

FY2004 Proposal

for the

CWA, Section 319(h)

Agricultural/Silvicultural Nonpoint Source Program

REVISED

JUNE 25, 2009

PROPOSAL FOR

THE NORTHEAST TEXAS MUNICIPAL WATER DISTRICT

Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin



TEXAS STATE SOIL AND WATER CONSERVATION BOARD

P.O. Box 658

Temple, Texas 76503

(254) 773-2250

**1.0 Nonpoint Source Summary Page
for the
FY04 CWA Section 319(h)
Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin
Northeast Texas Municipal Water District**

SUMMARY PAGE

May 1, 2004 – October 31, 2009

1. **Title of Project:** Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin.

2. **Project Goals/Objectives:** This proposal would fund a Northeast Texas Municipal Water District (NETMWD) Assessment Project and On-Site Sewage System Replacement Program. The primary goal of this project is to evaluate the effectiveness of selected BMPs in reducing nutrient inputs to Big Cypress Creek and Lake O' the Pines by documenting runoff quality from sites representing dominant soil and land use types, with and without BMPs implemented and replace failing septic systems thus initiating a nutrient reduction program by mitigating overflowing sewage from on-site systems in the rural areas. The project will support determination of the steps that could be taken to implement the current Lake O' the Pines TMDL as it relates to non-point source nutrient input. The project includes the establishment of a public outreach program to educate the public about nonpoint source water quality issues, particularly the role of agricultural activities in basin-wide nutrient loading.

3. **Project Tasks:** Task 1) Project Coordination and Administration, Task 2) Site Selection and Study Planning, Task 3) Quality Assurance Project Plan development, Task 4) Sample Station Construction and Calibration, Task 5) Maintenance/Sample Collection, Task 6) Data Management and Quality Assurance, Task 7) Mitigation of nutrients through an on-site sewage system replacement project, Task 8) Public Outreach and Education, and Task 9) SWAT Modeling, and Task 10) Data Analysis and Reporting, and Task

4. **Measures of Success and Performance**
 - a) Obtain actual nutrient and sediment loading data from agricultural fields that represent the major soil types, land use, fertilization levels and BMP implementations used to develop the SWAT model for the Lake O' the Pines watershed.
 - b) Update the Lake O' the Pines SWAT subwatershed models with locally obtained data to identify and quantify the agricultural practices resulting in the largest proportion of nutrient and sediment loading in the watershed.
 - c) Use basin-specific data and models to quantify the reductions in nutrient loading already achieved by BMP implementation in the poultry industry, and what additional steps will be needed to achieve the goals of the Lake O' the Pines TMDL (e.g., roughly a reduction of 60% in 1998-2000 total phosphorus loading levels).
 - d) Replace thirty failing on-site sewage systems thus reducing the amount of raw sewage being released on the surface of the ground (approximately 6000 gallons/day).
 - e) Based on estimated values of septic tank effluent quality, this number reflects a daily reduction of approximately 0.43 lbs of phosphorus, 0.002 lbs of nitrogen, and about 2.21 lbs of total Kjeldahl nitrogen.

5. **Project Type:** Statewide () Watershed (X) Demonstration ()

6. **Waterbody Type:** River () Groundwater () Other (X)

7. **Project Location:** Lake O' the Pines watershed, encompassing Segments 0403-0404 and tributaries, and to include the counties of Franklin, Titus, Camp, Morris, Upshur, Harrison, Marion, and Cass as the project relates to septic system replacement.

8. **NPS Management Program Reference:** USA Agricultural/Silvicultural Nonpoint Source Management Program, approved February 15, 2000. USEPA Onsite Wastewater Treatment Systems Manual EPA/625/R-00/008, February 2002

9. **NPS Assessment Report Status:** Impaired () Impacted (X) Threatened ()

10. **Key Project Activities:** Hire Staff (X) Monitoring (X) Regulatory Assistance () Technical Assistance (X) Education (X) BMP Implementation () Demonstration Project (X) Other ()

11. **NPS Management Program Elements:** Agricultural/Silvacultural and other nonpoint source runoff

12. **Project Costs:** Federal (\$ 442,805), Match (\$ 295,220), Total Project (\$ 738,025)

13. **Project Management:** Texas State Soil and Water Conservation Board Cooperating Entities: US Environmental Protection Agency, Texas A & M Cooperative Extension, Texas Commission of Environmental Quality, USDA Natural Resources Conservation Service, Northeast Texas Municipal Water District, area Soil and Conservation Districts, and area County Extension Agents.

14. **Project Period:** August 1, 2004 – October 31, 2009

**2.0 Workplan
for the
FY04 CWA Section 319(h)
Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin
Northeast Texas Municipal Water District**

WORKPLAN

August 1, 2004 – October 31, 2009

a. Title of Project: Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin.

b. Problem/Need Statement:

The proposed project will support implementation of agricultural best management practices (BMPs) to reduce nutrient runoff from agricultural operations in the Lake O' the Pines watershed. The project is an integral and essential part of the implementation plan following the findings and recommendations of the Lake O' the Pines TMDL. Study site monitoring results will be used to calibrate and verify (validate) small scale SWAT models of each study site. As part of that process, we expect to identify important variables that generally define nutrient loss rates in the local setting, to quantify loss rates from the study sites, evaluate the effectiveness of BMPs given the the land characteristics and uses on the study sites, and to estimate the reductions in nutrient loss with present and projected levels of BMP implementation.

The Implementation Plan for the Lake O' the Pines TMDL, scheduled for completion this spring, will include this project, evaluation of nutrient losses from agricultural operations and on-site wastewater disposal facilities, and projects that will (1) monitor nutrient discharges from permitted point sources, (2) nutrient transport out of selected subwatersheds and down Big Cypress Creek, and (3) monitor nutrient, chlorophyll a and dissolved oxygen concentrations in critical areas of Lake O' the Pines. Selection of nutrient loss study sites, subwatersheds, stream monitoring locations, schedules and parameter sets will be coordinated among the projects to insure that the data collected is adequate to define current conditions and provide input to refine the existing SWAT model of the Lake O' the Pines watershed. The information developed will be used to identify problem areas and opportunities for reducing nutrient losses, explore the relationship over time among application of agricultural BMPs, nutrient loading in Big Cypress Creek and Lake O' the Pines, and the corresponding changes in biological and water quality conditions in the reservoir.

