



12/1/11

Mr. Pete Wood  
Department of Natural Resources  
9531 Rayne Road, Suite 4  
Sturtevant, WI 53177

SUBJECT: White River Streambank Stabilization Final Report  
Targeted Runoff Management Program Grant No. TUC-FX04-51206-10

Dear Mr. Wood:

Please find, enclosed, the documents for the final report. The cover sheet, report, photos and supporting documents are enclosed. If you have any questions, please feel free to contact me to discuss. Thanks for your assistance on this grant.

I may be contacted at 262-758-6015 or [rcardinal@kapur-assoc.com](mailto:rcardinal@kapur-assoc.com).

Sincerely,

Ryan Cardinal  
Construction Staff Engineer

Enclosure

Cc: Kevin Lahner, City of Burlington  
Kapur & Associates Project File

**Final Report Form 3400-189** (rev. 7/30/09)

- Targeted Runoff Management Grant Program (ch. NR 153)
- Notice of Discharge Program (ch. NR 153)
- Urban Nonpoint Source & Storm Water Management Grant Program (ch. NR 155)

**NOTICE:** This Final Report is authorized under ss. 281.65 and 281.66., Wis. Stats., and chs. NR 153 and NR 155, Wis. Admin. Code. Personally identified information collected will be used for program administration and may be made available to requesters as required under Wisconsin Open Records Law [ss. 19.31-19.39, Wis. Stats.].

**INSTRUCTIONS:** Your grant agreement requires you to submit a Final Report with your final reimbursement request. This Final Report form must be used in conjunction with the "FINAL REPORT INSTRUCTIONS." The instructions detail how to complete and submit the report to DNR as described in the instructions.

<b>1. GRANT TYPE.</b> Check the one that applies.	
<input type="checkbox"/> Targeted Runoff Management Grant – Agricultural	<input checked="" type="checkbox"/> Targeted Runoff Management Grant – Urban
<input type="checkbox"/> Urban Nonpoint Source & Storm Water Management Grant – Construction	<input type="checkbox"/> Urban Nonpoint Source & Storm Water Management Grant – Planning
<input type="checkbox"/> Notice of Discharge Grant	

<b>2. PROJECT NAME &amp; LOCATION.</b>		
2.1. Project Name: <b>White River Streambank Stabilization</b>	2.2. Grant Number: <b>TUC-FX04-51206-10</b>	
2.3. Governmental Unit Name: <b>City of Burlington</b>	2.4. Primary Watershed Name: <b>Middle Fox River-Illinois</b>	2.5. Watershed Code: <b>FX04</b>

**NOTE FOR SECTION 2.6 (which follows):**  
 Section 2.6. includes five (5) columns (A. through E.) for recording data about five (5) discrete site locations. If your grant has more than five (5) discrete project locations, attach additional columns for Section 2.6 as described in the instructions. If your project occurs in more than one 12-digit Hydrologic Unit Code (HUC), use the space in adjacent columns to record other HUC numbers.

2.6 Site Location(s) →	A.	B.	C.	D.	E.
Name of Cost-Share Recipient or Governmental Unit	Burlington, City				
Cost-Share Agreement Number (Agricultural only)					
12-Digit Hydrologic Unit Code(s) (HUC) Where Work Was Completed	071200060604				
Nearest Surface Receiving Water Affected					
Name:	White River				
Waterbody Identification Code(s) (WBIC):	751200				
Nearest Impaired Water Affected					
Name:	Fox River				
Waterbody Identification Code(s) (WBIC):	742500				
Pollutants Reduced	Nonpoint source by sedimentation				
Impairments/Impacts Addressed	Failing shoreline revetment and erosion				

- Targeted Runoff Management Grant Program (ch. NR 153)
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Project Location(s) (cont.) →	A.	B.	C.	D.	E.
Project Coordinates:					
Town	03N				
Range	19E				
Section	32				
Quarter	NE				
Quarter-Quarter	NW				
Latitude (degrees, minutes, seconds North of Equator; use the DNR's Surface Water Data Viewer (SWDV))	42°40'54.6"N				
Longitude (degrees, minutes, seconds W of Prime Meridian, use the SWDV)	88°16'35.5"W				

### 3. SUMMARY OF RESULTS.

**Table A. Agricultural Projects. – Ch. NR 151 Performance Standards and Prohibitions and Other Water Resources Management Priorities**

