

INCOG's Green Country Stormwater Alliance

*Richard Smith, INCOG
Oklahoma MS4 Conference
March 30, 2011*

INCOG Background

INCOG is 1 of 11 “Substate Planning Districts” in Oklahoma.

INCOG:

TMAPC

Tulsa County BOA

City of Tulsa BOA

Services:

Regional Transportation

Air Quality / Clean Cities

Water Quality

Community Development

Membership:

5 Counties

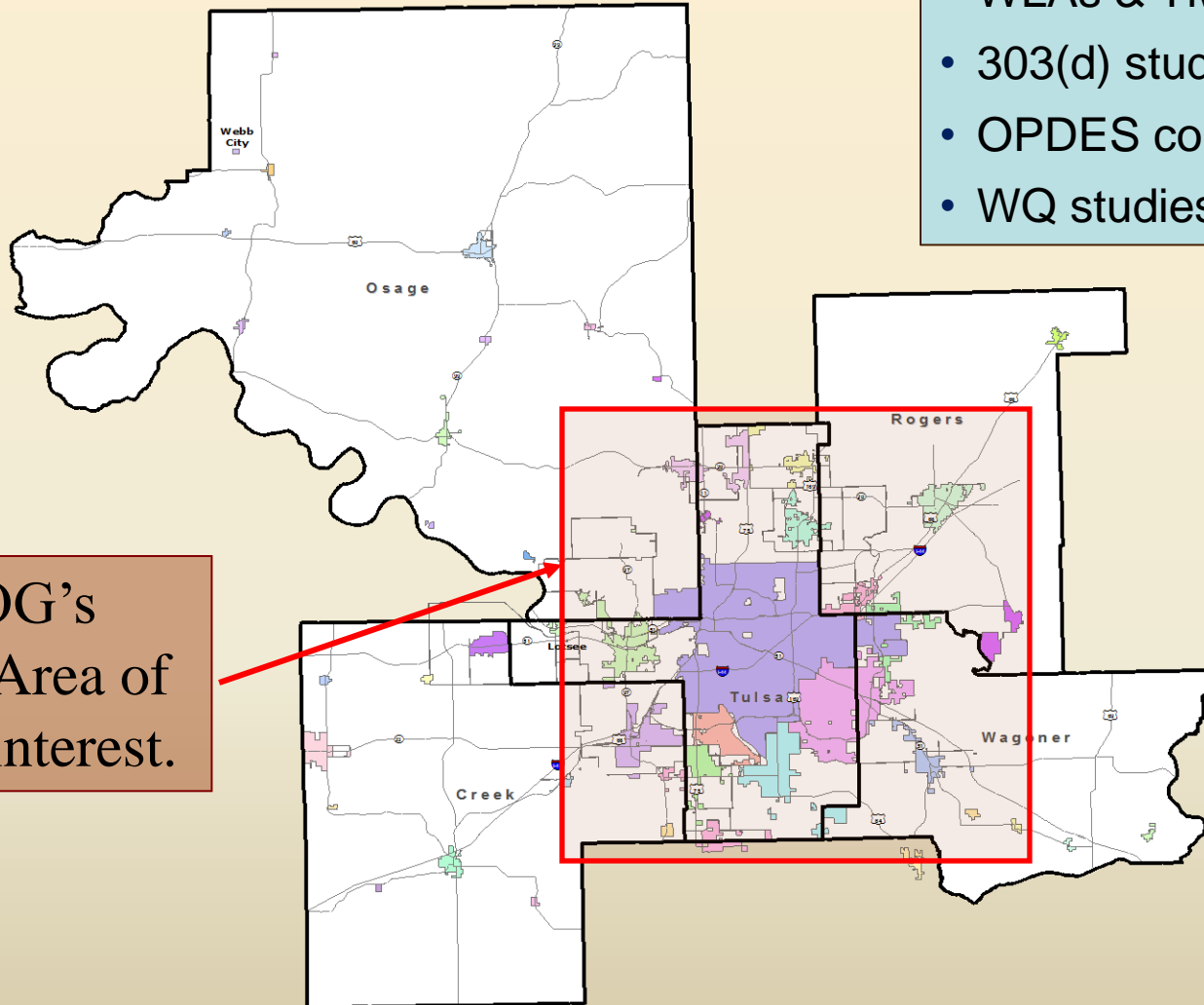
~50 Cities



INCOG's WQ Planning Area Since 1974

- WLAs & TMDLs
- 303(d) studies
- OPDES compliance
- WQ studies

INCOG's
WQMP Area of
greatest interest.



INCOG's Expanded Role Beyond WQMP

Work Groups:

- ODEQ's 303(d) TMDL Work Group
- OWRB's Water Quality Standards Work Groups
- OCC's Nonpoint Source Work Group
- OWRB's Wetlands Work Group
- EPA's Nutrient Regional Technical Advisory Group
- OSE's Unified Watershed Assessment Work Group

Memberships:

- Oklahoma Clean Lakes & Watersheds Association
- Oklahoma Water Quality Monitoring Council
- Tulsa Area Conservation Foundation