An additional study funded through TSSWCB is aimed at further development of the Texas Phosphorus Index (PI), a tool intended to facilitate agricultural land management by providing a relatively simple means of ranking a tract of land with respect to its potential to lose phosphorus to adjacent streams. That study will employ a rain simulator to evaluate the nutrient characteristics of runoff from small study plots. The study sites selected for this project will be made available to the PI study, and we invite collaboration with those investigators. Comparison of our respective study results will provide direct evaluation of the relationship between the PI and nutrient loadings to area streams and to Lake O' the Pines, and will likely be useful to our study in providing insight to the relationship between nutrient runoff and antecedent conditions, information notoriously difficult to obtain with storm event monitoring only.

In response to listings on the State of Texas 303(d) lists for 1998 and 2000, the Northeast Texas Municipal Water District (NETMWD), which conducts the Clean Rivers Program (CRP) in the Cypress Creek Basin, has completed development of a Total Maximum Daily Load (TMDL) program for the Lake O' the Pines watershed that is now being submitted to TCEQ for adoption. The Cypress Creek Basin, which includes the Lake O' the Pines watershed, is the site of major poultry (chicken) production facilities activity. Water quality monitoring, storm runoff studies, and modeling results have shown that poultry production, processing, and waste disposal are a source of significant contribution to the nutrient load currently entering Big Cypress Creek from both point and nonpoint sources, and the cause of violations of the dissolved oxygen standard in Lake O' the Pines (Segment 0404). Operation of production facilities, particularly the use of poultry litter as fertilizer on pasturelands, contributes excess nitrogen, phosphorus, oxygen demanding organic matter, and possibly other materials, to surface waters, while the discharge of treated wastewater from poultry processing facilities is contributing substantial amounts of nutrients to Big Cypress Creek and the Lake O' the Pines. Local effects on water quality have been shown to be positively related to poultry production activity under low flow conditions, while storm-generated surface runoff is the primary route through which nitrogen and phosphorus (and other pollutants) enter Lake O' the Pines at the bottom of this impaired watershed (Paul Price Associates, Inc., 2001, Ward 2003).

The largest poultry producer in the Cypress Creek Basin, Pilgrim's Pride Corporation, is in the process of making major changes in its operations. These changes include construction of new processing facilities and changes in waste handling practices which are intended to achieve major reductions in point source loadings of nitrogen and phosphorus. At the same time, Best Management Practices (BMP's) developed for handling and disposal of poultry litter and nutrient management plans are being implemented among Pilgrim's Pride corporate and contract growers with assistance from the local Soil and Water Conservation Districts. Pilgrim's Pride Corporation is requiring their corporate and contract growers to implement appropriate practices by developing Water Quality Management Plans (WQMP) with assistance from the Texas State Soil and Water Conservation Board (TSSWCB). TSSWCB administers and carries out Texas' soil and water conservation law, and coordinates Texas' soil and water conservation program with Soil and Water Conservation Districts (SWCDs). The TSSWCB is the lead agency in Texas for the management of agricultural and silvicultural nonpoint source pollution, as designated under Title 7, Chapter 201, Section 201.026 of the Agriculture Code of Texas. The TSSWCB addresses the prevention and/or abatement of NPS pollution through Water Quality Management Plan (WQMP) development and implementation. A WQMP is a site-specific plan, which includes appropriate land treatment practices, production practices, technologies and combinations thereof, and an implementation schedule.

Because of the large contribution of nutrients, particularly phosphorus, from non-point agricultural sources, implementation of the TMDL in the Lake O' the Pines watershed will depend critically on the increased efficiency with which those nutrients can be retained in the agricultural systems, and not be allowed to escape to cause problems in the receiving waterways. However, the effectiveness of the WQMPs in reducing nutrient runoff from waste application fields in the particular context of the Lake O' the Pines watershed is not known with certainty beyond the rather wide ranges reported in existing literature (Young et al., 1996).

As to the issues we face regarding on-site sewage systems, under a typical conventional system management approach, untrained and often uninformed system owners assume responsibility for operating and maintaining their relatively simple, gravity-based systems. Performance results under this approach can vary significantly, with operation and maintenance functions driven mostly by complaints or failures. In fact, many conventional system failures have been linked to operation and maintenance failures. Typical causes of failure include unpumped and sludge-filled tanks, which result in clogged absorption fields, and hydraulic overloading caused by increased occupancy and greater water use following the installation of new water lines to replace wells and cisterns. Full-time or high use of vacation homes served by systems installed under outdated practices or designed for part-time occupancy can cause water quality problems in lakes, coastal bays, and estuaries. Landscape modification, alteration of the infiltration field surface, or the use of outdated technologies like drywells and cesspools can also cause contamination problems.

Additionally, the discharge of partially treated sewage from malfunctioning onsite systems was identified as a principal or contributing source of degradation in 32% of all harvest-limited shellfish growing areas. Onsite wastewater treatment systems have also contributed to an overabundance of nutrients in ponds, lakes, and coastal estuaries, leading to the excessive growth of algae and other nuisance aquatic plants (USEPA, 1996b). In addition, onsite systems contribute to contamination of drinking water sources. USEPA estimates that 168,000 viral illnesses and 34,000 bacterial illnesses occur each year as a result of consumption of drinking water from systems that rely on improperly treated ground water.

Nitrogen in raw wastewater is primarily in the form of organic matter and ammonia. After the septic tank, it is primarily (more than 85%) ammonia. After discharge of the effluent to the infiltrative surface, aerobic bacteria in the biomat and upper vadose zone convert the ammonia in the effluent almost entirely to nitrite and then to nitrate. Nitrogen in its nitrate form is a significant ground water pollutant. It has been detected in urban and rural ground water nationwide, sometimes at levels exceeding the USEPA drinking water standard of 10 mg/L (USGS, 1999). Nitrogen is also an important plant nutrient that can cause excessive algal growth in nitrogen-limited inland (fresh) waters and coastal waters, which are often limited in available nitrogen. High algal productivity can block sunlight, create nuisance or harmful algal blooms, and significantly alter aquatic ecosystems. As algae die, they are decomposed by bacteria, which can deplete available dissolved oxygen in surface waters and degrade habitat conditions.

