

Cheyenne Business Parkway (CBP) Natural Area Water Quality BMP Identification and Planning Grant

**Project Sponsor:
Laramie County Conservation District
December 22, 2017**

This project was conducted in cooperation with the State of Wyoming and the United States Environmental Agency, Region 8, Cheyenne LEADS, and those who served on the CBP Natural Area Committee including Barb Gorges (Audubon Society), Janet Marschner (Cheyenne LEADS), Zach Roehs (Laramie County Community College), Lindi Kirkbride (LCCD Board), Brent Lathrop (The Nature Conservancy), Jeff Wiggins (Cheyenne Greenway Committee), Bill Loken (Lowes) and Robert Koehler (Sierra Trading Post).

Project No. 205J2015B

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Executive Summary

The Cheyenne Business Parkway Natural Area (CBPNA) BMP Identification and Planning Grant was initiated when the District assumed management of the natural area from Cheyenne LEADS. LCCD employees desired a master plan for the area, not only for water quality BMPs but for a pathway to follow for all of our program needs. LCCD was awarded the grant in early 2016 and after an initial delay due to employee turnover and contract agreements, the project was completed in December, 2017. The LCCD contracted with Ayers Associates to provide said comprehensive master plan.

The LCCD was awarded \$40,000 in 205J funding and estimated a non-federal match of \$29,841.74, making for a total project budget of \$69,841.74. The District did expend the full 205J appropriation but only committed a non-federal cash match of \$17,891.30, yielding an actual project expenditure of \$57,891.30. Non-federal match towards the project represented 31% of total project costs.

The project was to serve as an initial phase of a comprehensive water quality BMP masterplan for the CBPNA that would provide us a list of projects that could be implemented over time to help improve water quality in the lower Dry Creek and Crow Creek basins. The goals of the project were to identify a list of BMPs developed at a 35% design with three of the projects being developed to a 95% design based on a prioritization of the CBPNA Committee. All BMPs were to contain associated costs for implementation prioritization. Each of the three priority designs would have education components associated within the design, as education is a key factor for the natural area.

In lieu of the 95% design drawings for three specific BMPs, a more enhanced BMP identification and master plan was produced as the consultant suggested this would be a better path for generating local sponsorship that would ultimately lead to match opportunities for grants. While there were some benefits from this approach, the District had some complications in working with the consultant to clearly outline the expectations and deliverables for the project. These complications are described later in the report. Overall, the enhanced master plan included more educational BMPs that even incorporated some of the areas historical aspects. Ultimately, nine BMPs were identified and brought to a 35% design level with corresponding cost estimates that can serve as a basis for design-build projects and sufficient design and cost analysis for overall site grading and pathway projects.

Background

The CBPNA represents 150 acres of wetland, riparian, and upland habitats located in southeast Cheyenne at the bottom of the Dry Creek watershed. This area lies approximately 1/2 mile above Dry Creek's confluence with Crow Creek, a 303(d)-listed stream segment for *E. coli* (a pathogenic bacteria that poses a human health risk and is also an indicator of fecal contamination). Upstream segments of Crow Creek flowing through the City of Cheyenne are also listed for *E. coli*, selenium, and sediment. In addition to these formal listings, Crow Creek is

also heavily impacted by a variety of other urban runoff pollutants (e.g., sediment from construction sites and road sanding, bacteria from pet waste and illicit discharges, oil/grease and other chemicals from motor vehicles, heavy metals, pesticides, fertilizers and other nutrients) that have degraded water quality. Dry Creek has been identified through the TMDL process as a contributor of urban nonpoint source pollution to the main stem of Crow Creek so projects implemented through the CBP Natural Area should also reduce pollutant loading to Crow Creek.

