00	16.2
10.00	35.2
15.00	57.0
20.00	81.9
25.00	110.2
30.00	141.9

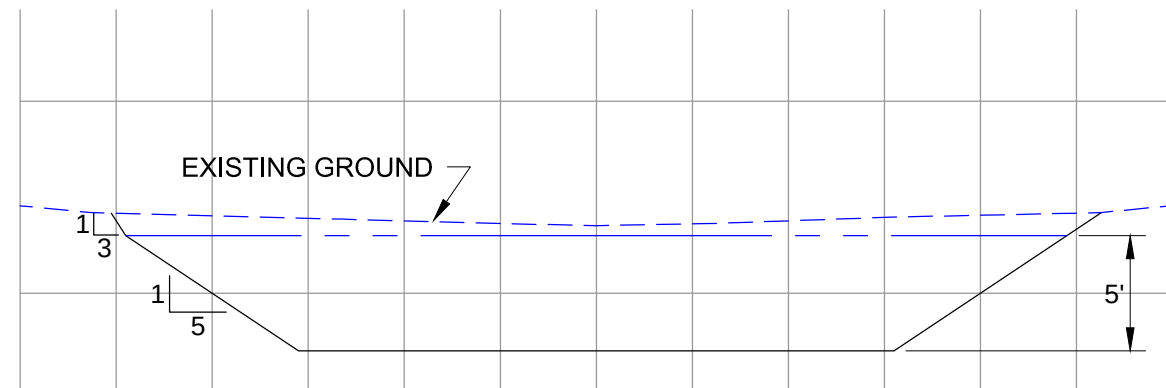
OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

SECOND PHASE OPERATIONAL
DRAINAGE CONTROL SEDIMENT POND
EP-15 CONFIGURATION

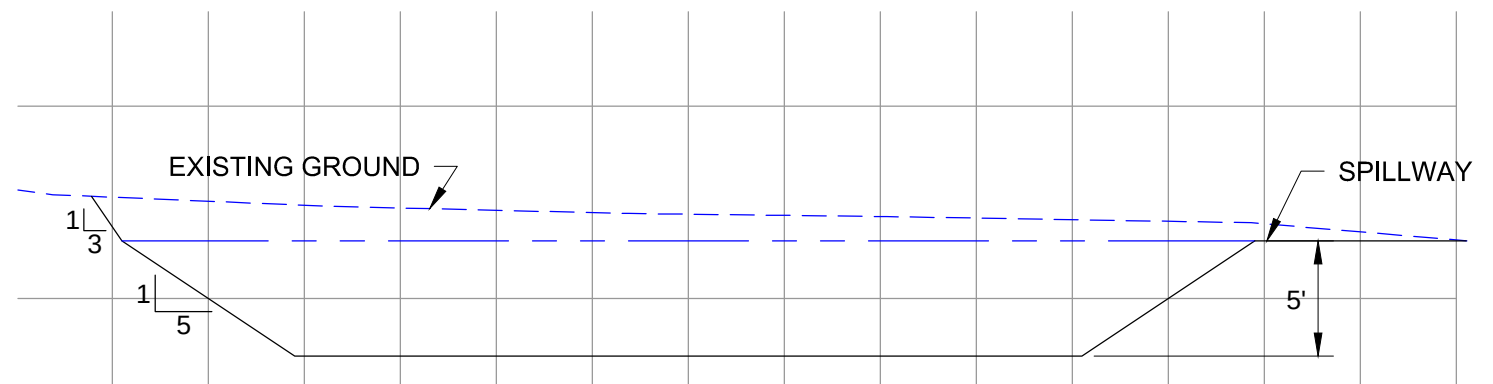
FIGURE
B-31



PERMANENT POND - PLAN VIEW
NTS



A
-
SECTION
TYPICAL SECTION
NTS



B
-
SECTION
TYPICAL SECTION
NTS

NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 11'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-1P	335.6	0.21	0.02	1.73	2.16