Phosphorus is also a key plant nutrient, and like nitrogen it contributes to eutrophication and dissolved oxygen depletion in surface waters, especially fresh waters such as rivers, lakes, and ponds. Increased distance of the system from surface waters is also an important factor in limiting

phosphorus discharges because of greater and more prolonged contact with soil. The fate and transport of phosphorus in soils are controlled by absorption and precipitation reactions.

c. General Project Description:

This 319(h) project will evaluate the effectiveness of applied Water Quality Management Plans in reducing the runoff of nutrients from fields that receive applications of poultry litter. The litter used in the production of poultry (broiler chickens) in the Lake O' the Pines watershed is commonly disposed of by its beneficial application as fertilizer to fields used in the production of grasses used as forage for cattle. Application sites may be located on the poultry growers property, or it may be applied to the property of other parties. It is estimated by Pilgrims' Pride Corporation that roughly half of the poultry litter generated in the Cypress Creek Basin is applied outside of the basin. An important component of the WQMPs being implemented in the Lake O' the Pines watershed (and, more broadly in the Cypress Creek Basin) are Best Management Practices (BMPs) to reduce runoff of sediments and nutrients from the waste application fields. These BMPs include limitations on application rates, soil nutrient thresholds above which waste application are to be limited, and structural improvements such as filter strips and setbacks from stream courses.

Storm water studies conducted as part of the Lake O' the Pines TMDL program have shown that the presence of poultry litter application sites in a subwatershed can substantially increase nitrogen and phosphorus loads in the receiving streams. However, the relationships among poultry litter application rates, soil types, soil nutrient levels, vegetation cover, presence of BMPs, and field runoff loads of nutrient and sediment is known only generally for the Cypress Creek Basin. Demonstration of varying efficiencies of nutrient retention in the agricultural system, or positive delineation of the extent to which agricultural activities affect the retention of nutrients in the soil or their loss downstream, will lead to better public understanding of the problem and support for water quality protection measures, and will be beneficial to securing voluntary participation in the WQMP program.

The effectiveness of these BMPs will be evaluated through a series of small-scale comparative runoff studies which will be integrated with the water quality data collected and compiled in the CRP and TMDL programs. This analysis will supplement and complement monitoring in Lake O' the Pines and its watershed currently conducted under the Clean Rivers Program, or as part of the TMDL implementation plan. Land owners willing to participate in the project will be sought with the help of an advisory committee consisting of invited representatives of NETMWD, TSSWCB, Sulphur/Cypress Soil and Water Conservation District (SWCD), TCEQ, Pilgrims' Pride Corporation, interested agricultural operators, local independent contractors, local commercial fertilization companies, and Texas Cooperative Extension.

Study sites will be selected from among properties offering participation in the project using a set of criteria that includes land use, soil type and vegetation cover characteristics, history of poultry litter or other fertilizer application, suitability for efficiently capturing runoff from a defined area from a 10 year rainfall event, and accessibility during inclement weather. A substantial base of information on water quality, soils, land use and poultry litter application has been developed under the Cypress Creek Basin Clean Rivers Program and the Lake O' the Pines TMDL program. This data is available to assist NETMWD and its contractors in site selection, study design, approval and implementation.

NETMWD has a current Supplemental Environmental Project Agreement with the TCEQ and the contract allows for on-site sewage system replacement. Through this contract money that would typically be paid to the TCEQ for an administrative penalty for an environmental crime or violation can be diverted to a SEP fund to be dedicated to a project that has a direct benefit to the environment. These projects can be illegal dumpsite cleanup funds, replacement of failing on-site sewage systems programs, household hazardous waste collection programs, or any program that would have a direct and immediate impact on the environment.

NETMWD has recently been informed that one of our major agricultural industries in the basin has received an enforcement penalty for the sum of \$ 200,000. This particular industry has approached NETMWD to allow this money to be placed in NETMWD's SEP Fund. Agreements are being drafted at this time for this money to be converted to the SEP Project. The On-Site Sewage System Replacement portion of NETMWD's SEP Project will accept these funds and direct them toward this project. With the use of these funds at least 30 new systems could be installed, to replace failing systems or upgrade or enhance existing systems.

Literature Cited

- Ward, G. H., 2002a: Validation of watershed loading model. Tech. Memo., Big Cypress/Lake o' the Pines TMDL Project, Center for Research in Water Resources, University of Texas at Austin.
- Natural Resources Conservation Service, 1994(rev.): *State Soil Geographic (STATSGO) Data Base: Data use information*. Misc. Publ. 1492, National Soil Survey Center, U.S. Department of Agriculture, Washington, D.C.
- Natural Resources Conservation Service, 1995: *Soil Survey Geographic (SSURGO) Data Base: Data use information*. Misc. Publ. 1527, National Soil Survey Center, U.S. Department of Agriculture, Washington, D.C.
- Scott, H.D. (ed.), 2000: Water and chemical transport in soils of the Southeastern United States. Southern Cooperative Series Bull 395. Stillwater: Oklahoma State University.
- Paul Price Associates, Inc., 1998: Poultry operations water-quality impact study. Final Report to North East Texas Municipal Water District, PPA, Austin, Texas. (Appendix to TNRCC, 1999).
- Paul Price Associates, Inc., 2001: Cypress Creek Basin FY2000-2001, Special study of poultry operations. Final Report to North East Texas Municipal Water District, PPA, Austin, Texas.
- Young, J.L., M. Chang, MC Cochran, and LL Whiteside. 1996. Poultry Litter Land Application Rate Study (PILLARS), Final Report, prepared for Texas Natural Resource Conservation Commission by Stephen F. Austin University and Angelina Neches River Authority.
- USEPA Onsite Wastewater Treatment Systems Manual (2002 Addition), EPA/625/R-00/008, February 2002

d. Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs**Task 1: Project Coordination and Administration**

Costs: Federal (\$ 60,414), Match (\$ 0), Total Task Cost (\$ 60,414)

Objective: To coordinate project efforts with all project participants, perform accounting functions for project funds, facilitate the organization of the project's Watershed Advisory Committee, organize the group of enforcement entities to be involved in the OSSF replacement task, and secure permission to survey properties for inclusion in the project.

Task 1.1: Northeast Texas Municipal Water District (NETMWD) will perform accounting functions necessary to coordinate project fund expenditures.

Task 1.2: NETMWD will act as the lead agency to coordinate all efforts of the project. NETMWD will work closely with all agencies and entities involved to ensure project objectives are properly met. (Start Date: Month 1; Completion Date; Month 62)

Task 1.3: NETMWD will facilitate the organization of the Watershed Advisory Committee. The committee would be made up of stakeholders (point and nonpoint source users) and government agency partners. The committee is to be established by the current Clean Rivers Program Steering Committee. NETMWD will continue to facilitate information exchange among participants for the duration of the project. (Start Date: Month 1; Completion Date; Month 62)

Task 1.4: NETMWD will organize and coordinate a committee made up of Designated Representatives from OSSF Program enforcement entities involved in the OSSF replacement task. (Start Date: Month 1; Completion Date; Month 36 – See Task 8)

Task 1.5: Paul Price Associates, Inc. (PPAI), with assistance from NETMWD staff, will initiate the identification of 12 potential study sites within participating properties using existing GIS-based data. (Start Date: Month 1; Completion Date; Month 1 – See Task 2)

Deliverables:

Copies of materials employed to solicit Watershed Advisory Committee membership.

