PNNL-13560

Assessment of Carbon Tetrachloride Groundwater Transport in Support of the Hanford Carbon Tetrachloride Innovative Technology Demonstration Program

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July 2001

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Executive Summary

Groundwater modeling was performed in support of the Hanford Carbon Tetrachloride Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD program is facilitated by Sandia National Laboratories for the Department of Energy (DOE) Office of Science and Technology. This report was prepared to document the results of the modeling effort and facilitate discussion of characterization and remediation options for the carbon tetrachloride (CT) plume among the ITRD participants.

As a first step toward implementation of innovative technologies for remediation of the CT plume underlying the 200 West Area, modeling was performed to provide an indication of the potential impact of the CT source on the compliance boundary approximately 5000 m away. The primary objective of the modeling was to bracket the amount of CT source that will most likely result in compliance/non-compliance at the boundary and the relative influence of the various model input parameters.

The modeling was based on the assumption that about 750,000 kg of CT were discharged to the soil in the 200 West Area. Previous work has shown that, of this 750,000 kg, about 65% cannot be accounted for (after totaling atmospheric losses [21%]; unsaturated zone inventory in soil gas, soil moisture, and adsorbed phases [12%]; and the dissolved phase in the aquifer [2%]). Therefore, model simulations were performed using 65%, 30%, 10%, and 1% of the 750,000 kg as possible source amounts of CT that could reach the groundwater (approximately 1 to 2% of the original CT inventory now exists in the distal plume based on averaged CT groundwater measurements). The modeling simulations conducted for this study examine the migration of CT from the source area to the compliance boundary. The simulations did not examine migration of the existing distal plume and did not attempt to match the historical disposal and migration of CT (i.e., did not attempt to reproduce the current CT plume distribution).

Other model input parameters including the groundwater Darcy velocity; inlet concentration (the concentration of CT leaving the source area); porosity; soil/water equilibrium partition coefficient (K_d); abiotic degradation rate (K_a); dispersivity; and stream tube cross-sectional area were also varied to assess sensitivity of the results to each of the parameters.

The CT transport simulation was conservatively modeled as a stream tube 1000 m wide by 5000 m long in one-dimensional flow (i.e., no vertical or transverse dispersivity or convection). Regional flow-modeling results using the Hanford Site-Wide Groundwater Model (SGM) flow grid provided groundwater velocity estimates for the simulation. The basic assumptions used in developing the model were as follows:

- The major source of contamination is within a 500m x 500m box.
- The contaminant plume was in equilibrium with the source immediately before pump-and-treat efforts.
- Processes considered in the model are one-dimensional convective-dispersive transport of reactive solutes subject to adsorption and first-order abiotic degradation (hydrolysis).
- Volatilization and first-order natural biodegradation are negligible.

The one-dimensional van Genuchten model simulated convective-dispersive transport of CT through a homogenous medium along the centerline of the contaminant plume from the 200 West source area to the compliance boundary, approximately 5000 m distant. One thousand Monte Carlo realizations were carried out. Fixed and deterministic parameters included the following:

- Stream tube length: 5000 m
- Base inventory of contaminant: 750,000 kg CT
- Base porosity: 0.10 m^3/m^3
- Bulk density: 1950 kg/m^3
- Inlet concentration: 1500, 2000, 2500 or 3000 μg/L
- Amount of source remaining: 1%, 10%, 30%, or 65%
- Groundwater Darcy velocity: mean, $\pm\sigma$, $\pm 2\sigma$.

Stochastic parameters varied by Monte Carlo methods included the following:

- Porosity
- Soil/water equilibrium partition coefficient K_d
- Abiotic degradation rate K_a
- Dispersivity
- Stream tube cross-sectional area

Parameter limits for K_a and K_d were determined by methods detailed in the report entitled *Literature Review: Natural Attenuation Mechanisms and Rates for Chloromethane Subsurface Contamination at Hanford* previously provided to the ITRD Technical Advisory Group and included as Appendix C to this report. Parameter limits for porosity and dispersivity were determined by geophysical methods and transport field studies.

Simulations including transverse and vertical dispersion/dilution were conducted to determine how the one-dimensional modeling results could be interpreted to estimate the effect of a three-dimensional flow field. In 80% of these simulations, the concentration at the compliance boundary was reduced by a factor of greater than 5. In about 20% of these simulations, the concentration was reduced by a factor of greater than 10 with a maximum reduction factor of about 30. The results of these simulations were used to postulate that interpretations of one-dimensional modeling results using a 50-μg/L boundary concentration limit provided a pseudo-three-dimensional (ptd) estimate of CT transport at the higher end of the observed concentration reduction factor. This ptd estimate was used to provide a reasonable bound for the possible three-dimensional flow effects during transport of CT from the source area to the compliance boundary. CT concentration limits of 5 μg/L and 50 μg/L at the compliance boundary are used in the report. Note that the 50-μg/L compliance boundary concentration limit is solely a calculational construct to approximate a three-dimensional model, not a proposed change in the actual 5-μg/L compliance concentration requirement. Selection of the 50-μg/L compliance boundary

concentration is based on using a factor of 10 correlation between one- and three-dimensional transport that was calculated based on the components of dispersion that are not accounted for in the one-dimensional model.

The modeling produced 1000 Monte Carlo simulations that were analyzed to provide an estimate of the portion of the source area needing remediation. The simulations also provided a method for gauging sensitivity of predicted contaminant transport to variations in individual model parameters.

The results of the Monte Carlo simulations were charted as histograms showing resultant distributions for 1000 modeling realizations using stochastic parameters. Simulation outputs include the following:

- Required source cleanup percentage needed to meet compliance regulations
- Source inlet rate
- Compliance boundary concentration
- Compliance boundary flux
- Compliance boundary arrival times
- Source duration
- Arrival time of peak concentration
- Positional concentration profile.

The results show frequency distributions of the required source cleanup percentages for the Monte Carlo simulations (variations of transport parameters K_d, K_a, porosity, dispersivity and cross-sectional area) at the mean Darcy velocity and 3000 μg/L inlet-source concentration. The required source cleanup percentage for each simulation was calculated from the ratio of the maximum concentration at the compliance boundary to the selected compliance concentration. This calculation assumes that reducing the source quantity by this percentage would decrease the source concentration by this same percentage; thus the concentration at the compliance boundary would decrease by this percentage as well. The basis of this assumption is that by removing source within a portion of the defined source area volume so that this "cleaned up" portion now contributes only clean water within the source, the source is diluted.

Figure ES-1 shows the results of the 1000 realizations at 10% of source inventory reaching the groundwater and indicates for over 60% of the simulations (i.e., different groupings of transport parameter values) the 50-μg/L compliance concentration will be exceeded at the compliance boundary unless some CT is removed from the source area. Figure ES-2 shows the results of the 1000 realizations for 1% of the source inventory reaching the groundwater and indicates that, for over 70% of the simulations, the 50-μg/L compliance concentration will not be exceed without any CT source removal.

The break point for cleanup percentages clearly lies between 1% and 10% of source inventory remaining. The input parameters in the simulation having the greatest effect on the results

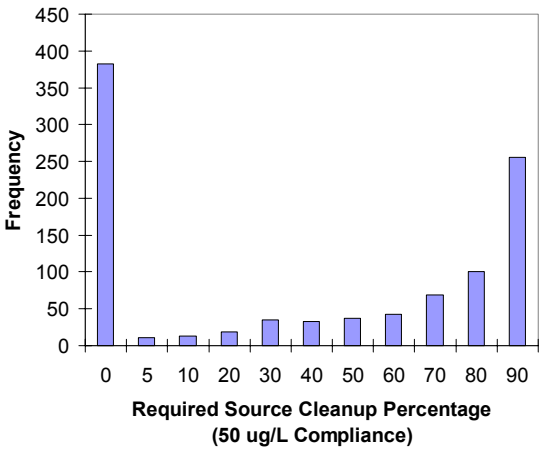

Figure ES-1. 10% Source Inventory Mean Velocity, 3000 μg/L

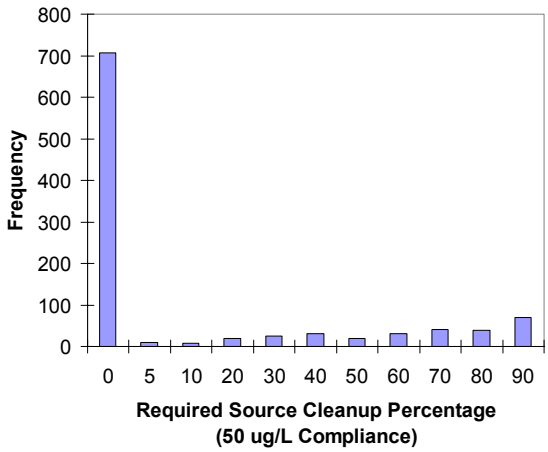

Figure ES-2. 1% Source Inventory Mean Velocity, 3000 μg/L

appear to be porosity, K_d, and K_a; a multiple linear regression analysis of log maximum concentration at the boundary versus porosity, K_d, and K_a gave standardized regression coefficients of –0.145, -0.785, and -0.504, respectively, at 1% inventory remaining and -0.187, -0.691, and -0.601, respectively, at 10% inventory. Thus, better definition of these parameters, primarily K_d, and K_a, would aid in refining the estimate of how much source requires treatment to avoid exceeding the compliance boundary concentration limit.

Several conclusions can be drawn from the modeling, as follows:

- If 1% of the discharged CT is all that ever reaches the groundwater, then it is likely the highest concentration of CT to arrive at the compliance boundary will not exceed the compliance concentration. However, it is possible the compliance concentration would be exceeded if the actual site parameters correspond to the lower porosity, lower K_d, and lower K_a values used in this study.
- If 10% or more of the discharged CT reaches the groundwater, it is likely that the concentration of CT eventually arriving at the compliance boundary will exceed the compliance concentration (unless source removal efforts are used).
- There is a breakpoint between 1% and 10% of the discharged inventory that defines the amount of CT in the source at which source removal would be required to avoid exceeding the compliance concentration at the compliance boundary.
- Because source inventory remaining appears to be the quantity driving the amount of site cleanup required for compliance, source inventory characterization would be a milestone on the path forward to resolution of compliance issues.
- Laboratory experiments and site surveys can be used to better quantify values for the parameters controlling compliance boundary concentrations: K_d, K_a and porosity; additional modeling, including use of a three-dimensional model, can then be performed using these improved values to give more accurate estimates of compliance boundary concentrations and source cleanup requirements.

Contents

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1.0 Introduction

Groundwater modeling was performed in support of the Hanford Carbon Tetrachloride Innovative Treatment Remediation Demonstration (ITRD) Program. This report documents the results of the modeling effort and facilitates discussion of characterization and remediation options for the carbon tetrachloride (CT) plume among the ITRD participants.

Section 1.1 states the objectives of the study. Section 1.2 provides an overview of the CT plume, and Section 1.3 describes the Hanford CT ITRD program.

1.1 Objectives

The objectives of this modeling study were to predict CT concentrations at the selected compliance boundary, use these predictions to estimate the amount of source remediation needed to meet selected cleanup requirements, and identify the transport parameters having the greatest effect on these results.

1.2 Hanford Carbon Tetrachloride Plume Summary

In the 200 West Area at Hanford, CT was disposed to the soil at several sites adjacent to the Z Plant (Plutonium Finishing Plant) during operations from 1955 to 1973. The CT had been used in mixtures with other organics to recover plutonium from aqueous streams at Z Plant. The resultant organic liquid waste stream discharged to the disposal sites consisted primarily of CT in mixtures with tributyl phosphate, dibutyl butyl phosphate, and lard oil.

The areal extent of the dissolved CT plume is approximately 10 km^2. Concentrations of dissolved CT detected in the groundwater have been estimated to account for approximately 2% of the original CT inventory.

Previous work (Swanson et al, 1999) considered an order-of-magnitude estimate of the 1990 inventory of CT remaining in the subsurface using available groundwater concentration data, soil-gas concentration data, and well venting data. For the rough-order-of-magnitude estimates, it was assumed that 750,000 kg of CT were discharged to the soil during 1955 to 1973. Total atmospheric losses were estimated to be 21%; the unsaturated zone inventory (in soil gas, soil moisture, and adsorbed phases) accounted for 12%; and the dissolved phase in the aquifer was estimated at 2%, leaving 65% of the original CT volume unaccounted for. However, the estimates did not consider nonaqueous-phase liquid organic residual saturation in the unsaturated zone, perched organic liquid on low-permeability lenses, or separate organic liquid present within the unconfined aquifer. Any or all of these forms of concentrated CT may be present within the subsurface, although none has been observed.

1.3 Hanford Carbon Tetrachloride ITRD Program Overview

Beginning in January 1999, the Technical Advisory Group (TAG) of the Hanford CT ITRD Program began a series of discussions regarding the potential application of remediation technologies at the CT site in the 200 West Area. The remediation technologies discussed included those for both the saturated zone and the unsaturated zone. However, during the discussions it became evident the selection of remediation technologies needs to be based on the type of remediation (e.g., source removal from the saturated zone) and the extent to which the remediation needs to occur (i.e., the level to which the CT concentration must be reduced). To provide such information, the ITRD TAG determined that groundwater modeling (and site characterization) need to be performed.

This report provides the approach (Section 2) and results (Section 3) of that modeling effort. The modeling was performed to provide an indication of the potential impact of the CT source on the compliance boundary approximately 5000 m distant. The primary results of the modeling bracket the amount of CT source that will most likely result in compliance/non-compliance at the boundary and the relative influence of the various modeling parameters, thus providing a basis for additional characterization and remediation needs to be addressed by the ITRD TAG.

Section 4 expresses the conclusions reached as a result of the research. Cited references may be found in Section 5. Supporting documentation is provided in the Appendixes.

2.0 Approach

The following overall approach was used to examine the transport of CT from the source area to the compliance boundary as a function of variation in CT source concentration and transport parameter values. A one-dimensional model was configured to estimate CT transport. Ranges for the value of transport parameters within the model (e.g., porosity, K_d) were determined from the literature and Hanford site data. The uncertainty in the concentration of CT in the source area was estimated based on geostatistical analysis of existing CT concentration data at the Hanford site. The parameter value ranges and source area CT concentration variability were used within a Monte Carlo approach where 1000 combinations of parameter values and CT concentration were simulated for selected cases of remaining source area inventory. Each transport simulation provided an estimate of the CT concentration at the compliance boundary over time. These estimated values were compared to the concentration limit selected by regulators for the compliance boundary to determine source cleanup requirements for each simulation. The entire set of simulations was used to determine the model parameters that had the greatest influence on the source cleanup requirements.

2.1 Simulation Approach

The CT transport simulation was conservatively modeled as a stream tube 1000 m wide by 5000 m long in one-dimensional flow (no vertical or transverse dispersivity or convection). Regional flow-modeling results using the Hanford Site-Wide Groundwater Model (SGM) flow grid provided groundwater velocity estimates for the simulation (see Appendix A). The basic assumptions used in developing the model are the following:

- The major source of contamination is within a 500 x 500-m box (see Figure 1).
- The plume was in equilibrium with the source just prior to pump-and-treat efforts.
- Processes considered in the model are one-dimensional convective-dispersive transport of reactive solutes subject to adsorption and first-order abiotic degradation (hydrolysis).
- Volatilization (Appendix B) and first-order biodegradation (Appendix C) are negligible.

A one-dimensional van Genuchten (1974) model simulated convective-dispersive transport of CT through a homogenous medium along the centerline of the contaminant plume from the 200 West source area to the compliance boundary approximately 5 km away (see Figure 2). One thousand Monte Carlo realizations were carried out. Fixed and deterministic parameters include:

- Stream tube length: 5.0 km
- Base inventory of contaminant: 750,000 kg CT
- Base porosity: 0.10 m^3/m^3 (a)
- Bulk density: 1950 kg/m^3
- Inlet concentration: 1500, 2000, 2500 or 3000 μg/L.

(a) The formation is bimodal with the large cobble-size fraction fully packed and the smaller-size fraction packed in the void space between the cobbles. The porosity is about 0.3 for the cobbles, and about 0.3 for the remaining void. Thus the total porosity is about 0.3 x 0.3 = 0.1.

- Amount of source remaining: 1%, 10%, 30%, or 65%
- Groundwater Darcy velocity: mean, ±σ, ±2σ.

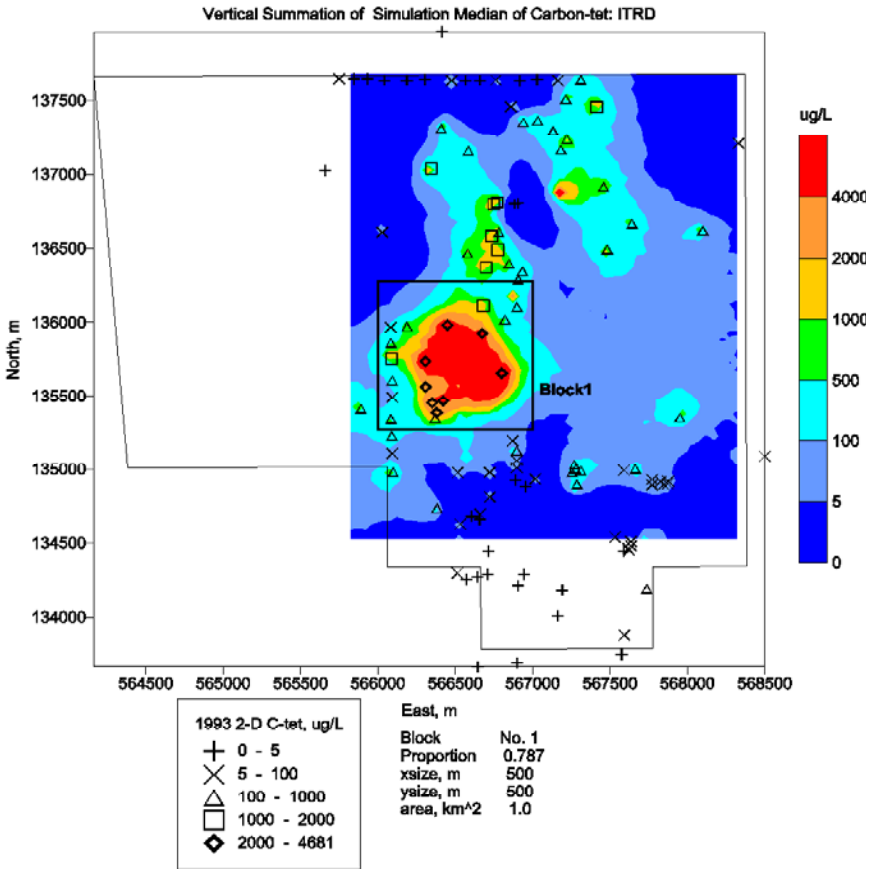

Figure 1. Contamination "Box"

Stochastic parameters varied by Monte Carlo methods include

- porosity
- soil/water equilibrium partition coefficient K_d
- abiotic degradation rate K_a
- dispersivity
- stream tube cross-sectional area.

Parameter limits for K_a and K_d were determined by methods detailed in Appendix C. Parameter limits for porosity and dispersivity were determined respectively by geophysical methods and transport field studies. (Gelhar et al. 1985)

An additional simulation of transverse and vertical dispersion/dilution was modeled using a transverse dispersivity ratio of 0.20 and a vertical dispersivity ratio of 0.02; the results of this simulation were used to postulate a 50-µg/L compliance boundary concentration limit to perform

pseudo-three-dimensional (ptd) simulations using the van Genuchten model. The 50 μg/L compliance boundary concentration limit is solely a calculational construct to give a realistic approximation of a three-dimensional model, not a proposed change in actual compliance concentration requirements.

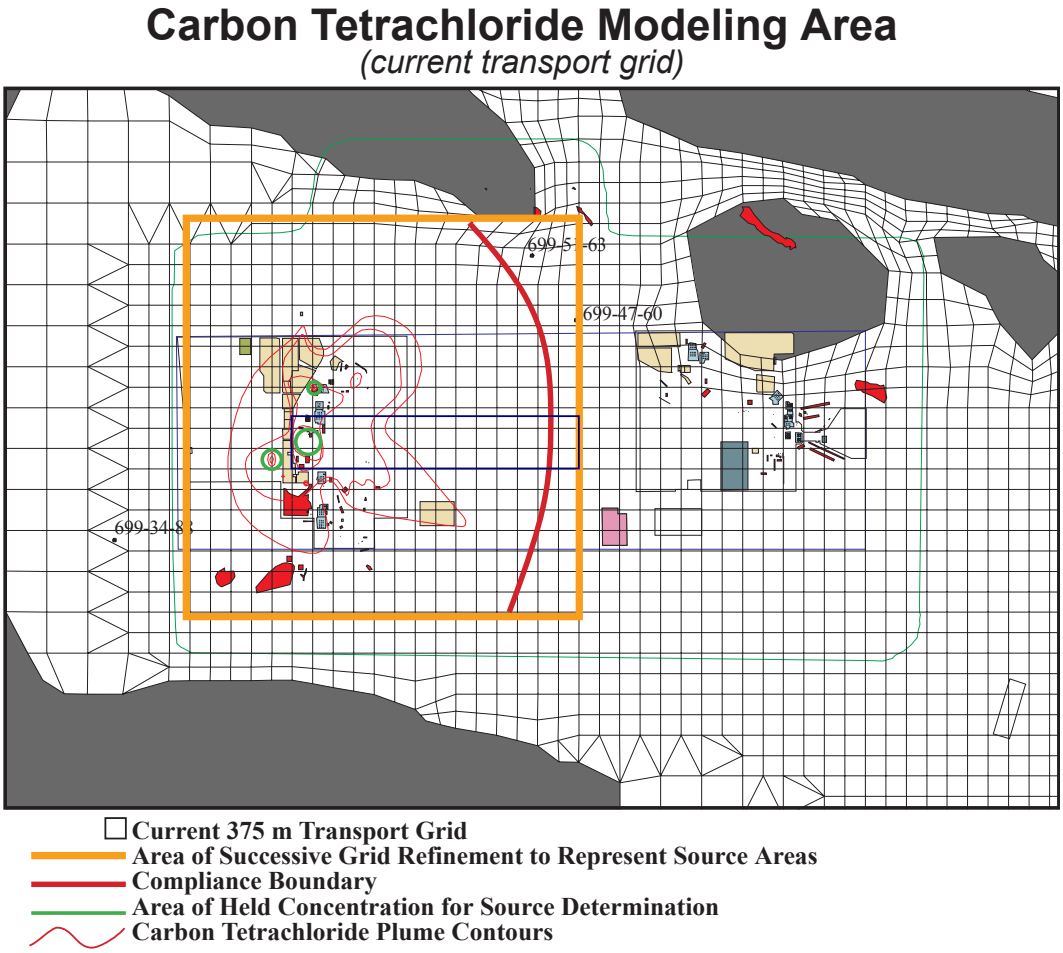

Figure 2. Carbon Tetrachloride Modeling Area

A summary of deterministic results serves to illustrate model performance, and the following tables and figures give details of simulation outputs. For these simulations, selected parameter values varied from low to high where the range of values was determined as described in Sections 2.3.1 and 2.3.2. The low, middle, and high parameter values in the simulations correspond to the minimum, most likely, and maximum values reported in these sections. The concentration of CT over time at the compliance boundary is presented in the figures to compare the effects of parameter variation on model output.

A simulation employing no abiotic decay and no sorption gives a visualization of transport solely through groundwater flow and dispersion. In this simulation, only dispersivity was varied (Figure 3). As dispersivity is increased (1b < 1a < 1c), the concurrent change in both initial

concentration increase at the boundary and time to reach peak concentration reflects the faster transport times and smearing of concentration pulses with higher dispersivity.

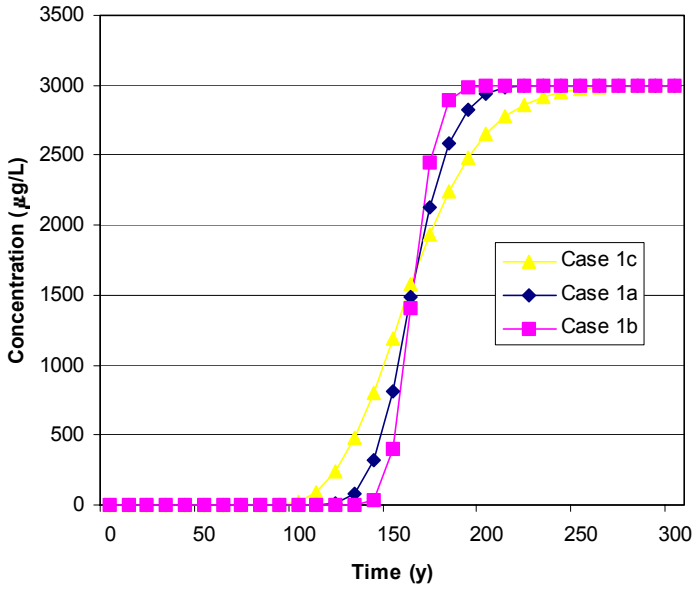

Figure 3. Concentration at the Compliance Boundary as a Function of Dispersivity

A simulation with a mid-range dispersivity, no abiotic decay, and varying sorption (K_d) illustrates the delay in arrival times of the concentration peak with increasing sorption (K_d ∀ 2a < 2b < 2c; see Figure 4). As arrival times are delayed, dispersion-related spreading also increases. The mid-range transport-only case (1a) is included here and with other graphs for comparison.

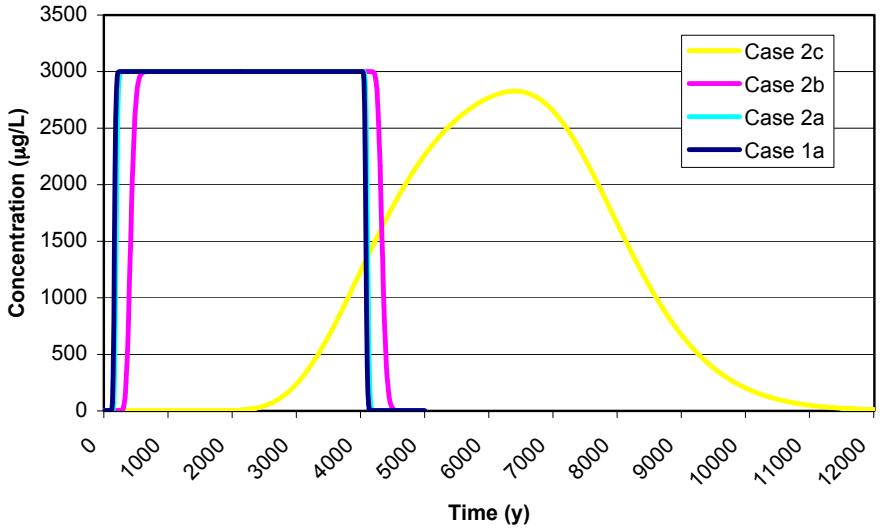

Figure 4. Concentration at the Compliance Boundary as a Function of Sorption

A simulation with no sorption, mid-range dispersivity, and varying abiotic decay shows the effect on peak concentration for increasing K_a (K_a ∀ 3a < 3b < 3c) (see Figure 5); the effect on the time of initial concentration change and time to reach peak concentration is minimal.

A series of simulations showing results for varying porosity, Darcy velocity, and cutoff volume using base-case values for sorption, decay and dispersion is given in Figures 6-9. Curve 4a shows base-case values for all fixed and deterministic parameters and is included on other figures for comparison; curve 4b shows base-case values with zero dispersion as a check of travel-time effect alone on reactivity (note slight reduction of peak concentration and squared-off shoulders at peak inflection points). Curves 4c & 4d show the effect of base-case parameters with low and high porosity, respectively, with a near-600 μg/L difference in concentration as well as noticeable lag in rise time for the low-porosity simulation. Curves 4e & 4f simulate base-case parameters with high and low Darcy velocities, with the expected results in peak concentration and event duration.

Remaining contaminant-inventory percentages are the varied parameters in curves 4g-i (g:1%, h:10%, i:30%), with a clear break-point in peak concentration between 1% and 10% of inventory; the 4a base-case inventory of 65% is included here also. Note that for inventories of 10%, 30% and 65%, the peak concentration remains constant at just over 500 μg/L, with only the event duration changing. This presages the results of the Monte Carlo simulations discussed in Section 3.

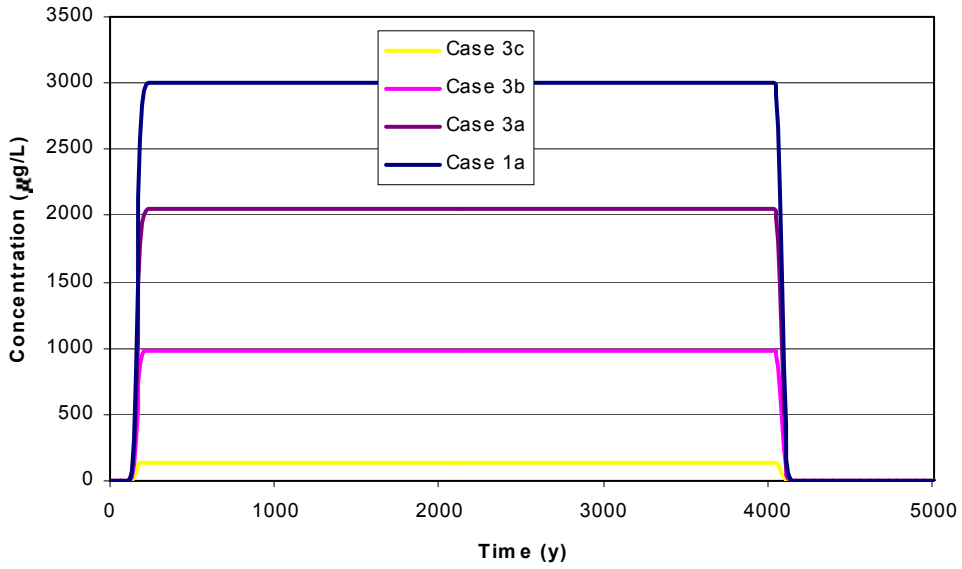

Figure 5. Concentration at the Compliance Boundary as a Function of Abiotic CT Degradation

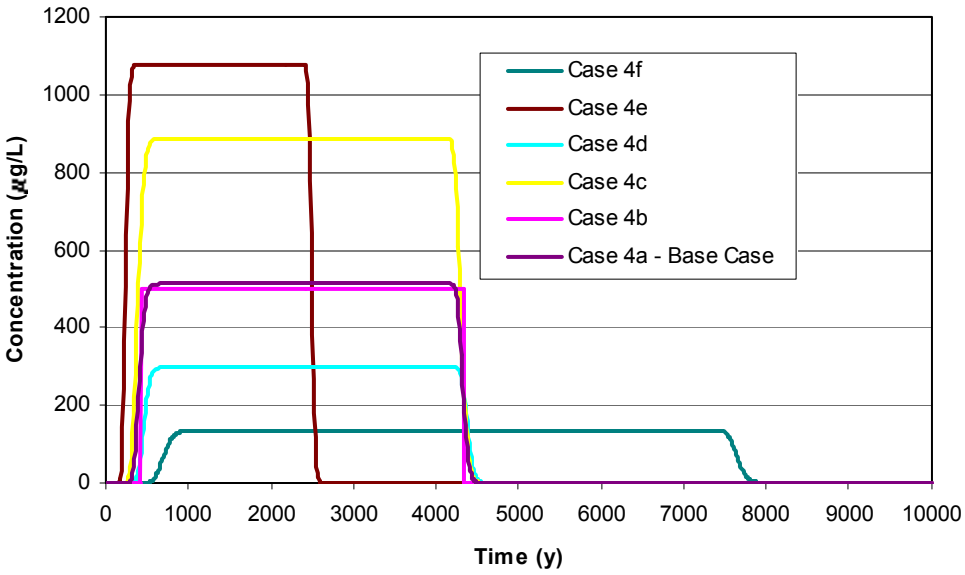

Figure 6. Concentration at the Compliance Boundary for Selected Simulation Scenarios

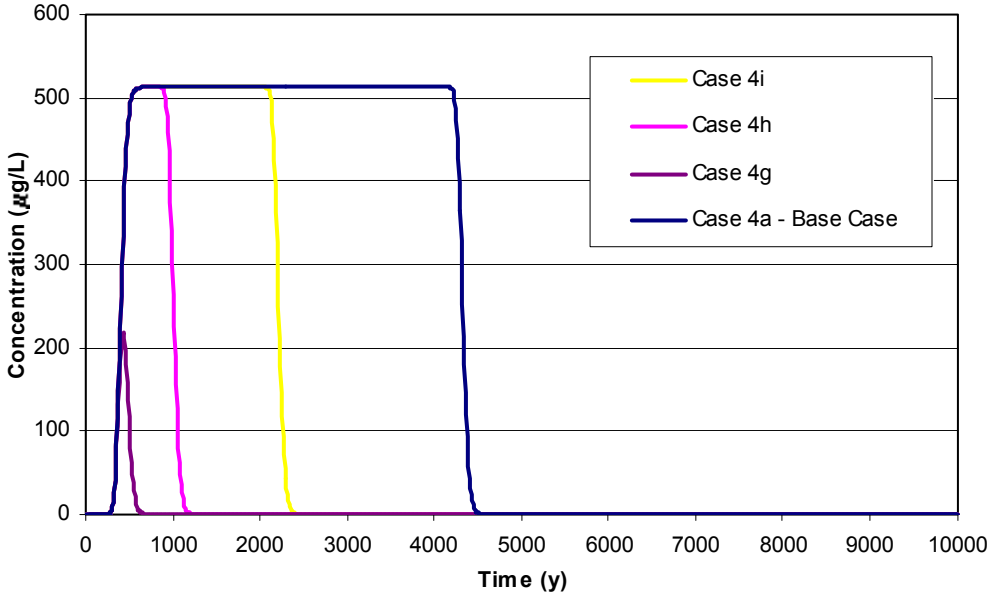

Figure 7. Concentration at the Compliance Boundary as a Function of Contaminant Mass in the Source Area

Curves 4j and k show simulations using base-case parameters and minimum and maximum cutoff volumes for a 3000 µg/L inlet Dirichlet concentration; peak concentrations remain constant while event durations change (cutoff volume affects influent mass to the model).

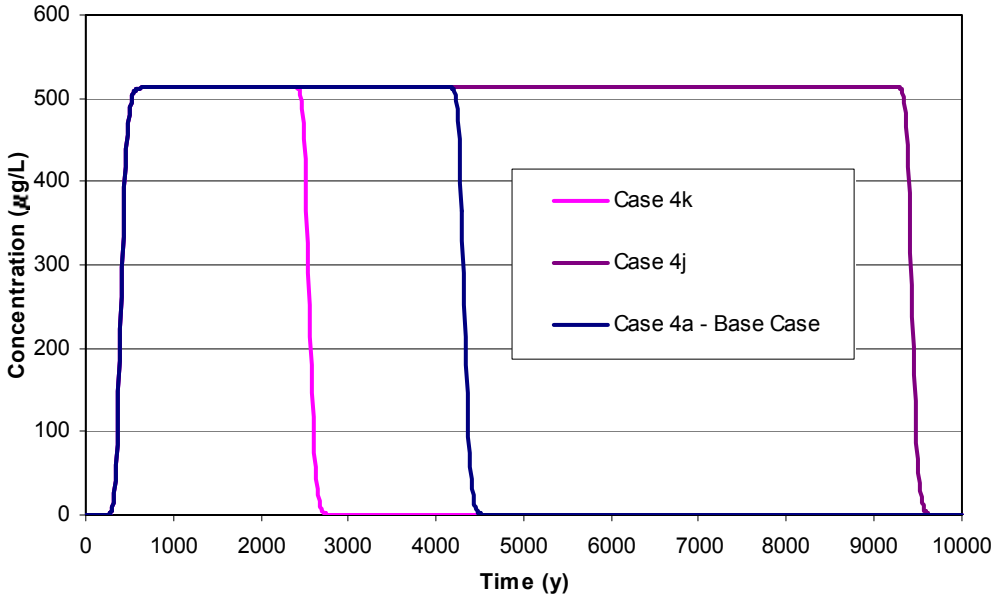

Figure 8. Concentration at the Compliance Boundary as a Function of Source Volumes

Curves 4l through o hold transport parameters constant while changing Dirichlet inlet concentrations (l:1000 µg/L, m:1500 µg/L, n:2000 µg/L, o:2500 µg/L); event duration decreases with increasing peak concentrations as the Dirichlet inlet concentrations increase.

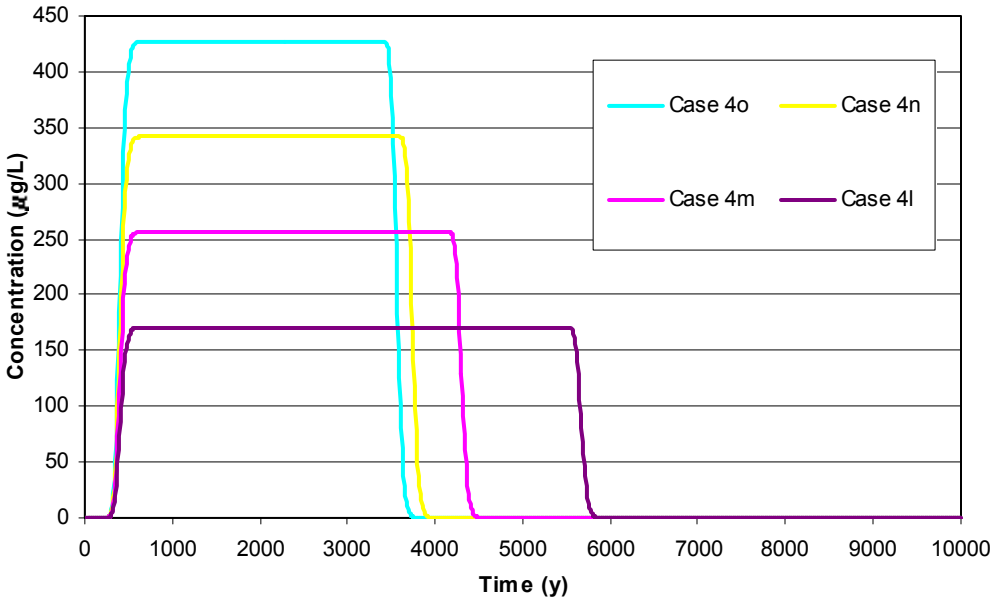

Figure 9. Concentration at the Compliance Boundary as a Function of Dirichlet Inlet Concentration

The simulation results from varying deterministic parameters show that the model outputs change as expected:

- Increasing dispersivity decreases the arrival time of the initial concentration increase and produces smearing effects at high dispersivity.
- Increasing sorption (K_d) delays the arrival time of the concentration peak.
- Increasing abiotic decay (K_a) reduces peak concentrations with little effect on arrival times.
- Increasing porosity reduces peak concentrations with a slight increase in arrival times.
- Decreasing Darcy velocity reduces peak concentrations; arrival times and event duration increase.
- Increasing contaminant inventory produces a break point in peak concentration between 1% and 10% of inventory, with increasing event duration at constant peak concentration above the break point. This result suggests determining the amount of CT in the source area is important for establishing remediation requirements.
- Increasing cutoff volumes decreases event duration with no change in arrival times or peak concentrations.
- Increasing Dirichlet inlet concentrations decreases event duration and increases peak concentration.

These outputs verify model performance and integrity as well as the independence of parameter inputs. Results of input parameter analysis are detailed in Section 3.

2.2 Source Area Definition

2.2.1 Equilibrium of Carbon Tetrachloride Source and Plume

The behavior of the CT plume over time was examined to determine whether it appeared to be in equilibrium with a constant source in 1993, prior to the start of pump-and-treat remediation of the plume. This examination was performed because it is assumed that the plume was in equilibrium with the source in the flow and transport modeling. To evaluate that assumption, we mapped the spatial distribution of CT from 1988 to 1993 to determine whether the plume was migrating, expanding, or contracting.

The locations of CT samples from 1988 to 1993 are shown in Figure 10. The sample number ranges from 25 (1989) to 118 (1993). We then used inverse distance squared gridding to map the distribution of CT for each of the six years. Our examination of the maps (not shown) suggested that the center and extent of the CT plume remained constant. To visualize that, we examined each grid node in the map and counted the number of years for which the concentrations exceeded two concentration levels, 500 and 1000 μg/L, which are mapped in Figures 11 and 12. Despite the uneven sampling coverage in the early years, the areas in which the concentrations exceeded each of the two cutoff levels remain constant throughout most of the six years. Only the portions of the study area with a good distribution of conditioning data are mapped. The bold

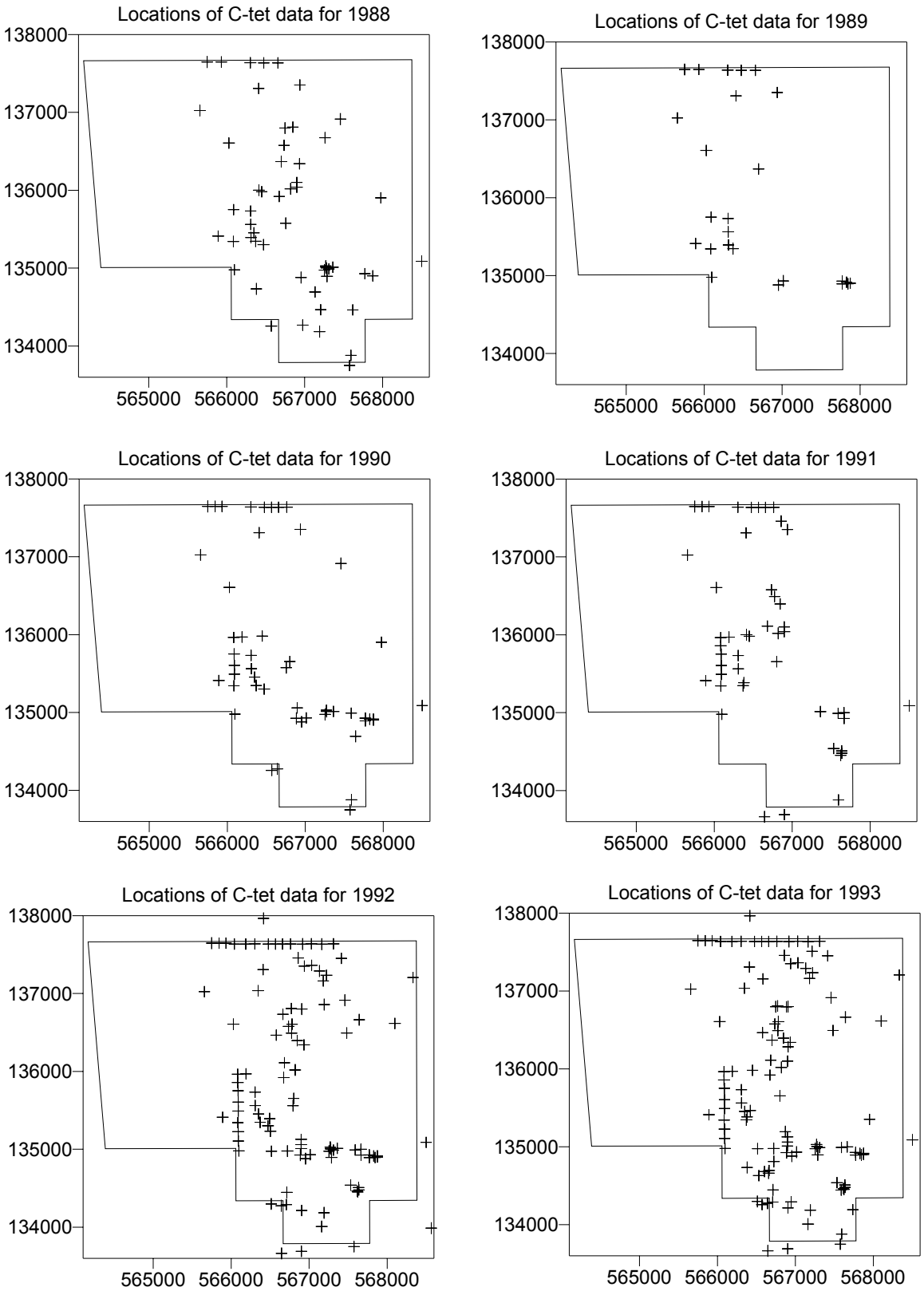

Figure 10. Location Map of CT Samples at 200 West Area from 1988 to 1993

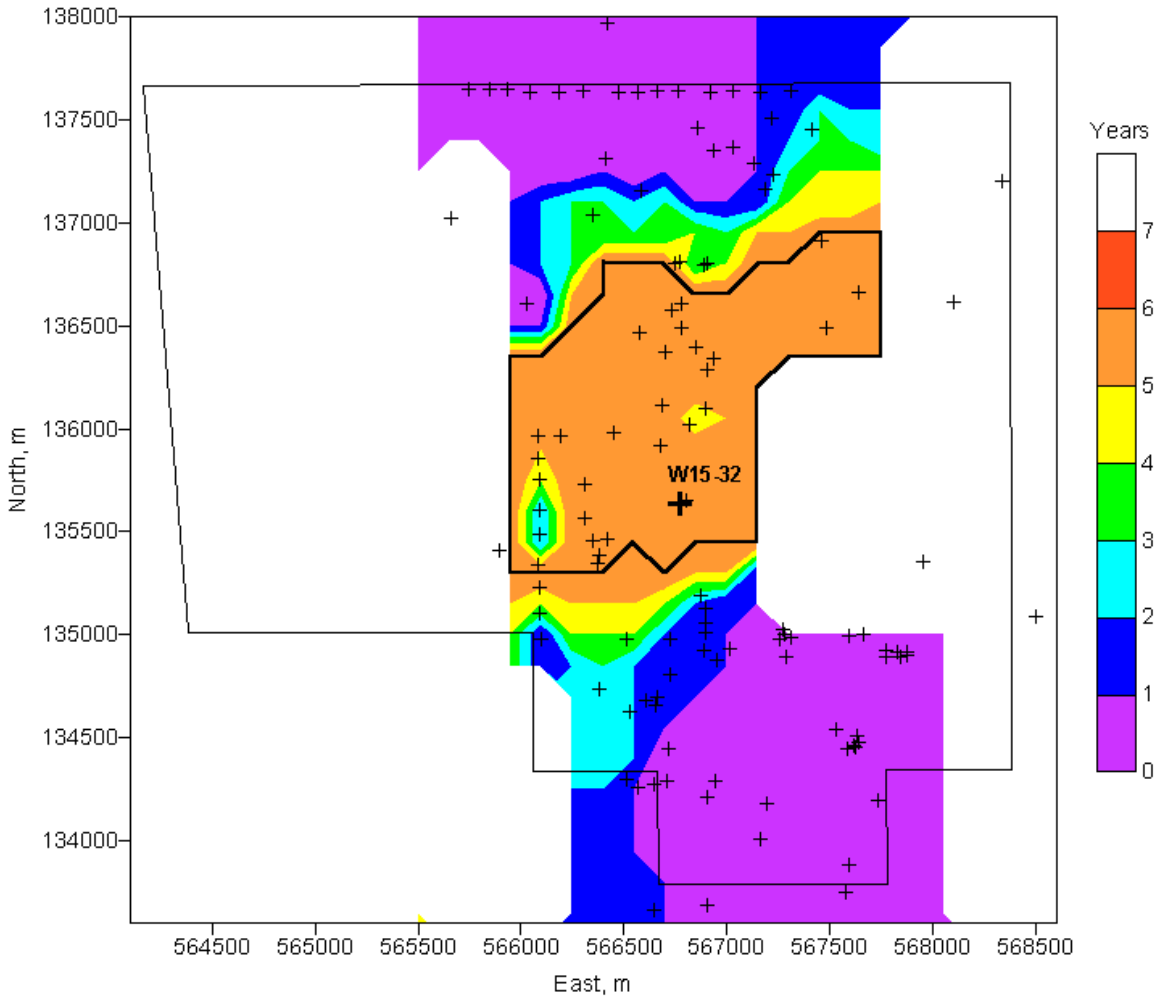

Figure 11. Number of Years CT Concentrations Exceeded 500 µg/L from 1988 to 1993 at Each Grid Node in Mapped Area. The 200 West Area fence is shown for reference. The cross indicates monitoring well W15-32 at the northeast corner of the Z-9 trench.

solid lines in Figures 11 and 12 outline the areas where the CT concentrations exceeded 500 µg/L for six years and 1000 µg/L for three or more years, respectively. The mean CT concentrations from 1988 to 1993 within the areas shown in bold solid lines in Figures 11 and 12 are shown in Figure 13. The mean CT concentration decreased from 1988 to 1991, then remained constant from 1991 to 1993. Figure 13 together with Figures 11 and 12 indicate that the center of the plume was not migrating with time; that the edges of the plume did not appear to be expanding or contracting; and that the mean concentration in the main portions of the plume was constant from 1991 to 1993. These results suggest that assuming the plume was in equilibrium with the source prior to the start of remediation does not disagree with the available data.

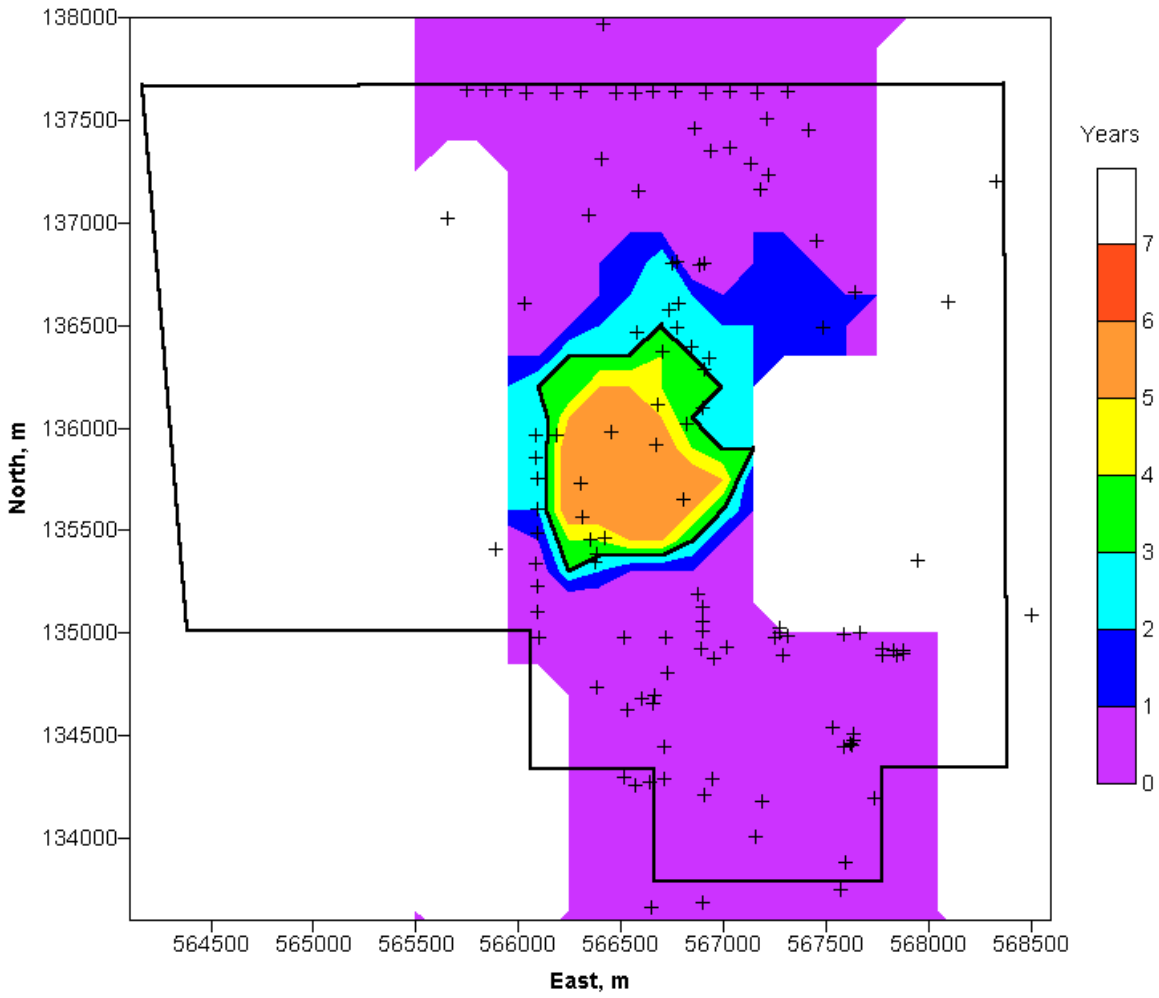

Figure 12. Number of Years that CT Concentrations Exceeded 1000 µg/L from 1988 to 1993 at Each Grid Node in the Mapped Area

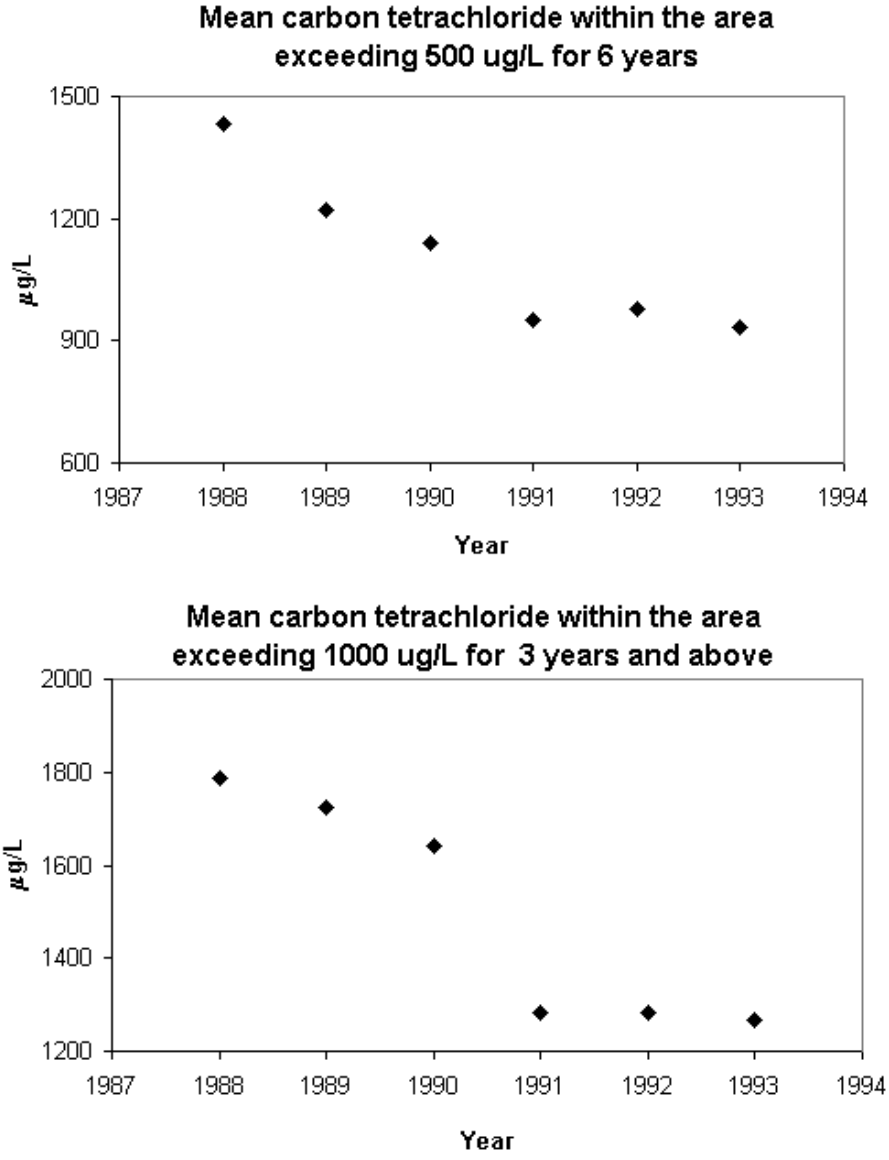

Figure 13. Mean CT Concentration Within the Areas of Exceedence

2.2.2 Three-Dimensional Simulation of Carbon Tetrachloride Distribution

We used geostatistical methods to provide a set of 1000 stochastic simulations of the CT concentration in the study area. The three-dimensional distribution of CT in 1993 was needed to provide initial conditions for the flow and transport modeling. Figure 14 is a map of the well locations used in the study. The wells are labeled as central wells if the concentration at any depth at the location exceeds 1000 µg/L. For most of the wells in the area, information on distribution of CT with depth was not available, and only one measurement was available near

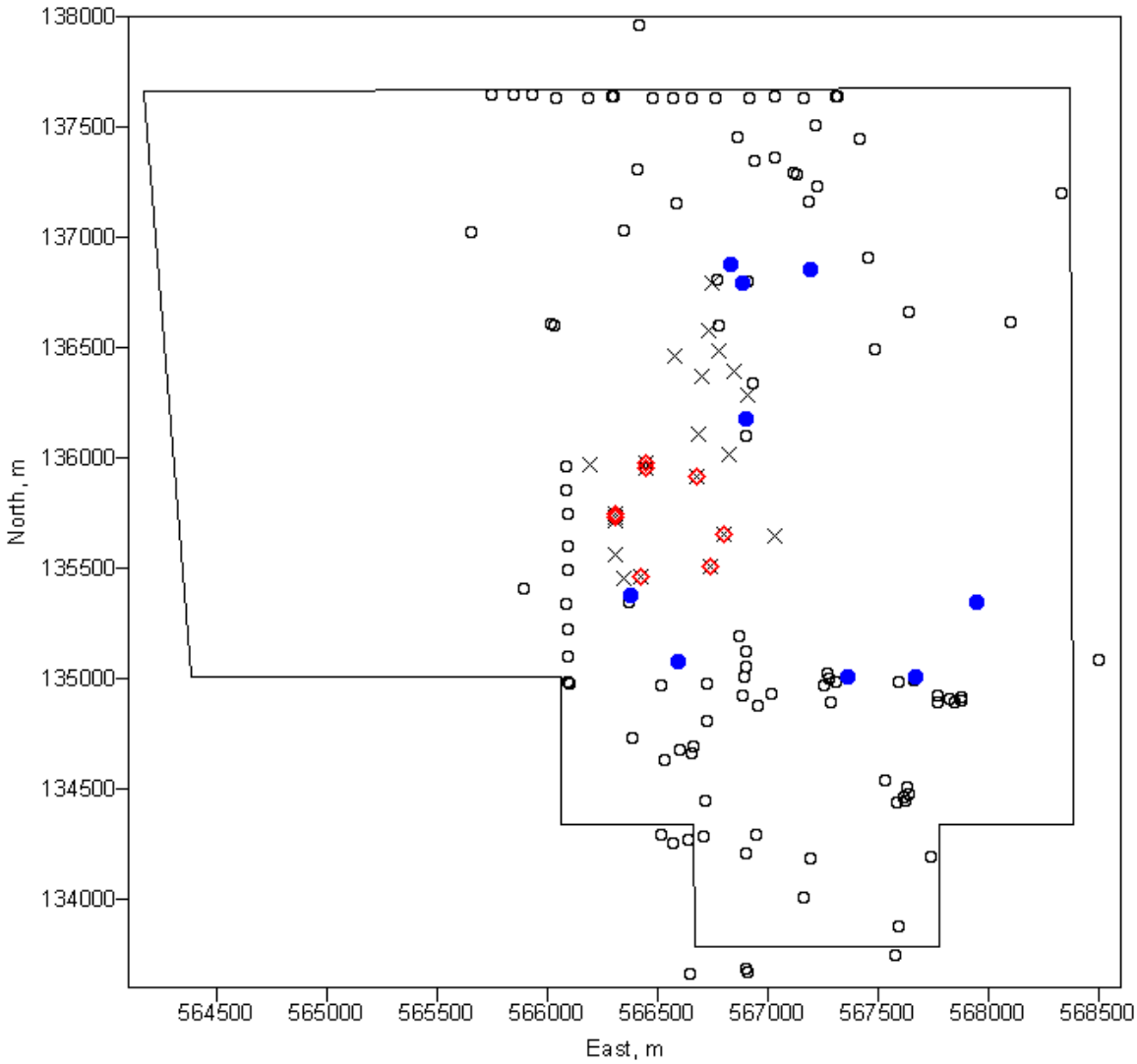

Figure 14. Location Map of CT Concentration Data Used in the Geostatistical Analysis. The 2-D outer and central wells are labeled as blank circles and crosses; the 3-D outer and central wells are labeled as blue solid circles and red diamonds. Central wells have CT concentrations exceeding 1000 μg/L; 3-D wells have CT concentration data at depths greater than 5 m.

the water table. CT concentration data for those 121 wells were taken from the database maintained by the Hanford Groundwater Monitoring Project and were restricted to concentrations measured in 1993. Data for the distribution of CT with depth were taken from Appendix A of Swanson et al. (1999). Only eight central wells and nine outer wells have available three-dimensional CT data in that dataset. Because of the scarcity of deep CT data where the location of the measurement is known with any confidence, it was not possible to restrict the data to 1993 for deep measurements, and the average of all measurements at a given three-dimensional location (i.e., for a given well and depth) were used. Even so, only 58 data points are available where the depth of the measurement was more than 5 m below the water table. The 58 data points are distributed among the 17 locations with deep CT measurements.

Because of the scarcity of deep CT data, there were not enough data to model the vertical spatial distribution using normal geostatistical methods or three-dimensional trend analysis. However, analysis of the available three-dimensional CT data suggests that the concentration profile is not constant with depth but decreases rapidly with depth below the water table (Figure 15). A relationship between measured concentrations near the water table and concentrations at selected depths was developed using well locations where data were available at multiple depths. This relationship was used to estimate concentrations for other depths in the aquifer where only the concentration near the water table was known. An exponential decay function was used for this correlation and fit with a decay distance of 15 m, as plotted in Figure 15 and shown in Eq. (1):

$$C(h) = C_0 * Exp(\frac{-3h}{a}) \quad (1)$$

where $C(h)$ is the concentration at depth h, C_0 is the concentration at the water table (measured), and a is the range of the exponential decay function. The parameters of the decay function were determined using available three-dimensional CT data from the central area plotted with depth for a large number of possible ranges of the decay function, and the root-mean-square error (RMSE) between the predicted and actual values was calculated for each possible range. The minimum RMSE was found for a15-m range and used to extrapolate the measured 1993 near-water-table concentrations to depth within the aquifer for the 121 points where no deep CT data were available. The extrapolation was performed from the water table down to a maximum of 100 meters below the water table at 5-m intervals. No extrapolation was applied to the 17 locations that had three-dimensional CT data. The original three-dimensional CT data and the extrapolated water table concentration data were combined as the conditioning data set for three-dimensional simulations of CT spatial distribution.

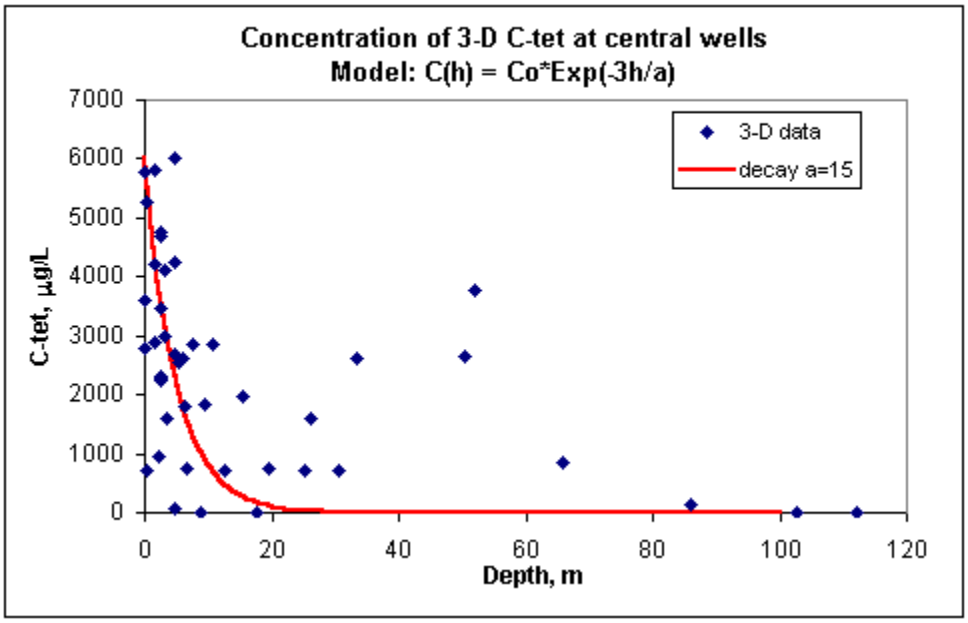

Figure 15. Exponential Decay Function for 3-D CT Data with a Decay Distance of 15m

We used variogram analysis to derive a mathematical model of the spatial continuity of the CT distributions (see Isaaks and Srivastava [1989] for a discussion of variogram analysis and modeling). Before performing the variogram analysis, a normal score transform was applied to the CT data to transform the data to a standard Gaussian distribution, which is required for the sequential Gaussian simulation technique used in the study (Deutsch and Journel 1998). Horizontal variograms were calculated using the GAMV program from the GSLIB software package (Deutsch and Journel 1998). No significant spatial anisotropy was found in the directional semivariograms (not shown). The omnidirectional horizontal semivariogram of the normal scores of the three-dimensional CT is plotted in Figure 16. This semivariogram was based only on the original data and does not include the extrapolated values for the locations that do not have CT measurements below the upper portion of the aquifer. A spherical model (Isaaks and Srivastava 1989) was fit to the horizontal semivariogram with a nugget of 0.07 and a range of 1100 m. There were not sufficient data with depth to calculate a vertical variogram, so the range of spatial continuity in the vertical direction was set to be 1/10 of the horizontal range, or 110 m. The ratio of the horizontal range to the vertical range (10:1) is based on a previous study by Connelly et al. (1992) that found a 10:1 anisotropy ratio between the horizontal and vertical hydraulic conductivity. The sequential Gaussian simulation program, SGSIM, from GSLIB (Deutsch and Journel 1998) was applied to simulate the 3-D spatial distribution of CT concentration. The simulations were conditioned to the combined data and the variogram model parameters. We generated 100 realizations of the 3-D spatial distribution of the CT concentration at a grid node spacing of 50 m by 50 m horizontally and 5 m vertically. A total of 65,280 (51 by 64 by 20) grid nodes were simulated in each realization. Horizontal and vertical displays of the median CT from the first 100 realizations are shown in Figure 17.

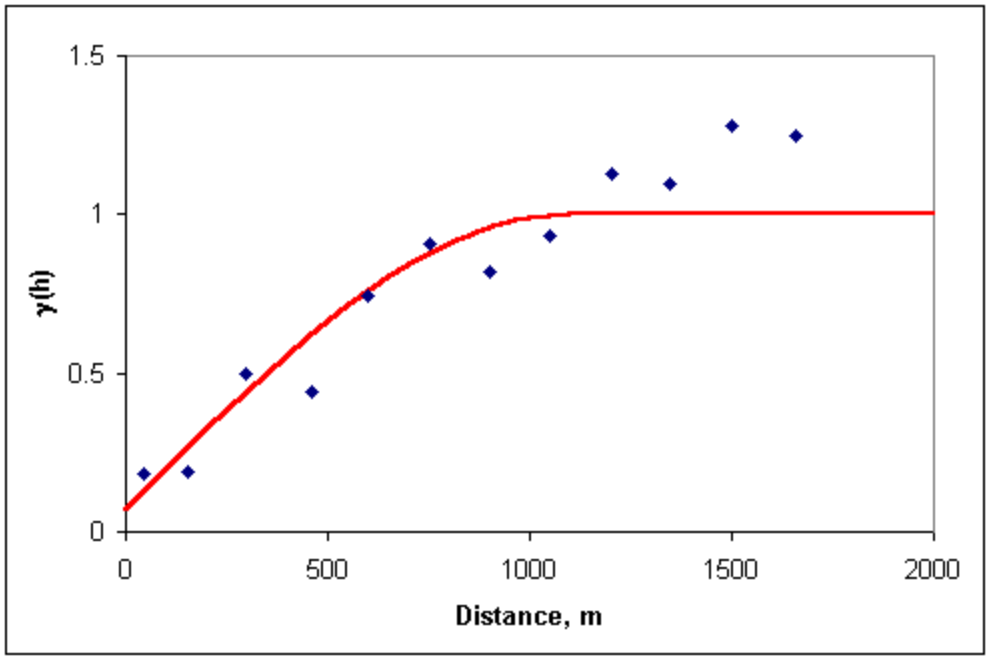

Figure 16. Experimental Horizontal Semivariogram of Normal Scores of Original 3-D CT Data and the Spherical Model with Nugget = 0.07 and Range of 1100 m

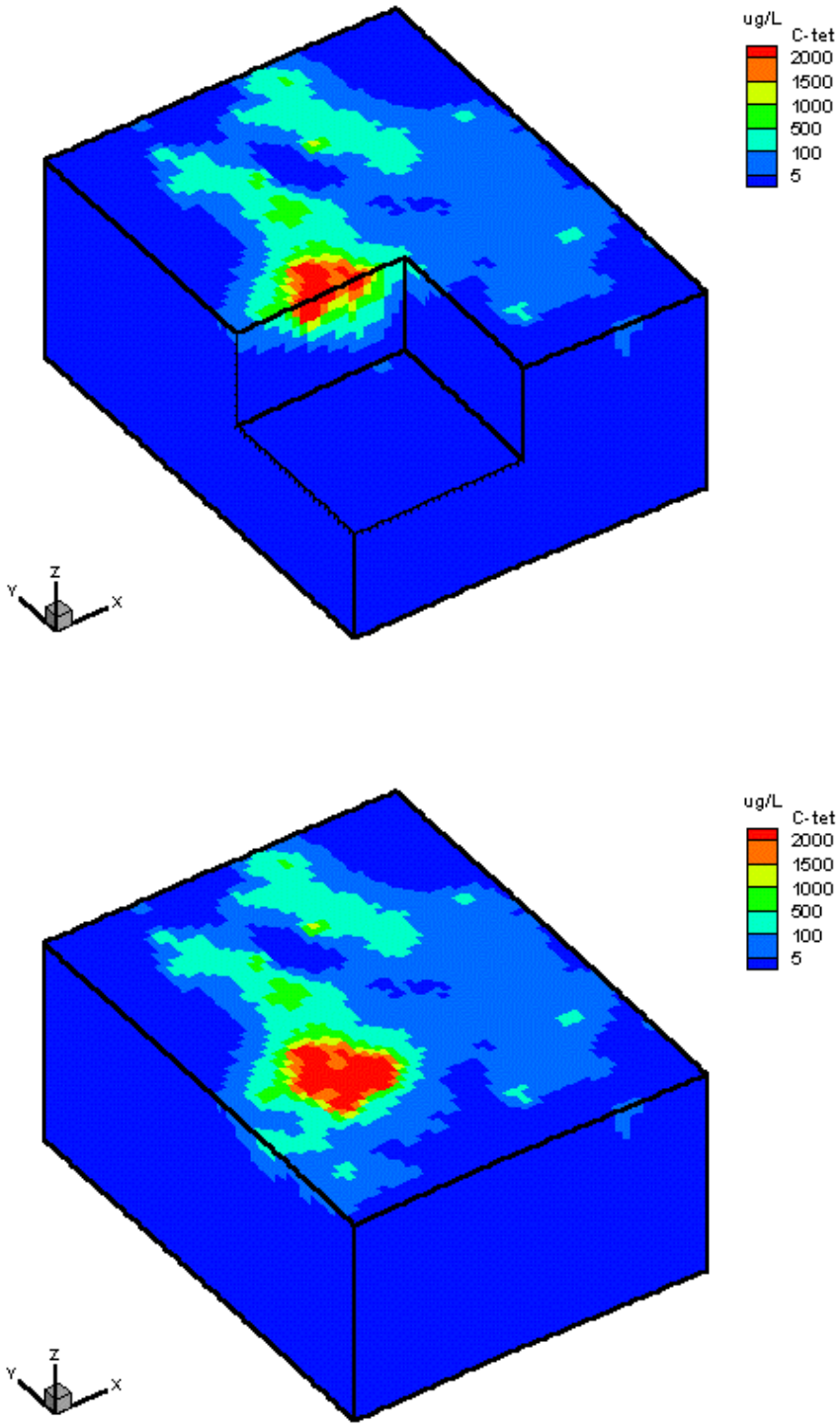

Figure 17. Block Diagrams Showing the Median of the First 100 Geostatistical Simulations of the 3-D CT Distribution

2.2.3 Source Area Determination

To define the major source area of CT mass for the flow and transport modeling, the simulated three-dimensional median values were summed vertically at each 2-D grid node. The summation of the simulated CT concentration was used as a proxy for the inventory of CT mass below each location. Any grid nodes with simulated CT concentrations that were equal to the detection limit of 1.0 μg/L were set to zero before the summation. Based on the 2-D distribution of the CT inventory, the outline of the source area can be defined. We calculated the inventory within several areas of different sizes and determined the proportion of that inventory to the total inventory. From the plot of the proportions of the inventory within different boundaries against the area, the size of the source area was determined such that the proportion of inventory remains nearly constant as the area increases.

The 2-D CT inventory from vertical summation of simulated three-dimensional median CT is shown in Figure 18. Three possible source areas were identified labeled as Blocks 1, 2, and 3. By varying the size of the blocks, the proportions of inventory within different block sizes were plotted against the area of the blocks (Figure 19). As a result, the proportion of CT inventory in

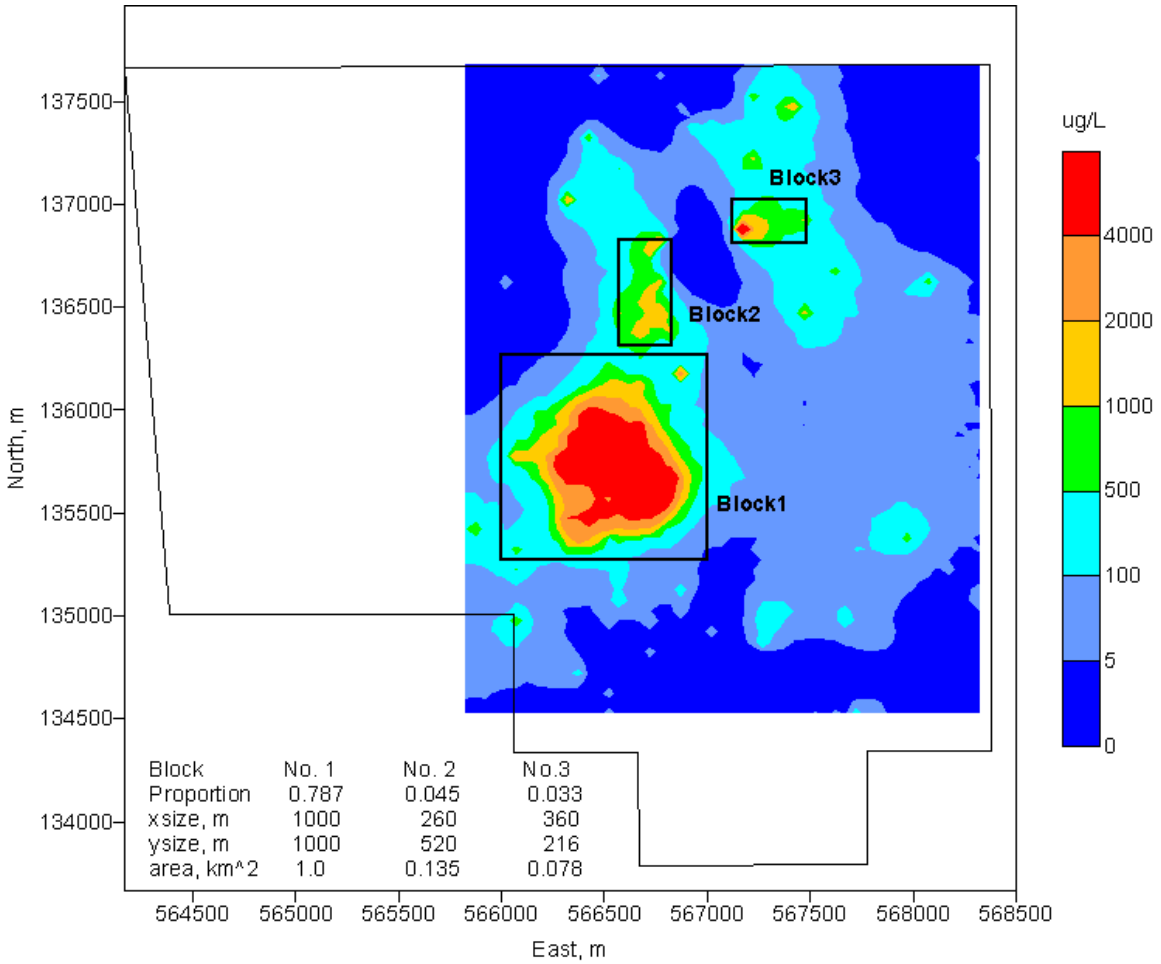

Figure 18. Vertical Summation of Simulated Median CT Concentration and the Proportion of the Concentration Within Three Source Blocks to the Total Summed Concentration

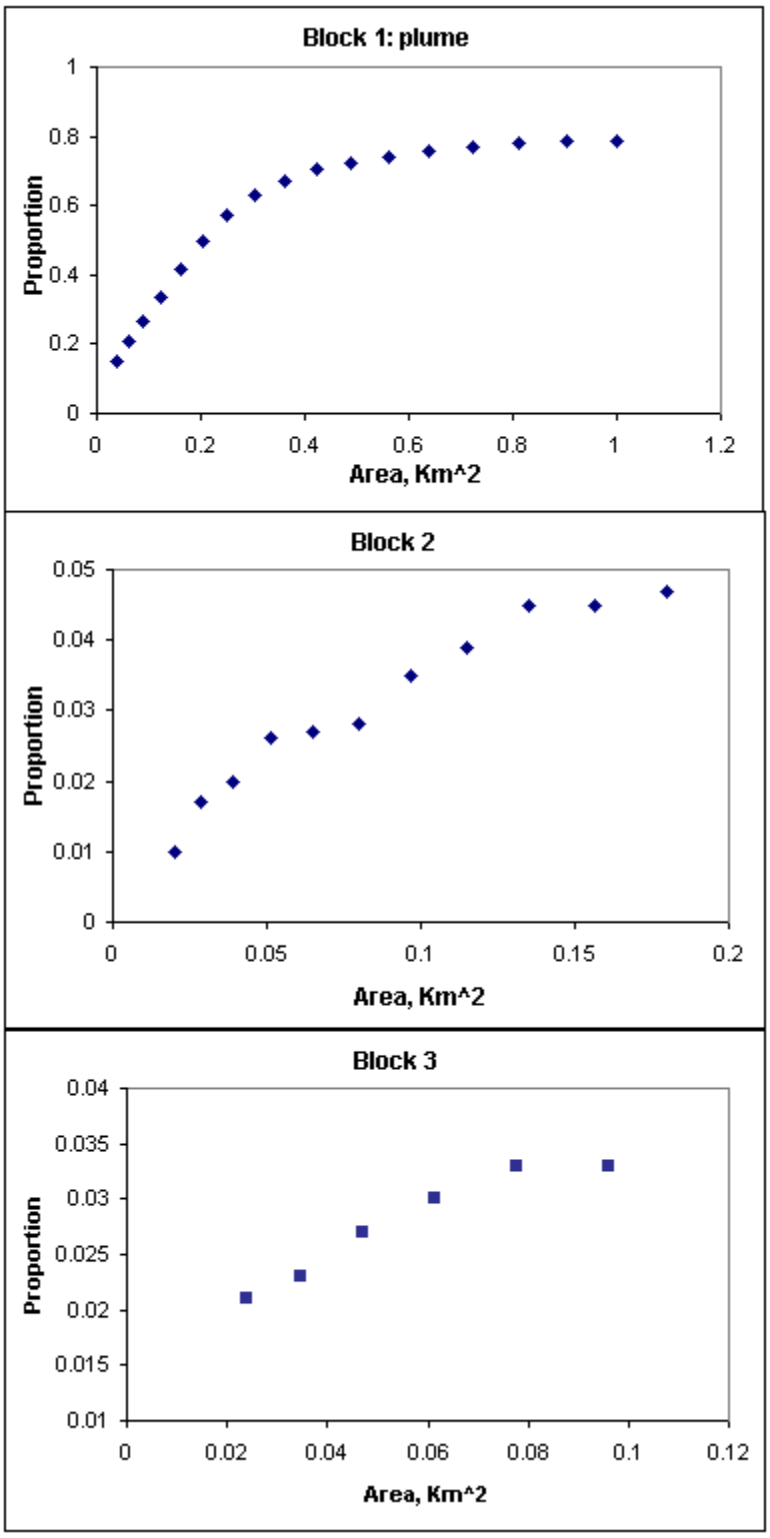

Figure 19. Proportions of Total CT Inventory Within Area of Different Sizes for the Three Blocks

Block 1 remains nearly constant around 0.8 for areas approaching 1.0 km^2. The proportion of CT inventory in Blocks 2 and 3 together remains below 0.1 of the total inventory. Therefore, a 1 by 1-km square box covering Block 1 was defined as the major source area for the flow and transport modeling (see Figure 18).

A set of 1000 realizations of three-dimensional CT concentration was generated using the same parameters that were used in the three-dimensional simulation described above and summarized in Figure 17. The volume and mass of CT that exceeded various thresholds ranging from 250 to 3000 μg/L within the defined source area (i.e., Block 1 in Figure 18) were calculated and are detailed in Section 2.4. Figure 20 is a scatterplot of the volume above the 3000 μg/L threshold for the 1000 realizations.

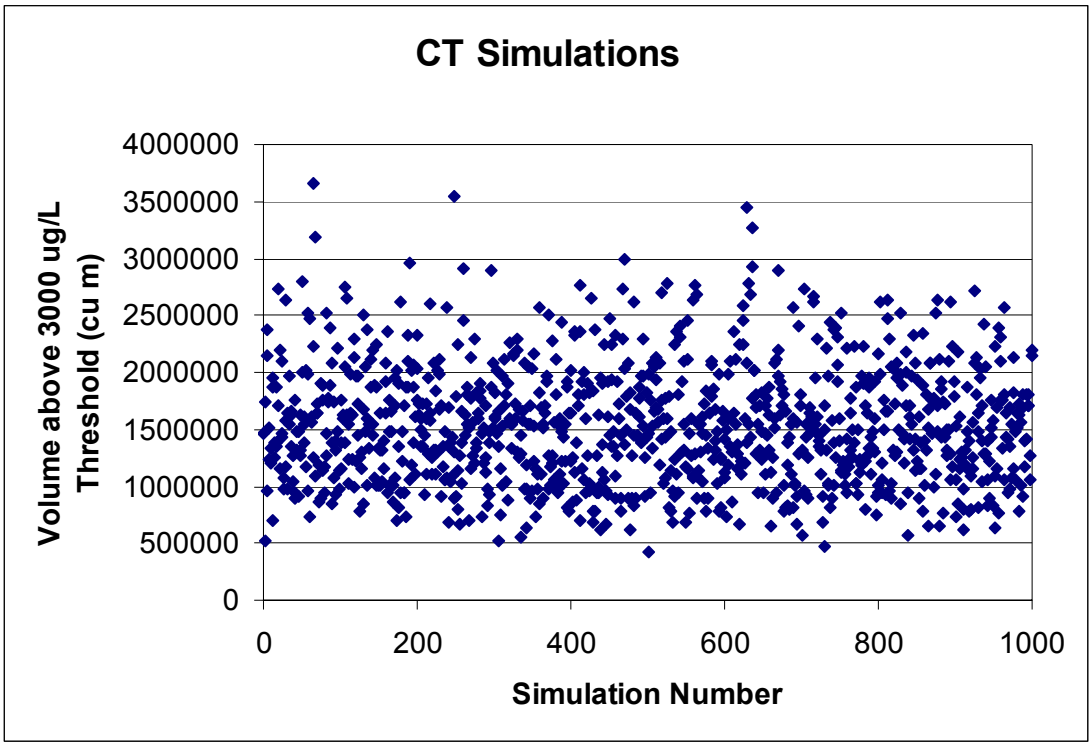

Figure 20. Volume Above a Threshold of 3000 μg/L for 1000 Simulations of the 3-D Distribution of CT

2.3 Parameter Estimates

2.3.1 Contaminant Transformation Rate

A summary of the natural mechanisms that may contribute to CT loss in the Hanford aquifer is provided in this section. Natural attenuation mechanisms were quantified for use as reaction parameters in the reactive transport simulations to estimate the fate of CT in the Hanford aquifer. Additional details about how the natural attenuation mechanisms were quantified are described in the reports include as part of Appendix C.

Three specific natural attenuation mechanisms for CT were determined to have the potential for affecting the fate of CT in the Hanford aquifer: aqueous hydrolysis, biodegradation, and volatilization. Aqueous hydrolysis and biodegradation are discussed in the following sub-sections; volatilization is discussed in Appendix B.

2.3.1.1 Aqueous Hydrolysis of Carbon Tetrachloride

Aqueous hydrolysis rates for CT in deionized water have been measured previously. The most relevant results for determining the loss rate of CT due to aqueous hydrolysis are those by Jeffers (1989, 1996). Based on the literature and personal communication sources listed above, it is likely that aqueous hydrolysis of CT leads to formation of CO_2 and HCl but no hazardous compounds. However, this assertion may need to be confirmed with site-specific testing.

The predicted half-life for CT using the Arrhenius parameters presented in Jeffers et al. (1989, 1996), which were shown to agree with data presented by Fells and Moelwyn-Hughes (1959) (as cited in the compilation by Mabey and Mill [1978]) over a temperature range of 10° to 25°C, is plotted in Figure 21. Included on this plot are the upper- and lower-bound predictions based on the uncertainty in the Arrhenius parameters listed in Jeffers (1996). *This plot suggests that the half-life of CT in the aquifer at Hanford is likely between 36 and 290 years for a temperature of about 19°C (groundwater temperature measured by Newcomer et al. 1995).* The best estimate for the half-life would be about 100 years. W*e have found no data for CT hydrolysis that were collected at ambient temperatures.*

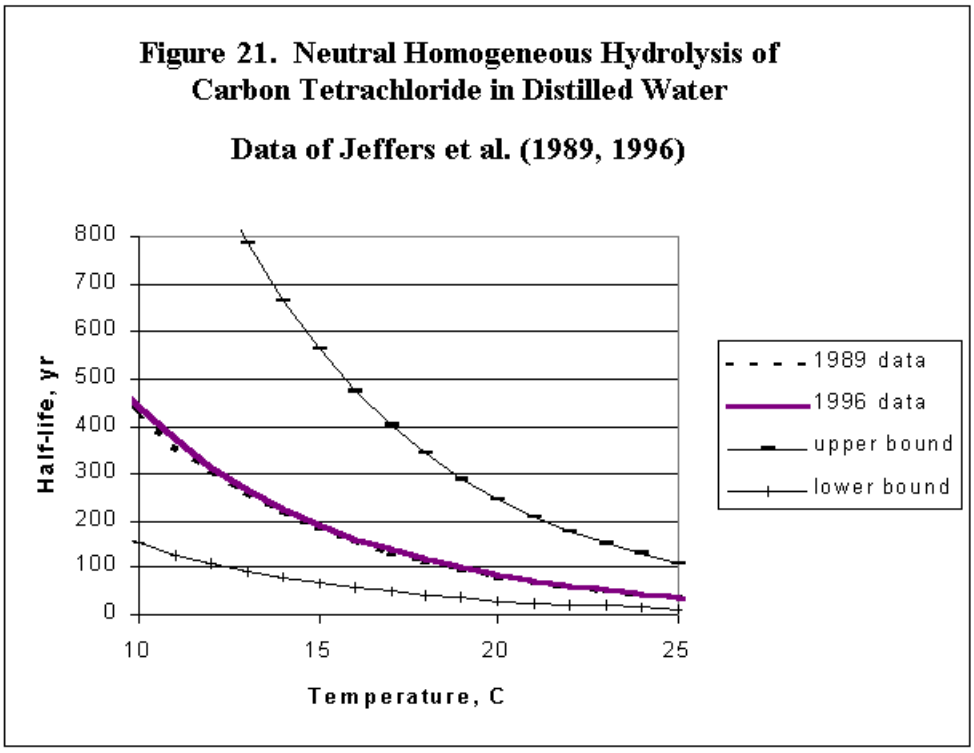

Figure 21. Neutral Homogeneous Hydrolysis of Carbon Tetrachloride in Distilled Water (Jeffers et al. 1989, 1996)

Jeffers et al. (1994) also attempted to measure any possible effect of mineral surfaces on hydrolysis rate and found the rate unchanged even in the presence of sulfide minerals. Other literature on related compounds (Haag and Mill 1988; Deeley et al. 1991) corroborates this result and suggests that the hydrolysis rate determined in distilled ionized water should be a reasonable prediction of the rate of hydrolysis in the subsurface.

2.3.1.2 Biodegradation of Carbon Tetrachloride

The conditions that favor biodegradation of CT are predominantly anaerobic and require the presence of biodegradable organic carbon (Bouwer and McCarty 1983a; Hooker et al. 1998; Cobb and Bouwer 1991; Criddle et al. 1990a). In fact, there have been no published reports of aerobic transformation of CT. For the Hanford CT groundwater plume, which is both aerobic and in contact with sediments that have organic carbon levels below 0.5 wt% (Newcomer et al., 1995), these results suggest *that no biological activity is currently contributing to the natural attenuation of CT.*

2.3.2 Solid/Liquid Partitioning

Solid/liquid partitioning is simulated in the model used for this project using a linear equilibrium partitioning coefficient, K_d. This section discusses how estimates of this parameter were determined for use in the model.

Solid/liquid partitioning is primarily a sorption-desorption process governed by the solubility of the particular chemical in water and its affinity to the solid phase. In high-carbon soils, it has been demonstrated that the amount of nonionic organic chemicals sorbed varies from soil to soil and that such variations are primarily caused by the organic content of the soil (Jeng et al. 1992; Lyman et al. 1990; Bishop et al. 1989). However, mineral-driven sorption becomes important as organic carbon content diminishes to below 0.1% (Kile et al. 1995). At levels of organic carbon above 0.1%, the normalized sorption coefficient (K_{oc}) represents an important parameter that can be used to estimate the soil/water equilibrium partition coefficient (K_d) with this equation:

$$K_d = f_{oc} \times K_{oc} \tag{2}$$

where f_{oc} is the mass fraction of organic carbon (mass-oc/mass-soil) in the soil and K_d is the soil/water equilibrium partition coefficient [(mg/kg-soil)/(mg/L)]. It is important to note that at levels of organic carbon below approximately 0.1%, this relationship will likely *underestimate* K_d because it neglects mineral-driven sorption (Stephanatos et al. 1991). In these cases, the real quantity of attached material will be higher than those predicted by Equation (2).

Many researchers have developed methods for estimating K_{oc} based on measurable properties such as the octanol/water partition coefficient (K_{ow}). The two most applicable of these common correlations are given in the following equations (Lyman et al. 1990; Bishop et al. 1989):

$$\log(K_{oc}) = 3.64 - 0.55 \times \log(S) \tag{3}$$

$$\log(K_{oc}) = 4.277 - 0.557 \times \log(S_m) \quad (4)$$

where S is the water solubility of the organic compound (mg/L), and S_m is the molar water solubility of the organic compound (μmol/L). Table 1 lists the values of K_{oc} estimated by Equations (3) and (4) for chlorinated methane. The estimate of K_{oc} can then be used to estimate the K_d for an aquifer if the f_{oc} is estimated or measured for the specific aquifer.

Table 1. Estimated K_{oc} Values for Chloromethanes

Compound	Koc (μg/g-oc)/(μg/mL)	
	Eq. (2)	Eq. (5)
CT	110.48	161.11
CF	30.72	38.26
DCM	23.84	24.49
CM	35.33	27.29

An estimate for the range and most probable value for K_d of each chloromethane at Hanford was derived from literature data. Equation (1) was used to calculate K_d based on reported or calculated data for f_{oc} and K_{oc}. However, *the predicted K_d from Equation (1) for Hanford may be an underestimate* because the organic carbon fraction of the Hanford aquifer sediments are very close to the lower limit of applicability for this correlation. This potential to underpredict sorption is demonstrated by the fact that Zhao et al. (1999) report a measured K_d value of 0.39 for CT in a soil with an organic carbon content below their detection limit of 0.03%. In contrast, the predicted K_d for CT in a soil with an organic carbon content of 0.03% ranges from 0.015 to 0.081 (L/kg) based on the values of K_{oc} reported in Tables 1 and 2.

The estimated range of K_d values for CT was determined by examining the range of calculated and reported K_d values from the literature. Table 3 reports the maximum values of K_d that are predicted from Equation (1) using the K_{oc} values reported in Table 1 and the highest organic carbon fraction reported in Table 4 (0.0052). Maximum values for K_d determined in field studies are listed in Table 5. These values are based on the highest organic carbon fraction reported in Table 4 (0.0052) and K_{oc} (Table 2) values from the individual studies. For CT, K_d values calculated using the f_{oc} and K_{oc} values measured in each study are shown in parentheses next to the maximum value. The maximum value of K_d selected from the information in Table 3 is 0.83 L/kg. There is one K_d value reported in Table 5 that is higher than the selected maximum, but the study conditions and results suggest that a K_d calculated using the measured K_{oc} and an f_{oc} value from another source would not be reasonable.

Tables 6 and 7 provide minimum K_d estimates using an f_{oc} of 0.00027, the lowest average f_{oc} value determined from the data of Newcomer et al. (1995). Values in Table 6 are calculated using the K_{oc} values reported in Table 1; values in Table 7 are calculated from field data using the K_{oc} values from Table 2. Another estimate for the minimum K_d was obtained by applying Equation (2) with the lowest average f_{oc} value determined from the data reported by Newcomer et al. (1995) and a K_{oc} value of 60. As shown in Table 4, the low average of measured f_{oc} corresponds to an organic fraction of 0.00027 (0.027%). The K_{oc} value (60 μg/g-oc/μg/mL) was selected from an extensive survey of soils conducted by Kile et al. (1995) showing relatively

Table 2. Published Values of Koc for Chloromethanes

Reference	Koc (µg/g-oc)/(µg/mL)				Comment
	CT	CF	DCM	CM	
Jeng et al. 1992	122	76.8	47.4	ND[a]	Data are a compilation of information measured by others
Walton et al. 1992	143.6 ± 32.1[b]	37.4 ± 8.6 [b]	ND	ND	Silty loam with an organic carbon content of 1.5%
Walton et al. 1992	48.9 ± 16.2[b]	30.0± 2.6 [b]	ND	ND	Sandy loam with an organic carbon content of 0.7%
Duffy et al. 1997	55.0± 1.0[b]	ND	ND	ND	Soil with an organic carbon content of 1.5%
Duffy et al. 1997	77.6 ± 1.3[b]	ND	ND	ND	Soil with an organic carbon content of 0.53%
Duffy et al. 1997	269 ± 2[b]	ND	ND	ND	Soil with an organic carbon content of 0.14%
Peng and Dural 1998	121.9	153.5	ND	ND	Measured with Missouri soil.
Peng and Dural 1998	150.4	196.9	ND	ND	Measured with California soil
Peng and Dural 1998	121.0	190.0	ND	ND	Measured with Florida Soil
Kile et al. 1999	59.1 ± 7.5[b]	ND	ND	ND	Average of 17 near surface soils with organic carbon ranging from 1.1% to 5.6%
Kile et al. 1999	106.7 ± 13.44[b]	ND	ND	ND	Average of nine river bottom sediments with organic carbon ranging from 1.4% to 5.6%
Kile et al. 1995	60 ± 7[b]	ND	ND	ND	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%
Kile et al. 1995	102 ± 11[b]	ND	ND	ND	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%

(a) ND denotes no data reported for this compound.
(b) Value reported as an average (± standard deviation).

Table 3. Maximum Estimates for the Solid/Liquid Equilibrium Partition Coefficient Based on K_{oc} Data reported in Table 1 and the Maximum f_{oc} in Table 4

Compound	K_d (µg/g-soil)/(µg/mL)	
	Equation 2	Equation 5
CT	0.57	0.83
CF	0.16	0.20
DCM	0.12	0.13
CM	0.18	0.14

Table 4. Organic Carbon Fraction Data for the Hanford Aquifer (Ringold Formation)

Location	Depth BGS (m)	Max f_{oc}	Min f_{oc}	Avg±Stdev	Reference
299-w11-30 (four samples)	67 to 85	5.15×10^{-3}	0	$1.5\times10^{-3} \pm 2.4\times10^{-3}$	Newcomer et al. 1995
299-w11-32 (five samples)	74 to 77	7.6×10^{-4}	0	$2.7\times10^{-4} \pm 2.9\times10^{-4}$	Newcomer et al. 1995
Quoted value for Hanford, no supporting data	NA[a]	1.00×10^{-3}	ND[b]	NA	WHC 1990
299-w15-31	40 to 43	1.10×10^{-3}	ND	NA	Ford 1996

(a) NA denotes the parameter is not applicable.
(b) ND denotes no data reported for this compound.

Table 5. Maximum Estimates for the Solid/Liquid Equilibrium Partition Coefficient Based on K_{oc} Data Reported in Table 2 and the Maximum f_{oc} in Table 4

Reference	K_d (µg/g-soil)/(µg/mL)				Comment
	CT	CF	DCM	CM	
Jeng et al. 1992	0.63	0.40	0.24	ND[a]	Data are a compilation of information measured by others
Walton et al. 1992	0.74 ± 0.17 (2.1)	0.19 ±0.04	ND	ND	Silty loam with an organic carbon content of 1.5%
Walton et al. 1992	0.25 ± 0.08 (0.34)	0.15 ± 0.01	ND	ND	Sandy loam with an organic carbon content of 0.7%
Duffy et al. 1997	0.28 ± 0.01 (0.83)	ND	ND	ND	Soil with an organic carbon content of 1.5%
Duffy et al. 1997	0.40 ± 0.01 (0.41)	ND	ND	ND	Soil with an organic carbon content of 0.53%
Duffy et al. 1997	1.4 ± 0.01 (0.38)	ND	ND	ND	Soil with an organic carbon content of 0.14%
Peng and Dural 1998	0.63	0.79	ND	ND	Measured with Missouri soil
Peng and Dural 1998	0.77	1.0	ND	ND	Measured with California soil
Peng and Dural 1998	0.62	0.98	ND	ND	Measured with Florida soil
Kile et al. 1999	0.30 ± 0.04[b]	ND	ND	ND	Average of 17 near surface soils.
Kile et al. 1999	0.55 ± 0.07[b]	ND	ND	ND	Average of nine river bottom sediments.
Kile et al. 1995	0.31 ± 0.04[b]	ND	ND	ND	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%
Kile et al. 1995	0.53 ± 0.06[b]	ND	ND	ND	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%.

(a) ND denotes no data was reported for this compound.
(b) Value reported as an average (± standard deviation).

Table 6. Minimum Estimates for the Solid/Liquid Equilibrium Partition Coefficient Based on K_{oc} Data Reported in Table 1 and an f_{oc} of 0.00027

Compound	K_d (µg/g-soil)/(µg/mL) Equation 2	Equation 5
CT	2.99×10^{-2}	4.35×10^{-2}
CF	8.39×10^{-3}	1.05×10^{-2}
DCM	6.29×10^{-3}	6.82×10^{-3}
CM	9.44×10^{-3}	7.34×10^{-3}

consistent K_{oc} values over a wide range of soil types and organic carbon content. The minimum K_d value calculated using this technique is 0.016 L/kg. This value is consistent with many of the lower K_d values listed in Table 7 and was selected as the minimum K_d value for use at Hanford.

Table 7. Minimum Estimates for the Solid/Liquid Equilibrium Partition Coefficient Based on K_{oc} Data Reported in Table 2 and an f_{oc} of 0.00027

Reference	K_d (µg/g-soil)/(µg/mL) CT[(a)]	CF[(a)]	DCM	CM	Comment
Jeng et al. 1992	0.033	0.021 ± 0.002	0.013	ND[(b)]	Data are a compilation of information measured by others
Walton et al. 1992	0.039 ± 0.009	0.010 ± 0.001	ND	ND	Silty loam with an organic carbon content of 1.5%
Walton et al. 1992	0.013 ± 0.004	0.0079	ND	ND	Sandy loam with an organic carbon content of 0.7%
Duffy et al. 1997	0.015 ± 0.003	ND	ND	ND	Soil with an organic carbon content of 1.5%
Duffy et al. 1997	0.021 ± 0.003	ND	ND	ND	Soil with an organic carbon content of 0.53%
Duffy et al. 1997	0.073 ± 0.005	ND	ND	ND	Soil with an organic carbon content of 0.14%
Peng and Dural 1998	0.033	0.041	ND	ND	Measured with Missouri soil
Peng and Dural 1998	0.040	0.052	ND	ND	Measured with California soil
Peng and Dural 1998	0.033	0.051	ND	ND	Measured with Florida soil
Kile et al. 1999	0.016 ± 0.002	ND	ND	ND	Average of 17 near surface soils
Kile et al. 1999	0.029 ± 0.004	ND	ND	ND	Average of 9 river bottom sediments
Kile et al. 1995	0.016 ± 0.002	ND	ND	ND	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%
Kile et al. 1995	0.028 ± 0.003	ND	ND	ND	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%

(a) When possible, values are reported as an average (± standard deviation).
(b) ND denotes no data reported for this compound.

The selected range of values of K_d for CT is 0.016 to 0.83 L/kg. The most probable value within this range was selected as 0.12 L/kg. This value corresponds a K_d calculated using a K_{oc} value measured from an extensive survey of soils conducted by Kile et al. (1995) showing relatively consistent K_{oc} values over a wide range of soil types and organic carbon content. The f_{oc} value used in the calculation of most probable K_d was 0.002. This value for f_{oc} is the average of the maximum f_{oc} values reported in Table 4 and is considered to be a reasonable compromise of f_{oc} information for the Hanford Site.

2.4 Probability Distributions of Modeling Parameters

In addition to the geostatistical simulations of the CT source volumes that we just described, realizations of several other modeling parameters were needed for the Monte Carlo flow and transport study. Two of those parameters, the K_d for CT and the abiotic degradation rate of CT, were included in the parameter estimation portion of this study (see Section 2.3). As part of parameter estimation, the minimum, maximum, and most likely values of each parameter were identified and used to characterize the probability distributions of those two variables (Table 8). In each case, a triangular probability distribution was assumed to fit the distribution. Estimated characteristics of the probability distribution for the porosity of the aquifer in the 200 West Area were identified by F. Spane (PNNL), based on the assumption that the aquifer is dominated by Ringold gravels. Based on that input, the distribution of porosity in those sediments was assumed to be uniform with a minimum of 5% and a maximum of 15%. The remaining parameter required for the modeling was the longitudinal dispersivity. The characteristics of the probability distribution for that parameter were supplied by C. Cole (PNNL), and were assumed to be a triangular distribution with a minimum of 10 m, maximum of 100 m, with a most probable value of 30 m. Table 9 summarizes the assumed characteristics of the probability distributions of the 4 modeling parameters. These probability distributions were then sampled using the program STATGEN, developed by Paul Eslinger (PNNL). A suite of 1000 realizations of each parameter were generated by the program, assuming that the four parameters are independent of one another. Figure 21 displays histograms of the simulated values for each of the four parameters.

Table 8 shows the volume and mass exceeding cutoff levels within the source area. The table also shows the proportions of mass exceeding the cutoff levels within the source area to the total mass within the identified source area and the proportions of mass exceeding the cutoff levels within the source area to the entire simulated map area. Results shown are for the first three of 1000 simulations generated.

Table 8. Cutoff Levels and Volume, Mass, and Proportions

Simulation No.	Cutoff Level = 500 Φg/L				Cutoff Level = 1000 Φg/L				Cutoff Level = 2000 Φg/L			
	Vol (>CT)	Mass (>CT)	Prop(box)	Prop(all)	Vol(>CT)	Mass(>CT)	Prop(box)	Prop(all)	Vol(>CT)	Mass(>CT)	Prop(box)	Prop(all)
1	6887500	14447	0.92	0.44	4500000	12756	0.81	0.39	3312500	11013	0.70	0.34
2	4762500	8258	0.88	0.29	2975000	7031	0.75	0.24	1750000	5238	0.56	0.18
3	8437500	17836	0.94	0.49	5775000	15962	0.84	0.43	4125000	13567	0.71	0.37

Table 9. Modeling Parameter Probability Distributions

Parameter	Distribution Type	Minimum	Maximum	Most Probable
CT K_d (L/kg)	Triangular	0.016	0.83	0.12
CT K_a (per day)	Triangular	6.50E-06	5.30E-05	1.90E-05
Porosity	Uniform	5%	15%	NA[(a)]
Dispersity (m)	Triangular	10	100	30
(a) NA equals not applicable.				

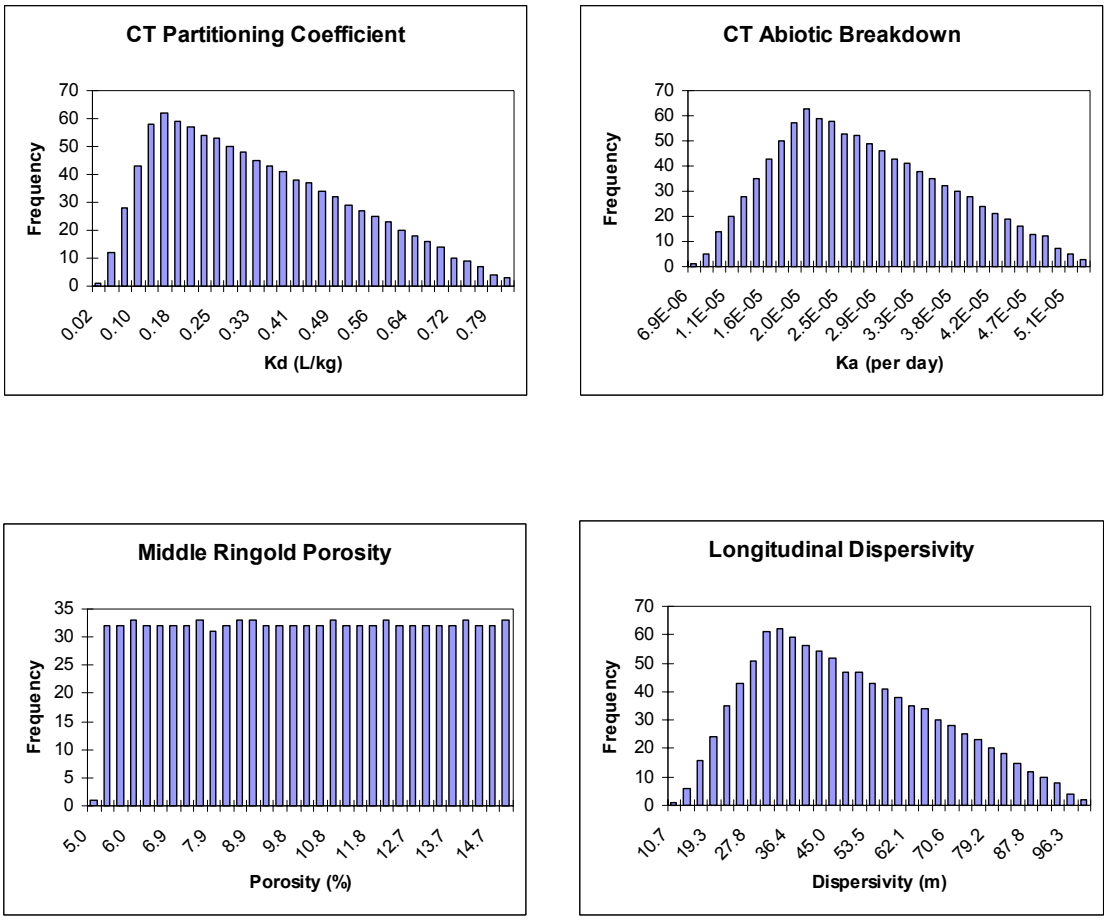

Figure 22. Histograms of 1000 Simulated Values of Each of the Four Input Parameters Used in the Flow and Transport Modeling

3.0 Results

The results presented in this section show frequency distributions of the required source cleanup percentages for the Monte Carlo simulations (i.e., variations of transport parameters K_d, K_a, porosity, dispersivity, and cross-sectional area) at the mean Darcy velocity and a 3000 μg/L inlet-source concentration. The required source cleanup percentage for each simulation was calculated from the ratio of the maximum concentration at the compliance boundary to the selected compliance concentration. This calculation assumes that reducing the source quantity by this percentage would decrease the source concentration by this same percentage; thus, the concentration at the compliance boundary would decrease by this percentage as well. The basis of this assumption is that by removing source within a portion of the defined source area volume so that this "cleaned up" portion now contributes only clean water within the source, the source is diluted.

Two boundary-concentration levels were used in the simulations: the 5-μg/L regulatory limit, and a higher 50-μg/L concentration used to account for three-dimensional dispersion. The probability distributions of source cleanup required as a function of source inventory were used to identify the likely limits of remediation; stochastic parameters were subjected to regression analysis to determine their relative influence on simulation outputs and identify variables needing further characterization to improve modeling accuracy.

3.1 Modeling Results and Discussion

The results of the 1000 Monte Carlo simulations using the van Genuchten model provide a basis for determining the portion of the source area needing remediation; the simulations also provide a method of gauging sensitivity of predicted contaminant transport to variations in individual parameters. (Simulation results are provided in Appendix D.) The break point between peak contaminant-concentration levels at 1% and 10% remaining source inventory seen in the determinant-parameter variation simulations is repeated in the Monte Carlo simulations. With more accurate parameter estimates and additional site characterization, the path forward to necessary site remediation can be mapped using improved modeling techniques and source-inventory quantification technologies.

The one-dimensional model used for this study simulates the transport of CT from the source area to the compliance boundary assuming a steady-state, one-dimensional flow field. Thus the model is conservative in that CT travels in a direct path from the source area toward the compliance boundary. Based on the current and projected groundwater flow conditions in the 200 West Area, an assumption of uniform steady-state flow in one direction is conservative but reasonable. However, the one-dimensional van Genuchten model did not take into account transverse or vertical dispersivity and the additional reduction in contaminant-concentration that would occur with this additional plume spreading (i.e., increased vertical and lateral dispersion would result in the CT plume contacting more volume of the aquifer and therefore more sorption sites, delaying migration and allowing more time for hydrolysis to occur).

To estimate three-dimensional dispersion effects on simulation outputs, transverse and vertical dispersivities were modeled as 20% and 2% (respectively) of longitudinal dispersion. Simulations including transverse and vertical dispersion/dilution were conducted to determine how the one-dimension modeling results could be interpreted for estimating the effect of a three-dimensional flow field (see Figure 23). In 80% of these simulations, the concentration at the compliance boundary was reduced by a factor of greater than 5. In about 20% of these simulations, the concentration was reduced by a factor of greater than 10 with a maximum reduction of a factor of about 30. The results of these simulations were used to postulate that interpretations of one-dimensional modeling results using a 50-µg/L boundary concentration limit provided a ptd estimate of CT transport at the higher end of the observed concentration reduction factor. This ptd estimate was used to provide a reasonable bound for the possible three-dimensional flow effects during transport of CT from the source area to the compliance boundary. CT concentration limits of 5 µg/L and 50 µg/L at the compliance boundary are used in the report so that interpretations of the results under both conservative one-dimensional flow conditions and reasonable estimate of three-dimensional flow conditions (factor of 10 change due to three-dimensional flow) can be considered. Note that the 50-µg/L compliance boundary concentration limit is solely a calculational construct to give an approximation of a three-dimensional model, not a proposed change in the actual 5-µg/L compliance concentration requirement. Selection of the 50-µg/L compliance boundary concentration is based on using a factor of 10 correlation between one- and three-dimensional transport that was calculated based on the components of dispersion that are not accounted for in the one-dimensional model.

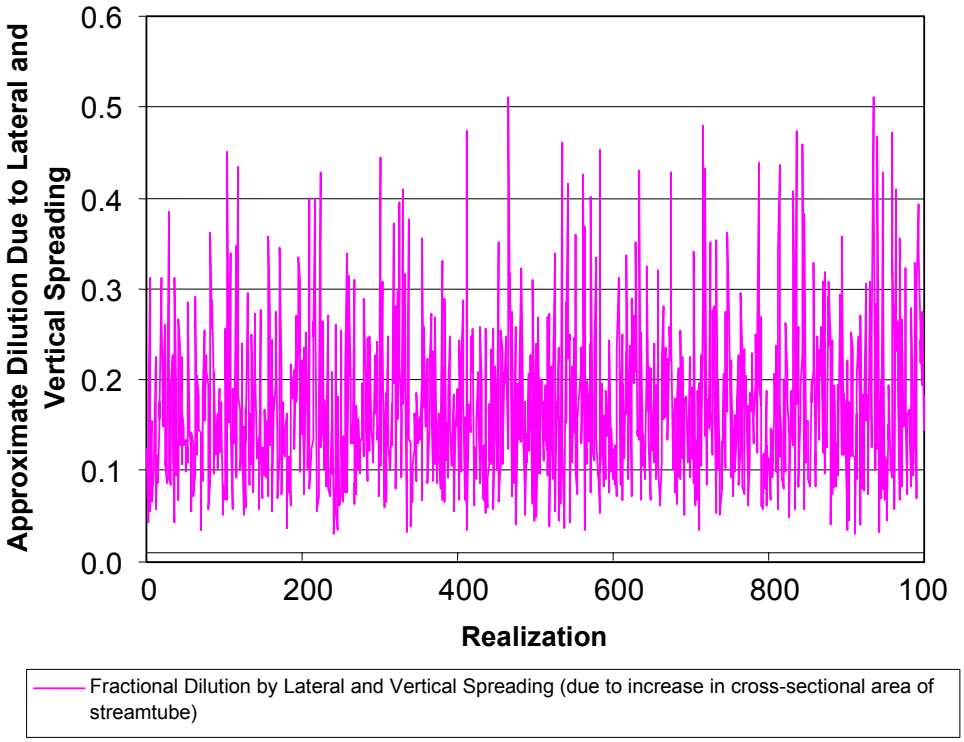

Figure 23. Estimated Additional Dilution due to Transverse and Vertical Spreading (3-D effect)

The simulations conducted for this study examine the migration of CT from the source area to the compliance boundary; the simulations did not examine migration of the existing dispersed plume and did not attempt to match the historical disposal and migration of CT (i.e., did not attempt to reproduce the current CT plume distribution).

The results of the Monte Carlo simulations were charted as histograms showing frequency distributions for 1000 modeling realizations using stochastic parameters. Simulation outputs include

- required source cleanup percentage needed to meet compliance regulations
- source inlet rate
- compliance boundary concentration
- compliance boundary flux
- compliance boundary arrival times
- source duration
- arrival time of peak concentration
- concentration as a function of distance from the source.

The results considered here are the source cleanup percentages presented as realizations of the base-case deterministic parameters (mean Darcy velocity, 3000 μg/L inlet source concentration) with the variable deterministic parameter being the fraction of base inventory remaining.

Results for the required source cleanup frequency distribution for 65% of the source inventory remaining shows that more than 470 simulations out of 1000 require more than 70% source cleanup for the ptd simulation using the 50-μg/L ptd compliance boundary concentration. The conservative one-dimensional result (5-μg/L ptd compliance boundary concentration) shows that about 850 simulations out of 1000 require more than 70% source cleanup (see Figure 24). The

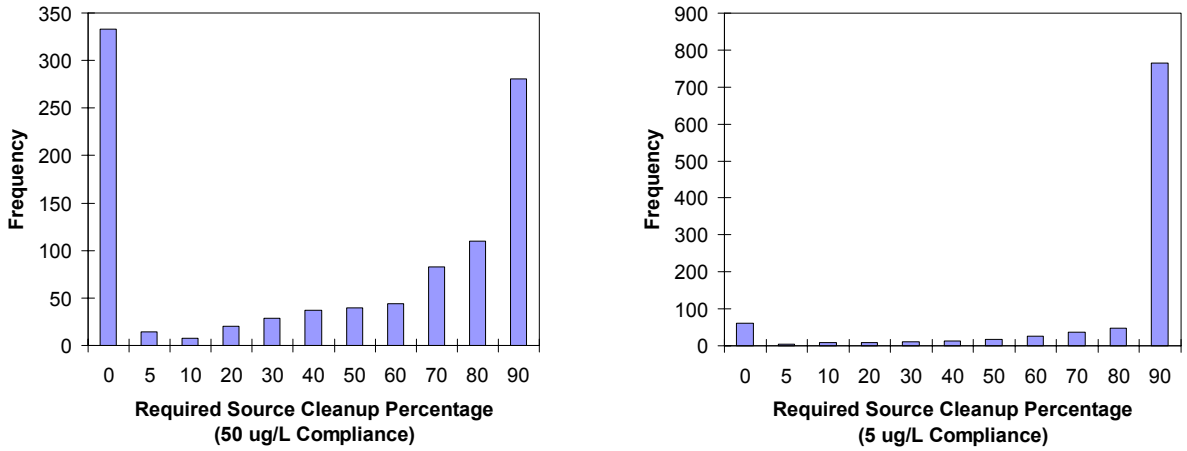

Figure 24. 65% Source Inventory—Mean Velocity, 3000 μg/L

results also show that more than 300 and more than 50 of the simulations required less than 5% source cleanup for the 50-μg /L and 5-μg /L compliance concentrations, respectively.

The required source cleanup percentage for 30% of the source inventory remaining shows approximately the same results as the 65% case. The required source cleanup frequency distribution for 30% of source inventory remaining shows more than 470 simulations out of 1000 require greater than 70% source cleanup for the ptd simulation using the 50-μg/L ptd compliance boundary concentration; the conservative one-dimensional result (5-μg/L ptd compliance boundary concentration) shows about 850 simulations out of 1000 require greater than 70% source cleanup (Figure 25). The results also show that more than 300 and more than 50 of the simulations required less than 5% source cleanup for the 50-μg /L and 5-μg /L compliance concentrations, respectively.

There is also little change in required source cleanup percentage from the former cases to the 10% source inventory remaining. The required source cleanup frequency distribution for 10% of source inventory remaining shows more than 420 simulations out of 1000 require greater than 70% source cleanup for the ptd simulation using the 50-μg/L ptd compliance boundary concentration; the conservative one-dimensional result (5-μg/L ptd compliance boundary concentration) shows more than 800 simulations out of 1000 require greater than 70% source cleanup (see Figure 26). The results also show that more than 375 and about 100 of the simulations required less than 5% source cleanup for the 50-μg /L and 5-μg /L compliance concentrations, respectively.

At 1% source inventory remaining, a dramatic shift in the distributions is observed. The required source cleanup frequency distribution for 1% of source inventory remaining shows about 150 simulations out of 1000 require greater than 70% source cleanup for the ptd simulation using the 50-μg/L ptd compliance boundary concentration; the conservative one-dimensional result (5-μg/L ptd compliance boundary concentration) shows about 550 simulations out of 1000 require greater than 70% source cleanup (Figure 27). The results also show that more than 700 and more than 300 of the simulations required less than 5% source cleanup for the 50-μg /L and 5-μg /L compliance concentrations, respectively.

The breakpoint for dramatic change in the cleanup percentages clearly lies between 1% and 10% of source inventory remaining. The input parameters in the simulation that had the greatest effect on the results appear to be porosity, K_d and K_a; a multiple linear regression analysis of log maximum concentration at the boundary versus porosity, K_d and K_a gave standardized regression coefficients of -0.145, -0.785, and -0.504, respectively, at 1% inventory remaining and -0.187, -0.691, and -0.601, respectively, at 10% inventory remaining (see Table 10).

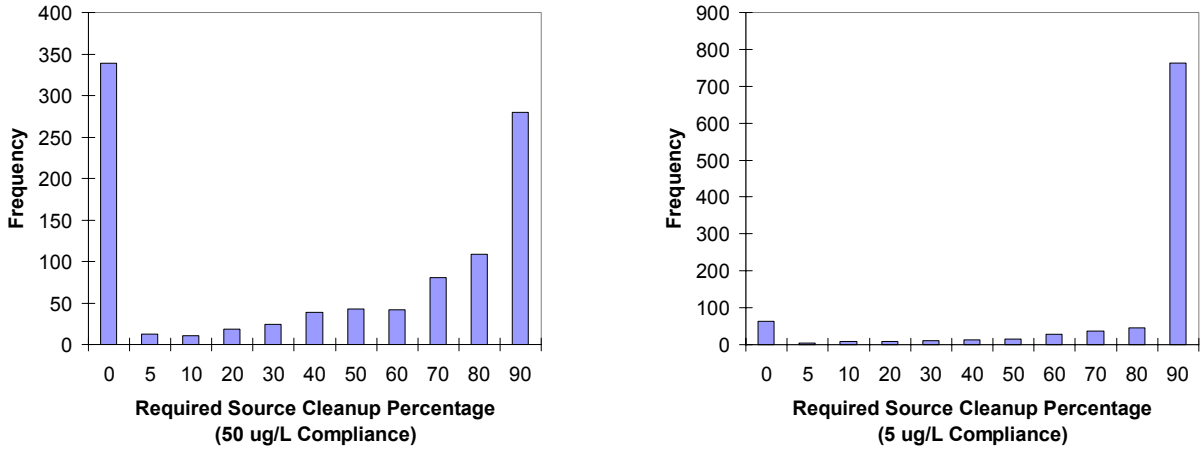

Figure 25. 30% Source Inventory—Mean Velocity, 3000 μg/L

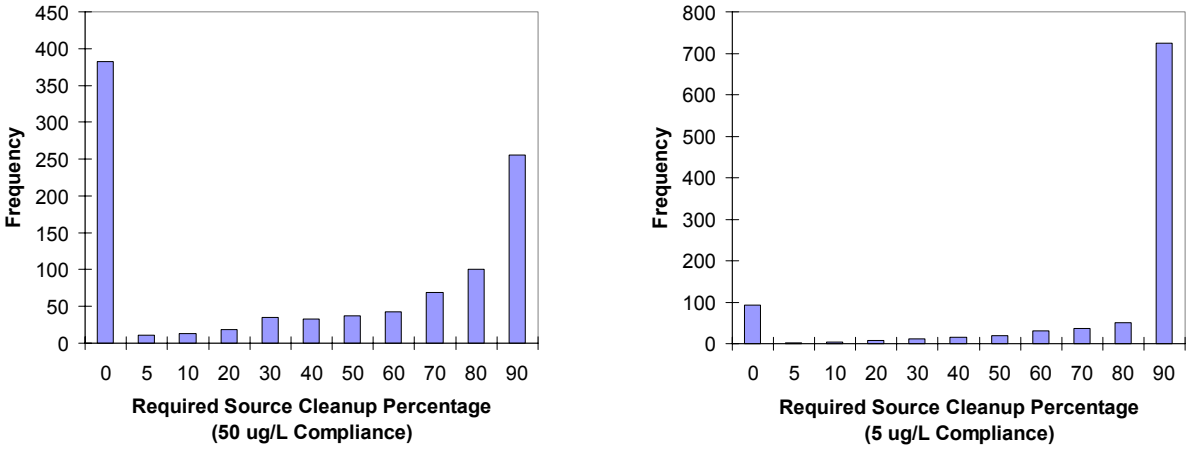

Figure 26. 10% Source Inventory—Mean Velocity, 3000 μg/L

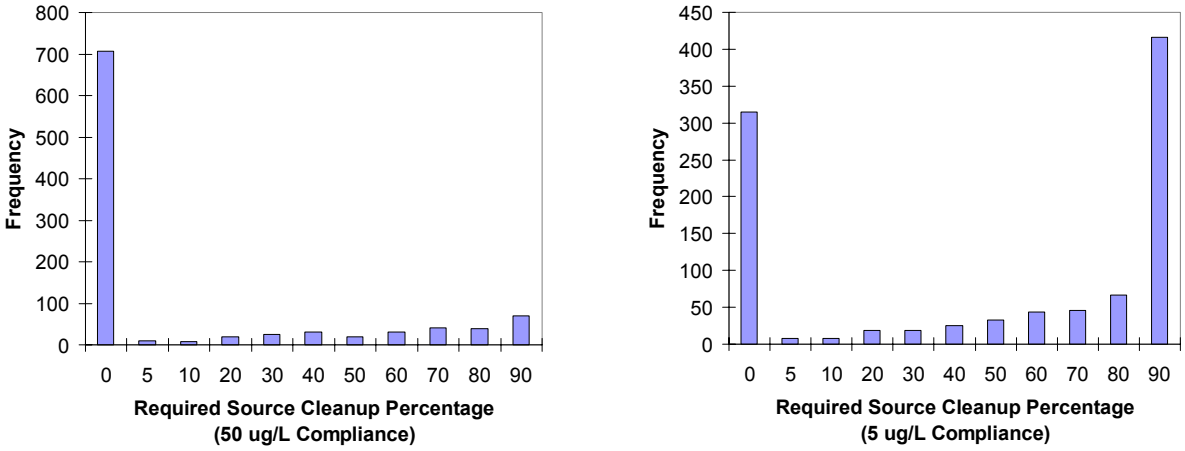

Figure 27. 1% Source Inventory—Mean Velocity, 3000 μg/L

Table 10. Linear Correlation Coefficients Between the Logarithm of Maximum Concentration at the Compliance Boundary and Input Parameters for the Set of 1000 1-D Flow and Transport Simulations of CT (2% remaining inventory case)

	Vol. over 3000 µg/L	Porosity	K_d	$\alpha_{Long.}$	Abiotic $t_{1/2}$
Volume above cutoff	1.000				
Porosity	0.057	1.000			
K_d	-0.070	0.053	1.000		
$\alpha_{Long.}$	-0.032	3.205E-4	0.004	1.000	
Abiotic $t_{1/2}$	-0.016	0.004	0.012	0.026	1.000
log max. concentration	-0.054	-0.184	-0.787	0.025	0.493

3.2 Parameter Influence

The simulation results suggest that K_d has the greatest influence and porosity the least influence on boundary concentration levels as source inventory remaining decreases. Figure 28 displays notched box plots of the five input parameters for realizations that would require cleanup at the 50-µg/L threshold vs. those that would not, for the 1% inventory case. The plots indicate that the porosity and Kd are significantly lower and the abiotic half-life significantly higher for cases that require cleanup. The correlation coefficients for the logarithm of maximum concentration at the compliance boundary and the five input parameters for the 1% case (see Table 10) also suggest that the volume above the cutoff and the longitudinal dispersivity do not influence the maximum concentration at the compliance boundary, but that the porosity, Kd, and abiotic half-life all do. The relative influence of the three variables that appear to control the maximum concentration was confirmed by multiple linear regression of the logarithm of the maximum concentration against the porosity, Kd, and abiotic half-life. The standardized regression coefficients for the three input parameters are –0.145, -0.785, and 0.504, suggesting that Kd has the greatest influence of the three input parameters on the maximum concentrations and porosity has the least influence after accounting for differences in the scale of the three input parameters. Because the input parameters are independent of one another (by construction), the standardized regression coefficients should provide a reasonable measure of the relative importance of the input parameters, which would not necessarily be the case if there were significant correlation between them. The total correlation coefficient for that multiple linear regression model is 0.945, suggesting that almost 90% of the variation in the logarithm of the maximum concentration at the compliance boundary is explained by the linear regression using the porosity, Kd, and abiotic half-life.

