# 5.0 Information and Education Campaign

In order to gain acceptance and promote a watershed-based restoration plan, this public education campaign was prepared to instill within the residents, commercial and industrial businesses, developers, visitors, and public officials a heightened level of awareness of the connection between individual actions and the health of their watershed and water resources. The objective of this section of the plan is to promote, publicize, and facilitate watershed education for the purpose of encouraging the public to reduce the discharge of point and nonpoint source pollutants in local waters to the maximum extent practicable. The current plan will serve as a developmental foundation of public involvement, which will be expanded and updated to meet long-term goals and objectives.

The main focus of the first and second year will be on communicating with household members within the watershed, with a concerted effort to reach large operation farmers and residents along waterways. The primary goal of this first phase will be to develop awareness within the communities of the study area of the water cycle and how we impact the inputs and outputs. Educating residents, visitors and employees on practices and behaviors they can implement in their lives which will result in improvement and protection of the watershed will be a secondary emphasis. During Phase 2, messages will build upon those developed in the preceding years. It is the hope of the steering committee that implemented BMPs within the watershed will serve as learning tools on the effects of land uses and practices.

### 5.1 Relation to the Watershed Management Plan

The planning process for the Pond Creek watershed recognizes the importance of public involvement in developing a restoration plan and in its short-term acceptance for long-term sustainability. Successful stakeholder participation will, among other things, aid in plan acceptance and improve the probability of success. Efforts were made to engage diverse stakeholders in the process of creating the watershed management plan, and to foster stewardship in residents of water and other natural resources through education, outreach, and training opportunities. A continuous effort has been cultivated to increase local commitment to watershed management and to sustain the project by integrating it into community work plans.

In the early stages of the planning process, public meetings were organized to introduce the role and purpose of watershed management planning to residents. The meetings were also opportunities to collect concerns from stakeholders regarding water resources in the watershed and to provide explanations of the planning process. Public sessions were organized at the end of the planning process in order to present findings and recommendations and to discuss local efforts to implement the plan. Such meetings were highly effective in streamlining

the planning process by addressing local and regional concerns on water quality, increasing public awareness, and determining the likelihood of various BMP implementations.

## 5.2 Proposed Public Education Activities

This section details the proposed educational activities designed to encourage the public to reduce the discharge of pollutants into local waterways. The overall goal is to create an awareness of water quality and watershed issues that will promote positive actions to protect and enhance the integrity of Pond Creek watershed. These activities are organized according to Goals 3 and 4 listed in Section 4.0 of this document.

After the development of overriding goals and specific objectives to meet these goals, target audiences were identified to maximize the potential results from each objective. It is recognized that land usage of the study area is primarily agriculture, although old and new residential areas, commercial and industrial areas, and new developments are all found on the landscape. Specific water resource related behaviors are associated with these separate audiences and messages will be prioritized to those behaviors that will have the most impact on a specific objective of the plan. While this process is not exact, the major goal of this section will be used as a tool to increase awareness, understanding, and support for the Pond Creek watershed restoration plan and its recommendations.

Proposed education and information activities will be updated and amended as necessary to compliment the objectives of the plan. Supplemental details regarding responsible parties, contacts and dates will need to be defined in task work plans as partnerships and funding resources are secured.

Goal Three: Provide for the protection and enhancement of the Pond Creek Watershed by increasing the public's understanding of nonpoint source pollution and means of prevention.

Overall target audiences: Residents, visitors, public employees, businesses, industries, construction contractors, and developers

### **Proposed Activities:**

**Objective One:** Promote personal watershed stewardship (Phase 1)

- Task 1. Educate the public about their responsibility for and stewardship of their watersheds, and promote awareness of and participation in existing stewardship and monitoring programs
- Task 2. Encourage public reporting of the presence of illicit discharge or improper disposal of materials into their watershed
- Target audience: Residents, visitors, businesses, industries, and construction contractors

Time Line: Annual, bi-annual, and/or quarterly materials will be created and disseminated during years 1 through 3. Printing and distribution will be on-going as supplies last.

**Objective Two**: Develop educational tools for the citizens of the watershed to reduce sediment, nutrient, pathogen, and toxin contributions from crop management, septic system, and wastewater practices (Phases 1 & 2)

- Task 1. Disseminate informational brochures to landowners discussing conservation easements, land donations and other means to permanently protect their lands
- Task 2. Provide educational materials and technical assistance to property owners regarding vegetative buffers, septic care and proper fertilizer application
- Target audience: Residents, visitors, businesses, industries, construction contractors, and developers
- Time Line: Starting in Year 1, newsletters will be published bi-annually throughout years 1 through 3. Starting in Year 4, newsletters will be published annually through Year 10.

