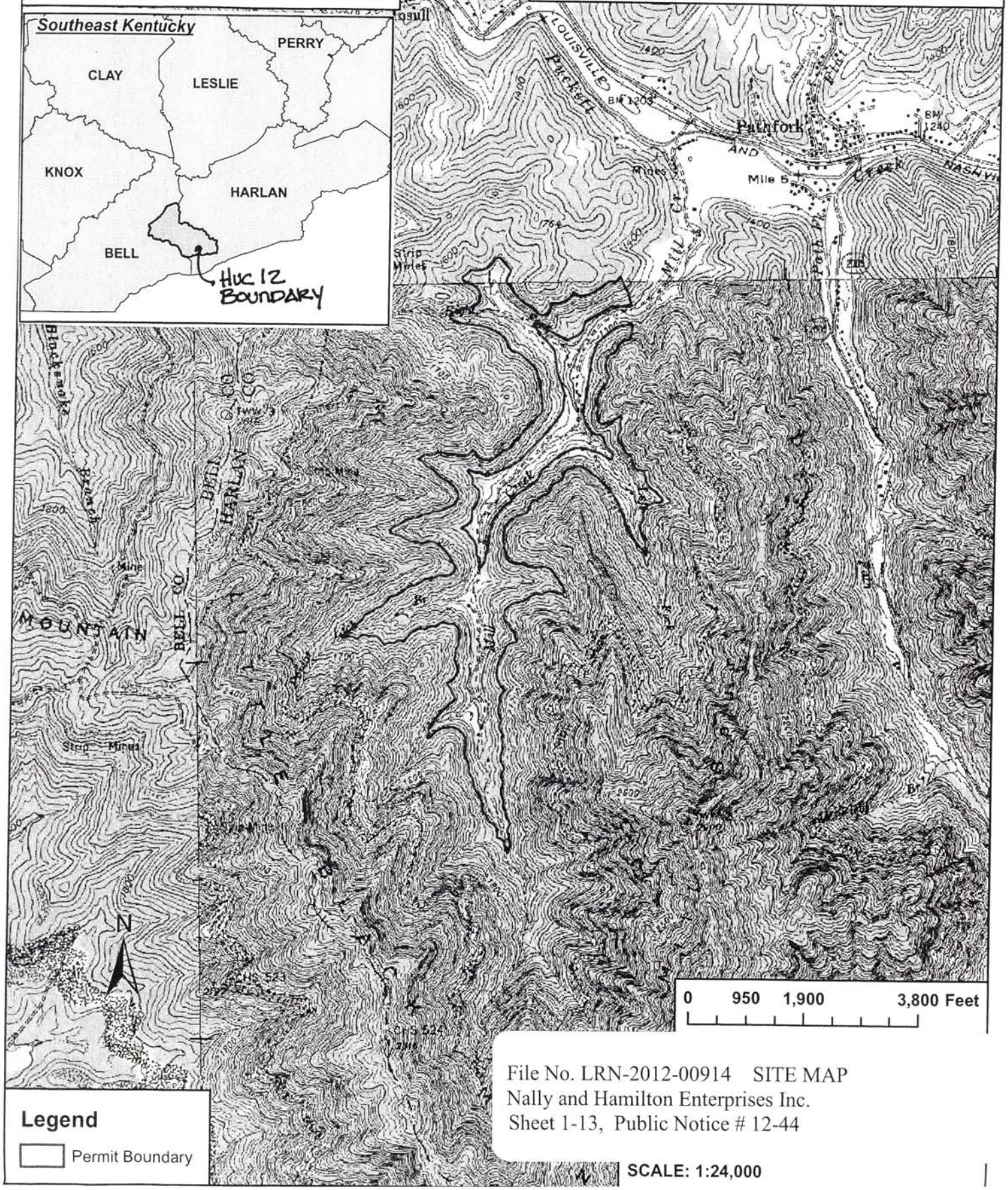
BIOLOGICAL SYSTEMS
CONSULTANTS, INC.

Excerpt from Balkan, Wallins Creek, Varilla & Ewing, KY
USGS 7.5' Topographic Map
NAD 1983 StatePlane Kentucky FIPS 1600 (Feet)

