QUALITY ASSURANCE PROJECT PLAN
(QAPP)

INCOG

Phase I Watershed Management Plan for Shell Lake, Sand Springs, Oklahoma

Prepared By
INCOG
Environmental and Engineering Services Division

201 West 5th Street, Suite 600
Tulsa, OK 74103-4236

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FY-2006 604(b)C6-400000-46
Project 2 Output 202

SECTION 1: PROJECT MANAGEMENT

Section A1: Revision Page

Revisions

There have been no revisions to this QAPP. This page is reserved for future revisions.

Section A2: Title and Signature Page

Quality Assurance Project Plan

Phase I Watershed Management Plan for Shell Lake

Secondary Data Research Project to Aid in the Development of a Watershed Management Plan for Shell Lake

Task 202
FY-2006 604(b)

Approvals

INCOG Project Manager: _____ 7/9/07
(Richard Smith) (Date)

INCOG Quality Assurance Officer: Vernon Seaman 7-9-07
(Vernon Seaman) (Date)

INCOG Executive Director: _____ 7-9-07
(Jerry Lasker) (Date)

EPA Project Officer: _____ 9/6/07
(Timothy Herfel) (Date)

EPA Approving Official – Office of Water Quality, Region 6 U.S. Environmental Protection Agency: Donna R. Miller 9-6-07
(Date)

Oklahoma Office of Secretary of Environment: Gayle Bartholomew 7/26/07
(Gayle Bartholomew) (Date)

Section A3: Table of Contents

Section A4: Distribution List

The following agencies or individuals have received official copies of this Quality Assurance Project Plan (QAPP):

Entry	Number of Copies	Revision Number	Agency	Individual	Date
1					
2					
3					
4					
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Section A5: Project and Task Organization

Richard Smith, INCOG Project Manager: Responsible for overall management of administrative and technical work and will be actively involved in all aspects of this project.

Vernon Seaman, INCOG QA Officer and Principal Technical Investigator: Responsible for the project QAPP, the collection of existing data, review of data and final report generation.

John McElhenney, P.E., INCOG Senior Engineer: Will provide engineering support.

Section A6: Project Description

This project involves the collection and evaluation of water quality related information from multiple sources that will be useful for future development of a long range watershed management plan to protect the water quality of Shell Lake and Shell Creek. Reliable information for the following categories will be collected: physical and natural features, land characteristics and usage, water usage, demographics, waterbody and watershed conditions, watershed history, pollutant sources and watershed monitoring data. INCOG personnel will study the data and work closely with Sand Springs personnel to assist them in the preparation of a long range management plan designed to protect this city water supply source.

Richard Smith, Project Manager, will be the final decision making authority for this project.

Section A7: Project Objectives and Responsibilities

Section A7.1: Project Objectives

(a) Identify and locate data pertinent to this study.
(b) Determine past and present conditions for this watershed with a particular interest in areas showing degradation.
(c) Utilize the data and information learned in the analysis of the data to identify areas of concern.
(d) Consider some options available to help protect this watershed from future degradation thus enabling it to continue serving as a source water for the City of Sand Springs.
(e) Assist in educating the City of Sand Springs personnel, landowners, the general public and others with a vested interest in the continued protection of this watershed through public meetings and the distribution of printed materials.

(f) Compile the information acquired into a final report to be used by the City of Sand Springs and stakeholders in the protection of the Shell Lake watershed.
(g) No water quality analysis is proposed nor will samples be collected for this project.

Section A7.2: Project Responsibilities

Richard Smith, with INCOG, will provide project oversight and review. Vernon Seaman will be the INCOG QA Officer and Principal Technical Investigator. John McElhenney, P.E., INCOG Senior Engineer, will provide engineering support. INCOG Environmental and Engineering Services Division personnel will work with the City of Sand Springs as required to perform all work and produce the final document.

SECTION 2: SECONDARY DATA SOURCES

Section B1: Sources of Secondary Data

Numerous sources will be searched for data relevant to this project. Categories and potential sources of data are listed in the table below. This secondary data may be obtained from literature, surveys, computerized databases and information systems, environmental, geological, biological and water quality studies, files, and records. The data search will not be limited to the sources or topics shown.