List of Watershed Advisory Committee members.

Quarterly and annual reports including updated Watershed Advisory Committee membership, minutes of meetings.

List of OSSF Replacement Program committee members.

GIS map(s) of potential study sites.

Task 2: Site Selection and Study Planning

Federal (\$ 16,394), Match (\$ 7,200), Total Task Cost (\$ 23,594)

Objective: To identify and select twelve study sites to represent three litter application histories (none, <1ton/acre, >5tons/acre, cumulative for the last five years), presence/absence of WQMP approved BMPs, and the two predominant soil types in the subwatersheds already identified as sources of excess nutrients (i.e., Tankersley, Hart, Dry, Prairie, and Boggy Creeks). Study sites will not be replicated, instead all sites will be monitored for the duration of the study on the assumption that variation among storm events will be substantially greater than variation among sites. This study will confirm or deny that assumption and provide basic data to evaluate the necessity, and guide the design of, future studies of the influence of specific site characteristics programs and in Big Cypress Creek and Lake O' the Pines.

Task 2.1: PPAI will assist NETMWD staff and participants from the Watershed Advisory Committee to conduct field surveys and develop a matrix evaluation of site suitability. Somewhat simplifying matters, the soils do not vary greatly across the subwatersheds, consisting predominantly of acid and sandy alfisols and ultisols weathered from sandstone, and occasionally shale (Scott, 2000). Table 1 was developed from the STATSGO and SSURGO data bases (NRCS, 1994, 1995) during the Lake O' the Pines TMDL project (Ward, 2002, 2003). The dominant land use (typically 60-80%) in all these basins is "crop and pastureland", which is overwhelmingly rangeland for cattle grazing, fertilized pasture employed for hay production or some combination of the two (Paul Price Associates, Inc., 1998, 2001, Ward, 2003). (Start Date: Month 1; Completion Date; final selection of study sites, Month 2.5)

Table 1

Main MUID soil associations for wetweather catchments used in SWAT validation (Ward, 2002)

<i>MUID</i>	<i>description</i>	<i>fraction of watershed</i>
	10263 Tankersley Creek at FM127	
TX620	WOODTELL-FREESTONE-BERNALDO	0.83
TX619	WOLFPEN-PICKTON-WOODTELL	0.08
TX172	ESTES-MANTACHIE-BIENVILLE	0.09
	10266 Hart Creek at Titus County Road	
TX620	WOODTELL-FREESTONE-BERNALDO	0.61
TX619	WOLFPEN-PICKTON-WOODTELL	0.21
TX357	NAHATCHE-CROCKETT-WOODTELL	0.16
TX067	BOWIE-CUTHBERT-KIRVIN	0.03
	16455 Alley Creek approx. 8 KM SW of Avinger at SH155	
TX296	LILBERT-DARCO-BRILEY	0.50
TX122	CUTHBERT-REDSPRINGS-ELROSE	0.50
	17030 Unnamed Tributary of Prairie Creek at Camp CR1264	
TX492	SACUL-BOWIE-KULLIT	1.00
	17031 Tributary of Prairie Creek at Camp CR1140	
TX067	BOWIE-CUTHBERT-KIRVIN	1.00
	17033 Boggy Creek at FM144	
TX620	WOODTELL-FREESTONE-BERNALDO	0.76
TX316	IUKA-GUYTON-MANTACHIE	0.13
TX067	BOWIE-CUTHBERT-KIRVIN	0.11
	17057 Little Boggy Creek at Crossing of Morris CR3301 (Green Street Rd.)	
TX620	WOODTELL-FREESTONE-BERNALDO	0.66
TX067	BOWIE-CUTHBERT-KIRVIN	0.18
TX316	IUKA-GUYTON-MANTACHIE	0.15

Deliverables:

GIS based map(s) of selected study sites.

Tabular summary of study site characteristics

Task 3: Quality Assurance Project Plan Development

Federal (\$ 12,000), Match (\$ 0), Total Task Cost (\$ 12,000)

Objective: To develop a Quality Assurance Project Plan (QAPP) using guidelines in EPA QA/R-5, "EPA Guidance for Quality Assurance Project Plan"**Task 3.1:** PPAI will develop a Quality Assurance Project Plan (QAPP) that will detail project goals and objectives, the data needs to fulfill those objectives, lists field and laboratory methods, procedures and schedules to be followed, and specify a data management structure and quality assurance protocols. (Start Date: Month 1; Completion Date: Complete draft QAPP to TSSWCB by end of month 1, and final completed for transmittal to EPA by end of month 2)**Deliverables:**

Draft QAPP submitted to TSSWCB

Final QAPP approved by USEPA

Task 4: Sample Station Construction and Calibration

Federal (\$ 60,428), Match (\$ 55,800), Total Task Cost (\$ 116,228)

Objective: To set up all equipment and monitoring site associated construction materials to allow the gathering of flow data and wet weather samples for analysis.

Task 4.1: PPAI will provide assistance to NETMWD personnel during sample station construction and calibration. Most sample fields will require some type of modification to allow concentration and quantitative measurement of runoff volumes. This could include construction or installation of small lengths of fencing, terracing or berms to direct overland flow to the sampling point, but suitability of the field for runoff sampling will obviously be a major factor in site selection. Surface runoff will be diverted into an artificial flume or channel with a temporary weir installed downslope from each experimental site to provide an optimal environment in which to measure water flows and collect water quality samples for the three year duration of this project. A weather station consisting of a tipping bucket rain gage and event datalogger will also be established at each of the sample sites, as they are occupied. Rainfall is an extremely variable parameter in the Cypress Creek Basin and will be critical in evaluating runoff and nutrient loading data. (Start Date: Month2; Completion Date; Month 3)

Task 4.2: Install an automated, battery operated sampling system, consisting of a suitable flow meter, automatic sampler, modem and vital accessories at selected locations to collect samples on initiation of surface runoff, at 15 minutes, and at up to three additional samples depending on the persistence of the runoff events. Discharge will be monitored throughout the hydrograph of the event. All gages and loggers will be programmed, setup, and calibrated according to manufacturers specifications. The flow meters will be calibrated using the most convenient available water source, for example a water truck or a high-volume pump and hose to take water from a nearby pond or stream. Equipment will be quality checked in the lab prior to installation, and function tested subsequent to initial installation following the manufacturer's instructions. Telemetry equipment activated by the water level sensor will be installed to initiate water level monitoring and automated water sampling, and to alert local, trained personnel that a sample event is taking place, so that water samples can be collected and transported to the chemistry laboratory. (Start Date: Month2; Completion Date; Month 4)

Deliverables:

As built diagrams of each automated sampler installation put into service.