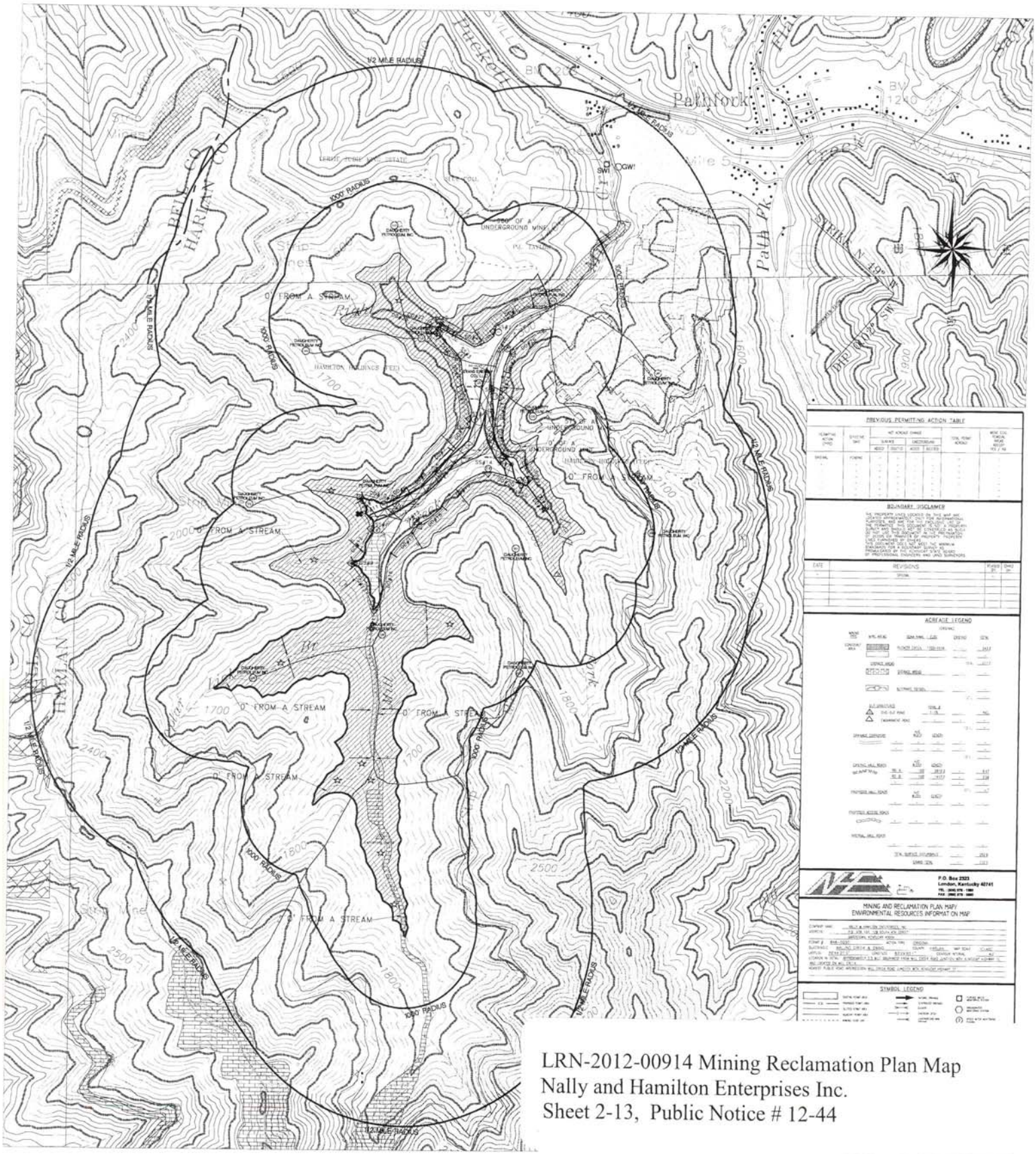


File No. LRN-2012-00914 SITE MAP
Nally and Hamilton Enterprises Inc.
Sheet 1-13, Public Notice # 12-44