A.1. Management Measures	Units of Measure	Quantity	Measurement Method Used
Sheet, rill and wind erosion	Acres meeting "T"	acres	
Manure Storage Facilities: New Construction/Alterations	Number of facilities	facilities	
	Number of animal units	animal units	
Manure Storage Facilities: Closure	Number of facilities	facilities	
Manure Storage Facilities: Failing/Leaking Facilities	Number of facilities	facilities	
	Number of animal units	animal units	
Clean Water Diversions in WQMA	Pollutant load reduction	lbs.	
	Number of farms with diversions	farms	
	Number animal units	animal units	
Nutrient Management on Agricultural Land	Acres planned	acres	
Prohibition: Manure Storage Overflow	Number of farms	farms	
	Number of animal units	animal units	
Prohibition: Unconfined Manure Pile in WQMA	Number of farms	farms	
Prohibition: Direct Runoff From Feedlot/Stored Manure	Pollutant load reduction	lbs.	
	Number of facilities	facilities	
	Number of animal units	animal units	
Prohibition: Unlimited Livestock Access	Feet of bank protected	feet	
	Number of farms	farms	



- Targeted Runoff Management Grant Program (ch. NR 153)
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<b>Table A. Agricultural Projects.</b> (continued)			
<b>A.2. Other Management Measures</b>			
	Units of Measure	Quantity	Measurement Method Used
Streambank & Shoreline Protection	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
Other:	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
Other:	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
Other:	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		

<b>Table B. Urban Construction Projects Serving Developed Areas.</b>			
<b>B.1. Required Management Measures</b>			
	Units of Measure	Quantity	Measurement Method Used
20-40% Total Suspended Solids (TSS) Reduction for NR 216 communities	TSS reduced	lbs.	
	TSS reduction	%	
<b>B.2. Other Management Measures</b>			
20-40% Reduction in TSS for non-NR 216 communities	TSS reduced	lbs.	
	TSS reduction	%	
Infiltration	Pre-development stay-on volume	%	
	Stay-on volume	ft <sup>3</sup> /year	
Peak flow discharge for 2 year/24 hour design storm	Change in cubic feet per second for design year	ft <sup>3</sup> /sec	
Protective areas	Bank protected	350 feet	Count
Fueling & maintenance areas	Oily sheen presence reduced	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Streambank & Shoreline Protection	Bank erosion reduced	84 tons	NRCS Streambank Erosion Equation Estimator
	Bank protected	350 feet	Count
Other:	Pollutant load reduction (if method available)		
	Units (use feet, acres or number as applicable)		

<b>Table C. Urban Planning Projects.</b>			
C.1. Governmental unit(s) involved (list by name):			
C.2. Estimate total acres covered by the	Existing Developed Urban Areas	New Development	Total Acres

- Targeted Runoff Management Grant Program (ch. NR 153)
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planning product:	acres	acres	acres
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<b>C.3. Products developed</b> (check all below that apply)	Identify Documents by Name (if applicable)
<input type="checkbox"/> Storm Water Plan	
<input type="checkbox"/> Construction or Erosion Ordinances	
<input type="checkbox"/> Post-construction Storm Water Ordinances	
<input type="checkbox"/> Other Types of Storm Water Quality Ordinances	
<input type="checkbox"/> Financing Methods: identified and evaluated	
<input type="checkbox"/> Financing Methods: developed or implemented	
<input type="checkbox"/> I & E Plan	
<input type="checkbox"/> I & E Implementation Activities	
<input type="checkbox"/> Other:	
<b>C.4. Identify the Storm Water goals addressed</b> (check all that apply)	
<input type="checkbox"/> Reduce TSS	Comments:
<input type="checkbox"/> Maintain infiltration	
<input type="checkbox"/> Control Peak Flow	
<input type="checkbox"/> Protective Areas	
<input type="checkbox"/> Control of Fueling & Maintenance Areas	
<input type="checkbox"/> Remove Illicit Discharges	
<input type="checkbox"/> Other:	

**4. Satisfaction of Notice Requirements.** If cost sharing for this project was offered under a formal notice pursuant to chs. NR 151 or 243, provide information for each notice in the table below.

