6 CAPITAL IMPROVEMENT PROJECTS BY WATERSHED

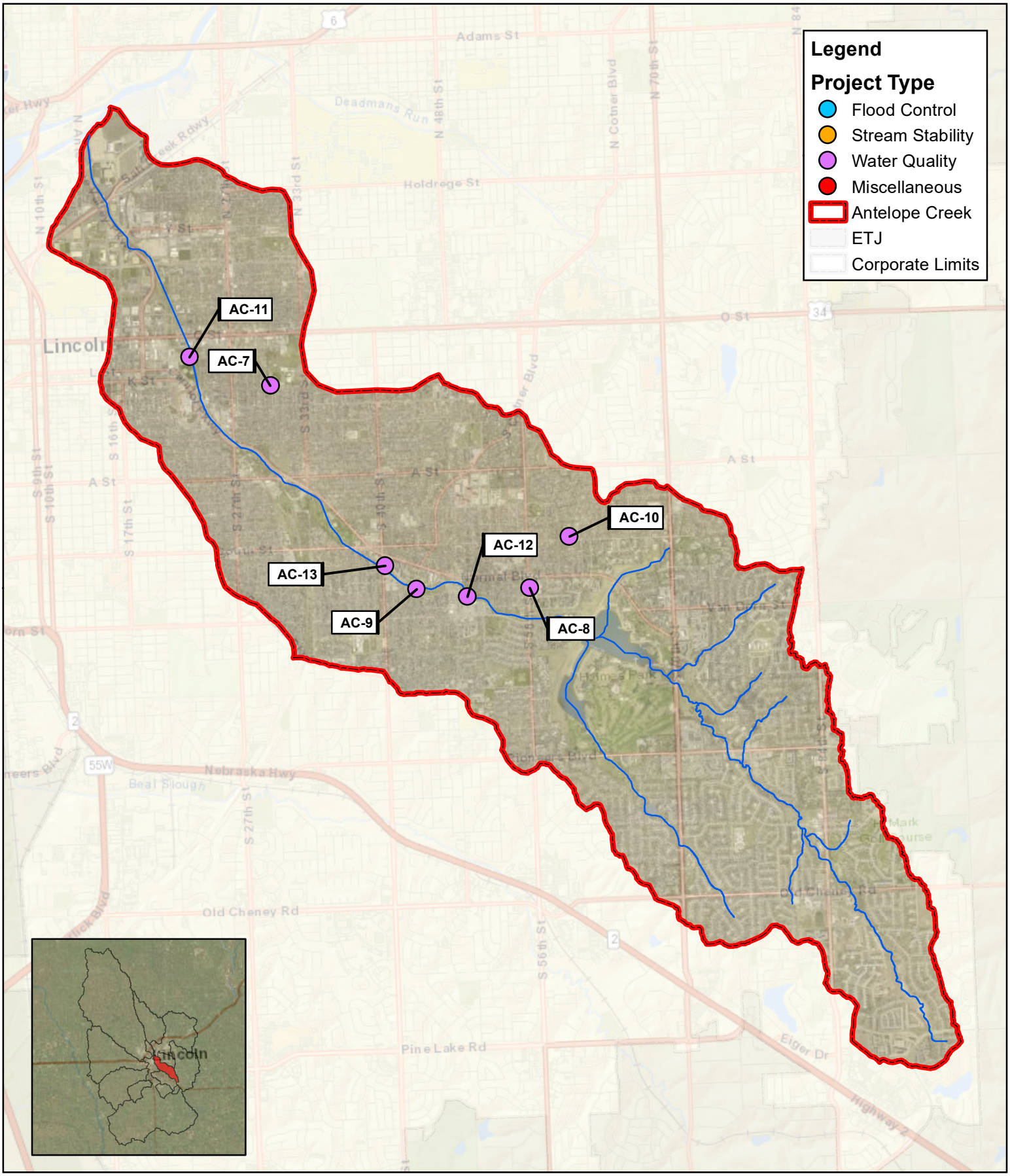
6.1 Antelope Creek

Table 5 - Proposed Projects - Antelope Creek Watershed

Project ID	Project Type	Project Location	Project Description	2021 Prioritization Score*	2021 Updated Cost**
AC-7	WQ	Woods Park (West of 33rd St. & J St.)	Bioretention & Hydrodynamic Separators	100	$291,192
AC-8	WQ	Gere Library (SE of 56th St. & Normal Blvd.)	Bioretention & Hydrodynamic Separators	80	$110,653
AC-9	WQ	Eden Park (North of 44th St. & Antelope Creek Rd.)	Bioretention	100	$52,414
AC-10	WQ	NW of 60th St. & South St.	Detention Cell Retrofit	80	$52,414
AC-11	WQ	SW of 24th St. & N St.	Antelope Creek Labyrinth Weir Water Quality	195	$727,979
AC-12	WQ	Van Dorn Plaza & US Post Office (North of 48th St. & Van Dorn St.)	Bioretention	80	$75,710
AC-13	WQ	SE of 40th St. & Normal Blvd.	Bioretention & Hydrodynamic Separators	80	$145,596

