Public Notice

U.S. Army Corps
of Engineers
Tulsa District

Reply To:

U.S. Army Corps of Engineers
ATTN: Regulatory Office
1645 South 101st East Avenue
Tulsa, Oklahoma 74128-4609

SWT-2014-636
Public Notice No.

Aug 25, 2014
Public Notice Date

Sep 24, 2014
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.

Application No. SWT-2014-636

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 and Section 10 of the Rivers and Harbors Act of 1899. The ODEQ hereby incorporates this public notice and procedure as its own public notice and procedure by reference thereto.

The application is to protect State Highway (SH) 10 from Illinois River erosion by restoring the right descending bank, adjacent riparian area, and river equilibrium.

Name of Applicant: Mr. Andrew Wells
Estate of Clair Wells
1111 S. Muskogee Avenue
Tahlequah, OK 74464

Name of Agent: Ms. Shanon Phillips, Director
Water Quality Division
Oklahoma Conservation Commission
4545 N. Lincoln Blvd., Suite 11A
Oklahoma City, OK 73105

Name of Agent: Ms. Dawn Sullivan, Chief
Environmental Programs Division
Oklahoma Department of Transportation
200 NE. 21st Street
Oklahoma City, OK 73105

Location: The proposed project is located in Section 23, Township 17 North, Range 22 East, near Tahlequah, Cherokee County, Oklahoma. The project site can be found on the Tahlequah, Oklahoma 7.5 Minute USGS Quadrangle map at North Latitude 35.93507 and West Longitude 94.92419. The site is located approximately one-half mile north from the SH 62 and SH 10 junction on the east side of SH 10 and stretches approximately 2,900 feet north.

Purpose: The basic purpose of the proposed work is to provide bank stabilization and protect the eastern edge of SH 10 from erosion. A water dependency statement determination is unnecessary since no special aquatic sites are being permanently impacted at the project site.

The overall purpose of the proposed work is restoration of the riverbank and riparian corridor, and restoration of stable river channel and river habitat, for the purpose of protecting SH 10 from continued erosion. Discharge includes excavation and grading of the riverbed, restoration of the riverbank; and placement of rock vanes within the river for stream enhancement, and erosion control.

Table of Impact:

Original Proposal					
Location	**Impact Activity**	**Type of Impact**	**Type of Fill Material**	**Quantity of Material (CY) below OHWM**	**Footprint (AC and/or LF)**
Right Descending Bank	Placement of Fill Material	Bank Stabilization	Gray Riprap Stone (10 to 30 CU FT each) and Bedding	2,000 CY	2,900 LF
Right Descending Bank	Placement of Fill Material	Bank Restoration	River Gravel and Soil	9,000 CY and 6,000 CY	0.917 Acre
Right Descending Bank	Placement of Fill Material	Rock Vanes (4) River Restoration	Gray Boulders (40 cubic feet each)	4 @ 200 = 800 CY Total	4 @ 95 LF each = 380 LF

Description of Work: The applicant proposes to stabilize approximately 2,900 linear feet of the Illinois River channel. Approximately 2,000 cubic yards of stone would be used to restore the eroded bank. Approximately 9,000 cubic yards of river gravel would be removed from a point bar in the middle of the river by track hoe and placed behind the restored bankline. Approximately 6,000 cubic yards of soil would be placed about one feet deep over the river gravel. Four rock arm vanes sized about 95 feet long with approximately 200 cubic yards of 40 cubic foot boulders would be placed along the western bank for a total of 800 cubic yards. Gray riprap stone and rock from local quarries would be used. The adjacent floodplain and right descending bank riparian buffer would be enhanced through implementation of this project. The existing channel would be realigned and reshaped to provide equilibrium for riffle-pool morphology, effective sediment transport, and improved habitats. The right-bank floodplain bench would be planted with native riparian buffer vegetation to support long-term erosion resistance, streambank stability, habitats, and water quality. Sod mats would be laid

and sycamores would be transplanted along disturbed areas of the banks. Seed mixes, bare root trees, and live stakes would be planted throughout the riparian and upland areas. See the Planting Plan in the enclosed plans.

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:

> In order to achieve stream enhancement goals relative to geomorphic sustainability and aquatic habitat quality, the proposed impacts are unavoidable. The existing unstable channel must be realigned and reshaped to provide equilibrium for riffle-pool morphology, effective sediment transport, and improved habitats. The right-bank floodplain bench planted with native riparian buffer vegetation is necessary for long-term erosion resistance, stream bank stability, habitats, and water quality. Impacts are minimized by working within the existing stream corridor and maintaining the existing left-bank riparian forest buffer intact.

Mitigation: The applicant believes the project is self-mitigating and offers no mitigation beyond the restoration and planting proposed in the plans.

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. The Corps is accepting comments on the need for and nature of the proposed mitigation in addition to comments on the applicant's primary proposal. The Corps bears the final decision on the need for and extent of mitigation required if the project proposed herein is authorized.

Other: The applicant has received a CHEROKEE COUNTY FLOODPLAIN DEVELOPMENT PERMIT dated July 9, 2014.

Project Setting: The project location lies in the Ozark Highlands Ecoregion which is largely underlain by flat-lying, cherty limestone. In the Illinois River watershed underground drainage, karst features, springs, and perennial streams are common. Upland natural vegetation is oak–hickory and oak–hickory–pine forests and woodlands. Livestock and poultry farming, woodland grazing, logging, recreation, and quarrying are the main land uses.

Existing Condition: The Illinois River is a State of Oklahoma Scenic River. Canoeing and kayaking are common during the summer recreation season. At the project location aggraded gravel from upstream hillslope erosion, common in the watershed, has created a wide shallow pool with a narrow thalwag on the right descending bank which has negatively impacted river habitat and increased bank erosion.

Plans and Data: Plans showing the location of the proposed activity and other data are enclosed with this notice (Enclosures 1 through 16). If additional information is desired,

it may be obtained from U.S. Army Corps of Engineers, Tulsa District, ATTN: Regulatory Office, 1645 South 101st East Avenue, Tulsa, OK 74128-4609, or telephone 918-669-7400.

Cultural Resources: The DE has consulted the National Register of Historic Places regarding the potential effects from the proposed action. The DE will comply with the requirements of the National Historic Preservation Act of 1966 for any known or presently unknown historic or archeological resources that may exist in the project vicinity and which could be directly affected by the proposed work. At the request of the Oklahoma Archeological Survey (OAS), the applicant has agreed to have an archeological survey completed and the survey approved by OAS prior to construction. This public notice is being sent to the Oklahoma State Historic Preservation Officer and to Native American Tribal governments to reveal if other known historic or archeological resources may be eligible for listing in the National Register exist in the project area and which could be directly affected by the proposed work. This coordination is being done to fulfill our requirements under the National Historic Preservation Act of 1966 (Public Law 89-665) and associated historic preservation laws. If we are made aware, as a result of comments received in response to this notice, or by other means, of specific archeological or other historic properties which may be affected by the proposed work, the DE will immediately take the appropriate action necessary pursuant to the National Historic Preservation Act of 1966, as amended, and 36 CFR Part 800, in accordance with implementing regulations 33 CFR 325, Appendix C.

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: piping plover (*Charadrius melodus);* red knot (*Calidris canutus rufa);* Neosho mucket (*Lampsilis rafinesqueanna);* rabbitsfoot (*Quadrula cylindrical cylindrical)(* Arkansas darter (*Etheostoma cragini);* American burying beetle (*Nicrophorus americanus*); gray bat (*Myotis grisescens*); northern long-eared bat (*Myotis septentrionalis);* Ozark big-eared bat (*Corynorhinus townsendii ingens);* and least tern *(Sterna antillarum).* The project location is in designated critical habitat for the Neosho mucket and the rabbitsfoot.

A copy of this notice is being furnished to the U.S. Fish and Wildlife Service (USFWS) and appropriate state agencies. This notice constitutes a request to those agencies for information on whether any other listed or proposed-to-be-listed endangered or threatened species may be present in the area which would be affected by the proposed activity.

The applicant has contacted the USFWS and agreed to survey the project site for the Neosho mucket and rabbitsfoot.

The Corps is currently assessing the potential effects of the proposed action on these species and will comply with the Endangered Species Act with regard to any affect of our decision on this permit application.

Environmental Considerations: 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, flood plain 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.