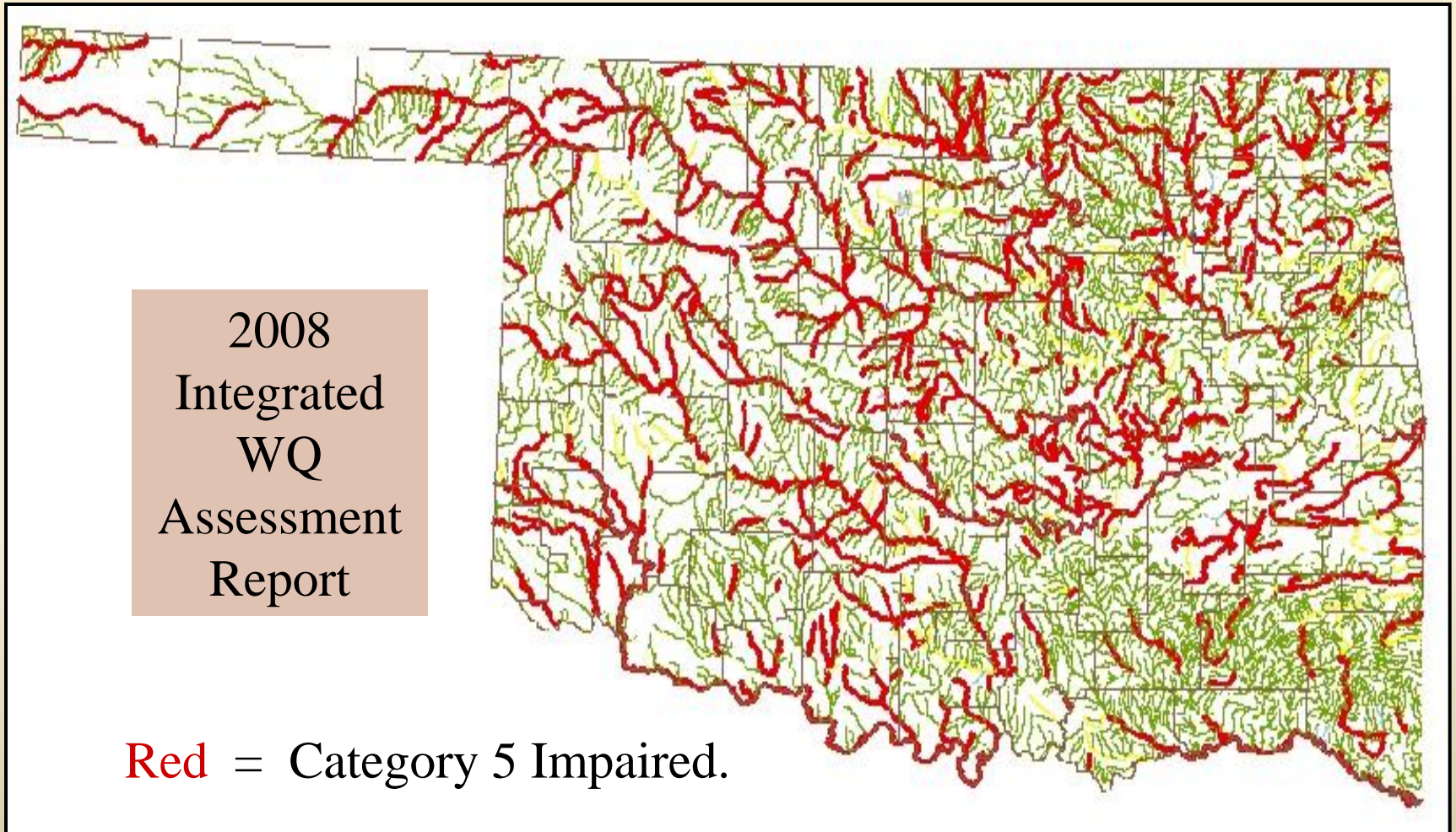
INCOG's Expanded Role Beyond WQMP

INCOG's Own Committees and Programs:

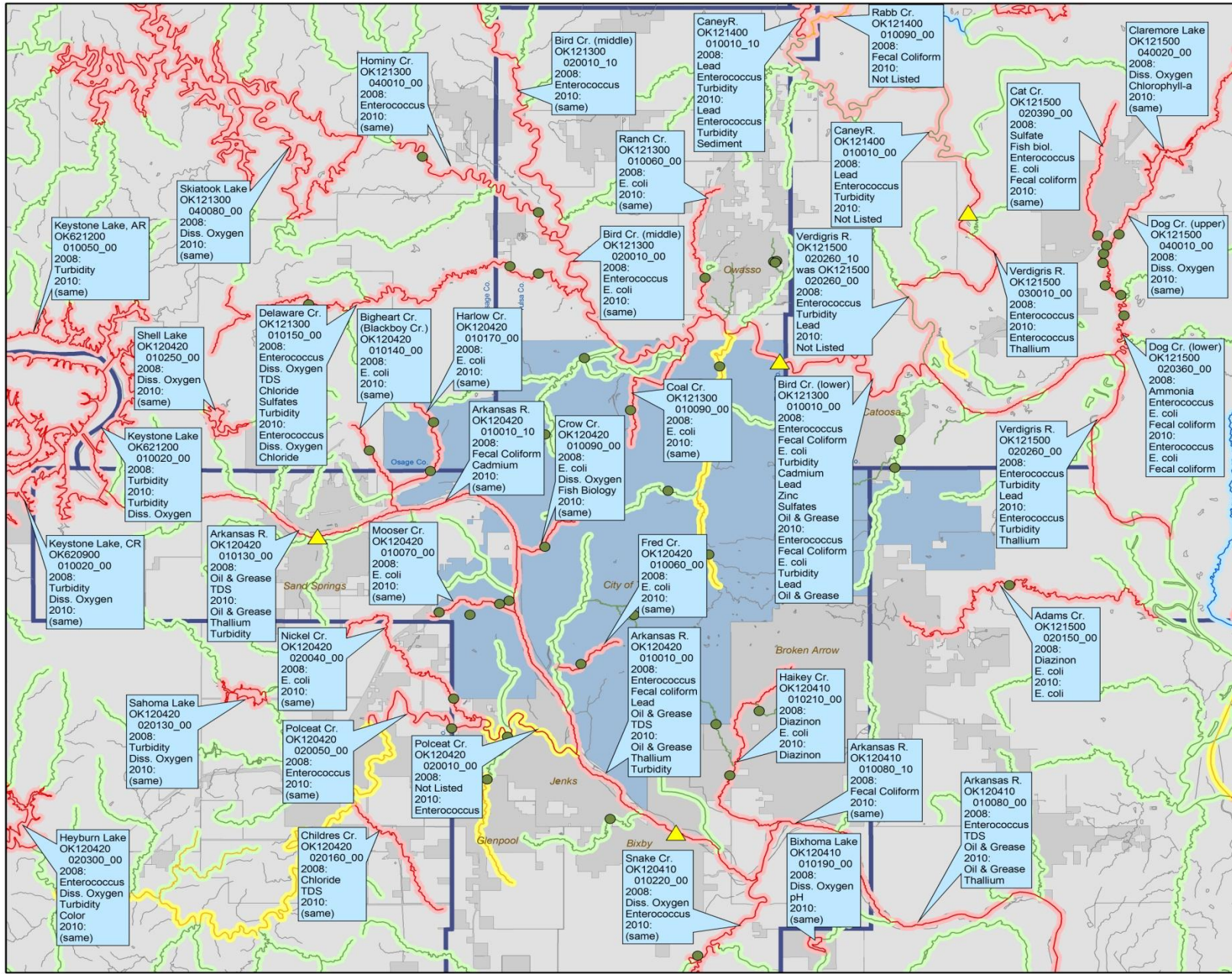
- Oklahoma Stream Team
- Environmental Policy Committee
- Legislative Consortium
- Public Works Forum
- Green Country Stormwater Alliance
- Vision 2025 Committees (Arkansas River)