Notice Information				Notice Satisfaction Information		
Chs. NR 151 or 243 Notice Type	Issue Date	From (Name)	To (Name)	Satisfied?		Date Letter Sent
				Yes	No	
				<input type="checkbox"/>	<input type="checkbox"/>	
				<input type="checkbox"/>	<input type="checkbox"/>	
				<input type="checkbox"/>	<input type="checkbox"/>	
				<input type="checkbox"/>	<input type="checkbox"/>	



- Targeted Runoff Management Grant Program (ch. NR 153)
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**5. Additional Information.** (Space will expand to fit your text.)

Project successfully completed as planned.

**6. Summary of Project Challenges.** (Space will expand to fit your text.)

White River, at the project location, is directly downstream of the Echo Lake dam and relatively flat from bank to bank. During more rare flooding events, much of the general area could be under water. Challenges occurred in design and construction to define the ordinary high water mark and effectively install fabric and rip rap to protect the eroding area. A typical riverbank cross section did not apply in this situation. Through field supervision and working in conjunction with WDNR representatives, we have successfully completed the project to reduce potential erosion into the river.

**7. Grantee Certification.**

Checking here  certifies that, to the best of your knowledge, the information contained in this report is correct.

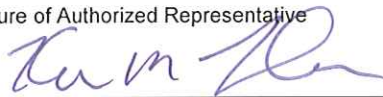
Name of Authorized Representative (type or print) ↓

Kevin Lahner

Title of Authorized Representative (type or print) ↓

City Administrator

Signature of Authorized Representative



Date

11/10/11

**8. For Departmental Use Only.**

Regional NPS Coordinator – Please complete the following:

8.A. Check here  if you have received the following from the project sponsor:

- one (1) printed, signed, original Final Report + attachments
- one (1) electronic version of Final Report.

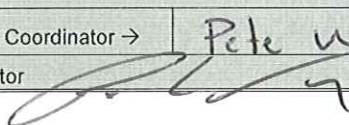
Send the printed, signed original Final Report with attachments + electronic version to the Community Financial Assistance Grants Manager. Community Financial Assistance will forward to Runoff Management Section Grants Coordinator.

8.B. Comments about this project:

8.C. Type or print Name of Regional NPS Coordinator →

Pete Wood

8.D. Signature of Regional NPS Coordinator



8.E. Date

12/9/11

Wisconsin Department of Natural Resources  
Bureau of Watershed Management (WT/3)  
101 S. Webster St.  
Madison, WI 53703  
PO Box 7921  
Madison, WI 53707-7921

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**NRCS Streambank Erosion Estimator (Direct Volume Method)**

Farmer / Cooperator Name:  
Tract Number:

City of Burlington  
White River Streambank Stabilization Project

Evaluated By:  
Evaluation Date:

Ryan Cardinal  
November 9, 2011

Field Number	Eroding Streambank Reach Number	Eroding Bank Length (Feet)	Eroding Bank Height * (Feet)	Area of Eroding Streambank (FT <sup>2</sup> )	Lateral Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT <sup>3</sup> ) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT <sup>3</sup>	Estimated Soil Loss (Tons/Year)
Pre-Project	1	350.0	10.0	3,500	0.50	1,750.0	Sandy Loam	100	87.5
	2								
	3								
Total Estimated Annual Streambank Erosion Soil Loss (Tons):									87.5

Field Number	Eroding Streambank Reach Number	Eroding Bank Length (Feet)	Eroding Bank Height * (Feet)	Area of Eroding Streambank (FT <sup>2</sup> )	Lateral Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT <sup>3</sup> ) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT <sup>3</sup>	Estimated Soil Loss (Tons/Year)
Post-Project	1	350.0	10.0	3,500	0.02	70.0	Sandy Loam	100	3.5
	2								
	3								
Total Estimated Annual Streambank Erosion Soil Loss (Tons):									3.5

Field Number	Eroding Streambank Reach Number	Eroding Bank Length (Feet)	Eroding Bank Height * (Feet)	Area of Eroding Streambank (FT <sup>2</sup> )	Lateral Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT <sup>3</sup> ) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT <sup>3</sup>	Estimated Soil Loss (Tons/Year)
	1								
	2								
	3								
Total Estimated Annual Streambank Erosion Soil Loss (Tons):									

\* Eroding bank height is measured along the bank, not the vertical height of bank.

