Public Notice

U S Army Corps of Engineers
Huntington District

In reply refer to Public Notice No. **200201421**

Issuance Date: April 20, 2005

Stream: **Un Trib Blount Run**

Closing Date: May 20, 2005

Please address all comments and inquiries to:
U.S. Army Corps of Engineers, Huntington District
ATTN: CELRH-OR-F Public Notice No. (*reference above*)
502 Eighth Street
Huntington, West Virginia 25701-2070 Phone: (304) 399-5210

PUBLIC NOTICE: The purpose of this public notice is to inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. We hope you will participate in this process.

REGULATORY PROGRAM: Since its early history, the U.S. Army Corps of Engineers (Corps) has played an important role in the development of the nation's water resources. Originally, this involved construction of harbor fortifications and coastal defenses. Later duties included the improvement of waterways to provide avenues of commerce. An important part of our mission today is the protection of the nation's waterways through the administration of the Corps Regulatory Program.

SECTION 404: The Corps is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the United States, including wetlands. The intent of the law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical and biological integrity.

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army Permit under the provisions of Section 404 of the Clean Water Act. This notice serves as the Corps of Engineers' request to the Ohio Environmental Protection Agency (OEPA) to act on Section 401 Water Quality Certification for the following application:

APPLICANT: Oxford Mining Company
544 Chestnut Street
Post Office Box 427
Coshocton, Ohio 43812

LOCATION: The proposed project is in unnamed tributaries of Blount Run and adjacent wetlands east of State Route 666 and west of State Route 93 near Gilbert, Muskingum County, Ohio.

DESCRIPTION OF THE PROPOSED WORK: The applicant proposes to place fill material into waters of the United States in conjunction with surface coal mining activities at the Adamsville SE Mining Area. According to the applicant, the purpose of the project is to extract the No.6 and 6A coal

by conventional surface mining methods in order to meet contractual obligations to deliver coal. Approximately 750 acres of land, the majority of which has been impacted by pre-SMCRA mining operations, would be impacted by the proposal.

Approximately 13,106' of eleven stream channels and 5.08 acres of six wetlands would be impacted by coal extraction, haul road crossings, sediment pond construction, and sediment transport activities. Tables 1 and 2 of this public notice provide additional information regarding the proposed stream and wetland impacts.

COMPENSATORY MITIGATION: The applicant has submitted a conceptual compensatory mitigation plan (CMP) to compensate for impacts to waters of the United States regulated by the United States Army Corps of Engineers. To mitigate for impacts to 13,106' of stream channel, the applicant proposes to reconstruct 12,246' of stream channel at the approximate location of the pre-mining stream locations. The stream restorative measures would include creating a naturally stable channel using Rosgen principles and natural channel design techniques. Substrate would be obtained from native soil and rock obtained during the mining process. Pool-riffle structures would be incorporated into the reconstructed stream channels where practicable. Native grass and legume species would be planted during construction and reclamation. After establishment of vegetation, a riparian zone consisting of native tree and shrub species would be planted along the restored stream channels. The riparian zone would extend 50' from the top of each bank. To compensate for the loss of 5.08 acres of jurisdictional wetland, the applicant would restore a minimum of 7.65 acre of emergent/shrub-scrub wetland at six separate locations along the reconstructed length of Stream A and Stream D and within Ponds 015, 016 and 017 as indicated on the site plan. Hydric soils removed from the existing wetlands would be stockpiled and re-distributed in the restored wetlands. Surface run-off and groundwater is expected to provide sufficient hydrology to support seasonal saturation and inundation. Emergent vegetation would be supplied via the seed source within the hydric soils while hydrophytic tree and shrub species would be planted. The stream channels and wetlands would be monitored for a period of five years. The property is a part of the Tri-Valley Wildlife Area and is owned by the Ohio Department of Natural Resources.

ALTERNATIVE ANALYSIS: A total of 5.08 acres of jurisdictional wetland would be filled as a result of the proposal. The project does not require access to or sitting within the wetlands to fulfill its basic purpose and is considered a non-water dependent activity. The Section 404(b)(1) Guidelines state that for non-water dependent activities, practicable alternatives that do not involve wetlands are presumed to be available unless clearly demonstrated otherwise. The applicant is required to provide an alternative analysis that must overcome the presumption prior to receiving authorization for the placement of fill material. The applicant has submitted the required alternative analysis and it is currently being reviewed.

Plans of the proposed work are attached to this notice.

A section 401 Water Quality Certification is required for this project. It is the applicant's responsibility to obtain the certification from the Ohio Environmental Protection Agency.

HISTORIC AND CULTURAL RESOURCES: The National Register of Historic Places has been consulted and it has been determined that there no listed properties eligible for the register in the area affected by the project. A copy of this public notice will be furnished to the Ohio State Historic Preservation Office for their review. Comments concerning archeological sensitivity of the project area should be based upon collected data.

ENDANGERED/THREATENED SPECIES REVIEW: The project is located within the known or historic range of the following endangered species:

Indiana Bat
Bald Eagle
Fanshell Mussel

The Huntington District has consulted the most recently available information and based on the proposed avoidance and minimization measures, and while the project will likely have no effect on these species or their designated Critical Habitat, this public notice serves as a request to the U.S. Fish and Wildlife Service for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST REVIEW AND COMMENT: Any person who has an interest that may be adversely affected by the issuance of a permit may request a public hearing. The request must be submitted in writing to the District Engineer on or before the expiration date of this notice and must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity. This application will be reviewed in accordance with 33 CFR 320-331, the Regulatory Program of the U. S. Army Corps of Engineers (USACE), and other pertinent laws, regulations, and executive orders. Our evaluation will also follow the guidelines published by the U. S. Environmental Protection Agency pursuant to Section 404(b) (1) of the CWA. Interested parties are invited to state any objections they may have to the proposed work. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered including the cumulative effects thereof; of those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. Written statements on these factors received in this office on or before the expiration date of this public notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

SOLICITATION OF COMMENTS: The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. For accuracy and completeness of the administrative record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

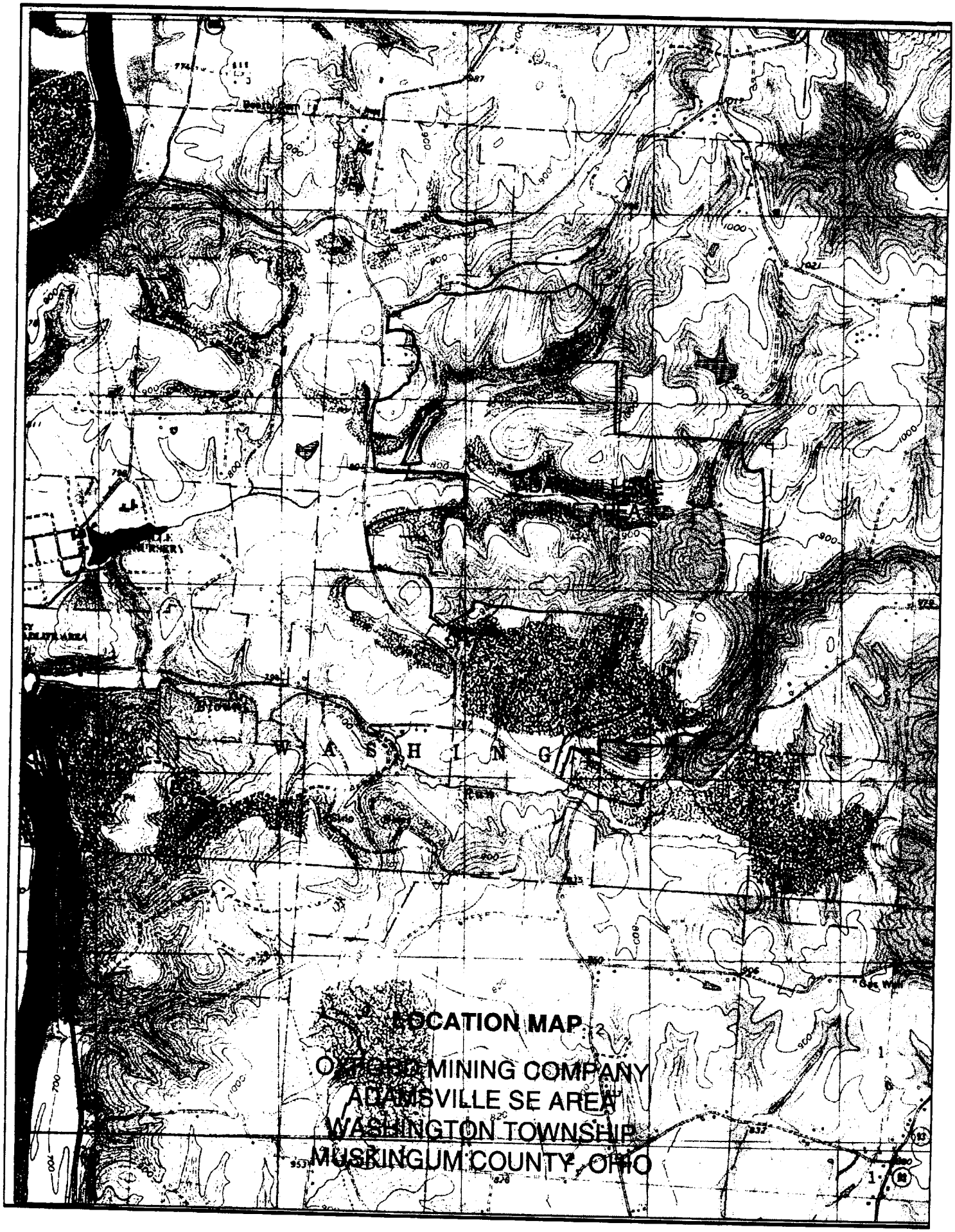
CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice. If no comments are received by that date, it will be considered that there are no objections. Comments and requests for additional information should be submitted to:

Kimberly Courts-Brown, Regulatory Project Manager
North Regulatory Section, CELRH-OR-FN
U. S. Army Corps of Engineers Huntington District
502 Eighth Street
Huntington, West Virginia 25701-2070.

Please note names and addresses of those who submit comments in response to this public notice may be made publicly available. Thank you for your interest in our nation's water resources. If you have any questions concerning this public notice, please contact Kimberly Courts-Brown of the North Regulatory Section at 304-399-5210.