303(d) Listed Streams in Oklahoma

(Water Quality Needs in INCOG Area)



Final 2008 & Draft 2010 303(d) Impaired Streams in Tulsa Metropolitan Area



Legend:

- ▲ BUMP Streams 2008
- OCC Sites 2006
- Draft_2010_IR_waterbodies
- Cat**
 - 2
 - 3
 - 4a
 - 5a
 - 5b
 - 5c
- 2008_Draft_IR_Waterbodies**
- Category**
 - 2
 - 3
 - 4a
 - 5a
 - 5b
 - 5c

CATEGORIES FROM 2008 and Draft 2010 ODEQ INTEGRATED REPORT

- Category 2 =** Some beneficial uses attained, insufficient data for remaining uses.
- Category 3 =** Insufficient data to determine any beneficial use.
- Category 4a =** TMDL has been completed.
- Category 5a =** Impaired, TMDL is underway or will be scheduled.
- Category 5b =** Water quality standards review is required before TMDL will be scheduled.
- Category 5c =** More data will be collected before a TMDL or standards review is scheduled.



Phase II Stormwater

Members approached INCOG in 1998.



*What services could
INCOG provide ?*

*Regional BMPs
Technical Help
Permit Compliance*



Six “Minimum Control Measures”

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention and Good Housekeeping

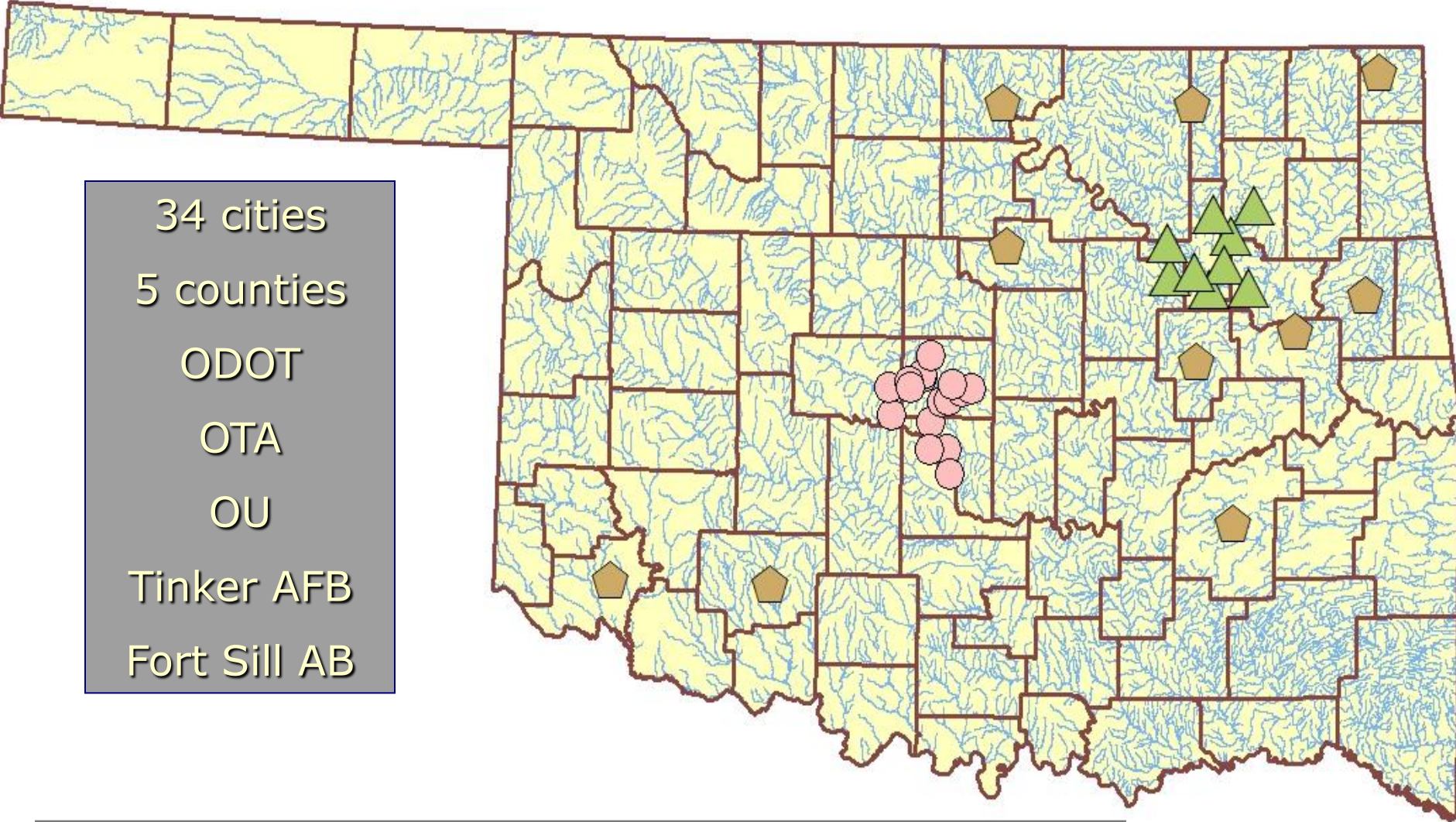
Several years of hard work to get OKR04 permits !

