ELECTRICAL CONDUCTIVITY AS A SURROGATE FOR DISSOLVED BROMIDE STREAM TRACER SAMPLES

by

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ABSTRACT

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Electrical conductivity as a surrogate for dissolved bromide stream tracer samples

Thesis directed by Professor Joseph N. Ryan

The coupling of the stream tracer technique with transient storage modeling is a well-established approach to characterizing solute transport processes of complex stream systems. Stream tracer studies require a large number of samples and the associated chemical analyses are costly. Sampling and analytical demand would be significantly reduced if electrical conductivity – a robust, easy-to-measure, water-quality property– was used as the primary measure of tracer breakthrough and converted to bromide tracer concentrations for breakthrough curve analysis and transient storage model parameter optimization. The advantages of collecting electrical conductivity data as a surrogate for dissolved bromide tracer samples are (1) reduced cost of laboratory analysis, (2) high-frequency data collection by field instruments, and (3) well-defined breakthrough curves for enhanced transient storage model simulations.

This method was tested by collecting electrical conductivity data and dissolved tracer samples during an instantaneous sodium bromide (NaBr) injection experiment in Fourmile Creek, Boulder County, Colorado. Concentrations of bromide were calculated from electrical conductivity data using equations that relate electrical conductivity of natural waters to their chemical composition. Models of transient storage were simulated for both the tracer data derived from electrical conductivity and the measured tracer data.

Small changes in background electrical conductivity caused the highest error (%) in the breakthrough curves. The method was robust in stream reaches where changes in background electrical conductivity could be accounted for. The use of high-frequency calculated bromide data within the transient storage model provided improved parameter estimates.

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CHAPTER 1

INTRODUCTION

Motivation of Study

Understanding how a stream works, how it relates to other systems (natural and artificial), and how it relates to the entire watershed is essential knowledge for developing effective environmental protection measures for sensitive stream environments (Schumm, 1977; Bernhardt and Palmer, 2007; Herget *et al.*, 2007; Gregory *et al.*, 2008; Shaw and Cooper, 2008; Vaughan *et al.*, 2009; Lord *et al.*, 2009). Scientific investigations provide tools to make more informed environmental decisions about stream systems.

Tracer experiments and transient storage modeling are frequently used to investigate complex stream environments (Bencala and Walters, 1983; Bencala *et al*., 1990; Broshears *et al*., 1993; D'Angelo *et al*., 1993; Harvey *et al*., 1996; Morrice *et al*., 1997; Runkel *et al*., 1998; Fernald *et al*., 2001; McKnight *et al.*, 2002; Payn *et al.*, 2008). Transient storage can occur when solutes, or dissolved substances, move laterally into the banks of the stream, flow into the sediment bed or enter areas of the stream surface water that have slow-moving or eddying pockets of water (Mullholland *et al.*, 1997; Fernald *et al.*, 2001; Runkel, 2002). Solutes are any dissolved substance that is transported downstream by the flowing waters such as nutrients, trace elements, pollutants, or artificial tracer additions. Models of transient storage aid our understanding of stream behavior by mathematically quantifying physical, geochemical, and biochemical parameters that influence solute concentrations. We study the processes affecting solutes in streams to predict how pollutants (such as agricultural runoff, erosion, or acid mine drainage) will interact with the stream environment, affect the aquatic ecosystem, or pose a threat

to public health when the affected water body is used as a water supply or for recreational purposes (Runkel and Bencala, 1995).

An appropriate tracer must be (1) conservative, or unaffected by biogeochemical reactions and not prone to sorb to solid material, (2) insensitive to variations in pH and metal chemistry that occur naturally within the study reach, (3) measurable at concentrations several times greater than background concentrations, (4) cost-effective, and (5) safe to human health and aquatic life (Bencala *et al.*, 1986; Bencala *et al.*, 1990). Fluorescent dyes like rhodamine WT are often used, but have been found to photodegrade (Keefe *et al.*, 2004) and react with cationic co-tracers and sediment surfaces of streambeds (Bencala *et al.*, 1983). Ionic tracers such as dissolved bromide or lithium that have low or no background concentration have been found to behave in a more conservative manner (Zellweger, 1994).

The typical objective of a stream tracer study is to generate a plot of tracer concentration against time (a breakthrough curve) at downstream sampling sites (Figure 1.1). Studies have shown that transient storage modeling is most reliable when there is adequate sample coverage of the leading edge and trailing edge of a breakthrough curve (Harvey *et al*., 1996). Wagner and Harvey (1997) suggest that one method for decreasing uncertainty in the optimization of transient storage parameters is to increase the number of data collected during a stream tracer experiment. Thus, stream tracer studies require the collection of a large number of samples.

The logistics of stream tracer sample collection can be complex and the associated chemical analyses are costly. Sampling and analytical demand would be significantly reduced if electrical conductivity - a robust, easy-to-measure, water-quality property - were used as the primary measure of tracer breakthrough and converted to ionic tracer concentrations.

