

*Review of  
Erosion and Sedimentation Program  
Delegation to the North Carolina Department  
of Transportation, Division of Highways*

*November 4, 2019*



*Performed by:*

*NCDEQ*

*North Carolina Department of Environmental Quality  
Division of Energy, Mineral, and Land Resources  
Land Quality Section*

*Report by:*

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## INTRODUCTION

The Land Quality Section reviewed the program delegation to the North Carolina Department of Transportation (NC DOT) between April 8, 2019 and October 31, 2019. The review and the results reported here are in accordance with requirements of the Sedimentation Control Commission (SCC) delegation to the NC DOT and § 113A-54(d)(2) and § 113A-56(b).

### § 113A-54. POWERS AND DUTIES OF THE COMMISSION

(d) In implementing the erosion and sedimentation control program, the [Sedimentation Control] Commission shall:... (2) Assist and encourage other State agencies in developing erosion and sedimentation control programs to be administered in their jurisdictions. The Commission shall approve, approve as modified, or disapprove programs submitted pursuant to G.S. 113A-56 and from time to time shall review these programs for compliance with rules adopted by the Commission and for adequate enforcement.

### § 113A-56. JURISDICTION OF THE COMMISSION

(b) The [Sedimentation Control] Commission may delegate the jurisdiction conferred by G.S. 113A-56(a), in whole or in part, to any other State agency that has submitted an erosion and sedimentation control program to be administered by it, if the program has been approved by the Commission as being in conformity with the general State program.

## PROJECT REVIEWS

Fourteen contract construction projects were chosen at random, with varying stages of construction, sizes, and the significance of the projects. Projects were generally between 40 and 99 percent completed.

Land Quality Section personnel from the regional offices and central office accompanied NC DOT personnel to the 14 projects. The review for each of the projects consisted of reviewing the erosion control plan for adequacy, inspecting the project for compliance, and examining the project files.

NC DOT is responsible for two types of inspections on each project: weekly NPDES/SPCA self-monitoring and monthly Roadside Environmental Unit (REU) inspections. NPDES Self-Monitoring and SPCA Self-Inspections are conducted by a project inspector from the office of the resident engineer for active design-build or contract construction, or from the office of the county or district engineer for active maintenance projects. The REU inspections are conducted by one of 7 REU Field Operation engineers. Each engineer covers 2 of the 14 DOT divisions across the state. The engineers each have generally one technician, who inspects secondary road projects and some contract construction. Projects are inspected monthly. Each project is evaluated on a scale of 1-10 for installation of measures, maintenance of measures, effectiveness of measures, plan implementation

and overall project evaluation. A total site score of 6 or less results in the issuance of an “Immediate Corrective Action” report (ICA). The weekly project inspections and monthly REU inspections were reviewed for each project.

Field data was collected on erosion and sediment control measure installation, maintenance and effectiveness. Timely provision of ground cover, phasing of grading, field revisions and sedimentation damage were also evaluated. Each project was evaluated for overall compliance with the Sedimentation Pollution Control Act. A summary of the fourteen projects follows.

CONTRACT PROJECTS

Division	DEMLR-Region	County	TIP #	Route	Contract Amount	Length (miles)
1	Washington	Martin	R-3826	NC-125 From SR-1182 (East College Road) to NC-125 Northwest of Williamston	\$9,472,971.40	2.6
2	Washington	Beaufort	-	Bridge #249 Over Duck Creek on SR 1337	\$ 2,121,457.06	0.126
3	Wilmington	New Hanover	U-4751	SR-1409 (Military Cutoff Road Extension)	\$ 95,498,821.29	4.156
4	Raleigh	Edgecombe	U-4762	SR-1250 (Springfield Rd) From US-64 Alt to SR-1243 (Leggett Rd)	\$ 5,516,161.43	1.29
5	Raleigh	Durham	U-0071	NC-98 to NC-147 East End Connector	\$ 141,949,500	4.009
6	Wilmington	Columbus	R-5749	Interchange US 74/76 and SR1001	\$ 9,398,677.98	1.196
7	Raleigh	Orange	R-5821B	NC-54 & SR-1006 Intersection Improvements	-	0.321
8	Fayetteville	Moore	-	Replacement Bridge #63 over Buffalo Creek	\$ 2,092,653.41	0.283
9	Winston-Salem	Forsyth	U-4734	Macy Grove Road Extension	\$ 12,819,745.99	
10	Mooreville	Union	B-5371	Replace Bridge over Clear Creek on US 601	\$ 2,199,969.58	0.369
11	Winston-Salem	Surry	-	Bridge 12 over Snow Creek	\$ 4,046,406.68	0.389
12	Mooreville	Gaston	U-3633	NC-273 (South Main ST) From Tuskagee Rd at Beatty Dr to Highland St at A&E Dr in Mount Holly	\$ 15,329,149.04	1.37
13	Asheville	Buncombe	I-5504	I-26/NC-191 (Brevard Rd) Interchange Modifications and I-26 Widening and Pavement Reconstruction	\$ 47,464,448	1.2
14	Asheville	Transylvania	R-5605	Davidson River Village Connector from US-64 to IS-276/US-64 in Pisgah Forest	\$ 6,601,487.68	0.789