Task 5: Maintenance/Sample Collection

Federal (\$ 102,519), Match (\$ 0), Total Task Cost (\$ 102,519)

Objective: To allow for the maintenance, calibration, and data logging of flow measurement and water sample collection devices and the collection of both storm water quality and soil samples.

Task 5.1: The NETMWD Technician will perform all the necessary station maintenance and sample collection. Sample collection for both soil and wet weather to be performed with assistance from existing NETMWD staff and PPAI staff. (Start Date: Month2; Completion Date; Month 36)

Task 5.2: The NETMWD Technician will be responsible for field calibrations of the automated sample stations, and will establish a regular schedule for service and maintenance. The NETMWD Technician will visit the study sites and perform required maintenance immediately following a runoff event sample collection. (Start Date: Month2; Completion Date; Month 36)

Task 5.3: The Technician with assistance from existing NETMWD staff, will maintain up to date event sample plans, insure adequate manpower to collect the runoff water samples as rain events occur and deliver samples to the water quality laboratory within the QAPP specified time limits. Given the climatic conditions typical of the Cypress Creek Basin and the difficulty of event-response sampling, we believe that it is reasonable to expect that 3 to 6 adequately monitored events can be obtained from each sample site. Manpower estimates and costs are based on obtaining 5 valid samples per study site over the course of the project, sufficient to provide estimates of seasonal and interannual variation in runoff loading. Parameters to be sampled for include total organic carbon (TOC) total and dissolved phosphorus (TP, OP), ammonia (NH_4^+), nitrite (NO_2^-), nitrate (NO_3^-), total Kjeldahl nitrogen (TKN), total dissolved solids (TDS), and total suspended solids (TSS). Mr. Pafford will

coordinate with an accredited water quality analysis laboratory to obtain timely, quality assured data, as specified in the QAPP. (Start Date: Month4; Completion Date; Month 36)

Task 5.4: Soil samples will be collected and transported for analysis to a local accredited chemistry laboratory capable of achieving precision levels consistent with testing techniques accepted by EPA and TCEQ regarding Confined Animal Feeding Operations (CAFO's). According to the rules set forth for Pollution Prevention Plans in Title 30, Part1, Chapter 321 Subchapter B, Rule §321.39 of the Texas Administrative Code, soil analysis shall include the testing for nitrate, phosphorous, potassium, sodium, magnesium, calcium, soluble salts/electrical conductivity and soil water pH. Sampling procedures will be consistent with the accepted soil science techniques for achieving representative and analytical results. TCEQ guidance suggests the collection of one composite soil sample for each soil depth zone per land management unit and for each uniform soil type found within the land management unit. Soil sampling depth is dependent on the type of crop cultivated, cultural practices, tillage depth, and the nutrient parameter to be analyzed. A minimum of 10 sample cores will be collected at random and composited from each of the following soil depth zones: 0-6 inches and 6-24 inches. Surface soil samples are needed from a sample depth zone of 0-6 inches for each of the aforementioned parameters and from 6-24 inches for the more mobile nutrients associated with the nitrogen series. Typical areas such as eroded sections, dead furrows, and fence lines will be avoided during sample collection. Laboratory tracking and quality assurance measures will be consistent with the ongoing Cypress Creek Basin Clean Rivers Program. (Start Date: Month3; Completion Date; Month 6)

Deliverables:

Quality assured data sets reported quarterly as they are collected and analyzed.

Standard maintenance schedule, quarterly summaries of maintenance activities reported quarterly.

Task 6: Data Management and Quality Assurance

Federal (\$ 17,500), Match (\$ 0), Total Task Cost (\$ 17,500)

Objective: To utilize data management procedures previously developed by PPAI, to screen and store digital data, convert the data received in non-compatible formats to a format suitable for analysis, apply quality control and assurance procedures, and provide data access for current and future users of the data. The software most commonly used for data management are Excel© and Access©. The database is linked to an ArcView© based GIS-type system in which sample results can be mapped and analyzed in a graphic environment. Quality assurance and control is integrated at all points along this process, with sample field sheets, chain of custody forms, analyst's bench sheets, control charts, and lab reports.

Task 6.1: After the data has been received from the source laboratories, it will be screened to insure consistency with the QAPP, including (1) transcription accuracy, and (2) that the quality criteria for that data type was met (e.g., were holding times exceeded, were AWRL's met) prior to its addition to the active database. The analytical structure of the database will consist of tables of descriptive data, such as water quality test results and monitoring data. Water quality data collected through this monitoring program will be introduced into the system by either manual entry, or digital electronic files. A final ten percent validation of all data prior to its submission will be performed before timely entry into the active database. Once the data has been entered, screened, and quality checked, it will be submitted to NETMWD. (Data management Plan for inclusion in QAPP completed by end of month 1, Submit quality assurance documentation quarterly with data submitted under Task 5.4). This task includes screened data transmission to and coordination with Dr George Ward, who will be responsible for refinement and updating of the existing SWAT model of the Lake O' the Pines watershed.

Deliverables:

Quality assurance documentation (field activity reports, calibration records, and general information, field data sheets and notes, copies of the Chain of Custody forms, raw analytic results)

Task 7: On-Site Sewage System Replacement Project

Federal (\$ 1,601), Match (\$ 225,740), Total Task Cost (\$ 227,341)

Objective: To utilize NETMWD Supplemental Environmental Project (SEP) fund to identify and mitigate failing on-site sewage facilities in the SEP Project boundary.

Task 7.1: NETMWD will organize a committee made up of the On-Site Sewage System Enforcement Agencies in Franklin, Titus, Camp, Morris, Upshur, Harrison, Marion, and Cass Counties. This committee will develop a list of systems in each of these counties that may qualify for replacement or upgrade.

Task 7.2: This committee will meet on a quarterly basis to determine which of the systems identified should be replaced or brought into compliance with current standards. (The committee will be established in month 2, system replacement and upgrade will begin in month 4, and the project will end when funds are exhausted, estimated time frame 2 years. Quarterly reports submitted by **the 15th of January, April, July and**, annual reports submitted to TSSWCB by end of months 11 and 23. Draft Final report submitted by end of month 60, Final Report to EPA by end of month 62).

Deliverables:

Quarterly progress reports and 2 annual reports containing the status of the replacement and upgrade project (# of systems identified, # of systems replaced).

