



Public Notice

U.S. Army Corps
of Engineers
Tulsa District

Reply To:

U.S. Army Corps of Engineers
ATTN: Regulatory Office
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

SWT-2017-339
Public Notice No.

November 18, 2019
Public Notice Date

December 17, 2019
Expiration Date

PURPOSE

The purpose of this public notice is to inform you of a proposal for work in which you might be interested and to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest.

SECTION 10

The U.S. Army Corps of Engineers is directed by Congress through Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) to regulate all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States. The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

SECTION 404

The U.S. Army Corps of Engineers is directed by Congress through Section 404 of the Clean Water Act (33 U.S.C. 1344) to regulate the discharges of dredged and fill material into all waters of the United States. These waters include lakes, rivers, streams, mudflats, sandflats, sloughs, wet meadows, natural ponds, and wetlands adjacent to other waters. The intent of the law is to protect these waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical, and biological integrity.

NOTICE TO PUBLISHERS

This public notice has been provided as a public service and may be reprinted at your discretion. However, any cost incurred as a result of reprinting or further distribution shall not be a basis for claim against the Government.



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
2488 EAST 81ST STREET
TULSA, OKLAHOMA 74137-4290

Application No. SWT-2017-339

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS
AND
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ)
(30-DAY COMMENT PERIOD)

Interested parties are hereby notified that the District Engineer (DE) has received an application for a Department of the Army (DA) permit and water quality certification pursuant to Sections 404 and 401 of the Clean Water Act (CWA). The ODEQ hereby incorporates this public notice and procedure as its own public notice and procedure by reference thereto.

Applicant: Mr. Todd Green
American Environmental Landfill (AEL)
207 North 117th West Avenue
Sands Springs, OK 74063

Agent: Mr. Wade Miller
SCS Engineers
1817 Commons Circle, Suite 1
Yukon, OK 73099

Location: The proposed project is in the North ½ of Section 35 and West ½ of Section 36, Township 20 North, Range 10 East, in Sand Springs, Osage County, Oklahoma. The project site can be found on the Wekiwa Oklahoma 7.5 Minute USGS Quadrangle map at North Latitude 36.165971 and West Longitude 96.199087.

Project Description: The application is for an after-the-fact (ATF) permit for placement of fill material into an unnamed tributary of Arkansas River and also includes the placement of fill material for the proposed lateral AEL expansion of the existing, active solid waste landfill.

Purpose: The overall purpose of this work is for an expansion of the primary destination of solid waste for the Tulsa Region. The proposed landfill expansion would allow AEL to continue to receive and manage solid waste for approximately next 120 years. The proposal would construct interlocking impervious cell liners, which will expand the storage capacity of the landfill. The project is not a water dependent activity and there are no special aquatic sites located within the project site.

Summary Table of Impacts:

Original Proposal					
Number or Location	Impact Activity	Type of Water	Type of Fill Material	Quantity of Material (CY) below OHWM	Footprint (AC and/or LF)
Unnamed Tributary of the Arkansas River Stream 1 North	Placement of Fill Material	Stream	Earthen Material/Grey shale	79	1,283 LF 0.095 AC
Unnamed Tributary of the Arkansas River (ATF) Stream 1 Central	Placement of Fill Material	Stream	Earthen Material/Grey Shale	145	1,300 LF 0.135 AC
Unnamed Tributary of the Arkansas River Stream 1 Southern	Placement of Fill Material	Stream	Earthen Material/Grey Shale	172	1,934 LF 0.272 AC
cubic yards (cy), ordinary high water mark (OHWM), acre (ac), linear feet (lf)					

Description of Work: The applicant's proposal would eliminate this reach of the stream channel by the placement of fill material using 396 CY of compacted clay and HDPE Geomembrane for approximately 4,517 LF (0.502 AC) of the unnamed tributary of the Arkansas River. Also, the applicant proposes to construct a composite liner for a solid waste landfill. The fill material may consist of grey shale and earthen material. The work would be performed using conventional earth moving equipment.

Avoidance and Minimization Information: The applicant provided the following statement with regard to how avoidance and minimization of impacts to aquatic resources was incorporated into the project plan:

This applicant did not provide a statement to avoidance and minimization of impacts to aquatic resources.

Mitigation: Furthermore, the applicant proposes the following as compensatory mitigation for the existing impact and additional unavoidable impacts to aquatic resources expected from the proposed project:

The mitigation stream (unnamed tributary of Shell Creek) would be shorter than the impacted stream channel (2,920 LF [0.67 AC]). The proposed mitigation channel would begin at a spillway located at the southeast corner of a farm pond and traverse east to a second pond. The constructed channel would be sinuous in nature, including rocks and boulders in and along the channel to re-establish desired condition that simulate the reference stream channel and establish the riparian area. An additional 1.85 AC of existing wetlands/ponds/streams channel will be included as preservation.

This mitigation plan is the applicant's proposal. The Corps has made no determination at this time with regard to the adequacy of the proposed mitigation relative to the federal mitigation rules and guidance, including Tulsa District's Mitigation and Monitoring Guidelines. Compensatory Mitigation for unavoidable impacts may be required to ensure that this activity requiring a Section 404 permit, if issued, complies with the Section 404 (b)(1) Guidelines. The Corps bears the final decision on the need for and extent of mitigation required if the project proposed herein is authorized.

Government Authorizations obtained or received: The Corps has not reviewed any copies of other required permits.

Project Setting: This project is located within the Oklahoma Ecoregion of Cross Timber Transition, which is part of the Northern Cross Timbers geomorphic province. The Transition is characterized by a series of woodland and prairies. The project is in the floodplain of the Arkansas River.

Existing Condition: The parcel of land is comprised woodlands, savanna, and tallgrass prairies in the uplands. The intermittent stream channel is jurisdictional waters of the United States. The primary use for the land historically was for woodlands.

Cultural Resources: The DE is responsible to ensure compliance with the National Historic Preservation Act of 1966 (NHPA) (Public Law 89-665), as amended, and other cultural resources laws and Executive Orders. A preliminary review of the state's records has been completed for the presence of sites included in, or eligible for, inclusion in the National Register of Historic Places, as well as the Oklahoma Landmark Inventory Database. There are no known historic properties, as defined by the NHPA, in or within the vicinity of the proposed permit area.