	Data Sources															
Categories	Conservation Commission	Corporation Commission	INCOG	NHD	NOAA	NRCS	OBS	ODA	ODEQ	ODWC	Osage County	OWRB	OMWD	Sand Springs, City of	USACE	USGS
Physical & Natural Features																
Watershed Boundaries			x	x					x	x	x	x				
Boundaries, City, County			x						x	x	x	x		x		
Hydrology	x		x	x		x			x	x	x	x				
Wetlands						x				x					x	
Topography	x	x	x			x				x	x			x		x
Soils			x			x		x								x
Climate					x								x			
Fish & Wildlife	x					x	x			x		x				
Roads			x								x			x		

	Data Sources																
Categories	Conservation Commission	Corporation Commission	INCOG	Local Agencies	NHD	Nonprofit	NRCS	OBS	ODA	ODM	ODWC	Osage County	OWRB	Sand Springs, City of	Universities	USGS	Utilities
Land Characteristics & Usage																	
Land Ownership			x	x		x	x			x	x	x		x			x
Zoning			x									x		x			
Land (Vegetation) Cover	x		x				x	x	x		x	x	x	x		x	
Rate of Development & Long Range Plans											x	x		x			
Mineral & Mining Rights		x								x					x		
Oil & Gas		x		x											x		
Water Wells													x				
Land Useage					x		x		x								
Electrical Stations & Lines		x										x		x			x

	Data Sources									
Categories	Conservation Commission	Local Agencies	Nonprofit	ODEQ	ODWC	Osage County	OWRB	Sand Springs, City of	USGS	Utilities
Water Usage										
Lake Ownership						x		x		
Water Rights						x	x	x		
Lake Usage	x	x	x	x	x	x	x	x	x	
Water Lines							x			x

	Data Sources			
Categories	INCOG	Osage County	Sand Springs, City of	US Census Bureau
Demographic Data				
Demographic Data	x	x	x	x

	Data Sources															
Categories	Conservation Commission	Corporation Commission	INCOG	Local Agencies	Nonprofit	NRCS	OBS	ODA	ODEQ	ODWC	Osage County	OWRB	Sand Springs, City of	Universities	USACE	USGS
Waterbody & Watershed Conditions																
Lake Restrictions & Ordinances											x		x			
Environmental Assesment Data	x	x	x	x					x	x	x	x			x	
Impairment Status									x							
Lake Data (Physical)	x						x		x	x		x				
Water Quality Data	x		x	x		x		x	x	x	x	x	x	x		x
Protected, Rare & Endangered Species					x		x		x	x					x	
Protected Areas	x			x	x	x	x	x	x	x	x	x	x			

	Data Sources					
Categories	OAS	OHS	Osage County	OWRB	Sand Springs, City of	Universities
Watershed History						
Lake History			x	x	x	
Historical & Archaeological Sites	x	x				x

	Data Sources																
Categories	Corporation Commission	INCOG	Local Agencies	Nonprofit	NRCS	OBS	ODA	ODEQ	ODM	ODWC	Osage County	OWRB	Sand Springs, City of	Universities	USACE	USGS	Utilities
Pollutant Sources																	
Wastewater Discharges			x					x			x	x	x				
Waste Disposal & Landfills								x			x		x				x
Septic Systems		x									x		x				
Potential Sources	x		x	x	x		x	x		x	x	x	x	x	x	x	
Point Sources	x		x		x	x	x	x	x	x	x	x	x			x	
Nonpoint Sources	x		x		x	x	x	x	x	x	x	x	x			x	

	Data Sources														
Categories	Conservation Commission	Corporation Commission	Local Agencies	NHD	Nonprofit	NRCS	OBS	ODEQ	ODWC	Osage County	OWRB	Sand Springs, City of	Universities	USACE	USGS
Watershed Monitoring Data															
Water Quality Monitoring	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Biological Monitoring	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Geomorphological Monitoring	x	x	x		x	x		x	x	x	x	x	x	x	x

INCOG - Indian Nations Council of Governments
Local Agencies - Fire Departments, Emergency Response Teams
NHD - National Hydrography Dataset
NOAA - National Oceanic and Atmospheric Administration's National Weather Service, Tulsa Office
Nonprofit - Organizations such as: Audobon, Nature Conservancy
NRCS - Natural Resources Conservation Service
OAS - Oklahoma Archaeological Survey
OBS - Oklahoma Biological Survey
ODA - Oklahoma Department of Agriculture
ODEQ - Oklahoma Department of Environmental Quality
ODM - Oklahoma Department of Mines
ODWC - Oklahoma Department of Wildlife Conservation