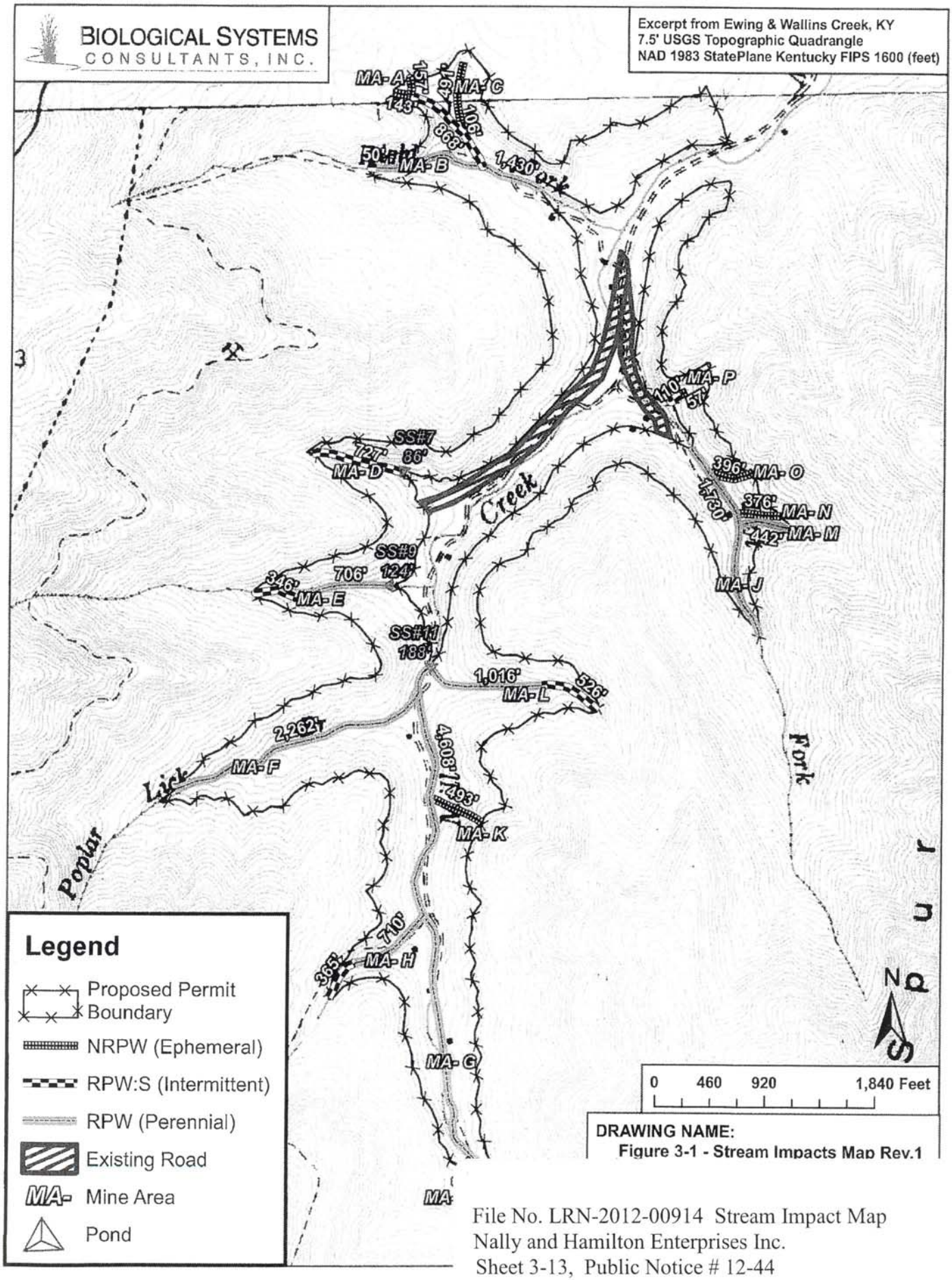
Legend

Permit Boundary

SCALE: 1:24,000



LRN-2012-00914 Mining Reclamation Plan Map
Nally and Hamilton Enterprises Inc.
Sheet 2-13, Public Notice # 12-44



File No. LRN-2012-00914 Stream Impact Map
Nally and Hamilton Enterprises Inc.
Sheet 3-13, Public Notice # 12-44

Table 3.1 Summary of Impact Name, Flow Regime, Linear Feet, Existing EIUs, EIUs Lost, RBP Score, EII Score, Conductivity, and Flow Regime Totals; Harlan County, KY

Impact Name	Flow Regime	Linear Feet (ft)	Acreage	Existing EIUs	RBP Score	EII Score	Conductivity	Total Ephemeral (ft)	Total Intermittent (ft)	Total Perennial (ft)	Total Wetland (acres)
IN-STREAM ~~DUG-OUT BENCH~~ PONDS (SS)											
SS#7	RPW:S	86	0.015	62.78	135	0.73	70	-	86	-	-
SS#9	RPW:P	124	0.019	90.52	135	0.73	80	-	-	124	-
SS#11	RPW:P	188	0.06	41.36	123	0.22	730	-	-	188	-
MINE AREAS (MA)											
MA-A	RPW:S	868	0.09	477.4	79	0.55	70		868		-
	NRPW	300	0.025	165	79	0.55	70	300			-
MA-B	RPW:S	50	0.01	34.5	128	0.69	70		50		-
	RPW:P	1,430	0.28	986.7	128	0.69	70			1,430	-
MA-C	RPW:S	106	0.008	58.3	72	0.55	70		106		-
	NRPW	491	0.04	270.05	72	0.55	70	491			-
MA-D	RPW:S	727	0.085	530.71	135	0.73	70		727		-
MA-E	RPW:P	706	0.11	515.38	135	0.73	80			706	-
	RPW:S	346	0.09	252.58	135	0.73	80		346		-
MA-F	RPW:P	2,262	0.36	1,515.54	124	0.67	100			2,262	-
MA-G	RPW:P	4,608	1.59	1,013.76	123	0.22	730			4,608	-
MA-H	RPW:P	710	0.06	454.4	117	0.64	90			710	-
	RPW:S	365	0.03	233.6	117	0.64	90		365		-

Table 3.1 CONT. Summary of Impact Name, Flow Regime, Linear Feet, Existing EIUs, EIUs Lost, RBP Score, EII Score, Conductivity, and Flow Regime Totals; Harlan County, KY