Ginger Mullins, Chief
Regulatory Branch

(O)



LOCATION MAP

OXFORD MINING COMPANY
ADAMSVILLE SE AREA
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

Adamsville SE Area
Streams and Wetlands Impact/Avoidance Chart

STREAMS

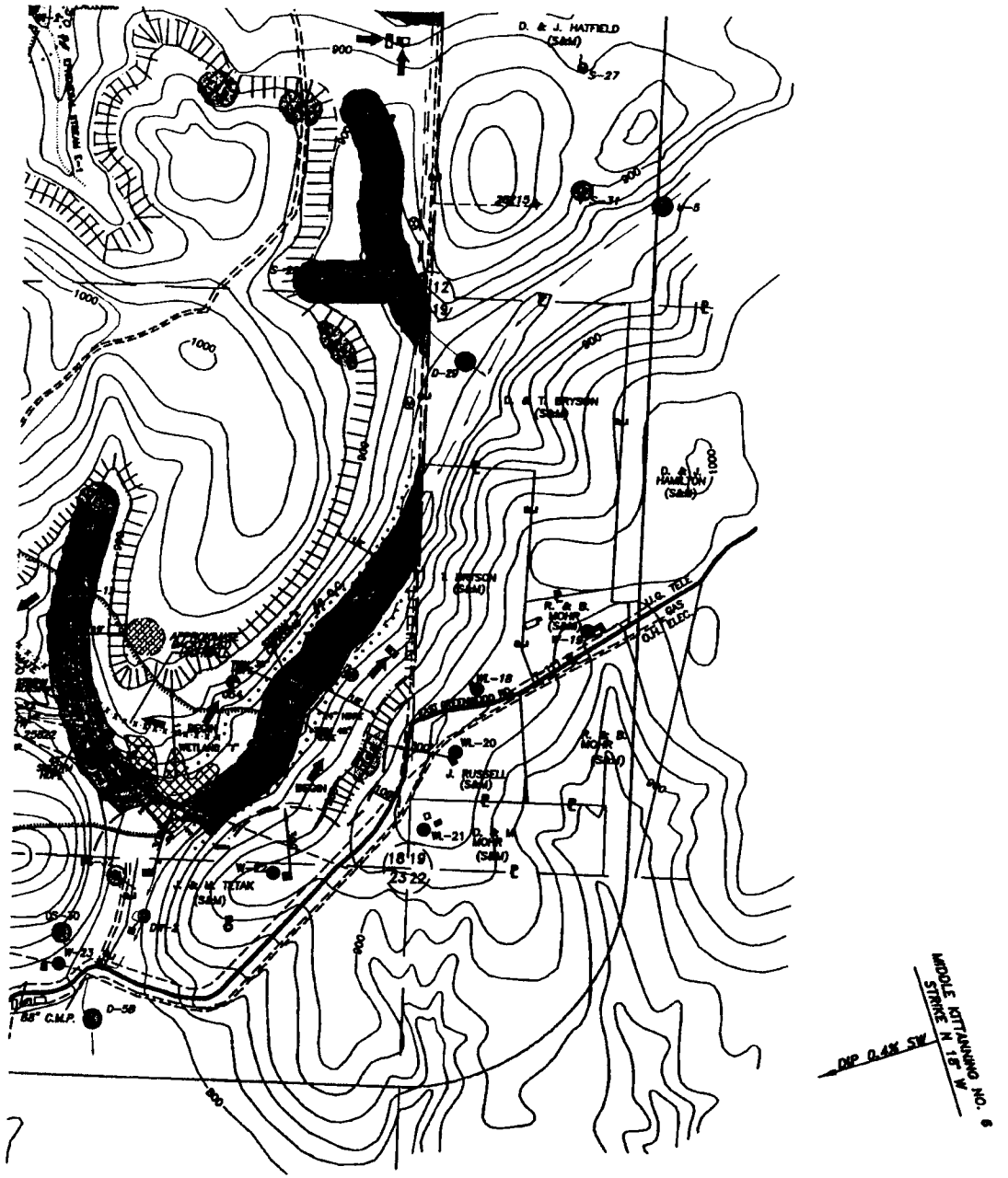
Stream ID	Type* E, I, or P	QHEI/HHEI Score*	Total Length on Site (lf)	Total Length Certified (lf)	Impact Type	% Avoided
Stream A	P	33.5-60.5	5450	3190	temporary crossing, mine through, temporary ponds (15,16)	41.47%
Stream B	I	39	1144	1070	mine through, temporary pond (16)	6.47%
Stream C	I	41.5	1130	1050	temporary crossing, mine through	7.08%
Stream D	I	68.5	2355	1225	temporary crossing, mine through, temporary pond (17)	47.98%
Stream E	P	58	1764	751	temporary crossing, temporary pond (14)	57.43%
Stream F	I	44.5	2180	2040	temporary crossing, mine through, temporary pond	6.42%
Stream G	I	27.5	200	100	permanent crossing	50.00%
Stream H	I	38.5	1460	1460	temporary crossing, mine through, permanent pond (13)	0.00%
Stream I-Complex	I	50.75	1360	1360	mine through, permanent pond (12)	0.00%
Stream E-1	E	-	900	690	Mine through	23.33%
Stream E-2	E	-	325	170	Mine through	47.69%
Totals			18268	13106		28.26%

Table 1

WETLANDS

Wetland ID	Isolated or Adjacent	Forested or Non?	Category	Total Acreage on Site	Total Acreage Certified to be Impacted	% Avoided
Wetland A	Adjacent	Non	1	2.0	0	100.00%
Wetland B	Adjacent	Non	1	1.4	0.18	87.14%
Wetland C	Adjacent	Non	2	1.85	1.2	35.14%
Wetland D	Adjacent	Non	2	1.85	0	100.00%
Wetland E	Adjacent	Non	1	0.1	0	100.00%
Wetland F	Adjacent	Non	1	0.9	0.8	11.11%
Wetland G	Adjacent	Non	2	1.0	0.09	91.00%
Wetland H	Adjacent	Non	1	0.41	0.41	0.00%
Wetland I	Adjacent	Non	1	2.4	2.4	0.00%
Wetland R	Adjacent	Non	2	0.24	0	100.00%
Totals				12.15	5.08	58.19%

Table 2



MUSKINGUM RIVER DRAINAGE BASIN

0' 400' 800' 1200'

- 100' STREAM BUFFER ZONE
- CISTERN
- 20074 OIL OR GAS WELL
- # 20074 OIL OR GAS WELL (PLUGGED)
- # 27584 OIL OR GAS WELL (EXPIRED PERMIT LOCATION)
- FOUNDATION
- CHURCH
- CEMETERY
- ALTERNATIVE RESOILING MATERIAL SAMPLE
- ALTERNATIVE RESOILING MATERIAL STOCKPILE
- HYDRIC SOIL PILES
- WETLAND DELINEATION
- WETLAND MITIGATION
- NO SURFACE AFFECTMENT
- D-1196 PERMIT LIMITS

SUMMARY

AREA OF STRIP COAL	196.9	AC.
AREA OF AUGER COAL	98.7	AC.
AREA OF PONDS	11.4	AC.
AREA OF HAUL ROADS	7.8	AC.
AREA OF TOPSOIL STORAGE	23.7	AC.
AREA OF PRIME FARMLAND	19.7	AC.
TOTAL PERMIT AREA	761.5	AC.

Area To Be Affected 1st. Year 20.0 Ac.

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS MAP IS CORRECT, AND SHOWS TO THE BEST OF MY KNOWLEDGE AND BELIEF ALL THE INFORMATION REQUIRED BY CHAPTER 1513 OF THE REVISED CODE AND RULES ADOPTED THEREUNDER.

_____

REG. SURVEYOR NO._____

ACKNOWLEDGED BEFORE ME, A NOTARY PUBLIC, THIS

_____ DAY OF _____, ____

_____NOTARY PUBLIC

- [x] APPLICATION MAP
- [x] HYDROLOGY MAP
- [ ] ANNUAL MAP
- [ ] FINAL MAP

PERMIT NO._____

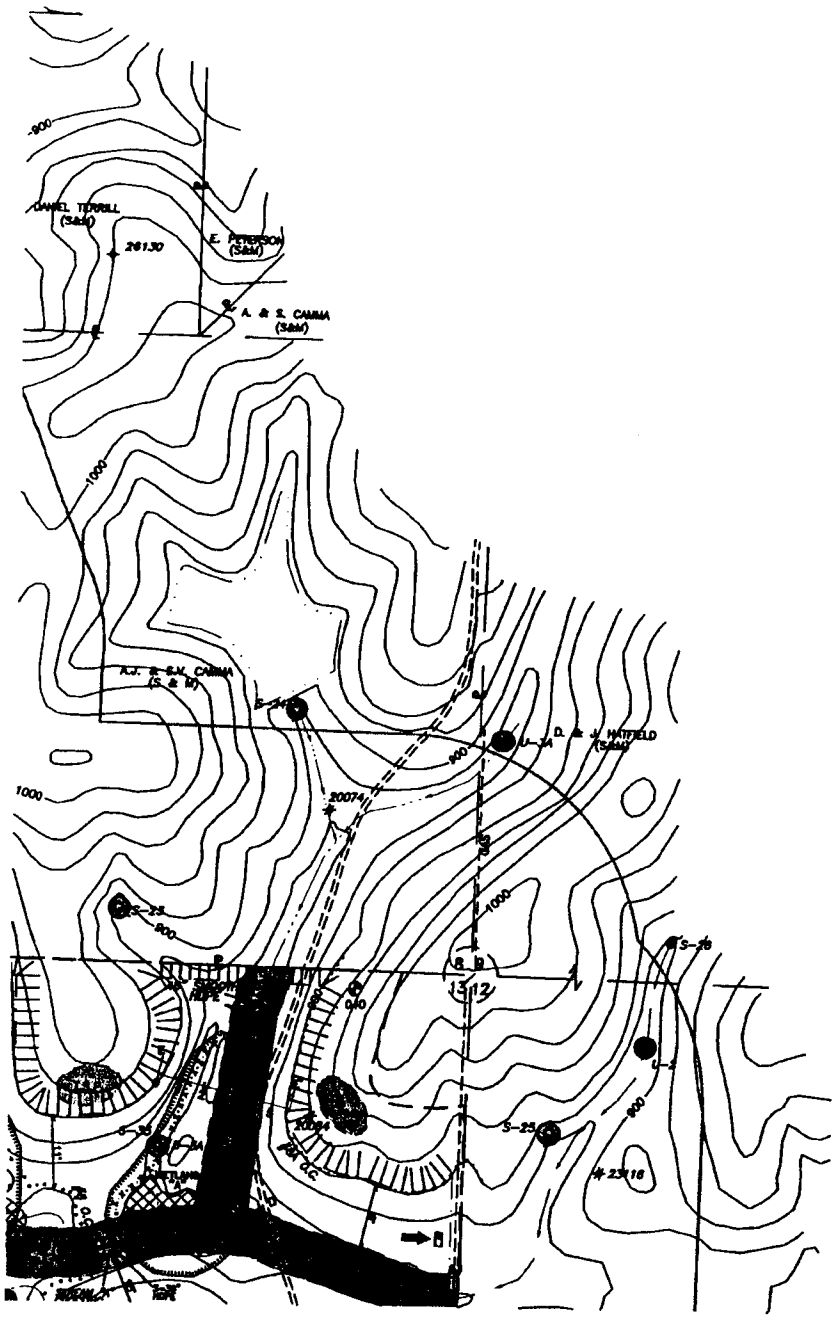
ADAMSVILLE SE

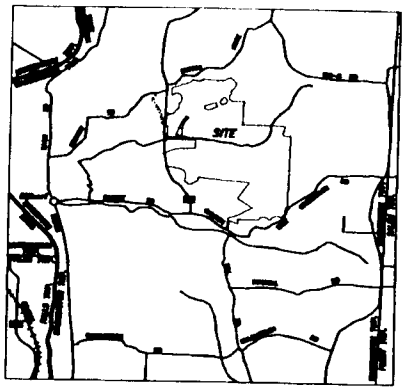
OXFORD MINING COMPANY

LOCATED IN
LOTS 6, 7, 13, 14, 15, 16, 17, 18, 24
FOURTH QUARTER OF T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