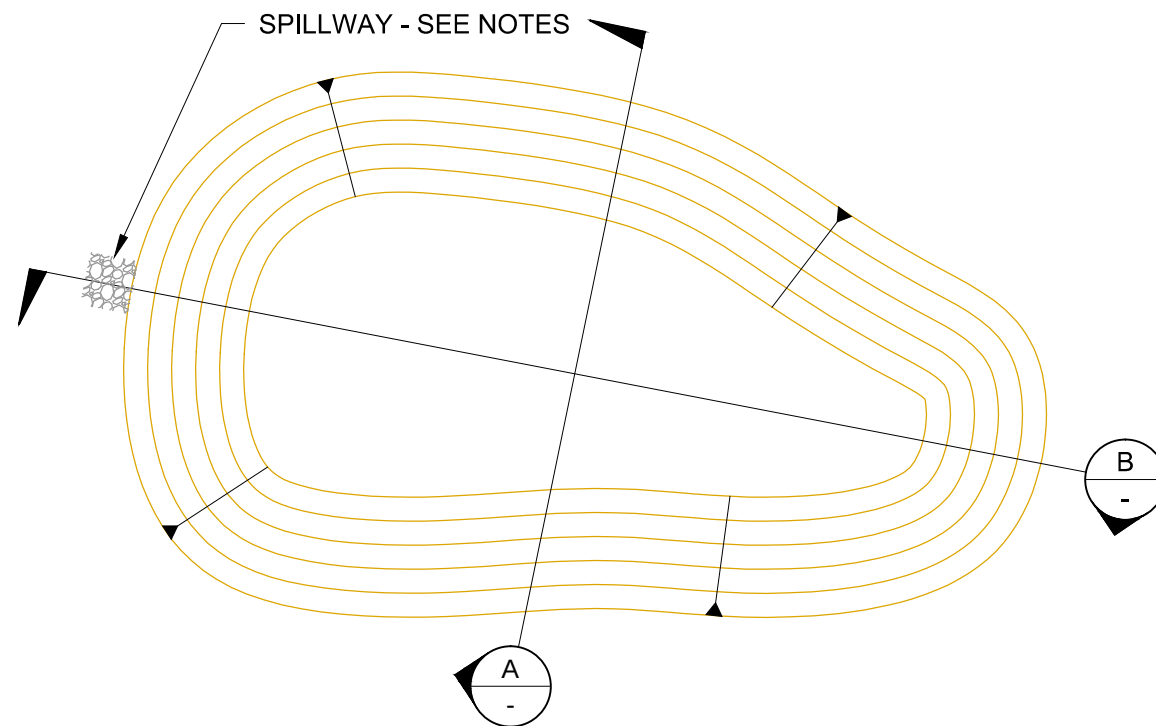
POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.25	0.0
2.0	0.40	0.7
4.0	0.56	1.6
5.0	0.65	2.2

OTTER CREEK MINE - EXHIBIT 315A
DRAINAGE CONTROL HYDROLOGY AND
SEDIMENTOLOGY REPORT

PERMANENT POND
EP-1P CONFIGURATION

FIGURE

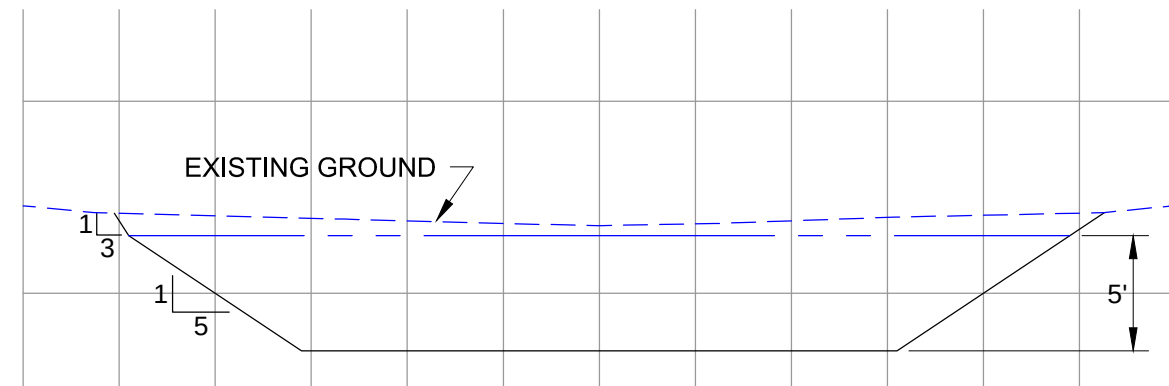
B-32



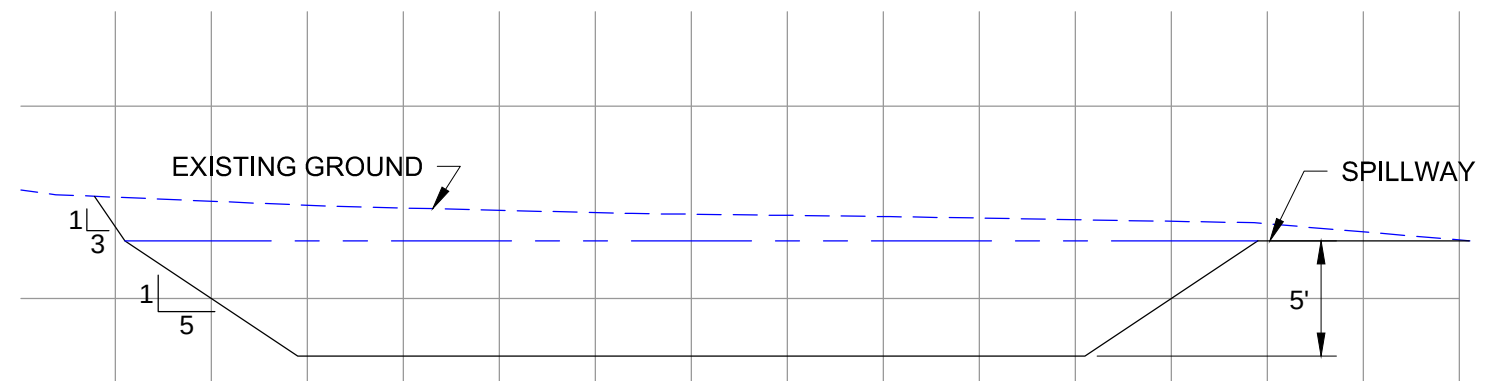
PERMANENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 7'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.



