

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan						
*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
Goal 1: Reduce nutrient and bacteria loads, from fecal contamination, in lakes and streams						
Objective 1.1: Decrease potential nutrient and bacteria loads from discharging off-lot , i.e., point source, home/semi-public sewage disposal systems (HSDSs) and (SPSDSs)						
Priority Areas: Subwatersheds 2 and 3; especially along SR. 619, S.R. 241 and to the east of S.R. 93						
a. Establish a permit system to facilitate HSDS and SPDS inspection and maintenance (D3)	<ul style="list-style-type: none"> State and Local Health Departments Ohio EPA 	<ul style="list-style-type: none"> Local Property/Home Owner Operation & Maintenance Fee 	3 years	Lower number of malfunctioning/failing HSDSs and SPDSs	Number of systems inspected, pumped, and/or repaired	\$352,000/year for DOES Summit County Inspections
b. Repair or replace faulty HSDSs and SPDSs (D3)	<ul style="list-style-type: none"> Local Health Departments Ohio EPA 	<ul style="list-style-type: none"> NPS Program (ODNR) WPCLF WPCLF (Linked Deposit) PL-566 CWA Section 319 NPS (Ohio EPA) 	3 years	Lower number of malfunctioning/failing HSDSs and SPDSs	Number of systems repaired or replaced	\$3,000-\$8,000 average cost to replace HSDS up to \$1,000 to repair HSDS \$10,000-\$15,000 to replace SPDSs, less to repair
c. Research cost effective and environmentally-sound alternatives to control water pollution from HSDSs and SPDSs, e.g., constructed wetlands (A1)	<ul style="list-style-type: none"> Local Health Departments NEFCO 	<ul style="list-style-type: none"> WPCLF WPCLF (Linked Deposit) PL-566 R&D Grant 	3 years	Viable alternatives to control water pollution from HSDSs and SPDSs, especially where current technology is limited, e.g. poor soils	Types of research conducted, data collected, and results	\$42,000-\$105,000 for constructed wetland

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d. Establish education efforts to increase public awareness on faulty HSDSs and SPSDSs (B) 1) Surveys 2) Distribute information materials where needed, e.g., video "Dollars Down the Drain", soil pipe sticker to remind homeowners when to pump septic tanks 3) Hold public meetings 4) Set up information booths at county/local fairs	<ul style="list-style-type: none"> • Local Health Departments • NEFCO 	<ul style="list-style-type: none"> • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased awareness of water quality impacts associated with malfunctioning/failing HSDSs and SPSDSs	1) Number surveys completed 2) Number of information materials distributed 3) Number of public meetings held 4) Number of fairs with information booths	1) \$2/ survey 2) \$1.50-\$3/ pamphlet 3) \$1,200 per 2 hour meeting with associated costs 4) \$1,000 and up for display, \$1.50-\$3/ pamphlet, \$8/hr for volunteers
e. Educate homeowners and promote the extension of sewers in the watershed, especially where high concentrations of HSDSs and SPSDSs are located on poor soils for septic systems (B, D2)	<ul style="list-style-type: none"> • State and Local Governments • County Sanitary Engineer • State and Local Health Departments 	<ul style="list-style-type: none"> • WPCLF • Local Property/Home Owners (through assessments) • County/Local Government 	3 years	Lower number of Malfunctioning/failing HSDSs and SPSDSs	Level of interest in extending existing sewer areas and future plans/projects	\$1.50-\$3/ pamphlet or fact sheet \$2/ survey \$9,000/ home and up
Objective 1.2: Decrease potential nutrient and bacteria loads from failing on-lot (non-discharging) home/semi-public sewage disposal systems (HSDSs) and (SPSDSs)						
Priority Areas: Subwatersheds 2 and 3, especially along SR. 619, S.R. 241 and to the east of S.R. 93						
a. Establish a permit system to facilitate HSDS and SPSDS inspection and maintenance (D3)	<ul style="list-style-type: none"> • State and Local Health Departments • Ohio EPA 	<ul style="list-style-type: none"> • Local Property/Home Owner Operation & Maintenance Fee 	Once every 3 years	Lower number of malfunctioning/failing HSDSs and SPSDSs	Number of systems inspected, pumped, and/or repaired	\$352,000/ year for DOES Summit County Inspections

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b. Repair or replace faulty HSDSs and SPDSs (D3)	<ul style="list-style-type: none"> • Local Health Departments 	<ul style="list-style-type: none"> • NPS Program (319 Grants) • WPCLF • WPCLF (Linked Deposit) • PL-566 • CWA Section 319 NPS 	3 years	Lower number of malfunctioning/failing HSDSs and SPDSs	Number of systems repaired or replaced	\$3,000-\$8,000 average cost to replace HSDS up to \$1,000 to repair HSDS \$10,000-\$15,000 to replace SPDS, less to repair
c. Research cost effective and environmentally-sound alternatives to control water pollution from HSDSs and SPDSs, e.g., constructed wetlands (A1)	<ul style="list-style-type: none"> • Local Health Departments • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (ODNR) • WPCLF • WPCLF (Linked Deposit) • PL-566 • R&D Grant • CWA Section 319 NPS (Ohio EPA) 	3 years	Viable alternatives to control water pollution from HSDSs and SPDSs, especially where current technology is limited, e.g. poor soils	Types of research conducted, data collected, and results	\$42,000-\$105,000 for constructed wetland
d. Establish education efforts to increase public awareness on faulty HSDSs and SPDSs (B) <ol style="list-style-type: none"> 1) Door-to-door surveys 2) Distribute information materials where needed, e.g., video "Dollars Down the Drain", soil pipe sticker to remind homeowners when to pump septic tanks 3) Hold public meetings 4) Set up information booths at county/local fairs 	<ul style="list-style-type: none"> • Local Health Departments • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased awareness of water quality impacts associated with malfunctioning/failing HSDSs and SPDSs	<ol style="list-style-type: none"> 1) Number of surveys completed 2) Number of information materials distributed 3) Number of public meetings held 4) Number of fairs with information booths 	<ol style="list-style-type: none"> 1) \$2/ survey 2) \$1.50-\$3/ pamphlet 3) \$1,200 per 2 hour meeting with associated costs 4) \$1,000 and up for display, \$1.50-\$3/ pamphlet, \$8/hr for volunteers