However, a significant shift occurs in standardized regression coefficients for increasing remaining inventory levels. In all cases up to the 65% inventory level, the porosity has the least influence on the maximum concentration, but the magnitude of its standardized correlation coefficient does increase from –0.145 to –0.235. The relative importance of Kd and the abiotic half-life also shift, so the relative influence of the two parameters is more nearly equal for the 65% remaining inventory case (standardized regression coefficients are –0.598 and 0.656, respectively).

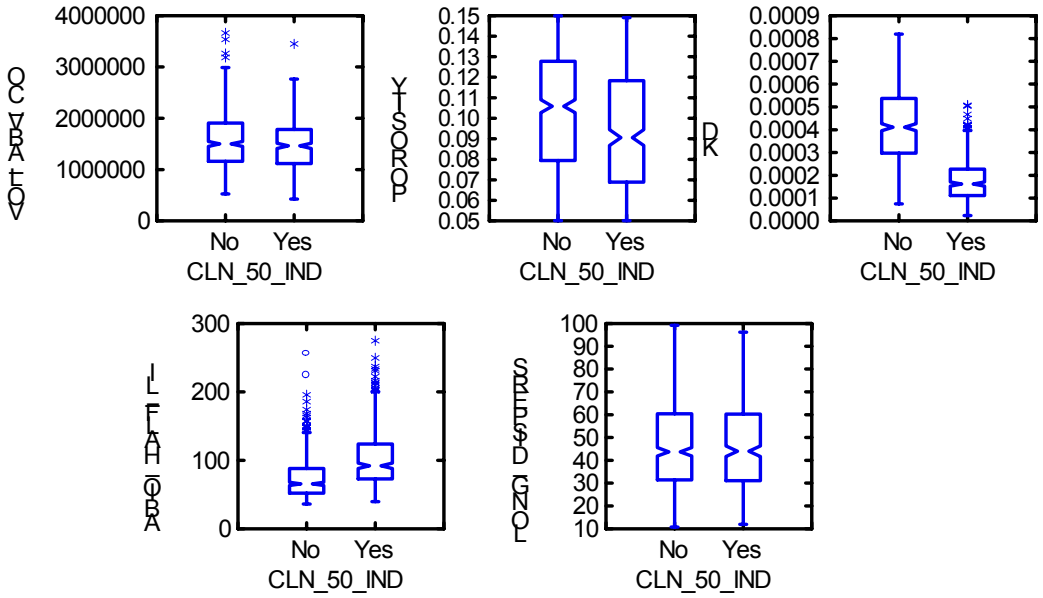

Figure 28. Notched Box Plots Showing Values of Transport Parameters for Cases that Did and Did Not Require Source Cleanup for the 1% Inventory Case. Note that transport parameters with a significant effect on the need for cleanup are where the notches of the two boxes do not overlap. Notched box plots compare the values of input parameters, for those cases requiring cleanup and those that do not, for the 1% remaining inventory case. The upper edge of the box in each case marks the 75th percentile; the lower edge of the box marks the 25th percentile; and the middle of the notch denotes the median of the distribution. The upper and lower edges of the notches represent an approximate 95% confidence interval for the median of the distribution. If the notches overlap, as they do for the volume above the cutoff of 3000 μg/L and for the longitudinal dispersivity, the difference between the medians of the cases requiring cleanup and those not requiring cleanup is not significant. Significant differences exist for the porosity, abiotic half-life, and K_d, with the maximum separation occurring for the K_d.

These results suggest that K_d is the most important input parameter when there is only a small remaining inventory and the duration of the source term is relatively small, but that K_d and the abiotic half-life both exert about equal influence on the maximum concentration at the compliance boundary for larger remaining inventory levels when the duration of the source term is much longer.

4.0 Conclusions

The modeling was based on the assumption that about 750,000 kg of CT was discharged to the soil in the Z-crib area. Previous work has shown that of this 750,000 kg, about 65% cannot be accounted for. Therefore, modeling was performed using 65%, 30%, 10%, and 1% of the 750,000 kg as possible amounts of CT that could reach the groundwater. It is of value to note that approximately 1 to 2% of the CT inventory currently exists in the distal plume based on averaged CT groundwater measurements.

Several conclusions drawn from the modeling are discussed below:

- If 1% of the discharged CT is all that ever reaches the groundwater, it is likely that the highest concentration of CT to arrive at the compliance boundary will not exceed the compliance concentration. However, it is possible the compliance concentration would be exceeded if the actual site parameters correspond to the lower porosity, lower K_d, and lower K_a values used in this study.
- If 10% or more of the discharged CT reaches the groundwater, it is likely that the concentration of CT eventually arriving at the compliance boundary will exceed the compliance concentration (unless source removal efforts are used).
- There is a breakpoint between 1% and 10% of the discharged inventory that defines the amount of CT in the source at which source removal would be required to avoid exceeding the compliance concentration at the compliance boundary.
- Because source inventory remaining appears to be the quantity driving the amount of site cleanup required for compliance, source inventory characterization using partitioning interwell tracer tests (or other source-quantity characterization technologies) would be a milestone on the path toward resolution of compliance issues.
- Laboratory experiments and site surveys can be used to better quantify values for the parameters controlling compliance boundary concentrations: K_d, K_a, and porosity; additional modeling, including use of a three-dimensional model, can then be performed using these improved values to give more accurate estimates of compliance boundary concentrations and source cleanup requirements.

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Appendix A

Groundwater Modeling Plan
Hanford Carbon Tetrachloride ITRD Project

Appendix A

Groundwater Modeling Plan
Hanford Carbon Tetrachloride ITRD Project

A.1 Approach

The Hanford Carbon Tetrachloride ITRD project will use the Monte Carlo saturated groundwater modeling approach described in this modeling plan. The purpose of this effort is to quantify the uncertainties in the strength of the remaining source term feeding the carbon tetrachloride plume originating in the 200 West Area of the Hanford Site (Figure 1). For each Monte Carlo groundwater flow and transport realization created, the modeling team will identify the source term strength, and maximum concentration arriving at the compliance boundary through time (i.e., 2000 through 2200). The maximum concentration arriving at the compliance boundary will then be used to determine the fraction of source area requiring remediation. Results from the

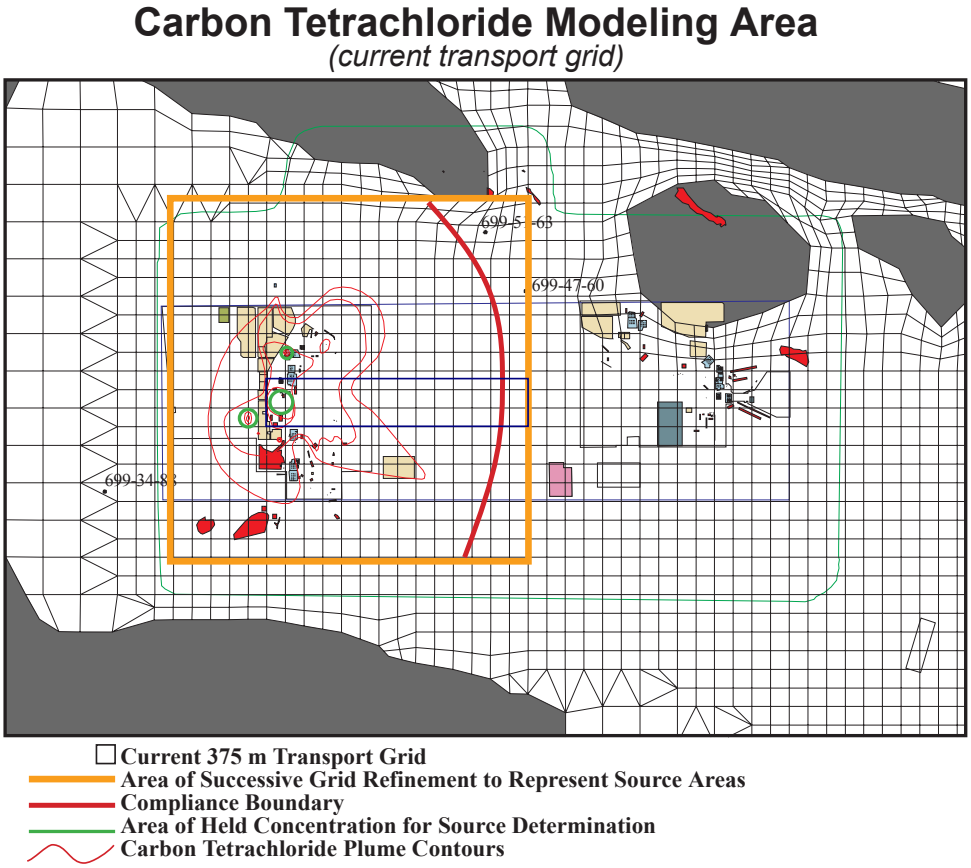

Figure A.1. Portion of the Current Hanford SGM Grid near the 200 East and 200 West Areas with Various Overlays that Illustrate: 1) the areal extent of the carbon tetrachloride plume (thin red lines), 2) the proposed area of grid refinement for this study (orange line), 3) the proposed location of the compliance boundary (thick red line) for this study, and 4) a blue box showing the proposed initial one-dimensional modeling, which will examine parameter sampling strategies to develop a way to minimize the number of three-dimensional model runs.

multiple realizations will provide uncertainty estimates for source term strength related to the uncertainty in K_d, porosity, dispersivity, and first-order abiotic reaction rates. Estimates of the uncertainty in the remaining source term and the fraction requiring treatment will provide information useful to the ITRD for estimating uncertainty in the costs associated with each of the proposed source term remediation strategies.

Mass balance derived from observations of existing plumes, amounts removed with already implemented initial remediations, and other considerations only account for ~35% of the mass that was imported for use at Hanford. Estimates are that this remaining source could be ~780,000 kg and that the remaining source(s) of contamination could be described as follows:

- Located only in the vadose zone with the source resulting from any combination of dissolved, vapor, and/or DNAPL phases
- Located only in the groundwater as a DNAPL source only
- Combinations of various vadose sources and groundwater DNAPL sources.

A.1.1 Basic Assumption Used in Approach

The pivotal assumption in the approach outlined in this modeling plan is that the plume immediately prior to the start of interim pump and treat was in equilibrium with the various possible types of potential sources.

The assumption has been investigated through a geostatistical evaluation of the data gathered before beginning the interim pump and treat. Chris Murray presented the geostatistical evaluation results at the March 2000 Hanford Carbon Tetrachloride ITRD project meeting. These results indicate that it is reasonable to assume that the groundwater plume was in equilibrium with the remaining source before the interim pump and treat began because the temporal analysis of the observations indicated the concentrations near the source area had stabilized. The spatial concentration distributions from the geostatistical evaluation will provide initial conditions for the Monte Carlo realizations and the location and values of specified concentrations that will represent the source term and its uncertainty as can be interpreted from existing data.

A.1.2 Uncertainties Addressed

This groundwater modeling effort, in conjunction with the geostatistical analysis of concentration presented at the March 2000 workshop by Chris Murray and the analysis of uncertainty in Kd, biotic and abiotic reaction rates, and other natural attenuation factors presented at this same workshop by Rod Skeen will allow us to address source term uncertainty arising from uncertainty in the following parameters:

- plume definition (concentration distribution horizontally and vertically including assumptions about porosity)
- K_d
- first-order natural abiotic dechlorination rate
- dispersivity.

Volatilization from saturated zone to unsaturated zone and first-order natural biodegradation were investigated by the team and determined to be negligible. As a result, the uncertainty related to these processes will not be included. Details are presented in Appendix C. As was discussed in the initial Hanford Carbon Tetrachloride ITRD project modeling workshops, uncertainties in the groundwater model will not be addressed because the current model is deterministic. Uncertainty related to the groundwater flow model will be reduced by limiting transport model calculations to movement through the less transmissive Ringold formation (Unit E and the lower units) from 200 West Area source locations to a compliance boundary at or near the contact with the highly transmissive saturated Hanford formation (Figures 1 and 2).

A.1.3 Modeling Scales

Two scales of modeling will be used in this assessment.

1. An analytical model for one-dimensional, convective-dispersive transport of reactive solutes, subject to adsorption, first-order degradation, and in a homogeneous medium will be used. The model is based on the analytical solution developed by van Genuchten (1974). It will be used to represent transport in a single flow tube along the centerline of the plume from the 200 West source area(s) (green circles in Figure 1) to the compliance boundary, a distance of ~5 km (blue rectangle in Figure 1). This one-dimensional model will be used to develop an initial understanding of parameter interactions/sensitivity and to examine a large number of realizations of the uncertain parameters (source term volume/concentration, K_d, porosity, degradation half time, dispersivity) to develop an efficient sampling strategy to use with the three-dimensional model.
2. A three-dimensional local scale model to simulate transport of the approximate scale shown in Figure 1 (orange box). This model will be used to represent transport from the source area(s) (thick green lines in Figure 1) to the compliance boundary (thick red line in Figure 1). Multiple realizations for the transport parameters and initial and source term boundary conditions will be implemented based on the sampling strategy developed with the one-dimensional streamtube model to address the uncertainty in source term strength.

A.2 Regional Model

The groundwater model used in this assessment is the three-dimensional deterministic model of the Hanford Site developed and maintained as part of the Hanford Site Groundwater Monitoring Program. The Sitewide Groundwater Model (SGM) is documented in Cole et al. (1997) and Wurstner et al. (1995). Figure 3 illustrates the SGM flow model grid (~750 m regular grid) and the various lateral boundary conditions (green are specified heads based on river elevations, red are no flow, and blue are specified flux). Regional flow model results from the plume analysis discussed in Cole et al. (1997) will be used to provide information for the two scales of modeling for this ITRD effort. The regional SGM will provide velocity estimates for the one-dimensional streamtube analysis and boundary conditions for the local scale transport model (approximately the scale shown in Figure 1).

Geologic Units Present at the Water Table, June 1998.

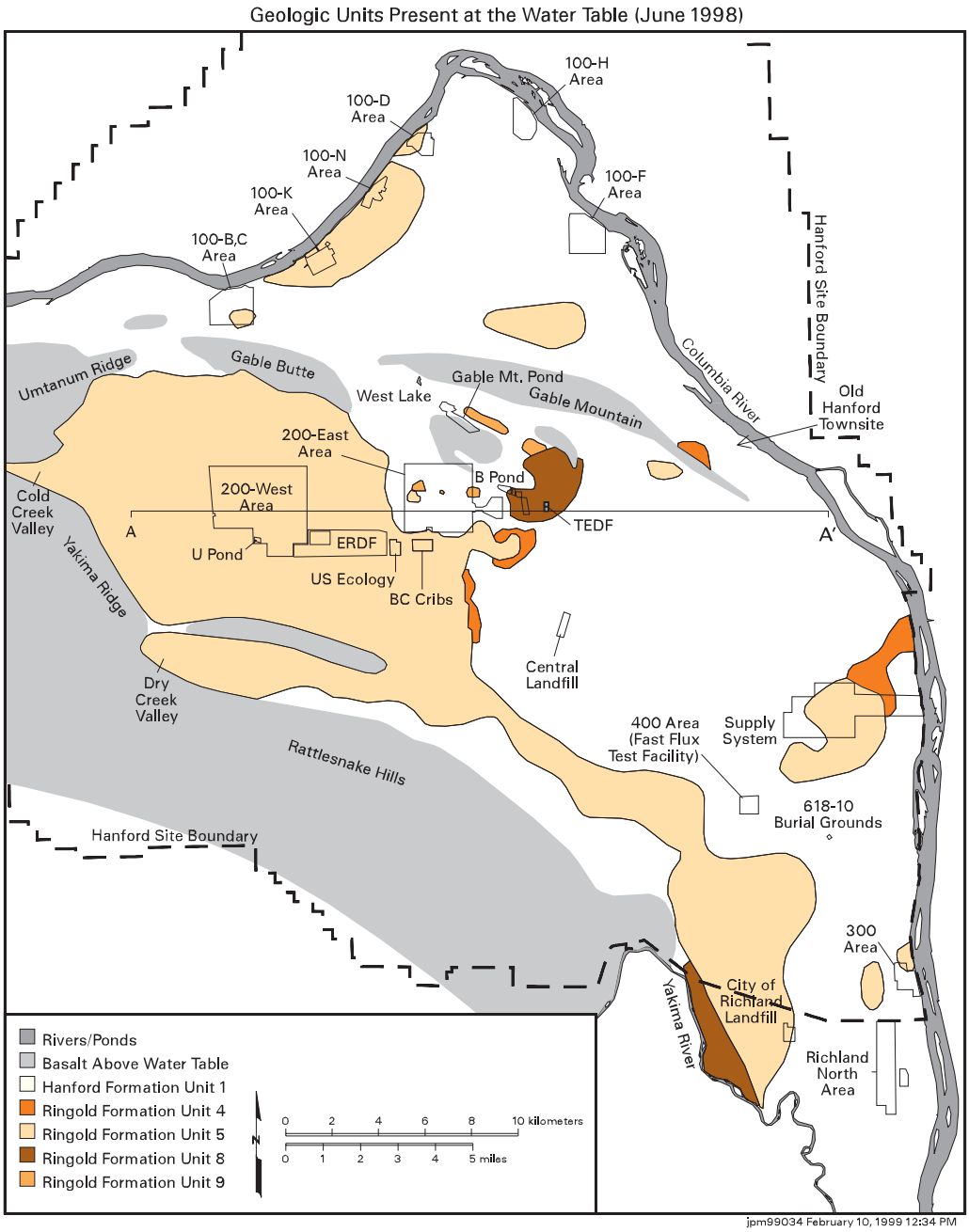

Figure A.2. Illustration of the Areal Extent of the Geologic Units Present at the Water Table (June 1998). Note that Ringold Unit 5 (i.e., middle Ringold conglomerate or Ringold E) is the hydrologic unit that contains the water table from 200 West to the western boundary of 200 East.

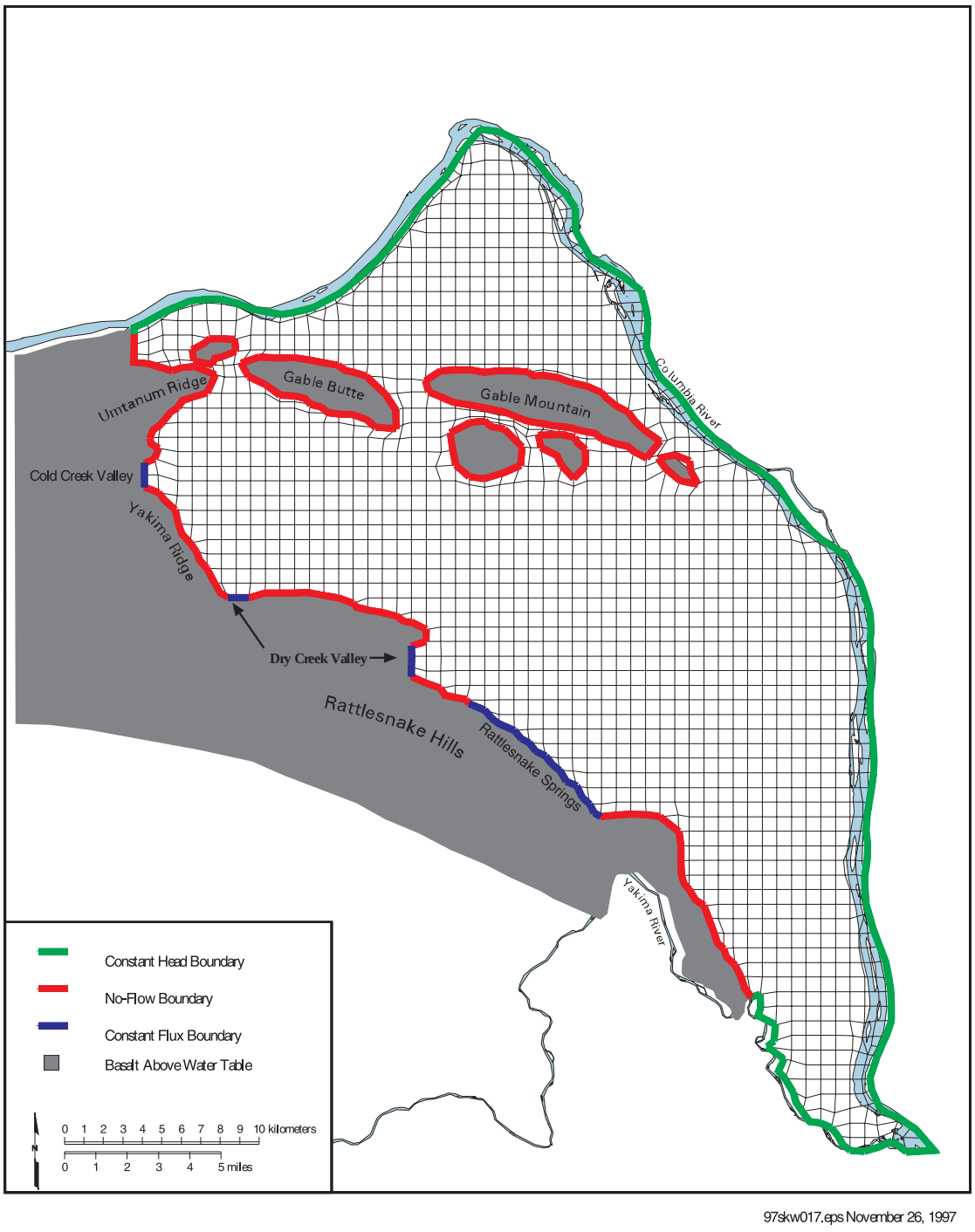

Figure 3. SGM flow model grid (~750 m regular grid) with the various lateral boundary conditions annotated. Green boundaries are specified heads based on river elevations, red boundaries are no-flow, and blue boundaries are specified flux.

A.3 Source Area Assumption

Figure 4 illustrates the vertically summed median concentration contours (from 100 realizations) for the 1993 carbon tetrachloride plume(s) in the 200 West area. This result (from the geostatistical analysis presented at the March 2000 workshop by Chris Murray) indicates that the majority of the mass of carbon tetrachloride is within the 500 m by 500 m zone outlined by the small black box that surrounds the high concentration portion of the plume (Figure 4). As a result we will assume that the majority of the remaining source is within this area and only this single source area will be investigated in this modeling analysis. However, the entire interpretation of carbon tetrachloride concentration (i.e., the colored area) for each plume realization will be used to set the initial conditions for the three-dimensional modeling.

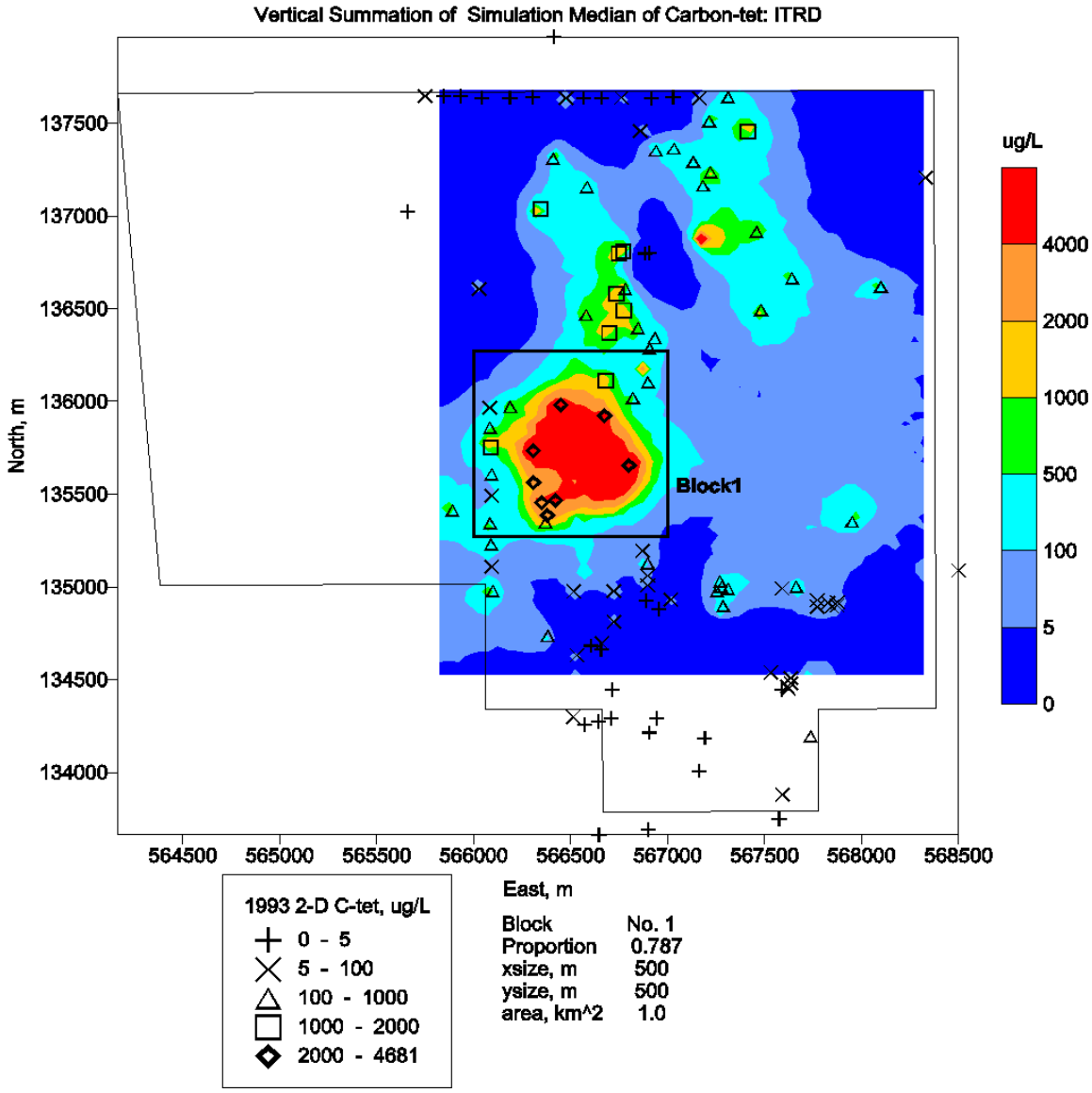

Figure 4. Vertical Summation of the Simulated Median of the Carbon Tetrachloride Concentration in the 200 West Area in 1993 (µg/L)

A.4 Realizations

The 100 realizations of concentration distributions will be used in the one-dimensional modeling to develop a sampling strategy. This strategy will allow a smaller number of three-dimensional model runs to be made while developing the uncertainties in the source term and the maximum concentration arriving at the compliance boundary over the next 200 years (i.e., 2000-2200). For each of the 100 concentration distribution realizations the probability distributions representing the uncertainty in the transport parameters (K_d, porosity, first-order reaction rate, and dispersivity) will be used to prepare a parameter tablelike Table 1

Table 1. Example of a Realization Table

Realization Number	Name of Concentration Distribution File	Kd (ml/g)	Porosity	1st order reaction half time (y)	Dispersivity (m)
1	realization_1.fil	xx	sxy	xyx	xxz
2	realization_2.fil	yx	fxz	yyy	zxx
.					
.					
.					
100	realization_100.fil	Zx	dxz	xxx	zzz

A.5 One-Dimensional Streamtube Model

The streamtube model will consider convective-dispersive transport of reactive solutes, subject to adsorption and first-order degradation in a homogeneous medium, and is based on the analytical solution developed by van Genuchten (1974). The model will be used in a Monte Carlo mode to address the effect of uncertainty in K_d, dispersivity, first-order abiotic reaction rate, and concentration distribution on the concentration of carbon tetrachloride reaching the compliance boundary during the 200 year model period. Uncertainty in travel time from the source area to the assumed compliance boundary will be addressed using a range of travel times along different streamlines from the source area to the compliance boundary. Uncertainty about what contour levels (at some distance from the source area) might be in equilibrium with the source will also be addressed by performing the set of Monte Carlo analysis runs for a range of concentration cutoff levels (e.g., 500, 750, 1000, 1250, and 1500 μg/L in the plume within the small black box shown in Figure 4).

A.5.1 Domain and Inlet Boundary Concentration

The streamtube model will consist of a 1000 m wide (see small black box in Figure 4) by ~5000 m long area (see dark blue rectangle in Figure 1 going from source area to the assumed compliance boundary). The height of the streamtube will depend both on the concentration distribution developed for each realization and the concentration level selected for the upstream source area boundary as the specified concentration at this inlet boundary. If one assumes that the three-dimensional plume that develops around the source area were a cube, the downstream exit face area that would be at the concentration cutoff level (i.e., specified inlet concentration) would be equal to the 2/3 root of the volume of the plume above this cutoff level, which is what we will assume. Depending on the actual shape of the three-dimensional plume, the downstream exit face will be proportional to the 2/3 root of the volume of the plume at or above this cutoff

concentration level time constant. Since our streamtube width is fixed at 1000 m, the height will depend on the volume of the plume at or above the cutoff concentration level that will be used as the specified inlet concentration. As a result, the height of the streamtube for each realization will be equal to 1/1000th of the 2/3 root of the volume of the plume above the cutoff level.

Figure A.5 illustrates the variation of the mean and median volume above the cutoff level for the 100 concentration realizations as a function of the specified cutoff level. This figure also shows the variation in the projected source term rate considering only advective flow for an assumed square plume and a groundwater velocity of 0.04 m/d which is close to the model predicted velocity near the source area. Figure A.6 illustrates the variability in volume above a cutoff level of 1000 μg/L for the various realizations as well as the mean and the mean plus and minus one standard deviation.

A.5.2 Velocity

Velocity for the streamtube will be estimated from the 1995 SGM predictions shown in Figure A.7. Table A.2 illustrates the average and range of values that will be considered. The line of velocity magnitudes down the actual streamtube (dark blue box in Figure A.7 and stream-tube 2 in Table A.2) and lines of velocity magnitudes below and above the actual streamtube (dark blue box in Figure A.7 and streamtubes 1 and 3, respectively, in Table A.2) will be used to calculate the average, maximum, and minimum streamtube velocities for this study.

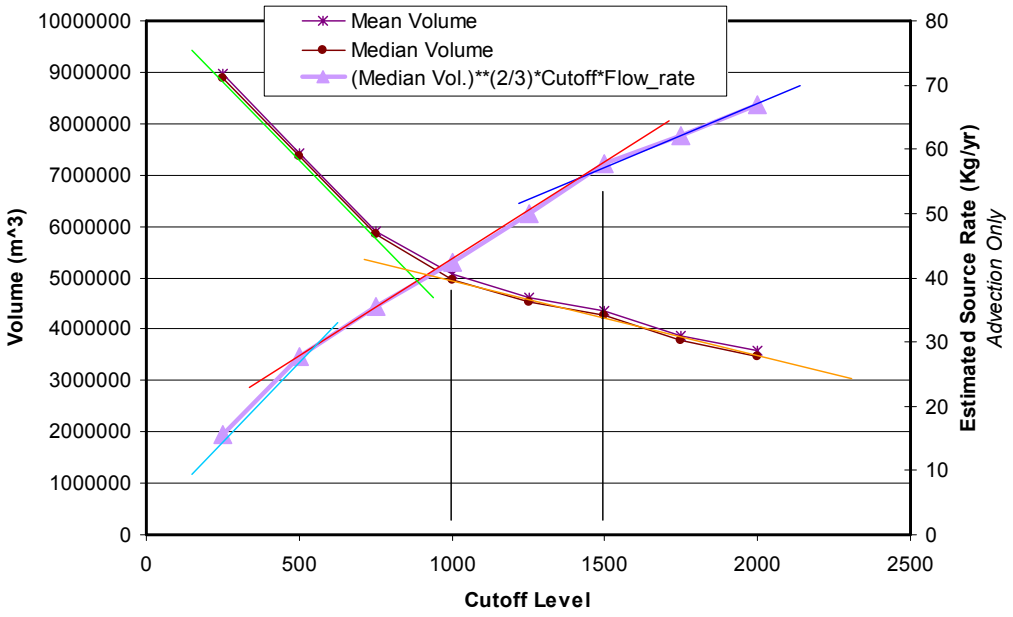

Figure A.5. Mean and Median Volume above a Specified Cutoff Level for the 100 Concentration Realizations and Projected Source Term Rate Considering only Advective Flow as a Function of the Specified Cutoff Level

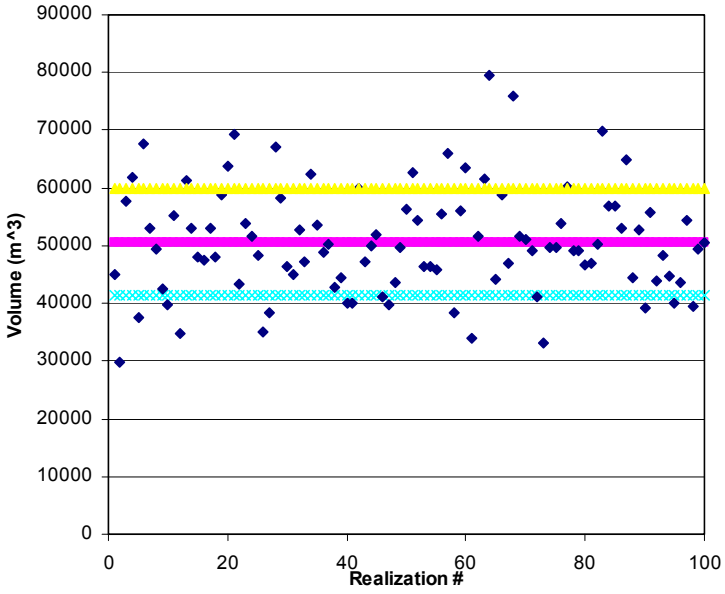

Figure A.6. Illustration of the Volume above a Cutoff Level of 1000 mg/L for the Various Realizations as well as the Mean *(magenta)* and the Mean plus *(yellow)* and minus *(cyan)* one Standard Deviation

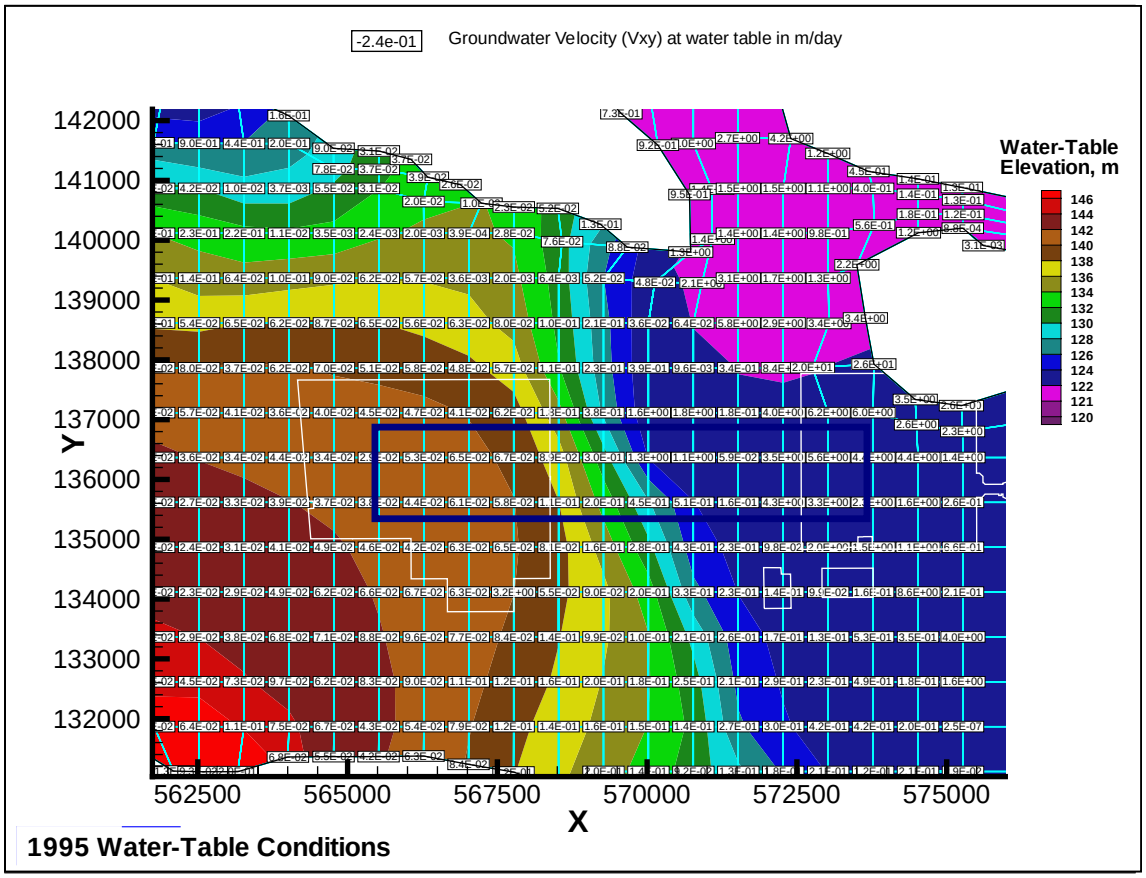

Figure A.7. SGM Predicted Velocities (posted) and Color-Coded Head (red-blue)

Table A.2. Streamtube Velocity Table

Average ***v = 0.096 m/day t = 150 y***

	Streamtube 1		Streamtube 2		Streamtube 3	
Grid Block	*v* (m/d)	*t* (y)	*v* (m/d)	*t* (y)	*v* (m/d)	*t* (y)
1	0.042	48.89	0.044	46.67	0.053	38.74
2	0.063	32.59	0.061	33.66	0.065	31.59
3	0.065	31.59	0.058	35.40	0.067	30.65
4	0.081	25.35	0.110	18.67	0.089	23.07
5	0.160	12.83	0.200	10.27	0.300	6.84
6	0.280	7.33	0.450	4.56	1.300	1.58
7	0.430	4.78	0.510	4.03	1.100	1.87
Average	**0.088**	**163.37**	**0.094**	**153.26**	**0.107**	**134.34**

v = porewater velocity, *t* = travel time for grid block
grid block size = 750 m
Streamtube length = 5.25 km

A.5.2 Output

Output will be frequency plots of source term strength and fraction of source requiring remediation, an understanding of parameter importance, and a strategy for realization sampling to reduce the number of three-dimensional model runs.

A.5.3 Realizations and Time Domain

Realizations will be the 100 realizations drawn from the various distributions as already discussed (see Table A.1). The model will be run from 2000-2300 to understand the longer-term nature of compliance boundary arrival curves, but the analysis will be for the 2200 time period.

A.6 Three-Dimensional Local Scale Model

The CFEST code (Cole et al. 1988) will be used to model a three-dimensional local scale model to simulate transport at the approximate scale shown in Figure A.1 (orange box). This model will use the SGM methodology to refine the grid and develop a refined (both laterally and vertically) local scale model as discussed in Barnett et al. (1997). Processes considered are the same as for the streamtube model and include convective-dispersive transport of reactive solutes subject to adsorption and first-order degradation. Uncertainty in the concentration contours that are in equilibrium with the source will be addressed in the same way as was proposed for the one-dimensional modeling. Uncertainty as to what contour levels (at some distance from the source area) might be in equilibrium with the source will also be addressed by examining a range of concentration cutoff levels used to represent the source term. The parameter distributions and other aspects of the three-dimensional flow model are not discussed because they are the same as used in the SGM.

A.6.1 Spatial Domain and Boundary Conditions

An subregion of the SGM as approximately shown in Figure A.1 will be selected and a refined plan view grid prepared that corresponds exactly to the 50 m regular grid used to do the statistical interpretations around the source area (i.e., the 20 by 20 regular 50 m grid within the black box around the source in Figure A.4). The vertical model resolution will also be altered to correspond exactly to the 5 m vertical grid used in the geostatistical interpretation shown in Figure A.4. This will allow the concentration values from the geostatistical interpretation to be directly used to specify the concentration distribution in this high concentration source area and to provide a simple means to identify the nodes that will be specified concentration boundary conditions representing the source. The horizontal resolution of the subregion model will be decreased to 100 m, then 200 m, and it will finally correspond to the SGM transport model grid spacing of 375 m just beyond the compliance boundary. Similarly the vertical spatial resolution will be decreased to correspond to the transport model grid as we move away from the source area. Note that the grid in Figure A.1 is the SGM transport model grid. Boundary conditions for this subregion model will be supplied by the full=scale regional transport model.

As with the streamtube model, the representation of the source area depends on the realization. Within the source area (see small black box in Figure A.4), and for a selected cutoff level as discussed earlier all the nodes that are at or above the specified cutoff level will become specified concentration boundary condition nodes (value = the cutoff value). As a result, the shape, location and distribution of the source will vary with each realization.

A.6.2 Realizations and Time Domain

The realization strategy developed from the one-dimensional modeling will be used to define the required subsampling of the 100 realizations examined in the one-dimensional modeling. The model time domain for the three-dimensional model will be just 200 years (from 2000 to 2200).

A.6.3 Desired Output

1. Determine the source term release for each realization that is consistent with the uncertainty in parameters drawn for that realization.
2. Produce a distribution of source term release rates conditioned on uncertainty in unknown parameters.
3. For each realization, determine concentrations at the compliance boundary at 200 years to determine the portion of the source that needs to be removed to achieve compliance.

A.7 References

Barnett DB, MD Freshley, MP Bergeron, SK Wurstner, and CR Cole. 1997. *Tritium Monitoring in Groundwater and Evaluation of Model Predictions for the Hanford Site 200 Area Effluent Treatment Facility*. PNNL-11665, Pacific National Northwest Laboratory, Richland, Washington.

Cole CR, SB Yabusaki, and CT Kincaid. 1988. *CFEST-SC, Coupled Fluid, Energy, and Solute Transport Code, SuperComputer Version, Documentation and User's Manual.* Battelle, Pacific Northwest Laboratories, Richland, Washington.

Cole CR, SK Wurstner, MP Bergeron, MD Williams, and PD Thorne. 1997. *Three-Dimensional Analysis of Future Groundwater Flow Conditions and Contaminant Plume Transport in the Hanford Site Unconfined Aquifer System: FY 1996 and 1997 Status Report*. PNNL-11801, Pacific Northwest National Laboratory, Richland, Washington.

van Genuchten MT. 1974. "Mass transfer studies in sorbing porous media." Ph.D thesis, New Mexico State University, Las Cruces.

Wurstner SK, PD Thorne, MA Chamness, MD Freshley, and MD Williams. 1995. *Development of a Three-Dimensional Groundwater Model of the Hanford Site Unconfined Aquifer System: FY 1995 Status Report.* PNL-10886, Pacific Northwest Laboratory, Richland, Washington.

Appendix B

Volatilization Notes

Appendix B

Volatilization Notes

A potential mechanism for decreasing carbon tetrachloride (CT) concentration in the groundwater is through volatilization of CT into the vadose zone. This mechanism was investigated for the dispersed portion of the plume. The investigation provides an estimate of the mass transfer rate of CT out of the groundwater and into the vadose zone. Thus, the investigation does not apply to areas of the vadose zone where CT sources in the vadose zone can maintain high CT vapor concentrations.

There are three mass transfer processes that must be quantified to estimate the overall transfer to CT from the groundwater to the gas phase. Figure B.1 illustrates the concept applied for mass transfer at the liquid-gas interface. At the liquid-gas interface, there is a mass transfer resistance associated with CT molecules crossing this interface. On either side of this interface, there are diffusion layers (gas film and liquid film) that effect the rate at which CT can reach the liquid-gas interface from the bulk groundwater and the rate at which CT can move away from the interface into the bulk vadose zone gas phase. The estimate of overall mass transfer rate is a function of the parameters that control these three mass transfer processes.

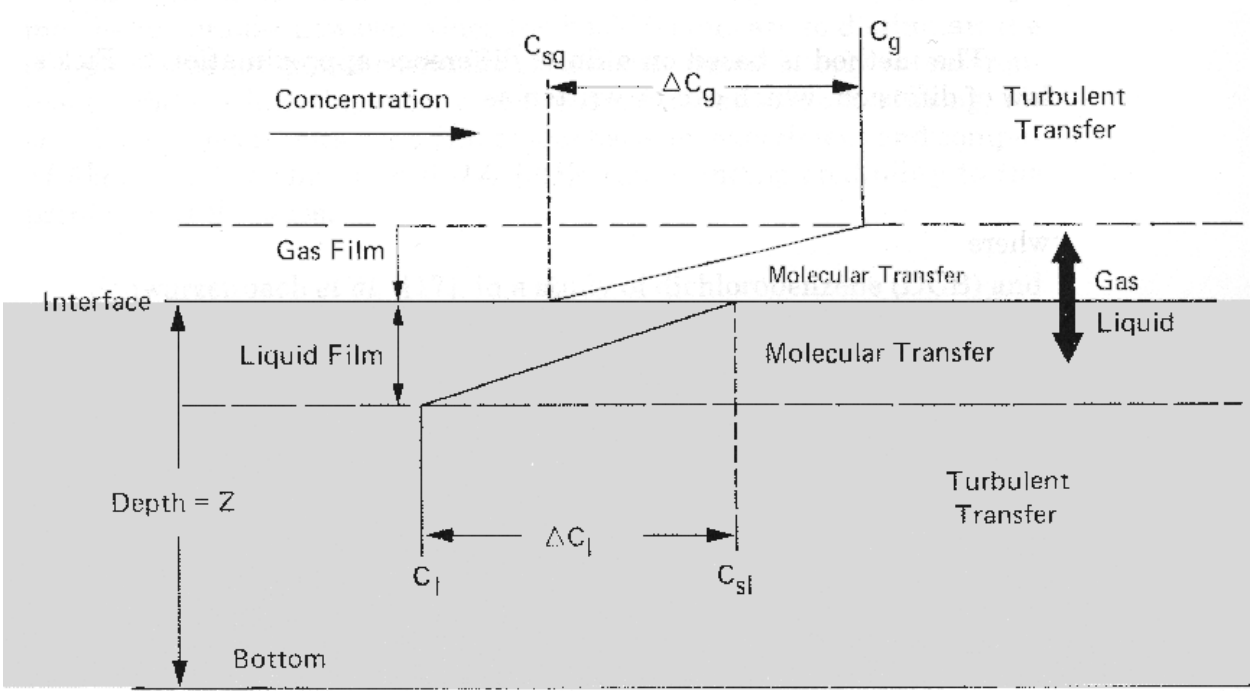

Figure B.1. Mass Transfer Concept at the Liquid-Gas Interface

The parameter controlling mass transfer at the liquid-gas interface is the Henry's Law equilibrium partitioning coefficient. The Henry's Law coefficient is expressed as the concentration of a species in the vapor phase divided by the concentration of the species in the aqueous phase when these two phases are in equilibrium with respect to the species of interest. CT has a relatively high Henry's Law coefficient; consequently, CT readily partitions into the vapor phase across the liquid-gas interface.

The diffusion processes to and away from the liquid-gas interface are controlled by the diffusion coefficient in the medium (water or air) and the thickness of the diffusion layer. The diffusion coefficients for carbon tetrachloride are 7.9×10^{-6} cm^2/s and 7.3×10^{-2} cm^2/s in water and air, respectively (Lyman et al. 1990). The thickness of the diffusion layer is dependent on the hydraulic regime and physical nature of the liquid-gas system. In the Hanford vadose zone, it was assumed that the soil gas is mixed well enough that the concentration of CT was maintained at near zero within 1 m above the groundwater. Thus, the diffusion layer thickness in the gas phase was estimated as 1 m. Because of the very slow groundwater flow rates and the physical nature of groundwater flow, the groundwater was considered to have minimal mixing over a scale of between 10 cm and 1 m. Thus the diffusion layer thickness in the aqueous phase was estimated as being between 10 cm and 1 m. The mass transfer rate is significantly influenced by the diffusion layer thickness in the groundwater and minimally influenced by the diffusion layer thickness in the gas phase.

The calculated mass transfer flux rates ranged from 9×10^{-6} $g/m^2 \cdot d$ to 9×10^{-7} $g/m^2 \cdot d$ based on an aqueous-phase diffusion layer thickness of 10 cm and 1 m, respectively. These rates were converted to psuedo first-order reaction rates to compare the magnitude of rate of volatilization to the magnitude of the rate of abiotic hydrolysis. As described in the main report, the likely range of abiotic hydrolysis rates estimated for this modeling correspond to a CT half-life of between 36 and 290 years. The range of estimated volatilization rates correspond to a CT half-life of between 600 and 6000 years.

It was concluded that rate of CT volatilization was not significant compared with the other mechanisms of CT loss in the groundwater flow field.

Reference

Lyman WJ, WF Reehl, and DH Rosenblatt, eds. 1990. *Handbook of Chemical Property Estimation Methods*. American Chemical Society, Washington, D.C.

Appendix C

Literature Review:
Natural Attenuation Mechanisms and Rates for Chloromethane Subsurface Contamination at Hanford

Literature Review:
Natural Attenuation Mechanisms and Rates for Chloromethane Subsurface Contamination at Hanford

6/30/2000

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Hanford Carbon Tetrachloride Project

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Table of Contents for Appendix C

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Abbreviations

CT	Carbon Tetrachloride
CF	Chloroform
DCM	Dichloromethane
CM	Chloromethane
TeCA	1,1,2,2-Tetrachloroethane
TCA	1,1,1-Trichloroethane
DCA	1,2-Dichloroethane
PCE	Tetrachloroethene
DI	Deionized water
$t_{1/2}$	Half-life

Executive Summary

This report provides a review of the current published literature on potential natural attenuation processes that could affect the concentration of chloromethane contaminants in the groundwater of the Hanford Site. The processes discussed in this report include biotic and abiotic reactions and solid/liquid equilibrium partitioning. Contaminants that are included in the analysis are CT and its potential reaction products CF, DCM, and CM.

It was found that the natural processes that are likely to affect chloromethanes in the groundwater at Hanford include abiotic hydrolysis of CT and CF; biotic and abiotic transformation of DCM; and sorption of all these compounds to the soil matrix. Substantial levels of natural biotic transformation of CT are unlikely at Hanford because this is an anaerobic process that is inhibited by the dissolved oxygen present in the Hanford aquifer. Furthermore, the Hanford aquifer has very low levels of the organic carbon needed to support biotic transformation of CT. Similarly, biotic conversion of CF will be minimal in the Hanford aquifer because although the reaction can occur in the presence of oxygen, it also requires an additional electron donor. In contrast, biotic conversion of DCM may occur at Hanford because it has been reported to be used as an aerobic growth substrate for a variety of microorganisms. In general, the products from abiotic conversion of the chloromethanes are predominately nonchlorinated species. Products from the aerobic biotransformation of DCM are also nontoxic, nonchlorinated species.

A substantial amount of published information was found for the equilibrium sorption of chloromethanes on soils. These data include several studies with soil organic carbon levels similar to Hanford (below 0.5%). Experimentally measured values were found to correlate well with the traditional predictive equations that were developed using chlorinated C_1 and C_2 compounds in the regression data sets. The most probable values for K_d for the Hanford aquifer were estimated to be 0.12, 0.06, and 0.1 L/kg for CT, CF, and DCM, respectively.

Review of Chloromethane Transformation

Figure 1 outlines the published biotic and abiotic reactions that have been observed for chlorinated methanes. The following sections discuss the published data that supports the reaction pathways detailed in this figure.

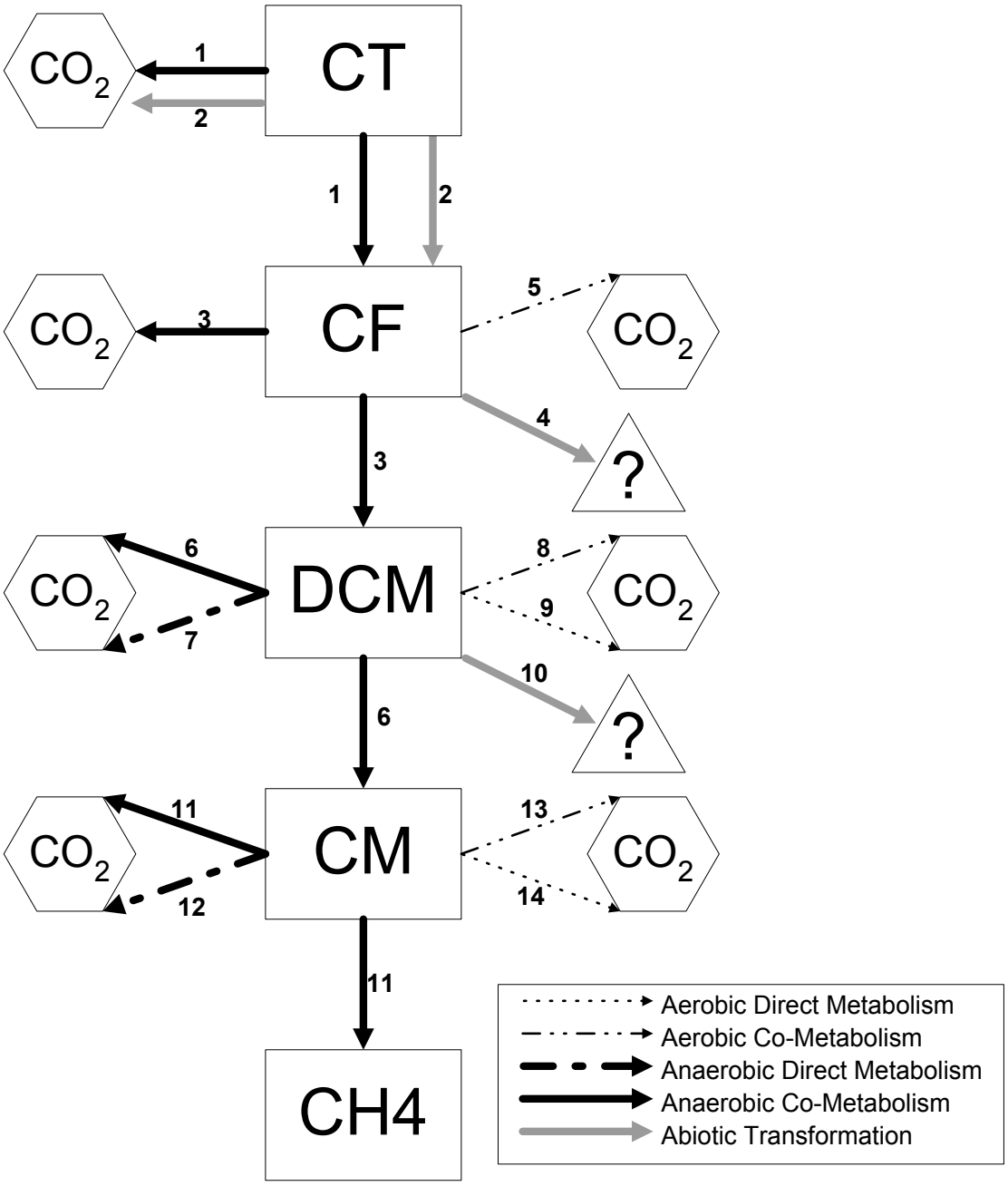


Figure 1: Transformation pathways for chlorinated methanes. Numbers next to each reaction refer to reaction numbers that are referenced in the text.

Carbon Tetrachloride

Abiotic transformation

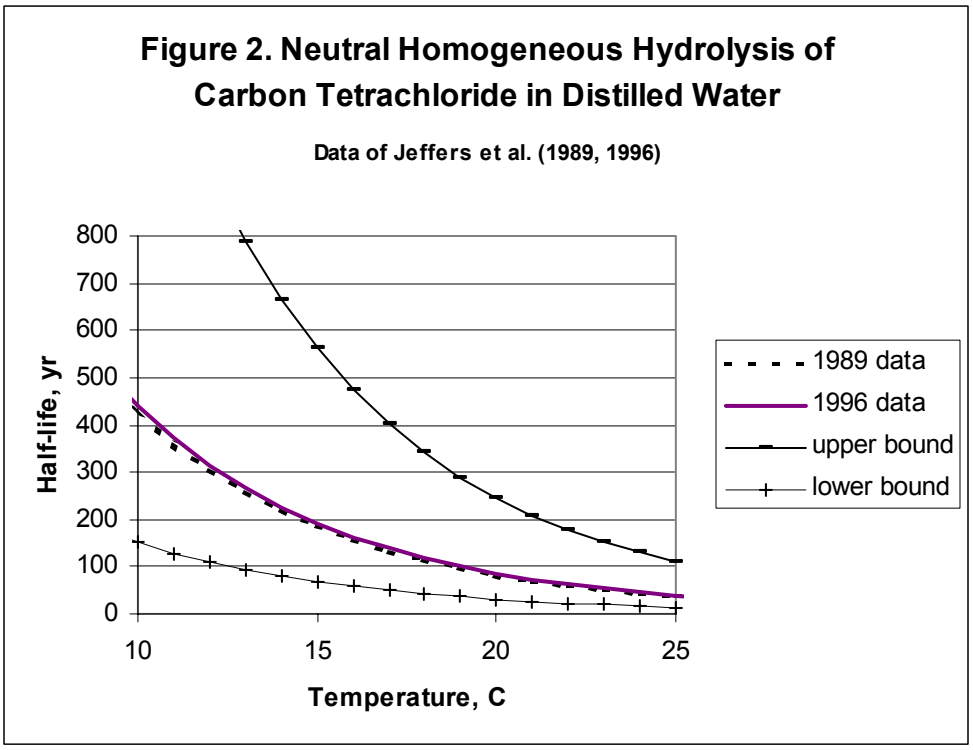
There is some conflicting information in the literature for on the hydrolysis rate of CT at 25C. For instance, Fells and Moelwyn-Hughes (1959), as cited in the compilation by Mabey and Mill (1978), reported a CT half-life of 7000 years at 25C; whereas, Jeffers et al., (1989) reported a CT half-life of 40 years at 25C. It should be noted that these data were collected at temperatures of 70-180C and extrapolated to 25C using the Arrhenius equation.

A later article by Jeffers et al. (1996) addresses the discrepancy between the previous two sources. Essentially, through further testing of reaction order, Jeffers et al. (1996) show that the hydrolysis reaction for CT is first order, as proposed in the 1989 paper and in contrast to the second-order interpretation that generated the 7000-year half-life in Fells and Moelwyn-Hughes (1959). Both the new Jeffers et al. (1996) data and a reanalysis of original data that were the basis for the Fells and Moelwyn-Hughes (1959) half-life calculation agree with the half-life reported in Jeffers et al. (1989). That is, Jeffers et al. (1996) assert and provide evidence to support that the extrapolated half-life of CT at 25C is approximately 40 years.

Both Peter Jeffers and Ted Mill, the primary researchers in this field, were personally contacted. They agree that the estimate of 40 years for the half-life of CT in water seemed reasonable and that the hydrolysis reaction is appropriately modeled as a first-order reaction. A further paper by Jeffers et al. (1994) attempted to measure any possible effect of mineral surfaces on hydrolysis rate and found the rate unchanged even in the presence of sulfide minerals. Other literature on related compounds (Haag and Mill 1988; Deeley et al. 1991) corroborates this result and suggests that the hydrolysis rate determined in DI water should be a reasonable prediction of the rate of hydrolysis in the subsurface. However, both of these individuals thought that further laboratory work to verify this general assumption with Hanford sediments under ambient conditions would be a good idea before making a remediation decision.

The predicted half-life for CT using the Arrhenius parameters presented in Jeffers et al. (1989) and Jeffers et al. (1996) over a temperature range of 10 to 25 C is plotted in Figure 2. Included on this plot are the upper and lower bound predictions based on the uncertainty in the Arrhenius parameters listed in Jeffers (1996). *This plot suggests that the half-life of CT in the aquifer at Hanford is likely between 36 and 290 years for a temperature of about 19 C.* The best estimate for the half-life would be about 100 years. It should be noted, however, that *we have found no data for CT hydrolysis that were collected at ambient temperatures.* As this seems to be an issue with the other chlorinated methanes (see below), it cannot be ignored for CT.

Based on the literature and personal communication sources listed above, it is likely that neutral hydrolysis of CT leads to formation of CO_2 and HCl, not any hazardous compounds. However, reductive processes leading to the formation of other chlorinated intermediates such as CF, and the possible presence and persistence of any chlorinated intermediates formed during hydrolysis of CT under conditions in the Hanford aquifer (including groundwater and sediment interactions) should be confirmed.



Biotic transformation

Carbon tetrachloride biotransformation has been demonstrated with a number of different bacteria in both the laboratory and the field. The conditions that favor biodegradation of CT are predominantly anaerobic. In fact, there have been no published reports of aerobic transformation of CT. In contrast, anaerobic transformation of CT has been demonstrated in a wide range of microbes. Table 1 provides details on pure cultures that have demonstrated CT transformation. As is evident from this table, CT destruction has been observed using denitrifying, sulfate-reducing, acetogenic, fermentative, and methanogenic organisms. Unlike chloroethenes, CT biotransformation does not strictly follow a reductive dechlorination pattern with sequential removal of single chlorines to produce CF, DCM, CM, and methane. Rather, the presence of chloromethanes, carbon dioxide, and other non-chlorinated organics suggest both reductive and substitutional reactions.

Various authors studying mixed cultures of anaerobic organisms have also reported a similar distribution of products. For example, Bouwer and McCarty reported that cultures of sewage treatment bacteria biodegraded CT to carbon dioxide and other non-chlorinated metabolites under methanogenic conditions using acetate as the electron donor (Bouwer and McCarty 1983a). These authors also demonstrated CT transformation to CF and carbon dioxide by an ethanol-fed, denitrifying consortium (Bouwer and McCarty 1983b). Similar products were reported by researchers studying CT biotransformation under denitrifying conditions at the Hanford Site (Hooker et al. 1998; Sherwood et al. 1996). A sulfate-reducing consortium was also reported to transform CT (Cobb and Bouwer 1991). In addition, Semprini speculated that sulfate-reducing bacteria were responsible for the CT degradation they observed during a field test of in situ bioremediation (Semprini et al. 1991). In both cases CF production only accounted for approximately 50% to 60% of the reduction in CT concentration. Other products were not identified.

It is important to note that in each of the above systems, CT was transformed by anaerobic cultures that were actively metabolizing another organic compound as an energy and carbon source. To date, it has never been demonstrated that CT can be used as a growth substrate. For example, Semprini et al. observed only minimal reductions in CT concentration during the initial phase of their field test of CT in situ bioremediation before primary substrates were added to the aquifer (Semprini et al. 1992). In contrast once substrate addition commenced there was rapid reduction in CT concentration with a simultaneous production of CF.

Conversion of CT to less chlorinated methanes has also been observed in the field in anaerobic aquifers where CT is present as a co-contaminant with other organic compounds that can serve as an electron donor. Liang and Grbic-Galic (1993) observed reductions in CT concentration in a laboratory microcosm study using sediments from two CT and fuel hydrocarbon contaminated sites. These researchers also saw similar responses from an uncontaminated, but actively methanogenic, aquifer sediment. Chloroform formation could only account for between 15 and 50% of the reduction in CT. No DCM or chloromethane were detected.

Table 1: Pure cultures showing CT transformation

Organism	Condition	Reported Products	CM Fraction of Products [a]	Reference
Desulfobacterium autotrophicum	Sulfate Reducing	CF, DCM	60%	Egli et al. 1988
Acetobacterium woodii	Acetogenic	CF, DCM, CO_2	8%	Egli et al. 1988
Methanobacterium thermoautotrophicum	Methanogenic	CF, DCM, CO_2, WSC [b]	34%	Egli et al. 1990
Methanosarcina thermophila	Methanogenic	CF, CO_2	13%	Andrews and Novak 1999
Clostridium sp.	Fermentative	CF, DCM	8%	Galli and McCarty 1989
Pseudomonas strain KC	Denitrifying	CO_2	0%	Criddle et al. 1990a
Escherichia coli K-12	Fermentative	CF, CO_2, CBF [c]	38%	Criddle et al. 1990b

[a] Fraction of products that are chlorinated methanes such as CF and DCM.
[b] WSC denotes unidentified water-soluble compounds.
[c] CBF denotes a cell bound compound other than a volatile organic.

Chloroform

Abiotic Transformation

The literature on hydrolysis rates of CF also contains conflicting data. For example, a room-temperature sealed-ampule study of CF hydrolysis (Dilling et al. 1975) yielded a half-live of 1.25 years. In contrast, the extrapolated high-temperature (100-150C) data of Fells and Moelwyn-Hughes (1959) for CF show a half-live of 3500 years at 25C. Jeffers et al., (1989) reported a half-life for CF of 1850 years based on data collected at 50-170 C.

Dilling et al. (1975) stated that the faster rates obtained at 25 C were possibly due to different mechanisms operating at low temperature than at the elevated temperature. This possibility is supported by the failure of the Fells and Moelwyn-Hughes (1959) data to be adequately described by the standard two-constant Arrhenius equation. Other differences in the high- and low-temperature data sets are 1) that a large headspace (49-72% of the total ampule) was used in the low-temperature work, whereas Jeffers et al. (1989) restricted headspace to the minimum needed to prevent ampule breakage (about 5%), and 2) initial concentrations were 1 ppm in the low-temperature work, and 1125 ppm for the Fells and Moelwyn-Hughes (1959) high-temperature data. It is unclear what the initial CF concentration was in the Jeffers et al. (1989) work at high temperature, although it was probably between 1% and 10% of aqueous saturation (i.e., 82-820 ppm).

Biotic Transformation

Unlike CT, chloroform can be biologically transformed under both aerobic and anaerobic conditions. Aerobic destruction of CF is a co-metabolic process that is mediated by a variety of organisms. Table 2 provides a list of some of the most common types of co-substrates that have demonstrated the ability to support aerobic CF transformation. As is evident from Table 2, aerobic co-metabolism of CF results in complete mineralization of the toxin.

Table 2: Metabolisms that co-metabolically degrade CF under aerobic conditions

Organism	Co-Substrate	Reported Products	Reference
Methylosinus trichosporium OB3b	Methane	CO_2	Speitel et al. 1993
Rhodococcus rhodochrous ATCC 21197	Propane	CO_2 [a]	Malachowsky et al. 1994
Pseudomonas sp. strain ENVPC1	Toluene	CO2, [b], CBF [c]	McClay et al. 1996
Nitrosomonas europaea	Ammonia	Not Reported	Ely et al. 1997

[a] Products from CF not reported, but is implied as both TCE and VC produced CO_2.
[b] WSC denotes unidentified water-soluble compounds.
[c] CBF denotes a cell bound compound other than a volatile organic.

Anaerobic transformation of CF is similar to that for CT with the exception that it is not transformed by denitrifying bacteria (Bouwer and McCarty 1983; Criddle et al. 1990). CF biotransformation as been demonstrated by sulfate reducing (Gupta et al. 1996a; Egli et al. 1987), acetogenic (Egli et al. 1990), fermentative (Gali and McCarty 1989), and methanogenic cultures (Gupta et al. 1996; Bagley and Gossett 1995; Mikesell and Boyd 1990; Bouwer and

McCarty 1983). In each case, CF was not acting as a growth substrate and its destruction requires the presence of a co-substrate. The last entry in this table represents a methanogenic river sediment that was not amended with an anthropogenic electron donor. Hence, the energy source for CF transformation is natural organic carbon. Products from biotransformation of CF in well-controlled laboratory studies are shown in Table 3. As is evident from this table, both reductive dechlorination and oxidation products are produced by the various anaerobic organisms.

Table 3: Cultures showing anaerobic CF biotransformation

Organism	Condition	Reported Products	CM Fraction of Products [a]	Reference
Mixed culture	Sulfate reducing	DCM	5% (CM not measured so could be higher)	Gupta et al. 1996b
Acetobacterium woodii	Acetogenic	DCM, CO_2	28%	Egli et al. 1988
Clostridium sp.	Fermentative	DCM	20%	Galli and McCarty 1989
Methanosarcina barkeri 227	Methanogenic	DCM, CO_2	20-60%	Bagley and Gossett 1995
Methanosarcina strain DCM	Methanogenic	DCM, CM, CO_2	65%	Mikesell and Boyd 1990
Methanosarcina mazei S6	Methanogenic	DCM, CM, CO_2	78%	Mikesell and Boyd 1990
Mixed culture	Methanogenic	CO_2	~80%	VanBeelen and VanKeulen 1990

[a] Fraction of products that are chlorinated methanes.
[b] WSC denotes unidentified water-soluble compounds.
[c] CBF denotes a cell bound compound other than a volatile organic.

Dichloromethane

Abiotic Transformation

Little published data is available on abiotic transformation of DCM. No data was found for reaction in a mixed mineral and aqueous system. One report was found for aqueous hydrolysis of DCM in DI water and a half-life of 690 years was observed at 25 C (Maybey and Mills 1978). No products were reported for this work. In addition, it is not known whether the experiments were conducted with, or without oxygen.

Biotic Transformation

Microorganisms transform dichloromethane under both aerobic and anaerobic conditions. Transformation under both conditions has been observed both cometabolically and with DCM acting as a growth substrate (Leisinger and Braus-Stromeyer 1995; Freedman and Gossett 1991; Yanghao 1990). Table 4 provides list of the reported laboratory microbial systems that transform DCM. It is important to note that, with the exception of the acetogen, *Acetobacterium woodii*, the predominant products are nonchlorinated compounds. This finding is consistent with the lack of chloromethane in groundwater where DCM is degrading (Mehran and Wolf 1999; Mechaber et al. 1998). This observation implies that it may be reasonable to assume that CM

can be neglected as a degradation product while modeling the fate of CT in the Hanford aquifer. Such an assumption would eliminate reactions 6, 11, 12, 13, and 14 from the reaction scheme displayed in Figure 1.

Table 4: List of organisms showing the ability to co-metabolically degrade DCM under aerobic conditions

Organism	Condition	Co-Substrate	Reported Products	Reference
Rhodococcus rhodochrous ATCC 21197	Aerobic; cometabolic	Propane	CO_2 [a]	Malachowsky et al. 1994
Soil microcosm	Aerobic; cometabolic?	None added, but SOM [a] was present	CO_2 (15-75%)	Davis and Madsen 1991
Soil microcosm	Aerobic; cometabolic?	None added, but SOM [a] was present	CO_2 (15-75%)	Davis and Madsen 1991
Mixed culture	Aerobic; cometabolic	Glucose	CO_2 (~100%)	Klecka 1982
Pseudomonas strain DM1	Aerobic; growth substrate	None	Complete release of Cl^-	Yanghao 1990
Mixed culture	Methanogenic; growth substrate	None	CO_2, CH_4, Acetate	Freedman and Gossett 1991
Acetobacterium woodii	Acetogenic; co-metabolic	Fructose	CM	Egli et al. 1988
Mixed culture	Methanogenic; cometabolic	Acetate	Not reported	Gupta et al. 1996a
Mixed culture	Sulfate reducing; co-metabolic	Acetate	Not reported	Gupta et al. 1996b
Strain DMC	Acetogenic; growth substrate	None	Acetate	Magli et al. 1995
Mixed culture	Acetogenic; growth substrate	None	Acetate (23%), CO_2 (58%), Formate (11%)	Braus-Stromeyer et al. 1993
[a] SOM denotes soil organic matter.				

Chloromethane

Abiotic Transformation

Little published data is available on abiotic transformation of CM. No data could be found for reaction in a mixed mineral and aqueous system. One report was found for aqueous hydrolysis of CM at 25 °C, and a half-life of 0.93 years was observed (Maybey and Mills 1978). No products were reported for these experiments nor whether the experiments were conducted in the presence of oxygen..

Biotic Transformation

Chloromethane can be transformed by a number of biological processes. This compound is cometabolized both oxidatively (Rasche et al. 1990; Stirling and Dalton 1979) and hydrolytically

(Keuning et al. 1985). In addition, several bacteria have been characterized which are able to use chloromethane as a growth substrate. These organisms include the strictly anaerobic homoacetogenic bacterium strain MC (Messmer et al. 1993) and several aerobic methylotrophs (Connell-Hancock et al. 1998; Doronia and Trotsenko 1997; Doronia et al. 1996; Hartmans et al. 1986). Table 5 outlines the pertinent properties of these reactions including the reported products from CM biotransformation.

Table 5: List of organisms showing the ability to degrade CM under aerobic conditions

Organism	Condition	Co-Substrate	Reported Products	Reference
Methylobacterium sp. Strain CM4	Aerobic	None	Complete Cl^- release to media	Vannelli et al. 1998
Strain IMB-1	Aerobic	None	Not reported, but MeBr [a] transformed to CO2, and biomass	Connell-Hancock et al. 1998
Hyphomicrobium	Aerobic	None	Complete Cl^- release to media	Hartmans et al. 1986
Nitrosomonas europaea	Aerobic	Ammonia	Formate	Rasche et al. 1990
Methylococcus capsulatus	Aerobic	Methane	ND [b]	Stirling and Dalton 1979
[a] MeBr denotes methyl bromide. [b] ND denotes no data was reported.				

Chloromethane Transformation in Groundwater Systems

Tables 6, 7, and 8 summarize the published first order rate data (reported as a half-life) for biotransformation of CT, CF, and DCM in actual, or simulated, aquifer systems. No published data could be found for CM degradation rates in an aquifer system. For CT, the reported half-life ranges from 2.8 days to 4300 days. The range of values for both CF and DCM is much smaller at 12 to 63 days and 2.3 to 70 days, respectively.

The reaction products and conditions listed in Tables 6 through 8 are consistent with those discussed in the preceding sections for highly enriched and pure cultures. Namely, a co-substrate was present in all systems showing CT and CF transformation. In contrast, DCM was transformed in systems without a co-substrate, suggesting it was used as a growth substrate. Furthermore, anaerobic conditions were present in all systems showing CT and CF degradation while DCM was degraded in both aerobic and anaerobic systems. Finally, products of transformation for each compound consisted of a mixture of both less chlorinated methanes and (presumably in many cases) non-chlorinated compounds.

For the Hanford CT groundwater plume, which is both aerobic and in contact with sediments that have organic carbon levels below 0.5 wt% (Newcomer et al. 1995), these results suggest *that no biological activity is currently contributing to the natural attenuation of either CT or CF*. Hence only the abiotic reactions indicated in Figure 1 (Numbers 2, 4, and 10) and aerobic DCM transformation (Number 9) should be considered when evaluating the impact of natural attenuation on the Hanford CT plume.

Table 6: First-order dehalogenation rates measured for CT

Location	Temp (°C)	Condition	Lab or Field Data?	Initial Concentration (μM)	Products	Half Life (day)	Co-Substrate	Reference
Brazil Manufacturing Site	ND [b]	Anaerobic	Field	65 to 650	CF, DCM	90 to 130	DCP [a]	Hardy et al. 1999
Tyndal AFB	35	Anaerobic	Lab	10	CF	4.6	Jet fuel	Liang and Grbic-Galic 1993
Traverse City MI	35	Anaerobic	Lab	8	CF(50%) [c], other?	22	Gasoline	Liang and Grbic-Galic 1993
Pensacola FL	35	Anaerobic	Lab	10	CF(14%) [c], other?	14	High carbon soil	Liang and Grbic-Galic 1993
Grinsted Landfill, Denmark	ND [b]	Anaerobic	Field	0.5 to 2.3	ND [b]	2.8	ND [b]	Rugge et al. 1995
Vejen Landfill, Denmark	ND [b]	Anaerobic	Field	0.8	ND [b]	3.5	DOC [e]	Nielsen et al. 1992
Tucumcari NM	ND [b]	Anaerobic	Field	6.5	CF, DCM, CO_2? [d]	4300	Gasoline	McQuillian et al. 1998
Necco Park, NY	10	Anaerobic	Field	65 to 650	CF, DCM	340	Landfill leachate	Lee et al. 1995

[a] DCP denotes dichloropropane.
[b] ND denotes no data was reported.
[c] Values in brackets indicate the quantity of the transformed parent compound present as a less chlorinated species.
[d] Carbon dioxide implicated by lack of mass balance on CF and DCM, not verified with direct measurement.
[e] DOC denotes dissolved organic carbon.

Table 7: First-order dehalogenation rates measured for CF

Location	Temp (°C)	Condition	Lab or Field Data?	Initial Concentration (μM)	Products	Half Life (day)	Co-Substrate	Reference
Merwede River, Netherlands	10	Anaerobic	Lab	34	CO_2 (60%) [a]	12	High carbon soil	VanVeelen and Keulem 1990
CA chemical plant	20	Anaerobic	Field	268	DCM, CO_2 [b]	63	Yes, other GW contaminants	Cox et al. 1998
Gulf Coast, open pond	15	Anaerobic	Field	126	Not reported	25	High carbon soil	Fathepure et al. 1995

(a) Value in brackets indicates the quantity of the transformed parent compound present as a less chlorinated species.
(b) Carbon dioxide formation is speculated, but was not verified by direct measurement.

Table 8: First-order dehalogenation rates measured for DCM

Location	Temp (°C)	Condition	Lab or Field Data?	Initial Concentration (μM)	Products	Half Life (day)	Co-Substrate	Reference
Not stated	ND [a]	Anaerobic	Lab	1200	CO_2, Cl^-	2.3	None	Biehle et al. 1999
Los Angeles, CA	ND [a]	Sequential Anaerobic/ Aerobic	Field	12,000	NCh [b]	4	None	Mehran and Wolf 1999
Near surface soil, location not stated	25	Aerobic	Lab	6	CO_2, Others?	7 to 70	None	Davis and Masen 1991
Near surface soil, location not stated	25	Anaerobic	Lab	ND [a]	ND [a]	22	None	Davis and Masen 1991
Not stated	ND [a]	Anaerobic	Field	<15	ND [a]	63	Unspecified co-contaminants	Mechaber et al. 1998

(a) ND denotes no data was reported.
(b) NCh denotes the products were non chlorinated species since no CM was formed.

Sorption of Chloromethanes on Hanford Sediments

Movement of chemicals across the water/sediment interface is primarily a sorption-desorption process governed by the solubility of the particular chemical in water and its affinity to the solid phase. In high carbon soils, it has been demonstrated that the amount of nonionic organic chemicals sorbed varies from soil to soil and that such variations are primarily caused by the organic content of the soil (Chang et al. 1992; Lyman et al. 1990; Bishop et al. 1989). However, mineral driven sorption also becomes important as organic carbon content diminishes to below 0.1% (Kile et al. 1995). At levels of organic carbon above 0.1%, the normalized sorption coefficient (K_{oc}) represents an important parameter that can be used to estimate the soil/water equilibrium partition coefficient (K_d) by the equation:

$$\boldsymbol{K_d = f_{oc} \times K_{oc}} \quad (1)$$

Where f_{oc} is the mass fraction of organic carbon (mass-oc/mass-soil) in the soil and K_d is the soil/water equilibrium partition coefficient [(mg/kg-soil)/(mg/L)]. It is important to note that at levels of organic carbon below approximately 0.1%, this relationship will likely *under estimate* K_d since it neglects mineral driven sorption (Stephanatos et al. 1991). In these cases the real quantity of attached material will be higher than those predicted by Equation (1).

Many researchers have developed methods for estimating K_{oc} based on measurable properties such as the octanol/water partition coefficient (K_{ow}). Four of the most common correlations are given in the following equations (Lyman et al. 1990; Bishop et al. 1989).

$$\log(K_{oc}) = 3.64 - 0.55 \times \log(S) \quad (2)$$

$$K_{oc} = 0.63 \times K_{ow} \quad (3)$$

$$\log(K_{oc}) = 5.3 - 0.54 \times \log(W \times 10^9) \quad (4)$$

$$\log(K_{oc}) = 4.277 - 0.557 \times \log(S_m) \quad (5)$$

Where S is the water solubility of the organic compound (mg/L), S_m is the molar water solubility of the organic compound (μmol/L), and W the water solubility in mole fraction (mole-compound/mole-water). Table 9 provides information on the data used to develop each of these predictive equations. Table 10 details the value of the required input parameters for the chlorinated methanes while Table 11 lists the values of K_{oc} estimated by equations 2 and 5 for chlorinated methane. Equations 2 and 5 are likely to provide the most reliable predictions of K_{oc} for chloromethanes because the value of the input parameters is within the range used to develop these equations. In addition, halogenated C_1 and C_2 compounds were included in the regression data used to develop Equations 2 and 5, but not Equations 3 and 4. Experimentally measured values of K_{oc} for chloromethanes from a variety of studies are given in Table 12 for comparison.

Table 9: Information on predictive equations for K_{oc}

Equation Number	Range of Independent Parameter [a]	Range of K_{oc} [a]	Comment
2	$5\times10^{-4} \le S \le 1\times10^{6}$	$1 \le K_{oc} \le 1\times10^{6}$	Wide variety of compounds, dibromomethane was only halogenated C_1 or C_2
3	$1\times10^{2} \le K_{ow} \le 4\times10^{6}$	$100 \le K_{oc} \le 1\times10^{6}$	Mostly aromatic compounds, no halogenated C_1 or C_2
4	$3\times10^{-11} \le W \le 4\times10^{-5}$	$80 \le K_{oc} \le 1\times10^{6}$	Mostly aromatic compounds, no halogenated C_1 or C_2
5	$2\times10^{-3} \le S_m \le 1\times10^{5}$	$30 \le K_{oc} \le 1\times10^{6}$	Chlorinated hydrocarbons including TeCA, TCA, DCA, PCE, dibromomethane
(a) Approximate range of data used for regression equation.			

Table 10: Physical properties used to estimate organic carbon sorption coefficient

Compound	Molecular Weight	S (mg/L)	S_m (μmol/L)	W (mol/mol)	K_{ow}
CT	153.8	800	5200	9.4×10^{-5}	537
CF	119.4	8200	6.9×10^{4}	1.2×10^{-3}	85.1
DCM	84.9	13000	1.5×10^{5}	2.8×10^{-3}	14.1
CM	50.5	6400	1.3×10^{5}	2.3×10^{-3}	26.9
(a) Koc values were taken from those compiled by Chang et al. 1992.					

Table 11: Estimated K_{oc} values for chloromethanes

Compound	Koc (μg/g-oc)/(μg/mL)	
	Eq. 2	Eq 5
CT	110.48	161.11
CF	30.72	38.26
DCM	23.84	24.49
CM	35.33	27.29

Table 12: Published values of Koc for chloromethanes

Reference	Koc (µg/g-oc)/(µg/mL)				Comment
	CT	CF	DCM	CM	
Jeng et al. 1992	122	76.8	47.4	ND [a]	Data is a compilation of information measured by others.
Walton et al. 1992	143.6 ± 32.1 [b]	37.4 ± 8.6 [b]	ND [a]	ND [a]	Silty loam with an organic carbon content of 1.5%.
Walton et al. 1992	48.9 ± 16.2 [b]	30.0± 2.6 [b]	ND [a]	ND [a]	Sandy loam with an organic carbon content of 0.7%.
Duffy et al. 1997	55.0± 1.0 [b]	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 1.5%.
Duffy et al. 1997	77.6 ± 1.3 [b]	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.53%.
Duffy et al. 1997	269 ± 2 [b]	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.14%.
Peng and Dural 1998	121.9	153.5	ND [a]	ND [a]	Measured with Missouri Soil.
Peng and Dural 1998	150.4	196.9	ND [a]	ND [a]	Measured with California Soil.
Peng and Dural 1998	121.0	190.0	ND [a]	ND [a]	Measured with Florida Soil.
Kile et al. 1999	59.1 ± 7.5 [b]	ND [a]	ND [a]	ND [a]	Average of 17 near surface soils with organic carbon ranging from 1.1% to 5.6%.
Kile et al. 1999	106.7 ± 13.44 [b]	ND [a]	ND [a]	ND [a]	Average of 9 river bottom sediments with organic carbon ranging from 1.4% to 5.6%.
Kile et al. 1995	60 ± 7 [b]	ND [a]	ND [a]	ND [a]	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%.
Kile et al. 1995	102 ± 11 [b]	ND [a]	ND [a]	ND [a]	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%.

(a) ND denotes no data was reported for this compound.
(b) Value reported as an average (± standard deviation).

Estimating the soil/water equilibrium partition coefficient for Hanford requires a knowledge of the organic carbon of aquifer sediments. Values for f_{oc} for the Hanford aquifer are listed in Table 13. The first two entries in this table correspond to values determined at the in situ bioremediation test site approximately 1.5 km northeast of the Plutonium Finishing Plant. The third entry represents the value used in the 1990 assessment of liquid effluents at the Hanford Site (WHC 1990). No reference was given in this document to the source of the value. The final value corresponds to that measured for a Hanford silty sand used by Washington State University will study the effects of soil vapor extraction on CT.

Table 13: Organic carbon fraction data for the Hanford aquifer

Location	Depth BGS (m)	Max f_{oc}	Min f_{oc}	Av ±St dev	Reference
299-w11-30 (4 samples)	67 to 85	5.15×10^{-3}	0	$1.5\times10^{-3} \pm 2.4\times10^{-3}$	Newcomer et al. 1995
299-w11-32 (5 samples)	74 to 77	7.6×10^{-4}	0	$2.7\times10^{-4} \pm 2.9\times10^{-4}$	Newcomer et al. 1995
Quoted value for Hanford, no supporting data	NA	1.00×10^{-3}	ND [a]	NA [b]	WHC 1990
299-w15-31	40 to 43	1.10×10^{-3}	ND [a]	NA [b]	Ford 1996
(a) ND denotes no data was reported for this compound (b) NA denotes the parameter is not applicable					

An estimate for the range and most probable value for K_d of each chloromethane at Hanford was derived from the data and information presented in this report. Equation 1 was used to calculate K_d based on reported or calculated data for f_{oc} and K_{oc}. However, it is important to note that *the predicted K_d from Equation 1 for Hanford may be an under estimate* since the organic carbon fraction of the Hanford aquifer sediments are very close to the lower limit of applicability for this correlation. This potential to under predict sorption is demonstrated by the fact that Zhao et al. (1999) report a measured K_d value of 0.39 for CT in a soil with an organic carbon content below their detection limit of 0.03%. In contrast, the predicted K_d for CT in a soil with an organic carbon content of 0.03% ranges from 0.013 to 0.12 (L/kg) based on the values of K_{oc} reported in Table 11 and Table 12.

The estimated range of K_d values for CT was determined by examining the range of calculated and reported K_d values from the literature. Table 14 reports the maximum values of K_d that are predicted from Equation 1 using the K_{oc} values reported in Table 11, along with the highest organic carbon fraction reported in Table 13 (0.0052). Maximum values for K_d determined in field studies are listed in Table 15. These values are based on the highest organic carbon fraction reported in Table 13 (0.0052) and K_{oc} (Table 12) values from each individual study. For CT, Kd values calculated using the f_{oc} and K_{oc} values measured in each study are shown in parentheses next to the maximum value. The maximum value of K_d selected from this information is 0.83 L/kg. There is one K_d value reported in Table 15 that is higher than the selected maximum, but the study conditions and results suggest that a K_d calculated using the measured K_{oc} and an f_{oc} value from another source would not be reasonable.

Table 16and Table 17 provide minimum K_d estimates using an f_{oc} of 0.0027, the lowest average f_{oc} value determined from the data reported by Newcomer et al. (1995). Values in Table 16 are calculated using the K_{oc} values reported in Table 11. Values in Table 17 are calculated from field data using the K_{oc} values reported in Table 12. Another estimate for the minimum K_d was obtained by applying Equation 1 with the lowest average f_{oc} value determined from the data reported by Newcomer et al. (1995) and a K_{oc} value of 60. As shown in Table 13, the low average of measured f_{oc} corresponds to an organic fraction of 0.00027 (0.027%). The K_{oc} value (60 (ug/g-oc)/(ug/mL)) was selected from an extensive survey of soils conducted by Kile et al. (1995) showing relatively consistent K_{oc} values over a wide range of soil types and organic carbon content.. The minimum K_d value calculated using this technique is 0.016 L/kg. This

value is consistent with many of the lower K_d values listed in Table 17 and was selected as the minimum K_d value for use at Hanford.

The selected range of values of K_d for CT is 0.016 to 0.83 L/kg. The most probable value within this range was selected as 0.12 L/kg. This value corresponds a K_d calculated using a K_{oc} value measured from an extensive survey of soils conducted by Kile et al. (1995) showing relatively consistent K_{oc} values over a wide range of soil types and organic carbon content. The f_{oc} value used in the calculation of most probable K_d was 0.002. This value for f_{oc} is the average of the maximum f_{oc} values reported in Table 13 and is considered to be a reasonable compromise of f_{oc} information for the Hanford Site.

Similarly, Tables 14 through 17 show range of K_d values for CF and DCM. For CF, the range of K_d values selected from this information is 0.008 to 0.39 L/kg. For the maximum K_d value, the data from Peng and Dural (1998)was not considered due to the study conditions. The most probable K_d value of 0.06 L/kg was selected using the same f_{oc} as used for the CT estimate and a K_{oc} value of 30 (μg/g-oc)/(μg/mL) (experimental value of Walton et al. 1992). Only limited data are available for DCM. The selected range of K_d values is 0.013 to 0.24 L/kg based on the available K_{oc} value (47 (μg/g-oc)/(μg/mL)) and the minimum and maximum f_{oc} values used in the CT calculations. The most probable K_d value of 0.13 L/kg is a simple average of the minimum and maximum values.

For comparison, the values for K_d evaluated in the previous Hanford CT modeling report by Chiaramonte et al. (1996) were 0 and 0.114 (L/kg) for CT and 0 and 0.016 (L/kg) for CF. Clearly, these are somewhat lower that those predicted from the analysis described in this report.

Table 14: Maximum estimates for the solid/liquid equilibrium partition coefficient based on K_{oc} data reported in Table 12 and the maximum f_{oc} in Table 14

Compound	K_d (μg/g-soil)/(μg/mL)	
	Equation 2	Equation 5
CT	0.57	0.83
CF	0.16	0.20
DCM	0.12	0.13
CM	0.18	0.14
(a) ND = no data was reported for this compound.		

Table 15: Maximum estimates for the solid/liquid equilibrium partition coefficient based on K_{oc} data reported in Table 13 and the maximum f_{oc} in Table 14

Reference	K_d (ug/g-soil)/(ug/mL)				Comment
	CT	CF	DCM	CM	
Jeng et al. 1992	0.63	0.40	0.24	ND [a]	Data is a compilation of information measured by others.
Walton et al. 1992	0.74 ± 0.17 (2.1)	0.19 ±0.04	ND [a]	ND [a]	Silty loam with an organic carbon content of 1.5%
Walton et al. 1992	0.25 ± 0.08 (0.34)	0.15 ± 0.01	ND [a]	ND [a]	Sandy loam with an organic carbon content of 0.7%
Duffy et al. 1997	0.28 ± 0.01 (0.83)	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 1.5%
Duffy et al. 1997	0.40 ± 0.01 (0.41)	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.53%
Duffy et al. 1997	1.4 ± 0.01 (0.38)	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.14%
Peng and Dural 1998	0.63	0.79	ND [a]	ND [a]	Measured with Missouri Soil
Peng and Dural 1998	0.77	1.0	ND [a]	ND [a]	Measured with California Soil
Peng and Dural 1998	0.62	0.98	ND [a]	ND [a]	Measured with Florida Soil
Kile et al. 1999	0.30 ± 0.04 [b]	ND [a]	ND [a]	ND [a]	Average of 17 near surface soils.
Kile et al. 1999	0.55 ± 0.07 [b]	ND [a]	ND [a]	ND [a]	Average of 9 river bottom sediments.
Kile et al. 1995	0.31 ± 0.04 [b]	ND [a]	ND [a]	ND [a]	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%.
Kile et al. 1995	0.53 ± 0.06 [b]	ND [a]	ND [a]	ND [a]	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%.

(a) ND denotes no data was reported for this compound.
(b) Value reported as an average (± standard deviation).

Table 16: Minimum estimates for the solid/liquid equilibrium partition coefficient based on K_{oc} data reported in Table 12 and an f_{oc} of 0.00027

Compound	K_d (ug/g-soil)/(ug/mL)	
	Equation 2	Equation 5
CT	2.99×10^{-2}	4.35×10^{-2}
CF	8.39×10^{-3}	1.05×10^{-2}
DCM	6.29×10^{-3}	6.82×10^{-3}
CM	9.44×10^{-3}	7.34×10^{-3}
(a) ND = no data was reported for this compound		

Table 17: Minimum estimates for the solid/liquid equilibrium partition coefficient based on K_{oc} data reported in Table 13 and an f_{oc} of 0.00027

Reference	K_d (ug/g-soil)/(ug/mL)				Comment
	CT [b]	CF [b]	DCM	CM	
Jeng et al. 1992	0.033	0.021 ± 0.002	0.013	ND [a]	Data is a compilation of information measured by others.
Walton et al. 1992	0.039 ± 0.009	0.010 ± 0.001	ND [a]	ND [a]	Silty loam with an organic carbon content of 1.5%
Walton et al. 1992	0.013 ± 0.004	0.0079	ND [a]	ND [a]	Sandy loam with an organic carbon content of 0.7%
Duffy et al. 1997	0.015 ± 0.003	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 1.5%
Duffy et al. 1997	0.021 ± 0.003	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.53%
Duffy et al. 1997	0.073 ± 0.005	ND [a]	ND [a]	ND [a]	Soil with an organic carbon content of 0.14%
Peng and Dural 1998	0.033	0.041	ND [a]	ND [a]	Measured with Missouri Soil
Peng and Dural 1998	0.040	0.052	ND [a]	ND [a]	Measured with California Soil
Peng and Dural 1998	0.033	0.051	ND [a]	ND [a]	Measured with Florida Soil
Kile et al. 1999	0.016 ± 0.002	ND [a]	ND [a]	ND [a]	Average of 17 near surface soils.
Kile et al. 1999	0.029 ± 0.004	ND [a]	ND [a]	ND [a]	Average of 9 river bottom sediments.
Kile et al. 1995	0.016 ± 0.002	ND [a]	ND [a]	ND [a]	Average of 32 near surface soils with organic carbon ranging from 0.16% to 6.1%.
Kile et al. 1995	0.028 ± 0.003	ND [a]	ND [a]	ND [a]	Average of 36 bed sediments with organic carbon ranging from 0.11% to 4.7%.
a ND denotes no data was reported for this compound. b When possible, values are reported as an average (± standard deviation).					

Summary

Natural processes that are likely to affect chloromethane contamination in the groundwater at Hanford include abiotic hydrolysis of CT and CF; biotic and abiotic transformation of DCM, and sorption of these compounds to the soil matrix. The reaction processes are summarized in Figure 3.

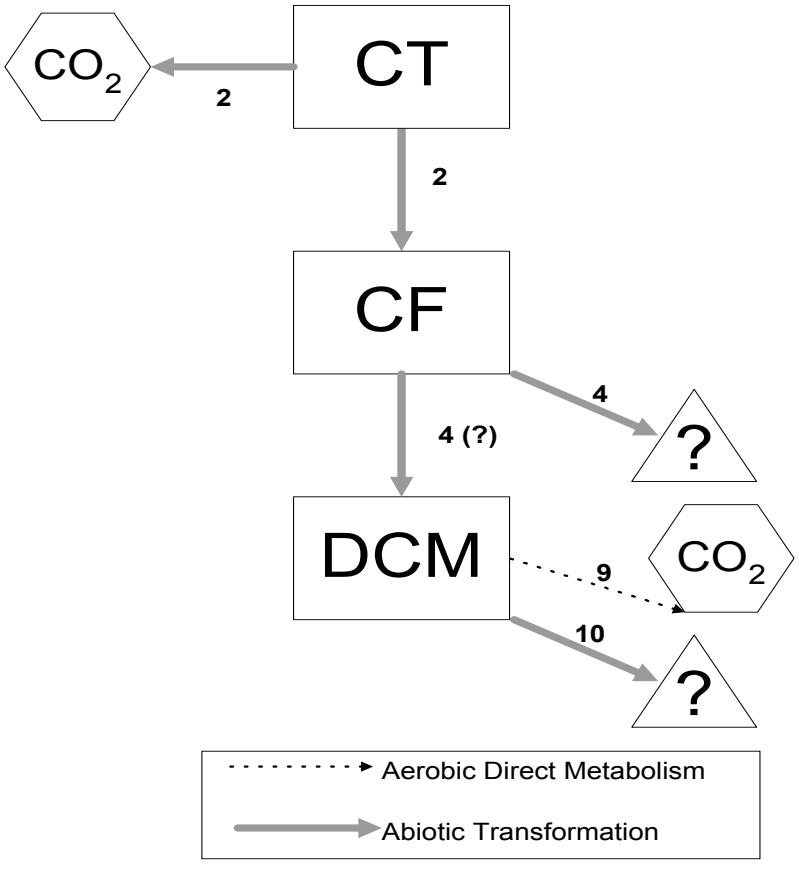


Figure 3: Transformation pathways that can be expected to occur at Hanford. Numbers next to each reaction refer to reaction numbers that are referenced in the text.

Assuming first order reactions, the following equations describe the potential effects of abiotic and biotic transformation on CT, CF, and DCM in the Hanford groundwater.

$$\left.\frac{\partial[CT]}{\partial t}\right|_{reaction} = k_a^{CT} \cdot [CT] \quad (6)$$

$$\left.\frac{\partial[CF]}{\partial t}\right|_{reaction} = k_a^{CT} \cdot [CT] \cdot Y_{(CF/CT)} - k_a^{CF} \cdot [CF] \quad (7)$$

$$\left.\frac{\partial[DCM]}{\partial t}\right|_{reaction} = k_a^{CF} \cdot [CF] \cdot Y_{(DCM/CF)} - (k_a^{DCM} + k_b^{DCM}) \cdot [DCM] \quad (8)$$

where k_a^i is the first order abiotic transformation rate for the i^{th} compound, k_b^i is the first order biotic transformation rate for the i^{th} compound, $Y_{(CF/CT)}$ is the yield of CF from abiotic transformation of CT, and $Y_{(DCM/CF)}$ is the yield of DCM from abiotic transformation of CF.

Ranges for each parameter listed in Equations 6 through 8 are given in Table 18. These values are based on the results reviewed in the previous sections. Table 18 also provides the expected range of values for the soil/water equilibrium partition coefficient for CT, CF, and DCM. As described in the preceding sections, CM is ignored since the products from both biotic and abiotic transformation of DCM are predominately nonchlorinated (Braus-Stromeyer et al. 1993; Freedman and Gossett 1991; Yanghao 1990). In addition, CM is readily degraded as a growth substrate by many aerobic organisms, and, even if formed, it will be rapidly consumed in the Hanford aquifer.

Table 18: Range of parameters for modeling fate of chloromethanes in Hanford Aquifer

Parameter	Maximum Value	Minimum Value	Most Probable Value	Comment
k_a^{CT} (day^{-1})	4.6×10^{-5}	2.7×10^{-7}	4.6×10^{-5}	Work by Jeffers et al. (1989) appears to be more reliable.
k_a^{CF} (day^{-1})	1.1×10^{-6}	5.9×10^{-7}	1.1×10^{-6}	Work by Jeffers et al. (1989) appears to be more reliable.
k_a^{DCM} (day^{-1})	2.8×10^{-6}	2.8×10^{-6}	2.8×10^{-6}	Only one measured value available for this parameter.
k_b^{DCM} (day^{-1})	3.0×10^{-1}	9.9×10^{-3}	1.7×10^{-1}	Most probable value is based field test by Mehran and Wolf (1999) in an aerobic aquifer.
$Y_{(CF/CT)}$ (mole/mole)	0.2	0.1	0.1	Most studies showed CF production to be closer to the lower value.
$Y_{(DCM/CF)}$ (mole/mole)	0.2	0.1	0.1	No data available for this, so based on CT to CF reaction.
K_d^{CT} (L/kg)	0.83	0.016	0.12	See text.
K_d^{CF} (L/kg)	0.39	0.008	0.06	See text.
K_d^{DCM} (L/kg)	0.24	0.013	0.10	See text.

Recommendations

Based on a review of the available site data and published literature, it is recommended that site-specific values for both the soil/water equilibrium partition coefficient and the abiotic hydrolysis half-life be determined for CT, CF, and DCM. Neither parameter has been measured for the Hanford system.

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Appendix D
Simulation Parameters and Results

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
64	21.52	3000	570	4.428796	0.3348	226.8	33.07	5125	0.1	1950	7500	3662500	0.1478	######	1.673	1.23E-02	52.78	0	0	0	56.6	398.3
65	24.66	3000	1130	14.566434	0.5377	110.7	67.72	5125	0.1	1950	7500	1250000	0.129	######	2.562	6.42E-03	52.21	65.67	0	0	108	532.4
66	46.17	3000	210	126.276218	6.8467	162.7	46.11	5125	0.1	1950	7500	2225000	0.0689	######	1.405	1.62E-02	72.97	96.04	60.4	0	42.8	156
67	49.79	3000	1080	39.542806	1.3303	100.9	74.31	5125	0.1	1950	7500	1087500	0.0639	######	3.368	7.65E-03	21.89	87.36	0	0	90.6	346.7
68	26.34	3000	1990	0.528119	0.0364	206.7	36.28	5125	0.1	1950	7500	3187500	0.1208	######	3.918	8.11E-03	50.27	0	0	0	85.5	762.5
69	41	3000	460	23.962752	1.0965	137.3	54.64	5125	0.1	1950	7500	1725000	0.0776	######	2.075	1.42E-02	64.47	79.13	0	0	48.9	259.5
70	56.81	3000	1730	0.197101	0.0087	132.6	56.56	5125	0.1	1950	7500	1637500	0.056	######	7.404	1.71E-02	82.08	0	0	0	40.6	667.9
71	25.31	3000	1200	0.074735	0.0033	133.3	56.28	5125	0.1	1950	7500	1650000	0.1257	######	2.961	1.68E-02	45.79	0	0	0	41.2	599.6
72	27.21	3000	2040	0.867229	0.0309	107	70.08	5125	0.1	1950	7500	1187500	0.1169	######	3.975	8.47E-03	44.95	0	0	0	81.8	748.6
73	29.32	3000	1150	7.380022	0.2127	86.48	86.73	5125	0.1	1950	7500	862500	0.1085	######	2.682	9.99E-03	22.54	32.25	0	0	69.4	468.9
74	46.04	3000	450	112.761638	5.5031	146.4	51.23	5125	0.1	1950	7500	1900000	0.0691	######	2.054	9.13E-03	34.26	95.57	55.66	0	75.9	228.6
75	33.49	3000	280	375.591504	11.1383	88.97	84.3	5125	0.1	1950	7500	900000	0.095	######	1.282	9.81E-03	32.53	98.67	86.69	0	70.6	196.1
76	23.85	3000	1250	9.466528	0.4394	139.3	53.86	5125	0.1	1950	7500	1762500	0.1334	######	2.644	6.26E-03	46.73	47.18	0	0	110.8	568.2
77	43.94	3000	670	52.15927	2.5343	145.8	51.45	5125	0.1	1950	7500	1887500	0.0724	######	2.493	8.38E-03	32.24	90.41	4.14	0	82.7	290.7
78	22.28	3000	790	57.690186	1.9999	104	72.12	5125	0.1	1950	7500	1137500	0.1428	######	1.899	6.00E-03	33.34	91.33	13.33	0	115.5	436.9
79	25.57	3000	1520	0.087815	0.0027	91.42	82.04	5125	0.1	1950	7500	937500	0.1244	######	3.031	1.56E-02	20.24	0	0	0	44.6	607.5
80	21.39	3000	1490	8.287934	0.2936	106.3	70.57	5125	0.1	1950	7500	1175000	0.1487	######	3.048	5.09E-03	93.26	39.67	0	0	136.1	730.2
81	54.2	3000	1130	10.943092	0.4486	123	60.99	5125	0.1	1950	7500	1462500	0.0587	######	4.014	9.35E-03	52.36	54.31	0	0	74.2	379.6
82	43.28	3000	410	454.042118	16.873	111.5	67.27	5125	0.1	1950	7500	1262500	0.0735	######	1.843	4.71E-03	36.87	98.9	88.99	0	147.1	218.2
83	23.12	3000	1310	10.192102	0.5993	176.4	42.52	5125	0.1	1950	7500	2512500	0.1376	######	2.521	6.18E-03	19.94	50.94	0	0	112.1	558.8
84	22.33	3000	830	4.073215	0.1873	137.9	54.37	5125	0.1	1950	7500	1737500	0.1425	######	2.01	1.12E-02	31.85	0	0	0	61.8	461.3
85	32.17	3000	550	23.777587	1.1089	139.9	53.6	5125	0.1	1950	7500	1775000	0.0989	######	1.902	1.22E-02	29.19	78.97	0	0	56.6	303.1
86	21.77	3000	890	10.11871	0.4917	145.8	51.45	5125	0.1	1950	7500	1887500	0.1461	######	2.094	7.88E-03	47.6	50.59	0	0	87.9	492.9
87	34.88	3000	600	1.425578	0.081	170.5	43.99	5125	0.1	1950	7500	2387500	0.0912	######	2.601	1.83E-02	99.18	0	0	0	37.8	382.2
88	21.72	3000	1390	0.079587	0.0031	118.7	63.17	5125	0.1	1950	7500	1387500	0.1465	######	2.719	1.47E-02	26.72	0	0	0	47.2	641.7
89	35.11	3000	1210	3.826907	0.1989	155.9	48.11	5125	0.1	1950	7500	2087500	0.0906	######	3.332	9.30E-03	50.87	0	0	0	74.5	486.3
90	27.31	3000	620	74.556706	2.1074	84.8	88.45	5125	0.1	1950	7500	837500	0.1165	######	1.892	7.44E-03	54.23	93.29	32.94	0	93.2	355.1
91	41.97	3000	1090	1.512106	0.0695	137.9	54.37	5125	0.1	1950	7500	1737500	0.0758	######	3.381	1.45E-02	33.87	0	0	0	47.9	412.8
92	33.28	3000	1090	11.699945	0.3906	100.2	74.88	5125	0.1	1950	7500	1075000	0.0956	######	2.961	8.41E-03	47.7	57.26	0	0	82.5	456
93	58.37	3000	580	67.593219	2.6911	119.4	62.79	5125	0.1	1950	7500	1400000	0.0545	######	2.644	1.09E-02	31.4	92.6	26.03	0	63.5	232.1
94	22.02	3000	790	28.725261	1.1024	115.1	65.14	5125	0.1	1950	7500	1325000	0.1445	######	1.975	6.62E-03	59.75	82.59	0	0	104.6	459.8
95	31.31	3000	440	26.134063	0.7893	90.61	82.78	5125	0.1	1950	7500	925000	0.1016	######	1.721	1.48E-02	62.93	80.87	0	0	46.8	281.6
96	42.82	3000	200	237.419416	9.8423	124.4	60.31	5125	0.1	1950	7500	1487500	0.0743	######	1.249	1.48E-02	75.81	97.89	78.94	0	46.7	149.5
97	47.98	3000	2290	1.374426	0.0742	162.1	46.28	5125	0.1	1950	7500	2212500	0.0663	######	5.307	8.74E-03	26.21	0	0	0	79.3	566.8
98	38.89	3000	1350	8.934536	0.2795	93.84	79.92	5125	0.1	1950	7500	975000	0.0818	######	3.908	7.64E-03	71.09	44.04	0	0	90.7	514.9
99	62.75	3000	1450	5.695484	0.1974	104	72.12	5125	0.1	1950	7500	1137500	0.0507	######	5.028	1.05E-02	44.5	12.21	0	0	66.1	410.7
100	63.25	3000	1940	2.289541	0.0906	118.7	63.17	5125	0.1	1950	7500	1387500	0.0503	######	5.874	1.04E-02	35.04	0	0	0	66.6	476
101	24.16	3000	1720	10.315695	0.3602	104.8	71.59	5125	0.1	1950	7500	1150000	0.1317	######	3.344	4.60E-03	70.34	51.53	0	0	150.8	709.4
102	25.95	3000	400	173.164911	8.0381	139.3	53.86	5125	0.1	1950	7500	1762500	0.1226	######	1.422	6.65E-03	45.37	97.11	71.13	0	104.2	280.9
103	43.4	3000	1490	3.012873	0.1304	129.9	57.75	5125	0.1	1950	7500	1587500	0.0733	######	4.489	9.26E-03	64.56	0	0	0	74.9	530.1
104	31.34	3000	2370	2.573334	0.1132	131.9	56.85	5125	0.1	1950	7500	1625000	0.1015	######	4.461	5.99E-03	41.38	0	0	0	115.7	729.4
105	23.6	3000	540	32.392704	1.663	154	48.7	5125	0.1	1950	7500	2050000	0.1348	######	1.585	1.03E-02	19.01	84.56	0	0	67.7	344.1
106	55.04	3000	560	51.071237	2.009	118	63.55	5125	0.1	1950	7500	1375000	0.0578	######	2.523	1.25E-02	29.67	90.21	2.1	0	55.6	234.9
107	29.62	3000	720	1.483054	0.0926	187.3	40.04	5125	0.1	1950	7500	2750000	0.1074	######	2.421	1.49E-02	69.95	0	0	0	46.4	418.9
108	26.42	3000	1130	11.4689	0.6987	182.8	41.04	5125	0.1	1950	7500	2650000	0.1204	######	2.522	6.93E-03	22.75	56.4	0	0	100	489.2
109	21.8	3000	980	0.912507	0.0401	131.9	56.85	5125	0.1	1950	7500	1625000	0.1459	######	2.339	1.25E-02	51.43	0	0	0	55.7	549.7
110	47.41	3000	1130	1.241428	0.0526	127.1	58.99	5125	0.1	1950	7500	1537500	0.0671	######	4.398	1.46E-02	77.02	0	0	0	47.3	475.4
111	29.13	3000	1480	0.131689	0.0043	97.02	77.3	5125	0.1	1950	7500	1025000	0.1092	######	3.516	1.53E-02	39.76	0	0	0	45.3	618.6
112	28	3000	540	109.31495	4.0085	110	68.18	5125	0.1	1950	7500	1237500	0.1136	######	1.749	6.91E-03	43.41	95.43	54.26	0	100.3	320.1
113	30.74	3000	1120	1.193201	0.0527	132.6	56.56	5125	0.1	1950	7500	1637500	0.1035	######	3.026	1.26E-02	47.36	0	0	0	55	504.5
114	35.47	3000	900	65.706355	3.3044	150.9	49.71	5125	0.1	1950	7500	1987500	0.0897	######	2.642	4.24E-03	47.3	92.39	23.9	0	163.4	381.8
115	45.97	3000	610	29.898982	1.0964	110	68.18	5125	0.1	1950	7500	1237500	0.0692	######	2.352	1.44E-02	14.12	83.28	0	0	48	262.2
116	47.77	3000	1420	18.02329	0.7925	131.9	56.85	5125	0.1	1950	7500	1625000	0.0666	######	4.13	5.71E-03	50.5	72.26	0	0	121.4	443.1
117	31.16	3000	740	146.330476	4.6164	94.64	79.25	5125	0.1	1950	7500	987500	0.1021	######	2.16	4.73E-03	38.77	96.58	65.83	0	146.5	355.2
118	26.8	3000	510	27.650707	1.5327	166.3	45.1	5125	0.1	1950	7500	2300000	0.1187	######	1.645	1.15E-02	21.28	81.92	0	0	60.3	314.6
119	22.18	3000	1360	16.782717	0.8825	157.7	47.54	5125	0.1	1950	7500	2125000	0.1434	######	2.616	4.40E-03	44.21	70.21	0	0	157.4	604.3
120	30.47	3000	870	24.502598	1.2271	150.2	49.92	5125	0.1	1950	7500	1975000	0.1044	######	2.447	6.78E-03	49.77	79.59	0	0	102.2	411.6
121	43.58	3000	1210	3.258248	0.1179	108.5	69.11	5125	0.1	1950	7500	1212500	0.073	######	3.711	1.19E-02	42.27	0	0	0	58.1	436.4
122	22.89	3000	650	16.5873	0.676	122.3	61.34	5125	0.1	1950	7500	1450000	0.139	######	1.854	9.25E-03	68.23	69.86	0	0	75	415.2
123	49.86	3000	970	15.845203	0.7935	150.2	49.92	5125	0.1	1950	7500	1975000	0.0638	######	3.239	9.97E-03	23.78	68.44	0	0	69.5	332.9
124	26.78	3000	1660	0.923965	0.0423	137.3	54.64	5125	0.1	1950	7500	1725000	0.1188	######	3.432	9.32E-03	41.73	0	0	0	74.4	656.8
125	60.37	3000	1100	11.406111	0.4211	110.7	67.72	5125	0.1	1950	7500	1250000	0.0527	######	4.484	9.58E-03	73.56	56.16	0	0	72.3	380.7
126	23.88	3000	370	75.641408	2.0521	81.39	92.15	5125	0.1	1950	7500	787500	0.1332	######	1.295	1.21E-02	58.57	93.39	33.9	0	57.5	277.9

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
127	53.74	3000	620	9.233732	0.3248	105.5	71.08	5125	0.1	1950	7500	1162500	0.0592	######	3.104	1.65E-02	86.02	45.85	0	0	42	296.1
128	62.62	3000	780	147.688812	5.5965	113.7	65.97	5125	0.1	1950	7500	1300000	0.0508	######	3.162	5.30E-03	28.81	96.61	66.15	0	130.7	258.8
129	28.84	3000	390	197.549082	5.5839	84.8	88.45	5125	0.1	1950	7500	837500	0.1103	######	1.465	8.23E-03	61.96	97.47	74.69	0	84.2	260.4
130	23.76	3000	340	37.930642	1.7019	134.6	55.72	5125	0.1	1950	7500	1675000	0.1339	######	1.258	1.39E-02	41.03	86.82	0	0	49.7	271.3
131	25.51	3000	520	9.368479	0.549	175.8	42.66	5125	0.1	1950	7500	2500000	0.1247	######	1.698	1.31E-02	41.95	46.63	0	0	53	341
132	47.27	3000	1630	0.287273	0.0118	123.7	60.65	5125	0.1	1950	7500	1475000	0.0673	######	4.812	1.55E-02	37.09	0	0	0	44.9	521.7
133	38.38	3000	1320	5.171792	0.2655	154	48.7	5125	0.1	1950	7500	2050000	0.0829	######	3.842	7.86E-03	70.23	3.32	0	0	88.2	513
134	23.94	3000	2510	0.395449	0.0224	169.9	44.15	5125	0.1	1950	7500	2375000	0.1329	######	4.025	7.43E-03	35.24	0	0	0	93.3	861.7
135	34.5	3000	720	126.236193	5.4651	129.9	57.75	5125	0.1	1950	7500	1587500	0.0922	######	2.352	3.30E-03	74.31	96.04	60.39	0	209.8	349.4
136	27.14	3000	770	25.347663	0.8064	95.44	78.58	5125	0.1	1950	7500	1000000	0.1172	######	2.053	9.68E-03	22.44	80.27	0	0	71.6	387.7
137	61.3	3000	910	88.681147	3.7786	127.8	58.67	5125	0.1	1950	7500	1550000	0.0519	######	3.476	4.97E-03	37.88	94.36	43.62	0	139.5	290.6
138	45.51	3000	630	39.332416	1.519	115.9	64.73	5125	0.1	1950	7500	1337500	0.0699	######	2.682	9.09E-03	84.52	87.29	0	0	76.3	302
139	23.72	3000	970	22.663297	1.187	157.1	47.73	5125	0.1	1950	7500	2112500	0.1341	######	2.213	6.09E-03	31.74	77.94	0	0	113.9	478
140	22.28	3000	760	38.997347	1.8781	144.5	51.91	5125	0.1	1950	7500	1862500	0.1428	######	1.869	6.37E-03	33.22	87.18	0	0	108.8	430
141	25.64	3000	670	75.760894	3.2281	127.8	58.67	5125	0.1	1950	7500	1550000	0.1241	######	1.878	5.92E-03	39.15	93.4	34	0	117.1	375.5
142	29.93	3000	1230	7.27099	0.3898	160.8	46.63	5125	0.1	1950	7500	2187500	0.1063	######	3.091	6.85E-03	61.91	31.23	0	0	101.2	529.2
143	22.06	3000	1320	15.711529	0.6403	122.3	61.34	5125	0.1	1950	7500	1450000	0.1442	######	2.646	4.84E-03	58.49	68.18	0	0	143.3	614.6
144	42.19	3000	1780	0.043248	0.0021	145.8	51.45	5125	0.1	1950	7500	1887500	0.0754	######	4.771	1.78E-02	31.3	0	0	0	39	579.5
145	44.31	3000	1800	0.177814	0.0059	100.2	74.88	5125	0.1	1950	7500	1075000	0.0718	######	5.047	1.56E-02	39.43	0	0	0	44.4	583.8
146	39.82	3000	1030	2.260395	0.0725	96.23	77.94	5125	0.1	1950	7500	1012500	0.0799	######	3.571	1.38E-02	71.64	0	0	0	50.3	459.6
147	33.45	3000	1200	0.623939	0.0341	163.9	45.77	5125	0.1	1950	7500	2250000	0.0951	######	3.043	1.44E-02	22.51	0	0	0	48.2	466.2
148	43.52	3000	760	24.00143	1.1559	144.5	51.91	5125	0.1	1950	7500	1862500	0.0731	######	2.808	8.86E-03	58.11	79.17	0	0	78.3	330.7
149	21.89	3000	1270	30.064156	0.9644	96.23	77.94	5125	0.1	1950	7500	1012500	0.1453	######	2.625	3.97E-03	79.41	83.37	0	0	174.8	614.5
150	36.78	3000	330	62.881297	2.4284	115.9	64.73	5125	0.1	1950	7500	1337500	0.0865	######	1.607	1.41E-02	80.46	92.05	20.49	0	49.3	224
151	39.57	3000	640	4.297289	0.1649	115.1	65.14	5125	0.1	1950	7500	1325000	0.0804	######	2.588	1.69E-02	67.82	0	0	0	41	335.2
152	25.47	3000	1870	0.615958	0.0274	133.3	56.28	5125	0.1	1950	7500	1650000	0.1249	######	3.518	9.18E-03	35.62	0	0	0	75.5	707.8
153	24.47	3000	340	88.057958	2.8247	96.23	77.94	5125	0.1	1950	7500	1012500	0.13	######	1.269	1.16E-02	61.52	94.32	43.22	0	59.7	265.7
154	55.42	3000	1800	6.124974	0.1997	97.81	76.68	5125	0.1	1950	7500	1037500	0.0574	######	4.996	8.70E-03	30.88	18.37	0	0	79.6	462
155	56.91	3000	630	315.472485	12.031	114.4	65.55	5125	0.1	1950	7500	1312500	0.0559	######	2.696	3.00E-03	37.69	98.42	84.15	0	231.1	242.8
156	21.57	3000	1360	0.906889	0.0317	104.8	71.59	5125	0.1	1950	7500	1150000	0.1475	######	3.01	9.85E-03	73.1	0	0	0	70.4	715.3
157	28.05	3000	1410	7.117465	0.2834	119.4	62.79	5125	0.1	1950	7500	1400000	0.1134	######	3.053	7.07E-03	38.86	29.75	0	0	98.1	557.7
158	33.88	3000	410	91.414198	4.7501	155.9	48.11	5125	0.1	1950	7500	2087500	0.0939	######	1.655	1.01E-02	27.32	94.53	45.3	0	68.4	250.4
159	25.09	3000	450	17.325147	0.8492	147	51	5125	0.1	1950	7500	1912500	0.1268	######	1.534	1.33E-02	41.12	71.14	0	0	52	313.3
160	25.23	3000	1040	0.890217	0.0395	133.3	56.28	5125	0.1	1950	7500	1650000	0.1261	######	2.656	1.27E-02	54.92	0	0	0	54.5	539.5
161	39.92	3000	1030	2.053829	0.1159	169.3	44.3	5125	0.1	1950	7500	2362500	0.0797	######	3.154	1.34E-02	33.49	0	0	0	51.9	405
162	34.1	3000	440	331.309022	10.1857	92.23	81.32	5125	0.1	1950	7500	950000	0.0933	######	1.669	6.56E-03	27.45	98.49	84.91	0	105.6	250.9
163	38.15	3000	890	75.916179	2.4151	95.44	78.58	5125	0.1	1950	7500	1000000	0.0834	######	2.902	4.27E-03	91.33	93.41	34.14	0	162.2	389.9
164	22.66	3000	2210	0.002787	0.0001	139.3	53.86	5125	0.1	1950	7500	1762500	0.1404	######	3.805	1.57E-02	26.86	0	0	0	44.2	860.5
165	28.13	3000	1280	3.731101	0.1547	124.4	60.31	5125	0.1	1950	7500	1487500	0.1131	######	2.913	9.05E-03	34.43	0	0	0	76.6	530.7
166	26.01	3000	240	104.800091	4.6789	133.9	56	5125	0.1	1950	7500	1662500	0.1223	######	1.117	1.29E-02	78.7	95.23	52.29	0	53.6	220
167	24.66	3000	380	25.93595	1.0752	124.4	60.31	5125	0.1	1950	7500	1487500	0.129	######	1.367	1.46E-02	38.69	80.72	0	0	47.5	284.2
168	50.98	3000	750	109.044338	3.1433	86.48	86.73	5125	0.1	1950	7500	862500	0.0624	######	2.823	7.09E-03	34.15	95.41	54.15	0	97.8	283.7
169	24.49	3000	950	12.238447	0.3926	96.23	77.94	5125	0.1	1950	7500	1012500	0.1299	######	2.38	8.02E-03	61.69	59.15	0	0	86.4	498
170	31.85	3000	1800	7.936474	0.265	100.2	74.88	5125	0.1	1950	7500	1075000	0.0999	######	3.917	5.74E-03	55.14	37	0	0	120.8	630.3
171	60.25	3000	1960	4.955882	0.2461	149	50.35	5125	0.1	1950	7500	1950000	0.0528	######	5.552	7.64E-03	34.18	0	0	0	90.7	472.3
172	24.74	3000	510	5.251369	0.2391	136.6	54.9	5125	0.1	1950	7500	1712500	0.1286	######	1.604	1.67E-02	26.04	4.79	0	0	41.5	332.4
173	23.51	3000	1140	28.025199	1.4212	152.1	49.3	5125	0.1	1950	7500	2012500	0.1353	######	2.409	4.62E-03	38.08	82.16	0	0	150	525
174	21.64	3000	1120	22.363572	0.5609	75.24	99.68	5125	0.1	1950	7500	700000	0.147	######	2.228	7.01E-03	23.14	77.64	0	0	98.9	527.6
175	42.25	3000	1480	3.607886	0.0999	83.1	90.25	5125	0.1	1950	7500	812500	0.0753	######	4.06	1.05E-02	41.28	0	0	0	65.9	492.5
176	25.43	3000	1370	3.287644	0.1278	116.6	64.33	5125	0.1	1950	7500	1350000	0.1251	######	2.832	8.72E-03	31.18	0	0	0	79.5	570.7
177	24.06	3000	690	30.64561	1.4956	146.4	51.23	5125	0.1	1950	7500	1900000	0.1322	######	1.986	6.44E-03	86.33	83.68	0	0	107.6	422.9
178	29.98	3000	1180	0.71729	0.0433	181	41.43	5125	0.1	1950	7500	2612500	0.1061	######	3.312	1.20E-02	67.5	0	0	0	57.8	566.2
179	23.12	3000	730	1.829621	0.0562	92.23	81.32	5125	0.1	1950	7500	950000	0.1376	######	1.981	1.53E-02	43.98	0	0	0	45.2	439.2
180	38.1	3000	520	44.306763	1.8264	123.7	60.65	5125	0.1	1950	7500	1475000	0.0835	######	2.074	1.07E-02	49.24	88.72	0	0	64.6	279
181	59.58	3000	1750	6.393694	0.2313	108.5	69.11	5125	0.1	1950	7500	1212500	0.0534	######	6.026	7.49E-03	74.15	21.8	0	0	92.6	518.4
182	22.79	3000	760	116.340835	3.5768	92.23	81.32	5125	0.1	1950	7500	950000	0.1396	######	1.927	4.00E-03	65.21	95.7	57.02	0	173.2	433.4
183	53.11	3000	1420	7.896684	0.2406	91.42	82.04	5125	0.1	1950	7500	937500	0.0599	######	4.41	9.59E-03	41.02	36.68	0	0	72.3	425.5
184	27.4	3000	1380	3.170165	0.1444	136.6	54.9	5125	0.1	1950	7500	1712500	0.1161	######	3.164	8.06E-03	53.97	0	0	0	86	591.7
185	27.78	3000	1400	3.403662	0.0884	77.91	96.27	5125	0.1	1950	7500	737500	0.1145	######	3.271	9.02E-03	57.84	0	0	0	76.9	603.4
186	27.57	3000	760	8.639082	0.4179	145.1	51.68	5125	0.1	1950	7500	1875000	0.1154	######	2.158	1.07E-02	39.34	42.12	0	0	64.7	401.2
187	36.07	3000	600	39.71929	2.2176	167.5	44.78	5125	0.1	1950	7500	2325000	0.0882	######	2.18	8.39E-03	46.89	87.41	0	0	82.6	309.8
188	30.62	3000	3030	0.019144	0.0009	145.1	51.68	5125	0.1	1950	7500	1875000	0.1039	######	4.985	1.22E-02	19.2	0	0	0	56.8	834.3
189	44.49	3000	790	6.456247	0.3368	156.5	47.92	5125	0.1	1950	7500	2100000	0.0715	######	2.894	1.33E-02	39.81	22.56	0	0	52.1	333.3