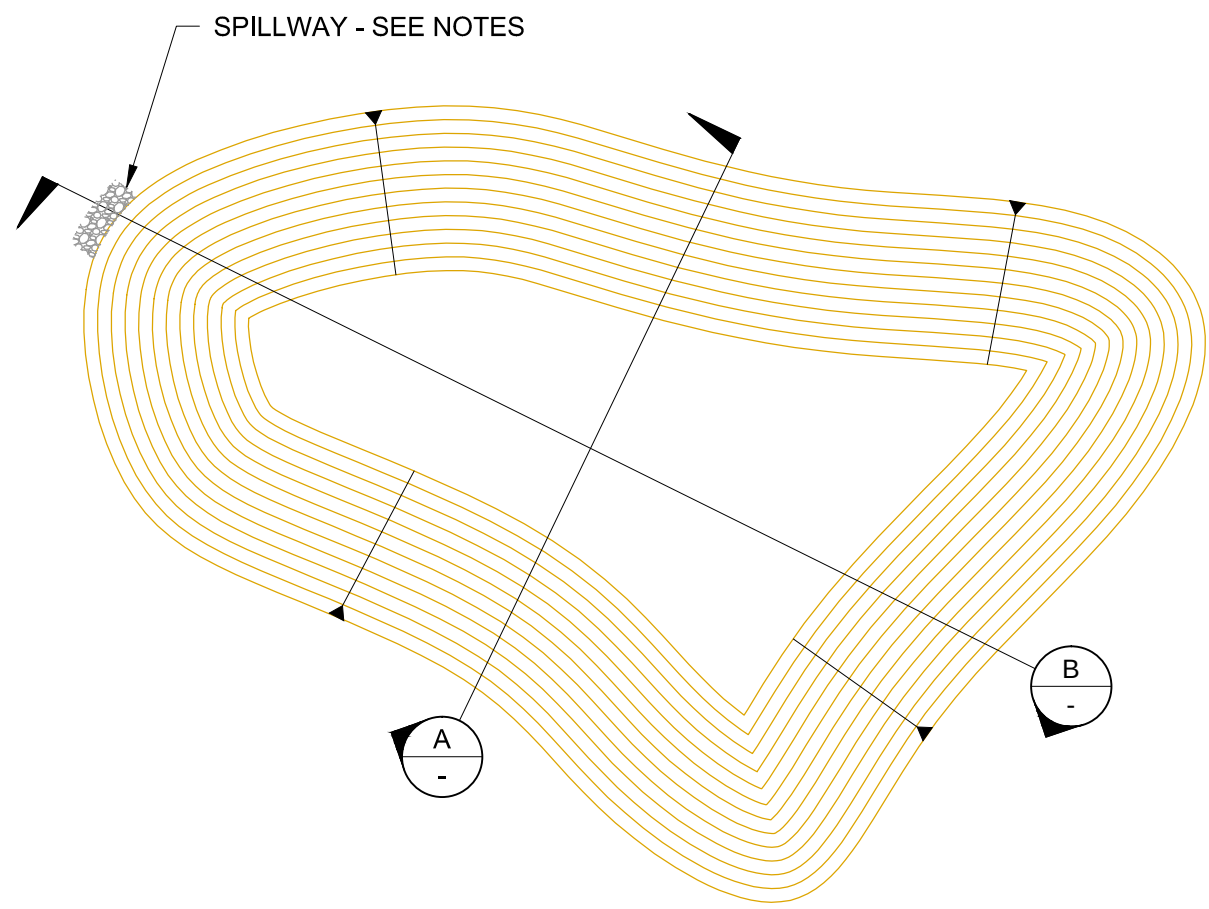
SECTION A
TYPICAL SECTION
NTS



SECTION B
TYPICAL SECTION
NTS

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-5P	349.9	0.25	0.02	0.80	1.25

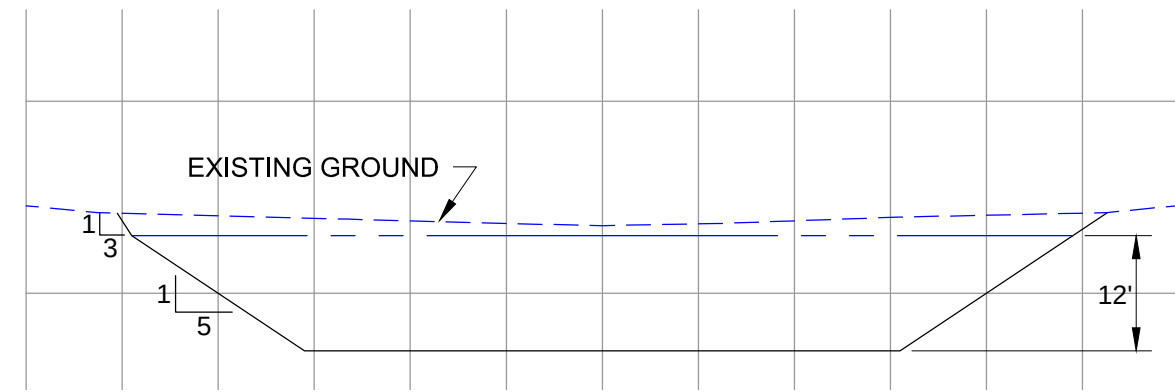
POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.16	0.0
2.0	0.25	0.4
4.0	0.35	1.0
5.0	0.40	1.4