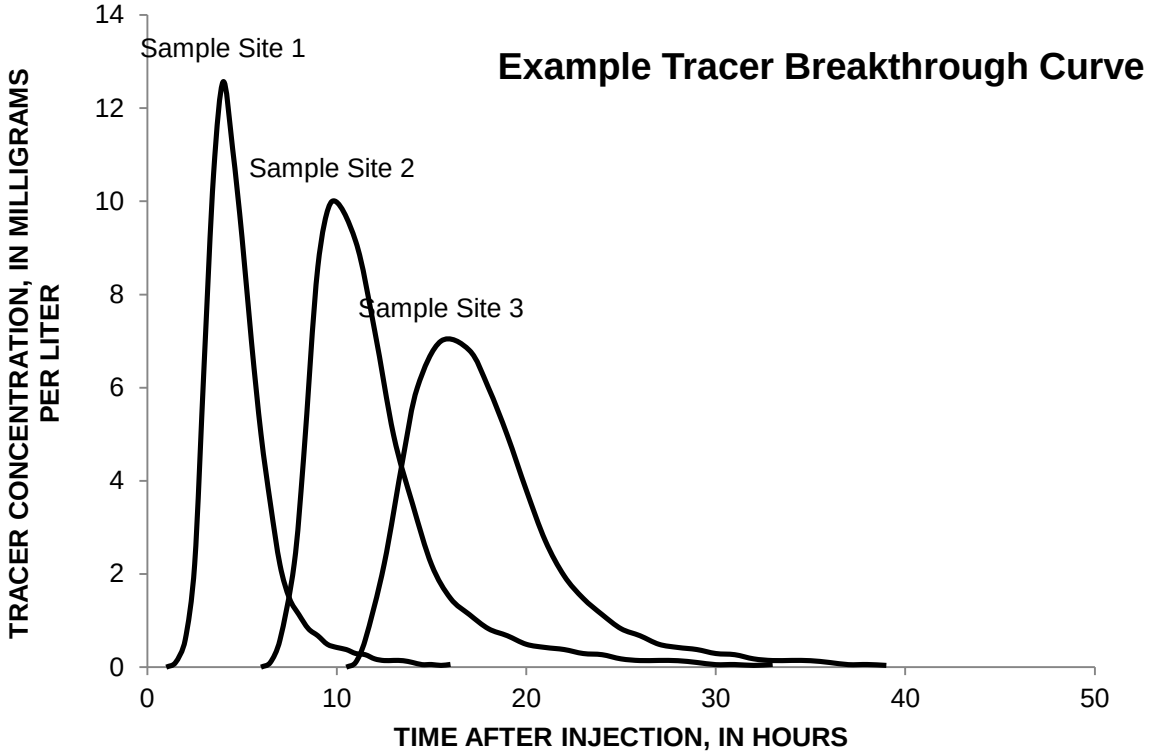

Figure 1.1 Concentration-time plots at three downstream sampling sites during an instantaneous stream tracer-injection experiment.

Electrical conductivity data can be collected at higher frequency than tracer samples by deploying electrical conductivity field meters with data loggers for extended periods. When background electrical conductivity values are subtracted from the sampled electrical conductivity data set, the observed change in electrical conductivity corresponds to conservative ionic tracer concentrations (Gooseff and McGlynn, 2005). The advantages of collecting electrical conductivity data as a surrogate for dissolved ionic tracer samples are (1) reduced cost of laboratory analysis, (2) high-frequency, real-time data collection by field instruments, and (3) well-defined breakthrough curves. Alternatively, the collection of real-time dissolved ion data with an ion-specific probe could provide the same result if probe sensitivity was comparable to laboratory analysis results.

Background and Theory

The purpose of this section is to provide fundamental background information on stream tracer investigation techniques and electrical conductivity necessary for readers to understand the research. Several topics will be discussed including the theory and technique of the stream tracer experiment and the principles and applications of electrical conductivity measurements.

Tracer Study Concepts

Stream tracer studies may be conducted to estimate discharge, quantify traveltime, characterize stream-solute dynamics, and examine biogeochemical transformations (Jobson, 2002; Bencala *et al.,* 1983; Gooseff *et al.,* 2005). An ideal tracer injected into a stream will behave in the same manner as the water molecules themselves. As the tracer moves downstream, the various physical, chemical, and biological processes active in the stream system affect it. A measure of the tracer at a downstream sampling location allows one to quantify the amount of tracer, the timing of tracer arrival, and the array of tracer concentrations that move past the downstream sampling point (Gooseff *et al.,* 2008). Breakthrough curves of measurable tracer concentrations at downstream sampling locations can be recorded. The timing, magnitude and shape of the tracer breakthrough curves provide data for solute transport model simulations. Models quantify the physical solute transport processes and biogeochemical reactions influencing the tracer that are described as follows.

Physical processes are perhaps the most studied solute transport processes because they affect both conservative solutes and non-conservative, or reactive, solutes that are affected by geochemical and biochemical processes. Physical transport processes include (1) advection, the tracer moving at the mean velocity of the water in the stream; (2) dispersion, the spreading of

tracer within the stream channel; and (3) transient storage due to in-channel stagnant zones and hyporheic exchange (Runkel, 2000).

Hyporheic exchange describes the process of stream water entering the subsurface (the hyporheic zone) and eventually reentering the stream at some point downstream causing the tracer to act as a sink during the initial stages of the tracer injection and a source of tracer during the latter stages (Runkel and Bencala, 1995). The travel time for solutes moving through the coarse gravel of the streambed and the porous areas within the stream bank may be significantly longer than that for solutes travelling within the water column.

Although physical processes play a large role in determining the fate of solutes, chemical and biological processes may be equally important. The concentration of a released solute may decrease due to sorption, biodegradation, oxidation/reduction, volatilization, hydrolysis, photolysis and other biochemical processes (Runkel and Bencala, 1995). In order to investigate these reactive transport processes, at least two tracers, a non-conservative one and a conservative one are injected simultaneously. The relative difference in the transport behavior of the tracers indicates the reactive transport processes within the stream.

Stream Tracer Technique

There are two common timescales for tracer releases: (1) instantaneous release, or slug injection, refers to a dissolved tracer mass that is introduced to the stream over a very short period of time and (2) constant-rate, or continuous injection, refers to a solution of known tracer concentration that is applied at a steady rate until the downstream concentration reaches a constant value (Payn *et al.,* 2008). In instantaneous release experiments, the stream is subject to a relatively high peak concentration over a short period of time (Figure 1.2). Breakthrough curves

exhibit decreasing peak concentration with downstream travel distance due to dispersive transport processes and tracer dilution. Tracer dilution can be caused by (1) lateral inflow, water that is added to the stream due to groundwater inflow, overland flow, or small springs and seeps, (2) hyporheic flow paths that return water that was lost from the channel upstream of the tracer injection, and (3) hyporheic flow paths that return water that was lost from the channel downstream from the tracer release, but was lost before being labeled with tracer (Ruehl *et al.*, 2006; Payn *et al.*, 2009). By contrast, constant-rate release experiments exhibit relatively consistent peak tracer concentration over the reach in streams without substantial lateral inflow (Payn *et al.*, 2008). The constant-rate method generally exhibits more precise transient storage model results but requires additional equipment to control tracer injection.