***These scores were determined in 2021 using concept level data and are subject to change as additional data becomes available**

****Costs are adjusted to 2021 dollars based on inflation since the original master plan was completed**



Created By: MB
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File: Lincoln Prioritization CIP Locations.mxd

Figure 5: Proposed Projects
Antelope Creek Watershed

Lincoln, NE

0 1,250 2,500 5,000 Feet

Antelope Creek: Bioretention & Hydrodynamic Separators | AC-7

Woods Park (West of 33rd St. & J St.)

Problem Description: This project is located west of 33rd and J Street at Woods Park, and is illustrated in Figure 8-9. The sub-watershed for this project is approximately 2 acres in size. The land use consists of residential development, park space and recreational facilities. Flow within the sub-watershed is generally in a westerly direction.

Recommendation: Install hydrodynamic separators near parking areas as shown in Figure 8-9. Flow from the parking areas should be directed into the units. Outflow from units should be either directed back into the storm drainage system or nearby bioretention areas. Grit chambers can be substituted for hydrodynamic separators where only sediment and gravel are of concern. Construct bioretention areas as shown in Figure 8-9. Total size of the bioretention areas is approximately 2,000 square feet. Each bioretention area is approximately 1.0 to 1.5 feet deep, with 2 to 3 feet of engineered soil. Overflows within a bioretention cell should carry large rainfall events to nearby storm drains. Curbs should be cut, and inlets modified where possible to allow runoff from nearby parking areas and rooftops to be captured.

Impact to Water Quality: Use of hydrodynamic separators can reduce the overall pollutant loading to Antelope Creek by capturing floatable debris, oils, grease, sediment, and gravel. The units should always be located in areas accessible for maintenance. Installing the bioretention areas will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The bioretention areas will also help to slow stormwater runoff; aiding in the prevention of future erosion downstream. Disconnecting impervious areas and redirecting them to green areas helps promote infiltration while reducing the volume of stormwater runoff. A reduction in the volume of stormwater runoff directly reduces each pollutant load being carried to Antelope Creek. Table 8-10 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $291,191

FOR MORE INFORMATION

Visit lincoln.ne.gov/watershed or email watershed@lincoln.gov

**Refer to the original Master Plan for all Figure and Table Callouts*

Antelope Creek: Bioretention & Hydrodynamic Separators | AC-8

Gere Library (SE of 56th St. & Normal Blvd.)

Problem Description: This project is located southeast of 56th and Myrtle Street. The sub-watershed for this project includes the adjacent parking areas to the east; less than 3 acres in size. Flow within the sub-watershed is generally in a westerly direction.

Recommendation: Install a hydrodynamic separator near parking lot as shown in Figure 8-10. Flow from the parking lot should be directed into the unit. Outflow from unit should be directed back into the storm drainage system. A grit chamber can be substituted for the hydrodynamic separator where only sediment and gravel are of concern. Construct a bioretention area as shown in Figure 8-10. The bioretention area is approximately 2,000 to 2,500 square feet and approximately 1.0 to 1.5 feet deep with 2 to 3 feet of engineered soil. Overflows should have large events directed to nearby storm drain inlets. Curbs should be cut, or inlets modified where possible to allow runoff from nearby parking areas and rooftops to be captured.

Impact to Water Quality: Use of hydrodynamic separators can reduce the overall pollutant loading to Antelope Creek by capturing floatable debris, oils, grease, sediment, and gravel. The units should always be located in areas accessible for maintenance. Installing the bioretention areas will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The bioretention area will also help to slow stormwater runoff, which will aid in the prevention of future erosion downstream. Disconnecting impervious areas and redirecting them to green areas helps promote infiltration while reducing the volume of stormwater runoff. A reduction in the volume of stormwater runoff directly reduces each pollutant load being carried to Antelope Creek. Table 8-11 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $110,652

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Antelope Creek: Bioretention | AC-9