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
190	40.47	3000	530	338.263461	11.2051	99.38	75.47	5125	0.1	1950	7500	1062500	0.0786	######	2.04	4.48E-03	36.19	98.52	85.22	0	154.6	258.2
191	21.76	3000	1240	3.952764	0.2594	196.9	38.1	5125	0.1	1950	7500	2962500	0.1462	######	2.547	6.98E-03	46.83	0	0	0	99.3	600
192	34.58	3000	2550	0.46064	0.0164	107	70.08	5125	0.1	1950	7500	1187500	0.092	######	4.794	9.50E-03	25.42	0	0	0	73	710.5
193	35.39	3000	330	83.298874	4.2241	152.1	49.3	5125	0.1	1950	7500	2012500	0.0899	######	1.534	1.23E-02	42.8	94	39.98	0	56.4	222.2
194	21.63	3000	610	2.29637	0.1184	154.6	48.5	5125	0.1	1950	7500	2062500	0.1471	######	1.796	1.43E-02	65.09	0	0	0	48.6	425.6
195	23.44	3000	350	157.425285	6.1928	118	63.55	5125	0.1	1950	7500	1375000	0.1357	######	1.266	8.20E-03	50.11	96.82	68.24	0	84.6	276.7
196	29.19	3000	530	10.732077	0.5192	145.1	51.68	5125	0.1	1950	7500	1875000	0.109	######	1.785	1.48E-02	25.94	53.41	0	0	47	313.4
197	28.23	3000	1050	2.579763	0.1129	131.2	57.15	5125	0.1	1950	7500	1612500	0.1127	######	2.516	1.21E-02	18.66	0	0	0	57.1	456.8
198	55.81	3000	1640	0.453359	0.0154	101.7	73.75	5125	0.1	1950	7500	1100000	0.057	######	5.052	1.62E-02	29.39	0	0	0	42.7	463.9
199	33.81	3000	780	10.290012	0.5745	167.5	44.78	5125	0.1	1950	7500	2325000	0.0941	######	2.448	1.04E-02	40.07	51.41	0	0	66.8	371.2
200	48.94	3000	510	54.095069	2.4991	138.6	54.11	5125	0.1	1950	7500	1750000	0.065	######	2.372	1.03E-02	57.92	90.76	7.57	0	67.5	248.3
201	26.96	3000	490	71.097607	3.6203	152.8	49.1	5125	0.1	1950	7500	2025000	0.118	######	1.663	7.48E-03	52.69	92.97	29.67	0	92.7	316.1
202	44.37	3000	2210	0.270901	0.0119	131.9	56.85	5125	0.1	1950	7500	1625000	0.0717	######	5.351	1.22E-02	31.54	0	0	0	56.7	618.1
203	24.05	3000	1320	8.246691	0.3774	137.3	54.64	5125	0.1	1950	7500	1725000	0.1323	######	2.633	6.81E-03	27.58	39.37	0	0	101.8	561.1
204	39.08	3000	1040	5.608774	0.218	116.6	64.33	5125	0.1	1950	7500	1350000	0.0814	######	3.396	1.04E-02	68.97	10.85	0	0	66.5	445.3
205	56.31	3000	460	236.157888	9.8448	125.1	59.97	5125	0.1	1950	7500	1500000	0.0565	######	2.261	6.69E-03	37.96	97.88	78.83	0	103.6	205.8
206	49.55	3000	1000	73.885899	3.2155	130.6	57.44	5125	0.1	1950	7500	1600000	0.0642	######	3.184	5.67E-03	19.51	93.23	32.33	0	122.3	329.3
207	24.14	3000	910	0.657341	0.0301	137.3	54.64	5125	0.1	1950	7500	1725000	0.1318	######	2.365	1.45E-02	46.99	0	0	0	47.8	502.1
208	32.01	3000	960	1.560734	0.0606	116.6	64.33	5125	0.1	1950	7500	1350000	0.0994	######	2.898	1.39E-02	56.77	0	0	0	50	464
209	27.12	3000	400	167.523932	6.8275	122.3	61.34	5125	0.1	1950	7500	1450000	0.1173	######	1.47	7.13E-03	47.97	97.02	70.15	0	97.3	277.8
210	52.24	3000	360	736.884312	22.2554	90.61	82.78	5125	0.1	1950	7500	925000	0.0609	######	1.807	7.00E-03	12.18	99.32	93.21	32.15	99	177.3
211	58.05	3000	1180	74.306321	2.519	101.7	73.75	5125	0.1	1950	7500	1100000	0.0548	######	3.974	4.06E-03	47.9	93.27	32.71	0	170.6	350.8
212	36.48	3000	620	36.13045	1.5724	130.6	57.44	5125	0.1	1950	7500	1600000	0.0872	######	2.296	8.76E-03	68.28	86.16	0	0	79.2	322.5
213	29.03	3000	1410	3.615437	0.1654	137.3	54.64	5125	0.1	1950	7500	1725000	0.1096	######	3.241	7.98E-03	48.67	0	0	0	86.8	572.2
214	26.53	3000	820	0.903973	0.0449	149	50.35	5125	0.1	1950	7500	1950000	0.1199	######	2.437	1.50E-02	63.29	0	0	0	46.3	470.8
215	39.18	3000	1250	16.508861	0.6216	113	66.4	5125	0.1	1950	7500	1287500	0.0812	######	3.195	8.29E-03	15.83	69.71	0	0	83.6	417.9
216	27.5	3000	470	79.63156	3.5195	132.6	56.56	5125	0.1	1950	7500	1637500	0.1157	######	1.612	8.56E-03	39.98	93.72	37.21	0	81	300.5
217	41.86	3000	350	182.892384	11.0015	180.5	41.56	5125	0.1	1950	7500	2600000	0.076	######	1.694	8.81E-03	25.89	97.27	72.66	0	78.7	207.4
218	23.97	3000	480	66.914879	2.8817	129.2	58.05	5125	0.1	1950	7500	1575000	0.1327	######	1.507	8.94E-03	31.91	92.53	25.28	0	77.5	322.2
219	32.73	3000	1400	0.453609	0.0167	110.7	67.72	5125	0.1	1950	7500	1250000	0.0972	######	3.798	1.34E-02	56.08	0	0	0	51.8	594.8
220	24.1	3000	730	1.53666	0.0525	102.5	73.19	5125	0.1	1950	7500	1112500	0.132	######	2.28	1.49E-02	90.82	0	0	0	46.6	484.8
221	27.54	3000	1710	0.810135	0.0309	114.4	65.55	5125	0.1	1950	7500	1312500	0.1155	######	4.082	9.32E-03	77.28	0	0	0	74.4	759.4
222	50.58	3000	1300	8.695642	0.45	155.3	48.3	5125	0.1	1950	7500	2075000	0.0629	######	4.413	7.38E-03	72.24	42.5	0	0	93.9	447.1
223	22.26	3000	1300	3.42186	0.1305	114.4	65.55	5125	0.1	1950	7500	1312500	0.1429	######	2.578	8.45E-03	33.03	0	0	0	82.1	593.5
224	42.42	3000	440	245.020643	8.3691	102.5	73.19	5125	0.1	1950	7500	1112500	0.075	######	1.851	9.54E-03	11.89	97.96	79.59	0	72.6	223.6
225	30.24	3000	1290	0.64862	0.031	143.2	52.38	5125	0.1	1950	7500	1837500	0.1052	######	3.312	1.24E-02	48.73	0	0	0	56.1	561.2
226	26.16	3000	2290	0.837773	0.0425	152.1	49.3	5125	0.1	1950	7500	2012500	0.1216	######	3.969	7.31E-03	36.01	0	0	0	94.8	777.4
227	27.24	3000	780	8.456661	0.3205	113.7	65.97	5125	0.1	1950	7500	1300000	0.1168	######	2.133	1.16E-02	29.89	40.88	0	0	59.9	401.3
228	21.97	3000	950	0.56552	0.0284	150.9	49.71	5125	0.1	1950	7500	1987500	0.1448	######	2.198	1.40E-02	30.72	0	0	0	49.4	512.6
229	37.43	3000	930	12.950151	0.5811	134.6	55.72	5125	0.1	1950	7500	1675000	0.085	######	2.99	8.49E-03	64.65	61.39	0	0	81.6	409.4
230	43.11	3000	970	19.167637	1.0039	157.1	47.73	5125	0.1	1950	7500	2112500	0.0738	######	3.08	7.93E-03	38.12	73.91	0	0	87.4	366.2
231	56.21	3000	2670	1.24365	0.0566	136.6	54.9	5125	0.1	1950	7500	1712500	0.0566	######	6.73	8.48E-03	36.22	0	0	0	81.8	613.7
232	24.57	3000	420	88.363874	2.6447	89.79	83.53	5125	0.1	1950	7500	912500	0.1295	######	1.446	9.43E-03	70.8	94.34	43.42	0	73.5	301.7
233	46.99	3000	980	126.951022	4.9333	116.6	64.33	5125	0.1	1950	7500	1350000	0.0677	######	3.116	3.41E-03	34.97	96.06	60.61	0	203	339.8
234	24.28	3000	430	82.966847	2.939	106.3	70.57	5125	0.1	1950	7500	1175000	0.131	######	1.414	1.00E-02	32.42	93.97	39.73	0	69.2	298.3
235	28.43	3000	2190	1.666786	0.0691	124.4	60.31	5125	0.1	1950	7500	1487500	0.1119	######	4.286	6.72E-03	53.87	0	0	0	103.1	772.5
236	37.69	3000	540	14.882103	0.4891	98.6	76.07	5125	0.1	1950	7500	1050000	0.0844	######	2.307	1.42E-02	89.31	66.4	0	0	48.9	313.7
237	33.74	3000	1120	0.789673	0.026	98.6	76.07	5125	0.1	1950	7500	1050000	0.0943	######	3.256	1.50E-02	50.14	0	0	0	46.2	494.6
238	29.65	3000	1450	2.96442	0.099	100.2	74.88	5125	0.1	1950	7500	1075000	0.1073	######	3.15	9.57E-03	27.89	0	0	0	72.4	544.5
239	30.27	3000	1860	0.472086	0.0282	179.3	41.83	5125	0.1	1950	7500	2575000	0.1051	######	4.331	9.41E-03	62.09	0	0	0	73.6	733.3
240	35.75	3000	1290	26.453991	1.1929	135.3	55.44	5125	0.1	1950	7500	1687500	0.089	######	3.158	5.56E-03	26.35	81.1	0	0	124.8	452.7
241	46.31	3000	1510	0.092058	0.0036	116.6	64.33	5125	0.1	1950	7500	1350000	0.0687	######	5.248	1.91E-02	55.79	0	0	0	36.2	580.8
242	54.66	3000	1420	6.33097	0.1569	74.34	100.88	5125	0.1	1950	7500	687500	0.0582	######	5.153	1.00E-02	75.61	21.02	0	0	69.2	483.1
243	27.83	3000	1220	1.178334	0.0384	97.81	76.68	5125	0.1	1950	7500	1037500	0.1143	######	3.055	1.20E-02	52.74	0	0	0	58	562.6
244	39.92	3000	650	29.175849	1.1547	118.7	63.17	5125	0.1	1950	7500	1387500	0.0797	######	2.303	1.18E-02	23.5	82.86	0	0	58.8	295.7
245	59.02	3000	660	169.831263	5.7136	100.9	74.31	5125	0.1	1950	7500	1087500	0.0539	######	3.016	3.87E-03	87.95	97.06	70.56	0	179	261.8
246	58.27	3000	1710	8.436624	0.3419	121.6	61.7	5125	0.1	1950	7500	1437500	0.0546	######	5.989	6.27E-03	88.07	40.73	0	0	110.5	526.7
247	23.69	3000	990	3.37431	0.2492	221.6	33.85	5125	0.1	1950	7500	3537500	0.1343	######	2.462	8.43E-03	65.51	0	0	0	82.3	532.7
248	53.29	3000	620	32.913264	0.9761	88.97	84.3	5125	0.1	1950	7500	900000	0.0597	######	2.876	1.22E-02	75.68	84.81	0	0	57	276.6
249	60.48	3000	930	38.474538	1.458	113.7	65.97	5125	0.1	1950	7500	1300000	0.0526	######	3.839	6.81E-03	72.69	87	0	0	101.7	325.3
250	32.1	3000	750	1.598758	0.0478	89.79	83.53	5125	0.1	1950	7500	912500	0.0991	######	2.597	1.74E-02	69.53	0	0	0	39.9	414.6
251	30.13	3000	530	286.166122	13.4088	140.6	53.35	5125	0.1	1950	7500	1787500	0.1056	######	1.773	3.37E-03	37.16	98.25	82.53	0	205.4	301.6
252	29.4	3000	1840	0.323416	0.0177	163.9	45.77	5125	0.1	1950	7500	2250000	0.1082	######	3.949	1.05E-02	42.62	0	0	0	65.8	688.3

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
253	45.84	3000	1010	6.358565	0.1743	82.25	91.19	5125	0.1	1950	7500	800000	0.0694	######	3.515	1.27E-02	53.99	21.37	0	0	54.8	393
254	23.34	3000	490	43.241442	1.499	104	72.12	5125	0.1	1950	7500	1137500	0.1363	######	1.559	9.65E-03	67.04	88.44	0	0	71.8	342.4
255	51.9	3000	900	59.554521	2.2277	112.2	66.83	5125	0.1	1950	7500	1275000	0.0613	######	3.359	5.50E-03	65.89	91.6	16.04	0	126.1	331.7
256	51.06	3000	330	599.642064	14.4974	72.53	103.4	5125	0.1	1950	7500	662500	0.0623	######	1.735	6.89E-03	63.56	99.17	91.66	16.62	100.6	174.2
257	36.69	3000	310	461.845568	20.6196	133.9	56	5125	0.1	1950	7500	1662500	0.0867	######	1.465	5.08E-03	55.95	98.92	89.17	0	136.4	204.6
258	24.12	3000	460	56.775368	1.8362	97.02	77.3	5125	0.1	1950	7500	1025000	0.1319	######	1.447	1.15E-02	20.96	91.19	11.93	0	60.2	307.5
259	54.76	3000	1220	0.943005	0.0373	118.7	63.17	5125	0.1	1950	7500	1387500	0.0581	######	4.564	1.64E-02	50.34	0	0	0	42.3	427.2
260	31.04	3000	680	1.000353	0.0649	194.6	38.53	5125	0.1	1950	7500	2912500	0.1025	######	2.307	1.75E-02	49.61	0	0	0	39.5	381
261	42.76	3000	430	9.160549	0.5314	174	43.09	5125	0.1	1950	7500	2462500	0.0744	######	2.071	1.87E-02	53	45.42	0	0	37.1	248.2
262	28.05	3000	330	67.203822	2.9551	131.9	56.85	5125	0.1	1950	7500	1625000	0.1134	######	1.33	1.34E-02	34.91	92.56	25.6	0	51.7	242.9
263	22.95	3000	600	42.034196	1.7131	122.3	61.34	5125	0.1	1950	7500	1450000	0.1386	######	1.695	7.94E-03	47.16	88.1	0	0	87.3	378.5
264	46.99	3000	2740	0.722918	0.0308	127.8	58.67	5125	0.1	1950	7500	1550000	0.0677	######	5.818	9.24E-03	23.95	0	0	0	75	634.5
265	37.04	3000	490	83.270619	4.0281	145.1	51.68	5125	0.1	1950	7500	1875000	0.0859	######	1.985	7.57E-03	66.88	94	39.95	0	91.6	274.7
266	22.06	3000	1650	0.251907	0.0119	141.9	52.86	5125	0.1	1950	7500	1812500	0.1442	######	3.223	1.06E-02	47.86	0	0	0	65.6	748.7
267	23.15	3000	580	17.586672	0.7372	125.8	59.64	5125	0.1	1950	7500	1512500	0.1374	######	1.647	1.14E-02	27.37	71.57	0	0	60.7	364.5
268	45.32	3000	1870	1.704438	0.0427	75.24	99.68	5125	0.1	1950	7500	700000	0.0702	######	4.857	1.10E-02	36.59	0	0	0	63.3	549.3
269	29.9	3000	1470	3.468628	0.1831	158.4	47.36	5125	0.1	1950	7500	2137500	0.1064	######	3.619	7.10E-03	74.71	0	0	0	97.6	620.4
270	55.33	3000	3700	0.214472	0.0075	105.5	71.08	5125	0.1	1950	7500	1162500	0.0575	######	8.05	1.03E-02	26.45	0	0	0	67.4	745.7
271	23.55	3000	690	9.532449	0.4446	139.9	53.6	5125	0.1	1950	7500	1775000	0.1351	######	1.933	1.02E-02	56.85	47.55	0	0	67.9	420.7
272	48.13	3000	450	179.914166	6.73	112.2	66.83	5125	0.1	1950	7500	1275000	0.0661	######	2.143	6.71E-03	75.14	97.22	72.21	0	103.2	228.2
273	27.03	3000	710	7.311304	0.3132	128.5	58.36	5125	0.1	1950	7500	1562500	0.1177	######	2.173	1.13E-02	65.03	31.61	0	0	61.4	412.1
274	38.94	3000	2400	0.198896	0.011	165.7	45.26	5125	0.1	1950	7500	2287500	0.0817	######	5.106	1.11E-02	28.19	0	0	0	62.7	672.1
275	34.21	3000	760	51.294974	1.8428	107.8	69.59	5125	0.1	1950	7500	1200000	0.093	######	2.444	6.52E-03	65.83	90.25	2.52	0	106.3	366.2
276	29.9	3000	2350	6.652554	0.2617	118	63.55	5125	0.1	1950	7500	1375000	0.1064	######	4.083	4.86E-03	30.7	24.84	0	0	142.6	699.8
277	23.51	3000	970	31.900364	1.232	115.9	64.73	5125	0.1	1950	7500	1337500	0.1353	######	2.261	5.42E-03	52.57	84.33	0	0	127.9	492.7
278	48.79	3000	760	8.908073	0.4232	142.5	52.62	5125	0.1	1950	7500	1825000	0.0652	######	2.898	1.40E-02	32.64	43.87	0	0	49.6	304.4
279	50.74	3000	1190	7.329393	0.3239	132.6	56.56	5125	0.1	1950	7500	1637500	0.0627	######	3.908	9.94E-03	41.84	31.78	0	0	69.7	394.7
280	43.05	3000	430	134.158473	5.8081	129.9	57.75	5125	0.1	1950	7500	1587500	0.0739	######	1.973	7.97E-03	58.04	96.27	62.73	0	86.9	234.9
281	41.21	3000	1690	1.580747	0.0771	146.4	51.23	5125	0.1	1950	7500	1900000	0.0772	######	3.924	1.10E-02	14.68	0	0	0	62.9	488
282	23.07	3000	450	252.29051	12.041	143.2	52.38	5125	0.1	1950	7500	1837500	0.1379	######	1.443	3.59E-03	62.94	98.02	80.18	0	193.1	320.5
283	43.94	3000	880	2.328657	0.1086	139.9	53.6	5125	0.1	1950	7500	1775000	0.0724	######	3.122	1.57E-02	42.05	0	0	0	44.1	364.1
284	25.97	3000	900	4.231975	0.1099	77.91	96.27	5125	0.1	1950	7500	737500	0.1225	######	2.39	1.21E-02	53.71	0	0	0	57.5	471.7
285	24.43	3000	960	0.716008	0.0293	123	60.99	5125	0.1	1950	7500	1462500	0.1302	######	2.471	1.40E-02	49	0	0	0	49.4	518.3
286	39.28	3000	1580	2.22596	0.0933	125.8	59.64	5125	0.1	1950	7500	1512500	0.081	######	3.705	1.08E-02	16.77	0	0	0	64.1	483.5
287	23.71	3000	1790	2.362211	0.0849	107.8	69.59	5125	0.1	1950	7500	1200000	0.1342	######	3.25	7.27E-03	38.38	0	0	0	95.3	702.6
288	32.43	3000	370	268.020565	12.1453	135.9	55.17	5125	0.1	1950	7500	1700000	0.0981	######	1.527	6.19E-03	43.48	98.13	81.34	0	112	241.3
289	34.06	3000	1740	0.348209	0.0129	110.7	67.72	5125	0.1	1950	7500	1250000	0.0934	######	3.872	1.29E-02	25.85	0	0	0	53.9	582.6
290	46.65	3000	360	186.915257	6.4321	103.2	72.65	5125	0.1	1950	7500	1125000	0.0682	######	1.806	1.06E-02	46.8	97.32	73.25	0	65.5	198.5
291	46.78	3000	260	1060.925069	29.689	83.95	89.34	5125	0.1	1950	7500	825000	0.068	######	1.442	4.94E-03	54.98	99.53	95.29	52.87	140.3	157.9
292	31.1	3000	1490	1.495437	0.0468	93.84	79.92	5125	0.1	1950	7500	975000	0.1023	######	3.372	1.10E-02	31.78	0	0	0	63.3	555.7
293	26.71	3000	1030	5.842495	0.2312	118.7	63.17	5125	0.1	1950	7500	1387500	0.1191	######	2.643	8.97E-03	58.98	14.42	0	0	77.3	507.1
294	26.76	3000	1320	39.213951	1.6256	124.4	60.31	5125	0.1	1950	7500	1487500	0.1189	######	2.723	4.30E-03	25.27	87.25	0	0	161.3	521.6
295	25.95	3000	550	65.522959	1.9789	90.61	82.78	5125	0.1	1950	7500	925000	0.1226	######	1.706	8.79E-03	44.36	92.37	23.69	0	78.9	336.9
296	34.02	3000	470	106.826634	5.1446	144.5	51.91	5125	0.1	1950	7500	1862500	0.0935	######	1.838	6.94E-03	60.77	95.32	53.2	0	99.9	276.9
297	21.47	3000	460	9.796489	0.632	193.5	38.75	5125	0.1	1950	7500	2887500	0.1482	######	1.501	1.22E-02	65.62	48.96	0	0	57	358.5
298	35.71	3000	960	4.329657	0.225	155.9	48.11	5125	0.1	1950	7500	2087500	0.0891	######	2.982	1.09E-02	54.43	0	0	0	63.6	428.1
299	22.23	3000	1180	29.642825	1.2426	125.8	59.64	5125	0.1	1950	7500	1512500	0.1431	######	2.424	4.36E-03	48.04	83.13	0	0	159	558.8
300	39.37	3000	1220	0.78695	0.0341	129.9	57.75	5125	0.1	1950	7500	1587500	0.0808	######	3.998	1.40E-02	66.64	0	0	0	49.5	520.5
301	23.29	3000	380	11.291643	0.494	131.2	57.15	5125	0.1	1950	7500	1612500	0.1366	######	1.299	1.81E-02	20.41	55.72	0	0	38.2	285.9
302	41.37	3000	1520	1.23744	0.0588	142.5	52.62	5125	0.1	1950	7500	1825000	0.0769	######	3.918	1.19E-02	26.77	0	0	0	58.3	485.4
303	52.76	3000	740	20.797276	0.8525	123	60.99	5125	0.1	1950	7500	1462500	0.0603	######	3.092	1.11E-02	55.24	75.96	0	0	62.8	300.4
304	21.5	3000	1410	1.93862	0.0983	152.1	49.3	5125	0.1	1950	7500	2012500	0.148	######	2.577	8.67E-03	21.35	0	0	0	80	614.3
305	49.02	3000	1520	15.184759	0.6779	133.9	56	5125	0.1	1950	7500	1662500	0.0649	######	3.998	7.26E-03	17.11	67.07	0	0	95.5	418
306	61.77	3000	420	330.88082	6.7413	61.12	122.71	5125	0.1	1950	7500	512500	0.0515	######	2.249	8.83E-03	67.87	98.49	84.89	0	78.5	186.6
307	50.42	3000	1130	63.861713	2.4816	116.6	64.33	5125	0.1	1950	7500	1350000	0.0631	######	3.502	4.92E-03	31.1	92.17	21.71	0	140.9	356
308	25.03	3000	1050	3.701356	0.0972	78.78	95.2	5125	0.1	1950	7500	750000	0.1271	######	2.376	1.17E-02	23.58	0	0	0	59.4	486.6
309	34.39	3000	1700	0.031044	0.0011	105.5	71.08	5125	0.1	1950	7500	1162500	0.0925	######	4.704	1.79E-02	51.09	0	0	0	38.7	701
310	52.58	3000	240	637.198876	20.2714	95.44	78.58	5125	0.1	1950	7500	1000000	0.0605	######	1.491	8.54E-03	59.4	99.22	92.15	21.53	81.1	145.3
311	24.7	3000	1590	20.222683	1.0127	150.2	49.92	5125	0.1	1950	7500	1975000	0.1288	######	2.899	4.19E-03	25.2	75.28	0	0	165.5	601.5
312	32.6	3000	960	0.642287	0.0271	126.4	59.31	5125	0.1	1950	7500	1525000	0.0976	######	2.895	1.63E-02	46.08	0	0	0	42.4	455.2
313	27.62	3000	1850	0.007218	0.0003	135.9	55.17	5125	0.1	1950	7500	1700000	0.1152	######	4.306	1.75E-02	45.57	0	0	0	39.7	799.1
314	21.82	3000	1480	0.420477	0.022	157.1	47.73	5125	0.1	1950	7500	2112500	0.1458	######	3.108	1.01E-02	61.34	0	0	0	68.9	730.1
315	29.38	3000	1820	0.515903	0.0168	97.81	76.68	5125	0.1	1950	7500	1037500	0.1083	######	3.81	1.09E-02	36.67	0	0	0	63.7	664.7

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
316	24.82	3000	2600	12.320283	0.5827	141.9	52.86	5125	0.1	1950	7500	1812500	0.1282	######	3.804	3.08E-03	28.61	59.42	0	0	225.3	785.6
317	45.77	3000	460	83.123283	2.4192	87.31	85.9	5125	0.1	1950	7500	875000	0.0695	######	2.065	1.24E-02	46.28	93.98	39.85	0	55.9	231.2
318	40.17	3000	590	72.932444	3.5593	146.4	51.23	5125	0.1	1950	7500	1900000	0.0792	######	2.167	9.11E-03	18.36	93.14	31.44	0	76.1	276.5
319	31.47	3000	510	177.626851	7.6091	128.5	58.36	5125	0.1	1950	7500	1562500	0.1011	######	1.798	5.39E-03	42.43	97.19	71.85	0	128.6	292.8
320	30.98	3000	590	32.691096	1.4227	130.6	57.44	5125	0.1	1950	7500	1600000	0.1027	######	1.975	9.78E-03	44.07	84.71	0	0	70.9	326.8
321	38.01	3000	630	11.648458	0.6387	164.5	45.6	5125	0.1	1950	7500	2262500	0.0837	######	2.264	1.34E-02	29.69	57.08	0	0	51.7	305.3
322	36.4	3000	1400	0.337714	0.013	115.9	64.73	5125	0.1	1950	7500	1337500	0.0874	######	4.035	1.47E-02	52.91	0	0	0	47.1	568.1
323	38.24	3000	1080	0.510576	0.0216	127.1	58.99	5125	0.1	1950	7500	1537500	0.0832	######	3.007	1.83E-02	16	0	0	0	37.9	403
324	33.81	3000	800	70.961001	3.0235	127.8	58.67	5125	0.1	1950	7500	1550000	0.0941	######	2.413	5.22E-03	46.39	92.95	29.54	0	132.9	365.8
325	25.8	3000	700	2.373846	0.1263	159.6	46.99	5125	0.1	1950	7500	2162500	0.1233	######	1.987	1.48E-02	30.93	0	0	0	46.9	394.8
326	27.78	3000	670	32.32839	1.7132	159	47.17	5125	0.1	1950	7500	2150000	0.1145	######	1.938	8.84E-03	20.16	84.53	0	0	78.4	357.4
327	27.17	3000	1370	5.629183	0.2576	137.3	54.64	5125	0.1	1950	7500	1725000	0.1171	######	2.883	7.69E-03	27.41	11.18	0	0	90.1	543.9
328	27.4	3000	390	64.520014	2.8079	130.6	57.44	5125	0.1	1950	7500	1600000	0.1161	######	1.505	1.01E-02	72.11	92.25	22.5	0	68.9	281.4
329	56.11	3000	2500	0.127118	0.0048	113.7	65.97	5125	0.1	1950	7500	1300000	0.0567	######	6.568	1.46E-02	27.25	0	0	0	47.4	599.9
330	33.17	3000	430	135.003368	7.4835	166.3	45.1	5125	0.1	1950	7500	2300000	0.0959	######	1.662	8.15E-03	23.25	96.3	62.96	0	85.1	256.7
331	38.84	3000	260	52.675688	2.8347	161.4	46.46	5125	0.1	1950	7500	2200000	0.0819	######	1.469	1.68E-02	81.45	90.51	5.08	0	41.2	193.8
332	53.92	3000	1340	17.890197	0.6604	110.7	67.72	5125	0.1	1950	7500	1250000	0.059	######	3.978	8.26E-03	21.41	72.05	0	0	83.9	378.1
333	22.61	3000	1400	9.602891	0.4309	134.6	55.72	5125	0.1	1950	7500	1675000	0.1407	######	2.576	6.45E-03	18.19	47.93	0	0	107.5	583.8
334	23.83	3000	570	147.040241	5.5362	113	66.4	5125	0.1	1950	7500	1287500	0.1335	######	1.652	5.14E-03	43.66	96.6	66	0	134.7	355.3
335	34.96	3000	2250	2.582533	0.0552	64.07	117.06	5125	0.1	1950	7500	550000	0.091	######	5.06	7.60E-03	60.02	0	0	0	91.2	741.7
336	37.65	3000	570	124.701975	5.0823	122.3	61.34	5125	0.1	1950	7500	1450000	0.0845	######	2.144	5.64E-03	61.36	95.99	59.9	0	122.8	291.9
337	28.92	3000	380	314.122325	14.0243	133.9	56	5125	0.1	1950	7500	1662500	0.11	######	1.429	6.29E-03	25.05	98.41	84.08	0	110.3	253.2
338	34.28	3000	320	377.939625	16.2761	129.2	58.05	5125	0.1	1950	7500	1575000	0.0928	######	1.429	6.34E-03	45.59	98.68	86.77	0	109.3	213.7
339	37.47	3000	660	118.504109	6.1578	155.9	48.11	5125	0.1	1950	7500	2087500	0.0849	######	2.335	3.62E-03	69.24	95.78	57.81	0	191.4	319.4
340	23.64	3000	1510	3.823289	0.1196	93.84	79.92	5125	0.1	1950	7500	975000	0.1346	######	2.896	7.83E-03	34.54	0	0	0	88.5	628
341	53.02	3000	2810	5.347731	0.126	70.69	106.09	5125	0.1	1950	7500	637500	0.06	######	6.612	6.28E-03	41.62	6.5	0	0	110.3	639.1
342	38.47	3000	1090	30.706526	0.9605	93.84	79.92	5125	0.1	1950	7500	975000	0.0827	######	3.098	6.74E-03	42.48	83.72	0	0	102.8	412.8
343	60.03	3000	2720	2.687185	0.0959	107	70.08	5125	0.1	1950	7500	1187500	0.053	######	6.904	7.51E-03	35.97	0	0	0	92.2	589.5
344	35.95	3000	640	31.858473	1.3501	127.1	58.99	5125	0.1	1950	7500	1537500	0.0885	######	2.363	8.67E-03	76.52	84.31	0	0	80	336.8
345	50.9	3000	1730	7.23602	0.3715	154	48.7	5125	0.1	1950	7500	2050000	0.0625	######	4.717	6.87E-03	37.46	30.9	0	0	101	474.9
346	40.22	3000	260	200.150682	5.9355	88.97	84.3	5125	0.1	1950	7500	900000	0.0791	######	1.368	1.45E-02	54.12	97.5	75.02	0	47.9	174.4
347	51.64	3000	660	6.011656	0.2738	136.6	54.9	5125	0.1	1950	7500	1712500	0.0616	######	3.042	1.64E-02	65.7	16.83	0	0	42.3	301.8
348	38.56	3000	1590	1.982837	0.084	127.1	58.99	5125	0.1	1950	7500	1537500	0.0825	######	4.194	9.60E-03	50.47	0	0	0	72.2	557.4
349	50.66	3000	530	29.198528	1.4929	153.4	48.9	5125	0.1	1950	7500	2037500	0.0628	######	2.446	1.28E-02	44.75	82.88	0	0	54	247.5
350	23	3000	990	3.938138	0.1221	93.04	80.61	5125	0.1	1950	7500	962500	0.1383	######	2.282	1.07E-02	38.65	0	0	0	64.9	508.3
351	56.71	3000	420	52.424332	1.9094	109.3	68.64	5125	0.1	1950	7500	1225000	0.0561	######	2.259	1.55E-02	52.41	90.46	4.62	0	44.6	204.1
352	21.25	3000	760	23.78048	1.0023	126.4	59.31	5125	0.1	1950	7500	1525000	0.1497	######	1.898	7.05E-03	57.28	78.97	0	0	98.4	457.7
353	45.06	3000	1050	13.636025	0.7254	159.6	46.99	5125	0.1	1950	7500	2162500	0.0706	######	3.401	7.97E-03	49.11	63.33	0	0	87	386.8
354	23.65	3000	1380	3.054578	0.0784	77.02	97.37	5125	0.1	1950	7500	725000	0.1345	######	2.637	9.87E-03	18.94	0	0	0	70.3	571.3
355	52.41	3000	2990	2.050796	0.0716	104.8	71.59	5125	0.1	1950	7500	1150000	0.0607	######	6.721	7.14E-03	34.02	0	0	0	97.1	657.2
356	29.4	3000	370	119.988553	3.7533	93.84	79.92	5125	0.1	1950	7500	975000	0.1082	######	1.408	1.22E-02	19.44	95.83	58.33	0	56.8	245.5
357	37.34	3000	370	164.833625	5.6302	102.5	73.19	5125	0.1	1950	7500	1112500	0.0852	######	1.65	9.78E-03	49.31	96.97	69.67	0	70.9	226.5
358	27.26	3000	730	5.883744	0.2795	142.5	52.62	5125	0.1	1950	7500	1825000	0.1167	######	2.084	1.24E-02	31.36	15.02	0	0	55.9	391.9
359	23.37	3000	900	11.266772	0.3185	84.8	88.45	5125	0.1	1950	7500	837500	0.1361	######	2.14	9.46E-03	36.98	55.62	0	0	73.2	469.2
360	21.7	3000	780	0.699325	0.0417	178.7	41.97	5125	0.1	1950	7500	2562500	0.1466	######	2.148	1.42E-02	69.13	0	0	0	48.9	507.2
361	41.8	3000	450	142.655918	4.8726	102.5	73.19	5125	0.1	1950	7500	1112500	0.0761	######	1.941	9.07E-03	43.28	96.5	64.95	0	76.5	237.9
362	37.12	3000	550	33.225841	1.4982	135.3	55.44	5125	0.1	1950	7500	1687500	0.0857	######	2.082	1.13E-02	36.73	84.95	0	0	61.3	287.4
363	57.63	3000	4000	0.231292	0.0069	88.97	84.3	5125	0.1	1950	7500	900000	0.0552	######	8.065	1.03E-02	18.72	0	0	0	67.1	717.2
364	35.99	3000	910	31.031176	1.3222	127.8	58.67	5125	0.1	1950	7500	1550000	0.0884	######	2.718	6.86E-03	44.02	83.89	0	0	101.1	387
365	28.2	3000	660	45.869126	1.9228	125.8	59.64	5125	0.1	1950	7500	1512500	0.1128	######	1.976	7.75E-03	38.22	89.1	0	0	89.4	359.1
366	25.43	3000	900	2.657115	0.121	136.6	54.9	5125	0.1	1950	7500	1712500	0.1251	######	2.234	1.24E-02	26.39	0	0	0	55.8	450.2
367	29.43	3000	860	2.711089	0.1204	133.3	56.28	5125	0.1	1950	7500	1650000	0.1081	######	2.348	1.38E-02	24.36	0	0	0	50.1	409
368	29.29	3000	580	126.394838	6.1954	147	51	5125	0.1	1950	7500	1912500	0.1086	######	1.893	4.46E-03	59.55	96.04	60.44	0	155.6	331.2
369	62.14	3000	1280	10.131847	0.5074	150.2	49.92	5125	0.1	1950	7500	1975000	0.0512	######	4.648	8.32E-03	53.33	50.65	0	0	83.3	383.4
370	34.36	3000	2590	0.010032	0.0006	175.8	42.66	5125	0.1	1950	7500	2500000	0.0926	######	4.914	1.50E-02	19.31	0	0	0	46.2	733.1
371	26.89	3000	1290	10.757427	0.3998	111.5	67.27	5125	0.1	1950	7500	1262500	0.1183	######	2.902	6.49E-03	51.73	53.52	0	0	106.8	553.1
372	36.61	3000	1410	4.503022	0.1409	93.84	79.92	5125	0.1	1950	7500	975000	0.0869	######	3.475	9.88E-03	29.02	0	0	0	70.1	486.5
373	39.42	3000	480	152.284077	5.3945	106.3	70.57	5125	0.1	1950	7500	1175000	0.0807	######	1.899	9.05E-03	24.39	96.72	67.17	0	76.6	246.9
374	54.38	3000	1550	11.920971	0.3824	96.23	77.94	5125	0.1	1950	7500	1012500	0.0585	######	4.56	7.89E-03	35.86	58.06	0	0	87.8	429.8
375	29.05	3000	1690	10.91704	0.4057	111.5	67.27	5125	0.1	1950	7500	1262500	0.1095	######	3.446	5.32E-03	43.81	54.2	0	0	130.4	607.8
376	42.42	3000	840	12.859822	0.462	107.8	69.59	5125	0.1	1950	7500	1200000	0.075	######	2.811	1.20E-02	31.96	61.12	0	0	58	339.6
377	49.48	3000	310	135.349066	7.4482	165.1	45.43	5125	0.1	1950	7500	2275000	0.0643	######	1.809	1.01E-02	76.02	96.31	63.06	0	68.6	187.4
378	25.55	3000	590	35.663503	1.1814	99.38	75.47	5125	0.1	1950	7500	1062500	0.1245	######	1.823	9.07E-03	66.37	85.98	0	0	76.4	365.7

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
379	54.1	3000	640	41.576013	1.781	128.5	58.36	5125	0.1	1950	7500	1562500	0.0588	######	2.958	8.92E-03	80.6	87.97	0	0	77.7	280.2
380	28	3000	410	19.500803	1.0214	157.1	47.73	5125	0.1	1950	7500	2112500	0.1136	######	1.656	1.28E-02	94.67	74.36	0	0	54.3	303.1
381	21.8	3000	430	212.499021	10.0496	141.9	52.86	5125	0.1	1950	7500	1812500	0.1459	######	1.35	5.33E-03	34.36	97.65	76.47	0	130	317.2
382	24.59	3000	1330	0.067534	0.0021	92.23	81.32	5125	0.1	1950	7500	950000	0.1294	######	3.326	1.64E-02	60.68	0	0	0	42.2	693.4
383	30.15	3000	870	16.675201	0.7067	127.1	58.99	5125	0.1	1950	7500	1537500	0.1055	######	2.375	8.89E-03	31.67	70.02	0	0	78	403.6
384	24.8	3000	800	0.327429	0.0102	93.84	79.92	5125	0.1	1950	7500	975000	0.1283	######	2.528	1.85E-02	83.92	0	0	0	37.4	522.4
385	39.57	3000	330	96.603113	4.1822	129.9	57.75	5125	0.1	1950	7500	1587500	0.0804	######	1.58	1.39E-02	32.57	94.82	48.24	0	49.8	204.6
386	50.82	3000	2650	0.476106	0.0161	101.7	73.75	5125	0.1	1950	7500	1100000	0.0626	######	5.973	1.12E-02	21.8	0	0	0	61.9	602.3
387	56.41	3000	1050	1.579036	0.091	172.9	43.39	5125	0.1	1950	7500	2437500	0.0564	######	3.97	1.59E-02	39.19	0	0	0	43.6	360.7
388	25.41	3000	1790	0.141993	0.0051	108.5	69.11	5125	0.1	1950	7500	1212500	0.1252	######	3.617	1.23E-02	39.93	0	0	0	56.5	729.5
389	36.32	3000	1940	4.320718	0.1781	123.7	60.65	5125	0.1	1950	7500	1475000	0.0876	######	4.34	6.60E-03	45.24	0	0	0	105.1	612.5
390	31.16	3000	950	6.354214	0.256	120.9	62.06	5125	0.1	1950	7500	1425000	0.1021	######	2.586	1.08E-02	32.91	21.31	0	0	64.1	425.4
391	40.63	3000	1520	1.219917	0.0395	97.02	77.3	5125	0.1	1950	7500	1025000	0.0783	######	3.649	1.37E-02	12.91	0	0	0	50.6	460.2
392	58.7	3000	700	6.468758	0.2741	127.1	58.99	5125	0.1	1950	7500	1537500	0.0542	######	3.131	1.77E-02	37.72	22.71	0	0	39.1	273.4
393	31.34	3000	540	149.52414	5.4089	108.5	69.11	5125	0.1	1950	7500	1212500	0.1015	######	1.907	5.10E-03	77.71	96.66	66.56	0	135.8	311.8
394	57.42	3000	1170	19.869732	0.9739	147	51	5125	0.1	1950	7500	1912500	0.0554	######	4.032	7.16E-03	43.18	74.84	0	0	96.8	359.9
395	23.19	3000	1230	32.905486	1.5847	144.5	51.91	5125	0.1	1950	7500	1862500	0.1372	######	2.499	3.92E-03	41.73	84.8	0	0	177	552.4
396	21.34	3000	1240	0.219756	0.0061	83.1	90.25	5125	0.1	1950	7500	812500	0.1491	######	2.554	1.44E-02	33.97	0	0	0	48.1	613.4
397	24.3	3000	1410	28.739422	0.7797	81.39	92.15	5125	0.1	1950	7500	787500	0.1309	######	2.944	4.11E-03	75.31	82.6	0	0	168.8	620.9
398	22.48	3000	410	4.848797	0.2154	133.3	56.28	5125	0.1	1950	7500	1650000	0.1415	######	1.481	1.73E-02	79.86	0	0	0	40.2	337.7
399	48.79	3000	520	11.613763	0.5133	132.6	56.56	5125	0.1	1950	7500	1637500	0.0652	######	2.442	1.73E-02	50.23	56.95	0	0	40	256.5
400	44.74	3000	2120	1.897558	0.0686	108.5	69.11	5125	0.1	1950	7500	1212500	0.0711	######	4.653	9.77E-03	16.18	0	0	0	71	532.9
401	40.42	3000	210	589.906942	29.9146	152.1	49.3	5125	0.1	1950	7500	2012500	0.0787	######	1.256	5.69E-03	92.87	99.15	91.52	15.24	121.8	159.2
402	32.93	3000	1270	87.740915	3.239	110.7	67.72	5125	0.1	1950	7500	1250000	0.0966	######	2.946	3.26E-03	26.31	94.3	43.01	0	212.6	458.4
403	40.89	3000	1340	4.889091	0.1409	86.48	86.73	5125	0.1	1950	7500	862500	0.0778	######	3.845	1.01E-02	49.14	0	0	0	68.7	481.8
404	26.67	3000	910	16.787914	0.9474	169.3	44.3	5125	0.1	1950	7500	2362500	0.1193	######	2.303	7.14E-03	36.38	70.22	0	0	97.1	442.7
405	22	3000	1060	9.845473	0.3388	103.2	72.65	5125	0.1	1950	7500	1125000	0.1446	######	2.396	7.24E-03	64.02	49.22	0	0	95.7	558
406	52.85	3000	1080	3.934641	0.2197	167.5	44.78	5125	0.1	1950	7500	2325000	0.0602	######	3.894	1.20E-02	46.69	0	0	0	57.6	377.7
407	27.86	3000	1740	20.066013	0.584	87.31	85.9	5125	0.1	1950	7500	875000	0.1142	######	3.165	5.48E-03	15.65	75.08	0	0	126.5	582.2
408	41.21	3000	1110	36.239163	1.4342	118.7	63.17	5125	0.1	1950	7500	1387500	0.0772	######	3.056	7.19E-03	15.43	86.2	0	0	96.4	380
409	33	3000	1100	5.084351	0.2393	141.2	53.11	5125	0.1	1950	7500	1800000	0.0964	######	2.927	9.80E-03	37.24	1.66	0	0	70.7	454.6
410	50.1	3000	1690	10.220072	0.4654	136.6	54.9	5125	0.1	1950	7500	1712500	0.0635	######	4.904	5.77E-03	61.03	51.08	0	0	120.2	501.7
411	40.53	3000	1830	17.783452	1.0036	169.3	44.3	5125	0.1	1950	7500	2362500	0.0785	######	4.137	3.98E-03	35	71.88	0	0	174.2	523.2
412	38.75	3000	1380	27.54867	0.6909	75.24	99.68	5125	0.1	1950	7500	700000	0.0821	######	3.609	5.84E-03	51.72	81.85	0	0	118.6	477.3
413	22.33	3000	380	62.122049	3.891	187.9	39.91	5125	0.1	1950	7500	2762500	0.1425	######	1.285	1.00E-02	26.23	91.95	19.51	0	69.1	294.9
414	36.65	3000	2080	3.718051	0.1308	105.5	71.08	5125	0.1	1950	7500	1162500	0.0868	######	5.304	6.15E-03	87.44	0	0	0	112.7	741.6
415	61.65	3000	1930	0.350285	0.0172	147	51	5125	0.1	1950	7500	1912500	0.0516	######	5.631	1.51E-02	22.67	0	0	0	45.9	468
416	26.85	3000	590	1.98172	0.0933	141.2	53.11	5125	0.1	1950	7500	1800000	0.1185	######	1.967	1.70E-02	55.32	0	0	0	40.7	375.5
417	57.84	3000	1800	2.872635	0.1451	151.5	49.5	5125	0.1	1950	7500	2000000	0.055	######	5.139	9.70E-03	28.65	0	0	0	71.5	455.3
418	26.49	3000	490	90.034222	2.9824	99.38	75.47	5125	0.1	1950	7500	1062500	0.1201	######	1.592	9.00E-03	33.64	94.45	44.47	0	77	308
419	24.64	3000	1130	4.018527	0.174	129.9	57.75	5125	0.1	1950	7500	1587500	0.1291	######	2.473	9.53E-03	25.48	0	0	0	72.7	514.3
420	49.4	3000	800	28.967604	0.8827	91.42	82.04	5125	0.1	1950	7500	937500	0.0644	######	2.841	1.20E-02	19.79	82.74	0	0	57.7	294.8
421	21.22	3000	770	14.416027	0.7035	146.4	51.23	5125	0.1	1950	7500	1900000	0.1499	######	1.875	8.28E-03	36.15	65.32	0	0	83.7	452.9
422	24.97	3000	1050	0.559947	0.0209	112.2	66.83	5125	0.1	1950	7500	1275000	0.1274	######	3.02	1.36E-02	91.3	0	0	0	51	619.9
423	24.03	3000	770	13.984861	0.4337	93.04	80.61	5125	0.1	1950	7500	962500	0.1324	######	2.045	9.63E-03	50.8	64.25	0	0	72	436.2
424	22.12	3000	1120	3.815432	0.1813	142.5	52.62	5125	0.1	1950	7500	1825000	0.1438	######	2.661	7.77E-03	86.8	0	0	0	89.2	616.5
425	38.47	3000	770	23.686118	0.766	97.02	77.3	5125	0.1	1950	7500	1025000	0.0827	######	2.568	1.03E-02	42.91	78.89	0	0	67.2	342.1
426	25.76	3000	720	13.348866	0.8132	182.8	41.04	5125	0.1	1950	7500	2650000	0.1235	######	2.13	8.06E-03	75.48	62.54	0	0	86	423.8
427	40.17	3000	2210	2.5549	0.0806	94.64	79.25	5125	0.1	1950	7500	987500	0.0792	######	4.406	8.95E-03	13.19	0	0	0	77.4	562.1
428	33.7	3000	400	56.679777	2.7051	143.2	52.38	5125	0.1	1950	7500	1837500	0.0944	######	1.714	1.08E-02	69.34	91.18	11.79	0	64.4	260.6
429	42.08	3000	2200	0.340935	0.0092	81.39	92.15	5125	0.1	1950	7500	787500	0.0756	######	4.93	1.28E-02	23.74	0	0	0	54.1	600.4
430	29.48	3000	400	50.09891	1.2415	74.34	100.88	5125	0.1	1950	7500	687500	0.1079	######	1.584	1.35E-02	80.36	90.02	0.2	0	51.6	275.4
431	21.93	3000	1000	1.612535	0.0913	169.9	44.15	5125	0.1	1950	7500	2375000	0.1451	######	2.25	1.09E-02	34.69	0	0	0	63.4	525.9
432	61.53	3000	360	608.576044	16.3352	80.53	93.14	5125	0.1	1950	7500	775000	0.0517	######	1.977	7.68E-03	26.87	99.18	91.78	17.84	90.3	164.7
433	22.39	3000	770	104.433436	3.1825	91.42	82.04	5125	0.1	1950	7500	937500	0.1421	######	1.909	4.38E-03	57.67	95.21	52.12	0	158.4	436.9
434	35.23	3000	1230	16.61178	0.6214	112.2	66.83	5125	0.1	1950	7500	1275000	0.0903	######	3.401	6.03E-03	72.85	69.9	0	0	114.9	494.8
435	24.72	3000	580	68.383701	2.1024	92.23	81.32	5125	0.1	1950	7500	950000	0.1287	######	1.743	7.53E-03	58.72	92.69	26.88	0	92.1	361.4
436	55.91	3000	1050	23.589135	0.7442	94.64	79.25	5125	0.1	1950	7500	987500	0.0569	######	3.983	8.08E-03	68.48	78.8	0	0	85.7	365.1
437	24.78	3000	860	23.015216	1.012	131.9	56.85	5125	0.1	1950	7500	1625000	0.1284	######	2.116	7.47E-03	29.05	78.28	0	0	92.8	437.8
438	23.57	3000	1180	0.597792	0.0297	149	50.35	5125	0.1	1950	7500	1950000	0.135	######	2.95	1.15E-02	73.84	0	0	0	60.5	641.6
439	55.62	3000	2570	0.394164	0.009	68.83	108.96	5125	0.1	1950	7500	612500	0.0572	######	6.495	1.30E-02	27.04	0	0	0	53.4	598.5
440	36.19	3000	940	3.887696	0.1338	103.2	72.65	5125	0.1	1950	7500	1125000	0.0879	######	2.997	1.27E-02	55.88	0	0	0	54.5	424.4
441	34.65	3000	530	31.24439	1.5248	146.4	51.23	5125	0.1	1950	7500	1900000	0.0918	######	2.124	9.53E-03	92.4	84	0	0	72.7	314

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
442	23.31	3000	640	2.297934	0.0898	117.3	63.94	5125	0.1	1950	7500	1362500	0.1365	######	1.865	1.54E-02	48.42	0	0	0	45	410
443	28.25	3000	510	110.330573	3.6547	99.38	75.47	5125	0.1	1950	7500	1062500	0.1126	######	1.749	6.83E-03	73.71	95.47	54.68	0	101.6	317.3
444	41.8	3000	1930	0.304053	0.0165	163.3	45.94	5125	0.1	1950	7500	2237500	0.0761	######	5.047	1.21E-02	43.14	0	0	0	57.3	618.7
445	23.58	3000	390	50.95037	1.2318	72.53	103.4	5125	0.1	1950	7500	662500	0.1349	######	1.291	1.41E-02	29.77	90.19	1.87	0	49	280.5
446	26.06	3000	720	8.528332	0.2645	93.04	80.61	5125	0.1	1950	7500	962500	0.1221	######	2.108	1.17E-02	57.55	41.37	0	0	59.2	414.5
447	33.07	3000	610	82.997137	4.0682	147	51	5125	0.1	1950	7500	1912500	0.0962	######	2.024	6.73E-03	33.72	93.98	39.76	0	103.1	313.7
448	35.11	3000	1280	0.814678	0.0356	131.2	57.15	5125	0.1	1950	7500	1612500	0.0906	######	4.096	1.25E-02	85.72	0	0	0	55.3	597.8
449	61.89	3000	690	121.163658	3.6594	90.61	82.78	5125	0.1	1950	7500	925000	0.0514	######	2.962	8.10E-03	28.93	95.87	58.73	0	85.6	245.3
450	26.21	3000	410	58.12295	3.3833	174.6	42.95	5125	0.1	1950	7500	2475000	0.1214	######	1.525	8.58E-03	67.37	91.4	13.98	0	80.8	298.3
451	22.56	3000	1580	1.086377	0.0443	122.3	61.34	5125	0.1	1950	7500	1450000	0.141	######	2.98	8.98E-03	37.52	0	0	0	77.2	677
452	23.34	3000	1650	0.231838	0.0115	148.3	50.56	5125	0.1	1950	7500	1937500	0.1363	######	3.521	1.07E-02	60.91	0	0	0	64.6	773
453	26.8	3000	360	328.564695	17.8815	163.3	45.94	5125	0.1	1950	7500	2237500	0.1187	######	1.364	4.83E-03	35.46	98.48	84.78	0	143.6	260.9
454	38.61	3000	600	57.818273	2.2468	116.6	64.33	5125	0.1	1950	7500	1350000	0.0824	######	2.3	8.02E-03	66.48	91.35	13.52	0	86.5	305.3
455	40.68	3000	1240	5.688582	0.2211	116.6	64.33	5125	0.1	1950	7500	1350000	0.0782	######	3.851	9.03E-03	68.85	12.1	0	0	76.7	485.2
456	32.46	3000	600	41.702644	1.7288	124.4	60.31	5125	0.1	1950	7500	1487500	0.098	######	2.133	8.12E-03	78.92	88.01	0	0	85.3	336.8
457	44.81	3000	620	188.281815	5.5836	88.97	84.3	5125	0.1	1950	7500	900000	0.071	######	2.317	7.40E-03	18	97.34	73.44	0	93.6	265
458	21.73	3000	930	0.799093	0.0446	167.5	44.78	5125	0.1	1950	7500	2325000	0.1464	######	2.202	1.29E-02	40.25	0	0	0	53.7	519.3
459	22.99	3000	1740	4.957772	0.1668	100.9	74.31	5125	0.1	1950	7500	1087500	0.1384	######	2.98	6.66E-03	24.05	0	0	0	104	664.4
460	22.44	3000	720	4.075936	0.1998	147	51	5125	0.1	1950	7500	1912500	0.1418	######	2.111	1.09E-02	93.45	0	0	0	63.7	482.2
461	50.74	3000	390	78.210484	2.9256	112.2	66.83	5125	0.1	1950	7500	1275000	0.0627	######	1.994	1.45E-02	34.64	93.61	36.07	0	47.7	201.4
462	30.86	3000	520	14.679471	0.6717	137.3	54.64	5125	0.1	1950	7500	1725000	0.1031	######	1.887	1.33E-02	48.48	65.94	0	0	52.1	313.3
463	25.17	3000	600	18.931215	0.8239	130.6	57.44	5125	0.1	1950	7500	1600000	0.1264	######	1.777	1.08E-02	35.56	73.59	0	0	64.5	361.9
464	46.44	3000	1000	11.635861	0.4742	122.3	61.34	5125	0.1	1950	7500	1450000	0.0685	######	3.167	1.11E-02	22.09	57.03	0	0	62.2	349.5
465	25.45	3000	380	48.689726	1.4439	88.97	84.3	5125	0.1	1950	7500	900000	0.125	######	1.401	1.30E-02	72.52	89.73	0	0	53.5	282
466	41.48	3000	520	157.349229	4.2688	81.39	92.15	5125	0.1	1950	7500	787500	0.0767	######	1.996	1.01E-02	17.62	96.82	68.22	0	68.8	246.6
467	21.37	3000	490	119.406133	7.4337	186.8	40.16	5125	0.1	1950	7500	2737500	0.1489	######	1.433	6.06E-03	20.12	95.81	58.13	0	114.4	343.7
468	50.26	3000	780	47.977512	2.6595	166.3	45.1	5125	0.1	1950	7500	2300000	0.0633	######	2.862	7.74E-03	25.75	89.58	0	0	89.6	291.8
469	53.92	3000	890	15.931363	1.0513	198	37.88	5125	0.1	1950	7500	2987500	0.059	######	3.201	1.03E-02	21.47	68.62	0	0	67	304.2
470	35.87	3000	800	1.883202	0.0736	117.3	63.94	5125	0.1	1950	7500	1362500	0.0887	######	2.847	1.60E-02	66.01	0	0	0	43.4	406.8
471	45.06	3000	1290	1.956247	0.0996	152.8	49.1	5125	0.1	1950	7500	2025000	0.0706	######	4.395	1.12E-02	71.44	0	0	0	62	499.9
472	41.53	3000	950	3.161845	0.1318	125.1	59.97	5125	0.1	1950	7500	1500000	0.0766	######	2.92	1.51E-02	18.1	0	0	0	45.8	360.3
473	48.13	3000	1790	5.337882	0.2501	140.6	53.35	5125	0.1	1950	7500	1787500	0.0661	######	4.769	7.29E-03	41.6	6.33	0	0	95.1	507.9
474	34.32	3000	690	53.634482	1.5906	88.97	84.3	5125	0.1	1950	7500	900000	0.0927	######	2.321	7.80E-03	64.81	90.68	6.78	0	88.9	346.6
475	21.54	3000	890	9.589693	0.4963	155.3	48.3	5125	0.1	1950	7500	2075000	0.1477	######	2.046	8.13E-03	35.13	47.86	0	0	85.2	486.8
476	26.01	3000	400	12.876923	0.6118	142.5	52.62	5125	0.1	1950	7500	1825000	0.1223	######	1.529	1.52E-02	68.6	61.17	0	0	45.6	301.2
477	29.21	3000	1040	1.258762	0.0293	69.77	107.5	5125	0.1	1950	7500	625000	0.1089	######	3.153	1.41E-02	82.33	0	0	0	49.1	553.1
478	25.35	3000	2070	0.098276	0.0044	134.6	55.72	5125	0.1	1950	7500	1675000	0.1255	######	3.892	1.14E-02	36.76	0	0	0	61	786.8
479	34.73	3000	500	15.936404	0.5961	112.2	66.83	5125	0.1	1950	7500	1275000	0.0916	######	1.927	1.55E-02	38.8	68.63	0	0	44.8	284.4
480	47.41	3000	1610	1.77115	0.052	88.14	85.09	5125	0.1	1950	7500	887500	0.0671	######	4.244	1.28E-02	21.6	0	0	0	54.3	458.7
481	23.24	3000	1050	0.475384	0.0194	122.3	61.34	5125	0.1	1950	7500	1450000	0.1369	######	2.397	1.43E-02	30.63	0	0	0	48.6	528.7
482	23.04	3000	950	7.682367	0.4651	181.6	41.3	5125	0.1	1950	7500	2625000	0.1381	######	2.168	8.31E-03	28.85	34.92	0	0	83.4	482.2
483	21.88	3000	740	98.578838	2.7586	83.95	89.34	5125	0.1	1950	7500	825000	0.1454	######	1.827	5.16E-03	48.59	94.93	49.28	0	134.2	427.9
484	23.69	3000	650	4.191687	0.1243	88.97	84.3	5125	0.1	1950	7500	900000	0.1343	######	1.744	1.61E-02	17.23	0	0	0	43.1	377.3
485	24.91	3000	1460	4.683091	0.208	133.3	56.28	5125	0.1	1950	7500	1650000	0.1277	######	2.889	7.26E-03	31.63	0	0	0	95.5	594.4
486	49.94	3000	590	65.798079	2.6662	121.6	61.7	5125	0.1	1950	7500	1437500	0.0637	######	2.528	9.21E-03	44.4	92.4	24.01	0	75.3	259.4
487	54.95	3000	1270	6.301402	0.2568	122.3	61.34	5125	0.1	1950	7500	1450000	0.0579	######	4.447	9.97E-03	55.58	20.65	0	0	69.6	414.8
488	41.59	3000	750	9.898499	0.4788	145.1	51.68	5125	0.1	1950	7500	1875000	0.0765	######	2.685	1.24E-02	40.83	49.49	0	0	56	330.8
489	37.65	3000	1490	0.48066	0.021	131.2	57.15	5125	0.1	1950	7500	1612500	0.0845	######	4.762	1.29E-02	81.01	0	0	0	53.8	648.2
490	37.34	3000	880	2.194636	0.1024	139.9	53.6	5125	0.1	1950	7500	1775000	0.0852	######	2.903	1.46E-02	48.14	0	0	0	47.6	398.5
491	38.1	3000	660	80.445809	3.1837	118.7	63.17	5125	0.1	1950	7500	1387500	0.0835	######	2.377	6.01E-03	66.23	93.78	37.85	0	115.3	319.8
492	23.09	3000	1320	0.839622	0.042	150.2	49.92	5125	0.1	1950	7500	1975000	0.1378	######	2.712	1.05E-02	34.33	0	0	0	65.7	602.1
493	26.67	3000	830	2.379946	0.1319	166.3	45.1	5125	0.1	1950	7500	2300000	0.1193	######	2.498	1.17E-02	77.69	0	0	0	59.4	480.2
494	25.39	3000	390	145.501524	6.1328	126.4	59.31	5125	0.1	1950	7500	1525000	0.1253	######	1.401	7.33E-03	60.26	96.56	65.64	0	94.6	282.7
495	46.17	3000	660	89.661345	4.4901	150.2	49.92	5125	0.1	1950	7500	1975000	0.0689	######	2.522	6.50E-03	32.7	94.42	44.23	0	106.7	279.9
496	24.97	3000	950	8.980635	0.3315	110.7	67.72	5125	0.1	1950	7500	1250000	0.1274	######	2.283	9.23E-03	34.77	44.32	0	0	75.1	468.6
497	61.3	3000	490	28.185213	0.8436	89.79	83.53	5125	0.1	1950	7500	912500	0.0519	######	2.739	1.69E-02	78.04	82.26	0	0	40.9	229
498	30.71	3000	530	62.217197	2.9559	142.5	52.62	5125	0.1	1950	7500	1825000	0.1036	######	1.8	9.09E-03	28.22	91.96	19.64	0	76.2	300.4
499	63.5	3000	1610	61.311069	2.4844	121.6	61.7	5125	0.1	1950	7500	1437500	0.0501	######	4.698	3.50E-03	24.57	91.84	18.45	0	198.1	379.2
500	52.93	3000	790	47.53303	0.8548	53.95	139.02	5125	0.1	1950	7500	425000	0.0601	######	3.12	1.08E-02	58.41	89.48	0	0	64	302
501	36.86	3000	860	20.41845	0.8369	123	60.99	5125	0.1	1950	7500	1462500	0.0863	######	2.678	8.79E-03	42.31	75.51	0	0	78.9	372.3
502	34.21	3000	1000	16.882447	0.849	150.9	49.71	5125	0.1	1950	7500	1987500	0.093	######	2.721	7.87E-03	28.37	70.38	0	0	88.1	407.7
503	25.78	3000	1680	2.458891	0.0756	92.23	81.32	5125	0.1	1950	7500	950000	0.1234	######	3.706	7.55E-03	76.67	0	0	0	91.8	736.7
504	22.48	3000	490	45.614771	2.1174	139.3	53.86	5125	0.1	1950	7500	1762500	0.1415	######	1.573	7.82E-03	86.2	89.04	0	0	88.6	358.6

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
505	37.08	3000	1590	6.326576	0.3274	155.3	48.3	5125	0.1	1950	7500	2075000	0.0858	######	4.008	6.30E-03	58.17	20.97	0	0	110.1	553.9
506	24.19	3000	1190	33.468026	1.4106	126.4	59.31	5125	0.1	1950	7500	1525000	0.1315	######	2.44	5.04E-03	22.64	85.06	0	0	137.5	516.9
507	24.43	3000	1440	0.241199	0.0093	115.9	64.73	5125	0.1	1950	7500	1337500	0.1302	######	3.256	1.26E-02	53.51	0	0	0	55.1	683
508	30.98	3000	400	76.446087	3.9246	154	48.7	5125	0.1	1950	7500	2050000	0.1027	######	1.611	9.22E-03	61.59	93.46	34.59	0	75.2	266.6
509	25.25	3000	630	68.102606	3.0405	133.9	56	5125	0.1	1950	7500	1662500	0.126	######	1.83	6.13E-03	47.11	92.66	26.58	0	113.1	371.5
510	45.32	3000	440	109.809477	5.7968	158.4	47.36	5125	0.1	1950	7500	2137500	0.0702	######	2.068	7.72E-03	61.26	95.45	54.47	0	89.8	233.8
511	43.82	3000	700	63.262245	2.8527	135.3	55.44	5125	0.1	1950	7500	1687500	0.0726	######	2.662	6.20E-03	65.42	92.1	20.96	0	111.8	311.4
512	23.48	3000	530	3.595927	0.1778	148.3	50.56	5125	0.1	1950	7500	1937500	0.1355	######	1.73	1.52E-02	65.29	0	0	0	45.7	377.5
513	30.27	3000	560	36.191593	1.5503	128.5	58.36	5125	0.1	1950	7500	1562500	0.1051	######	1.957	9.13E-03	64.31	86.18	0	0	75.9	331.3
514	28.2	3000	510	82.055549	3.6818	134.6	55.72	5125	0.1	1950	7500	1675000	0.1128	######	1.74	7.20E-03	52.28	93.91	39.07	0	96.2	316.1
515	36.4	3000	1280	0.67529	0.0241	107	70.08	5125	0.1	1950	7500	1187500	0.0874	######	3.441	1.47E-02	32.68	0	0	0	47.1	484.5
516	21.27	3000	910	0.369462	0.0192	155.9	48.11	5125	0.1	1950	7500	2087500	0.1496	######	2.406	1.42E-02	74.9	0	0	0	48.8	579.9
517	22.55	3000	1340	24.450345	1.135	139.3	53.86	5125	0.1	1950	7500	1762500	0.1411	######	2.517	4.66E-03	24.15	79.55	0	0	148.7	572
518	32.23	3000	1300	14.519981	0.5815	120.1	62.42	5125	0.1	1950	7500	1412500	0.0987	######	3.237	5.95E-03	57.52	65.56	0	0	116.5	514.7
519	22.92	3000	640	3.345679	0.2064	185.1	40.53	5125	0.1	1950	7500	2700000	0.1388	######	1.816	1.31E-02	43.63	0	0	0	52.8	406.1
520	57.22	3000	1270	4.104604	0.1327	97.02	77.3	5125	0.1	1950	7500	1025000	0.0556	######	5.019	1.17E-02	74.79	0	0	0	59.1	449.5
521	26.14	3000	630	103.175051	4.4668	129.9	57.75	5125	0.1	1950	7500	1587500	0.1217	######	1.834	5.34E-03	41.83	95.15	51.54	0	129.7	359.6
522	23.02	3000	580	17.821031	0.5949	100.2	74.88	5125	0.1	1950	7500	1075000	0.1382	######	1.7	1.11E-02	53.74	71.94	0	0	62.4	378.5
523	32.17	3000	1360	0.086355	0.0035	121.6	61.7	5125	0.1	1950	7500	1437500	0.0989	######	3.794	1.72E-02	51.28	0	0	0	40.3	604.4
524	26.1	3000	620	1.671803	0.078	139.9	53.6	5125	0.1	1950	7500	1775000	0.1219	######	2.078	1.63E-02	71.31	0	0	0	42.6	408.1
525	34.39	3000	740	9.060289	0.5692	188.5	39.79	5125	0.1	1950	7500	2775000	0.0925	######	2.438	1.07E-02	48.24	44.81	0	0	64.8	363.4
526	33.24	3000	790	106.412884	4.6311	130.6	57.44	5125	0.1	1950	7500	1600000	0.0957	######	2.274	5.52E-03	17.92	95.3	53.01	0	125.6	350.6
527	22.22	3000	1180	1.055925	0.0292	83.1	90.25	5125	0.1	1950	7500	812500	0.1432	######	2.848	1.13E-02	78.8	0	0	0	61.3	657
528	24.87	3000	1230	6.205094	0.2908	140.6	53.35	5125	0.1	1950	7500	1787500	0.1279	######	2.669	7.45E-03	40.21	19.42	0	0	93.1	549.9
529	25.57	3000	530	48.884116	1.3262	81.39	92.15	5125	0.1	1950	7500	787500	0.1244	######	1.643	1.06E-02	40.5	89.77	0	0	65.5	329.3
530	34.73	3000	1260	10.178816	0.4196	123.7	60.65	5125	0.1	1950	7500	1475000	0.0916	######	3.169	7.78E-03	33.81	50.88	0	0	89.1	467.6
531	24.7	3000	1150	3.60105	0.1248	104	72.12	5125	0.1	1950	7500	1137500	0.1288	######	2.474	1.03E-02	22.04	0	0	0	67.2	513.3
532	51.39	3000	1450	31.755549	0.7869	74.34	100.88	5125	0.1	1950	7500	687500	0.0619	######	4.404	5.61E-03	58.32	84.25	0	0	123.6	439.1
533	39.42	3000	920	14.59569	0.4527	93.04	80.61	5125	0.1	1950	7500	962500	0.0807	######	2.804	1.10E-02	28.58	65.74	0	0	63	364.5
534	37.92	3000	1080	35.215839	1.054	89.79	83.53	5125	0.1	1950	7500	912500	0.0839	######	3.103	6.24E-03	53.15	85.8	0	0	111.1	419.4
535	31.25	3000	1150	7.297863	0.2676	110	68.18	5125	0.1	1950	7500	1237500	0.1018	######	3.223	8.00E-03	81.85	31.49	0	0	86.7	528.6
536	31.59	3000	670	47.962722	2.62	163.9	45.77	5125	0.1	1950	7500	2250000	0.1007	######	2.044	8.51E-03	15.12	89.58	0	0	81.5	331.6
537	59.8	3000	980	46.894459	2.6463	169.3	44.3	5125	0.1	1950	7500	2362500	0.0532	######	3.7	4.98E-03	50.93	89.34	0	0	139.1	317.1
538	53.56	3000	2160	1.555229	0.0531	102.5	73.19	5125	0.1	1950	7500	1112500	0.0594	######	6.697	9.44E-03	64.69	0	0	0	73.4	640.8
539	39.72	3000	1850	3.14306	0.0958	91.42	82.04	5125	0.1	1950	7500	937500	0.0801	######	4.6	8.37E-03	48.92	0	0	0	82.8	593.5
540	39.72	3000	1120	17.448226	0.8214	141.2	53.11	5125	0.1	1950	7500	1800000	0.0801	######	3.062	8.18E-03	18.57	71.34	0	0	84.7	395.1
541	23.43	3000	410	68.798897	2.5903	113	66.4	5125	0.1	1950	7500	1287500	0.1358	######	1.416	9.33E-03	72.01	92.73	27.32	0	74.3	309.7
542	35.59	3000	390	104.429411	5.8097	166.9	44.94	5125	0.1	1950	7500	2312500	0.0894	######	1.677	8.96E-03	45.27	95.21	52.12	0	77.3	241.5
543	24.36	3000	580	39.18999	2.2349	171.1	43.84	5125	0.1	1950	7500	2400000	0.1306	######	1.678	8.61E-03	23.16	87.24	0	0	80.5	353.1
544	34.84	3000	1290	11.62677	0.4406	113.7	65.97	5125	0.1	1950	7500	1300000	0.0913	######	3.102	8.16E-03	20.61	57	0	0	85	456.2
545	26.34	3000	1270	0.576128	0.0284	147.7	50.78	5125	0.1	1950	7500	1925000	0.1208	######	2.785	1.27E-02	25.38	0	0	0	54.8	541.9
546	63.25	3000	2130	0.870335	0.0454	156.5	47.92	5125	0.1	1950	7500	2100000	0.0503	######	7.791	1.07E-02	71.86	0	0	0	65.1	631.3
547	45.13	3000	800	10.008847	0.3841	115.1	65.14	5125	0.1	1950	7500	1325000	0.0705	######	3.257	1.15E-02	88.3	50.04	0	0	60.2	369.9
548	22.77	3000	620	16.397267	0.6949	127.1	58.99	5125	0.1	1950	7500	1537500	0.1397	######	1.747	1.01E-02	43.03	69.51	0	0	68.5	393.2
549	24.53	3000	1650	13.222505	0.3237	73.44	102.12	5125	0.1	1950	7500	675000	0.1297	######	3.012	5.82E-03	32.12	62.19	0	0	119.1	629.2
550	26.25	3000	690	6.473459	0.2293	106.3	70.57	5125	0.1	1950	7500	1175000	0.1212	######	2.009	1.30E-02	40.72	22.76	0	0	53.1	392.2
551	22.92	3000	450	72.729948	2.5397	104.8	71.59	5125	0.1	1950	7500	1150000	0.1388	######	1.418	9.61E-03	36.41	93.13	31.25	0	72.1	317.1
552	28.61	3000	2330	0.773361	0.0449	174	43.09	5125	0.1	1950	7500	2462500	0.1112	######	4.288	7.32E-03	40.12	0	0	0	94.7	768.2
553	25.27	3000	500	7.333345	0.3841	157.1	47.73	5125	0.1	1950	7500	2112500	0.1259	######	1.615	1.54E-02	27.96	31.82	0	0	45.1	327.5
554	58.59	3000	640	77.162375	3.1628	123	60.99	5125	0.1	1950	7500	1462500	0.0543	######	2.941	7.41E-03	61.01	93.52	35.2	0	93.5	257.2
555	26.6	3000	710	16.760453	0.445	79.66	94.15	5125	0.1	1950	7500	762500	0.1196	######	2.142	1.02E-02	73.92	70.17	0	0	67.9	412.7
556	22.42	3000	1120	38.569725	1.6786	130.6	57.44	5125	0.1	1950	7500	1600000	0.1419	######	2.356	4.02E-03	48.28	87.04	0	0	172.3	538.6
557	45.77	3000	530	26.486574	0.9908	112.2	66.83	5125	0.1	1950	7500	1275000	0.0695	######	2.237	1.52E-02	29.49	81.12	0	0	45.5	250.5
558	25.15	3000	1190	1.560459	0.0525	100.9	74.31	5125	0.1	1950	7500	1087500	0.1265	######	2.556	1.20E-02	20.67	0	0	0	57.9	520.8
559	26.38	3000	540	11.827456	0.3949	100.2	74.88	5125	0.1	1950	7500	1075000	0.1206	######	1.787	1.37E-02	60.23	57.73	0	0	50.7	347.2
560	30.92	3000	350	10.205786	0.6198	182.2	41.17	5125	0.1	1950	7500	2637500	0.1029	######	1.58	1.80E-02	73.24	51.01	0	0	38.5	261.9
561	36.82	3000	500	20.37114	1.2759	187.9	39.91	5125	0.1	1950	7500	2762500	0.0864	######	1.936	1.40E-02	21	75.46	0	0	49.6	269.5
562	38.05	3000	1800	2.681636	0.101	113	66.4	5125	0.1	1950	7500	1287500	0.0836	######	5.247	7.59E-03	97.42	0	0	0	91.4	706.7
563	27.88	3000	2100	0.046188	0.0028	183.9	40.78	5125	0.1	1950	7500	2675000	0.1141	######	3.675	1.32E-02	13.81	0	0	0	52.4	675.6
564	27.86	3000	640	9.749125	0.2864	88.14	85.09	5125	0.1	1950	7500	887500	0.1142	######	1.971	1.37E-02	40.31	48.71	0	0	50.8	362.7
565	32.53	3000	800	107.733976	3.6245	100.9	74.31	5125	0.1	1950	7500	1087500	0.0978	######	2.377	4.34E-03	57.03	95.36	53.59	0	159.8	374.5
566	27.1	3000	1380	29.818437	1.0337	104	72.12	5125	0.1	1950	7500	1137500	0.1174	######	2.808	5.07E-03	24.23	83.23	0	0	136.8	531
567	22.45	3000	610	3.926428	0.1664	127.1	58.99	5125	0.1	1950	7500	1537500	0.1417	######	1.792	1.38E-02	56.93	0	0	0	50.3	409.2

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
568	22.9	3000	1110	8.769975	0.3323	113.7	65.97	5125	0.1	1950	7500	1300000	0.1389	######	2.455	7.34E-03	49.53	42.99	0	0	94.4	549.3
569	48.72	3000	350	110.837868	4.7226	127.8	58.67	5125	0.1	1950	7500	1550000	0.0653	######	1.829	1.33E-02	35.74	95.49	54.89	0	52	192.4
570	23.15	3000	1250	10.756774	0.3507	97.81	76.68	5125	0.1	1950	7500	1037500	0.1374	######	2.734	6.20E-03	70.98	53.52	0	0	111.7	605.2
571	37.78	3000	330	634.706556	27.7661	131.2	57.15	5125	0.1	1950	7500	1612500	0.0842	######	1.512	5.19E-03	20.78	99.21	92.12	21.22	133.5	205.1
572	49.32	3000	1090	28.365043	1.1627	123	60.99	5125	0.1	1950	7500	1462500	0.0645	######	3.413	7.63E-03	26.69	82.37	0	0	90.8	354.6
573	23.27	3000	620	56.989632	1.6744	88.14	85.09	5125	0.1	1950	7500	887500	0.1367	######	1.757	7.49E-03	58.25	91.23	12.26	0	92.5	387
574	35.31	3000	2020	4.217384	0.193	137.3	54.64	5125	0.1	1950	7500	1725000	0.0901	######	4.302	6.23E-03	40.9	0	0	0	111.3	624.4
575	47.84	3000	200	539.022423	25.7257	143.2	52.38	5125	0.1	1950	7500	1837500	0.0665	######	1.344	7.82E-03	79.28	99.07	90.72	7.24	88.6	143.9
576	35.31	3000	590	76.352504	2.0714	81.39	92.15	5125	0.1	1950	7500	787500	0.0901	######	2.005	1.05E-02	21.22	93.45	34.51	0	66.2	291
577	32.07	3000	450	86.712265	3.534	122.3	61.34	5125	0.1	1950	7500	1450000	0.0992	######	1.673	1.05E-02	23.31	94.23	42.34	0	66	267.3
578	22.81	3000	1220	1.39886	0.054	115.9	64.73	5125	0.1	1950	7500	1337500	0.1395	######	2.64	1.04E-02	44.71	0	0	0	66.6	593.2
579	46.31	3000	860	29.512777	0.8671	88.14	85.09	5125	0.1	1950	7500	887500	0.0687	######	3.026	9.51E-03	45.15	83.06	0	0	72.9	334.9
580	35.95	3000	2170	0.968447	0.0428	132.6	56.56	5125	0.1	1950	7500	1637500	0.0885	######	4.719	8.65E-03	40.35	0	0	0	80.1	672.7
581	42.08	3000	1970	5.465078	0.2428	133.3	56.28	5125	0.1	1950	7500	1650000	0.0756	######	5.148	5.72E-03	72.46	8.51	0	0	121.1	627
582	21.22	3000	1170	2.558715	0.1335	156.5	47.92	5125	0.1	1950	7500	2100000	0.1499	######	2.261	9.84E-03	13.52	0	0	0	70.5	546
583	56.81	3000	2180	3.907769	0.1831	140.6	53.35	5125	0.1	1950	7500	1787500	0.056	######	5.772	7.38E-03	35.61	0	0	0	93.9	520.7
584	49.25	3000	690	54.587715	2.8138	154.6	48.5	5125	0.1	1950	7500	2062500	0.0646	######	2.802	6.74E-03	62.11	90.84	8.4	0	102.8	291.6
585	37.74	3000	370	15.565157	0.7462	143.8	52.15	5125	0.1	1950	7500	1850000	0.0843	######	1.744	1.88E-02	54.7	67.88	0	0	36.8	236.8
586	39.62	3000	1130	4.865719	0.1784	110	68.18	5125	0.1	1950	7500	1237500	0.0803	######	3.478	1.06E-02	56.24	0	0	0	65.2	449.9
587	27.74	3000	680	101.315743	4.546	134.6	55.72	5125	0.1	1950	7500	1675000	0.1147	######	2.039	3.95E-03	76.8	95.06	50.65	0	175.6	376.8
588	38.66	3000	370	241.291395	9.6066	119.4	62.79	5125	0.1	1950	7500	1400000	0.0823	######	1.681	7.03E-03	59.99	97.93	79.28	0	98.6	222.9
589	32.86	3000	950	68.901964	2.6443	115.1	65.14	5125	0.1	1950	7500	1325000	0.0968	######	2.69	3.88E-03	69.65	92.74	27.43	0	178.7	419.6
590	48.28	3000	420	76.694426	2.4804	97.02	77.3	5125	0.1	1950	7500	1025000	0.0659	######	2.004	1.43E-02	33.89	93.48	34.81	0	48.5	212.7
591	31.97	3000	660	40.171342	1.6653	124.4	60.31	5125	0.1	1950	7500	1487500	0.0995	######	2.176	7.90E-03	56.74	87.55	0	0	87.7	348.7
592	34.47	3000	390	449.274652	12.1886	81.39	92.15	5125	0.1	1950	7500	787500	0.0923	######	1.581	5.67E-03	51.95	98.89	88.87	0	122.2	235.1
593	26.98	3000	870	5.48381	0.2758	150.9	49.71	5125	0.1	1950	7500	1987500	0.1179	######	2.307	1.05E-02	37.35	8.82	0	0	65.9	438.2
594	25.05	3000	1170	0.361937	0.0133	110	68.18	5125	0.1	1950	7500	1237500	0.127	######	3.07	1.37E-02	70.07	0	0	0	50.4	628.1
595	23.9	3000	570	366.140665	10.1424	83.1	90.25	5125	0.1	1950	7500	812500	0.1331	######	1.597	4.21E-03	25.76	98.63	86.34	0	164.8	342.4
596	50.42	3000	1650	46.924116	1.7323	110.7	67.72	5125	0.1	1950	7500	1250000	0.0631	######	4.357	3.46E-03	37.39	89.34	0	0	200.3	442.9
597	52.15	3000	520	228.592243	10.2057	133.9	56	5125	0.1	1950	7500	1662500	0.061	######	2.372	4.32E-03	53.26	97.81	78.13	0	160.5	233.1
598	27.01	3000	1100	0.226426	0.0098	129.2	58.05	5125	0.1	1950	7500	1575000	0.1178	######	3.103	1.56E-02	67.99	0	0	0	44.3	588.8
599	40.02	3000	430	126.34068	4.3476	103.2	72.65	5125	0.1	1950	7500	1125000	0.0795	######	1.947	8.25E-03	85.12	96.04	60.42	0	84	249.3
600	42.3	3000	1570	24.227411	0.8088	100.2	74.88	5125	0.1	1950	7500	1075000	0.0752	######	3.863	5.57E-03	29.42	79.36	0	0	124.4	468
601	34.69	3000	2090	2.46955	0.0989	120.1	62.42	5125	0.1	1950	7500	1412500	0.0917	######	4.506	7.11E-03	46.46	0	0	0	97.4	665.6
602	44.43	3000	1240	14.909054	0.6215	125.1	59.97	5125	0.1	1950	7500	1500000	0.0716	######	3.602	7.52E-03	38.04	66.46	0	0	92.2	415.5
603	38.24	3000	2090	8.761629	0.2249	77.02	97.37	5125	0.1	1950	7500	725000	0.0832	######	4.456	6.17E-03	35.68	42.93	0	0	112.4	597.2
604	34.5	3000	410	39.349205	1.4038	107	70.08	5125	0.1	1950	7500	1187500	0.0922	######	1.695	1.46E-02	46.62	87.29	0	0	47.6	251.8
605	48.35	3000	320	432.592108	21.755	150.9	49.71	5125	0.1	1950	7500	1987500	0.0658	######	1.736	5.12E-03	46.18	98.84	88.44	0	135.4	184
606	39.03	3000	440	29.227457	1.2653	129.9	57.75	5125	0.1	1950	7500	1587500	0.0815	######	1.854	1.59E-02	25.11	82.89	0	0	43.7	243.4
607	51.15	3000	200	1125.437504	58.7141	156.5	47.92	5125	0.1	1950	7500	2100000	0.0622	######	1.365	3.79E-03	40.58	99.56	95.56	55.57	183	136.8
608	40.63	3000	780	8.67449	0.3371	116.6	64.33	5125	0.1	1950	7500	1350000	0.0783	######	2.909	1.21E-02	70.71	42.36	0	0	57.3	367
609	24.53	3000	350	156.809421	4.5202	86.48	86.73	5125	0.1	1950	7500	862500	0.1297	######	1.264	9.73E-03	54.57	96.81	68.11	0	71.2	264.2
610	27.64	3000	550	18.839897	0.7139	113.7	65.97	5125	0.1	1950	7500	1300000	0.1151	######	1.763	1.28E-02	31	73.46	0	0	54.1	326.9
611	56.11	3000	550	135.595566	5.2039	115.1	65.14	5125	0.1	1950	7500	1325000	0.0567	######	2.685	5.61E-03	93.99	96.31	63.13	0	123.5	245.2
612	36.48	3000	1500	18.652338	1.0526	169.3	44.3	5125	0.1	1950	7500	2362500	0.0872	######	3.504	4.79E-03	32.02	73.19	0	0	144.6	492.2
613	36.28	3000	2260	0.107375	0.0048	133.3	56.28	5125	0.1	1950	7500	1650000	0.0877	######	4.85	1.27E-02	29.48	0	0	0	54.6	685.2
614	32.7	3000	2420	0.941723	0.0493	157.1	47.73	5125	0.1	1950	7500	2112500	0.0973	######	4.748	7.36E-03	41.51	0	0	0	94.2	744.2
615	54.1	3000	240	1007.235592	42.9168	127.8	58.67	5125	0.1	1950	7500	1550000	0.0588	######	1.522	4.15E-03	45.52	99.5	95.04	50.36	167	144.2
616	28.74	3000	400	111.588282	4.363	117.3	63.94	5125	0.1	1950	7500	1362500	0.1107	######	1.536	8.56E-03	63.67	95.52	55.19	0	81	274
617	26.27	3000	400	129.99541	4.5723	105.5	71.08	5125	0.1	1950	7500	1162500	0.1211	######	1.393	9.95E-03	23.87	96.15	61.54	0	69.7	271.8
618	58.05	3000	320	269.814558	10.1587	113	66.4	5125	0.1	1950	7500	1287500	0.0548	######	1.904	1.02E-02	45.35	98.15	81.47	0	68.3	168.1
619	27.47	3000	1830	1.419893	0.0343	72.53	103.4	5125	0.1	1950	7500	662500	0.1158	######	3.547	9.42E-03	32.94	0	0	0	73.6	661.7
620	25.91	3000	1040	2.25808	0.1233	163.9	45.77	5125	0.1	1950	7500	2250000	0.1228	######	2.503	1.08E-02	34.07	0	0	0	64.3	495.1
621	28.69	3000	620	44.714927	1.6286	109.3	68.64	5125	0.1	1950	7500	1225000	0.1109	######	1.894	9.29E-03	31.13	88.82	0	0	74.6	338.3
622	59.58	3000	1740	1.484731	0.0507	102.5	73.19	5125	0.1	1950	7500	1112500	0.0534	######	5.511	1.26E-02	38.46	0	0	0	55.2	474.1
623	51.31	3000	210	958.618245	52.3652	163.9	45.77	5125	0.1	1950	7500	2250000	0.062	######	1.386	4.16E-03	46.56	99.48	94.78	47.84	166.7	138.5
624	23.07	3000	440	130.087057	7.8	179.9	41.69	5125	0.1	1950	7500	2587500	0.1379	######	1.433	5.36E-03	54.16	96.16	61.56	0	129.3	318.4
625	28.4	3000	730	38.452435	2.2307	174	43.09	5125	0.1	1950	7500	2462500	0.112	######	2.138	6.04E-03	54.3	87	0	0	114.7	385.8
626	25.21	3000	390	326.994211	11.7472	107.8	69.59	5125	0.1	1950	7500	1200000	0.1262	######	1.352	5.91E-03	34.29	98.47	84.71	0	117.3	274.9
627	33.66	3000	800	32.524312	1.4155	130.6	57.44	5125	0.1	1950	7500	1600000	0.0945	######	2.392	7.93E-03	33.5	84.63	0	0	87.4	364.2
628	47.13	3000	810	43.597229	1.715	118	63.55	5125	0.1	1950	7500	1375000	0.0675	######	2.817	8.87E-03	24.98	88.53	0	0	78.1	306.3
629	48.94	3000	420	186.943749	13.5789	217.9	34.42	5125	0.1	1950	7500	3450000	0.065	######	2.016	5.97E-03	32.09	97.33	73.25	0	116.2	211.1
630	46.51	3000	2170	0.355913	0.0184	155.3	48.3	5125	0.1	1950	7500	2075000	0.0684	######	5.317	1.18E-02	29.55	0	0	0	58.7	585.9

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
631	32.4	3000	710	5.588832	0.3511	188.5	39.79	5125	0.1	1950	7500	2775000	0.0982	######	2.451	1.16E-02	73.32	10.54	0	0	59.8	387.8
632	42.76	3000	1150	0.365691	0.0155	127.1	58.99	5125	0.1	1950	7500	1537500	0.0744	######	3.655	1.82E-02	36.45	0	0	0	38.2	438.1
633	34.92	3000	790	17.714838	1.0894	184.5	40.65	5125	0.1	1950	7500	2687500	0.0911	######	2.379	9.89E-03	16.55	71.78	0	0	70.1	349.2
634	29.16	3000	520	66.194651	2.6667	120.9	62.06	5125	0.1	1950	7500	1425000	0.1091	######	1.707	1.02E-02	17.51	92.45	24.47	0	67.7	299.9
635	25.37	3000	1900	1.806792	0.0843	139.9	53.6	5125	0.1	1950	7500	1775000	0.1254	######	3.968	6.52E-03	78.43	0	0	0	106.3	801.5
636	34.58	3000	1800	5.555916	0.3615	195.2	38.42	5125	0.1	1950	7500	2925000	0.092	######	3.754	6.16E-03	24.8	10.01	0	0	112.5	556.3
637	53.11	3000	820	5.558821	0.389	209.9	35.72	5125	0.1	1950	7500	3262500	0.0599	######	3.604	1.20E-02	79.54	10.05	0	0	57.7	347.8
638	60.03	3000	620	49.398015	2.505	152.1	49.3	5125	0.1	1950	7500	2012500	0.053	######	2.91	9.20E-03	52.04	89.88	0	0	75.4	248.5
639	29.76	3000	1440	1.660286	0.0842	152.1	49.3	5125	0.1	1950	7500	2012500	0.1069	######	3.618	8.91E-03	68.67	0	0	0	77.8	623
640	43.17	3000	730	102.563078	4.8505	141.9	52.86	5125	0.1	1950	7500	1812500	0.0737	######	2.7	3.67E-03	78.3	95.12	51.25	0	189.1	320.6
641	42.03	3000	1230	2.200924	0.0829	113	66.4	5125	0.1	1950	7500	1287500	0.0757	######	3.679	1.26E-02	41.14	0	0	0	55	448.6
642	21.39	3000	350	27.609568	1.245	135.3	55.44	5125	0.1	1950	7500	1687500	0.1487	######	1.255	1.32E-02	62.44	81.89	0	0	52.6	300.6
643	32.8	3000	390	172.715136	7.3195	127.1	58.99	5125	0.1	1950	7500	1537500	0.097	######	1.564	8.82E-03	27.16	97.11	71.05	0	78.6	244.4
644	26.21	3000	460	14.326891	0.4366	91.42	82.04	5125	0.1	1950	7500	937500	0.1214	######	1.58	1.58E-02	47.51	65.1	0	0	44	309
645	31.07	3000	350	243.01732	11.0662	136.6	54.9	5125	0.1	1950	7500	1712500	0.1024	######	1.452	6.57E-03	55.88	97.94	79.43	0	105.5	239.5
646	43.05	3000	660	58.84149	2.244	114.4	65.55	5125	0.1	1950	7500	1312500	0.0739	######	2.484	8.25E-03	48.75	91.5	15.03	0	84	295.8
647	35.51	3000	1710	6.632708	0.2734	123.7	60.65	5125	0.1	1950	7500	1475000	0.0896	######	4.17	6.02E-03	64.89	24.62	0	0	115.2	602
648	22.95	3000	1700	0.120717	0.0044	110	68.18	5125	0.1	1950	7500	1237500	0.1386	######	3.043	1.29E-02	21.77	0	0	0	54	679.4
649	21.25	3000	780	15.434077	0.7333	142.5	52.62	5125	0.1	1950	7500	1825000	0.1497	######	2.023	7.04E-03	81.91	67.6	0	0	98.4	487.8
650	21.58	3000	1090	1.908496	0.0582	91.42	82.04	5125	0.1	1950	7500	937500	0.1474	######	2.38	1.10E-02	43.06	0	0	0	63.1	565.1
651	28.18	3000	550	73.866244	2.745	111.5	67.27	5125	0.1	1950	7500	1262500	0.1129	######	1.781	8.00E-03	44.1	93.23	32.31	0	86.6	323.9
652	54.76	3000	560	236.474257	10.7158	135.9	55.17	5125	0.1	1950	7500	1700000	0.0581	######	2.467	5.05E-03	28.28	97.89	78.86	0	137.4	230.9
653	36.91	3000	280	524.204169	17.7707	101.7	73.75	5125	0.1	1950	7500	1100000	0.0862	######	1.41	5.46E-03	95	99.05	90.46	4.62	126.9	195.8
654	52.07	3000	330	482.738966	19.7872	123	60.99	5125	0.1	1950	7500	1462500	0.0611	######	1.798	5.74E-03	45.68	98.96	89.64	0	120.7	177
655	42.59	3000	620	52.894324	2.4669	139.9	53.6	5125	0.1	1950	7500	1775000	0.0747	######	2.548	7.00E-03	89.97	90.55	5.47	0	99.1	306.6
656	29.11	3000	860	4.689396	0.1911	122.3	61.34	5125	0.1	1950	7500	1450000	0.1093	######	2.33	1.25E-02	27.51	0	0	0	55.6	410.3
657	38.8	3000	310	325.646065	14.3193	131.9	56.85	5125	0.1	1950	7500	1625000	0.082	######	1.509	8.23E-03	29.84	98.46	84.65	0	84.2	199.3
658	22.72	3000	1510	0.028068	0.0014	144.5	51.91	5125	0.1	1950	7500	1862500	0.14	######	3.459	1.53E-02	58.64	0	0	0	45.4	780.1
659	34.02	3000	790	7.635347	0.2912	114.4	65.55	5125	0.1	1950	7500	1312500	0.0935	######	2.795	1.10E-02	91.71	34.52	0	0	62.8	421
660	25.66	3000	1540	3.402401	0.0812	71.62	104.73	5125	0.1	1950	7500	650000	0.124	######	3.264	8.31E-03	54.63	0	0	0	83.4	652
661	22.76	3000	1140	17.320094	0.596	103.2	72.65	5125	0.1	1950	7500	1125000	0.1398	######	2.468	5.91E-03	55.03	71.13	0	0	117.4	555.7
662	46.85	3000	1640	0.221283	0.0082	110.7	67.72	5125	0.1	1950	7500	1250000	0.0679	######	4.534	1.67E-02	26.49	0	0	0	41.6	496
663	30.44	3000	700	72.802674	2.139	88.14	85.09	5125	0.1	1950	7500	887500	0.1045	######	2.048	8.07E-03	24.5	93.13	31.32	0	85.9	344.7
664	41.1	3000	630	18.295775	0.7921	129.9	57.75	5125	0.1	1950	7500	1587500	0.0774	######	2.319	1.36E-02	22.94	72.67	0	0	51	289.2
665	30.5	3000	660	4.063453	0.1703	125.8	59.64	5125	0.1	1950	7500	1512500	0.1043	######	2.18	1.51E-02	49.83	0	0	0	46.1	366.4
666	22.72	3000	1290	6.705351	0.3484	155.9	48.11	5125	0.1	1950	7500	2087500	0.14	######	2.556	6.76E-03	31.9	25.43	0	0	102.5	576.6
667	24.34	3000	2290	0.108293	0.0033	91.42	82.04	5125	0.1	1950	7500	937500	0.1307	######	3.703	1.13E-02	21.09	0	0	0	61.6	779.7
668	60.6	3000	500	194.045088	10.1635	157.1	47.73	5125	0.1	1950	7500	2112500	0.0525	######	2.473	5.88E-03	35.88	97.42	74.23	0	118	209.1
669	36.15	3000	1890	3.837228	0.2475	193.5	38.75	5125	0.1	1950	7500	2887500	0.088	######	4.238	6.06E-03	45.03	0	0	0	114.4	600.8
670	48.42	3000	2200	5.573367	0.2999	161.4	46.46	5125	0.1	1950	7500	2200000	0.0657	######	5.156	5.94E-03	32.42	10.29	0	0	116.7	545.7
671	22.37	3000	900	11.558998	0.5764	149.6	50.13	5125	0.1	1950	7500	1962500	0.1422	######	2.105	7.76E-03	38.35	56.74	0	0	89.3	482.3
672	30.89	3000	1370	4.68887	0.2062	131.9	56.85	5125	0.1	1950	7500	1625000	0.103	######	3.038	8.93E-03	20.03	0	0	0	77.6	504.1
673	39.28	3000	260	127.641358	6.2565	147	51	5125	0.1	1950	7500	1912500	0.081	######	1.406	1.36E-02	59.67	96.08	60.83	0	50.9	183.5
674	21.45	3000	450	84.969672	3.8504	135.9	55.17	5125	0.1	1950	7500	1700000	0.1483	######	1.357	8.77E-03	21.65	94.12	41.16	0	79	324.2
675	22.05	3000	500	9.81326	0.4705	143.8	52.15	5125	0.1	1950	7500	1850000	0.1443	######	1.532	1.32E-02	44.87	49.05	0	0	52.5	356
676	53.47	3000	400	60.742263	2.8727	141.9	52.86	5125	0.1	1950	7500	1812500	0.0595	######	2.264	1.18E-02	89.41	91.77	17.68	0	58.9	217
677	23.37	3000	1390	0.061884	0.002	95.44	78.58	5125	0.1	1950	7500	1000000	0.1361	######	2.905	1.60E-02	31.52	0	0	0	43.3	636.8
678	44.25	3000	570	256.925016	6.9703	81.39	92.15	5125	0.1	1950	7500	787500	0.0719	######	2.199	6.56E-03	27.2	98.05	80.54	0	105.7	254.7
679	39.13	3000	1730	0.54508	0.0151	83.1	90.25	5125	0.1	1950	7500	812500	0.0813	######	4.386	1.32E-02	37.1	0	0	0	52.7	574.4
680	51.81	3000	890	1.885415	0.0842	133.9	56	5125	0.1	1950	7500	1662500	0.0614	######	3.452	1.77E-02	39.6	0	0	0	39.2	341.4
681	25.64	3000	860	49.773656	1.3929	83.95	89.34	5125	0.1	1950	7500	825000	0.1241	######	2.297	5.46E-03	85.16	89.95	0	0	126.9	459.2
682	28.28	3000	720	2.517484	0.0898	107	70.08	5125	0.1	1950	7500	1187500	0.1125	######	2.157	1.58E-02	37.75	0	0	0	43.9	390.8
683	26.91	3000	1040	0.598516	0.0235	118	63.55	5125	0.1	1950	7500	1375000	0.1182	######	2.546	1.51E-02	27.64	0	0	0	45.9	484.9
684	51.9	3000	1300	10.659558	0.4319	121.6	61.7	5125	0.1	1950	7500	1437500	0.0613	######	4.155	8.35E-03	45.43	53.09	0	0	83	410.3
685	57.63	3000	350	324.296058	8.8909	82.25	91.19	5125	0.1	1950	7500	800000	0.0552	######	1.973	9.16E-03	66.76	98.46	84.58	0	75.7	175.4
686	25.84	3000	3000	1.36731	0.0464	101.7	73.75	5125	0.1	1950	7500	1100000	0.1231	######	4.158	6.42E-03	14.95	0	0	0	108	824.6
687	50.34	3000	170	386.773331	16.4798	127.8	58.67	5125	0.1	1950	7500	1550000	0.0632	######	1.187	1.59E-02	50.66	98.71	87.07	0	43.7	120.9
688	41.32	3000	880	13.288885	0.7917	178.7	41.97	5125	0.1	1950	7500	2562500	0.077	######	3.087	8.16E-03	72.89	62.37	0	0	85	383
689	39.47	3000	510	36.087421	1.5623	129.9	57.75	5125	0.1	1950	7500	1587500	0.0806	######	2.042	1.25E-02	35.31	86.14	0	0	55.3	265.1
690	27.35	3000	1240	8.920721	0.2471	83.1	90.25	5125	0.1	1950	7500	812500	0.1163	######	3.098	7.30E-03	81.26	43.95	0	0	95	580.4
691	62.01	3000	390	202.027335	6.5338	97.02	77.3	5125	0.1	1950	7500	1025000	0.0513	######	2.273	9.01E-03	76.88	97.53	75.25	0	77	187.9
692	25.61	3000	390	175.223154	5.5744	95.44	78.58	5125	0.1	1950	7500	1000000	0.1242	######	1.387	8.04E-03	50.62	97.15	71.46	0	86.2	277.6
693	27.08	3000	540	61.674841	1.4911	72.53	103.4	5125	0.1	1950	7500	662500	0.1175	######	1.683	1.06E-02	33.18	91.89	18.93	0	65.2	318.5

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
694	28.66	3000	590	2.453479	0.1051	128.5	58.36	5125	0.1	1950	7500	1562500	0.111	######	1.984	1.76E-02	47.2	0	0	0	39.4	354.8
695	48.42	3000	2620	20.180731	0.604	89.79	83.53	5125	0.1	1950	7500	912500	0.0657	######	5.355	4.12E-03	22.27	75.22	0	0	168.5	566.7
696	36.74	3000	1060	11.519378	0.4337	113	66.4	5125	0.1	1950	7500	1287500	0.0866	######	3.08	8.68E-03	48.33	56.59	0	0	79.9	429.7
697	22.69	3000	450	28.778059	1.6468	171.7	43.69	5125	0.1	1950	7500	2412500	0.1402	######	1.498	9.72E-03	63.81	82.63	0	0	71.3	338.3
698	33.24	3000	2320	10.861565	0.5137	141.9	52.86	5125	0.1	1950	7500	1812500	0.0957	######	4.448	3.54E-03	49.91	53.97	0	0	195.8	685.7
699	28.58	3000	730	57.38879	2.6006	135.9	55.17	5125	0.1	1950	7500	1700000	0.1113	######	2.185	5.18E-03	71.8	91.29	12.87	0	133.9	391.7
700	21.31	3000	930	1.427703	0.0548	115.1	65.14	5125	0.1	1950	7500	1325000	0.1493	######	2.294	1.19E-02	63.16	0	0	0	58.2	551.7
701	41.75	3000	340	636.762256	14.0076	65.99	113.65	5125	0.1	1950	7500	575000	0.0762	######	1.545	7.57E-03	29.07	99.21	92.15	21.48	91.6	189.7
702	30.83	3000	410	41.889779	1.5874	113.7	65.97	5125	0.1	1950	7500	1300000	0.1032	######	1.663	1.23E-02	77.47	88.06	0	0	56.5	276.4
703	28.53	3000	1650	7.877616	0.2443	93.04	80.61	5125	0.1	1950	7500	962500	0.1115	######	3.423	6.31E-03	46.11	36.53	0	0	109.8	614.8
704	24.42	3000	630	35.175032	2.1898	186.8	40.16	5125	0.1	1950	7500	2737500	0.1303	######	1.789	7.43E-03	32.47	85.79	0	0	93.3	375.5
705	34.77	3000	1520	0.395987	0.016	120.9	62.06	5125	0.1	1950	7500	1425000	0.0915	######	4.382	1.29E-02	67.75	0	0	0	53.6	645.9
706	28.61	3000	680	1.901964	0.081	127.8	58.67	5125	0.1	1950	7500	1550000	0.1112	######	2.236	1.61E-02	59.92	0	0	0	43.1	400.6
707	41.69	3000	460	80.194829	2.422	90.61	82.78	5125	0.1	1950	7500	925000	0.0763	######	2.103	1.02E-02	96.19	93.77	37.65	0	68.2	258.5
708	22.85	3000	940	36.219956	1.3371	110.7	67.72	5125	0.1	1950	7500	1250000	0.1392	######	2.133	5.82E-03	36.31	86.2	0	0	119.2	478.4
709	54.29	3000	1340	17.41399	0.5116	88.14	85.09	5125	0.1	1950	7500	887500	0.0586	######	4.731	6.88E-03	80.79	71.29	0	0	100.8	446.6
710	33.52	3000	420	14.683444	0.6621	135.3	55.44	5125	0.1	1950	7500	1687500	0.0949	######	1.754	1.66E-02	50.99	65.95	0	0	41.7	268.1
711	25.03	3000	1130	15.523417	0.6861	132.6	56.56	5125	0.1	1950	7500	1637500	0.1271	######	2.583	5.89E-03	52.88	67.79	0	0	117.7	528.8
712	28.79	3000	840	2.222167	0.0911	123	60.99	5125	0.1	1950	7500	1462500	0.1105	######	2.33	1.44E-02	29.12	0	0	0	48.1	414.8
713	25.68	3000	2210	0.072718	0.003	125.1	59.97	5125	0.1	1950	7500	1500000	0.1239	######	4.198	1.15E-02	40.79	0	0	0	60.4	837.8
714	27.93	3000	400	64.110491	2.8046	131.2	57.15	5125	0.1	1950	7500	1612500	0.1139	######	1.479	1.13E-02	36.26	92.2	22.01	0	61.4	271.3
715	24.93	3000	310	218.205187	13.3352	183.3	40.91	5125	0.1	1950	7500	2662500	0.1276	######	1.204	7.71E-03	26.56	97.71	77.09	0	90	247.5
716	22.53	3000	400	29.070263	1.7543	181	41.43	5125	0.1	1950	7500	2612500	0.1412	######	1.325	1.25E-02	23.92	82.8	0	0	55.5	301.4
717	62.38	3000	240	589.749404	24.3111	123.7	60.65	5125	0.1	1950	7500	1475000	0.051	######	1.665	6.97E-03	75.19	99.15	91.52	15.22	99.5	136.8
718	32.46	3000	1260	0.264099	0.0131	149	50.35	5125	0.1	1950	7500	1950000	0.098	######	2.947	1.68E-02	10.71	0	0	0	41.4	465.3
719	30.04	3000	790	16.022217	0.6827	127.8	58.67	5125	0.1	1950	7500	1550000	0.1059	######	2.507	8.10E-03	90.4	68.79	0	0	85.5	427.8
720	32.76	3000	920	7.57729	0.3315	131.2	57.15	5125	0.1	1950	7500	1612500	0.0971	######	2.678	1.02E-02	46.01	34.01	0	0	68	418.8
721	22.87	3000	1060	8.607479	0.4754	165.7	45.26	5125	0.1	1950	7500	2287500	0.1391	######	2.396	6.80E-03	52.63	41.91	0	0	102	536.9
722	24.23	3000	490	366.934333	14.2589	116.6	64.33	5125	0.1	1950	7500	1350000	0.1313	######	1.534	2.78E-03	56.12	98.64	86.37	0	249.8	324.6
723	42.59	3000	890	5.798348	0.2363	122.3	61.34	5125	0.1	1950	7500	1450000	0.0747	######	2.996	1.31E-02	38.17	13.77	0	0	52.8	360.5
724	42.7	3000	640	26.052602	1.0372	119.4	62.79	5125	0.1	1950	7500	1400000	0.0745	######	2.339	1.34E-02	15.2	80.81	0	0	51.6	280.7
725	47.27	3000	1020	5.428915	0.2084	115.1	65.14	5125	0.1	1950	7500	1325000	0.0673	######	3.321	1.32E-02	28.01	7.9	0	0	52.6	360
726	22.64	3000	2010	6.78624	0.2318	102.5	73.19	5125	0.1	1950	7500	1112500	0.1405	######	3.291	5.02E-03	37.59	26.32	0	0	138	744.9
727	24.93	3000	1630	1.50701	0.0369	73.44	102.12	5125	0.1	1950	7500	675000	0.1276	######	3.08	9.87E-03	26.95	0	0	0	70.2	633.2
728	27.96	3000	310	445.971221	13.3476	89.79	83.53	5125	0.1	1950	7500	912500	0.1138	######	1.23	7.59E-03	31.07	98.88	88.79	0	91.3	225.4
729	21.85	3000	750	24.678034	1.1238	136.6	54.9	5125	0.1	1950	7500	1712500	0.1456	######	1.846	7.72E-03	30.42	79.74	0	0	89.8	433
730	37.3	3000	770	172.02888	7.1714	125.1	59.97	5125	0.1	1950	7500	1500000	0.0853	######	2.42	3.57E-03	32.14	97.09	70.94	0	194.3	332.5
731	35.83	3000	1480	27.933006	0.541	58.1	129.08	5125	0.1	1950	7500	475000	0.0888	######	3.556	5.98E-03	45.92	82.1	0	0	115.9	508.7
732	30.13	3000	1760	0.40476	0.0154	114.4	65.55	5125	0.1	1950	7500	1312500	0.1056	######	4.128	1.11E-02	54.76	0	0	0	62.5	702.2
733	32.86	3000	550	7.08375	0.3826	162.1	46.28	5125	0.1	1950	7500	2212500	0.0968	######	1.949	1.61E-02	24.52	29.42	0	0	43	304
734	25.86	3000	1590	0.392041	0.0127	97.02	77.3	5125	0.1	1950	7500	1025000	0.123	######	3.355	1.17E-02	41.31	0	0	0	59	664.8
735	27.76	3000	710	41.393441	2.0729	150.2	49.92	5125	0.1	1950	7500	1975000	0.1146	######	2.06	6.63E-03	47.04	87.92	0	0	104.5	380.3
736	21.67	3000	790	5.217548	0.1674	96.23	77.94	5125	0.1	1950	7500	1012500	0.1468	######	2.055	1.09E-02	64.14	4.17	0	0	63.5	486
737	27.43	3000	1040	2.300785	0.0637	83.1	90.25	5125	0.1	1950	7500	812500	0.116	######	2.981	1.17E-02	84.65	0	0	0	59.3	557.1
738	33.84	3000	1220	2.524939	0.1455	172.9	43.39	5125	0.1	1950	7500	2437500	0.094	######	3.684	9.14E-03	88.81	0	0	0	75.8	557.8
739	42.53	3000	1130	67.128441	2.8909	129.2	58.05	5125	0.1	1950	7500	1575000	0.0748	######	3.252	3.75E-03	42.49	92.55	25.52	0	184.8	391.9
740	26.51	3000	1560	5.487531	0.1612	88.14	85.09	5125	0.1	1950	7500	887500	0.12	######	3.256	7.11E-03	49.96	8.88	0	0	97.5	629.4
741	30.8	3000	980	15.020984	0.8506	169.9	44.15	5125	0.1	1950	7500	2375000	0.1033	######	2.613	7.15E-03	40.67	66.71	0	0	96.9	434.9
742	24.99	3000	1620	0.323206	0.0128	118.7	63.17	5125	0.1	1950	7500	1387500	0.1273	######	3.22	1.16E-02	33.1	0	0	0	60	660.3
743	29.51	3000	800	7.524726	0.2414	96.23	77.94	5125	0.1	1950	7500	1012500	0.1078	######	2.391	1.17E-02	56.4	33.55	0	0	59.5	415.2
744	22.69	3000	780	1.464195	0.0832	170.5	43.99	5125	0.1	1950	7500	2387500	0.1402	######	2.015	1.35E-02	35.77	0	0	0	51.2	455
745	47.62	3000	440	82.636465	3.0506	110.7	67.72	5125	0.1	1950	7500	1250000	0.0668	######	2.039	1.26E-02	34.46	93.95	39.49	0	54.9	219.4
746	29.84	3000	1670	0.047477	0.0023	147	51	5125	0.1	1950	7500	1912500	0.1066	######	3.749	1.55E-02	32.23	0	0	0	44.7	643.9
747	37.04	3000	270	471.330625	26.2214	166.9	44.94	5125	0.1	1950	7500	2312500	0.0859	######	1.363	6.22E-03	34.72	98.94	89.39	0	111.5	188.6
748	29.76	3000	1830	0.078801	0.0041	154.6	48.5	5125	0.1	1950	7500	2062500	0.1069	######	3.633	1.40E-02	19.59	0	0	0	49.5	625.7
749	21.88	3000	850	17.536476	0.6982	119.4	62.79	5125	0.1	1950	7500	1400000	0.1454	######	1.973	8.05E-03	28.48	71.49	0	0	86.1	462.2
750	61.18	3000	3630	0.140059	0.0061	130.6	57.44	5125	0.1	1950	7500	1600000	0.052	######	8.393	1.14E-02	24.68	0	0	0	60.9	703.1
751	29.24	3000	1050	8.696246	0.5113	176.4	42.52	5125	0.1	1950	7500	2512500	0.1088	######	2.641	7.86E-03	37.91	42.5	0	0	88.2	463
752	28.46	3000	530	123.266	4.2418	103.2	72.65	5125	0.1	1950	7500	1125000	0.1118	######	1.733	7.08E-03	40.16	95.94	59.44	0	97.9	312.2
753	54.95	3000	450	95.191494	3.3	104	72.12	5125	0.1	1950	7500	1137500	0.0579	######	2.275	1.16E-02	51.07	94.75	47.47	0	59.6	212.2
754	42.93	3000	2290	3.184585	0.116	109.3	68.64	5125	0.1	1950	7500	1225000	0.0741	######	5.269	6.99E-03	42.75	0	0	0	99.2	629
755	37.17	3000	320	429.16768	15.3106	107	70.08	5125	0.1	1950	7500	1187500	0.0856	######	1.498	6.13E-03	60.79	98.83	88.35	0	113.2	206.6
756	27.01	3000	600	6.343231	0.215	101.7	73.75	5125	0.1	1950	7500	1100000	0.1178	######	1.903	1.48E-02	44.96	21.18	0	0	46.8	361.1

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
757	29.65	3000	630	152.469062	4.8505	95.44	78.58	5125	0.1	1950	7500	1000000	0.1073	######	1.99	4.56E-03	71.24	96.72	67.21	0	152	343.9
758	31.69	3000	400	612.035043	18.8163	92.23	81.32	5125	0.1	1950	7500	950000	0.1004	######	1.557	3.12E-03	60.14	99.18	91.83	18.31	222.5	251.9
759	27.33	3000	370	27.617845	1.4918	162.1	46.28	5125	0.1	1950	7500	2212500	0.1164	######	1.502	1.28E-02	81.61	81.9	0	0	54.4	281.6
760	59.8	3000	1900	35.37668	1.4168	120.1	62.42	5125	0.1	1950	7500	1412500	0.0532	######	4.881	4.80E-03	13.62	85.87	0	0	144.3	418.3
761	21.37	3000	1460	0.037013	0.0013	106.3	70.57	5125	0.1	1950	7500	1175000	0.1489	######	2.949	1.54E-02	37.62	0	0	0	45	707.5
762	28.76	3000	790	44.187524	1.6203	110	68.18	5125	0.1	1950	7500	1237500	0.1106	######	2.34	5.80E-03	82.81	88.68	0	0	119.5	416.9
763	47.55	3000	490	83.104639	3.8758	139.9	53.6	5125	0.1	1950	7500	1775000	0.0669	######	2.295	8.21E-03	70.16	93.98	39.83	0	84.4	247.3
764	22.68	3000	520	25.430226	1.1297	133.3	56.28	5125	0.1	1950	7500	1650000	0.1403	######	1.541	1.09E-02	33.13	80.34	0	0	63.9	348.4
765	30.59	3000	1280	1.747191	0.0671	115.1	65.14	5125	0.1	1950	7500	1325000	0.104	######	2.944	1.19E-02	20.49	0	0	0	58.4	493.3
766	27.62	3000	1280	7.590055	0.2802	110.7	67.72	5125	0.1	1950	7500	1250000	0.1152	######	3.056	7.06E-03	64.34	34.12	0	0	98.2	567.2
767	32.3	3000	1110	0.937993	0.0391	125.1	59.97	5125	0.1	1950	7500	1500000	0.0985	######	3.407	1.33E-02	74.55	0	0	0	52.2	540.6
768	24.01	3000	640	7.088978	0.2789	118	63.55	5125	0.1	1950	7500	1375000	0.1325	######	1.806	1.31E-02	34.88	29.47	0	0	53.1	385.4
769	26.31	3000	760	1.44924	0.0786	162.7	46.11	5125	0.1	1950	7500	2225000	0.1209	######	2.259	1.44E-02	56.61	0	0	0	48.3	440.1
770	28.35	3000	400	82.085461	3.9708	145.1	51.68	5125	0.1	1950	7500	1875000	0.1122	######	1.538	8.88E-03	59.47	93.91	39.09	0	78	277.9
771	60.71	3000	490	298.791723	9.6633	97.02	77.3	5125	0.1	1950	7500	1025000	0.0524	######	2.392	6.96E-03	30.45	98.33	83.27	0	99.6	201.9
772	21.45	3000	1210	14.71938	0.476	97.02	77.3	5125	0.1	1950	7500	1025000	0.1483	######	2.502	5.78E-03	61.17	66.03	0	0	119.9	597.7
773	21.64	3000	770	6.478698	0.2701	125.1	59.97	5125	0.1	1950	7500	1500000	0.147	######	1.96	1.03E-02	50.03	22.82	0	0	67.6	464.2
774	30.33	3000	1740	15.328808	0.463	90.61	82.78	5125	0.1	1950	7500	925000	0.1049	######	3.7	4.70E-03	59.21	67.38	0	0	147.6	625.3
775	21.52	3000	1980	5.149544	0.1888	110	68.18	5125	0.1	1950	7500	1237500	0.1478	######	3.241	5.16E-03	43.6	2.9	0	0	134.4	771.8
776	59.13	3000	600	40.423999	1.4623	108.5	69.11	5125	0.1	1950	7500	1212500	0.0538	######	2.729	1.35E-02	28.09	87.63	0	0	51.5	236.6
777	62.38	3000	200	1240.017302	42.6715	103.2	72.65	5125	0.1	1950	7500	1125000	0.051	######	1.426	5.62E-03	59.3	99.6	95.97	59.68	123.3	117.1
778	23.78	3000	710	7.844004	0.2798	107	70.08	5125	0.1	1950	7500	1187500	0.1338	######	1.891	1.21E-02	30.84	36.26	0	0	57.4	407.5
779	31.44	3000	970	20.15209	1.0049	149.6	50.13	5125	0.1	1950	7500	1962500	0.1012	######	2.699	6.36E-03	59.84	75.19	0	0	109.1	440
780	26.82	3000	1910	2.068519	0.1009	146.4	51.23	5125	0.1	1950	7500	1900000	0.1186	######	3.62	6.94E-03	39.91	0	0	0	99.8	691.6
781	49.63	3000	410	182.508247	9.8957	162.7	46.11	5125	0.1	1950	7500	2225000	0.0641	######	2.073	5.83E-03	68.42	97.26	72.6	0	118.9	214
782	25.53	3000	960	44.184193	2.0022	135.9	55.17	5125	0.1	1950	7500	1700000	0.1246	######	2.288	4.91E-03	39.11	88.68	0	0	141.3	459.3
783	23.27	3000	2100	14.15311	0.512	108.5	69.11	5125	0.1	1950	7500	1212500	0.1367	######	3.205	4.39E-03	16.37	64.67	0	0	158.1	705.7
784	43.76	3000	2460	7.479501	0.2051	82.25	91.19	5125	0.1	1950	7500	800000	0.0727	######	4.958	6.39E-03	19.76	33.15	0	0	108.5	580.7
785	35.71	3000	660	62.340982	2.332	112.2	66.83	5125	0.1	1950	7500	1275000	0.0891	######	2.264	7.35E-03	54.35	91.98	19.8	0	94.3	325
786	59.35	3000	200	818.198834	36.346	133.3	56.28	5125	0.1	1950	7500	1650000	0.0536	######	1.455	7.62E-03	42.35	99.39	93.89	38.89	91	125.7
787	39.82	3000	210	880.257024	43.7094	149	50.35	5125	0.1	1950	7500	1950000	0.0799	######	1.194	6.47E-03	25.69	99.43	94.32	43.2	107.1	153.7
788	46.04	3000	940	20.604919	0.9923	144.5	51.91	5125	0.1	1950	7500	1862500	0.0691	######	3.087	8.80E-03	31.47	75.73	0	0	78.7	343.7
789	23.92	3000	450	195.12915	7.5358	115.9	64.73	5125	0.1	1950	7500	1337500	0.133	######	1.467	5.27E-03	62.27	97.44	74.38	0	131.6	314.3
790	28.89	3000	310	501.289617	20.3128	121.6	61.7	5125	0.1	1950	7500	1437500	0.1101	######	1.294	5.29E-03	40.92	99	90.03	0.26	131.2	229.5
791	21.69	3000	1900	1.546332	0.0528	102.5	73.19	5125	0.1	1950	7500	1112500	0.1467	######	3.565	6.92E-03	69.43	0	0	0	100.1	842.5
792	32.5	3000	1110	0.442322	0.0171	115.9	64.73	5125	0.1	1950	7500	1337500	0.0979	######	3.668	1.53E-02	84.24	0	0	0	45.2	578.5
793	22.36	3000	1090	0.261108	0.0108	124.4	60.31	5125	0.1	1950	7500	1487500	0.1423	######	2.642	1.42E-02	56.57	0	0	0	48.7	605.8
794	30.1	3000	1100	2.262657	0.1109	147	51	5125	0.1	1950	7500	1912500	0.1057	######	2.997	1.07E-02	58.78	0	0	0	65	510.3
795	41.05	3000	1230	27.611973	1.2017	130.6	57.44	5125	0.1	1950	7500	1600000	0.0775	######	3.589	4.78E-03	67.09	81.89	0	0	145	448
796	26.6	3000	920	2.140687	0.0811	113.7	65.97	5125	0.1	1950	7500	1300000	0.1196	######	2.373	1.31E-02	33.42	0	0	0	52.9	457.2
797	24.89	3000	2110	0.800317	0.021	78.78	95.2	5125	0.1	1950	7500	750000	0.1278	######	3.94	8.52E-03	49.68	0	0	0	81.3	811.3
798	28.3	3000	700	93.918351	2.8109	89.79	83.53	5125	0.1	1950	7500	912500	0.1124	######	2.038	5.96E-03	48.56	94.68	46.76	0	116.3	369.1
799	29.82	3000	1100	4.855881	0.2583	159.6	46.99	5125	0.1	1950	7500	2162500	0.1067	######	3.036	8.28E-03	76.41	0	0	0	83.8	521.8
800	22.82	3000	590	41.428064	1.3289	96.23	77.94	5125	0.1	1950	7500	1012500	0.1394	######	1.727	8.17E-03	70.53	87.93	0	0	84.9	387.9
801	36.11	3000	600	16.755755	0.5151	92.23	81.32	5125	0.1	1950	7500	950000	0.0881	######	2.361	1.27E-02	87.19	70.16	0	0	54.7	335.1
802	27.26	3000	1460	10.539591	0.636	181	41.43	5125	0.1	1950	7500	2612500	0.1167	######	3.175	4.65E-03	61.63	52.56	0	0	149	596.9
803	46.58	3000	630	19.237176	0.9674	150.9	49.71	5125	0.1	1950	7500	1987500	0.0683	######	2.63	1.18E-02	53.65	74.01	0	0	58.9	289.4
804	29.21	3000	990	14.210492	0.4369	92.23	81.32	5125	0.1	1950	7500	950000	0.1089	######	2.522	8.90E-03	35.51	64.81	0	0	77.9	442.5
805	31.62	3000	880	65.472683	2.1688	99.38	75.47	5125	0.1	1950	7500	1062500	0.1006	######	2.511	4.99E-03	62.73	92.36	23.63	0	138.9	407
806	33.1	3000	420	218.91702	7.8646	107.8	69.59	5125	0.1	1950	7500	1200000	0.0961	######	1.659	6.54E-03	55.68	97.72	77.16	0	106	256.9
807	50.1	3000	610	25.174748	1.0495	125.1	59.97	5125	0.1	1950	7500	1500000	0.0635	######	2.551	1.35E-02	30.5	80.14	0	0	51.2	261
808	31.22	3000	620	8.715923	0.4046	139.3	53.86	5125	0.1	1950	7500	1762500	0.1019	######	2.118	1.30E-02	51.14	42.63	0	0	53.2	347.7
809	32.1	3000	580	69.867649	2.1101	90.61	82.78	5125	0.1	1950	7500	925000	0.0991	######	2.015	8.18E-03	66.26	92.84	28.44	0	84.8	321.7
810	44.56	3000	1130	5.333044	0.2381	133.9	56	5125	0.1	1950	7500	1662500	0.0714	######	3.329	1.18E-02	20.86	6.24	0	0	58.6	382.9
811	40.79	3000	2010	3.639919	0.1625	133.9	56	5125	0.1	1950	7500	1662500	0.078	######	5.167	6.41E-03	68.81	0	0	0	108.2	649.2
812	24.4	3000	520	68.035942	4.1318	182.2	41.17	5125	0.1	1950	7500	2637500	0.1304	######	1.602	6.96E-03	35.18	92.65	26.51	0	99.5	336.6
813	35.59	3000	260	407.762074	23.7355	174.6	42.95	5125	0.1	1950	7500	2475000	0.0894	######	1.31	7.53E-03	27.69	98.77	87.74	0	92	188.6
814	26.91	3000	2170	2.175965	0.1206	166.3	45.1	5125	0.1	1950	7500	2300000	0.1182	######	4.022	5.75E-03	51.65	0	0	0	120.5	765.8
815	33.17	3000	540	82.967325	2.5731	93.04	80.61	5125	0.1	1950	7500	962500	0.0959	######	1.894	9.27E-03	38.9	93.97	39.74	0	74.8	292.6
816	57.12	3000	670	29.344339	1.5065	154	48.7	5125	0.1	1950	7500	2050000	0.0557	######	3.001	1.03E-02	51.85	82.96	0	0	67.3	269.3
817	21.29	3000	620	9.770614	0.316	97.02	77.3	5125	0.1	1950	7500	1025000	0.1494	######	1.804	1.11E-02	84.89	48.83	0	0	62.3	434.1
818	55.62	3000	680	115.421012	3.3911	88.14	85.09	5125	0.1	1950	7500	887500	0.0572	######	2.885	6.83E-03	57.15	95.67	56.68	0	101.4	265.8
819	23.76	3000	490	53.837608	2.7414	152.8	49.1	5125	0.1	1950	7500	2025000	0.1339	######	1.582	7.66E-03	62.3	90.71	7.13	0	90.4	341.3