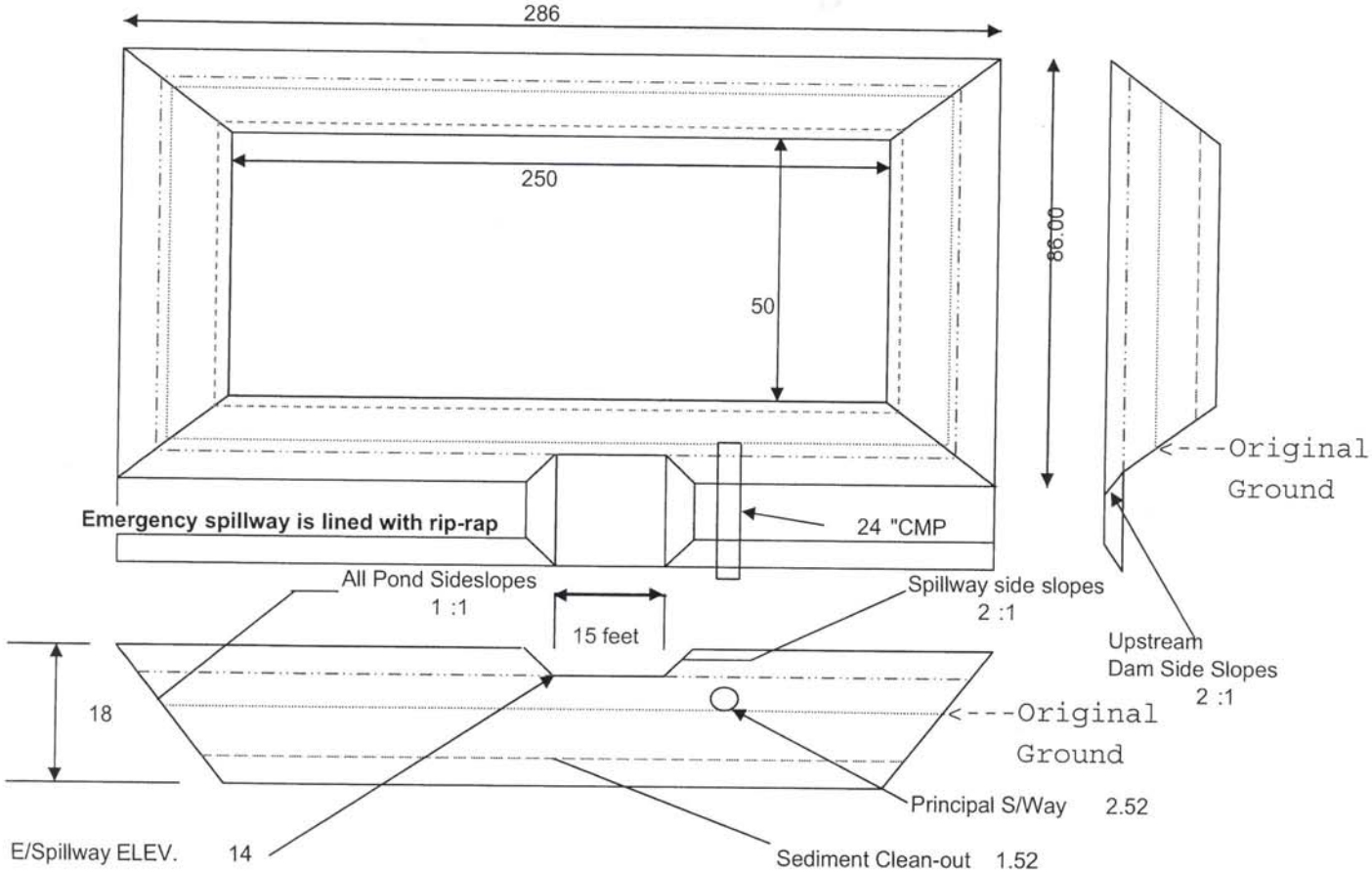
Impact Name	Flow Regime	Linear Feet (ft)	Acreage	Existing EIUs	RBP Score	EII Score	Conductivity	Total Ephemeral (ft)	Total Intermittent (ft)	Total Perennial (ft)	Total Wetland (acres)
MA- I	RPW:S	158	0.009	105.86	136	0.67	195 n=2		158		-
MA-J	RPW:P	1,730	0.22	1,038	128	0.60	210			1,730	-
MA-K	NRPW	493	0.01	69.02	107	0.14	730	493			-
MA-L	RPW:P	1,016	0.11	731.52	134	0.72	100			1,016	-
	RPW:S	526	0.06	378.72	134	0.72	100		526		-
MA-M	RPW:P	442	0.01	331.5	139	0.75	100			442	-
MA-N	NRPW	376	0.01	236.88	116	0.63	100	376			-
MA-O	NRPW	396	0.01	205.92	111	0.52	210	396			-
MA-P	RPW:S	110	0.007	58.3	113	0.53	210		110		-
	NRPW	57	0.001	30.21	113	0.53	210	57			-
Total	-	**18,671**	**3.32**	**9,888.51**	-	-	-	**2,113**	**3,342**	**13,216**	-

n= average

As outlined in **Table 3.1**, the proposed impacts include 18,671 linear feet (LF) of ephemeral, intermittent and perennial streams; with total ephemeral at 2,113 LF, total intermittent at 3,342 LF, and total perennial at 13,216 LF. Proposed impacts include sixteen temporary mine through areas (Mine Area A-P) and 3 dug out bench ponds (7, 9, and 11). Stream impact locations and lengths are illustrated on **Figure 3-1**.

I, _____ (signature), 12575 (reg. no.), hereby certify, in accordance with 405 KAR 7:040E, Section 10, that this document is correct as determined by accepted engineering practices and includes all the information required of it by KRS Chapter 350 and KAR Title 405. (Affix engineer's seal)

Digitally signed by Don R. Roberts
DN: cn=Don R. Roberts, o=Logos Engineering, LLC, ou, email=logosengineering@windstream.net, c=US
Date: 2009.12.15 15:09:28 -05'00'



POND DESIGN SPECIFICATIONS

BOTTOM WIDTH	50
BOTTOM LENGTH	250
POND DEPTH	18
TOP WIDTH	86
TOP LENGTH	286
PRINCIPAL S/WAY	2.52
EMERGENCY S/WAY	14
POND LENGTH SIDE SLOPES	1 :1
POND WIDTH SIDE SLOPES	1 :1
EMERGENCY S/WAY SLOPES	2
EMERGENCY S/WAY DEPTH	14
EMERGENCY SWAY BOTTON WIDTH	15
PRINCIPAL S/WAY CMP SIZE	24 "
TOP OF DAM WIDTH	10

SS#7

NOTES:

No north arrow is provided on this drawing. The bench pond will be placed at the location shown on the MRP map such that the the spillway is perpendicular through the berm.

The design specifies only the stage between various features of the pond. Due to several conditions, such as coal seam rolls, the designs are based on stages and are not elevations, therefore no elevations are shown. Approximate elevations can be estimated from the MRP.