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e. Educate homeowners and promote the extension of sewers in the watershed, especially where high concentrations of HSDSs and SPSDSs are located on poor soils for septic systems (B, D2)	<ul style="list-style-type: none"> State and Local Governments County Sanitary Engineer State and Local Health Departments 	<ul style="list-style-type: none"> WPCLF Local Property/Home Owners (through assessments) County/Local Government 	3 years	Lower number of Malfunctioning/failing HSDSs and SPSDSs	Level of interest in extending existing sewer areas and future plans/projects	\$1.50-\$3/ pamphlet or fact sheet \$2/ survey \$9,000/ home and up
Objective 1.3: Reduce nutrient and bacteria loads from livestock						
Priority Areas: To be determined						
a. Identify and assess all livestock operations in the watershed and map target areas (A5)	<ul style="list-style-type: none"> USDA/NRCS ODA OSU Extension NEFCO County SWCDs 	<ul style="list-style-type: none"> NatureWorks CWA Section 319 NPS (Ohio EPA) 	3 months	Stronger understanding of where potential sources of pollution are located and their severity	Map and list of all livestock operations in the watershed with target areas	\$140-\$490 and up / map
b. Plan and implement manure management plans on agricultural operations (D10)	<ul style="list-style-type: none"> USDA/NRCS ODNR/DSWC County SWCDs 	<ul style="list-style-type: none"> EQIP State Cost Share Program NatureWorks NPS Program (ODNR) WPCLF (Linked Deposit) PL-566 R&D Grant 	1 year	Reduced levels of nutrient and bacteria contamination	Number of manure management plans implemented and degree of success	NRCS does not charge for plan (EQIP) \$10,000 - \$50,000 for concrete holding facility \$15,000-\$20,000 for lined lagoon
c. Establish settling, grass filtration or soil infiltration systems around animal feeding and containment areas, e.g., buffer strips (D10)	<ul style="list-style-type: none"> USDA/NRCS ODNR/DSWC County SWCDs 	<ul style="list-style-type: none"> EQIP CRP State Cost Share Program NatureWorks NPS Program (ODNR) WPCLF (Linked Deposit) PL-566 CWA Section 319 Grant (Ohio EPA) 	1 year	Reduced agricultural runoff into lakes and streams	Number of buffer strips established and maintained	\$0.25-\$1.10/ sq yd seeded and mulched \$0.40-\$0.49 per seedling planted \$3.20/ linear foot grassed diversion

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d. Implement fencing and development of off-stream watering facilities to limit or exclude livestock from stream areas (D10)	<ul style="list-style-type: none"> • ODNR/DSWC • County SWCDs 	<ul style="list-style-type: none"> • EQIP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • PL-566 • CWA Section 319 Grant (Ohio EPA) • SIP 	1 year	Reduce point source pollution by livestock	Number of off-stream watering facilities developed and length of fencing around lakes and streams	\$470/ linear foot for barbed wire fencing \$1,500 - \$2,000 and up
e. Fund alternative technology for farm waste treatment, e.g., constructed wetlands (D9)	<ul style="list-style-type: none"> • ODA • ODNR/DSWC • County SWCDs 	<ul style="list-style-type: none"> • EQIP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • PL-566 • R&D Grant • CWA Section 319 Grant (Ohio EPA) 	3 years	Viable alternatives to treat manure effectively	Types of research conducted, data collected, and results	~\$35,000, varies much with size and features

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Objective 1.4: Reduce excess (those over MCLs and MCL goals) nutrient and bacteria loads from wastewater treatment plants (WWTPs)						
Priority Areas: Subwatersheds 2 and 3, especially along S.R. 93						
a. Require stricter final effluent self-monitoring requirements for WWTPs under 0.25 mgd (D1, D7b) <ol style="list-style-type: none"> 1) Add monitoring of nitrate and nitrites to the list of parameters to be tested for WWTPs under NPDES permits with design flows <0.25 mgd 2) Add monitoring of phosphorus to the list of parameters to be tested for WWTPs under NPDES permits with design flows <0.1 mgd b. Support Ohio EPA's statewide general permit to regulate treated wastewater discharges from small systems (≤0.025 mgd)	<ul style="list-style-type: none"> • Ohio EPA/DSW • Local Health Departments • NEFCO 	<ul style="list-style-type: none"> • WPCLF • WWTPs 	1 year	Better understanding and control of pollutants from WWTPs with design flows less than 0.25 mgd	Additional nutrient parameters added and statewide general permit recognized by local government and residents	a. legislative costs variable <ol style="list-style-type: none"> 1) \$20/tested parameter 2) \$20/tested parameter b. Time spent on attending public meetings, writing letters, making phone calls
Objective 1.5: Reduce excess nutrients and bacteria from natural sources						
Priority Area: Subwatershed 3, with an emphasis on landowners with riparian or shoreline property						
a. Educate shoreline and riparian landowners on ways to deter waterfowl from grazing on their property (B) <ol style="list-style-type: none"> 1) Distribute information pamphlets 	<ul style="list-style-type: none"> • Ohio EPA • ODNR/Div. of Wildlife • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Reduced nutrients and bacteria from waterfowl	1) Number of information pamphlets distributed	1) \$1.50-\$3/ pamphlet or factsheet
b. Educate pet owners about proper disposal of pet wastes <ol style="list-style-type: none"> 1) Distribute information pamphlets (B) 	<ul style="list-style-type: none"> • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Reduced nonpoint source pollution from domestic animal waste	1) Number of information pamphlets distributed	1) \$1.50-\$3/ pamphlet or factsheet

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Goal 2: Decrease levels of toxic substances (heavy metals, oil and petroleum products, etc.) entering surface and/or ground water						
Objective 2.1: Decrease contributions of toxic substances from landfills and dumps						
Priority Area: Subwatershed 4						
a. Identify priority sites for additional investigation and remediation efforts 1) Conduct adequate monitoring to determine the sources(s), pollutant(s) and severity of water quality degradation (D4) 2) Promote appropriate reuse of contaminated sites (B)	<ul style="list-style-type: none"> • Ohio EPA/DERR • State and Local Health Departments • Private Sector 	<ul style="list-style-type: none"> • WPCLF • CWA Section 319 NPS (Ohio EPA) • Private Sector 	1 year	1) Acquire a defensible base of information for future action 2) Decreased health hazards from contaminated sites	1) Number of water samples collected, results and conclusion(s) 2) Number and types of actions taken to ensure appropriate reuse of contaminated sites	1) \$41,000/year for inspection 2) \$15/person for workshop
b. Initiate volunteer clean-up days for illegal dumping areas (C1)	<ul style="list-style-type: none"> • Ohio EPA • Local Health Departments • Grassroots/citizen-based Groups 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF • CWA Section 319 NPS (Ohio EPA) 	2 months per clean-up day	Lower number of illegal dumps	Number of clean-up days organized and amount of refuse collected and hauled to appropriate facilities	\$1.50-\$3/fact sheet or pamphlet \$8/hour-volunteer \$25/ton trash
c. Enforce stricter penalties against illegal dumping (D1)	<ul style="list-style-type: none"> • Local Governments 	<ul style="list-style-type: none"> • CWA Section 319 NPS (Ohio EPA) • WPCLF 	1 year	Decrease illegal dumping	Stricter penalties imposed	Legislative costs variable to develop regulations needed to impose penalties.