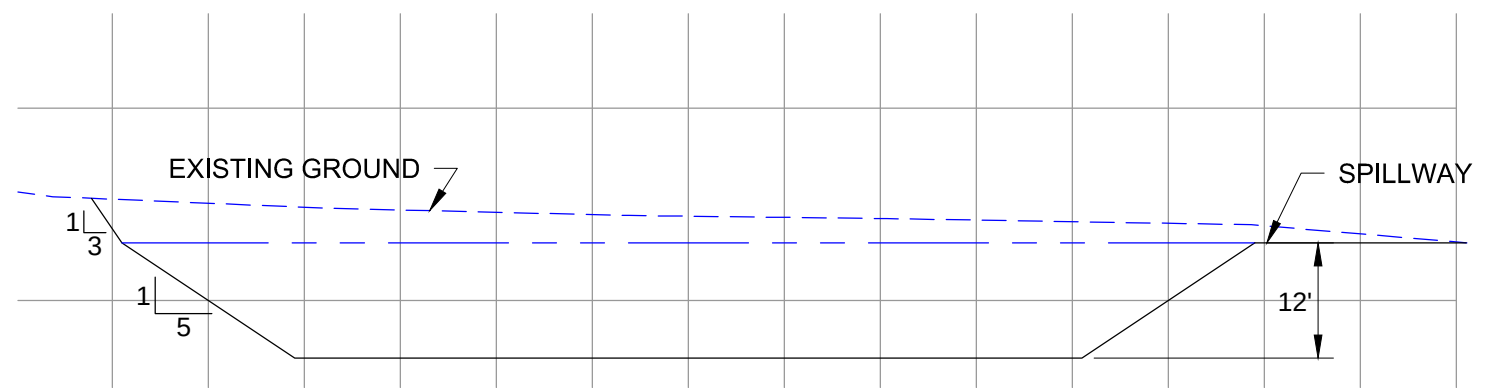
PERMANENT POND - PLAN VIEW
NTS

NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 28'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.