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
820	32.33	3000	1540	10.045975	0.3855	115.1	65.14	5125	0.1	1950	7500	1325000	0.0984	######	3.385	6.51E-03	32.88	50.23	0	0	106.5	536.5
821	35	3000	520	181.849304	6.8024	112.2	66.83	5125	0.1	1950	7500	1275000	0.0909	######	1.99	4.51E-03	83.6	97.25	72.5	0	153.7	291.5
822	33.74	3000	490	40.196889	1.8393	137.3	54.64	5125	0.1	1950	7500	1725000	0.0943	######	1.839	1.16E-02	33.64	87.56	0	0	59.8	279.4
823	25.31	3000	420	18.876951	0.7153	113.7	65.97	5125	0.1	1950	7500	1300000	0.1257	######	1.487	1.47E-02	47.59	73.51	0	0	47.3	301.1
824	37.6	3000	310	267.662032	13.9085	155.9	48.11	5125	0.1	1950	7500	2087500	0.0846	######	1.537	6.11E-03	76.18	98.13	81.32	0	113.5	209.5
825	52.24	3000	2510	0.312652	0.0155	149	50.35	5125	0.1	1950	7500	1950000	0.0609	######	6.029	1.17E-02	24.9	0	0	0	59.2	591.5
826	47.7	3000	1360	0.602016	0.0301	150.2	49.92	5125	0.1	1950	7500	1975000	0.0667	######	5.302	1.43E-02	86.65	0	0	0	48.3	569.7
827	63.5	3000	1740	1.740779	0.0726	125.1	59.97	5125	0.1	1950	7500	1500000	0.0501	######	5.995	1.15E-02	49.45	0	0	0	60.1	483.9
828	52.67	3000	430	57.83032	3.4114	177	42.38	5125	0.1	1950	7500	2525000	0.0604	######	2.236	1.12E-02	55.31	91.35	13.54	0	62.1	217.6
829	32.66	3000	930	21.207828	0.5995	84.8	88.45	5125	0.1	1950	7500	837500	0.0974	######	2.555	9.19E-03	30.36	76.42	0	0	75.4	400.9
830	21.66	3000	1140	43.856043	2.2055	150.9	49.71	5125	0.1	1950	7500	1987500	0.1469	######	2.382	2.97E-03	69.85	88.6	0	0	233.7	563.7
831	25.91	3000	1700	4.854915	0.199	123	60.99	5125	0.1	1950	7500	1462500	0.1228	######	3.266	6.38E-03	38.99	0	0	0	108.7	646.1
832	43.7	3000	260	591.731911	28.7513	145.8	51.45	5125	0.1	1950	7500	1887500	0.0728	######	1.44	7.18E-03	23.65	99.16	91.55	15.5	96.5	168.9
833	31.1	3000	710	16.206759	0.6491	120.1	62.42	5125	0.1	1950	7500	1412500	0.1023	######	2.147	1.13E-02	25.16	69.15	0	0	61.2	353.9
834	60.71	3000	860	49.983164	1.7956	107.8	69.59	5125	0.1	1950	7500	1200000	0.0524	######	3.68	6.59E-03	78.25	90	0	0	105.2	310.7
835	31.78	3000	750	59.975302	3.0288	151.5	49.5	5125	0.1	1950	7500	2000000	0.1001	######	2.16	7.50E-03	12.55	91.66	16.63	0	92.4	348.3
836	23.19	3000	430	31.921838	1.4465	135.9	55.17	5125	0.1	1950	7500	1700000	0.1372	######	1.475	1.07E-02	70.92	84.34	0	0	64.9	326
837	25.72	3000	360	24.980669	1.3341	160.2	46.81	5125	0.1	1950	7500	2175000	0.1237	######	1.399	1.39E-02	52.49	79.98	0	0	50	278.8
838	40.53	3000	2100	1.8858	0.0409	65.03	115.32	5125	0.1	1950	7500	562500	0.0785	######	4.593	1.01E-02	25.54	0	0	0	69	580.8
839	38.99	3000	720	58.896203	1.7948	91.42	82.04	5125	0.1	1950	7500	937500	0.0816	######	2.523	7.56E-03	60.33	91.51	15.1	0	91.7	331.7
840	29.7	3000	960	54.305475	2.4729	136.6	54.9	5125	0.1	1950	7500	1712500	0.1071	######	2.489	4.47E-03	45.73	90.79	7.93	0	155.2	429.4
841	28.56	3000	1080	5.080747	0.2223	131.2	57.15	5125	0.1	1950	7500	1612500	0.1114	######	2.658	9.64E-03	33.77	1.59	0	0	71.9	477
842	30.68	3000	880	8.975703	0.3595	120.1	62.42	5125	0.1	1950	7500	1412500	0.1037	######	2.411	1.09E-02	27.12	44.29	0	0	63.9	402.8
843	47.48	3000	340	241.459886	12.092	150.2	49.92	5125	0.1	1950	7500	1975000	0.067	######	1.744	9.17E-03	28.34	97.93	79.29	0	75.6	188.2
844	25.07	3000	450	90.110514	3.8395	127.8	58.67	5125	0.1	1950	7500	1550000	0.1269	######	1.454	9.82E-03	16.63	94.45	44.51	0	70.6	297.2
845	29.98	3000	1270	1.685221	0.0643	114.4	65.55	5125	0.1	1950	7500	1312500	0.1061	######	3.558	1.04E-02	84.02	0	0	0	66.9	608.2
846	21.94	3000	560	146.726478	8.1922	167.5	44.78	5125	0.1	1950	7500	2325000	0.145	######	1.55	4.61E-03	28.12	96.59	65.92	0	150.2	362.1
847	24.03	3000	1840	1.344737	0.0466	104	72.12	5125	0.1	1950	7500	1137500	0.1324	######	3.263	8.36E-03	29.98	0	0	0	82.9	696
848	31.85	3000	1420	10.00725	0.52	155.9	48.11	5125	0.1	1950	7500	2087500	0.0999	######	3.422	5.55E-03	60.5	50.04	0	0	125	550.7
849	23.97	3000	2100	1.004302	0.0402	120.1	62.42	5125	0.1	1950	7500	1412500	0.1327	######	3.522	7.74E-03	30.03	0	0	0	89.5	753
850	26.16	3000	640	3.79935	0.1879	148.3	50.56	5125	0.1	1950	7500	1937500	0.1216	######	2.043	1.36E-02	64.16	0	0	0	51.1	400.1
851	32.97	3000	1790	11.357876	0.4109	108.5	69.11	5125	0.1	1950	7500	1212500	0.0965	######	3.832	5.21E-03	46.31	55.98	0	0	133	595.8
852	26.06	3000	1480	0.158321	0.0055	104.8	71.59	5125	0.1	1950	7500	1150000	0.1221	######	3.481	1.38E-02	53.38	0	0	0	50.3	684.8
853	24.62	3000	1790	1.217643	0.0358	88.14	85.09	5125	0.1	1950	7500	887500	0.1292	######	3.464	8.72E-03	45.94	0	0	0	79.5	720.9
854	35.35	3000	320	273.124759	11.9482	131.2	57.15	5125	0.1	1950	7500	1612500	0.09	######	1.485	7.21E-03	57.74	98.17	81.69	0	96.1	215.3
855	43.88	3000	1250	10.204669	0.3563	104.8	71.59	5125	0.1	1950	7500	1150000	0.0725	######	3.476	9.66E-03	22.88	51	0	0	71.7	406
856	30.41	3000	710	127.033458	5.0275	118.7	63.17	5125	0.1	1950	7500	1387500	0.1046	######	2.108	4.54E-03	40.48	96.06	60.64	0	152.7	355.3
857	44.43	3000	410	76.622584	3.723	145.8	51.45	5125	0.1	1950	7500	1887500	0.0716	######	1.937	1.14E-02	45.85	93.47	34.75	0	61.1	223.4
858	36.95	3000	410	124.184508	3.3691	81.39	92.15	5125	0.1	1950	7500	787500	0.0861	######	1.655	1.31E-02	16.14	95.97	59.74	0	53.1	229.5
859	61.77	3000	870	14.617025	0.819	168.1	44.62	5125	0.1	1950	7500	2337500	0.0515	######	3.914	9.36E-03	77.89	65.79	0	0	74	324.7
860	46.51	3000	420	280.34977	8.9188	95.44	78.58	5125	0.1	1950	7500	1000000	0.0684	######	1.971	6.70E-03	57.4	98.22	82.17	0	103.5	217.2
861	26.64	3000	1080	49.324989	1.9638	119.4	62.79	5125	0.1	1950	7500	1400000	0.1194	######	2.562	3.84E-03	62.38	89.86	0	0	180.3	492.9
862	23.53	3000	390	43.693932	1.6769	115.1	65.14	5125	0.1	1950	7500	1325000	0.1352	######	1.347	1.23E-02	41.41	88.56	0	0	56.2	293.5
863	33.38	3000	820	8.519683	0.4029	141.9	52.86	5125	0.1	1950	7500	1812500	0.0953	######	2.442	1.15E-02	29.3	41.31	0	0	60.5	374.9
864	21.77	3000	740	8.07962	0.3387	125.8	59.64	5125	0.1	1950	7500	1512500	0.1461	######	1.971	9.71E-03	66.12	38.12	0	0	71.4	463.9
865	25.25	3000	510	152.329749	3.6364	71.62	104.73	5125	0.1	1950	7500	650000	0.126	######	1.544	8.33E-03	24.71	96.72	67.18	0	83.2	313.5
866	40.02	3000	1340	44.136975	1.9804	134.6	55.72	5125	0.1	1950	7500	1675000	0.0795	######	3.365	4.53E-03	23.47	88.67	0	0	153.1	431
867	28.13	3000	1790	2.692037	0.1399	155.9	48.11	5125	0.1	1950	7500	2087500	0.1131	######	3.437	7.22E-03	28.74	0	0	0	96	626.2
868	32.66	3000	1380	11.546101	0.5976	155.3	48.3	5125	0.1	1950	7500	2075000	0.0974	######	3.123	6.66E-03	22.86	56.7	0	0	104.1	490
869	31.59	3000	600	101.150946	4.6731	138.6	54.11	5125	0.1	1950	7500	1750000	0.1007	######	2.048	4.77E-03	79.96	95.06	50.57	0	145.4	332.2
870	22.44	3000	600	11.345688	0.5242	138.6	54.11	5125	0.1	1950	7500	1750000	0.1418	######	1.676	1.16E-02	29.9	55.93	0	0	59.6	382.8
871	24.83	3000	1570	0.187154	0.0077	123	60.99	5125	0.1	1950	7500	1462500	0.1281	######	3.473	1.23E-02	53.1	0	0	0	56.3	716.8
872	27.1	3000	840	7.475783	0.3487	139.9	53.6	5125	0.1	1950	7500	1775000	0.1174	######	2.183	1.10E-02	22	33.12	0	0	62.9	412.9
873	27.96	3000	780	14.364074	0.4532	94.64	79.25	5125	0.1	1950	7500	987500	0.1138	######	2.226	1.01E-02	47.73	65.19	0	0	68.6	408.1
874	27.5	3000	850	1.058374	0.0362	102.5	73.19	5125	0.1	1950	7500	1112500	0.1157	######	2.398	1.59E-02	42.95	0	0	0	43.5	447
875	26.44	3000	1110	0.079309	0.0047	177	42.38	5125	0.1	1950	7500	2525000	0.1203	######	3.12	1.70E-02	63.89	0	0	0	40.8	604.7
876	30.8	3000	560	126.64868	5.7672	136.6	54.9	5125	0.1	1950	7500	1712500	0.1033	######	1.856	6.25E-03	28.71	96.05	60.52	0	110.9	308.9
877	23.85	3000	1060	21.945309	0.9097	124.4	60.31	5125	0.1	1950	7500	1487500	0.1334	######	2.312	6.32E-03	27.84	77.22	0	0	109.7	496.9
878	30.21	3000	350	15.966868	0.9697	182.2	41.17	5125	0.1	1950	7500	2637500	0.1053	######	1.482	1.71E-02	44.21	68.69	0	0	40.5	251.4
879	23.39	3000	470	50.551756	2.6477	157.1	47.73	5125	0.1	1950	7500	2112500	0.136	######	1.507	8.52E-03	51.22	90.11	1.09	0	81.4	330.1
880	57.42	3000	2050	3.156383	0.0753	71.62	104.73	5125	0.1	1950	7500	650000	0.0554	######	6.007	9.76E-03	44.62	0	0	0	71	536.1
881	35.23	3000	670	30.916481	1.4822	143.8	52.15	5125	0.1	1950	7500	1850000	0.0903	######	2.239	9.40E-03	32.37	83.83	0	0	73.7	325.7
882	23.2	3000	1210	1.641804	0.0661	120.9	62.06	5125	0.1	1950	7500	1425000	0.1371	######	2.945	9.51E-03	83.46	0	0	0	72.9	650.4

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
883	56.51	3000	640	18.728183	0.918	147	51	5125	0.1	1950	7500	1912500	0.0563	######	2.924	1.30E-02	48.97	73.3	0	0	53.3	265.2
884	44.19	3000	1910	0.064088	0.0029	137.9	54.37	5125	0.1	1950	7500	1737500	0.072	######	5.536	1.65E-02	44.3	0	0	0	42.1	642.1
885	24.59	3000	910	7.418041	0.197	79.66	94.15	5125	0.1	1950	7500	762500	0.1294	######	2.164	1.12E-02	24.85	32.6	0	0	61.8	451.1
886	51.64	3000	1550	7.375915	0.2989	121.6	61.7	5125	0.1	1950	7500	1437500	0.0616	######	4.648	7.91E-03	47.41	32.21	0	0	87.6	461.2
887	21.48	3000	1060	16.457707	0.7531	137.3	54.64	5125	0.1	1950	7500	1725000	0.1481	######	2.33	5.50E-03	63.79	69.62	0	0	126	555.8
888	44	3000	680	107.460492	3.9934	111.5	67.27	5125	0.1	1950	7500	1262500	0.0723	######	2.584	5.36E-03	63.25	95.35	53.47	0	129.4	301
889	21.85	3000	880	1.104002	0.046	125.1	59.97	5125	0.1	1950	7500	1500000	0.1456	######	2.13	1.35E-02	39.53	0	0	0	51.4	499.6
890	23.48	3000	1920	3.686715	0.1415	115.1	65.14	5125	0.1	1950	7500	1325000	0.1355	######	3.45	5.79E-03	51.59	0	0	0	119.7	753.1
891	45.51	3000	570	24.597393	1.2832	156.5	47.92	5125	0.1	1950	7500	2100000	0.0699	######	2.341	1.30E-02	30.14	79.67	0	0	53.5	263.6
892	31.78	3000	240	131.55694	5.4842	125.1	59.97	5125	0.1	1950	7500	1500000	0.1001	######	1.187	1.49E-02	40.64	96.2	61.99	0	46.5	191.5
893	54.57	3000	390	403.298556	13.3594	99.38	75.47	5125	0.1	1950	7500	1062500	0.0583	######	2.031	5.69E-03	59.02	98.76	87.6	0	121.7	190.7
894	41.64	3000	370	82.071445	4.9684	181.6	41.3	5125	0.1	1950	7500	2625000	0.0764	######	1.745	1.19E-02	30.05	93.91	39.08	0	58.4	214.7
895	35.15	3000	620	21.423458	0.8066	113	66.4	5125	0.1	1950	7500	1287500	0.0905	######	2.222	1.14E-02	51.34	76.66	0	0	60.6	323.9
896	33.56	3000	1020	1.038794	0.0368	106.3	70.57	5125	0.1	1950	7500	1175000	0.0948	######	2.991	1.52E-02	43.35	0	0	0	45.7	456.8
897	28.63	3000	2080	0.420056	0.0228	162.7	46.11	5125	0.1	1950	7500	2225000	0.1111	######	3.911	9.38E-03	29.32	0	0	0	73.9	699.9
898	23.43	3000	690	1.445684	0.0709	147	51	5125	0.1	1950	7500	1912500	0.1358	######	2.009	1.49E-02	57.93	0	0	0	46.4	439.6
899	33.31	3000	1500	1.185431	0.0555	140.6	53.35	5125	0.1	1950	7500	1787500	0.0955	######	3.601	1.06E-02	37.42	0	0	0	65.3	553.9
900	58.59	3000	2570	1.741052	0.0734	126.4	59.31	5125	0.1	1950	7500	1525000	0.0543	######	7.973	7.70E-03	70.51	0	0	0	90	697.4
901	35.67	3000	1220	34.312322	1.1277	98.6	76.07	5125	0.1	1950	7500	1050000	0.0892	######	2.993	6.54E-03	18.9	85.43	0	0	105.9	430.2
902	22.39	3000	550	95.306747	2.475	77.91	96.27	5125	0.1	1950	7500	737500	0.1421	######	1.555	7.81E-03	40.44	94.75	47.54	0	88.8	356
903	40.32	3000	2030	17.803394	0.5032	84.8	88.45	5125	0.1	1950	7500	837500	0.0789	######	4.732	4.26E-03	60.55	71.92	0	0	162.9	601.4
904	30.33	3000	630	3.427425	0.183	160.2	46.81	5125	0.1	1950	7500	2175000	0.1049	######	2.157	1.50E-02	56.52	0	0	0	46.1	364.5
905	58.37	3000	730	282.01866	9.8481	104.8	71.59	5125	0.1	1950	7500	1150000	0.0545	######	2.973	2.52E-03	43.74	98.23	82.27	0	274.9	261
906	38.28	3000	1220	29.654142	1.0874	110	68.18	5125	0.1	1950	7500	1237500	0.0831	######	3.137	6.58E-03	22.18	83.14	0	0	105.3	419.9
907	30.71	3000	340	136.749223	5.9823	131.2	57.15	5125	0.1	1950	7500	1612500	0.1036	######	1.424	9.93E-03	43.85	96.34	63.44	0	69.8	237.7
908	26.25	3000	1020	23.129026	0.8765	113.7	65.97	5125	0.1	1950	7500	1300000	0.1212	######	2.369	7.03E-03	25.33	78.38	0	0	98.6	462.6
909	36.23	3000	1890	0.061785	0.0023	110.7	67.72	5125	0.1	1950	7500	1250000	0.0878	######	4.455	1.58E-02	30.22	0	0	0	43.8	630.1
910	37.96	3000	1150	81.370236	2.2308	82.25	91.19	5125	0.1	1950	7500	800000	0.0838	######	3.045	4.58E-03	34.03	93.86	38.55	0	151.5	411.1
911	31.44	3000	1660	1.00897	0.0235	69.77	107.5	5125	0.1	1950	7500	625000	0.1012	######	4.421	1.08E-02	79.08	0	0	0	64.2	720.7
912	38.56	3000	2050	4.755167	0.1487	93.84	79.92	5125	0.1	1950	7500	975000	0.0825	######	4.205	7.79E-03	18.44	0	0	0	89	558.9
913	29.48	3000	660	5.211032	0.1859	107	70.08	5125	0.1	1950	7500	1187500	0.1079	######	2.267	1.38E-02	77.21	4.05	0	0	50.1	394
914	24.12	3000	950	42.351085	1.6151	114.4	65.55	5125	0.1	1950	7500	1312500	0.1319	######	2.189	5.59E-03	32.75	88.19	0	0	124.1	465.1
915	36.52	3000	380	134.154471	6.4895	145.1	51.68	5125	0.1	1950	7500	1875000	0.0871	######	1.653	9.12E-03	42.67	96.27	62.73	0	76	231.9
916	27.69	3000	800	46.19591	1.9043	123.7	60.65	5125	0.1	1950	7500	1475000	0.1149	######	2.14	6.67E-03	30.95	89.18	0	0	103.9	396.1
917	22.55	3000	1190	73.758561	2.5569	104	72.12	5125	0.1	1950	7500	1137500	0.1411	######	2.374	3.24E-03	38.3	93.22	32.21	0	213.7	539.6
918	48.5	3000	1510	2.55152	0.0692	81.39	92.15	5125	0.1	1950	7500	787500	0.0656	######	4.929	1.14E-02	63.39	0	0	0	60.8	520.9
919	40.79	3000	290	579.177335	23.0589	119.4	62.79	5125	0.1	1950	7500	1400000	0.078	######	1.467	6.34E-03	35.12	99.14	91.37	13.67	109.3	184.3
920	24.23	3000	730	4.058551	0.1113	82.25	91.19	5125	0.1	1950	7500	800000	0.1313	######	2.134	1.32E-02	71.53	0	0	0	52.3	451.3
921	28.74	3000	580	66.571492	2.2397	100.9	74.31	5125	0.1	1950	7500	1087500	0.1107	######	1.852	8.40E-03	39.34	92.49	24.89	0	82.6	330.2
922	30.36	3000	860	8.318096	0.3071	110.7	67.72	5125	0.1	1950	7500	1250000	0.1048	######	2.651	9.91E-03	79.72	39.89	0	0	69.9	447.6
923	22.29	3000	1400	1.192551	0.0511	128.5	58.36	5125	0.1	1950	7500	1562500	0.1427	######	2.751	9.55E-03	36.1	0	0	0	72.6	632.4
924	33.1	3000	270	456.998274	16.0738	105.5	71.08	5125	0.1	1950	7500	1162500	0.0961	######	1.265	8.42E-03	30.34	98.91	89.06	0	82.4	195.8
925	23.64	3000	440	94.892745	5.8716	185.6	40.4	5125	0.1	1950	7500	2712500	0.1346	######	1.457	6.40E-03	52.12	94.73	47.31	0	108.4	315.9
926	43.46	3000	960	27.51522	1.4241	155.3	48.3	5125	0.1	1950	7500	2075000	0.0732	######	3.088	6.75E-03	44.61	81.83	0	0	102.7	364.1
927	36.23	3000	410	32.023994	1.5145	141.9	52.86	5125	0.1	1950	7500	1812500	0.0878	######	1.798	1.37E-02	57.08	84.39	0	0	50.5	254.3
928	44.87	3000	2610	1.229514	0.0649	158.4	47.36	5125	0.1	1950	7500	2137500	0.0709	######	6.229	7.23E-03	51.49	0	0	0	95.9	711.5
929	21.28	3000	770	4.138096	0.1715	124.4	60.31	5125	0.1	1950	7500	1487500	0.1495	######	1.856	1.22E-02	24.27	0	0	0	57	447.1
930	63.12	3000	480	168.184297	4.6588	83.1	90.25	5125	0.1	1950	7500	812500	0.0504	######	2.373	1.25E-02	17.43	97.03	70.27	0	55.4	192.6
931	32.23	3000	380	218.068445	9.687	133.3	56.28	5125	0.1	1950	7500	1650000	0.0987	######	1.539	7.17E-03	38.55	97.71	77.07	0	96.6	244.7
932	31.41	3000	660	10.644185	0.542	152.8	49.1	5125	0.1	1950	7500	2025000	0.1013	######	2.29	1.08E-02	74.45	53.03	0	0	64.3	373.7
933	28.95	3000	830	0.961628	0.0477	149	50.35	5125	0.1	1950	7500	1950000	0.1099	######	2.343	1.63E-02	30.2	0	0	0	42.6	414.8
934	24.34	3000	380	147.430239	5.8697	119.4	62.79	5125	0.1	1950	7500	1400000	0.1307	######	1.296	9.92E-03	14.27	96.61	66.09	0	69.9	272.9
935	21.61	3000	420	41.196266	1.3432	97.81	76.68	5125	0.1	1950	7500	1037500	0.1472	######	1.287	1.33E-02	16.97	87.86	0	0	52.3	305.2
936	22.59	3000	1500	3.713656	0.1691	136.6	54.9	5125	0.1	1950	7500	1712500	0.1408	######	2.861	6.91E-03	41.56	0	0	0	100.4	648.9
937	37.25	3000	1270	0.388435	0.0223	172.3	43.54	5125	0.1	1950	7500	2425000	0.0854	######	3.977	1.43E-02	62.66	0	0	0	48.4	547.1
938	25.19	3000	620	149.705165	5.6365	113	66.4	5125	0.1	1950	7500	1287500	0.1263	######	1.753	5.38E-03	26.07	96.66	66.6	0	128.8	356.6
939	27.33	3000	680	2.049097	0.0771	113	66.4	5125	0.1	1950	7500	1287500	0.1164	######	2.168	1.60E-02	59.1	0	0	0	43.4	406.5
940	21.34	3000	460	30.151814	1.548	154	48.7	5125	0.1	1950	7500	2050000	0.1491	######	1.385	1.14E-02	20.38	83.42	0	0	60.8	332.6
941	44.12	3000	520	99.318477	3.2641	98.6	76.07	5125	0.1	1950	7500	1050000	0.0721	######	2.213	8.85E-03	57.38	94.97	49.66	0	78.3	257.1
942	61.06	3000	1720	17.11472	0.4789	83.95	89.34	5125	0.1	1950	7500	825000	0.0521	######	5.68	5.86E-03	69.76	70.79	0	0	118.3	476.7
943	28.1	3000	1110	0.284996	0.0113	119.4	62.79	5125	0.1	1950	7500	1400000	0.1132	######	3.061	1.56E-02	57.22	0	0	0	44.5	558.1
944	42.93	3000	290	364.025124	13.2586	109.3	68.64	5125	0.1	1950	7500	1225000	0.0741	######	1.507	9.00E-03	47.82	98.63	86.26	0	77.1	179.8
945	34.13	3000	1090	0.487091	0.0144	88.97	84.3	5125	0.1	1950	7500	900000	0.0932	######	3.357	1.68E-02	56.3	0	0	0	41.3	504.1

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
946	22.02	3000	690	14.083155	0.6537	139.3	53.86	5125	0.1	1950	7500	1762500	0.1445	######	1.748	1.04E-02	17.09	64.5	0	0	66.5	406.9
947	27.57	3000	880	8.665354	0.3632	125.8	59.64	5125	0.1	1950	7500	1512500	0.1154	######	2.595	8.63E-03	89.95	42.3	0	0	80.3	482.5
948	43.46	3000	220	801.36864	32.4723	121.6	61.7	5125	0.1	1950	7500	1437500	0.0732	######	1.287	7.37E-03	31.32	99.38	93.76	37.61	94.1	151.8
949	26.56	3000	1620	0.531165	0.0149	83.95	89.34	5125	0.1	1950	7500	825000	0.1198	######	3.586	1.12E-02	51.89	0	0	0	61.7	692.1
950	53.29	3000	1310	32.990012	1.4207	129.2	58.05	5125	0.1	1950	7500	1575000	0.0597	######	4.031	5.24E-03	39.47	84.84	0	0	132.3	387.7
951	30.56	3000	720	2.166966	0.0729	100.9	74.31	5125	0.1	1950	7500	1087500	0.1041	######	2.352	1.65E-02	55.64	0	0	0	41.9	394.4
952	29.29	3000	1410	1.874045	0.0442	70.69	106.09	5125	0.1	1950	7500	637500	0.1086	######	3.552	1.06E-02	66.6	0	0	0	65.7	621.5
953	33.38	3000	1040	3.973698	0.2155	162.7	46.11	5125	0.1	1950	7500	2225000	0.0953	######	2.964	1.02E-02	50.37	0	0	0	68.2	455.1
954	38.42	3000	750	178.419992	6.2304	104.8	71.59	5125	0.1	1950	7500	1150000	0.0828	######	2.445	3.70E-03	44.81	97.2	71.98	0	187.2	326.1
955	32.01	3000	420	159.38632	7.1871	135.3	55.44	5125	0.1	1950	7500	1687500	0.0994	######	1.66	6.64E-03	54.49	96.86	68.63	0	104.4	265.8
956	35.51	3000	1300	5.867964	0.3335	170.5	43.99	5125	0.1	1950	7500	2387500	0.0896	######	3.55	7.28E-03	63.09	14.79	0	0	95.2	512.5
957	24.25	3000	490	15.289115	0.406	79.66	94.15	5125	0.1	1950	7500	762500	0.1312	######	1.621	1.41E-02	67.42	67.3	0	0	49.2	342.6
958	53.74	3000	540	70.63915	3.2635	138.6	54.11	5125	0.1	1950	7500	1750000	0.0592	######	2.624	8.03E-03	82.52	92.92	29.22	0	86.3	250.3
959	26.4	3000	500	137.397616	7.168	156.5	47.92	5125	0.1	1950	7500	2100000	0.1205	######	1.6	6.79E-03	17.74	96.36	63.61	0	102.1	310.5
960	40.27	3000	930	109.667282	6.1011	166.9	44.94	5125	0.1	1950	7500	2312500	0.079	######	2.755	3.81E-03	19.29	95.44	54.41	0	181.9	350.6
961	22.59	3000	1220	25.547588	1.1803	138.6	54.11	5125	0.1	1950	7500	1750000	0.1408	######	2.415	4.88E-03	28.44	80.43	0	0	141.9	547.8
962	28.35	3000	1540	5.095107	0.1968	115.9	64.73	5125	0.1	1950	7500	1337500	0.1122	######	3.659	6.43E-03	82.77	1.87	0	0	107.8	661.3
963	22.08	3000	380	156.174514	9.3341	179.3	41.83	5125	0.1	1950	7500	2575000	0.1441	######	1.285	6.48E-03	32.3	96.8	67.98	0	106.9	298.4
964	45	3000	390	250.751104	8.241	98.6	76.07	5125	0.1	1950	7500	1050000	0.0707	######	1.809	9.39E-03	29.22	98.01	80.06	0	73.8	206
965	22.09	3000	590	46.461507	2.1973	141.9	52.86	5125	0.1	1950	7500	1812500	0.144	######	1.645	7.40E-03	38.58	89.24	0	0	93.7	381.6
966	60.83	3000	230	240.1476	9.731	121.6	61.7	5125	0.1	1950	7500	1437500	0.0523	######	1.604	1.62E-02	42.56	97.92	79.18	0	42.9	135.1
967	36.69	3000	1140	39.064536	1.7265	132.6	56.56	5125	0.1	1950	7500	1637500	0.0867	######	3.006	5.25E-03	30.78	87.2	0	0	132.1	419.9
968	31.22	3000	1410	0.951445	0.029	91.42	82.04	5125	0.1	1950	7500	937500	0.1019	######	3.641	1.18E-02	56.33	0	0	0	58.6	597.8
969	53.47	3000	550	110.515613	4.4261	120.1	62.42	5125	0.1	1950	7500	1412500	0.0595	######	2.382	1.06E-02	14.64	95.48	54.76	0	65.4	228.3
970	41.37	3000	1900	0.941793	0.0366	116.6	64.33	5125	0.1	1950	7500	1350000	0.0769	######	4.847	1.05E-02	43.52	0	0	0	66.2	600.5
971	51.56	3000	450	425.373049	13.306	93.84	79.92	5125	0.1	1950	7500	975000	0.0617	######	2.1	5.41E-03	36.81	98.82	88.25	0	128.1	208.8
972	32.36	3000	690	39.240413	1.7694	135.3	55.44	5125	0.1	1950	7500	1687500	0.0983	######	2.146	8.59E-03	27.92	87.26	0	0	80.7	339.8
973	35.87	3000	1000	5.443659	0.2307	127.1	58.99	5125	0.1	1950	7500	1537500	0.0887	######	2.916	1.11E-02	37.83	8.15	0	0	62.6	416.7
974	49.17	3000	1490	11.518923	0.3846	100.2	74.88	5125	0.1	1950	7500	1075000	0.0647	######	4.049	8.50E-03	23.07	56.59	0	0	81.5	422
975	57.22	3000	550	91.553599	4.8142	157.7	47.54	5125	0.1	1950	7500	2125000	0.0556	######	2.629	7.25E-03	53.54	94.54	45.39	0	95.6	235.5
976	33.92	3000	320	292.898045	10.302	105.5	71.08	5125	0.1	1950	7500	1162500	0.0938	######	1.393	9.62E-03	25.62	98.29	82.93	0	72	210.5
977	22.14	3000	790	35.261843	1.6753	142.5	52.62	5125	0.1	1950	7500	1825000	0.1437	######	1.973	5.59E-03	60.45	85.82	0	0	123.9	456.8
978	29	3000	1630	2.108	0.0874	124.4	60.31	5125	0.1	1950	7500	1487500	0.1097	######	3.788	7.95E-03	66.96	0	0	0	87.1	669.3
979	37.47	3000	490	318.027015	10.452	98.6	76.07	5125	0.1	1950	7500	1050000	0.0849	######	1.891	4.87E-03	43.93	98.43	84.28	0	142.4	258.7
980	51.23	3000	290	305.76293	13.5139	132.6	56.56	5125	0.1	1950	7500	1637500	0.0621	######	1.721	8.22E-03	61.82	98.36	83.65	0	84.3	172.2
981	22.11	3000	2190	5.661619	0.2373	125.8	59.64	5125	0.1	1950	7500	1512500	0.1439	######	3.359	4.67E-03	32.8	11.69	0	0	148.3	778.7
982	33.59	3000	1260	1.631339	0.0443	81.39	92.15	5125	0.1	1950	7500	787500	0.0947	######	3.343	1.26E-02	43.24	0	0	0	54.8	510
983	24.21	3000	380	128.814603	5.8943	137.3	54.64	5125	0.1	1950	7500	1725000	0.1314	######	1.343	7.85E-03	50.7	96.12	61.18	0	88.3	284.2
984	44.62	3000	400	169.640298	7.4594	131.9	56.85	5125	0.1	1950	7500	1625000	0.0713	######	1.853	9.48E-03	29.59	97.05	70.53	0	73.1	212.8
985	55.52	3000	530	191.067402	8.1848	128.5	58.36	5125	0.1	1950	7500	1562500	0.0573	######	2.44	6.10E-03	38.48	97.38	73.83	0	113.7	225.2
986	37.52	3000	490	46.984837	1.5072	96.23	77.94	5125	0.1	1950	7500	1012500	0.0848	######	2.03	1.16E-02	72.32	89.36	0	0	60	277.3
987	25.89	3000	840	51.541394	2.3241	135.3	55.44	5125	0.1	1950	7500	1687500	0.1229	######	2.204	4.74E-03	59.25	90.3	2.99	0	146.1	436.4
988	24.82	3000	1020	2.275695	0.0681	89.79	83.53	5125	0.1	1950	7500	912500	0.1282	######	2.431	1.21E-02	36.51	0	0	0	57.2	502.1
989	29.7	3000	470	54.693885	2.5866	141.9	52.86	5125	0.1	1950	7500	1812500	0.1071	######	1.674	1.04E-02	27.79	90.86	8.58	0	66.4	288.8
990	31.5	3000	2330	0.654819	0.0232	106.3	70.57	5125	0.1	1950	7500	1175000	0.101	######	4.793	8.62E-03	48.08	0	0	0	80.4	779.8
991	26.4	3000	440	194.367302	7.7384	119.4	62.79	5125	0.1	1950	7500	1400000	0.1205	######	1.487	6.78E-03	30.54	97.43	74.28	0	102.3	288.6
992	30.62	3000	430	589.159754	27.8629	141.9	52.86	5125	0.1	1950	7500	1812500	0.1039	######	1.578	2.92E-03	22.34	99.15	91.51	15.13	237.3	264
993	47.98	3000	280	659.343663	26.4066	120.1	62.42	5125	0.1	1950	7500	1412500	0.0663	######	1.543	7.18E-03	24.09	99.24	92.42	24.17	96.6	164.8
994	57.95	3000	420	51.431304	2.4323	141.9	52.86	5125	0.1	1950	7500	1812500	0.0549	######	2.217	1.57E-02	30.3	90.28	2.78	0	44.1	196
995	38.84	3000	720	2.394084	0.1085	135.9	55.17	5125	0.1	1950	7500	1700000	0.0819	######	2.525	1.79E-02	31.25	0	0	0	38.8	333.1
996	28.48	3000	520	58.657092	2.658	135.9	55.17	5125	0.1	1950	7500	1700000	0.1117	######	1.741	8.75E-03	39.05	91.48	14.76	0	79.2	313.2
997	40.07	3000	640	66.039954	2.1704	98.6	76.07	5125	0.1	1950	7500	1050000	0.0794	######	2.289	9.35E-03	28.92	92.43	24.29	0	74.1	292.8
998	23.79	3000	520	108.397088	4.0548	112.2	66.83	5125	0.1	1950	7500	1275000	0.1337	######	1.548	7.33E-03	30.6	95.39	53.87	0	94.6	333.5
999	44.81	3000	1260	1.118449	0.0602	161.4	46.46	5125	0.1	1950	7500	2200000	0.071	######	3.905	1.35E-02	39.29	0	0	0	51.3	446.6
1000	32.9	3000	320	364.664162	19.3253	159	47.17	5125	0.1	1950	7500	2150000	0.0967	######	1.439	4.08E-03	80.2	98.63	86.29	0	169.9	224.1

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
1	58.91	3000	2070	12.561377	0.5149	122.968	609.91	5125	0.1	1950	75000	1462500	0.054	######	5.208	1.24E-02	26.99	60.2	0	0	55.8	453.1
2	22.15	3000	1880	4.826098	0.0999	62.1111	1207.51	5125	0.1	1950	75000	525000	0.1436	######	2.853	1.23E-02	76.26	0	0	0	56.2	660
3	30.44	3000	880	116.840515	5.3722	137.937	543.73	5125	0.1	1950	75000	1737500	0.1045	######	1.975	1.04E-02	55.4	95.72	57.21	0	66.7	332.4
4	22.99	3000	860	459.649464	26.0302	169.892	441.46	5125	0.1	1950	75000	2375000	0.1384	######	1.704	5.00E-03	35.33	98.91	89.12	0	138.6	379.8
5	45.25	3000	1660	47.122104	1.4614	93.0387	806.12	5125	0.1	1950	75000	962500	0.0703	######	4.023	1.02E-02	63.48	89.39	0	0	67.8	455.6
6	35.04	3000	1900	58.256399	3.0873	158.985	471.74	5125	0.1	1950	75000	2150000	0.0908	######	3.891	6.07E-03	48.82	91.42	14.17	0	114.2	569.2
7	59.13	3000	1190	258.618076	10.8409	125.755	596.4	5125	0.1	1950	75000	1512500	0.0538	######	3.363	8.53E-03	33	98.07	80.67	0	81.2	291.5
8	49.32	3000	2420	13.407441	0.4916	110.009	681.77	5125	0.1	1950	75000	1237500	0.0645	######	5.636	9.74E-03	44.48	62.71	0	0	71.2	585.6
9	26.53	3000	1330	29.084817	1.1232	115.858	647.34	5125	0.1	1950	75000	1337500	0.1199	######	2.608	1.02E-02	62.53	82.81	0	0	68.1	503.7
10	29.57	3000	2060	283.172977	10.173	107.775	695.9	5125	0.1	1950	75000	1200000	0.1076	######	3.384	3.45E-03	39.84	98.23	82.34	0	201.2	586.6
11	28.46	3000	1510	177.823326	8.8299	148.966	503.47	5125	0.1	1950	75000	1950000	0.1118	######	2.788	5.27E-03	29.73	97.19	71.88	0	131.5	502.1
12	21.41	3000	1150	185.517538	4.6529	75.2423	996.78	5125	0.1	1950	75000	700000	0.1486	######	1.399	8.58E-03	42.84	97.3	73.05	0	80.8	334.8
13	62.5	3000	2560	2.354173	0.1134	144.475	519.12	5125	0.1	1950	75000	1862500	0.0509	######	7.691	1.36E-02	49.38	0	0	0	50.8	630.6
14	28.87	3000	2510	11.22621	0.4144	110.748	677.21	5125	0.1	1950	75000	1250000	0.1102	######	4.027	7.91E-03	33.57	55.46	0	0	87.7	714.9
15	41	3000	1860	17.515538	0.6932	118.728	631.7	5125	0.1	1950	75000	1387500	0.0776	######	4.236	1.04E-02	47.28	71.45	0	0	67	529.6
16	37.83	3000	910	1282.963207	49.8554	116.579	643.34	5125	0.1	1950	75000	1350000	0.0841	######	1.989	3.20E-03	55.5	99.61	96.1	61.03	216.6	269.5
17	59.24	3000	870	696.459267	33.6903	145.121	516.81	5125	0.1	1950	75000	1875000	0.0537	######	2.697	6.33E-03	41.22	99.28	92.82	28.21	109.5	233.3
18	52.5	3000	970	200.241998	7.9248	118.728	631.7	5125	0.1	1950	75000	1387500	0.0606	######	2.617	1.12E-02	39.63	97.5	75.03	0	62.2	255.5
19	29.59	3000	620	436.709687	19.8863	136.61	549.01	5125	0.1	1950	75000	1712500	0.1075	######	1.153	9.82E-03	41.91	98.86	88.55	0	70.6	199.7
20	21.6	3000	940	13.342534	0.8306	186.767	401.57	5125	0.1	1950	75000	2737500	0.1473	######	1.901	1.28E-02	42.14	62.53	0	0	54.2	451
21	31.69	3000	2200	22.835159	1.2288	161.44	464.57	5125	0.1	1950	75000	2200000	0.1004	######	3.993	6.88E-03	37.29	78.1	0	0	100.7	645.8
22	26.1	3000	1350	17.45675	0.6096	104.76	715.92	5125	0.1	1950	75000	1150000	0.1219	######	2.352	1.18E-02	27.73	71.36	0	0	58.5	461.8
23	22.18	3000	860	88.335134	4.6084	156.51	479.2	5125	0.1	1950	75000	2100000	0.1434	######	1.682	9.48E-03	42.19	94.34	43.4	0	73.1	388.6
24	28.87	3000	1830	133.172694	5.365	120.857	620.57	5125	0.1	1950	75000	1425000	0.1102	######	3.258	4.93E-03	49.66	96.25	62.45	0	140.7	578.4
25	29	3000	2100	179.125168	7.3422	122.968	609.91	5125	0.1	1950	75000	1462500	0.1097	######	3.519	3.73E-03	46.41	97.21	72.09	0	185.8	622
26	22.76	3000	2970	156.246783	5.2163	100.154	748.85	5125	0.1	1950	75000	1075000	0.1398	######	3.771	2.71E-03	45.07	96.8	68	0	256.3	849.3
27	43.28	3000	1700	68.260158	2.1352	93.8425	799.21	5125	0.1	1950	75000	975000	0.0735	######	3.53	9.45E-03	26.64	92.68	26.75	0	73.3	417.9
28	21.94	3000	650	95.219471	5.7827	182.19	411.66	5125	0.1	1950	75000	2637500	0.145	######	1.361	1.12E-02	34.57	94.75	47.49	0	61.9	317.9
29	45.38	3000	730	838.048761	36.0909	129.196	580.51	5125	0.1	1950	75000	1575000	0.0701	######	1.794	6.46E-03	58.83	99.4	94.03	40.34	107.3	202.6
30	34.81	3000	920	39.514785	1.3998	106.273	705.73	5125	0.1	1950	75000	1175000	0.0914	######	2.034	1.66E-02	85.44	87.35	0	0	41.8	299.4
31	25.11	3000	1420	134.416681	4.2047	93.8425	799.21	5125	0.1	1950	75000	975000	0.1267	######	2.433	6.68E-03	67.25	96.28	62.8	0	103.8	496.7
32	21.44	3000	1180	5.403244	0.24	133.266	562.78	5125	0.1	1950	75000	1650000	0.1484	######	2.126	1.37E-02	42.06	7.46	0	0	50.7	508.2
33	49.71	3000	780	458.418892	19.4274	127.137	589.91	5125	0.1	1950	75000	1537500	0.064	######	2.015	9.28E-03	34.79	98.91	89.09	0	74.7	207.7
34	31.72	3000	1080	131.982806	6.5816	149.602	501.33	5125	0.1	1950	75000	1962500	0.1003	######	2.374	8.34E-03	35.37	96.21	62.12	0	83.1	383.5
35	32.56	3000	1900	20.146403	0.8995	133.938	559.96	5125	0.1	1950	75000	1662500	0.0977	######	3.649	8.74E-03	36.93	75.18	0	0	79.4	574.3
36	46.92	3000	2370	86.89421	3.8209	131.916	568.54	5125	0.1	1950	75000	1625000	0.0678	######	5.714	4.43E-03	83.15	94.25	42.46	0	156.6	624
37	55.81	3000	620	863.706063	33.5632	116.579	643.34	5125	0.1	1950	75000	1350000	0.057	######	1.584	8.64E-03	26.14	99.42	94.21	42.11	80.2	145.5
38	29.79	3000	1050	532.679785	17.3673	97.8112	766.78	5125	0.1	1950	75000	1037500	0.1068	######	1.858	5.53E-03	36.63	99.06	90.61	6.13	125.3	319.7
39	24.51	3000	1290	5.906513	0.2209	112.22	668.33	5125	0.1	1950	75000	1275000	0.1298	######	2.543	1.39E-02	67.64	15.35	0	0	49.9	531.7
40	23.9	3000	1150	135.043676	3.9676	88.1405	850.91	5125	0.1	1950	75000	887500	0.1331	######	1.775	8.60E-03	52.06	96.3	62.97	0	80.6	380.6
41	31.91	3000	1210	104.489491	3.1842	91.4206	820.38	5125	0.1	1950	75000	937500	0.0997	######	2.424	9.68E-03	83.34	95.21	52.15	0	71.6	389.4
42	25.8	3000	1530	168.042457	7.7634	138.597	541.14	5125	0.1	1950	75000	1750000	0.1233	######	2.607	5.43E-03	23.41	97.02	70.25	0	127.6	517.9
43	31.53	3000	960	148.514801	5.6997	115.135	651.41	5125	0.1	1950	75000	1325000	0.1009	######	1.915	1.00E-02	31.71	96.63	66.33	0	69.3	311.2
44	22.5	3000	830	62.948282	2.6095	124.366	603.06	5125	0.1	1950	75000	1487500	0.1414	######	1.569	1.19E-02	87.64	92.06	20.57	0	58.1	357.5
45	31.94	3000	690	314.221676	12.9531	123.668	606.46	5125	0.1	1950	75000	1475000	0.0996	######	1.287	1.13E-02	53.8	98.41	84.09	0	61.6	206.5
46	21.97	3000	1480	142.034524	4.251	89.788	835.3	5125	0.1	1950	75000	912500	0.1448	######	2.256	6.12E-03	53.24	96.48	64.8	0	113.3	526.3
47	24.28	3000	1310	17.659424	0.6606	112.22	668.33	5125	0.1	1950	75000	1275000	0.131	######	2.315	1.14E-02	39.66	71.69	0	0	60.9	488.5
48	26.73	3000	1670	63.666734	2.4434	115.135	651.41	5125	0.1	1950	75000	1325000	0.119	######	2.88	7.07E-03	37.04	92.15	21.47	0	98	552.1
49	42.25	3000	2130	97.600904	4.2917	131.916	568.54	5125	0.1	1950	75000	1625000	0.0753	######	4.325	5.65E-03	33.38	94.88	48.77	0	122.6	524.6
50	40.89	3000	1110	143.716994	7.2578	151.501	495.05	5125	0.1	1950	75000	2000000	0.0778	######	2.883	8.46E-03	54.87	96.52	65.21	0	81.9	361.3
51	33.99	3000	1620	40.572226	2.5641	189.599	395.57	5125	0.1	1950	75000	2800000	0.0936	######	3.784	6.84E-03	74.18	87.68	0	0	101.3	570.6
52	47.2	3000	1130	257.639094	11.2708	131.239	571.48	5125	0.1	1950	75000	1612500	0.0674	######	2.98	7.67E-03	49.18	98.06	80.59	0	90.3	323.5
53	55.14	3000	770	126.300305	4.9984	118.728	631.7	5125	0.1	1950	75000	1387500	0.0577	######	2.141	1.75E-02	73.54	96.04	60.41	0	39.7	199
54	22.22	3000	1040	140.324853	5.9468	127.137	589.91	5125	0.1	1950	75000	1537500	0.1432	######	1.797	7.61E-03	28.5	96.44	64.37	0	91.1	414.5
55	25.72	3000	1380	65.989416	2.3376	106.273	705.73	5125	0.1	1950	75000	1175000	0.1237	######	2.397	8.43E-03	38.94	92.42	24.23	0	82.2	477.7
56	48.57	3000	1640	22.949691	1.1638	152.132	492.99	5125	0.1	1950	75000	2012500	0.0655	######	4.175	1.11E-02	35.94	78.21	0	0	62.5	440.5
57	45.58	3000	790	624.483729	36.717	176.387	425.2	5125	0.1	1950	75000	2512500	0.0698	######	2.423	5.44E-03	81.1	99.2	91.99	19.93	127.5	272.5
58	30.04	3000	2310	52.817902	1.638	93.0387	806.12	5125	0.1	1950	75000	962500	0.1059	######	4.045	5.87E-03	62.83	90.53	5.34	0	118.1	690.1
59	23.24	3000	1100	137.324172	6.906	150.869	497.12	5125	0.1	1950	75000	1987500	0.1369	######	2.144	6.61E-03	68.12	96.36	63.59	0	104.8	472.8

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
60	33.56	3000	770	111.661799	6.4997	174.628	429.49	5125	0.1	1950	75000	2475000	0.0948	######	2.125	1.10E-02	88.57	95.52	55.22	0	63.2	324.5
61	27.69	3000	1370	4.578663	0.1176	77.0232	973.73	5125	0.1	1950	75000	725000	0.1149	######	2.441	1.72E-02	65.36	0	0	0	40.2	451.8
62	45.71	3000	3040	13.672589	0.5981	131.239	571.48	5125	0.1	1950	75000	1612500	0.0696	######	5.954	7.46E-03	33.26	63.43	0	0	92.9	667.6
63	63	3000	830	550.369806	23.5763	128.512	583.6	5125	0.1	1950	75000	1562500	0.0505	######	2.457	8.69E-03	30.09	99.09	90.92	9.15	79.8	199.9
64	21.52	3000	740	29.57272	2.2354	226.768	330.73	5125	0.1	1950	75000	3662500	0.1478	######	1.673	1.23E-02	52.78	83.09	0	0	56.6	398.3
65	24.66	3000	1490	107.662326	3.9745	110.748	677.21	5125	0.1	1950	75000	1250000	0.129	######	2.562	6.42E-03	52.21	95.36	53.56	0	108	532.4
66	46.17	3000	530	270.005197	14.6398	162.661	461.08	5125	0.1	1950	75000	2225000	0.0689	######	1.405	1.62E-02	72.97	98.15	81.48	0	42.8	156
67	49.79	3000	1480	224.323656	7.5469	100.929	743.1	5125	0.1	1950	75000	1087500	0.0639	######	3.368	7.65E-03	21.89	97.77	77.71	0	90.6	346.7
68	26.34	3000	2160	5.149742	0.3548	206.711	362.83	5125	0.1	1950	75000	3187500	0.1208	######	3.918	8.11E-03	50.27	2.91	0	0	85.5	762.5
69	41	3000	780	102.030167	4.6687	137.274	546.35	5125	0.1	1950	75000	1725000	0.0776	######	2.075	1.42E-02	64.47	95.1	50.99	0	48.9	259.5
70	56.81	3000	2010	1.878377	0.083	132.592	565.65	5125	0.1	1950	75000	1637500	0.056	######	7.404	1.71E-02	82.08	0	0	0	40.6	667.9
71	25.31	3000	1480	0.592265	0.0263	133.266	562.78	5125	0.1	1950	75000	1650000	0.1257	######	2.961	1.68E-02	45.79	0	0	0	41.2	599.6
72	27.21	3000	2390	7.888877	0.2814	107.025	700.77	5125	0.1	1950	75000	1187500	0.1169	######	3.975	8.47E-03	44.95	36.62	0	0	81.8	748.6
73	29.32	3000	1620	34.754599	1.0018	86.4774	867.28	5125	0.1	1950	75000	862500	0.1085	######	2.682	9.99E-03	22.54	85.61	0	0	69.4	468.9
74	46.04	3000	760	393.621665	19.2098	146.408	512.27	5125	0.1	1950	75000	1900000	0.0691	######	2.054	9.13E-03	34.26	98.73	87.3	0	75.9	228.6
75	33.49	3000	650	450.832377	13.3696	88.9661	843.02	5125	0.1	1950	75000	900000	0.095	######	1.282	9.81E-03	32.53	98.89	88.91	0	70.6	196.1
76	23.85	3000	1520	79.224067	3.6775	139.257	538.57	5125	0.1	1950	75000	1762500	0.1334	######	2.644	6.26E-03	46.73	93.69	36.89	0	110.8	568.2
77	43.94	3000	950	279.418791	13.5765	145.765	514.53	5125	0.1	1950	75000	1887500	0.0724	######	2.493	8.38E-03	32.24	98.21	82.11	0	82.7	290.7
78	22.28	3000	1200	235.740438	8.1723	103.999	721.16	5125	0.1	1950	75000	1137500	0.1428	######	1.899	6.00E-03	33.34	97.88	78.79	0	115.5	436.9
79	25.57	3000	1950	0.53829	0.0164	91.4206	820.38	5125	0.1	1950	75000	937500	0.1244	######	3.031	1.56E-02	20.24	0	0	0	44.6	607.5
80	21.39	3000	1850	74.090958	2.6246	106.273	705.73	5125	0.1	1950	75000	1175000	0.1487	######	3.048	5.09E-03	93.26	93.25	32.52	0	136.1	730.2
81	54.2	3000	1450	91.506915	3.7508	122.968	609.91	5125	0.1	1950	75000	1462500	0.0587	######	4.014	9.35E-03	52.36	94.54	45.36	0	74.2	379.6
82	43.28	3000	840	1087.902042	40.4283	111.485	672.73	5125	0.1	1950	75000	1262500	0.0735	######	1.843	4.71E-03	36.87	99.54	95.4	54.04	147.1	218.2
83	23.12	3000	1520	81.705425	4.8039	176.387	425.2	5125	0.1	1950	75000	2512500	0.1376	######	2.521	6.18E-03	19.94	93.88	38.8	0	112.1	558.8
84	22.33	3000	1120	22.194809	1.0205	137.937	543.73	5125	0.1	1950	75000	1737500	0.1425	######	2.01	1.12E-02	31.85	77.47	0	0	61.8	461.3
85	32.17	3000	850	84.370441	3.9349	139.914	536.04	5125	0.1	1950	75000	1775000	0.0989	######	1.902	1.22E-02	29.19	94.07	40.74	0	56.6	303.1
86	21.77	3000	1150	70.557686	3.4283	145.765	514.53	5125	0.1	1950	75000	1887500	0.1461	######	2.094	7.88E-03	47.6	92.91	29.14	0	87.9	492.9
87	34.88	3000	840	10.453623	0.5941	170.487	439.92	5125	0.1	1950	75000	2387500	0.0912	######	2.601	1.83E-02	99.18	52.17	0	0	37.8	382.2
88	21.72	3000	1710	0.572248	0.0226	118.728	631.7	5125	0.1	1950	75000	1387500	0.1465	######	2.719	1.47E-02	26.72	0	0	0	47.2	641.7
89	35.11	3000	1450	33.843122	1.7586	155.889	481.11	5125	0.1	1950	75000	2087500	0.0906	######	3.332	9.30E-03	50.87	85.23	0	0	74.5	486.3
90	27.31	3000	1170	242.673242	6.8594	84.7981	884.45	5125	0.1	1950	75000	837500	0.1165	######	1.892	7.44E-03	54.23	97.94	79.4	0	93.2	355.1
91	41.97	3000	1370	11.647844	0.5356	137.937	543.73	5125	0.1	1950	75000	1737500	0.0758	######	3.381	1.45E-02	33.87	57.07	0	0	47.9	412.8
92	33.28	3000	1500	80.848962	2.6991	100.154	748.85	5125	0.1	1950	75000	1075000	0.0956	######	2.961	8.41E-03	47.7	93.82	38.16	0	82.5	456
93	58.37	3000	940	261.738537	10.4207	119.44	627.93	5125	0.1	1950	75000	1400000	0.0545	######	2.644	1.09E-02	31.4	98.09	80.9	0	63.5	232.1
94	22.02	3000	1150	165.452318	6.3498	115.135	651.41	5125	0.1	1950	75000	1325000	0.1445	######	1.975	6.62E-03	59.75	96.98	69.78	0	104.6	459.8
95	31.31	3000	990	63.408567	1.9151	90.6061	827.76	5125	0.1	1950	75000	925000	0.1016	######	1.721	1.48E-02	62.93	92.11	21.15	0	46.8	281.6
96	42.82	3000	640	355.247009	14.7269	124.366	603.06	5125	0.1	1950	75000	1487500	0.0743	######	1.249	1.48E-02	75.81	98.59	85.93	0	46.7	149.5
97	47.98	3000	2510	13.224903	0.7144	162.051	462.82	5125	0.1	1950	75000	2212500	0.0663	######	5.307	8.74E-03	26.21	62.19	0	0	79.3	566.8
98	38.89	3000	1770	74.89358	2.3427	93.8425	799.21	5125	0.1	1950	75000	975000	0.0818	######	3.908	7.64E-03	71.09	93.32	33.24	0	90.7	514.9
99	62.75	3000	1820	48.944494	1.6967	103.999	721.16	5125	0.1	1950	75000	1137500	0.0507	######	5.028	1.05E-02	44.5	89.78	0	0	66.1	410.7
100	63.25	3000	2250	21.279683	0.8422	118.728	631.7	5125	0.1	1950	75000	1387500	0.0503	######	5.874	1.04E-02	35.04	76.5	0	0	66.6	476
101	24.16	3000	2080	93.484923	3.2645	104.76	715.92	5125	0.1	1950	75000	1150000	0.1317	######	3.344	4.60E-03	70.34	94.65	46.52	0	150.8	709.4
102	25.95	3000	730	483.054831	22.4229	139.257	538.57	5125	0.1	1950	75000	1762500	0.1226	######	1.422	6.65E-03	45.37	98.96	89.65	0	104.2	280.9
103	43.4	3000	1780	27.80239	1.2036	129.879	577.46	5125	0.1	1950	75000	1587500	0.0733	######	4.489	9.26E-03	64.56	82.02	0	0	74.9	530.1
104	31.34	3000	2640	24.665207	1.0846	131.916	568.54	5125	0.1	1950	75000	1625000	0.1015	######	4.461	5.99E-03	41.38	79.73	0	0	115.7	729.4
105	23.6	3000	810	94.717951	4.8627	154.016	486.96	5125	0.1	1950	75000	2050000	0.1348	######	1.585	1.03E-02	19.01	94.72	47.21	0	67.7	344.1
106	55.04	3000	930	179.734454	7.0704	118.014	635.52	5125	0.1	1950	75000	1375000	0.0578	######	2.523	1.25E-02	29.67	97.22	72.18	0	55.6	234.9
107	29.62	3000	930	11.592288	0.7239	187.335	400.35	5125	0.1	1950	75000	2750000	0.1074	######	2.421	1.49E-02	69.95	56.87	0	0	46.4	418.9
108	26.42	3000	1340	90.288982	5.5006	182.765	410.36	5125	0.1	1950	75000	2650000	0.1204	######	2.522	6.93E-03	22.75	94.46	44.62	0	100	489.2
109	21.8	3000	1280	6.495255	0.2856	131.916	568.54	5125	0.1	1950	75000	1625000	0.1459	######	2.339	1.25E-02	51.43	23.02	0	0	55.7	549.7
110	47.41	3000	1440	10.784587	0.457	127.137	589.91	5125	0.1	1950	75000	1537500	0.0671	######	4.398	1.46E-02	77.02	53.64	0	0	47.3	475.4
111	29.13	3000	1880	1.003714	0.0325	97.024	773	5125	0.1	1950	75000	1025000	0.1092	######	3.516	1.53E-02	39.76	0	0	0	45.3	618.6
112	28	3000	950	351.551259	12.8912	110.009	681.77	5125	0.1	1950	75000	1237500	0.1136	######	1.749	6.91E-03	43.41	98.58	85.78	0	100.3	320.1
113	30.74	3000	1410	9.477787	0.4189	132.592	565.65	5125	0.1	1950	75000	1637500	0.1035	######	3.026	1.26E-02	47.36	47.25	0	0	55	504.5
114	35.47	3000	1160	507.621585	25.5282	150.869	497.12	5125	0.1	1950	75000	1987500	0.0897	######	2.642	4.24E-03	47.3	99.02	90.15	1.5	163.4	381.8
115	45.97	3000	1010	74.356764	2.7266	110.009	681.77	5125	0.1	1950	75000	1237500	0.0692	######	2.352	1.44E-02	14.12	93.28	32.76	0	48	262.2
116	47.77	3000	1700	163.638331	7.1955	131.916	568.54	5125	0.1	1950	75000	1625000	0.0666	######	4.13	5.71E-03	50.5	96.94	69.44	0	121.4	443.1
117	31.16	3000	1200	582.337019	18.3713	94.6429	792.45	5125	0.1	1950	75000	987500	0.1021	######	2.16	4.73E-03	38.77	99.14	91.41	14.14	146.5	355.2
118	26.8	3000	760	87.835622	4.8689	166.296	451	5125	0.1	1950	75000	2300000	0.1187	######	1.645	1.15E-02	21.28	94.31	43.08	0	60.3	314.6

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
119	22.18	3000	1600	148.5437	7.8109	157.75	475.44	5125	0.1	1950	75000	2125000	0.1434	######	2.616	4.40E-03	44.21	96.63	66.34	0	157.4	604.3
120	30.47	3000	1130	182.138215	9.1212	150.236	499.21	5125	0.1	1950	75000	1975000	0.1044	######	2.447	6.78E-03	49.77	97.25	72.55	0	102.2	411.6
121	43.58	3000	1570	25.102214	0.908	108.522	691.1	5125	0.1	1950	75000	1212500	0.073	######	3.711	1.19E-02	42.27	80.08	0	0	58.1	436.4
122	22.89	3000	1000	86.019785	3.5058	122.267	613.41	5125	0.1	1950	75000	1450000	0.139	######	1.854	9.25E-03	68.23	94.19	41.87	0	75	415.2
123	49.86	3000	1230	111.462296	5.5819	150.236	499.21	5125	0.1	1950	75000	1975000	0.0638	######	3.239	9.97E-03	23.78	95.51	55.14	0	69.5	332.9
124	26.78	3000	1920	8.335562	0.3814	137.274	546.35	5125	0.1	1950	75000	1725000	0.1188	######	3.432	9.32E-03	41.73	40.02	0	0	74.4	656.8
125	60.37	3000	1460	96.640019	3.5676	110.748	677.21	5125	0.1	1950	75000	1250000	0.0527	######	4.484	9.58E-03	73.56	94.83	48.26	0	72.3	380.7
126	23.88	3000	1020	122.606895	3.3263	81.3886	921.51	5125	0.1	1950	75000	787500	0.1332	######	1.295	1.21E-02	58.57	95.92	59.22	0	57.5	277.9
127	53.74	3000	1040	51.151637	1.7991	105.518	710.78	5125	0.1	1950	75000	1162500	0.0592	######	3.104	1.65E-02	86.02	90.23	2.25	0	42	296.1
128	62.62	3000	1140	769.25838	29.1503	113.682	659.73	5125	0.1	1950	75000	1300000	0.0508	######	3.162	5.30E-03	28.81	99.35	93.5	35	130.7	258.8
129	28.84	3000	1000	379.551173	10.7284	84.7981	884.45	5125	0.1	1950	75000	837500	0.1103	######	1.465	8.23E-03	61.96	98.68	86.83	0	84.2	260.4
130	23.76	3000	690	78.099195	3.5043	134.609	557.17	5125	0.1	1950	75000	1675000	0.1339	######	1.258	1.39E-02	41.03	93.6	35.98	0	49.7	271.3
131	25.51	3000	760	43.898205	2.5725	175.802	426.62	5125	0.1	1950	75000	2500000	0.1247	######	1.698	1.31E-02	41.95	88.61	0	0	53	341
132	47.27	3000	1940	2.555846	0.1054	123.668	606.46	5125	0.1	1950	75000	1475000	0.0673	######	4.812	1.55E-02	37.09	0	0	0	44.9	521.7
133	38.38	3000	1560	48.054178	2.467	154.016	486.96	5125	0.1	1950	75000	2050000	0.0829	######	3.842	7.86E-03	70.23	89.6	0	0	88.2	513
134	23.94	3000	2720	3.83672	0.2173	169.892	441.46	5125	0.1	1950	75000	2375000	0.1329	######	4.025	7.43E-03	35.24	0	0	0	93.3	861.7
135	34.5	3000	1040	873.158198	37.8016	129.879	577.46	5125	0.1	1950	75000	1587500	0.0922	######	2.352	3.30E-03	74.31	99.43	94.27	42.74	209.8	349.4
136	27.14	3000	1220	79.241231	2.5209	95.4399	785.84	5125	0.1	1950	75000	1000000	0.1172	######	2.053	9.68E-03	22.44	93.69	36.9	0	71.6	387.7
137	61.3	3000	1220	640.447461	27.2885	127.826	586.74	5125	0.1	1950	75000	1550000	0.0519	######	3.476	4.97E-03	37.88	99.22	92.19	21.93	139.5	290.6
138	45.51	3000	1000	238.196175	9.199	115.858	647.34	5125	0.1	1950	75000	1337500	0.0699	######	2.682	9.09E-03	84.52	97.9	79.01	0	76.3	302
139	23.72	3000	1210	160.130072	8.3871	157.131	477.31	5125	0.1	1950	75000	2112500	0.1341	######	2.213	6.09E-03	31.74	96.88	68.78	0	113.9	478
140	22.28	3000	1030	206.652919	9.9521	144.475	519.12	5125	0.1	1950	75000	1862500	0.1428	######	1.869	6.37E-03	33.22	97.58	75.8	0	108.8	430
141	25.64	3000	1000	344.906238	14.6959	127.826	586.74	5125	0.1	1950	75000	1550000	0.1241	######	1.878	5.92E-03	39.15	98.55	85.5	0	117.1	375.5
142	29.93	3000	1460	65.893323	3.5325	160.828	466.34	5125	0.1	1950	75000	2187500	0.1063	######	3.091	6.85E-03	61.91	92.41	24.12	0	101.2	529.2
143	22.06	3000	1630	133.041147	5.4222	122.267	613.41	5125	0.1	1950	75000	1450000	0.1442	######	2.646	4.84E-03	58.49	96.24	62.42	0	143.3	614.6
144	42.19	3000	2030	0.396569	0.0193	145.765	514.53	5125	0.1	1950	75000	1887500	0.0754	######	4.771	1.78E-02	31.3	0	0	0	39	579.5
145	44.31	3000	2170	1.54559	0.0516	100.154	748.85	5125	0.1	1950	75000	1075000	0.0718	######	5.047	1.56E-02	39.43	0	0	0	44.4	583.8
146	39.82	3000	1450	16.309995	0.5232	96.2335	779.35	5125	0.1	1950	75000	1012500	0.0799	######	3.571	1.38E-02	71.64	69.34	0	0	50.3	459.6
147	33.45	3000	1430	4.894969	0.2674	163.877	457.66	5125	0.1	1950	75000	2250000	0.0951	######	3.043	1.44E-02	22.51	0	0	0	48.2	466.2
148	43.52	3000	1040	173.56919	8.3588	144.475	519.12	5125	0.1	1950	75000	1862500	0.0731	######	2.808	8.86E-03	58.11	97.12	71.19	0	78.3	330.7
149	21.89	3000	1680	242.319498	7.7731	96.2335	779.35	5125	0.1	1950	75000	1012500	0.1453	######	2.625	3.97E-03	79.41	97.94	79.37	0	174.8	614.5
150	36.78	3000	760	159.502043	6.1599	115.858	647.34	5125	0.1	1950	75000	1337500	0.0865	######	1.607	1.41E-02	80.46	96.87	68.65	0	49.3	224
151	39.57	3000	1010	22.699888	0.8712	115.135	651.41	5125	0.1	1950	75000	1325000	0.0804	######	2.588	1.69E-02	67.82	77.97	0	0	41	335.2
152	25.47	3000	2140	5.591471	0.2484	133.266	562.78	5125	0.1	1950	75000	1650000	0.1249	######	3.518	9.18E-03	35.62	10.58	0	0	75.5	707.8
153	24.47	3000	880	156.700185	5.0266	96.2335	779.35	5125	0.1	1950	75000	1012500	0.13	######	1.269	1.16E-02	61.52	96.81	68.09	0	59.7	265.7
154	55.42	3000	2180	52.82223	1.7222	97.8112	766.78	5125	0.1	1950	75000	1037500	0.0574	######	4.996	8.70E-03	30.88	90.53	5.34	0	79.6	462
155	56.91	3000	1010	1451.199984	55.3438	114.41	655.54	5125	0.1	1950	75000	1312500	0.0559	######	2.696	3.00E-03	37.69	99.66	96.55	65.55	231.1	242.8
156	21.57	3000	1740	7.50512	0.2621	104.76	715.92	5125	0.1	1950	75000	1150000	0.1475	######	3.01	9.85E-03	73.1	33.38	0	0	70.4	715.3
157	28.05	3000	1720	58.393054	2.3248	119.44	627.93	5125	0.1	1950	75000	1400000	0.1134	######	3.053	7.07E-03	38.86	91.44	14.37	0	98.1	557.7
158	33.88	3000	700	250.74735	13.0295	155.889	481.11	5125	0.1	1950	75000	2087500	0.0939	######	1.655	1.01E-02	27.32	98.01	80.06	0	68.4	250.4
159	25.09	3000	750	55.872309	2.7387	147.05	510.03	5125	0.1	1950	75000	1912500	0.1268	######	1.534	1.33E-02	41.12	91.05	10.51	0	52	313.3
160	25.23	3000	1330	6.83162	0.3035	133.266	562.78	5125	0.1	1950	75000	1650000	0.1261	######	2.656	1.27E-02	54.92	26.81	0	0	54.5	539.5
161	39.92	3000	1250	16.645227	0.9393	169.295	443.01	5125	0.1	1950	75000	2362500	0.0797	######	3.154	1.34E-02	33.49	69.96	0	0	51.9	405
162	34.1	3000	970	591.966297	18.1993	92.2314	813.17	5125	0.1	1950	75000	950000	0.0933	######	1.669	6.56E-03	27.45	99.16	91.55	15.54	105.6	250.9
163	38.15	3000	1340	546.952568	17.4004	95.4399	785.84	5125	0.1	1950	75000	1000000	0.0834	######	2.902	4.27E-03	91.33	99.09	90.86	8.58	162.2	389.9
164	22.66	3000	2470	0.025537	0.0012	139.257	538.57	5125	0.1	1950	75000	1762500	0.1404	######	3.805	1.57E-02	26.86	0	0	0	44.2	860.5
165	28.13	3000	1590	28.972971	1.2011	124.366	603.06	5125	0.1	1950	75000	1487500	0.1131	######	2.913	9.05E-03	34.43	82.74	0	0	76.6	530.7
166	26.01	3000	630	197.809533	8.8314	133.938	559.96	5125	0.1	1950	75000	1662500	0.1223	######	1.117	1.29E-02	78.7	97.47	74.72	0	53.6	220
167	24.66	3000	760	55.756415	2.3114	124.366	603.06	5125	0.1	1950	75000	1487500	0.129	######	1.367	1.46E-02	38.69	91.03	10.32	0	47.5	284.2
168	50.98	3000	1270	430.225658	12.4016	86.4774	867.28	5125	0.1	1950	75000	862500	0.0624	######	2.823	7.09E-03	34.15	98.84	88.38	0	97.8	283.7
169	24.49	3000	1390	75.4926	2.4216	96.2335	779.35	5125	0.1	1950	75000	1012500	0.1299	######	2.38	8.02E-03	61.69	93.38	33.77	0	86.4	498
170	31.85	3000	2180	71.315803	2.3809	100.154	748.85	5125	0.1	1950	75000	1075000	0.0999	######	3.917	5.74E-03	55.14	92.99	29.89	0	120.8	630.3
171	60.25	3000	2200	47.336173	2.3505	148.966	503.47	5125	0.1	1950	75000	1950000	0.0528	######	5.552	7.64E-03	34.18	89.44	0	0	90.7	472.3
172	24.74	3000	830	14.694078	0.6691	136.61	549.01	5125	0.1	1950	75000	1712500	0.1286	######	1.604	1.67E-02	26.04	65.97	0	0	41.5	332.4
173	23.51	3000	1380	224.6222	11.3907	152.132	492.99	5125	0.1	1950	75000	2012500	0.1353	######	2.409	4.62E-03	38.08	97.77	77.74	0	150	525
174	21.64	3000	1680	84.285596	2.1139	75.2423	996.78	5125	0.1	1950	75000	700000	0.147	######	2.228	7.01E-03	23.14	94.07	40.68	0	98.9	527.6
175	42.25	3000	1950	27.222051	0.7541	83.1021	902.5	5125	0.1	1950	75000	812500	0.0753	######	4.06	1.05E-02	41.28	81.63	0	0	65.9	492.5
176	25.43	3000	1690	24.816162	0.9643	116.579	643.34	5125	0.1	1950	75000	1350000	0.1251	######	2.832	8.72E-03	31.18	79.85	0	0	79.5	570.7
177	24.06	3000	970	214.014285	10.4445	146.408	512.27	5125	0.1	1950	75000	1900000	0.1322	######	1.986	6.44E-03	86.33	97.66	76.64	0	107.6	422.9

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
178	29.98	3000	1390	6.584243	0.3973	181.037	414.28	5125	0.1	1950	75000	2612500	0.1061	######	3.312	1.20E-02	67.5	24.06	0	0	57.8	566.2
179	23.12	3000	1210	6.739583	0.2072	92.2314	813.17	5125	0.1	1950	75000	950000	0.1376	######	1.981	1.53E-02	43.98	25.81	0	0	45.2	439.2
180	38.1	3000	880	175.96896	7.2539	123.668	606.46	5125	0.1	1950	75000	1475000	0.0835	######	2.074	1.07E-02	49.24	97.16	71.59	0	64.6	279
181	59.58	3000	2100	60.352558	2.1832	108.522	691.1	5125	0.1	1950	75000	1212500	0.0534	######	6.026	7.49E-03	74.15	91.72	17.15	0	92.6	518.4
182	22.79	3000	1240	560.005834	17.2167	92.2314	813.17	5125	0.1	1950	75000	950000	0.1396	######	1.927	4.00E-03	65.21	99.11	91.07	10.72	173.2	433.4
183	53.11	3000	1850	62.553179	1.9062	91.4206	820.38	5125	0.1	1950	75000	937500	0.0599	######	4.41	9.59E-03	41.02	92.01	20.07	0	72.3	425.5
184	27.4	3000	1660	28.031246	1.2765	136.61	549.01	5125	0.1	1950	75000	1712500	0.1161	######	3.164	8.06E-03	53.97	82.16	0	0	86	591.7
185	27.78	3000	1920	24.680797	0.6409	77.906	962.7	5125	0.1	1950	75000	737500	0.1145	######	3.271	9.02E-03	57.84	79.74	0	0	76.9	603.4
186	27.57	3000	1030	50.988978	2.4665	145.121	516.81	5125	0.1	1950	75000	1875000	0.1154	######	2.158	1.07E-02	39.34	90.19	1.94	0	64.7	401.2
187	36.07	3000	850	239.166299	13.3534	167.499	447.76	5125	0.1	1950	75000	2325000	0.0882	######	2.18	8.39E-03	46.89	97.91	79.09	0	82.6	309.8
188	30.62	3000	3270	0.183451	0.0089	145.121	516.81	5125	0.1	1950	75000	1875000	0.1039	######	4.985	1.22E-02	19.2	0	0	0	56.8	834.3
189	44.49	3000	1050	45.478891	2.3726	156.51	479.2	5125	0.1	1950	75000	2100000	0.0715	######	2.894	1.33E-02	39.81	89.01	0	0	52.1	333.3
190	40.47	3000	1000	960.551199	31.8186	99.3762	754.71	5125	0.1	1950	75000	1062500	0.0786	######	2.04	4.48E-03	36.19	99.48	94.79	47.95	154.6	258.2
191	21.76	3000	1430	35.863273	2.3534	196.865	380.97	5125	0.1	1950	75000	2962500	0.1462	######	2.547	6.98E-03	46.83	86.06	0	0	99.3	600
192	34.58	3000	2890	4.238573	0.1512	107.025	700.77	5125	0.1	1950	75000	1187500	0.092	######	4.794	9.50E-03	25.42	0	0	0	73	710.5
193	35.39	3000	640	213.496384	10.8265	152.132	492.99	5125	0.1	1950	75000	2012500	0.0899	######	1.534	1.23E-02	42.8	97.66	76.58	0	56.4	222.2
194	21.63	3000	870	13.009316	0.6706	154.641	484.99	5125	0.1	1950	75000	2062500	0.1471	######	1.796	1.43E-02	65.09	61.57	0	0	48.6	425.6
195	23.44	3000	770	330.02986	12.9827	118.014	635.52	5125	0.1	1950	75000	1375000	0.1357	######	1.266	8.20E-03	50.11	98.48	84.85	0	84.6	276.7
196	29.19	3000	830	35.109443	1.6984	145.121	516.81	5125	0.1	1950	75000	1875000	0.109	######	1.785	1.48E-02	25.94	85.76	0	0	47	313.4
197	28.23	3000	1350	14.65399	0.6411	131.239	571.48	5125	0.1	1950	75000	1612500	0.1127	######	2.516	1.21E-02	18.66	65.88	0	0	57.1	456.8
198	55.81	3000	2020	3.758324	0.1274	101.701	737.46	5125	0.1	1950	75000	1100000	0.057	######	5.052	1.62E-02	29.39	0	0	0	42.7	463.9
199	33.81	3000	1020	72.09118	4.0251	167.499	447.76	5125	0.1	1950	75000	2325000	0.0941	######	2.448	1.04E-02	40.07	93.06	30.64	0	66.8	371.2
200	48.94	3000	830	269.103884	12.4324	138.597	541.14	5125	0.1	1950	75000	1750000	0.065	######	2.372	1.03E-02	57.92	98.14	81.42	0	67.5	248.3
201	26.96	3000	770	307.234718	15.6445	152.761	490.96	5125	0.1	1950	75000	2025000	0.118	######	1.663	7.48E-03	52.69	98.37	83.73	0	92.7	316.1
202	44.37	3000	2490	2.55516	0.1124	131.916	568.54	5125	0.1	1950	75000	1625000	0.0717	######	5.351	1.22E-02	31.54	0	0	0	56.7	618.1
203	24.05	3000	1590	63.892205	2.9236	137.274	546.35	5125	0.1	1950	75000	1725000	0.1323	######	2.633	6.81E-03	27.58	92.17	21.74	0	101.8	561.1
204	39.08	3000	1380	44.806489	1.7412	116.579	643.34	5125	0.1	1950	75000	1350000	0.0814	######	3.396	1.04E-02	68.97	88.84	0	0	66.5	445.3
205	56.31	3000	820	779.949386	32.5139	125.062	599.7	5125	0.1	1950	75000	1500000	0.0565	######	2.261	6.69E-03	37.96	99.36	93.59	35.89	103.6	205.8
206	49.55	3000	1300	456.154906	19.8518	130.56	574.45	5125	0.1	1950	75000	1600000	0.0642	######	3.184	5.67E-03	19.51	98.9	89.04	0	122.3	329.3
207	24.14	3000	1200	4.487036	0.2053	137.274	546.35	5125	0.1	1950	75000	1725000	0.1318	######	2.365	1.45E-02	46.99	0	0	0	47.8	502.1
208	32.01	3000	1300	11.005649	0.4277	116.579	643.34	5125	0.1	1950	75000	1350000	0.0994	######	2.898	1.39E-02	56.77	54.57	0	0	50	464
209	27.12	3000	790	436.188562	17.7771	122.267	613.41	5125	0.1	1950	75000	1450000	0.1173	######	1.47	7.13E-03	47.97	98.85	88.54	0	97.3	277.8
210	52.24	3000	670	872.81002	26.3606	90.6061	827.76	5125	0.1	1950	75000	925000	0.0609	######	1.807	7.00E-03	12.18	99.43	94.27	42.71	99	177.3
211	58.05	3000	1570	592.419378	20.0832	101.701	737.46	5125	0.1	1950	75000	1100000	0.0548	######	3.974	4.06E-03	47.9	99.16	91.56	15.6	170.6	350.8
212	36.48	3000	940	209.916358	9.1356	130.56	574.45	5125	0.1	1950	75000	1600000	0.0872	######	2.296	8.76E-03	68.28	97.62	76.18	0	79.2	322.5
213	29.03	3000	1680	31.929636	1.461	137.274	546.35	5125	0.1	1950	75000	1725000	0.1096	######	3.241	7.98E-03	48.67	84.34	0	0	86.8	572.2
214	26.53	3000	1080	6.557051	0.3256	148.966	503.47	5125	0.1	1950	75000	1950000	0.1199	######	2.437	1.50E-02	63.29	23.75	0	0	46.3	470.8
215	39.18	3000	1590	99.598167	3.7499	112.952	664	5125	0.1	1950	75000	1287500	0.0812	######	3.195	8.29E-03	15.83	94.98	49.8	0	83.6	417.9
216	27.5	3000	810	248.044731	10.9629	132.592	565.65	5125	0.1	1950	75000	1637500	0.1157	######	1.612	8.56E-03	39.98	97.98	79.84	0	81	300.5
217	41.86	3000	600	496.266988	29.852	180.459	415.61	5125	0.1	1950	75000	2600000	0.076	######	1.694	8.81E-03	25.89	98.99	89.92	0	78.7	207.4
218	23.97	3000	830	181.318495	7.8086	129.196	580.51	5125	0.1	1950	75000	1575000	0.1327	######	1.507	8.94E-03	31.91	97.24	72.42	0	77.5	322.2
219	32.73	3000	1750	3.82169	0.1411	110.748	677.21	5125	0.1	1950	75000	1250000	0.0972	######	3.798	1.34E-02	56.08	0	0	0	51.8	594.8
220	24.1	3000	1150	8.497097	0.2902	102.47	731.92	5125	0.1	1950	75000	1112500	0.132	######	2.28	1.49E-02	90.82	41.16	0	0	46.6	484.8
221	27.54	3000	2040	7.462577	0.2846	114.41	655.54	5125	0.1	1950	75000	1312500	0.1155	######	4.082	9.32E-03	77.28	33	0	0	74.4	759.4
222	50.58	3000	1540	81.65827	4.2262	155.266	483.04	5125	0.1	1950	75000	2075000	0.0629	######	4.413	7.38E-03	72.24	93.88	38.77	0	93.9	447.1
223	22.26	3000	1640	24.719327	0.9427	114.41	655.54	5125	0.1	1950	75000	1312500	0.1429	######	2.578	8.45E-03	33.03	79.77	0	0	82.1	593.5
224	42.42	3000	860	361.906406	12.3615	102.47	731.92	5125	0.1	1950	75000	1112500	0.075	######	1.851	9.54E-03	11.89	98.62	86.18	0	72.6	223.6
225	30.24	3000	1560	5.620727	0.2683	143.18	523.82	5125	0.1	1950	75000	1837500	0.1052	######	3.312	1.24E-02	48.73	11.04	0	0	56.1	561.2
226	26.16	3000	2520	8.01629	0.4065	152.132	492.99	5125	0.1	1950	75000	2012500	0.1216	######	3.969	7.31E-03	36.01	37.63	0	0	94.8	777.4
227	27.24	3000	1150	36.554775	1.3852	113.682	659.73	5125	0.1	1950	75000	1300000	0.1168	######	2.133	1.16E-02	29.89	86.32	0	0	59.9	401.3
228	21.97	3000	1210	3.701072	0.1861	150.869	497.12	5125	0.1	1950	75000	1987500	0.1448	######	2.198	1.40E-02	30.72	0	0	0	49.4	512.6
229	37.43	3000	1230	103.045196	4.6236	134.609	557.17	5125	0.1	1950	75000	1675000	0.085	######	2.99	8.49E-03	64.65	95.15	51.48	0	81.6	409.4
230	43.11	3000	1210	151.999215	7.9612	157.131	477.31	5125	0.1	1950	75000	2112500	0.0738	######	3.08	7.93E-03	38.12	96.71	67.11	0	87.4	366.2
231	56.21	3000	2940	12.115823	0.5517	136.61	549.01	5125	0.1	1950	75000	1712500	0.0566	######	6.73	8.48E-03	36.22	58.73	0	0	81.8	613.7
232	24.57	3000	980	201.610983	6.0341	89.788	835.3	5125	0.1	1950	75000	912500	0.1295	######	1.446	9.43E-03	70.8	97.52	75.2	0	73.5	301.7
233	46.99	3000	1330	866.791304	33.6831	116.579	643.34	5125	0.1	1950	75000	1350000	0.0677	######	3.116	3.41E-03	34.97	99.42	94.23	42.32	203	339.8
234	24.28	3000	880	163.381206	5.7877	106.273	705.73	5125	0.1	1950	75000	1175000	0.131	######	1.414	1.00E-02	32.42	96.94	69.4	0	69.2	298.3
235	28.43	3000	2480	15.874855	0.6581	124.366	603.06	5125	0.1	1950	75000	1487500	0.1119	######	4.286	6.72E-03	53.87	68.5	0	0	103.1	772.5
236	37.69	3000	1010	63.348786	2.082	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0844	######	2.307	1.42E-02	89.31	92.11	21.07	0	48.9	313.7

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
237	33.74	3000	1520	5.452397	0.1792	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0943	######	3.256	1.50E-02	50.14	8.3	0	0	46.2	494.6
238	29.65	3000	1830	21.207576	0.708	100.154	748.85	5125	0.1	1950	75000	1075000	0.1073	######	3.15	9.57E-03	27.89	76.42	0	0	72.4	544.5
239	30.27	3000	2060	4.574001	0.2734	179.3	418.29	5125	0.1	1950	75000	2575000	0.1051	######	4.331	9.41E-03	62.09	0	0	0	73.6	733.3
240	35.75	3000	1570	209.251142	9.4357	135.278	554.42	5125	0.1	1950	75000	1687500	0.089	######	3.158	5.56E-03	26.35	97.61	76.11	0	124.8	452.7
241	46.31	3000	1840	0.815193	0.0317	116.579	643.34	5125	0.1	1950	75000	1350000	0.0687	######	5.248	1.91E-02	55.79	0	0	0	36.2	580.8
242	54.66	3000	1970	51.411717	1.274	74.3438	1008.83	5125	0.1	1950	75000	687500	0.0582	######	5.153	1.00E-02	75.61	90.27	2.75	0	69.2	483.1
243	27.83	3000	1630	8.559592	0.2791	97.8112	766.78	5125	0.1	1950	75000	1037500	0.1143	######	3.055	1.20E-02	52.74	41.59	0	0	58	562.6
244	39.92	3000	1010	103.277842	4.0873	118.728	631.7	5125	0.1	1950	75000	1387500	0.0797	######	2.303	1.18E-02	23.5	95.16	51.59	0	58.8	295.7
245	59.02	3000	1100	1059.610175	35.6485	100.929	743.1	5125	0.1	1950	75000	1087500	0.0539	######	3.016	3.87E-03	87.95	99.53	95.28	52.81	179	261.8
246	58.27	3000	2020	80.954655	3.2804	121.563	616.96	5125	0.1	1950	75000	1437500	0.0546	######	5.989	6.27E-03	88.07	93.82	38.24	0	110.5	526.7
247	23.69	3000	1160	30.67541	2.2657	221.578	338.48	5125	0.1	1950	75000	3537500	0.1343	######	2.462	8.43E-03	65.51	83.7	0	0	82.3	532.7
248	53.29	3000	1140	150.434078	4.4612	88.9661	843.02	5125	0.1	1950	75000	900000	0.0597	######	2.876	1.22E-02	75.68	96.68	66.76	0	57	276.6
249	60.48	3000	1290	307.886341	11.6671	113.682	659.73	5125	0.1	1950	75000	1300000	0.0526	######	3.839	6.81E-03	72.69	98.38	83.76	0	101.7	325.3
250	32.1	3000	1240	7.665235	0.2294	89.788	835.3	5125	0.1	1950	75000	912500	0.0991	######	2.597	1.74E-02	69.53	34.77	0	0	39.9	414.6
251	30.13	3000	840	1097.213564	51.4119	140.57	533.54	5125	0.1	1950	75000	1787500	0.1056	######	1.773	3.37E-03	37.16	99.54	95.44	54.43	205.4	301.6
252	29.4	3000	2060	3.062204	0.1673	163.877	457.66	5125	0.1	1950	75000	2250000	0.1082	######	3.949	1.05E-02	42.62	0	0	0	65.8	688.3
253	45.84	3000	1520	38.691665	1.0608	82.2476	911.88	5125	0.1	1950	75000	800000	0.0694	######	3.515	1.27E-02	53.99	87.08	0	0	54.8	393
254	23.34	3000	940	134.106529	4.649	103.999	721.16	5125	0.1	1950	75000	1137500	0.1363	######	1.559	9.65E-03	67.04	96.27	62.72	0	71.8	342.4
255	51.9	3000	1270	449.739408	16.8232	112.22	668.33	5125	0.1	1950	75000	1275000	0.0613	######	3.359	5.50E-03	65.89	98.89	88.88	0	126.1	331.7
256	51.06	3000	1100	930.342768	22.4927	72.5304	1034.05	5125	0.1	1950	75000	662500	0.0623	######	1.735	6.89E-03	63.56	99.46	94.63	46.26	100.6	174.2
257	36.69	3000	670	1078.691769	48.1593	133.938	559.96	5125	0.1	1950	75000	1662500	0.0867	######	1.465	5.08E-03	55.95	99.54	95.36	53.65	136.4	204.6
258	24.12	3000	960	93.225149	3.015	97.024	773	5125	0.1	1950	75000	1025000	0.1319	######	1.447	1.15E-02	20.96	94.64	46.37	0	60.2	307.5
259	54.76	3000	1550	7.880305	0.3119	118.728	631.7	5125	0.1	1950	75000	1387500	0.0581	######	4.564	1.64E-02	50.34	36.55	0	0	42.3	427.2
260	31.04	3000	880	7.150667	0.4639	194.644	385.32	5125	0.1	1950	75000	2912500	0.1025	######	2.307	1.75E-02	49.61	30.08	0	0	39.5	381
261	42.76	3000	680	42.574421	2.4699	174.039	430.94	5125	0.1	1950	75000	2462500	0.0744	######	2.071	1.87E-02	53	88.26	0	0	37.1	248.2
262	28.05	3000	700	126.798309	5.5756	131.916	568.54	5125	0.1	1950	75000	1625000	0.1134	######	1.33	1.34E-02	34.91	96.06	60.57	0	51.7	242.9
263	22.95	3000	950	168.399021	6.8632	122.267	613.41	5125	0.1	1950	75000	1450000	0.1386	######	1.695	7.94E-03	47.16	97.03	70.31	0	87.3	378.5
264	46.99	3000	3020	6.912572	0.2945	127.826	586.74	5125	0.1	1950	75000	1550000	0.0677	######	5.818	9.24E-03	23.95	27.67	0	0	75	634.5
265	37.04	3000	790	409.534814	19.8107	145.121	516.81	5125	0.1	1950	75000	1875000	0.0859	######	1.985	7.57E-03	66.88	98.78	87.79	0	91.6	274.7
266	22.06	3000	1910	2.284586	0.108	141.878	528.62	5125	0.1	1950	75000	1812500	0.1442	######	3.223	1.06E-02	47.86	0	0	0	65.6	748.7
267	23.15	3000	920	53.739769	2.2527	125.755	596.4	5125	0.1	1950	75000	1512500	0.1374	######	1.647	1.14E-02	27.37	90.7	6.96	0	60.7	364.5
268	45.32	3000	2390	13.727909	0.3443	75.2423	996.78	5125	0.1	1950	75000	700000	0.0702	######	4.857	1.10E-02	36.59	63.58	0	0	63.3	549.3
269	29.9	3000	1700	32.758065	1.7293	158.368	473.58	5125	0.1	1950	75000	2137500	0.1064	######	3.619	7.10E-03	74.71	84.74	0	0	97.6	620.4
270	55.33	3000	4040	2.085769	0.0734	105.518	710.78	5125	0.1	1950	75000	1162500	0.0575	######	8.05	1.03E-02	26.45	0	0	0	67.4	745.7
271	23.55	3000	980	55.126868	2.571	139.914	536.04	5125	0.1	1950	75000	1775000	0.1351	######	1.933	1.02E-02	56.85	90.93	9.3	0	67.9	420.7
272	48.13	3000	870	691.911461	25.8821	112.22	668.33	5125	0.1	1950	75000	1275000	0.0661	######	2.143	6.71E-03	75.14	99.28	92.77	27.74	103.2	228.2
273	27.03	3000	1030	43.959579	1.8831	128.512	583.6	5125	0.1	1950	75000	1562500	0.1177	######	2.173	1.13E-02	65.03	88.63	0	0	61.4	412.1
274	38.94	3000	2620	1.919688	0.106	165.693	452.64	5125	0.1	1950	75000	2287500	0.0817	######	5.106	1.11E-02	28.19	0	0	0	62.7	672.1
275	34.21	3000	1150	305.885042	10.9889	107.775	695.9	5125	0.1	1950	75000	1200000	0.093	######	2.444	6.52E-03	65.83	98.37	83.65	0	106.3	366.2
276	29.9	3000	2660	61.987683	2.4385	118.014	635.52	5125	0.1	1950	75000	1375000	0.1064	######	4.083	4.86E-03	30.7	91.93	19.34	0	142.6	699.8
277	23.51	3000	1320	216.577307	8.3641	115.858	647.34	5125	0.1	1950	75000	1337500	0.1353	######	2.261	5.42E-03	52.57	97.69	76.91	0	127.9	492.7
278	48.79	3000	1040	53.936805	2.5625	142.53	526.21	5125	0.1	1950	75000	1825000	0.0652	######	2.898	1.40E-02	32.64	90.73	7.3	0	49.6	304.4
279	50.74	3000	1480	61.705291	2.7272	132.592	565.65	5125	0.1	1950	75000	1637500	0.0627	######	3.908	9.94E-03	41.84	91.9	18.97	0	69.7	394.7
280	43.05	3000	790	495.07756	21.4334	129.879	577.46	5125	0.1	1950	75000	1587500	0.0739	######	1.973	7.97E-03	58.04	98.99	89.9	0	86.9	234.9
281	41.21	3000	1940	13.229803	0.6457	146.408	512.27	5125	0.1	1950	75000	1900000	0.0772	######	3.924	1.10E-02	14.68	62.21	0	0	62.9	488
282	23.07	3000	760	969.889962	46.2895	143.18	523.82	5125	0.1	1950	75000	1837500	0.1379	######	1.443	3.59E-03	62.94	99.48	94.84	48.45	193.1	320.5
283	43.94	3000	1160	16.585151	0.7735	139.914	536.04	5125	0.1	1950	75000	1775000	0.0724	######	3.122	1.57E-02	42.05	69.85	0	0	44.1	364.1
284	25.97	3000	1460	19.076613	0.4954	77.906	962.7	5125	0.1	1950	75000	737500	0.1225	######	2.39	1.21E-02	53.71	73.79	0	0	57.5	471.7
285	24.43	3000	1290	4.829152	0.1979	122.968	609.91	5125	0.1	1950	75000	1462500	0.1302	######	2.471	1.40E-02	49	0	0	0	49.4	518.3
286	39.28	3000	1880	17.322931	0.7262	125.755	596.4	5125	0.1	1950	75000	1512500	0.081	######	3.705	1.08E-02	16.77	71.14	0	0	64.1	483.5
287	23.71	3000	2140	20.302914	0.7294	107.775	695.9	5125	0.1	1950	75000	1200000	0.1342	######	3.25	7.27E-03	38.38	75.37	0	0	95.3	702.6
288	32.43	3000	720	693.16822	31.4109	135.945	551.69	5125	0.1	1950	75000	1700000	0.0981	######	1.527	6.19E-03	43.48	99.28	92.79	27.87	112	241.3
289	34.06	3000	2080	2.877787	0.1062	110.748	677.21	5125	0.1	1950	75000	1250000	0.0934	######	3.872	1.29E-02	25.85	0	0	0	53.9	582.6
290	46.65	3000	850	393.605751	13.5448	103.236	726.49	5125	0.1	1950	75000	1125000	0.0682	######	1.806	1.06E-02	46.8	98.73	87.3	0	65.5	198.5
291	46.78	3000	850	1387.248064	38.8209	83.9523	893.36	5125	0.1	1950	75000	825000	0.068	######	1.442	4.94E-03	54.98	99.64	96.4	63.96	140.3	157.9
292	31.1	3000	1900	10.916853	0.3415	93.8425	799.21	5125	0.1	1950	75000	975000	0.1023	######	3.372	1.10E-02	31.78	54.2	0	0	63.3	555.7
293	26.71	3000	1370	43.654385	1.7277	118.728	631.7	5125	0.1	1950	75000	1387500	0.1191	######	2.643	8.97E-03	58.98	88.55	0	0	77.3	507.1
294	26.76	3000	1630	289.056519	11.9829	124.366	603.06	5125	0.1	1950	75000	1487500	0.1189	######	2.723	4.30E-03	25.27	98.27	82.7	0	161.3	521.6
295	25.95	3000	1070	175.245675	5.2928	90.6061	827.76	5125	0.1	1950	75000	925000	0.1226	######	1.706	8.79E-03	44.36	97.15	71.47	0	78.9	336.9

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
296	34.02	3000	770	470.235288	22.6458	144.475	519.12	5125	0.1	1950	75000	1862500	0.0935	######	1.838	6.94E-03	60.77	98.94	89.37	0	99.9	276.9
297	21.47	3000	680	51.295341	3.309	193.528	387.54	5125	0.1	1950	75000	2887500	0.1482	######	1.501	1.22E-02	65.62	90.25	2.53	0	57	358.5
298	35.71	3000	1210	35.583606	1.849	155.889	481.11	5125	0.1	1950	75000	2087500	0.0891	######	2.982	1.09E-02	54.43	85.95	0	0	63.6	428.1
299	22.23	3000	1490	233.36276	9.7822	125.755	596.4	5125	0.1	1950	75000	1512500	0.1431	######	2.424	4.36E-03	48.04	97.86	78.57	0	159	558.8
300	39.37	3000	1510	6.847629	0.2965	129.879	577.46	5125	0.1	1950	75000	1587500	0.0808	######	3.998	1.40E-02	66.64	26.98	0	0	49.5	520.5
301	23.29	3000	730	19.163524	0.8383	131.239	571.48	5125	0.1	1950	75000	1612500	0.1366	######	1.299	1.81E-02	20.41	73.91	0	0	38.2	285.9
302	41.37	3000	1780	10.727389	0.5097	142.53	526.21	5125	0.1	1950	75000	1825000	0.0769	######	3.918	1.19E-02	26.77	53.39	0	0	58.3	485.4
303	52.76	3000	1080	135.144008	5.5395	122.968	609.91	5125	0.1	1950	75000	1462500	0.0603	######	3.092	1.11E-02	55.24	96.3	63	0	62.8	300.4
304	21.5	3000	1660	15.245502	0.7731	152.132	492.99	5125	0.1	1950	75000	2012500	0.148	######	2.577	8.67E-03	21.35	67.2	0	0	80	614.3
305	49.02	3000	1800	122.858367	5.4851	133.938	559.96	5125	0.1	1950	75000	1662500	0.0649	######	3.998	7.26E-03	17.11	95.93	59.3	0	95.5	418
306	61.77	3000	1320	621.846122	12.6693	61.1213	1227.07	5125	0.1	1950	75000	512500	0.0515	######	2.249	8.83E-03	67.87	99.2	91.96	19.59	78.5	186.6
307	50.42	3000	1460	469.711331	18.2528	116.579	643.34	5125	0.1	1950	75000	1350000	0.0631	######	3.502	4.92E-03	31.1	98.94	89.36	0	140.9	356
308	25.03	3000	1590	14.059261	0.3692	78.7839	951.97	5125	0.1	1950	75000	750000	0.1271	######	2.376	1.17E-02	23.58	64.44	0	0	59.4	486.6
309	34.39	3000	2060	0.2706	0.0095	105.518	710.78	5125	0.1	1950	75000	1162500	0.0925	######	4.704	1.79E-02	51.09	0	0	0	38.7	701
310	52.58	3000	820	889.591382	28.3008	95.4399	785.84	5125	0.1	1950	75000	1000000	0.0605	######	1.491	8.54E-03	59.4	99.44	94.38	43.79	81.1	145.3
311	24.7	3000	1840	174.579251	8.7427	150.236	499.21	5125	0.1	1950	75000	1975000	0.1288	######	2.899	4.19E-03	25.2	97.14	71.36	0	165.5	601.5
312	32.6	3000	1280	4.503331	0.1898	126.447	593.13	5125	0.1	1950	75000	1525000	0.0976	######	2.895	1.63E-02	46.08	0	0	0	42.4	455.2
313	27.62	3000	2120	0.066339	0.003	135.945	551.69	5125	0.1	1950	75000	1700000	0.1152	######	4.306	1.75E-02	45.57	0	0	0	39.7	799.1
314	21.82	3000	1710	3.868149	0.2026	157.131	477.31	5125	0.1	1950	75000	2112500	0.1458	######	3.108	1.01E-02	61.34	0	0	0	68.9	730.1
315	29.38	3000	2210	4.339849	0.1415	97.8112	766.78	5125	0.1	1950	75000	1037500	0.1083	######	3.81	1.09E-02	36.67	0	0	0	63.7	664.7
316	24.82	3000	2850	117.86224	5.574	141.878	528.62	5125	0.1	1950	75000	1812500	0.1282	######	3.804	3.08E-03	28.61	95.76	57.58	0	225.3	785.6
317	45.77	3000	1030	196.34834	5.7144	87.3109	859	5125	0.1	1950	75000	875000	0.0695	######	2.065	1.24E-02	46.28	97.45	74.54	0	55.9	231.2
318	40.17	3000	880	253.325703	12.363	146.408	512.27	5125	0.1	1950	75000	1900000	0.0792	######	2.167	9.11E-03	18.36	98.03	80.26	0	76.1	276.5
319	31.47	3000	860	640.603401	27.4417	128.512	583.6	5125	0.1	1950	75000	1562500	0.1011	######	1.798	5.39E-03	42.43	99.22	92.19	21.95	128.6	292.8
320	30.98	3000	920	142.821678	6.2156	130.56	574.45	5125	0.1	1950	75000	1600000	0.1027	######	1.975	9.78E-03	44.07	96.5	64.99	0	70.9	326.8
321	38.01	3000	880	59.874305	3.2828	164.483	455.97	5125	0.1	1950	75000	2262500	0.0837	######	2.264	1.34E-02	29.69	91.65	16.49	0	51.7	305.3
322	36.4	3000	1730	2.879928	0.1112	115.858	647.34	5125	0.1	1950	75000	1337500	0.0874	######	4.035	1.47E-02	52.91	0	0	0	47.1	568.1
323	38.24	3000	1380	2.875395	0.1219	127.137	589.91	5125	0.1	1950	75000	1537500	0.0832	######	3.007	1.83E-02	16	0	0	0	37.9	403
324	33.81	3000	1120	447.082906	19.0495	127.826	586.74	5125	0.1	1950	75000	1550000	0.0941	######	2.413	5.22E-03	46.39	98.88	88.82	0	132.9	365.8
325	25.8	3000	950	12.379382	0.6586	159.6	469.92	5125	0.1	1950	75000	2162500	0.1233	######	1.987	1.48E-02	30.93	59.61	0	0	46.9	394.8
326	27.78	3000	920	136.51901	7.2348	158.985	471.74	5125	0.1	1950	75000	2150000	0.1145	######	1.938	8.84E-03	20.16	96.34	63.38	0	78.4	357.4
327	27.17	3000	1640	45.003848	2.0593	137.274	546.35	5125	0.1	1950	75000	1725000	0.1171	######	2.883	7.69E-03	27.41	88.89	0	0	90.1	543.9
328	27.4	3000	750	205.644641	8.9496	130.56	574.45	5125	0.1	1950	75000	1600000	0.1161	######	1.505	1.01E-02	72.11	97.57	75.69	0	68.9	281.4
329	56.11	3000	2810	1.195224	0.0453	113.682	659.73	5125	0.1	1950	75000	1300000	0.0567	######	6.568	1.46E-02	27.25	0	0	0	47.4	599.9
330	33.17	3000	690	382.690071	21.2133	166.296	451	5125	0.1	1950	75000	2300000	0.0959	######	1.662	8.15E-03	23.25	98.69	86.93	0	85.1	256.7
331	38.84	3000	560	142.350252	7.6603	161.44	464.57	5125	0.1	1950	75000	2200000	0.0819	######	1.469	1.68E-02	81.45	96.49	64.88	0	41.2	193.8
332	53.92	3000	1690	130.809281	4.829	110.748	677.21	5125	0.1	1950	75000	1250000	0.059	######	3.978	8.26E-03	21.41	96.18	61.78	0	83.9	378.1
333	22.61	3000	1680	68.648661	3.0802	134.609	557.17	5125	0.1	1950	75000	1675000	0.1407	######	2.576	6.45E-03	18.19	92.72	27.17	0	107.5	583.8
334	23.83	3000	960	504.323922	18.9882	112.952	664	5125	0.1	1950	75000	1287500	0.1335	######	1.652	5.14E-03	43.66	99.01	90.09	0.86	134.7	355.3
335	34.96	3000	2850	22.392351	0.4782	64.0676	1170.64	5125	0.1	1950	75000	550000	0.091	######	5.06	7.60E-03	60.02	77.67	0	0	91.2	741.7
336	37.65	3000	930	607.853576	24.7734	122.267	613.41	5125	0.1	1950	75000	1450000	0.0845	######	2.144	5.64E-03	61.36	99.18	91.77	17.74	122.8	291.9
337	28.92	3000	730	621.487148	27.7469	133.938	559.96	5125	0.1	1950	75000	1662500	0.11	######	1.429	6.29E-03	25.05	99.2	91.95	19.55	110.3	253.2
338	34.28	3000	700	791.379186	34.0811	129.196	580.51	5125	0.1	1950	75000	1575000	0.0928	######	1.429	6.34E-03	45.59	99.37	93.68	36.82	109.3	213.7
339	37.47	3000	920	848.338854	44.0821	155.889	481.11	5125	0.1	1950	75000	2087500	0.0849	######	2.335	3.62E-03	69.24	99.41	94.11	41.06	191.4	319.4
340	23.64	3000	1920	27.933313	0.8738	93.8425	799.21	5125	0.1	1950	75000	975000	0.1346	######	2.896	7.83E-03	34.54	82.1	0	0	88.5	628
341	53.02	3000	3340	49.589819	1.1686	70.6941	1060.91	5125	0.1	1950	75000	637500	0.06	######	6.612	6.28E-03	41.62	89.92	0	0	110.3	639.1
342	38.47	3000	1530	202.064908	6.3208	93.8425	799.21	5125	0.1	1950	75000	975000	0.0827	######	3.098	6.74E-03	42.48	97.53	75.26	0	102.8	412.8
343	60.03	3000	3060	25.843203	0.922	107.025	700.77	5125	0.1	1950	75000	1187500	0.053	######	6.904	7.51E-03	35.97	80.65	0	0	92.2	589.5
344	35.95	3000	980	195.479177	8.2842	127.137	589.91	5125	0.1	1950	75000	1537500	0.0885	######	2.363	8.67E-03	76.52	97.44	74.42	0	80	336.8
345	50.9	3000	1970	68.338041	3.5084	154.016	486.96	5125	0.1	1950	75000	2050000	0.0625	######	4.717	6.87E-03	37.46	92.68	26.83	0	101	474.9
346	40.22	3000	780	262.595746	7.7874	88.9661	843.02	5125	0.1	1950	75000	900000	0.0791	######	1.368	1.45E-02	54.12	98.1	80.96	0	47.9	174.4
347	51.64	3000	960	39.413464	1.7948	136.61	549.01	5125	0.1	1950	75000	1712500	0.0616	######	3.042	1.64E-02	65.7	87.31	0	0	42.3	301.8
348	38.56	3000	1880	18.042585	0.7646	127.137	589.91	5125	0.1	1950	75000	1537500	0.0825	######	4.194	9.60E-03	50.47	72.29	0	0	72.2	557.4
349	50.66	3000	810	148.822073	7.6092	153.389	488.95	5125	0.1	1950	75000	2037500	0.0628	######	2.446	1.28E-02	44.75	96.64	66.4	0	54	247.5
350	23	3000	1430	19.970151	0.6193	93.0387	806.12	5125	0.1	1950	75000	962500	0.1383	######	2.282	1.07E-02	38.65	74.96	0	0	64.9	508.3
351	56.71	3000	860	154.53496	5.6285	109.267	686.4	5125	0.1	1950	75000	1225000	0.0561	######	2.259	1.55E-02	52.41	96.76	67.64	0	44.6	204.1
352	21.25	3000	1080	138.716162	5.8468	126.447	593.13	5125	0.1	1950	75000	1525000	0.1497	######	1.898	7.05E-03	57.28	96.4	63.96	0	98.4	457.7
353	45.06	3000	1290	117.651794	6.2591	159.6	469.92	5125	0.1	1950	75000	2162500	0.0706	######	3.401	7.97E-03	49.11	95.75	57.5	0	87	386.8
354	23.65	3000	1900	14.048122	0.3607	77.0232	973.73	5125	0.1	1950	75000	725000	0.1345	######	2.637	9.87E-03	18.94	64.41	0	0	70.3	571.3

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
355	52.41	3000	3330	19.775132	0.6905	104.76	715.92	5125	0.1	1950	75000	1150000	0.0607	######	6.721	7.14E-03	34.02	74.72	0	0	97.1	657.2
356	29.4	3000	760	157.483074	4.9262	93.8425	799.21	5125	0.1	1950	75000	975000	0.1082	######	1.408	1.22E-02	19.44	96.83	68.25	0	56.8	245.5
357	37.34	3000	860	352.286947	12.0329	102.47	731.92	5125	0.1	1950	75000	1112500	0.0852	######	1.65	9.78E-03	49.31	98.58	85.81	0	70.9	226.5
358	27.26	3000	1020	30.005072	1.4255	142.53	526.21	5125	0.1	1950	75000	1825000	0.1167	######	2.084	1.24E-02	31.36	83.34	0	0	55.9	391.9
359	23.37	3000	1400	46.174808	1.3052	84.7981	884.45	5125	0.1	1950	75000	837500	0.1361	######	2.14	9.46E-03	36.98	89.17	0	0	73.2	469.2
360	21.7	3000	990	5.382014	0.3206	178.72	419.65	5125	0.1	1950	75000	2562500	0.1466	######	2.148	1.42E-02	69.13	7.1	0	0	48.9	507.2
361	41.8	3000	920	372.627864	12.7277	102.47	731.92	5125	0.1	1950	75000	1112500	0.0761	######	1.941	9.07E-03	43.28	98.66	86.58	0	76.5	237.9
362	37.12	3000	870	133.896557	6.0377	135.278	554.42	5125	0.1	1950	75000	1687500	0.0857	######	2.082	1.13E-02	36.73	96.27	62.66	0	61.3	287.4
363	57.63	3000	4410	2.216366	0.0657	88.9661	843.02	5125	0.1	1950	75000	900000	0.0552	######	8.065	1.03E-02	18.72	0	0	0	67.1	717.2
364	35.99	3000	1230	216.425508	9.2216	127.826	586.74	5125	0.1	1950	75000	1550000	0.0884	######	2.718	6.86E-03	44.02	97.69	76.9	0	101.1	387
365	28.2	3000	1000	204.799673	8.5849	125.755	596.4	5125	0.1	1950	75000	1512500	0.1128	######	1.976	7.75E-03	38.22	97.56	75.59	0	89.4	359.1
366	25.43	3000	1190	14.880724	0.6776	136.61	549.01	5125	0.1	1950	75000	1712500	0.1251	######	2.234	1.24E-02	26.39	66.4	0	0	55.8	450.2
367	29.43	3000	1160	14.171978	0.6295	133.266	562.78	5125	0.1	1950	75000	1650000	0.1081	######	2.348	1.38E-02	24.36	64.72	0	0	50.1	409
368	29.29	3000	870	695.927843	34.112	147.05	510.03	5125	0.1	1950	75000	1912500	0.1086	######	1.893	4.46E-03	59.55	99.28	92.82	28.15	155.6	331.2
369	62.14	3000	1530	93.210793	4.6679	150.236	499.21	5125	0.1	1950	75000	1975000	0.0512	######	4.648	8.32E-03	53.33	94.64	46.36	0	83.3	383.4
370	34.36	3000	2790	0.096311	0.0056	175.802	426.62	5125	0.1	1950	75000	2500000	0.0926	######	4.914	1.50E-02	19.31	0	0	0	46.2	733.1
371	26.89	3000	1630	86.499288	3.2145	111.485	672.73	5125	0.1	1950	75000	1262500	0.1183	######	2.902	6.49E-03	51.73	94.22	42.2	0	106.8	553.1
372	36.61	3000	1830	31.709354	0.9919	93.8425	799.21	5125	0.1	1950	75000	975000	0.0869	######	3.475	9.88E-03	29.02	84.23	0	0	70.1	486.5
373	39.42	3000	920	335.700821	11.8919	106.273	705.73	5125	0.1	1950	75000	1175000	0.0807	######	1.899	9.05E-03	24.39	98.51	85.11	0	76.6	246.9
374	54.38	3000	1950	98.787016	3.1689	96.2335	779.35	5125	0.1	1950	75000	1012500	0.0585	######	4.56	7.89E-03	35.86	94.94	49.39	0	87.8	429.8
375	29.05	3000	2020	96.01123	3.5679	111.485	672.73	5125	0.1	1950	75000	1262500	0.1095	######	3.446	5.32E-03	43.81	94.79	47.92	0	130.4	607.8
376	42.42	3000	1220	65.75897	2.3624	107.775	695.9	5125	0.1	1950	75000	1200000	0.075	######	2.811	1.20E-02	31.96	92.4	23.96	0	58	339.6
377	49.48	3000	590	492.99848	27.1295	165.089	454.3	5125	0.1	1950	75000	2275000	0.0643	######	1.809	1.01E-02	76.02	98.99	89.86	0	68.6	187.4
378	25.55	3000	1040	136.04293	4.5065	99.3762	754.71	5125	0.1	1950	75000	1062500	0.1245	######	1.823	9.07E-03	66.37	96.32	63.25	0	76.4	365.7
379	54.1	3000	970	280.199514	12.003	128.512	583.6	5125	0.1	1950	75000	1562500	0.0588	######	2.958	8.92E-03	80.6	98.22	82.16	0	77.7	280.2
380	28	3000	690	90.153732	4.722	157.131	477.31	5125	0.1	1950	75000	2112500	0.1136	######	1.656	1.28E-02	94.67	94.45	44.54	0	54.3	303.1
381	21.8	3000	750	566.615208	26.7967	141.878	528.62	5125	0.1	1950	75000	1812500	0.1459	######	1.35	5.33E-03	34.36	99.12	91.18	11.76	130	317.2
382	24.59	3000	1760	0.499899	0.0154	92.2314	813.17	5125	0.1	1950	75000	950000	0.1294	######	3.326	1.64E-02	60.68	0	0	0	42.2	693.4
383	30.15	3000	1180	95.111464	4.0307	127.137	589.91	5125	0.1	1950	75000	1537500	0.1055	######	2.375	8.89E-03	31.67	94.74	47.43	0	78	403.6
384	24.8	3000	1260	1.764144	0.0552	93.8425	799.21	5125	0.1	1950	75000	975000	0.1283	######	2.528	1.85E-02	83.92	0	0	0	37.4	522.4
385	39.57	3000	700	187.956624	8.1372	129.879	577.46	5125	0.1	1950	75000	1587500	0.0804	######	1.58	1.39E-02	32.57	97.34	73.4	0	49.8	204.6
386	50.82	3000	3010	4.390803	0.1488	101.701	737.46	5125	0.1	1950	75000	1100000	0.0626	######	5.973	1.12E-02	21.8	0	0	0	61.9	602.3
387	56.41	3000	1270	13.61713	0.7846	172.859	433.88	5125	0.1	1950	75000	2437500	0.0564	######	3.97	1.59E-02	39.19	63.28	0	0	43.6	360.7
388	25.41	3000	2130	1.22186	0.0442	108.522	691.1	5125	0.1	1950	75000	1212500	0.1252	######	3.617	1.23E-02	39.93	0	0	0	56.5	729.5
389	36.32	3000	2240	40.397202	1.6653	123.668	606.46	5125	0.1	1950	75000	1475000	0.0876	######	4.34	6.60E-03	45.24	87.62	0	0	105.1	612.5
390	31.16	3000	1280	38.833637	1.5644	120.857	620.57	5125	0.1	1950	75000	1425000	0.1021	######	2.586	1.08E-02	32.91	87.12	0	0	64.1	425.4
391	40.63	3000	1910	7.272795	0.2352	97.024	773	5125	0.1	1950	75000	1025000	0.0783	######	3.649	1.37E-02	12.91	31.25	0	0	50.6	460.2
392	58.7	3000	1030	35.850997	1.5193	127.137	589.91	5125	0.1	1950	75000	1537500	0.0542	######	3.131	1.77E-02	37.72	86.05	0	0	39.1	273.4
393	31.34	3000	960	649.433507	23.4926	108.522	691.1	5125	0.1	1950	75000	1212500	0.1015	######	1.907	5.10E-03	77.71	99.23	92.3	23.01	135.8	311.8
394	57.42	3000	1430	174.137066	8.5356	147.05	510.03	5125	0.1	1950	75000	1912500	0.0554	######	4.032	7.16E-03	43.18	97.13	71.29	0	96.8	359.9
395	23.19	3000	1490	272.867642	13.1409	144.475	519.12	5125	0.1	1950	75000	1862500	0.1372	######	2.499	3.92E-03	41.73	98.17	81.68	0	177	552.4
396	21.34	3000	1730	1.182221	0.0327	83.1021	902.5	5125	0.1	1950	75000	812500	0.1491	######	2.554	1.44E-02	33.97	0	0	0	48.1	613.4
397	24.3	3000	1910	227.992292	6.1853	81.3886	921.51	5125	0.1	1950	75000	787500	0.1309	######	2.944	4.11E-03	75.31	97.81	78.07	0	168.8	620.9
398	22.48	3000	760	16.503828	0.7331	133.266	562.78	5125	0.1	1950	75000	1650000	0.1415	######	1.481	1.73E-02	79.86	69.7	0	0	40.2	337.7
399	48.79	3000	850	52.06285	2.301	132.592	565.65	5125	0.1	1950	75000	1637500	0.0652	######	2.442	1.73E-02	50.23	90.4	3.96	0	40	256.5
400	44.74	3000	2460	16.120043	0.5831	108.522	691.1	5125	0.1	1950	75000	1212500	0.0711	######	4.653	9.77E-03	16.18	68.98	0	0	71	532.9
401	40.42	3000	550	1234.812961	62.6182	152.132	492.99	5125	0.1	1950	75000	2012500	0.0787	######	1.256	5.69E-03	92.87	99.6	95.95	59.51	121.8	159.2
402	32.93	3000	1620	614.724902	22.6932	110.748	677.21	5125	0.1	1950	75000	1250000	0.0966	######	2.946	3.26E-03	26.31	99.19	91.87	18.66	212.6	458.4
403	40.89	3000	1810	36.847607	1.0622	86.4774	867.28	5125	0.1	1950	75000	862500	0.0778	######	3.845	1.01E-02	49.14	86.43	0	0	68.7	481.8
404	26.67	3000	1140	124.607272	7.0318	169.295	443.01	5125	0.1	1950	75000	2362500	0.1193	######	2.303	7.14E-03	36.38	95.99	59.87	0	97.1	442.7
405	22	3000	1450	69.08444	2.3773	103.236	726.49	5125	0.1	1950	75000	1125000	0.1446	######	2.396	7.24E-03	64.02	92.76	27.62	0	95.7	558
406	52.85	3000	1300	34.666316	1.9355	167.499	447.76	5125	0.1	1950	75000	2325000	0.0602	######	3.894	1.20E-02	46.69	85.58	0	0	57.6	377.7
407	27.86	3000	2180	126.826243	3.6911	87.3109	859	5125	0.1	1950	75000	875000	0.1142	######	3.165	5.48E-03	15.65	96.06	60.58	0	126.5	582.2
408	41.21	3000	1440	202.172207	8.0011	118.728	631.7	5125	0.1	1950	75000	1387500	0.0772	######	3.056	7.19E-03	15.43	97.53	75.27	0	96.4	380
409	33	3000	1370	39.703311	1.869	141.225	531.07	5125	0.1	1950	75000	1800000	0.0964	######	2.927	9.80E-03	37.24	87.41	0	0	70.7	454.6
410	50.1	3000	1960	97.295868	4.4305	136.61	549.01	5125	0.1	1950	75000	1712500	0.0635	######	4.904	5.77E-03	61.03	94.86	48.61	0	120.2	501.7
411	40.53	3000	2040	169.514568	9.566	169.295	443.01	5125	0.1	1950	75000	2362500	0.0785	######	4.137	3.98E-03	35	97.05	70.5	0	174.2	523.2
412	38.75	3000	1920	199.770234	5.0104	75.2423	996.78	5125	0.1	1950	75000	700000	0.0821	######	3.609	5.84E-03	51.72	97.5	74.97	0	118.6	477.3
413	22.33	3000	610	164.521332	10.3046	187.902	399.14	5125	0.1	1950	75000	2762500	0.1425	######	1.285	1.00E-02	26.23	96.96	69.61	0	69.1	294.9