SCALE: 1" = 400'
CONTOUR INTERVAL = 20'
DATE PREPARED: SEPTEMBER 18, 2002
DATE REVISED: MARCH 08, 2005

PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3400



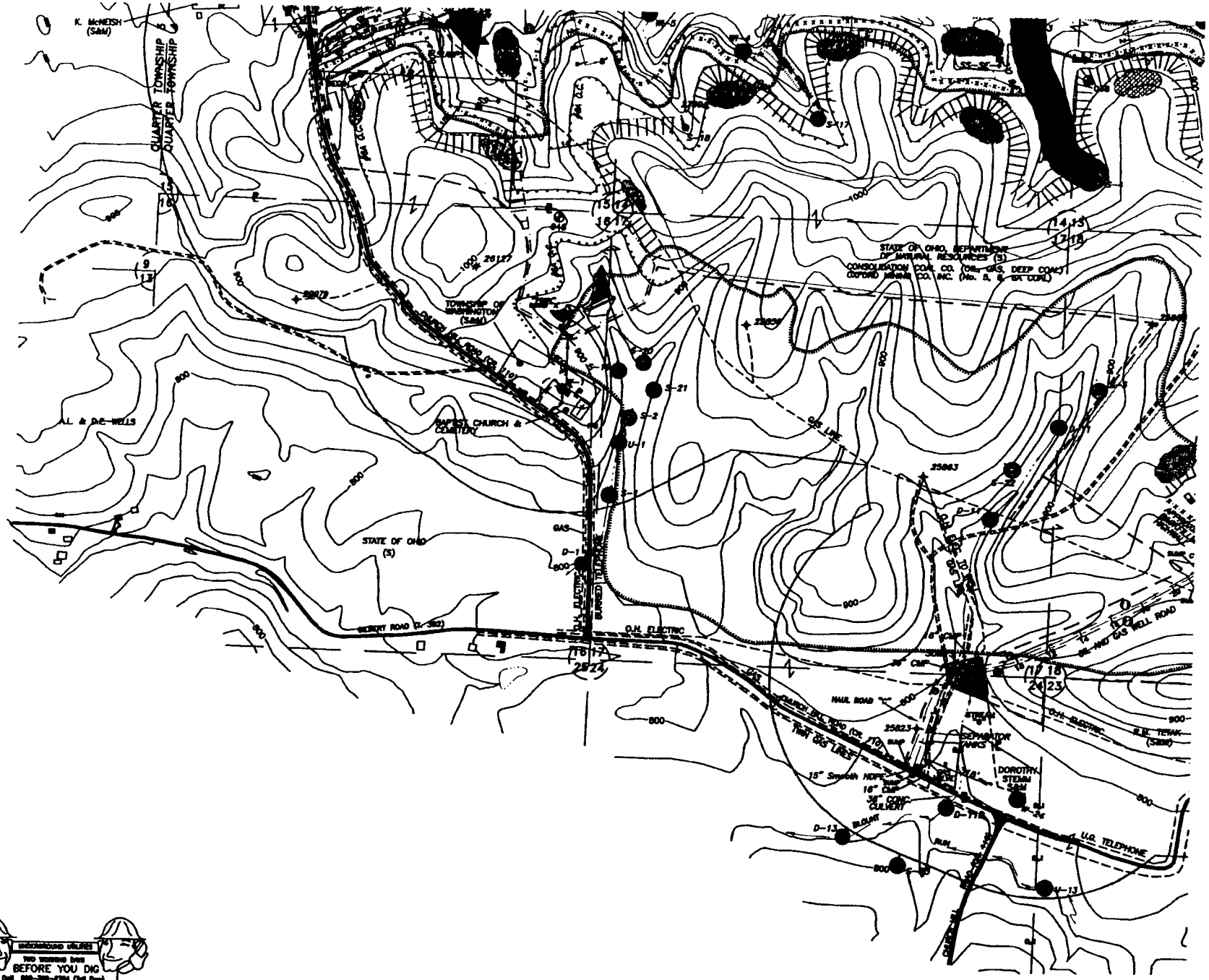


LOCATION MAP
SCALE: 1" = 1 MILE

ADAMSVILLE QUADRANGLE

LEGEND

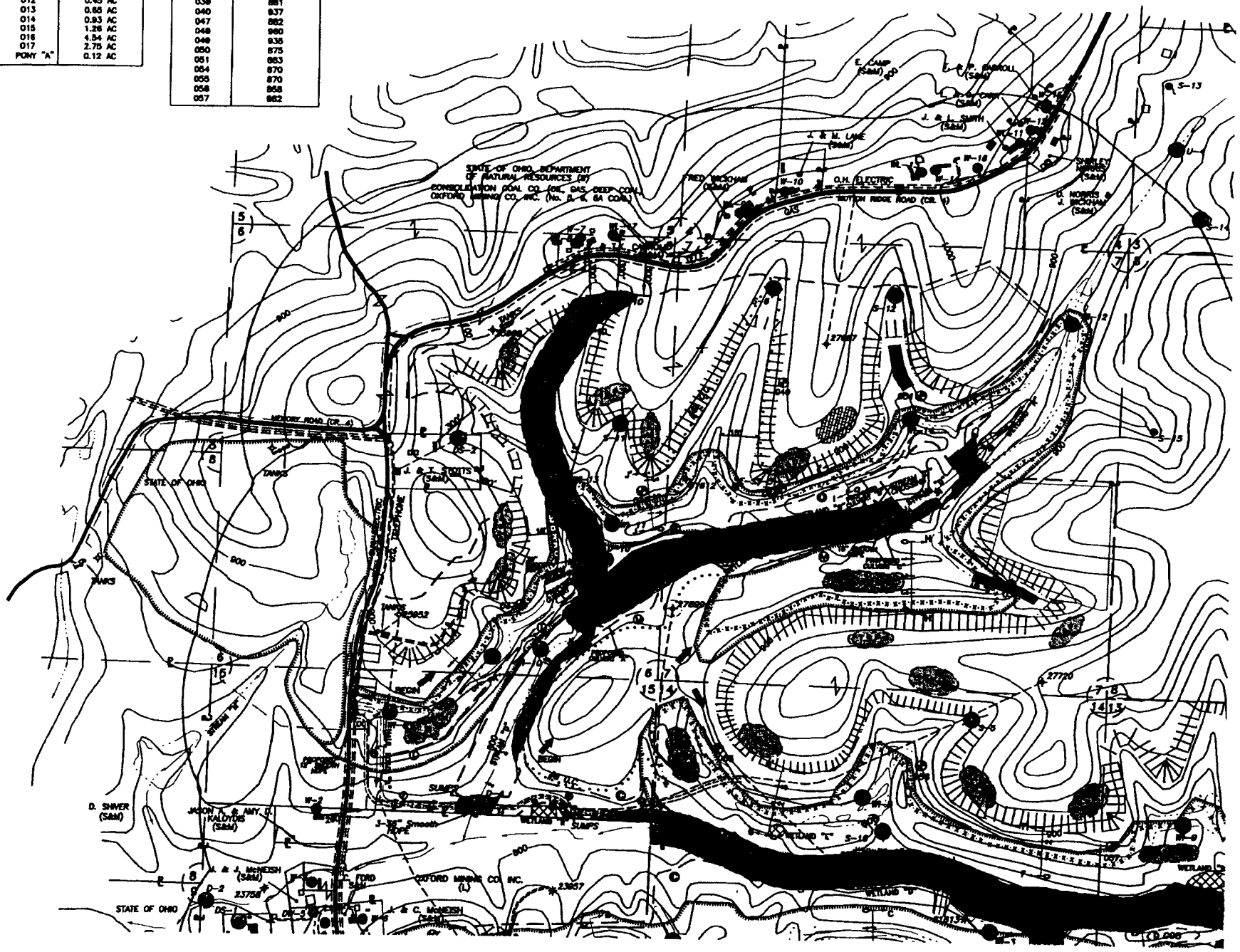
- PERMIT LIMITS
- PREVIOUSLY AFFECTED AREA
- AUGER MINE AREA
- TEST HOLE
- DIVERSION DITCH, (A) DITCH I.D.
- NATURAL OR PUMPED DRAINAGE
- DEEP MINE ENTRY
- TOP SOIL STOCK PILES
- COAL OUTCROP LINE
- PERENNIAL STREAM
- INTERMITTENT STREAM
- EPHEMERAL STREAM
- UTILITY (e.g. gas, electric, telephone)
- EXISTING IMPOUNDMENT
- TREATMENT FACILITY
- SEDIMENT POND
- EXISTING HIGHWALL
- FINAL HIGHWALL
- 15° SLOPE MEASUREMENT
- PIT IDENTIFICATION
- (S) INDICATES SURFACE OWNER
- (M) INDICATES MINERAL OWNER
- (L) INDICATES LESSEE
- OCCUPIED AND UNOCCUPIED STRUCTURE
- COMMERCIAL BUILDING
- BEGIN MINING
- END MINING
- PROPERTY LINE
- ROAD
- 1000' BOUNDARY LINE
- DW– DUG WELL
- WL– DRILLED WELL (LOG AVAILABLE)
- W– DRILLED WELL (NO LOG AVAILABLE)
- DS– DEVELOPED SPRING
- S– UNDEVELOPED SPRING
- DM– DEEP MINE WATER DISCHARGE
- U– UPSTREAM SAMPLING STATION
- D– DOWNSTREAM SAMPLING STATION
- SOURCE OF PUBLIC WATER SUPPLY
- M– MONITORING STATION
- BACKGROUND SAMPLING STATION



UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
OHIO UTILITIES PROTECTION SERVICE

PONDS	
POND No.	SURFACE AREA
001	0.50 AC
011	0.32 AC
012	0.45 AC
013	0.65 AC
014	0.93 AC
015	1.26 AC
016	4.54 AC
017	2.75 AC
PONY "A"	0.12 AC

TEST HOLES	
T.H. No.	GROUND ELEV.
037	870
038	873
039	881
040	937
047	882
048	960
049	935
050	875
051	863
054	870
055	870
056	858
057	882



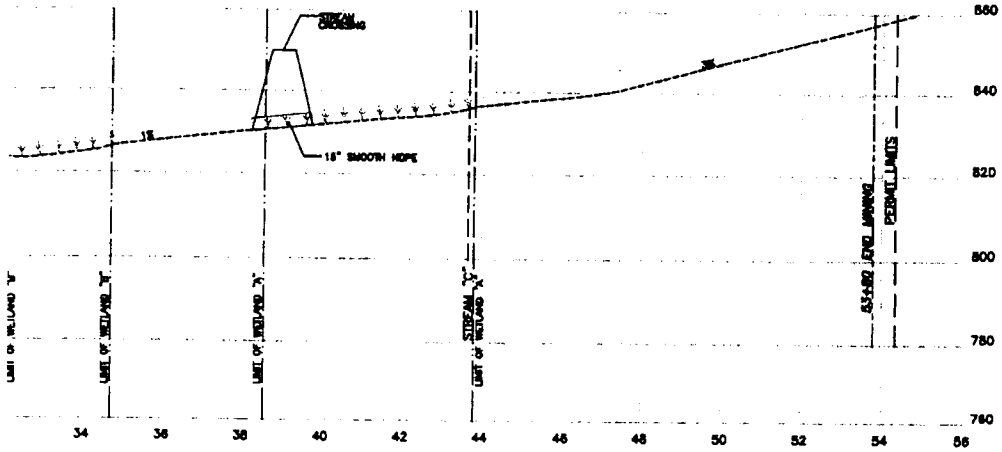


CHART FOR CHANNELS OF 2-4%

Stream	Station	Watershed	SCS 6 hour Peak Flow Q(1.5yr)	Q(100yr)	Grade	U_{bf} typ.	$F_r(1)$ typ.	$F_r(100)$ typ.	d_{bf} (ft)	d (ft)	b (ft)	Y (ft)	x (ft)	Meandering Channel Pattern w(ft) typ.	w(ft) min.	w(ft) max.	L(ft) typ.	L(ft) min.	L(ft) max.	R(ft) typ.	R(ft) min.	R(ft) max.	S typ.	S min.	S max.	V_{max} (fps)	D_{50} (in.)
A	0+80 to 18+45	650Ac.	340cfs	1343cfs	1%	57.0	0.6	2.3	3.5	4.0	2.8	28.3	16.4	2	—	—	148	—	—	370	—	—	111	1.30	1.10	1.30	9.02	6"
A	18+45 to 43+85	468Ac.	220cfs	816cfs	1%	50.5	0.6	2.0	3.3	2.4	2.3	28.3	16.5	2	—	—	122	—	—	305	—	—	92	1.30	1.10	1.30	7.38	6"
A	43+85 to 47+00	138Ac.	91cfs	322cfs	1%	21.0	0.6	2.0	2.4	1.7	1.6	20.3	3	2	—	—	88	—	—	219	—	—	66	1.30	1.10	1.30	4.71	6"
A	47+00 to 63+80	138Ac.	91cfs	322cfs	3%	17.0	0.8	2.5	1.7	1.0	1.4	12.3	2.3	2	46	38	71	143	107	178	48	38	83	1.30	1.10	1.30	6.30	6"
B	0+00 to 8+76	30Ac.	32cfs	98cfs	2%	13.0	0.8	1.2	1.4	1.0	0.8	16.1	2	35	28	62	104	78	130	33	26	39	1.30	1.10	1.30	4.04	6"
C	0+00 to 8+74	243Ac.	148cfs	585cfs	1%	27.0	0.4	2.0	3.0	2.2	1.8	28.0	2	—	—	111	—	—	278	—	—	83	1.30	1.10	1.30	6.24	6"
C	8+74 to 16+50	243Ac.	148cfs	585cfs	2%	24.5	0.6	2.3	2.8	1.8	1.6	22.7	2	66	49	87	194	146	243	61	46	73	1.30	1.10	1.30	7.54	6"

CHART FOR CHANNELS OF >4%

Stream	Station	Watershed	SCS 6 hour Peak Flow Q(1.5yr)	Q(100yr)	Grade	U_{bf} typ.	$F_r(1)$ typ.	$F_r(100)$ typ.	d_{bf} (ft)	d (ft)	b (ft)	Y (ft)	x (ft)	Pool Dimensions P_w typ.	P_w min.	P_w max.	P_d typ.	P_d min.	P_d max.	P_l typ.	P_l min.	P_l max.	S typ.	S min.	S max.	V_{max} (fps)	D_{50} (in.)
B	7+10 to 11+80	30Ac.	32cfs	98cfs	12%	10.5	3.7	2.1	1.6	2.8	2.7	12.0	1	12.8	10.8	14.7	4.0	3.3	4.8	17.8	10.8	21.0	1.05	1.00	1.10	4.41	48"

P_w – POOL WIDTH – WIDTH OF BANKFULL CHANNEL AT POOL.