Final report containing estimates on impact reduction to the environment, total # of systems identified and replaced, and recommendation for future projects.

Task 8: Public Outreach and Education

Federal (\$ 11,513), Match (\$ 6,480), Total Task Cost (\$ 17,993)

Objective: 1) To educate ranchers and farmers on the importance of maintaining effective BMP's and WQMP's and the importance of nutrient reductions as it relates to the Lake O' the Pines TMDL, and 2) To educate the rural public and those whom utilize on-site sewage facilities to dispose of wastewater from their household or business on the Environmental and Health & Safety impacts associated with failing septic system waste, some of the steps being taken to mitigate these problems, and best management practices associated with the use of septic systems.

Task 8.1: NETMWD will work with the Texas A & M Texas Cooperative Extension Service, local Soil and Water Conservation District, and County Extension Agents to direct a public outreach program for education of agricultural operators and the public at large concerning sediment and nutrient loss from agricultural land and their impact on water quality. This educational meeting will be held in the City of Mount Pleasant Convention Center in the fall of 2004. This opportunity will be advertised as a basin wide event.

Task 8.2: NETMWD will also work with local Soil and Water Conservation District, and County Extension Agents, to introduce the same educational opportunity to smaller groups for those whom could not be at the area wide meeting or whom choose to have smaller group settings. Have possibly 6 additional meetings in the Cypress Basin area beginning month 9 and being completed by month 14.

Task 8.3: NETMWD will also hold annual meetings in different areas of the basin, to invite the public to hear presentations on the importance of proper maintenance of an on-site sewage system and our program to replace failing systems. Three meetings during the project with the anticipation that we have 125 participants at each meeting and each meeting to last 2 hours. (meetings to be held in month 5, 8, and 11)

Task 8.4: NETMWD will also develop a biannual newsletter for the purpose of reaching those rural residents that fail to come to the OSSF educational meeting, when given in their area. The newsletter will encompass the educational information given at the area meetings as well as information on new technology in the on-site industry.

Task 8.5: NETMWD will also speak at public engagements with civic groups and explain the aspects of this study approach and the various task associated with this project. (Speak with 4 groups/year throughout the duration of the project). PPA will assist NETMWD staff in the presentation of this information at least two engagements per year.

Deliverables:

Quarterly progress reports to include all information associate with each meeting or publication from that quarter, to include copies of notices, copies of publications, meeting agendas and notes or minutes.

Task 9: SWAT Modeling

Federal (\$ 100,000), Match (\$ 0), Total Task Cost (\$ 100,000)

Objective: Employ the results of non point nutrient loss from specific land use types (this study), together with the results of other aquatic monitoring programs, to examine and refine, as appropriate, elements of the SWAT model which are currently based on literature values or limited local data. Operate the SWAT model to better evaluate land use impacts to nutrient loading to Lake O' the Pines, effectiveness of BMP's, and progress toward achieving the goals of the TMDL.

Task 9.1: Small scale SWAT models will be calibrated and verified for each study site using measured properties (e.g., soils and soil nutrients, vegetative cover and cover types, seasonal effects, antecedent conditions, runoff rates, TSS and nutrient concentrations) instead of the literature values employed in the Lake O' the Pines TMDL modeling.

Deliverables: A validated SWAT model for each study site. Model documentation including identification of measured variables used in each model together with an evaluation their respective confidence intervals and major differences, where they occur, with previously employed input variables.

Task 9.2: The validated models will be used to identify the major variables affecting nutrient loss from the study sites and examine the relationships among those variables in order to evaluate the effectiveness of water quality management plans (WQMPs) in limiting nutrient loss and to estimate basinwide progress in reducing agricultural nutrient loss since the widespread imposition of WQMPs in the Lake O' the Pines watershed began in about 2000.

Deliverables: Model runs necessary to estimate the nutrient reductions achieved through time as WQMPs have been implemented. The results of the SWAT modeling of the study sites will be appropriately presented in the final report (Task 10)

Task 10: Data Analysis and Reporting

Federal (\$ 60,436), Match (\$ 0), Total Task Cost (\$ 60,436)

Objective: To allow for the preparation and submittal of quarterly status report summarizing activities conducted and raw data collected during each preceding quarter and annual reports, detailing progress in achieving Task goals and objectives, and success in meeting project schedules will be submitted at the end of the first and second year.

Task 10.1: A final project report will be prepared briefly summarizing five years of project activities, reviewing project goals and objectives and their achievement, and detailing the investigations and findings of the edge of all field studies conducted during the three years of the 319(h) grant. The final report will include discussion of the methods used and the locations sampled, a results presentation summarizing the data collected, the edaphic conditions, and the agricultural activities and characteristics at each sample site, and an analysis, discussion and conclusions section. Data analysis will be focused on using the results of the individual field studies together with the land use and soil sampling information in the GIS database together with runs of the updated SWAT model to extrapolate the non-point nutrient contributions of the studied agricultural or silvicultural land uses/activities throughout the Cypress Creek Basin. This analysis will also use the results of water quality monitoring projects in Segments 0403 and 0404 to provide continuing validation of SWAT model updates. The authors of the Phosphorus Index study will be invited to collaborate on a final report section comparing the results of the two studies, evaluating the relationship between the two methodologies and their respective results. (Quarterly reports will be submitted by the 15th of January, April, July and October and Annual reports submitted to TSSWCB by end of months 11 and 23. Draft Final report submitted by end of month 60, Final Report to EPA by end of month 62).

Task 10.2 : A draft Watershed Implementation Plan will be developed in cooperation with Texas Commission on Environmental Quality and watershed stakeholders as part of this project. The results to be obtained in the proposed 319(h) study is critical to the development of a Watershed Implementation Plan that incorporates all nine elements recommended by EPA. While the existing SWAT model implies that the use of poultry litter as a source of nitrogen, phosphorus and organic material on crops and pastures is the major cause of excessive phosphorus loading in the Lake O' the Pines watershed, two problems remain. First, no distinction between poultry litter and other nutrient sources are made in the SWAT models, and no direct comparisons of runoff

loading from alternative land use types, fertilization levels and BMP implementation in the Lake O' the Pines watershed are available. Second, the litter application levels and most of the monitoring data used in model development were obtained prior to the significant implementation of BMPs in the poultry production industry here.

Deliverables:

Quarterly progress reports

Two annual reports

One draft and one final version of the comprehensive project report.