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
414	36.65	3000	2430	35.568345	1.251	105.518	710.78	5125	0.1	1950	75000	1162500	0.0868	######	5.304	6.15E-03	87.44	85.94	0	0	112.7	741.6
415	61.65	3000	2180	3.250153	0.1593	147.05	510.03	5125	0.1	1950	75000	1912500	0.0516	######	5.631	1.51E-02	22.67	0	0	0	45.9	468
416	26.85	3000	890	9.858124	0.4641	141.225	531.07	5125	0.1	1950	75000	1800000	0.1185	######	1.967	1.70E-02	55.32	49.28	0	0	40.7	375.5
417	57.84	3000	2040	26.877967	1.3573	151.501	495.05	5125	0.1	1950	75000	2000000	0.055	######	5.139	9.70E-03	28.65	81.4	0	0	71.5	455.3
418	26.49	3000	970	202.285018	6.7008	99.3762	754.71	5125	0.1	1950	75000	1062500	0.1201	######	1.592	9.00E-03	33.64	97.53	75.28	0	77	308
419	24.64	3000	1430	26.593228	1.1513	129.879	577.46	5125	0.1	1950	75000	1587500	0.1291	######	2.473	9.53E-03	25.48	81.2	0	0	72.7	514.3
420	49.4	3000	1270	98.60094	3.0047	91.4206	820.38	5125	0.1	1950	75000	937500	0.0644	######	2.841	1.20E-02	19.79	94.93	49.29	0	57.7	294.8
421	21.22	3000	1050	80.888909	3.9476	146.408	512.27	5125	0.1	1950	75000	1900000	0.1499	######	1.875	8.28E-03	36.15	93.82	38.19	0	83.7	452.9
422	24.97	3000	1400	4.374892	0.1636	112.22	668.33	5125	0.1	1950	75000	1275000	0.1274	######	3.02	1.36E-02	91.3	0	0	0	51	619.9
423	24.03	3000	1240	60.854911	1.8873	93.0387	806.12	5125	0.1	1950	75000	962500	0.1324	######	2.045	9.63E-03	50.8	91.78	17.84	0	72	436.2
424	22.12	3000	1380	33.272955	1.5808	142.53	526.21	5125	0.1	1950	75000	1825000	0.1438	######	2.661	7.77E-03	86.8	84.97	0	0	89.2	616.5
425	38.47	3000	1210	110.3439	3.5687	97.024	773	5125	0.1	1950	75000	1025000	0.0827	######	2.568	1.03E-02	42.91	95.47	54.69	0	67.2	342.1
426	25.76	3000	930	104.887159	6.3899	182.765	410.36	5125	0.1	1950	75000	2650000	0.1235	######	2.13	8.06E-03	75.48	95.23	52.33	0	86	423.8
427	40.17	3000	2600	20.086459	0.6337	94.6429	792.45	5125	0.1	1950	75000	987500	0.0792	######	4.406	8.95E-03	13.19	75.11	0	0	77.4	562.1
428	33.7	3000	720	213.312776	10.1807	143.18	523.82	5125	0.1	1950	75000	1837500	0.0944	######	1.714	1.08E-02	69.34	97.66	76.56	0	64.4	260.6
429	42.08	3000	2660	2.800323	0.076	81.3886	921.51	5125	0.1	1950	75000	787500	0.0756	######	4.93	1.28E-02	23.74	0	0	0	54.1	600.4
430	29.48	3000	1120	98.835349	2.4493	74.3438	1008.83	5125	0.1	1950	75000	687500	0.1079	######	1.584	1.35E-02	80.36	94.94	49.41	0	51.6	275.4
431	21.93	3000	1220	12.1909	0.6904	169.892	441.46	5125	0.1	1950	75000	2375000	0.1451	######	2.25	1.09E-02	34.69	58.99	0	0	63.4	525.9
432	61.53	3000	950	860.781927	23.1048	80.525	931.39	5125	0.1	1950	75000	775000	0.0517	######	1.977	7.68E-03	26.87	99.42	94.19	41.91	90.3	164.7
433	22.39	3000	1250	473.237037	14.4212	91.4206	820.38	5125	0.1	1950	75000	937500	0.1421	######	1.909	4.38E-03	57.67	98.94	89.43	0	158.4	436.9
434	35.23	3000	1580	142.140495	5.317	112.22	668.33	5125	0.1	1950	75000	1275000	0.0903	######	3.401	6.03E-03	72.85	96.48	64.82	0	114.9	494.8
435	24.72	3000	1080	225.671131	6.938	92.2314	813.17	5125	0.1	1950	75000	950000	0.1287	######	1.743	7.53E-03	58.72	97.78	77.84	0	92.1	361.4
436	55.91	3000	1480	180.587293	5.6971	94.6429	792.45	5125	0.1	1950	75000	987500	0.0569	######	3.983	8.08E-03	68.48	97.23	72.31	0	85.7	365.1
437	24.78	3000	1160	125.144378	5.5029	131.916	568.54	5125	0.1	1950	75000	1625000	0.1284	######	2.116	7.47E-03	29.05	96	60.05	0	92.8	437.8
438	23.57	3000	1440	5.253565	0.2609	148.966	503.47	5125	0.1	1950	75000	1950000	0.135	######	2.95	1.15E-02	73.84	4.83	0	0	60.5	641.6
439	55.62	3000	3120	3.389522	0.0778	68.8336	1089.58	5125	0.1	1950	75000	612500	0.0572	######	6.495	1.30E-02	27.04	0	0	0	53.4	598.5
440	36.19	3000	1340	25.443726	0.8756	103.236	726.49	5125	0.1	1950	75000	1125000	0.0879	######	2.997	1.27E-02	55.88	80.35	0	0	54.5	424.4
441	34.65	3000	820	188.32573	9.1908	146.408	512.27	5125	0.1	1950	75000	1900000	0.0918	######	2.124	9.53E-03	92.4	97.35	73.45	0	72.7	314
442	23.31	3000	1010	9.605885	0.3756	117.297	639.4	5125	0.1	1950	75000	1362500	0.1365	######	1.865	1.54E-02	48.42	47.95	0	0	45	410
443	28.25	3000	980	382.523501	12.6712	99.3762	754.71	5125	0.1	1950	75000	1062500	0.1126	######	1.749	6.83E-03	73.71	98.69	86.93	0	101.6	317.3
444	41.8	3000	2150	2.915747	0.1587	163.27	459.36	5125	0.1	1950	75000	2237500	0.0761	######	5.047	1.21E-02	43.14	0	0	0	57.3	618.7
445	23.58	3000	870	63.580679	1.5372	72.5304	1034.05	5125	0.1	1950	75000	662500	0.1349	######	1.291	1.41E-02	29.77	92.14	21.36	0	49	280.5
446	26.06	3000	1200	36.697144	1.1381	93.0387	806.12	5125	0.1	1950	75000	962500	0.1221	######	2.108	1.17E-02	57.55	86.37	0	0	59.2	414.5
447	33.07	3000	890	381.826165	18.7158	147.05	510.03	5125	0.1	1950	75000	1912500	0.0962	######	2.024	6.73E-03	33.72	98.69	86.91	0	103.1	313.7
448	35.11	3000	1570	7.331142	0.3207	131.239	571.48	5125	0.1	1950	75000	1612500	0.0906	######	4.096	1.25E-02	85.72	31.8	0	0	55.3	597.8
449	61.89	3000	1190	437.66608	13.2184	90.6061	827.76	5125	0.1	1950	75000	925000	0.0514	######	2.962	8.10E-03	28.93	98.86	88.58	0	85.6	245.3
450	26.21	3000	660	260.085049	15.1394	174.628	429.49	5125	0.1	1950	75000	2475000	0.1214	######	1.525	8.58E-03	67.37	98.08	80.78	0	80.8	298.3
451	22.56	3000	1880	9.165964	0.3736	122.267	613.41	5125	0.1	1950	75000	1450000	0.141	######	2.98	8.98E-03	37.52	45.45	0	0	77.2	677
452	23.34	3000	1900	2.158098	0.1067	148.328	505.63	5125	0.1	1950	75000	1937500	0.1363	######	3.521	1.07E-02	60.91	0	0	0	64.6	773
453	26.8	3000	640	864.54431	47.0512	163.27	459.36	5125	0.1	1950	75000	2237500	0.1187	######	1.364	4.83E-03	35.46	99.42	94.22	42.17	143.6	260.9
454	38.61	3000	980	297.57734	11.5637	116.579	643.34	5125	0.1	1950	75000	1350000	0.0824	######	2.3	8.02E-03	66.48	98.32	83.2	0	86.5	305.3
455	40.68	3000	1570	49.183662	1.9113	116.579	643.34	5125	0.1	1950	75000	1350000	0.0782	######	3.851	9.03E-03	68.85	89.83	0	0	76.7	485.2
456	32.46	3000	940	231.901849	9.6136	124.366	603.06	5125	0.1	1950	75000	1487500	0.098	######	2.133	8.12E-03	78.92	97.84	78.44	0	85.3	336.8
457	44.81	3000	1140	434.942011	12.8984	88.9661	843.02	5125	0.1	1950	75000	900000	0.071	######	2.317	7.40E-03	18	98.85	88.5	0	93.6	265
458	21.73	3000	1160	5.896834	0.3292	167.499	447.76	5125	0.1	1950	75000	2325000	0.1464	######	2.202	1.29E-02	40.25	15.21	0	0	53.7	519.3
459	22.99	3000	2120	37.721746	1.2691	100.929	743.1	5125	0.1	1950	75000	1087500	0.1384	######	2.98	6.66E-03	24.05	86.75	0	0	104	664.4
460	22.44	3000	1000	29.372595	1.4397	147.05	510.03	5125	0.1	1950	75000	1912500	0.1418	######	2.111	1.09E-02	93.45	82.98	0	0	63.7	482.2
461	50.74	3000	830	178.77799	6.6875	112.22	668.33	5125	0.1	1950	75000	1275000	0.0627	######	1.994	1.45E-02	34.64	97.2	72.03	0	47.7	201.4
462	30.86	3000	840	60.540966	2.7702	137.274	546.35	5125	0.1	1950	75000	1725000	0.1031	######	1.887	1.33E-02	48.48	91.74	17.41	0	52.1	313.3
463	25.17	3000	930	72.569392	3.1582	130.56	574.45	5125	0.1	1950	75000	1600000	0.1264	######	1.777	1.08E-02	35.56	93.11	31.1	0	64.5	361.9
464	46.44	3000	1320	70.07367	2.8559	122.267	613.41	5125	0.1	1950	75000	1450000	0.0685	######	3.167	1.11E-02	22.09	92.86	28.65	0	62.2	349.5
465	25.45	3000	960	97.817719	2.9008	88.9661	843.02	5125	0.1	1950	75000	900000	0.125	######	1.401	1.30E-02	72.52	94.89	48.88	0	53.5	282
466	41.48	3000	1120	260.751272	7.0741	81.3886	921.51	5125	0.1	1950	75000	787500	0.0767	######	1.996	1.01E-02	17.62	98.08	80.82	0	68.8	246.6
467	21.37	3000	720	382.942008	23.8403	186.767	401.57	5125	0.1	1950	75000	2737500	0.1489	######	1.433	6.06E-03	20.12	98.69	86.94	0	114.4	343.7
468	50.26	3000	1010	310.884123	17.2329	166.296	451	5125	0.1	1950	75000	2300000	0.0633	######	2.862	7.74E-03	25.75	98.39	83.92	0	89.6	291.8
469	53.92	3000	1080	120.77368	7.9699	197.971	378.84	5125	0.1	1950	75000	2987500	0.059	######	3.201	1.03E-02	21.47	95.86	58.6	0	67	304.2
470	35.87	3000	1150	12.217544	0.4777	117.297	639.4	5125	0.1	1950	75000	1362500	0.0887	######	2.847	1.60E-02	66.01	59.08	0	0	43.4	406.8
471	45.06	3000	1540	18.141618	0.9238	152.761	490.96	5125	0.1	1950	75000	2025000	0.0706	######	4.395	1.12E-02	71.44	72.44	0	0	62	499.9
472	41.53	3000	1270	16.622623	0.693	125.062	599.7	5125	0.1	1950	75000	1500000	0.0766	######	2.92	1.51E-02	18.1	69.92	0	0	45.8	360.3

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
473	48.13	3000	2050	50.276502	2.3558	140.57	533.54	5125	0.1	1950	75000	1787500	0.0661	######	4.769	7.29E-03	41.6	90.05	0.55	0	95.1	507.9
474	34.32	3000	1200	240.276987	7.1255	88.9661	843.02	5125	0.1	1950	75000	900000	0.0927	######	2.321	7.80E-03	64.81	97.92	79.19	0	88.9	346.6
475	21.54	3000	1140	63.736523	3.2987	155.266	483.04	5125	0.1	1950	75000	2075000	0.1477	######	2.046	8.13E-03	35.13	92.16	21.55	0	85.2	486.8
476	26.01	3000	720	44.294467	2.1044	142.53	526.21	5125	0.1	1950	75000	1825000	0.1223	######	1.529	1.52E-02	68.6	88.71	0	0	45.6	301.2
477	29.21	3000	1670	7.20225	0.1675	69.767	1075.01	5125	0.1	1950	75000	625000	0.1089	######	3.153	1.41E-02	82.33	30.58	0	0	49.1	553.1
478	25.35	3000	2340	0.91151	0.0409	134.609	557.17	5125	0.1	1950	75000	1675000	0.1255	######	3.892	1.14E-02	36.76	0	0	0	61	786.8
479	34.73	3000	910	47.374036	1.7721	112.22	668.33	5125	0.1	1950	75000	1275000	0.0916	######	1.927	1.55E-02	38.8	89.45	0	0	44.8	284.4
480	47.41	3000	2050	12.571112	0.3693	88.1405	850.91	5125	0.1	1950	75000	887500	0.0671	######	4.244	1.28E-02	21.6	60.23	0	0	54.3	458.7
481	23.24	3000	1370	2.939302	0.1198	122.267	613.41	5125	0.1	1950	75000	1450000	0.1369	######	2.397	1.43E-02	30.63	0	0	0	48.6	528.7
482	23.04	3000	1150	56.038087	3.3924	181.614	412.96	5125	0.1	1950	75000	2625000	0.1381	######	2.168	8.31E-03	28.85	91.08	10.77	0	83.4	482.2
483	21.88	3000	1270	355.943212	9.9607	83.9523	893.36	5125	0.1	1950	75000	825000	0.1454	######	1.827	5.16E-03	48.59	98.6	85.95	0	134.2	427.9
484	23.69	3000	1160	8.526736	0.2529	88.9661	843.02	5125	0.1	1950	75000	900000	0.1343	######	1.744	1.61E-02	17.23	41.36	0	0	43.1	377.3
485	24.91	3000	1740	38.847279	1.7257	133.266	562.78	5125	0.1	1950	75000	1650000	0.1277	######	2.889	7.26E-03	31.63	87.13	0	0	95.5	594.4
486	49.94	3000	950	305.519732	12.38	121.563	616.96	5125	0.1	1950	75000	1437500	0.0637	######	2.528	9.21E-03	44.4	98.36	83.63	0	75.3	259.4
487	54.95	3000	1580	55.172743	2.2486	122.267	613.41	5125	0.1	1950	75000	1450000	0.0579	######	4.447	9.97E-03	55.58	90.94	9.38	0	69.6	414.8
488	41.59	3000	1030	63.134665	3.0541	145.121	516.81	5125	0.1	1950	75000	1875000	0.0765	######	2.685	1.24E-02	40.83	92.08	20.8	0	56	330.8
489	37.65	3000	1770	4.453453	0.1948	131.239	571.48	5125	0.1	1950	75000	1612500	0.0845	######	4.762	1.29E-02	81.01	0	0	0	53.8	648.2
490	37.34	3000	1160	15.840282	0.7388	139.914	536.04	5125	0.1	1950	75000	1775000	0.0852	######	2.903	1.46E-02	48.14	68.43	0	0	47.6	398.5
491	38.1	3000	1020	465.293769	18.4144	118.728	631.7	5125	0.1	1950	75000	1387500	0.0835	######	2.377	6.01E-03	66.23	98.93	89.25	0	115.3	319.8
492	23.09	3000	1570	6.957777	0.3484	150.236	499.21	5125	0.1	1950	75000	1975000	0.1378	######	2.712	1.05E-02	34.33	28.14	0	0	65.7	602.1
493	26.67	3000	1070	19.358853	1.0731	166.296	451	5125	0.1	1950	75000	2300000	0.1193	######	2.498	1.17E-02	77.69	74.17	0	0	59.4	480.2
494	25.39	3000	760	403.42933	17.0042	126.447	593.13	5125	0.1	1950	75000	1525000	0.1253	######	1.401	7.33E-03	60.26	98.76	87.61	0	94.6	282.7
495	46.17	3000	940	496.327197	24.8554	150.236	499.21	5125	0.1	1950	75000	1975000	0.0689	######	2.522	6.50E-03	32.7	98.99	89.93	0	106.7	279.9
496	24.97	3000	1310	49.724881	1.8356	110.748	677.21	5125	0.1	1950	75000	1250000	0.1274	######	2.283	9.23E-03	34.77	89.94	0	0	75.1	468.6
497	61.3	3000	1030	100.147425	2.9973	89.788	835.3	5125	0.1	1950	75000	912500	0.0519	######	2.739	1.69E-02	78.04	95.01	50.07	0	40.9	229
498	30.71	3000	830	209.726928	9.9641	142.53	526.21	5125	0.1	1950	75000	1825000	0.1036	######	1.8	9.09E-03	28.22	97.62	76.16	0	76.2	300.4
499	63.5	3000	1920	533.7381	21.6276	121.563	616.96	5125	0.1	1950	75000	1437500	0.0501	######	4.698	3.50E-03	24.57	99.06	90.63	6.32	198.1	379.2
500	52.93	3000	1700	155.466605	2.7958	53.9497	1390.18	5125	0.1	1950	75000	425000	0.0601	######	3.12	1.08E-02	58.41	96.78	67.84	0	64	302
501	36.86	3000	1190	130.092132	5.3324	122.968	609.91	5125	0.1	1950	75000	1462500	0.0863	######	2.678	8.79E-03	42.31	96.16	61.57	0	78.9	372.3
502	34.21	3000	1250	121.337455	6.102	150.869	497.12	5125	0.1	1950	75000	1987500	0.093	######	2.721	7.87E-03	28.37	95.88	58.79	0	88.1	407.7
503	25.78	3000	2090	21.601769	0.6641	92.2314	813.17	5125	0.1	1950	75000	950000	0.1234	######	3.706	7.55E-03	76.67	76.85	0	0	91.8	736.7
504	22.48	3000	810	215.419598	9.9995	139.257	538.57	5125	0.1	1950	75000	1762500	0.1415	######	1.573	7.82E-03	86.2	97.68	76.79	0	88.6	358.6
505	37.08	3000	1820	59.921954	3.1013	155.266	483.04	5125	0.1	1950	75000	2075000	0.0858	######	4.008	6.30E-03	58.17	91.66	16.56	0	110.1	553.9
506	24.19	3000	1490	218.942508	9.2282	126.447	593.13	5125	0.1	1950	75000	1525000	0.1315	######	2.44	5.04E-03	22.64	97.72	77.16	0	137.5	516.9
507	24.43	3000	1770	2.02772	0.0783	115.858	647.34	5125	0.1	1950	75000	1337500	0.1302	######	3.256	1.26E-02	53.51	0	0	0	55.1	683
508	30.98	3000	690	285.855938	14.6755	154.016	486.96	5125	0.1	1950	75000	2050000	0.1027	######	1.611	9.22E-03	61.59	98.25	82.51	0	75.2	266.6
509	25.25	3000	950	329.720464	14.7207	133.938	559.96	5125	0.1	1950	75000	1662500	0.126	######	1.83	6.13E-03	47.11	98.48	84.84	0	113.1	371.5
510	45.32	3000	720	524.80533	27.7041	158.368	473.58	5125	0.1	1950	75000	2137500	0.0702	######	2.068	7.72E-03	61.26	99.05	90.47	4.73	89.8	233.8
511	43.82	3000	1010	433.93887	19.5674	135.278	554.42	5125	0.1	1950	75000	1687500	0.0726	######	2.662	6.20E-03	65.42	98.85	88.48	0	111.8	311.4
512	23.48	3000	820	17.274822	0.8541	148.328	505.63	5125	0.1	1950	75000	1937500	0.1355	######	1.73	1.52E-02	65.29	71.06	0	0	45.7	377.5
513	30.27	3000	900	174.996829	7.4964	128.512	583.6	5125	0.1	1950	75000	1562500	0.1051	######	1.957	9.13E-03	64.31	97.14	71.43	0	75.9	331.3
514	28.2	3000	840	334.392864	15.0041	134.609	557.17	5125	0.1	1950	75000	1675000	0.1128	######	1.74	7.20E-03	52.28	98.5	85.05	0	96.2	316.1
515	36.4	3000	1640	4.882049	0.1742	107.025	700.77	5125	0.1	1950	75000	1187500	0.0874	######	3.441	1.47E-02	32.68	0	0	0	47.1	484.5
516	21.27	3000	1160	2.940342	0.1528	155.889	481.11	5125	0.1	1950	75000	2087500	0.1496	######	2.406	1.42E-02	74.9	0	0	0	48.8	579.9
517	22.55	3000	1610	186.090587	8.6381	139.257	538.57	5125	0.1	1950	75000	1762500	0.1411	######	2.517	4.66E-03	24.15	97.31	73.13	0	148.7	572
518	32.23	3000	1620	124.453222	4.9843	120.15	624.22	5125	0.1	1950	75000	1412500	0.0987	######	3.237	5.95E-03	57.52	95.98	59.82	0	116.5	514.7
519	22.92	3000	850	20.157158	1.2434	185.057	405.28	5125	0.1	1950	75000	2700000	0.1388	######	1.816	1.31E-02	43.63	75.19	0	0	52.8	406.1
520	57.22	3000	1680	34.862618	1.1275	97.024	773	5125	0.1	1950	75000	1025000	0.0556	######	5.019	1.17E-02	74.79	85.66	0	0	59.1	449.5
521	26.14	3000	950	459.961864	19.9131	129.879	577.46	5125	0.1	1950	75000	1587500	0.1217	######	1.834	5.34E-03	41.83	98.91	89.13	0	129.7	359.6
522	23.02	3000	1030	58.97367	1.9688	100.154	748.85	5125	0.1	1950	75000	1075000	0.1382	######	1.7	1.11E-02	53.74	91.52	15.22	0	62.4	378.5
523	32.17	3000	1680	0.726479	0.0294	121.563	616.96	5125	0.1	1950	75000	1437500	0.0989	######	3.794	1.72E-02	51.28	0	0	0	40.3	604.4
524	26.1	3000	920	9.594886	0.4475	139.914	536.04	5125	0.1	1950	75000	1775000	0.1219	######	2.078	1.63E-02	71.31	47.89	0	0	42.6	408.1
525	34.39	3000	940	68.438525	4.2995	188.468	397.94	5125	0.1	1950	75000	2775000	0.0925	######	2.438	1.07E-02	48.24	92.69	26.94	0	64.8	363.4
526	33.24	3000	1100	444.839254	19.3594	130.56	574.45	5125	0.1	1950	75000	1600000	0.0957	######	2.274	5.52E-03	17.92	98.88	88.76	0	125.6	350.6
527	22.22	3000	1670	7.272589	0.2015	83.1021	902.5	5125	0.1	1950	75000	812500	0.1432	######	2.848	1.13E-02	78.8	31.25	0	0	61.3	657
528	24.87	3000	1500	50.557315	2.369	140.57	533.54	5125	0.1	1950	75000	1787500	0.1279	######	2.669	7.45E-03	40.21	90.11	1.1	0	93.1	549.9
529	25.57	3000	1130	106.083274	2.878	81.3886	921.51	5125	0.1	1950	75000	787500	0.1244	######	1.643	1.06E-02	40.5	95.29	52.87	0	65.5	329.3
530	34.73	3000	1570	79.739737	3.2871	123.668	606.46	5125	0.1	1950	75000	1475000	0.0916	######	3.169	7.78E-03	33.81	93.73	37.3	0	89.1	467.6
531	24.7	3000	1530	19.219319	0.6663	103.999	721.16	5125	0.1	1950	75000	1137500	0.1288	######	2.474	1.03E-02	22.04	73.98	0	0	67.2	513.3

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
532	51.39	3000	2000	251.721525	6.238	74.3438	1008.83	5125	0.1	1950	75000	687500	0.0619	######	4.404	5.61E-03	58.32	98.01	80.14	0	123.6	439.1
533	39.42	3000	1370	67.528755	2.0943	93.0387	806.12	5125	0.1	1950	75000	962500	0.0807	######	2.804	1.10E-02	28.58	92.6	25.96	0	63	364.5
534	37.92	3000	1540	238.218312	7.1297	89.788	835.3	5125	0.1	1950	75000	912500	0.0839	######	3.103	6.24E-03	53.15	97.9	79.01	0	111.1	419.4
535	31.25	3000	1510	60.49608	2.2184	110.009	681.77	5125	0.1	1950	75000	1237500	0.1018	######	3.223	8.00E-03	81.85	91.74	17.35	0	86.7	528.6
536	31.59	3000	910	186.910685	10.2101	163.877	457.66	5125	0.1	1950	75000	2250000	0.1007	######	2.044	8.51E-03	15.12	97.32	73.25	0	81.5	331.6
537	59.8	3000	1200	413.421637	23.3301	169.295	443.01	5125	0.1	1950	75000	2362500	0.0532	######	3.7	4.98E-03	50.93	98.79	87.91	0	139.1	317.1
538	53.56	3000	2530	14.799742	0.5055	102.47	731.92	5125	0.1	1950	75000	1112500	0.0594	######	6.697	9.44E-03	64.69	66.22	0	0	73.4	640.8
539	39.72	3000	2270	27.755119	0.8458	91.4206	820.38	5125	0.1	1950	75000	937500	0.0801	######	4.6	8.37E-03	48.92	81.99	0	0	82.8	593.5
540	39.72	3000	1390	118.865315	5.5956	141.225	531.07	5125	0.1	1950	75000	1800000	0.0801	######	3.062	8.18E-03	18.57	95.79	57.94	0	84.7	395.1
541	23.43	3000	830	193.612423	7.2896	112.952	664	5125	0.1	1950	75000	1287500	0.1358	######	1.416	9.33E-03	72.01	97.42	74.18	0	74.3	309.7
542	35.59	3000	650	367.461914	20.4429	166.898	449.38	5125	0.1	1950	75000	2312500	0.0894	######	1.677	8.96E-03	45.27	98.64	86.39	0	77.3	241.5
543	24.36	3000	820	153.220184	8.7377	171.082	438.39	5125	0.1	1950	75000	2400000	0.1306	######	1.678	8.61E-03	23.16	96.74	67.37	0	80.5	353.1
544	34.84	3000	1630	77.619837	2.9413	113.682	659.73	5125	0.1	1950	75000	1300000	0.0913	######	3.102	8.16E-03	20.61	93.56	35.58	0	85	456.2
545	26.34	3000	1520	4.44452	0.2188	147.69	507.82	5125	0.1	1950	75000	1925000	0.1208	######	2.785	1.27E-02	25.38	0	0	0	54.8	541.9
546	63.25	3000	2360	8.535084	0.4453	156.51	479.2	5125	0.1	1950	75000	2100000	0.0503	######	7.791	1.07E-02	71.86	41.42	0	0	65.1	631.3
547	45.13	3000	1160	72.993312	2.8014	115.135	651.41	5125	0.1	1950	75000	1325000	0.0705	######	3.257	1.15E-02	88.3	93.15	31.5	0	60.2	369.9
548	22.77	3000	960	68.888615	2.9194	127.137	589.91	5125	0.1	1950	75000	1537500	0.1397	######	1.747	1.01E-02	43.03	92.74	27.42	0	68.5	393.2
549	24.53	3000	2190	87.872701	2.1511	73.4399	1021.24	5125	0.1	1950	75000	675000	0.1297	######	3.012	5.82E-03	32.12	94.31	43.1	0	119.1	629.2
550	26.25	3000	1100	25.777712	0.9132	106.273	705.73	5125	0.1	1950	75000	1175000	0.1212	######	2.009	1.30E-02	40.72	80.6	0	0	53.1	392.2
551	22.92	3000	900	155.583982	5.433	104.76	715.92	5125	0.1	1950	75000	1150000	0.1388	######	1.418	9.61E-03	36.41	96.79	67.86	0	72.1	317.1
552	28.61	3000	2530	7.518998	0.4362	174.039	430.94	5125	0.1	1950	75000	2462500	0.1112	######	4.288	7.32E-03	40.12	33.5	0	0	94.7	768.2
553	25.27	3000	770	24.087763	1.2616	157.131	477.31	5125	0.1	1950	75000	2112500	0.1259	######	1.615	1.54E-02	27.96	79.24	0	0	45.1	327.5
554	58.59	3000	990	470.001449	19.2651	122.968	609.91	5125	0.1	1950	75000	1462500	0.0543	######	2.941	7.41E-03	61.01	98.94	89.36	0	93.5	257.2
555	26.6	3000	1290	68.594711	1.8213	79.6568	941.54	5125	0.1	1950	75000	762500	0.1196	######	2.142	1.02E-02	73.92	92.71	27.11	0	67.9	412.7
556	22.42	3000	1420	300.980962	13.0987	130.56	574.45	5125	0.1	1950	75000	1600000	0.1419	######	2.356	4.02E-03	48.28	98.34	83.39	0	172.3	538.6
557	45.77	3000	930	78.501044	2.9365	112.22	668.33	5125	0.1	1950	75000	1275000	0.0695	######	2.237	1.52E-02	29.49	93.63	36.31	0	45.5	250.5
558	25.15	3000	1590	8.211555	0.2763	100.929	743.1	5125	0.1	1950	75000	1087500	0.1265	######	2.556	1.20E-02	20.67	39.11	0	0	57.9	520.8
559	26.38	3000	1000	38.625609	1.2895	100.154	748.85	5125	0.1	1950	75000	1075000	0.1206	######	1.787	1.37E-02	60.23	87.06	0	0	50.7	347.2
560	30.92	3000	590	40.742391	2.4743	182.19	411.66	5125	0.1	1950	75000	2637500	0.1029	######	1.58	1.80E-02	73.24	87.73	0	0	38.5	261.9
561	36.82	3000	720	77.391402	4.8473	187.902	399.14	5125	0.1	1950	75000	2762500	0.0864	######	1.936	1.40E-02	21	93.54	35.39	0	49.6	269.5
562	38.05	3000	2130	25.48518	0.9595	112.952	664	5125	0.1	1950	75000	1287500	0.0836	######	5.247	7.59E-03	97.42	80.38	0	0	91.4	706.7
563	27.88	3000	2290	0.422275	0.0259	183.913	407.8	5125	0.1	1950	75000	2675000	0.1141	######	3.675	1.32E-02	13.81	0	0	0	52.4	675.6
564	27.86	3000	1160	29.608563	0.8699	88.1405	850.91	5125	0.1	1950	75000	887500	0.1142	######	1.971	1.37E-02	40.31	83.11	0	0	50.8	362.7
565	32.53	3000	1220	607.777738	20.4475	100.929	743.1	5125	0.1	1950	75000	1087500	0.0978	######	2.377	4.34E-03	57.03	99.18	91.77	17.73	159.8	374.5
566	27.1	3000	1750	201.555879	6.9872	103.999	721.16	5125	0.1	1950	75000	1137500	0.1174	######	2.808	5.07E-03	24.23	97.52	75.19	0	136.8	531
567	22.45	3000	950	17.915707	0.7593	127.137	589.91	5125	0.1	1950	75000	1537500	0.1417	######	1.792	1.38E-02	56.93	72.09	0	0	50.3	409.2
568	22.9	3000	1460	63.440605	2.404	113.682	659.73	5125	0.1	1950	75000	1300000	0.1389	######	2.455	7.34E-03	49.53	92.12	21.19	0	94.4	549.3
569	48.72	3000	730	250.034016	10.6536	127.826	586.74	5125	0.1	1950	75000	1550000	0.0653	######	1.829	1.33E-02	35.74	98	80	0	52	192.4
570	23.15	3000	1650	84.302618	2.7486	97.8112	766.78	5125	0.1	1950	75000	1037500	0.1374	######	2.734	6.20E-03	70.98	94.07	40.69	0	111.7	605.2
571	37.78	3000	700	1041.2663	45.5516	131.239	571.48	5125	0.1	1950	75000	1612500	0.0842	######	1.512	5.19E-03	20.78	99.52	95.2	51.98	133.5	205.1
572	49.32	3000	1400	199.207756	8.1654	122.968	609.91	5125	0.1	1950	75000	1462500	0.0645	######	3.413	7.63E-03	26.69	97.49	74.9	0	90.8	354.6
573	23.27	3000	1150	192.205165	5.647	88.1405	850.91	5125	0.1	1950	75000	887500	0.1367	######	1.757	7.49E-03	58.25	97.4	73.99	0	92.5	387
574	35.31	3000	2290	39.935847	1.8274	137.274	546.35	5125	0.1	1950	75000	1725000	0.0901	######	4.302	6.23E-03	40.9	87.48	0	0	111.3	624.4
575	47.84	3000	580	998.058968	47.6339	143.18	523.82	5125	0.1	1950	75000	1837500	0.0665	######	1.344	7.82E-03	79.28	99.5	94.99	49.9	88.6	143.9
576	35.31	3000	1170	153.618981	4.1676	81.3886	921.51	5125	0.1	1950	75000	787500	0.0901	######	2.005	1.05E-02	21.22	96.75	67.45	0	66.2	291
577	32.07	3000	830	191.934987	7.8224	122.267	613.41	5125	0.1	1950	75000	1450000	0.0992	######	1.673	1.05E-02	23.31	97.39	73.95	0	66	267.3
578	22.81	3000	1550	10.462063	0.404	115.858	647.34	5125	0.1	1950	75000	1337500	0.1395	######	2.64	1.04E-02	44.71	52.21	0	0	66.6	593.2
579	46.31	3000	1350	153.414616	4.5073	88.1405	850.91	5125	0.1	1950	75000	887500	0.0687	######	3.026	9.51E-03	45.15	96.74	67.41	0	72.9	334.9
580	35.95	3000	2440	9.19592	0.4064	132.592	565.65	5125	0.1	1950	75000	1637500	0.0885	######	4.719	8.65E-03	40.35	45.63	0	0	80.1	672.7
581	42.08	3000	2240	52.827848	2.3467	133.266	562.78	5125	0.1	1950	75000	1650000	0.0756	######	5.148	5.72E-03	72.46	90.54	5.35	0	121.1	627
582	21.22	3000	1410	15.568503	0.8122	156.51	479.2	5125	0.1	1950	75000	2100000	0.1499	######	2.261	9.84E-03	13.52	67.88	0	0	70.5	546
583	56.81	3000	2430	37.557445	1.7598	140.57	533.54	5125	0.1	1950	75000	1787500	0.056	######	5.772	7.38E-03	35.61	86.69	0	0	93.9	520.7
584	49.25	3000	950	399.982653	20.618	154.641	484.99	5125	0.1	1950	75000	2062500	0.0646	######	2.802	6.74E-03	62.11	98.75	87.5	0	102.8	291.6
585	37.74	3000	690	47.806725	2.292	143.828	521.46	5125	0.1	1950	75000	1850000	0.0843	######	1.744	1.88E-02	54.7	89.54	0	0	36.8	236.8
586	39.62	3000	1480	38.058613	1.3956	110.009	681.77	5125	0.1	1950	75000	1237500	0.0803	######	3.478	1.06E-02	56.24	86.86	0	0	65.2	449.9
587	27.74	3000	990	660.855043	29.6523	134.609	557.17	5125	0.1	1950	75000	1675000	0.1147	######	2.039	3.95E-03	76.8	99.24	92.43	24.34	175.6	376.8
588	38.66	3000	770	654.982618	26.077	119.44	627.93	5125	0.1	1950	75000	1400000	0.0823	######	1.681	7.03E-03	59.99	99.24	92.37	23.66	98.6	222.9
589	32.86	3000	1300	523.956415	20.1086	115.135	651.41	5125	0.1	1950	75000	1325000	0.0968	######	2.69	3.88E-03	69.65	99.05	90.46	4.57	178.7	419.6
590	48.28	3000	930	160.685572	5.1968	97.024	773	5125	0.1	1950	75000	1025000	0.0659	######	2.004	1.43E-02	33.89	96.89	68.88	0	48.5	212.7

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
591	31.97	3000	1000	217.964374	9.0358	124.366	603.06	5125	0.1	1950	75000	1487500	0.0995	######	2.176	7.90E-03	56.74	97.71	77.06	0	87.7	348.7
592	34.47	3000	1030	812.57999	22.0449	81.3886	921.51	5125	0.1	1950	75000	787500	0.0923	######	1.581	5.67E-03	51.95	99.38	93.85	38.47	122.2	235.1
593	26.98	3000	1130	36.903156	1.8559	150.869	497.12	5125	0.1	1950	75000	1987500	0.1179	######	2.307	1.05E-02	37.35	86.45	0	0	65.9	438.2
594	25.05	3000	1530	2.833534	0.1039	110.009	681.77	5125	0.1	1950	75000	1237500	0.127	######	3.07	1.37E-02	70.07	0	0	0	50.4	628.1
595	23.9	3000	1140	722.53194	20.0146	83.1021	902.5	5125	0.1	1950	75000	812500	0.1331	######	1.597	4.21E-03	25.76	99.31	93.08	30.8	164.8	342.4
596	50.42	3000	1990	417.12921	15.3988	110.748	677.21	5125	0.1	1950	75000	1250000	0.0631	######	4.357	3.46E-03	37.39	98.8	88.01	0	200.3	442.9
597	52.15	3000	850	1108.175282	49.4756	133.938	559.96	5125	0.1	1950	75000	1662500	0.061	######	2.372	4.32E-03	53.26	99.55	95.49	54.88	160.5	233.1
598	27.01	3000	1400	1.830714	0.0788	129.196	580.51	5125	0.1	1950	75000	1575000	0.1178	######	3.103	1.56E-02	67.99	0	0	0	44.3	588.8
599	40.02	3000	900	432.977601	14.8996	103.236	726.49	5125	0.1	1950	75000	1125000	0.0795	######	1.947	8.25E-03	85.12	98.85	88.45	0	84	249.3
600	42.3	3000	1950	194.23897	6.4846	100.154	748.85	5125	0.1	1950	75000	1075000	0.0752	######	3.863	5.57E-03	29.42	97.43	74.26	0	124.4	468
601	34.69	3000	2390	23.245128	0.931	120.15	624.22	5125	0.1	1950	75000	1412500	0.0917	######	4.506	7.11E-03	46.46	78.49	0	0	97.4	665.6
602	44.43	3000	1550	122.141466	5.0917	125.062	599.7	5125	0.1	1950	75000	1500000	0.0716	######	3.602	7.52E-03	38.04	95.91	59.06	0	92.2	415.5
603	38.24	3000	2590	74.022595	1.9005	77.0232	973.73	5125	0.1	1950	75000	725000	0.0832	######	4.456	6.17E-03	35.68	93.25	32.45	0	112.4	597.2
604	34.5	3000	860	92.619974	3.3042	107.025	700.77	5125	0.1	1950	75000	1187500	0.0922	######	1.695	1.46E-02	46.62	94.6	46.02	0	47.6	251.8
605	48.35	3000	640	1185.78899	59.6331	150.869	497.12	5125	0.1	1950	75000	1987500	0.0658	######	1.736	5.12E-03	46.18	99.58	95.78	57.83	135.4	184
606	39.03	3000	790	71.956672	3.1152	129.879	577.46	5125	0.1	1950	75000	1587500	0.0815	######	1.854	1.59E-02	25.11	93.05	30.51	0	43.7	243.4
607	51.15	3000	540	1791.854662	93.4812	156.51	479.2	5125	0.1	1950	75000	2100000	0.0622	######	1.365	3.79E-03	40.58	99.72	97.21	72.1	183	136.8
608	40.63	3000	1130	57.940202	2.2515	116.579	643.34	5125	0.1	1950	75000	1350000	0.0783	######	2.909	1.21E-02	70.71	91.37	13.7	0	57.3	367
609	24.53	3000	960	249.426548	7.1899	86.4774	867.28	5125	0.1	1950	75000	862500	0.1297	######	1.264	9.73E-03	54.57	98	79.95	0	71.2	264.2
610	27.64	3000	940	53.904345	2.0427	113.682	659.73	5125	0.1	1950	75000	1300000	0.1151	######	1.763	1.28E-02	31	90.72	7.24	0	54.1	326.9
611	56.11	3000	940	784.047638	30.0904	115.135	651.41	5125	0.1	1950	75000	1325000	0.0567	######	2.685	5.61E-03	93.99	99.36	93.62	36.23	123.5	245.2
612	36.48	3000	1720	170.588202	9.6266	169.295	443.01	5125	0.1	1950	75000	2362500	0.0872	######	3.504	4.79E-03	32.02	97.07	70.69	0	144.6	492.2
613	36.28	3000	2530	1.006926	0.0447	133.266	562.78	5125	0.1	1950	75000	1650000	0.0877	######	4.85	1.27E-02	29.48	0	0	0	54.6	685.2
614	32.7	3000	2640	9.150862	0.4793	157.131	477.31	5125	0.1	1950	75000	2112500	0.0973	######	4.748	7.36E-03	41.51	45.36	0	0	94.2	744.2
615	54.1	3000	650	1657.122258	70.6075	127.826	586.74	5125	0.1	1950	75000	1550000	0.0588	######	1.522	4.15E-03	45.52	99.7	96.98	69.83	167	144.2
616	28.74	3000	810	316.573515	12.3777	117.297	639.4	5125	0.1	1950	75000	1362500	0.1107	######	1.536	8.56E-03	63.67	98.42	84.21	0	81	274
617	26.27	3000	860	210.239318	7.3947	105.518	710.78	5125	0.1	1950	75000	1162500	0.1211	######	1.393	9.95E-03	23.87	97.62	76.22	0	69.7	271.8
618	58.05	3000	770	570.611634	21.4839	112.952	664	5125	0.1	1950	75000	1287500	0.0548	######	1.904	1.02E-02	45.35	99.12	91.24	12.37	68.3	168.1
619	27.47	3000	2370	10.246952	0.2477	72.5304	1034.05	5125	0.1	1950	75000	662500	0.1158	######	3.547	9.42E-03	32.94	51.21	0	0	73.6	661.7
620	25.91	3000	1270	17.465607	0.9541	163.877	457.66	5125	0.1	1950	75000	2250000	0.1228	######	2.503	1.08E-02	34.07	71.37	0	0	64.3	495.1
621	28.69	3000	1020	143.965003	5.2435	109.267	686.4	5125	0.1	1950	75000	1225000	0.1109	######	1.894	9.29E-03	31.13	96.53	65.27	0	74.6	338.3
622	59.58	3000	2100	13.125242	0.4483	102.47	731.92	5125	0.1	1950	75000	1112500	0.0534	######	5.511	1.26E-02	38.46	61.91	0	0	55.2	474.1
623	51.31	3000	520	1693.895738	92.5302	163.877	457.66	5125	0.1	1950	75000	2250000	0.062	######	1.386	4.16E-03	46.56	99.7	97.05	70.48	166.7	138.5
624	23.07	3000	670	564.532093	33.8494	179.88	416.94	5125	0.1	1950	75000	2587500	0.1379	######	1.433	5.36E-03	54.16	99.11	91.14	11.43	129.3	318.4
625	28.4	3000	950	279.60254	16.2206	174.039	430.94	5125	0.1	1950	75000	2462500	0.112	######	2.138	6.04E-03	54.3	98.21	82.12	0	114.7	385.8
626	25.21	3000	840	605.150413	21.74	107.775	695.9	5125	0.1	1950	75000	1200000	0.1262	######	1.352	5.91E-03	34.29	99.17	91.74	17.38	117.3	274.9
627	33.66	3000	1110	182.429164	7.9393	130.56	574.45	5125	0.1	1950	75000	1600000	0.0945	######	2.392	7.93E-03	33.5	97.26	72.59	0	87.4	364.2
628	47.13	3000	1160	214.862911	8.4522	118.014	635.52	5125	0.1	1950	75000	1375000	0.0675	######	2.817	8.87E-03	24.98	97.67	76.73	0	78.1	306.3
629	48.94	3000	610	861.706829	62.5913	217.909	344.18	5125	0.1	1950	75000	3450000	0.065	######	2.016	5.97E-03	32.09	99.42	94.2	41.98	116.2	211.1
630	46.51	3000	2400	3.400415	0.176	155.266	483.04	5125	0.1	1950	75000	2075000	0.0684	######	5.317	1.18E-02	29.55	0	0	0	58.7	585.9
631	32.4	3000	910	44.577768	2.8005	188.468	397.94	5125	0.1	1950	75000	2775000	0.0982	######	2.451	1.16E-02	73.32	88.78	0	0	59.8	387.8
632	42.76	3000	1450	2.812996	0.1192	127.137	589.91	5125	0.1	1950	75000	1537500	0.0744	######	3.655	1.82E-02	36.45	0	0	0	38.2	438.1
633	34.92	3000	1000	100.153021	6.1589	184.485	406.54	5125	0.1	1950	75000	2687500	0.0911	######	2.379	9.89E-03	16.55	95.01	50.08	0	70.1	349.2
634	29.16	3000	890	147.023313	5.9229	120.857	620.57	5125	0.1	1950	75000	1425000	0.1091	######	1.707	1.02E-02	17.51	96.6	65.99	0	67.7	299.9
635	25.37	3000	2160	17.334493	0.8084	139.914	536.04	5125	0.1	1950	75000	1775000	0.1254	######	3.968	6.52E-03	78.43	71.16	0	0	106.3	801.5
636	34.58	3000	1980	52.443073	3.4123	195.2	384.22	5125	0.1	1950	75000	2925000	0.092	######	3.754	6.16E-03	24.8	90.47	4.66	0	112.5	556.3
637	53.11	3000	1000	50.389887	3.5263	209.941	357.24	5125	0.1	1950	75000	3262500	0.0599	######	3.604	1.20E-02	79.54	90.08	0.77	0	57.7	347.8
638	60.03	3000	890	321.342207	16.2955	152.132	492.99	5125	0.1	1950	75000	2012500	0.053	######	2.91	9.20E-03	52.04	98.44	84.44	0	75.4	248.5
639	29.76	3000	1680	15.444897	0.7832	152.132	492.99	5125	0.1	1950	75000	2012500	0.1069	######	3.618	8.91E-03	68.67	67.63	0	0	77.8	623
640	43.17	3000	1020	786.335174	37.1879	141.878	528.62	5125	0.1	1950	75000	1812500	0.0737	######	2.7	3.67E-03	78.3	99.36	93.64	36.41	189.1	320.6
641	42.03	3000	1570	17.190031	0.6472	112.952	664	5125	0.1	1950	75000	1287500	0.0757	######	3.679	1.26E-02	41.14	70.91	0	0	55	448.6
642	21.39	3000	700	71.012467	3.2021	135.278	554.42	5125	0.1	1950	75000	1687500	0.1487	######	1.255	1.32E-02	62.44	92.96	29.59	0	52.6	300.6
643	32.8	3000	760	360.530532	15.279	127.137	589.91	5125	0.1	1950	75000	1537500	0.097	######	1.564	8.82E-03	27.16	98.61	86.13	0	78.6	244.4
644	26.21	3000	990	31.334955	0.9549	91.4206	820.38	5125	0.1	1950	75000	937500	0.1214	######	1.58	1.58E-02	47.51	84.04	0	0	44	309
645	31.07	3000	690	645.369603	29.388	136.61	549.01	5125	0.1	1950	75000	1712500	0.1024	######	1.452	6.57E-03	55.88	99.23	92.25	22.53	105.5	239.5
646	43.05	3000	1030	292.212957	11.144	114.41	655.54	5125	0.1	1950	75000	1312500	0.0739	######	2.484	8.25E-03	48.75	98.29	82.89	0	84	295.8
647	35.51	3000	2010	62.08808	2.5594	123.668	606.46	5125	0.1	1950	75000	1475000	0.0896	######	4.17	6.02E-03	64.89	91.95	19.47	0	115.2	602
648	22.95	3000	2040	0.910203	0.0334	110.009	681.77	5125	0.1	1950	75000	1237500	0.1386	######	3.043	1.29E-02	21.77	0	0	0	54	679.4
649	21.25	3000	1070	112.692354	5.354	142.53	526.21	5125	0.1	1950	75000	1825000	0.1497	######	2.023	7.04E-03	81.91	95.56	55.63	0	98.4	487.8

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
650	21.58	3000	1540	10.858544	0.3309	91.4206	820.38	5125	0.1	1950	75000	937500	0.1474	######	2.38	1.10E-02	43.06	53.95	0	0	63.1	565.1
651	28.18	3000	950	247.086396	9.1822	111.485	672.73	5125	0.1	1950	75000	1262500	0.1129	######	1.781	8.00E-03	44.1	97.98	79.76	0	86.6	323.9
652	54.76	3000	870	950.249365	43.0605	135.945	551.69	5125	0.1	1950	75000	1700000	0.0581	######	2.467	5.05E-03	28.28	99.47	94.74	47.38	137.4	230.9
653	36.91	3000	810	1059.711628	35.9245	101.701	737.46	5125	0.1	1950	75000	1100000	0.0862	######	1.41	5.46E-03	95	99.53	95.28	52.82	126.9	195.8
654	52.07	3000	730	1103.514165	45.2325	122.968	609.91	5125	0.1	1950	75000	1462500	0.0611	######	1.798	5.74E-03	45.68	99.55	95.47	54.69	120.7	177
655	42.59	3000	920	367.57186	17.1428	139.914	536.04	5125	0.1	1950	75000	1775000	0.0747	######	2.548	7.00E-03	89.97	98.64	86.4	0	99.1	306.6
656	29.11	3000	1190	23.709232	0.9663	122.267	613.41	5125	0.1	1950	75000	1450000	0.1093	######	2.33	1.25E-02	27.51	78.91	0	0	55.6	410.3
657	38.8	3000	690	594.987527	26.1629	131.916	568.54	5125	0.1	1950	75000	1625000	0.082	######	1.509	8.23E-03	29.84	99.16	91.6	15.96	84.2	199.3
658	22.72	3000	1760	0.253011	0.0122	144.475	519.12	5125	0.1	1950	75000	1862500	0.14	######	3.459	1.53E-02	58.64	0	0	0	45.4	780.1
659	34.02	3000	1160	53.695349	2.0478	114.41	655.54	5125	0.1	1950	75000	1312500	0.0935	######	2.795	1.10E-02	91.71	90.69	6.88	0	62.8	421
660	25.66	3000	2100	24.482232	0.5844	71.6152	1047.26	5125	0.1	1950	75000	650000	0.124	######	3.264	8.31E-03	54.63	79.58	0	0	83.4	652
661	22.76	3000	1530	124.403457	4.281	103.236	726.49	5125	0.1	1950	75000	1125000	0.1398	######	2.468	5.91E-03	55.03	95.98	59.81	0	117.4	555.7
662	46.85	3000	1980	1.827064	0.0674	110.748	677.21	5125	0.1	1950	75000	1250000	0.0679	######	4.534	1.67E-02	26.49	0	0	0	41.6	496
663	30.44	3000	1200	199.484539	5.8609	88.1405	850.91	5125	0.1	1950	75000	887500	0.1045	######	2.048	8.07E-03	24.5	97.49	74.94	0	85.9	344.7
664	41.1	3000	960	68.410835	2.9617	129.879	577.46	5125	0.1	1950	75000	1587500	0.0774	######	2.319	1.36E-02	22.94	92.69	26.91	0	51	289.2
665	30.5	3000	990	20.188499	0.8463	125.755	596.4	5125	0.1	1950	75000	1512500	0.1043	######	2.18	1.51E-02	49.83	75.23	0	0	46.1	366.4
666	22.72	3000	1530	55.350933	2.8762	155.889	481.11	5125	0.1	1950	75000	2087500	0.14	######	2.556	6.76E-03	31.9	90.97	9.67	0	102.5	576.6
667	24.34	3000	2690	0.883586	0.0269	91.4206	820.38	5125	0.1	1950	75000	937500	0.1307	######	3.703	1.13E-02	21.09	0	0	0	61.6	779.7
668	60.6	3000	770	893.212606	46.7837	157.131	477.31	5125	0.1	1950	75000	2112500	0.0525	######	2.473	5.88E-03	35.88	99.44	94.4	44.02	118	209.1
669	36.15	3000	2080	37.271832	2.4044	193.528	387.54	5125	0.1	1950	75000	2887500	0.088	######	4.238	6.06E-03	45.03	86.59	0	0	114.4	600.8
670	48.42	3000	2420	53.869808	2.8989	161.44	464.57	5125	0.1	1950	75000	2200000	0.0657	######	5.156	5.94E-03	32.42	90.72	7.18	0	116.7	545.7
671	22.37	3000	1160	78.205809	3.8999	149.602	501.33	5125	0.1	1950	75000	1962500	0.1422	######	2.105	7.76E-03	38.35	93.61	36.07	0	89.3	482.3
672	30.89	3000	1660	34.886194	1.534	131.916	568.54	5125	0.1	1950	75000	1625000	0.103	######	3.038	8.93E-03	20.03	85.67	0	0	77.6	504.1
673	39.28	3000	600	271.529914	13.3095	147.05	510.03	5125	0.1	1950	75000	1912500	0.081	######	1.406	1.36E-02	59.67	98.16	81.59	0	50.9	183.5
674	21.45	3000	780	182.702997	8.2792	135.945	551.69	5125	0.1	1950	75000	1700000	0.1483	######	1.357	8.77E-03	21.65	97.26	72.63	0	79	324.2
675	22.05	3000	800	35.392079	1.6968	143.828	521.46	5125	0.1	1950	75000	1850000	0.1443	######	1.532	1.32E-02	44.87	85.87	0	0	52.5	356
676	53.47	3000	730	286.343522	13.542	141.878	528.62	5125	0.1	1950	75000	1812500	0.0595	######	2.264	1.18E-02	89.41	98.25	82.54	0	58.9	217
677	23.37	3000	1800	0.408849	0.013	95.4399	785.84	5125	0.1	1950	75000	1000000	0.1361	######	2.905	1.60E-02	31.52	0	0	0	43.3	636.8
678	44.25	3000	1160	582.996403	15.8164	81.3886	921.51	5125	0.1	1950	75000	787500	0.0719	######	2.199	6.56E-03	27.2	99.14	91.42	14.24	105.7	254.7
679	39.13	3000	2190	4.314606	0.1195	83.1021	902.5	5125	0.1	1950	75000	812500	0.0813	######	4.386	1.32E-02	37.1	0	0	0	52.7	574.4
680	51.81	3000	1190	13.307335	0.5941	133.938	559.96	5125	0.1	1950	75000	1662500	0.0614	######	3.452	1.77E-02	39.6	62.43	0	0	39.2	341.4
681	25.64	3000	1380	286.22614	8.0098	83.9523	893.36	5125	0.1	1950	75000	825000	0.1241	######	2.297	5.46E-03	85.16	98.25	82.53	0	126.9	459.2
682	28.28	3000	1120	10.378588	0.3703	107.025	700.77	5125	0.1	1950	75000	1187500	0.1125	######	2.157	1.58E-02	37.75	51.82	0	0	43.9	390.8
683	26.91	3000	1370	3.522061	0.1386	118.014	635.52	5125	0.1	1950	75000	1375000	0.1182	######	2.546	1.51E-02	27.64	0	0	0	45.9	484.9
684	51.9	3000	1620	91.659353	3.7141	121.563	616.96	5125	0.1	1950	75000	1437500	0.0613	######	4.155	8.35E-03	45.43	94.55	45.45	0	83	410.3
685	57.63	3000	1000	639.974865	17.5455	82.2476	911.88	5125	0.1	1950	75000	800000	0.0552	######	1.973	9.16E-03	66.76	99.22	92.19	21.87	75.7	175.4
686	25.84	3000	3350	12.218353	0.4142	101.701	737.46	5125	0.1	1950	75000	1100000	0.1231	######	4.158	6.42E-03	14.95	59.08	0	0	108	824.6
687	50.34	3000	450	459.05366	19.5596	127.826	586.74	5125	0.1	1950	75000	1550000	0.0632	######	1.187	1.59E-02	50.66	98.91	89.11	0	43.7	120.9
688	41.32	3000	1090	116.415663	6.9353	178.72	419.65	5125	0.1	1950	75000	2562500	0.077	######	3.087	8.16E-03	72.89	95.71	57.05	0	85	383
689	39.47	3000	850	124.388329	5.3851	129.879	577.46	5125	0.1	1950	75000	1587500	0.0806	######	2.042	1.25E-02	35.31	95.98	59.8	0	55.3	265.1
690	27.35	3000	1730	67.296068	1.8641	83.1021	902.5	5125	0.1	1950	75000	812500	0.1163	######	3.098	7.30E-03	81.26	92.57	25.7	0	95	580.4
691	62.01	3000	910	602.908935	19.4989	97.024	773	5125	0.1	1950	75000	1025000	0.0513	######	2.273	9.01E-03	76.88	99.17	91.71	17.07	77	187.9
692	25.61	3000	920	343.515326	10.9284	95.4399	785.84	5125	0.1	1950	75000	1000000	0.1242	######	1.387	8.04E-03	50.62	98.54	85.44	0	86.2	277.6
693	27.08	3000	1230	114.013527	2.7565	72.5304	1034.05	5125	0.1	1950	75000	662500	0.1175	######	1.683	1.06E-02	33.18	95.61	56.15	0	65.2	318.5
694	28.66	3000	920	10.456653	0.4479	128.512	583.6	5125	0.1	1950	75000	1562500	0.111	######	1.984	1.76E-02	47.2	52.18	0	0	39.4	354.8
695	48.42	3000	3030	182.981164	5.4765	89.788	835.3	5125	0.1	1950	75000	912500	0.0657	######	5.355	4.12E-03	22.27	97.27	72.67	0	168.5	566.7
696	36.74	3000	1410	85.004942	3.2005	112.952	664	5125	0.1	1950	75000	1287500	0.0866	######	3.08	8.68E-03	48.33	94.12	41.18	0	79.9	429.7
697	22.69	3000	700	132.836575	7.6016	171.675	436.87	5125	0.1	1950	75000	2412500	0.1402	######	1.498	9.72E-03	63.81	96.24	62.36	0	71.3	338.3
698	33.24	3000	2570	105.417938	4.9855	141.878	528.62	5125	0.1	1950	75000	1812500	0.0957	######	4.448	3.54E-03	49.91	95.26	52.57	0	195.8	685.7
699	28.58	3000	1030	393.738265	17.8422	135.945	551.69	5125	0.1	1950	75000	1700000	0.1113	######	2.185	5.18E-03	71.8	98.73	87.3	0	133.9	391.7
700	21.31	3000	1280	9.50028	0.3646	115.135	651.41	5125	0.1	1950	75000	1325000	0.1493	######	2.294	1.19E-02	63.16	47.37	0	0	58.2	551.7
701	41.75	3000	810	726.512455	15.982	65.9946	1136.46	5125	0.1	1950	75000	575000	0.0762	######	1.545	7.57E-03	29.07	99.31	93.12	31.18	91.6	189.7
702	30.83	3000	830	129.234557	4.8972	113.682	659.73	5125	0.1	1950	75000	1300000	0.1032	######	1.663	1.23E-02	77.47	96.13	61.31	0	56.5	276.4
703	28.53	3000	2060	65.28758	2.0248	93.0387	806.12	5125	0.1	1950	75000	962500	0.1115	######	3.423	6.31E-03	46.11	92.34	23.42	0	109.8	614.8
704	24.42	3000	850	194.431813	12.1045	186.767	401.57	5125	0.1	1950	75000	2737500	0.1303	######	1.789	7.43E-03	32.47	97.43	74.28	0	93.3	375.5
705	34.77	3000	1840	3.580436	0.1442	120.857	620.57	5125	0.1	1950	75000	1425000	0.0915	######	4.382	1.29E-02	67.75	0	0	0	53.6	645.9
706	28.61	3000	1010	10.559756	0.4499	127.826	586.74	5125	0.1	1950	75000	1550000	0.1112	######	2.236	1.61E-02	59.92	52.65	0	0	43.1	400.6
707	41.69	3000	1000	272.038127	8.2161	90.6061	827.76	5125	0.1	1950	75000	925000	0.0763	######	2.103	1.02E-02	96.19	98.16	81.62	0	68.2	258.5
708	22.85	3000	1310	200.739297	7.4105	110.748	677.21	5125	0.1	1950	75000	1250000	0.1392	######	2.133	5.82E-03	36.31	97.51	75.09	0	119.2	478.4

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
709	54.29	3000	1800	149.468205	4.3914	88.1405	850.91	5125	0.1	1950	75000	887500	0.0586	######	4.731	6.88E-03	80.79	96.65	66.55	0	100.8	446.6
710	33.52	3000	760	47.24564	2.1304	135.278	554.42	5125	0.1	1950	75000	1687500	0.0949	######	1.754	1.66E-02	50.99	89.42	0	0	41.7	268.1
711	25.03	3000	1420	125.622956	5.5522	132.592	565.65	5125	0.1	1950	75000	1637500	0.1271	######	2.583	5.89E-03	52.88	96.02	60.2	0	117.7	528.8
712	28.79	3000	1170	11.325693	0.4642	122.968	609.91	5125	0.1	1950	75000	1462500	0.1105	######	2.33	1.44E-02	29.12	55.85	0	0	48.1	414.8
713	25.68	3000	2500	0.678882	0.0283	125.062	599.7	5125	0.1	1950	75000	1500000	0.1239	######	4.198	1.15E-02	40.79	0	0	0	60.4	837.8
714	27.93	3000	750	153.661122	6.7221	131.239	571.48	5125	0.1	1950	75000	1612500	0.1139	######	1.479	1.13E-02	36.26	96.75	67.46	0	61.4	271.3
715	24.93	3000	560	455.521213	27.8384	183.34	409.08	5125	0.1	1950	75000	2662500	0.1276	######	1.204	7.71E-03	26.56	98.9	89.02	0	90	247.5
716	22.53	3000	640	75.458988	4.5536	181.037	414.28	5125	0.1	1950	75000	2612500	0.1412	######	1.325	1.25E-02	23.92	93.37	33.74	0	55.5	301.4
717	62.38	3000	670	1181.16133	48.6907	123.668	606.46	5125	0.1	1950	75000	1475000	0.051	######	1.665	6.97E-03	75.19	99.58	95.77	57.67	99.5	136.8
718	32.46	3000	1510	1.642608	0.0816	148.966	503.47	5125	0.1	1950	75000	1950000	0.098	######	2.947	1.68E-02	10.71	0	0	0	41.4	465.3
719	30.04	3000	1110	118.570536	5.0521	127.826	586.74	5125	0.1	1950	75000	1550000	0.1059	######	2.507	8.10E-03	90.4	95.78	57.83	0	85.5	427.8
720	32.76	3000	1220	53.310639	2.3321	131.239	571.48	5125	0.1	1950	75000	1612500	0.0971	######	2.678	1.02E-02	46.01	90.62	6.21	0	68	418.8
721	22.87	3000	1290	72.456907	4.0019	165.693	452.64	5125	0.1	1950	75000	2287500	0.1391	######	2.396	6.80E-03	52.63	93.1	30.99	0	102	536.9
722	24.23	3000	880	1234.886933	47.9871	116.579	643.34	5125	0.1	1950	75000	1350000	0.1313	######	1.534	2.78E-03	56.12	99.6	95.95	59.51	249.8	324.6
723	42.59	3000	1220	37.12663	1.5131	122.267	613.41	5125	0.1	1950	75000	1450000	0.0747	######	2.996	1.31E-02	38.17	86.53	0	0	52.8	360.5
724	42.7	3000	1000	76.109851	3.0302	119.44	627.93	5125	0.1	1950	75000	1400000	0.0745	######	2.339	1.34E-02	15.2	93.43	34.31	0	51.6	280.7
725	47.27	3000	1360	34.488296	1.3236	115.135	651.41	5125	0.1	1950	75000	1325000	0.0673	######	3.321	1.32E-02	28.01	85.5	0	0	52.6	360
726	22.64	3000	2370	59.640742	2.0371	102.47	731.92	5125	0.1	1950	75000	1112500	0.1405	######	3.291	5.02E-03	37.59	91.62	16.16	0	138	744.9
727	24.93	3000	2170	9.269881	0.2269	73.4399	1021.24	5125	0.1	1950	75000	675000	0.1276	######	3.08	9.87E-03	26.95	46.06	0	0	70.2	633.2
728	27.96	3000	710	553.54963	16.5674	89.788	835.3	5125	0.1	1950	75000	912500	0.1138	######	1.23	7.59E-03	31.07	99.1	90.97	9.67	91.3	225.4
729	21.85	3000	1050	117.809685	5.3647	136.61	549.01	5125	0.1	1950	75000	1712500	0.1456	######	1.846	7.72E-03	30.42	95.76	57.56	0	89.8	433
730	37.3	3000	1100	913.998517	38.102	125.062	599.7	5125	0.1	1950	75000	1500000	0.0853	######	2.42	3.57E-03	32.14	99.45	94.53	45.3	194.3	332.5
731	35.83	3000	2200	172.224354	3.3355	58.1021	1290.83	5125	0.1	1950	75000	475000	0.0888	######	3.556	5.98E-03	45.92	97.1	70.97	0	115.9	508.7
732	30.13	3000	2090	3.664904	0.1398	114.41	655.54	5125	0.1	1950	75000	1312500	0.1056	######	4.128	1.11E-02	54.76	0	0	0	62.5	702.2
733	32.86	3000	810	27.374737	1.4787	162.051	462.82	5125	0.1	1950	75000	2212500	0.0968	######	1.949	1.61E-02	24.52	81.73	0	0	43	304
734	25.86	3000	1980	3.111363	0.1006	97.024	773	5125	0.1	1950	75000	1025000	0.123	######	3.355	1.17E-02	41.31	0	0	0	59	664.8
735	27.76	3000	980	253.823525	12.7112	150.236	499.21	5125	0.1	1950	75000	1975000	0.1146	######	2.06	6.63E-03	47.04	98.03	80.3	0	104.5	380.3
736	21.67	3000	1240	26.053276	0.8357	96.2335	779.35	5125	0.1	1950	75000	1012500	0.1468	######	2.055	1.09E-02	64.14	80.81	0	0	63.5	486
737	27.43	3000	1550	15.22124	0.4216	83.1021	902.5	5125	0.1	1950	75000	812500	0.116	######	2.981	1.17E-02	84.65	67.15	0	0	59.3	557.1
738	33.84	3000	1430	23.704919	1.3659	172.859	433.88	5125	0.1	1950	75000	2437500	0.094	######	3.684	9.14E-03	88.81	78.91	0	0	75.8	557.8
739	42.53	3000	1430	545.283291	23.4829	129.196	580.51	5125	0.1	1950	75000	1575000	0.0748	######	3.252	3.75E-03	42.49	99.08	90.83	8.3	184.8	391.9
740	26.51	3000	2000	43.646896	1.2824	88.1405	850.91	5125	0.1	1950	75000	887500	0.12	######	3.256	7.11E-03	49.96	88.54	0	0	97.5	629.4
741	30.8	3000	1200	121.295044	6.869	169.892	441.46	5125	0.1	1950	75000	2375000	0.1033	######	2.613	7.15E-03	40.67	95.88	58.78	0	96.9	434.9
742	24.99	3000	1930	2.686482	0.1063	118.728	631.7	5125	0.1	1950	75000	1387500	0.1273	######	3.22	1.16E-02	33.1	0	0	0	60	660.3
743	29.51	3000	1240	38.266636	1.2275	96.2335	779.35	5125	0.1	1950	75000	1012500	0.1078	######	2.391	1.17E-02	56.4	86.93	0	0	59.5	415.2
744	22.69	3000	1010	9.356548	0.5317	170.487	439.92	5125	0.1	1950	75000	2387500	0.1402	######	2.015	1.35E-02	35.77	46.56	0	0	51.2	455
745	47.62	3000	860	207.486227	7.6596	110.748	677.21	5125	0.1	1950	75000	1250000	0.0668	######	2.039	1.26E-02	34.46	97.59	75.9	0	54.9	219.4
746	29.84	3000	1920	0.424822	0.0208	147.05	510.03	5125	0.1	1950	75000	1912500	0.1066	######	3.749	1.55E-02	32.23	0	0	0	44.7	643.9
747	37.04	3000	560	940.637939	52.3302	166.898	449.38	5125	0.1	1950	75000	2312500	0.0859	######	1.363	6.22E-03	34.72	99.47	94.68	46.84	111.5	188.6
748	29.76	3000	2060	0.696108	0.0359	154.641	484.99	5125	0.1	1950	75000	2062500	0.1069	######	3.633	1.40E-02	19.59	0	0	0	49.5	625.7
749	21.88	3000	1190	82.789197	3.2961	119.44	627.93	5125	0.1	1950	75000	1400000	0.1454	######	1.973	8.05E-03	28.48	93.96	39.61	0	86.1	462.2
750	61.18	3000	3900	1.373427	0.0598	130.56	574.45	5125	0.1	1950	75000	1600000	0.052	######	8.393	1.14E-02	24.68	0	0	0	60.9	703.1
751	29.24	3000	1260	72.033956	4.2353	176.387	425.2	5125	0.1	1950	75000	2512500	0.1088	######	2.641	7.86E-03	37.91	93.06	30.59	0	88.2	463
752	28.46	3000	980	350.4628	12.0601	103.236	726.49	5125	0.1	1950	75000	1125000	0.1118	######	1.733	7.08E-03	40.16	98.57	85.73	0	97.9	312.2
753	54.95	3000	910	287.865929	9.9793	103.999	721.16	5125	0.1	1950	75000	1137500	0.0579	######	2.275	1.16E-02	51.07	98.26	82.63	0	59.6	212.2
754	42.93	3000	2620	30.092413	1.096	109.267	686.4	5125	0.1	1950	75000	1225000	0.0741	######	5.269	6.99E-03	42.75	83.38	0	0	99.2	629
755	37.17	3000	800	869.794892	31.03	107.025	700.77	5125	0.1	1950	75000	1187500	0.0856	######	1.498	6.13E-03	60.79	99.43	94.25	42.52	113.2	206.6
756	27.01	3000	1040	21.369565	0.7244	101.701	737.46	5125	0.1	1950	75000	1100000	0.1178	######	1.903	1.48E-02	44.96	76.6	0	0	46.8	361.1
757	29.65	3000	1100	661.678117	21.0502	95.4399	785.84	5125	0.1	1950	75000	1000000	0.1073	######	1.99	4.56E-03	71.24	99.24	92.44	24.43	152	343.9
758	31.69	3000	950	1384.081085	42.5519	92.2314	813.17	5125	0.1	1950	75000	950000	0.1004	######	1.557	3.12E-03	60.14	99.64	96.39	63.87	222.5	251.9
759	27.33	3000	650	107.652346	5.8151	162.051	462.82	5125	0.1	1950	75000	2212500	0.1164	######	1.502	1.28E-02	81.61	95.36	53.55	0	54.4	281.6
760	59.8	3000	2210	297.9981	11.9348	120.15	624.22	5125	0.1	1950	75000	1412500	0.0532	######	4.881	4.80E-03	13.62	98.32	83.22	0	144.3	418.3
761	21.37	3000	1830	0.279152	0.0099	106.273	705.73	5125	0.1	1950	75000	1175000	0.1489	######	2.949	1.54E-02	37.62	0	0	0	45	707.5
762	28.76	3000	1170	292.735676	10.7345	110.009	681.77	5125	0.1	1950	75000	1237500	0.1106	######	2.34	5.80E-03	82.81	98.29	82.92	0	119.5	416.9
763	47.55	3000	810	432.353257	20.1641	139.914	536.04	5125	0.1	1950	75000	1775000	0.0669	######	2.295	8.21E-03	70.16	98.84	88.44	0	84.4	247.3
764	22.68	3000	840	78.096083	3.4692	133.266	562.78	5125	0.1	1950	75000	1650000	0.1403	######	1.541	1.09E-02	33.13	93.6	35.98	0	63.9	348.4
765	30.59	3000	1610	11.340333	0.4352	115.135	651.41	5125	0.1	1950	75000	1325000	0.104	######	2.944	1.19E-02	20.49	55.91	0	0	58.4	493.3
766	27.62	3000	1630	63.109975	2.3298	110.748	677.21	5125	0.1	1950	75000	1250000	0.1152	######	3.056	7.06E-03	64.34	92.08	20.77	0	98.2	567.2
767	32.3	3000	1420	7.802703	0.3253	125.062	599.7	5125	0.1	1950	75000	1500000	0.0985	######	3.407	1.33E-02	74.55	35.92	0	0	52.2	540.6

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
768	24.01	3000	1000	25.756961	1.0132	118.014	635.52	5125	0.1	1950	75000	1375000	0.1325	######	1.806	1.31E-02	34.88	80.59	0	0	53.1	385.4
769	26.31	3000	1000	10.232248	0.5548	162.661	461.08	5125	0.1	1950	75000	2225000	0.1209	######	2.259	1.44E-02	56.61	51.13	0	0	48.3	440.1
770	28.35	3000	710	280.802447	13.5835	145.121	516.81	5125	0.1	1950	75000	1875000	0.1122	######	1.538	8.88E-03	59.47	98.22	82.19	0	78	277.9
771	60.71	3000	980	756.316265	24.4603	97.024	773	5125	0.1	1950	75000	1025000	0.0524	######	2.392	6.96E-03	30.45	99.34	93.39	33.89	99.6	201.9
772	21.45	3000	1620	108.193782	3.4991	97.024	773	5125	0.1	1950	75000	1025000	0.1483	######	2.502	5.78E-03	61.17	95.38	53.79	0	119.9	597.7
773	21.64	3000	1100	35.978815	1.4999	125.062	599.7	5125	0.1	1950	75000	1500000	0.147	######	1.96	1.03E-02	50.03	86.1	0	0	67.6	464.2
774	30.33	3000	2170	134.357337	4.0579	90.6061	827.76	5125	0.1	1950	75000	925000	0.1049	######	3.7	4.70E-03	59.21	96.28	62.79	0	147.6	625.3
775	21.52	3000	2320	46.363661	1.7001	110.009	681.77	5125	0.1	1950	75000	1237500	0.1478	######	3.241	5.16E-03	43.6	89.22	0	0	134.4	771.8
776	59.13	3000	1010	142.468633	5.1537	108.522	691.1	5125	0.1	1950	75000	1212500	0.0538	######	2.729	1.35E-02	28.09	96.49	64.9	0	51.5	236.6
777	62.38	3000	650	1563.501002	53.8032	103.236	726.49	5125	0.1	1950	75000	1125000	0.051	######	1.426	5.62E-03	59.3	99.68	96.8	68.02	123.3	117.1
778	23.78	3000	1110	27.965321	0.9977	107.025	700.77	5125	0.1	1950	75000	1187500	0.1338	######	1.891	1.21E-02	30.84	82.12	0	0	57.4	407.5
779	31.44	3000	1230	165.611513	8.2586	149.602	501.33	5125	0.1	1950	75000	1962500	0.1012	######	2.699	6.36E-03	59.84	96.98	69.81	0	109.1	440
780	26.82	3000	2160	19.376919	0.9456	146.408	512.27	5125	0.1	1950	75000	1900000	0.1186	######	3.62	6.94E-03	39.91	74.2	0	0	99.8	691.6
781	49.63	3000	680	884.816538	47.975	162.661	461.08	5125	0.1	1950	75000	2225000	0.0641	######	2.073	5.83E-03	68.42	99.43	94.35	43.49	118.9	214
782	25.53	3000	1250	305.324793	13.8358	135.945	551.69	5125	0.1	1950	75000	1700000	0.1246	######	2.288	4.91E-03	39.11	98.36	83.62	0	141.3	459.3
783	23.27	3000	2440	114.086964	4.127	108.522	691.1	5125	0.1	1950	75000	1212500	0.1367	######	3.205	4.39E-03	16.37	95.62	56.17	0	158.1	705.7
784	43.76	3000	2920	63.634302	1.7446	82.2476	911.88	5125	0.1	1950	75000	800000	0.0727	######	4.958	6.39E-03	19.76	92.14	21.43	0	108.5	580.7
785	35.71	3000	1040	306.7042	11.4728	112.22	668.33	5125	0.1	1950	75000	1275000	0.0891	######	2.264	7.35E-03	54.35	98.37	83.7	0	94.3	325
786	59.35	3000	590	1163.813207	51.6989	133.266	562.78	5125	0.1	1950	75000	1650000	0.0536	######	1.455	7.62E-03	42.35	99.57	95.7	57.04	91	125.7
787	39.82	3000	440	1116.199483	55.4251	148.966	503.47	5125	0.1	1950	75000	1950000	0.0799	######	1.194	6.47E-03	25.69	99.55	95.52	55.21	107.1	153.7
788	46.04	3000	1210	147.775167	7.1166	144.475	519.12	5125	0.1	1950	75000	1862500	0.0691	######	3.087	8.80E-03	31.47	96.62	66.16	0	78.7	343.7
789	23.92	3000	850	600.089377	23.175	115.858	647.34	5125	0.1	1950	75000	1337500	0.133	######	1.467	5.27E-03	62.27	99.17	91.67	16.68	131.6	314.3
790	28.89	3000	730	905.120507	36.6764	121.563	616.96	5125	0.1	1950	75000	1437500	0.1101	######	1.294	5.29E-03	40.92	99.45	94.48	44.76	131.2	229.5
791	21.69	3000	2270	14.102537	0.4817	102.47	731.92	5125	0.1	1950	75000	1112500	0.1467	######	3.565	6.92E-03	69.43	64.55	0	0	100.1	842.5
792	32.5	3000	1450	3.631511	0.1402	115.858	647.34	5125	0.1	1950	75000	1337500	0.0979	######	3.668	1.53E-02	84.24	0	0	0	45.2	578.5
793	22.36	3000	1410	1.972188	0.0818	124.366	603.06	5125	0.1	1950	75000	1487500	0.1423	######	2.642	1.42E-02	56.57	0	0	0	48.7	605.8
794	30.1	3000	1360	19.155436	0.9389	147.05	510.03	5125	0.1	1950	75000	1912500	0.1057	######	2.997	1.07E-02	58.78	73.9	0	0	65	510.3
795	41.05	3000	1530	246.825538	10.7418	130.56	574.45	5125	0.1	1950	75000	1600000	0.0775	######	3.589	4.78E-03	67.09	97.97	79.74	0	145	448
796	26.6	3000	1280	11.68255	0.4427	113.682	659.73	5125	0.1	1950	75000	1300000	0.1196	######	2.373	1.31E-02	33.42	57.2	0	0	52.9	457.2
797	24.89	3000	2590	6.860553	0.1802	78.7839	951.97	5125	0.1	1950	75000	750000	0.1278	######	3.94	8.52E-03	49.68	27.12	0	0	81.3	811.3
798	28.3	3000	1200	362.088494	10.8371	89.788	835.3	5125	0.1	1950	75000	912500	0.1124	######	2.038	5.96E-03	48.56	98.62	86.19	0	116.3	369.1
799	29.82	3000	1330	43.453069	2.3117	159.6	469.92	5125	0.1	1950	75000	2162500	0.1067	######	3.036	8.28E-03	76.41	88.49	0	0	83.8	521.8
800	22.82	3000	1070	155.368094	4.9839	96.2335	779.35	5125	0.1	1950	75000	1012500	0.1394	######	1.727	8.17E-03	70.53	96.78	67.82	0	84.9	387.9
801	36.11	3000	1100	73.678322	2.2652	92.2314	813.17	5125	0.1	1950	75000	950000	0.0881	######	2.361	1.27E-02	87.19	93.21	32.14	0	54.7	335.1
802	27.26	3000	1670	100.04644	6.0374	181.037	414.28	5125	0.1	1950	75000	2612500	0.1167	######	3.175	4.65E-03	61.63	95	50.02	0	149	596.9
803	46.58	3000	900	121.315945	6.101	150.869	497.12	5125	0.1	1950	75000	1987500	0.0683	######	2.63	1.18E-02	53.65	95.88	58.79	0	58.9	289.4
804	29.21	3000	1440	72.999724	2.2443	92.2314	813.17	5125	0.1	1950	75000	950000	0.1089	######	2.522	8.90E-03	35.51	93.15	31.51	0	77.9	442.5
805	31.62	3000	1300	411.060471	13.6165	99.3762	754.71	5125	0.1	1950	75000	1062500	0.1006	######	2.511	4.99E-03	62.73	98.78	87.84	0	138.9	407
806	33.1	3000	870	586.865418	21.0831	107.775	695.9	5125	0.1	1950	75000	1200000	0.0961	######	1.659	6.54E-03	55.68	99.15	91.48	14.8	106	256.9
807	50.1	3000	950	103.676604	4.322	125.062	599.7	5125	0.1	1950	75000	1500000	0.0635	######	2.551	1.35E-02	30.5	95.18	51.77	0	51.2	261
808	31.22	3000	920	45.717968	2.1222	139.257	538.57	5125	0.1	1950	75000	1762500	0.1019	######	2.118	1.30E-02	51.14	89.06	0	0	53.2	347.7
809	32.1	3000	1090	253.03675	7.6422	90.6061	827.76	5125	0.1	1950	75000	925000	0.0991	######	2.015	8.18E-03	66.26	98.02	80.24	0	84.8	321.7
810	44.56	3000	1420	37.010115	1.6524	133.938	559.96	5125	0.1	1950	75000	1662500	0.0714	######	3.329	1.18E-02	20.86	86.49	0	0	58.6	382.9
811	40.79	3000	2280	35.164584	1.57	133.938	559.96	5125	0.1	1950	75000	1662500	0.078	######	5.167	6.41E-03	68.81	85.78	0	0	108.2	649.2
812	24.4	3000	740	303.179873	18.4121	182.19	411.66	5125	0.1	1950	75000	2637500	0.1304	######	1.602	6.96E-03	35.18	98.35	83.51	0	99.5	336.6
813	35.59	3000	530	734.766818	42.7702	174.628	429.49	5125	0.1	1950	75000	2475000	0.0894	######	1.31	7.53E-03	27.69	99.32	93.2	31.95	92	188.6
814	26.91	3000	2380	21.133736	1.1715	166.296	451	5125	0.1	1950	75000	2300000	0.1182	######	4.022	5.75E-03	51.65	76.34	0	0	120.5	765.8
815	33.17	3000	1040	219.844861	6.818	93.0387	806.12	5125	0.1	1950	75000	962500	0.0959	######	1.894	9.27E-03	38.9	97.73	77.26	0	74.8	292.6
816	57.12	3000	930	203.13423	10.4286	154.016	486.96	5125	0.1	1950	75000	2050000	0.0557	######	3.001	1.03E-02	51.85	97.54	75.39	0	67.3	269.3
817	21.29	3000	1090	41.306885	1.3359	97.024	773	5125	0.1	1950	75000	1025000	0.1494	######	1.804	1.11E-02	84.89	87.9	0	0	62.3	434.1
818	55.62	3000	1190	531.353557	15.6112	88.1405	850.91	5125	0.1	1950	75000	887500	0.0572	######	2.885	6.83E-03	57.15	99.06	90.59	5.9	101.4	265.8
819	23.76	3000	770	245.402585	12.496	152.761	490.96	5125	0.1	1950	75000	2025000	0.1339	######	1.582	7.66E-03	62.3	97.96	79.63	0	90.4	341.3
820	32.33	3000	1860	83.364451	3.1994	115.135	651.41	5125	0.1	1950	75000	1325000	0.0984	######	3.385	6.51E-03	32.88	94	40.02	0	106.5	536.5
821	35	3000	930	840.502618	31.4404	112.22	668.33	5125	0.1	1950	75000	1275000	0.0909	######	1.99	4.51E-03	83.6	99.41	94.05	40.51	153.7	291.5
822	33.74	3000	810	132.109302	6.0451	137.274	546.35	5125	0.1	1950	75000	1725000	0.0943	######	1.839	1.16E-02	33.64	96.22	62.15	0	59.8	279.4
823	25.31	3000	840	46.236238	1.7521	113.682	659.73	5125	0.1	1950	75000	1300000	0.1257	######	1.487	1.47E-02	47.59	89.19	0	0	47.3	301.1
824	37.6	3000	610	864.589672	44.9265	155.889	481.11	5125	0.1	1950	75000	2087500	0.0846	######	1.537	6.11E-03	76.18	99.42	94.22	42.17	113.5	209.5
825	52.24	3000	2750	3.008805	0.1494	148.966	503.47	5125	0.1	1950	75000	1950000	0.0609	######	6.029	1.17E-02	24.9	0	0	0	59.2	591.5
826	47.7	3000	1600	5.654269	0.2832	150.236	499.21	5125	0.1	1950	75000	1975000	0.0667	######	5.302	1.43E-02	86.65	11.57	0	0	48.3	569.7

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
827	63.5	3000	2040	16.316089	0.6802	125.062	599.7	5125	0.1	1950	75000	1500000	0.0501	######	5.995	1.15E-02	49.45	69.36	0	0	60.1	483.9
828	52.67	3000	670	295.031226	17.4041	176.972	423.8	5125	0.1	1950	75000	2525000	0.0604	######	2.236	1.12E-02	55.31	98.31	83.05	0	62.1	217.6
829	32.66	3000	1440	90.318174	2.5529	84.7981	884.45	5125	0.1	1950	75000	837500	0.0974	######	2.555	9.19E-03	30.36	94.46	44.64	0	75.4	400.9
830	21.66	3000	1390	384.613354	19.3421	150.869	497.12	5125	0.1	1950	75000	1987500	0.1469	######	2.382	2.97E-03	69.85	98.7	87	0	233.7	563.7
831	25.91	3000	2000	42.872537	1.7573	122.968	609.91	5125	0.1	1950	75000	1462500	0.1228	######	3.266	6.38E-03	38.99	88.34	0	0	108.7	646.1
832	43.7	3000	600	900.12931	43.7359	145.765	514.53	5125	0.1	1950	75000	1887500	0.0728	######	1.44	7.18E-03	23.65	99.44	94.45	44.45	96.5	168.9
833	31.1	3000	1060	63.570817	2.546	120.15	624.22	5125	0.1	1950	75000	1412500	0.1023	######	2.147	1.13E-02	25.16	92.13	21.35	0	61.2	353.9
834	60.71	3000	1240	379.910523	13.6483	107.775	695.9	5125	0.1	1950	75000	1200000	0.0524	######	3.68	6.59E-03	78.25	98.68	86.84	0	105.2	310.7
835	31.78	3000	1010	227.455654	11.4866	151.501	495.05	5125	0.1	1950	75000	2000000	0.1001	######	2.16	7.50E-03	12.55	97.8	78.02	0	92.4	348.3
836	23.19	3000	760	114.537277	5.1902	135.945	551.69	5125	0.1	1950	75000	1700000	0.1372	######	1.475	1.07E-02	70.92	95.63	56.35	0	64.9	326
837	25.72	3000	650	76.262017	4.0728	160.215	468.12	5125	0.1	1950	75000	2175000	0.1237	######	1.399	1.39E-02	52.49	93.44	34.44	0	50	278.8
838	40.53	3000	2700	13.876515	0.3008	65.0346	1153.23	5125	0.1	1950	75000	562500	0.0785	######	4.593	1.01E-02	25.54	63.97	0	0	69	580.8
839	38.99	3000	1210	284.300531	8.6636	91.4206	820.38	5125	0.1	1950	75000	937500	0.0816	######	2.523	7.56E-03	60.33	98.24	82.41	0	91.7	331.7
840	29.7	3000	1240	401.636672	18.2892	136.61	549.01	5125	0.1	1950	75000	1712500	0.1071	######	2.489	4.47E-03	45.73	98.76	87.55	0	155.2	429.4
841	28.56	3000	1380	36.292275	1.5877	131.239	571.48	5125	0.1	1950	75000	1612500	0.1114	######	2.658	9.64E-03	33.77	86.22	0	0	71.9	477
842	30.68	3000	1220	46.444656	1.8601	120.15	624.22	5125	0.1	1950	75000	1412500	0.1037	######	2.411	1.09E-02	27.12	89.23	0	0	63.9	402.8
843	47.48	3000	650	549.114289	27.4989	150.236	499.21	5125	0.1	1950	75000	1975000	0.067	######	1.744	9.17E-03	28.34	99.09	90.89	8.94	75.6	188.2
844	25.07	3000	800	168.622665	7.1848	127.826	586.74	5125	0.1	1950	75000	1550000	0.1269	######	1.454	9.82E-03	16.63	97.03	70.35	0	70.6	297.2
845	29.98	3000	1600	14.55111	0.5549	114.41	655.54	5125	0.1	1950	75000	1312500	0.1061	######	3.558	1.04E-02	84.02	65.64	0	0	66.9	608.2
846	21.94	3000	800	576.650414	32.1961	167.499	447.76	5125	0.1	1950	75000	2325000	0.145	######	1.55	4.61E-03	28.12	99.13	91.33	13.29	150.2	362.1
847	24.03	3000	2200	11.118005	0.3854	103.999	721.16	5125	0.1	1950	75000	1137500	0.1324	######	3.263	8.36E-03	29.98	55.03	0	0	82.9	696
848	31.85	3000	1660	93.136322	4.8396	155.889	481.11	5125	0.1	1950	75000	2087500	0.0999	######	3.422	5.55E-03	60.5	94.63	46.32	0	125	550.7
849	23.97	3000	2410	9.038307	0.362	120.15	624.22	5125	0.1	1950	75000	1412500	0.1327	######	3.522	7.74E-03	30.03	44.68	0	0	89.5	753
850	26.16	3000	920	22.822771	1.1284	148.328	505.63	5125	0.1	1950	75000	1937500	0.1216	######	2.043	1.36E-02	64.16	78.09	0	0	51.1	400.1
851	32.97	3000	2130	102.178771	3.6962	108.522	691.1	5125	0.1	1950	75000	1212500	0.0965	######	3.832	5.21E-03	46.31	95.11	51.07	0	133	595.8
852	26.06	3000	1850	1.301251	0.0454	104.76	715.92	5125	0.1	1950	75000	1150000	0.1221	######	3.481	1.38E-02	53.38	0	0	0	50.3	684.8
853	24.62	3000	2220	10.047549	0.2952	88.1405	850.91	5125	0.1	1950	75000	887500	0.1292	######	3.464	8.72E-03	45.94	50.24	0	0	79.5	720.9
854	35.35	3000	690	659.578349	28.8541	131.239	571.48	5125	0.1	1950	75000	1612500	0.09	######	1.485	7.21E-03	57.74	99.24	92.42	24.19	96.1	215.3
855	43.88	3000	1620	67.34029	2.3515	104.76	715.92	5125	0.1	1950	75000	1150000	0.0725	######	3.476	9.66E-03	22.88	92.58	25.75	0	71.7	406
856	30.41	3000	1070	615.625877	24.3639	118.728	631.7	5125	0.1	1950	75000	1387500	0.1046	######	2.108	4.54E-03	40.48	99.19	91.88	18.78	152.7	355.3
857	44.43	3000	720	263.17593	12.7873	145.765	514.53	5125	0.1	1950	75000	1887500	0.0716	######	1.937	1.14E-02	45.85	98.1	81	0	61.1	223.4
858	36.95	3000	830	157.197651	4.2647	81.3886	921.51	5125	0.1	1950	75000	787500	0.0861	######	1.655	1.31E-02	16.14	96.82	68.19	0	53.1	229.5
859	61.77	3000	1100	129.626114	7.2633	168.099	446.17	5125	0.1	1950	75000	2337500	0.0515	######	3.914	9.36E-03	77.89	96.14	61.43	0	74	324.7
860	46.51	3000	940	731.603123	23.2747	95.4399	785.84	5125	0.1	1950	75000	1000000	0.0684	######	1.971	6.70E-03	57.4	99.32	93.17	31.66	103.5	217.2
861	26.64	3000	1410	389.396178	15.5031	119.44	627.93	5125	0.1	1950	75000	1400000	0.1194	######	2.562	3.84E-03	62.38	98.72	87.16	0	180.3	492.9
862	23.53	3000	810	91.875368	3.526	115.135	651.41	5125	0.1	1950	75000	1325000	0.1352	######	1.347	1.23E-02	41.41	94.56	45.58	0	56.2	293.5
863	33.38	3000	1100	49.473862	2.3398	141.878	528.62	5125	0.1	1950	75000	1812500	0.0953	######	2.442	1.15E-02	29.3	89.89	0	0	60.5	374.9
864	21.77	3000	1070	48.210801	2.0209	125.755	596.4	5125	0.1	1950	75000	1512500	0.1461	######	1.971	9.71E-03	66.12	89.63	0	0	71.4	463.9
865	25.25	3000	1190	231.410656	5.5242	71.6152	1047.26	5125	0.1	1950	75000	650000	0.126	######	1.544	8.33E-03	24.71	97.84	78.39	0	83.2	313.5
866	40.02	3000	1620	351.000978	15.7493	134.609	557.17	5125	0.1	1950	75000	1675000	0.0795	######	3.365	4.53E-03	23.47	98.58	85.76	0	153.1	431
867	28.13	3000	2020	24.630389	1.2799	155.889	481.11	5125	0.1	1950	75000	2087500	0.1131	######	3.437	7.22E-03	28.74	79.7	0	0	96	626.2
868	32.66	3000	1620	95.709402	4.9535	155.266	483.04	5125	0.1	1950	75000	2075000	0.0974	######	3.123	6.66E-03	22.86	94.78	47.76	0	104.1	490
869	31.59	3000	900	621.710935	28.7225	138.597	541.14	5125	0.1	1950	75000	1750000	0.1007	######	2.048	4.77E-03	79.96	99.2	91.96	19.58	145.4	332.2
870	22.44	3000	910	41.80442	1.9313	138.597	541.14	5125	0.1	1950	75000	1750000	0.1418	######	1.676	1.16E-02	29.9	88.04	0	0	59.6	382.8
871	24.83	3000	1870	1.646672	0.0675	122.968	609.91	5125	0.1	1950	75000	1462500	0.1281	######	3.473	1.23E-02	53.1	0	0	0	56.3	716.8
872	27.1	3000	1120	37.462981	1.7472	139.914	536.04	5125	0.1	1950	75000	1775000	0.1174	######	2.183	1.10E-02	22	86.65	0	0	62.9	412.9
873	27.96	3000	1240	65.146157	2.0552	94.6429	792.45	5125	0.1	1950	75000	987500	0.1138	######	2.226	1.01E-02	47.73	92.32	23.25	0	68.6	408.1
874	27.5	3000	1260	5.324666	0.1819	102.47	731.92	5125	0.1	1950	75000	1112500	0.1157	######	2.398	1.59E-02	42.95	6.1	0	0	43.5	447
875	26.44	3000	1320	0.701647	0.0414	176.972	423.8	5125	0.1	1950	75000	2525000	0.1203	######	3.12	1.70E-02	63.89	0	0	0	40.8	604.7
876	30.8	3000	880	451.210448	20.5467	136.61	549.01	5125	0.1	1950	75000	1712500	0.1033	######	1.856	6.25E-03	28.71	98.89	88.92	0	110.9	308.9
877	23.85	3000	1380	137.041022	5.6811	124.366	603.06	5125	0.1	1950	75000	1487500	0.1334	######	2.312	6.32E-03	27.84	96.35	63.51	0	109.7	496.9
878	30.21	3000	590	50.097357	3.0424	182.19	411.66	5125	0.1	1950	75000	2637500	0.1053	######	1.482	1.71E-02	44.21	90.02	0.19	0	40.5	251.4
879	23.39	3000	740	200.946075	10.5249	157.131	477.31	5125	0.1	1950	75000	2112500	0.136	######	1.507	8.52E-03	51.22	97.51	75.12	0	81.4	330.1
880	57.42	3000	2590	27.262368	0.6508	71.6152	1047.26	5125	0.1	1950	75000	650000	0.0554	######	6.007	9.76E-03	44.62	81.66	0	0	71	536.1
881	35.23	3000	960	156.245246	7.4908	143.828	521.46	5125	0.1	1950	75000	1850000	0.0903	######	2.239	9.40E-03	32.37	96.8	68	0	73.7	325.7
882	23.2	3000	1530	13.934655	0.5614	120.857	620.57	5125	0.1	1950	75000	1425000	0.1371	######	2.945	9.51E-03	83.46	64.12	0	0	72.9	650.4
883	56.51	3000	920	117.637183	5.7662	147.05	510.03	5125	0.1	1950	75000	1912500	0.0563	######	2.924	1.30E-02	48.97	95.75	57.5	0	53.3	265.2
884	44.19	3000	2170	0.602961	0.0277	137.937	543.73	5125	0.1	1950	75000	1737500	0.072	######	5.536	1.65E-02	44.3	0	0	0	42.1	642.1
885	24.59	3000	1450	24.277373	0.6446	79.6568	941.54	5125	0.1	1950	75000	762500	0.1294	######	2.164	1.12E-02	24.85	79.4	0	0	61.8	451.1

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
886	51.64	3000	1860	66.958603	2.7132	121.563	616.96	5125	0.1	1950	75000	1437500	0.0616	######	4.648	7.91E-03	47.41	92.53	25.33	0	87.6	461.2
887	21.48	3000	1340	133.466885	6.1072	137.274	546.35	5125	0.1	1950	75000	1725000	0.1481	######	2.33	5.50E-03	63.79	96.25	62.54	0	126	555.8
888	44	3000	1070	618.507984	22.9848	111.485	672.73	5125	0.1	1950	75000	1262500	0.0723	######	2.584	5.36E-03	63.25	99.19	91.92	19.16	129.4	301
889	21.85	3000	1200	6.357583	0.265	125.062	599.7	5125	0.1	1950	75000	1500000	0.1456	######	2.13	1.35E-02	39.53	21.35	0	0	51.4	499.6
890	23.48	3000	2240	33.823219	1.2981	115.135	651.41	5125	0.1	1950	75000	1325000	0.1355	######	3.45	5.79E-03	51.59	85.22	0	0	119.7	753.1
891	45.51	3000	840	113.103463	5.9006	156.51	479.2	5125	0.1	1950	75000	2100000	0.0699	######	2.341	1.30E-02	30.14	95.58	55.79	0	53.5	263.6
892	31.78	3000	620	186.003086	7.7539	125.062	599.7	5125	0.1	1950	75000	1500000	0.1001	######	1.187	1.49E-02	40.64	97.31	73.12	0	46.5	191.5
893	54.57	3000	890	1039.42406	34.4313	99.3762	754.71	5125	0.1	1950	75000	1062500	0.0583	######	2.031	5.69E-03	59.02	99.52	95.19	51.9	121.7	190.7
894	41.64	3000	610	250.117782	15.1416	181.614	412.96	5125	0.1	1950	75000	2625000	0.0764	######	1.745	1.19E-02	30.05	98	80.01	0	58.4	214.7
895	35.15	3000	1010	95.660444	3.6017	112.952	664	5125	0.1	1950	75000	1287500	0.0905	######	2.222	1.14E-02	51.34	94.77	47.73	0	60.6	323.9
896	33.56	3000	1400	6.753102	0.2392	106.273	705.73	5125	0.1	1950	75000	1175000	0.0948	######	2.991	1.52E-02	43.35	25.96	0	0	45.7	456.8
897	28.63	3000	2300	3.968586	0.2152	162.661	461.08	5125	0.1	1950	75000	2225000	0.1111	######	3.911	9.38E-03	29.32	0	0	0	73.9	699.9
898	23.43	3000	970	8.659516	0.4245	147.05	510.03	5125	0.1	1950	75000	1912500	0.1358	######	2.009	1.49E-02	57.93	42.26	0	0	46.4	439.6
899	33.31	3000	1760	10.474642	0.4908	140.57	533.54	5125	0.1	1950	75000	1787500	0.0955	######	3.601	1.06E-02	37.42	52.27	0	0	65.3	553.9
900	58.59	3000	2850	17.08425	0.7201	126.447	593.13	5125	0.1	1950	75000	1525000	0.0543	######	7.973	7.70E-03	70.51	70.73	0	0	90	697.4
901	35.67	3000	1620	189.710228	6.2348	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0892	######	2.993	6.54E-03	18.9	97.36	73.64	0	105.9	430.2
902	22.39	3000	1180	203.413938	5.2824	77.906	962.7	5125	0.1	1950	75000	737500	0.1421	######	1.555	7.81E-03	40.44	97.54	75.42	0	88.8	356
903	40.32	3000	2480	162.973991	4.6066	84.7981	884.45	5125	0.1	1950	75000	837500	0.0789	######	4.732	4.26E-03	60.55	96.93	69.32	0	162.9	601.4
904	30.33	3000	880	20.936062	1.1181	160.215	468.12	5125	0.1	1950	75000	2175000	0.1049	######	2.157	1.50E-02	56.52	76.12	0	0	46.1	364.5
905	58.37	3000	1140	1526.587168	53.3084	104.76	715.92	5125	0.1	1950	75000	1150000	0.0545	######	2.973	2.52E-03	43.74	99.67	96.72	67.25	274.9	261
906	38.28	3000	1570	192.463486	7.0575	110.009	681.77	5125	0.1	1950	75000	1237500	0.0831	######	3.137	6.58E-03	22.18	97.4	74.02	0	105.3	419.9
907	30.71	3000	710	302.202729	13.2203	131.239	571.48	5125	0.1	1950	75000	1612500	0.1036	######	1.424	9.93E-03	43.85	98.35	83.45	0	69.8	237.7
908	26.25	3000	1370	126.913252	4.8093	113.682	659.73	5125	0.1	1950	75000	1300000	0.1212	######	2.369	7.03E-03	25.33	96.06	60.6	0	98.6	462.6
909	36.23	3000	2230	0.537053	0.0198	110.748	677.21	5125	0.1	1950	75000	1250000	0.0878	######	4.455	1.58E-02	30.22	0	0	0	43.8	630.1
910	37.96	3000	1650	469.582682	12.874	82.2476	911.88	5125	0.1	1950	75000	800000	0.0838	######	3.045	4.58E-03	34.03	98.94	89.35	0	151.5	411.1
911	31.44	3000	2230	8.137254	0.1892	69.767	1075.01	5125	0.1	1950	75000	625000	0.1012	######	4.421	1.08E-02	79.08	38.55	0	0	64.2	720.7
912	38.56	3000	2450	38.20438	1.1951	93.8425	799.21	5125	0.1	1950	75000	975000	0.0825	######	4.205	7.79E-03	18.44	86.91	0	0	89	558.9
913	29.48	3000	1070	26.766302	0.9549	107.025	700.77	5125	0.1	1950	75000	1187500	0.1079	######	2.267	1.38E-02	77.21	81.32	0	0	50.1	394
914	24.12	3000	1300	236.360527	9.014	114.41	655.54	5125	0.1	1950	75000	1312500	0.1319	######	2.189	5.59E-03	32.75	97.88	78.85	0	124.1	465.1
915	36.52	3000	690	383.990965	18.5751	145.121	516.81	5125	0.1	1950	75000	1875000	0.0871	######	1.653	9.12E-03	42.67	98.7	86.98	0	76	231.9
916	27.69	3000	1130	229.342158	9.4541	123.668	606.46	5125	0.1	1950	75000	1475000	0.1149	######	2.14	6.67E-03	30.95	97.82	78.2	0	103.9	396.1
917	22.55	3000	1570	496.707893	17.2191	103.999	721.16	5125	0.1	1950	75000	1137500	0.1411	######	2.374	3.24E-03	38.3	98.99	89.93	0	213.7	539.6
918	48.5	3000	1990	21.06052	0.5714	81.3886	921.51	5125	0.1	1950	75000	787500	0.0656	######	4.929	1.14E-02	63.39	76.26	0	0	60.8	520.9
919	40.79	3000	720	944.861707	37.618	119.44	627.93	5125	0.1	1950	75000	1400000	0.078	######	1.467	6.34E-03	35.12	99.47	94.71	47.08	109.3	184.3
920	24.23	3000	1280	16.861273	0.4623	82.2476	911.88	5125	0.1	1950	75000	800000	0.1313	######	2.134	1.32E-02	71.53	70.35	0	0	52.3	451.3
921	28.74	3000	1030	207.543021	6.9824	100.929	743.1	5125	0.1	1950	75000	1087500	0.1107	######	1.852	8.40E-03	39.34	97.59	75.91	0	82.6	330.2
922	30.36	3000	1230	57.593428	2.1261	110.748	677.21	5125	0.1	1950	75000	1250000	0.1048	######	2.651	9.91E-03	79.72	91.32	13.18	0	69.9	447.6
923	22.29	3000	1690	9.646659	0.4132	128.512	583.6	5125	0.1	1950	75000	1562500	0.1427	######	2.751	9.55E-03	36.1	48.17	0	0	72.6	632.4
924	33.1	3000	640	589.047399	20.7183	105.518	710.78	5125	0.1	1950	75000	1162500	0.0961	######	1.265	8.42E-03	30.34	99.15	91.51	15.12	82.4	195.8
925	23.64	3000	670	418.902069	25.92	185.628	404.03	5125	0.1	1950	75000	2712500	0.1346	######	1.457	6.40E-03	52.12	98.81	88.06	0	108.4	315.9
926	43.46	3000	1200	223.071392	11.5451	155.266	483.04	5125	0.1	1950	75000	2075000	0.0732	######	3.088	6.75E-03	44.61	97.76	77.59	0	102.7	364.1
927	36.23	3000	730	113.397544	5.3629	141.878	528.62	5125	0.1	1950	75000	1812500	0.0878	######	1.798	1.37E-02	57.08	95.59	55.91	0	50.5	254.3
928	44.87	3000	2840	12.091898	0.6383	158.368	473.58	5125	0.1	1950	75000	2137500	0.0709	######	6.229	7.23E-03	51.49	58.65	0	0	95.9	711.5
929	21.28	3000	1100	16.559145	0.6865	124.366	603.06	5125	0.1	1950	75000	1487500	0.1495	######	1.856	1.22E-02	24.27	69.81	0	0	57	447.1
930	63.12	3000	1070	282.165615	7.8162	83.1021	902.5	5125	0.1	1950	75000	812500	0.0504	######	2.373	1.25E-02	17.43	98.23	82.28	0	55.4	192.6
931	32.23	3000	730	536.729357	23.8426	133.266	562.78	5125	0.1	1950	75000	1650000	0.0987	######	1.539	7.17E-03	38.55	99.07	90.68	6.84	96.6	244.7
932	31.41	3000	930	73.229226	3.7289	152.761	490.96	5125	0.1	1950	75000	2025000	0.1013	######	2.29	1.08E-02	74.45	93.17	31.72	0	64.3	373.7
933	28.95	3000	1090	5.713062	0.2837	148.966	503.47	5125	0.1	1950	75000	1950000	0.1099	######	2.343	1.63E-02	30.2	12.48	0	0	42.6	414.8
934	24.34	3000	690	205.65435	8.1878	119.44	627.93	5125	0.1	1950	75000	1400000	0.1307	######	1.296	9.92E-03	14.27	97.57	75.69	0	69.9	272.9
935	21.61	3000	780	56.176236	1.8316	97.8112	766.78	5125	0.1	1950	75000	1037500	0.1472	######	1.287	1.33E-02	16.97	91.1	10.99	0	52.3	305.2
936	22.59	3000	1770	32.343658	1.4728	136.61	549.01	5125	0.1	1950	75000	1712500	0.1408	######	2.861	6.91E-03	41.56	84.54	0	0	100.4	648.9
937	37.25	3000	1490	3.589256	0.2061	172.268	435.37	5125	0.1	1950	75000	2425000	0.0854	######	3.977	1.43E-02	62.66	0	0	0	48.4	547.1
938	25.19	3000	1010	454.249482	17.1028	112.952	664	5125	0.1	1950	75000	1287500	0.1263	######	1.753	5.38E-03	26.07	98.9	88.99	0	128.8	356.6
939	27.33	3000	1060	10.005136	0.3767	112.952	664	5125	0.1	1950	75000	1287500	0.1164	######	2.168	1.60E-02	59.1	50.03	0	0	43.4	406.5
940	21.34	3000	740	73.233872	3.7597	154.016	486.96	5125	0.1	1950	75000	2050000	0.1491	######	1.385	1.14E-02	20.38	93.17	31.73	0	60.8	332.6
941	44.12	3000	1000	346.110195	11.3749	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0721	######	2.213	8.85E-03	57.38	98.56	85.55	0	78.3	257.1
942	61.06	3000	2180	154.932312	4.3356	83.9523	893.36	5125	0.1	1950	75000	825000	0.0521	######	5.68	5.86E-03	69.76	96.77	67.73	0	118.3	476.7
943	28.1	3000	1440	2.184568	0.087	119.44	627.93	5125	0.1	1950	75000	1400000	0.1132	######	3.061	1.56E-02	57.22	0	0	0	44.5	558.1
944	42.93	3000	770	616.352643	22.4489	109.267	686.4	5125	0.1	1950	75000	1225000	0.0741	######	1.507	9.00E-03	47.82	99.19	91.89	18.88	77.1	179.8

Simulation Parameters and Results: 10% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
945	34.13	3000	1550	3.170093	0.094	88.9661	843.02	5125	0.1	1950	75000	900000	0.0932	######	3.357	1.68E-02	56.3	0	0	0	41.3	504.1
946	22.02	3000	990	47.547549	2.2071	139.257	538.57	5125	0.1	1950	75000	1762500	0.1445	######	1.748	1.04E-02	17.09	89.48	0	0	66.5	406.9
947	27.57	3000	1200	66.94968	2.8064	125.755	596.4	5125	0.1	1950	75000	1512500	0.1154	######	2.595	8.63E-03	89.95	92.53	25.32	0	80.3	482.5
948	43.46	3000	520	990.220822	40.1248	121.563	616.96	5125	0.1	1950	75000	1437500	0.0732	######	1.287	7.37E-03	31.32	99.5	94.95	49.51	94.1	151.8
949	26.56	3000	2090	4.193298	0.1173	83.9523	893.36	5125	0.1	1950	75000	825000	0.1198	######	3.586	1.12E-02	51.89	0	0	0	61.7	692.1
950	53.29	3000	1610	286.261546	12.328	129.196	580.51	5125	0.1	1950	75000	1575000	0.0597	######	4.031	5.24E-03	39.47	98.25	82.53	0	132.3	387.7
951	30.56	3000	1150	10.036993	0.3377	100.929	743.1	5125	0.1	1950	75000	1087500	0.1041	######	2.352	1.65E-02	55.64	50.18	0	0	41.9	394.4
952	29.29	3000	1990	13.3213	0.3139	70.6941	1060.91	5125	0.1	1950	75000	637500	0.1086	######	3.552	1.06E-02	66.6	62.47	0	0	65.7	621.5
953	33.38	3000	1270	33.59891	1.8217	162.661	461.08	5125	0.1	1950	75000	2225000	0.0953	######	2.964	1.02E-02	50.37	85.12	0	0	68.2	455.1
954	38.42	3000	1160	907.226573	31.6803	104.76	715.92	5125	0.1	1950	75000	1150000	0.0828	######	2.445	3.70E-03	44.81	99.45	94.49	44.89	187.2	326.1
955	32.01	3000	760	540.585971	24.3764	135.278	554.42	5125	0.1	1950	75000	1687500	0.0994	######	1.66	6.64E-03	54.49	99.08	90.75	7.51	104.4	265.8
956	35.51	3000	1520	54.723167	3.1099	170.487	439.92	5125	0.1	1950	75000	2387500	0.0896	######	3.55	7.28E-03	63.09	90.86	8.63	0	95.2	512.5
957	24.25	3000	1120	36.450521	0.9678	79.6568	941.54	5125	0.1	1950	75000	762500	0.1312	######	1.621	1.41E-02	67.42	86.28	0	0	49.2	342.6
958	53.74	3000	850	435.456266	20.1177	138.597	541.14	5125	0.1	1950	75000	1750000	0.0592	######	2.624	8.03E-03	82.52	98.85	88.52	0	86.3	250.3
959	26.4	3000	770	373.040098	19.4615	156.51	479.2	5125	0.1	1950	75000	2100000	0.1205	######	1.6	6.79E-03	17.74	98.66	86.6	0	102.1	310.5
960	40.27	3000	1160	732.660702	40.7598	166.898	449.38	5125	0.1	1950	75000	2312500	0.079	######	2.755	3.81E-03	19.29	99.32	93.18	31.76	181.9	350.6
961	22.59	3000	1490	190.36979	8.7949	138.597	541.14	5125	0.1	1950	75000	1750000	0.1408	######	2.415	4.88E-03	28.44	97.37	73.74	0	141.9	547.8
962	28.35	3000	1870	46.669963	1.8024	115.858	647.34	5125	0.1	1950	75000	1337500	0.1122	######	3.659	6.43E-03	82.77	89.29	0	0	107.8	661.3
963	22.08	3000	630	446.450139	26.6829	179.3	418.29	5125	0.1	1950	75000	2575000	0.1441	######	1.285	6.48E-03	32.3	98.88	88.8	0	106.9	298.4
964	45	3000	900	449.770298	14.7817	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0707	######	1.809	9.39E-03	29.22	98.89	88.88	0	73.8	206
965	22.09	3000	890	194.843955	9.2147	141.878	528.62	5125	0.1	1950	75000	1812500	0.144	######	1.645	7.40E-03	38.58	97.43	74.34	0	93.7	381.6
966	60.83	3000	670	359.224699	14.5562	121.563	616.96	5125	0.1	1950	75000	1437500	0.0523	######	1.604	1.62E-02	42.56	98.61	86.08	0	42.9	135.1
967	36.69	3000	1430	296.316073	13.0964	132.592	565.65	5125	0.1	1950	75000	1637500	0.0867	######	3.006	5.25E-03	30.78	98.31	83.13	0	132.1	419.9
968	31.22	3000	1840	7.495099	0.2284	91.4206	820.38	5125	0.1	1950	75000	937500	0.1019	######	3.641	1.18E-02	56.33	33.29	0	0	58.6	597.8
969	53.47	3000	920	276.828917	11.087	120.15	624.22	5125	0.1	1950	75000	1412500	0.0595	######	2.382	1.06E-02	14.64	98.19	81.94	0	65.4	228.3
970	41.37	3000	2220	8.680897	0.3373	116.579	643.34	5125	0.1	1950	75000	1350000	0.0769	######	4.847	1.05E-02	43.52	42.4	0	0	66.2	600.5
971	51.56	3000	970	988.083991	30.9081	93.8425	799.21	5125	0.1	1950	75000	975000	0.0617	######	2.1	5.41E-03	36.81	99.49	94.94	49.4	128.1	208.8
972	32.36	3000	1000	176.558672	7.9615	135.278	554.42	5125	0.1	1950	75000	1687500	0.0983	######	2.146	8.59E-03	27.92	97.17	71.68	0	80.7	339.8
973	35.87	3000	1310	38.435481	1.6289	127.137	589.91	5125	0.1	1950	75000	1537500	0.0887	######	2.916	1.11E-02	37.83	86.99	0	0	62.6	416.7
974	49.17	3000	1870	85.884228	2.8672	100.154	748.85	5125	0.1	1950	75000	1075000	0.0647	######	4.049	8.50E-03	23.07	94.18	41.78	0	81.5	422
975	57.22	3000	820	553.840192	29.1227	157.75	475.44	5125	0.1	1950	75000	2125000	0.0556	######	2.629	7.25E-03	53.54	99.1	90.97	9.72	95.6	235.5
976	33.92	3000	710	406.748236	14.3064	105.518	710.78	5125	0.1	1950	75000	1162500	0.0938	######	1.393	9.62E-03	25.62	98.77	87.71	0	72	210.5
977	22.14	3000	1070	239.904037	11.3978	142.53	526.21	5125	0.1	1950	75000	1825000	0.1437	######	1.973	5.59E-03	60.45	97.92	79.16	0	123.9	456.8
978	29	3000	1930	19.413021	0.8048	124.366	603.06	5125	0.1	1950	75000	1487500	0.1097	######	3.788	7.95E-03	66.96	74.24	0	0	87.1	669.3
979	37.47	3000	970	872.964575	28.6901	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0849	######	1.891	4.87E-03	43.93	99.43	94.27	42.72	142.4	258.7
980	51.23	3000	670	757.809524	33.4932	132.592	565.65	5125	0.1	1950	75000	1637500	0.0621	######	1.721	8.22E-03	61.82	99.34	93.4	34.02	84.3	172.2
981	22.11	3000	2480	52.208516	2.1885	125.755	596.4	5125	0.1	1950	75000	1512500	0.1439	######	3.359	4.67E-03	32.8	90.42	4.23	0	148.3	778.7
982	33.59	3000	1760	10.546462	0.2861	81.3886	921.51	5125	0.1	1950	75000	787500	0.0947	######	3.343	1.26E-02	43.24	52.59	0	0	54.8	510
983	24.21	3000	720	342.996928	15.6949	137.274	546.35	5125	0.1	1950	75000	1725000	0.1314	######	1.343	7.85E-03	50.7	98.54	85.42	0	88.3	284.2
984	44.62	3000	750	416.377292	18.309	131.916	568.54	5125	0.1	1950	75000	1625000	0.0713	######	1.853	9.48E-03	29.59	98.8	87.99	0	73.1	212.8
985	55.52	3000	870	783.077206	33.5449	128.512	583.6	5125	0.1	1950	75000	1562500	0.0573	######	2.44	6.10E-03	38.48	99.36	93.61	36.15	113.7	225.2
986	37.52	3000	990	156.304259	5.0139	96.2335	779.35	5125	0.1	1950	75000	1012500	0.0848	######	2.03	1.16E-02	72.32	96.8	68.01	0	60	277.3
987	25.89	3000	1140	365.245236	16.4698	135.278	554.42	5125	0.1	1950	75000	1687500	0.1229	######	2.204	4.74E-03	59.25	98.63	86.31	0	146.1	436.4
988	24.82	3000	1480	11.474428	0.3434	89.788	835.3	5125	0.1	1950	75000	912500	0.1282	######	2.431	1.21E-02	36.51	56.42	0	0	57.2	502.1
989	29.7	3000	780	158.890799	7.5144	141.878	528.62	5125	0.1	1950	75000	1812500	0.1071	######	1.674	1.04E-02	27.79	96.85	68.53	0	66.4	288.8
990	31.5	3000	2680	6.150075	0.2179	106.273	705.73	5125	0.1	1950	75000	1175000	0.101	######	4.793	8.62E-03	48.08	18.7	0	0	80.4	779.8
991	26.4	3000	830	438.38963	17.4537	119.44	627.93	5125	0.1	1950	75000	1400000	0.1205	######	1.487	6.78E-03	30.54	98.86	88.59	0	102.3	288.6
992	30.62	3000	750	1393.09538	65.8832	141.878	528.62	5125	0.1	1950	75000	1812500	0.1039	######	1.578	2.92E-03	22.34	99.64	96.41	64.11	237.3	264
993	47.98	3000	650	928.878938	37.2015	120.15	624.22	5125	0.1	1950	75000	1412500	0.0663	######	1.543	7.18E-03	24.09	99.46	94.62	46.17	96.6	164.8
994	57.95	3000	730	154.224972	7.2937	141.878	528.62	5125	0.1	1950	75000	1812500	0.0549	######	2.217	1.57E-02	30.3	96.76	67.58	0	44.1	196
995	38.84	3000	1020	12.246897	0.555	135.945	551.69	5125	0.1	1950	75000	1700000	0.0819	######	2.525	1.79E-02	31.25	59.17	0	0	38.8	333.1
996	28.48	3000	840	212.159242	9.614	135.945	551.69	5125	0.1	1950	75000	1700000	0.1117	######	1.741	8.75E-03	39.05	97.64	76.43	0	79.2	313.2
997	40.07	3000	1100	212.490077	6.9835	98.5952	760.69	5125	0.1	1950	75000	1050000	0.0794	######	2.289	9.35E-03	28.92	97.65	76.47	0	74.1	292.8
998	23.79	3000	920	274.623399	10.2727	112.22	668.33	5125	0.1	1950	75000	1275000	0.1337	######	1.548	7.33E-03	30.6	98.18	81.79	0	94.6	333.5
999	44.81	3000	1500	9.920304	0.5338	161.44	464.57	5125	0.1	1950	75000	2200000	0.071	######	3.905	1.35E-02	39.29	49.6	0	0	51.3	446.6
1000	32.9	3000	610	1223.83953	64.8573	158.985	471.74	5125	0.1	1950	75000	2150000	0.0967	######	1.439	4.08E-03	80.2	99.59	95.91	59.14	169.9	224.1

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (µg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 µg/L Compliance)	Required Source Cleanup Percentage (50 µg/L Compliance)	Required Source Cleanup Percentage (500 µg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
1	58.91	3000	2880	20.884307	0.856	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.054	4.50E-04	5.208	1.24E-02	26.99	76.06	0	0	55.8	453.1
2	22.15	3000	3950	4.97586	0.103	62.1111	3622.54	5125	0.1	1950	225000	525000	0.1436	5.26E-04	2.853	1.23E-02	76.26	0	0	0	56.2	660
3	30.44	3000	1800	118.468698	5.4471	137.9366	1631.18	5125	0.1	1950	225000	1737500	0.1045	2.01E-04	1.975	1.04E-02	55.4	95.78	57.79	0	66.7	332.4
4	22.99	3000	1560	467.441712	26.4715	169.8917	1324.37	5125	0.1	1950	225000	2375000	0.1384	1.93E-04	1.704	5.00E-03	35.33	98.93	89.3	0	138.6	379.8
5	45.25	3000	2910	60.625998	1.8802	93.0387	2418.35	5125	0.1	1950	225000	962500	0.0703	4.20E-04	4.023	1.02E-02	63.48	91.75	17.53	0	67.8	455.6
6	35.04	3000	2500	122.485137	6.4911	158.9847	1415.23	5125	0.1	1950	225000	2150000	0.0908	5.19E-04	3.891	6.07E-03	48.82	95.92	59.18	0	114.2	569.2
7	59.13	3000	2120	281.623874	11.8052	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.0538	2.52E-04	3.363	8.53E-03	33	98.22	82.25	0	81.2	291.5
8	49.32	3000	3320	26.762314	0.9814	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.0645	5.92E-04	5.636	9.74E-03	44.48	81.32	0	0	71.2	585.6
9	26.53	3000	2330	33.742146	1.3031	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.1199	3.81E-04	2.608	1.02E-02	62.53	85.18	0	0	68.1	503.7
10	29.57	3000	3030	435.119264	15.6316	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.1076	5.07E-04	3.384	3.45E-03	39.84	98.85	88.51	0	201.2	586.6
11	28.46	3000	2210	235.920715	11.7147	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.1118	3.95E-04	2.788	5.27E-03	29.73	97.88	78.81	0	131.5	502.1
12	21.41	3000	1390	185.517538	4.6529	75.2423	2990.34	5125	0.1	1950	225000	700000	0.1486	1.17E-04	1.399	8.58E-03	42.84	97.3	73.05	0	80.8	334.8
13	62.5	3000	3200	5.822751	0.2804	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.0509	6.74E-04	7.691	1.36E-02	49.38	14.13	0	0	50.8	630.6
14	28.87	3000	3390	19.785743	0.7304	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.1102	6.60E-04	4.027	7.91E-03	33.57	74.73	0	0	87.7	714.9
15	41	3000	2740	28.562124	1.1304	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0776	4.97E-04	4.236	1.04E-02	47.28	82.49	0	0	67	529.6
16	37.83	3000	2050	1286.001247	49.9734	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0841	1.65E-04	1.989	3.20E-03	55.5	99.61	96.11	61.12	216.6	269.5
17	59.24	3000	1730	716.319339	34.651	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.0537	1.80E-04	2.697	6.33E-03	41.22	99.3	93.02	30.2	109.5	233.3
18	52.5	3000	2060	201.416671	7.9712	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0606	1.94E-04	2.617	1.12E-02	39.63	97.52	75.18	0	62.2	255.5
19	29.59	3000	650	436.709687	19.8863	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1075	3.26E-05	1.153	9.82E-03	41.91	98.86	88.55	0	70.6	199.7
20	21.6	3000	1530	14.644185	0.9117	186.7666	1204.71	5125	0.1	1950	225000	2737500	0.1473	2.62E-04	1.901	1.28E-02	42.14	65.86	0	0	54.2	451
21	31.69	3000	2770	49.577248	2.6679	161.4401	1393.71	5125	0.1	1950	225000	2200000	0.1004	5.94E-04	3.993	6.88E-03	37.29	89.91	0	0	100.7	645.8
22	26.1	3000	2500	17.675777	0.6172	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.1219	3.26E-04	2.352	1.18E-02	27.73	71.71	0	0	58.5	461.8
23	22.18	3000	1640	89.296983	4.6586	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.1434	1.94E-04	1.682	9.48E-03	42.19	94.4	44.01	0	73.1	388.6
24	28.87	3000	2690	213.361054	8.5954	120.8573	1861.7	5125	0.1	1950	225000	1425000	0.1102	4.92E-04	3.258	4.93E-03	49.66	97.66	76.57	0	140.7	578.4
25	29	3000	2910	329.500563	13.5061	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.1097	5.47E-04	3.519	3.73E-03	46.41	98.48	84.83	0	185.8	622
26	22.76	3000	3930	322.163526	10.7553	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.1398	7.66E-04	3.771	2.71E-03	45.07	98.45	84.48	0	256.3	849.3
27	43.28	3000	2930	74.174946	2.3203	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0735	3.68E-04	3.53	9.45E-03	26.64	93.26	32.59	0	73.3	417.9
28	21.94	3000	1130	95.233404	5.7835	182.1901	1234.97	5125	0.1	1950	225000	2637500	0.145	1.04E-04	1.361	1.12E-02	34.57	94.75	47.5	0	61.9	317.9
29	45.38	3000	1480	838.084461	36.0925	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.0701	1.10E-04	1.794	6.46E-03	58.83	99.4	94.03	40.34	107.3	202.6
30	34.81	3000	2210	39.563262	1.4015	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.0914	1.87E-04	2.034	1.66E-02	85.44	87.36	0	0	41.8	299.4
31	25.11	3000	2730	145.565834	4.5534	93.8425	2397.63	5125	0.1	1950	225000	975000	0.1267	3.59E-04	2.433	6.68E-03	67.25	96.57	65.65	0	103.8	496.7
32	21.44	3000	2040	5.724448	0.2543	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1484	3.31E-04	2.126	1.37E-02	42.06	12.66	0	0	50.7	508.2
33	49.71	3000	1360	458.422988	19.4276	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.064	1.28E-04	2.015	9.28E-03	34.79	98.91	89.09	0	74.7	207.7
34	31.72	3000	1850	142.402068	7.1012	149.6016	1503.99	5125	0.1	1950	225000	1962500	0.1003	2.73E-04	2.374	8.34E-03	35.37	96.49	64.89	0	83.1	383.5
35	32.56	3000	2640	33.247014	1.4843	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.0977	5.12E-04	3.649	8.74E-03	36.93	84.96	0	0	79.4	574.3
36	46.92	3000	3100	219.058995	9.6325	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.0678	6.32E-04	5.714	4.43E-03	83.15	97.72	77.18	0	156.6	624
37	55.81	3000	620	863.706063	33.5632	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.057	6.59E-05	1.584	8.64E-03	26.14	99.42	94.21	42.11	80.2	145.5
38	29.79	3000	1920	532.699315	17.368	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.1068	1.81E-04	1.858	5.53E-03	36.63	99.06	90.61	6.14	125.3	319.7
39	24.51	3000	2350	6.542794	0.2447	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.1298	3.96E-04	2.543	1.39E-02	67.64	23.58	0	0	49.9	531.7
40	23.9	3000	2350	135.063355	3.9682	88.1405	2552.74	5125	0.1	1950	225000	887500	0.1331	2.04E-04	1.775	8.60E-03	52.06	96.3	62.98	0	80.6	380.6
41	31.91	3000	2640	107.058862	3.2625	91.4206	2461.15	5125	0.1	1950	225000	937500	0.0997	2.81E-04	2.424	9.68E-03	83.34	95.33	53.3	0	71.6	389.4
42	25.8	3000	2280	196.751746	9.0898	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.1233	3.92E-04	2.607	5.43E-03	23.41	97.46	74.59	0	127.6	517.9
43	31.53	3000	1780	148.531295	5.7004	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.1009	1.83E-04	1.915	1.00E-02	31.71	96.63	66.34	0	69.3	311.2
44	22.5	3000	1910	63.085456	2.6152	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1414	1.59E-04	1.569	1.19E-02	87.64	92.07	20.74	0	58.1	357.5
45	31.94	3000	870	314.221676	12.9531	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0996	5.65E-05	1.287	1.13E-02	53.8	98.41	84.09	0	61.6	206.5
46	21.97	3000	2850	148.355848	4.4402	89.788	2505.9	5125	0.1	1950	225000	912500	0.1448	3.60E-04	2.256	6.12E-03	53.24	96.63	66.3	0	113.3	526.3
47	24.28	3000	2360	18.415156	0.6888	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.131	3.41E-04	2.315	1.14E-02	39.66	72.85	0	0	60.9	488.5
48	26.73	3000	2610	79.582736	3.0543	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.119	4.43E-04	2.88	7.07E-03	37.04	93.72	37.17	0	98	552.1
49	42.25	3000	2870	183.175795	8.0546	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.0753	4.95E-04	4.325	5.65E-03	33.38	97.27	72.7	0	122.6	524.6
50	40.89	3000	1850	180.134521	9.0969	151.5013	1485.14	5125	0.1	1950	225000	2000000	0.0778	2.90E-04	2.883	8.46E-03	54.87	97.22	72.24	0	81.9	361.3
51	33.99	3000	2120	92.601197	5.8524	189.5986	1186.72	5125	0.1	1950	225000	2800000	0.0936	5.16E-04	3.784	6.84E-03	74.18	94.6	46.01	0	101.3	570.6
52	47.2	3000	2030	292.662587	12.8029	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0674	2.64E-04	2.98	7.67E-03	49.18	98.29	82.92	0	90.3	323.5
53	55.14	3000	1850	126.321225	4.9993	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0577	1.30E-04	2.141	1.75E-02	73.54	96.04	60.42	0	39.7	199
54	22.22	3000	2010	140.636971	5.9601	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.1432	2.26E-04	1.797	7.61E-03	28.5	96.44	64.45	0	91.1	414.5
55	25.72	3000	2490	69.163854	2.4501	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.1237	3.42E-04	2.397	8.43E-03	38.94	92.77	27.71	0	82.2	477.7
56	48.57	3000	2300	38.49764	1.9522	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.0655	4.11E-04	4.175	1.11E-02	35.94	87.01	0	0	62.5	440.5
57	45.58	3000	1480	735.333512	43.2345	176.3872	1275.6	5125	0.1	1950	225000	2512500	0.0698	1.97E-04	2.423	5.44E-03	81.1	99.32	93.2	32	127.5	272.5
58	30.04	3000	3440	91.952269	2.8517	93.0387	2418.35	5125	0.1	1950	225000	962500	0.1059	6.38E-04	4.045	5.87E-03	62.83	94.56	45.62	0	118.1	690.1
59	23.24	3000	1850	166.999527	8.3984	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.1369	3.10E-04	2.144	6.61E-03	68.12	97.01	70.06	0	104.8	472.8
60	33.56	3000	1470	123.974365	7.2165	174.6277	1288.46	5125	0.1	1950	225000	2475000	0.0948	2.11E-04	2.125	1.10E-02	88.57	95.97	59.67	0	63.2	324.5
61	27.69	3000	3100	4.593559	0.1179	77.0232	2921.2	5125	0.1	1950	225000	725000	0.1149	3.27E-04	2.441	1.72E-02	65.36	0	0	0	40.2	451.8
62	45.71	3000	3730	32.984023	1.4429	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0696	6.82E-04	5.954	7.46E-03	33.26	84.84	0	0	92.9	667.6
63	63	3000	1650	550.490349	23.5815	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.0505	1.46E-04	2.457	8.69E-03	30.09	99.09	90.92	9.17	79.8	199.9
64	21.52	3000	1240	32.47364	2.4547	226.7679	992.2	5125	0.1	1950	225000	3662500	0.1478	1.97E-04	1.673	1.23E-02	52.78	84.6	0	0	56.6	398.3
65	24.66	3000	2520	127.540191	4.7083	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.129	3.99E-04	2.562	6.42E-03	52.21	96.08	60.8	0	108	532.4