P_d – MAXIMUM POOL DEPTH – THE MAXIMUM DEPTH OF THE CHANNEL AT A POOL. A POOL IS THE DEEP AND FLAT FACET OF THE CHANNEL.

P_l – POOL TO POOL LENGTH – HORIZONTAL DISTANCE BETWEEN TWO POOLS IN A CHANNEL PROFILE.

NOTES:

(1) DESIGN CRITERIA IS BASED ON "A NATURAL CHANNEL DESIGN PROCEDURE FOR STEEP AND MODERATELY STEEP STREAMS" ISSUED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF MINES AND RECLAMATION AND DIVISION OF SOIL AND WATER CONSERVATION DATED NOVEMBER 15, 1999.

(2) THE ABOVE MENTIONED DESIGN CRITERIA DOES NOT CONSIDER CHANNELS WITH SLOPES OF LESS THAN 2%. THEREFORE, FORMULAS FOR 2–4% CHANNELS WERE USED TO DESIGN THE 1% CHANNELS IN THIS PLAN. ASSUMING THAT DESIGN VALUES WOULD INCREASE AS THE CHANNEL SLOPE DECREASED, ONLY MAXIMUM DESIGN VALUES SHALL BE USED FOR 1% CHANNELS.

(3) THESE NATURAL CHANNELS ARE DESIGNED TO ACCOMMODATE THE 1.5YEAR, 6HOUR STORM WITHIN THE BANKFULL DUMPED ROCK LIMITS. THE ENTIRE CHANNEL WILL ACCOMODATE THE 100YEAR, 6HOUR STORM. THE CHANNEL SIDE SLOPES ABOVE THE "BANKFULL" CHANNEL SHALL BE WELL VEGETATED.

(4) MINIMUM AND MAXIMUM VALUES ARE TO BE UTILIZED TO FIT THE PROPOSED CHANNEL INTO THE EXISTING LANDSCAPE. TYPICAL VALUES SHALL BE UTILIZED WHEREVER POSSIBLE.

(5) ALL ROCK SHALL BE OF DURABLE MATERIAL.

(6) 25% OF THE ROCK, BY VOLUME, SHALL BE IN SIZES SLIGHTLY LARGER THAN THE D75 AND THE REMAINING 75% SHALL BE SMALLER, INCLUDING SUFFICIENT SAND AND GRAVEL TO FILL THE VOIDS AROUND THE LARGER ROCK. THE ROCK SHALL BE PLACED IN THE "BANKFULL" CHANNEL PORTION OF THE CHANNEL BY OVEREXCAVATING AND PLACING IT AT A DEPTH OF 1.5 TIMES THE D75 SIZE. PROPERLY SIZED BEDDING MATERIAL SHALL BE PLACED TO A THICKNESS APPROXIMATELY ONE HALF THE D75, BUT TYPICALLY NOT LESS THAN SIX INCHES. FILTER FABRIC (SUCH AS MIRAFI 140N) MAY ALSO BE USED UNDER THE BEDDING MATERIAL TO MINIMIZE PIPING. ADDITIONAL "TOP DRESSING" WITH SAND AND GRAVEL MAY BE NECESSARY TO FILL THE VOIDS AROUND THE LARGER ROCK.

FOR SLOPES 4–10% :

(7) CHANNEL LINING CAN BE SIZED AS DESCRIBED ABOVE TO PROVIDE A STABLE SLOPE FROM THE CREST OF EACH STEP DOWNSTREAM TO THE MAXIMUM DEPTH OF THE NEXT POOL. ALTERNATIVELY, THE CONFIGURATION AND MATERIALS DESCRIBED BELOW FOR SLOPES GREATER THAN 10% MAY BE USED FOR THE 4–10% RANGE AS WELL.

FOR SLOPES GREATER THAN 10% :

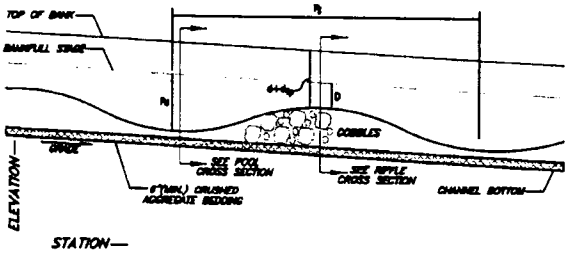
(8) A STRUCTURAL FUNCTION IS REQUIRED OF THE BED MATERIAL OF CASCADE–POOL CHANNELS WHERE THE STEPS FORM A NEAR–VERTICAL DROP FROM THE TOP OF THE STEP TO THE BOTTOM OF THE POOL. TO PREVENT THE LARGE ROCKS FROM BECOMING UNDERMINED, FOOTER ROCKS MUST BE PLACED BELOW AND DOWNSTREAM FROM THE LARGE ROCKS. LOGS CAN ALSO BE USED TO CONSTRUCT THE NEAR–VERTICAL DROPS. AS WITH LOWER GRADIENT CHANNELS, SMALLER ROCK, GRAVEL AND SAND CAN BE USED TO FILL THE VOIDS AROUND THE LARGER ROCK.

DEPTH OF THE STREAM MEASURED
L DISCHARGE.
DEPTH OF A CHANNEL AT A RIFFLE.
TO STEEP FACET OF THE CHANNEL.

AS OF THE BENDS IN THE BANKFULL

TENT OF THE BANKFULL CHANNEL.
THE VERTICAL FALL OF THE CHANNEL.
LINE DISTANCE THROUGH ONE

LENGTH TO VALLEY DISTANCE.
SERPENTINE OR WAVY FORM



4%+ TYPICAL CHANNEL PROFILE

DESIGN STORM, SCS TYPE II
1.5 YR, 6 HR STORM = 1.8"
100 YR, 6 HR STORM = 3.8"

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS COMPLIES WITH THE REQUIREMENTS OF RULE 1501:13-9-04 OF THE OHIO ADMINISTRATIVE CODE.

JOHN M. PELTZ, P.E./63629 DATE

ADDENDUM PART 3 (C) 2

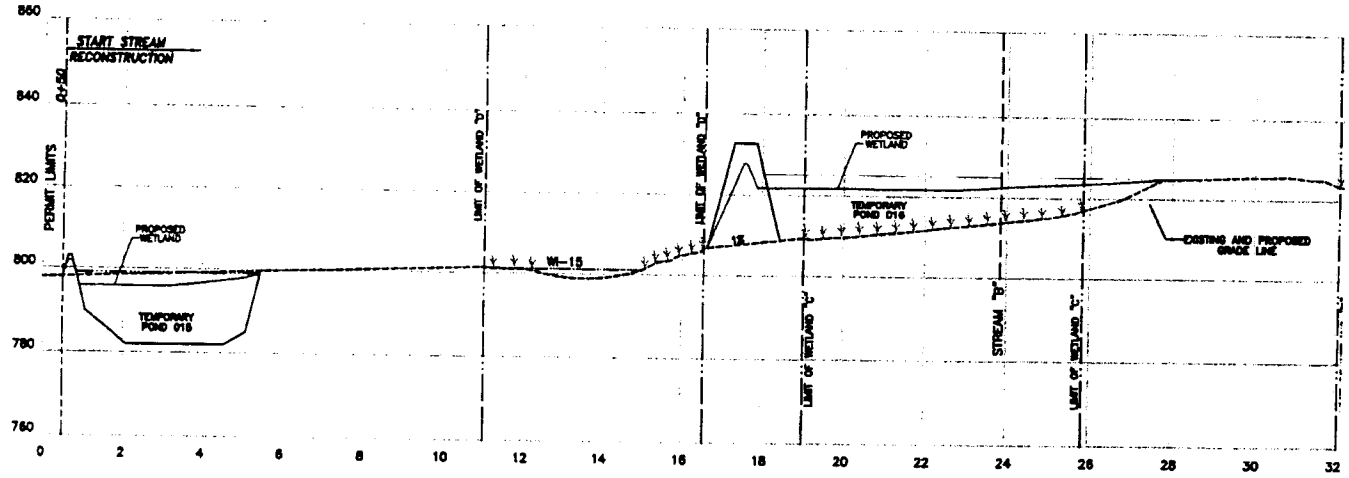
NATURAL STREAM RESTORATION

Permit No. (ADAMSVILLE SE)
OXFORD MINING CO., INC.

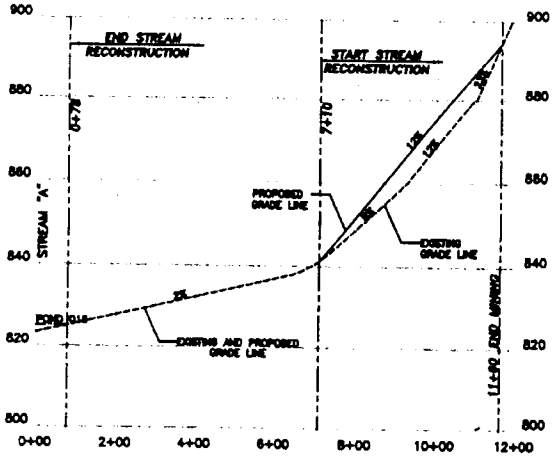
Located in
LOTS 13 & 14
FOURTH QUARTER OF T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

SCALE: AS NOTED
DATE PREPARED: JUNE 13, 2002
DATE REVISED: JANUARY 08, 2008

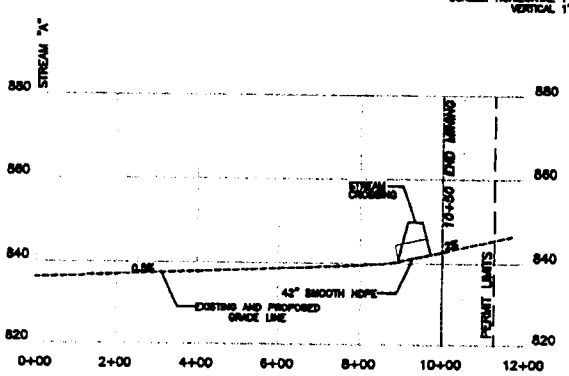
PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3489



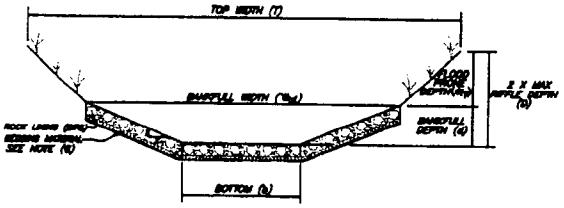
PROFILE OF STREAM "A"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



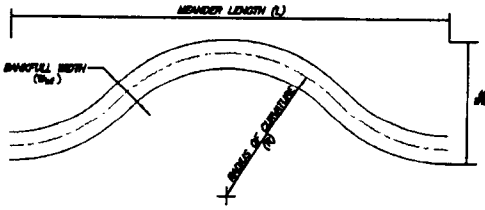
PROFILE OF STREAM "B"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM "C"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

