

ORC TECHNICAL BULLETIN # 2 . 5 . 4

Oxygen Release Compound, ORC[®]**Computer Modeling Results for an Iterative Cut-Off Design**

The following graphical representations are generated by a unique version of the Cleary Unga model, adapted for interactive, menu driven use. Further details are found in [Technical Bulletin 2.5.3](#).

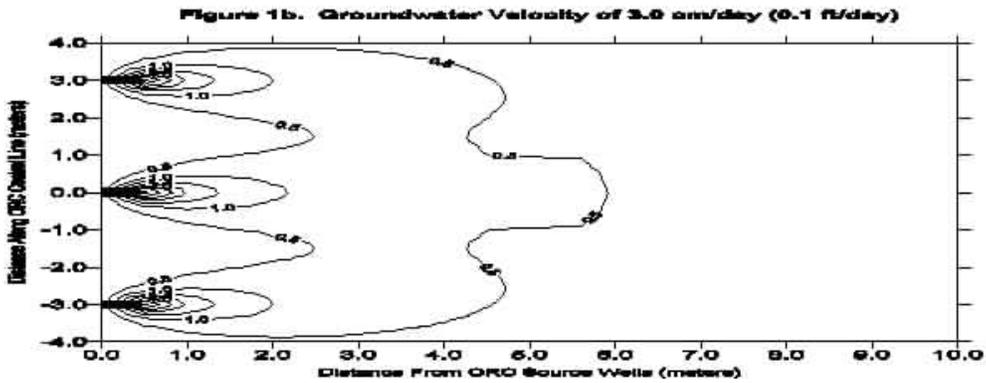
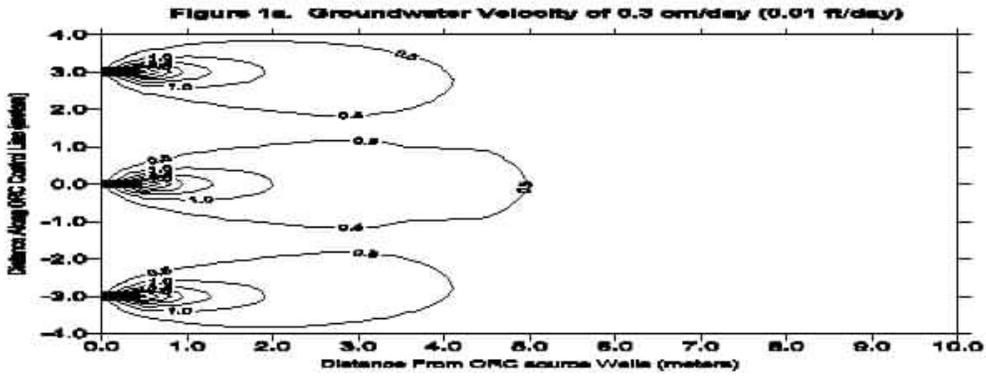
Given a, 1) groundwater seepage velocity, 2) initial oxygen concentration and, 3) the initial contaminant concentration, one can generate the following for a specified time period and spatial array:

1. Oxygen distribution as a function of advection, dispersion and retardation without utilization.
2. Oxygen distribution as a function of advection, dispersion and retardation with utilization.
3. Reduction of dissolved-phase contaminants in relation to the available oxygen.