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
66	46.17	3000	830	270.005206	14.6398	162.6609	1383.25	5125	0.1	1950	225000	2225000	0.0689	5.52E-05	1.405	1.62E-02	72.97	98.15	81.48	0	42.8	156
67	49.79	3000	2650	232.270419	7.8143	100.929	2229.29	5125	0.1	1950	225000	1087500	0.0639	2.99E-04	3.368	7.65E-03	21.89	97.85	78.47	0	90.6	346.7
68	26.34	3000	2590	12.855927	0.8858	206.7108	1088.48	5125	0.1	1950	225000	3187500	0.1208	6.97E-04	3.918	8.11E-03	50.27	61.11	0	0	85.5	762.5
69	41	3000	1750	102.490738	4.6898	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.0776	1.65E-04	2.075	1.42E-02	64.47	95.12	51.22	0	48.9	259.5
70	56.81	3000	2750	4.108232	0.1816	132.592	1696.94	5125	0.1	1950	225000	1637500	0.056	7.09E-04	7.404	1.71E-02	82.08	0	0	0	40.6	667.9
71	25.31	3000	2290	0.757937	0.0337	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1257	4.88E-04	2.961	1.68E-02	45.79	0	0	0	41.2	599.6
72	27.21	3000	3320	13.93595	0.4972	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.1169	6.88E-04	3.975	8.47E-03	44.95	64.12	0	0	81.8	748.6
73	29.32	3000	3010	35.062035	1.0107	86.4774	2601.84	5125	0.1	1950	225000	862500	0.1085	3.61E-04	2.682	9.99E-03	22.54	85.74	0	0	69.4	468.9
74	46.04	3000	1520	393.79069	19.2181	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.0691	1.44E-04	2.054	9.13E-03	34.26	98.73	87.3	0	75.9	228.6
75	33.49	3000	650	450.832377	13.3696	88.9661	2529.05	5125	0.1	1950	225000	900000	0.095	5.29E-05	1.282	9.81E-03	32.53	98.89	88.91	0	70.6	196.1
76	23.85	3000	2270	111.162875	5.1601	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1334	4.34E-04	2.644	6.26E-03	46.73	95.5	55.02	0	110.8	568.2
77	43.94	3000	1780	286.238735	13.9079	145.7654	1543.58	5125	0.1	1950	225000	1887500	0.0724	2.14E-04	2.493	8.38E-03	32.24	98.25	82.53	0	82.7	290.7
78	22.28	3000	2400	236.326511	8.1926	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1428	2.54E-04	1.899	6.00E-03	33.34	97.88	78.84	0	115.5	436.9
79	25.57	3000	3160	0.568831	0.0173	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1244	5.00E-04	3.031	1.56E-02	20.24	0	0	0	44.6	607.5
80	21.39	3000	2870	124.269459	4.4021	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.1487	6.02E-04	3.048	5.09E-03	93.26	95.98	59.76	0	136.1	730.2
81	54.2	3000	2350	129.145357	5.2936	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0587	3.50E-04	4.014	9.35E-03	52.36	96.13	61.28	0	74.2	379.6
82	43.28	3000	1330	1087.902467	40.4284	111.4852	2018.2	5125	0.1	1950	225000	1262500	0.0735	1.23E-04	1.843	4.71E-03	36.87	99.54	95.4	54.04	147.1	218.2
83	23.12	3000	2070	105.780098	6.2194	176.3872	1275.6	5125	0.1	1950	225000	2512500	0.1376	4.14E-04	2.521	6.18E-03	19.94	95.27	52.73	0	112.1	558.8
84	22.33	3000	1960	22.784665	1.0476	137.9366	1631.18	5125	0.1	1950	225000	1737500	0.1425	2.85E-04	2.01	1.12E-02	31.85	78.06	0	0	61.8	461.3
85	32.17	3000	1630	84.409913	3.9367	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.0989	1.77E-04	1.902	1.22E-02	29.19	94.08	40.77	0	56.6	303.1
86	21.77	3000	1930	79.601793	3.8677	145.7654	1543.58	5125	0.1	1950	225000	1887500	0.1461	3.16E-04	2.094	7.88E-03	47.6	93.72	37.19	0	87.9	492.9
87	34.88	3000	1540	12.356346	0.7022	170.4873	1319.75	5125	0.1	1950	225000	2387500	0.0912	2.89E-04	2.601	1.83E-02	99.18	59.53	0	0	37.8	382.2
88	21.72	3000	2610	0.65843	0.0261	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.1465	4.98E-04	2.719	1.47E-02	26.72	0	0	0	47.2	641.7
89	35.11	3000	2110	54.485715	2.8312	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0906	4.18E-04	3.332	9.30E-03	50.87	90.82	8.23	0	74.5	486.3
90	27.31	3000	2530	242.72278	6.8608	84.7981	2653.36	5125	0.1	1950	225000	837500	0.1165	2.06E-04	1.892	7.44E-03	54.23	97.94	79.4	0	93.2	355.1
91	41.97	3000	2160	14.369474	0.6607	137.9366	1631.18	5125	0.1	1950	225000	1737500	0.0758	3.57E-04	3.381	1.45E-02	33.87	65.2	0	0	47.9	412.8
92	33.28	3000	2670	90.91061	3.035	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.0956	3.71E-04	2.961	8.41E-03	47.7	94.5	45	0	82.5	456
93	58.37	3000	2030	262.139989	10.4366	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.0545	1.77E-04	2.644	1.09E-02	31.4	98.09	80.93	0	63.5	232.1
94	22.02	3000	2220	172.258966	6.611	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.1445	2.79E-04	1.975	6.62E-03	59.75	97.1	70.97	0	104.6	459.8
95	31.31	3000	1730	63.408631	1.9151	90.6061	2483.28	5125	0.1	1950	225000	925000	0.1016	1.45E-04	1.721	1.48E-02	62.93	92.11	21.15	0	46.8	281.6
96	42.82	3000	710	355.247009	14.7269	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.0743	3.66E-05	1.249	1.48E-02	75.81	98.59	85.93	0	46.7	149.5
97	47.98	3000	3070	30.380417	1.6411	162.0511	1388.45	5125	0.1	1950	225000	2212500	0.0663	5.65E-04	5.307	8.74E-03	26.21	83.54	0	0	79.3	566.8
98	38.89	3000	2990	106.665358	3.3366	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0818	4.70E-04	3.908	7.64E-03	71.09	95.31	53.12	0	90.7	514.9
99	62.75	3000	2870	73.300271	2.5411	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.0507	4.04E-04	5.028	1.05E-02	44.5	93.18	31.79	0	66.1	410.7
100	63.25	3000	3080	41.061774	1.6251	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0503	4.85E-04	5.874	1.04E-02	35.04	87.82	0	0	66.6	476
101	24.16	3000	3080	163.736895	5.7177	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.1317	6.11E-04	3.344	4.60E-03	70.34	96.95	69.46	0	150.8	709.4
102	25.95	3000	1250	483.060162	22.4231	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1226	1.02E-04	1.422	6.65E-03	45.37	98.96	89.65	0	104.2	280.9
103	43.4	3000	2570	52.225715	2.261	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0733	5.06E-04	4.489	9.26E-03	64.56	90.43	4.26	0	74.9	530.1
104	31.34	3000	3350	55.470618	2.4392	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.1015	6.95E-04	4.461	5.99E-03	41.38	90.99	9.86	0	115.7	729.4
105	23.6	3000	1230	94.719535	4.8628	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.1348	1.56E-04	1.585	1.03E-02	19.01	94.72	47.21	0	67.7	344.1
106	55.04	3000	1950	179.821317	7.0738	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.0578	1.74E-04	2.523	1.25E-02	29.67	97.22	72.19	0	55.6	234.9
107	29.62	3000	1520	14.617309	0.9128	187.3347	1201.06	5125	0.1	1950	225000	2750000	0.1074	3.02E-04	2.421	1.49E-02	69.95	65.79	0	0	46.4	418.9
108	26.42	3000	1890	113.939965	6.9414	182.7653	1231.09	5125	0.1	1950	225000	2650000	0.1204	3.63E-04	2.522	6.93E-03	22.75	95.61	56.12	0	100	489.2
109	21.8	3000	2130	7.440804	0.3272	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.1459	3.86E-04	2.339	1.25E-02	51.43	32.8	0	0	55.7	549.7
110	47.41	3000	2310	16.648871	0.7056	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0671	4.51E-04	4.398	1.46E-02	77.02	69.97	0	0	47.3	475.4
111	29.13	3000	3010	1.2243	0.0396	97.024	2319.01	5125	0.1	1950	225000	1025000	0.1092	5.44E-04	3.516	1.53E-02	39.76	0	0	0	45.3	618.6
112	28	3000	1890	351.600966	12.893	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.1136	1.68E-04	1.749	6.91E-03	43.41	98.58	85.78	0	100.3	320.1
113	30.74	3000	2240	12.189772	0.5388	132.592	1696.94	5125	0.1	1950	225000	1637500	0.1035	4.15E-04	3.026	1.26E-02	47.36	58.98	0	0	55	504.5
114	35.47	3000	1900	630.07609	31.6864	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.0897	2.91E-04	2.642	4.24E-03	47.3	99.21	92.06	20.64	163.4	381.8
115	45.97	3000	1430	74.356792	2.7266	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.0692	1.85E-04	2.352	1.44E-02	14.12	93.28	32.76	0	48	262.2
116	47.77	3000	2490	288.307596	12.6775	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.0666	4.12E-04	4.13	5.71E-03	50.5	98.27	82.66	0	121.4	443.1
117	31.16	3000	2570	583.540206	18.4093	94.6429	2377.36	5125	0.1	1950	225000	987500	0.1021	2.34E-04	2.16	4.73E-03	38.77	99.14	91.43	14.32	146.5	355.2
118	26.8	3000	1230	87.842283	4.8693	166.2959	1353.01	5125	0.1	1950	225000	2300000	0.1187	1.52E-04	1.645	1.15E-02	21.28	94.31	43.08	0	60.3	314.6
119	22.18	3000	2230	239.145214	12.575	157.7499	1426.31	5125	0.1	1950	225000	2125000	0.1434	4.58E-04	2.616	4.40E-03	44.21	97.91	79.09	0	157.4	604.3
120	30.47	3000	1880	216.722162	10.8532	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.1044	2.99E-04	2.447	6.78E-03	49.77	97.69	76.93	0	102.2	411.6
121	43.58	3000	2610	31.080272	1.1243	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.073	3.91E-04	3.711	1.19E-02	42.27	83.91	0	0	58.1	436.4
122	22.89	3000	2030	87.804172	3.5785	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.139	2.35E-04	1.854	9.25E-03	68.23	94.31	43.06	0	75	415.2
123	49.86	3000	1960	126.32386	6.3261	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.0638	2.83E-04	3.239	9.97E-03	23.78	96.04	60.42	0	69.5	332.9
124	26.78	3000	2650	14.273015	0.6531	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1188	5.71E-04	3.432	9.32E-03	41.73	64.97	0	0	74.4	656.8
125	60.37	3000	2500	141.27085	5.2152	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0527	3.63E-04	4.484	9.58E-03	73.56	96.46	64.61	0	72.3	380.7
126	23.88	3000	1150	122.606895	3.3263	81.3886	2764.52	5125	0.1	1950	225000	787500	0.1332	7.78E-05	1.295	1.21E-02	58.57	95.92	59.22	0	57.5	277.9
127	53.74	3000	2290	53.014965	1.8647	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0592	2.46E-04	3.104	1.65E-02	86.02	90.57	5.69	0	42	296.1
128	62.62	3000	2230	785.012754	29.7473	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.0508	2.17E-04	3.162	5.30E-03	28.81	99.36	93.63	36.31	130.7	258.8
129	28.84	3000	1390	379.551173	10.7284	84.7981	2653.36	5125	0.1	1950	225000	837500	0.1103	1.02E-04	1.465	8.23E-03	61.96	98.68	86.83	0	84.2	260.4
130	23.76	3000	940	78.099195	3.5043	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.1339	6.83E-05	1.258	1.39E-02	41.03	93.6	35.98	0	49.7	271.3

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
131	25.51	3000	1450	44.283814	2.5951	175.8017	1279.85	5125	0.1	1950	225000	2500000	0.1247	1.72E-04	1.698	1.31E-02	41.95	88.71	0	0	53	341
132	47.27	3000	2760	4.185304	0.1725	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0673	5.08E-04	4.812	1.55E-02	37.09	0	0	0	44.9	521.7
133	38.38	3000	2220	92.869603	4.7678	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.0829	4.66E-04	3.842	7.86E-03	70.23	94.62	46.16	0	88.2	513
134	23.94	3000	3240	9.268195	0.5249	169.8917	1324.37	5125	0.1	1950	225000	2375000	0.1329	7.95E-04	4.025	7.43E-03	35.24	46.05	0	0	93.3	861.7
135	34.5	3000	1980	986.319876	42.7007	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0922	2.47E-04	2.352	3.30E-03	74.31	99.49	94.93	49.31	209.8	349.4
136	27.14	3000	2090	79.24651	2.5211	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.1172	2.44E-04	2.053	9.68E-03	22.44	93.69	36.91	0	71.6	387.7
137	61.3	3000	2130	743.94935	31.6986	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0519	2.54E-04	3.476	4.97E-03	37.88	99.33	93.28	32.79	139.5	290.6
138	45.51	3000	2120	252.978214	9.7698	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.0699	2.33E-04	2.682	9.09E-03	84.52	98.02	80.24	0	76.3	302
139	23.72	3000	1900	181.993882	9.5323	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.1341	3.22E-04	2.213	6.09E-03	31.74	97.25	72.53	0	113.9	478
140	22.28	3000	1850	211.192568	10.1707	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.1428	2.46E-04	1.869	6.37E-03	33.22	97.63	76.32	0	108.8	430
141	25.64	3000	1970	347.320814	14.7988	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.1241	2.16E-04	1.878	5.92E-03	39.15	98.56	85.6	0	117.1	375.5
142	29.93	3000	2100	115.070143	6.1688	160.8281	1399.01	5125	0.1	1950	225000	2187500	0.1063	4.40E-04	3.091	6.85E-03	61.91	95.65	56.55	0	101.2	529.2
143	22.06	3000	2510	191.928734	7.8222	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.1442	4.69E-04	2.646	4.84E-03	58.49	97.39	73.95	0	143.3	614.6
144	42.19	3000	2690	0.720723	0.035	145.7654	1543.58	5125	0.1	1950	225000	1887500	0.0754	5.62E-04	4.771	1.78E-02	31.3	0	0	0	39	579.5
145	44.31	3000	3220	2.370722	0.0791	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.0718	5.75E-04	5.047	1.56E-02	39.43	0	0	0	44.4	583.8
146	39.82	3000	2710	19.023123	0.6102	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.0799	4.06E-04	3.571	1.38E-02	71.64	73.72	0	0	50.3	459.6
147	33.45	3000	2050	6.156327	0.3363	163.877	1372.98	5125	0.1	1950	225000	2250000	0.0951	3.84E-04	3.043	1.44E-02	22.51	18.78	0	0	48.2	466.2
148	43.52	3000	1850	202.210499	9.7381	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.0731	2.61E-04	2.808	8.86E-03	58.11	97.53	75.27	0	78.3	330.7
149	21.89	3000	2880	320.945737	10.2952	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.1453	4.67E-04	2.625	3.97E-03	79.41	98.44	84.42	0	174.8	614.5
150	36.78	3000	1490	159.502668	6.1599	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.0865	1.04E-04	1.607	1.41E-02	80.46	96.87	68.65	0	49.3	224
151	39.57	3000	2130	23.25577	0.8925	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0804	2.53E-04	2.588	1.69E-02	67.82	78.5	0	0	41	335.2
152	25.47	3000	2870	9.776136	0.4343	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1249	6.22E-04	3.518	9.18E-03	35.62	48.86	0	0	75.5	707.8
153	24.47	3000	1130	156.700185	5.0266	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.13	6.91E-05	1.269	1.16E-02	61.52	96.81	68.09	0	59.7	265.7
154	55.42	3000	3260	79.423326	2.5895	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.0574	4.54E-04	4.996	8.70E-03	30.88	93.7	37.05	0	79.6	462
155	56.91	3000	2140	1463.195101	55.8012	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.0559	1.88E-04	2.696	3.00E-03	37.69	99.66	96.58	65.83	231.1	242.8
156	21.57	3000	2790	10.359727	0.3618	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.1475	5.87E-04	3.01	9.85E-03	73.1	51.74	0	0	70.4	715.3
157	28.05	3000	2610	78.922613	3.1422	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1134	4.61E-04	3.053	7.07E-03	38.86	93.66	36.65	0	98.1	557.7
158	33.88	3000	1090	250.748788	13.0296	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0939	1.22E-04	1.655	1.01E-02	27.32	98.01	80.06	0	68.4	250.4
159	25.09	3000	1380	55.879461	2.739	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1268	1.34E-04	1.534	1.33E-02	41.12	91.05	10.52	0	52	313.3
160	25.23	3000	2160	8.405773	0.3734	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1261	4.13E-04	2.656	1.27E-02	54.92	40.52	0	0	54.5	539.5
161	39.92	3000	1880	22.022304	1.2428	169.2951	1329.04	5125	0.1	1950	225000	2362500	0.0797	3.40E-04	3.154	1.34E-02	33.49	77.3	0	0	51.9	405
162	34.1	3000	1160	591.966297	18.1993	92.2314	2439.52	5125	0.1	1950	225000	950000	0.0933	1.24E-04	1.669	6.56E-03	27.45	99.16	91.55	15.54	105.6	250.9
163	38.15	3000	2650	640.983297	20.3918	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.0834	3.14E-04	2.902	4.27E-03	91.33	99.22	92.2	21.99	162.2	389.9
164	22.66	3000	3130	0.046152	0.0021	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1404	7.79E-04	3.805	1.57E-02	26.86	0	0	0	44.2	860.5
165	28.13	3000	2450	36.060812	1.4949	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1131	4.28E-04	2.913	9.05E-03	34.43	86.13	0	0	76.6	530.7
166	26.01	3000	880	197.809533	8.8314	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.1223	2.83E-05	1.117	1.29E-02	78.7	97.47	74.72	0	53.6	220
167	24.66	3000	1070	55.756415	2.3114	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.129	9.38E-05	1.367	1.46E-02	38.69	91.03	10.32	0	47.5	284.2
168	50.98	3000	2790	431.08649	12.4264	86.4774	2601.84	5125	0.1	1950	225000	862500	0.0624	2.25E-04	2.823	7.09E-03	34.15	98.84	88.4	0	97.8	283.7
169	24.49	3000	2660	80.331576	2.5769	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.1299	3.55E-04	2.38	8.02E-03	61.69	93.78	37.76	0	86.4	498
170	31.85	3000	3220	121.15945	4.0449	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.0999	5.76E-04	3.917	5.74E-03	55.14	95.87	58.73	0	120.8	630.3
171	60.25	3000	2840	104.441478	5.1861	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.0528	4.76E-04	5.552	7.64E-03	34.18	95.21	52.13	0	90.7	472.3
172	24.74	3000	1280	14.694193	0.6691	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1286	1.54E-04	1.604	1.67E-02	26.04	65.97	0	0	41.5	332.4
173	23.51	3000	2080	291.878459	14.8013	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.1353	3.77E-04	2.409	4.62E-03	38.08	98.29	82.87	0	150	525
174	21.64	3000	3200	84.367189	2.116	75.2423	2990.34	5125	0.1	1950	225000	700000	0.147	3.57E-04	2.228	7.01E-03	23.14	94.07	40.74	0	98.9	527.6
175	42.25	3000	3330	32.956525	0.9129	83.1021	2707.51	5125	0.1	1950	225000	812500	0.0753	4.56E-04	4.06	1.05E-02	41.28	84.83	0	0	65.9	492.5
176	25.43	3000	2610	29.891124	1.1616	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.1251	4.53E-04	2.832	8.72E-03	31.18	83.27	0	0	79.5	570.7
177	24.06	3000	1790	243.016941	11.8599	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.1322	2.58E-04	1.986	6.44E-03	86.33	97.94	79.43	0	107.6	422.9
178	29.98	3000	1940	12.063338	0.728	181.037	1242.84	5125	0.1	1950	225000	2612500	0.1061	4.85E-04	3.312	1.20E-02	67.5	58.55	0	0	57.8	566.2
179	23.12	3000	2570	6.745329	0.2074	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1376	2.67E-04	1.981	1.53E-02	43.98	25.87	0	0	45.2	439.2
180	38.1	3000	1950	176.346099	7.2695	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0835	1.77E-04	2.074	1.07E-02	49.24	97.16	71.65	0	64.6	279
181	59.58	3000	3060	126.074583	4.5606	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.0534	5.31E-04	6.026	7.49E-03	74.15	96.03	60.34	0	92.6	518.4
182	22.79	3000	2640	566.910971	17.429	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1396	2.56E-04	1.927	4.00E-03	65.21	99.12	91.18	11.8	173.2	433.4
183	53.11	3000	3080	80.449745	2.4516	91.4206	2461.15	5125	0.1	1950	225000	937500	0.0599	4.04E-04	4.41	9.59E-03	41.02	93.78	37.85	0	72.3	425.5
184	27.4	3000	2410	45.114069	2.0543	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1161	4.97E-04	3.164	8.06E-03	53.97	88.92	0	0	86	591.7
185	27.78	3000	3430	28.819014	0.7484	77.906	2888.09	5125	0.1	1950	225000	737500	0.1145	5.14E-04	3.271	9.02E-03	57.84	82.65	0	0	76.9	603.4
186	27.57	3000	1840	53.348711	2.5807	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.1154	2.64E-04	2.158	1.07E-02	39.34	90.63	6.28	0	64.7	401.2
187	36.07	3000	1560	251.897127	14.0642	167.4988	1343.29	5125	0.1	1950	225000	2325000	0.0882	2.06E-04	2.18	8.39E-03	46.89	98.02	80.15	0	82.6	309.8
188	30.62	3000	3880	0.411094	0.0199	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.1039	8.19E-04	4.985	1.22E-02	19.2	0	0	0	56.8	834.3
189	44.49	3000	1780	51.701523	2.6973	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.0715	2.68E-04	2.894	1.33E-02	39.81	90.33	3.29	0	52.1	333.3
190	40.47	3000	1810	960.568682	31.8192	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.0786	1.62E-04	2.04	4.48E-03	36.19	99.48	94.79	47.95	154.6	258.2
191	21.76	3000	1920	62.617715	4.1091	196.8651	1142.91	5125	0.1	1950	225000	2962500	0.1462	4.48E-04	2.547	6.98E-03	46.83	92.02	20.15	0	99.3	600
192	34.58	3000	3780	7.807175	0.2785	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.092	6.90E-04	4.794	9.50E-03	25.42	35.96	0	0	73	710.5
193	35.39	3000	1050	213.496748	10.8266	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.0899	9.50E-05	1.534	1.23E-02	42.8	97.66	76.58	0	56.4	222.2
194	21.63	3000	1660	13.481861	0.695	154.6414	1454.98	5125	0.1	1950	225000	2062500	0.1471	2.32E-04	1.796	1.43E-02	65.09	62.91	0	0	48.6	425.6
195	23.44	3000	1100	330.029861	12.9827	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.1357	7.13E-05	1.266	8.20E-03	50.11	98.48	84.85	0	84.6	276.7

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
196	29.19	3000	1420	35.114395	1.6986	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.109	1.69E-04	1.785	1.48E-02	25.94	85.76	0	0	47	313.4
197	28.23	3000	2190	15.158705	0.6631	131.239	1714.43	5125	0.1	1950	225000	1612500	0.1127	3.38E-04	2.516	1.21E-02	18.66	67.02	0	0	57.1	456.8
198	55.81	3000	3060	5.179683	0.1756	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.057	4.57E-04	5.052	1.62E-02	29.39	3.47	0	0	42.7	463.9
199	33.81	3000	1690	81.597334	4.5558	167.4988	1343.29	5125	0.1	1950	225000	2325000	0.0941	2.70E-04	2.448	1.04E-02	40.07	93.87	38.72	0	66.8	371.2
200	48.94	3000	1760	273.362682	12.6291	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.065	1.76E-04	2.372	1.03E-02	57.92	98.17	81.71	0	67.5	248.3
201	26.96	3000	1610	308.652439	15.7167	152.7612	1472.89	5125	0.1	1950	225000	2025000	0.118	1.55E-04	1.663	7.48E-03	52.69	98.38	83.8	0	92.7	316.1
202	44.37	3000	3200	5.270166	0.2317	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.0717	6.17E-04	5.351	1.22E-02	31.54	5.13	0	0	56.7	618.1
203	24.05	3000	2350	79.136375	3.6211	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1323	4.27E-04	2.633	6.81E-03	27.58	93.68	36.82	0	101.8	561.1
204	39.08	3000	2370	58.516489	2.2739	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0814	3.86E-04	3.396	1.04E-02	68.97	91.46	14.55	0	66.5	445.3
205	56.31	3000	1710	780.12345	32.5212	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0565	1.41E-04	2.261	6.69E-03	37.96	99.36	93.59	35.91	103.6	205.8
206	49.55	3000	2160	483.522313	21.0429	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.0642	2.77E-04	3.184	5.67E-03	19.51	98.97	89.66	0	122.3	329.3
207	24.14	3000	2030	4.99374	0.2285	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1318	3.56E-04	2.365	1.45E-02	46.99	0	0	0	47.8	502.1
208	32.01	3000	2310	12.553323	0.4878	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0994	3.73E-04	2.898	1.39E-02	56.77	60.17	0	0	50	464
209	27.12	3000	1330	436.189728	17.7772	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.1173	1.09E-04	1.47	7.13E-03	47.97	98.85	88.54	0	97.3	277.8
210	52.24	3000	670	872.81002	26.3606	90.6061	2483.28	5125	0.1	1950	225000	925000	0.0609	9.72E-05	1.807	7.00E-03	12.18	99.43	94.27	42.71	99	177.3
211	58.05	3000	2710	771.541327	26.1555	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.0548	3.22E-04	3.974	4.06E-03	47.9	99.35	93.52	35.19	170.6	350.8
212	36.48	3000	1910	219.468767	9.5513	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.0872	2.24E-04	2.296	8.76E-03	68.28	97.72	77.22	0	79.2	322.5
213	29.03	3000	2430	51.146443	2.3404	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1096	4.86E-04	3.241	7.98E-03	48.67	90.22	2.24	0	86.8	572.2
214	26.53	3000	1850	7.63571	0.3792	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.1199	3.41E-04	2.437	1.50E-02	63.29	34.52	0	0	46.3	470.8
215	39.18	3000	2570	104.709233	3.9424	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0812	3.53E-04	3.195	8.29E-03	15.83	95.22	52.25	0	83.6	417.9
216	27.5	3000	1480	248.06424	10.9638	132.592	1696.94	5125	0.1	1950	225000	1637500	0.1157	1.40E-04	1.612	8.56E-03	39.98	97.98	79.84	0	81	300.5
217	41.86	3000	930	496.268951	29.8521	180.459	1246.82	5125	0.1	1950	225000	2600000	0.076	1.04E-04	1.694	8.81E-03	25.89	98.99	89.92	0	78.7	207.4
218	23.97	3000	1330	181.319361	7.8086	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.1327	1.33E-04	1.507	8.94E-03	31.91	97.24	72.42	0	77.5	322.2
219	32.73	3000	2720	5.458467	0.2015	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0972	5.38E-04	3.798	1.34E-02	56.08	8.4	0	0	51.8	594.8
220	24.1	3000	2400	8.782058	0.3	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.132	3.34E-04	2.28	1.49E-02	90.82	43.07	0	0	46.6	484.8
221	27.54	3000	2930	13.909158	0.5304	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.1155	7.04E-04	4.082	9.32E-03	77.28	64.05	0	0	74.4	759.4
222	50.58	3000	2200	165.945975	8.5886	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.0629	4.25E-04	4.413	7.38E-03	72.24	96.99	69.87	0	93.9	447.1
223	22.26	3000	2590	28.586878	1.0902	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.1429	4.46E-04	2.578	8.45E-03	33.03	82.51	0	0	82.1	593.5
224	42.42	3000	860	361.906406	12.3615	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.075	1.26E-04	1.851	9.54E-03	11.89	98.62	86.18	0	72.6	223.6
225	30.24	3000	2280	8.543132	0.4077	143.1797	1571.45	5125	0.1	1950	225000	1837500	0.1052	4.81E-04	3.312	1.24E-02	48.73	41.47	0	0	56.1	561.2
226	26.16	3000	3120	17.828979	0.9041	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.1216	7.14E-04	3.969	7.31E-03	36.01	71.96	0	0	94.8	777.4
227	27.24	3000	2230	36.710461	1.3911	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1168	2.62E-04	2.133	1.16E-02	29.89	86.38	0	0	59.9	401.3
228	21.97	3000	1940	4.017248	0.202	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.1448	3.43E-04	2.198	1.40E-02	30.72	0	0	0	49.4	512.6
229	37.43	3000	2070	133.566513	5.9931	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.085	3.35E-04	2.99	8.49E-03	64.65	96.26	62.57	0	81.6	409.4
230	43.11	3000	1900	194.881826	10.2073	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.0738	3.04E-04	3.08	7.93E-03	38.12	97.43	74.34	0	87.4	366.2
231	56.21	3000	3600	30.082524	1.3699	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.0566	6.42E-04	6.73	8.48E-03	36.22	83.38	0	0	81.8	613.7
232	24.57	3000	1630	201.611027	6.0341	89.788	2505.9	5125	0.1	1950	225000	912500	0.1295	1.14E-04	1.446	9.43E-03	70.8	97.52	75.2	0	73.5	301.7
233	46.99	3000	2320	966.229814	37.5472	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0677	2.83E-04	3.116	3.41E-03	34.97	99.48	94.83	48.25	203	339.8
234	24.28	3000	1130	163.381206	5.7877	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.131	1.07E-04	1.414	1.00E-02	32.42	96.94	69.4	0	69.2	298.3
235	28.43	3000	3250	34.501048	1.4303	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1119	7.27E-04	4.286	6.72E-03	53.87	85.51	0	0	103.1	772.5
236	37.69	3000	2390	63.681824	2.0929	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0844	2.18E-04	2.307	1.42E-02	89.31	92.15	21.48	0	48.9	313.7
237	33.74	3000	2720	6.127894	0.2014	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0943	4.21E-04	3.256	1.50E-02	50.14	18.41	0	0	46.2	494.6
238	29.65	3000	2930	24.342045	0.8127	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.1073	4.56E-04	3.15	9.57E-03	27.89	79.46	0	0	72.4	544.5
239	30.27	3000	2570	10.970017	0.6556	179.3004	1254.88	5125	0.1	1950	225000	2575000	0.1051	6.93E-04	4.331	9.41E-03	62.09	54.42	0	0	73.6	733.3
240	35.75	3000	2350	266.563727	12.02	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.089	3.80E-04	3.158	5.56E-03	26.35	98.12	81.24	0	124.8	452.7
241	46.31	3000	2740	1.32073	0.0513	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0687	5.77E-04	5.248	1.91E-02	55.79	0	0	0	36.2	580.8
242	54.66	3000	3570	69.49997	1.7223	74.3438	3026.48	5125	0.1	1950	225000	687500	0.0582	4.78E-04	5.153	1.00E-02	75.61	92.81	28.06	0	69.2	483.1
243	27.83	3000	2800	9.989085	0.3257	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.1143	4.65E-04	3.055	1.20E-02	52.74	49.95	0	0	58	562.6
244	39.92	3000	1880	103.324358	4.0892	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0797	2.05E-04	2.303	1.18E-02	23.5	95.16	51.61	0	58.8	295.7
245	59.02	3000	2400	1142.304229	38.4305	100.929	2229.29	5125	0.1	1950	225000	1087500	0.0539	2.15E-04	3.016	3.87E-03	87.95	99.56	95.62	56.23	179	261.8
246	58.27	3000	2860	184.417996	7.4728	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0546	5.39E-04	5.989	6.27E-03	88.07	97.29	72.89	0	110.5	526.7
247	23.69	3000	1610	54.090566	3.9951	221.5784	1015.44	5125	0.1	1950	225000	3537500	0.1343	3.89E-04	2.462	8.43E-03	65.51	90.76	7.56	0	82.3	532.7
248	53.29	3000	2660	151.889343	4.5043	88.9661	2529.05	5125	0.1	1950	225000	900000	0.0597	2.22E-04	2.876	1.22E-02	75.68	96.71	67.08	0	57	276.6
249	60.48	3000	2340	405.874538	15.3802	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.0526	2.95E-04	3.839	6.81E-03	72.69	98.77	87.68	0	101.7	325.3
250	32.1	3000	2700	7.759341	0.2322	89.788	2505.9	5125	0.1	1950	225000	912500	0.0991	3.13E-04	2.597	1.74E-02	69.53	35.56	0	0	39.9	414.6
251	30.13	3000	1750	1098.65332	51.4794	140.5704	1600.62	5125	0.1	1950	225000	1787500	0.1056	1.61E-04	1.773	3.37E-03	37.16	99.54	95.45	54.49	205.4	301.6
252	29.4	3000	2630	6.439385	0.3518	163.877	1372.98	5125	0.1	1950	225000	2250000	0.1082	6.31E-04	3.949	1.05E-02	42.62	22.35	0	0	65.8	688.3
253	45.84	3000	3050	41.03937	1.1251	82.2476	2735.64	5125	0.1	1950	225000	800000	0.0694	3.45E-04	3.515	1.27E-02	53.99	87.82	0	0	54.8	393
254	23.34	3000	1960	134.120061	4.6495	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1363	1.51E-04	1.559	9.65E-03	67.04	96.27	62.72	0	71.8	342.4
255	51.9	3000	2340	548.791092	20.5284	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0613	2.86E-04	3.359	5.50E-03	65.89	99.09	90.89	8.89	126.1	331.7
256	51.06	3000	1270	930.342768	22.4927	72.5304	3102.15	5125	0.1	1950	225000	662500	0.0623	9.06E-05	1.735	6.89E-03	63.56	99.46	94.63	46.26	100.6	174.2
257	36.69	3000	1100	1078.692095	48.1593	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.0867	7.97E-05	1.465	5.08E-03	55.95	99.54	95.36	53.65	136.4	204.6
258	24.12	3000	1010	93.225149	3.015	97.024	2319.01	5125	0.1	1950	225000	1025000	0.1319	1.17E-04	1.447	1.15E-02	20.96	94.64	46.37	0	60.2	307.5
259	54.76	3000	2470	11.089678	0.4389	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0581	4.10E-04	4.564	1.64E-02	50.34	54.91	0	0	42.3	427.2
260	31.04	3000	1460	8.214165	0.5329	194.6437	1155.96	5125	0.1	1950	225000	2912500	0.1025	2.65E-04	2.307	1.75E-02	49.61	39.13	0	0	39.5	381

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
261	42.76	3000	1410	42.947434	2.4915	174.0393	1292.81	5125	0.1	1950	225000	2462500	0.0744	1.58E-04	2.071	1.87E-02	53	88.36	0	0	37.1	248.2
262	28.05	3000	860	126.798309	5.5756	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.1134	7.40E-05	1.33	1.34E-02	34.91	96.06	60.57	0	51.7	242.9
263	22.95	3000	2000	168.758695	6.8779	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.1386	1.91E-04	1.695	7.94E-03	47.16	97.04	70.37	0	87.3	378.5
264	46.99	3000	3730	15.317338	0.6526	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0677	6.45E-04	5.818	9.24E-03	23.95	67.36	0	0	75	634.5
265	37.04	3000	1680	415.503657	20.0995	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.0859	1.67E-04	1.985	7.57E-03	66.88	98.8	87.97	0	91.6	274.7
266	22.06	3000	2600	3.985642	0.1885	141.878	1585.87	5125	0.1	1950	225000	1812500	0.1442	6.34E-04	3.223	1.06E-02	47.86	0	0	0	65.6	748.7
267	23.15	3000	1520	53.742142	2.2528	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1374	1.76E-04	1.647	1.14E-02	27.37	90.7	6.96	0	60.7	364.5
268	45.32	3000	3860	18.063194	0.453	75.2423	2990.34	5125	0.1	1950	225000	700000	0.0702	5.36E-04	4.857	1.10E-02	36.59	72.32	0	0	63.3	549.3
269	29.9	3000	2320	68.241432	3.6024	158.3679	1420.74	5125	0.1	1950	225000	2137500	0.1064	5.51E-04	3.619	7.10E-03	74.71	92.67	26.73	0	97.6	620.4
270	55.33	3000	4890	5.118094	0.18	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0575	8.02E-04	8.05	1.03E-02	26.45	2.31	0	0	67.4	745.7
271	23.55	3000	1850	57.411454	2.6776	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.1351	2.49E-04	1.933	1.02E-02	56.85	91.29	12.91	0	67.9	420.7
272	48.13	3000	2090	693.308498	25.9343	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0661	1.50E-04	2.143	6.71E-03	75.14	99.28	92.79	27.88	103.2	228.2
273	27.03	3000	1990	46.358588	1.9859	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.1177	2.73E-04	2.173	1.13E-02	65.03	89.21	0	0	61.4	412.1
274	38.94	3000	3160	4.490168	0.248	165.6929	1357.93	5125	0.1	1950	225000	2287500	0.0817	6.64E-04	5.106	1.11E-02	28.19	0	0	0	62.7	672.1
275	34.21	3000	2320	322.260207	11.5772	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.093	2.66E-04	2.444	6.52E-03	65.83	98.45	84.48	0	106.3	366.2
276	29.9	3000	3470	120.592342	4.7438	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.1064	6.49E-04	4.083	4.86E-03	30.7	95.85	58.54	0	142.6	699.8
277	23.51	3000	2330	240.68411	9.2951	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.1353	3.37E-04	2.261	5.42E-03	52.57	97.92	79.23	0	127.9	492.7
278	48.79	3000	1870	56.888718	2.7028	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.0652	2.45E-04	2.898	1.40E-02	32.64	91.21	12.11	0	49.6	304.4
279	50.74	3000	2290	87.918725	3.8858	132.592	1696.94	5125	0.1	1950	225000	1637500	0.0627	3.61E-04	3.908	9.94E-03	41.84	94.31	43.13	0	69.7	394.7
280	43.05	3000	1820	495.608658	21.4564	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0739	1.42E-04	1.973	7.97E-03	58.04	98.99	89.91	0	86.9	234.9
281	41.21	3000	2610	18.456128	0.9007	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.0772	4.46E-04	3.924	1.10E-02	14.68	72.91	0	0	62.9	488
282	23.07	3000	1680	971.346034	46.359	143.1797	1571.45	5125	0.1	1950	225000	1837500	0.1379	1.21E-04	1.443	3.59E-03	62.94	99.49	94.85	48.53	193.1	320.5
283	43.94	3000	1980	19.020673	0.8871	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.0724	3.04E-04	3.122	1.57E-02	42.05	73.71	0	0	44.1	364.1
284	25.97	3000	3120	19.211832	0.4989	77.906	2888.09	5125	0.1	1950	225000	737500	0.1225	3.37E-04	2.39	1.21E-02	53.71	73.97	0	0	57.5	471.7
285	24.43	3000	2230	5.338943	0.2188	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.1302	3.79E-04	2.471	1.40E-02	49	6.35	0	0	49.4	518.3
286	39.28	3000	2690	21.558115	0.9037	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.081	4.34E-04	3.705	1.08E-02	16.77	76.81	0	0	64.1	483.5
287	23.71	3000	3090	30.186115	1.0844	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.1342	5.97E-04	3.25	7.27E-03	38.38	83.44	0	0	95.3	702.6
288	32.43	3000	1200	693.169955	31.4109	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.0981	1.02E-04	1.527	6.19E-03	43.48	99.28	92.79	27.87	112	241.3
289	34.06	3000	3010	3.930889	0.1451	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0934	5.31E-04	3.872	1.29E-02	25.85	0	0	0	53.9	582.6
290	46.65	3000	1270	393.605756	13.5448	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.0682	1.09E-04	1.806	1.06E-02	46.8	98.73	87.3	0	65.5	198.5
291	46.78	3000	850	1387.248064	38.8209	83.9523	2680.09	5125	0.1	1950	225000	825000	0.068	5.94E-05	1.442	4.94E-03	54.98	99.64	96.4	63.96	140.3	157.9
292	31.1	3000	3080	12.754425	0.399	93.8425	2397.63	5125	0.1	1950	225000	975000	0.1023	4.80E-04	3.372	1.10E-02	31.78	60.8	0	0	63.3	555.7
293	26.71	3000	2330	52.313775	2.0704	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.1191	3.87E-04	2.643	8.97E-03	58.98	90.44	4.42	0	77.3	507.1
294	26.76	3000	2480	339.831223	14.0878	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1189	4.05E-04	2.723	4.30E-03	25.27	98.53	85.29	0	161.3	521.6
295	25.95	3000	1880	175.246611	5.2928	90.6061	2483.28	5125	0.1	1950	225000	925000	0.1226	1.71E-04	1.706	8.79E-03	44.36	97.15	71.47	0	78.9	336.9
296	34.02	3000	1680	473.007673	22.7793	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.0935	1.55E-04	1.838	6.94E-03	60.77	98.94	89.43	0	99.9	276.9
297	21.47	3000	1310	52.380544	3.379	193.5283	1162.62	5125	0.1	1950	225000	2887500	0.1482	1.47E-04	1.501	1.22E-02	65.62	90.45	4.54	0	57	358.5
298	35.71	3000	1910	48.389374	2.5144	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0891	3.49E-04	2.982	1.09E-02	54.43	89.67	0	0	63.6	428.1
299	22.23	3000	2360	296.282587	12.4197	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1431	4.03E-04	2.424	4.36E-03	48.04	98.31	83.12	0	159	558.8
300	39.37	3000	2340	10.57972	0.458	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0808	4.79E-04	3.998	1.40E-02	66.64	52.74	0	0	49.5	520.5
301	23.29	3000	790	19.163524	0.8383	131.239	1714.43	5125	0.1	1950	225000	1612500	0.1366	8.09E-05	1.299	1.81E-02	20.41	73.91	0	0	38.2	285.9
302	41.37	3000	2480	16.266996	0.7728	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.0769	4.44E-04	3.918	1.19E-02	26.77	69.26	0	0	58.3	485.4
303	52.76	3000	2080	147.155427	6.0318	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0603	2.50E-04	3.092	1.11E-02	55.24	96.6	66.02	0	62.8	300.4
304	21.5	3000	2310	19.218113	0.9746	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.148	4.62E-04	2.577	8.67E-03	21.35	73.98	0	0	80	614.3
305	49.02	3000	2560	161.578417	7.2138	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.0649	3.85E-04	3.998	7.26E-03	17.11	96.91	69.06	0	95.5	418
306	61.77	3000	2040	621.846124	12.6693	61.1213	3681.21	5125	0.1	1950	225000	512500	0.0515	1.27E-04	2.249	8.83E-03	67.87	99.2	91.96	19.59	78.5	186.6
307	50.42	3000	2430	553.261429	21.4995	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0631	3.12E-04	3.502	4.92E-03	31.1	99.1	90.96	9.63	140.9	356
308	25.03	3000	3050	14.074266	0.3696	78.7839	2855.91	5125	0.1	1950	225000	750000	0.1271	3.46E-04	2.376	1.17E-02	23.58	64.47	0	0	59.4	486.6
309	34.39	3000	3050	0.418213	0.0147	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0925	6.78E-04	4.704	1.79E-02	51.09	0	0	0	38.7	701
310	52.58	3000	820	889.591382	28.3008	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.0605	5.87E-05	1.491	8.54E-03	59.4	99.44	94.38	43.79	81.1	145.3
311	24.7	3000	2490	261.496363	13.0954	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.1288	4.84E-04	2.899	4.19E-03	25.2	98.09	80.88	0	165.5	601.5
312	32.6	3000	2180	5.105138	0.2152	126.4473	1779.4	5125	0.1	1950	225000	1525000	0.0976	3.66E-04	2.895	1.63E-02	46.08	2.06	0	0	42.4	455.2
313	27.62	3000	2830	0.121739	0.0055	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1152	7.53E-04	4.306	1.75E-02	45.57	0	0	0	39.7	799.1
314	21.82	3000	2340	7.136626	0.3738	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.1458	6.08E-04	3.108	1.01E-02	61.34	29.94	0	0	68.9	730.1
315	29.38	3000	3280	6.154085	0.2006	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.1083	6.02E-04	3.81	1.09E-02	36.67	18.75	0	0	63.7	664.7
316	24.82	3000	3480	261.72405	12.3776	141.878	1585.87	5125	0.1	1950	225000	1812500	0.1282	7.11E-04	3.804	3.08E-03	28.61	98.09	80.9	0	225.3	785.6
317	45.77	3000	1720	196.348433	5.7145	87.3109	2577	5125	0.1	1950	225000	875000	0.0695	1.46E-04	2.065	1.24E-02	46.28	97.45	74.54	0	55.9	231.2
318	40.17	3000	1500	253.407662	12.367	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.0792	1.83E-04	2.167	9.11E-03	18.36	98.03	80.27	0	76.1	276.5
319	31.47	3000	1830	641.035018	27.4602	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.1011	1.60E-04	1.798	5.39E-03	42.43	99.22	92.2	22	128.6	292.8
320	30.98	3000	1890	143.544043	6.247	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.1027	1.98E-04	1.975	9.78E-03	44.07	96.52	65.17	0	70.9	326.8
321	38.01	3000	1600	60.94402	3.3414	164.4834	1367.92	5125	0.1	1950	225000	2262500	0.0837	2.09E-04	2.264	1.34E-02	29.69	91.8	17.96	0	51.7	305.3
322	36.4	3000	2650	4.221679	0.163	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.0874	5.25E-04	4.035	1.47E-02	52.91	0	0	0	47.1	568.1
323	38.24	3000	2260	2.968541	0.1258	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0832	3.30E-04	3.007	1.83E-02	16	0	0	0	37.9	403
324	33.81	3000	2050	478.975144	20.4084	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0941	2.63E-04	2.413	5.22E-03	46.39	98.96	89.56	0	132.9	365.8
325	25.8	3000	1680	12.618722	0.6713	159.6003	1409.77	5125	0.1	1950	225000	2162500	0.1233	2.41E-04	1.987	1.48E-02	30.93	60.38	0	0	46.9	394.8

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
326	27.78	3000	1670	136.954203	7.2579	158.9847	1415.23	5125	0.1	1950	225000	2150000	0.1145	2.12E-04	1.938	8.84E-03	20.16	96.35	63.49	0	78.4	357.4
327	27.17	3000	2390	58.171384	2.6618	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1171	4.36E-04	2.883	7.69E-03	27.41	91.4	14.05	0	90.1	543.9
328	27.4	3000	1620	205.6774	8.9511	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.1161	1.16E-04	1.505	1.01E-02	72.11	97.57	75.69	0	68.9	281.4
329	56.11	3000	3650	2.427501	0.092	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.0567	6.25E-04	6.568	1.46E-02	27.25	0	0	0	47.4	599.9
330	33.17	3000	1090	382.693821	21.2135	166.2959	1353.01	5125	0.1	1950	225000	2300000	0.0959	1.26E-04	1.662	8.15E-03	23.25	98.69	86.93	0	85.1	256.7
331	38.84	3000	1140	142.352003	7.6604	161.4401	1393.71	5125	0.1	1950	225000	2200000	0.0819	7.60E-05	1.469	1.68E-02	81.45	96.49	64.88	0	41.2	193.8
332	53.92	3000	2680	152.871911	5.6434	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.059	3.48E-04	3.978	8.26E-03	21.41	96.73	67.29	0	83.9	378.1
333	22.61	3000	2450	78.524025	3.5233	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.1407	4.39E-04	2.576	6.45E-03	18.19	93.63	36.33	0	107.5	583.8
334	23.83	3000	1940	504.498665	18.9947	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.1335	1.72E-04	1.652	5.14E-03	43.66	99.01	90.09	0.89	134.7	355.3
335	34.96	3000	4580	34.393288	0.7345	64.0676	3511.92	5125	0.1	1950	225000	550000	0.091	7.31E-04	5.06	7.60E-03	60.02	85.46	0	0	91.2	741.7
336	37.65	3000	1990	616.189448	25.1132	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.0845	1.91E-04	2.144	5.64E-03	61.36	99.19	91.89	18.86	122.8	291.9
337	28.92	3000	900	621.487148	27.7469	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.11	9.33E-05	1.429	6.29E-03	25.05	99.2	91.95	19.55	110.3	253.2
338	34.28	3000	980	791.379191	34.0811	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.0928	7.88E-05	1.429	6.34E-03	45.59	99.37	93.68	36.82	109.3	213.7
339	37.47	3000	1690	981.42257	50.9975	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0849	2.24E-04	2.335	3.62E-03	69.24	99.49	94.91	49.05	191.4	319.4
340	23.64	3000	3100	32.651591	1.0214	93.8425	2397.63	5125	0.1	1950	225000	975000	0.1346	5.05E-04	2.896	7.83E-03	34.54	84.69	0	0	88.5	628
341	53.02	3000	4780	95.071025	2.2403	70.6941	3182.73	5125	0.1	1950	225000	637500	0.06	6.66E-04	6.612	6.28E-03	41.62	94.74	47.41	0	110.3	639.1
342	38.47	3000	2800	220.913248	6.9103	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0827	3.43E-04	3.098	6.74E-03	42.48	97.74	77.37	0	102.8	412.8
343	60.03	3000	3940	59.310212	2.1159	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.053	6.19E-04	6.904	7.51E-03	35.97	91.57	15.7	0	92.2	589.5
344	35.95	3000	1970	208.04895	8.8169	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0885	2.39E-04	2.363	8.67E-03	76.52	97.6	75.97	0	80	336.8
345	50.9	3000	2590	142.037514	7.292	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.0625	4.60E-04	4.717	6.87E-03	37.46	96.48	64.8	0	101	474.9
346	40.22	3000	780	262.595746	7.7874	88.9661	2529.05	5125	0.1	1950	225000	900000	0.0791	5.76E-05	1.368	1.45E-02	54.12	98.1	80.96	0	47.9	174.4
347	51.64	3000	1870	43.144265	1.9647	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.0616	2.49E-04	3.042	1.64E-02	65.7	88.41	0	0	42.3	301.8
348	38.56	3000	2680	31.973503	1.355	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0825	5.21E-04	4.194	9.60E-03	50.47	84.36	0	0	72.2	557.4
349	50.66	3000	1630	151.488832	7.7456	153.3892	1466.86	5125	0.1	1950	225000	2037500	0.0628	1.80E-04	2.446	1.28E-02	44.75	96.7	66.99	0	54	247.5
350	23	3000	2750	20.300417	0.6296	93.0387	2418.35	5125	0.1	1950	225000	962500	0.1383	3.51E-04	2.282	1.07E-02	38.65	75.37	0	0	64.9	508.3
351	56.71	3000	1830	154.543004	5.6288	109.2665	2059.19	5125	0.1	1950	225000	1225000	0.0561	1.40E-04	2.259	1.55E-02	52.41	96.76	67.65	0	44.6	204.1
352	21.25	3000	2040	144.836558	6.1047	126.4473	1779.4	5125	0.1	1950	225000	1525000	0.1497	2.66E-04	1.898	7.05E-03	57.28	96.55	65.48	0	98.4	457.7
353	45.06	3000	1950	177.398863	9.4376	159.6003	1409.77	5125	0.1	1950	225000	2162500	0.0706	3.35E-04	3.401	7.97E-03	49.11	97.18	71.81	0	87	386.8
354	23.65	3000	3440	14.147407	0.3632	77.0232	2921.2	5125	0.1	1950	225000	725000	0.1345	4.36E-04	2.637	9.87E-03	18.94	64.66	0	0	70.3	571.3
355	52.41	3000	4220	46.074122	1.6089	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.0607	6.87E-04	6.721	7.14E-03	34.02	89.15	0	0	97.1	657.2
356	29.4	3000	760	157.483074	4.9262	93.8425	2397.63	5125	0.1	1950	225000	975000	0.1082	8.74E-05	1.408	1.22E-02	19.44	96.83	68.25	0	56.8	245.5
357	37.34	3000	1310	352.286954	12.0329	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.0852	1.10E-04	1.65	9.78E-03	49.31	98.58	85.81	0	70.9	226.5
358	27.26	3000	1850	30.502939	1.4492	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1167	2.50E-04	2.084	1.24E-02	31.36	83.61	0	0	55.9	391.9
359	23.37	3000	2910	46.29893	1.3087	84.7981	2653.36	5125	0.1	1950	225000	837500	0.1361	3.07E-04	2.14	9.46E-03	36.98	89.2	0	0	73.2	469.2
360	21.7	3000	1620	6.644542	0.3958	178.7197	1258.95	5125	0.1	1950	225000	2562500	0.1466	3.33E-04	2.148	1.42E-02	69.13	24.75	0	0	48.9	507.2
361	41.8	3000	1640	372.629298	12.7278	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.0761	1.42E-04	1.941	9.07E-03	43.28	98.66	86.58	0	76.5	237.9
362	37.12	3000	1820	134.196355	6.0512	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.0857	1.83E-04	2.082	1.13E-02	36.73	96.27	62.74	0	61.3	287.4
363	57.63	3000	5430	4.971072	0.1474	88.9661	2529.05	5125	0.1	1950	225000	900000	0.0552	7.71E-04	8.065	1.03E-02	18.72	0	0	0	67.1	717.2
364	35.99	3000	2130	244.609972	10.4225	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0884	3.00E-04	2.718	6.86E-03	44.02	97.96	79.56	0	101.1	387
365	28.2	3000	1990	206.013193	8.6358	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1128	2.18E-04	1.976	7.75E-03	38.22	97.57	75.73	0	89.4	359.1
366	25.43	3000	2020	15.353689	0.6992	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1251	3.05E-04	2.234	1.24E-02	26.39	67.43	0	0	55.8	450.2
367	29.43	3000	2030	14.449819	0.6419	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1081	2.88E-04	2.348	1.38E-02	24.36	65.4	0	0	50.1	409
368	29.29	3000	1710	717.507766	35.1698	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1086	1.92E-04	1.893	4.46E-03	59.55	99.3	93.03	30.31	155.6	331.2
369	62.14	3000	2210	172.881065	8.6577	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.0512	3.70E-04	4.648	8.32E-03	53.33	97.11	71.08	0	83.3	383.4
370	34.36	3000	3290	0.218063	0.0128	175.8017	1279.85	5125	0.1	1950	225000	2500000	0.0926	7.17E-04	4.914	1.50E-02	19.31	0	0	0	46.2	733.1
371	26.89	3000	2620	113.455437	4.2162	111.4852	2018.2	5125	0.1	1950	225000	1262500	0.1183	4.45E-04	2.902	6.49E-03	51.73	95.59	55.93	0	106.8	553.1
372	36.61	3000	3020	36.011273	1.1265	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0869	4.26E-04	3.475	9.88E-03	29.02	86.12	0	0	70.1	486.5
373	39.42	3000	1280	335.700827	11.8919	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.0807	1.44E-04	1.899	9.05E-03	24.39	98.51	85.11	0	76.6	246.9
374	54.38	3000	3090	136.51816	4.3792	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.0585	4.12E-04	4.56	7.89E-03	35.86	96.34	63.37	0	87.8	429.8
375	29.05	3000	2950	152.04796	5.6504	111.4852	2018.2	5125	0.1	1950	225000	1262500	0.1095	5.30E-04	3.446	5.32E-03	43.81	96.71	67.12	0	130.4	607.8
376	42.42	3000	2360	66.928323	2.4044	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.075	2.69E-04	2.811	1.20E-02	31.96	92.53	25.29	0	58	339.6
377	49.48	3000	1420	493.522016	27.1583	165.0887	1362.9	5125	0.1	1950	225000	2275000	0.0643	1.03E-04	1.809	1.01E-02	76.02	98.99	89.87	0	68.6	187.4
378	25.55	3000	2390	136.249737	4.5133	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.1245	2.03E-04	1.823	9.07E-03	66.37	96.33	63.3	0	76.4	365.7
379	54.1	3000	1950	312.479605	13.3858	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.0588	2.28E-04	2.958	8.92E-03	80.6	98.4	84	0	77.7	280.2
380	28	3000	1530	90.997611	4.7662	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.1136	1.47E-04	1.656	1.28E-02	94.67	94.51	45.05	0	54.3	303.1
381	21.8	3000	1190	566.616948	26.7968	141.878	1585.87	5125	0.1	1950	225000	1812500	0.1459	1.01E-04	1.35	5.33E-03	34.36	99.12	91.18	11.76	130	317.2
382	24.59	3000	3000	0.593306	0.0182	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1294	5.95E-04	3.326	1.64E-02	60.68	0	0	0	42.2	693.4
383	30.15	3000	2110	98.602317	4.1787	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.1055	2.87E-04	2.375	8.89E-03	31.67	94.93	49.29	0	78	403.6
384	24.8	3000	2620	1.813441	0.0567	93.8425	2397.63	5125	0.1	1950	225000	975000	0.1283	3.88E-04	2.528	1.85E-02	83.92	0	0	0	37.4	522.4
385	39.57	3000	890	187.956624	8.1372	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0804	9.22E-05	1.58	1.39E-02	32.57	97.34	73.4	0	49.8	204.6
386	50.82	3000	3950	8.166272	0.2768	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.0626	6.16E-04	5.973	1.12E-02	21.8	38.77	0	0	61.9	602.3
387	56.41	3000	1870	20.460026	1.1789	172.8593	1301.64	5125	0.1	1950	225000	2437500	0.0564	3.31E-04	3.97	1.59E-02	39.19	75.56	0	0	43.6	360.7
388	25.41	3000	3080	1.822311	0.0659	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.1252	6.48E-04	3.617	1.23E-02	39.93	0	0	0	56.5	729.5
389	36.32	3000	3030	80.0654	3.3005	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0876	5.79E-04	4.34	6.60E-03	45.24	93.76	37.55	0	105.1	612.5
390	31.16	3000	2240	41.060876	1.6542	120.8573	1861.7	5125	0.1	1950	225000	1425000	0.1021	3.20E-04	2.586	1.08E-02	32.91	87.82	0	0	64.1	425.4

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
391	40.63	3000	3040	7.615223	0.2463	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0783	4.10E-04	3.649	1.37E-02	12.91	34.34	0	0	50.6	460.2
392	58.7	3000	2000	36.99138	1.5677	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0542	2.28E-04	3.131	1.77E-02	37.72	86.48	0	0	39.1	273.4
393	31.34	3000	2190	653.192189	23.6286	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.1015	1.82E-04	1.907	5.10E-03	77.71	99.23	92.35	23.45	135.8	311.8
394	57.42	3000	2150	273.694332	13.4156	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.0554	3.32E-04	4.032	7.16E-03	43.18	98.17	81.73	0	96.8	359.9
395	23.19	3000	2220	375.814232	18.0986	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.1372	4.07E-04	2.499	3.92E-03	41.73	98.67	86.7	0	177	552.4
396	21.34	3000	3160	1.211582	0.0336	83.1021	2707.51	5125	0.1	1950	225000	812500	0.1491	4.58E-04	2.554	1.44E-02	33.97	0	0	0	48.1	613.4
397	24.3	3000	3340	295.218018	8.0091	81.3886	2764.52	5125	0.1	1950	225000	787500	0.1309	5.03E-04	2.944	4.11E-03	75.31	98.31	83.06	0	168.8	620.9
398	22.48	3000	1700	16.5102	0.7334	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1415	1.35E-04	1.481	1.73E-02	79.86	69.72	0	0	40.2	337.7
399	48.79	3000	1830	52.416225	2.3167	132.592	1696.94	5125	0.1	1950	225000	1637500	0.0652	1.86E-04	2.442	1.73E-02	50.23	90.46	4.61	0	40	256.5
400	44.74	3000	3370	23.239648	0.8407	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.0711	5.14E-04	4.653	9.77E-03	16.18	78.49	0	0	71	532.9
401	40.42	3000	890	1234.813005	62.6182	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.0787	3.98E-05	1.256	5.69E-03	92.87	99.6	95.95	59.51	121.8	159.2
402	32.93	3000	2620	694.908642	25.6533	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0966	3.72E-04	2.946	3.26E-03	26.31	99.28	92.8	28.05	212.6	458.4
403	40.89	3000	3150	44.627995	1.2864	86.4774	2601.84	5125	0.1	1950	225000	862500	0.0778	4.38E-04	3.845	1.01E-02	49.14	88.8	0	0	68.7	481.8
404	26.67	3000	1780	147.63377	8.3312	169.2951	1329.04	5125	0.1	1950	225000	2362500	0.1193	3.08E-04	2.303	7.14E-03	36.38	96.61	66.13	0	97.1	442.7
405	22	3000	2590	78.543412	2.7028	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.1446	3.99E-04	2.396	7.24E-03	64.02	93.63	36.34	0	95.7	558
406	52.85	3000	1930	55.264928	3.0856	167.4988	1343.29	5125	0.1	1950	225000	2325000	0.0602	3.45E-04	3.894	1.20E-02	46.69	90.95	9.53	0	57.6	377.7
407	27.86	3000	3420	135.501152	3.9436	87.3109	2577	5125	0.1	1950	225000	875000	0.1142	4.89E-04	3.165	5.48E-03	15.65	96.31	63.1	0	126.5	582.2
408	41.21	3000	2380	208.352883	8.2457	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0772	3.14E-04	3.056	7.19E-03	15.43	97.6	76	0	96.4	380
409	33	3000	2140	49.814191	2.345	141.2249	1593.2	5125	0.1	1950	225000	1800000	0.0964	3.68E-04	2.927	9.80E-03	37.24	89.96	0	0	70.7	454.6
410	50.1	3000	2680	211.523627	9.6321	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.0635	4.90E-04	4.904	5.77E-03	61.03	97.64	76.36	0	120.2	501.7
411	40.53	3000	2590	369.444987	20.8484	169.2951	1329.04	5125	0.1	1950	225000	2362500	0.0785	4.87E-04	4.137	3.98E-03	35	98.65	86.47	0	174.2	523.2
412	38.75	3000	3500	233.663071	5.8604	75.2423	2990.34	5125	0.1	1950	225000	700000	0.0821	4.24E-04	3.609	5.84E-03	51.72	97.86	78.6	0	118.6	477.3
413	22.33	3000	900	164.521655	10.3046	187.9019	1197.43	5125	0.1	1950	225000	2762500	0.1425	8.02E-05	1.285	1.00E-02	26.23	96.96	69.61	0	69.1	294.9
414	36.65	3000	3390	79.529949	2.7973	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0868	7.39E-04	5.304	6.15E-03	87.44	93.71	37.13	0	112.7	741.6
415	61.65	3000	2820	6.201872	0.304	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.0516	4.73E-04	5.631	1.51E-02	22.67	19.38	0	0	45.9	468
416	26.85	3000	1780	10.003179	0.4709	141.2249	1593.2	5125	0.1	1950	225000	1800000	0.1185	2.27E-04	1.967	1.70E-02	55.32	50.02	0	0	40.7	375.5
417	57.84	3000	2670	53.335741	2.6935	151.5013	1485.14	5125	0.1	1950	225000	2000000	0.055	4.50E-04	5.139	9.70E-03	28.65	90.63	6.25	0	71.5	455.3
418	26.49	3000	1380	202.285027	6.7008	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.1201	1.41E-04	1.592	9.00E-03	33.64	97.53	75.28	0	77	308
419	24.64	3000	2270	29.019337	1.2563	129.879	1732.38	5125	0.1	1950	225000	1587500	0.1291	3.76E-04	2.473	9.53E-03	25.48	82.77	0	0	72.7	514.3
420	49.4	3000	2340	98.627376	3.0055	91.4206	2461.15	5125	0.1	1950	225000	937500	0.0644	2.35E-04	2.841	1.20E-02	19.79	94.93	49.3	0	57.7	294.8
421	21.22	3000	1840	83.521303	4.0761	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.1499	2.60E-04	1.875	8.28E-03	36.15	94.01	40.14	0	83.7	452.9
422	24.97	3000	2440	5.536844	0.2071	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.1274	5.09E-04	3.02	1.36E-02	91.3	9.7	0	0	51	619.9
423	24.03	3000	2630	61.161247	1.8968	93.0387	2418.35	5125	0.1	1950	225000	962500	0.1324	2.74E-04	2.045	9.63E-03	50.8	91.82	18.25	0	72	436.2
424	22.12	3000	2140	51.69871	2.4562	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1438	4.73E-04	2.661	7.77E-03	86.8	90.33	3.29	0	89.2	616.5
425	38.47	3000	2530	111.347343	3.6011	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0827	2.57E-04	2.568	1.03E-02	42.91	95.51	55.1	0	67.2	342.1
426	25.76	3000	1550	133.310223	8.1215	182.7653	1231.09	5125	0.1	1950	225000	2650000	0.1235	2.76E-04	2.13	8.06E-03	75.48	96.25	62.49	0	86	423.8
427	40.17	3000	3660	25.311209	0.7985	94.6429	2377.36	5125	0.1	1950	225000	987500	0.0792	5.34E-04	4.406	8.95E-03	13.19	80.25	0	0	77.4	562.1
428	33.7	3000	1660	213.5937	10.1941	143.1797	1571.45	5125	0.1	1950	225000	1837500	0.0944	1.33E-04	1.714	1.08E-02	69.34	97.66	76.59	0	64.4	260.6
429	42.08	3000	3950	3.788064	0.1028	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0756	5.88E-04	4.93	1.28E-02	23.74	0	0	0	54.1	600.4
430	29.48	3000	1710	98.835349	2.4493	74.3438	3026.48	5125	0.1	1950	225000	687500	0.1079	1.25E-04	1.584	1.35E-02	80.36	94.94	49.41	0	51.6	275.4
431	21.93	3000	1850	14.699237	0.8324	169.8917	1324.37	5125	0.1	1950	225000	2375000	0.1451	3.59E-04	2.25	1.09E-02	34.69	65.98	0	0	63.4	525.9
432	61.53	3000	950	860.781927	23.1048	80.525	2794.16	5125	0.1	1950	225000	775000	0.0517	1.00E-04	1.977	7.68E-03	26.87	99.42	94.19	41.91	90.3	164.7
433	22.39	3000	2660	476.74163	14.528	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1421	2.55E-04	1.909	4.38E-03	57.67	98.95	89.51	0	158.4	436.9
434	35.23	3000	2570	211.449421	7.9096	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0903	4.29E-04	3.401	6.03E-03	72.85	97.64	76.35	0	114.9	494.8
435	24.72	3000	2360	225.727588	6.9397	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1287	1.89E-04	1.743	7.53E-03	58.72	97.78	77.85	0	92.1	361.4
436	55.91	3000	2760	224.185573	7.0725	94.6429	2377.36	5125	0.1	1950	225000	987500	0.0569	3.36E-04	3.983	8.08E-03	68.48	97.77	77.7	0	85.7	365.1
437	24.78	3000	2050	128.436137	5.6476	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.1284	2.84E-04	2.116	7.47E-03	29.05	96.11	61.07	0	92.8	437.8
438	23.57	3000	2140	8.3132	0.4128	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.135	5.21E-04	2.95	1.15E-02	73.84	39.85	0	0	60.5	641.6
439	55.62	3000	4650	5.057417	0.116	68.8336	3268.75	5125	0.1	1950	225000	612500	0.0572	6.22E-04	6.495	1.30E-02	27.04	1.14	0	0	53.4	598.5
440	36.19	3000	2510	27.771663	0.9557	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.0879	3.47E-04	2.997	1.27E-02	55.88	82	0	0	54.5	424.4
441	34.65	3000	1690	199.355736	9.7291	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.0918	2.04E-04	2.124	9.53E-03	92.4	97.49	74.92	0	72.7	314
442	23.31	3000	2100	9.637674	0.3768	117.2971	1918.21	5125	0.1	1950	225000	1362500	0.1365	2.33E-04	1.865	1.54E-02	48.42	48.12	0	0	45	410
443	28.25	3000	2350	382.73656	12.6783	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.1126	1.67E-04	1.749	6.83E-03	73.71	98.69	86.94	0	101.6	317.3
444	41.8	3000	2720	6.573998	0.3578	163.2695	1378.09	5125	0.1	1950	225000	2237500	0.0761	6.09E-04	5.047	1.21E-02	43.14	23.94	0	0	57.3	618.7
445	23.58	3000	870	63.580679	1.5372	72.5304	3102.15	5125	0.1	1950	225000	662500	0.1349	7.75E-05	1.291	1.41E-02	29.77	92.14	21.36	0	49	280.5
446	26.06	3000	2600	36.871007	1.1435	93.0387	2418.35	5125	0.1	1950	225000	962500	0.1221	2.68E-04	2.108	1.17E-02	57.55	86.44	0	0	59.2	414.5
447	33.07	3000	1730	384.671653	18.8553	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.0962	1.95E-04	2.024	6.73E-03	33.72	98.7	87	0	103.1	313.7
448	35.11	3000	2380	12.550381	0.549	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0906	5.55E-04	4.096	1.25E-02	85.72	60.16	0	0	55.3	597.8
449	61.89	3000	2590	437.978377	13.2278	90.6061	2483.28	5125	0.1	1950	225000	925000	0.0514	2.00E-04	2.962	8.10E-03	28.93	98.86	88.58	0	85.6	245.3
450	26.21	3000	1400	261.760809	15.2369	174.6277	1288.46	5125	0.1	1950	225000	2475000	0.1214	1.26E-04	1.525	8.58E-03	67.37	98.09	80.9	0	80.8	298.3
451	22.56	3000	2720	13.058434	0.5322	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.141	5.52E-04	2.98	8.98E-03	37.52	61.71	0	0	77.2	677
452	23.34	3000	2550	4.18919	0.2071	148.3284	1516.9	5125	0.1	1950	225000	1937500	0.1363	6.80E-04	3.521	1.07E-02	60.91	0	0	0	64.6	773
453	26.8	3000	1020	864.546348	47.0514	163.2695	1378.09	5125	0.1	1950	225000	2237500	0.1187	8.55E-05	1.364	4.83E-03	35.46	99.42	94.22	42.17	143.6	260.9
454	38.61	3000	2090	303.714619	11.8022	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0824	2.12E-04	2.3	8.02E-03	66.48	98.35	83.54	0	86.5	305.3
455	40.68	3000	2520	74.969757	2.9133	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0782	4.41E-04	3.851	9.03E-03	68.85	93.33	33.31	0	76.7	485.2

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
456	32.46	3000	1980	240.034446	9.9507	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.098	2.20E-04	2.133	8.12E-03	78.92	97.92	79.17	0	85.3	336.8
457	44.81	3000	1610	434.942036	12.8984	88.9661	2529.05	5125	0.1	1950	225000	900000	0.071	1.85E-04	2.317	7.40E-03	18	98.85	88.5	0	93.6	265
458	21.73	3000	1800	6.946274	0.3878	167.4988	1343.29	5125	0.1	1950	225000	2325000	0.1464	3.48E-04	2.202	1.29E-02	40.25	28.02	0	0	53.7	519.3
459	22.99	3000	3160	45.754485	1.5393	100.929	2229.29	5125	0.1	1950	225000	1087500	0.1384	5.42E-04	2.98	6.66E-03	24.05	89.07	0	0	104	664.4
460	22.44	3000	1800	34.149888	1.6739	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1418	3.12E-04	2.111	1.09E-02	93.45	85.36	0	0	63.7	482.2
461	50.74	3000	1280	178.778008	6.6875	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0627	1.23E-04	1.994	1.45E-02	34.64	97.2	72.03	0	47.7	201.4
462	30.86	3000	1780	60.719498	2.7784	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1031	1.81E-04	1.887	1.33E-02	48.48	91.77	17.65	0	52.1	313.3
463	25.17	3000	1850	72.660948	3.1622	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.1264	1.94E-04	1.777	1.08E-02	35.56	93.12	31.19	0	64.5	361.9
464	46.44	3000	2260	73.697015	3.0036	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.0685	2.94E-04	3.167	1.11E-02	22.09	93.22	32.15	0	62.2	349.5
465	25.45	3000	1410	97.817719	2.9008	88.9661	2529.05	5125	0.1	1950	225000	900000	0.125	9.91E-05	1.401	1.30E-02	72.52	94.89	48.88	0	53.5	282
466	41.48	3000	1180	260.751272	7.0741	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0767	1.51E-04	1.996	1.01E-02	17.62	98.08	80.82	0	68.8	246.6
467	21.37	3000	1120	382.975605	23.8423	186.7666	1204.71	5125	0.1	1950	225000	2737500	0.1489	1.28E-04	1.433	6.06E-03	20.12	98.69	86.94	0	114.4	343.7
468	50.26	3000	1690	336.238101	18.6383	166.2959	1353.01	5125	0.1	1950	225000	2300000	0.0633	2.33E-04	2.862	7.74E-03	25.75	98.51	85.13	0	89.6	291.8
469	53.92	3000	1610	145.915675	9.629	197.9711	1136.53	5125	0.1	1950	225000	2987500	0.059	2.57E-04	3.201	1.03E-02	21.47	96.57	65.73	0	67	304.2
470	35.87	3000	2190	13.285996	0.5195	117.2971	1918.21	5125	0.1	1950	225000	1362500	0.0887	3.24E-04	2.847	1.60E-02	66.01	62.37	0	0	43.4	406.8
471	45.06	3000	2210	34.797793	1.7719	152.7612	1472.89	5125	0.1	1950	225000	2025000	0.0706	4.74E-04	4.395	1.12E-02	71.44	85.63	0	0	62	499.9
472	41.53	3000	2190	16.958704	0.707	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0766	2.91E-04	2.92	1.51E-02	18.1	70.52	0	0	45.8	360.3
473	48.13	3000	2740	103.185687	4.835	140.5704	1600.62	5125	0.1	1950	225000	1787500	0.0661	4.93E-04	4.769	7.29E-03	41.6	95.15	51.54	0	95.1	507.9
474	34.32	3000	2690	242.040042	7.1778	88.9661	2529.05	5125	0.1	1950	225000	900000	0.0927	2.42E-04	2.321	7.80E-03	64.81	97.93	79.34	0	88.9	346.6
475	21.54	3000	1860	69.761583	3.6105	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.1477	3.06E-04	2.046	8.13E-03	35.13	92.83	28.33	0	85.2	486.8
476	26.01	3000	1610	44.312891	2.1053	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1223	1.28E-04	1.529	1.52E-02	68.6	88.72	0	0	45.6	301.2
477	29.21	3000	3510	7.51063	0.1747	69.767	3225.02	5125	0.1	1950	225000	625000	0.1089	4.64E-04	3.153	1.41E-02	82.33	33.43	0	0	49.1	553.1
478	25.35	3000	3040	1.736884	0.0779	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.1255	7.18E-04	3.892	1.14E-02	36.76	0	0	0	61	786.8
479	34.73	3000	1670	47.375785	1.7722	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0916	1.68E-04	1.927	1.55E-02	38.8	89.45	0	0	44.8	284.4
480	47.41	3000	3300	14.346053	0.4215	88.1405	2552.74	5125	0.1	1950	225000	887500	0.0671	4.31E-04	4.244	1.28E-02	21.6	65.15	0	0	54.3	458.7
481	23.24	3000	2300	3.11784	0.1271	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.1369	3.78E-04	2.397	1.43E-02	30.63	0	0	0	48.6	528.7
482	23.04	3000	1730	65.225265	3.9486	181.614	1238.89	5125	0.1	1950	225000	2625000	0.1381	3.19E-04	2.168	8.31E-03	28.85	92.33	23.34	0	83.4	482.2
483	21.88	3000	2850	356.201077	9.968	83.9523	2680.09	5125	0.1	1950	225000	825000	0.1454	2.38E-04	1.827	5.16E-03	48.59	98.6	85.96	0	134.2	427.9
484	23.69	3000	1410	8.526736	0.2529	88.9661	2529.05	5125	0.1	1950	225000	900000	0.1343	1.98E-04	1.744	1.61E-02	17.23	41.36	0	0	43.1	377.3
485	24.91	3000	2510	53.439918	2.3739	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1277	4.77E-04	2.889	7.26E-03	31.63	90.64	6.44	0	95.5	594.4
486	49.94	3000	2010	308.261068	12.4911	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0637	1.93E-04	2.528	9.21E-03	44.4	98.38	83.78	0	75.3	259.4
487	54.95	3000	2470	86.792681	3.5373	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.0579	3.95E-04	4.447	9.97E-03	55.58	94.24	42.39	0	69.6	414.8
488	41.59	3000	1840	67.937271	3.2864	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.0765	2.55E-04	2.685	1.24E-02	40.83	92.64	26.4	0	56	330.8
489	37.65	3000	2560	8.512287	0.3724	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0845	6.29E-04	4.762	1.29E-02	81.01	41.26	0	0	53.8	648.2
490	37.34	3000	1980	18.365777	0.8565	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.0852	3.21E-04	2.903	1.46E-02	48.14	72.78	0	0	47.6	398.5
491	38.1	3000	2090	485.988942	19.2334	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.0835	2.28E-04	2.377	6.01E-03	66.23	98.97	89.71	0	115.3	319.8
492	23.09	3000	2240	9.55181	0.4783	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.1378	4.67E-04	2.712	1.05E-02	34.33	47.65	0	0	65.7	602.1
493	26.67	3000	1740	25.903488	1.4359	166.2959	1353.01	5125	0.1	1950	225000	2300000	0.1193	3.54E-04	2.498	1.17E-02	77.69	80.7	0	0	59.4	480.2
494	25.39	3000	1400	403.434284	17.0044	126.4473	1779.4	5125	0.1	1950	225000	1525000	0.1253	9.93E-05	1.401	7.33E-03	60.26	98.76	87.61	0	94.6	282.7
495	46.17	3000	1730	511.548029	25.6177	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.0689	2.07E-04	2.522	6.50E-03	32.7	99.02	90.23	2.26	106.7	279.9
496	24.97	3000	2380	51.227628	1.8911	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.1274	3.23E-04	2.283	9.23E-03	34.77	90.24	2.4	0	75.1	468.6
497	61.3	3000	2590	100.246418	3.0003	89.788	2505.9	5125	0.1	1950	225000	912500	0.0519	1.79E-04	2.739	1.69E-02	78.04	95.01	50.12	0	40.9	229
498	30.71	3000	1490	209.773662	9.9663	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1036	1.64E-04	1.8	9.09E-03	28.22	97.62	76.16	0	76.2	300.4
499	63.5	3000	2760	820.221135	33.2362	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0501	3.67E-04	4.698	3.50E-03	24.57	99.39	93.9	39.04	198.1	379.2
500	52.93	3000	4290	155.520474	2.7968	53.9497	4170.55	5125	0.1	1950	225000	425000	0.0601	2.52E-04	3.12	1.08E-02	58.41	96.78	67.85	0	64	302
501	36.86	3000	2150	139.969396	5.7373	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0863	2.86E-04	2.678	8.79E-03	42.31	96.43	64.28	0	78.9	372.3
502	34.21	3000	1980	139.76557	7.0288	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.093	3.17E-04	2.721	7.87E-03	28.37	96.42	64.23	0	88.1	407.7
503	25.78	3000	3270	34.324925	1.0553	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1234	6.61E-04	3.706	7.55E-03	76.67	85.43	0	0	91.8	736.7
504	22.48	3000	1740	217.75682	10.108	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1415	1.60E-04	1.573	7.82E-03	86.2	97.7	77.04	0	88.6	358.6
505	37.08	3000	2450	126.561631	6.5502	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.0858	5.10E-04	4.008	6.30E-03	58.17	96.05	60.49	0	110.1	553.9
506	24.19	3000	2350	237.560806	10.013	126.4473	1779.4	5125	0.1	1950	225000	1525000	0.1315	3.75E-04	2.44	5.04E-03	22.64	97.9	78.95	0	137.5	516.9
507	24.43	3000	2690	2.875728	0.1111	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.1302	5.81E-04	3.256	1.26E-02	53.51	0	0	0	55.1	683
508	30.98	3000	1550	286.179106	14.692	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.1027	1.24E-04	1.611	9.22E-03	61.59	98.25	82.53	0	75.2	266.6
509	25.25	3000	1880	333.620871	14.8949	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.126	2.07E-04	1.83	6.13E-03	47.11	98.5	85.01	0	113.1	371.5
510	45.32	3000	1540	530.981975	28.0302	158.3679	1420.74	5125	0.1	1950	225000	2137500	0.0702	1.48E-04	2.068	7.72E-03	61.26	99.06	90.58	5.83	89.8	233.8
511	43.82	3000	1910	487.2852	21.9729	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.0726	2.39E-04	2.662	6.20E-03	65.42	98.97	89.74	0	111.8	311.4
512	23.48	3000	1670	17.472937	0.8639	148.3284	1516.9	5125	0.1	1950	225000	1937500	0.1355	1.96E-04	1.73	1.52E-02	65.29	71.38	0	0	45.7	377.5
513	30.27	3000	1900	177.190042	7.5903	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.1051	1.99E-04	1.957	9.13E-03	64.31	97.18	71.78	0	75.9	331.3
514	28.2	3000	1800	335.281273	15.0439	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.1128	1.65E-04	1.74	7.20E-03	52.28	98.51	85.09	0	96.2	316.1
515	36.4	3000	2680	5.65709	0.2018	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.0874	4.22E-04	3.441	1.47E-02	32.68	11.62	0	0	47.1	484.5
516	21.27	3000	1870	3.797608	0.1973	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.1496	4.16E-04	2.406	1.42E-02	74.9	0	0	0	48.8	579.9
517	22.55	3000	2350	225.676381	10.4756	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1411	4.23E-04	2.517	4.66E-03	24.15	97.78	77.84	0	148.7	572
518	32.23	3000	2520	184.945146	7.407	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.0987	4.37E-04	3.237	5.95E-03	57.52	97.3	72.96	0	116.5	514.7
519	22.92	3000	1470	21.199657	1.3077	185.057	1215.84	5125	0.1	1950	225000	2700000	0.1388	2.24E-04	1.816	1.31E-02	43.63	76.41	0	0	52.8	406.1
520	57.22	3000	2870	51.226332	1.6567	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0556	4.42E-04	5.019	1.17E-02	74.79	90.24	2.39	0	59.1	449.5

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
521	26.14	3000	1920	462.687238	20.0311	129.879	1732.38	5125	0.1	1950	225000	1587500	0.1217	2.01E-04	1.834	5.34E-03	41.83	98.92	89.19	0	129.7	359.6
522	23.02	3000	2140	58.987234	1.9693	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.1382	1.91E-04	1.7	1.11E-02	53.74	91.52	15.24	0	62.4	378.5
523	32.17	3000	2550	1.03241	0.0418	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0989	5.47E-04	3.794	1.72E-02	51.28	0	0	0	40.3	604.4
524	26.1	3000	1810	9.984249	0.4656	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.1219	2.60E-04	2.078	1.63E-02	71.31	49.92	0	0	42.6	408.1
525	34.39	3000	1530	82.712913	5.1963	188.4683	1193.83	5125	0.1	1950	225000	2775000	0.0925	2.63E-04	2.438	1.07E-02	48.24	93.95	39.55	0	64.8	363.4
526	33.24	3000	2010	446.10414	19.4144	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.0957	2.41E-04	2.274	5.52E-03	17.92	98.88	88.79	0	125.6	350.6
527	22.22	3000	3130	8.182157	0.2267	83.1021	2707.51	5125	0.1	1950	225000	812500	0.1432	5.23E-04	2.848	1.13E-02	78.8	38.89	0	0	61.3	657
528	24.87	3000	2250	67.477779	3.1618	140.5704	1600.62	5125	0.1	1950	225000	1787500	0.1279	4.22E-04	2.669	7.45E-03	40.21	92.59	25.9	0	93.1	549.9
529	25.57	3000	1630	106.083276	2.878	81.3886	2764.52	5125	0.1	1950	225000	787500	0.1244	1.58E-04	1.643	1.06E-02	40.5	95.29	52.87	0	65.5	329.3
530	34.73	3000	2440	100.463881	4.1414	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0916	3.93E-04	3.169	7.78E-03	33.81	95.02	50.23	0	89.1	467.6
531	24.7	3000	2640	19.65531	0.6814	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1288	3.76E-04	2.474	1.03E-02	22.04	74.56	0	0	67.2	513.3
532	51.39	3000	3590	326.58309	8.0931	74.3438	3026.48	5125	0.1	1950	225000	687500	0.0619	4.17E-04	4.404	5.61E-03	58.32	98.47	84.69	0	123.6	439.1
533	39.42	3000	2710	68.07079	2.1111	93.0387	2418.35	5125	0.1	1950	225000	962500	0.0807	2.88E-04	2.804	1.10E-02	28.58	92.65	26.55	0	63	364.5
534	37.92	3000	2890	264.976086	7.9306	89.788	2505.9	5125	0.1	1950	225000	912500	0.0839	3.49E-04	3.103	6.24E-03	53.15	98.11	81.13	0	111.1	419.4
535	31.25	3000	2540	84.213632	3.0881	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.1018	4.48E-04	3.223	8.00E-03	81.85	94.06	40.63	0	86.7	528.6
536	31.59	3000	1560	187.151852	10.2233	163.877	1372.98	5125	0.1	1950	225000	2250000	0.1007	2.08E-04	2.044	8.51E-03	15.12	97.33	73.28	0	81.5	331.6
537	59.8	3000	1830	662.422096	37.3816	169.2951	1329.04	5125	0.1	1950	225000	2362500	0.0532	2.84E-04	3.7	4.98E-03	50.93	99.25	92.45	24.52	139.1	317.1
538	53.56	3000	3500	32.128229	1.0974	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.0594	6.69E-04	6.697	9.44E-03	64.69	84.44	0	0	73.4	640.8
539	39.72	3000	3430	44.631049	1.3601	91.4206	2461.15	5125	0.1	1950	225000	937500	0.0801	5.70E-04	4.6	8.37E-03	48.92	88.8	0	0	82.8	593.5
540	39.72	3000	2150	131.766275	6.2029	141.2249	1593.2	5125	0.1	1950	225000	1800000	0.0801	3.27E-04	3.062	8.18E-03	18.57	96.21	62.05	0	84.7	395.1
541	23.43	3000	1630	193.616485	7.2898	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.1358	1.12E-04	1.416	9.33E-03	72.01	97.42	74.18	0	74.3	309.7
542	35.59	3000	1370	367.646802	20.4532	166.8979	1348.13	5125	0.1	1950	225000	2312500	0.0894	1.20E-04	1.677	8.96E-03	45.27	98.64	86.4	0	77.3	241.5
543	24.36	3000	1480	153.434897	8.75	171.0818	1315.16	5125	0.1	1950	225000	2400000	0.1306	1.75E-04	1.678	8.61E-03	23.16	96.74	67.41	0	80.5	353.1
544	34.84	3000	2590	85.11163	3.2252	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.0913	3.80E-04	3.102	8.16E-03	20.61	94.13	41.25	0	85	456.2
545	26.34	3000	2220	5.473705	0.2695	147.6897	1523.46	5125	0.1	1950	225000	1925000	0.1208	4.27E-04	2.785	1.27E-02	25.38	8.65	0	0	54.8	541.9
546	63.25	3000	2950	22.166963	1.1565	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.0503	6.76E-04	7.791	1.07E-02	71.86	77.44	0	0	65.1	631.3
547	45.13	3000	2230	86.223421	3.3091	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0705	3.15E-04	3.257	1.15E-02	88.3	94.2	42.01	0	60.2	369.9
548	22.77	3000	1950	69.118074	2.9292	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.1397	2.06E-04	1.747	1.01E-02	43.03	92.77	27.66	0	68.5	393.2
549	24.53	3000	3750	96.329088	2.3581	73.4399	3063.73	5125	0.1	1950	225000	675000	0.1297	5.16E-04	3.012	5.82E-03	32.12	94.81	48.09	0	119.1	629.2
550	26.25	3000	2300	25.829295	0.915	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.1212	2.42E-04	2.009	1.30E-02	40.72	80.64	0	0	53.1	392.2
551	22.92	3000	1260	155.583983	5.433	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.1388	1.15E-04	1.418	9.61E-03	36.41	96.79	67.86	0	72.1	317.1
552	28.61	3000	3040	18.411783	1.0681	174.0393	1292.81	5125	0.1	1950	225000	2462500	0.1112	7.23E-04	4.288	7.32E-03	40.12	72.84	0	0	94.7	768.2
553	25.27	3000	1340	24.09125	1.2618	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.1259	1.53E-04	1.615	1.54E-02	27.96	79.25	0	0	45.1	327.5
554	58.59	3000	2020	499.134278	20.4593	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0543	2.09E-04	2.941	7.41E-03	61.01	99	89.98	0	93.5	257.2
555	26.6	3000	2980	68.823972	1.8274	79.6568	2824.62	5125	0.1	1950	225000	762500	0.1196	2.70E-04	2.142	1.02E-02	73.92	92.74	27.35	0	67.9	412.7
556	22.42	3000	2260	377.728718	16.4387	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.1419	3.81E-04	2.356	4.02E-03	48.28	98.68	86.76	0	172.3	538.6
557	45.77	3000	1690	78.503651	2.9366	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0695	1.70E-04	2.237	1.52E-02	29.49	93.63	36.31	0	45.5	250.5
558	25.15	3000	2720	8.379591	0.2819	100.929	2229.29	5125	0.1	1950	225000	1087500	0.1265	3.89E-04	2.556	1.20E-02	20.67	40.33	0	0	57.9	520.8
559	26.38	3000	2170	38.633688	1.2898	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.1206	1.88E-04	1.787	1.37E-02	60.23	87.06	0	0	50.7	347.2
560	30.92	3000	1320	40.838051	2.4801	182.1901	1234.97	5125	0.1	1950	225000	2637500	0.1029	1.18E-04	1.58	1.80E-02	73.24	87.76	0	0	38.5	261.9
561	36.82	3000	1310	77.468452	4.8522	187.9019	1197.43	5125	0.1	1950	225000	2762500	0.0864	1.60E-04	1.936	1.40E-02	21	93.55	35.46	0	49.6	269.5
562	38.05	3000	3040	55.056012	2.0729	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0836	7.02E-04	5.247	7.59E-03	97.42	90.92	9.18	0	91.4	706.7
563	27.88	3000	2780	0.75546	0.0463	183.9129	1223.4	5125	0.1	1950	225000	2675000	0.1141	6.04E-04	3.675	1.32E-02	13.81	0	0	0	52.4	675.6
564	27.86	3000	2190	29.610217	0.87	88.1405	2552.74	5125	0.1	1950	225000	887500	0.1142	2.19E-04	1.971	1.37E-02	40.31	83.11	0	0	50.8	362.7
565	32.53	3000	2470	630.397146	21.2084	100.929	2229.29	5125	0.1	1950	225000	1087500	0.0978	2.66E-04	2.377	4.34E-03	57.03	99.21	92.07	20.68	159.8	374.5
566	27.1	3000	2810	222.61151	7.7172	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1174	4.20E-04	2.808	5.07E-03	24.23	97.75	77.54	0	136.8	531
567	22.45	3000	1950	18.049683	0.7649	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.1417	2.22E-04	1.792	1.38E-02	56.93	72.3	0	0	50.3	409.2
568	22.9	3000	2460	73.653486	2.791	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1389	4.00E-04	2.455	7.34E-03	49.53	93.21	32.11	0	94.4	549.3
569	48.72	3000	1080	250.034033	10.6536	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0653	1.07E-04	1.829	1.33E-02	35.74	98	80	0	52	192.4
570	23.15	3000	2830	106.984913	3.4881	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.1374	4.71E-04	2.734	6.20E-03	70.98	95.33	53.26	0	111.7	605.2
571	37.78	3000	740	1041.2663	45.5516	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0842	8.53E-05	1.512	5.19E-03	20.78	99.52	95.2	51.98	133.5	205.1
572	49.32	3000	2320	225.767875	9.2541	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0645	3.08E-04	3.413	7.63E-03	26.69	97.79	77.85	0	90.8	354.6
573	23.27	3000	2520	192.268059	5.6489	88.1405	2552.74	5125	0.1	1950	225000	887500	0.1367	2.05E-04	1.757	7.49E-03	58.25	97.4	73.99	0	92.5	387
574	35.31	3000	2980	84.110361	3.8487	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.0901	5.88E-04	4.302	6.23E-03	40.9	94.06	40.55	0	111.3	624.4
575	47.84	3000	810	998.058968	47.6339	143.1797	1571.45	5125	0.1	1950	225000	1837500	0.0665	4.52E-05	1.344	7.82E-03	79.28	99.5	94.99	49.9	88.6	143.9
576	35.31	3000	1510	153.618982	4.1676	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0901	1.79E-04	2.005	1.05E-02	21.22	96.75	67.45	0	66.2	291
577	32.07	3000	1130	191.93499	7.8224	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.0992	1.32E-04	1.673	1.05E-02	23.31	97.39	73.95	0	66	267.3
578	22.81	3000	2510	12.504973	0.4829	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.1395	4.53E-04	2.64	1.04E-02	44.71	60.02	0	0	66.6	593.2
579	46.31	3000	2800	156.706223	4.6041	88.1405	2552.74	5125	0.1	1950	225000	887500	0.0687	2.75E-04	3.026	9.51E-03	45.15	96.81	68.09	0	72.9	334.9
580	35.95	3000	3160	19.64985	0.8685	132.592	1696.94	5125	0.1	1950	225000	1637500	0.0885	6.51E-04	4.719	8.65E-03	40.35	74.55	0	0	80.1	672.7
581	42.08	3000	2970	125.187312	5.5611	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.0756	6.20E-04	5.148	5.72E-03	72.46	96.01	60.06	0	121.1	627
582	21.22	3000	2070	16.390466	0.8551	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.1499	3.74E-04	2.261	9.84E-03	13.52	69.49	0	0	70.5	546
583	56.81	3000	3100	85.831574	4.0218	140.5704	1600.62	5125	0.1	1950	225000	1787500	0.056	5.29E-04	5.772	7.38E-03	35.61	94.17	41.75	0	93.9	520.7
584	49.25	3000	1720	471.926085	24.3264	154.6414	1454.98	5125	0.1	1950	225000	2062500	0.0646	2.30E-04	2.802	6.74E-03	62.11	98.94	89.41	0	102.8	291.6
585	37.74	3000	1380	47.810466	2.2922	143.8283	1564.37	5125	0.1	1950	225000	1850000	0.0843	1.24E-04	1.744	1.88E-02	54.7	89.54	0	0	36.8	236.8

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
586	39.62	3000	2520	48.147942	1.7656	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.0803	3.94E-04	3.478	1.06E-02	56.24	89.62	0	0	65.2	449.9
587	27.74	3000	1900	721.095322	32.3552	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.1147	2.36E-04	2.039	3.95E-03	76.8	99.31	93.07	30.66	175.6	376.8
588	38.66	3000	1510	654.990019	26.0773	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.0823	1.11E-04	1.681	7.03E-03	59.99	99.24	92.37	23.66	98.6	222.9
589	32.86	3000	2330	642.359468	24.6527	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0968	3.24E-04	2.69	3.88E-03	69.65	99.22	92.22	22.16	178.7	419.6
590	48.28	3000	1340	160.685573	5.1968	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0659	1.31E-04	2.004	1.43E-02	33.89	96.89	68.88	0	48.5	212.7
591	31.97	3000	2010	224.115428	9.2908	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.0995	2.31E-04	2.176	7.90E-03	56.74	97.77	77.69	0	87.7	348.7
592	34.47	3000	1340	812.57999	22.0449	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0923	1.06E-04	1.581	5.67E-03	51.95	99.38	93.85	38.47	122.2	235.1
593	26.98	3000	1880	40.693777	2.0465	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.1179	3.05E-04	2.307	1.05E-02	37.35	87.71	0	0	65.9	438.2
594	25.05	3000	2560	3.584179	0.1314	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.127	5.20E-04	3.07	1.37E-02	70.07	0	0	0	50.4	628.1
595	23.9	3000	1450	722.53194	20.0146	83.1021	2707.51	5125	0.1	1950	225000	812500	0.1331	1.57E-04	1.597	4.21E-03	25.76	99.31	93.08	30.8	164.8	342.4
596	50.42	3000	2930	683.20438	25.2212	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0631	4.19E-04	4.357	3.46E-03	37.39	99.27	92.68	26.82	200.3	442.9
597	52.15	3000	1820	1122.769621	50.1272	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.061	1.66E-04	2.372	4.32E-03	53.26	99.55	95.55	55.47	160.5	233.1
598	27.01	3000	2250	2.42399	0.1044	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.1178	4.90E-04	3.103	1.56E-02	67.99	0	0	0	44.3	588.8
599	40.02	3000	2250	433.233343	14.9084	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.0795	1.49E-04	1.947	8.25E-03	85.12	98.85	88.46	0	84	249.3
600	42.3	3000	3030	253.032289	8.4474	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.0752	4.26E-04	3.863	5.57E-03	29.42	98.02	80.24	0	124.4	468
601	34.69	3000	3200	47.548389	1.9043	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.0917	6.36E-04	4.506	7.11E-03	46.46	89.48	0	0	97.4	665.6
602	44.43	3000	2410	165.049588	6.8805	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0716	3.69E-04	3.602	7.52E-03	38.04	96.97	69.71	0	92.2	415.5
603	38.24	3000	3980	106.24095	2.7277	77.0232	2921.2	5125	0.1	1950	225000	725000	0.0832	5.69E-04	4.456	6.17E-03	35.68	95.29	52.94	0	112.4	597.2
604	34.5	3000	1400	92.619999	3.3042	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.0922	1.27E-04	1.695	1.46E-02	46.62	94.6	46.02	0	47.6	251.8
605	48.35	3000	1190	1185.80152	59.6337	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.0658	9.58E-05	1.736	5.12E-03	46.18	99.58	95.78	57.83	135.4	184
606	39.03	3000	1190	71.956703	3.1152	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0815	1.38E-04	1.854	1.59E-02	25.11	93.05	30.51	0	43.7	243.4
607	51.15	3000	570	1791.854662	93.4812	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.0622	4.50E-05	1.365	3.79E-03	40.58	99.72	97.21	72.1	183	136.8
608	40.63	3000	2190	64.070466	2.4897	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0783	2.96E-04	2.909	1.21E-02	70.71	92.2	21.96	0	57.3	367
609	24.53	3000	1050	249.426548	7.1899	86.4774	2601.84	5125	0.1	1950	225000	862500	0.1297	6.78E-05	1.264	9.73E-03	54.57	98	79.95	0	71.2	264.2
610	27.64	3000	1570	53.905155	2.0427	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1151	1.74E-04	1.763	1.28E-02	31	90.72	7.24	0	54.1	326.9
611	56.11	3000	2090	822.931408	31.5827	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0567	1.89E-04	2.685	5.61E-03	93.99	99.39	93.92	39.24	123.5	245.2
612	36.48	3000	2290	306.920466	17.32	169.2951	1329.04	5125	0.1	1950	225000	2362500	0.0872	4.32E-04	3.504	4.79E-03	32.02	98.37	83.71	0	144.6	492.2
613	36.28	3000	3230	2.017212	0.0896	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.0877	6.68E-04	4.85	1.27E-02	29.48	0	0	0	54.6	685.2
614	32.7	3000	3210	22.334078	1.1698	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.0973	7.21E-04	4.748	7.36E-03	41.51	77.61	0	0	94.2	744.2
615	54.1	3000	750	1657.122258	70.6075	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0588	6.07E-05	1.522	4.15E-03	45.52	99.7	96.98	69.83	167	144.2
616	28.74	3000	1600	316.580802	12.378	117.2971	1918.21	5125	0.1	1950	225000	1362500	0.1107	1.17E-04	1.536	8.56E-03	63.67	98.42	84.21	0	81	274
617	26.27	3000	900	210.239318	7.3947	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.1211	9.42E-05	1.393	9.95E-03	23.87	97.62	76.22	0	69.7	271.8
618	58.05	3000	1190	570.611644	21.4839	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0548	9.80E-05	1.904	1.02E-02	45.35	99.12	91.24	12.37	68.3	168.1
619	27.47	3000	3920	11.863108	0.2868	72.5304	3102.15	5125	0.1	1950	225000	662500	0.1158	5.84E-04	3.547	9.42E-03	32.94	57.85	0	0	73.6	661.7
620	25.91	3000	1920	21.614701	1.1807	163.877	1372.98	5125	0.1	1950	225000	2250000	0.1228	3.65E-04	2.503	1.08E-02	34.07	76.87	0	0	64.3	495.1
621	28.69	3000	1890	143.982241	5.2441	109.2665	2059.19	5125	0.1	1950	225000	1225000	0.1109	1.96E-04	1.894	9.29E-03	31.13	96.53	65.27	0	74.6	338.3
622	59.58	3000	3130	21.143739	0.7222	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.0534	4.77E-04	5.511	1.26E-02	38.46	76.35	0	0	55.2	474.1
623	51.31	3000	630	1693.895738	92.5302	163.877	1372.98	5125	0.1	1950	225000	2250000	0.062	4.74E-05	1.386	4.16E-03	46.56	99.7	97.05	70.48	166.7	138.5
624	23.07	3000	1380	567.197139	34.0092	179.8802	1250.83	5125	0.1	1950	225000	2587500	0.1379	1.18E-04	1.433	5.36E-03	54.16	99.12	91.18	11.85	129.3	318.4
625	28.4	3000	1610	326.097793	18.9179	174.0393	1292.81	5125	0.1	1950	225000	2462500	0.112	2.52E-04	2.138	6.04E-03	54.3	98.47	84.67	0	114.7	385.8
626	25.21	3000	1030	605.150413	21.74	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.1262	8.79E-05	1.352	5.91E-03	34.29	99.17	91.74	17.38	117.3	274.9
627	33.66	3000	2020	188.474617	8.2024	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.0945	2.60E-04	2.392	7.93E-03	33.5	97.35	73.47	0	87.4	364.2
628	47.13	3000	2180	217.677052	8.5629	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.0675	2.43E-04	2.817	8.87E-03	24.98	97.7	77.03	0	78.1	306.3
629	48.94	3000	1170	868.230408	63.0652	217.9093	1032.54	5125	0.1	1950	225000	3450000	0.065	1.31E-04	2.016	5.97E-03	32.09	99.42	94.24	42.41	116.2	211.1
630	46.51	3000	2990	7.500961	0.3882	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.0684	5.84E-04	5.317	1.18E-02	29.55	33.34	0	0	58.7	585.9
631	32.4	3000	1510	57.870092	3.6356	188.4683	1193.83	5125	0.1	1950	225000	2775000	0.0982	2.82E-04	2.451	1.16E-02	73.32	91.36	13.6	0	59.8	387.8
632	42.76	3000	2310	3.46736	0.1469	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0744	3.91E-04	3.655	1.82E-02	36.45	0	0	0	38.2	438.1
633	34.92	3000	1590	103.457813	6.3622	184.4854	1219.61	5125	0.1	1950	225000	2687500	0.0911	2.49E-04	2.379	9.89E-03	16.55	95.17	51.67	0	70.1	349.2
634	29.16	3000	1160	147.023315	5.9229	120.8573	1861.7	5125	0.1	1950	225000	1425000	0.1091	1.53E-04	1.707	1.02E-02	17.51	96.6	65.99	0	67.7	299.9
635	25.37	3000	2850	39.26801	1.8314	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.1254	7.36E-04	3.968	6.52E-03	78.43	87.27	0	0	106.3	801.5
636	34.58	3000	2450	108.38595	7.0523	195.2002	1152.66	5125	0.1	1950	225000	2925000	0.092	5.01E-04	3.754	6.16E-03	24.8	95.39	53.87	0	112.5	556.3
637	53.11	3000	1500	88.486337	6.1923	209.9408	1071.73	5125	0.1	1950	225000	3262500	0.0599	3.09E-04	3.604	1.20E-02	79.54	94.35	43.49	0	57.7	347.8
638	60.03	3000	1690	349.874684	17.7424	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.053	2.00E-04	2.91	9.20E-03	52.04	98.57	85.71	0	75.4	248.5
639	29.76	3000	2340	29.960491	1.5193	152.1319	1478.98	5125	0.1	1950	225000	2012500	0.1069	5.54E-04	3.618	8.91E-03	68.67	83.31	0	0	77.8	623
640	43.17	3000	1860	975.405287	46.1295	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0737	2.48E-04	2.7	3.67E-03	78.3	99.49	94.87	48.74	189.1	320.6
641	42.03	3000	2560	21.628608	0.8143	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0757	4.01E-04	3.679	1.26E-02	41.14	76.88	0	0	55	448.6
642	21.39	3000	1220	71.01264	3.2021	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.1487	7.49E-05	1.255	1.32E-02	62.44	92.96	29.59	0	52.6	300.6
643	32.8	3000	1010	360.530532	15.279	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.097	1.08E-04	1.564	8.82E-03	27.16	98.61	86.13	0	78.6	244.4
644	26.21	3000	1470	31.334956	0.9549	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1214	1.39E-04	1.58	1.58E-02	47.51	84.04	0	0	44	309
645	31.07	3000	1260	645.373055	29.3882	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1024	9.15E-05	1.452	6.57E-03	55.88	99.23	92.25	22.53	105.5	239.5
646	43.05	3000	2150	296.653735	11.3133	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.0739	2.17E-04	2.484	8.25E-03	48.75	98.31	83.15	0	84	295.8
647	35.51	3000	2830	124.092363	5.1154	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.0896	5.62E-04	4.17	6.02E-03	64.89	95.97	59.71	0	115.2	602
648	22.95	3000	2980	1.09259	0.0401	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.1386	5.60E-04	3.043	1.29E-02	21.77	0	0	0	54	679.4
649	21.25	3000	1890	132.327306	6.2869	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1497	3.03E-04	2.023	7.04E-03	81.91	96.22	62.21	0	98.4	487.8
650	21.58	3000	2850	11.260379	0.3431	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1474	4.02E-04	2.38	1.10E-02	43.06	55.6	0	0	63.1	565.1

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
651	28.18	3000	1930	247.148542	9.1845	111.4852	2018.2	5125	0.1	1950	225000	1262500	0.1129	1.74E-04	1.781	8.00E-03	44.1	97.98	79.77	0	86.6	323.9
652	54.76	3000	1810	952.345109	43.1554	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.0581	1.69E-04	2.467	5.05E-03	28.28	99.47	94.75	47.5	137.4	230.9
653	36.91	3000	1330	1059.711651	35.9245	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.0862	6.99E-05	1.41	5.46E-03	95	99.53	95.28	52.82	126.9	195.8
654	52.07	3000	1170	1103.514334	45.2325	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.0611	9.64E-05	1.798	5.74E-03	45.68	99.55	95.47	54.69	120.7	177
655	42.59	3000	1810	417.825029	19.4866	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.0747	2.29E-04	2.548	7.00E-03	89.97	98.8	88.03	0	99.1	306.6
656	29.11	3000	2160	24.077182	0.9813	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.1093	2.88E-04	2.33	1.25E-02	27.51	79.23	0	0	55.6	410.3
657	38.8	3000	830	594.987527	26.1629	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.082	8.25E-05	1.509	8.23E-03	29.84	99.16	91.6	15.96	84.2	199.3
658	22.72	3000	2460	0.432468	0.0208	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.14	6.81E-04	3.459	1.53E-02	58.64	0	0	0	45.4	780.1
659	34.02	3000	2230	61.480224	2.3446	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.0935	3.32E-04	2.795	1.10E-02	91.71	91.87	18.67	0	62.8	421
660	25.66	3000	3740	28.389667	0.6777	71.6152	3141.79	5125	0.1	1950	225000	650000	0.124	5.55E-04	3.264	8.31E-03	54.63	82.39	0	0	83.4	652
661	22.76	3000	2650	143.822572	4.9492	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.1398	4.06E-04	2.468	5.91E-03	55.03	96.52	65.23	0	117.4	555.7
662	46.85	3000	2920	2.49459	0.0921	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0679	4.75E-04	4.534	1.67E-02	26.49	0	0	0	41.6	496
663	30.44	3000	1930	199.485722	5.8609	88.1405	2552.74	5125	0.1	1950	225000	887500	0.1045	2.17E-04	2.048	8.07E-03	24.5	97.49	74.94	0	85.9	344.7
664	41.1	3000	1820	68.470778	2.9643	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0774	2.02E-04	2.319	1.36E-02	22.94	92.7	26.98	0	51	289.2
665	30.5	3000	1990	20.483907	0.8587	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1043	2.44E-04	2.18	1.51E-02	49.83	75.59	0	0	46.1	366.4
666	22.72	3000	2180	75.40236	3.9181	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.14	4.31E-04	2.556	6.76E-03	31.9	93.37	33.69	0	102.5	576.6
667	24.34	3000	3790	1.178212	0.0359	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1307	6.99E-04	3.703	1.13E-02	21.09	0	0	0	61.6	779.7
668	60.6	3000	1580	900.333045	47.1566	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.0525	1.53E-04	2.473	5.88E-03	35.88	99.44	94.45	44.46	118	209.1
669	36.15	3000	2550	90.752619	5.8544	193.5283	1162.62	5125	0.1	1950	225000	2887500	0.088	5.64E-04	4.238	6.06E-03	45.03	94.49	44.91	0	114.4	600.8
670	48.42	3000	2980	127.203761	6.8453	161.4401	1393.71	5125	0.1	1950	225000	2200000	0.0657	5.40E-04	5.156	5.94E-03	32.42	96.07	60.69	0	116.7	545.7
671	22.37	3000	1910	86.484121	4.3127	149.6016	1503.99	5125	0.1	1950	225000	1962500	0.1422	3.11E-04	2.105	7.76E-03	38.35	94.22	42.19	0	89.3	482.3
672	30.89	3000	2450	41.322742	1.817	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.103	4.15E-04	3.038	8.93E-03	20.03	87.9	0	0	77.6	504.1
673	39.28	3000	890	271.529919	13.3095	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.081	6.51E-05	1.406	1.36E-02	59.67	98.16	81.59	0	50.9	183.5
674	21.45	3000	1000	182.702997	8.2792	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1483	1.05E-04	1.357	8.77E-03	21.65	97.26	72.63	0	79	324.2
675	22.05	3000	1630	35.413746	1.6978	143.8283	1564.37	5125	0.1	1950	225000	1850000	0.1443	1.52E-04	1.532	1.32E-02	44.87	85.88	0	0	52.5	356
676	53.47	3000	1670	289.821997	13.7065	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0595	1.49E-04	2.264	1.18E-02	89.41	98.27	82.75	0	58.9	217
677	23.37	3000	2980	0.446282	0.0142	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.1361	5.13E-04	2.905	1.60E-02	31.52	0	0	0	43.3	636.8
678	44.25	3000	1740	582.996442	15.8164	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0719	1.71E-04	2.199	6.56E-03	27.2	99.14	91.42	14.24	105.7	254.7
679	39.13	3000	3520	5.525878	0.1531	83.1021	2707.51	5125	0.1	1950	225000	812500	0.0813	5.45E-04	4.386	1.32E-02	37.1	9.52	0	0	52.7	574.4
680	51.81	3000	2050	15.165113	0.6771	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.0614	2.98E-04	3.452	1.77E-02	39.6	67.03	0	0	39.2	341.4
681	25.64	3000	2920	298.940605	8.3656	83.9523	2680.09	5125	0.1	1950	225000	825000	0.1241	3.18E-04	2.297	5.46E-03	85.16	98.33	83.27	0	126.9	459.2
682	28.28	3000	2310	10.407833	0.3713	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.1125	2.57E-04	2.157	1.58E-02	37.75	51.96	0	0	43.9	390.8
683	26.91	3000	2340	3.678702	0.1447	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.1182	3.62E-04	2.546	1.51E-02	27.64	0	0	0	45.9	484.9
684	51.9	3000	2500	137.248655	5.5615	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0613	3.83E-04	4.155	8.35E-03	45.43	96.36	63.57	0	83	410.3
685	57.63	3000	1600	639.974871	17.5455	82.2476	2735.64	5125	0.1	1950	225000	800000	0.0552	1.06E-04	1.973	9.16E-03	66.76	99.22	92.19	21.87	75.7	175.4
686	25.84	3000	4270	20.160754	0.6835	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.1231	7.69E-04	4.158	6.42E-03	14.95	75.2	0	0	108	824.6
687	50.34	3000	450	459.05366	19.5596	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.0632	2.34E-05	1.187	1.59E-02	50.66	98.91	89.11	0	43.7	120.9
688	41.32	3000	1700	183.292131	10.9193	178.7197	1258.95	5125	0.1	1950	225000	2562500	0.077	3.18E-04	3.087	8.16E-03	72.89	97.27	72.72	0	85	383
689	39.47	3000	1690	124.432797	5.3871	129.879	1732.38	5125	0.1	1950	225000	1587500	0.0806	1.66E-04	2.042	1.25E-02	35.31	95.98	59.82	0	55.3	265.1
690	27.35	3000	3170	81.952801	2.2701	83.1021	2707.51	5125	0.1	1950	225000	812500	0.1163	4.83E-04	3.098	7.30E-03	81.26	93.9	38.99	0	95	580.4
691	62.01	3000	2250	602.974735	19.501	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0513	1.29E-04	2.273	9.01E-03	76.88	99.17	91.71	17.08	77	187.9
692	25.61	3000	1270	343.515327	10.9284	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.1242	9.52E-05	1.387	8.04E-03	50.62	98.54	85.44	0	86.2	277.6
693	27.08	3000	1500	114.013527	2.7565	72.5304	3102.15	5125	0.1	1950	225000	662500	0.1175	1.59E-04	1.683	1.06E-02	33.18	95.61	56.15	0	65.2	318.5
694	28.66	3000	1920	10.498442	0.4497	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.111	2.16E-04	1.984	1.76E-02	47.2	52.37	0	0	39.4	354.8
695	48.42	3000	4130	318.873513	9.5437	89.788	2505.9	5125	0.1	1950	225000	912500	0.0657	5.66E-04	5.355	4.12E-03	22.27	98.43	84.32	0	168.5	566.7
696	36.74	3000	2430	100.641415	3.7892	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0866	3.56E-04	3.08	8.68E-03	48.33	95.03	50.32	0	79.9	429.7
697	22.69	3000	1440	133.92072	7.6636	171.6754	1310.61	5125	0.1	1950	225000	2412500	0.1402	1.38E-04	1.498	9.72E-03	63.81	96.27	62.66	0	71.3	338.3
698	33.24	3000	3230	255.670472	12.0913	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0957	6.53E-04	4.448	3.54E-03	49.91	98.04	80.44	0	195.8	685.7
699	28.58	3000	1920	441.661305	20.0138	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1113	2.61E-04	2.185	5.18E-03	71.8	98.87	88.68	0	133.9	391.7
700	21.31	3000	2310	10.442189	0.4008	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.1493	3.82E-04	2.294	1.19E-02	63.16	52.12	0	0	58.2	551.7
701	41.75	3000	810	726.512455	15.982	65.9946	3409.37	5125	0.1	1950	225000	575000	0.0762	8.22E-05	1.545	7.57E-03	29.07	99.31	93.12	31.18	91.6	189.7
702	30.83	3000	1840	129.248979	4.8978	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1032	1.35E-04	1.663	1.23E-02	77.47	96.13	61.31	0	56.5	276.4
703	28.53	3000	3230	90.155178	2.796	93.0387	2418.35	5125	0.1	1950	225000	962500	0.1115	5.34E-04	3.423	6.31E-03	46.11	94.45	44.54	0	109.8	614.8
704	24.42	3000	1460	200.111326	12.458	186.7666	1204.71	5125	0.1	1950	225000	2737500	0.1303	2.03E-04	1.789	7.43E-03	32.47	97.5	75.01	0	93.3	375.5
705	34.77	3000	2700	6.213729	0.2503	120.8573	1861.7	5125	0.1	1950	225000	1425000	0.0915	6.12E-04	4.382	1.29E-02	67.75	19.53	0	0	53.6	645.9
706	28.61	3000	1980	10.902557	0.4645	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.1112	2.72E-04	2.236	1.61E-02	59.92	54.14	0	0	43.1	400.6
707	41.69	3000	2550	272.203719	8.2211	90.6061	2483.28	5125	0.1	1950	225000	925000	0.0763	1.67E-04	2.103	1.02E-02	96.19	98.16	81.63	0	68.2	258.5
708	22.85	3000	2380	206.879912	7.6372	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.1392	3.12E-04	2.133	5.82E-03	36.31	97.58	75.83	0	119.2	478.4
709	54.29	3000	3110	226.01515	6.6404	88.1405	2552.74	5125	0.1	1950	225000	887500	0.0586	4.33E-04	4.731	6.88E-03	80.79	97.79	77.88	0	100.8	446.6
710	33.52	3000	1530	47.25283	2.1307	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.0949	1.42E-04	1.754	1.66E-02	50.99	89.42	0	0	41.7	268.1
711	25.03	3000	2250	166.308172	7.3504	132.592	1696.94	5125	0.1	1950	225000	1637500	0.1271	3.98E-04	2.583	5.89E-03	52.88	96.99	69.94	0	117.7	528.8
712	28.79	3000	2140	11.513271	0.4719	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.1105	2.91E-04	2.33	1.44E-02	29.12	56.57	0	0	48.1	414.8
713	25.68	3000	3260	1.33285	0.0556	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.1239	7.84E-04	4.198	1.15E-02	40.79	0	0	0	60.4	837.8
714	27.93	3000	1140	153.661159	6.7221	131.239	1714.43	5125	0.1	1950	225000	1612500	0.1139	1.08E-04	1.479	1.13E-02	36.26	96.75	67.46	0	61.4	271.3
715	24.93	3000	710	455.521214	27.8384	183.3396	1227.23	5125	0.1	1950	225000	2662500	0.1276	5.15E-05	1.204	7.71E-03	26.56	98.9	89.02	0	90	247.5