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d. Establish hazardous waste drop-off facilities; where needed, for local communities and/or hazardous waste pick-up days (D5)	<ul style="list-style-type: none"> • Solid Waste Districts • State and Local Health Departments • Private Sector 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (319 Grants) • WPCLF • PL-566 • CWA Section 319 NPS • Private Sector 	1 year	Decrease illegal dumping	Number of drop-off facilities established or pick-up days held	\$400,000 - \$500,000 for county-wide facility (6-m.o. operation) \$150,000 for one day county-wide drop off (1,500 car loads)
e. Educate consumers about purchasing less and fewer household chemical products while using them more completely (B)	<ul style="list-style-type: none"> • NEFCO • Solid Waste Districts 	<ul style="list-style-type: none"> • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Minimized volume of disposed hazardous household materials	Reduction in pounds of materials collected for disposal	\$1.50-\$3/ factsheet or pamphlet
Objective 2.2: Decrease levels of toxic substances from industrial land use areas						
Priority Areas: Subwatersheds 1 and 2						
a. Identify sources of industrial hazardous waste produced within the watershed (A6) b. Educate owners/operators about the hazards of negligent management of such substances (B)	<ul style="list-style-type: none"> • Ohio EPA • State and Local Health Departments • Private Sector • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Lower releases of toxic substances from industrial operations	A listing of industrial sources and names and numbers of owners / operators educated about the hazards of negligent management	a. Maximum of one day spent sorting through & copying RCRA documents or ~\$200. b. \$15/person for workshop

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c. Educate owners/operators of industrial facilities about the benefits of implementing preventive and control measures (BMPs) to reduce pollutants (B)	<ul style="list-style-type: none"> • Local Governments • Ohio EPA • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF (Linked Deposit) • PL-566 • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased awareness about the benefits of BMPs and reduced levels of pollutants from industrial land use areas	List of contacts and number of operations that have implemented BMPs to reduce pollutants	\$15/person for workshop \$1.50-\$3/ pamphlet or fact sheet
Objective 2.3: Decrease levels of toxic substances from storm water runoff						
Priority Areas: Subwatersheds 1 and 3						
a. Implement a regional/ watershed-based storm water management plan (D15)	<ul style="list-style-type: none"> • ODNR/DSWC • County SWCDs • County Engineer • NEFCO 	<ul style="list-style-type: none"> • EQIP • NatureWorks • NPS Program (ODNR) • WPCLF • PL-566 • CWA Section 319 NPS (Ohio EPA) • Storm water utility 	3 years	Improved water quality and moderated peak storm water flows	Completion of the plan and level of participation	Summit Co: \$300,000 annually for two years, \$150,000 annually thereafter

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b. Implement NPDES Phase II Storm Water Program 1) Public education / outreach (B) 2) Public involvement / participation (B) 3) Eliminating illicit discharges (D1) 4) Construction site stormwater ordinances (D1) 5) Post-construction stormwater management ordinance (D1) 6) Pollution prevention / good housekeeping (B)	<ul style="list-style-type: none"> • Local Governments 	<ul style="list-style-type: none"> • WPCLF • Storm water utility 	3 years	Improved water quality and moderated peak storm water flows	Successful implementation of program	1) \$1.50-\$3/ pamphlet or factsheet 2) \$1,200/for a 2-hour meeting 3) Legislative Costs Variable 4) Legislative Costs Variable 5) Legislative Costs Variable 6) \$1,200 for a 2-hour meeting, \$15/person for workshop

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<p>c. Implement preventative measures to reduce storm water runoff</p> <ol style="list-style-type: none"> 1) Educate homeowners on proper use and disposal of household hazardous waste and the importance of proper operation and maintenance of stormwater control devices, e.g., debris and sediment removal from channels, pipes and pumps (B) 2) Begin a storm drain stenciling program (C1) 3) Limit the amount of impervious areas for commercial establishments (D1) 4) Organize hazardous waste drop-off facilities; where needed, for local communities and/or hazardous waste pick-up days (D5) 	<ol style="list-style-type: none"> 1) • Local Health Departments • County SWCDs • NEFCO • Solid Waste Districts • Private Sector 2) • County SWCDs • NEFCO 3) • Local and County Planning and Zoning Boards 4) • Solid Waste Districts • State and Local Health Departments • Private Sector 	<ul style="list-style-type: none"> • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF • CWA Section 319 NPS (Ohio EPA) • Private Sector 	<p>2 years</p>	<p>Lower levels of toxic substances entering the environment from storm water runoff</p>	<ol style="list-style-type: none"> 1) Education efforts conducted 2) Development of and participation in a storm drain stenciling program 3) Permits or ordinances in effect 4) Number of drop-off facilities or pick-up days organized 	<ol style="list-style-type: none"> 1) \$1.50-\$3/ pamphlet or fact sheet 2) \$75/ stenciling kit plus \$8/ volunteer-hour plus employee-hours to develop 3) Legislative Costs Variable 4) \$150,000 for one day county-wide drop off (1,500 car loads)

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<p>d. Implement control measures to reduce storm water runoff and/or improve water quality</p> <ol style="list-style-type: none"> 1) Require first flush or end-of-pipe treatment, e.g., stormceptor vortex (D1) 2) Require catch basins for parking lots over a specified size (D1) 3) Install detention and/or retention ponds and treatment systems for water quality improvement (D12) 4) Route drainage from impervious surfaces to pervious areas (as soils allow) (D12) 5) Routine/scheduled street sweeping (D14b) 	<ol style="list-style-type: none"> 1) • Ohio EPA/DWPC • County Engineer • Private Sector 2) • Local and County Planning and Zoning Boards • County Engineer 3) • ODNR/DSWC • County SWCDs • County Engineer • Private Sector 4) • ODNR/DSWC • County SWCDs • County Engineer • Private Sector 5) • ODOT 	<ul style="list-style-type: none"> • EQIP • NatureWorks • NPS Program (ODNR) • WPCLF • WPCLF (Linked Deposit) • PL-566 • R&D Grant • CWA Section 319 NPS (Ohio EPA) • Private Sector 	<p>2 years</p>	<p>Lower levels of toxic substances entering the environment from storm water runoff</p>	<ol style="list-style-type: none"> 1) Requirements established and enacted 2) Requirements established and enacted 3) Number of ponds and treatment systems installed 4) Number of drainage areas diverted from impervious surfaces to pervious areas 5) Number of communities participating in routine/scheduled street sweeping 	<ol style="list-style-type: none"> 1) Legislative costs variable 2) Legislative costs variable 3) \$10,000-\$50,000 as size and features vary 4) \$3.20/linear ft. grassed diversion 5) \$0.56/linear ft. for min. of 10x/year (residential) \$1.92/linear ft. for 2x/year (commercial) <p>~\$95,000/sweeper (~7-yr. life)</p>
<p>e. Locate historical spills and accidental release sites in the watershed (A5)</p>	<ul style="list-style-type: none"> • Ohio EPA/DERR • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	<p>3 months</p>	<p>Insight regarding locations where there is a higher risk for polluted storm water runoff</p>	<p>Up-to-date list and map of spills and accidental releases in the watershed</p>	<p>\$140-\$490 and up/map</p>