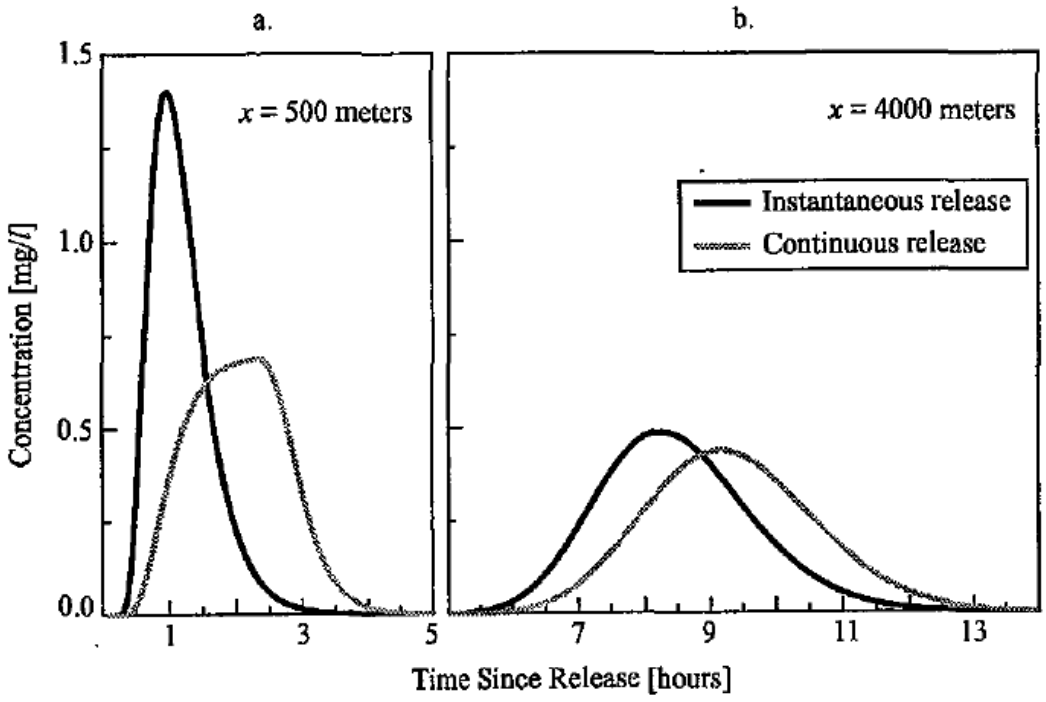

Figure 1.2 Predicted tracer concentrations at two downstream sampling sites: (a) at 500 m, the peak concentration of the instantaneous release is greater than that of the peak for the constant-rate release, and (b) at 4000 m, there is little difference between the concentration profiles for the instantaneous and constant-rate releases (Runkel and Bencala, 1995).

Grab sampling at downstream locations is most commonly used to collect samples and may be done by wading into the stream, using a boat, or by deploying an automatic water sampler. Samplers are large in size and weight, expensive, and can hold a maximum of 24 sample bottles. These complications might limit the number of samplers that can be deployed and limit the number of samples that can be collected during projects (Martin *et al.,* 2004).

Tracer analysis procedures may be done in the field or in the laboratory, depending on the type of tracer injected and available field equipment. Dye tracer sample concentrations are often measured by deploying field fluorometer instruments at sampling locations (Kilpatrick and Wilson, 1989). Dissolved anionic tracer concentrations such as bromide or chloride may be measured in the field by ion-selective electrodes (Paul and Hall, 2002). However, ion-selective electrodes are not suitable for prolonged environmental field use, particularly due to sensor drift which must be corrected by time and labor-intensive recalibration (Patko, 2009). More often, samples are collected and measured in the laboratory with ion chromatography, a process that allows the separation of ions and polar molecules based on their charge (Eith *et al.,* 2001).

Electrical conductivity data is often collected during ionic stream tracer studies to determine connectivity, discharge, or traveltime (Stream Solute Workshop, 1990). More recently, electrical conductivity data has been correlated to collected ionic tracer concentration data for enhanced solute transport modeling (Gooseff and McGlynn, 2005; Payn *et al.,* 2009). Gooseff and McGlynn's (2005) results suggest that when changes in background electrical conductivity data can be accounted for, a robust relationship exists between electrical conductivity and ionic tracer concentration during stream tracer experiments.

Electrical Conductivity Principles

Electrical conductivity is the ability of a material to pass electric current. In solutions, electric current is carried by cations and anions. Conductivity meters and probes measure electrical conductivity of solutions by applying an alternating electrical current (*I*) to two electrodes immersed in a solution and measuring the resulting voltage (*V*). The cations migrate to the negative electrode, the anions to the positive electrode, and the solution acts as an electrical conductor (Figure 1.3).

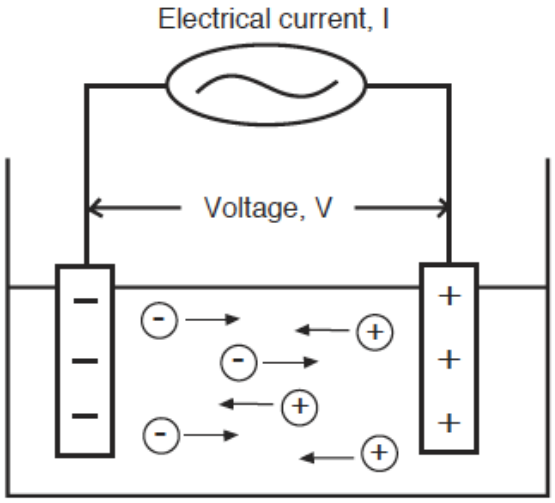

Figure 1.3 Electrical conductivity measurement exhibiting the migration of ions in solution (Radiometer Analytical SAS, 2004).

Conductivity meters determine electrical conductivity (κ; μS cm^{-1}) of a solution precisely and accurately by the following equation:

$$\kappa = K_{cell}G \tag{1.1}$$

where K_{cell} is the cell constant (cm^{-1}) and G is the conductance (μS). The conductivity cell constant is the ratio of the distance (d; cm) between the electrodes to the area (a: cm^2) of the electrodes. Conductance is defined as the reciprocal of the electrical resistance (R; Ω) of a solution between two electrodes. The conductivity meter measures the conductance, and displays the reading converted into conductivity.

The electrical conductivity of a solution is highly dependent on the solution temperature. Therefore, most conductivity meters designed for field use have a programmed temperature compensation algorithm and automatically report electrical conductivity at 25 °C. Temperature corrected electrical conductivity (κ_{25}; μS cm^{-1}) is calculated using the following equation:

$$\kappa_{25} = \frac{\kappa}{1 - \alpha(T - 25\ °C)} \tag{1.2}$$

where κ is the electrical conductivity at the solution temperature (T; °C) and α ($°C^{-1}$) is a temperature compensation factor. Conductivity meter manufacturers may use a linear compensation factor that ranges from 0.019-0.021, or a non-linear compensation factor, or allow the user to choose α.

Electrical Conductivity Applications

Electrical conductivity is one of the most frequently measured environmental parameters. It has been used to assess the salinity (Lewis, 1980; Wilson, 1981; Visconti *et al.*, 2010), ionic strength (Lind, 1970; Polemio *et al.*, 1980; Pintro and Inoue 1999), major solute concentrations (Pollak, 1954; McNeil and Cox, 2000), and total dissolved solids (Gustafson and Behrman 1939;

Singh and Kalra 1975; Lystrom *et al.*, 1978; Day and Nightingale 1984) of natural waters and soil solutions.

Several methods have been developed to calculate electrical conductivities of natural waters from their chemical compositions (Rossum, 1949; McNeal *et al.,* 1970; Rossum, 1975; Laxen, 1977; Miller *et al.,* 1988; Palowicz, 2008; McCleskey *et al.,* 2012a). Calculated conductivity can be used to better understand the chemical behavior of dissolved solutes by determining the ions that substantially contribute to conductivity and to check the accuracy of chemical analyses (Rossum, 1975; Laxen, 1977; Miller *et al.,* 1988; McCleskey *et al.,* 2012a). Many of the electrical conductivity calculation methods have been limited by the lack of available electrical conductivity data for electrolytes found in natural waters. In recent times, more comprehensive methods of calculating electrical conductivity of natural waters have been published that incorporate many of the missing transition metals and ions, such as bromide, known to contribute to electrical conductivity (Pawlowicz, 2008; Appelo, 2010; McCleskey *et al.,* 2012a).