*Streambank Erosion Calculation Formula:*

$$\text{Eroding Bank Length} \times \text{Eroding Bank Height} \times \text{Lateral Recession Rate (FT/YR)} \times \text{Soil Weight (lbs/ft}^3\text{)} = \text{Estimated Soil Loss Per Year (Tons)}$$

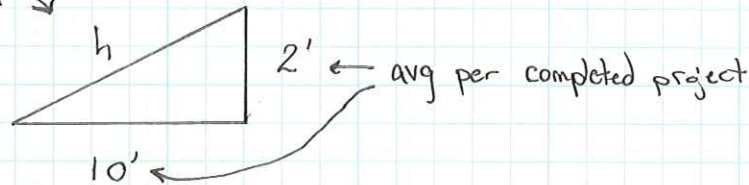
2000



## NRCS Streambank Erosion Estimator Notes & Assumptions

Eroding bank length → Per plans and completed project

Eroding bank height ↓



$$h = \frac{1}{2} (2') (10') = 10'$$

### Area of eroding streambank

Per pre-project conditions, area was heavily eroded with areas of bare bank & rills. Trees fell between application for grant & project design. Bike path eroded & fell into river.

Based off table in "Read Me" tab, this falls into the "severe" category with an assumption of 0.5 ft/year.

Post conditions observed and assumed to be in the slight category with 0.02 ft/year.

Soil texture from NRCS soils map of "Fox Loam" & "Sandy Gravel"

Chose "Sandy Loam" as closest equivalent.