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Objective 2.4: Decrease releases of toxic substances from underground storage tanks (USTs) and oil and gas pipelines						
Priority Areas: Subwatersheds 2, 3, 4 and 5						
a. Encourage regulations requiring USTs, over a certain age, to be replaced by new tanks (D1)	<ul style="list-style-type: none"> • SFM/BUSTR • Local Government • Lobbying Groups • Private Sector 	<ul style="list-style-type: none"> • CWA Section 319 NPS (Ohio EPA) • NPS Program (ODNR) 	1 year	Decrease releases from old USTs	Regulations developed and enacted	Legislative costs variable
b. Identify UST problem areas and ensure that these areas are monitored adequately (A5, D7d)	<ul style="list-style-type: none"> • SFM/BUSTR • NEFCO • Private Sector 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) 	1 year	Insight regarding areas with a high potential for releases of pollutants and decreasing the risk	Number of problem areas identified and appropriate person(s) contacted to ensure adequate monitoring	\$140-\$490 and up/map 1998 regulations require upgrades and monitoring
c. Encourage consumers to purchase gasoline/diesel from service stations that equip USTs with leak detectors or other protective mechanisms and identify these by a decal on the pump, such as the Buckeye Leaf Symbol (B)	<ul style="list-style-type: none"> • NEFCO • Private Sector 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • CWA Section 319 NPS (Ohio EPA) • Private Sector 	1 year	Increase in service stations which equip USTs with protective mechanisms through consumer demand	Level of increased business for service stations with decals associated with protective mechanisms	\$1.50-\$3/ pamphlet or fact sheet

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Objective 2.5: Increase awareness regarding the location and pollution potential of oil and gas pipelines in relation to drinking water wells						
Priority Areas: Subwatersheds 3 and 5						
<p>a. Identify all drinking water wells located within a prescribed distance of oil and gas transmission lines (A3)</p> <ol style="list-style-type: none"> 1) Sample a percentage of all drinking water wells for the presence of petroleum hydrocarbons representative of oil and gas and/or their byproducts (A4) 2) Provide pipeline and drinking water well location information to community planning and zoning officials and planning commissions (A5) 3) Recommend disclosure of pipeline locations to any person(s) purchasing property located within a prescribed distance of the known pipeline(s) 4) Recommend the use of treated public water supply to service residences within a prescribed distance of a known pipeline 	<ul style="list-style-type: none"> • ODNR/Div. of Oil and Gas • Health Departments • Community Planning and Zoning Officials • Planning Commission • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (ODNR) • PL-566 • CWA Section 319 NPS (Ohio EPA) 	3 years	More precise locations of oil and gas pipelines, detection of leaks or ruptures in pipelines, increased knowledge regarding pipeline location and potential to pollute drinking water wells, and availability of other water resources	Detailed maps of oil and gas pipeline locations in relation to drinking water wells, number of wells monitored each year and results, and information regarding pipeline locations and proximity to wells available	<p>\$7,000 - \$25,000, \$140-\$490 and up per map</p> <ol style="list-style-type: none"> 1) \$150/ sample for BTEX tests \$80/ sample for VOC tests 2) \$140-\$490 and up/ map 3) Time spent on letters, meeting attendance and phone calls 4) Time spent on letters, meeting attendance and phone calls

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
Objective: 2.6: Decrease ground water contamination from improperly constructed and/or abandoned drinking water wells						
Priority Areas: No specific areas identified at this time						
a. Identify wells abandoned prior to sealing requirements (A3, A5) 1) Determine if wells were sealed properly (D13) 2) Properly abandon wells if needed (D13)	<ul style="list-style-type: none"> • Ohio EPA/DDAGW • ODNR/DOW • NEFCO • State and Local Health Departments 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (ODNR) • PL-566 • CWA Section 319 NPS (Ohio EPA) 	3 years	Decrease ground water contamination from abandoned wells	List and map of all abandoned wells prior to sealing requirements 1) Number of these wells inspected for proper abandonment 2) Number of wells properly abandoned	\$140-\$490 and up/map 1) \$40 inspection fee 2) \$200-\$300 for plug \$150 for removal of pump/wiring if necessary
b. Proactively and consistently enforce well construction, maintenance and abandonment standards (D13)	<ul style="list-style-type: none"> • Ohio EPA/DDAGW • ODNR/DOW • State and Local Health Departments • Private Sector 	<ul style="list-style-type: none"> • NatureWorks • NPS Program (ODNR) • PL-566 • CWA Section 319 NPS (Ohio EPA) 	1 year	Decrease ground water contamination from wells	Level of enforcement and effectiveness of present standards	\$40 inspection fee \$200-\$300 for plug \$150 for removal of pump/wiring if necessary
c. Educate public and private well owners about the hazards of ground water contamination and preventative measures (B) 1) Distribute information pamphlets	<ul style="list-style-type: none"> • Ohio EPA/DDAGW • ODNR/DOW • State and Local Health Departments • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased awareness of ground water contamination associated with active or abandoned wells	1) Number of pamphlets distributed	1) \$1.50-\$3/ pamphlet
d. Identify critical NPS pollution areas in close proximity to abandoned wells and implement BMPs to reduce contamination risks (A5)	<ul style="list-style-type: none"> • Ohio EPA/DDAGW • ODNR/DOW • State and Local Health Departments • NEFCO • Private Sector 	<ul style="list-style-type: none"> • EQIP • CRP • NatureWorks • NPS Program (ODNR) • WPCLF • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) 	1 year	Decrease ground water contamination from abandoned wells	Critical areas identified and number and location of BMPs implemented to reduce contamination risks	\$140-\$490 and up/map