Research Approach

Beyond the analysis of stream tracer studies by Harvey *et al.* (1996), Wagner and Harvey (1997), and Payn *et al.* (2008), there has been little specific information published on the execution or design of the stream tracer experiment to refine our understanding of processes affecting solutes. The objective of this research was to present and evaluate a method to calculate bromide tracer breakthrough concentrations from electrical conductivity measurements taken during a sodium bromide stream tracer experiment. It is hypothesized that this alternative stream tracer technique will be a means to reliably calculate tracer breakthrough curves, enhance

transient storage modeling results, and reduce the use of limited resources (field personnel, autosamplers, and laboratory analysis).

A conservative ionic stream tracer experiment was performed and electrical conductivity data were collected frequently and dissolved ionic tracer samples less frequently at the same downstream sampling sites. The entire dataset of electrical conductivity was converted into ionic tracer concentrations using McCleskey's (2012a) method of calculating electrical conductivity of natural waters. Comparisons of the calculated tracer breakthrough data to the measured tracer breakthrough data are presented in Chapter 3. Additionally, both data sets were simulated using a transient storage model. The results are compared and considered in Chapter 4.

CHAPTER 2

METHODS

Study Area

A stream tracer injection experiment was performed in Fourmile Creek, a low-order foothills stream about 10 km west of the city of Boulder, Colorado (Figure 2.1). Fourmile Creek drains approximately 63.2 km^2 of mountainous area characterized by sparse human population, forested land cover, and steep slopes (Murphy *et al.,* 2003). Stream discharge is dominated by snowmelt in the spring and transient high flows during summer convective storms. Baseflow conditions occur in the fall and winter months. The area is primarily underlain by metamorphic and plutonic rocks that are intruded by late Cretaceous and Tertiary dikes associated with mineral deposits (Verplank *et. al.,* 2008). Much of the hydrological research to date has been directed towards wildfire impacts from the September 2010 Fourmile Canyon fire (Ruddy *et al.*, 2010; Murphy and Writer, 2011; McCleskey *et al.*, 2012b; Writer *et al.*, 2012; Moody and Ebel, 2012; Beganskas, 2012; Graham *et. al.,* 2012). Additional site information is in Appendix A.

The experiment described in this research was conducted on December 7^{th} and 8^{th}, 2012, during stream baseflow conditions. Wetted channel widths during the experiment were on the order of tens of centimeters and stream depths were generally less than 15 cm. One major tributary, Gold Run Creek, contributes to Fourmile Creek during low flow. Fourmile Creek was chosen as the study area for this research because the stream is well-characterized and provides the opportunity to evaluate several backgrounds for the conditions and limitations of using electrical conductivity as a surrogate for dissolved ionic stream tracer samples.

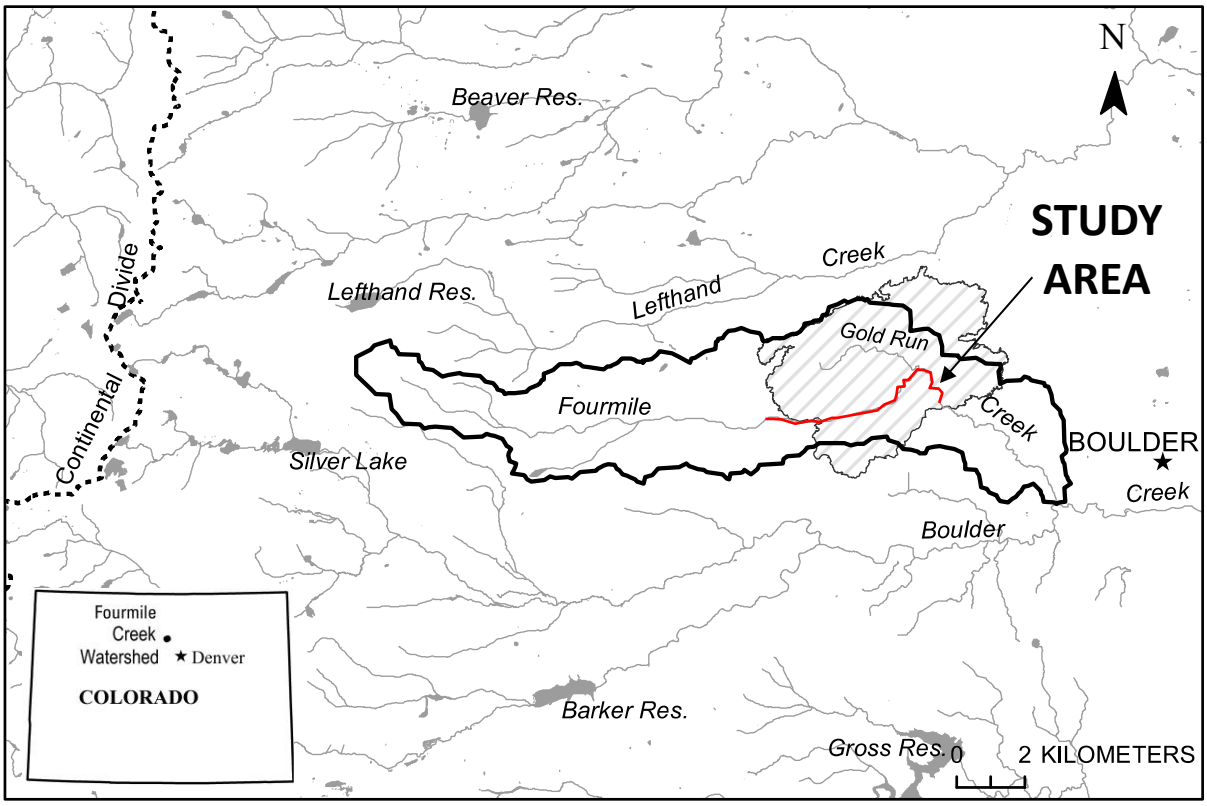

Figure 2.1 The Fourmile Creek watershed is located west of the City of Boulder, Colorado. The striped area represents the September 2010 Fourmile Canyon fire burned area (courtesy of Sheila Murphy, U.S. Geological Survey).

Stream Tracer Experiment

Field Methods

An ionic stream tracer experiment was performed in a 6.78 km reach of Fourmile Creek. Four downstream sampling sites were selected based on current U.S. Geological Survey stream monitoring sites and observable surface inflows (Figure 2.2). The stream gradient over the experimental reach is 4.1% (Figure 2.3). Stream reach distances and sample location elevations were measured in 2010 by the U.S. Geological Survey.