Dry Creek has historically been an intermittent stream that only flowed during snowmelt and storm events but as Cheyenne's population has expanded in recent years, the flow regime of the small waterway has increased and the stream now runs water almost year-round. The Dry Creek basin provides drainage for approximately 50% of the city as it flows from northwest Cheyenne, near Central High School, down the Dell Range corridor to its eventual confluence with Crow Creek near the Hereford Ranch. In a city of over 62,000 people, there are few areas that afford the opportunity to implement water quality BMPs across a broad floodplain without impacting future development. The CBPNA is unique in that approximately 1.25 miles of Dry Creek flows through the CBP Natural Area with a largely intact, hydrologically connected, floodplain. Much of the property lies within the 100-year floodplain ensuring that the property will likely never be developed. Given the area's size, location in the Dry Creek watershed, and the close proximity to Crow Creek, this area provides a unique opportunity to implement numerous and diverse water quality BMPs over a broad area that will maximize the water quality treatment benefits before this water flows into Crow Creek.

The CBPNA lies immediately downstream of the Laramie County sponsored Lower Dry Creek Wetland project that was constructed in 2010 using Section 319 funds. Our work in the CBPNA will build upon that project's success by adding both similar and different BMPs to the lower Dry Creek basin to maximize water quality treatment. The collective effort of these two projects should dramatically improve water quality in the lower Crow Creek watershed and help us to reach our ultimate goal of having Crow Creek meet all state water quality standards and support all designated uses.

This project was the initial "programming" needed to tell the where, what, and how to best implement water quality BMPs to maximize the water quality treatment benefits on Dry Creek as it flows through the CBPNA. This project served as the comprehensive plan moving forward providing us with a complete list of projects that can be implemented over time to help improve water quality in the lower Dry Creek and Crow Creek basins. The primary pollutants we desired to address through this project include *E. coli*, sediment, and other common urban runoff pollutants (e.g., oil/grease, heavy metals, pesticides/fertilizers, etc.). The design identified potential BMPs/projects including the development and expansion of shallow and deep water wetland habitats across the property as well as a "street-to-creek" water quality feature showing the treatment of stormwater runoff as it flows from LCCD's future office parking lot down to Dry Creek. One of the most important BMPs was the design of a new

channel allowing for more natural channel geomorphology, retaining a longer residence of water on the natural area.

The need for a comprehensive project focused on assessing, planning, and identifying what BMPs to implement and where to implement them developed out of a larger planning effort currently being undertaken by LCCD. LCCD, in cooperation with Cheyenne LEADS and the CBPNA Planning Committee, is working to transform the CBPNA into an outdoor education park with the goal of providing unique passive and active natural resource educational opportunities to Laramie County residents of all ages while improving the area's wildlife habitat value and maximizing the water quality benefits. Specific projects identified through this planning/assessment process will not only maximize the water quality benefits of the area but will also be a corner stone of this large outdoor classroom, showcasing the importance of water quality and water quality BMPs.

Goals and Outcomes

The goal of the project was to provide a comprehensive list and location of BMPs that will be implemented over time to reduce the amounts of non-point source pollutants entering lower Dry Creek and ultimately flowing into Crow Creek. Four objectives were set to accomplish this overarching goal: 1) administer the project, 2) develop a drainage study to understand the area's hydrology, both current and future, 3) select a consulting firm to perform BMP identification and finally 4) obtain the design. Another mutual goal derived from the comprehensive list and design would be to integrate an educational component to accompany the BMP.

The comprehensive list of BMPs were to be designed at a 35% level with cost estimates as funding allowed. Three priority BMPs were to be taken to a design level of 95% and include final cost estimates and permitting requirements. The consulting firm would provide a final report summarizing its findings, designs, and cost estimates.

The first objective was to effectively administer the funds, progress, and design over the life of the project. While reimbursements were submitted, the timeliness of the submittals were not on par with the schedule established through the Project Implementation Plan (PIP). Employee turnover, consultant selection, contract agreements, and unfamiliarity with the 205J procedures led to delays at every step of the process. However, the all of steps of the process listed in the PIP were completed. LCCD also communicated regularly with the WDEQ Nonpoint Source Program Coordinator about project progress and submittal timelines.

