United States Environmental Protection Agency
Region VI
POLLUTION REPORT

Date: Wednesday, August 1, 2007
From: Roberto Bernier

To: Ragan Broyles, Response and Prevention Branch
Terry Grooms, OCC-Bristow
Lawrence Stanton, Office of Emergency Management

Subject: Initiation of Action
Lake Oologah Oil Spill Project-North Lake Oologah Phase
Chelsea (Winganon), OK
Latitude: 36.5797000
Longitude: -95.5333000

POLREP No.:	1	**Site #:**	V6D4
Reporting Period:	12/11/2006-Present	**D.O. #:**	
Start Date:	12/11/2006	**Response Authority:**	OPA
Mob Date:	12/11/2006	**Response Type:**	Emergency
Demob Date:		**NPL Status:**	
Completion Date:		**Incident Category:**	Removal Assessment
CERCLIS ID #:		**Contract #**	
RCRIS ID #:		**Reimbursable Account #**	
FPN#	E07601		

Site Description
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The North Lake Oologah Phase of the Lake Oologah Oil Spill project is located in an approximately 26 square mile oil fields adjacent to and east, northeast, and northwest of Lake Oologah in Rogers and Nowata counties, Oklahoma. The site encompasses approximately 16,640 acres divided in two distinctive areas with one that is 1 mile wide in an east-west direction and 7 miles long in a north-south direction on the east side of the lake. The other area is approximately 8 miles east-west by 2 to 4 miles north-south on the NE and NW side of the lake. This area includes all or parts of 25 sections in one township and two ranges of the public land survey system. This project is a continuation of three previous phases that concentrated on sections adjacent to the east side of the lake.

The new area to the east of Lake Oologah is bounded by project areas included in Phase II and III and separated from it by a north-south line that coincides with Highway 28 to the west. Geographical coordinates for the northeastern corner of this area are 36← 38.464' N and 95←28.055' W and the coordinates for the southwestern corner are 36←31.485' N and 95←29.374' W. The new area to the NE and NW is bounded by Lake Oologah and separated by one mile by an east-west line that coincides with Highway 60 to the north. Geographical coordinates for the northeastern corner of this area are 36← 41.077' N and 95←29.417' W and the coordinates for the southwestern corner are 36←37.590' N and 95←36.703' W. The project area focuses on areas that are adjacent to creeks that drain directly into Lake Oologah as well as areas on the north side of Lake Oologah that had previously not been addressed.

The Lake Oologah Oil Spill site has been separated into four phases. The North Lake Oologah Phase includes: Sections 3, 10, 15, 22, and 27 of Township 24 North, Range 17 East; Sections 4, 5, 6, 7, 8, 27 and 34 of Township 25 North, Range 17 East; and Sections 3, 4, 5, 8, 9, 10, 11, 15, 16, 17, 21 and 22 of Township 25 North, Range 16 East, of the public land survey system. A map of the project area along with specific phases identified is attached.

The Lake Oologah Oil Spill site is part of a large, mature and declining oil field. The field is reported to be up to 100 years old. Completion tickets and historical information indicate that drilling and production activities began shortly before 1900, and continued through the 1990's. Wells within the project area are typically shallow, with a total depth of less than 500 feet below ground surface. Most wells are reported to be completed in, and produce from, the Bartlesville Sand formation at depths ranging from 400 feet to 725 feet. Oil and saltwater were produced from the wells with little or no natural gas. No hydrogen

sulfide gas is known to be present in these wells, but small amounts of natural gas may rise and vent to the surface in open wells.

Description of Threat

The Lake Oologah Oil Spill site contains hundreds of abandoned leaking oil wells and tank batteries that present a substantial threat of discharge to navigable waters of the United States or its adjoining shorelines. Although portions of the oil field remain active, operators have abandoned many of the oil wells and tank batteries. According to Oklahoma Corporation Commission (OCC) records, only eighteen percent of the oil and gas leases in Rogers County, Oklahoma are now actively being produced, and twenty-three percent of Nowata County leases are still in production. Many of the abandoned wells and tank batteries are leaking crude oil directly onto the surface and into nearby creeks and surface drainage paths. Surface runoff from these areas drains directly into Lake Oologah or tributaries of the lake. Owners and operators associated with a significant portion of the leaking wells or tank batteries have been reported by the OCC to be unknown, no longer in business, or individuals with insufficient financial resources to plug the wells. Many of the well locations are unknown or poorly identified, and comprehensive or accurate maps, databases, or other records are not generally available or incomplete.