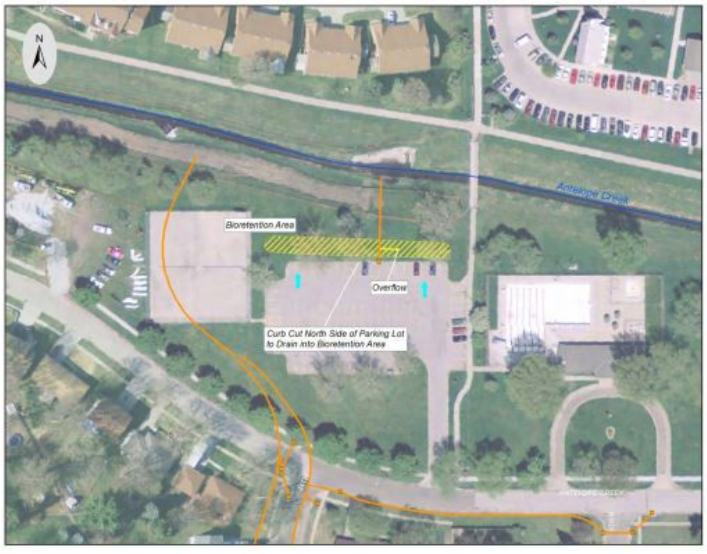
Eden Park (North of 44th St. & Antelope Creek Rd.)

Problem Description: This project is located north of 44th and Antelope Creek Road. The sub-watershed for this project is confined to the parking lot and areas immediately adjacent; less than 2 acres in size. The land use consists of parking areas and green space. Flow within the sub-watershed is generally in a northerly direction.

Recommendation: Installation of curb cuts along the north side of the parking lot to allow runoff to drain into a bioretention area. Construct a bioretention area as shown in Figure 8-11. Total size of the bioretention area is approximately 1,000 to 1,200 square feet. The bioretention area is approximately 1.0 to 1.5 feet deep, with 2 to 3 feet of engineered soil. Overflows within a bioretention cell should carry large rainfall events to nearby storm drains.

Impact to Water Quality: Curb cuts allow stormwater from the parking lot to discharge into the bioretention area designed to treat pollutants carried in the water. The bioretention area will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The bioretention area will also help to slow stormwater runoff, which will aid in the prevention of future erosion downstream. Disconnecting impervious areas and redirecting them to green areas helps promote infiltration while reducing the volume of stormwater runoff. A reduction in the volume of stormwater runoff directly reduces each pollutant load being carried to Antelope Creek. Table 8-12 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $52,414



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Antelope Creek: Detention Cell Retrofit | AC-10

NW of 60th St. & South St.

Problem Description: This potential retrofit project is located north of 60th and South Street, illustrated in Figure 8-12. The sub-watershed for this project is approximately 3 acres in size and consists entirely of residential development. Flow within the sub-watershed is generally in a southwesterly direction.

Recommendation: Modify the lining of the existing extended detention basin to enhance infiltration into soils. This can be accomplished by replacing approximately 1,500 to 2,000 square feet with 2 to 3 feet of engineered soil to promote infiltration, and planting deep rooted vegetation to aid soil aeration. Modifications to the basin outlet were also included as part of this project to aid in retaining runoff to infiltration and sediment deposition.

Impact to Water Quality: Modifying the existing detention basin will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The detention basin will also help to slow stormwater runoff; aiding in the prevention of future erosion downstream. A reduction in the volume of stormwater runoff directly reduces the loading of sediment, nutrients, and E. coli to Antelope Creek. Table 8-13 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $52,414

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Antelope Creek: Antelope Creek Labyrinth Weir Water Quality | AC-11

SW of 24th St. & N St.

Problem Description: This project is located south of N Street, west of 24th Street and is illustrated in Figure 8-13. The watershed (downstream of and not including Holmes Lake) for this project is approximately 3,900 acres in size; the land use is wide ranging, including residential development, commercial development, schools, park space and recreational facilities. Flow within the sub-watershed is generally in a northwest direction.

Recommendation: Construct an inline concrete weir along Antelope Creek, approximately 250 feet upstream of the labyrinth weir southwest of 24th and N Street. Excavate upstream of the new weir to provide an inline wet pond that is approximately 300 feet long, and 4 to 5 feet deep. The sides of this wet pond should be stabilized with sheet pile, gabion, or concrete. This inline wet pond will create an area for TSS to drop out of the water column and provide an area for easy removal of the captured sediment. Remove the existing concrete channel and articulated concrete block lining upstream of the labyrinth weir. Construct a low-flow concrete channel downstream of the new weir. A concrete apron should be placed at the base of the new concrete weir and extended to the outlet of the two stormwater outfalls located just downstream of the new weir. The low flow channel should be constructed to direct base flows toward the sluice gate located in the labyrinth weir. The channel should also be designed with a stub wall so that if the sluice gate is closed or under moderate flows, portions of the flow can be directed to the existing enclosed conduit. During high flows, the green space could potentially fill up and spill over the labyrinth weir. Construction of this project will require coordination with the US Army Corps of Engineers.

Impact to Water Quality: The wet pond is intended to capture large amounts sediment and gravel. A portion of the overall phosphorus load is expected to be bound to the sediment. By placing these types of structures in an area accessible to maintenance crews, the overall phosphorus and sediment load within Antelope Creek can reduced. The new weir would increase the water surface area during base flows, therefore increasing the amount of sunlight exposed to the water and reducing the amount of E. coli within Antelope Creek. The new concrete channel and green space will both increase aesthetics and flow through the Labyrinth Weir. Table 8-14 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $727,978

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Antelope Creek: Bioretention | AC-12

Van Dorn Plaza & US Post Office (North of 48th St. & Van Dorn St.)