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
Goal 3: Reduce impacts from sedimentation/siltation in lakes and streams						
Objective 3.1: Reduce soil erosion, transport, and deposition of sediment associated with construction sites						
Priority Areas: Subwatersheds 2, 3, 4 and 5; in close proximity to lakes and streams						
<p>a. Support preventative measures to reduce impacts from construction sites</p> <ol style="list-style-type: none"> 1) Encourage phasing of construction sites over a specified size (D1) 2) Develop and enforce zoning ordinances that restrict or require additional protective measures for development in sensitive areas, e.g., slopes >6%, wetlands, and slopes with high sediment yield (D1) 3) Initiate vegetative stabilization (seeding) of disturbed areas over a certain size and/or exposed for a specified length of time (D12) 4) Promote development that minimizes the percentage of impervious surfaces, such as open space zoning and cluster development (D1) 5) Develop township or municipal ordinances requiring construction sites to leave easements of a specified distance near shorelines of targeted wetlands and lakes and flood plains of targeted streams (D1) 	<ol style="list-style-type: none"> 1) • County SWCDs • Building Inspectors • HBA 2) • Ohio EPA • Local and County Planning and Zoning Boards • Building Inspectors • County Engineer • Local Unit of Government 3) • County SWCDs • USDA/NRCS • Building Inspectors 4) • Local Planning and Zoning Boards • County Engineer • USDA/NRCS 5) • Local Planning and Zoning Boards • USDA/NRCS 	<ul style="list-style-type: none"> • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) 	3 years	Reduce potential for sediment erosion, transport and deposition from construction sites	<ol style="list-style-type: none"> 1) Number of construction sites phasing development 2) Zoning ordinances established and enacted 3) Locations with vegetative stabilization initiated 4) List of communities participating in promoting such development 5) List of townships or municipalities with ordinances established and enforced 	<ol style="list-style-type: none"> 1) Legislative costs variable 2) Legislative costs variable 3) \$0.25-\$1.10/sq yd seeded and mulched \$3,000 per acre top soil 4) Legislative costs variable 5) Legislative costs variable

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
<p>b. Implement control measures to reduce impacts from construction sites</p> <ol style="list-style-type: none"> 1) Conduct frequent inspection of construction site erosion and sediment control BMPs and approved plans, i.e., SWPPPs (D11) 2) Require building controls for individual lots (D1) 3) Maintain vegetated buffer strips and riparian zones near construction sites (D12) 4) Promote the design of post-construction BMPs at construction sites, i.e., water quantity/water quality basins, constructed wetlands, planting and preserving trees, etc. (D12) 	<ol style="list-style-type: none"> 1) • County SWCDs • County Engineer 2) • Local and County Planning and Zoning Boards • County SWCDs • County Engineer 3) • County SWCDs • Local Government • Private Sector 4) • County SWCDs, • County Engineer • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • CRP • NatureWorks • NPS Program (ODNR) • WPCLF • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) • SIP 	3 years	Reduce potential for sediment erosion, transport and deposition from construction sites	<ol style="list-style-type: none"> 1) How often control plans are inspected 2) Requirements established and enacted 3) Number of buffer strips and riparian zones maintained 4) Number of post-construction BMPs implemented 	<ol style="list-style-type: none"> 1) \$20/acre-year, inspected bi-monthly 2) Legislative costs variable 3) \$0.25-\$1.10/sq yd seeded and mulched \$0.40-\$0.49/ seedling planted 4) \$10,000-\$50,000 per detention system, depends on size and features
<p>c. Work with SWCDs and building associations to identify pilot demonstrations that utilize innovative erosion control and management practices (D12)</p>	<ul style="list-style-type: none"> • County SWCDs • HBA • County Engineer • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • CRP • NatureWorks • NPS Program (ODNR) • WPCLF • R&D Grant • CWA Section 319 NPS (Ohio EPA) 	3 years	Viable alternatives to control water pollution from construction site	Number of pilot demonstrations tested and results	\$1.47/sq yd bonded fiber matrix, a relatively new product. # \$3,000 per acre top soil

Use of product and business names does not necessarily represent endorsement, but rather is for illustrative purposes

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
d. Offer additional education for builders, developers, and contractors, i.e., new techniques, post-construction BMPs, etc. (B) 1) Hold seminars/ workshops 2) Distribute information packets	<ul style="list-style-type: none"> • County SWCDs • ODNR/DSWC • USDA/NRCS 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) • Private Sector 	1 year	Increased awareness of present and future practices to reduce construction site water quality impacts	1) Number of seminars/ workshops held 2) Number of information packets distributed	1) \$15/ person for workshop 2) \$1.50-\$3/ pamphlet or fact sheet
Objective 3.2: Reduce soil erosion transport, and deposition of sediment associated with agricultural areas						
Priority Areas: Subwatersheds 2, 4 and 5; in close proximity to lakes and streams						
a. Educate farmers about the benefits of implementing appropriate vegetative and tillage BMPs, especially with fields adjacent to headwater streams, to reduce the impacts associated with sediment, e.g., conservation tillage, conservation cropping sequence, contour strip cropping, and contour farming (B)	<ul style="list-style-type: none"> • ODNR/DSWC • County SWCDs • ODA • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • CRP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • OEEF • WPCLF (Linked Deposit) • PL-566 • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Reduced sediment loads entering waterways from agricultural areas	Level of participation in vegetative and tillage BMPs	\$1.50-\$3/ pamphlet or fact sheet \$3,000 and up for an 80 picture slide show

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
b. Implement appropriate structural BMPs to alleviate soil-related pollution (D11) 1) fencing and development of off-stream watering facilities to exclude livestock from lakes and streams 2) Establish grassed and forested buffer strips on farm croplands, especially adjacent to streams 3) Construct water and sediment control basins equipped with treatment systems for water quality improvement	<ul style="list-style-type: none"> • ODNR/DSWC • County SWCDs • ODA • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • CRP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • PL-566 • R&D Grant • CWA Section 319 NPS (Ohio EPA) • SIP 	3 years	Lower soil-related pollution from agricultural areas	1) Number of off-stream watering facilities fenced and developed 2) Number of feet with grassed and forested buffer strips established 3) Number of water and sediment control basins, with treatment systems, constructed	1) \$4.70/linear foot for barbed wire fencing \$1,500 - \$2,000 and up for watering 2) \$0.25-\$1.10/sq yd seeded and mulched \$0.40-\$0.49 per seedling planted 3) \$10,000-\$50,000 per detention system, depends on size and features
Objective 3.3: Reduce sediment/siltation and airborne pollutants from sand and gravel mining activities						
Priority Areas: Active mining operation in the northern portion of Subwatershed 4 along Myersville Creek on Myersville Road and an active operation in the southern half of Subwatershed 5 near S.R. 241 (Wales Avenue).						
a. Ensure that implemented storm water control measures are frequently inspected (D11)	<ul style="list-style-type: none"> • County SWCDs • Ohio EPA 	<ul style="list-style-type: none"> • NPS Program (ODNR) 	6 months to 1 year	Reduced pollution from abandoned mines	Number of abandoned mines inspected for implemented storm water control measures	\$18-\$25/hour for county engineer to inspect