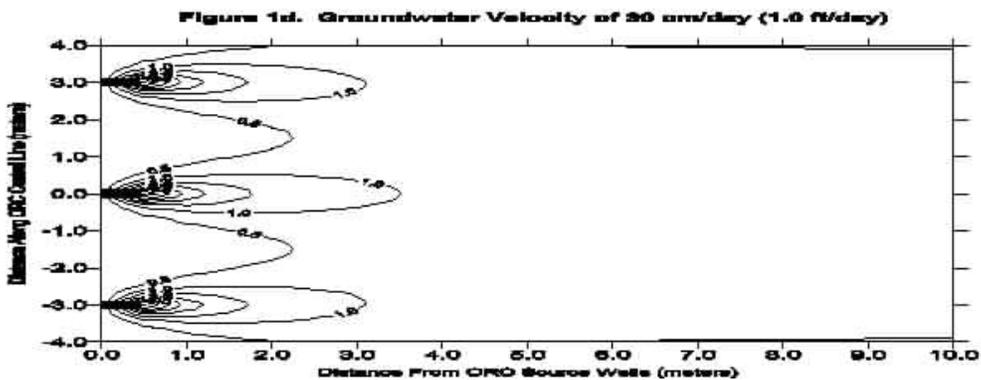
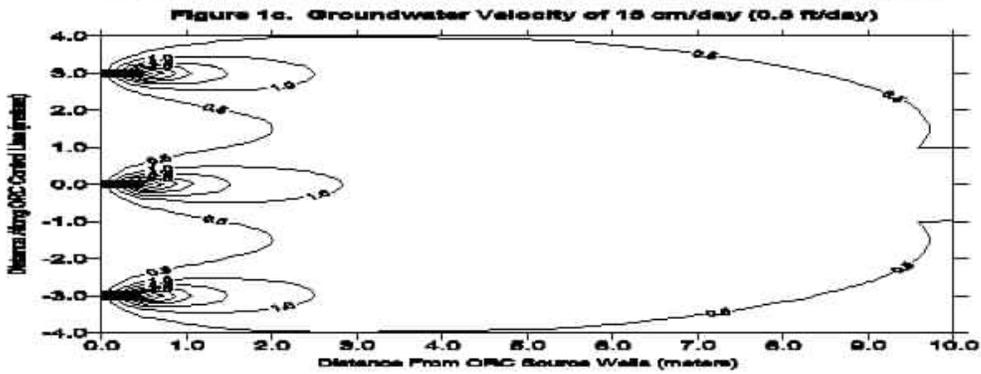
Figures 1a through 1d represent the distribution of oxygen after 90 days at the four different velocities indicated, after insertion of ORC filter socks into a 4" diameter well. The .01 ft/day groundwater velocity (1a) represents a static site. The .1, .5 and 1 ft/day flows in the other figures (1b-1d), represent a typical range of groundwater velocities seen on most sites. Figures 2 a-d repeat this series for 180 days after contact of ORC with the groundwater. In all cases, an initial oxygen concentration of 20 ppm is used and is mildly conservative based on actual field measurements. Oxygen contours are presented in plan view.

The 10 foot on center spacing of the wells provides partial coverage across the barrier. Since there may be some background oxygen in the system, these supplemental levels could be enough to control the forward movement of a dissolved phase hydrocarbon plume. Alternatively, the wider spacing may work as field results generally outperform model predications; this is due to the heterogeneity of the subsurface which has a positive effect on oxygen distribution in the aquifer.

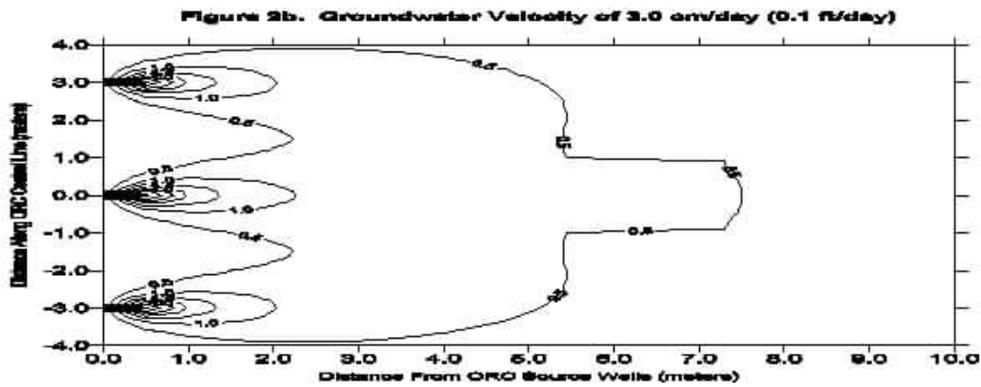
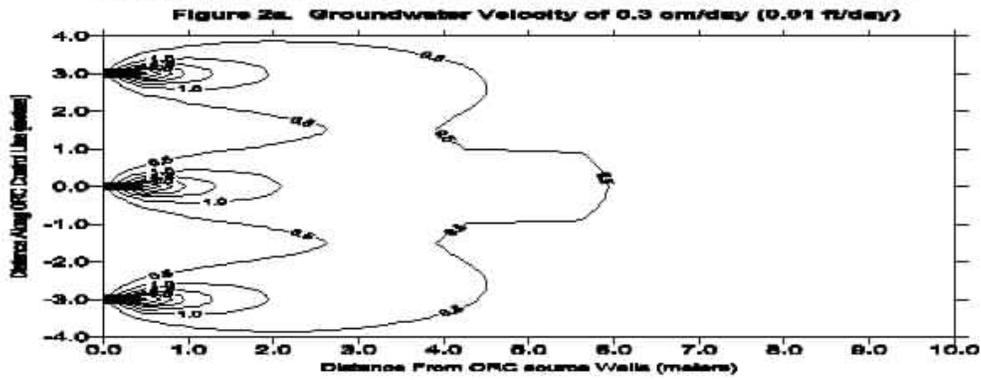
Dissolved Oxygen Distribution after 90 Days from Three 4-inch (0.1meter) Diameter Sources Spaced 3.0 meters (10 Feet) on Centers