Problem Description: This project is located in Van Dorn Plaza, near 48th and Van Dorn Street. The total sub-watershed for this project is approximately 2 acres in size; the land use consists entirely of commercial development. Flow within the sub-watershed is generally in a northeast direction.

Recommendation: Construct bioretention areas as shown in Figure 8-14. Total size of the bioretention areas is approximately 2,000 to 2,500 square feet. The bioretention areas are approximately 1.0 to 1.5 feet deep, with 2 to 3 feet of engineered soil. Overflows within a bioretention area should carry large rainfall events to nearby storm drains. Nearby inlets should be modified to allow runoff from nearby parking areas and rooftops to flow to the bioretention areas.

Impact to Water Quality: Inlet modifications allow stormwater from the rooftops and parking lots to discharge into the bioretention areas designed to treat pollutants carried in the water. Rooftops and parking lots often pollute stormwater with heavy metals, sediment, gravel and oils and greases. The bioretention areas will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The bioretention areas will also help to slow stormwater runoff; aiding in the reduction of future erosion downstream. A reduction in the volume of stormwater runoff directly reduces each pollutant load being carried to Antelope Creek. Table 8-15 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $75,709

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Antelope Creek: Bioretention & Hydrodynamic Separators | AC-13

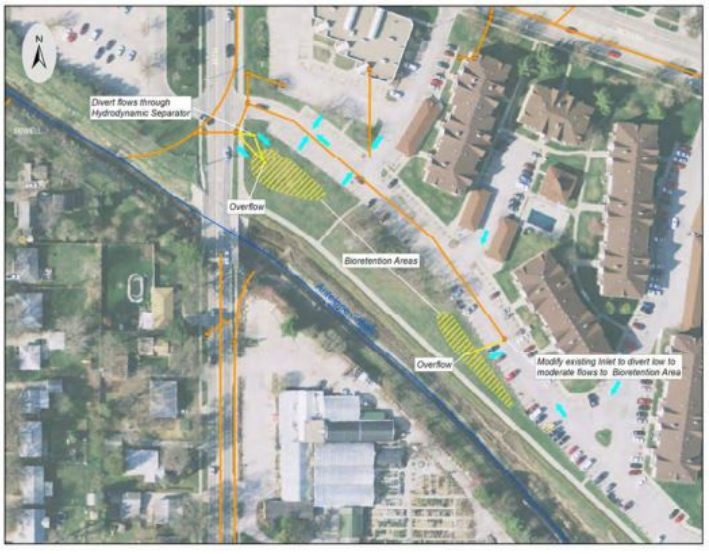
SE of 40th St. & Normal Blvd.

Problem Description: This project is located southwest of 40th and Normal Boulevard. The sub-watershed for this project is confined to the parking areas immediately north; less than 3 acres in size. The land use consists of parking areas and residential development. Flow within the sub-watershed is generally in a northwesterly direction.

Recommendation: Install a hydrodynamic separator near the parking lot, as shown in Figure 8-15. Flow from the parking lot should be directed into the unit. Outflow from unit should be directed back into the storm drainage system. Grit chambers can be substituted for hydrodynamic separators where only sediment and gravel are of concern. Construct bioretention areas as shown in Figure 8-15. Total size of the bioretention areas is approximately 3,000 to 3,500 square feet. The bioretention area is approximately 1.0 to 1.5 feet deep, with 2 to 3 feet of engineered soil. Overflows within a bioretention area should carry large rainfall events to nearby storm drains. Curbs should be cut, or inlets modified where possible to allow runoff from nearby parking areas and rooftops to be captured.

Impact to Water Quality: Use of hydrodynamic separators can reduce the overall pollutant loading to Antelope Creek by capturing floatable debris, oils, grease, sediment, and gravel. The units should always be located in areas accessible for maintenance. Installing the bioretention areas will promote infiltration, reduce runoff, and reduce the loading of sediment, nutrients, and E. coli to Antelope Creek. The bioretention areas will also help to slow stormwater runoff, which will aid in the reduction of future erosion downstream. Disconnecting impervious areas and redirecting them to green areas helps promote infiltration while reducing the volume of stormwater runoff. A reduction in the volume of stormwater runoff directly reduces each pollutant load being carried to Antelope Creek. Table 8-16 summarizes the current pollutant load, as well as the anticipated load reduction based on the structural BMPs to be implemented within this site. These loads are largely based upon WinSLAMM, and were adjusted to account for a variety of site specific measures.

Estimated Project Cost: $145,595



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