Threatened and Endangered Species: The following federally listed species are known to occur in the vicinity or are listed for the county in which the proposed action is located: least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*) and American burying beetle (*Nicrophorus americanus*). A copy of this notice is being furnished to the U.S. Fish and Wildlife Service and appropriate state agencies.

We are currently assessing the potential effects of the proposed action on these species and will comply with the Endangered Species Act with regard to any effect of our decision on this permit application.

Evaluation Factors: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof: 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 ownerships, and, in general, the needs and welfare of the people. A permit will be denied if the discharge does not comply with the Environmental Protection Agency's 404(b)(1) Guidelines. Subject to the 404(b)(1) Guidelines and any other applicable guidelines or criteria, a permit will be granted unless the DE determines that it would be contrary to the public interest.

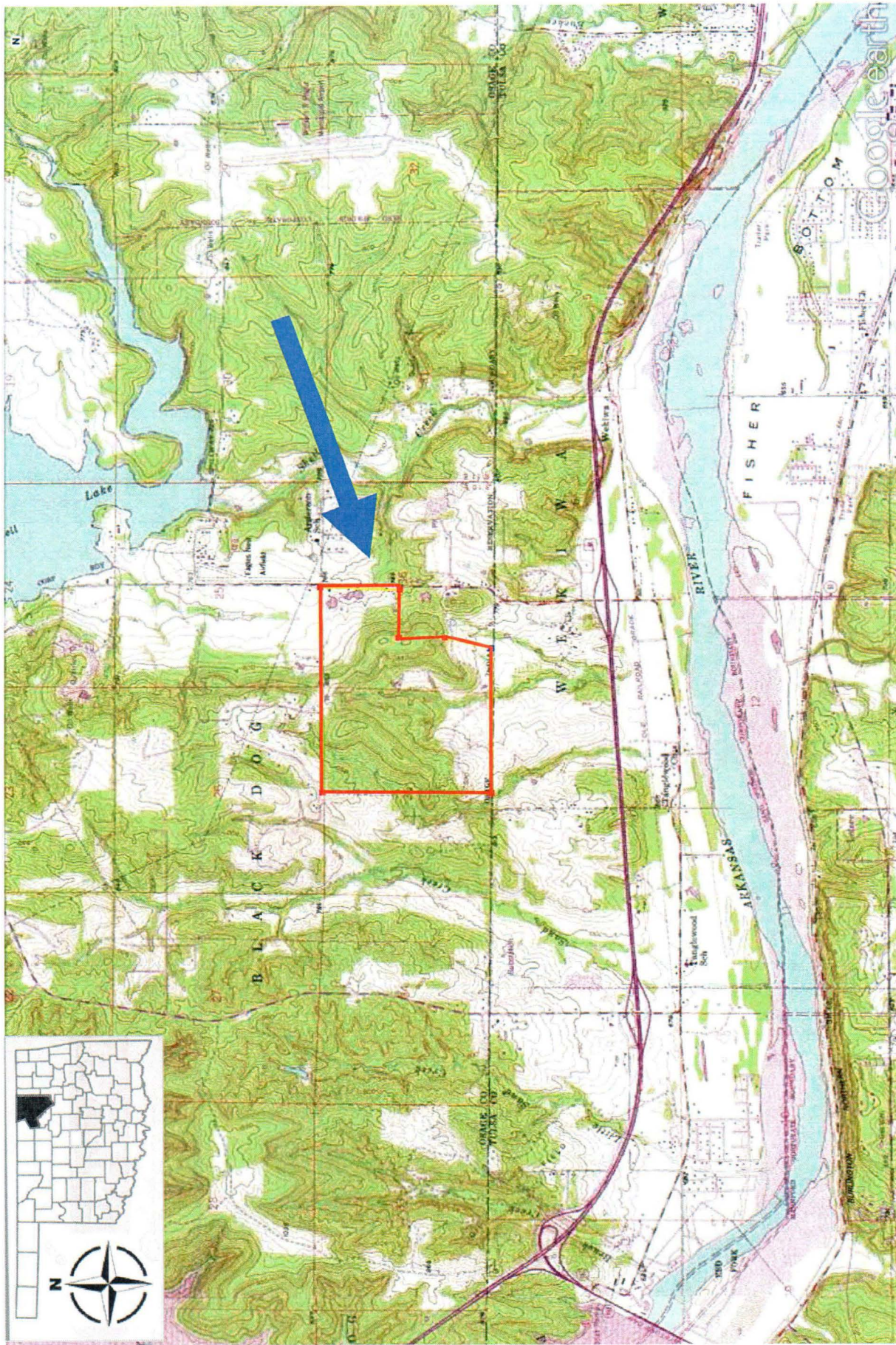
Plans and Data: Plans showing the location of the proposed activity and other data are enclosed with this notice (Enclosure 1 of 8). If additional information is desired, it may be obtained from Mr. Marcus Ware, Tulsa District Corps of Engineers, ATTN: Regulatory Office, 2488 East 81st Street, Tulsa, OK 74137; or telephone 918-669-7400.

Comments: In order to consider and evaluate the impacts of this proposed activity the Corps is soliciting comments from the public, federal, state, and local agencies and officials, floodplain administrators, state historic preservation officers, Indian tribes, and other interested parties. Comments concerning the issuance of this permit should be received by the DE no later than the expiration date of this public notice. You may submit comments to mailing address Tulsa District Corps of Engineers, ATTN: Regulatory Office, 2488 East 81st Street, Tulsa, OK 74137; or email CESWT-RO@usace.army.mil, please include the public notice number SWT-2017-339 in the subject line of the message.

Comments concerning water quality impacts will be forwarded to ODEQ for consideration in issuing a Section 401 Water Quality Certification for the proposed project. Work may **not** commence until decisions have been made on both Sections 401 and 404.

Andrew R. Commer
Chief, Regulatory Office

Enclosures



SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 1 of 8

750 375 0
SCALE: 1"=750'

THIS DRAWING IS PART
OF A BOUND SET
SEALED BY FLOYD
COTTER, A LICENSED
PROFESSIONAL
ENGINEER, ON OCTOBER
7, 2019. SEE COVER
PAGE FOR
PROFESSIONAL
ENGINEERS SEAL.