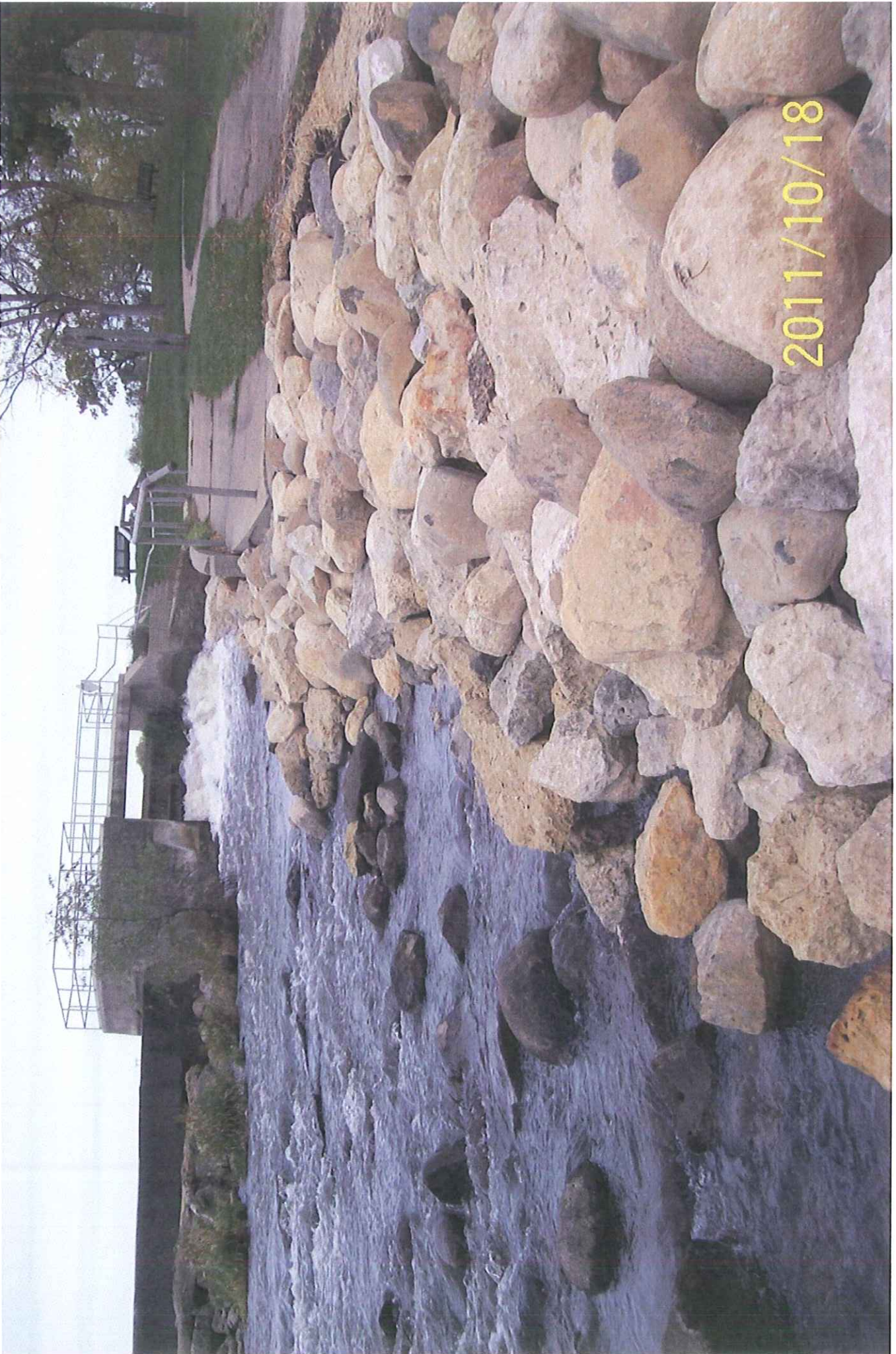
Pre-Project conditions 87.5 tn/yr

Post-Project conditions 3.5 tn/yr