The City of Cheyenne engineering staff was to perform a comprehensive drainage study detailing expected inflows and outflows of stormwater across a spectrum of potential storm events above the CBPNA. The study was to include future flow increases, especially as the City continues to expand to the north and east of the area of concern. The City engineering staff did

perform said study. The LCCD also established a seasonal staff gage within the natural area to help understand runoff patterns and to track yearly increases in contributions from upstream development. This gage site will continue to be operated seasonally for the next several years.

The third objective included releasing a Request for Proposals (RFP) and developing a selection process for contracting a consultant to provide a master plan and design. This phase was delayed for a few months to fill the LCCD Water Specialist position, but once the RFP was turned out, the process went quickly. An interview committee was assembled in November with participants from both the LCCD Board, Cheyenne LEADS, and the CBPNA Committee. The committee selected Ayres Associates to perform the design work because they believed Ayres had the most innovative ideas for the natural area. LCCD finalized contract agreements with Ayres Associates at the end of February 2017.

The final objective was to identify and design BMPs to maximize water quality benefits of the natural area to improve water quality in the Dry Creek and Crow Creek drainages. Ayres met with the LCCD employees at least three times individually and the LCCD Board once. CBPNA committee meetings occurred both at the beginning of the design phase and toward the end. Initial meetings seemed to progress well, setting the stage for the correct direction of the design. Ayres convinced the LCCD staff that we should pursue a more enhanced master plan that would prepare us for better funding opportunities in lieu of spending the majority of the money on 95% designs for three of the identified BMPs. The LCCD Board did not desire to pursue the suggested funding strategies and directed Ayres to focus on the enhanced list of BMPs.

Ayres proceeded with their enhanced master plan which did identify several water quality BMPs for the natural area. The LCCD was presented a couple of plan sets assuming we were being shown the latest versions for our consent before finalizing the detailed designs at a 35% level and implementation costs with load reduction estimates. The District organized the last committee meeting where Ayres presented the final "Draft" designs. It was at this point the District realized the plans were not going to be produced with any greater details.

In hind-sight, the District has found that one must incorporate *all* of the details described in the Request for Proposal into the contract agreement. Although we feel this project did complete some useful water quality BMP planning, we felt disappointed in the overall product provided and have learned how to improve management of such projects moving forward. When compiling design objectives at percentage-based levels, one must detail the exact deliverables to be assumed at said percentage. For example, a 35% design was assumed by the District to include at least some initial contour lines and corresponding capacity tables for wetland pond designs. Another example would be that our creek restoration design should include some limits of disturbance, cut/fill estimates, utility easements, etc., which it did not. The test for this design will become evident if the District is able to use these plans to move to a design build phase.

Task Activities

Task #	Task Title	Task Description	Actual Deliverables
1	Administration	Administer the project efficiently and effectively, submit reimbursement requests, keep all records, file all reports, and obtain any necessary permits.	Invoices were submitted and budgets reported including cash match and non-cash matches
2	Drainage Study	The City of Cheyenne Engineering Department will serve as a project partner and aid in performing a comprehensive drainage study looking at inflow and outflows of stormwater into and out of the CBP Natural Area.	City of Cheyenne Engineering Department completed its report and is presented in the deliverables appendices
3	RFP Development and Interviews	LCCD, with the help of other project partners, will develop an RFP for the scope of work. LCCD, again with partner help, will conduct consultant interviews and provide formal selection recommendations to the LCCD Board of Supervisors. LCCD will then develop and formalize a contract for services with the selected firm.	Project partners conducted an interview and contracted Ayres Associates to perform the design and master planning.
4	BMP Programming & Design	The contracted firm will analyze all potential water quality BMPs and begin providing location recommendations and preliminary cost estimates associated with each practice.	The consulting firm did compile a comprehensive list of BMPs and preliminary cost estimate for each. NPS pollution load reductions were not provided. A 95% level of design was not performed for 3 prioritized BMPs

BMP Implementation

Not Applicable in this design project

Monitoring Results

The District did not perform water quality monitoring on the CBPNA for this design study.