Funding of INCOG's Stormwater Program

- **1998** – INCOG members sought help with understanding Phase II regulations and how they might affect cities.
- **2000** – Evolved into considering regional assistance.
- **FY-98 104(b)(3)**: research draft Phase II regulations and educate potential future permittees.
- **FY-01 104(b)(3)**: Develop model SWMP, BMPs, begin education program.
- **FY-02 319(h)**: 2004 contract with OCC to develop regional stormwater education program.
- **FY-02 104(b)(3)**: Polecat Creek 303(d) study and stormwater related in-stream data for Sapulpa and Jenks.
- **FY-03 604(b)**: Develop quality assurance and data management resources for municipal stormwater programs.
- **Local Funds**: GCSA now 100% funded by members.

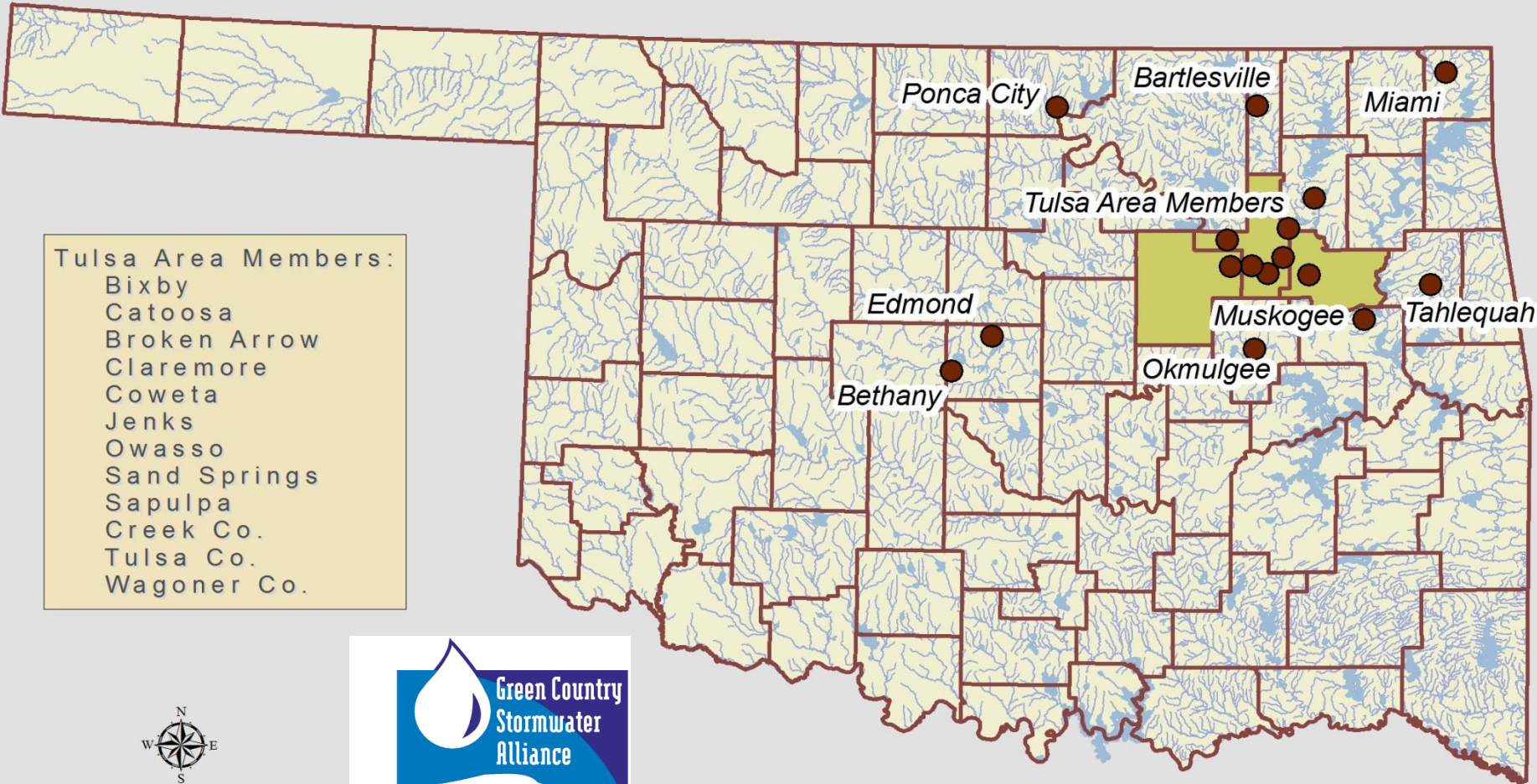
Phase II Stormwater Designated Cities

34 cities
5 counties
ODOT
OTA
OU
Tinker AFB
Fort Sill AB



5-Year waivers were granted to several others

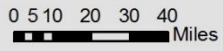
Green Country Stormwater Alliance Members 2010-11



- Tulsa Area Members:
- Bixby
 - Catoosa
 - Broken Arrow
 - Claremore
 - Coweta
 - Jenks
 - Owasso
 - Sand Springs
 - Sapulpa
 - Creek Co.
 - Tulsa Co.
 - Wagoner Co.