BERM:

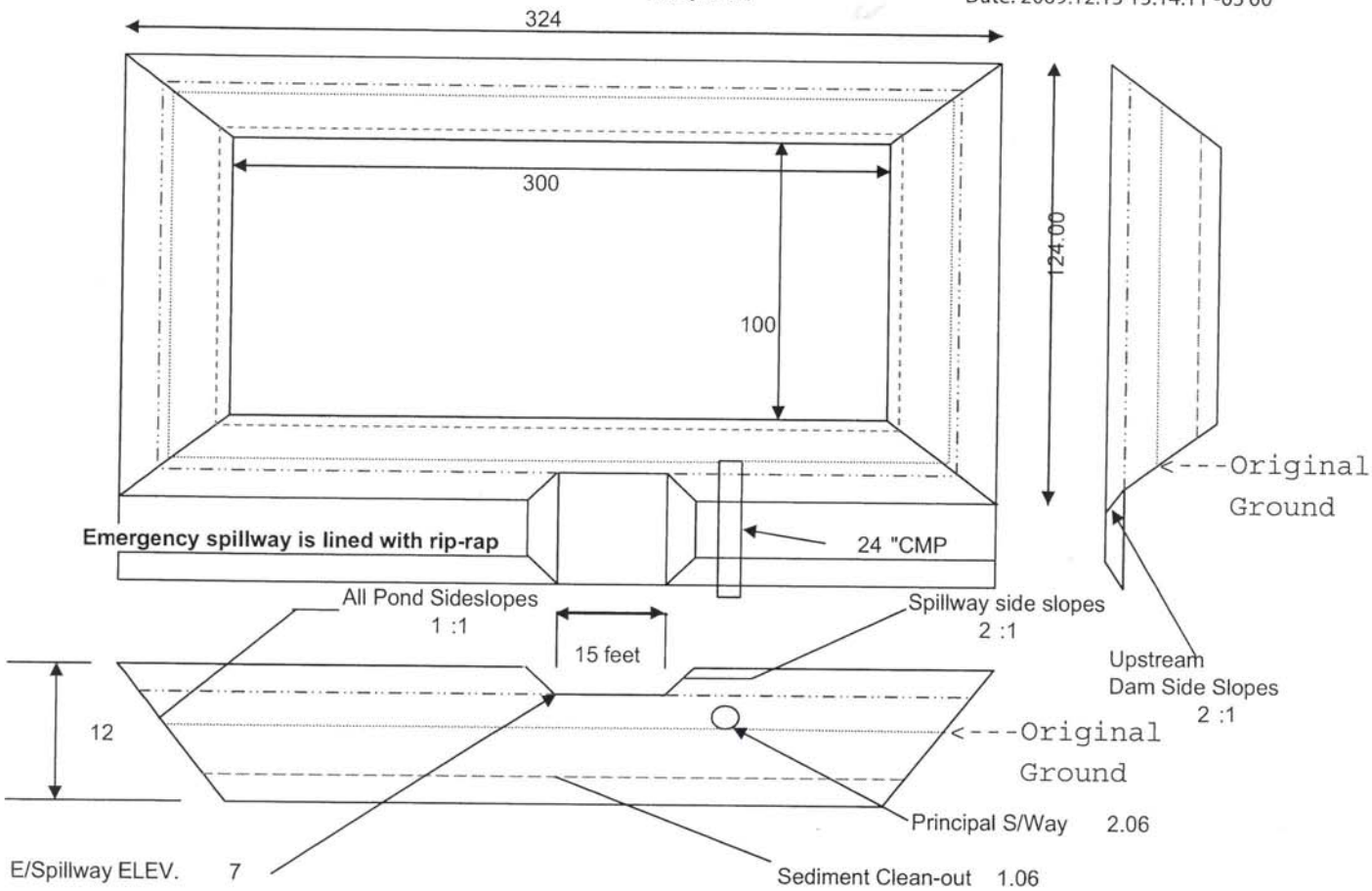
Undisturbed berm downhill slope varies 2H-3H:1V.

DRAWING HAS NO SCALE

File No. LRN-2012-00914 Sediment Structure #7
Nally and Hamilton Enterprises Inc.
Sheet 6-13, Public Notice # 12-44

I, _____, 12575, hereby certify, in accordance
(signature) (reg. no.)
with 405 KAR 7:040E, Section 10, that this document is correct as determined by accepted engineering practices and includes all the information required of it by KRS Chapter 350 and KAR Title 405.
(Affix engineer's seal)

Digitally signed by Don R. Roberts
DN: cn=Don R. Roberts, o=Logos Engineering, LLC, ou, email=logosengineering@windstream.net, c=US
Date: 2009.12.15 15:14:11 -05'00'



POND DESIGN SPECIFICATIONS

BOTTOM WIDTH	100
BOTTOM LENGTH	300
POND DEPTH	12
TOP WIDTH	124
TOP LENGTH	324
PRINCIPAL S/WAY	2.06
EMERGENCY S/WAY	7
POND LENGTH SIDE SLOPES	1 :1
POND WIDTH SIDE SLOPES	1 :1
EMERGENCY S/WAY SLOPES	2
EMERGENCY S/WAY DEPTH	7
EMERGENCY SWAY BOTTON WIDTH	15
PRINCIPAL S/WAY CMP SIZE	24 "
TOP OF DAM WIDTH	10

SS#9

NOTES:

No north arrow is provided on this drawing. The bench pond will be placed at the location shown on the MRP map such that the the spillway is perpendicular through the berm.

The design specifies only the stage between various features of the pond. Due to several conditions, such as coal seam rolls, the designs are based on stages and are not elevations, therefore no elevations are shown. Approximate elevations can be estimated from the MRP.

BERM:

Undisturbed berm downhill slope varies 2H-3H:1V.