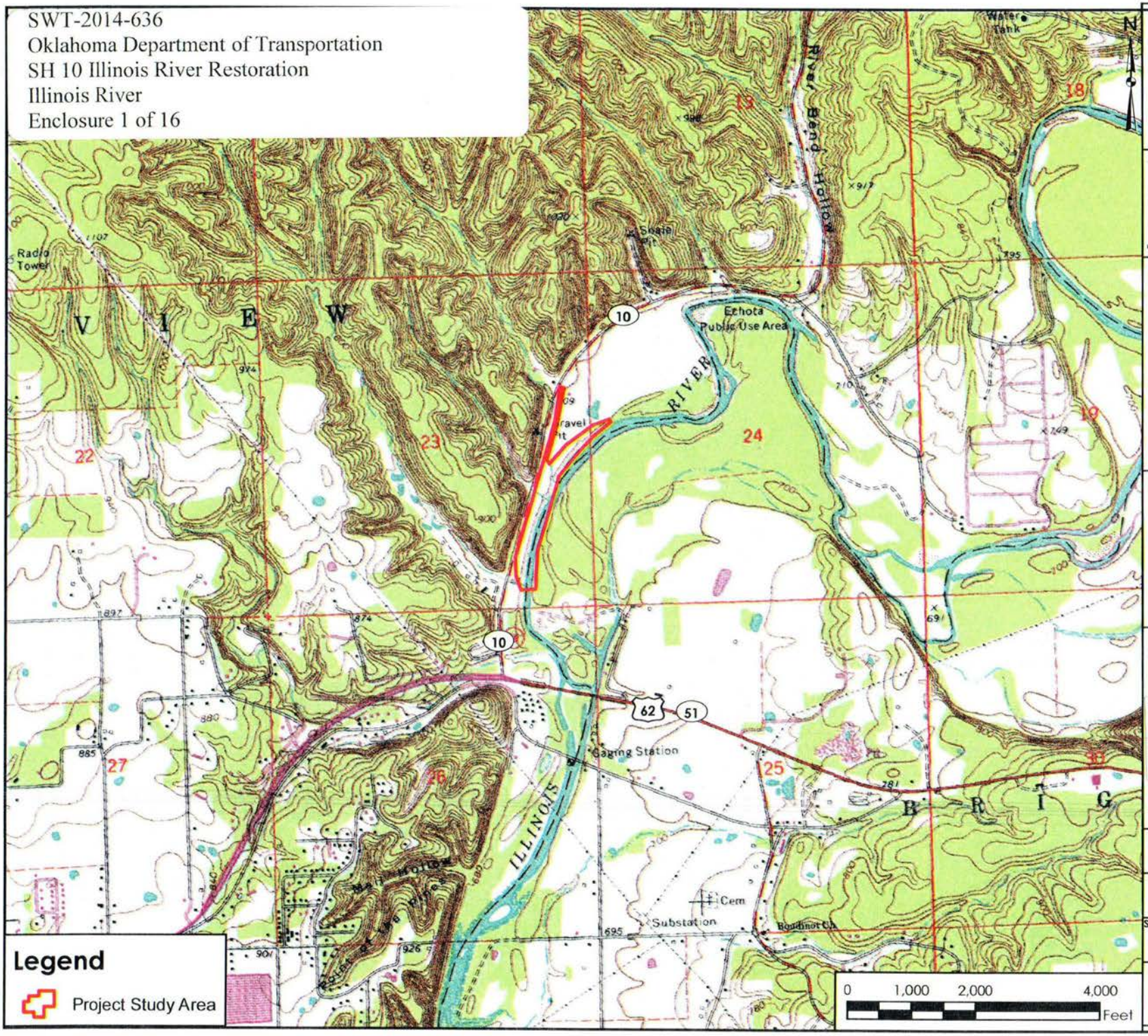
Comments: In order to consider and evaluate the impacts of this proposed activity the Corps is soliciting comments from the public, federal, state, and local agencies and officials, Indian tribes, and other interested parties. Comments concerning the issuance of this permit should be received by the DE no later than 30 days from the date of this public notice. Any comments received will be considered by the Corps 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. Any person may request in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

Comments concerning water quality impacts will be forwarded to ODEQ for consideration in issuing a water quality Section 401 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-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 1 of 16



Legend

Project Study Area

Stantec

Client:
OKLAHOMA CONSERVATION COMMISSION
OKLAHOMA CONSERVATION COMMISSION

Project:
Jurisdictional Determination Request
Illinois HWY 10 Project

Cherokee, OK

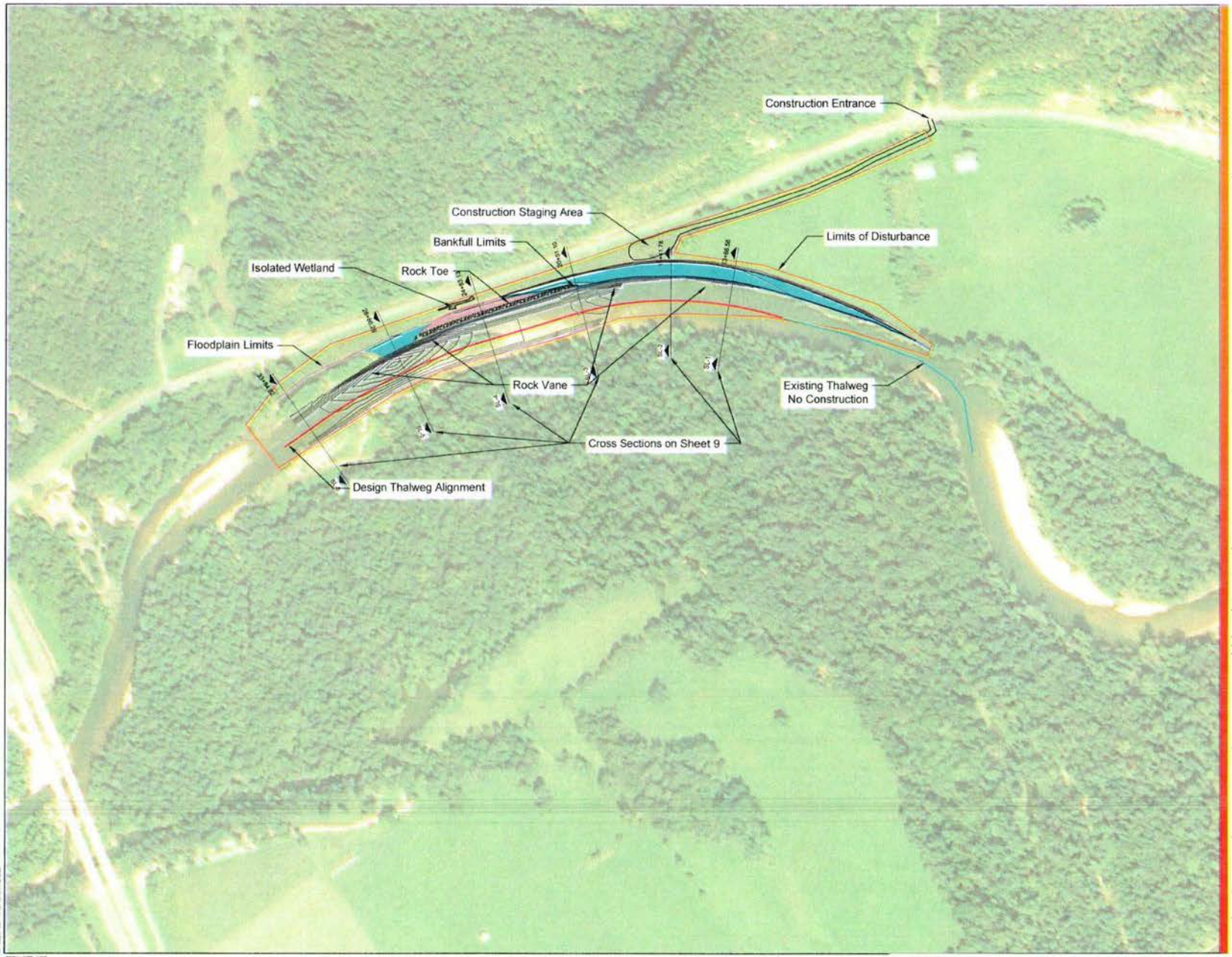
Title:
USGS TOPOGRAPHY MAP

Ref. USGS 7.5 Minute Topography Map Tahlequah, OK Quadrangle

Drawn By:	QA/QC Review:
NLR	AEB
Peer Review:	Date:
GJ	6/2/2014

Stantec Project Number:
212205128

FIGURE 2



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Oklahoma Conservation Commission

Notes

Revision	By	Appd.	YY.MM.DD
60% Design Plan Set	Stantec		14.06.26
30% Design Plan Set	Stantec		14.06.13

Issued	By	Appd.	YY.MM.DD
File Name: Exist_Illinois_River.dwg	ASB	GJ	DAB 14.06.12
	Dsgn.	Chkd.	Dwn. YY.MM.DD