LEGEND

- 5' EXISTING CONTOUR
- 25' EXISTING CONTOUR
- 5' EXPANSION FINAL COVER CONTOUR
- 25' EXPANSION FINAL COVER CONTOUR
- EXISTING PRODUCT LINE
- PROPERTY BOUNDARY
- EXISTING MSW LANDFILL AREA BOUNDARY
- PROPOSED EXPANSION BOUNDARY
- STREAM
- WETLAND
- POND
- PROPOSED MITIGATION-PROJECT AREA

NOTES:

1. EXISTING TOPOGRAPHY, PROPERTY BOUNDARY AND ROADWAYS FROM SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 7, 2018.
2. EXISTING PRODUCT LINE FROM SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED
3. EXISTING STREAMS, WETLANDS, AND PONDS LOCATED USING NATIONAL WETLANDS INVENTORY MAP AND SITE VISITS PERFORMED BY SCS ENGINEERS.
4. FINAL COVER CONTOURS SHOWN ARE FOR CONCEPTUAL PURPOSES ONLY.

SCS ENGINEERS

8575 WEST 110TH ST. SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO.	27219016.00	DATE	01/11/19	Q/A FOR	BY	VW
DESIGN	BY	ZEM	DATE	01/11/19	BY	WM
DESIGN	BY	MPP	DATE	01/11/19	BY	WM

SWT-2017-339

AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma

Enclosure 2 of 8

SHEET TITLE:

PROPOSED LANDFILL EXPANSION

PROJECT TITLE:

**PROPOSED EXPANSION AND STREAM
MITIGATION DESIGN**

DATE:

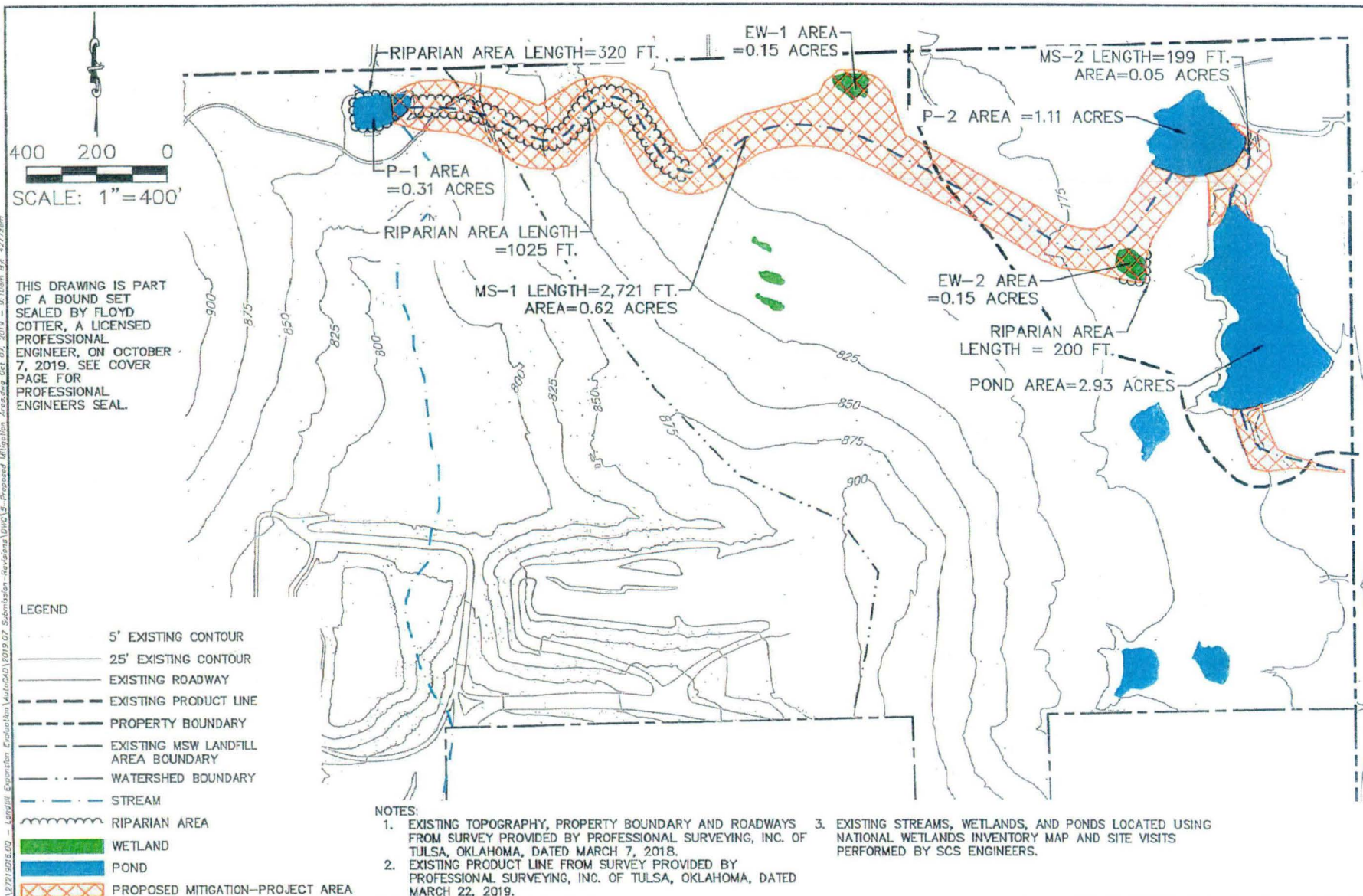
10/7/19

SCALE:

SCALE

DRAWING NO.