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
716	22.53	3000	920	75.45908	4.5536	181.037	1242.84	5125	0.1	1950	225000	2612500	0.1412	9.08E-05	1.325	1.25E-02	23.92	93.37	33.74	0	55.5	301.4
717	62.38	3000	1090	1181.161344	48.6907	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.051	6.71E-05	1.665	6.97E-03	75.19	99.58	95.77	57.67	99.5	136.8
718	32.46	3000	2200	1.742395	0.0865	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.098	3.77E-04	2.947	1.68E-02	10.71	0	0	0	41.4	465.3
719	30.04	3000	2050	141.539549	6.0308	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.1059	3.16E-04	2.507	8.10E-03	90.4	96.47	64.67	0	85.5	427.8
720	32.76	3000	2100	60.597282	2.6509	131.239	1714.43	5125	0.1	1950	225000	1612500	0.0971	3.22E-04	2.678	1.02E-02	46.01	91.75	17.49	0	68	418.8
721	22.87	3000	1920	102.941934	5.6856	165.6929	1357.93	5125	0.1	1950	225000	2287500	0.1391	3.84E-04	2.396	6.80E-03	52.63	95.14	51.43	0	102	536.9
722	24.23	3000	1870	1235.258928	48.0016	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.1313	1.39E-04	1.534	2.78E-03	56.12	99.6	95.95	59.52	249.8	324.6
723	42.59	3000	2180	40.018723	1.631	122.2668	1840.24	5125	0.1	1950	225000	1450000	0.0747	2.95E-04	2.996	1.31E-02	38.17	87.51	0	0	52.8	360.5
724	42.7	3000	1560	76.111119	3.0302	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.0745	1.97E-04	2.339	1.34E-02	15.2	93.43	34.31	0	51.6	280.7
725	47.27	3000	2370	37.008397	1.4203	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0673	3.09E-04	3.321	1.32E-02	28.01	86.49	0	0	52.6	360
726	22.64	3000	3360	94.049396	3.2124	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.1405	6.37E-04	3.291	5.02E-03	37.59	94.68	46.84	0	138	744.9
727	24.93	3000	3740	9.820231	0.2404	73.4399	3063.73	5125	0.1	1950	225000	675000	0.1276	5.25E-04	3.08	9.87E-03	26.95	49.08	0	0	70.2	633.2
728	27.96	3000	710	553.54963	16.5674	89.788	2505.9	5125	0.1	1950	225000	912500	0.1138	5.17E-05	1.23	7.59E-03	31.07	99.1	90.97	9.67	91.3	225.4
729	21.85	3000	1920	118.967872	5.4174	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1456	2.44E-04	1.846	7.72E-03	30.42	95.8	57.97	0	89.8	433
730	37.3	3000	2070	934.989827	38.9771	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0853	2.40E-04	2.42	3.57E-03	32.14	99.47	94.65	46.52	194.3	332.5
731	35.83	3000	4350	183.447757	3.5529	58.1021	3872.49	5125	0.1	1950	225000	475000	0.0888	4.49E-04	3.556	5.98E-03	45.92	97.27	72.74	0	115.9	508.7
732	30.13	3000	2980	6.37756	0.2432	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.1056	6.53E-04	4.128	1.11E-02	54.76	21.6	0	0	62.5	702.2
733	32.86	3000	1510	27.408425	1.4805	162.0511	1388.45	5125	0.1	1950	225000	2212500	0.0968	1.82E-04	1.949	1.61E-02	24.52	81.76	0	0	43	304
734	25.86	3000	3100	3.992773	0.1291	97.024	2319.01	5125	0.1	1950	225000	1025000	0.123	5.73E-04	3.355	1.17E-02	41.31	0	0	0	59	664.8
735	27.76	3000	1760	268.950295	13.4687	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.1146	2.40E-04	2.06	6.63E-03	47.04	98.14	81.41	0	104.5	380.3
736	21.67	3000	2570	26.462797	0.8489	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.1468	3.06E-04	2.055	1.09E-02	64.14	81.11	0	0	63.5	486
737	27.43	3000	3050	16.757434	0.4642	83.1021	2707.51	5125	0.1	1950	225000	812500	0.116	4.55E-04	2.981	1.17E-02	84.65	70.16	0	0	59.3	557.1
738	33.84	3000	2020	48.044956	2.7683	172.8593	1301.64	5125	0.1	1950	225000	2437500	0.094	4.99E-04	3.684	9.14E-03	88.81	89.59	0	0	75.8	557.8
739	42.53	3000	2280	727.100045	31.3129	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.0748	3.33E-04	3.252	3.75E-03	42.49	99.31	93.12	31.23	184.8	391.9
740	26.51	3000	3270	56.368738	1.6561	88.1405	2552.74	5125	0.1	1950	225000	887500	0.12	5.36E-04	3.256	7.11E-03	49.96	91.13	11.3	0	97.5	629.4
741	30.8	3000	1830	159.683338	9.043	169.8917	1324.37	5125	0.1	1950	225000	2375000	0.1033	3.30E-04	2.613	7.15E-03	40.67	96.87	68.69	0	96.9	434.9
742	24.99	3000	2800	3.710249	0.1468	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.1273	5.59E-04	3.22	1.16E-02	33.1	0	0	0	60	660.3
743	29.51	3000	2570	38.960569	1.2498	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.1078	2.97E-04	2.391	1.17E-02	56.4	87.17	0	0	59.5	415.2
744	22.69	3000	1670	10.051158	0.5712	170.4873	1319.75	5125	0.1	1950	225000	2387500	0.1402	2.81E-04	2.015	1.35E-02	35.77	50.25	0	0	51.2	455
745	47.62	3000	1410	207.486483	7.6596	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0668	1.37E-04	2.039	1.26E-02	34.46	97.59	75.9	0	54.9	219.4
746	29.84	3000	2580	0.706015	0.0346	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1066	5.80E-04	3.749	1.55E-02	32.23	0	0	0	44.7	643.9
747	37.04	3000	730	940.63794	52.3302	166.8979	1348.13	5125	0.1	1950	225000	2312500	0.0859	6.17E-05	1.363	6.22E-03	34.72	99.47	94.68	46.84	111.5	188.6
748	29.76	3000	2670	1.108264	0.0571	154.6414	1454.98	5125	0.1	1950	225000	2062500	0.1069	5.57E-04	3.633	1.40E-02	19.59	0	0	0	49.5	625.7
749	21.88	3000	2190	83.533177	3.3257	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1454	2.80E-04	1.973	8.05E-03	28.48	94.01	40.14	0	86.1	462.2
750	61.18	3000	4560	3.560309	0.1549	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.052	7.60E-04	8.393	1.14E-02	24.68	0	0	0	60.9	703.1
751	29.24	3000	1850	98.880586	5.8138	176.3872	1275.6	5125	0.1	1950	225000	2512500	0.1088	3.53E-04	2.641	7.86E-03	37.91	94.94	49.43	0	88.2	463
752	28.46	3000	1770	350.468867	12.0603	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.1118	1.62E-04	1.733	7.08E-03	40.16	98.57	85.73	0	97.9	312.2
753	54.95	3000	1980	287.888531	9.9801	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.0579	1.46E-04	2.275	1.16E-02	51.07	98.26	82.63	0	59.6	212.2
754	42.93	3000	3510	62.804751	2.2875	109.2665	2059.19	5125	0.1	1950	225000	1225000	0.0741	6.26E-04	5.269	6.99E-03	42.75	92.04	20.39	0	99.2	629
755	37.17	3000	1180	869.794897	31.03	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.0856	8.43E-05	1.498	6.13E-03	60.79	99.43	94.25	42.52	113.2	206.6
756	27.01	3000	2170	21.375578	0.7246	101.7009	2212.37	5125	0.1	1950	225000	1100000	0.1178	2.10E-04	1.903	1.48E-02	44.96	76.61	0	0	46.8	361.1
757	29.65	3000	2500	665.399885	21.1686	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.1073	2.10E-04	1.99	4.56E-03	71.24	99.25	92.49	24.86	152	343.9
758	31.69	3000	1580	1384.08131	42.5519	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1004	1.11E-04	1.557	3.12E-03	60.14	99.64	96.39	63.87	222.5	251.9
759	27.33	3000	1470	107.85864	5.8262	162.0511	1388.45	5125	0.1	1950	225000	2212500	0.1164	1.16E-04	1.502	1.28E-02	81.61	95.36	53.64	0	54.4	281.6
760	59.8	3000	3030	421.692967	16.8887	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.0532	4.08E-04	4.881	4.80E-03	13.62	98.81	88.14	0	144.3	418.3
761	21.37	3000	2840	0.336054	0.0119	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.1489	5.74E-04	2.949	1.54E-02	37.62	0	0	0	45	707.5
762	28.76	3000	2300	322.513045	11.8264	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.1106	2.93E-04	2.34	5.80E-03	82.81	98.45	84.5	0	119.5	416.9
763	47.55	3000	1740	442.142333	20.6207	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.0669	1.71E-04	2.295	8.21E-03	70.16	98.87	88.69	0	84.4	247.3
764	22.68	3000	1470	78.100146	3.4694	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.1403	1.50E-04	1.541	1.09E-02	33.13	93.6	35.98	0	63.9	348.4
765	30.59	3000	2560	12.260825	0.4705	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.104	4.00E-04	2.944	1.19E-02	20.49	59.22	0	0	58.4	493.3
766	27.62	3000	2630	87.954834	3.2469	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.1152	4.69E-04	3.056	7.06E-03	64.34	94.32	43.15	0	98.2	567.2
767	32.3	3000	2310	10.892833	0.4541	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0985	4.69E-04	3.407	1.33E-02	74.55	54.1	0	0	52.2	540.6
768	24.01	3000	1950	25.773565	1.0139	118.0135	1906.56	5125	0.1	1950	225000	1375000	0.1325	2.11E-04	1.806	1.31E-02	34.88	80.6	0	0	53.1	385.4
769	26.31	3000	1700	11.656034	0.632	162.6609	1383.25	5125	0.1	1950	225000	2225000	0.1209	3.01E-04	2.259	1.44E-02	56.61	57.1	0	0	48.3	440.1
770	28.35	3000	1540	280.910205	13.5887	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.1122	1.19E-04	1.538	8.88E-03	59.47	98.22	82.2	0	78	277.9
771	60.71	3000	1630	756.317471	24.4603	97.024	2319.01	5125	0.1	1950	225000	1025000	0.0524	1.44E-04	2.392	6.96E-03	30.45	99.34	93.39	33.89	99.6	201.9
772	21.45	3000	2810	127.679791	4.1293	97.024	2319.01	5125	0.1	1950	225000	1025000	0.1483	4.41E-04	2.502	5.78E-03	61.17	96.08	60.84	0	119.9	597.7
773	21.64	3000	2070	37.112745	1.5471	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.147	2.79E-04	1.96	1.03E-02	50.03	86.53	0	0	67.6	464.2
774	30.33	3000	3360	211.905028	6.4	90.6061	2483.28	5125	0.1	1950	225000	925000	0.1049	5.60E-04	3.7	4.70E-03	59.21	97.64	76.4	0	147.6	625.3
775	21.52	3000	3230	78.89547	2.8931	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.1478	6.55E-04	3.241	5.16E-03	43.6	93.66	36.63	0	134.4	771.8
776	59.13	3000	2130	142.53827	5.1562	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.0538	1.84E-04	2.729	1.35E-02	28.09	96.49	64.92	0	51.5	236.6
777	62.38	3000	650	1563.501002	53.8032	103.2361	2179.47	5125	0.1	1950	225000	1125000	0.051	4.30E-05	1.426	5.62E-03	59.3	99.68	96.8	68.02	123.3	117.1
778	23.78	3000	2100	27.979387	0.9982	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.1338	2.36E-04	1.891	1.21E-02	30.84	82.13	0	0	57.4	407.5
779	31.44	3000	1960	225.531885	11.2466	149.6016	1503.99	5125	0.1	1950	225000	1962500	0.1012	3.40E-04	2.699	6.36E-03	59.84	97.78	77.83	0	109.1	440
780	26.82	3000	2810	38.656592	1.8865	146.4082	1536.8	5125	0.1	1950	225000	1900000	0.1186	6.15E-04	3.62	6.94E-03	39.91	87.07	0	0	99.8	691.6

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
781	49.63	3000	1490	896.76541	48.6229	162.6609	1383.25	5125	0.1	1950	225000	2225000	0.0641	1.36E-04	2.073	5.83E-03	68.42	99.44	94.42	44.24	118.9	214
782	25.53	3000	2080	342.302924	15.5114	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1246	3.18E-04	2.288	4.91E-03	39.11	98.54	85.39	0	141.3	459.3
783	23.27	3000	3350	148.948875	5.3881	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.1367	5.96E-04	3.205	4.39E-03	16.37	96.64	66.43	0	158.1	705.7
784	43.76	3000	4150	92.265571	2.5295	82.2476	2735.64	5125	0.1	1950	225000	800000	0.0727	5.69E-04	4.958	6.39E-03	19.76	94.58	45.81	0	108.5	580.7
785	35.71	3000	2190	311.08325	11.6366	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0891	2.23E-04	2.264	7.35E-03	54.35	98.39	83.93	0	94.3	325
786	59.35	3000	590	1163.813207	51.6989	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.0536	4.83E-05	1.455	7.62E-03	42.35	99.57	95.7	57.04	91	125.7
787	39.82	3000	440	1116.199483	55.4251	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.0799	3.06E-05	1.194	6.47E-03	25.69	99.55	95.52	55.21	107.1	153.7
788	46.04	3000	1980	170.141566	8.1938	144.4754	1557.36	5125	0.1	1950	225000	1862500	0.0691	2.85E-04	3.087	8.80E-03	31.47	97.06	70.61	0	78.7	343.7
789	23.92	3000	1750	600.139352	23.177	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.133	1.23E-04	1.467	5.27E-03	62.27	99.17	91.67	16.69	131.6	314.3
790	28.89	3000	870	905.120507	36.6764	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.1101	6.41E-05	1.294	5.29E-03	40.92	99.45	94.48	44.76	131.2	229.5
791	21.69	3000	3270	25.240247	0.8621	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.1467	7.44E-04	3.565	6.92E-03	69.43	80.19	0	0	100.1	842.5
792	32.5	3000	2430	4.956794	0.1914	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.0979	5.17E-04	3.668	1.53E-02	84.24	0	0	0	45.2	578.5
793	22.36	3000	2300	2.384212	0.0988	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1423	4.62E-04	2.642	1.42E-02	56.57	0	0	0	48.7	605.8
794	30.1	3000	2090	27.618044	1.3537	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1057	4.18E-04	2.997	1.07E-02	58.78	81.9	0	0	65	510.3
795	41.05	3000	2350	413.490917	17.9951	130.5599	1723.35	5125	0.1	1950	225000	1600000	0.0775	3.97E-04	3.589	4.78E-03	67.09	98.79	87.91	0	145	448
796	26.6	3000	2320	12.000935	0.4548	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1196	3.25E-04	2.373	1.31E-02	33.42	58.34	0	0	52.9	457.2
797	24.89	3000	3940	10.176066	0.2672	78.7839	2855.91	5125	0.1	1950	225000	750000	0.1278	7.43E-04	3.94	8.52E-03	49.68	50.87	0	0	81.3	811.3
798	28.3	3000	2670	362.660069	10.8542	89.788	2505.9	5125	0.1	1950	225000	912500	0.1124	2.31E-04	2.038	5.96E-03	48.56	98.62	86.21	0	116.3	369.1
799	29.82	3000	1990	72.835074	3.8748	159.6003	1409.77	5125	0.1	1950	225000	2162500	0.1067	4.30E-04	3.036	8.28E-03	76.41	93.14	31.35	0	83.8	521.8
800	22.82	3000	2460	155.566778	4.9902	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.1394	2.01E-04	1.727	8.17E-03	70.53	96.79	67.86	0	84.9	387.9
801	36.11	3000	2570	74.184023	2.2807	92.2314	2439.52	5125	0.1	1950	225000	950000	0.0881	2.37E-04	2.361	1.27E-02	87.19	93.26	32.6	0	54.7	335.1
802	27.26	3000	2200	213.640821	12.8923	181.037	1242.84	5125	0.1	1950	225000	2612500	0.1167	5.02E-04	3.175	4.65E-03	61.63	97.66	76.6	0	149	596.9
803	46.58	3000	1710	130.189712	6.5472	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.0683	2.20E-04	2.63	1.18E-02	53.65	96.16	61.59	0	58.9	289.4
804	29.21	3000	2770	74.335767	2.2854	92.2314	2439.52	5125	0.1	1950	225000	950000	0.1089	3.28E-04	2.522	8.90E-03	35.51	93.27	32.74	0	77.9	442.5
805	31.62	3000	2550	440.937876	14.6062	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.1006	3.01E-04	2.511	4.99E-03	62.73	98.87	88.66	0	138.9	407
806	33.1	3000	1640	586.870026	21.0833	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.0961	1.25E-04	1.659	6.54E-03	55.68	99.15	91.48	14.8	106	256.9
807	50.1	3000	1970	103.969651	4.3342	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0635	1.95E-04	2.551	1.35E-02	30.5	95.19	51.91	0	51.2	261
808	31.22	3000	1810	46.712642	2.1683	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1019	2.25E-04	2.118	1.30E-02	51.14	89.3	0	0	53.2	347.7
809	32.1	3000	2600	253.272917	7.6494	90.6061	2483.28	5125	0.1	1950	225000	925000	0.0991	1.99E-04	2.015	8.18E-03	66.26	98.03	80.26	0	84.8	321.7
810	44.56	3000	2230	41.532914	1.8543	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.0714	3.29E-04	3.329	1.18E-02	20.86	87.96	0	0	58.6	382.9
811	40.79	3000	3000	83.020431	3.7065	133.9381	1679.88	5125	0.1	1950	225000	1662500	0.078	6.43E-04	5.167	6.41E-03	68.81	93.98	39.77	0	108.2	649.2
812	24.4	3000	1410	304.879955	18.5154	182.1901	1234.97	5125	0.1	1950	225000	2637500	0.1304	1.55E-04	1.602	6.96E-03	35.18	98.36	83.6	0	99.5	336.6
813	35.59	3000	620	734.766818	42.7702	174.6277	1288.46	5125	0.1	1950	225000	2475000	0.0894	5.48E-05	1.31	7.53E-03	27.69	99.32	93.2	31.95	92	188.6
814	26.91	3000	2930	51.437735	2.8513	166.2959	1353.01	5125	0.1	1950	225000	2300000	0.1182	7.07E-04	4.022	5.75E-03	51.65	90.28	2.8	0	120.5	765.8
815	33.17	3000	1790	219.845807	6.8181	93.0387	2418.35	5125	0.1	1950	225000	962500	0.0959	1.70E-04	1.894	9.27E-03	38.9	97.73	77.26	0	74.8	292.6
816	57.12	3000	1710	229.106184	11.762	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.0557	2.21E-04	3.001	1.03E-02	51.85	97.82	78.18	0	67.3	269.3
817	21.29	3000	2460	41.48847	1.3418	97.024	2319.01	5125	0.1	1950	225000	1025000	0.1494	2.38E-04	1.804	1.11E-02	84.89	87.95	0	0	62.3	434.1
818	55.62	3000	2710	536.419945	15.7601	88.1405	2552.74	5125	0.1	1950	225000	887500	0.0572	2.13E-04	2.885	6.83E-03	57.15	99.07	90.68	6.79	101.4	265.8
819	23.76	3000	1610	247.254185	12.5903	152.7612	1472.89	5125	0.1	1950	225000	2025000	0.1339	1.54E-04	1.582	7.66E-03	62.3	97.98	79.78	0	90.4	341.3
820	32.33	3000	2770	114.977251	4.4126	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.0984	4.64E-04	3.385	6.51E-03	32.88	95.65	56.51	0	106.5	536.5
821	35	3000	2120	848.843276	31.7524	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.0909	1.78E-04	1.99	4.51E-03	83.6	99.41	94.11	41.1	153.7	291.5
822	33.74	3000	1510	132.13181	6.0461	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.0943	1.57E-04	1.839	1.16E-02	33.64	96.22	62.16	0	59.8	279.4
823	25.31	3000	1350	46.236267	1.7521	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1257	1.21E-04	1.487	1.47E-02	47.59	89.19	0	0	47.3	301.1
824	37.6	3000	1410	864.785924	44.9367	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0846	8.99E-05	1.537	6.11E-03	76.18	99.42	94.22	42.18	113.5	209.5
825	52.24	3000	3350	6.917451	0.3435	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.0609	6.06E-04	6.029	1.17E-02	24.9	27.72	0	0	59.2	591.5
826	47.7	3000	2280	11.498591	0.5758	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.0667	5.68E-04	5.302	1.43E-02	86.65	56.52	0	0	48.3	569.7
827	63.5	3000	2840	32.793417	1.3671	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.0501	4.95E-04	5.995	1.15E-02	49.45	84.75	0	0	60.1	483.9
828	52.67	3000	1390	300.566338	17.7306	176.9718	1271.39	5125	0.1	1950	225000	2525000	0.0604	1.48E-04	2.236	1.12E-02	55.31	98.34	83.36	0	62.1	217.6
829	32.66	3000	2930	90.667176	2.5628	84.7981	2653.36	5125	0.1	1950	225000	837500	0.0974	3.00E-04	2.555	9.19E-03	30.36	94.49	44.85	0	75.4	400.9
830	21.66	3000	2090	605.669652	30.459	150.8694	1491.36	5125	0.1	1950	225000	1987500	0.1469	4.02E-04	2.382	2.97E-03	69.85	99.17	91.74	17.45	233.7	563.7
831	25.91	3000	2820	68.548488	2.8098	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.1228	5.50E-04	3.266	6.38E-03	38.99	92.71	27.06	0	108.7	646.1
832	43.7	3000	600	900.12931	43.7359	145.7654	1543.58	5125	0.1	1950	225000	1887500	0.0728	6.34E-05	1.44	7.18E-03	23.65	99.44	94.45	44.45	96.5	168.9
833	31.1	3000	2070	63.668044	2.5499	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.1023	2.32E-04	2.147	1.13E-02	25.16	92.15	21.47	0	61.2	353.9
834	60.71	3000	2380	469.288555	16.8592	107.7748	2087.69	5125	0.1	1950	225000	1200000	0.0524	2.78E-04	3.68	6.59E-03	78.25	98.93	89.35	0	105.2	310.7
835	31.78	3000	1630	227.659983	11.4969	151.5013	1485.14	5125	0.1	1950	225000	2000000	0.1001	2.30E-04	2.16	7.50E-03	12.55	97.8	78.04	0	92.4	348.3
836	23.19	3000	1730	114.620644	5.194	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1372	1.29E-04	1.475	1.07E-02	70.92	95.64	56.38	0	64.9	326
837	25.72	3000	1230	76.2665	4.073	160.2148	1404.36	5125	0.1	1950	225000	2175000	0.1237	9.77E-05	1.399	1.39E-02	52.49	93.44	34.44	0	50	278.8
838	40.53	3000	4410	16.336699	0.3542	65.0346	3459.69	5125	0.1	1950	225000	562500	0.0785	5.58E-04	4.593	1.01E-02	25.54	69.39	0	0	69	580.8
839	38.99	3000	2640	288.037927	8.7775	91.4206	2461.15	5125	0.1	1950	225000	937500	0.0816	2.46E-04	2.523	7.56E-03	60.33	98.26	82.64	0	91.7	331.7
840	29.7	3000	2070	475.563315	21.6556	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1071	3.15E-04	2.489	4.47E-03	45.73	98.95	89.49	0	155.2	429.4
841	28.56	3000	2220	41.618426	1.8207	131.239	1714.43	5125	0.1	1950	225000	1612500	0.1114	3.65E-04	2.658	9.64E-03	33.77	87.99	0	0	71.9	477
842	30.68	3000	2200	47.306701	1.8946	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.1037	2.89E-04	2.411	1.09E-02	27.12	89.43	0	0	63.9	402.8
843	47.48	3000	920	549.114314	27.4989	150.2362	1497.64	5125	0.1	1950	225000	1975000	0.067	9.86E-05	1.744	9.17E-03	28.34	99.09	90.89	8.94	75.6	188.2
844	25.07	3000	910	168.622665	7.1848	127.8255	1760.21	5125	0.1	1950	225000	1550000	0.1269	1.14E-04	1.454	9.82E-03	16.63	97.03	70.35	0	70.6	297.2
845	29.98	3000	2570	22.096173	0.8427	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.1061	5.37E-04	3.558	1.04E-02	84.02	77.37	0	0	66.9	608.2

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
846	21.94	3000	1510	577.504039	32.2437	167.4988	1343.29	5125	0.1	1950	225000	2325000	0.145	1.58E-04	1.55	4.61E-03	28.12	99.13	91.34	13.42	150.2	362.1
847	24.03	3000	3190	15.202528	0.527	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1324	5.93E-04	3.263	8.36E-03	29.98	67.11	0	0	82.9	696
848	31.85	3000	2300	180.985745	9.4045	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.0999	4.79E-04	3.422	5.55E-03	60.5	97.24	72.37	0	125	550.7
849	23.97	3000	3210	15.314406	0.6133	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.1327	6.62E-04	3.522	7.74E-03	30.03	67.35	0	0	89.5	753
850	26.16	3000	1740	24.042715	1.1887	148.3284	1516.9	5125	0.1	1950	225000	1937500	0.1216	2.51E-04	2.043	1.36E-02	64.16	79.2	0	0	51.1	400.1
851	32.97	3000	3080	173.862751	6.2893	108.5219	2073.31	5125	0.1	1950	225000	1212500	0.0965	5.41E-04	3.832	5.21E-03	46.31	97.12	71.24	0	133	595.8
852	26.06	3000	2880	1.768696	0.0618	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.1221	5.99E-04	3.481	1.38E-02	53.38	0	0	0	50.3	684.8
853	24.62	3000	3450	13.749981	0.404	88.1405	2552.74	5125	0.1	1950	225000	887500	0.1292	6.30E-04	3.464	8.72E-03	45.94	63.64	0	0	79.5	720.9
854	35.35	3000	1180	659.578841	28.8542	131.239	1714.43	5125	0.1	1950	225000	1612500	0.09	8.63E-05	1.485	7.21E-03	57.74	99.24	92.42	24.19	96.1	215.3
855	43.88	3000	2700	73.479648	2.5659	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.0725	3.55E-04	3.476	9.66E-03	22.88	93.2	31.95	0	71.7	406
856	30.41	3000	2120	623.002757	24.6559	118.7276	1895.09	5125	0.1	1950	225000	1387500	0.1046	2.29E-04	2.108	4.54E-03	40.48	99.2	91.97	19.74	152.7	355.3
857	44.43	3000	1530	263.277286	12.7922	145.7654	1543.58	5125	0.1	1950	225000	1887500	0.0716	1.33E-04	1.937	1.14E-02	45.85	98.1	81.01	0	61.1	223.4
858	36.95	3000	830	157.197651	4.2647	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0861	1.12E-04	1.655	1.31E-02	16.14	96.82	68.19	0	53.1	229.5
859	61.77	3000	1750	212.57173	11.911	168.0986	1338.5	5125	0.1	1950	225000	2337500	0.0515	2.97E-04	3.914	9.36E-03	77.89	97.65	76.48	0	74	324.7
860	46.51	3000	1840	731.607653	23.2748	95.4399	2357.51	5125	0.1	1950	225000	1000000	0.0684	1.31E-04	1.971	6.70E-03	57.4	99.32	93.17	31.66	103.5	217.2
861	26.64	3000	2350	498.460466	19.8453	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1194	3.69E-04	2.562	3.84E-03	62.38	99	89.97	0	180.3	492.9
862	23.53	3000	1130	91.875369	3.526	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.1352	9.29E-05	1.347	1.23E-02	41.41	94.56	45.58	0	56.2	293.5
863	33.38	3000	1920	51.501424	2.4356	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0953	2.72E-04	2.442	1.15E-02	29.3	90.29	2.92	0	60.5	374.9
864	21.77	3000	2040	50.694416	2.125	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1461	2.81E-04	1.971	9.71E-03	66.12	90.14	1.37	0	71.4	463.9
865	25.25	3000	1190	231.410656	5.5242	71.6152	3141.79	5125	0.1	1950	225000	650000	0.126	1.36E-04	1.544	8.33E-03	24.71	97.84	78.39	0	83.2	313.5
866	40.02	3000	2390	450.400686	20.2093	134.6086	1671.51	5125	0.1	1950	225000	1675000	0.0795	3.72E-04	3.365	4.53E-03	23.47	98.89	88.9	0	153.1	431
867	28.13	3000	2630	44.31253	2.3026	155.8885	1443.34	5125	0.1	1950	225000	2087500	0.1131	5.45E-04	3.437	7.22E-03	28.74	88.72	0	0	96	626.2
868	32.66	3000	2260	131.281795	6.7945	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.0974	4.09E-04	3.123	6.66E-03	22.86	96.19	61.91	0	104.1	490
869	31.59	3000	1810	661.89038	30.5788	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.1007	2.09E-04	2.048	4.77E-03	79.96	99.24	92.45	24.46	145.4	332.2
870	22.44	3000	1710	41.834579	1.9327	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.1418	1.90E-04	1.676	1.16E-02	29.9	88.05	0	0	59.6	382.8
871	24.83	3000	2710	2.609567	0.107	122.9684	1829.74	5125	0.1	1950	225000	1462500	0.1281	6.27E-04	3.473	1.23E-02	53.1	0	0	0	56.3	716.8
872	27.1	3000	1950	37.994084	1.772	139.9143	1608.13	5125	0.1	1950	225000	1775000	0.1174	2.75E-04	2.183	1.10E-02	22	86.84	0	0	62.9	412.9
873	27.96	3000	2590	65.6154	2.07	94.6429	2377.36	5125	0.1	1950	225000	987500	0.1138	2.76E-04	2.226	1.01E-02	47.73	92.38	23.8	0	68.6	408.1
874	27.5	3000	2470	5.408829	0.1847	102.4699	2195.77	5125	0.1	1950	225000	1112500	0.1157	3.20E-04	2.398	1.59E-02	42.95	7.56	0	0	43.5	447
875	26.44	3000	1900	1.129862	0.0667	176.9718	1271.39	5125	0.1	1950	225000	2525000	0.1203	5.05E-04	3.12	1.70E-02	63.89	0	0	0	40.8	604.7
876	30.8	3000	1650	451.432534	20.5568	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1033	1.75E-04	1.856	6.25E-03	28.71	98.89	88.92	0	110.9	308.9
877	23.85	3000	2280	145.879392	6.0475	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1334	3.46E-04	2.312	6.32E-03	27.84	96.57	65.73	0	109.7	496.9
878	30.21	3000	1110	50.101555	3.0427	182.1901	1234.97	5125	0.1	1950	225000	2637500	0.1053	1.00E-04	1.482	1.71E-02	44.21	90.02	0.2	0	40.5	251.4
879	23.39	3000	1560	201.33633	10.5454	157.1306	1431.93	5125	0.1	1950	225000	2112500	0.136	1.36E-04	1.507	8.52E-03	51.22	97.52	75.17	0	81.4	330.1
880	57.42	3000	4130	41.40948	0.9885	71.6152	3141.79	5125	0.1	1950	225000	650000	0.0554	5.49E-04	6.007	9.76E-03	44.62	87.93	0	0	71	536.1
881	35.23	3000	1800	158.706034	7.6088	143.8283	1564.37	5125	0.1	1950	225000	1850000	0.0903	2.21E-04	2.239	9.40E-03	32.37	96.85	68.5	0	73.7	325.7
882	23.2	3000	2440	20.277693	0.8169	120.8573	1861.7	5125	0.1	1950	225000	1425000	0.1371	5.27E-04	2.945	9.51E-03	83.46	75.34	0	0	72.9	650.4
883	56.51	3000	1750	126.033606	6.1777	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.0563	2.14E-04	2.924	1.30E-02	48.97	96.03	60.33	0	53.3	265.2
884	44.19	3000	2870	1.230105	0.0566	137.9366	1631.18	5125	0.1	1950	225000	1737500	0.072	6.46E-04	5.536	1.65E-02	44.3	0	0	0	42.1	642.1
885	24.59	3000	2580	24.280964	0.6447	79.6568	2824.62	5125	0.1	1950	225000	762500	0.1294	2.98E-04	2.164	1.12E-02	24.85	79.41	0	0	61.8	451.1
886	51.64	3000	2710	117.859721	4.7758	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0616	4.45E-04	4.648	7.91E-03	47.41	95.76	57.58	0	87.6	461.2
887	21.48	3000	2140	177.485336	8.1214	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1481	3.90E-04	2.33	5.50E-03	63.79	97.18	71.83	0	126	555.8
888	44	3000	2210	645.420527	23.985	111.4852	2018.2	5125	0.1	1950	225000	1262500	0.0723	2.27E-04	2.584	5.36E-03	63.25	99.23	92.25	22.53	129.4	301
889	21.85	3000	2140	6.606734	0.2754	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.1456	3.25E-04	2.13	1.35E-02	39.53	24.32	0	0	51.4	499.6
890	23.48	3000	3110	61.78723	2.3713	115.1349	1954.23	5125	0.1	1950	225000	1325000	0.1355	6.57E-04	3.45	5.79E-03	51.59	91.91	19.08	0	119.7	753.1
891	45.51	3000	1620	113.959437	5.9453	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.0699	1.85E-04	2.341	1.30E-02	30.14	95.61	56.12	0	53.5	263.6
892	31.78	3000	620	186.003086	7.7539	125.0616	1799.11	5125	0.1	1950	225000	1500000	0.1001	3.71E-05	1.187	1.49E-02	40.64	97.31	73.12	0	46.5	191.5
893	54.57	3000	1740	1039.429566	34.4315	99.3762	2264.12	5125	0.1	1950	225000	1062500	0.0583	1.19E-04	2.031	5.69E-03	59.02	99.52	95.19	51.9	121.7	190.7
894	41.64	3000	1050	250.129251	15.1423	181.614	1238.89	5125	0.1	1950	225000	2625000	0.0764	1.13E-04	1.745	1.19E-02	30.05	98	80.01	0	58.4	214.7
895	35.15	3000	2160	96.278985	3.625	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.0905	2.19E-04	2.222	1.14E-02	51.34	94.81	48.07	0	60.6	323.9
896	33.56	3000	2510	7.330469	0.2597	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.0948	3.73E-04	2.991	1.52E-02	43.35	31.79	0	0	45.7	456.8
897	28.63	3000	2870	8.242653	0.4469	162.6609	1383.25	5125	0.1	1950	225000	2225000	0.1111	6.40E-04	3.911	9.38E-03	29.32	39.34	0	0	73.9	699.9
898	23.43	3000	1780	9.109067	0.4465	147.0497	1530.1	5125	0.1	1950	225000	1912500	0.1358	2.71E-04	2.009	1.49E-02	57.93	45.11	0	0	46.4	439.6
899	33.31	3000	2480	16.781467	0.7863	140.5704	1600.62	5125	0.1	1950	225000	1787500	0.0955	4.91E-04	3.601	1.06E-02	37.42	70.21	0	0	65.3	553.9
900	58.59	3000	3590	44.564899	1.8784	126.4473	1779.4	5125	0.1	1950	225000	1525000	0.0543	7.49E-04	7.973	7.70E-03	70.51	88.78	0	0	90	697.4
901	35.67	3000	2780	195.232499	6.4163	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0892	3.52E-04	2.993	6.54E-03	18.9	97.44	74.39	0	105.9	430.2
902	22.39	3000	1660	203.41394	5.2824	77.906	2888.09	5125	0.1	1950	225000	737500	0.1421	1.56E-04	1.555	7.81E-03	40.44	97.54	75.42	0	88.8	356
903	40.32	3000	3730	297.277645	8.4029	84.7981	2653.36	5125	0.1	1950	225000	837500	0.0789	5.82E-04	4.732	4.26E-03	60.55	98.32	83.18	0	162.9	601.4
904	30.33	3000	1630	22.162361	1.1836	160.2148	1404.36	5125	0.1	1950	225000	2175000	0.1049	2.40E-04	2.157	1.50E-02	56.52	77.44	0	0	46.1	364.5
905	58.37	3000	2360	1570.135516	54.8291	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.0545	2.13E-04	2.973	2.52E-03	43.74	99.68	96.82	68.16	274.9	261
906	38.28	3000	2590	208.219657	7.6353	110.0086	2045.3	5125	0.1	1950	225000	1237500	0.0831	3.51E-04	3.137	6.58E-03	22.18	97.6	75.99	0	105.3	419.9
907	30.71	3000	1050	302.202739	13.2203	131.239	1714.43	5125	0.1	1950	225000	1612500	0.1036	8.69E-05	1.424	9.93E-03	43.85	98.35	83.45	0	69.8	237.7
908	26.25	3000	2390	130.443272	4.943	113.6821	1979.2	5125	0.1	1950	225000	1300000	0.1212	3.28E-04	2.369	7.03E-03	25.33	96.17	61.67	0	98.6	462.6
909	36.23	3000	3140	0.820819	0.0303	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.0878	6.00E-04	4.455	1.58E-02	30.22	0	0	0	43.8	630.1
910	37.96	3000	3130	488.930365	13.4044	82.2476	2735.64	5125	0.1	1950	225000	800000	0.0838	3.39E-04	3.045	4.58E-03	34.03	98.98	89.77	0	151.5	411.1

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
911	31.44	3000	3900	10.815063	0.2515	69.767	3225.02	5125	0.1	1950	225000	625000	0.1012	6.85E-04	4.421	1.08E-02	79.08	53.77	0	0	64.2	720.7
912	38.56	3000	3540	49.735507	1.5558	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0825	5.23E-04	4.205	7.79E-03	18.44	89.95	0	0	89	558.9
913	29.48	3000	2280	27.310058	0.9743	107.0251	2102.31	5125	0.1	1950	225000	1187500	0.1079	2.70E-04	2.267	1.38E-02	77.21	81.69	0	0	50.1	394
914	24.12	3000	2330	243.857533	9.2999	114.4096	1966.62	5125	0.1	1950	225000	1312500	0.1319	3.10E-04	2.189	5.59E-03	32.75	97.95	79.5	0	124.1	465.1
915	36.52	3000	1240	383.998231	18.5754	145.1211	1550.43	5125	0.1	1950	225000	1875000	0.0871	1.12E-04	1.653	9.12E-03	42.67	98.7	86.98	0	76	231.9
916	27.69	3000	2100	232.481411	9.5835	123.6681	1819.39	5125	0.1	1950	225000	1475000	0.1149	2.59E-04	2.14	6.67E-03	30.95	97.85	78.49	0	103.9	396.1
917	22.55	3000	2660	548.415401	19.0116	103.9994	2163.47	5125	0.1	1950	225000	1137500	0.1411	3.83E-04	2.374	3.24E-03	38.3	99.09	90.88	8.83	213.7	539.6
918	48.5	3000	3410	29.111602	0.7898	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0656	5.10E-04	4.929	1.14E-02	63.39	82.82	0	0	60.8	520.9
919	40.79	3000	780	944.861707	37.618	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.078	7.20E-05	1.467	6.34E-03	35.12	99.47	94.71	47.08	109.3	184.3
920	24.23	3000	2900	16.923045	0.464	82.2476	2735.64	5125	0.1	1950	225000	800000	0.1313	2.95E-04	2.134	1.32E-02	71.53	70.45	0	0	52.3	451.3
921	28.74	3000	1960	207.560371	6.983	100.929	2229.29	5125	0.1	1950	225000	1087500	0.1107	1.87E-04	1.852	8.40E-03	39.34	97.59	75.91	0	82.6	330.2
922	30.36	3000	2330	65.088054	2.4028	110.7481	2031.64	5125	0.1	1950	225000	1250000	0.1048	3.42E-04	2.651	9.91E-03	79.72	92.32	23.18	0	69.9	447.6
923	22.29	3000	2500	12.709164	0.5444	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.1427	4.94E-04	2.751	9.55E-03	36.1	60.66	0	0	72.6	632.4
924	33.1	3000	640	589.047399	20.7183	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0961	5.03E-05	1.265	8.42E-03	30.34	99.15	91.51	15.12	82.4	195.8
925	23.64	3000	1340	421.184601	26.0612	185.6278	1212.1	5125	0.1	1950	225000	2712500	0.1346	1.22E-04	1.457	6.40E-03	52.12	98.81	88.13	0	108.4	315.9
926	43.46	3000	1910	296.249028	15.3324	155.2656	1449.13	5125	0.1	1950	225000	2075000	0.0732	3.02E-04	3.088	6.75E-03	44.61	98.31	83.12	0	102.7	364.1
927	36.23	3000	1630	113.465825	5.3661	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0878	1.39E-04	1.798	1.37E-02	57.08	95.59	55.93	0	50.5	254.3
928	44.87	3000	3400	32.005511	1.6895	158.3679	1420.74	5125	0.1	1950	225000	2137500	0.0709	7.33E-04	6.229	7.23E-03	51.49	84.38	0	0	95.9	711.5
929	21.28	3000	2040	16.589427	0.6877	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1495	2.53E-04	1.856	1.22E-02	24.27	69.86	0	0	57	447.1
930	63.12	3000	1190	282.165615	7.8162	83.1021	2707.51	5125	0.1	1950	225000	812500	0.0504	1.37E-04	2.373	1.25E-02	17.43	98.23	82.28	0	55.4	192.6
931	32.23	3000	1140	536.729683	23.8426	133.2659	1688.35	5125	0.1	1950	225000	1650000	0.0987	1.05E-04	1.539	7.17E-03	38.55	99.07	90.68	6.84	96.6	244.7
932	31.41	3000	1710	82.248941	4.1881	152.7612	1472.89	5125	0.1	1950	225000	2025000	0.1013	2.59E-04	2.29	1.08E-02	74.45	93.92	39.21	0	64.3	373.7
933	28.95	3000	1860	5.982129	0.297	148.9657	1510.42	5125	0.1	1950	225000	1950000	0.1099	2.92E-04	2.343	1.63E-02	30.2	16.42	0	0	42.6	414.8
934	24.34	3000	690	205.65435	8.1878	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1307	7.66E-05	1.296	9.92E-03	14.27	97.57	75.69	0	69.9	272.9
935	21.61	3000	780	56.176236	1.8316	97.8112	2300.35	5125	0.1	1950	225000	1037500	0.1472	8.35E-05	1.287	1.33E-02	16.97	91.1	10.99	0	52.3	305.2
936	22.59	3000	2510	49.716906	2.2639	136.6103	1647.02	5125	0.1	1950	225000	1712500	0.1408	5.18E-04	2.861	6.91E-03	41.56	89.94	0	0	100.4	648.9
937	37.25	3000	2070	6.758418	0.3881	172.2679	1306.11	5125	0.1	1950	225000	2425000	0.0854	5.03E-04	3.977	1.43E-02	62.66	26.02	0	0	48.4	547.1
938	25.19	3000	1680	454.267521	17.1035	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.1263	1.88E-04	1.753	5.38E-03	26.07	98.9	88.99	0	128.8	356.6
939	27.33	3000	2190	10.137054	0.3817	112.9522	1991.99	5125	0.1	1950	225000	1287500	0.1164	2.69E-04	2.168	1.60E-02	59.1	50.68	0	0	43.4	406.5
940	21.34	3000	1010	73.233885	3.7597	154.0159	1460.89	5125	0.1	1950	225000	2050000	0.1491	1.13E-04	1.385	1.14E-02	20.38	93.17	31.73	0	60.8	332.6
941	44.12	3000	2370	346.315204	11.3817	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0721	1.73E-04	2.213	8.85E-03	57.38	98.56	85.56	0	78.3	257.1
942	61.06	3000	3500	272.95458	7.6384	83.9523	2680.09	5125	0.1	1950	225000	825000	0.0521	4.82E-04	5.68	5.86E-03	69.76	98.17	81.68	0	118.3	476.7
943	28.1	3000	2380	2.687743	0.107	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1132	4.61E-04	3.061	1.56E-02	57.22	0	0	0	44.5	558.1
944	42.93	3000	930	616.352643	22.4489	109.2665	2059.19	5125	0.1	1950	225000	1225000	0.0741	7.42E-05	1.507	9.00E-03	47.82	99.19	91.89	18.88	77.1	179.8
945	34.13	3000	2910	3.450361	0.1023	88.9661	2529.05	5125	0.1	1950	225000	900000	0.0932	4.35E-04	3.357	1.68E-02	56.3	0	0	0	41.3	504.1
946	22.02	3000	1580	47.556406	2.2075	139.2566	1615.72	5125	0.1	1950	225000	1762500	0.1445	2.14E-04	1.748	1.04E-02	17.09	89.49	0	0	66.5	406.9
947	27.57	3000	2140	83.66517	3.5071	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1154	3.64E-04	2.595	8.63E-03	89.95	94.02	40.24	0	80.3	482.5
948	43.46	3000	520	990.220822	40.1248	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0732	4.16E-05	1.287	7.37E-03	31.32	99.5	94.95	49.51	94.1	151.8
949	26.56	3000	3420	5.357306	0.1499	83.9523	2680.09	5125	0.1	1950	225000	825000	0.1198	6.13E-04	3.586	1.12E-02	51.89	6.67	0	0	61.7	692.1
950	53.29	3000	2430	437.673119	18.8486	129.1963	1741.54	5125	0.1	1950	225000	1575000	0.0597	3.58E-04	4.031	5.24E-03	39.47	98.86	88.58	0	132.3	387.7
951	30.56	3000	2420	10.125498	0.3407	100.929	2229.29	5125	0.1	1950	225000	1087500	0.1041	2.78E-04	2.352	1.65E-02	55.64	50.62	0	0	41.9	394.4
952	29.29	3000	3690	15.337874	0.3614	70.6941	3182.73	5125	0.1	1950	225000	637500	0.1086	5.48E-04	3.552	1.06E-02	66.6	67.4	0	0	65.7	621.5
953	33.38	3000	1920	48.231091	2.6151	162.6609	1383.25	5125	0.1	1950	225000	2225000	0.0953	3.70E-04	2.964	1.02E-02	50.37	89.63	0	0	68.2	455.1
954	38.42	3000	2370	923.471683	32.2476	104.7599	2147.77	5125	0.1	1950	225000	1150000	0.0828	2.37E-04	2.445	3.70E-03	44.81	99.46	94.59	45.86	187.2	326.1
955	32.01	3000	1640	540.763597	24.3844	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.0994	1.30E-04	1.66	6.64E-03	54.49	99.08	90.75	7.54	104.4	265.8
956	35.51	3000	2100	107.341629	6.1001	170.4873	1319.75	5125	0.1	1950	225000	2387500	0.0896	4.52E-04	3.55	7.28E-03	63.09	95.34	53.42	0	95.2	512.5
957	24.25	3000	1950	36.450545	0.9678	79.6568	2824.62	5125	0.1	1950	225000	762500	0.1312	1.61E-04	1.621	1.41E-02	67.42	86.28	0	0	49.2	342.6
958	53.74	3000	1780	465.330463	21.4979	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.0592	1.90E-04	2.624	8.03E-03	82.52	98.93	89.25	0	86.3	250.3
959	26.4	3000	1120	373.04136	19.4616	156.5102	1437.61	5125	0.1	1950	225000	2100000	0.1205	1.43E-04	1.6	6.79E-03	17.74	98.66	86.6	0	102.1	310.5
960	40.27	3000	1810	803.180498	44.6831	166.8979	1348.13	5125	0.1	1950	225000	2312500	0.079	2.74E-04	2.755	3.81E-03	19.29	99.38	93.77	37.75	181.9	350.6
961	22.59	3000	2260	226.094766	10.4454	138.5974	1623.41	5125	0.1	1950	225000	1750000	0.1408	3.94E-04	2.415	4.88E-03	28.44	97.79	77.89	0	141.9	547.8
962	28.35	3000	2770	85.232165	3.2916	115.8579	1942.03	5125	0.1	1950	225000	1337500	0.1122	5.90E-04	3.659	6.43E-03	82.77	94.13	41.34	0	107.8	661.3
963	22.08	3000	990	446.455123	26.6832	179.3004	1254.88	5125	0.1	1950	225000	2575000	0.1441	8.14E-05	1.285	6.48E-03	32.3	98.88	88.8	0	106.9	298.4
964	45	3000	1090	449.770298	14.7817	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0707	1.13E-04	1.809	9.39E-03	29.22	98.89	88.88	0	73.8	206
965	22.09	3000	1770	195.459029	9.2438	141.878	1585.87	5125	0.1	1950	225000	1812500	0.144	1.84E-04	1.645	7.40E-03	38.58	97.44	74.42	0	93.7	381.6
966	60.83	3000	710	359.224699	14.5562	121.5631	1850.89	5125	0.1	1950	225000	1437500	0.0523	6.25E-05	1.604	1.62E-02	42.56	98.61	86.08	0	42.9	135.1
967	36.69	3000	2250	359.099462	15.8712	132.592	1696.94	5125	0.1	1950	225000	1637500	0.0867	3.44E-04	3.006	5.25E-03	30.78	98.61	86.08	0	132.1	419.9
968	31.22	3000	3080	9.562487	0.2914	91.4206	2461.15	5125	0.1	1950	225000	937500	0.1019	5.32E-04	3.641	1.18E-02	56.33	47.71	0	0	58.6	597.8
969	53.47	3000	1300	276.829066	11.087	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.0595	1.63E-04	2.382	1.06E-02	14.64	98.19	81.94	0	65.4	228.3
970	41.37	3000	3080	16.164469	0.6281	116.5786	1930.03	5125	0.1	1950	225000	1350000	0.0769	5.85E-04	4.847	1.05E-02	43.52	69.07	0	0	66.2	600.5
971	51.56	3000	1550	988.084204	30.9081	93.8425	2397.63	5125	0.1	1950	225000	975000	0.0617	1.34E-04	2.1	5.41E-03	36.81	99.49	94.94	49.4	128.1	208.8
972	32.36	3000	1900	177.638396	8.0102	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.0983	2.23E-04	2.146	8.59E-03	27.92	97.19	71.85	0	80.7	339.8
973	35.87	3000	2200	43.759031	1.8545	127.1374	1769.74	5125	0.1	1950	225000	1537500	0.0887	3.36E-04	2.916	1.11E-02	37.83	88.57	0	0	62.6	416.7
974	49.17	3000	2960	102.239748	3.4132	100.1541	2246.54	5125	0.1	1950	225000	1075000	0.0647	3.90E-04	4.049	8.50E-03	23.07	95.11	51.1	0	81.5	422
975	57.22	3000	1600	585.750615	30.8007	157.7499	1426.31	5125	0.1	1950	225000	2125000	0.0556	1.79E-04	2.629	7.25E-03	53.54	99.15	91.46	14.64	95.6	235.5

Simulation Parameters and Results: 30% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
976	33.92	3000	710	406.748236	14.3064	105.5176	2132.35	5125	0.1	1950	225000	1162500	0.0938	7.30E-05	1.393	9.62E-03	25.62	98.77	87.71	0	72	210.5
977	22.14	3000	1890	266.909515	12.6808	142.5296	1578.62	5125	0.1	1950	225000	1825000	0.1437	2.77E-04	1.973	5.59E-03	60.45	98.13	81.27	0	123.9	456.8
978	29	3000	2750	36.101893	1.4966	124.3658	1809.18	5125	0.1	1950	225000	1487500	0.1097	6.05E-04	3.788	7.95E-03	66.96	86.15	0	0	87.1	669.3
979	37.47	3000	1760	872.973895	28.6904	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0849	1.50E-04	1.891	4.87E-03	43.93	99.43	94.27	42.72	142.4	258.7
980	51.23	3000	1220	757.810894	33.4932	132.592	1696.94	5125	0.1	1950	225000	1637500	0.0621	8.86E-05	1.721	8.22E-03	61.82	99.34	93.4	34.02	84.3	172.2
981	22.11	3000	3230	97.039781	4.0678	125.7554	1789.19	5125	0.1	1950	225000	1512500	0.1439	6.71E-04	3.359	4.67E-03	32.8	94.85	48.47	0	148.3	778.7
982	33.59	3000	3230	11.428474	0.31	81.3886	2764.52	5125	0.1	1950	225000	787500	0.0947	4.39E-04	3.343	1.26E-02	43.24	56.25	0	0	54.8	510
983	24.21	3000	1240	342.998471	15.695	137.2743	1639.05	5125	0.1	1950	225000	1725000	0.1314	8.91E-05	1.343	7.85E-03	50.7	98.54	85.42	0	88.3	284.2
984	44.62	3000	1140	416.377489	18.309	131.9164	1705.63	5125	0.1	1950	225000	1625000	0.0713	1.20E-04	1.853	9.48E-03	29.59	98.8	87.99	0	73.1	212.8
985	55.52	3000	1880	785.339422	33.6418	128.5118	1750.81	5125	0.1	1950	225000	1562500	0.0573	1.63E-04	2.44	6.10E-03	38.48	99.36	93.63	36.33	113.7	225.2
986	37.52	3000	2410	156.360827	5.0157	96.2335	2338.06	5125	0.1	1950	225000	1012500	0.0848	1.73E-04	2.03	1.16E-02	72.32	96.8	68.02	0	60	277.3
987	25.89	3000	2000	417.874102	18.843	135.2775	1663.25	5125	0.1	1950	225000	1687500	0.1229	2.93E-04	2.204	4.74E-03	59.25	98.8	88.03	0	146.1	436.4
988	24.82	3000	2850	11.656142	0.3489	89.788	2505.9	5125	0.1	1950	225000	912500	0.1282	3.63E-04	2.431	1.21E-02	36.51	57.1	0	0	57.2	502.1
989	29.7	3000	1300	158.893663	7.5145	141.878	1585.87	5125	0.1	1950	225000	1812500	0.1071	1.43E-04	1.674	1.04E-02	27.79	96.85	68.53	0	66.4	288.8
990	31.5	3000	3590	12.448718	0.441	106.2727	2117.2	5125	0.1	1950	225000	1175000	0.101	7.58E-04	4.793	8.62E-03	48.08	59.84	0	0	80.4	779.8
991	26.4	3000	1150	438.389645	17.4537	119.4396	1883.8	5125	0.1	1950	225000	1400000	0.1205	1.16E-04	1.487	6.78E-03	30.54	98.86	88.59	0	102.3	288.6
992	30.62	3000	1050	1393.095529	65.8832	141.878	1585.87	5125	0.1	1950	225000	1812500	0.1039	1.19E-04	1.578	2.92E-03	22.34	99.64	96.41	64.11	237.3	264
993	47.98	3000	650	928.878938	37.2015	120.1495	1872.67	5125	0.1	1950	225000	1412500	0.0663	7.12E-05	1.543	7.18E-03	24.09	99.46	94.62	46.17	96.6	164.8
994	57.95	3000	1360	154.231556	7.294	141.878	1585.87	5125	0.1	1950	225000	1812500	0.0549	1.32E-04	2.217	1.57E-02	30.3	96.76	67.58	0	44.1	196
995	38.84	3000	1910	12.459158	0.5646	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.0819	2.47E-04	2.525	1.79E-02	31.25	59.87	0	0	38.8	333.1
996	28.48	3000	1700	212.296951	9.6202	135.9447	1655.08	5125	0.1	1950	225000	1700000	0.1117	1.64E-04	1.741	8.75E-03	39.05	97.64	76.45	0	79.2	313.2
997	40.07	3000	2060	212.517582	6.9844	98.5952	2282.06	5125	0.1	1950	225000	1050000	0.0794	2.03E-04	2.289	9.35E-03	28.92	97.65	76.47	0	74.1	292.8
998	23.79	3000	1390	274.623642	10.2727	112.2199	2004.99	5125	0.1	1950	225000	1275000	0.1337	1.45E-04	1.548	7.33E-03	30.6	98.18	81.79	0	94.6	333.5
999	44.81	3000	2120	16.086784	0.8657	161.4401	1393.71	5125	0.1	1950	225000	2200000	0.071	4.08E-04	3.905	1.35E-02	39.29	68.92	0	0	51.3	446.6
1000	32.9	3000	1470	1224.259845	64.8795	158.9847	1415.23	5125	0.1	1950	225000	2150000	0.0967	8.39E-05	1.439	4.08E-03	80.2	99.59	95.92	59.16	169.9	224.1

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
1	58.91	3000	4630	21.221799	0.8699	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.054	4.50E-04	5.208	1.24E-02	26.99	76.44	0	0	55.8	453.1
2	22.15	3000	6530	4.975861	0.103	62.1111	7848.84	5125	0.1	1950	487500	525000	0.1436	5.26E-04	2.853	1.23E-02	76.26	0	0	0	56.2	660
3	30.44	3000	2440	118.468698	5.4471	137.9366	3534.23	5125	0.1	1950	487500	1737500	0.1045	2.01E-04	1.975	1.04E-02	55.4	95.78	57.79	0	66.7	332.4
4	22.99	3000	1940	467.441712	26.4715	169.8917	2869.47	5125	0.1	1950	487500	2375000	0.1384	1.93E-04	1.704	5.00E-03	35.33	98.93	89.3	0	138.6	379.8
5	45.25	3000	5510	60.675825	1.8817	93.0387	5239.76	5125	0.1	1950	487500	962500	0.0703	4.20E-04	4.023	1.02E-02	63.48	91.76	17.59	0	67.8	455.6
6	35.04	3000	3790	135.138311	7.1616	158.9847	3066.33	5125	0.1	1950	487500	2150000	0.0908	5.19E-04	3.891	6.07E-03	48.82	96.3	63	0	114.2	569.2
7	59.13	3000	3920	281.624411	11.8053	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.0538	2.52E-04	3.363	8.53E-03	33	98.22	82.25	0	81.2	291.5
8	49.32	3000	5250	28.738002	1.0538	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.0645	5.92E-04	5.636	9.74E-03	44.48	82.6	0	0	71.2	585.6
9	26.53	3000	4420	33.743679	1.3032	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.1199	3.81E-04	2.608	1.02E-02	62.53	85.18	0	0	68.1	503.7
10	29.57	3000	5090	438.407689	15.7498	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.1076	5.07E-04	3.384	3.45E-03	39.84	98.86	88.6	0	201.2	586.6
11	28.46	3000	3690	236.113198	11.7243	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.1118	3.95E-04	2.788	5.27E-03	29.73	97.88	78.82	0	131.5	502.1
12	21.41	3000	1390	185.517538	4.6529	75.2423	6479.07	5125	0.1	1950	487500	700000	0.1486	1.17E-04	1.399	8.58E-03	42.84	97.3	73.05	0	80.8	334.8
13	62.5	3000	4550	7.595494	0.3658	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.0509	6.74E-04	7.691	1.36E-02	49.38	34.17	0	0	50.8	630.6
14	28.87	3000	5280	20.314583	0.7499	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.1102	6.60E-04	4.027	7.91E-03	33.57	75.39	0	0	87.7	714.9
15	41	3000	4620	28.976867	1.1468	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0776	4.97E-04	4.236	1.04E-02	47.28	82.74	0	0	67	529.6
16	37.83	3000	2370	1286.001247	49.9734	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0841	1.65E-04	1.989	3.20E-03	55.5	99.61	96.11	61.12	216.6	269.5
17	59.24	3000	2680	716.319344	34.651	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.0537	1.80E-04	2.697	6.33E-03	41.22	99.3	93.02	30.2	109.5	233.3
18	52.5	3000	2500	201.416671	7.9712	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0606	1.94E-04	2.617	1.12E-02	39.63	97.52	75.18	0	62.2	255.5
19	29.59	3000	650	436.709687	19.8863	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1075	3.26E-05	1.153	9.82E-03	41.91	98.86	88.55	0	70.6	199.7
20	21.6	3000	2550	14.64421	0.9117	186.7666	2610.21	5125	0.1	1950	487500	2737500	0.1473	2.62E-04	1.901	1.28E-02	42.14	65.86	0	0	54.2	451
21	31.69	3000	3990	55.763392	3.0008	161.4401	3019.69	5125	0.1	1950	487500	2200000	0.1004	5.94E-04	3.993	6.88E-03	37.29	91.03	10.34	0	100.7	645.8
22	26.1	3000	3100	17.675777	0.6172	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.1219	3.26E-04	2.352	1.18E-02	27.73	71.71	0	0	58.5	461.8
23	22.18	3000	2030	89.296983	4.6586	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.1434	1.94E-04	1.682	9.48E-03	42.19	94.4	44.01	0	73.1	388.6
24	28.87	3000	4540	215.934961	8.6991	120.8573	4033.68	5125	0.1	1950	487500	1425000	0.1102	4.92E-04	3.258	4.93E-03	49.66	97.68	76.84	0	140.7	578.4
25	29	3000	4650	342.553214	14.0411	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.1097	5.47E-04	3.519	3.73E-03	46.41	98.54	85.4	0	185.8	622
26	22.76	3000	5990	351.206316	11.7249	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.1398	7.66E-04	3.771	2.71E-03	45.07	98.58	85.76	0	256.3	849.3
27	43.28	3000	5080	74.175035	2.3203	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0735	3.68E-04	3.53	9.45E-03	26.64	93.26	32.59	0	73.3	417.9
28	21.94	3000	1130	95.233404	5.7835	182.1901	2675.78	5125	0.1	1950	487500	2637500	0.145	1.04E-04	1.361	1.12E-02	34.57	94.75	47.5	0	61.9	317.9
29	45.38	3000	1480	838.084461	36.0925	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.0701	1.10E-04	1.794	6.46E-03	58.83	99.4	94.03	40.34	107.3	202.6
30	34.81	3000	2440	39.563262	1.4015	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.0914	1.87E-04	2.034	1.66E-02	85.44	87.36	0	0	41.8	299.4
31	25.11	3000	5370	145.566186	4.5534	93.8425	5194.88	5125	0.1	1950	487500	975000	0.1267	3.59E-04	2.433	6.68E-03	67.25	96.57	65.65	0	103.8	496.7
32	21.44	3000	3240	5.724449	0.2543	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1484	3.31E-04	2.126	1.37E-02	42.06	12.66	0	0	50.7	508.2
33	49.71	3000	1360	458.422988	19.4276	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.064	1.28E-04	2.015	9.28E-03	34.79	98.91	89.09	0	74.7	207.7
34	31.72	3000	3120	142.40216	7.1012	149.6016	3258.66	5125	0.1	1950	487500	1962500	0.1003	2.73E-04	2.374	8.34E-03	35.37	96.49	64.89	0	83.1	383.5
35	32.56	3000	4250	33.74652	1.5066	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.0977	5.12E-04	3.649	8.74E-03	36.93	85.18	0	0	79.4	574.3
36	46.92	3000	4650	297.505594	13.082	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.0678	6.32E-04	5.714	4.43E-03	83.15	98.32	83.19	0	156.6	624
37	55.81	3000	620	863.706063	33.5632	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.057	6.59E-05	1.584	8.64E-03	26.14	99.42	94.21	42.11	80.2	145.5
38	29.79	3000	1920	532.699315	17.368	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.1068	1.81E-04	1.858	5.53E-03	36.63	99.06	90.61	6.14	125.3	319.7
39	24.51	3000	4530	6.542838	0.2447	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.1298	3.96E-04	2.543	1.39E-02	67.64	23.58	0	0	49.9	531.7
40	23.9	3000	2350	135.063355	3.9682	88.1405	5530.94	5125	0.1	1950	487500	887500	0.1331	2.04E-04	1.775	8.60E-03	52.06	96.3	62.98	0	80.6	380.6
41	31.91	3000	4340	107.058863	3.2625	91.4206	5332.5	5125	0.1	1950	487500	937500	0.0997	2.81E-04	2.424	9.68E-03	83.34	95.33	53.3	0	71.6	389.4
42	25.8	3000	3910	196.757469	9.09	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.1233	3.92E-04	2.607	5.43E-03	23.41	97.46	74.59	0	127.6	517.9
43	31.53	3000	1780	148.531295	5.7004	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.1009	1.83E-04	1.915	1.00E-02	31.71	96.63	66.34	0	69.3	311.2
44	22.5	3000	2190	63.085456	2.6152	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1414	1.59E-04	1.569	1.19E-02	87.64	92.07	20.74	0	58.1	357.5
45	31.94	3000	870	314.221676	12.9531	123.6681	3942	5125	0.1	1950	487500	1475000	0.0996	5.65E-05	1.287	1.13E-02	53.8	98.41	84.09	0	61.6	206.5
46	21.97	3000	4720	148.355857	4.4402	89.788	5429.46	5125	0.1	1950	487500	912500	0.1448	3.60E-04	2.256	6.12E-03	53.24	96.63	66.3	0	113.3	526.3
47	24.28	3000	3600	18.415157	0.6888	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.131	3.41E-04	2.315	1.14E-02	39.66	72.85	0	0	60.9	488.5
48	26.73	3000	4610	79.603924	3.0551	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.119	4.43E-04	2.88	7.07E-03	37.04	93.72	37.19	0	98	552.1
49	42.25	3000	4460	191.424001	8.4173	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.0753	4.95E-04	4.325	5.65E-03	33.38	97.39	73.88	0	122.6	524.6
50	40.89	3000	3420	180.202165	9.1003	151.5013	3217.79	5125	0.1	1950	487500	2000000	0.0778	2.90E-04	2.883	8.46E-03	54.87	97.23	72.25	0	81.9	361.3
51	33.99	3000	3200	109.497632	6.9202	189.5986	2571.22	5125	0.1	1950	487500	2800000	0.0936	5.16E-04	3.784	6.84E-03	74.18	95.43	54.34	0	101.3	570.6
52	47.2	3000	3880	292.668942	12.8032	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0674	2.64E-04	2.98	7.67E-03	49.18	98.29	82.92	0	90.3	323.5
53	55.14	3000	1850	126.321225	4.9993	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0577	1.30E-04	2.141	1.75E-02	73.54	96.04	60.42	0	39.7	199
54	22.22	3000	2070	140.636971	5.9601	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.1432	2.26E-04	1.797	7.61E-03	28.5	96.44	64.45	0	91.1	414.5
55	25.72	3000	3870	69.163858	2.4501	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.1237	3.42E-04	2.397	8.43E-03	38.94	92.77	27.71	0	82.2	477.7
56	48.57	3000	3720	39.183717	1.987	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.0655	4.11E-04	4.175	1.11E-02	35.94	87.24	0	0	62.5	440.5
57	45.58	3000	2870	735.415021	43.2393	176.3872	2763.81	5125	0.1	1950	487500	2512500	0.0698	1.97E-04	2.423	5.44E-03	81.1	99.32	93.2	32.01	127.5	272.5
58	30.04	3000	5860	94.481685	2.9302	93.0387	5239.76	5125	0.1	1950	487500	962500	0.1059	6.38E-04	4.045	5.87E-03	62.83	94.71	47.08	0	118.1	690.1
59	23.24	3000	3430	167.028584	8.3998	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.1369	3.10E-04	2.144	6.61E-03	68.12	97.01	70.07	0	104.8	472.8
60	33.56	3000	2890	123.975717	7.2165	174.6277	2791.65	5125	0.1	1950	487500	2475000	0.0948	2.11E-04	2.125	1.10E-02	88.57	95.97	59.67	0	63.2	324.5
61	27.69	3000	3740	4.593559	0.1179	77.0232	6329.26	5125	0.1	1950	487500	725000	0.1149	3.27E-04	2.441	1.72E-02	65.36	0	0	0	40.2	451.8
62	45.71	3000	5180	41.353101	1.809	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0696	6.82E-04	5.954	7.46E-03	33.26	87.91	0	0	92.9	667.6
63	63	3000	1650	550.490349	23.5815	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.0505	1.46E-04	2.457	8.69E-03	30.09	99.09	90.92	9.17	79.8	199.9

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
64	21.52	3000	2130	32.473706	2.4547	226.7679	2149.78	5125	0.1	1950	487500	3662500	0.1478	1.97E-04	1.673	1.23E-02	52.78	84.6	0	0	56.6	398.3
65	24.66	3000	4670	127.550171	4.7086	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.129	3.99E-04	2.562	6.42E-03	52.21	96.08	60.8	0	108	532.4
66	46.17	3000	830	270.005206	14.6398	162.6609	2997.03	5125	0.1	1950	487500	2225000	0.0689	5.52E-05	1.405	1.62E-02	72.97	98.15	81.48	0	42.8	156
67	49.79	3000	3770	232.270421	7.8143	100.929	4830.13	5125	0.1	1950	487500	1087500	0.0639	2.99E-04	3.368	7.65E-03	21.89	97.85	78.47	0	90.6	346.7
68	26.34	3000	3480	16.932378	1.1667	206.7108	2358.37	5125	0.1	1950	487500	3187500	0.1208	6.97E-04	3.918	8.11E-03	50.27	70.47	0	0	85.5	762.5
69	41	3000	2150	102.490738	4.6898	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.0776	1.65E-04	2.075	1.42E-02	64.47	95.12	51.22	0	48.9	259.5
70	56.81	3000	4360	4.692344	0.2074	132.592	3676.69	5125	0.1	1950	487500	1637500	0.056	7.09E-04	7.404	1.71E-02	82.08	0	0	0	40.6	667.9
71	25.31	3000	4010	0.758277	0.0337	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1257	4.88E-04	2.961	1.68E-02	45.79	0	0	0	41.2	599.6
72	27.21	3000	5330	14.329763	0.5112	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.1169	6.88E-04	3.975	8.47E-03	44.95	65.11	0	0	81.8	748.6
73	29.32	3000	3500	35.062035	1.0107	86.4774	5637.31	5125	0.1	1950	487500	862500	0.1085	3.61E-04	2.682	9.99E-03	22.54	85.74	0	0	69.4	468.9
74	46.04	3000	1520	393.79069	19.2181	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.0691	1.44E-04	2.054	9.13E-03	34.26	98.73	87.3	0	75.9	228.6
75	33.49	3000	650	450.832377	13.3696	88.9661	5479.61	5125	0.1	1950	487500	900000	0.095	5.29E-05	1.282	9.81E-03	32.53	98.89	88.91	0	70.6	196.1
76	23.85	3000	3890	111.420926	5.172	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1334	4.34E-04	2.644	6.26E-03	46.73	95.51	55.13	0	110.8	568.2
77	43.94	3000	2490	286.238735	13.9079	145.7654	3344.42	5125	0.1	1950	487500	1887500	0.0724	2.14E-04	2.493	8.38E-03	32.24	98.25	82.53	0	82.7	290.7
78	22.28	3000	2510	236.326511	8.1926	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1428	2.54E-04	1.899	6.00E-03	33.34	97.88	78.84	0	115.5	436.9
79	25.57	3000	4620	0.568831	0.0173	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1244	5.00E-04	3.031	1.56E-02	20.24	0	0	0	44.6	607.5
80	21.39	3000	5030	126.875199	4.4945	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.1487	6.02E-04	3.048	5.09E-03	93.26	96.06	60.59	0	136.1	730.2
81	54.2	3000	4260	129.550689	5.3102	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0587	3.50E-04	4.014	9.35E-03	52.36	96.14	61.41	0	74.2	379.6
82	43.28	3000	1330	1087.902467	40.4284	111.4852	4372.78	5125	0.1	1950	487500	1262500	0.0735	1.23E-04	1.843	4.71E-03	36.87	99.54	95.4	54.04	147.1	218.2
83	23.12	3000	3270	105.824665	6.222	176.3872	2763.81	5125	0.1	1950	487500	2512500	0.1376	4.14E-04	2.521	6.18E-03	19.94	95.28	52.75	0	112.1	558.8
84	22.33	3000	2630	22.784665	1.0476	137.9366	3534.23	5125	0.1	1950	487500	1737500	0.1425	2.85E-04	2.01	1.12E-02	31.85	78.06	0	0	61.8	461.3
85	32.17	3000	1630	84.409913	3.9367	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.0989	1.77E-04	1.902	1.22E-02	29.19	94.08	40.77	0	56.6	303.1
86	21.77	3000	3560	79.60256	3.8678	145.7654	3344.42	5125	0.1	1950	487500	1887500	0.1461	3.16E-04	2.094	7.88E-03	47.6	93.72	37.19	0	87.9	492.9
87	34.88	3000	2980	12.357747	0.7023	170.4873	2859.45	5125	0.1	1950	487500	2387500	0.0912	2.89E-04	2.601	1.83E-02	99.18	59.54	0	0	37.8	382.2
88	21.72	3000	4490	0.658439	0.0261	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.1465	4.98E-04	2.719	1.47E-02	26.72	0	0	0	47.2	641.7
89	35.11	3000	3530	55.16802	2.8667	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0906	4.18E-04	3.332	9.30E-03	50.87	90.94	9.37	0	74.5	486.3
90	27.31	3000	2530	242.72278	6.8608	84.7981	5748.95	5125	0.1	1950	487500	837500	0.1165	2.06E-04	1.892	7.44E-03	54.23	97.94	79.4	0	93.2	355.1
91	41.97	3000	3840	14.372259	0.6608	137.9366	3534.23	5125	0.1	1950	487500	1737500	0.0758	3.57E-04	3.381	1.45E-02	33.87	65.21	0	0	47.9	412.8
92	33.28	3000	5090	90.911757	3.0351	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.0956	3.71E-04	2.961	8.41E-03	47.7	94.5	45	0	82.5	456
93	58.37	3000	2110	262.139989	10.4366	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.0545	1.77E-04	2.644	1.09E-02	31.4	98.09	80.93	0	63.5	232.1
94	22.02	3000	3620	172.258973	6.611	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.1445	2.79E-04	1.975	6.62E-03	59.75	97.1	70.97	0	104.6	459.8
95	31.31	3000	1730	63.408631	1.9151	90.6061	5380.43	5125	0.1	1950	487500	925000	0.1016	1.45E-04	1.721	1.48E-02	62.93	92.11	21.15	0	46.8	281.6
96	42.82	3000	710	355.247009	14.7269	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.0743	3.66E-05	1.249	1.48E-02	75.81	98.59	85.93	0	46.7	149.5
97	47.98	3000	4240	35.867159	1.9374	162.0511	3008.31	5125	0.1	1950	487500	2212500	0.0663	5.65E-04	5.307	8.74E-03	26.21	86.06	0	0	79.3	566.8
98	38.89	3000	5530	107.089726	3.3499	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0818	4.70E-04	3.908	7.64E-03	71.09	95.33	53.31	0	90.7	514.9
99	62.75	3000	5100	73.773436	2.5575	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.0507	4.04E-04	5.028	1.05E-02	44.5	93.22	32.22	0	66.1	410.7
100	63.25	3000	4870	43.406288	1.7178	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0503	4.85E-04	5.874	1.04E-02	35.04	88.48	0	0	66.6	476
101	24.16	3000	5220	168.440464	5.8819	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.1317	6.11E-04	3.344	4.60E-03	70.34	97.03	70.32	0	150.8	709.4
102	25.95	3000	1250	483.060162	22.4231	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1226	1.02E-04	1.422	6.65E-03	45.37	98.96	89.65	0	104.2	280.9
103	43.4	3000	4270	54.817261	2.3732	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0733	5.06E-04	4.489	9.26E-03	64.56	90.88	8.79	0	74.9	530.1
104	31.34	3000	4840	64.345794	2.8294	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.1015	6.95E-04	4.461	5.99E-03	41.38	92.23	22.29	0	115.7	729.4
105	23.6	3000	1230	94.719535	4.8628	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.1348	1.56E-04	1.585	1.03E-02	19.01	94.72	47.21	0	67.7	344.1
106	55.04	3000	1950	179.821317	7.0738	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.0578	1.74E-04	2.523	1.25E-02	29.67	97.22	72.19	0	55.6	234.9
107	29.62	3000	2780	14.623199	0.9131	187.3347	2602.29	5125	0.1	1950	487500	2750000	0.1074	3.02E-04	2.421	1.49E-02	69.95	65.81	0	0	46.4	418.9
108	26.42	3000	3070	113.968205	6.9431	182.7653	2667.36	5125	0.1	1950	487500	2650000	0.1204	3.63E-04	2.522	6.93E-03	22.75	95.61	56.13	0	100	489.2
109	21.8	3000	3930	7.440952	0.3272	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.1459	3.86E-04	2.339	1.25E-02	51.43	32.8	0	0	55.7	549.7
110	47.41	3000	4140	16.809239	0.7124	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0671	4.51E-04	4.398	1.46E-02	77.02	70.25	0	0	47.3	475.4
111	29.13	3000	5420	1.224487	0.0396	97.024	5024.53	5125	0.1	1950	487500	1025000	0.1092	5.44E-04	3.516	1.53E-02	39.76	0	0	0	45.3	618.6
112	28	3000	1890	351.600966	12.893	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.1136	1.68E-04	1.749	6.91E-03	43.41	98.58	85.78	0	100.3	320.1
113	30.74	3000	3990	12.196428	0.539	132.592	3676.69	5125	0.1	1950	487500	1637500	0.1035	4.15E-04	3.026	1.26E-02	47.36	59	0	0	55	504.5
114	35.47	3000	3460	630.244565	31.6949	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.0897	2.91E-04	2.642	4.24E-03	47.3	99.21	92.07	20.67	163.4	381.8
115	45.97	3000	1430	74.356792	2.7266	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.0692	1.85E-04	2.352	1.44E-02	14.12	93.28	32.76	0	48	262.2
116	47.77	3000	4170	296.847542	13.053	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.0666	4.12E-04	4.13	5.71E-03	50.5	98.32	83.16	0	121.4	443.1
117	31.16	3000	2780	583.540206	18.4093	94.6429	5150.94	5125	0.1	1950	487500	987500	0.1021	2.34E-04	2.16	4.73E-03	38.77	99.14	91.43	14.32	146.5	355.2
118	26.8	3000	1230	87.842283	4.8693	166.2959	2931.52	5125	0.1	1950	487500	2300000	0.1187	1.52E-04	1.645	1.15E-02	21.28	94.31	43.08	0	60.3	314.6
119	22.18	3000	3600	241.942619	12.7221	157.7499	3090.33	5125	0.1	1950	487500	2125000	0.1434	4.58E-04	2.616	4.40E-03	44.21	97.93	79.33	0	157.4	604.3
120	30.47	3000	3460	216.740308	10.8541	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.1044	2.99E-04	2.447	6.78E-03	49.77	97.69	76.93	0	102.2	411.6
121	43.58	3000	4790	31.088468	1.1246	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.073	3.91E-04	3.711	1.19E-02	42.27	83.92	0	0	58.1	436.4
122	22.89	3000	3020	87.804172	3.5785	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.139	2.35E-04	1.854	9.25E-03	68.23	94.31	43.06	0	75	415.2
123	49.86	3000	3460	126.325043	6.3262	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.0638	2.83E-04	3.239	9.97E-03	23.78	96.04	60.42	0	69.5	332.9
124	26.78	3000	4190	14.573091	0.6668	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1188	5.71E-04	3.432	9.32E-03	41.73	65.69	0	0	74.4	656.8
125	60.37	3000	4670	142.10919	5.2461	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0527	3.63E-04	4.484	9.58E-03	73.56	96.48	64.82	0	72.3	380.7
126	23.88	3000	1150	122.606895	3.3263	81.3886	5989.78	5125	0.1	1950	487500	787500	0.1332	7.78E-05	1.295	1.21E-02	58.57	95.92	59.22	0	57.5	277.9

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
127	53.74	3000	4220	53.014972	1.8647	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0592	2.46E-04	3.104	1.65E-02	86.02	90.57	5.69	0	42	296.1
128	62.62	3000	3100	785.012755	29.7473	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.0508	2.17E-04	3.162	5.30E-03	28.81	99.36	93.63	36.31	130.7	258.8
129	28.84	3000	1390	379.551173	10.7284	84.7981	5748.95	5125	0.1	1950	487500	837500	0.1103	1.02E-04	1.465	8.23E-03	61.96	98.68	86.83	0	84.2	260.4
130	23.76	3000	940	78.099195	3.5043	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.1339	6.83E-05	1.258	1.39E-02	41.03	93.6	35.98	0	49.7	271.3
131	25.51	3000	1750	44.283814	2.5951	175.8017	2773.01	5125	0.1	1950	487500	2500000	0.1247	1.72E-04	1.698	1.31E-02	41.95	88.71	0	0	53	341
132	47.27	3000	4520	4.245399	0.175	123.6681	3942	5125	0.1	1950	487500	1475000	0.0673	5.08E-04	4.812	1.55E-02	37.09	0	0	0	44.9	521.7
133	38.38	3000	3640	98.499568	5.0568	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.0829	4.66E-04	3.842	7.86E-03	70.23	94.92	49.24	0	88.2	513
134	23.94	3000	4320	11.601842	0.657	169.8917	2869.47	5125	0.1	1950	487500	2375000	0.1329	7.95E-04	4.025	7.43E-03	35.24	56.9	0	0	93.3	861.7
135	34.5	3000	3890	986.344518	42.7018	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0922	2.47E-04	2.352	3.30E-03	74.31	99.49	94.93	49.31	209.8	349.4
136	27.14	3000	2090	79.24651	2.5211	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.1172	2.44E-04	2.053	9.68E-03	22.44	93.69	36.91	0	71.6	387.7
137	61.3	3000	4010	743.983164	31.7	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0519	2.54E-04	3.476	4.97E-03	37.88	99.33	93.28	32.79	139.5	290.6
138	45.51	3000	4280	252.978554	9.7699	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.0699	2.33E-04	2.682	9.09E-03	84.52	98.02	80.24	0	76.3	302
139	23.72	3000	3360	181.995676	9.5324	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.1341	3.22E-04	2.213	6.09E-03	31.74	97.25	72.53	0	113.9	478
140	22.28	3000	2400	211.192568	10.1707	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.1428	2.46E-04	1.869	6.37E-03	33.22	97.63	76.32	0	108.8	430
141	25.64	3000	2350	347.320814	14.7988	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.1241	2.16E-04	1.878	5.92E-03	39.15	98.56	85.6	0	117.1	375.5
142	29.93	3000	3460	118.143484	6.3336	160.8281	3031.19	5125	0.1	1950	487500	2187500	0.1063	4.40E-04	3.091	6.85E-03	61.91	95.77	57.68	0	101.2	529.2
143	22.06	3000	4380	192.640273	7.8512	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.1442	4.69E-04	2.646	4.84E-03	58.49	97.4	74.04	0	143.3	614.6
144	42.19	3000	4110	0.74523	0.0362	145.7654	3344.42	5125	0.1	1950	487500	1887500	0.0754	5.62E-04	4.771	1.78E-02	31.3	0	0	0	39	579.5
145	44.31	3000	5450	2.388547	0.0797	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.0718	5.75E-04	5.047	1.56E-02	39.43	0	0	0	44.4	583.8
146	39.82	3000	5260	19.024625	0.6103	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.0799	4.06E-04	3.571	1.38E-02	71.64	73.72	0	0	50.3	459.6
147	33.45	3000	3390	6.157794	0.3364	163.877	2974.79	5125	0.1	1950	487500	2250000	0.0951	3.84E-04	3.043	1.44E-02	22.51	18.8	0	0	48.2	466.2
148	43.52	3000	3530	202.222265	9.7387	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.0731	2.61E-04	2.808	8.86E-03	58.11	97.53	75.27	0	78.3	330.7
149	21.89	3000	5360	321.362059	10.3086	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.1453	4.67E-04	2.625	3.97E-03	79.41	98.44	84.44	0	174.8	614.5
150	36.78	3000	1490	159.502668	6.1599	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.0865	1.04E-04	1.607	1.41E-02	80.46	96.87	68.65	0	49.3	224
151	39.57	3000	3370	23.25577	0.8925	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0804	2.53E-04	2.588	1.69E-02	67.82	78.5	0	0	41	335.2
152	25.47	3000	4430	10.016973	0.445	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1249	6.22E-04	3.518	9.18E-03	35.62	50.08	0	0	75.5	707.8
153	24.47	3000	1130	156.700185	5.0266	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.13	6.91E-05	1.269	1.16E-02	61.52	96.81	68.09	0	59.7	265.7
154	55.42	3000	5560	79.899551	2.605	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.0574	4.54E-04	4.996	8.70E-03	30.88	93.74	37.42	0	79.6	462
155	56.91	3000	2730	1463.195101	55.8012	114.4096	4261	5125	0.1	1950	487500	1312500	0.0559	1.88E-04	2.696	3.00E-03	37.69	99.66	96.58	65.83	231.1	242.8
156	21.57	3000	5020	10.382068	0.3625	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.1475	5.87E-04	3.01	9.85E-03	73.1	51.84	0	0	70.4	715.3
157	28.05	3000	4510	79.023504	3.1462	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1134	4.61E-04	3.053	7.07E-03	38.86	93.67	36.73	0	98.1	557.7
158	33.88	3000	1090	250.748788	13.0296	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0939	1.22E-04	1.655	1.01E-02	27.32	98.01	80.06	0	68.4	250.4
159	25.09	3000	1380	55.879461	2.739	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1268	1.34E-04	1.534	1.33E-02	41.12	91.05	10.52	0	52	313.3
160	25.23	3000	3920	8.407514	0.3735	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1261	4.13E-04	2.656	1.27E-02	54.92	40.53	0	0	54.5	539.5
161	39.92	3000	3200	22.040496	1.2438	169.2951	2879.59	5125	0.1	1950	487500	2362500	0.0797	3.40E-04	3.154	1.34E-02	33.49	77.31	0	0	51.9	405
162	34.1	3000	1160	591.966297	18.1993	92.2314	5285.62	5125	0.1	1950	487500	950000	0.0933	1.24E-04	1.669	6.56E-03	27.45	99.16	91.55	15.54	105.6	250.9
163	38.15	3000	5260	641.073203	20.3946	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.0834	3.14E-04	2.902	4.27E-03	91.33	99.22	92.2	22.01	162.2	389.9
164	22.66	3000	4550	0.047589	0.0022	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1404	7.79E-04	3.805	1.57E-02	26.86	0	0	0	44.2	860.5
165	28.13	3000	4290	36.069061	1.4953	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1131	4.28E-04	2.913	9.05E-03	34.43	86.14	0	0	76.6	530.7
166	26.01	3000	880	197.809533	8.8314	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.1223	2.83E-05	1.117	1.29E-02	78.7	97.47	74.72	0	53.6	220
167	24.66	3000	1070	55.756415	2.3114	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.129	9.38E-05	1.367	1.46E-02	38.69	91.03	10.32	0	47.5	284.2
168	50.98	3000	3030	431.08649	12.4264	86.4774	5637.31	5125	0.1	1950	487500	862500	0.0624	2.25E-04	2.823	7.09E-03	34.15	98.84	88.4	0	97.8	283.7
169	24.49	3000	4760	80.33162	2.5769	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.1299	3.55E-04	2.38	8.02E-03	61.69	93.78	37.76	0	86.4	498
170	31.85	3000	5460	123.801041	4.1331	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.0999	5.76E-04	3.917	5.74E-03	55.14	95.96	59.61	0	120.8	630.3
171	60.25	3000	4180	119.266874	5.9222	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.0528	4.76E-04	5.552	7.64E-03	34.18	95.81	58.08	0	90.7	472.3
172	24.74	3000	1280	14.694193	0.6691	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1286	1.54E-04	1.604	1.67E-02	26.04	65.97	0	0	41.5	332.4
173	23.51	3000	3560	292.046643	14.8099	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.1353	3.77E-04	2.409	4.62E-03	38.08	98.29	82.88	0	150	525
174	21.64	3000	3200	84.367189	2.116	75.2423	6479.07	5125	0.1	1950	487500	700000	0.147	3.57E-04	2.228	7.01E-03	23.14	94.07	40.74	0	98.9	527.6
175	42.25	3000	6210	32.961821	0.9131	83.1021	5866.28	5125	0.1	1950	487500	812500	0.0753	4.56E-04	4.06	1.05E-02	41.28	84.83	0	0	65.9	492.5
176	25.43	3000	4580	29.893788	1.1617	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.1251	4.53E-04	2.832	8.72E-03	31.18	83.27	0	0	79.5	570.7
177	24.06	3000	3460	243.023217	11.8602	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.1322	2.58E-04	1.986	6.44E-03	86.33	97.94	79.43	0	107.6	422.9
178	29.98	3000	3130	12.531653	0.7562	181.037	2692.82	5125	0.1	1950	487500	2612500	0.1061	4.85E-04	3.312	1.20E-02	67.5	60.1	0	0	57.8	566.2
179	23.12	3000	2570	6.745329	0.2074	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1376	2.67E-04	1.981	1.53E-02	43.98	25.87	0	0	45.2	439.2
180	38.1	3000	2170	176.346099	7.2695	123.6681	3942	5125	0.1	1950	487500	1475000	0.0835	1.77E-04	2.074	1.07E-02	49.24	97.16	71.65	0	64.6	279
181	59.58	3000	5100	140.009905	5.0647	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.0534	5.31E-04	6.026	7.49E-03	74.15	96.43	64.29	0	92.6	518.4
182	22.79	3000	3660	566.910971	17.429	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1396	2.56E-04	1.927	4.00E-03	65.21	99.12	91.18	11.8	173.2	433.4
183	53.11	3000	5680	80.503201	2.4532	91.4206	5332.5	5125	0.1	1950	487500	937500	0.0599	4.04E-04	4.41	9.59E-03	41.02	93.79	37.89	0	72.3	425.5
184	27.4	3000	4030	45.676259	2.0799	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1161	4.97E-04	3.164	8.06E-03	53.97	89.05	0	0	86	591.7
185	27.78	3000	6550	28.820851	0.7484	77.906	6257.54	5125	0.1	1950	487500	737500	0.1145	5.14E-04	3.271	9.02E-03	57.84	82.65	0	0	76.9	603.4
186	27.57	3000	2780	53.348713	2.5807	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.1154	2.64E-04	2.158	1.07E-02	39.34	90.63	6.28	0	64.7	401.2
187	36.07	3000	2550	251.897157	14.0642	167.4988	2910.47	5125	0.1	1950	487500	2325000	0.0882	2.06E-04	2.18	8.39E-03	46.89	98.02	80.15	0	82.6	309.8
188	30.62	3000	5130	0.472524	0.0229	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.1039	8.19E-04	4.985	1.22E-02	19.2	0	0	0	56.8	834.3
189	44.49	3000	3300	51.702324	2.6973	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.0715	2.68E-04	2.894	1.33E-02	39.81	90.33	3.29	0	52.1	333.3

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
190	40.47	3000	1810	960.568682	31.8192	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.0786	1.62E-04	2.04	4.48E-03	36.19	99.48	94.79	47.95	154.6	258.2
191	21.76	3000	2980	64.150633	4.2097	196.8651	2476.32	5125	0.1	1950	487500	2962500	0.1462	4.48E-04	2.547	6.98E-03	46.83	92.21	22.06	0	99.3	600
192	34.58	3000	5680	8.100075	0.289	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.092	6.90E-04	4.794	9.50E-03	25.42	38.27	0	0	73	710.5
193	35.39	3000	1050	213.496748	10.8266	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.0899	9.50E-05	1.534	1.23E-02	42.8	97.66	76.58	0	56.4	222.2
194	21.63	3000	2550	13.481861	0.695	154.6414	3152.45	5125	0.1	1950	487500	2062500	0.1471	2.32E-04	1.796	1.43E-02	65.09	62.91	0	0	48.6	425.6
195	23.44	3000	1100	330.029861	12.9827	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.1357	7.13E-05	1.266	8.20E-03	50.11	98.48	84.85	0	84.6	276.7
196	29.19	3000	1420	35.114395	1.6986	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.109	1.69E-04	1.785	1.48E-02	25.94	85.76	0	0	47	313.4
197	28.23	3000	2860	15.158705	0.6631	131.239	3714.6	5125	0.1	1950	487500	1612500	0.1127	3.38E-04	2.516	1.21E-02	18.66	67.02	0	0	57.1	456.8
198	55.81	3000	5290	5.188984	0.1759	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.057	4.57E-04	5.052	1.62E-02	29.39	3.64	0	0	42.7	463.9
199	33.81	3000	3100	81.59823	4.5559	167.4988	2910.47	5125	0.1	1950	487500	2325000	0.0941	2.70E-04	2.448	1.04E-02	40.07	93.87	38.72	0	66.8	371.2
200	48.94	3000	2560	273.362682	12.6291	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.065	1.76E-04	2.372	1.03E-02	57.92	98.17	81.71	0	67.5	248.3
201	26.96	3000	1890	308.652439	15.7167	152.7612	3191.25	5125	0.1	1950	487500	2025000	0.118	1.55E-04	1.663	7.48E-03	52.69	98.38	83.8	0	92.7	316.1
202	44.37	3000	4720	5.73418	0.2521	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.0717	6.17E-04	5.351	1.22E-02	31.54	12.8	0	0	56.7	618.1
203	24.05	3000	3970	79.150082	3.6218	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1323	4.27E-04	2.633	6.81E-03	27.58	93.68	36.83	0	101.8	561.1
204	39.08	3000	4420	58.575559	2.2762	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0814	3.86E-04	3.396	1.04E-02	68.97	91.46	14.64	0	66.5	445.3
205	56.31	3000	1710	780.12345	32.5212	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0565	1.41E-04	2.261	6.69E-03	37.96	99.36	93.59	35.91	103.6	205.8
206	49.55	3000	3220	483.522358	21.0429	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.0642	2.77E-04	3.184	5.67E-03	19.51	98.97	89.66	0	122.3	329.3
207	24.14	3000	3750	4.993765	0.2285	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1318	3.56E-04	2.365	1.45E-02	46.99	0	0	0	47.8	502.1
208	32.01	3000	4390	12.553616	0.4878	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0994	3.73E-04	2.898	1.39E-02	56.77	60.17	0	0	50	464
209	27.12	3000	1330	436.189728	17.7772	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.1173	1.09E-04	1.47	7.13E-03	47.97	98.85	88.54	0	97.3	277.8
210	52.24	3000	670	872.81002	26.3606	90.6061	5380.43	5125	0.1	1950	487500	925000	0.0609	9.72E-05	1.807	7.00E-03	12.18	99.43	94.27	42.71	99	177.3
211	58.05	3000	5070	772.285545	26.1807	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.0548	3.22E-04	3.974	4.06E-03	47.9	99.35	93.53	35.26	170.6	350.8
212	36.48	3000	3330	219.468797	9.5513	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.0872	2.24E-04	2.296	8.76E-03	68.28	97.72	77.22	0	79.2	322.5
213	29.03	3000	4030	51.745645	2.3678	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1096	4.86E-04	3.241	7.98E-03	48.67	90.34	3.37	0	86.8	572.2
214	26.53	3000	3460	7.636053	0.3792	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.1199	3.41E-04	2.437	1.50E-02	63.29	34.52	0	0	46.3	470.8
215	39.18	3000	3590	104.709236	3.9424	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0812	3.53E-04	3.195	8.29E-03	15.83	95.22	52.25	0	83.6	417.9
216	27.5	3000	1480	248.06424	10.9638	132.592	3676.69	5125	0.1	1950	487500	1637500	0.1157	1.40E-04	1.612	8.56E-03	39.98	97.98	79.84	0	81	300.5
217	41.86	3000	930	496.268951	29.8521	180.459	2701.44	5125	0.1	1950	487500	2600000	0.076	1.04E-04	1.694	8.81E-03	25.89	98.99	89.92	0	78.7	207.4
218	23.97	3000	1330	181.319361	7.8086	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.1327	1.33E-04	1.507	8.94E-03	31.91	97.24	72.42	0	77.5	322.2
219	32.73	3000	4800	5.476718	0.2022	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0972	5.38E-04	3.798	1.34E-02	56.08	8.7	0	0	51.8	594.8
220	24.1	3000	4050	8.782059	0.3	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.132	3.34E-04	2.28	1.49E-02	90.82	43.07	0	0	46.6	484.8
221	27.54	3000	4860	14.554416	0.5551	114.4096	4261	5125	0.1	1950	487500	1312500	0.1155	7.04E-04	4.082	9.32E-03	77.28	65.65	0	0	74.4	759.4
222	50.58	3000	3610	180.617514	9.3479	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.0629	4.25E-04	4.413	7.38E-03	72.24	97.23	72.32	0	93.9	447.1
223	22.26	3000	4610	28.587522	1.0902	114.4096	4261	5125	0.1	1950	487500	1312500	0.1429	4.46E-04	2.578	8.45E-03	33.03	82.51	0	0	82.1	593.5
224	42.42	3000	860	361.906406	12.3615	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.075	1.26E-04	1.851	9.54E-03	11.89	98.62	86.18	0	72.6	223.6
225	30.24	3000	3830	8.599633	0.4104	143.1797	3404.81	5125	0.1	1950	487500	1837500	0.1052	4.81E-04	3.312	1.24E-02	48.73	41.86	0	0	56.1	561.2
226	26.16	3000	4380	20.426464	1.0358	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.1216	7.14E-04	3.969	7.31E-03	36.01	75.52	0	0	94.8	777.4
227	27.24	3000	2480	36.710461	1.3911	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1168	2.62E-04	2.133	1.16E-02	29.89	86.38	0	0	59.9	401.3
228	21.97	3000	3030	4.017251	0.202	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.1448	3.43E-04	2.198	1.40E-02	30.72	0	0	0	49.4	512.6
229	37.43	3000	3840	133.675967	5.998	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.085	3.35E-04	2.99	8.49E-03	64.65	96.26	62.6	0	81.6	409.4
230	43.11	3000	3370	194.978992	10.2124	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.0738	3.04E-04	3.08	7.93E-03	38.12	97.44	74.36	0	87.4	366.2
231	56.21	3000	4990	39.381527	1.7933	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.0566	6.42E-04	6.73	8.48E-03	36.22	87.3	0	0	81.8	613.7
232	24.57	3000	1630	201.611027	6.0341	89.788	5429.46	5125	0.1	1950	487500	912500	0.1295	1.14E-04	1.446	9.43E-03	70.8	97.52	75.2	0	73.5	301.7
233	46.99	3000	4400	966.236634	37.5475	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0677	2.83E-04	3.116	3.41E-03	34.97	99.48	94.83	48.25	203	339.8
234	24.28	3000	1130	163.381206	5.7877	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.131	1.07E-04	1.414	1.00E-02	32.42	96.94	69.4	0	69.2	298.3
235	28.43	3000	4890	38.975792	1.6158	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1119	7.27E-04	4.286	6.72E-03	53.87	87.17	0	0	103.1	772.5
236	37.69	3000	3220	63.681824	2.0929	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0844	2.18E-04	2.307	1.42E-02	89.31	92.15	21.48	0	48.9	313.7
237	33.74	3000	5170	6.127968	0.2014	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0943	4.21E-04	3.256	1.50E-02	50.14	18.41	0	0	46.2	494.6
238	29.65	3000	5250	24.342462	0.8127	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.1073	4.56E-04	3.15	9.57E-03	27.89	79.46	0	0	72.4	544.5
239	30.27	3000	3650	13.674881	0.8173	179.3004	2718.9	5125	0.1	1950	487500	2575000	0.1051	6.93E-04	4.331	9.41E-03	62.09	63.44	0	0	73.6	733.3
240	35.75	3000	4010	266.660746	12.0244	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.089	3.80E-04	3.158	5.56E-03	26.35	98.12	81.25	0	124.8	452.7
241	46.31	3000	4670	1.339095	0.052	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0687	5.77E-04	5.248	1.91E-02	55.79	0	0	0	36.2	580.8
242	54.66	3000	6860	69.662096	1.7263	74.3438	6557.37	5125	0.1	1950	487500	687500	0.0582	4.78E-04	5.153	1.00E-02	75.61	92.82	28.22	0	69.2	483.1
243	27.83	3000	5260	9.989592	0.3257	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.1143	4.65E-04	3.055	1.20E-02	52.74	49.95	0	0	58	562.6
244	39.92	3000	1880	103.324358	4.0892	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0797	2.05E-04	2.303	1.18E-02	23.5	95.16	51.61	0	58.8	295.7
245	59.02	3000	4920	1142.311991	38.4308	100.929	4830.13	5125	0.1	1950	487500	1087500	0.0539	2.15E-04	3.016	3.87E-03	87.95	99.56	95.62	56.23	179	261.8
246	58.27	3000	4650	220.267746	8.9255	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0546	5.39E-04	5.989	6.27E-03	88.07	97.73	77.3	0	110.5	526.7
247	23.69	3000	2570	55.592859	4.1061	221.5784	2200.12	5125	0.1	1950	487500	3537500	0.1343	3.89E-04	2.462	8.43E-03	65.51	91.01	10.06	0	82.3	532.7
248	53.29	3000	3940	151.889343	4.5043	88.9661	5479.61	5125	0.1	1950	487500	900000	0.0597	2.22E-04	2.876	1.22E-02	75.68	96.71	67.08	0	57	276.6
249	60.48	3000	4480	406.486098	15.4034	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.0526	2.95E-04	3.839	6.81E-03	72.69	98.77	87.7	0	101.7	325.3
250	32.1	3000	3830	7.759341	0.2322	89.788	5429.46	5125	0.1	1950	487500	912500	0.0991	3.13E-04	2.597	1.74E-02	69.53	35.56	0	0	39.9	414.6
251	30.13	3000	1750	1098.65332	51.4794	140.5704	3468.01	5125	0.1	1950	487500	1787500	0.1056	1.61E-04	1.773	3.37E-03	37.16	99.54	95.45	54.49	205.4	301.6
252	29.4	3000	3840	7.087054	0.3871	163.877	2974.79	5125	0.1	1950	487500	2250000	0.1082	6.31E-04	3.949	1.05E-02	42.62	29.45	0	0	65.8	688.3

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
253	45.84	3000	5760	41.039396	1.1251	82.2476	5927.23	5125	0.1	1950	487500	800000	0.0694	3.45E-04	3.515	1.27E-02	53.99	87.82	0	0	54.8	393
254	23.34	3000	1960	134.120061	4.6495	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1363	1.51E-04	1.559	9.65E-03	67.04	96.27	62.72	0	71.8	342.4
255	51.9	3000	4520	548.955691	20.5346	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0613	2.86E-04	3.359	5.50E-03	65.89	99.09	90.89	8.92	126.1	331.7
256	51.06	3000	1270	930.342768	22.4927	72.5304	6721.32	5125	0.1	1950	487500	662500	0.0623	9.06E-05	1.735	6.89E-03	63.56	99.46	94.63	46.26	100.6	174.2
257	36.69	3000	1100	1078.692095	48.1593	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.0867	7.97E-05	1.465	5.08E-03	55.95	99.54	95.36	53.65	136.4	204.6
258	24.12	3000	1010	93.225149	3.015	97.024	5024.53	5125	0.1	1950	487500	1025000	0.1319	1.17E-04	1.447	1.15E-02	20.96	94.64	46.37	0	60.2	307.5
259	54.76	3000	4440	11.121564	0.4401	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0581	4.10E-04	4.564	1.64E-02	50.34	55.04	0	0	42.3	427.2
260	31.04	3000	2670	8.214341	0.533	194.6437	2504.58	5125	0.1	1950	487500	2912500	0.1025	2.65E-04	2.307	1.75E-02	49.61	39.13	0	0	39.5	381
261	42.76	3000	1830	42.947434	2.4915	174.0393	2801.09	5125	0.1	1950	487500	2462500	0.0744	1.58E-04	2.071	1.87E-02	53	88.36	0	0	37.1	248.2
262	28.05	3000	860	126.798309	5.5756	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.1134	7.40E-05	1.33	1.34E-02	34.91	96.06	60.57	0	51.7	242.9
263	22.95	3000	2150	168.758695	6.8779	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.1386	1.91E-04	1.695	7.94E-03	47.16	97.04	70.37	0	87.3	378.5
264	46.99	3000	5230	17.490023	0.7452	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0677	6.45E-04	5.818	9.24E-03	23.95	71.41	0	0	75	634.5
265	37.04	3000	2410	415.503657	20.0995	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.0859	1.67E-04	1.985	7.57E-03	66.88	98.8	87.97	0	91.6	274.7
266	22.06	3000	4090	4.083945	0.1931	141.878	3436.05	5125	0.1	1950	487500	1812500	0.1442	6.34E-04	3.223	1.06E-02	47.86	0	0	0	65.6	748.7
267	23.15	3000	1520	53.742142	2.2528	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1374	1.76E-04	1.647	1.14E-02	27.37	90.7	6.96	0	60.7	364.5
268	45.32	3000	6970	18.080169	0.4535	75.2423	6479.07	5125	0.1	1950	487500	700000	0.0702	5.36E-04	4.857	1.10E-02	36.59	72.35	0	0	63.3	549.3
269	29.9	3000	3660	75.094567	3.9642	158.3679	3078.28	5125	0.1	1950	487500	2137500	0.1064	5.51E-04	3.619	7.10E-03	74.71	93.34	33.42	0	97.6	620.4
270	55.33	3000	6660	6.566208	0.231	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0575	8.02E-04	8.05	1.03E-02	26.45	23.85	0	0	67.4	745.7
271	23.55	3000	2870	57.411456	2.6776	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.1351	2.49E-04	1.933	1.02E-02	56.85	91.29	12.91	0	67.9	420.7
272	48.13	3000	2510	693.308498	25.9343	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0661	1.50E-04	2.143	6.71E-03	75.14	99.28	92.79	27.88	103.2	228.2
273	27.03	3000	3440	46.358598	1.9859	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.1177	2.73E-04	2.173	1.13E-02	65.03	89.21	0	0	61.4	412.1
274	38.94	3000	4280	5.401743	0.2983	165.6929	2942.19	5125	0.1	1950	487500	2287500	0.0817	6.64E-04	5.106	1.11E-02	28.19	7.44	0	0	62.7	672.1
275	34.21	3000	4210	322.260315	11.5772	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.093	2.66E-04	2.444	6.52E-03	65.83	98.45	84.48	0	106.3	366.2
276	29.9	3000	5180	127.540929	5.0172	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.1064	6.49E-04	4.083	4.86E-03	30.7	96.08	60.8	0	142.6	699.8
277	23.51	3000	4400	240.685627	9.2951	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.1353	3.37E-04	2.261	5.42E-03	52.57	97.92	79.23	0	127.9	492.7
278	48.79	3000	2970	56.888724	2.7028	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.0652	2.45E-04	2.898	1.40E-02	32.64	91.21	12.11	0	49.6	304.4
279	50.74	3000	4020	88.197454	3.8981	132.592	3676.69	5125	0.1	1950	487500	1637500	0.0627	3.61E-04	3.908	9.94E-03	41.84	94.33	43.31	0	69.7	394.7
280	43.05	3000	1930	495.608658	21.4564	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0739	1.42E-04	1.973	7.97E-03	58.04	98.99	89.91	0	86.9	234.9
281	41.21	3000	4020	18.487294	0.9022	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.0772	4.46E-04	3.924	1.10E-02	14.68	72.95	0	0	62.9	488
282	23.07	3000	1770	971.346034	46.359	143.1797	3404.81	5125	0.1	1950	487500	1837500	0.1379	1.21E-04	1.443	3.59E-03	62.94	99.49	94.85	48.53	193.1	320.5
283	43.94	3000	3690	19.021123	0.8871	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.0724	3.04E-04	3.122	1.57E-02	42.05	73.71	0	0	44.1	364.1
284	25.97	3000	3940	19.211832	0.4989	77.906	6257.54	5125	0.1	1950	487500	737500	0.1225	3.37E-04	2.39	1.21E-02	53.71	73.97	0	0	57.5	471.7
285	24.43	3000	4080	5.338965	0.2188	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.1302	3.79E-04	2.471	1.40E-02	49	6.35	0	0	49.4	518.3
286	39.28	3000	4420	21.561983	0.9038	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.081	4.34E-04	3.705	1.08E-02	16.77	76.81	0	0	64.1	483.5
287	23.71	3000	5140	30.333647	1.0897	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.1342	5.97E-04	3.25	7.27E-03	38.38	83.52	0	0	95.3	702.6
288	32.43	3000	1200	693.169955	31.4109	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.0981	1.02E-04	1.527	6.19E-03	43.48	99.28	92.79	27.87	112	241.3
289	34.06	3000	5000	3.936271	0.1453	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0934	5.31E-04	3.872	1.29E-02	25.85	0	0	0	53.9	582.6
290	46.65	3000	1270	393.605756	13.5448	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.0682	1.09E-04	1.806	1.06E-02	46.8	98.73	87.3	0	65.5	198.5
291	46.78	3000	850	1387.248064	38.8209	83.9523	5806.87	5125	0.1	1950	487500	825000	0.068	5.94E-05	1.442	4.94E-03	54.98	99.64	96.4	63.96	140.3	157.9
292	31.1	3000	5580	12.754912	0.399	93.8425	5194.88	5125	0.1	1950	487500	975000	0.1023	4.80E-04	3.372	1.10E-02	31.78	60.8	0	0	63.3	555.7
293	26.71	3000	4340	52.319956	2.0706	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.1191	3.87E-04	2.643	8.97E-03	58.98	90.44	4.43	0	77.3	507.1
294	26.76	3000	4310	339.843771	14.0883	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1189	4.05E-04	2.723	4.30E-03	25.27	98.53	85.29	0	161.3	521.6
295	25.95	3000	1880	175.246611	5.2928	90.6061	5380.43	5125	0.1	1950	487500	925000	0.1226	1.71E-04	1.706	8.79E-03	44.36	97.15	71.47	0	78.9	336.9
296	34.02	3000	2080	473.007673	22.7793	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.0935	1.55E-04	1.838	6.94E-03	60.77	98.94	89.43	0	99.9	276.9
297	21.47	3000	1830	52.380544	3.379	193.5283	2519.01	5125	0.1	1950	487500	2887500	0.1482	1.47E-04	1.501	1.22E-02	65.62	90.45	4.54	0	57	358.5
298	35.71	3000	3400	48.466566	2.5185	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0891	3.49E-04	2.982	1.09E-02	54.43	89.68	0	0	63.6	428.1
299	22.23	3000	4200	296.403933	12.4248	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1431	4.03E-04	2.424	4.36E-03	48.04	98.31	83.13	0	159	558.8
300	39.37	3000	4110	10.674725	0.4621	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0808	4.79E-04	3.998	1.40E-02	66.64	53.16	0	0	49.5	520.5
301	23.29	3000	790	19.163524	0.8383	131.239	3714.6	5125	0.1	1950	487500	1612500	0.1366	8.09E-05	1.299	1.81E-02	20.41	73.91	0	0	38.2	285.9
302	41.37	3000	3990	16.362823	0.7774	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.0769	4.44E-04	3.918	1.19E-02	26.77	69.44	0	0	58.3	485.4
303	52.76	3000	4080	147.155953	6.0318	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0603	2.50E-04	3.092	1.11E-02	55.24	96.6	66.02	0	62.8	300.4
304	21.5	3000	3730	19.222613	0.9748	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.148	4.62E-04	2.577	8.67E-03	21.35	73.99	0	0	80	614.3
305	49.02	3000	4180	161.68242	7.2185	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.0649	3.85E-04	3.998	7.26E-03	17.11	96.91	69.08	0	95.5	418
306	61.77	3000	2040	621.846124	12.6693	61.1213	7975.95	5125	0.1	1950	487500	512500	0.0515	1.27E-04	2.249	8.83E-03	67.87	99.2	91.96	19.59	78.5	186.6
307	50.42	3000	4460	553.293288	21.5007	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0631	3.12E-04	3.502	4.92E-03	31.1	99.1	90.96	9.63	140.9	356
308	25.03	3000	3050	14.074266	0.3696	78.7839	6187.82	5125	0.1	1950	487500	750000	0.1271	3.46E-04	2.376	1.17E-02	23.58	64.47	0	0	59.4	486.6
309	34.39	3000	5170	0.421651	0.0148	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0925	6.78E-04	4.704	1.79E-02	51.09	0	0	0	38.7	701
310	52.58	3000	820	889.591382	28.3008	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.0605	5.87E-05	1.491	8.54E-03	59.4	99.44	94.38	43.79	81.1	145.3
311	24.7	3000	3880	262.755097	13.1584	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.1288	4.84E-04	2.899	4.19E-03	25.2	98.1	80.97	0	165.5	601.5
312	32.6	3000	4080	5.105211	0.2152	126.4473	3855.36	5125	0.1	1950	487500	1525000	0.0976	3.66E-04	2.895	1.63E-02	46.08	2.06	0	0	42.4	455.2
313	27.62	3000	4360	0.12627	0.0057	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1152	7.53E-04	4.306	1.75E-02	45.57	0	0	0	39.7	799.1
314	21.82	3000	3690	7.421397	0.3887	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.1458	6.08E-04	3.108	1.01E-02	61.34	32.63	0	0	68.9	730.1
315	29.38	3000	5570	6.170523	0.2012	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.1083	6.02E-04	3.81	1.09E-02	36.67	18.97	0	0	63.7	664.7

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
316	24.82	3000	4820	299.148613	14.1475	141.878	3436.05	5125	0.1	1950	487500	1812500	0.1282	7.11E-04	3.804	3.08E-03	28.61	98.33	83.29	0	225.3	785.6
317	45.77	3000	1720	196.348433	5.7145	87.3109	5583.5	5125	0.1	1950	487500	875000	0.0695	1.46E-04	2.065	1.24E-02	46.28	97.45	74.54	0	55.9	231.2
318	40.17	3000	1500	253.407662	12.367	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.0792	1.83E-04	2.167	9.11E-03	18.36	98.03	80.27	0	76.1	276.5
319	31.47	3000	1830	641.035018	27.4602	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.1011	1.60E-04	1.798	5.39E-03	42.43	99.22	92.2	22	128.6	292.8
320	30.98	3000	2250	143.544043	6.247	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.1027	1.98E-04	1.975	9.78E-03	44.07	96.52	65.17	0	70.9	326.8
321	38.01	3000	2040	60.94402	3.3414	164.4834	2963.82	5125	0.1	1950	487500	2262500	0.0837	2.09E-04	2.264	1.34E-02	29.69	91.8	17.96	0	51.7	305.3
322	36.4	3000	4630	4.241132	0.1638	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.0874	5.25E-04	4.035	1.47E-02	52.91	0	0	0	47.1	568.1
323	38.24	3000	2920	2.968541	0.1258	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0832	3.30E-04	3.007	1.83E-02	16	0	0	0	37.9	403
324	33.81	3000	3620	478.97546	20.4084	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0941	2.63E-04	2.413	5.22E-03	46.39	98.96	89.56	0	132.9	365.8
325	25.8	3000	2130	12.618722	0.6713	159.6003	3054.5	5125	0.1	1950	487500	2162500	0.1233	2.41E-04	1.987	1.48E-02	30.93	60.38	0	0	46.9	394.8
326	27.78	3000	1700	136.954203	7.2579	158.9847	3066.33	5125	0.1	1950	487500	2150000	0.1145	2.12E-04	1.938	8.84E-03	20.16	96.35	63.49	0	78.4	357.4
327	27.17	3000	4010	58.199061	2.6631	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1171	4.36E-04	2.883	7.69E-03	27.41	91.41	14.09	0	90.1	543.9
328	27.4	3000	1620	205.6774	8.9511	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.1161	1.16E-04	1.505	1.01E-02	72.11	97.57	75.69	0	68.9	281.4
329	56.11	3000	5420	2.619669	0.0993	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.0567	6.25E-04	6.568	1.46E-02	27.25	0	0	0	47.4	599.9
330	33.17	3000	1090	382.693821	21.2135	166.2959	2931.52	5125	0.1	1950	487500	2300000	0.0959	1.26E-04	1.662	8.15E-03	23.25	98.69	86.93	0	85.1	256.7
331	38.84	3000	1140	142.352003	7.6604	161.4401	3019.69	5125	0.1	1950	487500	2200000	0.0819	7.60E-05	1.469	1.68E-02	81.45	96.49	64.88	0	41.2	193.8
332	53.92	3000	4770	152.877205	5.6436	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.059	3.48E-04	3.978	8.26E-03	21.41	96.73	67.29	0	83.9	378.1
333	22.61	3000	3970	78.524776	3.5234	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.1407	4.39E-04	2.576	6.45E-03	18.19	93.63	36.33	0	107.5	583.8
334	23.83	3000	1940	504.498665	18.9947	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.1335	1.72E-04	1.652	5.14E-03	43.66	99.01	90.09	0.89	134.7	355.3
335	34.96	3000	8220	34.706293	0.7412	64.0676	7609.15	5125	0.1	1950	487500	550000	0.091	7.31E-04	5.06	7.60E-03	60.02	85.59	0	0	91.2	741.7
336	37.65	3000	2830	616.189449	25.1132	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.0845	1.91E-04	2.144	5.64E-03	61.36	99.19	91.89	18.86	122.8	291.9
337	28.92	3000	900	621.487148	27.7469	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.11	9.33E-05	1.429	6.29E-03	25.05	99.2	91.95	19.55	110.3	253.2
338	34.28	3000	980	791.379191	34.0811	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.0928	7.88E-05	1.429	6.34E-03	45.59	99.37	93.68	36.82	109.3	213.7
339	37.47	3000	3260	981.473327	51.0001	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0849	2.24E-04	2.335	3.62E-03	69.24	99.49	94.91	49.06	191.4	319.4
340	23.64	3000	5590	32.652823	1.0214	93.8425	5194.88	5125	0.1	1950	487500	975000	0.1346	5.05E-04	2.896	7.83E-03	34.54	84.69	0	0	88.5	628
341	53.02	3000	7890	100.53928	2.3692	70.6941	6895.91	5125	0.1	1950	487500	637500	0.06	6.66E-04	6.612	6.28E-03	41.62	95.03	50.27	0	110.3	639.1
342	38.47	3000	5310	220.913924	6.9104	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0827	3.43E-04	3.098	6.74E-03	42.48	97.74	77.37	0	102.8	412.8
343	60.03	3000	5820	70.372756	2.5105	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.053	6.19E-04	6.904	7.51E-03	35.97	92.89	28.95	0	92.2	589.5
344	35.95	3000	3780	208.049148	8.8169	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0885	2.39E-04	2.363	8.67E-03	76.52	97.6	75.97	0	80	336.8
345	50.9	3000	3920	155.530264	7.9847	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.0625	4.60E-04	4.717	6.87E-03	37.46	96.79	67.85	0	101	474.9
346	40.22	3000	780	262.595746	7.7874	88.9661	5479.61	5125	0.1	1950	487500	900000	0.0791	5.76E-05	1.368	1.45E-02	54.12	98.1	80.96	0	47.9	174.4
347	51.64	3000	3680	43.144493	1.9647	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.0616	2.49E-04	3.042	1.64E-02	65.7	88.41	0	0	42.3	301.8
348	38.56	3000	4400	32.934548	1.3957	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0825	5.21E-04	4.194	9.60E-03	50.47	84.82	0	0	72.2	557.4
349	50.66	3000	2320	151.488832	7.7456	153.3892	3178.19	5125	0.1	1950	487500	2037500	0.0628	1.80E-04	2.446	1.28E-02	44.75	96.7	66.99	0	54	247.5
350	23	3000	3660	20.300417	0.6296	93.0387	5239.76	5125	0.1	1950	487500	962500	0.1383	3.51E-04	2.282	1.07E-02	38.65	75.37	0	0	64.9	508.3
351	56.71	3000	1830	154.543004	5.6288	109.2665	4461.57	5125	0.1	1950	487500	1225000	0.0561	1.40E-04	2.259	1.55E-02	52.41	96.76	67.65	0	44.6	204.1
352	21.25	3000	3240	144.836565	6.1047	126.4473	3855.36	5125	0.1	1950	487500	1525000	0.1497	2.66E-04	1.898	7.05E-03	57.28	96.55	65.48	0	98.4	457.7
353	45.06	3000	3370	178.541529	9.4984	159.6003	3054.5	5125	0.1	1950	487500	2162500	0.0706	3.35E-04	3.401	7.97E-03	49.11	97.2	72	0	87	386.8
354	23.65	3000	3820	14.147407	0.3632	77.0232	6329.26	5125	0.1	1950	487500	725000	0.1345	4.36E-04	2.637	9.87E-03	18.94	64.66	0	0	70.3	571.3
355	52.41	3000	6100	55.479601	1.9373	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.0607	6.87E-04	6.721	7.14E-03	34.02	90.99	9.88	0	97.1	657.2
356	29.4	3000	760	157.483074	4.9262	93.8425	5194.88	5125	0.1	1950	487500	975000	0.1082	8.74E-05	1.408	1.22E-02	19.44	96.83	68.25	0	56.8	245.5
357	37.34	3000	1310	352.286954	12.0329	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.0852	1.10E-04	1.65	9.78E-03	49.31	98.58	85.81	0	70.9	226.5
358	27.26	3000	2330	30.502939	1.4492	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1167	2.50E-04	2.084	1.24E-02	31.36	83.61	0	0	55.9	391.9
359	23.37	3000	3160	46.29893	1.3087	84.7981	5748.95	5125	0.1	1950	487500	837500	0.1361	3.07E-04	2.14	9.46E-03	36.98	89.2	0	0	73.2	469.2
360	21.7	3000	2930	6.646045	0.3959	178.7197	2727.74	5125	0.1	1950	487500	2562500	0.1466	3.33E-04	2.148	1.42E-02	69.13	24.77	0	0	48.9	507.2
361	41.8	3000	1640	372.629298	12.7278	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.0761	1.42E-04	1.941	9.07E-03	43.28	98.66	86.58	0	76.5	237.9
362	37.12	3000	1920	134.196355	6.0512	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.0857	1.83E-04	2.082	1.13E-02	36.73	96.27	62.74	0	61.3	287.4
363	57.63	3000	7570	5.736327	0.1701	88.9661	5479.61	5125	0.1	1950	487500	900000	0.0552	7.71E-04	8.065	1.03E-02	18.72	12.84	0	0	67.1	717.2
364	35.99	3000	4010	244.613304	10.4226	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0884	3.00E-04	2.718	6.86E-03	44.02	97.96	79.56	0	101.1	387
365	28.2	3000	2310	206.013193	8.6358	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1128	2.18E-04	1.976	7.75E-03	38.22	97.57	75.73	0	89.4	359.1
366	25.43	3000	2700	15.353689	0.6992	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1251	3.05E-04	2.234	1.24E-02	26.39	67.43	0	0	55.8	450.2
367	29.43	3000	2550	14.449819	0.6419	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1081	2.88E-04	2.348	1.38E-02	24.36	65.4	0	0	50.1	409
368	29.29	3000	2650	717.507774	35.1698	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1086	1.92E-04	1.893	4.46E-03	59.55	99.3	93.03	30.31	155.6	331.2
369	62.14	3000	3690	180.659957	9.0472	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.0512	3.70E-04	4.648	8.32E-03	53.33	97.23	72.32	0	83.3	383.4
370	34.36	3000	4310	0.252991	0.0148	175.8017	2773.01	5125	0.1	1950	487500	2500000	0.0926	7.17E-04	4.914	1.50E-02	19.31	0	0	0	46.2	733.1
371	26.89	3000	4720	113.55356	4.2198	111.4852	4372.78	5125	0.1	1950	487500	1262500	0.1183	4.45E-04	2.902	6.49E-03	51.73	95.6	55.97	0	106.8	553.1
372	36.61	3000	5520	36.011731	1.1265	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0869	4.26E-04	3.475	9.88E-03	29.02	86.12	0	0	70.1	486.5
373	39.42	3000	1280	335.700827	11.8919	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.0807	1.44E-04	1.899	9.05E-03	24.39	98.51	85.11	0	76.6	246.9
374	54.38	3000	5500	136.804698	4.3884	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.0585	4.12E-04	4.56	7.89E-03	35.86	96.35	63.45	0	87.8	429.8
375	29.05	3000	4940	153.645007	5.7097	111.4852	4372.78	5125	0.1	1950	487500	1262500	0.1095	5.30E-04	3.446	5.32E-03	43.81	96.75	67.46	0	130.4	607.8
376	42.42	3000	3170	66.928323	2.4044	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.075	2.69E-04	2.811	1.20E-02	31.96	92.53	25.29	0	58	339.6
377	49.48	3000	1550	493.522016	27.1583	165.0887	2952.96	5125	0.1	1950	487500	2275000	0.0643	1.03E-04	1.809	1.01E-02	76.02	98.99	89.87	0	68.6	187.4
378	25.55	3000	2610	136.249737	4.5133	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.1245	2.03E-04	1.823	9.07E-03	66.37	96.33	63.3	0	76.4	365.7

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
379	54.1	3000	3900	312.486233	13.3861	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.0588	2.28E-04	2.958	8.92E-03	80.6	98.4	84	0	77.7	280.2
380	28	3000	2110	90.997611	4.7662	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.1136	1.47E-04	1.656	1.28E-02	94.67	94.51	45.05	0	54.3	303.1
381	21.8	3000	1190	566.616948	26.7968	141.878	3436.05	5125	0.1	1950	487500	1812500	0.1459	1.01E-04	1.35	5.33E-03	34.36	99.12	91.18	11.76	130	317.2
382	24.59	3000	5590	0.593358	0.0182	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1294	5.95E-04	3.326	1.64E-02	60.68	0	0	0	42.2	693.4
383	30.15	3000	3020	98.602317	4.1787	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.1055	2.87E-04	2.375	8.89E-03	31.67	94.93	49.29	0	78	403.6
384	24.8	3000	4180	1.813441	0.0567	93.8425	5194.88	5125	0.1	1950	487500	975000	0.1283	3.88E-04	2.528	1.85E-02	83.92	0	0	0	37.4	522.4
385	39.57	3000	890	187.956624	8.1372	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0804	9.22E-05	1.58	1.39E-02	32.57	97.34	73.4	0	49.8	204.6
386	50.82	3000	5950	8.498915	0.2881	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.0626	6.16E-04	5.973	1.12E-02	21.8	41.17	0	0	61.9	602.3
387	56.41	3000	3160	20.579086	1.1858	172.8593	2820.21	5125	0.1	1950	487500	2437500	0.0564	3.31E-04	3.97	1.59E-02	39.19	75.7	0	0	43.6	360.7
388	25.41	3000	5110	1.831549	0.0663	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.1252	6.48E-04	3.617	1.23E-02	39.93	0	0	0	56.5	729.5
389	36.32	3000	4730	85.591659	3.5283	123.6681	3942	5125	0.1	1950	487500	1475000	0.0876	5.79E-04	4.34	6.60E-03	45.24	94.16	41.58	0	105.1	612.5
390	31.16	3000	3540	41.06088	1.6542	120.8573	4033.68	5125	0.1	1950	487500	1425000	0.1021	3.20E-04	2.586	1.08E-02	32.91	87.82	0	0	64.1	425.4
391	40.63	3000	4110	7.615223	0.2463	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0783	4.10E-04	3.649	1.37E-02	12.91	34.34	0	0	50.6	460.2
392	58.7	3000	3090	36.99138	1.5677	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0542	2.28E-04	3.131	1.77E-02	37.72	86.48	0	0	39.1	273.4
393	31.34	3000	2860	653.192189	23.6286	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.1015	1.82E-04	1.907	5.10E-03	77.71	99.23	92.35	23.45	135.8	311.8
394	57.42	3000	3680	276.496765	13.5529	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.0554	3.32E-04	4.032	7.16E-03	43.18	98.19	81.92	0	96.8	359.9
395	23.19	3000	3770	376.448771	18.1292	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.1372	4.07E-04	2.499	3.92E-03	41.73	98.67	86.72	0	177	552.4
396	21.34	3000	4350	1.211582	0.0336	83.1021	5866.28	5125	0.1	1950	487500	812500	0.1491	4.58E-04	2.554	1.44E-02	33.97	0	0	0	48.1	613.4
397	24.3	3000	6310	295.490498	8.0165	81.3886	5989.78	5125	0.1	1950	487500	787500	0.1309	5.03E-04	2.944	4.11E-03	75.31	98.31	83.08	0	168.8	620.9
398	22.48	3000	1700	16.5102	0.7334	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1415	1.35E-04	1.481	1.73E-02	79.86	69.72	0	0	40.2	337.7
399	48.79	3000	2310	52.416225	2.3167	132.592	3676.69	5125	0.1	1950	487500	1637500	0.0652	1.86E-04	2.442	1.73E-02	50.23	90.46	4.61	0	40	256.5
400	44.74	3000	5320	23.307061	0.8431	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.0711	5.14E-04	4.653	9.77E-03	16.18	78.55	0	0	71	532.9
401	40.42	3000	890	1234.813005	62.6182	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.0787	3.98E-05	1.256	5.69E-03	92.87	99.6	95.95	59.51	121.8	159.2
402	32.93	3000	4670	694.914764	25.6535	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0966	3.72E-04	2.946	3.26E-03	26.31	99.28	92.8	28.05	212.6	458.4
403	40.89	3000	5940	44.63608	1.2867	86.4774	5637.31	5125	0.1	1950	487500	862500	0.0778	4.38E-04	3.845	1.01E-02	49.14	88.8	0	0	68.7	481.8
404	26.67	3000	3140	147.641754	8.3317	169.2951	2879.59	5125	0.1	1950	487500	2362500	0.1193	3.08E-04	2.303	7.14E-03	36.38	96.61	66.13	0	97.1	442.7
405	22	3000	4940	78.545112	2.7029	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.1446	3.99E-04	2.396	7.24E-03	64.02	93.63	36.34	0	95.7	558
406	52.85	3000	3260	55.90417	3.1213	167.4988	2910.47	5125	0.1	1950	487500	2325000	0.0602	3.45E-04	3.894	1.20E-02	46.69	91.06	10.56	0	57.6	377.7
407	27.86	3000	4940	135.501171	3.9436	87.3109	5583.5	5125	0.1	1950	487500	875000	0.1142	4.89E-04	3.165	5.48E-03	15.65	96.31	63.1	0	126.5	582.2
408	41.21	3000	3090	208.352883	8.2457	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0772	3.14E-04	3.056	7.19E-03	15.43	97.6	76	0	96.4	380
409	33	3000	3760	49.828679	2.3457	141.2249	3451.94	5125	0.1	1950	487500	1800000	0.0964	3.68E-04	2.927	9.80E-03	37.24	89.97	0	0	70.7	454.6
410	50.1	3000	4240	240.30477	10.9427	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.0635	4.90E-04	4.904	5.77E-03	61.03	97.92	79.19	0	120.2	501.7
411	40.53	3000	3760	417.055662	23.5352	169.2951	2879.59	5125	0.1	1950	487500	2362500	0.0785	4.87E-04	4.137	3.98E-03	35	98.8	88.01	0	174.2	523.2
412	38.75	3000	6750	233.681189	5.8609	75.2423	6479.07	5125	0.1	1950	487500	700000	0.0821	4.24E-04	3.609	5.84E-03	51.72	97.86	78.6	0	118.6	477.3
413	22.33	3000	900	164.521655	10.3046	187.9019	2594.44	5125	0.1	1950	487500	2762500	0.1425	8.02E-05	1.285	1.00E-02	26.23	96.96	69.61	0	69.1	294.9
414	36.65	3000	5430	92.885947	3.267	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0868	7.39E-04	5.304	6.15E-03	87.44	94.62	46.17	0	112.7	741.6
415	61.65	3000	4190	6.507918	0.319	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.0516	4.73E-04	5.631	1.51E-02	22.67	23.17	0	0	45.9	468
416	26.85	3000	2410	10.003179	0.4709	141.2249	3451.94	5125	0.1	1950	487500	1800000	0.1185	2.27E-04	1.967	1.70E-02	55.32	50.02	0	0	40.7	375.5
417	57.84	3000	4020	56.92219	2.8746	151.5013	3217.79	5125	0.1	1950	487500	2000000	0.055	4.50E-04	5.139	9.70E-03	28.65	91.22	12.16	0	71.5	455.3
418	26.49	3000	1380	202.285027	6.7008	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.1201	1.41E-04	1.592	9.00E-03	33.64	97.53	75.28	0	77	308
419	24.64	3000	3570	29.019364	1.2563	129.879	3753.49	5125	0.1	1950	487500	1587500	0.1291	3.76E-04	2.473	9.53E-03	25.48	82.77	0	0	72.7	514.3
420	49.4	3000	2340	98.627376	3.0055	91.4206	5332.5	5125	0.1	1950	487500	937500	0.0644	2.35E-04	2.841	1.20E-02	19.79	94.93	49.3	0	57.7	294.8
421	21.22	3000	2580	83.521303	4.0761	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.1499	2.60E-04	1.875	8.28E-03	36.15	94.01	40.14	0	83.7	452.9
422	24.97	3000	4580	5.539867	0.2072	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.1274	5.09E-04	3.02	1.36E-02	91.3	9.75	0	0	51	619.9
423	24.03	3000	3120	61.161247	1.8968	93.0387	5239.76	5125	0.1	1950	487500	962500	0.1324	2.74E-04	2.045	9.63E-03	50.8	91.82	18.25	0	72	436.2
424	22.12	3000	3750	52.191429	2.4796	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1438	4.73E-04	2.661	7.77E-03	86.8	90.42	4.2	0	89.2	616.5
425	38.47	3000	3220	111.347343	3.6011	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0827	2.57E-04	2.568	1.03E-02	42.91	95.51	55.1	0	67.2	342.1
426	25.76	3000	2850	133.376733	8.1255	182.7653	2667.36	5125	0.1	1950	487500	2650000	0.1235	2.76E-04	2.13	8.06E-03	75.48	96.25	62.51	0	86	423.8
427	40.17	3000	5950	25.31723	0.7987	94.6429	5150.94	5125	0.1	1950	487500	987500	0.0792	5.34E-04	4.406	8.95E-03	13.19	80.25	0	0	77.4	562.1
428	33.7	3000	1790	213.5937	10.1941	143.1797	3404.81	5125	0.1	1950	487500	1837500	0.0944	1.33E-04	1.714	1.08E-02	69.34	97.66	76.59	0	64.4	260.6
429	42.08	3000	6700	3.792708	0.1029	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0756	5.88E-04	4.93	1.28E-02	23.74	0	0	0	54.1	600.4
430	29.48	3000	1710	98.835349	2.4493	74.3438	6557.37	5125	0.1	1950	487500	687500	0.1079	1.25E-04	1.584	1.35E-02	80.36	94.94	49.41	0	51.6	275.4
431	21.93	3000	3170	14.700474	0.8325	169.8917	2869.47	5125	0.1	1950	487500	2375000	0.1451	3.59E-04	2.25	1.09E-02	34.69	65.99	0	0	63.4	525.9
432	61.53	3000	950	860.781927	23.1048	80.525	6054.02	5125	0.1	1950	487500	775000	0.0517	1.00E-04	1.977	7.68E-03	26.87	99.42	94.19	41.91	90.3	164.7
433	22.39	3000	3390	476.74163	14.528	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1421	2.55E-04	1.909	4.38E-03	57.67	98.95	89.51	0	158.4	436.9
434	35.23	3000	4670	212.816695	7.9608	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0903	4.29E-04	3.401	6.03E-03	72.85	97.65	76.51	0	114.9	494.8
435	24.72	3000	2360	225.727588	6.9397	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1287	1.89E-04	1.743	7.53E-03	58.72	97.78	77.85	0	92.1	361.4
436	55.91	3000	5360	224.2949	7.076	94.6429	5150.94	5125	0.1	1950	487500	987500	0.0569	3.36E-04	3.983	8.08E-03	68.48	97.77	77.71	0	85.7	365.1
437	24.78	3000	2710	128.436137	5.6476	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.1284	2.84E-04	2.116	7.47E-03	29.05	96.11	61.07	0	92.8	437.8
438	23.57	3000	3650	8.403335	0.4173	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.135	5.21E-04	2.95	1.15E-02	73.84	40.5	0	0	60.5	641.6
439	55.62	3000	7910	5.084827	0.1167	68.8336	7082.3	5125	0.1	1950	487500	612500	0.0572	6.22E-04	6.495	1.30E-02	27.04	1.67	0	0	53.4	598.5
440	36.19	3000	4890	27.771756	0.9557	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.0879	3.47E-04	2.997	1.27E-02	55.88	82	0	0	54.5	424.4
441	34.65	3000	3240	199.355883	9.7291	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.0918	2.04E-04	2.124	9.53E-03	92.4	97.49	74.92	0	72.7	314