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
b. Ensure dust control strategies are performed, such as periodic water spraying (D11)	<ul style="list-style-type: none"> • County SWCDs • Ohio EPA 	<ul style="list-style-type: none"> • NPS Program (ODNR) 	6 months to 1 year	Reduce airborne pollutants, which could eventually reach waterways	Number of active mines inspected and level of participation in dust control measures	\$20/acre-year, inspected bi-monthly
Goal 4: Protect and/or restore shorelines and riparian corridors in selected wetlands, lakes and streams						
Objective 4.1: Protect shoreline and riparian corridor in selected wetlands, lakes and streams						
Priority Areas: High Quality Riparian Corridors within the watershed and Biologically Significant Wetlands and other wetland areas adjacent to streams or lakes. Refer to Tables 28 and 29 for specific areas identified for protection efforts						
a. Encourage city and county park districts to purchase selected areas to protect and/or increase intact shoreline and riparian corridor (D8)	<ul style="list-style-type: none"> • City and County Park Districts • ODNR/ Div. of Wildlife and Div. of Parks and Recreation 	<ul style="list-style-type: none"> • WPCLF • PL-566 • CWA Section 319 NPS (Ohio EPA) • WRP 	1 year	Increased shoreline and riparian corridor in selected areas	Number of selected areas purchased	\$0-\$1,000/acre and up \$4,000 and up average set up & maintenance fee
b. Provide incentives for landowners to protect shoreline or riparian corridor with long-term protection or permanent conservation easements (D8)	<ul style="list-style-type: none"> • Local and County Planning and Zoning Boards 	<ul style="list-style-type: none"> • NatureWorks • PL-566 • CWA Section 319 NPS (Ohio EPA) • WRP 	3 years	Increased shoreline and riparian corridor	Number of feet set aside for long-term protection or permanent conservation easements	\$0-\$1,000/acre and up \$4,000 and up average set up & maintenance fee
c. Develop township or municipal ordinances requiring new construction sites to leave easements, of a specified distance, near shorelines of targeted wetlands and lakes and flood plains of targeted streams (D1)	<ul style="list-style-type: none"> • Local and County Planning and Zoning Boards 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF 	3 years	Protection of shoreline and riparian corridor	Townships or municipal ordinances established and enforced	Legislative costs variable

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
d. Identify shoreline and riparian landowners and educate them about shoreline or riparian zone protection and importance 1) Compile a list of riparian landowners 2) Distribute information pamphlets (B)	<ul style="list-style-type: none"> NEFCO 	<ul style="list-style-type: none"> NPS Education Grant NPS Program (ODNR) OEEF WPCLF CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased protection of shoreline and riparian corridor	1) List of riparian landowners 2) Number of information pamphlets distributed	1) \$105 (3 days at \$35/day) 2) \$1.50-\$3/ pamphlet
Objective 4.2: Restore shoreline and riparian corridor in selected wetlands, lakes and streams						
Priority Areas: Low Quality Riparian Corridors and former wetland areas which would aid in improving water quality. Refer to Tables 28 and 29 for specific areas identified for restoration efforts						
a. Assist shoreline and riparian landowners to replant shoreline and riparian corridor in selected wetlands, lakes and streams using appropriate BMPs (D6)	<ul style="list-style-type: none"> Ohio EPA ODNR/DSWC County SWCDs NEFCO USDA/NRCS Grassroots/Citizen-Based Groups ODNR/Div. of Wildlife 	<ul style="list-style-type: none"> EQIP CRP State Cost Share Program NatureWorks NPS Program (ODNR) WPCLF WPCLF (Linked Deposit) PL-566 CWA Section 319 NPS (Ohio EPA) SIP 	3 years	Restoration of shoreline and riparian corridor	Number of feet replanted	\$0.25-\$1.10/ sq yd seeded and mulched \$0.40-\$0.49 per seedling planted
b. Assist shoreline and riparian landowners to restabilize shoreline and riparian corridor in selected wetlands, lakes and streams using appropriate BMPs (D6)	<ul style="list-style-type: none"> ODNR/DSWC USDA/NRCS County SWCDs NEFCO ODNR/Div. of Wildlife 	<ul style="list-style-type: none"> EQIP CRP State Cost Share Program NatureWorks NPS Program (ODNR) WPCLF WPCLF (Linked Deposit) PL-566 CWA Section 319 NPS (Ohio EPA) SIP 	3 years	Restabilization of shoreline and riparian corridor	Number of feet restabilized	\$350,000 to restore/ restabilize 1,300 linear feet of stream channel

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
c. Assist riparian landowners to restore in-stream habitat using appropriate BMPs (D6)	<ul style="list-style-type: none"> • ODNR/DSWC • USDA/NRCS • County SWCDs • NEFCO • ODNR/Div. of Wildlife 	<ul style="list-style-type: none"> • EQIP • CRP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF • WPCLF (Linked Deposit) • PL-566 • CWA Section 319 NPS (Ohio EPA) • SIP 	3 years	Restoration of in-stream habitat	Number of feet restored	\$350,000 to restore/ restabilize 1,300 linear feet of stream channel
Goal 5: Reduce fertilizer, herbicide and pesticide runoff into the watershed						
Objective 5.1: Reduce fertilizer, herbicide and pesticide runoff from agricultural areas						
Priority Areas: To be determined						
a. Identify all agricultural areas within the watershed (A5)	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • NEFCO • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • State Cost Share Program • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) 	1 year	Knowledge of number and type of current agricultural operations in the watershed	Watershed map containing different types of agricultural operations	\$140-\$490 and up/map