4 of 13



SCS ENGINEERS

8575 WEST 110TH ST. SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27219016.00	CHK. BY: ZEM	Q/A BY: VW
DSK. BY: ZEM	CHK. BY: MPP	PROJ. MGR: WM

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 3 of 8

SHEET TITLE:

PROPOSED MITIGATION AREA

PROJECT TITLE:

**PROPOSED EXPANSION AND STREAM
MITIGATION DESIGN**

DATE:

10/7/19

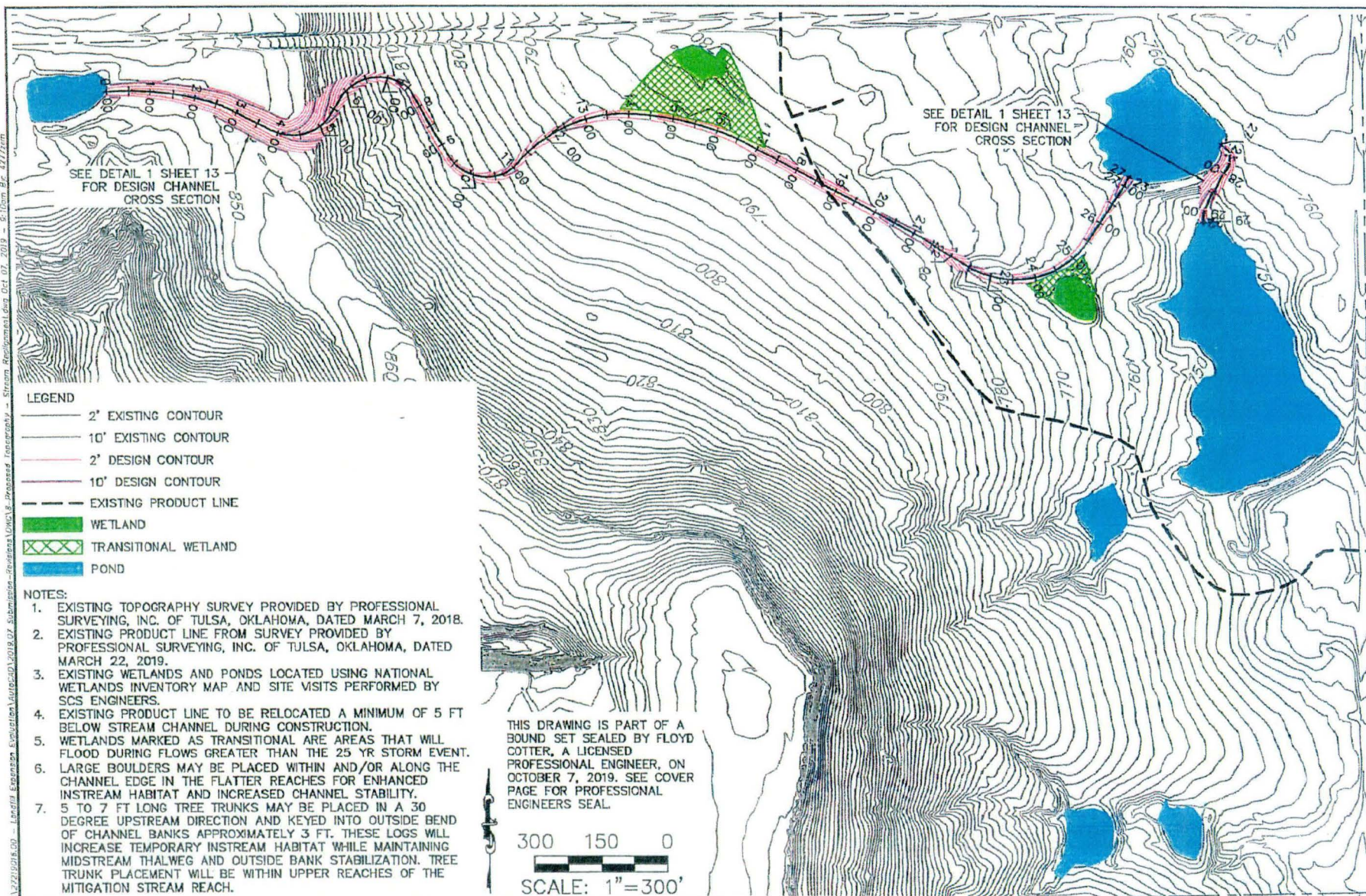
SCALE:

AS SHOWN

DRAWING NO.

5 of 13

C:\Users\jason\Documents\Projects\AEL Landfill\SWT-2017-339\SWT-2017-339.dwg - 10/7/2019 10:16:00 - Landed Expansion Evaluation\AEL Landfill\SWT-2017-339.dwg - Stream Realignment.dwg Oct 07, 2019 - 9:10am Dr. 4277m



SCS ENGINEERS

8575 WEST 110TH ST. SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27219C16.0D	DRW. BY: ZEM	C/A REV. BY: VW
DWG. BY: ZEM	CHK. BY: MPP	PROJ. MGR: WM

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 4 of 8

SHEET TITLE:

PROPOSED REALIGNMENT (OVERVIEW)

PROJECT TITLE:

PROPOSED EXPANSION AND STREAM MITIGATION DESIGN

DATE:

10/7/19

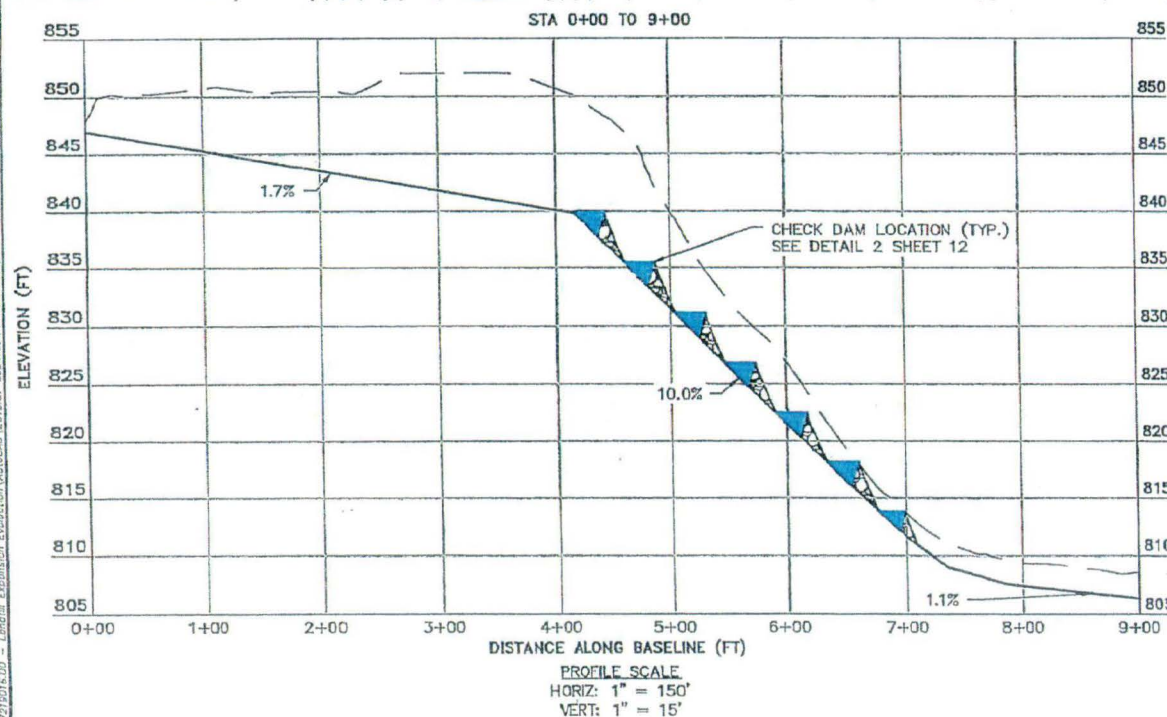
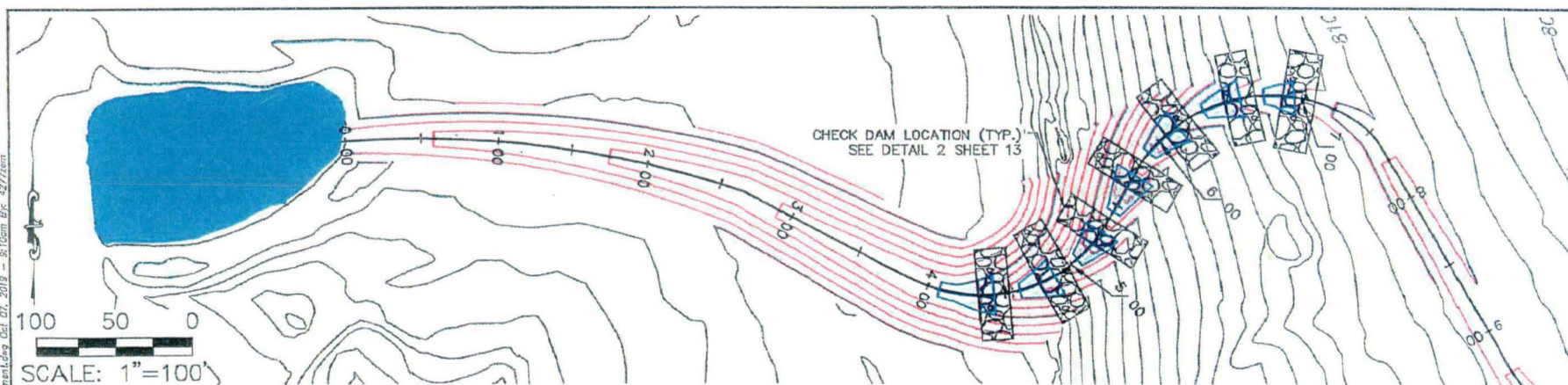
SCALE:

SCALE

DRAWING NO.

8 of 13

A:\American Environmental Landfill\127211016.00 - Landfill Expansion Evaluation\Notes\127211016.00 - Stream Realignment.dwg 07.07.2019 - 8:16am By: 4277ham



- LEGEND**
- 2' EXISTING CONTOUR
 - 10' EXISTING CONTOUR
 - 2' DESIGN CONTOUR
 - 10' DESIGN CONTOUR
 - - - EXISTING PROFILE
 - DESIGN PROFILE
 - POND
 - ▨ CHECK DAM

- NOTES:**
1. EXISTING TOPOGRAPHY SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 7, 2018.
 2. EXISTING PRODUCT LINE FROM SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 22, 2019.
 3. EXISTING WETLANDS AND PONDS LOCATED USING NATIONAL WETLANDS INVENTORY MAP AND SITE VISITS PERFORMED BY SCS ENGINEERS.
 4. EXISTING PRODUCT LINE TO BE RELOCATED A MINIMUM OF 5 FT BELOW STREAM CHANNEL DURING CONSTRUCTION.
 5. WETLANDS MARKED AS TRANSITIONAL ARE AREAS THAT WILL FLOOD DURING FLOWS GREATER THAN THE 25 YR STORM EVENT.
 6. LARGE BOULDERS MAY BE PLACED WITHIN AND/OR ALONG THE CHANNEL EDGE IN THE FLATTER REACHES FOR ENHANCED INSTREAM HABITAT AND INCREASED CHANNEL STABILITY.
 7. 5 TO 7 FT LONG TREE TRUNKS MAY BE PLACED IN A 30 DEGREE UPSTREAM DIRECTION AND KEYED INTO OUTSIDE BEND OF CHANNEL BANKS APPROXIMATELY 3 FT. THESE LOGS WILL INCREASE TEMPORARY INSTREAM HABITAT WHILE MAINTAINING MIDSTREAM THALWEG AND OUTSIDE BANK STABILIZATION. TREE TRUNK PLACEMENT WILL BE WITHIN UPPER REACHES OF THE MITIGATION STREAM REACH.

THIS DRAWING IS PART OF A BOUND SET SEALED BY FLOYD COTTER, A LICENSED PROFESSIONAL ENGINEER, ON OCTOBER 7, 2019. SEE COVER PAGE FOR PROFESSIONAL ENGINEERS SEAL.

SCS ENGINEERS

8575 WEST 110TH ST, SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27219016.00	DESIGN BY ZEM	Q/A REVIEW BY VW
DRAWN BY ZEM	CHECK BY MPP	PROJECT MANAGER WM

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 5 of 8

SHEET TITLE:

PROPOSED REALIGNMENT (0 TO 9+00)

PROJECT TITLE:

**PROPOSED EXPANSION AND STREAM
MITIGATION DESIGN**

DATE:

10/7/19

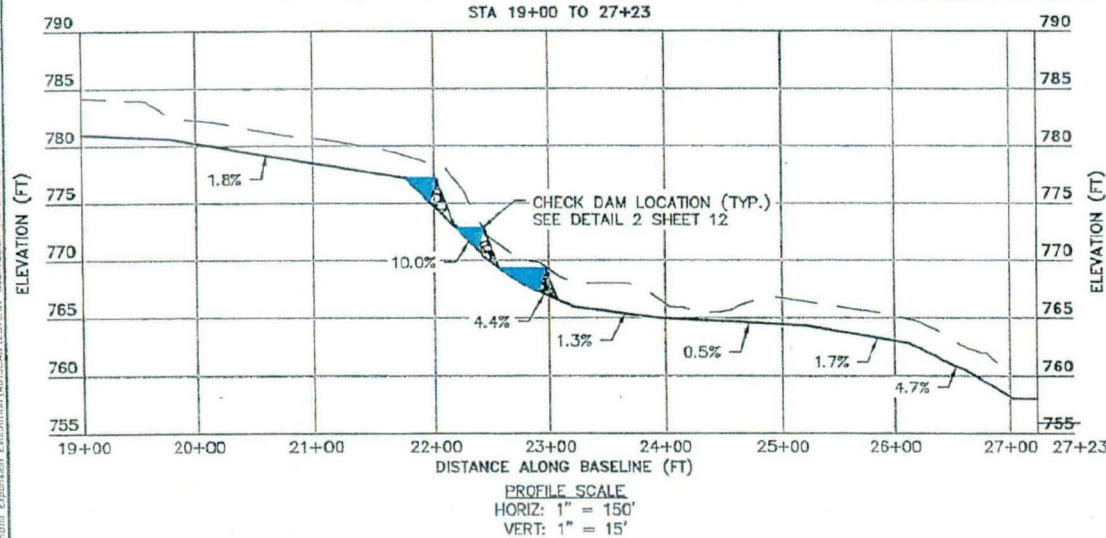
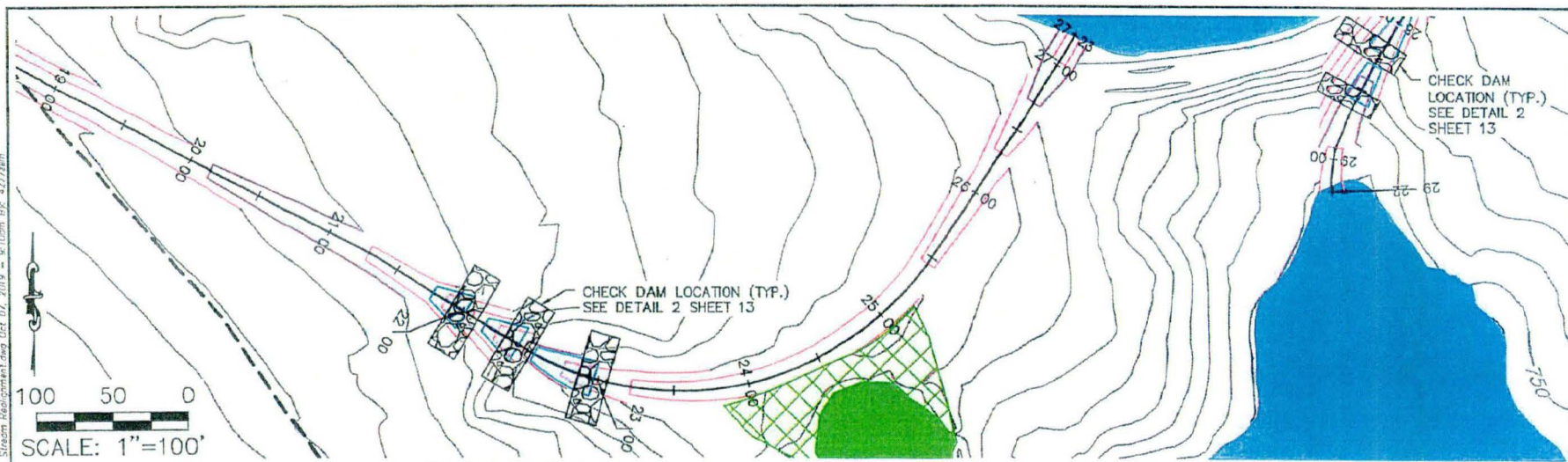
SCALE:

SCALE

DRAWING NO.

9 of 13

C:\Users\scs\Documents\27219016.00 - Landfill Expansion Evaluation\AutoCAD\2019\07 Submission-Revision\UNION-Proposed Topography - Stream Realignment.dwg Oct 07, 2019 - 9:10am By: 4277am



2' EXISTING CONTOUR	EXISTING PRODUCT LINE
10' EXISTING CONTOUR	WETLAND
2' DESIGN CONTOUR	TRANSITIONAL WETLAND
10' DESIGN CONTOUR	POND
EXISTING PROFILE	CHECK DAM
DESIGN PROFILE	

- NOTES:
1. EXISTING TOPOGRAPHY SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 7, 2018.
 2. EXISTING PRODUCT LINE FROM SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 22, 2019.
 3. EXISTING WETLANDS AND PONDS LOCATED USING NATIONAL WETLANDS INVENTORY MAP AND SITE VISITS PERFORMED BY SCS ENGINEERS.
 4. EXISTING PRODUCT LINE TO BE RELOCATED A MINIMUM OF 5 FT BELOW STREAM CHANNEL DURING CONSTRUCTION.
 5. WETLANDS MARKED AS TRANSITIONAL ARE AREAS THAT WILL FLOOD DURING FLOWS GREATER THAN THE 25 YR STORM EVENT.
 6. LARGE BOULDERS MAY BE PLACED WITHIN AND/OR ALONG THE CHANNEL EDGE IN THE FLATTER REACHES FOR ENHANCED INSTREAM HABITAT AND INCREASED CHANNEL STABILITY.
 7. 5 TO 7 FT LONG TREE TRUNKS MAY BE PLACED IN A 30 DEGREE UPSTREAM DIRECTION AND KEYED INTO OUTSIDE BEND OF CHANNEL BANKS APPROXIMATELY 3 FT. THESE LOGS WILL INCREASE TEMPORARY INSTREAM HABITAT WHILE MAINTAINING MIDSTREAM THALWEG AND OUTSIDE BANK STABILIZATION. TREE TRUNK PLACEMENT WILL BE WITHIN UPPER REACHES OF THE MITIGATION STREAM REACH.

THIS DRAWING IS PART OF A BOUND SET SEALED BY FLOYD COTTER, A LICENSED PROFESSIONAL ENGINEER, ON OCTOBER 7, 2019. SEE COVER PAGE FOR PROFESSIONAL ENGINEERS SEAL.