Map prepared by INCOG
October 2010



How Oklahoma Agencies Organized

Statewide Strategy Workgroup

INCOG

ACOG

ODEQ

OML

ACOG Stormwater Steering Committee

Planning and Public Education

INCOG Stormwater Steering Committee

Green Country Stormwater Alliance
(regional technical support)

ODEQ Stormwater Workshop

November 2003

Phase IIs presented

ODEQ General Permit Forums

December 2004

Phase IIs presented



INCOG Regional Stormwater Assistance

Goal – combine resources to address those Phase II activities that are suited to a regional approach.

- Public Education and Participation Materials and Activities
- Regional Mapping and Data Management
- Assistance with MS4 Inspection Programs
- Regional stormwater website and ordinances
- Assist with Annual Reports and SWMP amendments
- Employee Training Programs



Provide a Forum for continuing Phase II education and information sharing.

Developed BMPs and Model SWMP

BMP DESCRIPTION	CONTROL MEASURE ADDRESSED					
	PUBLIC EDUCATION	PUBLIC PARTICIPATION	ILLICIT DISCHARGE	CONSTRUCTION	POST-CONSTRUCTION	GOOD HOUSEKEEPING
BROCHURES						
Water quality impacts from urban stormwater	X					
Household chemical disposal options	X	X	X			
Proper on-site sewage disposal system maint.	X		X			
Chemical storage and disposal at businesses	X		X			X
Construction / erosion control BMPs				X	X	
Post-construction / erosion control BMPs					X	
City good house-keeping options						X
How to become involved in stormwater program	X					
Recycling and re-use benefits	X	X	X			
Chemical storage and disposal at city facilities	X					
TRAINING MODULES						
Storage and disposal of chemicals						X
Water quality impacts and regulations	X					X
Data quality and data management			X			X
How to conduct inspections effectively			X			
Stormwater and city activities						X
MS4 MAPPING						
Regional MS4 system maps			X			
Regional GIS databases / set priority areas			X			

BMP DESCRIPTION	CONTROL MEASURE ADDRESSED					
	PUBLIC EDUCATION	PUBLIC PARTICIPATION	ILLICIT DISCHARGE	CONSTRUCTION	POST-CONSTRUCTION	GOOD HOUSEKEEPING
ADMINISTRATIVE						
Adopt illicit discharge ordinance			X			
Adopt construction ordinance				X		
Adopt post-construction ordinance					X	
Comply with state and local public notification				X	X	
Program to receive information from the public			X	X	X	X
Site Plan review to include water quality	X	X	X	X	X	X
Support regional agency-sponsored seminars	X	X	X	X	X	X
Discuss Phase II in city council meetings	X					
Collect local and regional pollution data			X			
Develop regional stormwater web site	X	X				
COMMUNITY INVOLVEMENT						
Sponsor local clean-up events	X	X	X			X
Create display board for public meetings	X					
Create signs for community education	X					
Create signs for city work areas						X
Blue Thumb school presentations	X	X				
Blue Thumb volunteer stream monitoring	X	X	X			
Blue Thumb stormdrain marking	X	X	X			
Promote household pollutant collection events	X	X	X			
Promote use of recycling centers	X	X	X			
Distribute items with water quality logos	X					
INSPECTIONS						
Complaint investigations for MS4 system			X			
Source tracking of pollutants in MS4 system			X			
Inspection of construction sites and activities				X	X	
Good housekeeping inspections of city property						X

Assist with Mapping MS4

*Receiving Streams
System & Outfalls
Open Channels, Pipes
Detention Ponds
Watersheds*



Dry Weather Field Screen and Construction Site Inspections



*Visual
observations*

*Chemical test
kits*

*Forms &
Documentation*

*Interpretation &
follow-up*

Source-Tracking and Facility Inspections



OKR04 requirements
Starting local programs
Adopting local codes



Training & Resources

Field Safety

Enforcement

Educating Staff, Management, Councils and Commissions on Fundamentals



Point Sources

*Treated wastewater - have
NPDES discharge permits
with penalty provisions and
enforcement.*