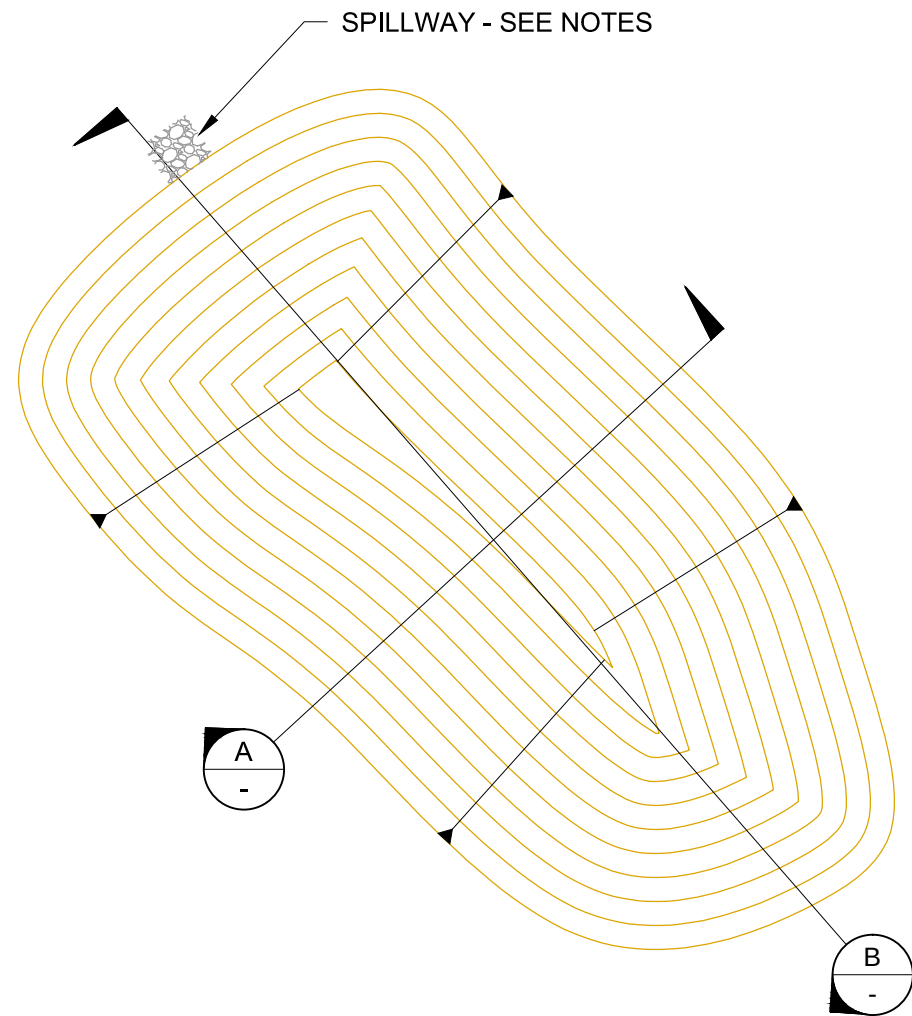
A
SECTION
TYPICAL SECTION
NTS



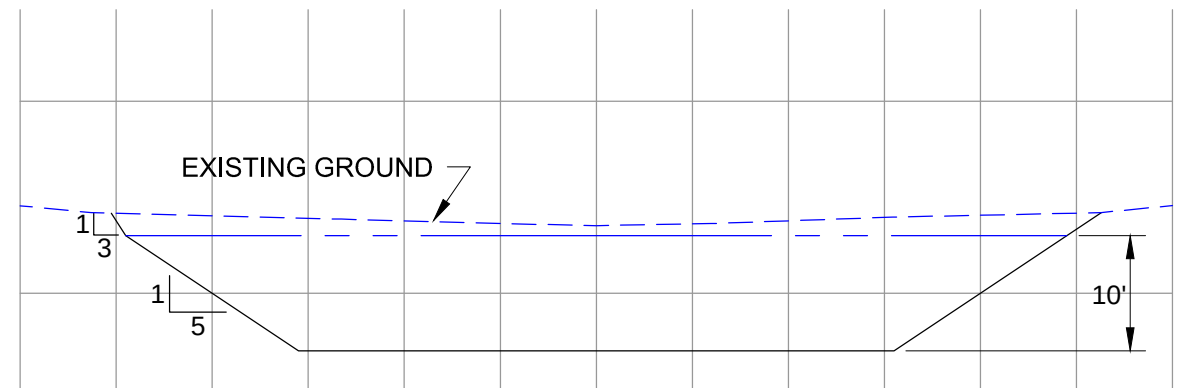
B
SECTION
TYPICAL SECTION
NTS

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-7P	1371.2	2.32	0.66	3.90	12.85

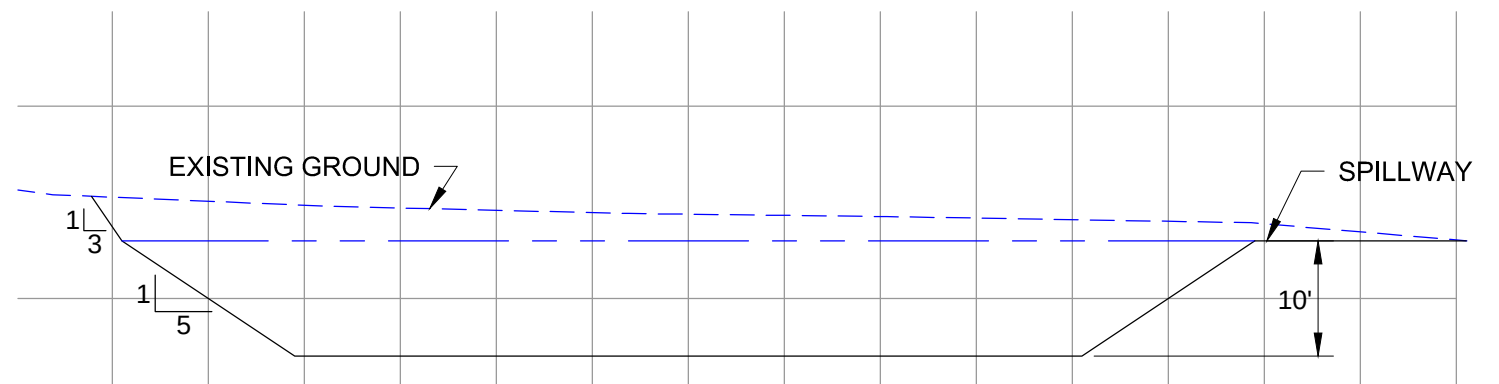
POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.50	0.0
4.0	0.86	2.7
8.0	1.27	6.9
12.0	1.74	12.9