**Objective Three**: Conduct tours of the model BMP sites and hold workshops for landowners, contractors, local governments and their personnel (Phase 2)

- Task 1. Assist in promotion of educational workshops and programs for target audiences that will be organized through agencies such as UT Extension and NRCS, among others
- Target Audience: Residents, government officials and employees, construction contractors, and developers
- Time Line: Throughout the year as workshop dates are established. Plan and conduct tours following the successful implementation of agricultural, residential and streambank structural and/or non-structural BMPs likely to begin at year 4.

Goal Four: Provide for long-term protection of the Pond Creek watershed through the adoption and enforcement of local land use polices and conservation practices.

Overall Target Audience: Public officials and employees, residents, businesses, industries, construction contractors, and developers

### **Proposed Activities:**

**Objective One**: Sponsor workshops and training sessions to increase local enforcement of regulations (Phases 1 & 2)

- Task 1. Assist state and federal agriculture agencies to help expedite the planning processes
- Task 2. Promote education of local government employees on water quality related goods and services and pollution prevention

Target Audience: Government officials and employees

Timeline: Task 1 to begin bi-annually in Years 1 through 3 to streamline the planning and permitting process of many of the BMPs recommended in Section 4.0. Tasks 1 and 2 will continue or begin annually in Years 4-8.

**Objective Two**: Continue water quality testing to establish a baseline assessment of the conditions of the watershed (Phases 1 & 2)

- Task 1. Continue a consistent water quality data collection regiment
- Task 2. Encourage stakeholders to identify possible contaminant sources to be included in the assessment
- Task 3. Promote data sharing and sampling methodology among the different agencies

Target Audience: Public employees, residents, businesses

Timeline: Task 1 and 2 will begin or continue monthly through Phase 2 of the restoration plan. Samples will continue to be collected no less than quarterly through the end of Phase 3. Task 3 will begin or continue bi-annually through Phase 3.

**Objective Three**: Enforce accountability policies and penalties on specific nonpoint source pollution contributors (Phase 3)

- Task 1. Assist local officials with the drafting of ordinances for the protection of water quality
- Task 2. Work with local communities to provide a means for zoning ordinance enforcement
- Target Audience: Public officials and employees, residents, businesses, industries, construction contractors, and developers
- Timeline: To begin annually in Year 5, or more often as deemed necessary.

The proposed messages stemming from the above list of objectives and tasks are displayed in Table 5.1 below, delineated by audience(s).

Table 5.1. The prioritized messages by target audience, based on current knowledge of audience behaviors.

benaviors.				Local
	Households	Agriculture	Business	Government
Watershed awareness: water cycle and watershed definitions and how we impact them	x	x	x	x
Water friendly lawn and garden practices; mowing habits; erosion control; landscaping with native plants	x			
Proper hazardous waste storage & disposal	X	х	X	x
Septic system maintenance	x			x
Surface water retention	x	х		
Advantages of and opportunities for buffer and filter strips	x	x		x
Impact of tillage practices		X		
Impact of fertilizer/pesticide use and mitigation options	x	x		
Impacts of livestock waste and mitigation options		x		
Opportunities for farmland conservation partnerships		x		x
Participation in watershed and education plan network	x	x	x	x
Identification and protection of key habitats and features	x	x	X	x
Advantages of and opportunities for innovative stormwater management			X	x
Benefits of water conservation measures	x	x	x	

# 6.0 Monitoring and Evaluation

Although achievement of water quality standards is the goal of plan implementation, the Steering Committee recognizes the importance of a long-term water quality, quantity and biological monitoring program to determine where resources should be focused as they progress toward meeting those collective goals. Measurement and evaluation are important parts of planning for they can indicate whether or not efforts are successful and provide a feedback loop for improving project implementation as new information is collected an/or obtained. Additionally, if the monitoring and evaluation program displays positive results as they relate to improved water quality, the plan will likely gain support from partnering communities and agencies, as well as local decision makers, and overall increase the likelihood of project sustainability and success.