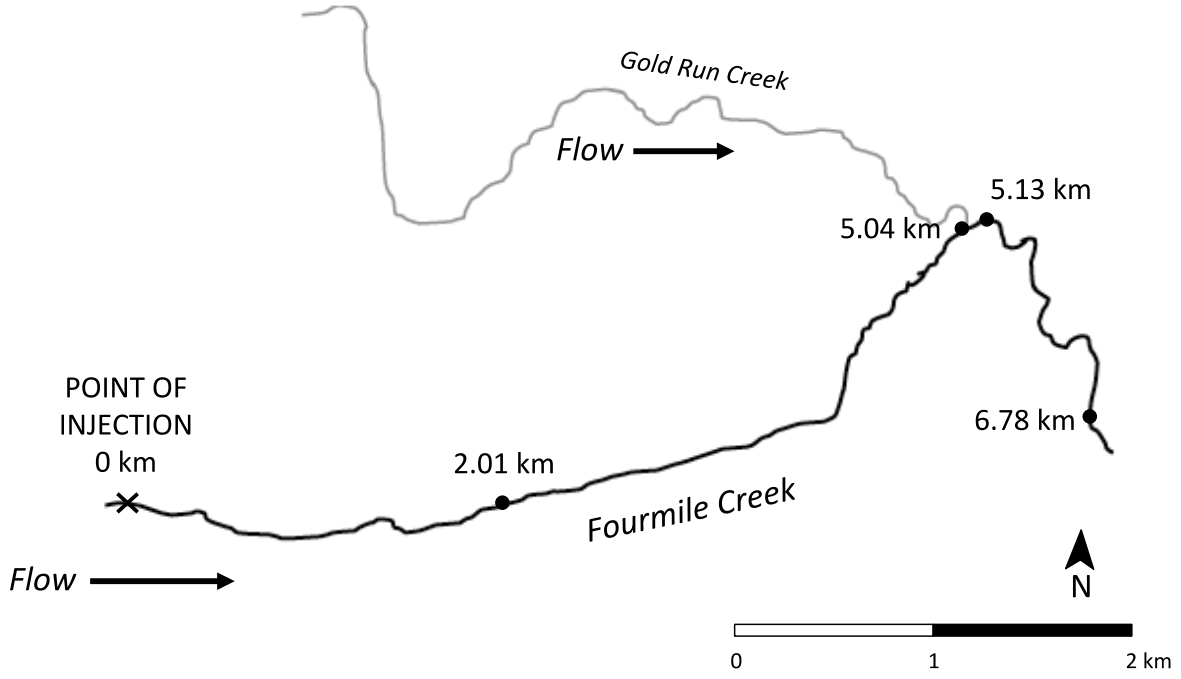

Figure 2.2 Experimental reach of Fourmile Creek in Boulder County, Colorado. Injection point and four sample sites are indicated.

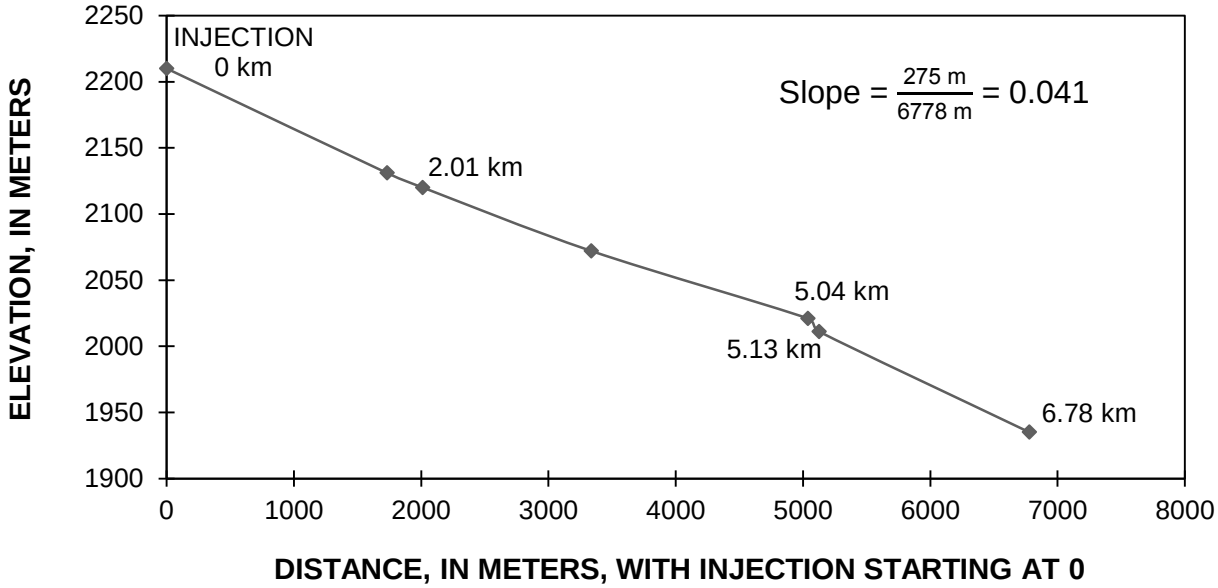

Figure 2.3 Measured elevation of water surface in Fourmile Creek experimental reach including sample sites and additional U.S. Geological Survey sites (McCleskey *et al.*, 2012b).

On December 7th, dissolved sodium bromide (NaBr) tracer solution was injected into Fourmile Creek and bromide was the target tracer constituent. A total of 40.5 kg of NaBr was placed in a portable water tank and mixed with about 80 L of stream water. The injectate was pumped into the center of the stream at a rate of 4 L min^{-1} for 20 min (12:10-12:30 pm local time). Injection rate was controlled using the pump of an automated sampler (Isco model 6700). After injection of the tracer solution, a solid layer of undissolved NaBr was found fixed to the bottom of the water tank. Approximately 1.9 kg of undissolved NaBr was recovered in the mixing container and measured in the laboratory. Therefore, only 38.6 kg of NaBr was injected into Fourmile Creek (30.0 kg as bromide) for an approximate bromide concentration of 375 g L^{-1} in the tracer solution. Undissolved NaBr in the mixing container indicates that some undissolved NaBr may have been pumped into the stream. A sample of tracer injectate solution was collected and measured in the laboratory as 529 g L^{-1} bromide concentration, a higher bromide concentration than the estimated bromide concentration based on mass per volume injected. The higher concentration of bromide in the tracer solution indicates that the tracer injectate was not well-mixed and likely contained undissolved NaBr.

Water samples were collected every 18-30 min at the sampling locations using automated water samplers (Isco models 6700 and 6712), which contained pre-cleaned 1 L polyethylene sampling bottles. Within 24 h, samples were removed from the automatic samplers and delivered to the U.S. Geological Survey National Research Program laboratory in Boulder, CO, where they were filtered for chemical analyses.