Permit-Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN OVERVIEW

60% DESIGN

Project No.	Scale	Revision
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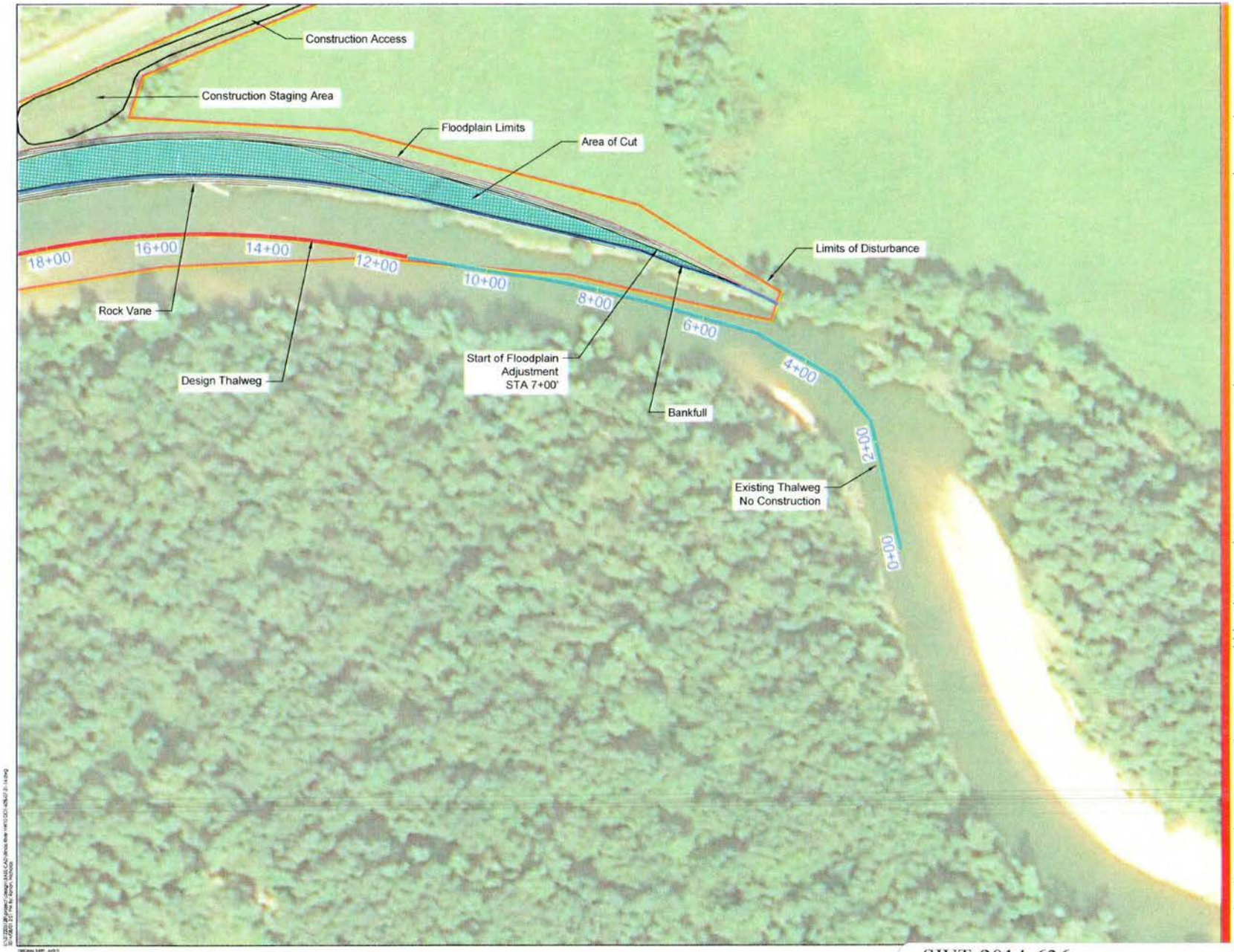
SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 2 of 16



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30% Design Plan Set	Stantec		1406.13

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Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN VIEW

60% DESIGN

Project No.	Scale	
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Drawing No.	Sheet	Revision
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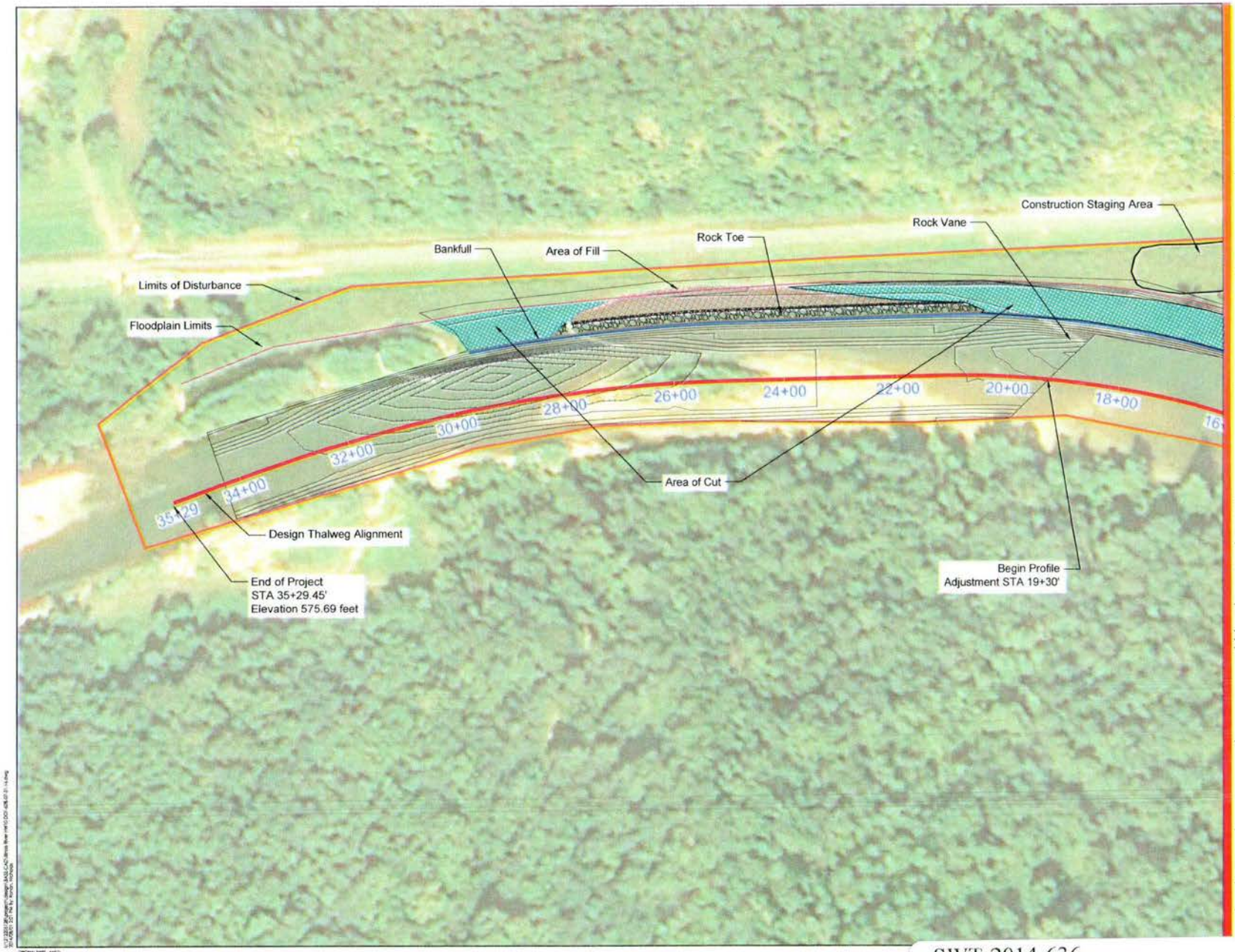
SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 3 of 16



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30% Design Plan Set	Stantec		14.06.13