Monitoring and evaluation progress in the watershed will be conducted at the local level since this approach is the most cost effective and consistent if sampling is done by one entity for an entire study area. Details regarding responsible parties, monitoring standards, sampling sites, and frequency of monitoring for qualitative and quantitative evaluation will need to be defined in project work plans as funding and manpower resources are secured. An established quantitative sampling regime is presently active by UT for monthly grab samples at 8 sites, as defined in Section 2.0. This campaign has successfully served its purpose of gathering baseline data to which post-initiative sample data may be compared.

The technical and economic feasibility of pollutant treatment, recovery, or adjustment of the evaluation technique shall be considered in determining the time to be allowed for the development of practicable methods and for the specified correction. Based on pollutant loading and fate modeling conducted as part of this plan, it is anticipated that proposed restoration methods will effectively address the known and suspected sources of impairment in Pond Creek watershed to allow the waters to meet State and Federal standards at the conclusion of this initiative.

### **6.1 Qualitative Evaluation**

As an alternative to direct water quality sampling, a set of qualitative evaluation criteria can be used to determine whether substantial progress is being made towards attaining water quality standards. Conversely, these same criteria can be used to determine whether this restoration plan needs to be modified and revised at a future time in order to meet proposed standards. Although these methods of measuring progress are not direct proxies to water quality, it is assumed that the successes of these actions/programs, collectively and over time, will have a positive impact on the in-stream conditions and measurements of Pond Creek that are concurrently investigated as described in Section 6.2 below.

Proposed indicators will include relatively easy-to-measure surrogates that can be used to demonstrate the actual health of the watershed based on the implementation of various BMPs or task elements. Useful indicators are often indirect measurements where the presence of the indicator suggests that a BMP or activity was successful. These qualitative measurements can be cost-effective methods of assessing the effectiveness of a BMP because direct, quantitative measurements may be too costly or time consuming to be practical. Among some of the programmatic indicators that can be studied to evaluate recommended strategies using qualitative approaches are 1) number of illicit connections identified/corrected, 2) number of BMPs installed, inspected and maintained, 3) permitting and compliance, 4) growth and development (e.g. impervious amounts), and 5) on-site BMP performance monitoring.

The non-exhaustive list of proposed qualitative evaluation strategies will be conducted quarterly during Phases 1, 2, and 3 at minimal cost or time. By evaluating the effectiveness of these programs, communities and agencies may be better informed about public response and success of these programs, how to improve the programs and which programs to (dis)continue.

### 6.2 Quantitative Evaluation

In addition to measuring the effectiveness of specific programs and BMPs via response of communities or agencies, it is beneficial to monitor immediate and long-term progress and effectiveness of watershed efforts in terms of water quality, quantity and biological monitoring. Physical, chemical and biological conditions of the water will be monitored to track progress, identify pollution source(s), and evaluate the success of efforts to restore Pond Creek and remove it from the TN 303(d) list. Upon reviewing the data collected over the years 2001 through 2005 for this watershed, we believe that the types of parameters monitored, the number of sample locations in the watershed, and the frequency of monitoring are sufficient to address this evaluation strategy.

Measuring parameters to evaluate progress toward a goal requires the establishment of targets against which observed measurements may be compared. These targets are not necessarily goals themselves, because some of them may not be realistically obtainable. However, targets necessarily define water quality standards, as set forth by the State of Tennessee, or scientifically-supported numbers that suggest trends to achieve said targets. Utilizing these numerical targets as targets for success will assist the stakeholders in deciding how to improve programs to reach both restoration and preservation goals and know when these goals have been successfully achieved.

To satisfy successful removal of Pond Creek from the TN 303(d) list, local water quality must meet certain target criteria, as defined in Table 6.1. These numeric goals must be attained for this watershed initiative to be considered successful.

Table 6.1. Target values for physical, chemical and biological indicators to be used in documenting restoration for Pond Creek.