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
<p>b. Inform local farmers about the benefits and principles of integrated pesticide management (IPM) and precision farming</p> <ol style="list-style-type: none"> 1) Distribute information packets (B) 2) Hold seminars/ workshops (B) 3) Develop nutrient management plans for local farms (D10) 	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • NEFCO • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • State Cost Share Program • NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) 	1 year	Greater awareness and involvement regarding IPM and precision farming	<ol style="list-style-type: none"> 1) Number of packets distributed 2) Number of seminars/ workshops held and level of participation 3) Level of participation in nutrient management plans 	<ol style="list-style-type: none"> 1) \$1.50-\$3/ pamphlet or fact sheet 2) \$15/ person for workshop 3) NRCS does not charge for this (EQIP)
<p>c. Provide assistance to farms willing to participate in IPM and precision farming (D7c)</p>	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • EQIP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • R&D Grant • CWA Section 319 NPS (Ohio EPA) 	1 year	Reduced contribution of fertilizer, herbicide and pesticide from agricultural areas	Assistance available and number of farms participating in IPM and precision farming	<p>\$6,000-\$7,000 for GPS unit</p> <p>\$2,000 for yield monitor or soil tester</p> <p>\$5,000-\$8,000 for variable rate technology</p> <p>\$25/acre for pest scouter</p> <p>\$2,000 for 50-acre field grid map</p>
<p>d. Ensure farmers are implementing BMPs, e.g., chemical management and disposal and calibration and maintenance of spray equipment through education (B)</p>	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Reduced levels of fertilizers, pesticides and herbicides from agricultural areas	Number of farmers using such BMPs on a regular basis	<p>\$1.50-\$3/ pamphlet or fact sheet</p> <p>\$15/ person for workshop</p>

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*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
e. Provide assistance to farms willing to implement appropriate BMPs to reduce agricultural runoff into lakes and streams such as buffers, filter strips or detention systems (D10)	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • USDA/NRCS 	<ul style="list-style-type: none"> • EQIP • CRP • State Cost Share Program • NatureWorks • NPS Program (ODNR) • WPCLF (Linked Deposit) • CWA Section 319 NPS (Ohio EPA) 	1 year	Reduced levels of fertilizers, pesticides and herbicides from agricultural areas	Number of farms given assistance to implement BMPs	\$0.25-\$1.10/ sq yd seeded and mulched \$0.40-\$0.49 per seedling planted \$10,000-\$50,000 per detention system, depends on size and features
Objective 5.2: Reduce fertilizer, herbicide and pesticide runoff from golf courses, nurseries, greenhouses, landscaping operations, and sod-farms						
Priority Areas: Subwatersheds 2, 3, 4 and 5						
a. Identify how many operations are using IPM and their level of knowledge regarding IPM (B) 1) Distribute surveys to all operations in the watershed	<ul style="list-style-type: none"> • ODA • OSU Extension • County SWCDs • USDA/NRCS • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months	Better understanding regarding where future education and promotion of IPM is needed	1) Number of surveys completed	1) \$2/ survey
b. Inform owners/operations about the benefits of BMPs, such as: IPM, calibration and maintenance of spray equipment, and proper chemical management and disposal (B) 1) Distribute information packets 2) Hold seminars/ workshops	<ul style="list-style-type: none"> • ODA • OCES • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Increased awareness of the benefits of BMPs	1) Number of pamphlets distributed 2) Number of seminars/ workshops held and level of participation	1) \$1.50-\$3/ pamphlet or fact sheet 2) \$15/ person for workshop

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan						
*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
Objective 5.3: Reduce fertilizer, herbicide and pesticide runoff from lawns						
Priority Area: Subwatershed 3						
a. Educate property/home owners about the importance of lawn fertilizer and herbicide management (B) 1) Distribute information pamphlets 2) Hold backyard stream stewardship programs which introduce alternative lawn and garden care	1) • Ohio EPA/DSW • County SWCDs • NEFCO 2) • Ohio EPA/DSW • County SWCDs • OSU Extension • ODNR/Div. of Wildlife • NEFCO	• NatureWorks • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) • Private Sector	6 months to 1 year	Increased awareness concerning the importance of lawn fertilizer and herbicide management	1) Number of information pamphlets distributed 2) Number of backyard stream stewardship programs held and list of participants	1) \$1.50-\$3/ pamphlet or fact sheet 2) highly variable
Goal 6: Reduce levels of salinity impacting surface and/or ground water quality, which will decrease levels of dissolved solids						
Objective 6.1: Decrease runoff from salt storage sites and seasonal spreading of salt						
Priority Area: Entire watershed						
a. Ensure that proper application, covered storage, cleanup of spills, and cleaning of sewers and ditches is implemented when using deicing materials (D7e)	• Ohio DOT • Local Government • NEFCO • Private Sector	• NPS Education Grant • NPS Program (ODNR) • OEEF • WPCLF • CWA Section 319 NPS (Ohio EPA)	3 years	Lower levels of water contamination from de-icing salts	Number of individuals or facilities contacted and level of management regarding de-icing materials	This is already done regularly
b. Introduce BMPs to absorb runoff from impervious areas such as porous pavement and installing grass swales (D12)	• County SWCDs • County Engineer • USDA/NRCS • NEFCO	• CRP • NatureWorks • NPS Program (ODNR) • WPCLF • CWA Section 319 NPS (Ohio EPA)	3 years	Decrease runoff, which may contain dissolved solids, from impervious surfaces	Number of BMPs introduced and installed	\$3.20/linear foot for grass - lined diversion \$3.60/linear foot for grass - lined waterway ~\$15,000 for 5,000ft ² Grasspave [®] porous pavement installed

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*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
c. Explore the use of environmentally-friendly de-icing materials (A2, D14a)	<ul style="list-style-type: none"> County Engineer Private Sector 	<ul style="list-style-type: none"> NatureWorks NPS Program (ODNR) WPCLF R&D Grant CWA Section 319 NPS (Ohio EPA) Private Sector 	3 years	Feasible alternatives to current de-icing materials	Results of alternative de-icing material research	Currently \$15/lane-mile for Iceban [‡] pre-treatment \$9,600-\$9,800 per truck retrofit
Objective 6.2: Decrease releases of brine from oil exploration and drilling activity						
Priority Area: Subwatershed 3						
a. Distribute flyers informing watershed residents on how to identify suspicious activities related to illegal dumping of brine and phone numbers of proper authorities to contact (B)	<ul style="list-style-type: none"> Ohio EPA/DERR NEFCO 	<ul style="list-style-type: none"> NPS Education Grant NPS Program (ODNR) OEEF CWA Section 319 NPS (Ohio EPA) 	6 months to 1 year	Decreased illegal dumping of brine	Number of flyers distributed	\$1.50-\$3/ pamphlet or fact sheet

[‡] Use of product and business names does not necessarily represent endorsement, but rather is for illustrative purposes