SCS ENGINEERS

8575 WEST 110TH ST. SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27219016.00	CHK. BY ZEM	Q/A BY VW
DSN. BY ZEM	CHK. BY MPP	PROJ. LEAD WM

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 6 of 8

SHEET TITLE:

PROPOSED REALIGNMENT (19+00 TO 27+23)

PROJECT TITLE:

PROPOSED EXPANSION AND STREAM MITIGATION DESIGN

DATE:

10/7/19

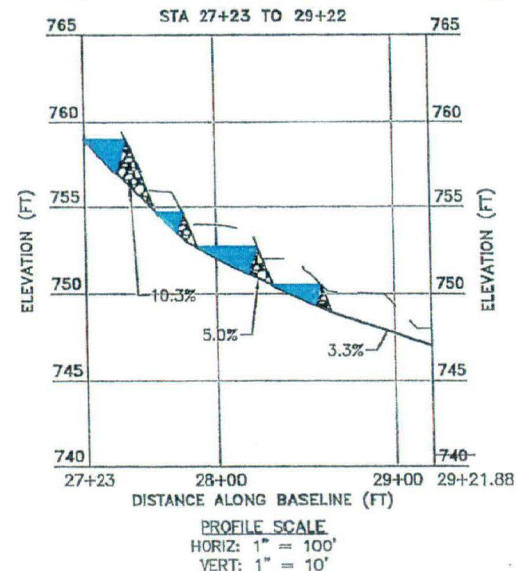
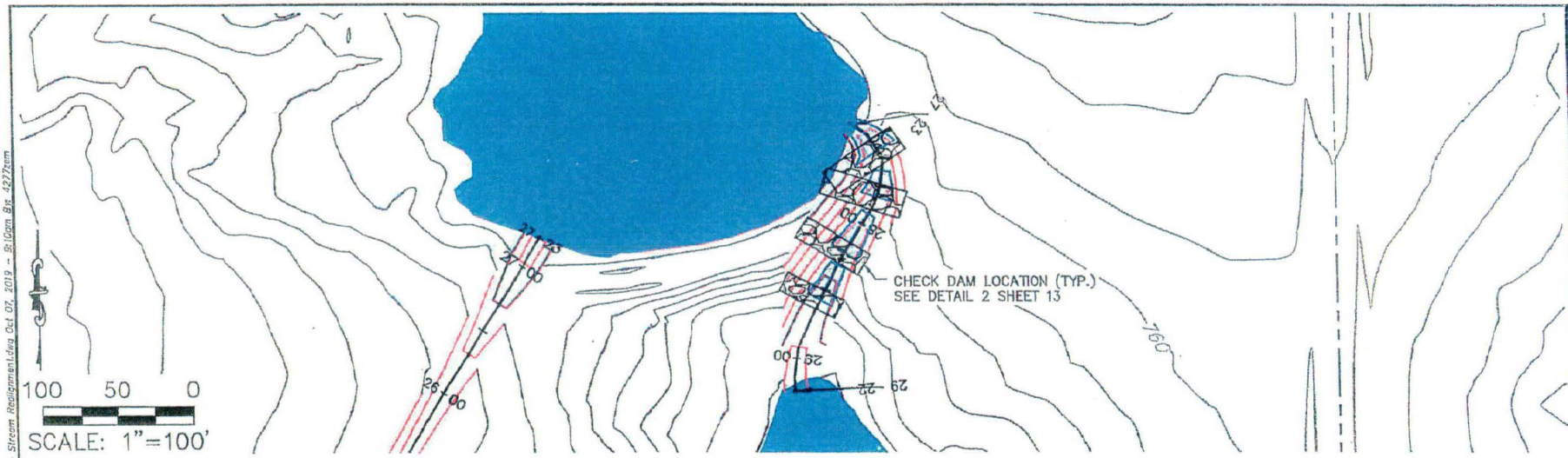
SCALE:

SCALE

DRAWING NO.

11 of 13

KS:Maricopa Environmental Landfill 12275016.00 - Landfill Expansion Evaluation (Miscellaneous) 10/18/2018 07: Submission - Revision (DWG) B-Proposed Topography - Stream Realignment.dwg Oct 07, 2019 - 9:10am Bns 4272rem



- LEGEND**
- 2' EXISTING CONTOUR
 - 10' EXISTING CONTOUR
 - 2' DESIGN CONTOUR
 - 10' DESIGN CONTOUR
 - EXISTING PROFILE
 - DESIGN PROFILE
 - EXISTING PRODUCT LINE
 - WETLAND
 - TRANSITIONAL WETLAND
 - POND
 - CHECK DAM

- NOTES:**
1. EXISTING TOPOGRAPHY SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 7, 2018.
 2. EXISTING PRODUCT LINE FROM SURVEY PROVIDED BY PROFESSIONAL SURVEYING, INC. OF TULSA, OKLAHOMA, DATED MARCH 22, 2019.
 3. EXISTING WETLANDS AND PONDS LOCATED USING NATIONAL WETLANDS INVENTORY MAP AND SITE VISITS PERFORMED BY SCS ENGINEERS.
 4. EXISTING PRODUCT LINE TO BE RELOCATED A MINIMUM OF 5 FT BELOW STREAM CHANNEL DURING CONSTRUCTION.
 5. WETLANDS MARKED AS TRANSITIONAL ARE AREAS THAT WILL FLOOD DURING FLOWS GREATER THAN THE 25 YR STORM EVENT.
 6. LARGE BOULDERS MAY BE PLACED WITHIN AND/OR ALONG THE CHANNEL EDGE IN THE FLATTER REACHES FOR ENHANCED INSTREAM HABITAT AND INCREASED CHANNEL STABILITY.
 7. 5 TO 7 FT LONG TREE TRUNKS MAY BE PLACED IN A 30 DEGREE UPSTREAM DIRECTION AND KEYED INTO OUTSIDE BEND OF CHANNEL BANKS APPROXIMATELY 3 FT. THESE LOGS WILL INCREASE TEMPORARY INSTREAM HABITAT WHILE MAINTAINING MIDSTREAM THALWEG AND OUTSIDE BANK STABILIZATION. TREE TRUNK PLACEMENT WILL BE WITHIN UPPER REACHES OF THE MITIGATION STREAM REACH.

THIS DRAWING IS PART OF A BOUND SET SEALED BY FLOYD COTTER, A LICENSED PROFESSIONAL ENGINEER, ON OCTOBER 7, 2019. SEE COVER PAGE FOR PROFESSIONAL ENGINEERS SEAL.