Many wells have been clearly documented as actively discharging, or threatening to discharge, oil into waters of the United States or adjoining shorelines. These wells are located in the headwaters of Lake Oologah and its adjacent watershed, where they discharge oil into waterways such as creeks, road ditches, intermittent streams, and other small drainage areas that empty directly into Lake Oologah. The area covered by the North Lake Oologah Phase drains into the lake through the Verdigris River and through several tributaries to the lake including Plumb, Spencer, Panther, Lightning, Salt, and Double creeks.

Many of the wells within this phase have not been plugged or were plugged incorrectly, and have no wellhead, flange, valve, or cap on the top of the well, thus remaining completely open to the surface. Other wells do have wellheads and valves, etc., that close off the wells, but much of this aging equipment is failing and thus leaking oil onto the ground surface and into the nearby waterways. Fluctuating groundwater levels cause water to seep into the wells and float oil to the surface and potentially migrate to waterways. Ongoing and continued leaks from these abandoned wells will lead to certain discharges of oil to navigable waters of the United States or adjoining shorelines.

The effects of well documented oil spills from area wells are easily seen, with dead or stressed vegetation in many areas. The environmental effects of oil on the navigable waters of the United States are also well documented. Many constituents of oil, particularly the lighter end fraction of the hydrocarbon chains, are directly toxic to animal and plant life. A secondary effect of surface oil is that it retards gas exchange between the water body and the atmosphere, and can result in fish kills from depressed dissolved oxygen levels. Depressed dissolved oxygen content dramatically decreases the diversity and density among most life forms in the water body, which results in extensive environmental impacts to the water body.

There is a potential for the exposure of humans and animals to the oily wastes, which have been dispersed over hundreds of acres surrounding the leaking oil well and tank battery locations. Soils surrounding the oil well and tank batteries are saturated with crude oil, and the extent of the contamination varies from few square yards to hundreds of square yards. Often, pits associated with leaking wells are full or partially full of oil and are open to the environment. Spills at these sites have frequently migrated offsite into wetlands, creeks, intermittent streams, and Lake Oologah. Rainfall events move this oil into the lake with storm water runoff. The spills have been documented to flow near adjacent residences, into cattle stock ponds, and into the Lake Oologah Wildlife Management area. Therefore, the potential exposure to farm animals, other wildlife, and even human populations is great.

Current conditions pose substantial threat of discharge to nearby creeks, wetlands, and Lake Oologah. Leaking wells are currently discharging into the watershed of Lake Oologah and many oil wells and tank batteries are all in relatively close proximity to the lake and/or primary tributaries. Lake Oologah is the public drinking water reservoir for the cities of Tulsa, Oologah, Claremore, and surrounding areas in the State of Oklahoma.

Previous Site Actions

For many years, various land owners in the Lake Oologah area have notified the OCC of leaking wells and tank batteries that contaminate property and either discharge into or substantially threaten to discharge into navigable waterways. Due to the public safety concerns and imminent threats to the environment, OCC has conducted many field investigations in the area to assess the problem. Investigations revealed

that a large number of oil wells were abandoned, remain unplugged, or were plugged inappropriately. Based on the extensive effort that will be required to locate and plug these wells and the limited amount of State funding available, the OCC requested that EPA assist the State and conduct a removal action to mitigate substantial threats of discharge to the navigable waters or its adjoining shorelines.

At the request of OCC, EPA initially became involved in the site activities during the summer of 1996, when EPA, OCC, and the Superfund Technical Assessment and Response Team contractor (START) personnel conducted an initial walk over survey of a representative section of the Lake Oologah spill area. Since that time, EPA and OCC have conducted several extensive field investigations and aerial reconnaissance flights to determine the full extent of the problem. The EPA also commissioned an aerial study and over flight using infrared (IR) technology and orthophotography to locate specific well and spill sites. As a result of field studies and the OCC request, EPA has also established an active, cooperative partnership and dialogue with the OCC and Oklahoma Energy Resources Board (OERB) to address the site problems and for the planning of a three-phased removal action. A number of high-level meetings and other correspondence have taken place between EPA and the state agencies to identify all sections included in the overall project scope and prioritize these sections into three phases based on pollution threat potential. Phase I, six sections with greatest density of severely polluting wells, Phase II, twenty complete or partial sections adjoining the Eastern Shore of Lake Oologah, and Phase III, sixteen sections farthest from the lake, were the resultant groupings based on the joint agency review of data collected during field investigation and aerial reconnaissance flights. Actions related to these prior EPA actions can be reviewed in the Lake Oologah Spill Project Phase I, II, and III Polreps