DRAWING HAS NO SCALE

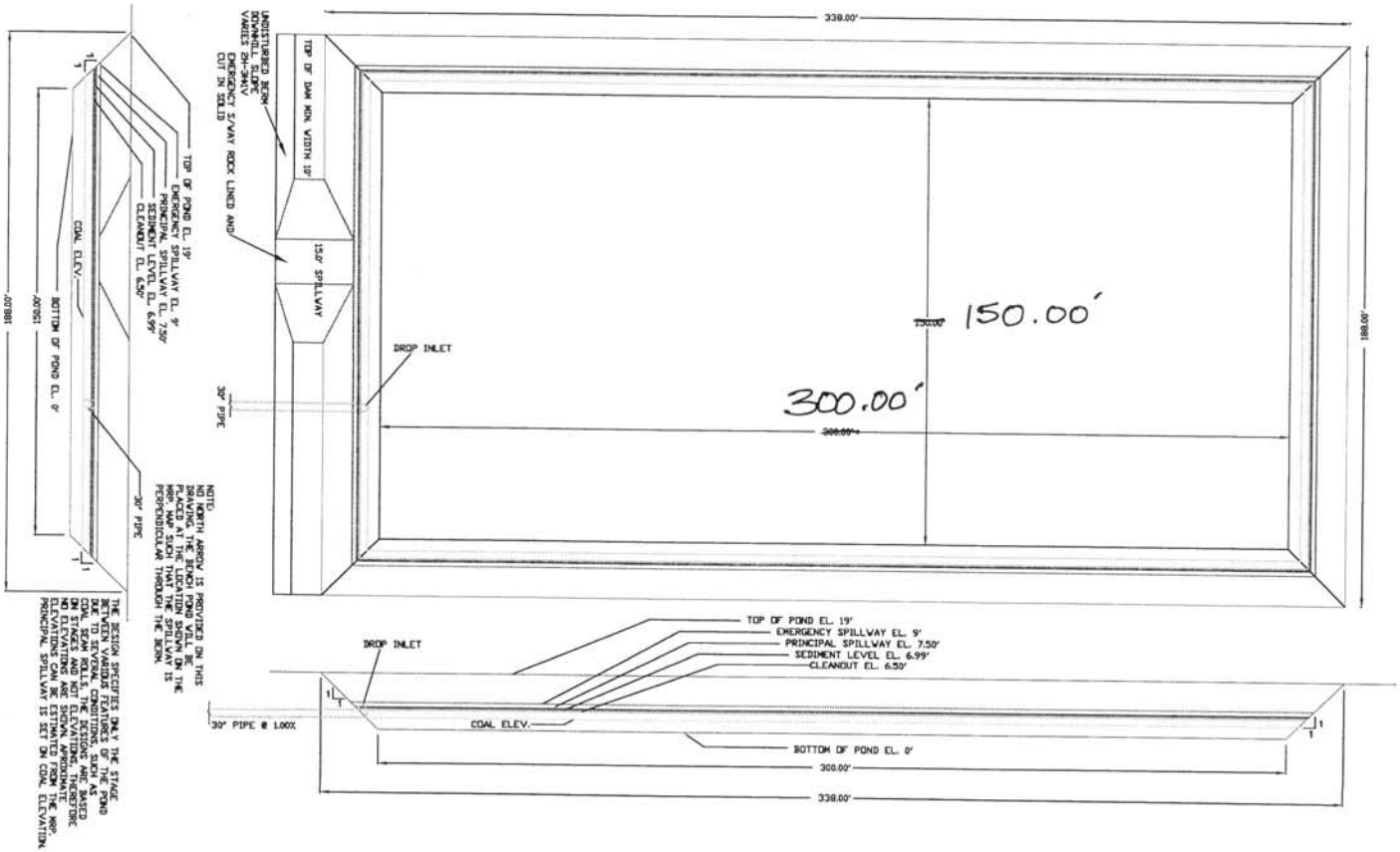
File No. LRN-2012-00914 Sediment Structure #9
Nally and Hamilton Enterprises Inc.
Sheet 7-13, Public Notice # 12-44

Digitally signed by Don R. Roberts
DN: cn=Don R. Roberts, o=Logos Engineering LLC, ou, email=logosengineering@windstream.net, c=US
Date: 2012.05.21 10:01:03 -04'00'

(signature) (reg. no.) hereby certify, in accordance with 405 KAR 7:040E, Section 10, that this document is correct as determined by accepted engineering practices and includes all the information required of it by KRS Chapter 350 and KAR Title 405 (Affix engineer's seal)

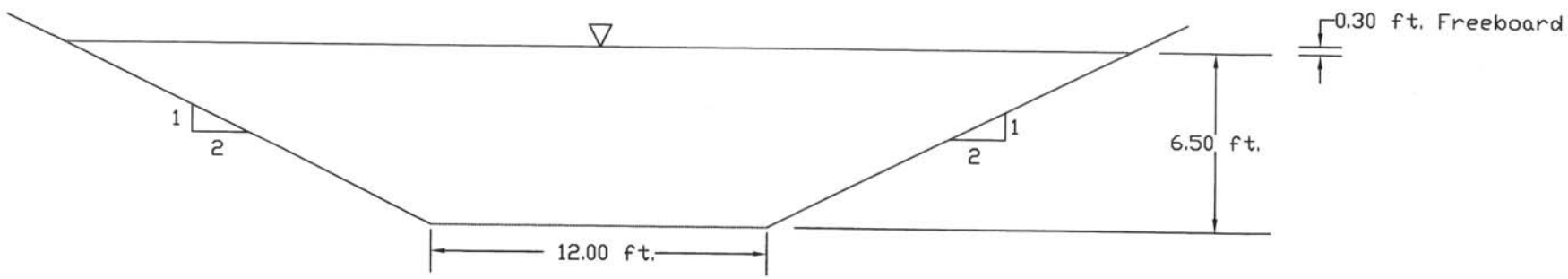
SS#11

SCALE 1"=40'