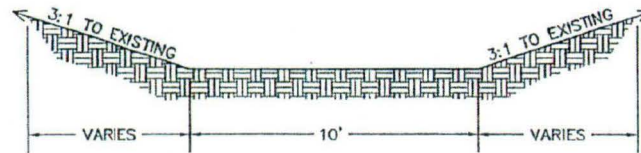
SCS ENGINEERS

8575 WEST 110TH ST. SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

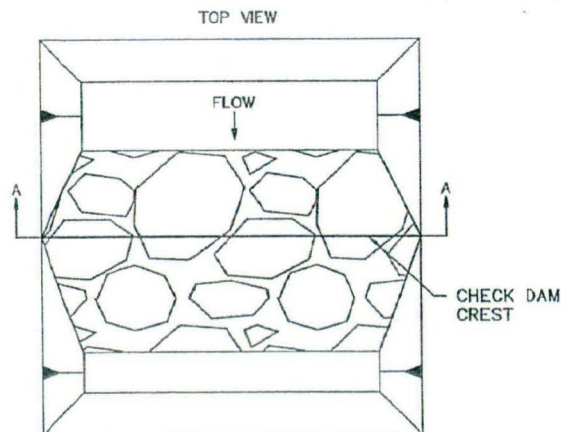
PROJ. NO. 27219016.00	DWN. BY: ZEM	D/A RYS. BY: VW
DWN. BY: ZEM	CHK. BY: MPP	PRCL. INCH: VW

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 7 of 8

<p>SHEET TITLE:</p> <p style="text-align: center;">PROPOSED REALIGNMENT (27+23 TO 29+22)</p> <p>PROJECT TITLE:</p> <p style="text-align: center;">PROPOSED EXPANSION AND STREAM MITIGATION DESIGN</p>	<p>DATE:</p> <p style="text-align: center;">10/7/19</p> <p>SCALE:</p> <p style="text-align: center;">SCALE</p> <p>DRAWING NO.</p> <p style="text-align: center;">12 of 13</p>
---	--

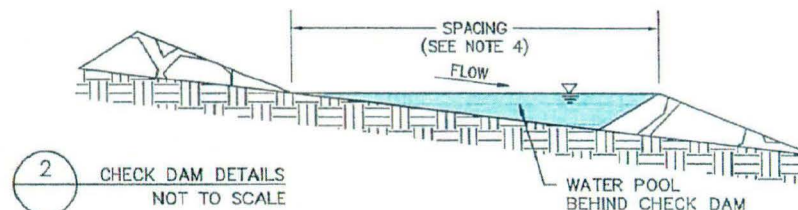
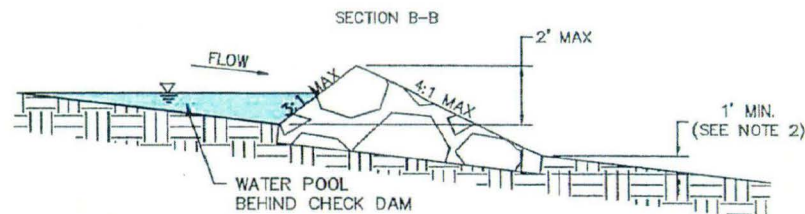
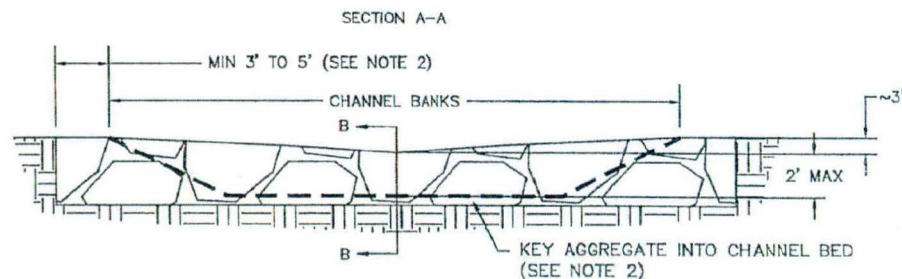


1 DESIGN CHANNEL CROSS SECTION
NOT TO SCALE



NOTES:

1. CHECK DAMS SHALL BE CONSTRUCTED OF NATIVE AGGREGATE HAVING A D_{50} EQUAL TO OR GREATER THAN 9 INCHES.
2. AGGREGATE FOR CHECK DAMS SHALL BE KEYED INTO CHANNEL BANKS A MINIMUM OF 3 FEET ON STRAIGHT SECTIONS AND INSIDE CURVES, A MINIMUM OF 5 FEET ON OUTSIDE CURVES, AND A MINIMUM OF 1 FOOT INTO THE CHANNEL BED TO REDUCE LIKELIHOOD OF BYPASS FLOW AND EXCESSIVE SCOUR.
3. CHECK DAMS SHALL BE CONSTRUCTED WITH THE LOWEST POINT LOCATED AT THE CHANNEL CENTERLINE TO DIRECT FLOW INTO THE CENTER OF THE CHANNEL.
4. CHECK DAMS SHALL BE SPACED SUCH THAT THE CREST OF THE DOWNSTREAM DAM IS APPROXIMATELY LEVEL WITH THE LOWEST ELEVATION OF THE UPSTREAM DAM.



2 CHECK DAM DETAILS
NOT TO SCALE

THIS DRAWING IS PART OF A BOUND SET SEALED
BY FLOYD COTTER, A LICENSED PROFESSIONAL
ENGINEER, ON OCTOBER 7, 2019. SEE COVER PAGE
FOR PROFESSIONAL ENGINEER'S SEAL.

SCS ENGINEERS

8575 WEST 110TH ST, SUITE 100
OVERLAND PARK, KS 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO.	27219016.00	CHK. BY:	ZEM	C/O/A. BY:	VW
CHK. BY:	ZEM	CHK. BY:	MPP	PROJ. MGR:	WM

SWT-2017-339
AEL Landfill Proposed Lateral Expansion
Unnamed Tributary of the Arkansas River
Osage County, Oklahoma
Enclosure 8 of 8

SHEET TITLE:

DETAILS

PROJECT TITLE:

**PROPOSED EXPANSION AND STREAM
MITIGATION DESIGN**

DATE:

10/7/19

SCALE:

SCALE

DRAWING NO.

13 of 13