Multi-parameter sensor probes (Hach Company, Hydrolab MS5 or Hydrolab 4a) were deployed at the same downstream sampling locations. Electrical conductivity, temperature, and pH data were recorded every 2 min. Each probe was calibrated in the laboratory on the day prior

to stream tracer injection for pH using pH 7 and 10 standards at room temperature and for electrical conductivity using a 99 μS cm^{-1} standard. The accuracies of the sensors as reported by the manufacturer are ± (0.5% of reading + 1 μS cm^{-1}) for electrical conductivity, ± 0.1 °C for temperature, and ± 0.2 units for pH (Hach Hydromet, 2011). The resolution of the sensors as reported by the manufacturer are 1 μS cm^{-1} for electrical conductivity, 0.01 °C for temperature, and 0.01 units for pH (Hach Hydromet, 2011). Measured electrical conductivity values are internally compensated for temperature to derive specific electrical conductivities. The accuracy of the multi-parameter probes was checked in the field by measuring the same parcel of stream water for 12 min prior to tracer injection.

Stream Discharge

Stream discharge was measured at each sample site prior to tracer injection with a pygmy flow meter using standard methods (Rantz *et al.*, 1982). When measuring the flow of small, tortuous channels such as the Fourmile Creek experimental reach, this discharge measurement technique has been reported to be accurate to ± 20%. Pressure transducers with data logging (Global Water, model WL16U) were deployed at each site to monitor stage every 2 min. Variations in stream discharge may induce fluctuations in electrical conductivity (Schmidt *et al.*, 2012). Discharge at the tracer injection location was not measured in the field but assumed to be the same discharge measured at the first sample site (2.01 km) based on past baseflow data (Sheila Murphy, personal communication, May 5, 2013). Discharge of Gold Run Creek into Fourmile Creek was measured with a 6 L polypropylene bucket and stopwatch and also calculated based on the difference in upstream and downstream flow measured in Fourmile Creek.

Laboratory Methods

Water samples were filtered using a battery-operated peristaltic pump (Geotech, geopump™) fitted with medical-grade silicone tubing through 0.45 μm capsule filter membranes constructed of white acrylic copolymer coating over a non-woven substrate (Geotech, High-Capacity dispos-a-filter™) into 250 mL high-density polyethylene bottles. Concentrations of dissolved anions (bromide, chloride, fluoride, nitrate, and sulfate) were determined using ion chromatography (Dionex DX 100) with suppressed electrical conductivity detection (Brinton *et al*., 1995). An analytical column (IonPac AS4, 4 mm), guard column (IonPac AG4), and an anion self-regenerating suppressor (ASRS ULTRA II, 4 mm) were used. A 17 mM carbonate ($NaCO_3$) /18 mM bicarbonate ($NaHCO_3$) eluent was pumped through the columns at a flow rate of 2 mL min^{-1}. Analytical errors for these constituents are typically less than 5% (McCleskey *et al*., 2012b). The analytical error in bromide concentrations was less than 2%. The ion chromatography method detection limits are reported in Appendix C.1. Samples were diluted as necessary to bring the dissolved bromide ion concentrations within the optimal range of the method.

One of every ten collected water samples was analyzed for alkalinity by autotitration (Thermo Scientific, 940-960 autotitrator) using standardized sulfuric acid (Barringer and Johnsson, 1996). The same subset of samples (one of every 10) were filtered into separate containers for the determination of dissolved major cations and trace metals concentrations using inductively coupled plasma-optical emission spectrometry (ICP-OES, PerkinElmer 7300 DV). Each sample was preserved with 1% (volume per volume) concentrated trace metal-grade HNO_3 and analyzed for concentrations of aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese,

molybdenum, nickel, potassium, rubidium, selenium, silicon dioxide, sodium, strontium, sulfur, tungsten, uranium, vanadium, and zinc.

Several techniques were used to assure the quality of the analytical data. These techniques included calculation of charge imbalance, electrical conductivity imbalance, analysis of U.S. Geological Survey standard reference water samples, analysis of blanks, analysis of replicate samples, and analysis of an independent commercial standard (Dionex 7 Ion Standard) to verify bromide concentrations were consistent with the calibration standards.

Quantification of solute loads

In-stream loads of major solutes in Fourmile Creek were calculated using methods described by Kimball *et al.* (2002; 2007). The in-stream load is the solute mass per unit time at a sampling site, and represents the variation in load from point to point along the study reach. The eight largest in-stream loads of solute mass (dissolved sodium, calcium, magnesium, sulfate, chloride, alkalinity (as bicarbonate), zinc, and manganese) were calculated as the product of the dissolved solute concentration and discharge. An increase in the in-stream load indicates that there is a solute source in the stream segment and a decrease in in-stream load suggests attenuation due to chemical, biological, or physical processes (Kimball *et al.*, 2002).

Revising Electrical Conductivity Measurements

Accurate measurement of electrical conductivity is of primary importance for calculating bromide breakthrough concentrations in Fourmile Creek. A check of the accuracy of the multi-parameter probes revealed that electrical conductivity measurements of the same parcel of stream water varied (84-134 $\mu S\ cm^{-1}$) between the four probes. This disparity was likely due to improper electrical conductivity calibration technique of the probes. Dilute conductivity standards (in this

case, a 99 μS cm^{-1} standard) were susceptible to contamination during calibration. To avoid the calibration errors, calibration with a higher conductivity standard solution, such as 1,413 μS cm^{-1} standard, is recommended for future experiments.

Measured electrical conductivity data were revised by measuring electrical conductivity of the collected water samples in the laboratory (WTW, 340i) and developing a relationship between field electrical conductivity data and collected water sample electrical conductivity data. Linear relationships between the field-measured and laboratory-measured electrical conductivity were developed for each of the four sampling sites. Each linear relationship was applied, respectively, to the sampling site's entire electrical conductivity dataset for more accurate electrical conductivity data. The amended data was verified by past baseflow electrical conductivity data measured at the sample sites (Sheila Murphy, written communication, February 7, 2013).

Electrical Conductivity-Ion Concentration Relationship

Electrical conductivity measurement is a rapid and inexpensive way to estimate the ionic strength of a solution if the major ionic combinations are known (Lind, 1970). However, the measurement is non-specific, or unable to distinguish between different types of ions. Electrical conductivity is proportional to the combined effect of all ions present in solution (Hem, 1982). The research method presented is based on the assumption that the tracer injectate (NaBr) alone produced the observed breakthrough curves in electrical conductivity (normalized from background) during the stream tracer experiment. Background electrical conductivity at a sample site was established by measuring electrical conductivity for a few hours before any tracer was introduced to the system and determining the mean electrical conductivity value.