IBI score of 48 HA score of 131	Simon 1991
HA score of 131	TD = 0 0004
117 2001 01 121	TDEC 2001
452.4 cfu/100mL	Ecoregion reference
126 cfu/100mL	TDEC 2004b
942 cfu/100mL	TDEC 2004b
0.763 mg/L	75% of Ecoregion reference
0.059 mg/L	75% of Ecoregion reference
	452.4 cfu/100mL 126 cfu/100mL 942 cfu/100mL 0.763 mg/L

# **Pathogens**

As noted in previous sections, the approved pathogen TMDL for Watts Bar watershed calls for a 99.1% reduction in *E. coli* loads in Pond Creek (TDEC 2005). State of Tennessee water quality standards (TDEC 2004b) for the *E. coli* group require that the concentration shall not exceed 126 colony forming units per 100 mL, as a geometric mean based on a minimum of 5 samples collected from a given site. Individual samples can range from 1 to 941 units per 100 mL. In order to track progress towards achieving water quality goals, *E. coli* samples will be collected at the established eight sites defined in Section 2.0 at least quarterly during Phases 1 and 2. In addition to quarterly or monthly samples, at least four *E. coli* samples will be collected, each year, during a 30 day period. Additional analyses using bacteria source tracking methods defined in Section 2.2.1 are planned for future sampling events.

All *E. coli* sample data and analyses will enable calculation of geometric means in accordance with State protocol. Results will be compared with pre-restoration data and State of Tennessee standards to evaluate the success of this initiative. The goal is to document pathogen loading reduction of 10% from 2002 levels by the end of Phase 1, loading reduction of 50% by the end of Phase 2, and meet regulatory standards by Phase 3.

## **Total Nitrogen**

The State of Tennessee suggests that water nitrogen content be within 75% (or 75<sup>th</sup> quartile) of the identified ecoregion stream. To meet regulatory requirements, the total nitrogen content of Pond Creek must be reduced to 0.7625 mg/L. Total nitrogen samples will be collected and analyzed monthly from the previously established 8 sites during Phases 1 and 2 to better identify the source of these pollutants and to monitor the success of this restoration plan. Samples will be collected at these same 8 sites at least quarterly during Phase 3 of this initiative. It is the goal of this initiative to reduce TN level by 15% from 2002 levels by the end of Phase 1, and attain a reduction of 75% by the end of Phase 2.

## **Phosphorus**

Phosphorus is not currently listed as a cause of impairment in Pond Creek watershed; however, TP concentrations in Pond Creek consistently exceed State standards. While the state does not provide a numerical target concentration, regulatory language is such that TP shall be limited to the extent to prevent nuisance plant growth in receiving lakes and impoundments. During Phase 1, phosphorus samples will be collected from the established 8 sites in Pond Creek, no less than quarterly, to determine the need for additional remediation. A sampling strategy for Phases 2 and 3 will be developed after an evaluation of sample analysis from Phase 1. It is anticipated that BMPs associated with the reduction of TN from Pond Creek will result in concurrent reductions in TP.

### **Sediment and Habitat Alteration**

The final 2004 303(d) list of Tennessee waters lists Pond Creek impaired for physical substrate habitat alteration. Numeric water quality criteria for siltation or habitat alteration in Tennessee have not been reported. However, to protect the designated uses of Pond Creek, there are recommended qualitative and quantitative targets based on a scientific basis. In general terms, as defined by TDEC (2001), there shall be no distinctly visible solids, bottom deposits or sludge banks of such size or character as to interfere with biological integrity, natural or approved artificial aquatic habitat, livestock watering and wildlife. TDEC (2004b) specifically states:

Biological Integrity - The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or adversely affected, except as allowed under 1200-4-3-06.

Habitat - The quality of instream habitat shall provide for the development of a diverse aquatic community that meets regionally-based biological integrity goals. The instream habitat within each subecoregion shall be generally similar to that found at reference streams.

It is recommended that habitat assessment scores be above 131 (TDEC 2001), as determined by the site-specific ecoregion reference stream for Pond Creek. To document progress, physical habitat will be assessed for at least one repeat site during both year 2 and year 5 of Phase 2. An assessment of Index of Biological Integrity, or IBI, will run concurrent with this habitat assessment at years 2 and 5. These scores will be obtained using approved and duplicated methods established by TVA and analyzed and compared against baseline scores obtained from 2001 and 2006.

In addition to physical habitat assessment and IBI, quantitative monitoring will be performed to better identify sediment sources and track progress. TSS samples will be collected monthly during Phase 1, and at least quarterly during Phase 2, from the previously established 8 sample sites along Pond Creek. TSS data will be analyzed using load duration curves, and results compared with pre-initiative data and ecoregion reference streams. It is recommended that TSS less than 25 mg/L is good, TSS 25 – 80 mg/L is fair, and TSS greater than 80 mg/L is poor. The target, therefore, will be to maintain TSS below 80 mg/L in dry conditions for Phase 1. Data from both 2001-2002 and 2006 are near or below this value, so we expect this target to be easily attainable.