PERMANENT POND - PLAN VIEW
NTS



A
SECTION
TYPICAL SECTION
NTS



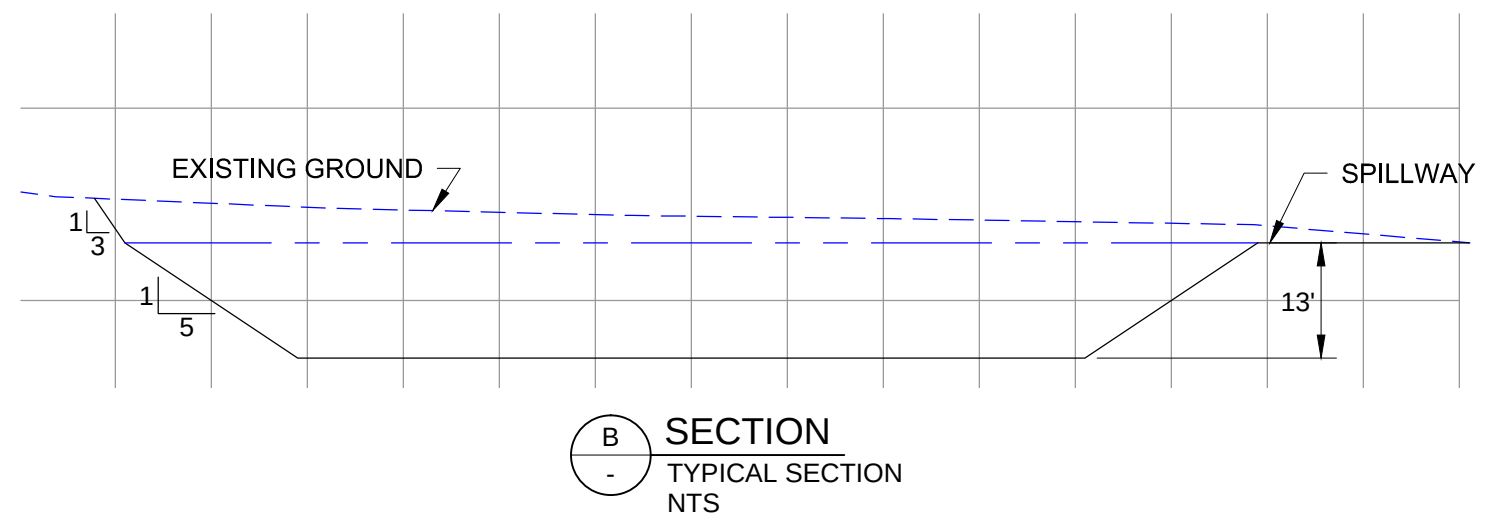
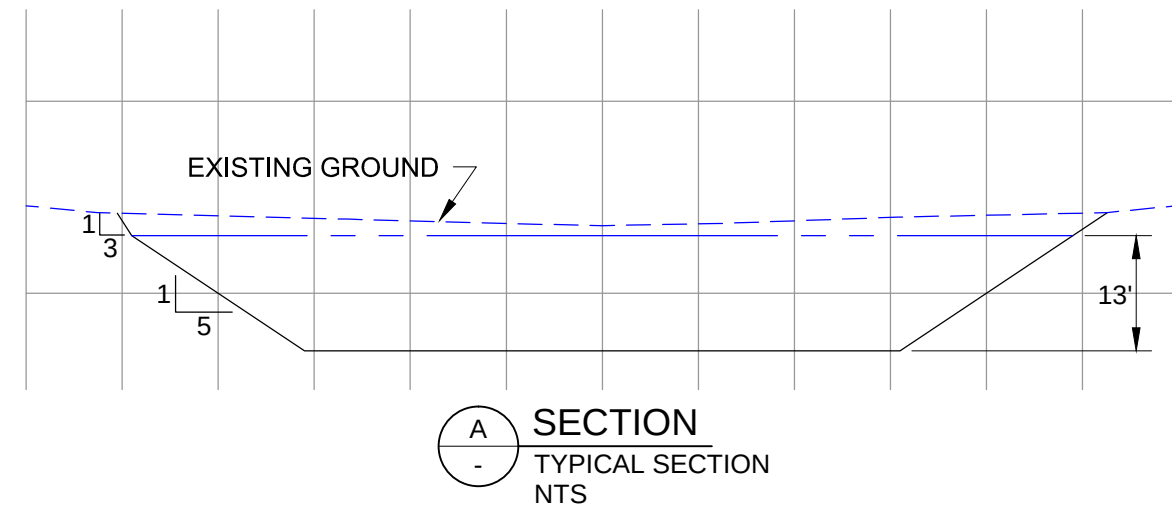
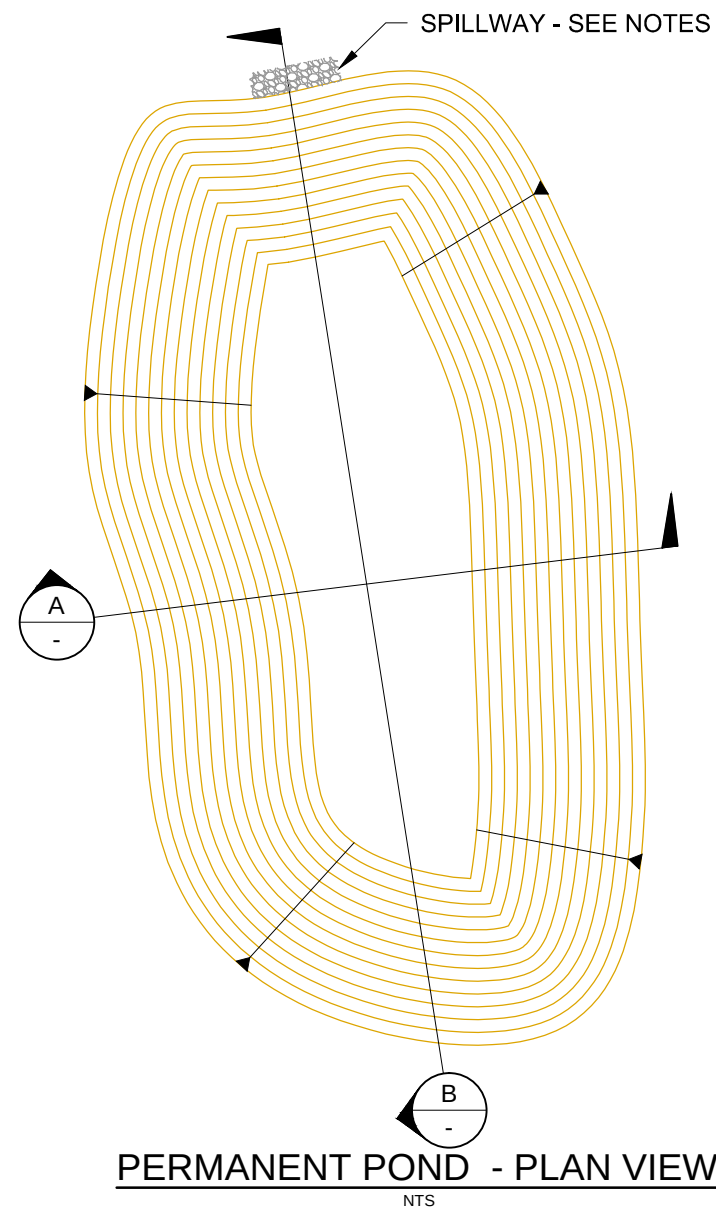
B
SECTION
TYPICAL SECTION
NTS

NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 9'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-12P	166.0	0.23	0.02	1.48	1.91

POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.01	0.0
4.0	0.14	0.3
8.0	0.33	1.2
10.0	0.44	1.94



NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 36'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-15P1	715.6	8.48	0.09	2.43	11.84

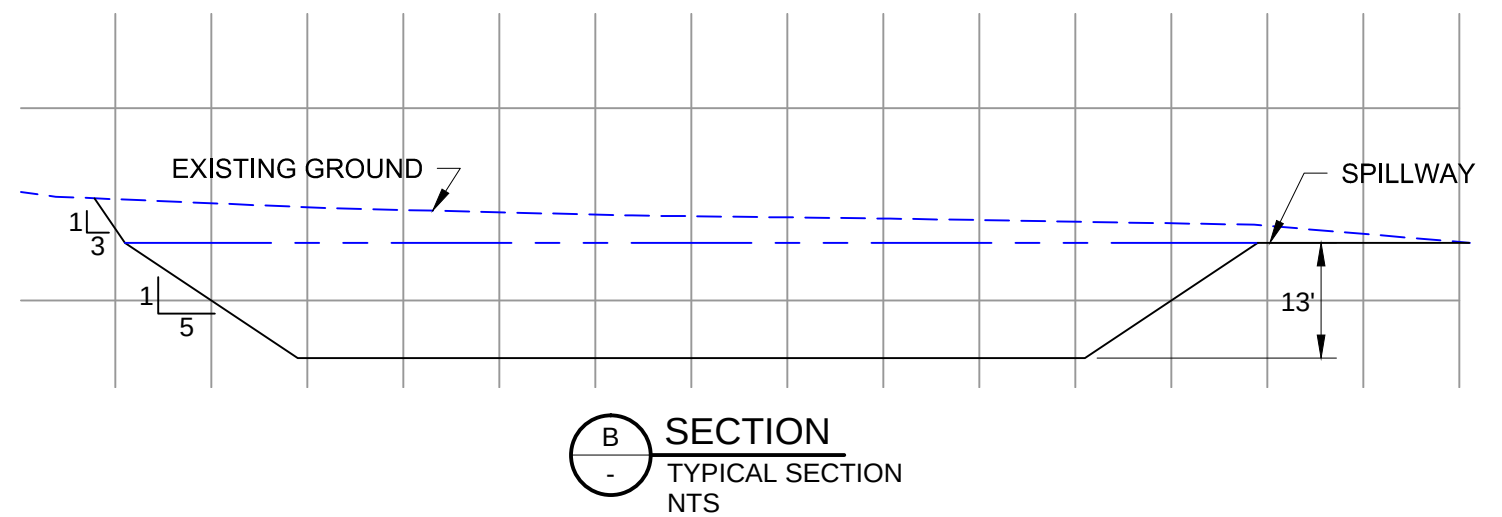
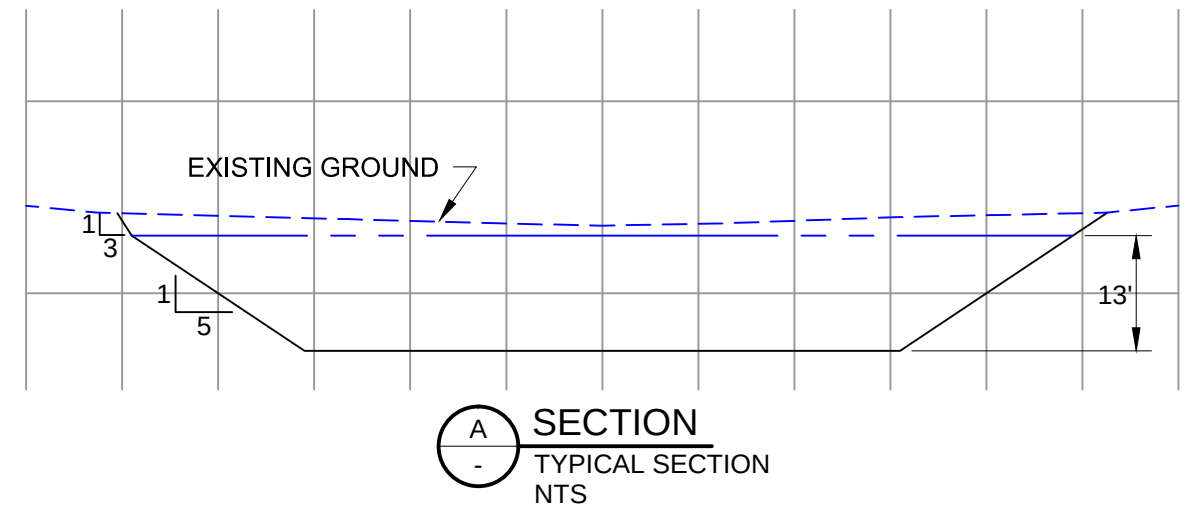
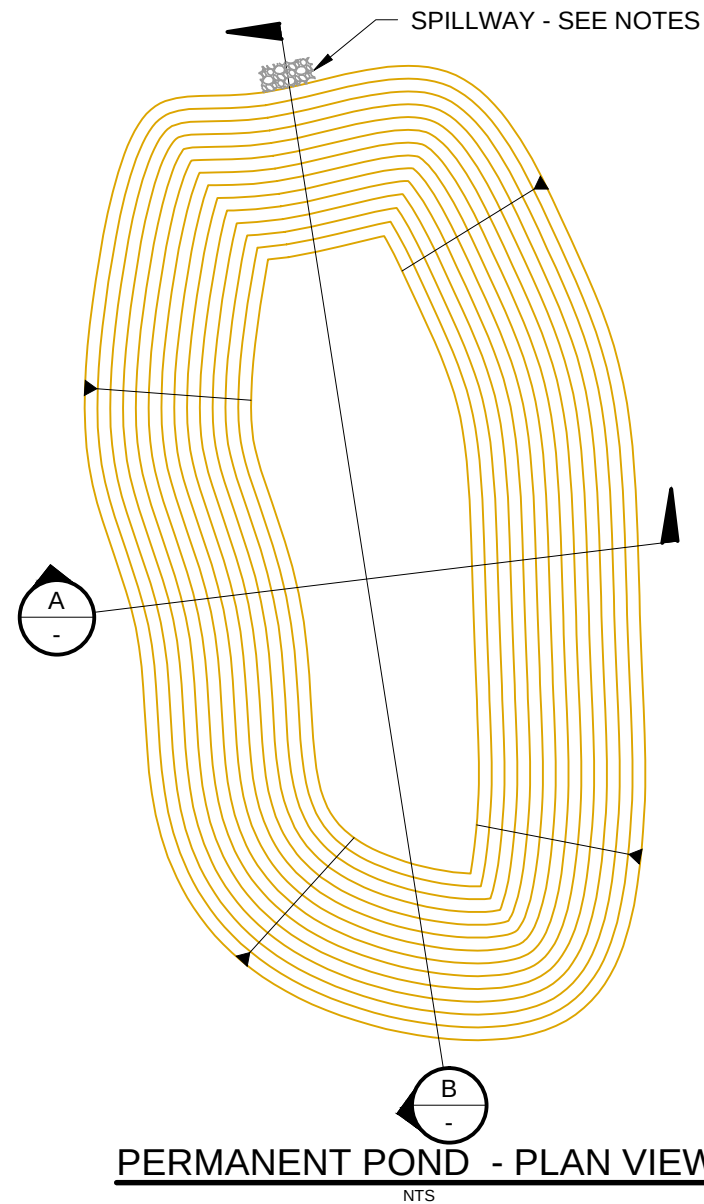
POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.37	0.0
4.0	0.67	1.9
8.0	1.03	5.4
13.0	1.56	11.9