Electrical conductivity (κ) of an aqueous solution can be calculated from its chemical composition using the following equation:

$$\kappa = \sum \lambda_i m_i \tag{2.1}$$

where λ_i is the ionic molal conductivity (mS kg cm^{-1} mol^{-1}) of the i^{th} ion and m_i is the speciated molality (mol kg^{-1}) of the i^{th} ion (Laxen, 1977; Appelo, 2010; McCleskey *et al.*, 2012a). By rearranging Eq. 2.1, we can determine the speciated molality of a solution if we know the electrical conductivity and ionic molal conductivity for ions that significantly contribute to electrical conductivity. The ionic tracer concentration in solution can be determined from the speciated molality.

Ionic Molal Conductivities

McCleskey *et al.* (2012a) developed a set of equations used to compute ionic molal conductivity and a more reliable method to calculate electrical conductivity of natural waters from their chemical composition. Ionic molal conductivities (λ_i) of the ions of interest (Na^+ and Br^-) were calculated using an equation of the form proposed by Lattey (1927):

$$\lambda_i = \lambda°(T) - \frac{A(T)\mathrm{I}^{1/2}}{1+B\mathrm{I}^{1/2}} \tag{2.2}$$

where $\lambda°$ and A are functions of temperature (°C) and B is an empirical constant (Table 2.1).

Table 2.1 Equations from McCleskey *et al.* (2012a) used to calculate individual ionic molal conductivities of the NaBr tracer injectate (parameters for Eq. 2.2, *T* is temperature (°C)).

Ion	$\lambda°$	*A*	*B*
Na^+	$0.003763T^2 + 0.8770T + 26.23$	$0.00027T^2 + 1.141T + 32.07$	1.7
Br^-	$0.000709T^2 + 1.477T + 40.91$	$0.00251T^2 + 0.5398T + 12.01$	0.1

Eq. 2.2 can be used to reliably calculate ionic molal conductivities of natural waters with temperatures ranging from 5 to 90 °C and ionic strengths up to 1 molal. Ionic strength, which is a measure of the concentration of all charged ions in solution, can be calculated using:

$$I = 1/2 \sum m_i z_i^2 \tag{2.3}$$

where *z* is the charge of the i^{th} ion. Ionic strength can be calculated for water samples more accurately using the U.S. Geological Survey geochemical speciation code WATEQ4F (Ball and Nordstrom, 1991) and measured ion concentration data.

Calculate Ionic Tracer Concentration

After determining the individual ionic molal conductivities (λ_i) of the conservative tracer injectate (NaBr) and electrical conductivity (κ) of the stream from field measurements, conservative tracer (bromide) concentration was determined using Eq. 2.1 and by assuming the density of the stream water is 1 g mL^{-1}. Bromide tracer concentrations were calculated for each sample site's entire electrical conductivity dataset. A smoothed 1 h symmetric moving average filter was used to display calculated bromide concentrations before and after the tracer breakthrough to reduce background noise (± 1 µS cm^{-1}) caused by natural electrical conductivity

fluctuations. In statistics, a moving average filter operates by creating a series of averages of different subsets of the full dataset. The moving average filter is optimal for reducing random white noise while keeping the sharpest step response of a dataset (Smith, 1997).

The equations of McCleskey *et al.* (2012a) have the capacity to calculate bromide tracer concentrations at a wide range of solution temperatures using electrical conductivity (κ) and measured solution temperature (T); however, the use of those parameters led to a number of uncertainties. For one, the background electrical conductivity of a sampling site is difficult to determine and subtract from the uncorrected temperature electrical conductivity dataset because electrical conductivity naturally fluctuates diurnally caused by changes in solution temperature. By using electrical conductivity corrected to 25 °C (κ_{25}) to determine speciated molality (Eq. 2.1) and a constant temperature of 25 °C to determine ionic molal conductivities (Eq. 2.2), the measured electrical conductivity datasets are easily normalized from background. One advantage of this approach is that the measured electrical conductivity dataset can be directly inserted into the equations of McCleskey *et al.* (2012a) without temperature conversions. In this research, the field-measured electrical conductivity datasets were calibrated to laboratory-measured electrical conductivity at T = 21 °C.

Measured stream bromide concentrations were compared with calculated bromide concentrations recorded at the same time as sample collection using the method of least squares regression where the sum, RSS, of squared residuals

$$\mathrm{RSS} = \sum_{i=1}^{n} r_i^2 \tag{2.4}$$

is a minimum. A residual is defined as the difference between the actual value of the dependent variable (measured bromide concentration) and the value predicted by the model (calculated bromide concentration).Transport numbers

Transport numbers (t_i), which are the relative contribution of an ion to the overall electrical conductivity, are useful for identifying the ions that substantially contribute to the electrical conductivity (McCleskey *et al.,* 2012a). The transport numbers for all of the ions in a solution sum to unity and can also be defined as the fraction of the current carried by a given ionic species. The values of t_i were calculated for samples collected from Fourmile Creek during background bromide concentration and peak bromide tracer concentration using:

$$t_i = \frac{\lambda_i}{\Lambda} \tag{2.5}$$

where λ_i is the ionic molal conductivity of the ion of interest and Λ is the molal conductivity of the electrolyte solution, or the sum of all ionic molal conductivities (λ_i) in the solution.

Interpretation of breakthrough curves

Tracer mass recovery

The mass of tracer present as it passed each sampling point was estimated from

$$M_s = Q_s \int_0^\infty C_s dt \tag{2.6}$$

where M_s is the sampled in-stream load, Q_s is the measured discharge at the sample site, and C_s is the bromide concentration at the sample site (Atkinson and Davis, 2000; Paschke *et al.,* 2005). The integral was approximated by the trapezoidal rule. The fractional recovery of tracer is M_s/M_I where M_I is the mass injected.

Transient Storage Model Simulations

The One-Dimensional Transport with Inflow and Storage (OTIS) transient storage model (Runkel, 1998) was used to simulate the conservative bromide breakthrough data. Transport of the tracer was simulated using the one-dimensional advection-dispersion equation within the channel and a storage-zone term that accounts for solute exchange with surface and subsurface storage zones. The governing equations that were used are:

$$\frac{\partial C}{\partial t} = -\frac{Q}{A}\frac{\partial C}{\partial x} + \frac{1}{A}\frac{\partial}{\partial x}\left(AD\frac{\partial C}{\partial x}\right) + \frac{q_{LIN}}{A}(C_L - C) + \alpha(C_S - C) \quad (2.7)$$

$$\frac{dC_S}{dt} = \alpha\frac{A}{A_S}(C - C_S) \quad (2.8)$$

where A is the cross-sectional area of stream (m^2), A_S is the cross-sectional area of storage zone (m^2), α is the storage zone exchange coefficient (s^{-1}), C is the main channel bromide concentration (mg L^{-1}), C_S is the storage zone bromide concentration (mg L^{-1}), q_{LIN} is the lateral inflow rate ($m^3\ s^{-1}\ m^{-1}$ of stream length), C_L is the lateral inflow bromide concentration (taken to be the same as background bromide concentration, 0 mg L^{-1}), D is the dispersion coefficient ($m^2\ s^{-1}$), x is the distance downstream (m), t is time (s), and Q is stream flow rate ($m^3\ s^{-1}$).