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN VIEW

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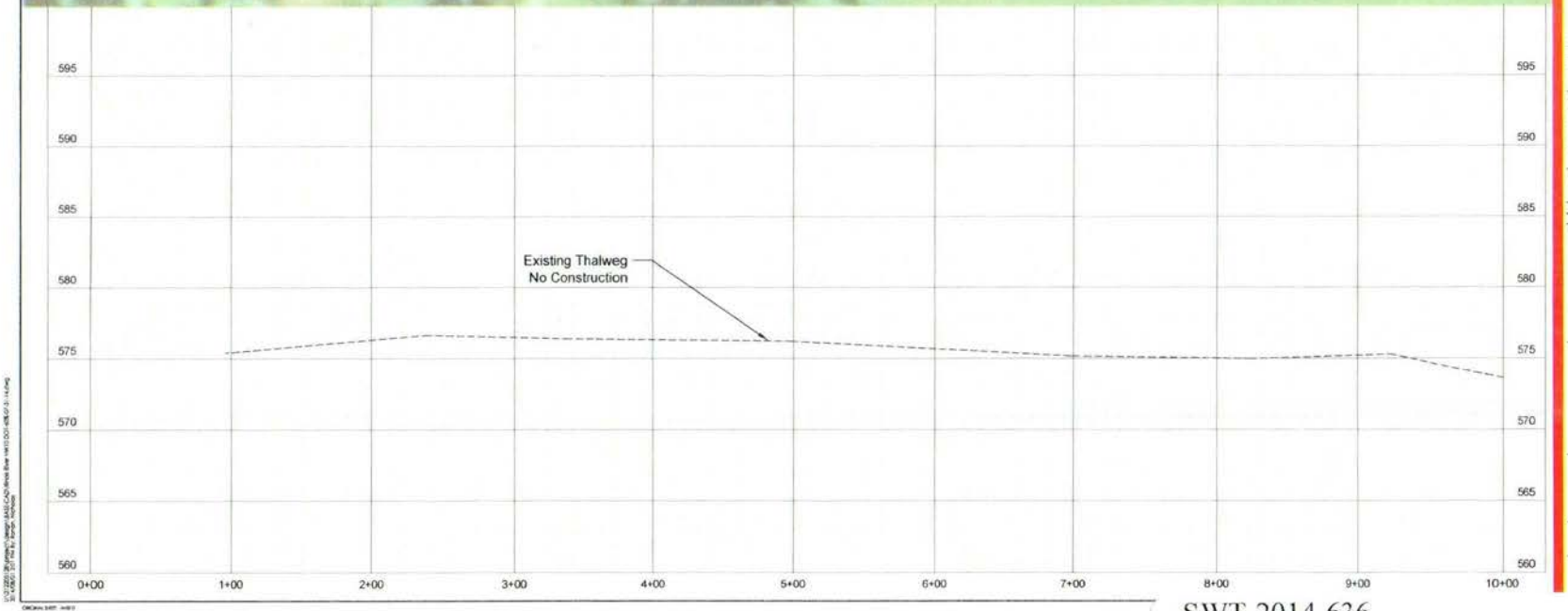
SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 4 of 16



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90% Design Plan Set | Stantec | | 14.08.13
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Permit-Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN / PROFILE

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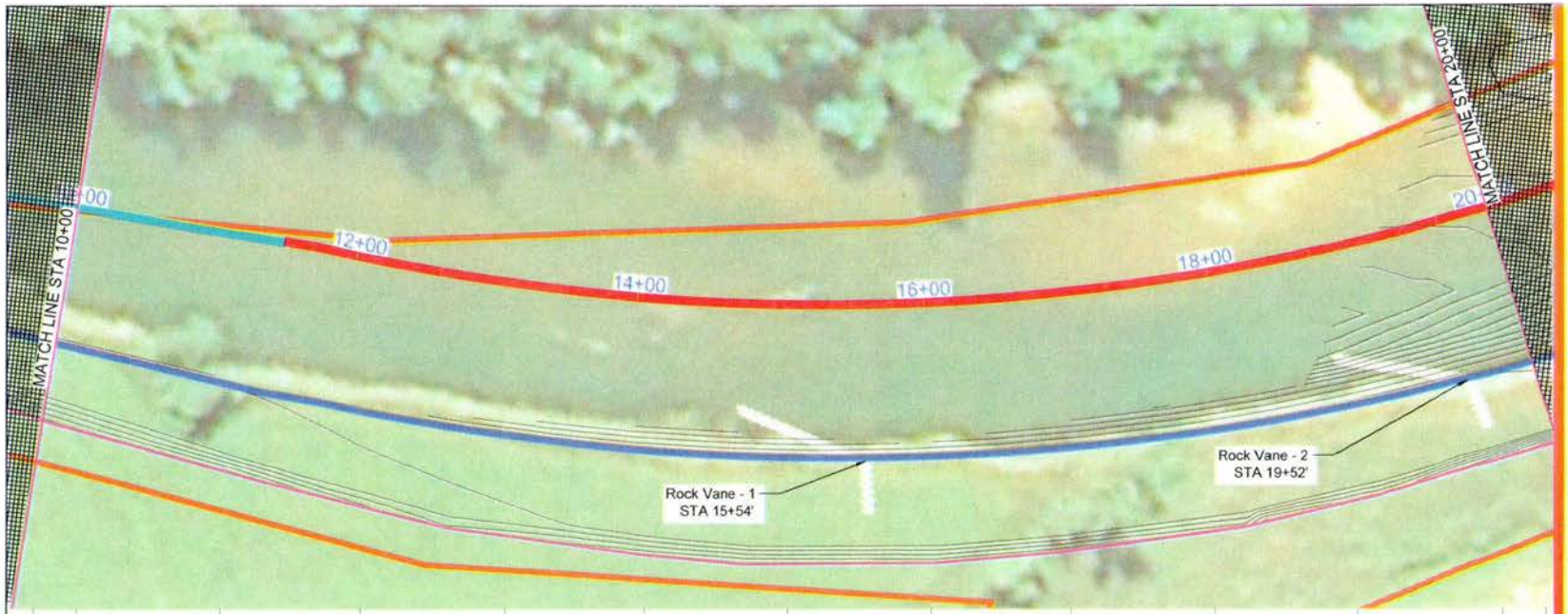
Drawing No. | Sheet 5 of 16 | Revision 0

SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 5 of 16



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30% Design Plan Set	Stantec		14.04.11

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Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN / PROFILE

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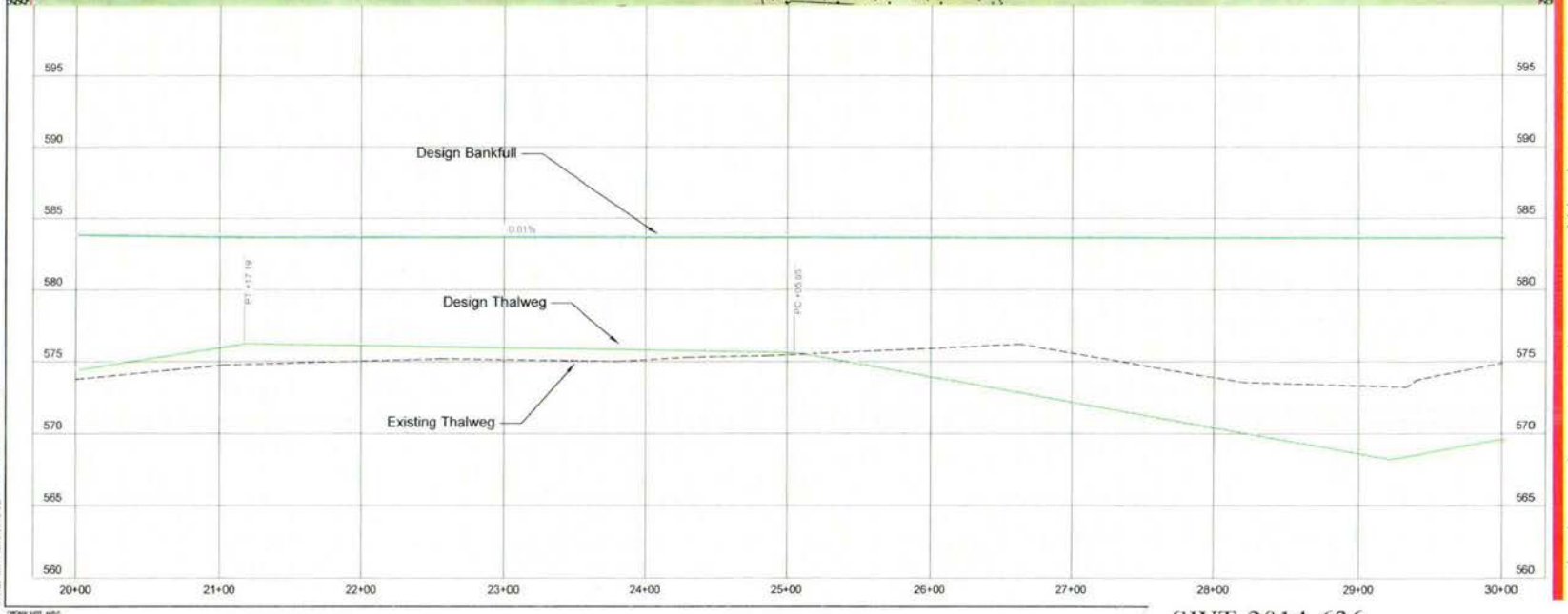
SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 6 of 16



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30% Design Plan Set	Stantec		14.06.13