The North Oologah Phase was initiated after further field investigations by OCC and EPA revealed a significant number of abandoned leaking wells threatening waterways in areas that drain directly into Lake Oologah. These areas were not originally targeted as part of the previous three phases of the Lake Oologah Spill Project, but the severity of the threat and proximity to the lake and its tributaries prompted the OCC and EPA to initiate a comprehensive assessment of the area. Wells that are found to be discharging or have the potential to discharge oil will be addressed. This will be done by the plugging and abandonment (P&A) of the wells as well as restoration of affected areas. All activities will be conducted in coordination between the EPA, OCC, OERB, and any identified Responsible Party (RP).

Current Activities

Lake Oologah Oil Spill Project North Lake Oologah Phase activities began with the development of a comprehensive site work plan. The plan identified several key tasks necessary to implement the project. Tasks identified include assessment, responsible party (RP) search, RP cleanup coordination, plugging and abandonment, and remediation.

Prior to field activities, a thorough search of courthouse and tax assessor records was conducted in both Rogers and Nowata Counties to compile a current database of land owners for the project area. All landowners believed to have property within the bounds of the project were sent a letter explaining the project scope and history, current objectives, and future phase plans. Landowners were also sent an access agreement granting EPA access to enter their property for project implementation, which they could sign and return. Follow-up communication was conducted with those individuals that had questions and/or concerns about the project.

As access agreements were compiled, objectives were developed to facilitate abandoned well and tank battery assessment in areas that access had been granted. EPA then began the process of compiling equipment and gathering the personnel needed to begin well assessment.

Activities for the North Lake Oologah Phase commenced on December 11, 2006, with the identification of potential areas and development of property access agreements. Actual field assessment commenced on February 5 and continued for six to seven weeks. Based on access agreements granted and well locations, the actual project area included approximately 6000 acres within 26 partial sections of land.

As on previous phases, identification of wells and tank batteries was completed by workers on horseback and all terrain vehicles (ATVs). Assessment efficiency has improved based on the use of the horseback crews and collection of assessment data using PDAs (personal data assistants). All wells and tank batteries were staked and assigned a unique identifier. The pollution threat potential of each well and tank battery is then determined on a per well/tank battery basis. Information collected during the assessment includes: well/tank battery identification number, Global Positioning System (GPS) data points, condition of the well, access issues, type of well, and contamination information. There have been a total of 727 wells and 109 tank batteries, debris, or stain identified.

The identification of RPs is ongoing. Thirty-four (34) Notices of Federal Interests (NOFI) letters have been sent to RPs.

Planned Removal Actions

Face to face meetings are scheduled to begin on August 6 to explain the RPs the process and determine potential liability.

Removal actions, either led by EPA, OCC, or RPs, are schedule to resume when all the RPs have been identified and a P&A contract is secured by ERRS contractor.

Next Steps

EPA will continue the search for PRPs and the ones that are identified will be sent a NOFI and given the opportunity to clean up and control wells for which they are responsible. Wells and tank batteries that have no responsible party identified and meet the OPA funding criteria will be scheduled for plugging and/or cleanup.

EPA will coordinate with OCC and OERB future site actions.

Key Issues

- Continue RP search
- Determination of well plugging plans for abandoned oil wells that meet OPA criteria for plugging and abandonment.
- Prepare plugging and cleanup contracts.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
PRFA	$217,000.00	$50,000.00	$167,000.00	76.96%
RST/START	$400,000.00	$399,000.00	$1,000.00	0.25%
Intramural Costs				
USEPA - Direct (Region, HQ)	$30,000.00	$20,000.00	$10,000.00	33.33%
USEPA - InDirect	$20,000.00	$10,000.00	$10,000.00	50.00%
Total Site Costs	$667,000.00	$479,000.00	$188,000.00	28.19%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

response.epa.gov/NorthLakeOologah

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