*Technology-driven pollution
reduction.*

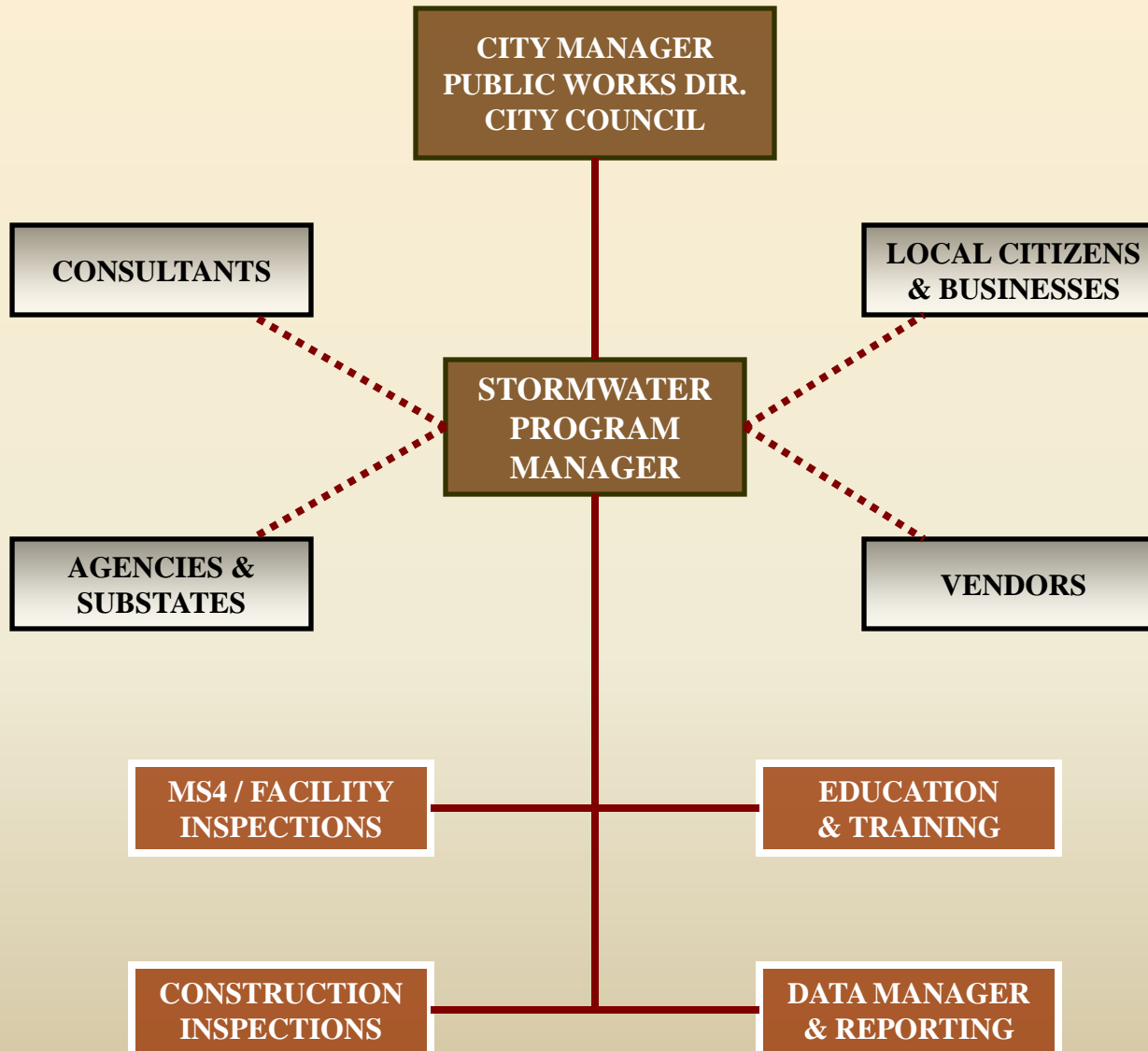


Nonpoint Sources

*Untreated runoff - have no
discharge permits and no
penalty provisions.*

*Exceptions are CAFOs and
certain urban stormwater
systems.*

Defining Program Management



PHASE 2 STORMWATER SPREADSHEET FOR CALCULATING PROGRAM COSTS

Manhour Unit Cost (Salary, fringe, indirects)						Total Cost	
ITEM NUMBER	UNIT COST	ANNUAL COST	ANNUAL MANHOURS	MANHOURLY TOTAL COST	TOTAL MANHOURS	TOTAL COST	
PUBLIC EDUCATION / PARTICIPATION							
Use Display Board at Public Events			20	\$800			
Distribute Brochures / Flyers		40		\$1,600			
Coordinate Stormwater Marking		40		\$1,600			
Coordinate Volunteer Monitoring		40		\$1,600			
Coordinate School Education Events		40		\$1,600			
Coordinate Local Public Meetings		40		\$1,600			
Promote Low Impact Development		40		\$1,600			
Host Public Water Quality Meetings		40		\$1,600			
BMP Record-keeping		40		\$1,600			
Cost: Newspaper Ads / Articles	2	\$300		\$600			
Cost: Radio / TV Announcements	2	\$500		\$1,000			
Cost: Print Education Materials	1000	\$0		\$0			
Cost: Display Board / Table	1	\$800		\$800			
Cost: Graphic Art Work Contract	1	\$700		\$700			
			340	\$15,350			
CONSTRUCTION INSPECTIONS							
Initial Inspections			120	\$4,800			
Enforcement Actions			80	\$3,200			
Closure of Episodes			80	\$3,200			
Coordinate Events with CDEQ			20	\$800			
BMP Record-keeping			40	\$1,600			
			300	\$13,600			
DRY WEATHER FIELD SCREENING							
Location of Outfalls			150	\$6,000			
Annual Outfall Inspections			100	\$4,000			
Map Preparation / Updates			100	\$4,000			
BMP Record-keeping			20	\$800			
			370	\$14,800			
SOURCE TRACKING INSPECTIONS							
Initial Inspections			200	\$8,000			
Enforcement Actions			100	\$4,000			
Follow-up Inspections			100	\$4,000			
Closure of Episodes			60	\$2,400			
Coordinate Events with CDEQ			20	\$800			
BMP Record-keeping			20	\$800			
			500	\$20,000			
FACILITY INSPECTIONS							
Maintenance Facilities			4	\$160			
Park and Recreation Areas			4	\$160			
Self-Cleaners			4	\$160			
Storage Areas			4	\$160			
Wastewater Treatment Plant			4	\$160			
Water Treatment Plant			4	\$160			
BMP Record-keeping			20	\$800			
			44	\$1,760			
EQUIPMENT (Items over \$500)							
Cost: Field Test Kits (cost chemistry)	4	\$600		\$2,400			
Cost: Field Test Instruments (protos)	2	\$1,000		\$2,000			
Cost: Computer	1	\$1,500		\$1,500			
Cost: Computer Upgrades / Supplies	1	\$500		\$500			
Cost: GPS Unit and Supplies	1	\$1,500		\$1,500			
Cost: Vehicle (annual)	1	\$1,200		\$1,200			
Cost: Stormwater Software	1	\$3,000		\$3,000			
Cost: GIS or other Map Software	1	\$4,000		\$4,000			
			0	\$14,100			
SUPPLIES (Items under \$500)							
Cost: Field Test Kits	4	\$200		\$800			
Cost: Sampling Devices	4	\$100		\$400			
Cost: Set of Sample Bottles	3	\$50		\$150			
Cost: Set of Kits/Tools for Test Kits	1	\$200		\$200			
Cost: Sample Preservatives	1	\$50		\$50			
Cost: GPS Unit and Supplies	1	\$1,500		\$1,500			
Cost: Purchase Documents	5	\$20		\$100			
Cost: Office Supplies	1	\$500		\$500			