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN / PROFILE

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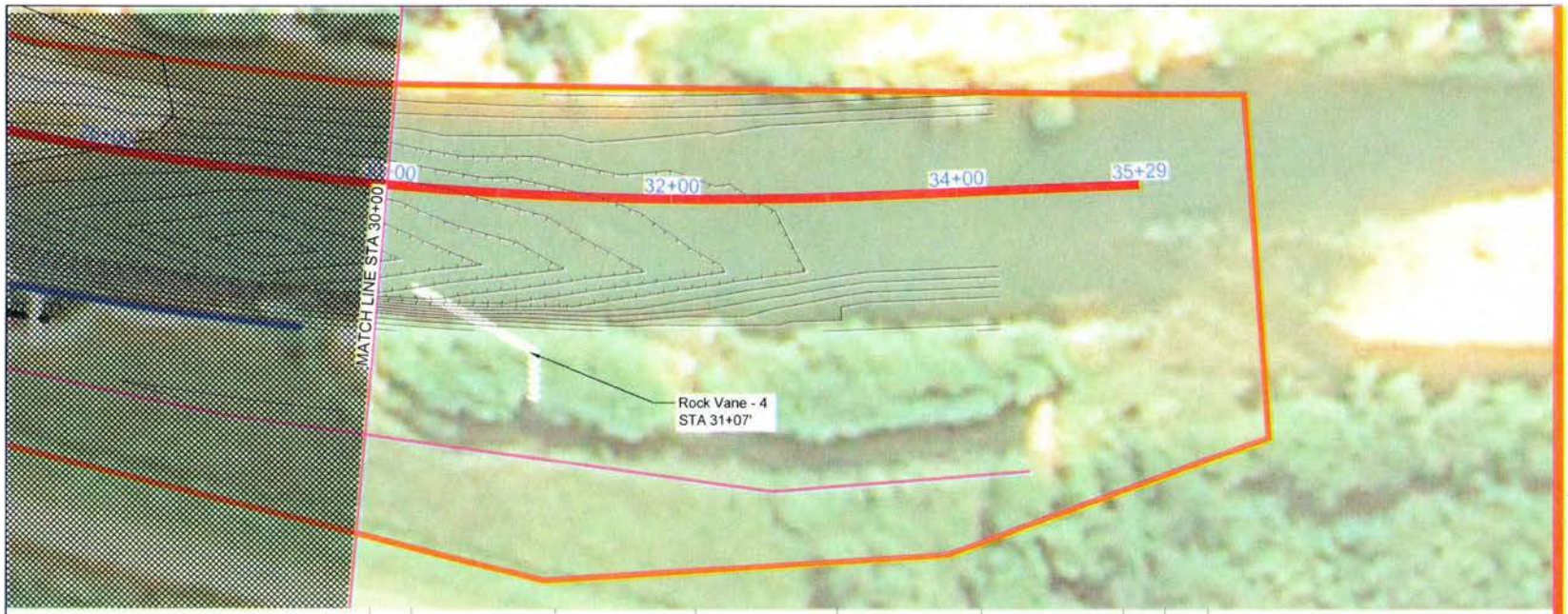
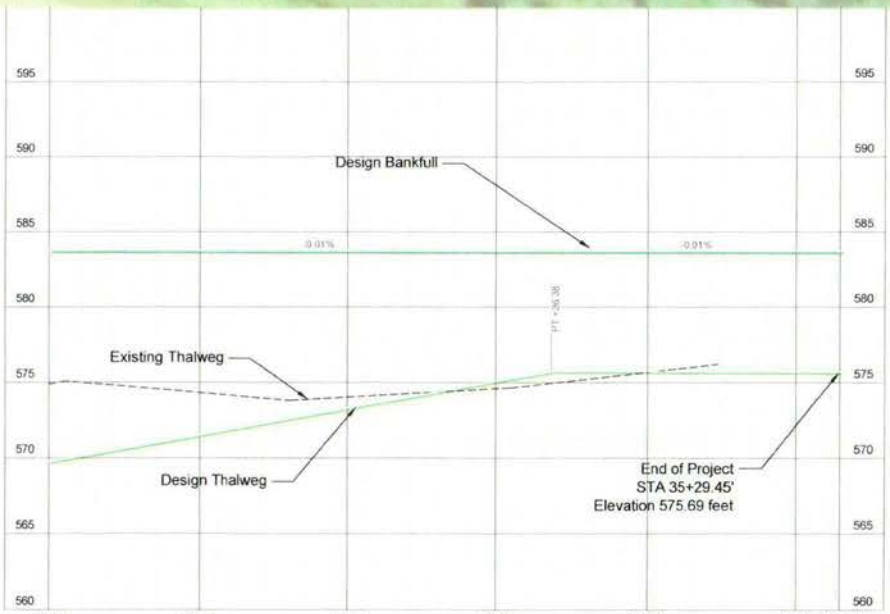
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 7 of 16





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30% Design Plan Set	Stantec		14.06.13

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	ADB	GJ	DAB	14.06.13

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Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLAN / PROFILE

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Project No.	Scale	Revision
212205128	1 to 20	0

Drawing No. | Sheet 8 of 16

SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 8 of 16

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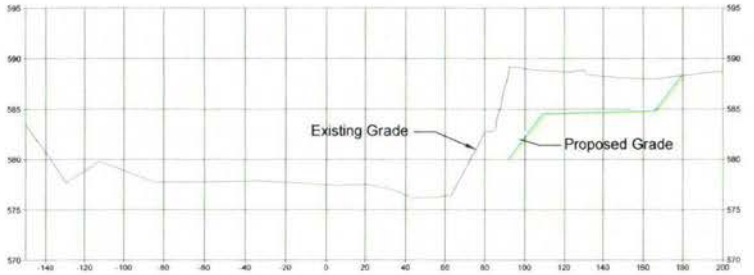

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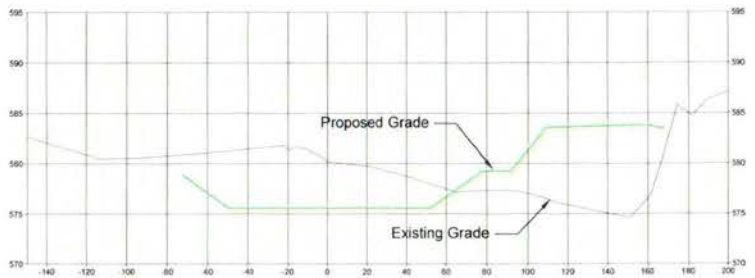

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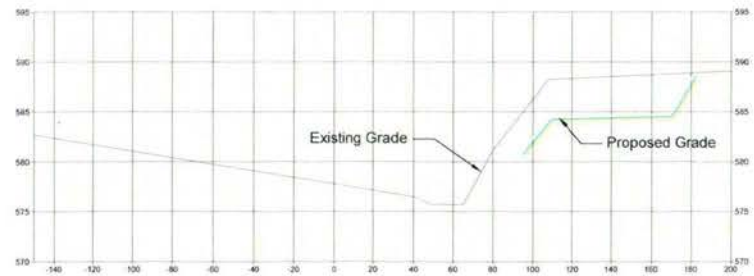

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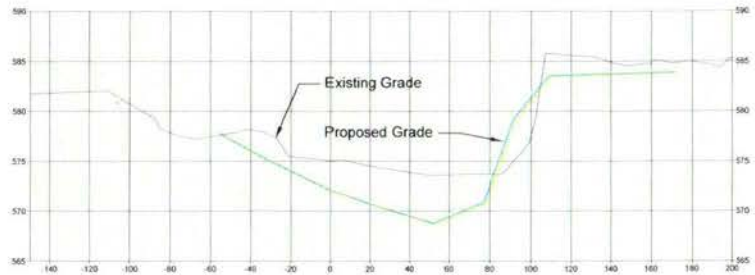

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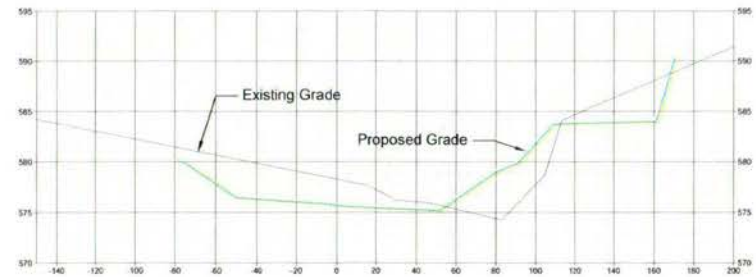