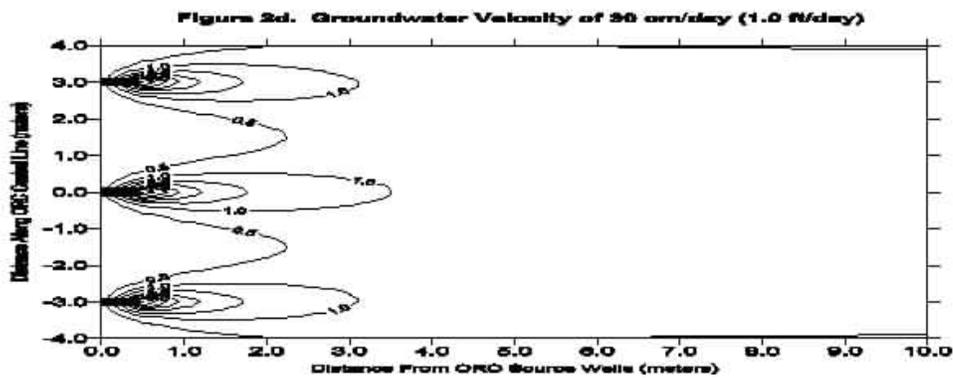
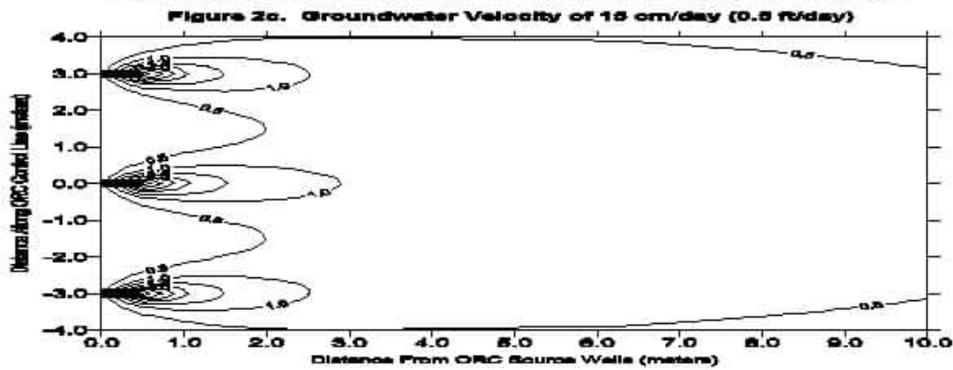
Dissolved Oxygen Distribution after 90 Days from Three 4-inch (0.1meter) Diameter Sources Spaced 3.0 meters (10 Feet) on Centers



Dissolved Oxygen Distribution after 180 Days from Three 4-Inch (0.1meter) Diameter Sources Spaced 3.0 meters (10 Feet) on Centers



Dissolved Oxygen Distribution after 180 Days from Three 4-Inch (0.1meter) Diameter Sources Spaced 3.0 meters (10 Feet) on Centers



[Technical Bulletin Index](#)||[Regenesis Home Page](#)