## PROJECT EVALUATIONS

- NC-125 From SR-1182 (East College Road) to NC-125 Northwest of Williamston

NC DOT Division 1, Martin County

Type of Project: Contract

Date of NC DEQ Inspection: 4/8/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.2 in (4/26), 1.1 in (4/22)

DOT Inspection Scores: 9 (5/9), 9 (4/11), 9 (3/7)

Comments/Summary:

This is a 2.595-mile project with a budget of \$9,472,971.40. The plan appeared to be adequate. This project was approximately 98% completed and was in compliance during our inspection. Most erosion control measures had already been removed and permanent ground cover was established across most of the site. Areas where permanent ground cover was established had been tacked and seeded. Certain areas could use a little more straw and tack coverage. During the inspection we looked at an area where offsite sedimentation had occurred in November of 2018. Since the event of the offsite sedimentation riprap has been placed in the diversion ditch and the sediment has been cleaned up. During our inspection there were no signs of offsite sedimentation; however, the spot still appears to have issues establishing groundcover at the bottom of the riprap and could erode in the future. The REU Field Operation engineer stated that he plans to continue to monitor the site for permanent ground cover growth and hopes he will be able to close the project in one year after the entire site is stabilized.

NPDES self-inspections and REU inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Straw and Tack Coverage. (5/16/2019)



Photo - Riprap Diversion Ditch (5/16/2019)



Photo - Location of Nov. 2018 Offsite Sedimentation. (5/16/2019)



Photo - Culvert with Good Vegetation and Maintained Stone. (5/16/2019)



Photo - Roadside Slope with Good Vegetation. (5/16/2019)



Photo - Straw and Tack with Bare Patches. (5/16/2019)

- Bridge #249 Over Duck Creek on SR 1337

NC DOT Division 2, Beaufort County

Type of Project: Contract

Date of NC DEQ Inspection: 5/16/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.75 in (5/11) 0.25 in (5/4) 0.25 in (5/1)

DOT Inspection Scores: 9 (5/2), 9 (4/22), 8 (3/26)

Comments/Summary:

This is a 0.2-mile project with a budget of \$2,121,457.06. This project was approximately 65% completed at the time of inspection. The plan appeared to be adequate and measures were installed. The site was in compliance at the time of inspection but there were a few areas of concern. The biggest concern was a very steep roadway fill slope that leads into Duck Creek with high risk of slope failure. The slope was nearing a vertical cliff, and due to the steepness was struggling to establish ground cover. The DOT currently has a silt curtain in place at the base of the slope, however due to the height of the slope, it could easily overtop the silt curtain if it were to experience slope failure. The DOT wished to add riprap and expand the slope outward, however a moratorium stopped all water work in the area. The DOT is in the process of having a revised plan for this fill slope accepted so that they can prevent any future sediment damage. Another area of concern was an undersized slope drain on a fill slope leading into the waterway. Water has gone around the slope drains inlet and has created a rill underneath the erosion mat currently placed on the slope. If not fixed this could lead to further erosion of the slope and sedimentation into the creek. Overall the site had well maintained measures, and good groundcover. Recommendations made at the site were to get a revised plan to regrade and stabilize the fill slope with riprap, and install a new, bigger slope drain to prevent water from flowing around the device.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained. DOT made a few comments to help make self-inspection records more readable to an outside reader.