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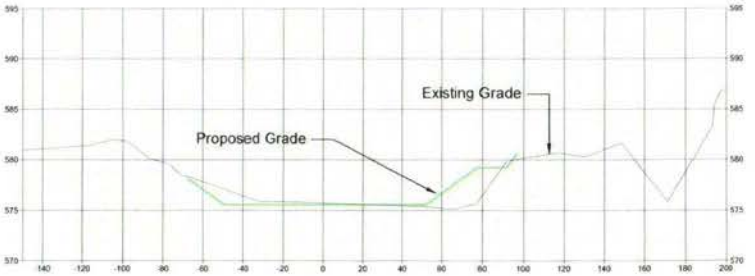

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
CROSS SECTION

60% DESIGN

Project No.	Scale	
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Drawing No.	Sheet	Revision
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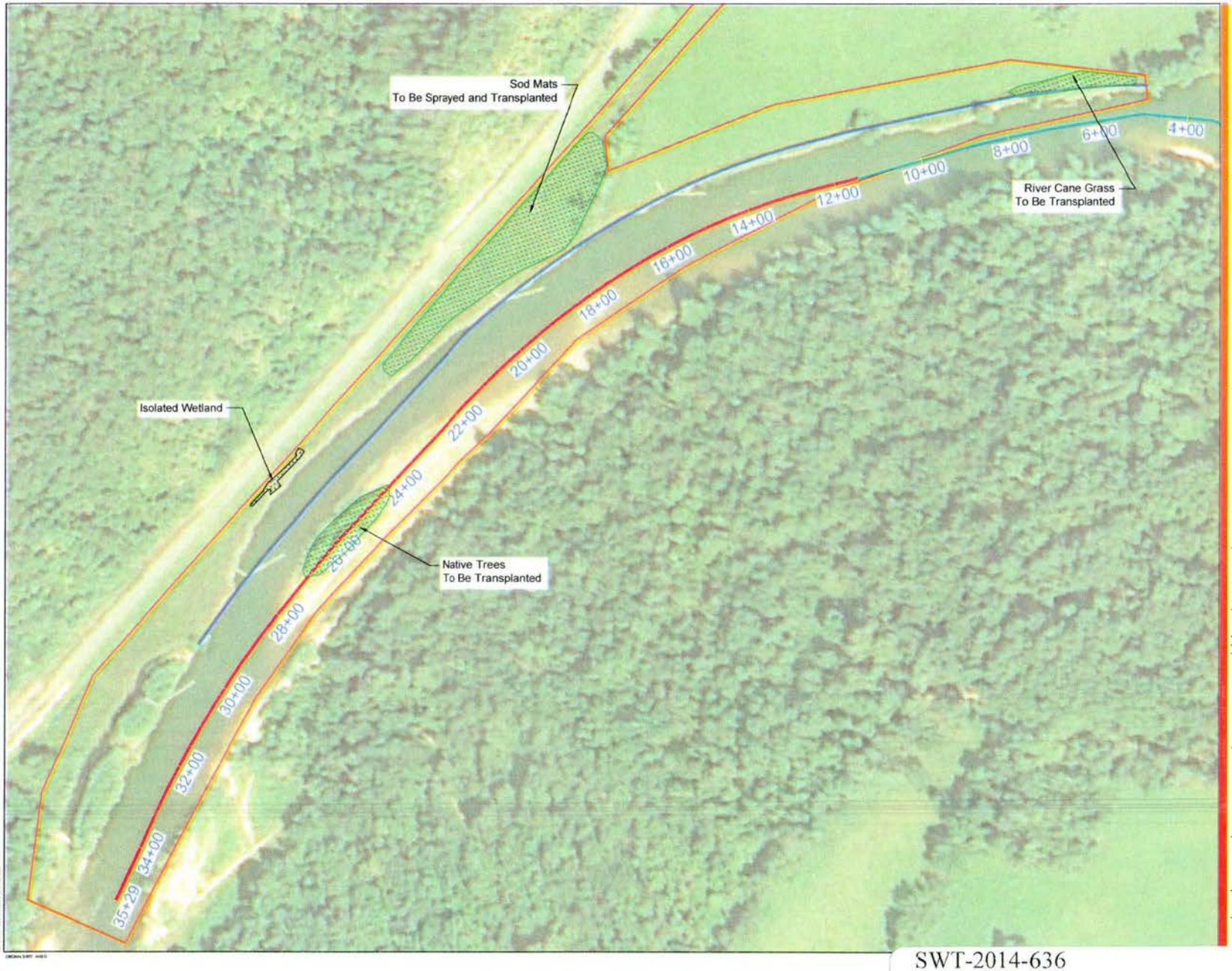
SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 9 of 16



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File Name:	Dsgn	Chkd	Date
	ADB	CJ	14.06.13

Permit-Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLANTING PLAN - TRANSPLANTS

60% DESIGN

Project No.	Scale	Revision
212205128	1 to 50	0
Drawing No.	Sheet	
	10 of 16	

SWT-2014-636
Oklahoma Department of Transportation
SH 10 Illinois River Restoration
Illinois River
Enclosure 10 of 16

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Notes

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLANTING PLAN

60% DESIGN

Project No. 212205128 | Scale 1 to 40 | 1"=40' | 0 20' 40'

Drawing No. | Sheet 11 of 16 | Revision 0

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Illinois River
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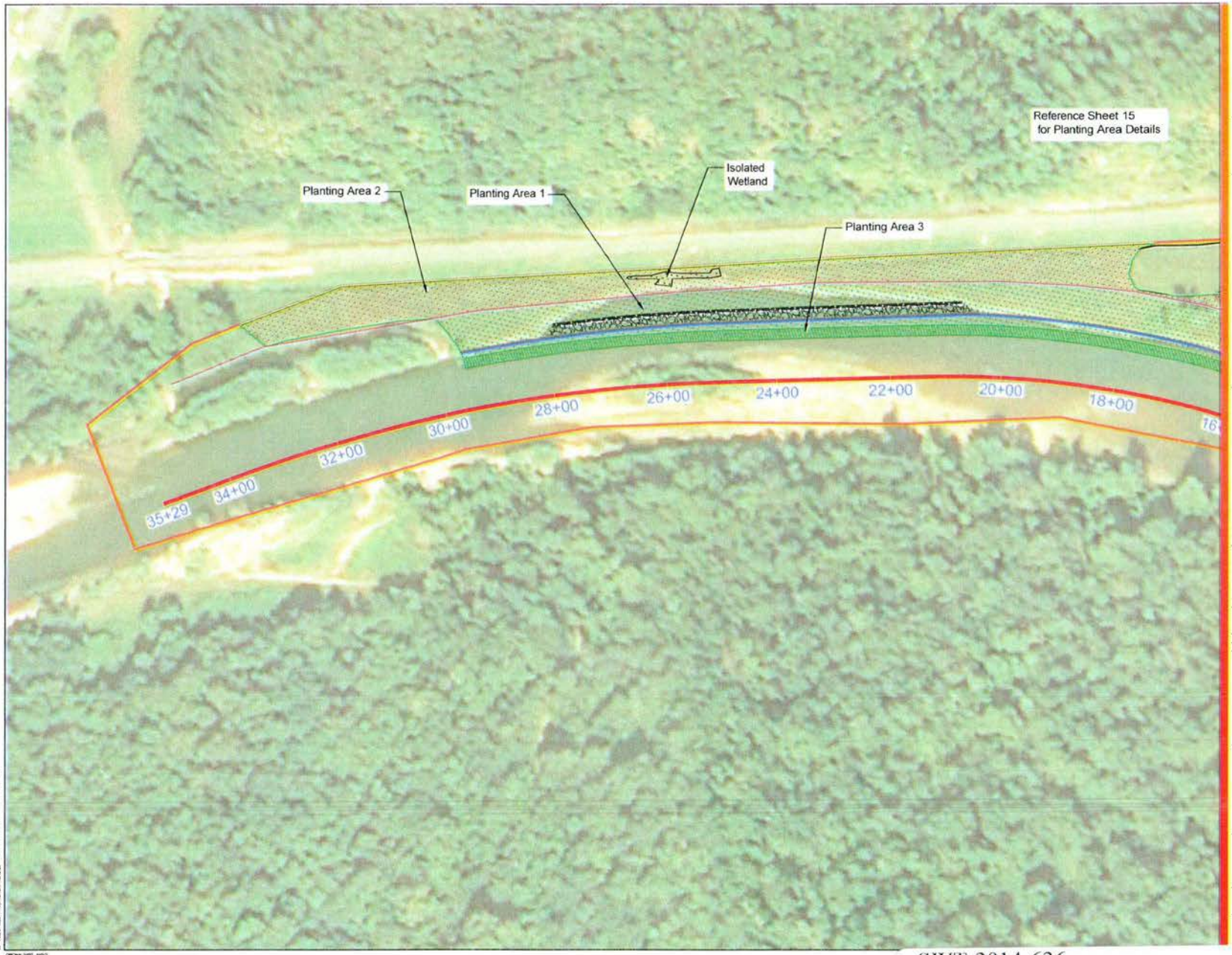

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Notes

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Permit-Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLANTING PLAN

60% DESIGN

Project No.	Scale	
212205128	1 to 40	1"=40' 0 20' 40'

Drawing No.	Sheet	Revision
	12 of 16	0

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SH 10 Illinois River Restoration
Illinois River
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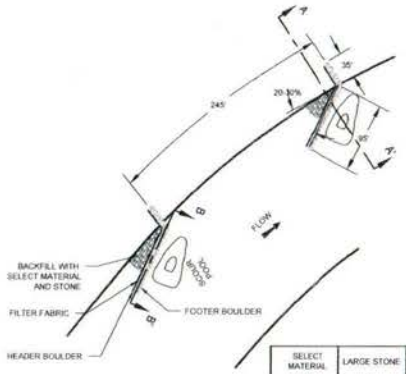


PLAN VIEW

NOTES:

ALL STONES ARE TO BE STRUCTURAL STONE.