OHS - Oklahoma Historical Society

OWRB - Oklahoma Water Resources Board

OMWD - Oklahoma Mesonet Weather Data

Universities - Oklahoma State University, University of Oklahoma, University of Tulsa

USACE - US Army Corp of Engineers, Tulsa District

USGS - United States Geological Society (STATSGO)
Utilities - Public Service Company (PSO), Oklahoma Gas & Electric (OG&E), Rural Electric Cooperatives, Rural Water Districts

Section B2: Data Selection Rationale

Data sources selected are considered to have expertise in their areas of interest and, to the best of their ability, will only maintain records they consider to be accurate and reliable.

Section B3: Statement of Sources

The secondary data sources will be cited and references will be noted where appropriate in project deliverables.

SECTION 3: QUALITY OF SECONDARY DATA

Section C1: Secondary Data Quality Requirements

Data from reputable organizations, agencies and printed reports will be used and sources will be cited. Historical as well as current data will be used in this study. There is a possibility that data from historical data sets will be less accurate than newer data sets. Analysis methods and data gathering techniques have improved and automation now allows quick and more thorough verification of facts. If discrepancies in data quality are determined, the potential effects will be considered and noted.

Section C2: Procedures for Determining Quality of Secondary Data

The primary sources for our secondary data will principally be government agencies and universities. The data will have been collected to meet each agency's specific requirements and judged to be adequate by their standards. Water quality data intended for DEQ use and analyzed by the State Environmental Laboratory will have adequate QA/QC procedures in place to insure proper collection and analysis of the samples. Land use data and records will be obtained from the agencies responsible for keeping these records and will be as current as possible.

SECTION 4: DATA REPORTING, DATA REDUCTION, AND DATA VALIDATION

Section D1: Data Reduction Procedures

Data reduction will consist of activities such as estimating the percentage of land use activities, watershed size, average gradients, percent soil types, precipitation patterns, etc. Water quality data will be received in a reduced form as secondary data. The number of data points used will vary within each category. Data will be managed in spreadsheets (such as excel), data tables and GIS analytical tools will be used for spatial data.

Section D2: Data Validation Procedures

The data used will be from other studies conducted by and compiled for State and Federal Government Agencies and other organizations. Land use data for this project will be based upon interpretation of maps, aerial photographs, and existing GIS-based land use data from state and federal agencies. Data from previous years will be evaluated with respect to the most recent data to determine its acceptability. If it is found that a given land use reported in an earlier data base has not been used within the past five years, then the most current land use will replace it. If the difference is under three years, then both land use types will be considered.

Land use data will be verified by comparing the available data for each property with respect to the most recent data. For some properties, there will be only one data set (e.g. no historical data concerning land use practices). However, for those properties that have both historic data and recent data (e.g. from site surveys), all property land use data will be compared with respect to topography, drainage characteristics, current and recent commercial and industrial activities and other land use practices that may contribute monitored pollutants to the watershed.

Data validation will also rely upon observance by the INCOG QA Officer of proper use of QAPP procedures in all data collection activities. The INCOG QA Officer will coordinate internal reviews of draft data summaries. Likewise, the INCOG QA Officer will coordinate draft report reviews through the OSE. Any additional submittals of secondary electronic data to other interested parties will be coordinated by the INCOG QA Officer who will maintain copies of all communication and distribution of said data in the project files.

SECTION 5: DELIVERABLE DOCUMENTS

Section E1: DELIVERABLE DOCUMENTS

A final report will be prepared for the Shell Lake watershed for the City of Sand Springs, Oklahoma. The report will include the watershed land use history, past and present activities that have affected the water quality of Shell Lake and Shell Creek, existing environmental characteristics that relate to water quality and an evaluation of existing and potential threats to the water quality within this watershed. INCOG will work with the City of Sand Springs to develop a course of action to protect this valuable resource and water supply for future generations. To aid in this effort and achieve broad based support, INCOG will prepare some educational materials and assist in city sponsored public meeting to educate stakeholders and the general public.