File No. LRN-2012-00914 Sediment Structure #11
Nally and Hamilton Enterprises Inc.
Sheet 8-13, Public Notice # 12-44

Maximum Diversion Ditch Design



Trapezoidal Channel
Equal Side Slopes
Channel Lining: Rip-Rap

Not to Scale

File No. LRN-2012-00914 Stream Diversion Ditch Plan
Nally and Hamilton Enterprises Inc.
Sheet 9-13, Public Notice # 12-44

Table 9.2. Impact Length, Mitigation Length, Flow regime, Existing EII, Existing EIU, Mitigation Location, 5 Year EII, 5 Year EIU Value and EIU Debit at 5 years

Impact	Impact Length (ft)	Mitigation Length (ft)	Flow-regime	Existing EII	Existing EIU	Mitigation Area *see Fig. 9-1*	5 Year EII	5 Year EIU Value	Remaining EIU Debit
MA- A	868	868	RPW:S	0.55	477.4	MA- A	0.55	477.4	0
	300	300	NRPW	0.55	165		0.55	165	0
MA-B	50	50	RPW:S	0.69	34.5	MA-B	0.55	27.5	7
	1,430	1,430	RPW:P	0.69	986.7		0.55	786.5	200.2
MA-C	106	106	RPW:S	0.55	58.3	MA-C	0.55	58.3	0
	491	491	NRPW	0.55	270.05		0.55	270.05	0
MA-D	727	727	RPW:S	0.73	530.71	MA-D	0.55	399.85	130.86
POND 7	86	0 (Fee)	RPW:S	0.73	62.78	Fee	N/A	N/A	62.78
MA-E	706	706	RPW:P	0.73	515.38	MA-E	0.55	388.3	127.08
	346	346	RPW:S	0.73	252.58		0.55	190.3	62.28
POND 9	124	0 (Fee)	RPW:P	0.73	90.52	Fee	N/A	N/A	90.52
MA-F	2,262	2,262	RPW:P	0.67	1,515.54	MA-F	0.55	1244.1	271.44
MA-G	4,608	4,608	RPW:P	0.22	1,013.76	MA-G	0.10	460.8	552.96
POND 11	188	0 (Fee)	RPW:P	0.22	41.36	Fee	N/A	N/A	41.36
MA-H	710	710	RPW:P	0.64	454.4	MA-H	0.55	390.5	63.9
	365	365	RPW:S	0.64	233.6		0.55	200.75	32.85
MA-I	158	158	RPW:S	0.67	105.86	MA-I	0.49	77.42	28.44
MA-J	1,730	1,730	RPW:P	0.60	1038	MA-J	0.46	795.8	242.2
MA-K	493	493	NRPW	0.14	69.02	MA-K	0.10	49.3	19.72
MA-L	1,016	1,016	RPW:P	0.72	731.52	MA-L	0.55	558.8	172.72
	526	526	RPW:S	0.72	378.72		0.55	289.3	89.42
MA-M	442	442	RPW:P	0.75	331.5	MA-M	0.55	243.1	88.4
MA-N	376	376	NRPW	0.63	236.88	MA-N	0.55	206.8	30.08
MA-O	396	396	NRPW	0.52	205.92	MA-O	0.46	182.16	23.76
MA-P	110	110	RPW:S	0.53	58.3	MA-P	0.46	50.6	7.7
	57	57	NRPW	0.53	30.21		0.46	26.22	3.99