GAPS BETWEEN BOULDERS SHALL BE MINIMIZED BY FITTING BOULDERS TOGETHER, AND PLUGGING WITH LARGE STONES AND SELECT MATERIAL AND LINED WITH FILTER FABRIC. THE CONTRACTOR WILL BE REQUIRED TO FIT BOULDERS TIGHTLY.

DIMENSIONS AND SLOPES MAYBE ADJUSTED TO FIT BY THE ENGINEER.

A DOUBLE FOOTER BOULDER SHALL BE UTILIZED IN SAND BED MATERIAL.

VANE ARM SHALL TIE INTO THE BANK HALFWAY BETWEEN THE CHANNEL INVERT AND BANKFULL ELEVATIONS. THE ARM SHALL RISE AT 2%-4% FROM THE CHANNEL INVERT AT AN ANGLE OF 20-30 DEG FROM THE ADJACENT TANGENT LINE.

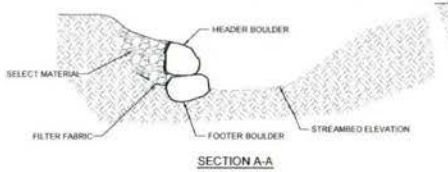
BOULDERS SHALL BE NATIVE STONE OR SHOT ROCK, CUBICAL OR RECTANGULAR IN NATURE.

FILTER FABRIC SHALL BE PLACED ON THE UPSTREAM SIDE OF THE VANE STRUCTURE TO PREVENT WASHOUT OF SEDIMENT THROUGH BOULDER GAPS. FILTER FABRIC SHALL EXTEND FROM THE BOTTOM OF THE FOOTER BOULDER TO THE FINISHED GRADE ELEVATION AND SHALL BE PLACED THE ENTIRE LENGTH OF THE STRUCTURE.

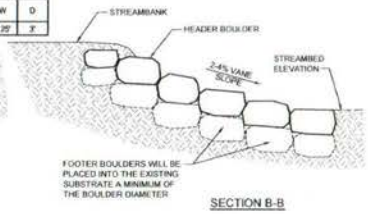
ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ONSITE CONSTRUCTION MANAGER.

SELECT MATERIAL		LARGE STONE		BOULDER SIZE		
D50	D84	D50	D84	L	W	D
2"	3"	8"	9"	4'	3.25'	3'

ESTIMATE OF 90 CUBIC YARDS PER VANE



SECTION A-A



SECTION B-B

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Details_Illinois_three.dwg	AJB	GJ	DAB	14.06.13

Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
Rock Vane Detail

60% DESIGN

Project No.	Scale	
212205128	NTS	
Drawing No.	Sheet	Revision
	13 of 16	0

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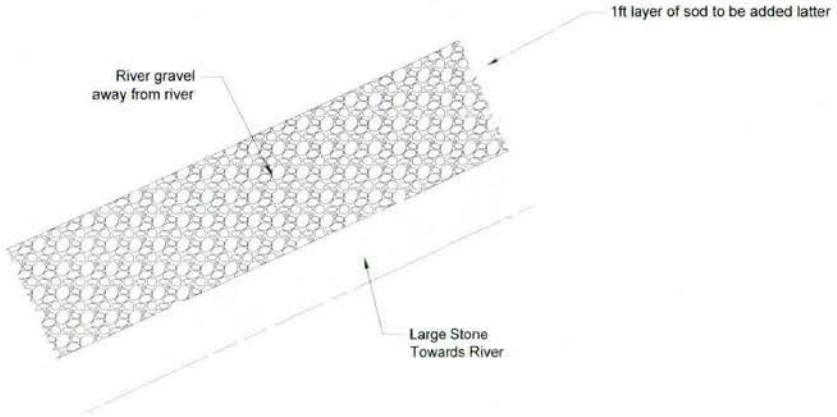


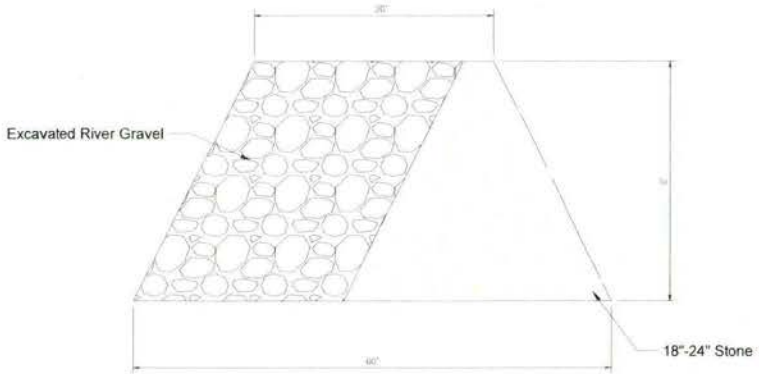
NOT TO SCALE

Construction Berm and Roadway

Not to scale

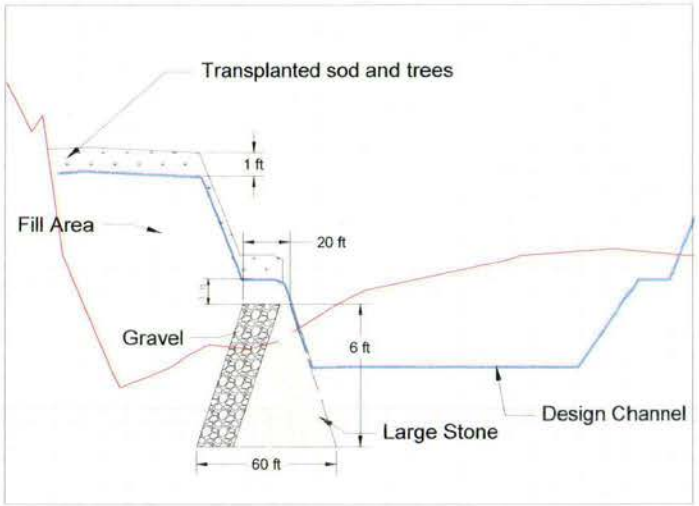
W_top = 20 ft
W_base = 60 ft
H_max = 6 ft
~ 2000 TNS 18"-24" Large Stone Armor
~ 5000 yd^3 Excavated Gravel

- Dimension Detail



- Location of construction berm in relation with the design channel

- Top of construction berm to be located 1 ft below the inner berm elevaton
- Looking upstream at typical riffle cross section



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Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
Construction Berm Detail

60% DESIGN

Project No.	Scale
212205128	NTS

Drawing No.	Sheet	Revision
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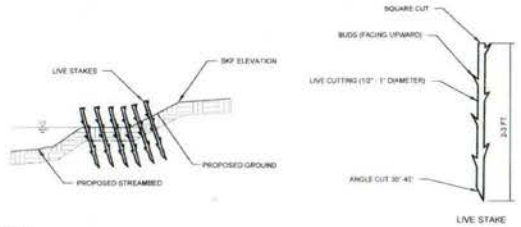


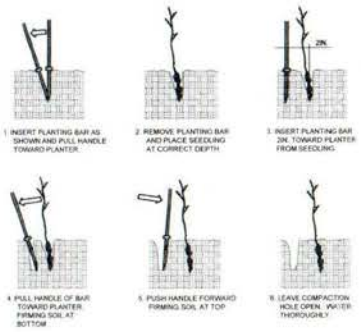
NOTES:
1. LIVE STAKES SHALL BE PLANTED IN 6 STAGGERED ROWS, PARALLEL TO THE STREAM CHANNEL, BETWEEN THE BANKFULL AND LOW FLOW STAGE.
2. LIVE STAKES SHALL BE PLANTED ON BOTH SIDES OF RIFFLES AND ON THE OUTSIDE BANK OF POOLS.
3. LIVE STAKES SHALL BE DRIVEN UNTIL APPROXIMATELY 3/4 OF LIVE STAKE IS WITHIN GROUND.
4. A STARTER HOLE MAY BE REQUIRED IF STAKING THROUGH MATTING, ROCK OR COMPACTED SOILS.
5. IF STARTER HOLE IS NEEDED, MINIMIZE AIR POCKET.
6. ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ONSITE CONSTRUCTION MANAGER.