Photo - High risk fill slope leading into Duck Creek. (5/16/19)



Photo - Undersized slope drain. Rill erosion underneath mat. (5/16/19)



Photo - Good temporary ground cover on the slope. (5/16/19)



Photo - straw and tack on fill slope. (5/16/19)

- SR-1409 (Military Cutoff Road Extension) From SR-1409 (Military Cutoff Road) to US-17 In Wilmington

NC DOT Division 3, New Hanover County

Type of Project: Contract

Date of First NC DEQ Inspection: 8/27/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 6.00+ inches (8/19), 1.5 inches (8/16), 0.25 inches (8/12)

DOT Inspection Scores: 8 (7/23), 8 (6/25), 9 (5/29)

Comments/Summary:

This is a 4.16-mile-long project with a total budget of \$ 95,498,821.29. This part of the was approximately 30% completed. The approved plan appeared adequate and had been implemented properly. The site was in compliance during the inspection. Overall, the site appeared well contained and protected. There was a slight sediment loss out of the limits of disturbance that remained on site. The sediment loss was caused by a heavy rain event (6.00+ inches) that overwhelmed some silt fence along the future road alignment. DOT followed protocol, contacting DWR and cleaning up the sediment loss following DWRs instructions. A few recommendations were made during the first visit: 1) Continue maintaining all measures and all construction entrances. 2) Provide temporary or permanent ground cover on all bare and inactive areas within required NPDES time frames.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Stream diversion channel. (8/27/2019)



Photo - Stream box culvert. (8/27/2019)



Photo - Location of offsite sedimentation post large rain event. (8/27/2019)



Photo - Conveyor bring soil from borrow pit to site. (8/27/2019)

- SR-1250 (Springfield Rd) From US-64 Alt to SR-1243 (Leggett Rd).

NC DOT Division 4,  
Type of Project: Contract

Date of First NC DEQ Inspection: 10/2/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

This is a 1.3-mile project with a budget of \$5,516,161.43. This project was approximately 12% completed at the time of inspection. The approved plan appeared adequate and had been implemented properly. The site was in compliance at the time of our inspection. The site had its preliminary measures in place and all measures on site appeared to be well maintained. No grading had begun at the time of our inspection. There was limited land disturbance at the time of our inspection, mostly related to basin or utility installation. Utilities were actively being installed during our inspection. Areas that had been disturbed had been tacked and seeded. There were a few areas that needed some more straw and tack placed down to cover bald patches.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The record keeping was well maintained.



Photo - Seeded and tacked basin (10/2/2019)

- NC-98 to NC-147 East End Connector

NC DOT Division 5, Durham County

Type of Project: Contract

Date of First NC DEQ Inspection: 4/5/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Date of Second Inspection: 8/28/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 1 inch (3/25), 0.4 inches (3/21), 0.7 inches (8/16), 0.2 inches (8/15)

DOT Inspection Scores: 8 (3/4), 8 (1/23), 8 (7/30), 8 (6/26)

Comments/Summary:

This is a 4-mile-long project with a budget of \$ 141,949,500. The project was approximately 65% completed at the time of the first inspection. The approved plan appeared adequate and had been implemented properly. The site was in compliance based on the first inspection but had several maintenance issues that needed to be resolved. One of the slopes on site had failed. DOT staff believe this was due to the Triassic rock on site. DOT is in discussion with the geotechnical unit on how to solve the slope failure. Some of the matting on one of the basins was damaged and need to be replaced, and some slopes required some temporary or permanent ground cover. Overall, the site appeared to be in good shape. Recommendations were made during the first visit: 1) Apply supplemental seeding to improve the ground cover as needed. 2) repair and replace all damaged silt fence and basin lining. 3) Come up with a solution for the slope failure to prevent future issues.

A second inspection was conducted on August 28, 2019. During this follow up inspection the project was at the 75-85% mark. The site remained in compliance. Previous areas that needed seeding now had ground cover and the measures needing repairs appeared to be fixed. The slope failure remains to be resolved. The DOT states that they had built the slope back up twice only to have it fail again a few days later. No sediment was lost during the slope failure. DOT continues to work with the geotechnical unit for a solution. During this review, DOT staff stated that there had not been any ICAs issued to this project; however, the DOT have issued stop work orders to resolve issues on site.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained. Some older documentation has been lost due to a field office fire, but many of the old records have been recovered or replaced.