Partners

The LCCD requested numerous partners to help establish a vision for the CBPNA. LEADS representatives were pivotal to secure on the committee, being the landowners. The Laramie County Community College and the High Plains Chapter of the Audubon Society were both compiling survey information at the natural area prior to the committee's formation. Therefore, it was logical to incorporate these two entities into our committee. From that point we attempted to incorporate a broad spectrum of nearby business managers, state agencies and City representatives, Laramie County District No. 1, and The Nature Conservancy.

These partners proved valuable in providing insight into what desires and visions were acceptable for the area. The groups overall goal was to maintain the area as a natural shortgrass prairie floodplain ecosystem. Ayres' initial committee meeting provided a visual preference guide for the master planning direction of efforts. The committee overwhelmingly favored a more natural look to all BMP projects. Several hours of decision making were performed by the committee on at least two separate occasions during the consultation period.

The District will continue to request input from this committee when pursuing implementation of BMPs. The committee should not only help provide prioritization of BMPs but may help obtain funding or contribute ideas in regards to funding outside of the normal grants.

Education

The background goal of the entire design was to incorporate an education aspect into every BMP. We believe this was accomplished in the plan. We have numerous sites from which our staff can monitor and teach water, biological and environmental sciences. The consultant has even built some local history into a few of the outdoor classrooms, tying multiple disciplines together in a natural area setting. This portion of the design was successful.

Complications

Ultimately, the goals as described in the Program Implementation Plan were not completed as initially set out. While the master plan did identify a comprehensive list of BMPs, none were taken to the 95% design level. The District felt disappointed that while the master plan did provide a comprehensive list of BMPs, it didn't meet *our* expectations of a 35% design. We did receive a cost analysis spreadsheet breakdown for each BMP.

The District chose to pursue a plan that would use an enhanced masterplan and BMP design that would attract a better funding solution. The thought was this type of plan would be a better use of 205J funding than completing a full design on three smaller projects. So, as stated

before, we did not pursue a 95% design for the “streets to creeks”, bank stability, and wetland enhancement-stabilization BMPs.

The common denominator in the lack of generating the best product possible was the change in personnel. The initiator of this natural area design had a more intimate knowledge of the area and desired concept. The replacement staff at that time did not have enough project management experience to make effective decisions which produced a design that would take us to the next level. The District did receive a comprehensive list of BMPs designed at a 35% level with educational opportunities melded into most of the design. As mentioned before, the Districts concept and the consultants concept of a 35% design were not in alignment. Therefore, in any future design RFPs, a detailed list of required deliverables would be described for each level of design.

Recommendations

The LCCD has learned from the process of the CBPNA project. The District feels that it should perform its own conceptual masterplan given our staff’s expertise in a variety of fields. After this point, we would be able to prioritize each conceptual BMP and pursue an engineering design at a level that will be permit-ready. In other words, consultant assistance should only be pursued when true engineering is a necessity. We anticipate some struggles with moving the CBPNA ahead to a design-build phase from this point but are committed to successful BMP implementation in the future.

The District believes the current 205J grant system is fine. The system the grant employs should prevent most mishaps from occurring. We would not recommend any changes.

Financial Summary

Task #	Task Title	205J Funds Expended	Nonfederal Match Expended	Total NPS Expenditures	Other Federal Funds Expended
1	Administration	0	\$2650.78	\$2650.78	NA
2	Drainage Study	0	\$1538.64	\$1538.64	NA
3	RFP Development and Interviews	0	\$2216.29	\$2216.29	NA
4	BMP Programming & Design	\$40,000	\$11,485.59	\$51,485.59	NA
	TOTALS	\$40,000	\$17,891.30	\$57891.30	NA

Appendices

Revised Cost Estimates – Ayres Associates

CBPNA Engineering Designs – Ayres Associates

Final Report – BMP Identification and Planning Project – Ayres Associates

CBPNA Drainage Study – City of Cheyenne