1/15 DETAIL – LIVE STAKING
NOT TO SCALE

PLANTING BAG:
DURING PLANTING, SEEDLINGS SHALL BE KEPT IN A MOIST CANVAS BAG OR SIMILAR CONTAINER TO PREVENT THE ROOT SYSTEMS FROM DRYING.

KBC PLANTING BAR:
PLANTING BAR SHALL HAVE A BLADE WITH A TRIANGULAR CROSS SECTION, AND SHALL BE 12IN. LONG, 4IN. WIDE, AND 1IN. THICK AT ENTER.

ROOT PRUNING:
ALL SEEDLINGS SHALL BE ROOT PRUNED, IF NECESSARY, SO THAT NO ROOTS EXTEND MORE THAN 10 INCHES (10IN.) BELOW THE ROOT COLLAR.



NOTES:
1. TREE REFORESTATION SHALL BE PLANTED 10 FT. ACCORDING TO TECHNICAL SPECIFICATIONS.
2. OTHER PLANTING METHOD CAN BE USED WITH THE PERMISSION OF THE PLANTING SUPERVISOR.
3. ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ONSITE CONSTRUCTION MANAGER.

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR
(FOR FLOODPLAIN BUFFER PLANTING AND UPLAND BUFFER PLANTING)

2/15 DETAIL – PLANTING SEEDING LINER BAREROOT
NOT TO SCALE

Planting Plan

TEMPORARY SEEDING SCHEDULE (ALL DISTURBED AREAS)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	LBS/AC of PLS	AC	QUANTITY
Avena sp.	Cool Season Oats	NI	30	9.77	100%
Swcale Cereale	Rye Grain	NI			100%

RIPARIAN SEEDING SCHEDULE (PLANTING AREA 1)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	LBS/AC of PLS	AC	QUANTITY
Elymus virginicus	Virginia Wild Rye	FACW	20	5.02	20%
Chasmanthium latifolium	River Oats	FAC			20%
Carex flaccosperma	Woodland Sedge	FAC			20%
Elymus riparious	River Bank Wild Rye	FACW			10%
Juncus effusus	Common Rush	FACW			10%
Impatiens capensis	Jewelweed	FACW			10%
Asclepias tuberosa	Butterfly milkweed	UPL			10%

UPLAND SEEDING SCHEDULE (PLANTING AREA 2)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	LBS/AC of PLS	AC	QUANTITY
Andropogon gerarridi	Big Bluestem	FAC	20	2.87	20%
Tripsacum dactyloides	Eastern Gammagrass	FACU			20%
Schizachyrium scoparium	Little Bluestem	FACU			20%
Asclepias tuberosa	Butterfly Milkweed	UPL			20%
Panicum anceps	Switchgrass	FAC			20%

RIPARIAN BARE ROOT / LIVE PLANTINGS SCHEDULE (PLANTING AREA 1)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	SPACING (FT O.C.)	SF	QUANTITY
TREES					
Fraxinus pennsylvanica	Green Ash	FACW	10	218,653	2,045
Betula nigra	River Birch	FACW	10		2,045
Acer rubrum	Red Maple	FACW	10		2,045
Liriodendron tulipifera	Tulip Poplar	FACU	10		2,045
Acer negundo	Boxelder	FAC	10		2,045
Quercus nigra	Water Oak	FAC	10		2,045
SHRUBS					
Sambucus canadensis	Elderberry	FACW	10	218,653	2,045
Cornus drummondii	Rough-leaved Dogwood	FAC	10		2,045
Hamamelis virginiana	American Witchhazel	FACU	10		2,045
Lindera benzoin	Northern Spicebush	FAC	10		2,045
ONSITE TRANSPLANTS					
Platanus occidentalis	American Sycamore	FACW	10	14,523	ALL
Arundinarea gigantea	River Cane	FACU	10	7,822	ALL
NA	Sod grass mats	NI	NA	58,325	ALL

UPLAND BARE ROOT / LIVE PLANTINGS SCHEDULE (PLANTING AREA 2)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	SPACING (FT O.C.)	SF	QUANTITY
TREES					
Liriodendron tulipifera	Tulip Poplar	FACU	10	125,028	1,790
Acer negundo	Boxelder	FAC	10		1,790
Quercus alba	White Oak	FACU	10		1,790
Quercus phellos	Willow Oak	FACW	10		1,790
Quercus nigra	Water Oak	FAC	10		1,790
SHRUBS					
Hamamelis virginiana	American Witchhazel	FACU	10	125,028	1,790
Lindera benzoin	Northern Spicebush	FAC	10		1,790

LIVE STAKE PLANTING SCHEDULE (PLANTING AREA 3)

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	SPACING (FT O.C.)	SF	QUANTITY
Salix nigra	Black Willow	OBL	3	40,932	4,550
Sambucus canadensis	Elderberry	FACW	3		4,550
Cornus drummondii	Rough-leaved Dogwood	FAC	3		4,550

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLANTING DETAIL

60% DESIGN

Project No.	Scale	
212205128	NTS	
Drawing No.	Sheet	Revision
	15 of 16	0

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SEQUENCE OF CONSTRUCTION EVENTS

The Contractor is responsible for the following sequence of construction in accordance with the construction plans and the Special Provisions. Any changes or improvements to the sequence of construction must be approved by the design engineer or by an on-site designer's construction manager before work being done. It is the contractor's responsibility to ensure that an approved field change is issued prior to conducting related work.

I. Initial Site Preparation

1. Install a gravel construction entrance as designated on the map.
2. Prepare gravel staging and stockpiling areas in locations as shown on the construction plans or as approved by the designer.
3. Stake limits of construction as shown on the construction plans or as directed by the designer.

II. Channel Construction

1. Construct a low flow berm directing flow toward the left half of the river channel beginning at Station 20+50 at an angle specified by the designer.
2. Construct a low flow channel in the left half of the river channel beginning at the end of the low flow berm and ending at Station 28+00.
3. Starting at Station 20+50 and working downstream, build the construction berm as the base of the new left bank. Construct the berm to the details provided in the plan sheets. This berm will end at Station 28+00.
4. Construct the proposed channel between Stations 20+50 and 28+00 by removing the mid channel bar and grading the channel to the specification in the plan sheet. Place any suitable fill excavated from the bar in the channel between the existing right bank and the construction berm. Construct only the portion of the channel that can be completed and stabilized in a single day. Construct any structures as they are encountered. Construct all structures according to details provided and at locations specified on the plan sheets. Designer must approve material for construction of structures before contractor builds structures. Salvage any vegetation from the mid-channel bar for transplants to the right bench.
5. Fill the area between the construction berm and existing left bank with the material from the mid channel bar.
6. Construct the proposed channel starting at Station 11+40 and ending at 20+50, by excavating the pool as shown on the drawings. Remove the sod before grading the new floodplain. Construct only the portion of the channel that can be completed and stabilized in a single day. Construct any structures as they are encountered. Construct all structures according to details provided and at locations specified on the plan sheets. Designer must approve material for construction of structures before contractor builds structures. Salvage any other vegetation for transplants to the right bank bench.
7. Construct the proposed channel starting between 28+50 and 35+29. Construct only the portion of the channel that can be completed and stabilized in a single day. Construct any structures as they are encountered. Construct all structures according to details provided and at locations specified on the plan sheets. Designer must approve material for construction of structures before contractor builds structures. Salvage any vegetation possible for transplants.
8. Plant the project in accordance to the planting plan provided for erosion control, including the transplanted sod mats and relocated trees from the mid channel bar. Straw with be placed to assist with erosion control.
9. Remove the low flow channel berm and grade the river thalweg according to design plans.

III. Seed and mulch staging, stockpiling, and all bare areas with permanent seed mixture.

IV. Site cleanup shall occur after all construction processes have been completed. Clean-up shall include pick up of trash and construction materials. The access road will be left in pre-construction conditions or better.

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Notes

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Permit Seal

Client/Project
Oklahoma Conservation Commission

Illinois River Enhancement at Highway 10

Tahlequah, Oklahoma

Title
PLANTING DETAIL

60% DESIGN

Project No.	Scale	
212205128	NTS	
Drawing No.	Sheet	Revision
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