Stream bank erosion rate will be estimated at no less than five sites from within the watershed. This information will be used to improve estimates of rate and of the relative importance of various sediment sources. These data can then be used to calibrate the soil loss loading model.

# 6.3. Evaluation and Adaptive Management

It is imperative that this restoration plan bring about changes in existing practices, vision, objectives and principles. To ensure logical and successful progression throughout the life of the restoration initiative, the entire restoration planning, implementation and monitoring processes will be evaluated on at least an annual basis. If deemed necessary, restoration priorities, strategies and tasks will be reevaluated and adapted to better suit the process. The individual proposed tasks can and should be amended or sacrificed to satisfy the overriding goals and objectives. This type of evaluation helps to learn, reflect, readjust and improve the performance of all stakeholders involved.

Criteria to be evaluated include, but are not limited to:

- The processes and resources used to implement the restoration plan. This includes time, financial, technical and manpower resources.
- The tasks initiated and/or products developed. This shall include BMPs implemented, social marketing products developed, and technical workshops produced.
- The results of plan implementation, BMP installation and any and all changes associated. This category includes changes in stakeholder practices and behaviors, pollutant load reduction, streambank improvement, and habitat improvement.

# 7.0 Implementation Schedule and Milestones

The proposed implementation schedule for Pond Creek watershed restoration project is presented in Table 7.1 below. This timeline will begin in Year 1 after approval of this restoration plan, or the date when funding would first become available, whichever occurs first. While the management values (e.g. feet or acres) may be amended to better suit the goals and objectives, the timeline should not.

Table 7.1. Schedule of implementation of the Pond Creek watershed restoration plan.

Table 7.1. Schedule of Implementation of the	Yr									
Management Plan Component	1	2	3	4	5	6	7	8	9	10
Goal 1. Infrastructure										
Install 4000 ft of fencing adjacent to stream		Х	Х	Х	Х					
Install 7 watering systems	Х	Х	Х	Х						
Revegetate 20 ac of feedlot/loafing areas	Х	Х								
Develop 4 CNMP for major livestock sites	Х	Х	Х							
Pasture and hay planting on 325 ac.		Х	Х	Х	Х					
Import 715 cy of gravel			Х	Х	Х	Х				
Establish 16,000 ft of riparian buffer	Х	Х	Х	Х	Х					
Install 4 stream crossings			Х	Х	Х					
Goal 2. Practices										
Plantings on 22 ac of abandoned mine		Х	Х							
Revegetate 50 ac of clearcut land	Х	Х	Х	Х	Х					
Install 11,000ft of fencing for grazing		Х	Х	Х	Х	Х	Х			
Repair 60 Septic Systems	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Install 4 animal waste facilities				Х	Х	Х				
Bi-annual hazardous waste collection days	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Goal 3. Education and Stewardship										
Agriculture BMP calendar	Х			Х				Х		
Pasture management publication		Х				Х				
NPS farm and home brochure	Х	Х	Х		Х		Х		Х	
Bi-annual newsletter	Х	Х	Х							
Annual newsletter				Х	Х	Χ	Х	Х	Х	Х
Tours and workshops for landowners		Х		Х		Χ	Х	Х	Х	Х
Goal 4. Enforcement										
Bi-annual training sessions for officials	Х	Х	Х							
Collect monthly/quarterly water samples	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Promote data sharing among agencies					Х	Х	Х	Х	Х	Х
Annual meeting with local officials					Χ	Х	Х	Х	Х	Х
Assessment of IBI					Χ					Χ

The following milestones in Table 7.2 will be tracked to document the major components and their success of this restoration plan. Table 7.3 presents quantitative restoration milestones for the pollutants listed. We believe that through the implementation and installation of the proposed tasks and BMPs that these numeric goals may be achieved at the times suggested.

Table 7.2. Planning and education milestones for successful restoration of Pond Creek.

Milestone	Anticipated Completion
Planning:	
Select sites to be remediated	Year 1
Develop site plans for BMP installations	Year 2 - ongoing
Develop CNMPs for all necessary sites	Year 3
Secure funding and organize materials for BMP installation	Year 2 - ongoing
Education and Outreach:	
Organize and promote an agriculture BMP workshop program	Year 3
Host workshops for developers, contractors and local officials	Year 5
Develop and assemble educational packet (septic maintenance, maintaining conservation buffers, proper fertilizer application, etc.) to be distributed to riparian landowners	Year 2 - ongoing
Create an informational publication to be distributed at local commercial sites	Year 3
Publication of a baseline assessment of Pond Creek water quality	Year 3
Adoption of updated water quality protection ordinances	Year 8

Table 7.3. Environmental and social indicators and interim, measurable milestones to track progress toward meeting Pond Creek Restoration goals and standards.