Cost: Stormwater Markers	50	\$8		\$400			
Cost: Volunteer Monitoring Test Kits	1	\$600		\$600			
			0	\$3,300			
HAZMAT CLEANUP COSTS							
Employee Involvement			80	\$3,200			
Cost: Unrecoverable cleanup costs	2	\$200		\$400			
Cost: Minor spill cleanup costs	3	\$200		\$600			
Cost: Materials and Supplies on Hand	5	\$200		\$1,000			
Cost: HAZWOPER Training	1	\$800		\$800			
			80	\$6,000			
HOUSEHOLD POLLUTANT COLLECTIONS							
Employee Participation			20	\$800			
Cost: ME Annual Fee	1	\$2,000		\$2,000			
Cost: Local Events Space Lease	1	\$500		\$500			
Cost: Disposal for Local Events	1	\$2,000		\$2,000			
			20	\$5,300			
TRASH PICKUP DAYS							
Employee Participation			20	\$800			
Cost: Local Events Space Lease	1	\$500		\$500			
Cost: Disposal for Local Events	1	\$2,000		\$2,000			
			20	\$3,300			
STREET SWEEPING							
Employee Participation			100	\$4,000			
Cost: Trucks and Equipment (annual)	1	\$5,000		\$5,000			
Cost: Disposal of Debris	1	\$1,000		\$1,000			
Cost: Maintenance of Equipment	1	\$2,000		\$2,000			
			100	\$12,000			
STORM SYSTEM MAINTENANCE							
Employee Participation			100	\$4,000			
Cost: Trucks and Equipment (annual)	1	\$3,000		\$3,000			
Cost: Disposal of Debris	1	\$500		\$500			
Cost: Maintenance of Equipment	1	\$1,000		\$1,000			
			100	\$8,500			
LABORATORY SERVICES							
Employee Negotiations with Lab			40	\$1,600			
Cost: Metals	10	\$20		\$200			
Cost: BOD / COD / TOC	10	\$40		\$400			
Cost: Nutrients	10	\$20		\$200			
Cost: Organics	5	\$100		\$500			
Cost: Petroleum Screening Tests	10	\$50		\$500			
Cost: Minerals	5	\$20		\$100			
Cost: Other Misc. Pollutant Tests	10	\$20		\$200			
			40	\$3,700			
ENGINEERING / CONSULTING SERVICES							
RFP Preparation / Bids			20	\$800			
Overnight of Contract / Progress			20	\$800			
Cost: Contract Price	1	\$5,000		\$5,000			
			40	\$6,600			
ADMINISTRATIVE							
Attend Stormwater Meetings			20	\$800			
Attend Training Classes			20	\$800			
Record-keeping			80	\$3,200			
Annual Report			80	\$3,200			
Audit			80	\$3,200			
Reports to Management			40	\$1,600			
Reports to Citizens / Media			40	\$1,600			
Research Issues			80	\$3,200			
Acquiring supplies / data			40	\$1,600			
Receiving / Processing Complaints			40	\$1,600			
Develop / Amend Ordinances			20	\$800			
Software Training			20	\$800			
Create / Update Forms			20	\$800			
Cost: Employee Travel Expenses	1	\$500		\$500			
Cost: Employee Certifications	2	\$100		\$200			
Cost: Duist to Green Co. Stw. Alliance	1	\$3,500		\$3,500			
			600	\$28,200			
PROGRAM TOTAL:						2,558	\$156,510
						2558	\$156,510

Developed Program Cost Estimator

Covered manpower, printing, consultants, waste disposal, supplies, lab, admin. and annualized major purchases (e.g., trucks).

Public Education and Participation



Booths at local festivals and events
Stormdrain marking
Volunteer stream monitoring
Brochures, newsletters
Pens, cups, magnets, clips, openers

Adopt a watershed
Adopt a stream
Household Pollutant Collections
Scouts, Camp Fire, etc.
Local school clubs & classes

Clean-ups

TV, Radio, Print – future?



