

**CHARNOCK INITIAL
REGIONAL RESPONSE ACTIVITIES (CIRRA)
Charnock Sub-Basin; Los Angeles, California**

**Task 11
Current Conditions Report**

Submitted to:

California Regional Water Quality Control Board,
Los Angeles Region

U.S. Environmental Protection Agency,
Region IX

On behalf of:

Shell Oil Company
Shell Oil Products Company
Equilon Enterprises LLC

Prepared by:

ENVIRON Corporation
Emeryville, California

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The following report was prepared by ENVIRON International Corporation under the professional supervision of the following individuals:



Robert L. Powell, Ph. D.
Principal



Jessica E. Donovan, R.G. No. 3791
Principal



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1.0 INTRODUCTION

1.1 BACKGROUND

The following Current Conditions Report (CCR) has been prepared in fulfillment of Task 11 of the *Scope of Work for Initial Regional Response Activities to Address MTBE and Other Gasoline Constituents in the Charnock Sub-Basin* (the SOW). This CCR provides a comprehensive summary of MTBE and other gasoline constituent contamination affecting the Charnock Sub-Basin Initial Investigation Area based on information available for review at this time. The report also includes a summary of remediation that has occurred at and in the vicinity of each of the 27 potential source-sites. As described in the SOW, the CCR will be updated on an annual basis. For the purposes of describing the extent of contamination, the Sub-Basin is divided into six areas: 1) the “regional” area, 2) the Sepulveda and Palms subregion, 3) the Sepulveda and Venice subregion, 4) the Washington and Sepulveda subregion, 5) the National and Overland subregion, and 6) Other Sites.

The City of Santa Monica (COSM) and the Southern California Water Company (SCWC) operate groundwater production wells in two separate well fields within the Charnock Sub-Basin, a part of the Santa Monica Groundwater Basin. In each well field, water is produced primarily from the Lower Silverado Aquifer, although some production is obtained from portions of the Upper Silverado Aquifer from some wells such as CH-19 and perhaps CH-13. The average pumping rate for 1990 through mid-1996 at the COSM Well Field was about 3,600 gallons per minute (gpm). The average pumping rate for the same period at the SCWC Well Field was about 140 gpm.

In August of 1995, methyl tertiary-butyl ether (MTBE) was first detected in one well (CH-13) at the COSM Well Field. MTBE was subsequently also detected in other production wells (e.g. CH-19) in the COSM Well Field. The peak concentration of MTBE measured in production wells was 610 micrograms per liter ($\mu\text{g/L}$) measured in CH-19 on March 25, 1996. In June 1996, the COSM voluntarily shut down their Charnock Well Field because of increasing MTBE levels. Although MTBE concentrations in impacted wells typically increased with time until the COSM Well Field was shut down, the variations in concentration are attributed to variations in pumping locations and rates, as well as unknown contaminant concentrations in the aquifer. Figure 1-1 shows the COSM Well Field pumping rates and MTBE concentrations. Although no MTBE has been detected in the SCWC Charnock Well Field, SCWC shut down their well field in October 1996.

The pumping of the groundwater from the COSM Well Field created a “wide cone of depression” that significantly altered historical regional groundwater flow patterns in the absence of pumping. Without well field pumping, groundwater naturally flows southeast across the Sub-Basin. During well field operations, however, groundwater flow converges on the well field from all directions; with an effective capture zone effectively (eventually) encompassing the entire Sub-Basin. The capture zone, with some variation, is essentially bounded by the Overland Avenue Fault to the east and the Charnock Avenue Fault to the west. During pumping, the groundwater flow rate was significantly accelerated.

Once groundwater pumping was terminated in mid-1996, the cone of depression gradually filled, causing the surface of the groundwater to rise approximately 70 feet at the COSM Well Field, 35 feet 0.5 mile southeast of the Well Field, and 30 feet 1 mile southeast from the Well Field. Additionally, the regional flow direction and rate returned to their natural states. The regional flow direction is primarily to the southeast from all points in the Sub-Basin, although there are local variations. In addition, the flow rate is now ten times slower. During pumping, groundwater moved about 1 foot per day toward the Well Field. Now it moves less than 0.10 foot per day generally toward the southeast. In addition, the groundwater storage of the basin has been replenished as the water levels have risen.

Initially, an Inter-Agency Task Force identified 45 retail sites and 2 product pipelines (Shell and Chevron) as potential MTBE sources based on an approximate 1.25-mile radius centered on the COSM Well Field. Another potential MTBE source, AM PM Delivery near Sepulveda and Venice, was subsequently identified by Shell and was added by the Agencies to the site list. Most stations that have commenced site investigations detected MTBE in onsite soil and/or groundwater. Figures 1-2 and 1-3 highlight those sites within the Sub-Basin that have MTBE contamination in soil and groundwater, respectively. This report focuses on the 27 source-sites listed in Attachment B to the Administrative Order on Consent (EPA, 2000) and is based on all data available for review by June 2000. These sites are presented in Table 1-1 and Figure 1-4.

1.2 REFERENCES

U.S. Environmental Protection Agency (USEPA). 2000. *Administrative Order on Consent for Initial Regional Response*. EPA Docket No. RCRA 7003-09-2000-0003.