Photo - Good vegetation on slope and diversion ditch w/ check dams. (4/5/2019)



Photo - Skimmer basin with damaged liner and no bank stabilization. (4/5/2019)





Photo - Skimmer basin with well-established groundcover on embankments. (8/28/2019)



Photo - Slope Failure. (8/28/2019)

- Interchange US 74/76 and SR1001

NC DOT Division 6, Columbus County

Type of Project: Contract

Date of First NC DEQ Inspection: 8/27/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.75 in (8/25), 0.02 in (8/24) 0.01 in (8/23)

DOT Inspection Scores: 8 (8/7), 8 (7/2), 8 (6/4)

Comments/Summary:

This is a 1.196-mile project with a budget of \$ 9,398,677.98. This project was approximately 60% completed at the time of inspection. The plan appeared to be adequate. Based on our inspection conducted the site was in compliance. Measures appeared to be properly installed and well maintained. Temporary and permanent ground cover were adequately provided. A bucket crew was seen cleaning up some slight sediment loss that had gone into the ditch stream along the highway during our inspection. Sediment loss had occurred just the day prior. DOT followed protocol for sediment loss. A few recommendations were made in the field: 1) Continue to maintain all measures and construction entrances. 2) Ensure that the concrete washout is maintained and that a second washout is installed on the other end of the site.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo -Well maintained skimmer diversion ditch. (8/27/2019)



Photo - Bucket crew cleaning up slight offsite sediment. (8/27/2019)

- NC-54 & SR-1006 Intersection Improvements

NC DOT Division 7, Orange County

Type of Project: Contract

Date of First NC DEQ Inspection: 4/5/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.634 in (4/6), 0.04 in (4/5), 0.315 in (4/3)

DOT Inspection Scores: 8 (3/20), 8 (1/29), 8 (1/03)

Comments/Summary:

This is a 0.321-mile-long project that was about 99% complete at the time of our inspection. The approved plan appeared to be adequate. During our inspection of the site was in compliance and in the final vegetative/stabilization phase. Most erosion control measures had been removed and permanent ground cover was established across most of the site. The project has been opened to traffic. Site inspector frequently notices tire damage to roadside shoulders caused by the motoring public and tearing up the established groundcover. No offsite sedimentation was seen. We recommended that the DOT continue to monitor the site and to repair any damaged groundcover until the project is closed out.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Good ground cover in permanent diversion ditch. (4/5/2019)



Photo - Culvert outlet. (4/5/2019)

- Replacement Bridge 63 over Buffalo Creek

NC DOT Division 8, Moore County

Type of Project: Contract

Date of First NC DEQ Inspection: 9/12/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.75 inches (9/5), 1.1 inches (8/24), 1.2 inches (8/22)

DOT Inspection Scores: 8 (8/5), 9 (7/10), 8 (6/6)

Comments/Summary:

This is a 0.3-mile-long bridge replacement project with a budget of \$ 2,092,653.41. The project was approximately 65% completed at the time of inspection. The approved plan appeared adequate and had been implemented properly. Measures were well maintained, and the site had adequate ground cover. A few areas/ slopes did need some additional seeding. The site has had a few incidents of small amounts of sediment reaching the creek after a measure has failed, or after a large storm event. Each time DOT has followed protocol and worked with DWR to resolve the issue. There was no offsite sedimentation during our inspection.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained; however, it was noted that the self-inspection records were being signed before they were completed. DOT was advised not to sign any self-inspection reports until the full report was completed.



Photo - Well maintain diversion ditch with check dams (9/12/19)



Photo - Slope above outlet in need for more straw and seeding. (9/12/19)



- Macy Grove Road Extension

NC DOT Division 9, Forsyth County

Type of Project: Contract

Date of First NC DEQ Inspection: 8/7/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 2.4 inches (8/1), 1.5 inches (7/24), 0.8 inches (7/23)

DOT Inspection Scores: 8 (7/16), 8 (6/19), 8 (5/31)

Comments/Summary:

This is a -mile-long project with a budget of \$ 12,819,745.99. The project was approximately 50% completed at the time of inspection. One of the permitted wetland sites along the project experienced flooding during the August 1, 2.4-inch rain event, which caused some sediment to get into the wetland. DOT contacted DWR on how to proceed to remedy the situation. DWR told DOT to leave sediment in wetland until vegetation dies down in order to limit disturbance of the wetland. Sediment was still in the wetland during our inspection. During the inspection we noted that the baffles of the skimmer basins near the wetland needed to be replaced. We also advised that they needed to establish groundcover at the discharge site outside of one of the skimmer basins that was exposed, creating dirty water again. We expressed some concern about a concrete washout, on the far end of the project, that did not have a liner as well as that fact that none of the fuel tanks on site had secondary containment. Overall the site appeared well maintained and had adequate ground cover.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Unprotected soil between skimmer basin outlet and silt fence outlet. (8/7/2019)



Photo - Recently mucked basin in need for baffles to be replaced. (8/7/2019)



Photo - Skimmer basin outlet to well protected creek. (8/7/2019)



Photo - Good groundcover along roadside. (8/7/2019)

- Replacement Bridge over Clear Creek on US 601

NC DOT Division 10, Union County

Type of Project: Contract

Date of First NC DEQ Inspection: 9/5/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.21 inches (8/25), 0.33 inches (8/16), 0.68 inches (8/14)

DOT Inspection Scores: 8 (7/31), 8 (6/27), 8 (6/7)

Comments/Summary:

This is a 0.37-mile-long project with a budget of \$ 2,199,196.58. The project was approximately 50% completed at the time of inspection. The approved plan appeared adequate and had been implemented properly. The site was in compliance during our inspection. For the most part, sediment control measures have been well maintained throughout the site. The silt fence underneath the new bridge had areas of damage that needed repair, and the site construction entrance also needed some new stone, but the diversion ditches, silt fence outlets, and skimmer basins were all in good condition. The site had experienced some offsite sedimentation that went into the creek in the past, but that has been cleaned up following DWR protocols. The contractor has installed a temporary solution at the site of the sediment loss to prevent further sediment damage from the area but were advised to permanently stabilize the slope. There was also evidence of rill and gully erosion both within the sites limits of disturbance and just outside one of the silt fence outlets; however, no sediment damage was noted at the time of our inspection. The DOT was advised to stabilize these areas as well to prevent potential future issues. One major issue with the site was the large amount of construction debris and trash on site, right next to one of the basins. There was also a poorly maintained concrete washout in the same area. DOT was advised to clean up the debris and properly install the concrete washout. Apart from these issues, the site had adequate groundcover on all slopes and well-maintained measures overall.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Construction entrance needs to be freshened up. (9/5/2019)



Photo - Well maintained diversion ditch and good slope stabilization. (9/5/2019)



Photo - Construction debris and unmaintained concrete washout. (9/5/2019)



Photo - Well maintained skimmer basin. (9/5/2019)



Photo - Slope failure temporarily stabilized with rock. (9/5/2019)



Photo - Gully erosion beyond silt fence outlet. (9/5/2019)



Photo - Slope drain protection. (9/5/2019)

- Bridge #12 over Snow Creek

NC DOT Division 11, Surry County  
Type of Project: Contract

Date of First NC DEQ Inspection: 8/7/2017  
Evaluation: In Compliance  
Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.375 inches (8/6), 0.1 inches (8/1), 0.1 inches (7/31)  
DOT Inspection Scores: 8 (7/19), 8 (6/10), Pre-Con (5/27)

Comments/Summary:

This is a 0.1-mile-long bridge replacement project with a total budget of \$4,046,406.68. The project was approximately 70% completed. The approved plan appeared adequate and had been implemented properly. Overall, the site appeared well contained and protected. Creek banks and the areas underneath the new bridge had good groundcover and well-maintained perimeter controls. No off-site sedimentation was observed during the inspection.



NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Slope protected with matting. (8/7/2019)

- NC 273 Mount Holly Widening

NC DOT Division 12, Gaston County

Type of Project: Contract

Date of First NC DEQ Inspection: 9/18/19

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.13 inches (9/14)

DOT Inspection Scores: 7 (8/1725), 8 (7/21), 8 (6/21)

Comments/Summary:

This is a 1.37-mile-long project with a total budget of \$15,329,149.04. The project was approximately 40% completed at the time of inspection. The approved plan appeared adequate and had been implemented properly. The site was in compliance during our inspection. Adequate permanent and temporary ground cover was provided on most of the disturbed areas. The basins on either side of the permitted creek on site were both well-maintained as well as the diversion channels leading into them. Some minor issues were noticed during the inspection. There were a few sites

where mud and dirt were being tracked into the roads from the disturbed area. DOT was advised to install a new/repair existing construction entrances at these locations. There was also no liner being used in the concrete washout on site. No off-site sedimentation was observed during our inspection.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed on both inspections and the record. The recordkeeping for this project was well maintained.