Reduction from project 84 tn/yr

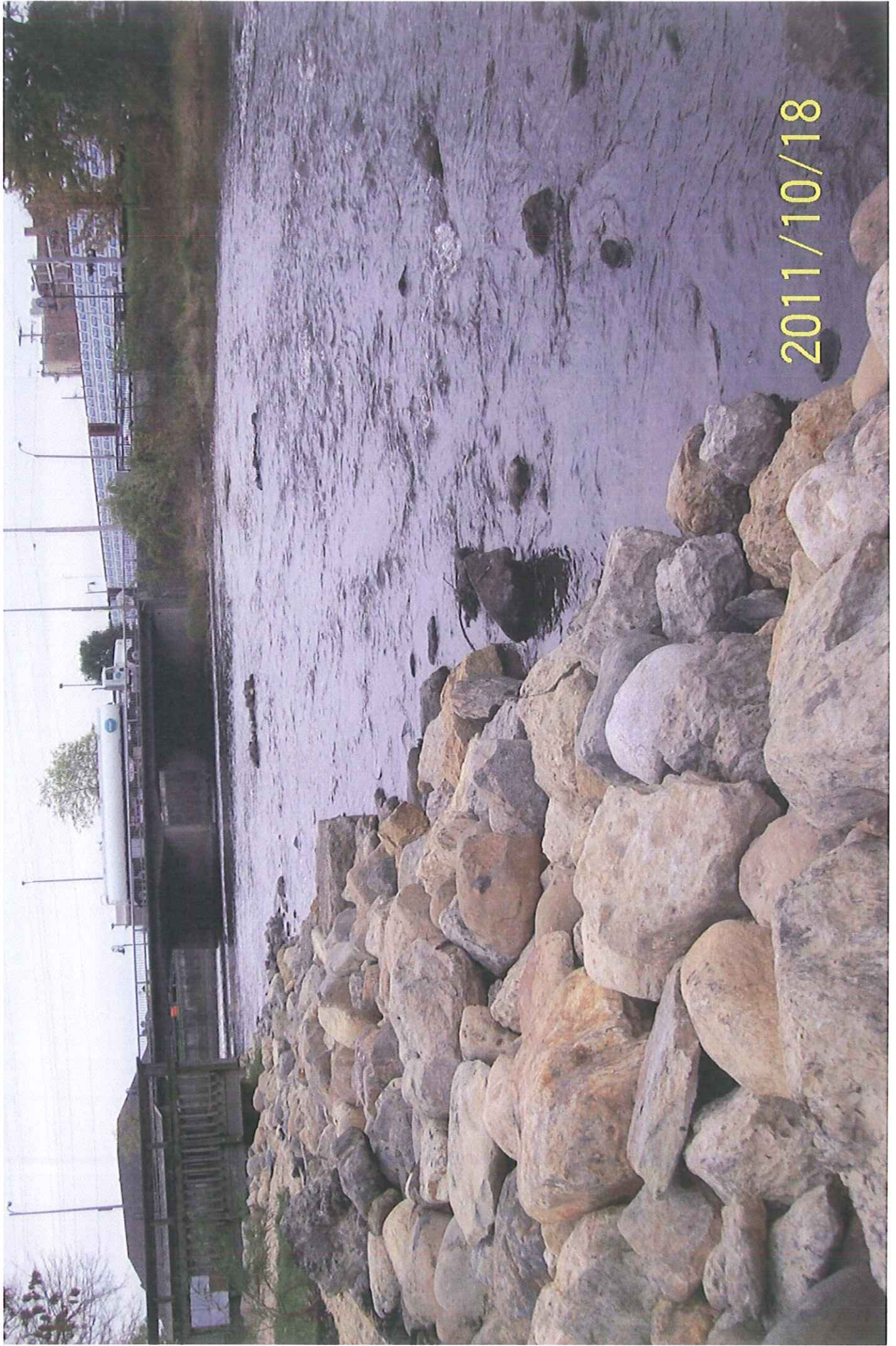


2011/10/18