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
Goal 7: Acquire stronger understanding, cooperation and participation regarding water quality issues						
Objective 7.1: Strengthen awareness of and involvement in watershed issues						
Priority Area: Entire watershed						
a. Create stronger partnerships between all stakeholders in the watershed, including government agencies, private businesses and property owners	<ul style="list-style-type: none"> • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • PL-566 • CWA Section 319 NPS (Ohio EPA) 	3 years	Greater cooperation and participation to protect/improve water quality	Level of interest and feedback at events pertaining to the watershed	Variable
b. Educate residents about watershed issues, through regularly scheduled events/activities that are recognized by the public (B) 1) Distribute surveys 2) Present information at local organizations, e.g., Kiwanis, Audubon Society, and Nature Conservancy 3) Set up information booths at County/Local Fairs 4) Distribute information pamphlets 5) Organize field days 6) Hold public meetings	<ul style="list-style-type: none"> • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	1 year	Greater awareness regarding watershed issues	1) Number of surveys distributed and returned 2) Number of presentations given 3) Number of fairs with information booths 4) Number of information pamphlets distributed 5) Number of field days held 6) Number of public meetings held	1) \$2/survey 2) \$3,000 and up per 80 picture slide show 3) \$1,000 and up for display, \$1.50-\$3/pamphlet, \$8/hr for volunteers 4) \$1.50-\$3 per pamphlet 5) Highly variable 6) \$1,200 per public meeting,
c. Organize volunteer action groups to address water quality concerns (C1)	<ul style="list-style-type: none"> • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) • Citizen Action Mini-Grant 	6 months to 1 year	Increased local involvement to improve water quality	Number of volunteers action groups formed	\$8/volunteer-hour

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*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
d. Implement a watershed protection and awareness program in local schools (B)	<ul style="list-style-type: none"> • Ohio EPA/DSW • County SWCDs • Local Boards of Education • Local Schools • Career Centers 	<ul style="list-style-type: none"> • NPS Education Grant • NPS Program (ODNR) • OEEF • CWA Section 319 NPS (Ohio EPA) 	1 year	Stronger knowledge of future generations regarding the importance of watershed protection	Number of local schools implementing program	\$450 -\$7,000
Objective 7.2: Monitor and evaluate water quality of lakes and streams						
Priority Area: Entire watershed						
a. Continue the NEFCO Volunteer Lake Monitoring Program (VLMP) (C2)	<ul style="list-style-type: none"> • NEFCO 	<ul style="list-style-type: none"> • NPS Education Grant • CWA Section 319 NPS (Ohio EPA) • Citizen Action Mini-Grant 	3 years	Increased comprehensiveness of database to draw more accurate conclusions regarding water quality of lakes in the watershed	Data collected and results	\$3,600/year plus startup
b. Monitor and establish baseline levels for macroinvertebrates, bacteria and water chemistry through volunteer monitoring programs (C1, D7a) 1) Organize volunteer monitoring programs 2) Summarize monitoring results into written reports	<ul style="list-style-type: none"> • ODNR/DSWC • County SWCDs • Ohio EPA/DSW • NEFCO • Izzak Walton League • Rivers Unlimited 	<ul style="list-style-type: none"> • CWA Section 319 NPS (Ohio EPA) • Citizen Action Mini-Grant 	3 years	Greater involvement and knowledge regarding water quality of streams and lakes, and additional data to monitor future results of remedial efforts	1) Number of critical monitoring locations identified 2) Number of volunteers and programs established 3) Written reports with result	1) \$8/ volunteer-hour plus \$40 kit 2) \$3,500 for macro monitoring and report
Objective 7.3: Conduct further research regarding point and nonpoint source pollution						
Priority Area: Entire watershed						
a. Locate historical spills and accidental release sites in the watershed (A5)	<ul style="list-style-type: none"> • Ohio EPA/DERR • NEFCO 	<ul style="list-style-type: none"> • R&D Grant • CWA Section 319 NPS (Ohio EPA) • Citizen Action Mini-Grant 	3 months	Insight regarding locations where there is a higher risk of pollutants from spills and accidental releases	List and map of spills and accidental release sites in the watershed	\$140-\$490 and up / map

Goals, Objectives, Priority Areas and Actions in Addition to Suggested Responsible Parties, Possible Funding Sources, Estimated Time Frames, Expected Improvements, Evaluations and Cost Estimates of the Upper Tuscarawas Watershed Action Plan

*Action	**Suggested Coordinating Party(ies)	***Possible Funding Source(s)	****Est. Time Frame	Expected Improvement(s)	Evaluation	*****Cost Estimate
b. Produce a map with soil limitations for HSDSs and SPSPDSs (A5)	<ul style="list-style-type: none"> • County SWCDs • NEFCO • Local Health Departments 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	3 months	Greater knowledge of where there is a high potential for HSDSs and SPSPDSs failure	Map of soil limitations for HSDSs and SPSPDSs	\$140-\$490 and up/map
c. Generate a map with present soil survey information available, e.g., slopes and potential soil loss (A5)	<ul style="list-style-type: none"> • County SWCDs • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	3 months	Insight regarding areas with increased pollutant runoff and erosion	Map with slopes and potential soil loss	\$140-\$490 and up/map
d. Identify types and locations of agricultural operations in the watershed (A5)	<ul style="list-style-type: none"> • ODA • OSU Extension • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	3 months	Insight regarding potential pollution sources in the watershed	List of agricultural operation in watershed	\$140-\$490 and up/map
e. Produce a map with the locations of registered underground storage tanks (RUSTs) (A5)	<ul style="list-style-type: none"> • Ohio EPA/DERR • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	1 month	Insight regarding potential pollution sources in the watershed	Map with the locations of RUSTs in the watershed	\$140-\$490 and up/map
f. Identify and map future extensions of central water facilities (A5)	<ul style="list-style-type: none"> • NEFCO • County Sanitary Engineer • Environmental Services Department 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	1 month	Insight regarding where ground water contamination is more likely to occur	Map with future extensions for central water facilities	\$140-\$490 and up/map
g. Plot locations of abandoned water wells (A5)	<ul style="list-style-type: none"> • Ohio EPA/DDAGW • NEFCO 	<ul style="list-style-type: none"> • NatureWorks • CWA Section 319 NPS (Ohio EPA) 	3 month	Insight regarding where ground water contamination is more likely to occur	Map with abandoned water wells in the watershed	\$140-\$490 and up/map

*Code numbers in parentheses (A1, for example) refer to accompanying explanation table.

**These are possibilities used as examples

***Refer to Appendix R of the full Comprehensive Watershed Management Plan for a complete listing of funding sources in Ohio.

****Estimated time frame refers to expected amount of time required once funding is obtained.

*****Cost estimates given are general examples drawn from interviews with professionals. Actual costs may be higher or lower for specific situations.