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**PERMANENT POND EP-15P1
CONFIGURATION**

FIGURE

B-36



NOTES:

1. CONSTRUCT PERMANENT PONDS WITH 5(H):1(V) SIDE SLOPES BELOW SPILLWAY ELEVATION. USE 3:1 OR SHALLOWER SLOPE TO DAYLIGHT WITH EXISTING GROUND.
2. CONSTRUCT SPILLWAY ON LEVEL TO DAYLIGHT WITH EXISTING GROUND.
3. ACTUAL POND GEOMETRY MAY VARY AS LONG AS STORAGE VOLUME REQUIREMENT IS MET.
4. ONCE CONSTRUCTED THIS DESIGN SHEET CAN BE UPDATED AND CERTIFIED AS AN AS-BUILT.
5. MINIMUM SPILLWAY WIDTH IS 21'. SPILLWAY OUTLET PROTECTION SHALL CONSIST OF 12" OF RIPRAP (D50 = 9") PLACED ON A 6 OZ GEOTEXTILE. RIPRAP SHALL EXTEND AT LEAST 10 FEET DOWNSTREAM OF POND OUTLET.

Pond	Drainage Area (acres)	Final Grading AASY (acre-feet)	Fully Reclaimed AASY (acre-feet)	Fully Reclaimed 2-yr, 24-hr Runoff (acre-feet)	Required Storage Volume (acre-feet)
EP-15P2	406.5	7.06	0.15	3.16	11.70

POND DEPTH (FT)	AREA (ACRES)	VOLUME (ACRE-FT)
0.0	0.37	0.0
4.0	0.67	1.9
8.0	1.03	5.4
13.0	1.56	11.9

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SEDIMENTOLOGY REPORT

**PERMANENT POND EP-15P2
CONFIGURATION**

FIGURE

B-37