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
442	23.31	3000	2310	9.637674	0.3768	117.2971	4156.11	5125	0.1	1950	487500	1362500	0.1365	2.33E-04	1.865	1.54E-02	48.42	48.12	0	0	45	410
443	28.25	3000	2410	382.73656	12.6783	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.1126	1.67E-04	1.749	6.83E-03	73.71	98.69	86.94	0	101.6	317.3
444	41.8	3000	3920	7.643617	0.416	163.2695	2985.86	5125	0.1	1950	487500	2237500	0.0761	6.09E-04	5.047	1.21E-02	43.14	34.59	0	0	57.3	618.7
445	23.58	3000	870	63.580679	1.5372	72.5304	6721.32	5125	0.1	1950	487500	662500	0.1349	7.75E-05	1.291	1.41E-02	29.77	92.14	21.36	0	49	280.5
446	26.06	3000	3180	36.871007	1.1435	93.0387	5239.76	5125	0.1	1950	487500	962500	0.1221	2.68E-04	2.108	1.17E-02	57.55	86.44	0	0	59.2	414.5
447	33.07	3000	2020	384.671653	18.8553	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.0962	1.95E-04	2.024	6.73E-03	33.72	98.7	87	0	103.1	313.7
448	35.11	3000	4110	12.857262	0.5625	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0906	5.55E-04	4.096	1.25E-02	85.72	61.11	0	0	55.3	597.8
449	61.89	3000	2590	437.978377	13.2278	90.6061	5380.43	5125	0.1	1950	487500	925000	0.0514	2.00E-04	2.962	8.10E-03	28.93	98.86	88.58	0	85.6	245.3
450	26.21	3000	1720	261.760809	15.2369	174.6277	2791.65	5125	0.1	1950	487500	2475000	0.1214	1.26E-04	1.525	8.58E-03	67.37	98.09	80.9	0	80.8	298.3
451	22.56	3000	4530	13.093697	0.5336	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.141	5.52E-04	2.98	8.98E-03	37.52	61.81	0	0	77.2	677
452	23.34	3000	3960	4.434821	0.2193	148.3284	3286.63	5125	0.1	1950	487500	1937500	0.1363	6.80E-04	3.521	1.07E-02	60.91	0	0	0	64.6	773
453	26.8	3000	1020	864.546348	47.0514	163.2695	2985.86	5125	0.1	1950	487500	2237500	0.1187	8.55E-05	1.364	4.83E-03	35.46	99.42	94.22	42.17	143.6	260.9
454	38.61	3000	3230	303.71462	11.8022	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0824	2.12E-04	2.3	8.02E-03	66.48	98.35	83.54	0	86.5	305.3
455	40.68	3000	4520	75.590018	2.9374	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0782	4.41E-04	3.851	9.03E-03	68.85	93.39	33.85	0	76.7	485.2
456	32.46	3000	3400	240.034458	9.9507	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.098	2.20E-04	2.133	8.12E-03	78.92	97.92	79.17	0	85.3	336.8
457	44.81	3000	1610	434.942036	12.8984	88.9661	5479.61	5125	0.1	1950	487500	900000	0.071	1.85E-04	2.317	7.40E-03	18	98.85	88.5	0	93.6	265
458	21.73	3000	3170	6.946572	0.3878	167.4988	2910.47	5125	0.1	1950	487500	2325000	0.1464	3.48E-04	2.202	1.29E-02	40.25	28.02	0	0	53.7	519.3
459	22.99	3000	5380	45.758934	1.5395	100.929	4830.13	5125	0.1	1950	487500	1087500	0.1384	5.42E-04	2.98	6.66E-03	24.05	89.07	0	0	104	664.4
460	22.44	3000	3460	34.151891	1.674	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1418	3.12E-04	2.111	1.09E-02	93.45	85.36	0	0	63.7	482.2
461	50.74	3000	1280	178.778008	6.6875	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0627	1.23E-04	1.994	1.45E-02	34.64	97.2	72.03	0	47.7	201.4
462	30.86	3000	1970	60.719498	2.7784	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1031	1.81E-04	1.887	1.33E-02	48.48	91.77	17.65	0	52.1	313.3
463	25.17	3000	1910	72.660948	3.1622	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.1264	1.94E-04	1.777	1.08E-02	35.56	93.12	31.19	0	64.5	361.9
464	46.44	3000	3410	73.697018	3.0036	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.0685	2.94E-04	3.167	1.11E-02	22.09	93.22	32.15	0	62.2	349.5
465	25.45	3000	1410	97.817719	2.9008	88.9661	5479.61	5125	0.1	1950	487500	900000	0.125	9.91E-05	1.401	1.30E-02	72.52	94.89	48.88	0	53.5	282
466	41.48	3000	1180	260.751272	7.0741	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0767	1.51E-04	1.996	1.01E-02	17.62	98.08	80.82	0	68.8	246.6
467	21.37	3000	1120	382.975605	23.8423	186.7666	2610.21	5125	0.1	1950	487500	2737500	0.1489	1.28E-04	1.433	6.06E-03	20.12	98.69	86.94	0	114.4	343.7
468	50.26	3000	2780	336.238321	18.6384	166.2959	2931.52	5125	0.1	1950	487500	2300000	0.0633	2.33E-04	2.862	7.74E-03	25.75	98.51	85.13	0	89.6	291.8
469	53.92	3000	2740	145.928274	9.6299	197.9711	2462.48	5125	0.1	1950	487500	2987500	0.059	2.57E-04	3.201	1.03E-02	21.47	96.57	65.74	0	67	304.2
470	35.87	3000	4300	13.286036	0.5195	117.2971	4156.11	5125	0.1	1950	487500	1362500	0.0887	3.24E-04	2.847	1.60E-02	66.01	62.37	0	0	43.4	406.8
471	45.06	3000	3650	36.811352	1.8744	152.7612	3191.25	5125	0.1	1950	487500	2025000	0.0706	4.74E-04	4.395	1.12E-02	71.44	86.42	0	0	62	499.9
472	41.53	3000	2730	16.958704	0.707	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0766	2.91E-04	2.92	1.51E-02	18.1	70.52	0	0	45.8	360.3
473	48.13	3000	4220	112.273445	5.2608	140.5704	3468.01	5125	0.1	1950	487500	1787500	0.0661	4.93E-04	4.769	7.29E-03	41.6	95.55	55.47	0	95.1	507.9
474	34.32	3000	3620	242.040042	7.1778	88.9661	5479.61	5125	0.1	1950	487500	900000	0.0927	2.42E-04	2.321	7.80E-03	64.81	97.93	79.34	0	88.9	346.6
475	21.54	3000	3030	69.761677	3.6105	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.1477	3.06E-04	2.046	8.13E-03	35.13	92.83	28.33	0	85.2	486.8
476	26.01	3000	1610	44.312891	2.1053	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1223	1.28E-04	1.529	1.52E-02	68.6	88.72	0	0	45.6	301.2
477	29.21	3000	6470	7.510632	0.1747	69.767	6987.55	5125	0.1	1950	487500	625000	0.1089	4.64E-04	3.153	1.41E-02	82.33	33.43	0	0	49.1	553.1
478	25.35	3000	4550	1.822081	0.0818	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.1255	7.18E-04	3.892	1.14E-02	36.76	0	0	0	61	786.8
479	34.73	3000	1670	47.375785	1.7722	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0916	1.68E-04	1.927	1.55E-02	38.8	89.45	0	0	44.8	284.4
480	47.41	3000	5900	14.346251	0.4215	88.1405	5530.94	5125	0.1	1950	487500	887500	0.0671	4.31E-04	4.244	1.28E-02	21.6	65.15	0	0	54.3	458.7
481	23.24	3000	3460	3.11784	0.1271	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.1369	3.78E-04	2.397	1.43E-02	30.63	0	0	0	48.6	528.7
482	23.04	3000	2970	65.226786	3.9487	181.614	2684.26	5125	0.1	1950	487500	2625000	0.1381	3.19E-04	2.168	8.31E-03	28.85	92.33	23.34	0	83.4	482.2
483	21.88	3000	2850	356.201077	9.968	83.9523	5806.87	5125	0.1	1950	487500	825000	0.1454	2.38E-04	1.827	5.16E-03	48.59	98.6	85.96	0	134.2	427.9
484	23.69	3000	1410	8.526736	0.2529	88.9661	5479.61	5125	0.1	1950	487500	900000	0.1343	1.98E-04	1.744	1.61E-02	17.23	41.36	0	0	43.1	377.3
485	24.91	3000	4160	53.522039	2.3776	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1277	4.77E-04	2.889	7.26E-03	31.63	90.66	6.58	0	95.5	594.4
486	49.94	3000	2650	308.261068	12.4911	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0637	1.93E-04	2.528	9.21E-03	44.4	98.38	83.78	0	75.3	259.4
487	54.95	3000	4350	87.761923	3.5768	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.0579	3.95E-04	4.447	9.97E-03	55.58	94.3	43.03	0	69.6	414.8
488	41.59	3000	3190	67.937322	3.2864	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.0765	2.55E-04	2.685	1.24E-02	40.83	92.64	26.4	0	56	330.8
489	37.65	3000	4240	8.993718	0.3934	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0845	6.29E-04	4.762	1.29E-02	81.01	44.41	0	0	53.8	648.2
490	37.34	3000	3690	18.36646	0.8566	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.0852	3.21E-04	2.903	1.46E-02	48.14	72.78	0	0	47.6	398.5
491	38.1	3000	3720	485.989012	19.2334	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.0835	2.28E-04	2.377	6.01E-03	66.23	98.97	89.71	0	115.3	319.8
492	23.09	3000	3700	9.565825	0.479	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.1378	4.67E-04	2.712	1.05E-02	34.33	47.73	0	0	65.7	602.1
493	26.67	3000	3150	25.937578	1.4378	166.2959	2931.52	5125	0.1	1950	487500	2300000	0.1193	3.54E-04	2.498	1.17E-02	77.69	80.72	0	0	59.4	480.2
494	25.39	3000	1400	403.434284	17.0044	126.4473	3855.36	5125	0.1	1950	487500	1525000	0.1253	9.93E-05	1.401	7.33E-03	60.26	98.76	87.61	0	94.6	282.7
495	46.17	3000	2490	511.548031	25.6177	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.0689	2.07E-04	2.522	6.50E-03	32.7	99.02	90.23	2.26	106.7	279.9
496	24.97	3000	3340	51.227628	1.8911	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.1274	3.23E-04	2.283	9.23E-03	34.77	90.24	2.4	0	75.1	468.6
497	61.3	3000	2950	100.246418	3.0003	89.788	5429.46	5125	0.1	1950	487500	912500	0.0519	1.79E-04	2.739	1.69E-02	78.04	95.01	50.12	0	40.9	229
498	30.71	3000	1490	209.773662	9.9663	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1036	1.64E-04	1.8	9.09E-03	28.22	97.62	76.16	0	76.2	300.4
499	63.5	3000	4570	826.20882	33.4788	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0501	3.67E-04	4.698	3.50E-03	24.57	99.39	93.95	39.48	198.1	379.2
500	52.93	3000	4400	155.520474	2.7968	53.9497	9036.19	5125	0.1	1950	487500	425000	0.0601	2.52E-04	3.12	1.08E-02	58.41	96.78	67.85	0	64	302
501	36.86	3000	3790	139.969514	5.7373	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0863	2.86E-04	2.678	8.79E-03	42.31	96.43	64.28	0	78.9	372.3
502	34.21	3000	3500	139.768169	7.0289	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.093	3.17E-04	2.721	7.87E-03	28.37	96.42	64.23	0	88.1	407.7
503	25.78	3000	5770	34.752305	1.0684	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1234	6.61E-04	3.706	7.55E-03	76.67	85.61	0	0	91.8	736.7
504	22.48	3000	2370	217.75682	10.108	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1415	1.60E-04	1.573	7.82E-03	86.2	97.7	77.04	0	88.6	358.6

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
505	37.08	3000	3800	140.337111	7.2632	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.0858	5.10E-04	4.008	6.30E-03	58.17	96.44	64.37	0	110.1	553.9
506	24.19	3000	3600	237.560941	10.013	126.4473	3855.36	5125	0.1	1950	487500	1525000	0.1315	3.75E-04	2.44	5.04E-03	22.64	97.9	78.95	0	137.5	516.9
507	24.43	3000	4650	2.883831	0.1114	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.1302	5.81E-04	3.256	1.26E-02	53.51	0	0	0	55.1	683
508	30.98	3000	1630	286.179106	14.692	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.1027	1.24E-04	1.611	9.22E-03	61.59	98.25	82.53	0	75.2	266.6
509	25.25	3000	2430	333.620871	14.8949	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.126	2.07E-04	1.83	6.13E-03	47.11	98.5	85.01	0	113.1	371.5
510	45.32	3000	2130	530.981975	28.0302	158.3679	3078.28	5125	0.1	1950	487500	2137500	0.0702	1.48E-04	2.068	7.72E-03	61.26	99.06	90.58	5.83	89.8	233.8
511	43.82	3000	3730	487.294092	21.9733	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.0726	2.39E-04	2.662	6.20E-03	65.42	98.97	89.74	0	111.8	311.4
512	23.48	3000	2190	17.472937	0.8639	148.3284	3286.63	5125	0.1	1950	487500	1937500	0.1355	1.96E-04	1.73	1.52E-02	65.29	71.38	0	0	45.7	377.5
513	30.27	3000	2670	177.190042	7.5903	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.1051	1.99E-04	1.957	9.13E-03	64.31	97.18	71.78	0	75.9	331.3
514	28.2	3000	2020	335.281273	15.0439	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.1128	1.65E-04	1.74	7.20E-03	52.28	98.51	85.09	0	96.2	316.1
515	36.4	3000	4880	5.657253	0.2018	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.0874	4.22E-04	3.441	1.47E-02	32.68	11.62	0	0	47.1	484.5
516	21.27	3000	3370	3.800039	0.1975	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.1496	4.16E-04	2.406	1.42E-02	74.9	0	0	0	48.8	579.9
517	22.55	3000	3940	225.696775	10.4766	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1411	4.23E-04	2.517	4.66E-03	24.15	97.78	77.85	0	148.7	572
518	32.23	3000	4430	185.996764	7.4491	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.0987	4.37E-04	3.237	5.95E-03	57.52	97.31	73.12	0	116.5	514.7
519	22.92	3000	2250	21.199658	1.3077	185.057	2634.32	5125	0.1	1950	487500	2700000	0.1388	2.24E-04	1.816	1.31E-02	43.63	76.41	0	0	52.8	406.1
520	57.22	3000	5330	51.547022	1.6671	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0556	4.42E-04	5.019	1.17E-02	74.79	90.3	3	0	59.1	449.5
521	26.14	3000	2240	462.687238	20.0311	129.879	3753.49	5125	0.1	1950	487500	1587500	0.1217	2.01E-04	1.834	5.34E-03	41.83	98.92	89.19	0	129.7	359.6
522	23.02	3000	2140	58.987234	1.9693	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.1382	1.91E-04	1.7	1.11E-02	53.74	91.52	15.24	0	62.4	378.5
523	32.17	3000	4420	1.035428	0.042	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0989	5.47E-04	3.794	1.72E-02	51.28	0	0	0	40.3	604.4
524	26.1	3000	3000	9.98425	0.4656	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.1219	2.60E-04	2.078	1.63E-02	71.31	49.92	0	0	42.6	408.1
525	34.39	3000	2780	82.723005	5.1969	188.4683	2586.64	5125	0.1	1950	487500	2775000	0.0925	2.63E-04	2.438	1.07E-02	48.24	93.96	39.56	0	64.8	363.4
526	33.24	3000	2040	446.10414	19.4144	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.0957	2.41E-04	2.274	5.52E-03	17.92	98.88	88.79	0	125.6	350.6
527	22.22	3000	6090	8.182307	0.2267	83.1021	5866.28	5125	0.1	1950	487500	812500	0.1432	5.23E-04	2.848	1.13E-02	78.8	38.89	0	0	61.3	657
528	24.87	3000	3850	67.544595	3.1649	140.5704	3468.01	5125	0.1	1950	487500	1787500	0.1279	4.22E-04	2.669	7.45E-03	40.21	92.6	25.97	0	93.1	549.9
529	25.57	3000	1630	106.083276	2.878	81.3886	5989.78	5125	0.1	1950	487500	787500	0.1244	1.58E-04	1.643	1.06E-02	40.5	95.29	52.87	0	65.5	329.3
530	34.73	3000	4300	100.496141	4.1427	123.6681	3942	5125	0.1	1950	487500	1475000	0.0916	3.93E-04	3.169	7.78E-03	33.81	95.02	50.25	0	89.1	467.6
531	24.7	3000	3410	19.65531	0.6814	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1288	3.76E-04	2.474	1.03E-02	22.04	74.56	0	0	67.2	513.3
532	51.39	3000	6870	326.933699	8.1018	74.3438	6557.37	5125	0.1	1950	487500	687500	0.0619	4.17E-04	4.404	5.61E-03	58.32	98.47	84.71	0	123.6	439.1
533	39.42	3000	3250	68.07079	2.1111	93.0387	5239.76	5125	0.1	1950	487500	962500	0.0807	2.88E-04	2.804	1.10E-02	28.58	92.65	26.55	0	63	364.5
534	37.92	3000	5630	264.978879	7.9306	89.788	5429.46	5125	0.1	1950	487500	912500	0.0839	3.49E-04	3.103	6.24E-03	53.15	98.11	81.13	0	111.1	419.4
535	31.25	3000	4710	84.454841	3.0969	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.1018	4.48E-04	3.223	8.00E-03	81.85	94.08	40.8	0	86.7	528.6
536	31.59	3000	1560	187.151852	10.2233	163.877	2974.79	5125	0.1	1950	487500	2250000	0.1007	2.08E-04	2.044	8.51E-03	15.12	97.33	73.28	0	81.5	331.6
537	59.8	3000	3180	670.973986	37.8642	169.2951	2879.59	5125	0.1	1950	487500	2362500	0.0532	2.84E-04	3.7	4.98E-03	50.93	99.25	92.55	25.48	139.1	317.1
538	53.56	3000	5600	36.510149	1.2471	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.0594	6.69E-04	6.697	9.44E-03	64.69	86.31	0	0	73.4	640.8
539	39.72	3000	5910	45.220226	1.378	91.4206	5332.5	5125	0.1	1950	487500	937500	0.0801	5.70E-04	4.6	8.37E-03	48.92	88.94	0	0	82.8	593.5
540	39.72	3000	3430	131.766578	6.2029	141.2249	3451.94	5125	0.1	1950	487500	1800000	0.0801	3.27E-04	3.062	8.18E-03	18.57	96.21	62.05	0	84.7	395.1
541	23.43	3000	1630	193.616485	7.2898	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.1358	1.12E-04	1.416	9.33E-03	72.01	97.42	74.18	0	74.3	309.7
542	35.59	3000	1370	367.646802	20.4532	166.8979	2920.95	5125	0.1	1950	487500	2312500	0.0894	1.20E-04	1.677	8.96E-03	45.27	98.64	86.4	0	77.3	241.5
543	24.36	3000	1480	153.434897	8.75	171.0818	2849.51	5125	0.1	1950	487500	2400000	0.1306	1.75E-04	1.678	8.61E-03	23.16	96.74	67.41	0	80.5	353.1
544	34.84	3000	4200	85.111743	3.2252	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.0913	3.80E-04	3.102	8.16E-03	20.61	94.13	41.25	0	85	456.2
545	26.34	3000	3720	5.474484	0.2695	147.6897	3300.84	5125	0.1	1950	487500	1925000	0.1208	4.27E-04	2.785	1.27E-02	25.38	8.67	0	0	54.8	541.9
546	63.25	3000	4190	31.62726	1.65	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.0503	6.76E-04	7.791	1.07E-02	71.86	84.19	0	0	65.1	631.3
547	45.13	3000	4380	86.236208	3.3096	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0705	3.15E-04	3.257	1.15E-02	88.3	94.2	42.02	0	60.2	369.9
548	22.77	3000	2130	69.118074	2.9292	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.1397	2.06E-04	1.747	1.01E-02	43.03	92.77	27.66	0	68.5	393.2
549	24.53	3000	6600	96.329297	2.3581	73.4399	6638.08	5125	0.1	1950	487500	675000	0.1297	5.16E-04	3.012	5.82E-03	32.12	94.81	48.09	0	119.1	629.2
550	26.25	3000	2420	25.829295	0.915	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.1212	2.42E-04	2.009	1.30E-02	40.72	80.64	0	0	53.1	392.2
551	22.92	3000	1260	155.583983	5.433	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.1388	1.15E-04	1.418	9.61E-03	36.41	96.79	67.86	0	72.1	317.1
552	28.61	3000	4110	23.528471	1.365	174.0393	2801.09	5125	0.1	1950	487500	2462500	0.1112	7.23E-04	4.288	7.32E-03	40.12	78.75	0	0	94.7	768.2
553	25.27	3000	1340	24.09125	1.2618	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.1259	1.53E-04	1.615	1.54E-02	27.96	79.25	0	0	45.1	327.5
554	58.59	3000	3970	499.134729	20.4593	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0543	2.09E-04	2.941	7.41E-03	61.01	99	89.98	0	93.5	257.2
555	26.6	3000	3630	68.823972	1.8274	79.6568	6120	5125	0.1	1950	487500	762500	0.1196	2.70E-04	2.142	1.02E-02	73.92	92.74	27.35	0	67.9	412.7
556	22.42	3000	4040	377.848115	16.4439	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.1419	3.81E-04	2.356	4.02E-03	48.28	98.68	86.77	0	172.3	538.6
557	45.77	3000	1690	78.503651	2.9366	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0695	1.70E-04	2.237	1.52E-02	29.49	93.63	36.31	0	45.5	250.5
558	25.15	3000	3390	8.379591	0.2819	100.929	4830.13	5125	0.1	1950	487500	1087500	0.1265	3.89E-04	2.556	1.20E-02	20.67	40.33	0	0	57.9	520.8
559	26.38	3000	2170	38.633688	1.2898	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.1206	1.88E-04	1.787	1.37E-02	60.23	87.06	0	0	50.7	347.2
560	30.92	3000	1490	40.838051	2.4801	182.1901	2675.78	5125	0.1	1950	487500	2637500	0.1029	1.18E-04	1.58	1.80E-02	73.24	87.76	0	0	38.5	261.9
561	36.82	3000	1310	77.468452	4.8522	187.9019	2594.44	5125	0.1	1950	487500	2762500	0.0864	1.60E-04	1.936	1.40E-02	21	93.55	35.46	0	49.6	269.5
562	38.05	3000	4980	62.5456	2.3549	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0836	7.02E-04	5.247	7.59E-03	97.42	92.01	20.06	0	91.4	706.7
563	27.88	3000	3790	0.776189	0.0476	183.9129	2650.71	5125	0.1	1950	487500	2675000	0.1141	6.04E-04	3.675	1.32E-02	13.81	0	0	0	52.4	675.6
564	27.86	3000	2190	29.610217	0.87	88.1405	5530.94	5125	0.1	1950	487500	887500	0.1142	2.19E-04	1.971	1.37E-02	40.31	83.11	0	0	50.8	362.7
565	32.53	3000	4110	630.397173	21.2085	100.929	4830.13	5125	0.1	1950	487500	1087500	0.0978	2.66E-04	2.377	4.34E-03	57.03	99.21	92.07	20.68	159.8	374.5
566	27.1	3000	4640	222.612013	7.7172	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1174	4.20E-04	2.808	5.07E-03	24.23	97.75	77.54	0	136.8	531
567	22.45	3000	2420	18.049683	0.7649	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.1417	2.22E-04	1.792	1.38E-02	56.93	72.3	0	0	50.3	409.2

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
568	22.9	3000	4550	73.656174	2.7911	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1389	4.00E-04	2.455	7.34E-03	49.53	93.21	32.12	0	94.4	549.3
569	48.72	3000	1080	250.034033	10.6536	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0653	1.07E-04	1.829	1.33E-02	35.74	98	80	0	52	192.4
570	23.15	3000	5270	107.043416	3.49	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.1374	4.71E-04	2.734	6.20E-03	70.98	95.33	53.29	0	111.7	605.2
571	37.78	3000	740	1041.2663	45.5516	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0842	8.53E-05	1.512	5.19E-03	20.78	99.52	95.2	51.98	133.5	205.1
572	49.32	3000	4190	225.77042	9.2542	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0645	3.08E-04	3.413	7.63E-03	26.69	97.79	77.85	0	90.8	354.6
573	23.27	3000	2520	192.268059	5.6489	88.1405	5530.94	5125	0.1	1950	487500	887500	0.1367	2.05E-04	1.757	7.49E-03	58.25	97.4	73.99	0	92.5	387
574	35.31	3000	4460	92.810878	4.2468	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.0901	5.88E-04	4.302	6.23E-03	40.9	94.61	46.13	0	111.3	624.4
575	47.84	3000	810	998.058968	47.6339	143.1797	3404.81	5125	0.1	1950	487500	1837500	0.0665	4.52E-05	1.344	7.82E-03	79.28	99.5	94.99	49.9	88.6	143.9
576	35.31	3000	1510	153.618982	4.1676	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0901	1.79E-04	2.005	1.05E-02	21.22	96.75	67.45	0	66.2	291
577	32.07	3000	1130	191.93499	7.8224	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.0992	1.32E-04	1.673	1.05E-02	23.31	97.39	73.95	0	66	267.3
578	22.81	3000	4520	12.506029	0.483	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.1395	4.53E-04	2.64	1.04E-02	44.71	60.02	0	0	66.6	593.2
579	46.31	3000	4280	156.706224	4.6041	88.1405	5530.94	5125	0.1	1950	487500	887500	0.0687	2.75E-04	3.026	9.51E-03	45.15	96.81	68.09	0	72.9	334.9
580	35.95	3000	4670	21.884337	0.9672	132.592	3676.69	5125	0.1	1950	487500	1637500	0.0885	6.51E-04	4.719	8.65E-03	40.35	77.15	0	0	80.1	672.7
581	42.08	3000	4520	154.93677	6.8826	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.0756	6.20E-04	5.148	5.72E-03	72.46	96.77	67.73	0	121.1	627
582	21.22	3000	2680	16.390466	0.8551	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.1499	3.74E-04	2.261	9.84E-03	13.52	69.49	0	0	70.5	546
583	56.81	3000	4510	101.231914	4.7434	140.5704	3468.01	5125	0.1	1950	487500	1787500	0.056	5.29E-04	5.772	7.38E-03	35.61	95.06	50.61	0	93.9	520.7
584	49.25	3000	3290	471.972312	24.3288	154.6414	3152.45	5125	0.1	1950	487500	2062500	0.0646	2.30E-04	2.802	6.74E-03	62.11	98.94	89.41	0	102.8	291.6
585	37.74	3000	1380	47.810466	2.2922	143.8283	3389.46	5125	0.1	1950	487500	1850000	0.0843	1.24E-04	1.744	1.88E-02	54.7	89.54	0	0	36.8	236.8
586	39.62	3000	4700	48.171804	1.7664	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.0803	3.94E-04	3.478	1.06E-02	56.24	89.62	0	0	65.2	449.9
587	27.74	3000	3740	721.098281	32.3554	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.1147	2.36E-04	2.039	3.95E-03	76.8	99.31	93.07	30.66	175.6	376.8
588	38.66	3000	1510	654.990019	26.0773	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.0823	1.11E-04	1.681	7.03E-03	59.99	99.24	92.37	23.66	98.6	222.9
589	32.86	3000	4440	642.543332	24.6597	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0968	3.24E-04	2.69	3.88E-03	69.65	99.22	92.22	22.18	178.7	419.6
590	48.28	3000	1340	160.685573	5.1968	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0659	1.31E-04	2.004	1.43E-02	33.89	96.89	68.88	0	48.5	212.7
591	31.97	3000	3060	224.11543	9.2908	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.0995	2.31E-04	2.176	7.90E-03	56.74	97.77	77.69	0	87.7	348.7
592	34.47	3000	1340	812.57999	22.0449	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0923	1.06E-04	1.581	5.67E-03	51.95	99.38	93.85	38.47	122.2	235.1
593	26.98	3000	3270	40.693882	2.0465	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.1179	3.05E-04	2.307	1.05E-02	37.35	87.71	0	0	65.9	438.2
594	25.05	3000	4720	3.585836	0.1315	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.127	5.20E-04	3.07	1.37E-02	70.07	0	0	0	50.4	628.1
595	23.9	3000	1450	722.53194	20.0146	83.1021	5866.28	5125	0.1	1950	487500	812500	0.1331	1.57E-04	1.597	4.21E-03	25.76	99.31	93.08	30.8	164.8	342.4
596	50.42	3000	4950	693.578183	25.6042	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0631	4.19E-04	4.357	3.46E-03	37.39	99.28	92.79	27.91	200.3	442.9
597	52.15	3000	2570	1122.769622	50.1272	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.061	1.66E-04	2.372	4.32E-03	53.26	99.55	95.55	55.47	160.5	233.1
598	27.01	3000	4060	2.426547	0.1045	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.1178	4.90E-04	3.103	1.56E-02	67.99	0	0	0	44.3	588.8
599	40.02	3000	2380	433.233343	14.9084	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.0795	1.49E-04	1.947	8.25E-03	85.12	98.85	88.46	0	84	249.3
600	42.3	3000	5320	253.201993	8.4531	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.0752	4.26E-04	3.863	5.57E-03	29.42	98.03	80.25	0	124.4	468
601	34.69	3000	4930	51.638773	2.0681	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.0917	6.36E-04	4.506	7.11E-03	46.46	90.32	3.17	0	97.4	665.6
602	44.43	3000	4250	165.277201	6.8899	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0716	3.69E-04	3.602	7.52E-03	38.04	96.97	69.75	0	92.2	415.5
603	38.24	3000	6950	106.608687	2.7371	77.0232	6329.26	5125	0.1	1950	487500	725000	0.0832	5.69E-04	4.456	6.17E-03	35.68	95.31	53.1	0	112.4	597.2
604	34.5	3000	1400	92.619999	3.3042	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.0922	1.27E-04	1.695	1.46E-02	46.62	94.6	46.02	0	47.6	251.8
605	48.35	3000	1190	1185.80152	59.6337	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.0658	9.58E-05	1.736	5.12E-03	46.18	99.58	95.78	57.83	135.4	184
606	39.03	3000	1190	71.956703	3.1152	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0815	1.38E-04	1.854	1.59E-02	25.11	93.05	30.51	0	43.7	243.4
607	51.15	3000	570	1791.854662	93.4812	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.0622	4.50E-05	1.365	3.79E-03	40.58	99.72	97.21	72.1	183	136.8
608	40.63	3000	4320	64.071077	2.4898	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0783	2.96E-04	2.909	1.21E-02	70.71	92.2	21.96	0	57.3	367
609	24.53	3000	1050	249.426548	7.1899	86.4774	5637.31	5125	0.1	1950	487500	862500	0.1297	6.78E-05	1.264	9.73E-03	54.57	98	79.95	0	71.2	264.2
610	27.64	3000	1570	53.905155	2.0427	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1151	1.74E-04	1.763	1.28E-02	31	90.72	7.24	0	54.1	326.9
611	56.11	3000	4290	822.932146	31.5827	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0567	1.89E-04	2.685	5.61E-03	93.99	99.39	93.92	39.24	123.5	245.2
612	36.48	3000	3510	316.564716	17.8643	169.2951	2879.59	5125	0.1	1950	487500	2362500	0.0872	4.32E-04	3.504	4.79E-03	32.02	98.42	84.21	0	144.6	492.2
613	36.28	3000	4720	2.159754	0.0959	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.0877	6.68E-04	4.85	1.27E-02	29.48	0	0	0	54.6	685.2
614	32.7	3000	4410	28.443272	1.4898	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.0973	7.21E-04	4.748	7.36E-03	41.51	82.42	0	0	94.2	744.2
615	54.1	3000	750	1657.122258	70.6075	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0588	6.07E-05	1.522	4.15E-03	45.52	99.7	96.98	69.83	167	144.2
616	28.74	3000	1600	316.580802	12.378	117.2971	4156.11	5125	0.1	1950	487500	1362500	0.1107	1.17E-04	1.536	8.56E-03	63.67	98.42	84.21	0	81	274
617	26.27	3000	900	210.239318	7.3947	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.1211	9.42E-05	1.393	9.95E-03	23.87	97.62	76.22	0	69.7	271.8
618	58.05	3000	1190	570.611644	21.4839	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0548	9.80E-05	1.904	1.02E-02	45.35	99.12	91.24	12.37	68.3	168.1
619	27.47	3000	7170	11.863459	0.2868	72.5304	6721.32	5125	0.1	1950	487500	662500	0.1158	5.84E-04	3.547	9.42E-03	32.94	57.85	0	0	73.6	661.7
620	25.91	3000	3300	21.618584	1.1809	163.877	2974.79	5125	0.1	1950	487500	2250000	0.1228	3.65E-04	2.503	1.08E-02	34.07	76.87	0	0	64.3	495.1
621	28.69	3000	1890	143.982241	5.2441	109.2665	4461.57	5125	0.1	1950	487500	1225000	0.1109	1.96E-04	1.894	9.29E-03	31.13	96.53	65.27	0	74.6	338.3
622	59.58	3000	5320	21.419321	0.7316	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.0534	4.77E-04	5.511	1.26E-02	38.46	76.66	0	0	55.2	474.1
623	51.31	3000	630	1693.895738	92.5302	163.877	2974.79	5125	0.1	1950	487500	2250000	0.062	4.74E-05	1.386	4.16E-03	46.56	99.7	97.05	70.48	166.7	138.5
624	23.07	3000	1590	567.197139	34.0092	179.8802	2710.14	5125	0.1	1950	487500	2587500	0.1379	1.18E-04	1.433	5.36E-03	54.16	99.12	91.18	11.85	129.3	318.4
625	28.4	3000	2970	326.112076	18.9188	174.0393	2801.09	5125	0.1	1950	487500	2462500	0.112	2.52E-04	2.138	6.04E-03	54.3	98.47	84.67	0	114.7	385.8
626	25.21	3000	1030	605.150413	21.74	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.1262	8.79E-05	1.352	5.91E-03	34.29	99.17	91.74	17.38	117.3	274.9
627	33.66	3000	2900	188.474618	8.2024	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.0945	2.60E-04	2.392	7.93E-03	33.5	97.35	73.47	0	87.4	364.2
628	47.13	3000	2730	217.677052	8.5629	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.0675	2.43E-04	2.817	8.87E-03	24.98	97.7	77.03	0	78.1	306.3
629	48.94	3000	1370	868.230408	63.0652	217.9093	2237.17	5125	0.1	1950	487500	3450000	0.065	1.31E-04	2.016	5.97E-03	32.09	99.42	94.24	42.41	116.2	211.1
630	46.51	3000	4230	8.53803	0.4419	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.0684	5.84E-04	5.317	1.18E-02	29.55	41.44	0	0	58.7	585.9

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
631	32.4	3000	2760	57.914869	3.6384	188.4683	2586.64	5125	0.1	1950	487500	2775000	0.0982	2.82E-04	2.451	1.16E-02	73.32	91.37	13.67	0	59.8	387.8
632	42.76	3000	4140	3.468053	0.147	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0744	3.91E-04	3.655	1.82E-02	36.45	0	0	0	38.2	438.1
633	34.92	3000	2030	103.457814	6.3622	184.4854	2642.48	5125	0.1	1950	487500	2687500	0.0911	2.49E-04	2.379	9.89E-03	16.55	95.17	51.67	0	70.1	349.2
634	29.16	3000	1160	147.023315	5.9229	120.8573	4033.68	5125	0.1	1950	487500	1425000	0.1091	1.53E-04	1.707	1.02E-02	17.51	96.6	65.99	0	67.7	299.9
635	25.37	3000	4320	46.100623	2.15	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.1254	7.36E-04	3.968	6.52E-03	78.43	89.15	0	0	106.3	801.5
636	34.58	3000	3430	117.761708	7.6624	195.2002	2497.44	5125	0.1	1950	487500	2925000	0.092	5.01E-04	3.754	6.16E-03	24.8	95.75	57.54	0	112.5	556.3
637	53.11	3000	2580	91.16153	6.3795	209.9408	2322.08	5125	0.1	1950	487500	3262500	0.0599	3.09E-04	3.604	1.20E-02	79.54	94.52	45.15	0	57.7	347.8
638	60.03	3000	3270	349.875801	17.7424	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.053	2.00E-04	2.91	9.20E-03	52.04	98.57	85.71	0	75.4	248.5
639	29.76	3000	3750	31.773059	1.6112	152.1319	3204.46	5125	0.1	1950	487500	2012500	0.1069	5.54E-04	3.618	8.91E-03	68.67	84.26	0	0	77.8	623
640	43.17	3000	3590	975.824271	46.1493	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0737	2.48E-04	2.7	3.67E-03	78.3	99.49	94.88	48.76	189.1	320.6
641	42.03	3000	4630	21.636503	0.8146	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0757	4.01E-04	3.679	1.26E-02	41.14	76.89	0	0	55	448.6
642	21.39	3000	1220	71.01264	3.2021	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.1487	7.49E-05	1.255	1.32E-02	62.44	92.96	29.59	0	52.6	300.6
643	32.8	3000	1010	360.530532	15.279	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.097	1.08E-04	1.564	8.82E-03	27.16	98.61	86.13	0	78.6	244.4
644	26.21	3000	1470	31.334956	0.9549	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1214	1.39E-04	1.58	1.58E-02	47.51	84.04	0	0	44	309
645	31.07	3000	1260	645.373055	29.3882	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1024	9.15E-05	1.452	6.57E-03	55.88	99.23	92.25	22.53	105.5	239.5
646	43.05	3000	3020	296.653735	11.3133	114.4096	4261	5125	0.1	1950	487500	1312500	0.0739	2.17E-04	2.484	8.25E-03	48.75	98.31	83.15	0	84	295.8
647	35.51	3000	4580	133.621606	5.5082	123.6681	3942	5125	0.1	1950	487500	1475000	0.0896	5.62E-04	4.17	6.02E-03	64.89	96.26	62.58	0	115.2	602
648	22.95	3000	4990	1.092661	0.0401	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.1386	5.60E-04	3.043	1.29E-02	21.77	0	0	0	54	679.4
649	21.25	3000	3590	132.337021	6.2873	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1497	3.03E-04	2.023	7.04E-03	81.91	96.22	62.22	0	98.4	487.8
650	21.58	3000	4330	11.260379	0.3431	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1474	4.02E-04	2.38	1.10E-02	43.06	55.6	0	0	63.1	565.1
651	28.18	3000	1930	247.148542	9.1845	111.4852	4372.78	5125	0.1	1950	487500	1262500	0.1129	1.74E-04	1.781	8.00E-03	44.1	97.98	79.77	0	86.6	323.9
652	54.76	3000	1900	952.345109	43.1554	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.0581	1.69E-04	2.467	5.05E-03	28.28	99.47	94.75	47.5	137.4	230.9
653	36.91	3000	1330	1059.711651	35.9245	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.0862	6.99E-05	1.41	5.46E-03	95	99.53	95.28	52.82	126.9	195.8
654	52.07	3000	1170	1103.514334	45.2325	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.0611	9.64E-05	1.798	5.74E-03	45.68	99.55	95.47	54.69	120.7	177
655	42.59	3000	3590	417.842827	19.4874	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.0747	2.29E-04	2.548	7.00E-03	89.97	98.8	88.03	0	99.1	306.6
656	29.11	3000	2690	24.077182	0.9813	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.1093	2.88E-04	2.33	1.25E-02	27.51	79.23	0	0	55.6	410.3
657	38.8	3000	830	594.987527	26.1629	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.082	8.25E-05	1.509	8.23E-03	29.84	99.16	91.6	15.96	84.2	199.3
658	22.72	3000	3940	0.441566	0.0213	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.14	6.81E-04	3.459	1.53E-02	58.64	0	0	0	45.4	780.1
659	34.02	3000	4400	61.483301	2.3448	114.4096	4261	5125	0.1	1950	487500	1312500	0.0935	3.32E-04	2.795	1.10E-02	91.71	91.87	18.68	0	62.8	421
660	25.66	3000	7130	28.391033	0.6777	71.6152	6807.21	5125	0.1	1950	487500	650000	0.124	5.55E-04	3.264	8.31E-03	54.63	82.39	0	0	83.4	652
661	22.76	3000	4980	143.827801	4.9494	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.1398	4.06E-04	2.468	5.91E-03	55.03	96.52	65.24	0	117.4	555.7
662	46.85	3000	4930	2.498156	0.0922	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0679	4.75E-04	4.534	1.67E-02	26.49	0	0	0	41.6	496
663	30.44	3000	1930	199.485722	5.8609	88.1405	5530.94	5125	0.1	1950	487500	887500	0.1045	2.17E-04	2.048	8.07E-03	24.5	97.49	74.94	0	85.9	344.7
664	41.1	3000	1820	68.470778	2.9643	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0774	2.02E-04	2.319	1.36E-02	22.94	92.7	26.98	0	51	289.2
665	30.5	3000	2710	20.483907	0.8587	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1043	2.44E-04	2.18	1.51E-02	49.83	75.59	0	0	46.1	366.4
666	22.72	3000	3580	75.498044	3.9231	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.14	4.31E-04	2.556	6.76E-03	31.9	93.38	33.77	0	102.5	576.6
667	24.34	3000	6160	1.179192	0.0359	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1307	6.99E-04	3.703	1.13E-02	21.09	0	0	0	61.6	779.7
668	60.6	3000	1930	900.333045	47.1566	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.0525	1.53E-04	2.473	5.88E-03	35.88	99.44	94.45	44.46	118	209.1
669	36.15	3000	3530	115.273511	7.4362	193.5283	2519.01	5125	0.1	1950	487500	2887500	0.088	5.64E-04	4.238	6.06E-03	45.03	95.66	56.62	0	114.4	600.8
670	48.42	3000	4170	155.147457	8.349	161.4401	3019.69	5125	0.1	1950	487500	2200000	0.0657	5.40E-04	5.156	5.94E-03	32.42	96.78	67.77	0	116.7	545.7
671	22.37	3000	3310	86.484368	4.3127	149.6016	3258.66	5125	0.1	1950	487500	1962500	0.1422	3.11E-04	2.105	7.76E-03	38.35	94.22	42.19	0	89.3	482.3
672	30.89	3000	4140	41.324497	1.8171	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.103	4.15E-04	3.038	8.93E-03	20.03	87.9	0	0	77.6	504.1
673	39.28	3000	890	271.529919	13.3095	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.081	6.51E-05	1.406	1.36E-02	59.67	98.16	81.59	0	50.9	183.5
674	21.45	3000	1000	182.702997	8.2792	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1483	1.05E-04	1.357	8.77E-03	21.65	97.26	72.63	0	79	324.2
675	22.05	3000	1630	35.413746	1.6978	143.8283	3389.46	5125	0.1	1950	487500	1850000	0.1443	1.52E-04	1.532	1.32E-02	44.87	85.88	0	0	52.5	356
676	53.47	3000	2570	289.821998	13.7065	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0595	1.49E-04	2.264	1.18E-02	89.41	98.27	82.75	0	58.9	217
677	23.37	3000	4870	0.446283	0.0142	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.1361	5.13E-04	2.905	1.60E-02	31.52	0	0	0	43.3	636.8
678	44.25	3000	1740	582.996442	15.8164	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0719	1.71E-04	2.199	6.56E-03	27.2	99.14	91.42	14.24	105.7	254.7
679	39.13	3000	6330	5.528768	0.1532	83.1021	5866.28	5125	0.1	1950	487500	812500	0.0813	5.45E-04	4.386	1.32E-02	37.1	9.56	0	0	52.7	574.4
680	51.81	3000	3840	15.165401	0.6771	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.0614	2.98E-04	3.452	1.77E-02	39.6	67.03	0	0	39.2	341.4
681	25.64	3000	5390	298.940675	8.3656	83.9523	5806.87	5125	0.1	1950	487500	825000	0.1241	3.18E-04	2.297	5.46E-03	85.16	98.33	83.27	0	126.9	459.2
682	28.28	3000	2520	10.407833	0.3713	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.1125	2.57E-04	2.157	1.58E-02	37.75	51.96	0	0	43.9	390.8
683	26.91	3000	3350	3.678702	0.1447	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.1182	3.62E-04	2.546	1.51E-02	27.64	0	0	0	45.9	484.9
684	51.9	3000	4390	138.097073	5.5958	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0613	3.83E-04	4.155	8.35E-03	45.43	96.38	63.79	0	83	410.3
685	57.63	3000	1600	639.974871	17.5455	82.2476	5927.23	5125	0.1	1950	487500	800000	0.0552	1.06E-04	1.973	9.16E-03	66.76	99.22	92.19	21.87	75.7	175.4
686	25.84	3000	6210	20.431579	0.6926	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.1231	7.69E-04	4.158	6.42E-03	14.95	75.53	0	0	108	824.6
687	50.34	3000	450	459.05366	19.5596	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.0632	2.34E-05	1.187	1.59E-02	50.66	98.91	89.11	0	43.7	120.9
688	41.32	3000	2980	185.342247	11.0414	178.7197	2727.74	5125	0.1	1950	487500	2562500	0.077	3.18E-04	3.087	8.16E-03	72.89	97.3	73.02	0	85	383
689	39.47	3000	1690	124.432797	5.3871	129.879	3753.49	5125	0.1	1950	487500	1587500	0.0806	1.66E-04	2.042	1.25E-02	35.31	95.98	59.82	0	55.3	265.1
690	27.35	3000	6110	81.975293	2.2708	83.1021	5866.28	5125	0.1	1950	487500	812500	0.1163	4.83E-04	3.098	7.30E-03	81.26	93.9	39.01	0	95	580.4
691	62.01	3000	2250	602.974735	19.501	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0513	1.29E-04	2.273	9.01E-03	76.88	99.17	91.71	17.08	77	187.9
692	25.61	3000	1270	343.515327	10.9284	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.1242	9.52E-05	1.387	8.04E-03	50.62	98.54	85.44	0	86.2	277.6
693	27.08	3000	1500	114.013527	2.7565	72.5304	6721.32	5125	0.1	1950	487500	662500	0.1175	1.59E-04	1.683	1.06E-02	33.18	95.61	56.15	0	65.2	318.5

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
694	28.66	3000	2200	10.498442	0.4497	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.111	2.16E-04	1.984	1.76E-02	47.2	52.37	0	0	39.4	354.8
695	48.42	3000	6480	326.639758	9.7761	89.788	5429.46	5125	0.1	1950	487500	912500	0.0657	5.66E-04	5.355	4.12E-03	22.27	98.47	84.69	0	168.5	566.7
696	36.74	3000	4560	100.649829	3.7895	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0866	3.56E-04	3.08	8.68E-03	48.33	95.03	50.32	0	79.9	429.7
697	22.69	3000	1790	133.92072	7.6636	171.6754	2839.66	5125	0.1	1950	487500	2412500	0.1402	1.38E-04	1.498	9.72E-03	63.81	96.27	62.66	0	71.3	338.3
698	33.24	3000	4600	323.853261	15.3159	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0957	6.53E-04	4.448	3.54E-03	49.91	98.46	84.56	0	195.8	685.7
699	28.58	3000	3730	441.667804	20.0141	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1113	2.61E-04	2.185	5.18E-03	71.8	98.87	88.68	0	133.9	391.7
700	21.31	3000	4320	10.442228	0.4008	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.1493	3.82E-04	2.294	1.19E-02	63.16	52.12	0	0	58.2	551.7
701	41.75	3000	810	726.512455	15.982	65.9946	7386.97	5125	0.1	1950	487500	575000	0.0762	8.22E-05	1.545	7.57E-03	29.07	99.31	93.12	31.18	91.6	189.7
702	30.83	3000	1840	129.248979	4.8978	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1032	1.35E-04	1.663	1.23E-02	77.47	96.13	61.31	0	56.5	276.4
703	28.53	3000	5710	90.337403	2.8016	93.0387	5239.76	5125	0.1	1950	487500	962500	0.1115	5.34E-04	3.423	6.31E-03	46.11	94.47	44.65	0	109.8	614.8
704	24.42	3000	1950	200.111327	12.458	186.7666	2610.21	5125	0.1	1950	487500	2737500	0.1303	2.03E-04	1.789	7.43E-03	32.47	97.5	75.01	0	93.3	375.5
705	34.77	3000	4540	6.376221	0.2569	120.8573	4033.68	5125	0.1	1950	487500	1425000	0.0915	6.12E-04	4.382	1.29E-02	67.75	21.58	0	0	53.6	645.9
706	28.61	3000	3060	10.902558	0.4645	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.1112	2.72E-04	2.236	1.61E-02	59.92	54.14	0	0	43.1	400.6
707	41.69	3000	2820	272.203719	8.2211	90.6061	5380.43	5125	0.1	1950	487500	925000	0.0763	1.67E-04	2.103	1.02E-02	96.19	98.16	81.63	0	68.2	258.5
708	22.85	3000	3360	206.879912	7.6372	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.1392	3.12E-04	2.133	5.82E-03	36.31	97.58	75.83	0	119.2	478.4
709	54.29	3000	5850	228.122904	6.7023	88.1405	5530.94	5125	0.1	1950	487500	887500	0.0586	4.33E-04	4.731	6.88E-03	80.79	97.81	78.08	0	100.8	446.6
710	33.52	3000	1530	47.25283	2.1307	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.0949	1.42E-04	1.754	1.66E-02	50.99	89.42	0	0	41.7	268.1
711	25.03	3000	3990	166.471205	7.3576	132.592	3676.69	5125	0.1	1950	487500	1637500	0.1271	3.98E-04	2.583	5.89E-03	52.88	97	69.96	0	117.7	528.8
712	28.79	3000	2730	11.513271	0.4719	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.1105	2.91E-04	2.33	1.44E-02	29.12	56.57	0	0	48.1	414.8
713	25.68	3000	4880	1.415321	0.059	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.1239	7.84E-04	4.198	1.15E-02	40.79	0	0	0	60.4	837.8
714	27.93	3000	1140	153.661159	6.7221	131.239	3714.6	5125	0.1	1950	487500	1612500	0.1139	1.08E-04	1.479	1.13E-02	36.26	96.75	67.46	0	61.4	271.3
715	24.93	3000	710	455.521214	27.8384	183.3396	2659	5125	0.1	1950	487500	2662500	0.1276	5.15E-05	1.204	7.71E-03	26.56	98.9	89.02	0	90	247.5
716	22.53	3000	920	75.45908	4.5536	181.037	2692.82	5125	0.1	1950	487500	2612500	0.1412	9.08E-05	1.325	1.25E-02	23.92	93.37	33.74	0	55.5	301.4
717	62.38	3000	1090	1181.161344	48.6907	123.6681	3942	5125	0.1	1950	487500	1475000	0.051	6.71E-05	1.665	6.97E-03	75.19	99.58	95.77	57.67	99.5	136.8
718	32.46	3000	2900	1.742395	0.0865	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.098	3.77E-04	2.947	1.68E-02	10.71	0	0	0	41.4	465.3
719	30.04	3000	3970	141.562305	6.0318	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.1059	3.16E-04	2.507	8.10E-03	90.4	96.47	64.68	0	85.5	427.8
720	32.76	3000	3920	60.598291	2.651	131.239	3714.6	5125	0.1	1950	487500	1612500	0.0971	3.22E-04	2.678	1.02E-02	46.01	91.75	17.49	0	68	418.8
721	22.87	3000	3280	103.227779	5.7014	165.6929	2942.19	5125	0.1	1950	487500	2287500	0.1391	3.84E-04	2.396	6.80E-03	52.63	95.16	51.56	0	102	536.9
722	24.23	3000	1870	1235.258928	48.0016	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.1313	1.39E-04	1.534	2.78E-03	56.12	99.6	95.95	59.52	249.8	324.6
723	42.59	3000	3870	40.018758	1.631	122.2668	3987.18	5125	0.1	1950	487500	1450000	0.0747	2.95E-04	2.996	1.31E-02	38.17	87.51	0	0	52.8	360.5
724	42.7	3000	1560	76.111119	3.0302	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.0745	1.97E-04	2.339	1.34E-02	15.2	93.43	34.31	0	51.6	280.7
725	47.27	3000	3960	37.008414	1.4203	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0673	3.09E-04	3.321	1.32E-02	28.01	86.49	0	0	52.6	360
726	22.64	3000	5480	94.946428	3.2431	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.1405	6.37E-04	3.291	5.02E-03	37.59	94.73	47.34	0	138	744.9
727	24.93	3000	5840	9.820233	0.2404	73.4399	6638.08	5125	0.1	1950	487500	675000	0.1276	5.25E-04	3.08	9.87E-03	26.95	49.08	0	0	70.2	633.2
728	27.96	3000	710	553.54963	16.5674	89.788	5429.46	5125	0.1	1950	487500	912500	0.1138	5.17E-05	1.23	7.59E-03	31.07	99.1	90.97	9.67	91.3	225.4
729	21.85	3000	2250	118.967872	5.4174	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1456	2.44E-04	1.846	7.72E-03	30.42	95.8	57.97	0	89.8	433
730	37.3	3000	2810	934.989828	38.9771	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0853	2.40E-04	2.42	3.57E-03	32.14	99.47	94.65	46.52	194.3	332.5
731	35.83	3000	8440	183.447904	3.5529	58.1021	8390.4	5125	0.1	1950	487500	475000	0.0888	4.49E-04	3.556	5.98E-03	45.92	97.27	72.74	0	115.9	508.7
732	30.13	3000	4890	6.541012	0.2495	114.4096	4261	5125	0.1	1950	487500	1312500	0.1056	6.53E-04	4.128	1.11E-02	54.76	23.56	0	0	62.5	702.2
733	32.86	3000	1510	27.408425	1.4805	162.0511	3008.31	5125	0.1	1950	487500	2212500	0.0968	1.82E-04	1.949	1.61E-02	24.52	81.76	0	0	43	304
734	25.86	3000	5470	3.994769	0.1292	97.024	5024.53	5125	0.1	1950	487500	1025000	0.123	5.73E-04	3.355	1.17E-02	41.31	0	0	0	59	664.8
735	27.76	3000	2890	268.950347	13.4687	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.1146	2.40E-04	2.06	6.63E-03	47.04	98.14	81.41	0	104.5	380.3
736	21.67	3000	3570	26.462797	0.8489	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.1468	3.06E-04	2.055	1.09E-02	64.14	81.11	0	0	63.5	486
737	27.43	3000	6040	16.757581	0.4642	83.1021	5866.28	5125	0.1	1950	487500	812500	0.116	4.55E-04	2.981	1.17E-02	84.65	70.16	0	0	59.3	557.1
738	33.84	3000	3270	52.142329	3.0044	172.8593	2820.21	5125	0.1	1950	487500	2437500	0.094	4.99E-04	3.684	9.14E-03	88.81	90.41	4.11	0	75.8	557.8
739	42.53	3000	4080	727.945121	31.3493	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.0748	3.33E-04	3.252	3.75E-03	42.49	99.31	93.13	31.31	184.8	391.9
740	26.51	3000	5930	56.406246	1.6572	88.1405	5530.94	5125	0.1	1950	487500	887500	0.12	5.36E-04	3.256	7.11E-03	49.96	91.14	11.36	0	97.5	629.4
741	30.8	3000	3170	159.807888	9.05	169.8917	2869.47	5125	0.1	1950	487500	2375000	0.1033	3.30E-04	2.613	7.15E-03	40.67	96.87	68.71	0	96.9	434.9
742	24.99	3000	4650	3.716419	0.1471	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.1273	5.59E-04	3.22	1.16E-02	33.1	0	0	0	60	660.3
743	29.51	3000	3700	38.960569	1.2498	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.1078	2.97E-04	2.391	1.17E-02	56.4	87.17	0	0	59.5	415.2
744	22.69	3000	2630	10.051162	0.5712	170.4873	2859.45	5125	0.1	1950	487500	2387500	0.1402	2.81E-04	2.015	1.35E-02	35.77	50.25	0	0	51.2	455
745	47.62	3000	1410	207.486483	7.6596	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0668	1.37E-04	2.039	1.26E-02	34.46	97.59	75.9	0	54.9	219.4
746	29.84	3000	4000	0.716856	0.0351	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1066	5.80E-04	3.749	1.55E-02	32.23	0	0	0	44.7	643.9
747	37.04	3000	730	940.63794	52.3302	166.8979	2920.95	5125	0.1	1950	487500	2312500	0.0859	6.17E-05	1.363	6.22E-03	34.72	99.47	94.68	46.84	111.5	188.6
748	29.76	3000	3970	1.118676	0.0577	154.6414	3152.45	5125	0.1	1950	487500	2062500	0.1069	5.57E-04	3.633	1.40E-02	19.59	0	0	0	49.5	625.7
749	21.88	3000	2590	83.533177	3.3257	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1454	2.80E-04	1.973	8.05E-03	28.48	94.01	40.14	0	86.1	462.2
750	61.18	3000	5930	5.012348	0.2181	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.052	7.60E-04	8.393	1.14E-02	24.68	0.25	0	0	60.9	703.1
751	29.24	3000	3110	99.033488	5.8227	176.3872	2763.81	5125	0.1	1950	487500	2512500	0.1088	3.53E-04	2.641	7.86E-03	37.91	94.95	49.51	0	88.2	463
752	28.46	3000	1770	350.468867	12.0603	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.1118	1.62E-04	1.733	7.08E-03	40.16	98.57	85.73	0	97.9	312.2
753	54.95	3000	1980	287.888531	9.9801	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.0579	1.46E-04	2.275	1.16E-02	51.07	98.26	82.63	0	59.6	212.2
754	42.93	3000	5420	69.054806	2.5151	109.2665	4461.57	5125	0.1	1950	487500	1225000	0.0741	6.26E-04	5.269	6.99E-03	42.75	92.76	27.59	0	99.2	629
755	37.17	3000	1180	869.794897	31.03	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.0856	8.43E-05	1.498	6.13E-03	60.79	99.43	94.25	42.52	113.2	206.6
756	27.01	3000	2170	21.375578	0.7246	101.7009	4793.47	5125	0.1	1950	487500	1100000	0.1178	2.10E-04	1.903	1.48E-02	44.96	76.61	0	0	46.8	361.1

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
757	29.65	3000	3310	665.399885	21.1686	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.1073	2.10E-04	1.99	4.56E-03	71.24	99.25	92.49	24.86	152	343.9
758	31.69	3000	1580	1384.08131	42.5519	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1004	1.11E-04	1.557	3.12E-03	60.14	99.64	96.39	63.87	222.5	251.9
759	27.33	3000	1640	107.85864	5.8262	162.0511	3008.31	5125	0.1	1950	487500	2212500	0.1164	1.16E-04	1.502	1.28E-02	81.61	95.36	53.64	0	54.4	281.6
760	59.8	3000	4800	422.62189	16.9259	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.0532	4.08E-04	4.881	4.80E-03	13.62	98.82	88.17	0	144.3	418.3
761	21.37	3000	5000	0.336084	0.0119	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.1489	5.74E-04	2.949	1.54E-02	37.62	0	0	0	45	707.5
762	28.76	3000	4570	322.515914	11.8265	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.1106	2.93E-04	2.34	5.80E-03	82.81	98.45	84.5	0	119.5	416.9
763	47.55	3000	2750	442.142336	20.6207	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.0669	1.71E-04	2.295	8.21E-03	70.16	98.87	88.69	0	84.4	247.3
764	22.68	3000	1470	78.100146	3.4694	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.1403	1.50E-04	1.541	1.09E-02	33.13	93.6	35.98	0	63.9	348.4
765	30.59	3000	3910	12.260831	0.4705	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.104	4.00E-04	2.944	1.19E-02	20.49	59.22	0	0	58.4	493.3
766	27.62	3000	4740	88.177909	3.2552	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.1152	4.69E-04	3.056	7.06E-03	64.34	94.33	43.3	0	98.2	567.2
767	32.3	3000	4190	10.92199	0.4553	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0985	4.69E-04	3.407	1.33E-02	74.55	54.22	0	0	52.2	540.6
768	24.01	3000	1950	25.773565	1.0139	118.0135	4130.88	5125	0.1	1950	487500	1375000	0.1325	2.11E-04	1.806	1.31E-02	34.88	80.6	0	0	53.1	385.4
769	26.31	3000	3170	11.656237	0.632	162.6609	2997.03	5125	0.1	1950	487500	2225000	0.1209	3.01E-04	2.259	1.44E-02	56.61	57.1	0	0	48.3	440.1
770	28.35	3000	1540	280.910205	13.5887	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.1122	1.19E-04	1.538	8.88E-03	59.47	98.22	82.2	0	78	277.9
771	60.71	3000	1630	756.317471	24.4603	97.024	5024.53	5125	0.1	1950	487500	1025000	0.0524	1.44E-04	2.392	6.96E-03	30.45	99.34	93.39	33.89	99.6	201.9
772	21.45	3000	5290	127.689862	4.1297	97.024	5024.53	5125	0.1	1950	487500	1025000	0.1483	4.41E-04	2.502	5.78E-03	61.17	96.08	60.84	0	119.9	597.7
773	21.64	3000	3070	37.112745	1.5471	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.147	2.79E-04	1.96	1.03E-02	50.03	86.53	0	0	67.6	464.2
774	30.33	3000	5890	214.300946	6.4723	90.6061	5380.43	5125	0.1	1950	487500	925000	0.1049	5.60E-04	3.7	4.70E-03	59.21	97.67	76.67	0	147.6	625.3
775	21.52	3000	5180	80.487494	2.9514	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.1478	6.55E-04	3.241	5.16E-03	43.6	93.79	37.88	0	134.4	771.8
776	59.13	3000	2130	142.53827	5.1562	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.0538	1.84E-04	2.729	1.35E-02	28.09	96.49	64.92	0	51.5	236.6
777	62.38	3000	650	1563.501002	53.8032	103.2361	4722.19	5125	0.1	1950	487500	1125000	0.051	4.30E-05	1.426	5.62E-03	59.3	99.68	96.8	68.02	123.3	117.1
778	23.78	3000	2100	27.979387	0.9982	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.1338	2.36E-04	1.891	1.21E-02	30.84	82.13	0	0	57.4	407.5
779	31.44	3000	3520	225.915543	11.2658	149.6016	3258.66	5125	0.1	1950	487500	1962500	0.1012	3.40E-04	2.699	6.36E-03	59.84	97.79	77.87	0	109.1	440
780	26.82	3000	4190	41.347268	2.0179	146.4082	3329.73	5125	0.1	1950	487500	1900000	0.1186	6.15E-04	3.62	6.94E-03	39.91	87.91	0	0	99.8	691.6
781	49.63	3000	2140	896.765411	48.6229	162.6609	2997.03	5125	0.1	1950	487500	2225000	0.0641	1.36E-04	2.073	5.83E-03	68.42	99.44	94.42	44.24	118.9	214
782	25.53	3000	3770	342.305278	15.5115	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1246	3.18E-04	2.288	4.91E-03	39.11	98.54	85.39	0	141.3	459.3
783	23.27	3000	5310	149.024662	5.3908	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.1367	5.96E-04	3.205	4.39E-03	16.37	96.64	66.45	0	158.1	705.7
784	43.76	3000	6800	92.577238	2.5381	82.2476	5927.23	5125	0.1	1950	487500	800000	0.0727	5.69E-04	4.958	6.39E-03	19.76	94.6	45.99	0	108.5	580.7
785	35.71	3000	3060	311.08325	11.6366	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0891	2.23E-04	2.264	7.35E-03	54.35	98.39	83.93	0	94.3	325
786	59.35	3000	590	1163.813207	51.6989	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.0536	4.83E-05	1.455	7.62E-03	42.35	99.57	95.7	57.04	91	125.7
787	39.82	3000	440	1116.199483	55.4251	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.0799	3.06E-05	1.194	6.47E-03	25.69	99.55	95.52	55.21	107.1	153.7
788	46.04	3000	3610	170.145379	8.1939	144.4754	3374.28	5125	0.1	1950	487500	1862500	0.0691	2.85E-04	3.087	8.80E-03	31.47	97.06	70.61	0	78.7	343.7
789	23.92	3000	1750	600.139352	23.177	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.133	1.23E-04	1.467	5.27E-03	62.27	99.17	91.67	16.69	131.6	314.3
790	28.89	3000	870	905.120507	36.6764	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.1101	6.41E-05	1.294	5.29E-03	40.92	99.45	94.48	44.76	131.2	229.5
791	21.69	3000	5420	26.07939	0.8908	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.1467	7.44E-04	3.565	6.92E-03	69.43	80.83	0	0	100.1	842.5
792	32.5	3000	4480	4.966877	0.1918	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.0979	5.17E-04	3.668	1.53E-02	84.24	0	0	0	45.2	578.5
793	22.36	3000	4200	2.384517	0.0989	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1423	4.62E-04	2.642	1.42E-02	56.57	0	0	0	48.7	605.8
794	30.1	3000	3640	27.720019	1.3587	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1057	4.18E-04	2.997	1.07E-02	58.78	81.96	0	0	65	510.3
795	41.05	3000	4110	421.969242	18.3641	130.5599	3733.92	5125	0.1	1950	487500	1600000	0.0775	3.97E-04	3.589	4.78E-03	67.09	98.82	88.15	0	145	448
796	26.6	3000	3190	12.000935	0.4548	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1196	3.25E-04	2.373	1.31E-02	33.42	58.34	0	0	52.9	457.2
797	24.89	3000	6830	10.229737	0.2686	78.7839	6187.82	5125	0.1	1950	487500	750000	0.1278	7.43E-04	3.94	8.52E-03	49.68	51.12	0	0	81.3	811.3
798	28.3	3000	2850	362.660069	10.8542	89.788	5429.46	5125	0.1	1950	487500	912500	0.1124	2.31E-04	2.038	5.96E-03	48.56	98.62	86.21	0	116.3	369.1
799	29.82	3000	3400	74.259394	3.9506	159.6003	3054.5	5125	0.1	1950	487500	2162500	0.1067	4.30E-04	3.036	8.28E-03	76.41	93.27	32.67	0	83.8	521.8
800	22.82	3000	2640	155.566778	4.9902	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.1394	2.01E-04	1.727	8.17E-03	70.53	96.79	67.86	0	84.9	387.9
801	36.11	3000	3580	74.184023	2.2807	92.2314	5285.62	5125	0.1	1950	487500	950000	0.0881	2.37E-04	2.361	1.27E-02	87.19	93.26	32.6	0	54.7	335.1
802	27.26	3000	3330	238.285583	14.3795	181.037	2692.82	5125	0.1	1950	487500	2612500	0.1167	5.02E-04	3.175	4.65E-03	61.63	97.9	79.02	0	149	596.9
803	46.58	3000	3160	130.189842	6.5472	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.0683	2.20E-04	2.63	1.18E-02	53.65	96.16	61.59	0	58.9	289.4
804	29.21	3000	3770	74.335767	2.2854	92.2314	5285.62	5125	0.1	1950	487500	950000	0.1089	3.28E-04	2.522	8.90E-03	35.51	93.27	32.74	0	77.9	442.5
805	31.62	3000	4900	440.938486	14.6063	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.1006	3.01E-04	2.511	4.99E-03	62.73	98.87	88.66	0	138.9	407
806	33.1	3000	1640	586.870026	21.0833	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.0961	1.25E-04	1.659	6.54E-03	55.68	99.15	91.48	14.8	106	256.9
807	50.1	3000	2130	103.969651	4.3342	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0635	1.95E-04	2.551	1.35E-02	30.5	95.19	51.91	0	51.2	261
808	31.22	3000	2620	46.712643	2.1683	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1019	2.25E-04	2.118	1.30E-02	51.14	89.3	0	0	53.2	347.7
809	32.1	3000	2770	253.272917	7.6494	90.6061	5380.43	5125	0.1	1950	487500	925000	0.0991	1.99E-04	2.015	8.18E-03	66.26	98.03	80.26	0	84.8	321.7
810	44.56	3000	3800	41.53313	1.8543	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.0714	3.29E-04	3.329	1.18E-02	20.86	87.96	0	0	58.6	382.9
811	40.79	3000	4530	102.125566	4.5595	133.9381	3639.74	5125	0.1	1950	487500	1662500	0.078	6.43E-04	5.167	6.41E-03	68.81	95.1	51.04	0	108.2	649.2
812	24.4	3000	1600	304.879955	18.5154	182.1901	2675.78	5125	0.1	1950	487500	2637500	0.1304	1.55E-04	1.602	6.96E-03	35.18	98.36	83.6	0	99.5	336.6
813	35.59	3000	620	734.766818	42.7702	174.6277	2791.65	5125	0.1	1950	487500	2475000	0.0894	5.48E-05	1.31	7.53E-03	27.69	99.32	93.2	31.95	92	188.6
814	26.91	3000	4070	65.324292	3.6211	166.2959	2931.52	5125	0.1	1950	487500	2300000	0.1182	7.07E-04	4.022	5.75E-03	51.65	92.35	23.46	0	120.5	765.8
815	33.17	3000	1790	219.845807	6.8181	93.0387	5239.76	5125	0.1	1950	487500	962500	0.0959	1.70E-04	1.894	9.27E-03	38.9	97.73	77.26	0	74.8	292.6
816	57.12	3000	3300	229.110129	11.7622	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.0557	2.21E-04	3.001	1.03E-02	51.85	97.82	78.18	0	67.3	269.3
817	21.29	3000	3110	41.48847	1.3418	97.024	5024.53	5125	0.1	1950	487500	1025000	0.1494	2.38E-04	1.804	1.11E-02	84.89	87.95	0	0	62.3	434.1
818	55.62	3000	3880	536.419945	15.7601	88.1405	5530.94	5125	0.1	1950	487500	887500	0.0572	2.13E-04	2.885	6.83E-03	57.15	99.07	90.68	6.79	101.4	265.8
819	23.76	3000	2000	247.254185	12.5903	152.7612	3191.25	5125	0.1	1950	487500	2025000	0.1339	1.54E-04	1.582	7.66E-03	62.3	97.98	79.78	0	90.4	341.3

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
820	32.33	3000	4720	115.176337	4.4203	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.0984	4.64E-04	3.385	6.51E-03	32.88	95.66	56.59	0	106.5	536.5
821	35	3000	3050	848.843276	31.7524	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.0909	1.78E-04	1.99	4.51E-03	83.6	99.41	94.11	41.1	153.7	291.5
822	33.74	3000	1510	132.13181	6.0461	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.0943	1.57E-04	1.839	1.16E-02	33.64	96.22	62.16	0	59.8	279.4
823	25.31	3000	1350	46.236267	1.7521	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1257	1.21E-04	1.487	1.47E-02	47.59	89.19	0	0	47.3	301.1
824	37.6	3000	1410	864.785924	44.9367	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0846	8.99E-05	1.537	6.11E-03	76.18	99.42	94.22	42.18	113.5	209.5
825	52.24	3000	4620	8.173413	0.4059	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.0609	6.06E-04	6.029	1.17E-02	24.9	38.83	0	0	59.2	591.5
826	47.7	3000	3740	12.515404	0.6268	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.0667	5.68E-04	5.302	1.43E-02	86.65	60.05	0	0	48.3	569.7
827	63.5	3000	4560	35.388302	1.4752	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.0501	4.95E-04	5.995	1.15E-02	49.45	85.87	0	0	60.1	483.9
828	52.67	3000	2020	300.566338	17.7306	176.9718	2754.68	5125	0.1	1950	487500	2525000	0.0604	1.48E-04	2.236	1.12E-02	55.31	98.34	83.36	0	62.1	217.6
829	32.66	3000	3290	90.667176	2.5628	84.7981	5748.95	5125	0.1	1950	487500	837500	0.0974	3.00E-04	2.555	9.19E-03	30.36	94.49	44.85	0	75.4	400.9
830	21.66	3000	3590	612.003743	30.7775	150.8694	3231.27	5125	0.1	1950	487500	1987500	0.1469	4.02E-04	2.382	2.97E-03	69.85	99.18	91.83	18.3	233.7	563.7
831	25.91	3000	4580	69.303873	2.8407	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.1228	5.50E-04	3.266	6.38E-03	38.99	92.79	27.85	0	108.7	646.1
832	43.7	3000	600	900.12931	43.7359	145.7654	3344.42	5125	0.1	1950	487500	1887500	0.0728	6.34E-05	1.44	7.18E-03	23.65	99.44	94.45	44.45	96.5	168.9
833	31.1	3000	2070	63.668044	2.5499	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.1023	2.32E-04	2.147	1.13E-02	25.16	92.15	21.47	0	61.2	353.9
834	60.71	3000	4680	469.524499	16.8676	107.7748	4523.32	5125	0.1	1950	487500	1200000	0.0524	2.78E-04	3.68	6.59E-03	78.25	98.94	89.35	0	105.2	310.7
835	31.78	3000	1630	227.659983	11.4969	151.5013	3217.79	5125	0.1	1950	487500	2000000	0.1001	2.30E-04	2.16	7.50E-03	12.55	97.8	78.04	0	92.4	348.3
836	23.19	3000	1730	114.620644	5.194	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1372	1.29E-04	1.475	1.07E-02	70.92	95.64	56.38	0	64.9	326
837	25.72	3000	1230	76.2665	4.073	160.2148	3042.79	5125	0.1	1950	487500	2175000	0.1237	9.77E-05	1.399	1.39E-02	52.49	93.44	34.44	0	50	278.8
838	40.53	3000	8030	16.337566	0.3542	65.0346	7496	5125	0.1	1950	487500	562500	0.0785	5.58E-04	4.593	1.01E-02	25.54	69.4	0	0	69	580.8
839	38.99	3000	3830	288.037927	8.7775	91.4206	5332.5	5125	0.1	1950	487500	937500	0.0816	2.46E-04	2.523	7.56E-03	60.33	98.26	82.64	0	91.7	331.7
840	29.7	3000	3800	475.596703	21.6571	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1071	3.15E-04	2.489	4.47E-03	45.73	98.95	89.49	0	155.2	429.4
841	28.56	3000	3990	41.619138	1.8207	131.239	3714.6	5125	0.1	1950	487500	1612500	0.1114	3.65E-04	2.658	9.64E-03	33.77	87.99	0	0	71.9	477
842	30.68	3000	2810	47.306701	1.8946	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.1037	2.89E-04	2.411	1.09E-02	27.12	89.43	0	0	63.9	402.8
843	47.48	3000	920	549.114314	27.4989	150.2362	3244.89	5125	0.1	1950	487500	1975000	0.067	9.86E-05	1.744	9.17E-03	28.34	99.09	90.89	8.94	75.6	188.2
844	25.07	3000	910	168.622665	7.1848	127.8255	3813.79	5125	0.1	1950	487500	1550000	0.1269	1.14E-04	1.454	9.82E-03	16.63	97.03	70.35	0	70.6	297.2
845	29.98	3000	4610	22.271141	0.8493	114.4096	4261	5125	0.1	1950	487500	1312500	0.1061	5.37E-04	3.558	1.04E-02	84.02	77.55	0	0	66.9	608.2
846	21.94	3000	1510	577.504039	32.2437	167.4988	2910.47	5125	0.1	1950	487500	2325000	0.145	1.58E-04	1.55	4.61E-03	28.12	99.13	91.34	13.42	150.2	362.1
847	24.03	3000	5310	15.223906	0.5278	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1324	5.93E-04	3.263	8.36E-03	29.98	67.16	0	0	82.9	696
848	31.85	3000	3670	192.037288	9.9788	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.0999	4.79E-04	3.422	5.55E-03	60.5	97.4	73.96	0	125	550.7
849	23.97	3000	4940	15.595512	0.6246	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.1327	6.62E-04	3.522	7.74E-03	30.03	67.94	0	0	89.5	753
850	26.16	3000	2930	24.042719	1.1887	148.3284	3286.63	5125	0.1	1950	487500	1937500	0.1216	2.51E-04	2.043	1.36E-02	64.16	79.2	0	0	51.1	400.1
851	32.97	3000	5110	177.562713	6.4232	108.5219	4492.18	5125	0.1	1950	487500	1212500	0.0965	5.41E-04	3.832	5.21E-03	46.31	97.18	71.84	0	133	595.8
852	26.06	3000	5080	1.771399	0.0619	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.1221	5.99E-04	3.481	1.38E-02	53.38	0	0	0	50.3	684.8
853	24.62	3000	6050	13.773199	0.4047	88.1405	5530.94	5125	0.1	1950	487500	887500	0.1292	6.30E-04	3.464	8.72E-03	45.94	63.7	0	0	79.5	720.9
854	35.35	3000	1180	659.578841	28.8542	131.239	3714.6	5125	0.1	1950	487500	1612500	0.09	8.63E-05	1.485	7.21E-03	57.74	99.24	92.42	24.19	96.1	215.3
855	43.88	3000	4540	73.479739	2.5659	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.0725	3.55E-04	3.476	9.66E-03	22.88	93.2	31.95	0	71.7	406
856	30.41	3000	2750	623.002757	24.6559	118.7276	4106.04	5125	0.1	1950	487500	1387500	0.1046	2.29E-04	2.108	4.54E-03	40.48	99.2	91.97	19.74	152.7	355.3
857	44.43	3000	1530	263.277286	12.7922	145.7654	3344.42	5125	0.1	1950	487500	1887500	0.0716	1.33E-04	1.937	1.14E-02	45.85	98.1	81.01	0	61.1	223.4
858	36.95	3000	830	157.197651	4.2647	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0861	1.12E-04	1.655	1.31E-02	16.14	96.82	68.19	0	53.1	229.5
859	61.77	3000	3140	216.402078	12.1256	168.0986	2900.08	5125	0.1	1950	487500	2337500	0.0515	2.97E-04	3.914	9.36E-03	77.89	97.69	76.89	0	74	324.7
860	46.51	3000	1840	731.607653	23.2748	95.4399	5107.93	5125	0.1	1950	487500	1000000	0.0684	1.31E-04	1.971	6.70E-03	57.4	99.32	93.17	31.66	103.5	217.2
861	26.64	3000	4340	498.763195	19.8574	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1194	3.69E-04	2.562	3.84E-03	62.38	99	89.98	0	180.3	492.9
862	23.53	3000	1130	91.875369	3.526	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.1352	9.29E-05	1.347	1.23E-02	41.41	94.56	45.58	0	56.2	293.5
863	33.38	3000	2750	51.501425	2.4356	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0953	2.72E-04	2.442	1.15E-02	29.3	90.29	2.92	0	60.5	374.9
864	21.77	3000	3400	50.694423	2.125	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1461	2.81E-04	1.971	9.71E-03	66.12	90.14	1.37	0	71.4	463.9
865	25.25	3000	1190	231.410656	5.5242	71.6152	6807.21	5125	0.1	1950	487500	650000	0.126	1.36E-04	1.544	8.33E-03	24.71	97.84	78.39	0	83.2	313.5
866	40.02	3000	4050	450.589963	20.2178	134.6086	3621.61	5125	0.1	1950	487500	1675000	0.0795	3.72E-04	3.365	4.53E-03	23.47	98.89	88.9	0	153.1	431
867	28.13	3000	3930	45.670113	2.3731	155.8885	3127.24	5125	0.1	1950	487500	2087500	0.1131	5.45E-04	3.437	7.22E-03	28.74	89.05	0	0	96	626.2
868	32.66	3000	3650	131.462094	6.8038	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.0974	4.09E-04	3.123	6.66E-03	22.86	96.2	61.97	0	104.1	490
869	31.59	3000	3500	661.890993	30.5788	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.1007	2.09E-04	2.048	4.77E-03	79.96	99.24	92.45	24.46	145.4	332.2
870	22.44	3000	1710	41.834579	1.9327	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.1418	1.90E-04	1.676	1.16E-02	29.9	88.05	0	0	59.6	382.8
871	24.83	3000	4500	2.636784	0.1081	122.9684	3964.43	5125	0.1	1950	487500	1462500	0.1281	6.27E-04	3.473	1.23E-02	53.1	0	0	0	56.3	716.8
872	27.1	3000	2360	37.994084	1.772	139.9143	3484.28	5125	0.1	1950	487500	1775000	0.1174	2.75E-04	2.183	1.10E-02	22	86.84	0	0	62.9	412.9
873	27.96	3000	3220	65.6154	2.07	94.6429	5150.94	5125	0.1	1950	487500	987500	0.1138	2.76E-04	2.226	1.01E-02	47.73	92.38	23.8	0	68.6	408.1
874	27.5	3000	3330	5.408829	0.1847	102.4699	4757.49	5125	0.1	1950	487500	1112500	0.1157	3.20E-04	2.398	1.59E-02	42.95	7.56	0	0	43.5	447
875	26.44	3000	3140	1.143714	0.0675	176.9718	2754.68	5125	0.1	1950	487500	2525000	0.1203	5.05E-04	3.12	1.70E-02	63.89	0	0	0	40.8	604.7
876	30.8	3000	1650	451.432534	20.5568	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1033	1.75E-04	1.856	6.25E-03	28.71	98.89	88.92	0	110.9	308.9
877	23.85	3000	3510	145.879412	6.0475	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1334	3.46E-04	2.312	6.32E-03	27.84	96.57	65.73	0	109.7	496.9
878	30.21	3000	1110	50.101555	3.0427	182.1901	2675.78	5125	0.1	1950	487500	2637500	0.1053	1.00E-04	1.482	1.71E-02	44.21	90.02	0.2	0	40.5	251.4
879	23.39	3000	1630	201.33633	10.5454	157.1306	3102.51	5125	0.1	1950	487500	2112500	0.136	1.36E-04	1.507	8.52E-03	51.22	97.52	75.17	0	81.4	330.1
880	57.42	3000	7380	41.734473	0.9963	71.6152	6807.21	5125	0.1	1950	487500	650000	0.0554	5.49E-04	6.007	9.76E-03	44.62	88.02	0	0	71	536.1
881	35.23	3000	2330	158.706034	7.6088	143.8283	3389.46	5125	0.1	1950	487500	1850000	0.0903	2.21E-04	2.239	9.40E-03	32.37	96.85	68.5	0	73.7	325.7
882	23.2	3000	4360	20.370895	0.8207	120.8573	4033.68	5125	0.1	1950	487500	1425000	0.1371	5.27E-04	2.945	9.51E-03	83.46	75.46	0	0	72.9	650.4

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
883	56.51	3000	3230	126.033722	6.1777	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.0563	2.14E-04	2.924	1.30E-02	48.97	96.03	60.33	0	53.3	265.2
884	44.19	3000	4360	1.332493	0.0613	137.9366	3534.23	5125	0.1	1950	487500	1737500	0.072	6.46E-04	5.536	1.65E-02	44.3	0	0	0	42.1	642.1
885	24.59	3000	2580	24.280964	0.6447	79.6568	6120	5125	0.1	1950	487500	762500	0.1294	2.98E-04	2.164	1.12E-02	24.85	79.41	0	0	61.8	451.1
886	51.64	3000	4540	121.311351	4.9157	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0616	4.45E-04	4.648	7.91E-03	47.41	95.88	58.78	0	87.6	461.2
887	21.48	3000	3840	177.681866	8.1304	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1481	3.90E-04	2.33	5.50E-03	63.79	97.19	71.86	0	126	555.8
888	44	3000	3940	645.420627	23.985	111.4852	4372.78	5125	0.1	1950	487500	1262500	0.0723	2.27E-04	2.584	5.36E-03	63.25	99.23	92.25	22.53	129.4	301
889	21.85	3000	3110	6.606734	0.2754	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.1456	3.25E-04	2.13	1.35E-02	39.53	24.32	0	0	51.4	499.6
890	23.48	3000	4970	64.09809	2.46	115.1349	4234.16	5125	0.1	1950	487500	1325000	0.1355	6.57E-04	3.45	5.79E-03	51.59	92.2	21.99	0	119.7	753.1
891	45.51	3000	1900	113.959437	5.9453	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.0699	1.85E-04	2.341	1.30E-02	30.14	95.61	56.12	0	53.5	263.6
892	31.78	3000	620	186.003086	7.7539	125.0616	3898.08	5125	0.1	1950	487500	1500000	0.1001	3.71E-05	1.187	1.49E-02	40.64	97.31	73.12	0	46.5	191.5
893	54.57	3000	1740	1039.429566	34.4315	99.3762	4905.6	5125	0.1	1950	487500	1062500	0.0583	1.19E-04	2.031	5.69E-03	59.02	99.52	95.19	51.9	121.7	190.7
894	41.64	3000	1050	250.129251	15.1423	181.614	2684.26	5125	0.1	1950	487500	2625000	0.0764	1.13E-04	1.745	1.19E-02	30.05	98	80.01	0	58.4	214.7
895	35.15	3000	2680	96.278985	3.625	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.0905	2.19E-04	2.222	1.14E-02	51.34	94.81	48.07	0	60.6	323.9
896	33.56	3000	4520	7.33048	0.2597	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.0948	3.73E-04	2.991	1.52E-02	43.35	31.79	0	0	45.7	456.8
897	28.63	3000	4050	8.9857	0.4872	162.6609	2997.03	5125	0.1	1950	487500	2225000	0.1111	6.40E-04	3.911	9.38E-03	29.32	44.36	0	0	73.9	699.9
898	23.43	3000	2920	9.109067	0.4465	147.0497	3315.21	5125	0.1	1950	487500	1912500	0.1358	2.71E-04	2.009	1.49E-02	57.93	45.11	0	0	46.4	439.6
899	33.31	3000	4020	16.969379	0.7951	140.5704	3468.01	5125	0.1	1950	487500	1787500	0.0955	4.91E-04	3.601	1.06E-02	37.42	70.54	0	0	65.3	553.9
900	58.59	3000	5140	64.233048	2.7074	126.4473	3855.36	5125	0.1	1950	487500	1525000	0.0543	7.49E-04	7.973	7.70E-03	70.51	92.22	22.16	0	90	697.4
901	35.67	3000	3690	195.232499	6.4163	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0892	3.52E-04	2.993	6.54E-03	18.9	97.44	74.39	0	105.9	430.2
902	22.39	3000	1660	203.41394	5.2824	77.906	6257.54	5125	0.1	1950	487500	737500	0.1421	1.56E-04	1.555	7.81E-03	40.44	97.54	75.42	0	88.8	356
903	40.32	3000	6400	309.637574	8.7522	84.7981	5748.95	5125	0.1	1950	487500	837500	0.0789	5.82E-04	4.732	4.26E-03	60.55	98.39	83.85	0	162.9	601.4
904	30.33	3000	2780	22.162366	1.1836	160.2148	3042.79	5125	0.1	1950	487500	2175000	0.1049	2.40E-04	2.157	1.50E-02	56.52	77.44	0	0	46.1	364.5
905	58.37	3000	3730	1570.135536	54.8291	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.0545	2.13E-04	2.973	2.52E-03	43.74	99.68	96.82	68.16	274.9	261
906	38.28	3000	4130	208.219783	7.6353	110.0086	4431.47	5125	0.1	1950	487500	1237500	0.0831	3.51E-04	3.137	6.58E-03	22.18	97.6	75.99	0	105.3	419.9
907	30.71	3000	1050	302.202739	13.2203	131.239	3714.6	5125	0.1	1950	487500	1612500	0.1036	8.69E-05	1.424	9.93E-03	43.85	98.35	83.45	0	69.8	237.7
908	26.25	3000	3180	130.443272	4.943	113.6821	4288.27	5125	0.1	1950	487500	1300000	0.1212	3.28E-04	2.369	7.03E-03	25.33	96.17	61.67	0	98.6	462.6
909	36.23	3000	5090	0.826232	0.0305	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.0878	6.00E-04	4.455	1.58E-02	30.22	0	0	0	43.8	630.1
910	37.96	3000	4940	488.930382	13.4044	82.2476	5927.23	5125	0.1	1950	487500	800000	0.0838	3.39E-04	3.045	4.58E-03	34.03	98.98	89.77	0	151.5	411.1
911	31.44	3000	7360	10.831304	0.2519	69.767	6987.55	5125	0.1	1950	487500	625000	0.1012	6.85E-04	4.421	1.08E-02	79.08	53.84	0	0	64.2	720.7
912	38.56	3000	5890	49.762547	1.5566	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0825	5.23E-04	4.205	7.79E-03	18.44	89.95	0	0	89	558.9
913	29.48	3000	3470	27.310058	0.9743	107.0251	4555.01	5125	0.1	1950	487500	1187500	0.1079	2.70E-04	2.267	1.38E-02	77.21	81.69	0	0	50.1	394
914	24.12	3000	3260	243.857534	9.2999	114.4096	4261	5125	0.1	1950	487500	1312500	0.1319	3.10E-04	2.189	5.59E-03	32.75	97.95	79.5	0	124.1	465.1
915	36.52	3000	1240	383.998231	18.5754	145.1211	3359.26	5125	0.1	1950	487500	1875000	0.0871	1.12E-04	1.653	9.12E-03	42.67	98.7	86.98	0	76	231.9
916	27.69	3000	2610	232.481411	9.5835	123.6681	3942	5125	0.1	1950	487500	1475000	0.1149	2.59E-04	2.14	6.67E-03	30.95	97.85	78.49	0	103.9	396.1
917	22.55	3000	4760	548.417195	19.0117	103.9994	4687.53	5125	0.1	1950	487500	1137500	0.1411	3.83E-04	2.374	3.24E-03	38.3	99.09	90.88	8.83	213.7	539.6
918	48.5	3000	6350	29.189257	0.7919	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0656	5.10E-04	4.929	1.14E-02	63.39	82.87	0	0	60.8	520.9
919	40.79	3000	780	944.861707	37.618	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.078	7.20E-05	1.467	6.34E-03	35.12	99.47	94.71	47.08	109.3	184.3
920	24.23	3000	3510	16.923045	0.464	82.2476	5927.23	5125	0.1	1950	487500	800000	0.1313	2.95E-04	2.134	1.32E-02	71.53	70.45	0	0	52.3	451.3
921	28.74	3000	1960	207.560371	6.983	100.929	4830.13	5125	0.1	1950	487500	1087500	0.1107	1.87E-04	1.852	8.40E-03	39.34	97.59	75.91	0	82.6	330.2
922	30.36	3000	4560	65.089675	2.4029	110.7481	4401.88	5125	0.1	1950	487500	1250000	0.1048	3.42E-04	2.651	9.91E-03	79.72	92.32	23.18	0	69.9	447.6
923	22.29	3000	4240	12.718571	0.5448	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.1427	4.94E-04	2.751	9.55E-03	36.1	60.69	0	0	72.6	632.4
924	33.1	3000	640	589.047399	20.7183	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0961	5.03E-05	1.265	8.42E-03	30.34	99.15	91.51	15.12	82.4	195.8
925	23.64	3000	1550	421.184601	26.0612	185.6278	2626.22	5125	0.1	1950	487500	2712500	0.1346	1.22E-04	1.457	6.40E-03	52.12	98.81	88.13	0	108.4	315.9
926	43.46	3000	3400	296.561256	15.3486	155.2656	3139.78	5125	0.1	1950	487500	2075000	0.0732	3.02E-04	3.088	6.75E-03	44.61	98.31	83.14	0	102.7	364.1
927	36.23	3000	1630	113.465825	5.3661	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0878	1.39E-04	1.798	1.37E-02	57.08	95.59	55.93	0	50.5	254.3
928	44.87	3000	4570	47.257569	2.4947	158.3679	3078.28	5125	0.1	1950	487500	2137500	0.0709	7.33E-04	6.229	7.23E-03	51.49	89.42	0	0	95.9	711.5
929	21.28	3000	2040	16.589427	0.6877	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1495	2.53E-04	1.856	1.22E-02	24.27	69.86	0	0	57	447.1
930	63.12	3000	1190	282.165615	7.8162	83.1021	5866.28	5125	0.1	1950	487500	812500	0.0504	1.37E-04	2.373	1.25E-02	17.43	98.23	82.28	0	55.4	192.6
931	32.23	3000	1140	536.729683	23.8426	133.2659	3658.1	5125	0.1	1950	487500	1650000	0.0987	1.05E-04	1.539	7.17E-03	38.55	99.07	90.68	6.84	96.6	244.7
932	31.41	3000	3320	82.250203	4.1882	152.7612	3191.25	5125	0.1	1950	487500	2025000	0.1013	2.59E-04	2.29	1.08E-02	74.45	93.92	39.21	0	64.3	373.7
933	28.95	3000	2690	5.982129	0.297	148.9657	3272.57	5125	0.1	1950	487500	1950000	0.1099	2.92E-04	2.343	1.63E-02	30.2	16.42	0	0	42.6	414.8
934	24.34	3000	690	205.65435	8.1878	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1307	7.66E-05	1.296	9.92E-03	14.27	97.57	75.69	0	69.9	272.9
935	21.61	3000	780	56.176236	1.8316	97.8112	4984.09	5125	0.1	1950	487500	1037500	0.1472	8.35E-05	1.287	1.33E-02	16.97	91.1	10.99	0	52.3	305.2
936	22.59	3000	4110	50.072195	2.2801	136.6103	3568.54	5125	0.1	1950	487500	1712500	0.1408	5.18E-04	2.861	6.91E-03	41.56	90.01	0.14	0	100.4	648.9
937	37.25	3000	3310	7.082702	0.4067	172.2679	2829.9	5125	0.1	1950	487500	2425000	0.0854	5.03E-04	3.977	1.43E-02	62.66	29.41	0	0	48.4	547.1
938	25.19	3000	1680	454.267521	17.1035	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.1263	1.88E-04	1.753	5.38E-03	26.07	98.9	88.99	0	128.8	356.6
939	27.33	3000	3010	10.137054	0.3817	112.9522	4315.99	5125	0.1	1950	487500	1287500	0.1164	2.69E-04	2.168	1.60E-02	59.1	50.68	0	0	43.4	406.5
940	21.34	3000	1010	73.233885	3.7597	154.0159	3165.26	5125	0.1	1950	487500	2050000	0.1491	1.13E-04	1.385	1.14E-02	20.38	93.17	31.73	0	60.8	332.6
941	44.12	3000	2470	346.315204	11.3817	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0721	1.73E-04	2.213	8.85E-03	57.38	98.56	85.56	0	78.3	257.1
942	61.06	3000	6290	282.499091	7.9055	83.9523	5806.87	5125	0.1	1950	487500	825000	0.0521	4.82E-04	5.68	5.86E-03	69.76	98.23	82.3	0	118.3	476.7
943	28.1	3000	4360	2.688336	0.107	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1132	4.61E-04	3.061	1.56E-02	57.22	0	0	0	44.5	558.1
944	42.93	3000	930	616.352643	22.4489	109.2665	4461.57	5125	0.1	1950	487500	1225000	0.0741	7.42E-05	1.507	9.00E-03	47.82	99.19	91.89	18.88	77.1	179.8
945	34.13	3000	5610	3.45037	0.1023	88.9661	5479.61	5125	0.1	1950	487500	900000	0.0932	4.35E-04	3.357	1.68E-02	56.3	0	0	0	41.3	504.1

Simulation Parameters and Results: 1% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
1	58.91	3000	1770	1.404677	0.0576	123	60.99	5125	0.1	1950	7500	1462500	0.054	######	5.208	1.24E-02	26.99	0	0	0	55.8	453.1
2	22.15	3000	1190	0.883402	0.0183	62.11	120.75	5125	0.1	1950	7500	525000	0.1436	######	2.853	1.23E-02	76.26	0	0	0	56.2	660
3	30.44	3000	570	23.721629	1.0907	137.9	54.37	5125	0.1	1950	7500	1737500	0.1045	######	1.975	1.04E-02	55.4	78.92	0	0	66.7	332.4
4	22.99	3000	620	89.847916	5.0881	169.9	44.15	5125	0.1	1950	7500	2375000	0.1384	######	1.704	5.00E-03	35.33	94.44	44.35040652	0	138.6	379.8
5	45.25	3000	1230	5.966712	0.185	93.04	80.61	5125	0.1	1950	7500	962500	0.0703	######	4.023	1.02E-02	63.48	16.2	0	0	67.8	455.6
6	35.04	3000	1670	6.154983	0.3262	159	47.17	5125	0.1	1950	7500	2150000	0.0908	######	3.891	6.07E-03	48.82	18.77	0	0	114.2	569.2
7	59.13	3000	870	39.52725	1.6569	125.8	59.64	5125	0.1	1950	7500	1512500	0.0538	######	3.363	8.53E-03	33	87.35	0	0	81.2	291.5
8	49.32	3000	2090	1.432062	0.0525	110	68.18	5125	0.1	1950	7500	1237500	0.0645	######	5.636	9.74E-03	44.48	0	0	0	71.2	585.6
9	26.53	3000	980	4.036136	0.1559	115.9	64.73	5125	0.1	1950	7500	1337500	0.1199	######	2.608	1.02E-02	62.53	0	0	0	68.1	503.7
10	29.57	3000	1710	32.54681	1.1692	107.8	69.59	5125	0.1	1950	7500	1200000	0.1076	######	3.384	3.45E-03	39.84	84.64	0	0	201.2	586.6
11	28.46	3000	1260	21.88296	1.0866	149	50.35	5125	0.1	1950	7500	1950000	0.1118	######	2.788	5.27E-03	29.73	77.15	0	0	131.5	502.1
12	21.41	3000	480	105.021888	2.634	75.24	99.68	5125	0.1	1950	7500	700000	0.1486	######	1.399	8.58E-03	42.84	95.24	52.39	0	80.8	334.8
13	62.5	3000	2320	0.241808	0.0116	144.5	51.91	5125	0.1	1950	7500	1862500	0.0509	######	7.691	1.36E-02	49.38	0	0	0	50.8	630.6
14	28.87	3000	2170	1.234267	0.0456	110.7	67.72	5125	0.1	1950	7500	1250000	0.1102	######	4.027	7.91E-03	33.57	0	0	0	87.7	714.9
15	41	3000	1540	1.973018	0.0781	118.7	63.17	5125	0.1	1950	7500	1387500	0.0776	######	4.236	1.04E-02	47.28	0	0	0	67	529.6
16	37.83	3000	520	322.384403	12.5277	116.6	64.33	5125	0.1	1950	7500	1350000	0.0841	######	1.989	3.20E-03	55.5	98.45	84.49	0	216.6	269.5
17	59.24	3000	580	127.990848	6.1914	145.1	51.68	5125	0.1	1950	7500	1875000	0.0537	######	2.697	6.33E-03	41.22	96.09	60.93	0	109.5	233.3
18	52.5	3000	600	45.266497	1.7915	118.7	63.17	5125	0.1	1950	7500	1387500	0.0606	######	2.617	1.12E-02	39.63	88.95	0	0	62.2	255.5
19	29.59	3000	250	280.884936	12.7906	136.6	54.9	5125	0.1	1950	7500	1712500	0.1075	######	1.153	9.82E-03	41.91	98.22	82.2	0	70.6	199.7
20	21.6	3000	730	1.998832	0.1244	186.8	40.16	5125	0.1	1950	7500	2737500	0.1473	######	1.901	1.28E-02	42.14	0	0	0	54.2	451
21	31.69	3000	1970	2.397108	0.129	161.4	46.46	5125	0.1	1950	7500	2200000	0.1004	######	3.993	6.88E-03	37.29	0	0	0	100.7	645.8
22	26.1	3000	970	3.551448	0.124	104.8	71.59	5125	0.1	1950	7500	1150000	0.1219	######	2.352	1.18E-02	27.73	0	0	0	58.5	461.8
23	22.18	3000	600	18.3426	0.9569	156.5	47.92	5125	0.1	1950	7500	2100000	0.1434	######	1.682	9.48E-03	42.19	72.74	0	0	73.1	388.6
24	28.87	3000	1520	15.087007	0.6078	120.9	62.06	5125	0.1	1950	7500	1425000	0.1102	######	3.258	4.93E-03	49.66	66.86	0	0	140.7	578.4
25	29	3000	1800	19.491104	0.7989	123	60.99	5125	0.1	1950	7500	1462500	0.1097	######	3.519	3.73E-03	46.41	74.35	0	0	185.8	622
26	22.76	3000	2610	16.571652	0.5532	100.2	74.88	5125	0.1	1950	7500	1075000	0.1398	######	3.771	2.71E-03	45.07	69.83	0	0	256.3	849.3
27	43.28	3000	1280	10.448816	0.3268	93.84	79.92	5125	0.1	1950	7500	975000	0.0735	######	3.53	9.45E-03	26.64	52.15	0	0	73.3	417.9
28	21.94	3000	420	29.033846	1.7632	182.2	41.17	5125	0.1	1950	7500	2637500	0.145	######	1.361	1.12E-02	34.57	82.78	0	0	61.9	317.9
29	45.38	3000	360	286.734489	12.3483	129.2	58.05	5125	0.1	1950	7500	1575000	0.0701	######	1.794	6.46E-03	58.83	98.26	82.56	0	107.3	202.6
30	34.81	3000	470	10.735165	0.3803	106.3	70.57	5125	0.1	1950	7500	1175000	0.0914	######	2.034	1.66E-02	85.44	53.42	0	0	41.8	299.4
31	25.11	3000	980	20.913635	0.6542	93.84	79.92	5125	0.1	1950	7500	975000	0.1267	######	2.433	6.68E-03	67.25	76.09	0	0	103.8	496.7
32	21.44	3000	880	0.878915	0.039	133.3	56.28	5125	0.1	1950	7500	1650000	0.1484	######	2.126	1.37E-02	42.06	0	0	0	50.7	508.2
33	49.71	3000	410	166.471504	7.0549	127.1	58.99	5125	0.1	1950	7500	1537500	0.064	######	2.015	9.28E-03	34.79	97	69.96	0	74.7	207.7
34	31.72	3000	820	20.49509	1.022	149.6	50.13	5125	0.1	1950	7500	1962500	0.1003	######	2.374	8.34E-03	35.37	75.6	0	0	83.1	383.5
35	32.56	3000	1620	2.25816	0.1008	133.9	56	5125	0.1	1950	7500	1662500	0.0977	######	3.649	8.74E-03	36.93	0	0	0	79.4	574.3
36	46.92	3000	2090	8.9019	0.3914	131.9	56.85	5125	0.1	1950	7500	1625000	0.0678	######	5.714	4.43E-03	83.15	43.83	0	0	156.6	624
37	55.81	3000	260	640.859978	24.9035	116.6	64.33	5125	0.1	1950	7500	1350000	0.057	######	1.584	8.64E-03	26.14	99.22	92.2	21.98	80.2	145.5
38	29.79	3000	590	179.265903	5.8447	97.81	76.68	5125	0.1	1950	7500	1037500	0.1068	######	1.858	5.53E-03	36.63	97.21	72.11	0	125.3	319.7
39	24.51	3000	930	0.876537	0.0328	112.2	66.83	5125	0.1	1950	7500	1275000	0.1298	######	2.543	1.39E-02	67.64	0	0	0	49.9	531.7
40	23.9	3000	620	42.261028	1.2416	88.14	85.09	5125	0.1	1950	7500	887500	0.1331	######	1.775	8.60E-03	52.06	88.17	0	0	80.6	380.6
41	31.91	3000	720	19.923776	0.6071	91.42	82.04	5125	0.1	1950	7500	937500	0.0997	######	2.424	9.68E-03	83.34	74.9	0	0	71.6	389.4
42	25.8	3000	1250	22.883957	1.0572	138.6	54.11	5125	0.1	1950	7500	1750000	0.1233	######	2.607	5.43E-03	23.41	78.15	0	0	127.6	517.9
43	31.53	3000	570	46.531115	1.7858	115.1	65.14	5125	0.1	1950	7500	1325000	0.1009	######	1.915	1.00E-02	31.71	89.25	0	0	69.3	311.2
44	22.5	3000	470	15.980048	0.6625	124.4	60.31	5125	0.1	1950	7500	1487500	0.1414	######	1.569	1.19E-02	87.64	68.71	0	0	58.1	357.5
45	31.94	3000	270	176.677132	7.2831	123.7	60.65	5125	0.1	1950	7500	1475000	0.0996	######	1.287	1.13E-02	53.8	97.17	71.7	0	61.6	206.5
46	21.97	3000	1020	24.36222	0.7291	89.79	83.53	5125	0.1	1950	7500	912500	0.1448	######	2.256	6.12E-03	53.24	79.48	0	0	113.3	526.3
47	24.28	3000	950	3.029436	0.1133	112.2	66.83	5125	0.1	1950	7500	1275000	0.131	######	2.315	1.14E-02	39.66	0	0	0	60.9	488.5
48	26.73	3000	1340	8.178253	0.3139	115.1	65.14	5125	0.1	1950	7500	1325000	0.119	######	2.88	7.07E-03	37.04	38.86	0	0	98	552.1
49	42.25	3000	1850	10.564248	0.4645	131.9	56.85	5125	0.1	1950	7500	1625000	0.0753	######	4.325	5.65E-03	33.38	52.67	0	0	122.6	524.6
50	40.89	3000	850	18.486738	0.9336	151.5	49.5	5125	0.1	1950	7500	2000000	0.0778	######	2.883	8.46E-03	54.87	72.95	0	0	81.9	361.3
51	33.99	3000	1430	4.223083	0.2669	189.6	39.56	5125	0.1	1950	7500	2800000	0.0936	######	3.784	6.84E-03	74.18	0	0	0	101.3	570.6
52	47.2	3000	820	36.788003	1.6093	131.2	57.15	5125	0.1	1950	7500	1612500	0.0674	######	2.98	7.67E-03	49.18	86.41	0	0	90.3	323.5
53	55.14	3000	360	40.445516	1.6007	118.7	63.17	5125	0.1	1950	7500	1387500	0.0577	######	2.141	1.75E-02	73.54	87.64	0	0	39.7	199
54	22.22	3000	710	34.523113	1.4631	127.1	58.99	5125	0.1	1950	7500	1537500	0.1432	######	1.797	7.61E-03	28.5	85.52	0	0	91.1	414.5
55	25.72	3000	1000	11.122346	0.394	106.3	70.57	5125	0.1	1950	7500	1175000	0.1237	######	2.397	8.43E-03	38.94	55.05	0	0	82.2	477.7
56	48.57	3000	1390	2.560139	0.1298	152.1	49.3	5125	0.1	1950	7500	2012500	0.0655	######	4.175	1.11E-02	35.94	0	0	0	62.5	440.5
57	45.58	3000	560	85.659628	5.0364	176.4	42.52	5125	0.1	1950	7500	2512500	0.0698	######	2.423	5.44E-03	81.1	94.16	41.63	0	127.5	272.5
58	30.04	3000	1900	5.838766	0.1811	93.04	80.61	5125	0.1	1950	7500	962500	0.1059	######	4.045	5.87E-03	62.83	14.37	0	0	118.1	690.1
59	23.24	3000	830	18.116746	0.9111	150.9	49.71	5125	0.1	1950	7500	1987500	0.1369	######	2.144	6.61E-03	68.12	72.4	0	0	104.8	472.8
60	33.56	3000	530	16.578464	0.965	174.6	42.95	5125	0.1	1950	7500	2475000	0.0948	######	2.125	1.10E-02	88.57	69.84	0	0	63.2	324.5
61	27.69	3000	790	1.114796	0.0286	77.02	97.37	5125	0.1	1950	7500	725000	0.1149	######	2.441	1.72E-02	65.36	0	0	0	40.2	451.8
62	45.71	3000	2770	1.409715	0.0617	131.2	57.15	5125	0.1	1950	7500	1612500	0.0696	######	5.954	7.46E-03	33.26	0	0	0	92.9	667.6
63	63	3000	480	165.961253	7.1093	128.5	58.36	5125	0.1	1950	7500	1562500	0.0505	######	2.457	8.69E-03	30.09	96.99	69.87	0	79.8	199.9

Simulation Parameters and Results: 65% Inventory Case

Realization	Velocity (m/y)	Fixed Source Concentration (mg/L)	Time of Maximum at Compliance Boundary (y)	Maximum Concentration Compliance Boundary (μg/L)	Maximum Release Rate at Compliance Boundary (Kg/y)	Source Rate (Kg/y)	Source Duration (y)	1-D Streamtube Length (m)	Base Porosity (m^3/m^3)	Bulk Density (Kg/m^3)	Remaining Carbon Tetrachloride Source (Kg)	Volume at or above Fixed Source Concentration (m3)	Porosity (m^3/m^3)	Kd (m^3/Kg)	Retardation	First Order Rate Constant (1/y)	Longitudinal Dispersivity (m)	Required Source Cleanup Percentage (5 μg/L Compliance)	Required Source Cleanup Percentage (50 μg/L Compliance)	Required Source Cleanup Percentage (500 μg/L Compliance)	Abiotic Reaction Half Time (y)	Carbon Tetrachloride Travel Time (y)
946	22.02	3000	1580	47.556406	2.2075	139.2566	3500.73	5125	0.1	1950	487500	1762500	0.1445	2.14E-04	1.748	1.04E-02	17.09	89.49	0	0	66.5	406.9
947	27.57	3000	4070	83.703013	3.5087	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1154	3.64E-04	2.595	8.63E-03	89.95	94.03	40.26	0	80.3	482.5
948	43.46	3000	520	990.220822	40.1248	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0732	4.16E-05	1.287	7.37E-03	31.32	99.5	94.95	49.51	94.1	151.8
949	26.56	3000	6220	5.360159	0.15	83.9523	5806.87	5125	0.1	1950	487500	825000	0.1198	6.13E-04	3.586	1.12E-02	51.89	6.72	0	0	61.7	692.1
950	53.29	3000	4180	440.971064	18.9906	129.1963	3773.33	5125	0.1	1950	487500	1575000	0.0597	3.58E-04	4.031	5.24E-03	39.47	98.87	88.66	0	132.3	387.7
951	30.56	3000	3100	10.125498	0.3407	100.929	4830.13	5125	0.1	1950	487500	1087500	0.1041	2.78E-04	2.352	1.65E-02	55.64	50.62	0	0	41.9	394.4
952	29.29	3000	7170	15.338607	0.3614	70.6941	6895.91	5125	0.1	1950	487500	637500	0.1086	5.48E-04	3.552	1.06E-02	66.6	67.4	0	0	65.7	621.5
953	33.38	3000	3320	48.392123	2.6238	162.6609	2997.03	5125	0.1	1950	487500	2225000	0.0953	3.70E-04	2.964	1.02E-02	50.37	89.67	0	0	68.2	455.1
954	38.42	3000	3340	923.471683	32.2476	104.7599	4653.5	5125	0.1	1950	487500	1150000	0.0828	2.37E-04	2.445	3.70E-03	44.81	99.46	94.59	45.86	187.2	326.1
955	32.01	3000	1640	540.763597	24.3844	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.0994	1.30E-04	1.66	6.64E-03	54.49	99.08	90.75	7.54	104.4	265.8
956	35.51	3000	3360	114.378493	6.5	170.4873	2859.45	5125	0.1	1950	487500	2387500	0.0896	4.52E-04	3.55	7.28E-03	63.09	95.63	56.29	0	95.2	512.5
957	24.25	3000	1950	36.450545	0.9678	79.6568	6120	5125	0.1	1950	487500	762500	0.1312	1.61E-04	1.621	1.41E-02	67.42	86.28	0	0	49.2	342.6
958	53.74	3000	3570	465.331458	21.4979	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.0592	1.90E-04	2.624	8.03E-03	82.52	98.93	89.25	0	86.3	250.3
959	26.4	3000	1120	373.04136	19.4616	156.5102	3114.81	5125	0.1	1950	487500	2100000	0.1205	1.43E-04	1.6	6.79E-03	17.74	98.66	86.6	0	102.1	310.5
960	40.27	3000	2810	803.181398	44.6831	166.8979	2920.95	5125	0.1	1950	487500	2312500	0.079	2.74E-04	2.755	3.81E-03	19.29	99.38	93.77	37.75	181.9	350.6
961	22.59	3000	3890	226.106384	10.4459	138.5974	3517.38	5125	0.1	1950	487500	1750000	0.1408	3.94E-04	2.415	4.88E-03	28.44	97.79	77.89	0	141.9	547.8
962	28.35	3000	4710	88.74058	3.4271	115.8579	4207.74	5125	0.1	1950	487500	1337500	0.1122	5.90E-04	3.659	6.43E-03	82.77	94.37	43.66	0	107.8	661.3
963	22.08	3000	990	446.455123	26.6832	179.3004	2718.9	5125	0.1	1950	487500	2575000	0.1441	8.14E-05	1.285	6.48E-03	32.3	98.88	88.8	0	106.9	298.4
964	45	3000	1090	449.770298	14.7817	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0707	1.13E-04	1.809	9.39E-03	29.22	98.89	88.88	0	73.8	206
965	22.09	3000	1890	195.459029	9.2438	141.878	3436.05	5125	0.1	1950	487500	1812500	0.144	1.84E-04	1.645	7.40E-03	38.58	97.44	74.42	0	93.7	381.6
966	60.83	3000	710	359.224699	14.5562	121.5631	4010.26	5125	0.1	1950	487500	1437500	0.0523	6.25E-05	1.604	1.62E-02	42.56	98.61	86.08	0	42.9	135.1
967	36.69	3000	3990	359.140956	15.8731	132.592	3676.69	5125	0.1	1950	487500	1637500	0.0867	3.44E-04	3.006	5.25E-03	30.78	98.61	86.08	0	132.1	419.9
968	31.22	3000	5680	9.567823	0.2916	91.4206	5332.5	5125	0.1	1950	487500	937500	0.1019	5.32E-04	3.641	1.18E-02	56.33	47.74	0	0	58.6	597.8
969	53.47	3000	1300	276.829066	11.087	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.0595	1.63E-04	2.382	1.06E-02	14.64	98.19	81.94	0	65.4	228.3
970	41.37	3000	4910	16.870763	0.6556	116.5786	4181.73	5125	0.1	1950	487500	1350000	0.0769	5.85E-04	4.847	1.05E-02	43.52	70.36	0	0	66.2	600.5
971	51.56	3000	1550	988.084204	30.9081	93.8425	5194.88	5125	0.1	1950	487500	975000	0.0617	1.34E-04	2.1	5.41E-03	36.81	99.49	94.94	49.4	128.1	208.8
972	32.36	3000	2160	177.638396	8.0102	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.0983	2.23E-04	2.146	8.59E-03	27.92	97.19	71.85	0	80.7	339.8
973	35.87	3000	4070	43.759713	1.8545	127.1374	3834.44	5125	0.1	1950	487500	1537500	0.0887	3.36E-04	2.916	1.11E-02	37.83	88.57	0	0	62.6	416.7
974	49.17	3000	5270	102.246603	3.4135	100.1541	4867.5	5125	0.1	1950	487500	1075000	0.0647	3.90E-04	4.049	8.50E-03	23.07	95.11	51.1	0	81.5	422
975	57.22	3000	2890	585.75084	30.8007	157.7499	3090.33	5125	0.1	1950	487500	2125000	0.0556	1.79E-04	2.629	7.25E-03	53.54	99.15	91.46	14.64	95.6	235.5
976	33.92	3000	710	406.748236	14.3064	105.5176	4620.08	5125	0.1	1950	487500	1162500	0.0938	7.30E-05	1.393	9.62E-03	25.62	98.77	87.71	0	72	210.5
977	22.14	3000	3580	266.911307	12.6809	142.5296	3420.34	5125	0.1	1950	487500	1825000	0.1437	2.77E-04	1.973	5.59E-03	60.45	98.13	81.27	0	123.9	456.8
978	29	3000	4500	37.722424	1.5638	124.3658	3919.89	5125	0.1	1950	487500	1487500	0.1097	6.05E-04	3.788	7.95E-03	66.96	86.75	0	0	87.1	669.3
979	37.47	3000	1760	872.973895	28.6904	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0849	1.50E-04	1.891	4.87E-03	43.93	99.43	94.27	42.72	142.4	258.7
980	51.23	3000	1220	757.810894	33.4932	132.592	3676.69	5125	0.1	1950	487500	1637500	0.0621	8.86E-05	1.721	8.22E-03	61.82	99.34	93.4	34.02	84.3	172.2
981	22.11	3000	4850	100.952424	4.2318	125.7554	3876.57	5125	0.1	1950	487500	1512500	0.1439	6.71E-04	3.359	4.67E-03	32.8	95.05	50.47	0	148.3	778.7
982	33.59	3000	5960	11.428493	0.31	81.3886	5989.78	5125	0.1	1950	487500	787500	0.0947	4.39E-04	3.343	1.26E-02	43.24	56.25	0	0	54.8	510
983	24.21	3000	1240	342.998471	15.695	137.2743	3551.28	5125	0.1	1950	487500	1725000	0.1314	8.91E-05	1.343	7.85E-03	50.7	98.54	85.42	0	88.3	284.2
984	44.62	3000	1140	416.377489	18.309	131.9164	3695.52	5125	0.1	1950	487500	1625000	0.0713	1.20E-04	1.853	9.48E-03	29.59	98.8	87.99	0	73.1	212.8
985	55.52	3000	2120	785.339422	33.6418	128.5118	3793.42	5125	0.1	1950	487500	1562500	0.0573	1.63E-04	2.44	6.10E-03	38.48	99.36	93.63	36.33	113.7	225.2
986	37.52	3000	2410	156.360827	5.0157	96.2335	5065.8	5125	0.1	1950	487500	1012500	0.0848	1.73E-04	2.03	1.16E-02	72.32	96.8	68.02	0	60	277.3
987	25.89	3000	3790	417.88472	18.8435	135.2775	3603.7	5125	0.1	1950	487500	1687500	0.1229	2.93E-04	2.204	4.74E-03	59.25	98.8	88.03	0	146.1	436.4
988	24.82	3000	3770	11.656142	0.3489	89.788	5429.46	5125	0.1	1950	487500	912500	0.1282	3.63E-04	2.431	1.21E-02	36.51	57.1	0	0	57.2	502.1
989	29.7	3000	1300	158.893663	7.5145	141.878	3436.05	5125	0.1	1950	487500	1812500	0.1071	1.43E-04	1.674	1.04E-02	27.79	96.85	68.53	0	66.4	288.8
990	31.5	3000	5560	13.443675	0.4762	106.2727	4587.26	5125	0.1	1950	487500	1175000	0.101	7.58E-04	4.793	8.62E-03	48.08	62.81	0	0	80.4	779.8
991	26.4	3000	1150	438.389645	17.4537	119.4396	4081.56	5125	0.1	1950	487500	1400000	0.1205	1.16E-04	1.487	6.78E-03	30.54	98.86	88.59	0	102.3	288.6
992	30.62	3000	1050	1393.095529	65.8832	141.878	3436.05	5125	0.1	1950	487500	1812500	0.1039	1.19E-04	1.578	2.92E-03	22.34	99.64	96.41	64.11	237.3	264
993	47.98	3000	650	928.878938	37.2015	120.1495	4057.44	5125	0.1	1950	487500	1412500	0.0663	7.12E-05	1.543	7.18E-03	24.09	99.46	94.62	46.17	96.6	164.8
994	57.95	3000	1360	154.231556	7.294	141.878	3436.05	5125	0.1	1950	487500	1812500	0.0549	1.32E-04	2.217	1.57E-02	30.3	96.76	67.58	0	44.1	196
995	38.84	3000	2480	12.459158	0.5646	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.0819	2.47E-04	2.525	1.79E-02	31.25	59.87	0	0	38.8	333.1
996	28.48	3000	1700	212.296951	9.6202	135.9447	3586.02	5125	0.1	1950	487500	1700000	0.1117	1.64E-04	1.741	8.75E-03	39.05	97.64	76.45	0	79.2	313.2
997	40.07	3000	2060	212.517582	6.9844	98.5952	4944.46	5125	0.1	1950	487500	1050000	0.0794	2.03E-04	2.289	9.35E-03	28.92	97.65	76.47	0	74.1	292.8
998	23.79	3000	1390	274.623642	10.2727	112.2199	4344.15	5125	0.1	1950	487500	1275000	0.1337	1.45E-04	1.548	7.33E-03	30.6	98.18	81.79	0	94.6	333.5
999	44.81	3000	3470	16.294735	0.8769	161.4401	3019.69	5125	0.1	1950	487500	2200000	0.071	4.08E-04	3.905	1.35E-02	39.29	69.32	0	0	51.3	446.6
1000	32.9	3000	1470	1224.259845	64.8795	158.9847	3066.33	5125	0.1	1950	487500	2150000	0.0967	8.39E-05	1.439	4.08E-03	80.2	99.59	95.92	59.16	169.9	224.1

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