Parameter	Pollutant	Indicator	Phase 1 Milestones
Biological	E. coli	concentration	Reduce geometric mean concentrations by 10% from 2002 levels
Biological	Sediment, nutrients	IBI score	Retain IBI score ≥ 40
Chemical	Nitrogen	concentration and loading	Attain 15% reduction of TN load from 2002 levels
Chemical	Phosphorus	concentration and loading	Attain 15% reduction of TP load from 2002 levels
Physical	Soil erosion and sediment	concentration and deposition	Attain 10% reduction of soil loss from 2002 levels; TSS loads ≥ 80 mg/L
Social	Sediment, nutrients, pathogens	participation	Attain 5% participation rate of residents for BMP installation
Social	Sediment, nutrients, pathogens	organization	Develop site plans, obtain permits, implement BMPs at 4 sites per year
Parameter	Pollutant	Indicator	Phase 2 Milestones
Parameter  Biological	Pollutant  E. coli	concentration	Phase 2 Milestones  Reduce geometric mean concentrations by 50% from 2002 levels
			Reduce geometric mean concentrations
Biological	E. coli Sediment,	concentration	Reduce geometric mean concentrations by 50% from 2002 levels
Biological  Biological	E. coli Sediment, nutrients	concentration  IBI score  concentration and	Reduce geometric mean concentrations by 50% from 2002 levels  Retain IBI score ≥ 48  Attain 50% reduction of TN load from
Biological  Biological  Chemical	E. coli Sediment, nutrients Nitrogen	concentration  IBI score  concentration and loading  concentration and	Reduce geometric mean concentrations by 50% from 2002 levels  Retain IBI score ≥ 48  Attain 50% reduction of TN load from 2002 levels  Attain 50% reduction of TP load from
Biological  Biological  Chemical  Chemical	E. coli Sediment, nutrients Nitrogen Phosphorus Soil erosion	concentration  IBI score  concentration and loading  concentration and loading  concentration and	Reduce geometric mean concentrations by 50% from 2002 levels  Retain IBI score ≥ 48  Attain 50% reduction of TN load from 2002 levels  Attain 50% reduction of TP load from 2002 levels  Attain 10% reduction of soil loss from

### 8.0 Technical and Financial Needs

Included below in Table 8.1 is an itemized list of estimated costs associated with Pond Creek watershed restoration as taken from NRCS (2006). An itemized budget for each Task and/or BMP is described in the Appendix. Every effort was made to eliminate duplication of a BMP at a single location, e.g. livestock fencing adjacent to the stream is included only once for both 1.1.1 and 1.2.2 as defined in Table 8.1.

Sources of funding include, but are not limited to, NRCS cost-share (Table 8.1), EPA Section 319 funding, TVA Clean Water Initiative funding, and TN Department of Agriculture's Producer Diversification and Agribusiness Development Programs.

For appropriate fiscal management the timing and allocation of grant funds should be continuous throughout the planning process. However due to the phasing and milestone schedules proposed, concentrated financial goals should target years 1-6.

Table 8.1. Estimated costs and % cost share funds for recommended BMP installation for Pond Creek. A substantial and localized education and outreach campaign is also necessary although not included in this table

		Cost
Task Number and Description	Est. Costs (\$)	Share (%)
1.1.1. Limit direct access of livestock to stream.	159,998	50
1.1.2. Reduction of feedlot/loafing area.	9,430	50
1.1.3. Renovation and revegetation of pasturelands.	213,400	50
1.1.4. Add gravel to eroding unpaved roads.	157,300	50
1.2.1. Establish riparian buffers.	18,420	50
1.2.2. Repair stream access sites.	4,312	50
2.1.1. Apply biosolids on lands at appropriate rates	4,125	100
2.1.2. Residue and tillage management.	0	-
2.1.3. Revegetation of disturbed areas.	100,062	50
2.1.4. Prescribed grazing management.	165,252	50
2.2.1. Repair failing septic systems.	120,000	-
2.2.2. Repair or install manure holding facilities.	220,000	75
Total proposed budget:	\$1,172,299	