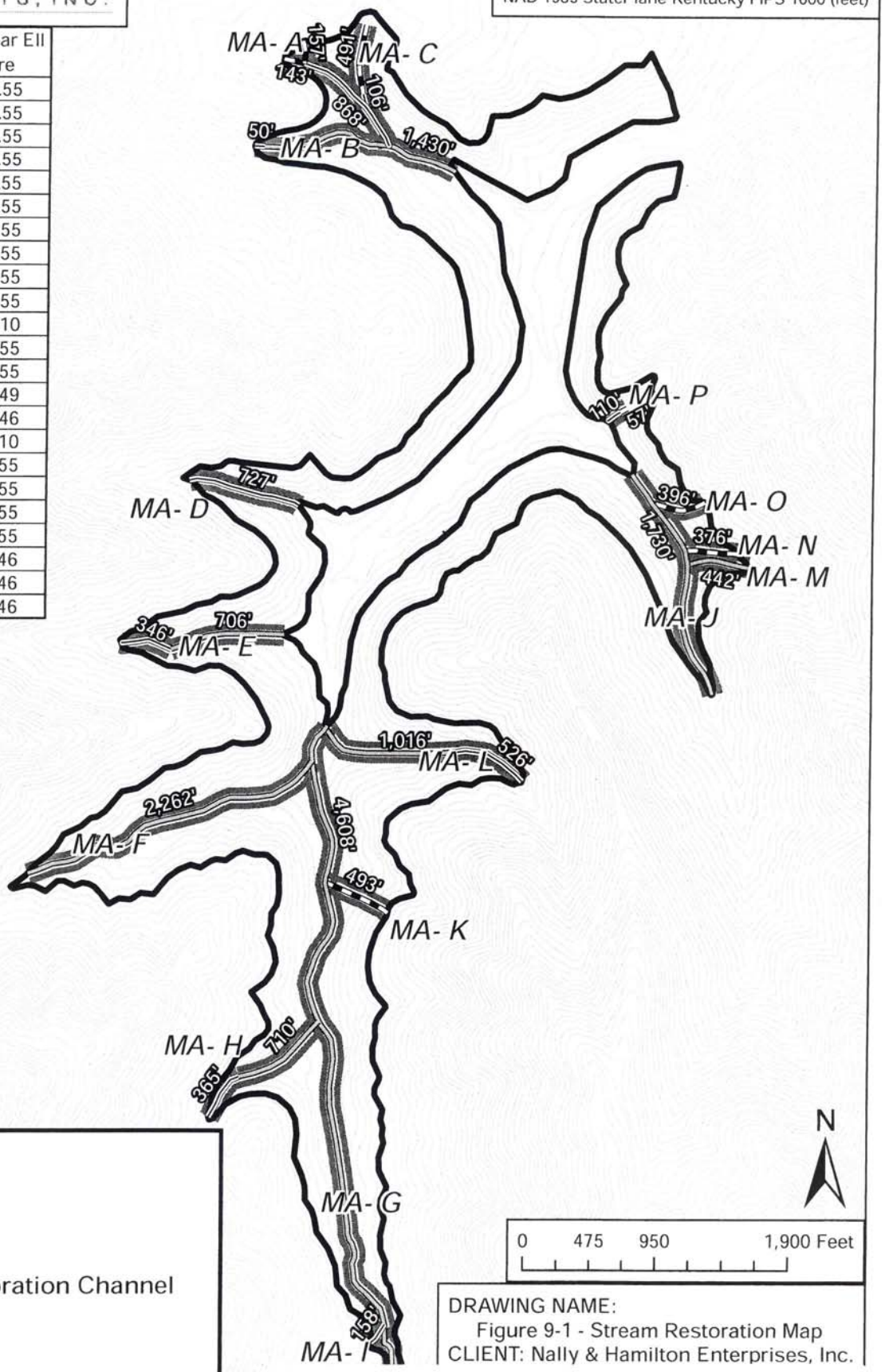
Table 9.2 Cont. Impact Length, Mitigation Length, Flow regime, Existing EII, Existing EIU, Mitigation Location, 5 Year EII, 5 Year EIU Value and EIU Debit at 5 years

Impact	Impact Length (ft)	Mitigation Length (ft)	Flow-regime	Existing EII	Existing EIU	Mitigation Area *see Fig. 9-1*	5 Year EII	5 Year EIU Value	Remaining EIU Debit
TOTAL	**18,671**	**18,273**			**9,888.51**			**7,538.85**	**2,349.66**

BIOLOGICAL SYSTEMS
CONSULTANTS, INC.

Excerpt from Ewing & Wallins Creek, KY
7.5' USGS Topographic Quadrangle
NAD 1983 StatePlane Kentucky FIPS 1600 (feet)

Mine Area	Stream Type	Length (feet)	5 Year EII Score
MA-A	NRPW	300	0.55
MA-A	RPW:S	868	0.55
MA-B	RPW:S	50	0.55
MA-B	RPW	1,430	0.55
MA-C	NRPW	491	0.55
MA-C	RPW:S	106	0.55
MA-D	RPW:S	727	0.55
MA-E	RPW:S	346	0.55
MA-E	RPW	706	0.55
MA-F	RPW	2,262	0.55
MA-G	RPW	4,608	0.10
MA-H	RPW:S	365	0.55
MA-H	RPW	710	0.55
MA-I	RPW:S	158	0.49
MA-J	RPW	1,730	0.46
MA-K	NRPW	493	0.10
MA-L	RPW:S	526	0.55
MA-L	RPW	1,016	0.55
MA-M	RPW	422	0.55
MA-N	NRPW	376	0.55
MA-O	NRPW	396	0.46
MA-P	NRPW	57	0.46
MA-P	RPW:S	110	0.46



Legend

- Permit Boundary
- MA- Mitigation Area

Natural Stream Restoration Channel

- NRPW (Ephemeral)
- RPW:S (Intermittent)
- RPW (Perennial)
- Riparian Planting Zone (60' from each bank)

DRAWING NAME:
Figure 9-1 - Stream Restoration Map
CLIENT: Nally & Hamilton Enterprises, Inc.

File No. LRN-2012-00914 MITIGATION MAP
Nally and Hamilton Enterprises Inc.

Table 9.3 EIUs for Purchasing Mitigation Credits; Watershed, Impact Site, Debit at 5 Years, Watershed Total

Watershed	Impact Site	Debit at 5 Years (EIUs)	EIUs to Purchase Credits
Right Fork Mill Creek	MA-B	207.2	207.2
UT1 to Mill Creek	MA-D	130.86	130.86
	Pond 7	62.78	62.78
UT2 to Mill Creek	MA-E	189.36	189.36
	Pond 9	90.52	90.52
Poplar Lick Branch	MA-F	271.44	271.44
Mill Creek	MA-G	552.96	552.96
	Pond 11	41.36	41.36
UT3 to Mill Creek	MA-H	96.75	96.75
UT4 to Mill Creek	MA-I	28.44	28.44
UT5 Mill Creek	MA-K	19.72	19.72
UT6 to Mill Creek	MA-L	262.14	262.14
Left Fork Mill Creek	MA-J	242.2	396.13
	MA-M	88.4	
	MA-N	30.08	
	MA-O	23.76	
	MA-P	11.69	

Based on these projections there would be a total debit of 2,349.66 EIUs which is proposed to be offset through the purchase of mitigation credits, as illustrated by **Table 9.3**. These credits would be obtained through 13 incremental purchases prior to the impacts occurring at each site. No credits would be purchased if the impacts did not occur.