Photo - Well maintained diversion channel and forebay. (9/18/19)



Photo - Concrete washout with no secondary containment. (9/18/19)



Photo - Good groundcover on slope. (9/18/19)



Photo - Construction entrance needed. (9/18/19)

- I-26/NC-191 Interchange Modifications and I-26 Widening and Pavement Reconstruction

NC DOT Division 13, Buncombe County

Type of Project: Contract

Date of First NC DEQ Inspection: 6/25/2019

Evaluation: Out of Compliance

Off-Site Sedimentation: Yes (still cleaning up offsite sediment from 6/19)

Second Date of Inspection: 8/21/2019

Evaluation: In Compliance

Off-Site Sedimentation: None

Recent Project History:

Rainfall: 0.29 in. (6/24), 1.13 in. (6/19), 0.69 in (6/18)

DOT Inspection Scores: 7 (6/20), 8 (5/16), 8 (4/17)

Comments/Summary:

1.2-mile-long project with a total budget of \$ 47,464,448. The project was approximately 70% completed at the time of inspection and was in a mix of stabilization and grading phases across the site. The approved plan appeared adequate and had been implemented properly. The site was found to be out of compliance during our first inspection conducted on June 25, 2019, due to a lack of control measure maintenance and remaining offsite sediment in the creek; however, the site was actively working to get the site back into compliance at the time of inspection. Workers were seen pumping water from offsite sedimentation into a site bag to remove sediment from the creek, as directed by DWR. Work was also being done to increase measures that were overwhelmed during the 6/18-6/19 rain events to prevent failure in the future. Most maintenance issues were noted in areas that were in the stabilization phase. Due to the lack of ongoing work in the area, measures had been ignored and have cause maintenance to fall behind. Inlet protection had fallen apart resulting in sediment and debris being at the bottom of multiple catch basins, and in one case filled to the top with sediment and water. In one spot it was noted that excess matting was rolled and used as a wattle in a diversion ditch. It was not determined if this rolled mat was used to replace or in place of a wattle, but it was noted as a possible deviation from the approved plan. Overall the site had good groundcover on its slopes and diversion ditches but needed to keep up with maintenance across the entire site. A few recommendations were made at the site: 1) Maintain and repair all measures on site until permeant stabilization has been achieved. 2) Ensure all measures on approved plan are adequately installed, and not replaced with an unapproved measure.

The second inspection was conducted by Asheville Regional Office staff. During this follow up inspection, the site was in compliance.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well-maintained.



Photo - Pumping offsite sedimentation out of creek. (6/25/2019)



Photo - Unmaintained inlet protection full of sediment and water. (6/25/2019)



Photo - Good stabilization on slopes and well-maintained channel. (6/25/2019)



Photo - Increasing control measures. (6/25/2019)

- Davidson River Village Connector from US-64 to IS-276/US-64 in Pisgah Forest

NC DOT Division 14, Transylvania County

Type of Project: Contract

Date of First NC DEQ Inspection: 6/25/2019

Evaluation: In Compliance

Off-Site Sedimentation: No

Recent Project History:

Rainfall: 0.25 in. (6/24), 0.543 in. (6/19), 1.618 in. (6/18)

DOT Inspection Scores: 8 (6/19), 8 (5/14), 8 (4/01)

Comments/Summary:

This is a 0.789-mile project with a budget of \$ 6,601,497.68. This is a contract project, and is project is in Transylvania County. The project was approximately 70% completed at the time of inspection. The erosion and sediment control plan received at the site was found to be adequate. The project runs through multiple brownfields which has experienced multiple delays waiting for brownfield approvals. One of basins for this site was lacking ground cover. On the far end of the project, where many of the brownfield delays had occurred, there were some major adjustments to the approved plan such as a basin removal and grade changes for the road elevation. There was no plan revision or review for these changes. Upon discovering this, we discussed with the DOT about minor and major changes to approved plans and when changes to plans require a plan revision/ review verses when they can simply use plan mark ups.

