U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Puncheon Camp Creek Oil Spill - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject: **POLREP #4**
and Final Oil Well Plugging Completed
Puncheon Camp Creek Oil Spill

Allred, TN
Latitude: 36.3282440 Longitude: -85.1967950

To:
From: Perry Gaughan, On Scene Coordinator
Date: 10/7/2010
Reporting Period: 10-01-10 thru 10-15-10

1. Introduction

1.1 Background

Site Number:	Z4TC	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	OPA	**Response Type:**	Emergency
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	8/11/2010	**Start Date:**	8/11/2010
Demob Date:	10/15/2010	**Completion Date:**	10/30/2010
CERCLIS ID:		**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

The Puncheon Creek Abandoned Oil Well was referred to EPA Region 4 OSC Perry Gaughan by the Tennessee Oil and Gas Divisions Jeff Patton on August 11th, 2010. As such, TDEC requested the Agency's assistance in evaluating threats to surface waters associated with the leaking well. This well was found to be flowing live crude oil, oily brine, and natural gas to land surface and impacting Puncheon Creek near Allred, Tennessee approximately five miles east of Livingston, Tennessee. Puncheon Creek flows into the west fork of the Obey River which eventually empties into the Obey River, Dale Hollow Lake and the Cumberland River.

The abandoned well is located along a flood plain of Puncheon Creek. The creek is bound to the north and south by steep terrain which appears to be made up of numerous caves and limestone formations. Access to the well will be performed from the flood plain along the creek and swamp matts will be utilized to cross the creek and place the drill rig. ERRs contractors are currently working with the property owner to determine the extent of temporary roads which will be needed to facilitate the well plugging.

Typical costs associated with plugging abandoned wells in western Kentucky and middle Tennessee which are 200-300 feet deep run approximately $35,000 to $40,000. Because of necessary site preparation and the well being 1800 feet deep, the OSC anticipates that costs associated with this plugging operation may take two weeks at an estimated $ 80,000.

1.1.2 Site Description

The general condition of the leaking well is poor. The depth of the well (approximately 1800 feet) and proximity to Puncheon Creek combined with the extremely high residual petroleum pressures and the advanced age of the well (i.e. 70 years), confirms that the threat to Puncheon Creek and the Obey River is imminent and substantial. The life expectancy of non-cemented casing used in the construction of oil wells is generally less than 10 years in Tennessee.

Most of the abandoned wells in this area lack sufficient quantities of cement in the annular space (i.e. between the production casing and the well bore) to preclude the discharge of crude oil (via leaking casing and tubing) to land surface. Crude oil is discharging at land surface from a subsurface depth of approximately 400 to 600 feet, from the Sunnybrook oil and shale formation.

1.1.2.1 Location

This well is located along Puncheon Creek near Allred, Overton County, Tennessee approximately five miles east of Livingston, Tennessee. Puncheon Creek flows into the west fork of the Obey River which eventually empties into the Obey River, Dale Hollow Lake and the Cumberland River.

The abandoned well is located along a flood plain of Puncheon Creek. The creek is bound to the north and south by steep terrain which appears to be made up of numerous caves and limestone formations.

1.1.2.2 Description of Threat

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

EPA Region 4 contract officials approved the drilling and geophysics subcontracts on Tuesday, October 5th and the drilling subcontractor began set up and rig placement on Wednesday, October 6th, 2010.

Well History

Information supplied by TDEC's Oil and Gas Jeff Patton indicates that this well was originally drilled in 1975. Seven inch surface casing was placed to a depth of 295 feet with approximately 30 sacks of cement and 4.5 inch well casing was placed to a total well depth of 1875 feet with an unknown amount of cement. The oil production zone from the Knox (oil) formation was at 1800 feet. Geologically, this area of Overton County is also high in sulfur deposits, and occasional sulfur water runoff into Puncheon Creek was noted by the OSC and TDEC. This was also the case during oil well plugging operations near Cookeville in June 2009.

Oil Well Plugging Operations

Thursday, October 7th, 2010 - Initial efforts by Tenn Rotary Drilling with a utility service rig and an air rig encontered significant obstructions at 80 feet and 200 feet. Attempts to enter the well with 2 inch pipe indicated that the 4 inch casing was most likely seperated at 80 feet from corrosion. Sulfur water is typically at a depth of 100-200 feet.

Friday, October 8th, 2010 - After the ERRs response manager and OSC discussed the well obstructions at 80 and 200 feet with the drilling subcontractor, the decision was made to secure the well location for the weekend and attempt to drill through the obstructions again on Monday using the service rig. Tenn Rotary owner Jerry Carr would be present to assist with the well plugging operations. Mr Carr's experience with drilling and plugging wells in the area should prove to be beneficial.

Monday and Tuesday, October 11th/12th, 2010 - Tenn Rotary again began running two inch pipe down hole and was able to run past the obstructions at 80 and 200 feet while washing the well to a depth of 350 feet. A large amount of silt was noted during washing procedures. On Tuesday, drillers again continued running two inch drill pipe to a total depth of 1850 feet and continued flushing the well in preparation for well logging by Tenn Well Services on Wednesday.

Wednesday, October 13th, 2010 - Tenn Well Services attempted to log the well, but again the obstruction at 80 feet was preventing them from pushing their logging tool past the obstruction. The logging subcontractor tried to get past the obstruction at 80 feet with a smaller logging tool but this too was unsuccessful. After consulting with EPA's Chuck Eger, the decision was made to not log the well but to perforate the casing at two depths the following day. Tenn Rotary put two inch tubing back in the hole to a depth of 365 feet to keep the well casing free of silt or other obstruction overnight.

Thursday, October 14th, 2010 - Tennessee Well Logging Services was on site, entered the well to a depth of 1200 feet and perforated the well casing with a three-hole shot. The logging crew then perforated the 4.5 inch well casing at a depth of 200 feet with an additional three-hole shot. After retrieving logging tools, Tenn Well Logging departed the site.

Tenn Rotary drilling crew then entered the well again to a depth of 1420 feet with two inch tubing in preparation for cementing the well. During the beginning of cementing operations, the operator noticed a significant build up of back pressure suggesting a blockage in the tubing. The drilling crew worked for an extended period of tube in freeing the tubing from the well casing and 124 feet of two inch tubing was removed during the process bringing the tubing depth up to 1296 feet. At this depth, cement operations began and 50 sacks of cement were pumped into the well at this depth insuring cement behind the casing. The drillers then removed an additional 310 feet of tubing bringing the depth to 986 feet, and an additional 50 sacks of cement were introduced into the well. In this manner, the drilling subcontractor pumped 50 sacks of cement into the well at 676 feet, 30 sacks at 366 feet and 70 sacks at 156 feet. The cementing performed on Thursday was allowed to set and an additional 40 sacks of cement were pumped into the well on Friday morning to complete the well closure. A total of 290 sacks of cement were used to seal the well with perforations at 1200 feet and 200 feet to insure cement behind the well casing.

Friday, October 15th, 2010 - After completing cementing, the drilling subcontractor cut the casing off four feet below land surface and backfilled the drill blow off pit. The area was graded, seeded and strawed to facilitate regrowth.

2.1.2 Response Actions to Date

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

No information available at this time.

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

No information available at this time.

3. Participating Entities

No information available at this time.

4. Personnel On Site

No information available at this time.

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.