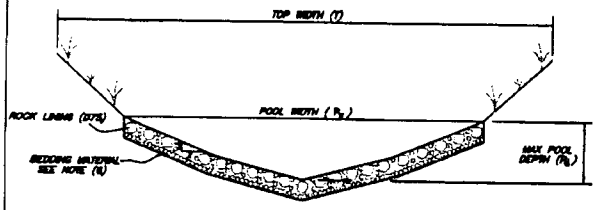


2-4% CHANNEL CROSS SECTION

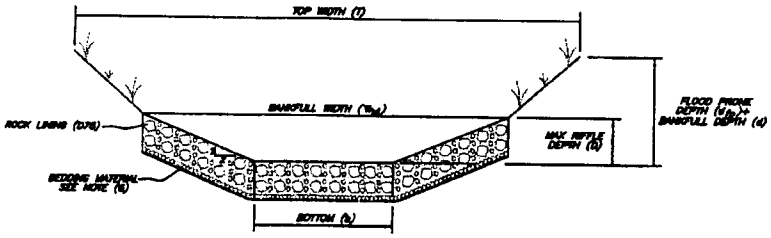


CHANNEL PATTERN

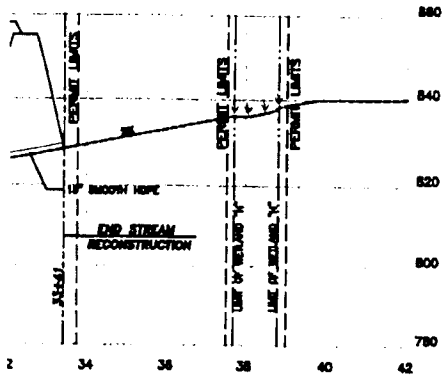
- W_{bf} – BANKFULL WIDTH – THE SURFACE W AT THE STAGE OF THE BANKFU
- D – MAX RIFFLE DEPTH – THE MAXIMUM THE RIFFLE IS THE SHALLOW A
- d_{fp} – FLOOD PRONE DEPTH
- R – RADIUS OF CURVATURE – THE RADI CHANNEL.
- d – BANKFULL DEPTH
- b – CHANNEL BOTTOM WIDTH
- T – TOP WIDTH OF CHANNEL
- W – MEANDER WIDTH – THE LATERAL EX MEASURED PERPENDICULAR TO
- L – MEANDER LENGTH – THE STRAIGHT WAVELENGTH OF THE CHANNEL.
- F – FLOOD PRONE WIDTH.
- S – SINUOSITY – THE RATIO OF STREAM IT INDICATES THE DEGREE OF S OF THE CHANNEL.

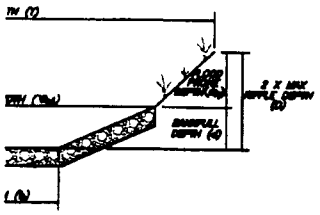


4%+ POOL CROSS SECTION

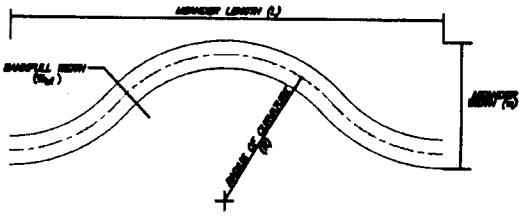


4%+ RIFFLE CROSS SECTION





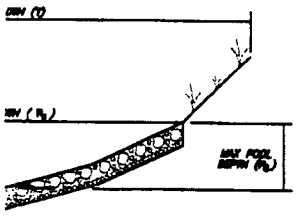
CROSS SECTION



CHANNEL PATTERN

W_{bf} – BANKFULL WIDTH – THE SURFACE WIDTH OF THE STREAM MEASURED AT THE STAGE OF THE BANKFULL DISCHARGE.
D – MAX RIFFLE DEPTH – THE MAXIMUM DEPTH OF A CHANNEL AT A RIFFLE. THE RIFFLE IS THE SHALLOW AND STEEP PART OF THE CHANNEL.
d_{fp} – FLOOD PRONE DEPTH
R – RADIUS OF CURVATURE – THE RADIUS OF THE BENDS IN THE BANKFULL CHANNEL.
d – BANKFULL DEPTH
b – CHANNEL BOTTOM WIDTH
T – TOP WIDTH OF CHANNEL
W – MEANDER WIDTH – THE LATERAL EXTENT OF THE BANKFULL CHANNEL MEASURED PERPENDICULAR TO THE VERTICAL FALL OF THE CHANNEL.
L – MEANDER LENGTH – THE STRAIGHT LINE DISTANCE THROUGH ONE WAVELENGTH OF THE CHANNEL.
F – FLOOD PRONE WIDTH.
S – SINUOSITY – THE RATIO OF STREAM LENGTH TO VALLEY DISTANCE. IT INDICATES THE DEGREE OF MEANDERING OR WAVY FORM OF THE CHANNEL.

CHART FOR CHANNELS OF 2-4%



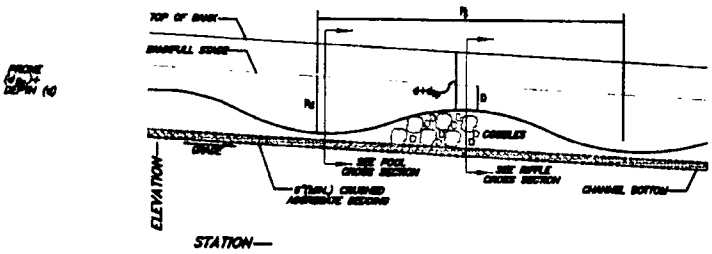
CROSS SECTION

Stream	Station	Watershed	BCS & Inner Peak Flow Q(1.5yr)	Q(100yr)	Grade	W_{bf}	d_{fp}	D	d	b	T	z	DESIGNED CHANNEL PATTERN W(YD)			L(YD)			R(YD)			S			W_{bf}/d	D/d_{fp}
						(yds.)	(yds.)	(yds.)	(yd)	(yd)	(yd)	(yd)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(ratio)	(%)
B	18+70 to 18+80	440ac.	117cfs	880cfs	1%	27.4	4.9	2.6	2.3	2.3	16.7	16.8	2	—	—	110	—	—	274	—	—	80	1.30	1.10	1.30	6.86	6"
B	34+60 to 34+80	380ac.	80cfs	480cfs	1%	21.4	4.3	2.0	2.3	1.7	14.4	16.8	2	—	—	86	—	—	214	—	—	64	1.30	1.10	1.30	6.43	6"
B	21+30 to 22+10	380ac.	80cfs	480cfs	2%	19.8	3.8	1.9	2.0	1.3	15.2	17.2	2	51	38	76	190	113	190	47	38	95	1.30	1.10	1.30	7.05	6"
F	7+80 to 14+80	880ac.	30cfs	134cfs	2%	12.2	3.1	1.3	1.4	1.0	9.8	10.8	2	34	25	50	100	75	125	31	25	25	1.30	1.10	1.30	8.86	6"

CHART FOR CHANNELS OF >4%

Stream	Station	Watershed	BCS & Inner Peak Flow Q(1.5yr)	Q(100yr)	Grade	W_{bf}	d_{fp}	D	d	b	T	z	POOL DIMENSIONS P_w			P_d			P_l			S			W_{bf}/d	D/d_{fp}
						(yds.)	(yds.)	(yds.)	(yd)	(yd)	(yd)	(yd)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(yds.)	(ratio)	(%)
F	0+00 to 3+00	880ac.	30cfs	134cfs	8%	12.2	3.1	1.3	1.3	1.0	9.7	10.8	2	13.3	10.6	17.6	3.8	3.3	4.8	36.1	31.7	54.4	1.10	1.00	1.30	9.24	10"
F	3+00 to 20+00	880ac.	30cfs	134cfs	8%	12.2	3.1	1.3	1.3	1.0	9.7	10.8	2	13.3	10.6	17.6	3.8	3.3	4.8	36.1	31.7	54.4	1.10	1.00	1.30	9.24	10"

P_w – POOL WIDTH – WIDTH OF BANKFULL CHANNEL AT POOL.
P_d – MAXIMUM POOL DEPTH – THE MAXIMUM DEPTH OF THE CHANNEL AT A POOL. A POOL IS THE DEEP AND FLAT PART OF THE CHANNEL.
P_l – POOL TO POOL LENGTH – HORIZONTAL DISTANCE BETWEEN TWO POOLS IN A CHANNEL PROFILE.



4%+ TYPICAL CHANNEL PROFILE

DESIGN STORM, SCS TYPE II
1.5 YR. 6 HR STORM = 1.8"
100 YR. 6 HR STORM = 3.8"

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS COMPLIES WITH THE REQUIREMENTS OF RULE 1501:13-9-04 OF THE OHIO ADMINISTRATIVE CODE.

JOHN M. FELTZ, P.E./#43929 DATE

ADDENDUM PART 3 (2) 2

NATURAL STREAM RESTORATION

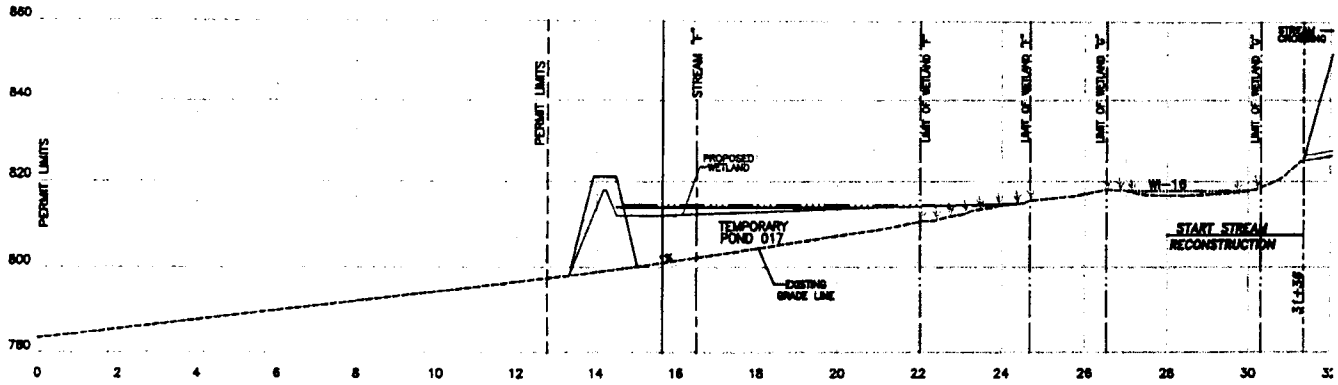
Permit No. (ABANDONED MINE)

OXFORD MINING CO., INC.