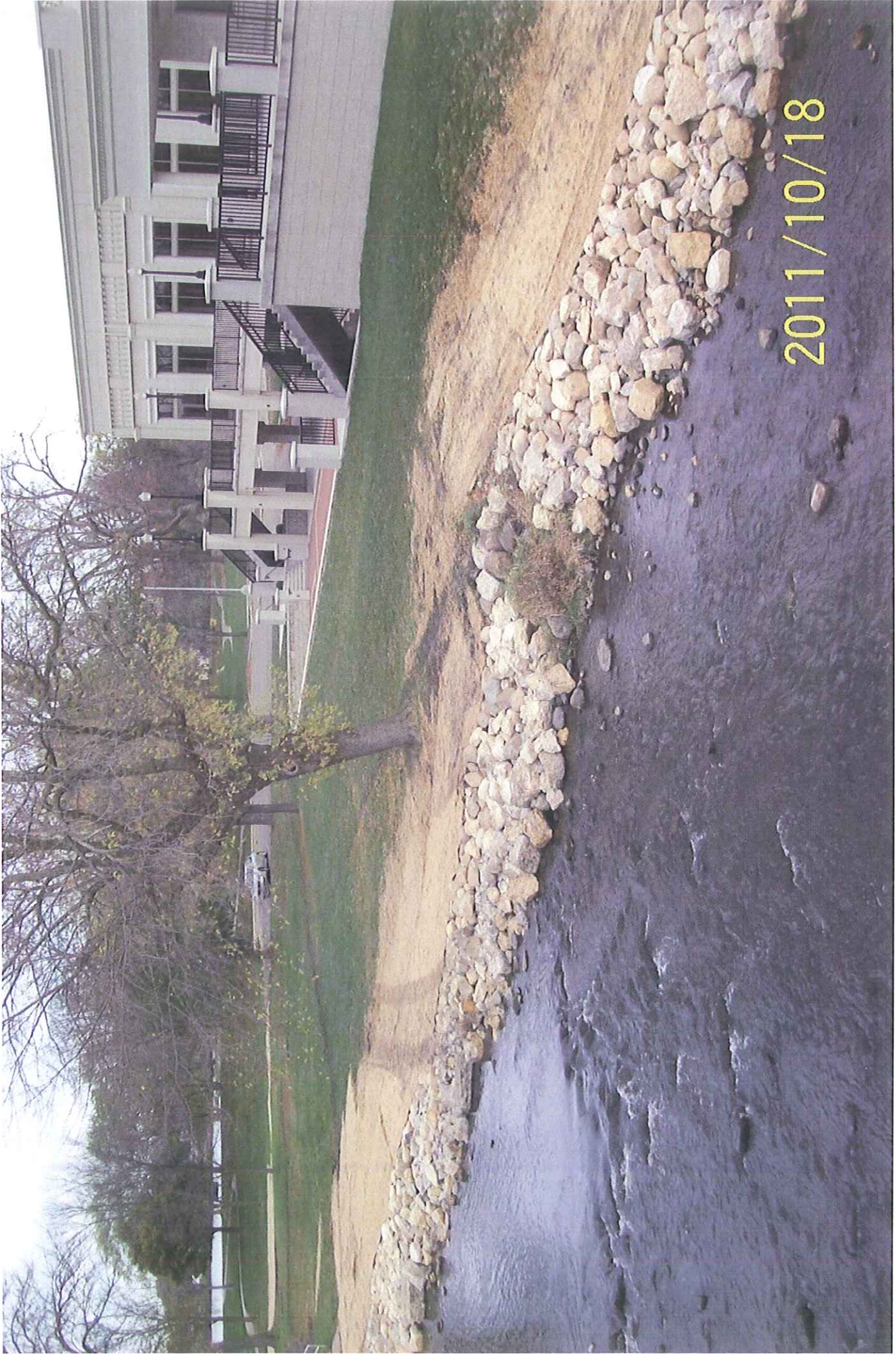


2011/10/18

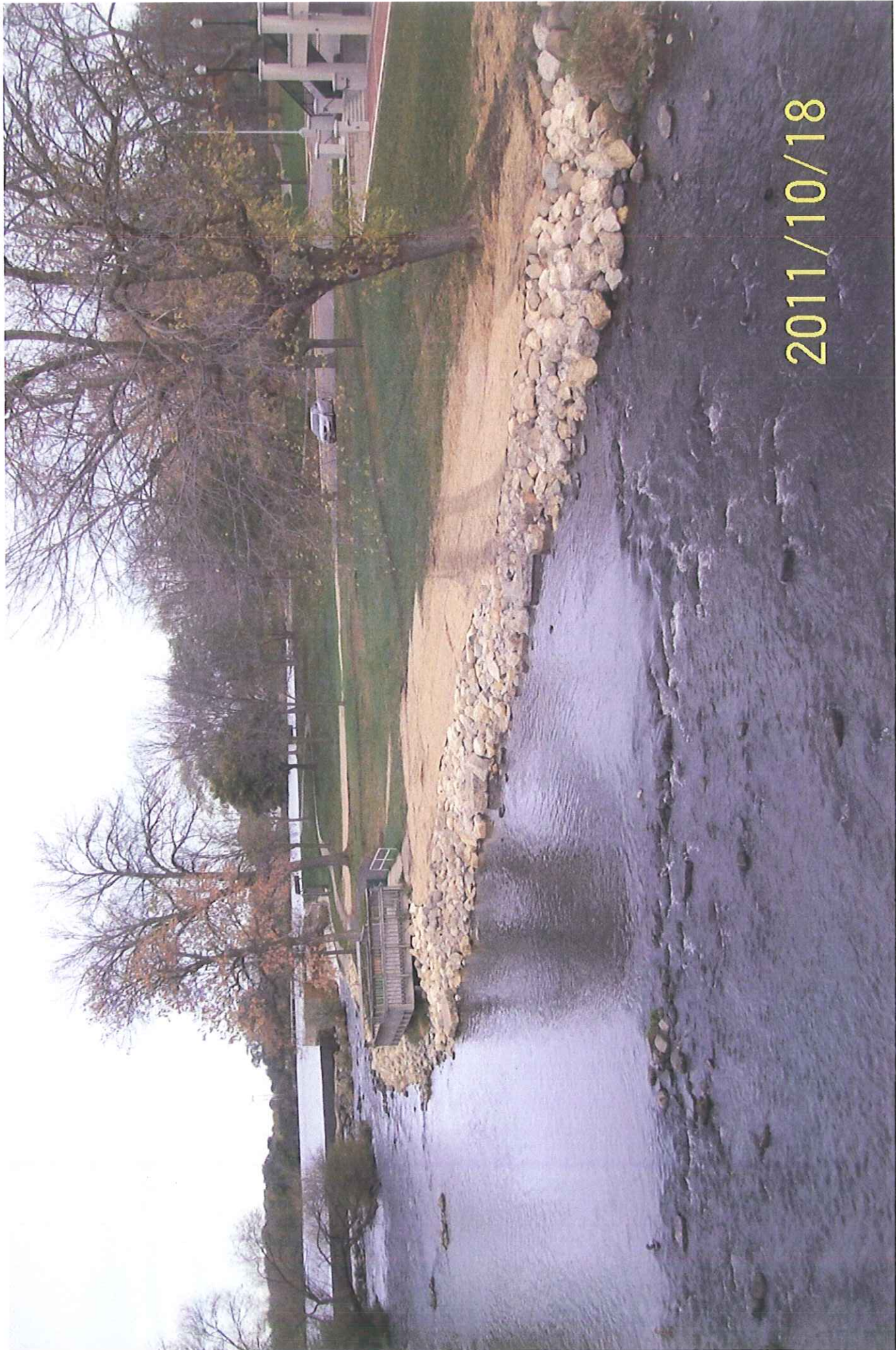




2011/10/18







2011/10/18