NPDES self-inspections and Roadside Environmental Unit inspection reports were reviewed. The recordkeeping for this project was well maintained.



Photo - Slope above permitted creek needing more groundcover. (6/25/2019)



Photo - Well maintained measures underneath new bridge. (6/25/2019)





Photo - Poorly protected inlet. (6/25/2019)

## **POSITIVE FINDINGS**

- DOT Internal Inspection Process

NC DOT is responsible for two types of inspections on each project: NPDES Self-Monitoring Inspection and REU monthly inspection. NPDES Inspections for all active projects are conducted at least weekly by a project inspector from the office of the resident engineer or his designee for design-build or contract construction, or from the office of the county or district engineer for maintenance projects. REU Field Operations staff inspect all DOT projects monthly. The weekly project inspections and monthly REU inspections were reviewed for each project. Record keeping appeared consistent across all the divisions and well maintained. In one case the weekly NPDES Self-Monitoring Inspections were seen to have been signed prior to its completion. DOT staff was told not to sign any unfinished documents.

- Educational Efforts

NC DOT has contracted with N. C. State University to train and certify contractors and staff in the design, management and installation of sedimentation and erosion control practices. There are three levels of certification: level one certification is for installers, level two for inspectors, and level three for designers. Certification is required to work on a DOT project. NC DOT is also funding extensive research on innovative sedimentation and turbidity control measures.

- Innovative Approach

It is much appreciated that NC DOT takes sediment and erosion control seriously on their construction sites. NC DOT continues to provide good design concepts for contract and maintenance projects. Some innovative approaches for sediment control were noticed during the review, such as use of flocculants on nearly every one of its projects statewide. Almost every project involved in this review had either used or planned to use PAM during the construction process in tandem with their standard control measures. PAM was often applied to check dams and wattles along diversion ditches leading to sediment basins and discharge points. Sites also made sure to have the last device PAM-free. The use of flocculants helps to keep sediment on site and our waters clean.

## **ISSUES NOTED AND RECOMMENDATIONS**

- Plan Revision Reviews

The NC DOT should rethink when it is appropriate to simply make in field revisions/ plan mark ups and when a plan needs to be revised and go back through the review process. Over the course of our review we noted one or two incidences where major alterations/deviations from the plan, such as basin relocations and grading changes, were made as simple field revisions as opposed to a plan revision with a subsequent plan review. While minor alterations, such as silt fence addition or alignment adjustments can be handled with red line drawings, any major deviation or alteration to a plan should result in a plan revision and review to ensure that the new plan will be adequate for the sites conditions.

- Concrete Washouts and Secondary Containment

Any project involving concrete (including those with sidewalks or curb and gutter) should have a designated concrete washout, and a detail(s) provided for its construction/maintenance. Concrete washouts (and earthen material stockpiles) should be located at least 50 feet from storm drains and streams unless no reasonable alternatives are available. Improvement in the installation of concrete washouts onsite was noted throughout this year's review. However, DOT contractors need to be reminded to use the washouts; there were several instances of improperly installed, maintained, or improperly used concrete washout pits during this review. Similarly, we observed multiple occurrences of improper fuel tank storage on site and a lack of secondary containment.

- Maintenance of Measures

Many of the issues with sites noted on this year's review were the result of inadequate maintenance of measures, especially in areas where work crews are not actively performing work at that time. Often, we would find inactive areas on larger sites that appeared to have been ignored, resulting in failing measures, or even offsite sediment. DOT should make sure routine maintenance is being performed on all erosion control measures and devices on site, not just the ones nearby the current task of the construction plan. Measure need to be well maintained until permanent stabilization is well established.

## **CONCLUSION**

Of the fourteen (14) projects reviewed, twelve (12) of them were in compliance. In most of the cases, measures were effective and had been maintained. Plans were available onsite on fourteen (14) projects and were adequate. Generally, revisions had been noted as such on the plans, where revisions were necessary; however, some of these revisions may have needed to go through the review process. The REU staff has done well to periodically and routinely inspect all the projects on a monthly basis. Record keeping and monitoring of erosion and sedimentation control measures was good.