Blue Thumb Program

(Public Education and Volunteer Monitoring)



“Dump No Waste Drains to River”



Help With Data Collection & Management

- GIS, GPS, AutoCAD, paper maps
- Regulations, codes, ordinances
- Electronic data sets. *Tier II, RCRA, TRI, etc.*
- Field test kits. *D.O. pH, Cond., etc.*
- Other field gear *Samplers, bottles, etc.*
- Data Management:
 - *Software for supervision, records, reports*
 - *Forms for inspections, contact records. etc.*
 - *Data & monitoring Quality Assurance (QAPPs & SOPs)*
 - *Sampling and Lab services*

Employee Training

- Material storage and disposal in the workplace.
- Chemical handling at specific municipal operations (e.g., fleet maintenance).
- Data quality and quality assurance.
- Hazardous Waste Operations and Emergency Response (24h & 8h HAZWOPER).
- Dry weather field screen and source tracking inspections.
- Chemical data interpretation, biological indicators.
- Sampling conditions and requirements, field safety.
- Regulations and permit requirements.

Phase II Data Management

DATA IN-FLOWS

Lab & Field Data

Who, what, where,
when, why, how

Visual
Observations

Photographs

BMP Quantities

Inspection
Interviews

Map Data

Data from
Agencies

Training
Records

Complaint
Tracking

Budget items

Data
Management
System

DATA OUT-FLOWS

Information to Media

Data for Court

Enforcement Data

Reports to Councils

Management Reports

Reports to City Staff

Reports to Citizens

Data to Agencies

Annual Report to DEQ

Program Audits

Getting the Word Out...

Local Codes must address construction site runoff and prohibit discharges that impair water quality.



City Inspectors must have the authority to control construction site runoff through enforcement of local codes.

Locating Funding Sources

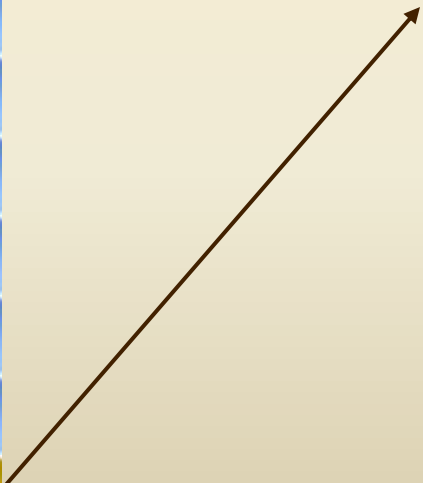
- Bonds – General Obligation and Revenue
- Utility (User) Fees – MS4 as a Utility
- Inter-fund Transfers from other municipal funds
- Utility and Improvement Districts
- General fund
- Service fees (inspections, development permits)
- Substate and regional planning resources

GCSA Website for Citizens & Permittees

- GCSA Program Background
- Educational Materials
- Getting Involved
- Household Pollutant Collection
- Internet Resources
- Recycling
- Resources for Construction
- Resources for Homeowners
- Resources for Homeowners
- Resources for Local Businesses
- Oklahoma Water Plan
- Stormwater Permit Basics
- Water Quality in NE Oklahoma
- Resources for Phase II Permittees
- GCSA Partner Communities

www.stormwaterok.net

- Forms
- Permittees in Oklahoma
- Regulations
- Guidance Documents
- PowerPoint Presentations
- Home



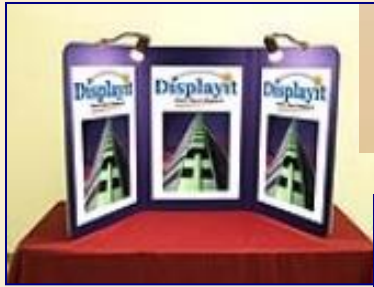
GCSA Work Groups and Issues

- Ordinance Work Group
- Inspection Work Group
- Researched numerous technical issues:
 - Power washing of parking lots and service bays;
 - Commercial lawn care (fertilizers and pesticides);
 - Community charity car washes;
 - Implementing Smart Growth and LID;
 - Fire-fighting impacts on water quality;
 - Sand and salt winter application impacts on water quality;
 - Swimming pool draining;
 - Developing manpower and program costs for local stormwater programs;
 - How local TMDLs and stream impairment listings will affect stormwater program structure and local efforts;

GCSA Issues (cont.)

- *Optimizing a dry weather field screen monitoring program and inspection program;*
- *How to conduct water quality monitoring;*
- *Construction site BMPs;*
- *Options on developing map features and selecting the best mapping tools;*
- *Potential legal issues and liabilities with starting a municipal stormwater program;*
- *Data management, quality assurance and communication issues;*
- *Safety concerns regarding chemical exposure in the field and at industrial sites, and physical aspects of field work;*
- *Mosquito spraying by cities through neighborhoods and on standing water;*
- *Grass and leaf yard waste water quality impacts and proper disposal;*
- *Pet waste management and bacteria pollution in urban areas;*
- *Pollution from vehicle maintenance (private and commercial).*

Purchase of Education Materials



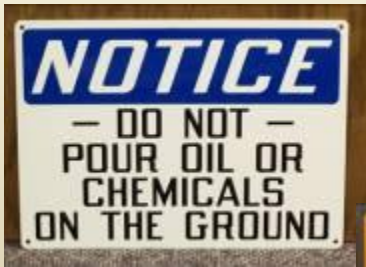
Display board, light bar, signs and case



Watershed signs



Give-away items with logos



Signs for city facilities



The Future of GCSA

- No more Federal water quality grants.
- Continue annual GCSA membership dues.
- In future, GCSA will continue:
 - Employee training
 - GCSA committee meetings, newsletters, news bulletins
 - Public education activities (brochures, logo-items, speaking, etc.)
 - Technical assistance (sampling, QA, SOPs, mapping, regs)
 - Help with ordinances and legal issues
 - General permit updates (OKR04, OKR05, OKR10)
 - Communication with departments, councils & commissions
 - Annual Reports, SWMP and other data management
 - Website maintenance
 - Providing a forum for members to exchange ideas

Thank You !
For More Information:

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