Drafting of the 9 Element Watershed Plan for inclusion to the TMDL Implementation Plan for Lake O' the Pines

e. Coordination, Roles, and Responsibilities

Participating organizations and agencies along with their roles in this project include:

- NETMWD – Project lead, technical assistance, project coordination and administration.
- PPAI– Technical Assistance to project lead, data management and reporting, and assistance in project coordination.
- TSSWCB – Project management, State NPS lead agency for silviculture. The TSSWCB project manager will be involved in the development and approval of all press releases, and workshop information (as they relate to TSSWCB programs) prior to dissemination.
- SWCDs –Assist with education, training, provide framework for organization of cooperators, provide communication within growers. Attend and present TSSWCB programs at workshops.
- EPA Region VI- Project coordination and funding.
- Eligible Counties Designated Representatives – Franklin County Water District, Titus County Fresh Water Supply #1, Titus County, Camp County, Upshur County, Harrison County, and Cass County.
- Texas A & M Cooperative Extension – To coordinate and administer the Field Validation of the Texas Phosphorous Index Project for the TSSWCB and coordinate the activities of that project as it relates to simulated monitoring events that will occur within this projects monitoring sites.
- Area County Extension Agents – To assist in providing programs to the poultry farmers for informational and educational purposes.

f) Public Participation

The primary goal of his project is to determine the effectiveness of agricultural BMP's and WQMP's as they relate to poultry production and poultry litter fertilization parameters, to educate farmers and ranchers of the importance of BMP' as they relate to nutrient reduction in the watershed. With the educational opportunities in place and with the level of committee involvement, the opportunities for public participation are extensive (See Task 8).

g) Measures of Success and Performance

- 1) Obtain actual nutrient and sediment loading data from agricultural fields that represent the major soil types, land use, fertilization levels and BMP implementations used to develop the SWAT model for the Lake O' the Pines watershed.
- 2) Update the Lake O' the Pines SWAT subwatershed models with locally obtained data to identify and quantify the agricultural practices resulting in the largest proportion of nutrient and sediment loading in the watershed.
- 3) Use basin-specific data and models to quantify the reductions in nutrient loading already achieved by BMP implementation in the poultry industry, and what additional steps will be needed to achieve the goals of the Lake O' the Pines TMDL (e.g., roughly a reduction of 60% in 1998-2000 total phosphorus loading levels).
- 4) Replace thirty failing on-site sewage systems thus reducing the amount of raw sewage being released on the surface of the ground (approximately 6000 gallons/day).
- 5) Based on estimated values of septic tank effluent quality, this number reflects a daily reduction of approximately 0.43 lbs of phosphorus, 0.002 lbs of nitrogen, and about 2.21 lbs of total Kjeldahl nitrogen.

h) Reference to Project in the NPS Management Program

Lake O' the Pines watershed, Segments 0404 and 0403, in the NPS Management Program.

i) Project Lead's Name, Telephone Number and Organization Responsibility for Implementing the Project Lead:

Name: Rick Blevins
Address: Northeast Texas Municipal Water District
P.O. Box 955
Hughes Springs, TX 75656
Phone # (903) 639-7538
Affiliation: Watershed Protection Team Leader

TSSWCB Project Manager:

Name: Mitch Conine
Address: Texas State Soil and Water Conservation Board
4311 S 31st Street, Suite 125
P.O. Box 658
Temple, TX 76503
Phone: (254)773-2250
Affiliation: Statewide Resource Management

**3.0 Project Budget
for the
CWA, Section 319(h)
Agricultural/Silvicultural Nonpoint Source Program
Assessment and Mitigation of Agricultural and Other Nonpoint Source Activities in the Cypress Creek Basin
Northeast Texas Municipal Water District**

OBJECT CLASS BUDGET

August 1, 2004 – October 31, 2009

<u>Object Class Category</u>	<u>Federal Funds</u>	<u>Non-Federal Match</u>	<u>Total Costs</u>
Personnel	\$ 89,044.00	\$.00	\$ 89,044.00
Fringe Benefits (% of personnel)	\$ 24,919.00	\$.00	\$ 24,919.00
Subtotal Personnel and Fringe Benefits	\$113,963.00	\$.00	\$113,963.00
Travel	\$ 36,750.00	\$	\$ 36,750.00
Equipment	\$.00	\$ 55,800.00	\$ 55,800.00
Supplies	\$ 39,132.00	\$.00	\$ 39,132.00
Contractual	\$242,880.00	\$200,000.00	\$442,880.00
Construction	\$	\$	\$ N/A
Miscellaneous	\$ 10,080.00	\$ 39,420.00	\$ 49,500.00
Subtotal Other Direct Costs	\$328,842.00	\$295,220.00	\$624,062.00
Total Direct Costs	\$442,805.00	\$295,220.00	\$738,025.00
Indirect (% Rate)	\$ N/A	\$ N/A	\$ N/A
Total Project Costs	\$442,805.00	\$295,220.00	\$738,025.00

Detailed Budget Summary

Personnel: The funds provided for this line item would pay the salary of personnel at NETMWD performing all field related duties of this project. These duties include, but are not limited to; assisting consultant in field activities related to setting up edge-of-field study sites (12 in all), maintaining and collecting samples at each of these sites, making initial contacts for field studies. This line item also identifies the in kind service cost of NETMWD for administration and assistance to the project.

The new position title will be Water Protection Specialist II/BMP Technician. The pay rate scale is from \$20,500.00 to \$25,000.00 and % effort on the project is 85%.

Other NETMWD personnel involved in the project would include the following;

- Watershed Protection Teamleader – To coordinate with various agencies involved and assist in public outreach activities, administration activities, field activities to include site selection, site set-up and sample collection.
- Water Protection Specialist II - To assist in public outreach activities, field activities to include site selection, site set-up and sample collection.
- Accountant – To perform accounting functions for the project.
- Secretary/Receptionist – To perform word processing functions related to record keeping and report functions of the project.

Fringe Benefits: This line item includes FICA, Medicare, Retirement, Health Ins., Workers Comp., Unemployment taxes. Fringe Benefits are calculated at a rate of 35%; however, realizing only 28% in the area of federal funding and showing the remaining 7% in match.

Personnel and In kind Cost Breakdown

Task 1 Cost: NETMWD Accountant will contribute 4 hrs/quarter for processing reimbursement funds and payments to subcontractor, for a total of 48 hours. NETMWD Secretary will contribute 12 hours per quarter processing, typing, and filing project documents, for a total of 144 hours. NETMWD Project Coordinator will contribute 3 hrs/quarter for review of items to be processed, quarterly reports and 16 hours to organize the Watershed Advisory Committee and the OSSF Project Committee for a total of 54 hours.

Task 2 Cost: NETMWD Technician - 150 hours, NETMWD Project Coordinator - 36 hours, and NETMWD WPS II – 90 hours. Review of sites with consultant and final review of final selected sites with consultant and Watershed Advisory Committee.