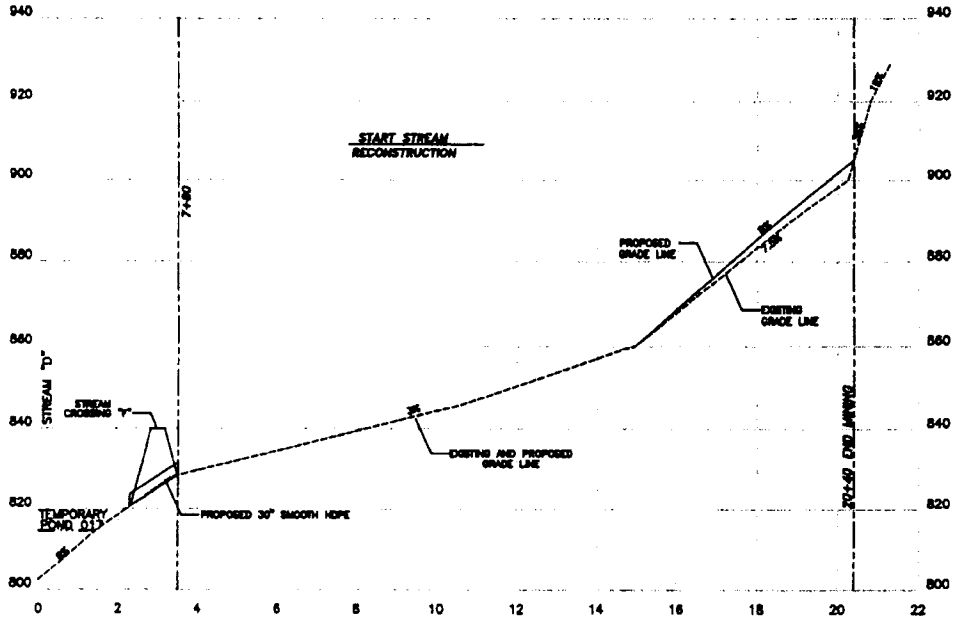
Located in
LOTS 6, 7 & 15
FOURTH QUARTER OF T-3-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

SCALE: AS NOTED
DATE PREPARED: JUNE 17, 2002
DATE REVISED: JANUARY 28, 2003

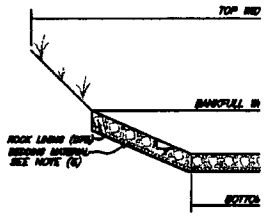
PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3489



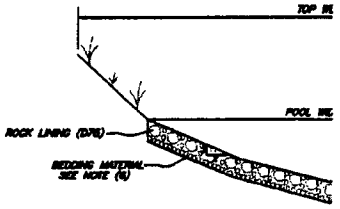
PROFILE OF STREAM "D"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM "F"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



2-4% CHANNEL C



4%+ POOL CR

NOTES:

(1) DESIGN CRITERIA IS BASED ON "A NATURAL CHANNEL DESIGN PROCEDURE FOR STEEP AND MODERATELY STEEP STREAMS" ISSUED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF MINES AND RECLAMATION AND DIVISION OF SOIL AND WATER CONSERVATION DATED NOVEMBER 15, 1998.

(2) THE ABOVE MENTIONED DESIGN CRITERIA DOES NOT CONSIDER CHANNELS WITH SLOPES OF LESS THAN 2%. THEREFORE, FORMULAS FOR 2-4% CHANNELS WERE USED TO DESIGN THE 1% CHANNELS IN THIS PLAN. ASSUMING THAT DESIGN VALUES WOULD INCREASE AS THE CHANNEL SLOPE DECREASED, ONLY MINIMUM DESIGN VALUES SHALL BE USED FOR 1% CHANNELS.

(3) THESE NATURAL CHANNELS ARE DESIGNED TO ACCOMMODATE THE 1.5YEAR, 6HOUR STORM WITHIN THE BANKFULL DUMPED ROCK LIMITS. THE ENTIRE CHANNEL WILL ACCOMODATE THE 100YEAR, 6HOUR STORM. THE CHANNEL SIDE SLOPES ABOVE THE "BANKFULL" CHANNEL SHALL BE WELL VEGETATED.

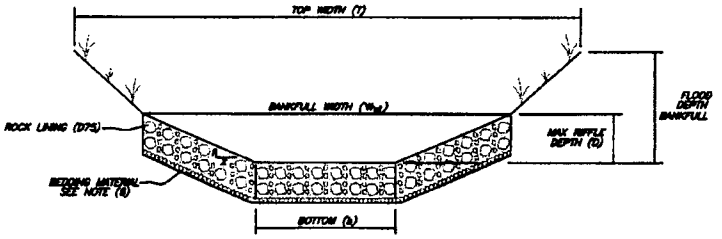
(4) MINIMUM AND MAXIMUM VALUES ARE TO BE UTILIZED TO FIT THE PROPOSED CHANNEL INTO THE EXISTING LANDSCAPE. TYPICAL VALUES SHALL BE UTILIZED WHEREVER POSSIBLE.

(5) ALL ROCK SHALL BE OF DURABLE MATERIAL.

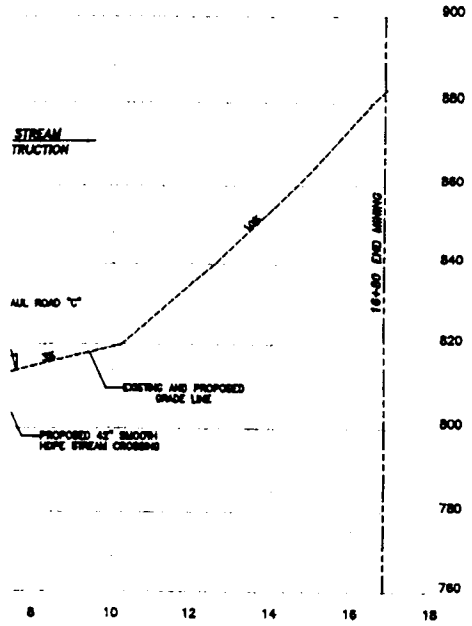
(6) 25% OF THE ROCK, BY VOLUME, SHALL BE IN SIZES SLIGHTLY LARGER THAN THE D75 AND THE REMAINING 75% SHALL BE SMALLER, INCLUDING SUFFICIENT SAND AND GRAVEL TO FILL THE VOIDS AROUND THE LARGER ROCK. THE ROCK SHALL BE PLACED IN THE "BANKFULL" CHANNEL PORTION OF THE CHANNEL BY OVERDIG/MIXING AND PLACING IT AT A DEPTH OF 1.5 TIMES THE D75 SIZE. PROPERLY SIZED BEDDING MATERIAL SHALL BE PLACED TO A THICKNESS APPROXIMATELY ONE HALF THE D75, BUT TYPICALLY NOT LESS THAN SIX INCHES. FILTER FABRIC (SUCH AS MIRAFI 140N) MAY ALSO BE USED UNDER THE BEDDING MATERIAL TO MINIMIZE PIPING. ADDITIONAL "TOP DRESSING" WITH SAND AND GRAVEL MAY BE NECESSARY TO FILL THE VOIDS AROUND THE LARGER ROCK.

FOR SLOPES 4-10%:

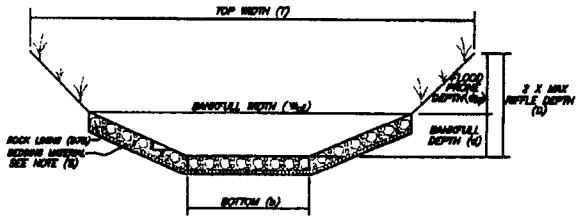
(7) CHANNEL LINING CAN BE SIZED AS DESCRIBED ABOVE TO PROVIDE A STABLE SLOPE FROM THE CREST OF EACH STEP DOWNSTREAM TO THE MAXIMUM DEPTH OF THE NEXT POOL. ALTERNATIVELY, THE CONFIGURATION AND MATERIALS DESCRIBED BELOW FOR SLOPES GREATER THAN 10% MAY BE USED FOR THE 4-10% RANGE AS WELL.



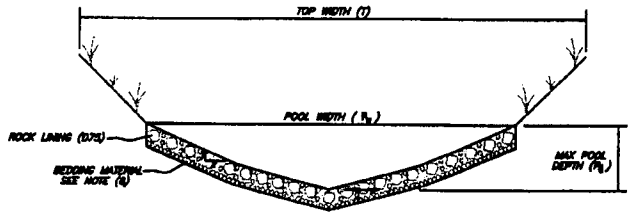
4%+ RIFFLE CROSS SECTION



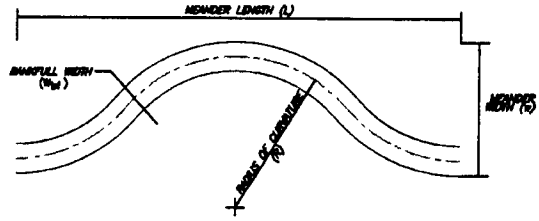
FILE OF STREAM "H"
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 20'



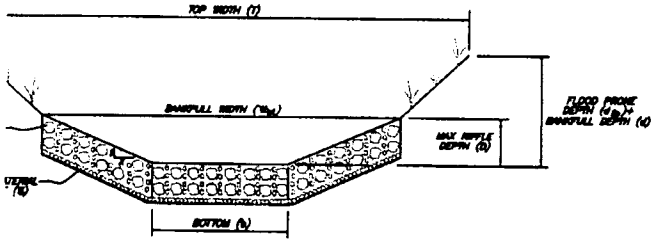
2-4% CHANNEL CROSS SECTION



4%+ POOL CROSS SECTION



CHANNEL PATTERN



4%+ RIFFLE CROSS SECTION

W_{bf} – BANKFULL WIDTH – THE SURFACE WIDTH OF THE STREAM MEASURED AT THE STAGE OF THE BANKFULL DISCHARGE.

D – MAX RIFFLE DEPTH – THE MAXIMUM DEPTH OF A CHANNEL AT A RIFFLE. THE RIFFLE IS THE SHALLOW AND STEEP FACET OF THE CHANNEL.

d_{fp} – FLOOD PRONE DEPTH

R – RADIUS OF CURVATURE – THE RADIUS OF THE BENDS IN THE BANKFULL CHANNEL.

d – BANKFULL DEPTH

b – CHANNEL BOTTOM WIDTH

T – TOP WIDTH OF CHANNEL

W – MEANDER WIDTH – THE LATERAL EXTENT OF THE BANKFULL CHANNEL MEASURED PERPENDICULAR TO THE VERTICAL FALL OF THE CHANNEL.

L – MEANDER LENGTH – THE STRAIGHT LINE DISTANCE THROUGH ONE WAVELENGTH OF THE CHANNEL.

F – FLOOD PRONE WIDTH.

S – SINUOSITY – THE RATIO OF STREAM LENGTH TO VALLEY DISTANCE. IT INDICATES THE DEGREE OF SERPENTINE OR WAVY FORM OF THE CHANNEL.

P_w – POOL WIDTH – WIDTH OF BANKFULL CHANNEL AT POOL.

P_d – MAXIMUM POOL DEPTH – THE MAXIMUM DEPTH OF THE CHANNEL AT A POOL. A POOL IS THE DEEP AND FLAT FACET OF THE CHANNEL.

P_l – POOL TO POOL LENGTH – HORIZONTAL DISTANCE BETWEEN TWO POOLS IN A CHANNEL PROFILE.

CHART FOR CHANNELS OF 2-4%

Station	Watershed	BCR 6 hour Peak Flow Q(1.5yr)	Q(100yr)	Grade	W_{bf} typ.	T typ.	D typ.	d_{fp} typ.	d (ft)	b (ft)	Y (ft)	z (ft)	MEANDERING CHANNEL PATTERN w(ft) typ.	w min.	w max.	L(ft) typ.	L min.	L max.	R(ft) typ.	R min.	R max.	S typ.	S min.	S max.	$n_{bankfull}$ (typ)	D_{75} (in.)
3 to 7+70	84Ac.	78cfs	436cfs	1%	20.8	53.3	1.8	2.3	1.7	14.2	20.3	2	—	—	83	—	—	209	—	—	62	1.20	1.10	1.30	0.07	6"
to 10+25	88Ac.	47cfs	186cfs	3%	13.8	22.3	1.3	1.5	1.1	8.5	12.3	2	37	28	56	111	83	139	34	26	42	1.20	1.10	1.30	4.21	6"
to 8+84	18Ac.	19cfs	86cfs	3%	8.9	15.8	0.9	1.1	0.8	6.7	10.3	2	27	20	39	76	59	95	25	20	30	1.20	1.10	1.30	2.91	6"
3 to 1+82	94Ac.	19cfs	118cfs	2%	10.7	17.1	1.0	1.2	0.9	7.3	10.1	2	29	21	43	86	64	107	27	21	32	1.20	1.10	1.3	4.14	6"

CHART FOR CHANNELS OF >4%

Station	Watershed	BCR 6 hour Peak Flow Q(1.5yr)	Q(100yr)	Grade	W_{bf} typ.	T (ft) typ.	D (ft) typ.	d_{fp} (ft)	d (ft)	b (ft)	Y (ft)	z (ft)	POOL DIMENSIONS P_w typ.	P_w min.	P_w max.	P_d typ.	P_d min.	P_d max.	P_l typ.	P_l min.	P_l max.	S typ.	S min.	S max.	$n_{bankfull}$ (typ)	D_{75} (in.)
to 18+80	98Ac.	47cfs	180cfs	10%	13.8	17.8	2.5	2.8	1.9	6.1	16.6	2	16.3	13.0	18.8	4.1	3.4	4.7	29.3	23.0	36.8	1.10	1.05	1.30	3.88	30"
to 10+03	38Ac.	38cfs	120cfs	7%	10.8	13.4	1.7	1.9	1.4	4.8	13.3	2	12.3	10.3	14.4	3.1	2.6	3.6	22.8	17.5	27.8	1.05	1.00	1.10	2.63	18"
to 1+16	8Ac.	10cfs	31cfs	8%	7.7	10.1	1.2	1.4	1.1	3.5	10.8	2	8.3	7.7	10.8	2.3	1.9	2.7	17.0	13.2	20.8	1.05	1.00	1.10	1.63	30"
to 3+87	8Ac.	10cfs	31cfs	14%	6.6	8.8	1.3	0.9	1.7	1.5	6.1	1	7.0	6.6	8.2	2.8	2.1	2.9	11.3	8.8	13.3	1.05	1.00	1.10	2.47	36"

DESIGN STORM, BCR TYPE II
1.5 YR, 6 HR STORM = 1.8"
100 YR, 6 HR STORM = 3.6"

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS COMPLIES WITH THE REQUIREMENTS OF RULE 1501:13-9-04 OF THE OHIO ADMINISTRATIVE CODE.

