

**Reclamation Plan for Brine  
Ponds at KC-1 under NSE  
Approval 2008-064245-R01**

*August 2011*

**Elmworth Energy**

**07-8198-0200**

*Submitted by:*

**Dillon Consulting Limited**

## 1. Company Information

### a. Background

In 2007, Elmworth Energy Corporation/Triangle Petroleum Corporation (Elmworth) entered into a business arrangement under Exploration Agreement 99-09-15-02, to undertake oil and natural gas exploration drilling and seismic in the Windsor Block near Kennetcook, Hants County, Nova Scotia.

Beginning in the spring of 2007, Elmworth carried out an exploration program within the Windsor Block to determine the feasibility of establishing shale gas production from the Horton Bluff Formation of the Horton Group. The well at KC-1 was drilled to a total depth of 1,358 m and was spudded on August 26, 2007. As part of the exploration program a pond was established at the well site to provide approximately 10,000 m<sup>3</sup> of production water for well development and for storage of water collected during well testing. Water that was returned to the pond was high in chlorides.

This reclamation plan focuses on the brine pond and provides information on the well head abandonment as requested by NSE.

### b. Address

Triangle Petroleum Corporation  
1660 Wynkoop Street Suite 900  
Denver, Colorado, USA  
80202

### c. Contacts

Dr. Peter Hill – Chief Executive Officer  
Phone: (303) 260 - 7125  
Fax: (303) 260 - 5080

## 2. Site Location

### a. **Description and Map**

KC-1 is located approximately 2 km south of the community of Noel and 2 km north of the community of Gormanville in the Municipality of the 3 District of East Hants. 5013602.56 N (45°16'32.05N), 4430036.85 E (63°43'34.36W) as described in **Figure 1**. Access to the drill pad site is to be directly off the east side of an existing logging road which extends south and east from Lake Road off of Route 354 and Highway 215.

### b. **General Geographic Setting**

The site and surrounding area are blanketed by red-brown silty clay Lawrencetown till exhibiting a relatively low permeability. Test pits confirmed a compact unit to a depth of at least 2.5 m below the ponds

Homes and businesses in Noel/Gormanville and surrounding communities rely on wells or springs for potable water. A search of the NSE well log data base recorded well depths ranging from less than 8 m to 100 m. The nearest resident (according to mapping) is located more than 1 km of the drill site.

### c. **Access**

The site is accessed from a logging road off Route 236. A 500 m section of new roadway was required to connect the existing road to the site.

### d. **Surface Water**

There are no watercourses or wetlands on or in the immediate vicinity of the site. The nearest watercourse to the KC-1 site is a small intermittent stream which flows in a northeast direction into Burns Brook. Eventual discharge is into the Kennetcook River below Route 236. The configuration of the site has the brine pond area draining southward.

### 3. Brine Pond Reclamation Plan

#### a. **Infrastructure Removal**

##### i. Wellhead

Abandonment of the wellhead will be to the requirements of the Exploration Agreement 99-09-15-02.

##### ii. Brine Ponds

After the water in the brine pond is removed the pond will be removed and the site regarded. This work will include removal of the following:

- pond perimeter fencing;
- geomembrane liner;
- median barriers used during pond filling; and
- miscellaneous piping.

Prior to commencing with earthworks, a soil sample of material to be used as cover will be analyzed and compared to appropriate guidelines and background to determine acceptability.

##### iii. Roadways

The existing roadway will not be disturbed as access to the site will be required after reclamation activities have been completed. There will be as-required maintenance on the roadway.

#### b. **Site Stabilization**

##### i. Contouring and Grading

The pond berms will be removed and along with the stockpiled material will be used to infill the ponds. The site will be graded such that the existing elevations will be maintained along the southern sides of the pond near the pad. On the northern side grade to the north side of the stockpiled material will be met with the existing ditch on the western edge forming the western limit for grading. The stockpile and ditch on the eastern side will be redefined to promote drainage to the south and west to flow into the existing western ditch.

ii. Erosion Control

Prior to construction activities commencing sediment fencing will be established up-gradient of the existing ditches and down-gradient of disturbed areas. Sediment traps will be established in the existing ditches or in the re-worked ditches.

With the site graded and new contours established the existing ditch on the eastern side of the pond will be re-ditched to re-define the ditch grade.

iii. Re-vegetation

All disturbed areas will be hydroseeded with straw applied.

**c. Post Reclamation Monitoring**

Post reclamation monitoring will consist of:

- i. Quarterly site visit and reporting for the one year period after reclamation.
- ii. Annual site visit and reporting for the two year period after the first year of reclamation.

**d. Schedule of Work**

The work will commence when the water in the pond has been removed in accordance with the Disposal Plan and is anticipated to take two weeks.

**e. Cost Estimate**

i. Reclamation

The estimated budget for reclamation is \$.

ii. Maintenance and Monitoring

The annual budget is estimated to be \$ for the first year and \$ to \$ for subsequent years.

S. 21