Task 3 Cost: NETMWD cost identified in the administration cost section.

Task 4 Cost: NETMWD Technician, 12 sites to be set up at 28 hours/site, which would include preparing site for equipment and moving equipment and setting up at each site, for a total of 336 hours. Assistance from the NETMWD Project Coordinator for a total of 48 hours, the NETMWD WPS II for a total of 192 hours and from NETMWD Facilities Maintenance Team, 2 men at 8 hours per site to assist in set-up at a total of 192 hours.

Task 5 Cost: NETMWD Technician, maintenance of sites which includes controlling weeds and fire ants, checking equipment, and downloading gauges and flow meters at 12 hours/site/month (32 months) for a total of 4,608 hours.

Assuming 2 events/quarter. The NETMWD Technician, 12 hours/event which includes event setup, post event cleanup, actual sample collection time, and sample loading from all assistance and delivery to lab, for a total of 160 hours. NETMWD assistance in sample collection - NETMWD Project Coordinator 6 hours/event, for a total of 84 hours, and NETMWD WPS II, 6 hours/event, for a total of 84 hours.

Soil sample collection -, NETMWD Technician, 8 hours/site and 32 hours for travel, for a total of 128 hours, NETMWD Project Coordinator 36 hours.

Task 6 Cost: No NETMWD cost.

Task 7 Cost: NETMWD Project Coordinator 5 hours every quarter to set up meetings and generate quarterly reports and meeting minutes and verify eligibility at 12 quarters in the project for a total 60 hours and NETMWD WPS II will assist in quarterly meetings and report generation 2.5 hours/quarter for 12 quarters for a total of 30 hours.

Task 8 Cost:

Task 8.1 and 8.2: NETMWD Technician – 8 hours for the A&M seminar and 30 hours for the Soil and Water Conservation Districts meetings for a total of 38 hours. NETMWD Project Coordinator - 8 hours for the A&M seminar and 30 hours for the Soil and Water Conservation Districts meetings. NETMWD WPS II - 4 hours for the A&M seminar and 12 hours for the Soil and Water Conservation Districts meetings.

Task 8.3: NETMWD Project Coordinator and NETMWD WPS II to contribute 16 hours each per meeting, which will cover the meeting materials, meeting site set up and the actual meeting time, for a total of 48 hours each.

Task 8.4: NETMWD Project Coordinator and NETMWD WPS II to contribute 16 hours each per publication for a total of 96 hours each.

Task 10 Cost: NETMWD Project Coordinator 40 hours/ year, years 1 and 2, 80 hours, year 3, for a total of 160 hours, NETMWD Technician, 10 hours/month for formatting and delivering data to consultant and all other reporting necessary for field activities, for a total of 340 hours.

contracted to independent contractors and all analysis cost for water samples would be contracted through a certified lab.

Task 1 Cost: Paul Price Associates, Inc. \$1,000

Task 2 Cost: Paul Price Associates, Inc. \$12,000 Paul Price Associates, Inc. staff, consulting agronomist (32 hours), travel costs.

Task 3 Cost: Paul Price Associates, Inc. \$12,000

Task 4 Cost: Paul Price Associates, Inc. \$18,000

Task 5 Cost: Paul Price Associates, Inc. (training and annual field audits), \$3,000/year, Water chemistry analysis, \$15,000 (12 sites x five events with composite sampling) + 10% QA samples and contingency @ \$200.00/sample.

Texas A&M Soil Laboratory Fees

pH, conductivity, nitrate, major nutrients TAMU Soil Test

(phosphorus, potassium, calcium, sodium EDTA Extractible magnesium, and sulfur). \$ 20.00 ea.

Ammonia – Nitrogen Kjeldahl Extraction \$ 10.00 ea.

Price/Sample \$ 30.00 at 36 Samples with a group sample fee of \$ 50.00/group X 2 groups = \$ 1,180.00

Task 6 Cost: Paul Price Associates, Inc. \$7,500 year 1, \$5,000/year during years 2 and 3.

Task 7 Cost: No contractual cost for this task.

Task 8 Cost: Attend 6 (2/year) public outreach meetings - \$5,000

Task 9 Cost: Dr G. Ward/UT Austin – modeling and preparation of report sections \$100,000

Task 10 Cost: Paul Price Associates, Inc. \$3,000/year, years 1 and 2, \$35,000, year 3. The final report will incorporate the SWAT modeling results and a summary of the relationship of the results of the Phosphorus Index to the results of this study. Additionally for participation in the development and the final drafting of the 9 element Watershed Plan, we include a cost of \$11,200.

Note: SEP funds are not identified in the total contractual, however they are shown in the object class budget category totals.

TOTAL CONTRACTUAL \$ 242,880.00

Construction: Non-Related.

Miscellaneous:

Rental of uniforms for NETMWD personnel (\$380.00/year for a total project cost of (\$1,140.00), office telephone expense (\$ 40.00/mth for a total cost of \$ 1,440.00), cost associated with public outreach materials (printing – \$ 2,500.00/year for total project cost of \$ 7,500.00).

The Watershed Advisory Committee will also meet every six months to discuss the progress of the project and redirect if necessary, 6 total meetings to involve all 20 members/2 hours/meeting for a total of 240 hours at \$ 30.00/hr for a total of \$ 7,200.00.

NETMWD will also work with local Soil and Water Conservation District, and County Extension Agents, to introduce the same educational opportunity to smaller groups for those whom could not be at the area wide meeting concerning sediment and nutrient loss from agricultural land and their impact on water quality or whom choose to have smaller group settings. (6 meetings planned at an attendance of 12 farmers per meeting, for 3 hours/meeting, 216 total hours at \$30.00/hr/attendee, for a total of \$ 6,480.00)

NETMWD will also hold annual meetings in different areas of the basin, to invite the public to hear presentations on the importance of proper maintenance of an on-site sewage system and our program to replace failing systems. Three meetings during the project with the anticipation that we have 125 participants at each meeting and each meeting to last 2 hours. Total of 750 hours with a estimated \$ 30.00/hour value for a total of \$ 22,500.00.

Designated Representatives from other counties, 8 eligible counties at 4 hours every 3 months for 12 quarters in the project = 384 hours at an average salary of \$30.00/hour, total cost \$ 11,520.00 (for quarterly meetings and preparation for system identification and verification). Designated Representative from 8 counties – 3 hours/system for 4.5 systems per county – 108 hours at average \$30.00/hr=\$3,240.00

TOTAL MISCELLANEOUS \$ 49,500.00