JOHN M. PELTZ, P.E./63629 DATE

ADDENDUM PART 3 (E) 2

NATURAL STREAM RESTORATION

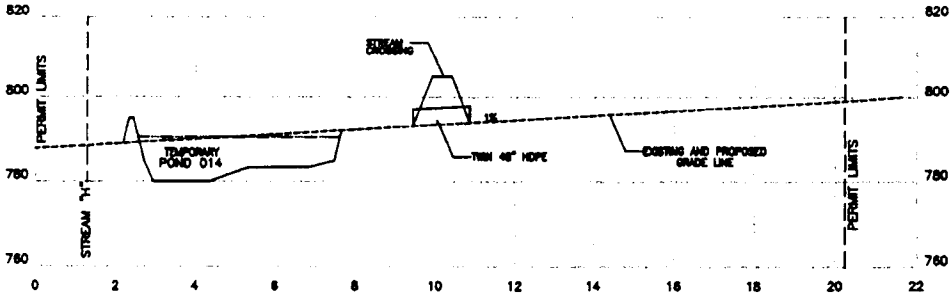
Permit No. (ADAMSVILLE 96)

OXFORD MINING CO., INC.

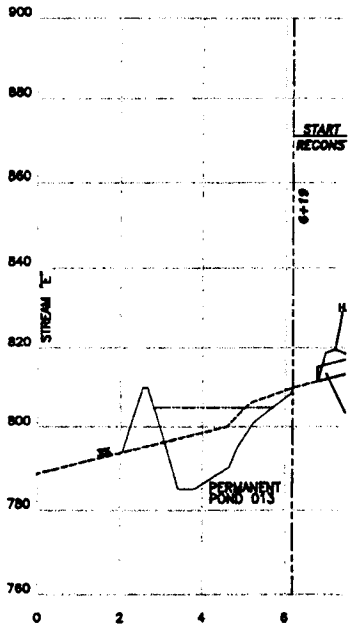
Located in
LOTS 13 & 18
FOURTH QUARTER OF T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

SCALE: AS NOTED
DATE PREPARED: JUNE 13, 2002
DATE REVISED: APRIL 13, 2004

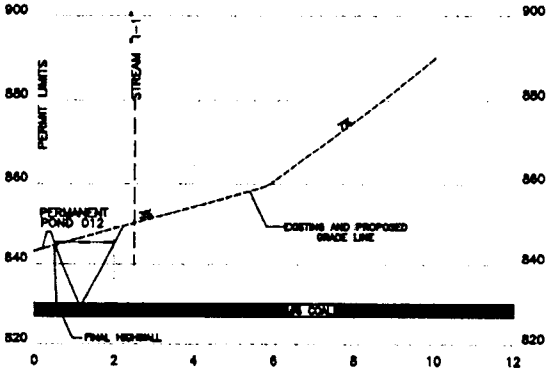
PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3469



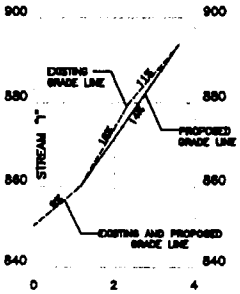
PROFILE OF STREAM "E"
SCALES: HORIZONTAL 1" = 300'
VERTICAL 1" = 30'



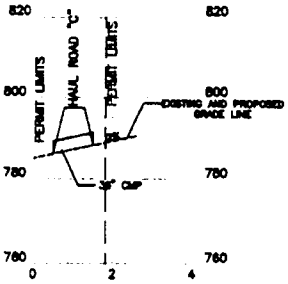
PRO
SCA



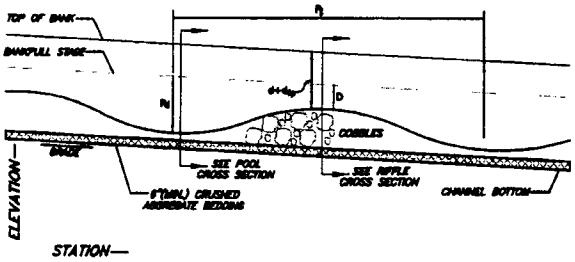
PROFILE OF STREAM "I"
SCALES: HORIZONTAL 1" = 300'
VERTICAL 1" = 30'



PROFILE OF STREAM "I-1"
SCALES: HORIZONTAL 1" = 300'
VERTICAL 1" = 30'



PROFILE OF STREAM "G"
SCALES: HORIZONTAL 1" = 300'
VERTICAL 1" = 30'



4%+ TYPICAL CHANNEL PROFILE

ROCK LINING (D75)

BEDDING M
SEE NOTE

Stream	
E	2+11
H	6+19
I	3+51
G	0+2

NOTES:

(1) DESIGN CRITERIA IS BASED ON "A NATURAL CHANNEL DESIGN PROCEDURE FOR STEEP AND MODERATELY STEEP STREAMS" ISSUED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF MINES AND RECLAMATION AND DIVISION OF SOIL AND WATER CONSERVATION DATED NOVEMBER 18, 1999.

(2) THE ABOVE MENTIONED DESIGN CRITERIA DOES NOT CONSIDER CHANNELS WITH SLOPES OF LESS THAN 3%. THEREFORE, FORMULAS FOR 3–4% CHANNELS WERE USED TO DESIGN THE 1% CHANNELS IN THIS PLAN. ASSUMING THAT DESIGN VALUES WOULD INCREASE AS THE CHANNEL SLOPE DECREASED, ONLY MAXIMUM DESIGN VALUES SHALL BE USED FOR 1% CHANNELS.

(3) THESE NATURAL CHANNELS ARE DESIGNED TO ACCOMMODATE THE 1.5YEAR, 6HOUR STORM WITHIN THE BANKFULL DUMPED ROCK LIMITS. THE ENTIRE CHANNEL WILL ACCOMODATE THE 100YEAR, 6HOUR STORM. THE CHANNEL SIDE SLOPES ABOVE THE "BANKFULL" CHANNEL SHALL BE WELL VEGETATED.

(4) MINIMUM AND MAXIMUM VALUES ARE TO BE UTILIZED TO FIT THE PROPOSED CHANNEL INTO THE EXISTING LANDSCAPE. TYPICAL VALUES SHALL BE UTILIZED WHEREVER POSSIBLE.

(5) ALL ROCK SHALL BE OF DURABLE MATERIAL.

(6) 25% OF THE ROCK, BY VOLUME, SHALL BE IN SIZES SLIGHTLY LARGER THAN THE D75 AND THE REMAINING 75% SHALL BE SMALLER, INCLUDING SUFFICIENT SAND AND GRAVEL TO FILL THE VOIDS AROUND THE LARGER ROCK. THE ROCK SHALL BE PLACED IN THE "BANKFULL" CHANNEL PORTION OF THE CHANNEL BY OVEREXCAVATING AND PLACING IT AT A DEPTH OF 1.5 TIMES THE D75 SIZE. PROPERLY SIZED BEDDING MATERIAL SHALL BE PLACED TO A THICKNESS APPROXIMATELY ONE HALF THE D75, BUT TYPICALLY NOT LESS THAN SIX INCHES. FILTER FABRIC (SUCH AS MIRAFI 140N) MAY ALSO BE USED UNDER THE BEDDING MATERIAL TO MINIMIZE PIPING. ADDITIONAL "TOP DRESSING" WITH SAND AND GRAVEL MAY BE NECESSARY TO FILL THE VOIDS AROUND THE LARGER ROCK.

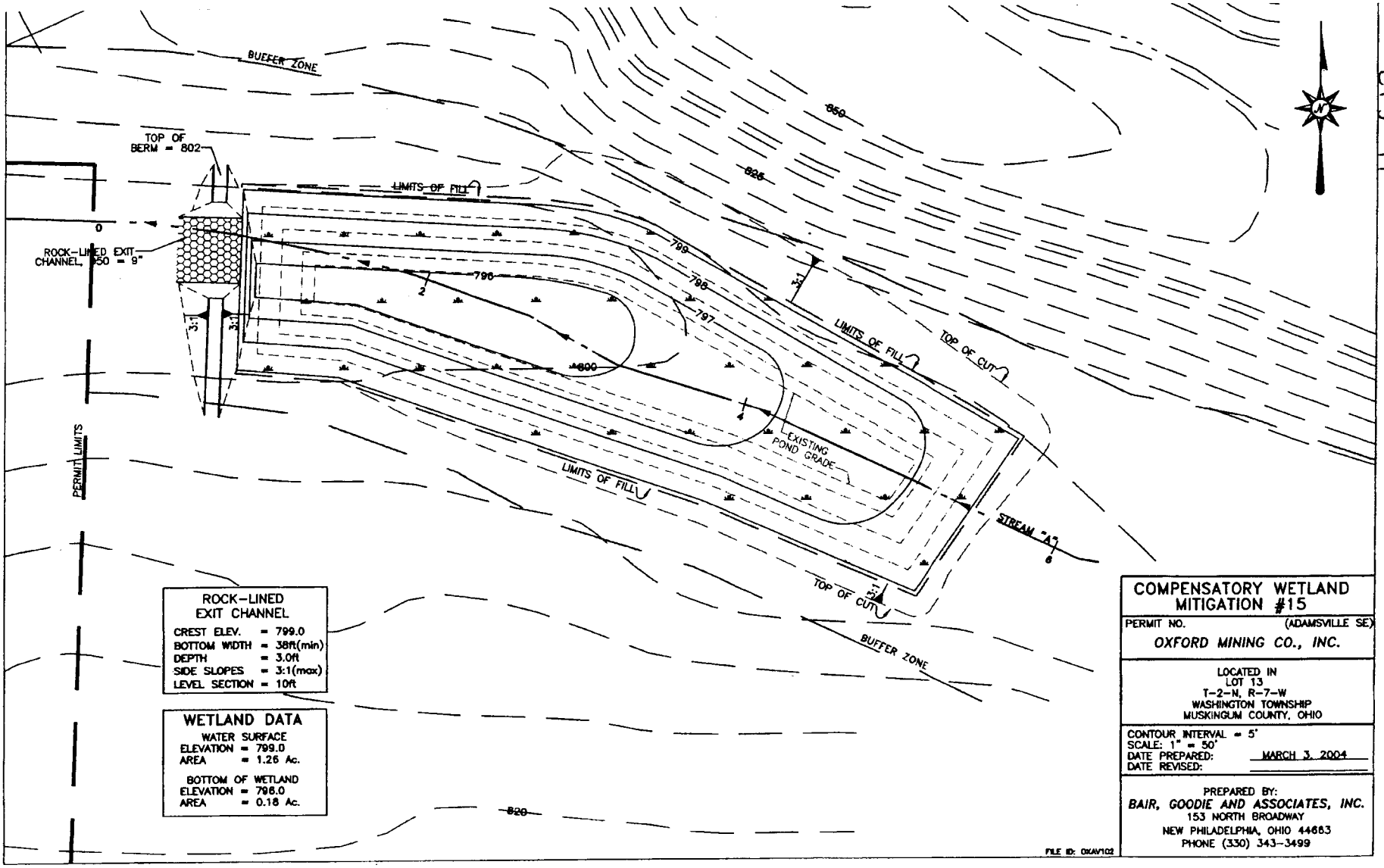
FOR SLOPES 4–10% :

(7) CHANNEL LINING CAN BE SIZED AS DESCRIBED ABOVE TO PROVIDE A STABLE SLOPE FROM THE CREST OF EACH STEP DOWNSTREAM TO THE MAXIMUM DEPTH OF THE NEXT POOL. ALTERNATIVELY, THE CONFIGURATION AND MATERIALS DESCRIBED BELOW FOR SLOPES GREATER THAN 10% MAY BE USED FOR THE 4–10% RANGE AS WELL.

