

**Reliable Circuits**  
**12880 Automobile Boulevard**  
**Clearwater, Florida**  
**County: Pinellas**  
**District: Southwest**  
**Site Lead: Waste Cleanup Program**  
**Approved for Cleanup: May 16, 1988**  
**HWC # 51**

**Site Description and History**

Reliable Circuit Systems (RCS), Inc. leased the building located at 12880-P Automobile Boulevard, Clearwater, Pinellas County, Florida, more specifically in Township 30S, Range 16E, Section 09 at 27° 53' 19.6100" N, 82° 41' 48.6852" W. From 1979 to 1985, the company manufactured rigid-flex printed circuit boards for the military and aero-space industries.

**Threat**

The remaining vinyl chloride plume affects groundwater in the surficial aquifer in the area.

**Response Strategy and Status (June 2016)**

In July 1988, a file review was completed and site access was obtained. Soil and groundwater samples were collected in October 1988 to assess conditions and to confirm the nature of contamination. The results of this sampling event noted concentrations of; chromium (134 µg/L), *trans*-1,2-dichloroethene (489 µg/L), and trichloroethene (1,090 µg/L). Low levels of trichloroethene were also found in the upgradient monitoring wells, which indicated possible upgradient sources of groundwater contamination.

In October 1989, an additional field investigation was completed to further define the extent of contamination and to confirm the possibility of upgradient sources of contamination. Nine additional monitoring wells were installed. Trichloroethene was found in the three upgradient monitoring wells at concentrations ranging from 32 to 69 µg/L, confirming the probability of upgradient sources.

In July 1990, the risk assessment indicated ingestion of soils contaminated with chromium from the site was the primary threat to human health. The assessment further concluded that the Floridan Aquifer was not impacted; however, the shallow aquifer was impacted on and offsite. The surficial aquifer did not pose a hazard to human health because it was not used as a source for either drinking water or irrigation.

In August 1991, FDER selected a Remedial Action Alternative for removal of contaminated soils and off-site disposal. Jacobs Engineering Group (JEG), developed a soil removal and disposal plan, in September 1991. In September and October 1993, DEP excavated the onsite soil contaminated with hexavalent chromium, copper, and lead.

In February 1993, the Site Investigation Section (SIS) conducted an evaluation of possible offsite sources of groundwater contamination. The SIS report was inconclusive in identifying offsite sources. The report did however note a high level of VOCs in the surficial aquifer.

Additional plume delineation at the site was conducted through May 1996 until March 1997. Final results indicated the plume had been delineated, and was located onsite in a small, northeast area of the site. IT Corporation submitted a Remedial Action Plan (RAP) September 1997. The RAP included an evaluation of natural attenuation remedial technologies.

The selected remedial strategy summarized in the December 1997 decision memo included natural attenuation with groundwater monitoring. Sampling of specific monitor wells under the Natural Attenuation remedy was conducted in April and October 1998. Evaluation of the yearly groundwater data indicated a decline, as predicted in the RAP, in total volatiles.

The second year semi-annual sampling event was conducted in April 1999, and was the first sampling event that indicated an increase of some contaminants in three monitor wells. Subsequent sampling results from October 1999 and April 2000 indicated an overall decline in groundwater contamination.

The DEP sent an "Actual Notice" to the offsite property owner and the Pinellas County Water Management Office in November 1999. "Constructive Notice" was placed in the St. Petersburg Times for the Clearwater area regarding the use of Natural Attenuation Monitoring as the selected remedial approach for site rehabilitation.

Semi-annual groundwater sampling was conducted in December 2001 in order to evaluate attenuation of groundwater contamination. The data indicated a decline in the main contaminant product (trichloroethene), and an increase in several "daughter" products (*cis*-1,2-dichloroethene and vinyl chloride).

Soil and groundwater assessment was conducted in November 2002, under the former RCS building in order to determine if there was an additional contaminant source. The data indicated there did not appear to be a continuing contaminant source area under the building.

In January 2004, the DEP conducted a five-year review, and the results indicated high levels of vinyl chloride migrating offsite from a source zone near the former RCS building. A biosparge pilot study was initiated by the DEP in August 2004, as a possible means to reduce the contaminant source zone in this area. The biosparge pilot test was successful in reducing the levels of groundwater contamination of vinyl chloride. The design for full implementation of biosparging remedial action was completed by the Department's contractor, Geosyntec, on September 2005, and was reviewed and approved by DEP engineering.

In April 2006, the Limited RAP Modification for the design of the biosparge system was approved by DEP. The biosparge system was designed to address vinyl chloride contamination in the groundwater.

The system was activated in October 2006. The treatment system originally operated intermittently but was operated continuously starting in February 2007. As a result of increased vinyl chloride levels, additional assessment was performed to investigate the possibility of an offsite upgradient groundwater contaminant source migrating onto the site. In 2009, the offsite source area was referred to the Southwest DEP District Office for further investigation.

Operation of the biosparge system was discontinued in December 2009 as a result of a shallow water table. In March 2010, Geosyntec prepared a RAP Modification recommending a passive bioremediation to reduce vinyl chloride levels.

### **Schedule**

SIS is investigating the upgradient vicinity of the site for other potential sources of vinyl chloride and parent compounds. WSCS continues to monitor groundwater using passive diffusion bags. Last date of groundwater sample collection was January 8, 2016. Vinyl chloride was detected at concentrations exceeding the GCTL of 1 microgram per liter ( $\mu\text{g/L}$ ) in monitoring/recovery wells MW001, MW010A, MW010B, MW022, RW001, RW003 and RW004. The maximum observed vinyl chloride concentration was 67  $\mu\text{g/L}$  at recovery well RW001. The groundwater plume extends offsite.

Groundwater sampling will be conducted on an annual basis until the vinyl chloride levels are below GCTLs.