FOR SLOPES GREATER THAN 10% :

(8) A STRUCTURAL FUNCTION IS REQUIRED OF THE BED MATERIAL OF CASCADE–POOL CHANNELS WHERE THE STEPS FORM A NEAR–VERTICAL DROP FROM THE TOP OF THE STEP TO THE BOTTOM OF THE POOL. TO PREVENT THE LARGE ROCKS FROM BECOMING UNDERMINED, FOOTER ROCKS MUST BE PLACED BELOW AND DOWNSTREAM FROM THE LARGE ROCKS. LOGS CAN ALSO BE USED TO CONSTRUCT THE NEAR–VERTICAL DROPS. AS WITH LOWER GRADIENT CHANNELS, SMALLER ROCK, GRAVEL AND SAND CAN BE USED TO FILL THE VOIDS AROUND THE LARGER ROCK.

Stream	St
H	10+23
I	5+84
I-1	0+00
I-1	1+16



ROCK-LINED EXIT CHANNEL

CREST ELEV.	= 799.0
BOTTOM WIDTH	= 38ft(min)
DEPTH	= 3.0ft
SIDE SLOPES	= 3:1(max)
LEVEL SECTION	= 10ft

WETLAND DATA

WATER SURFACE
ELEVATION = 799.0
AREA = 1.26 Ac.

BOTTOM OF WETLAND
ELEVATION = 796.0
AREA = 0.18 Ac.

FILE ID: OXAV102

COMPENSATORY WETLAND MITIGATION #15

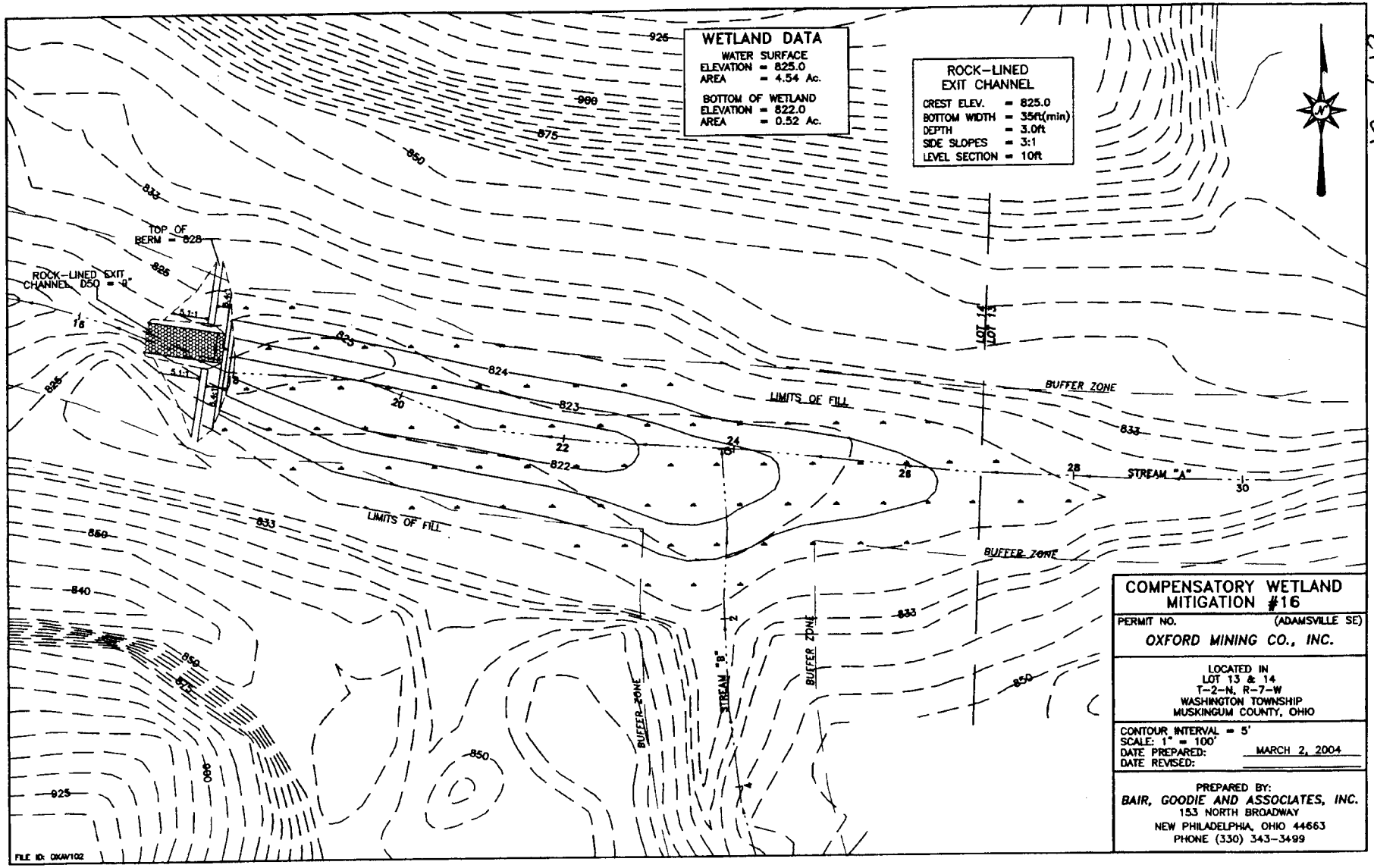
PERMIT NO. (ADAMSVILLE SE)

OXFORD MINING CO., INC.

LOCATED IN
LOT 13
T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

CONTOUR INTERVAL = 5'
SCALE: 1" = 50'
DATE PREPARED: MARCH 3, 2004
DATE REVISED:

PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3499



COMPENSATORY WETLAND MITIGATION #16

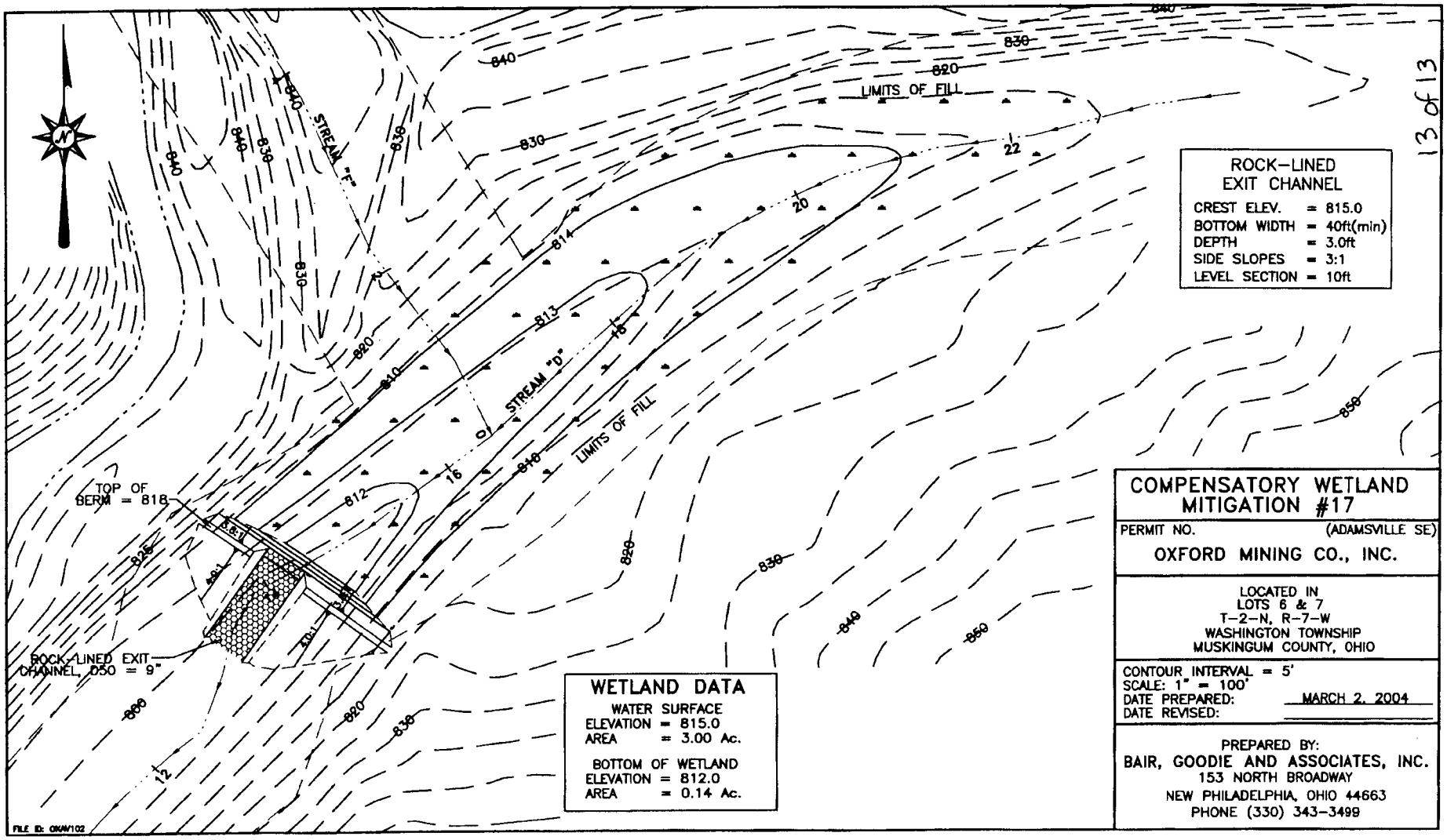
PERMIT NO. (ADAMSVILLE SE)

OXFORD MINING CO., INC.

LOCATED IN
LOT 13 & 14
T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

CONTOUR INTERVAL = 5'
SCALE: 1" = 100'
DATE PREPARED: MARCH 2, 2004
DATE REVISED:

PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3499



ROCK-LINED EXIT CHANNEL

CREST ELEV.	= 815.0
BOTTOM WIDTH	= 40ft(min)
DEPTH	= 3.0ft
SIDE SLOPES	= 3:1
LEVEL SECTION	= 10ft

WETLAND DATA

WATER SURFACE
ELEVATION = 815.0
AREA = 3.00 Ac.

BOTTOM OF WETLAND
ELEVATION = 812.0
AREA = 0.14 Ac.

COMPENSATORY WETLAND MITIGATION #17

PERMIT NO. (ADAMSVILLE SE)

OXFORD MINING CO., INC.

LOCATED IN
LOTS 6 & 7
T-2-N, R-7-W
WASHINGTON TOWNSHIP
MUSKINGUM COUNTY, OHIO

CONTOUR INTERVAL = 5'
SCALE: 1" = 100'
DATE PREPARED: MARCH 2, 2004
DATE REVISED:

PREPARED BY:
BAIR, GOODIE AND ASSOCIATES, INC.
153 NORTH BROADWAY
NEW PHILADELPHIA, OHIO 44663
PHONE (330) 343-3499