The experimental reach of Fourmile Creek was divided into four reaches bounded by the tracer injection location or sample sites (Table 2.2). Within each reach, parameters were adjusted

to provide a good fit between measured and simulated bromide data. Each stream reach was divided into discrete segments. OTIS incorporates a Crank-Nicolson method to solve Eqs. 2.7 and 2.8 numerically for each segment.

Table 2.2 Experimental reach distances used in Fourmile Creek transient storage modeling.

Reach No.	Upstream Boundary (km)	Downstream Boundary (km)	Length (km)
1	0	2.01	2.01
2	2.01	5.04	3.03
3	5.04	5.13	0.09
4	5.13	6.78	1.65

Main channel bromide concentration (C) and volumetric flow rate (Q) were measured in each of the four study reaches for one upstream boundary and one downstream boundary. Lateral inflow rates (q_{LIN}) were estimated based on the net changes in volumetric flow rate and used in the model simulations. Initially, the dispersion coefficient (D) and cross-sectional area (A) were estimated. Then, OTIS-P, a modified version of OTIS that is coupled to a nonlinear least squares algorithm (Runkel, 1998), was used to optimize parameters D, A, A_S, and α. The automated fitting routine and the statistical package used in OTIS-P attempts to minimize the squared differences between observed data and model simulations (Runkel, 1998).

Initially, the model would not converge when estimating transient storage parameters for Reaches 1 and 2, indicating errors in the data. Successful parameter estimation and excellent model-fit simulations are not possible when there is a considerable difference in tracer mass between upstream and downstream boundaries because the model assumes that mass is conserved (Runkel, 1998). To account for the difference between bromide mass at the upstream boundary and the downstream boundary in Reaches 1 and 2, first-order decay was applied for the

main channel using a first-order decay coefficient (λ; s^{-1}) even though bromide transport was expected to be conservative. Alternatively, it would have been possible to use lateral outflow to account for the decrease in bromide mass, but discharge measurements made by the flow meter showed an increase in flow over these reaches; thus, lateral inflow and outflow would both be needed. The model does not optimize flow parameters and the user is left to a prolonged trial and error method to determine lateral inflow and outflow rates that result in convergence and the measured increase in discharge.

Two simulations were run to test the calculated bromide tracer experiment approach for each of the four study reaches. In the first simulation (the low temporal resolution simulation), all of the measured stream samples were used to simulate bromide transport downstream. This dataset was sparse – four observations at the injection location, 28 observations at 2.01 km, 50 observations at 5.04 km, 50 observations at 5.13 km, and 29 observations at 6.78 km. In the second simulation (the high temporal resolution simulation), observed bromide concentrations were derived from electrical conductivity data which resulted in a high temporal resolution dataset as electrical conductivity was recorded on a 2 min interval. Calculated bromide data ranged from 535 to 1375 observations at each site.

Evaluation of Simulated Parameters

Each run of the OTIS-P fitting routine minimizes the residual sum of squares. The residual sum of squares quantifies the discrepancy (error) between the simulation and the observed data. OTIS-P runs are repeated until the final parameter estimates and the residual sum of squares are invariant from one run to the next (Runkel, 1998).

The OTIS-P automated parameter estimation output includes a parameter estimate, standard deviation of the parameter estimate, ratio of the parameter estimate to the standard

deviation of the estimate, 95% confidence intervals, and the residual sum of squares. For publications, Runkel (2011) suggests reporting the parameter estimate and the ratio using the 95% confidence intervals as error bars on the estimates. High ratios indicate low variation, or low uncertainty in the parameter estimate. Ratios for cross-sectional area of the stream (A) will always be higher than for D, A_S and α because A is well defined by the timing of the tracer arrival and departure, whereas there is more uncertainty in characterizing mixing and storage parameters (D, A_S and α) because they are defined by shape of the breakthrough curve (Runkel, 2011). Ratios less than 1 indicate the standard deviation is greater than the parameter estimate itself and that the parameter estimate is highly uncertain.

Several metrics are available for quantifying the importance of transient storage based on the model parameters (Runkel, 2002). The parameters in this experiment were evaluated using the fraction of median travel time due to transient storage (F_{med}):

$$F_{med} = \left(1 - e^{-L\left(\frac{\alpha}{u}\right)}\right)\frac{A_s}{A + A_s} \tag{2.9}$$

where u is the median stream flow velocity (Q/A; m s^{-1}), and L is the reach length (m). F_{med} was also evaluated at the standard distance of 200 m by setting L equal to 200 m (F_{med}^{200}) for comparison between stream reaches and with other datasets (Runkel, 2002). F_{med} is the only metric that includes the interaction between u, α and A_S and is an effective way to quantify the effects of transient storage in the context of whole-stream mass transport (Runkel, 2002). Median travel time (t_{med}; s^{-1}) corresponds to the time when ½ the mass has passed the observation point and is equivalent to the time at which ½ of the integrated area under the breakthrough curve is realized (Runkel, 2002).

While each of these metrics emphasizes a slightly different aspect of transient storage, they have in common an attempt to normalize transient storage model parameters by some measure of flow conditions in the surface channel to facilitate comparisons between reaches (Runkel, 2002). Parameters were compared between the low and high temporal resolution simulations and between experimental reaches.

CHAPTER 3

RESULTS

Stream Water Sampling

Field-Measured Data

Water-quality data (temperature, pH, and electrical conductivity) were automatically collected every 2 min for a total of 603 data points at 2.01 km, 1,412 data points at 5.04 km, 1,389 data points at 5.13 km, and 1,372 data points at 6.78 km. pH and temperature data are summarized in Table 3.1 (Appendix B.2). During the tracer injection test, Fourmile Creek had neutral pH and cold waters.

Table 3.1 pH and temperature data collected during Fourmile Creek tracer injection test.

Distance from Injection (km)	pH	Temp (°C)
2.01	7.61 – 7.87	1.23 – 3.74
5.04	7.60*	0.48 – 4.31
5.13	7.40*	0.51 – 4.44
6.78	7.76 – 7.96	0.20 – 4.85

*pH was not measured in the field but was measured in the laboratory in the range of the value denoted.

Measured electrical conductivity data were revised by developing and applying a linear relationship between field-measured electrical conductivity data and collected water sample electrical conductivity data at each sampling site (Appendix B.1). Revised electrical conductivity data as a function of time are shown together in Figure 3.1 (Appendix B.2). Sampling sites are identified by their downstream distance in kilometers from the NaBr injection site. As stream water flows down Fourmile Creek, background electrical conductivity increases.

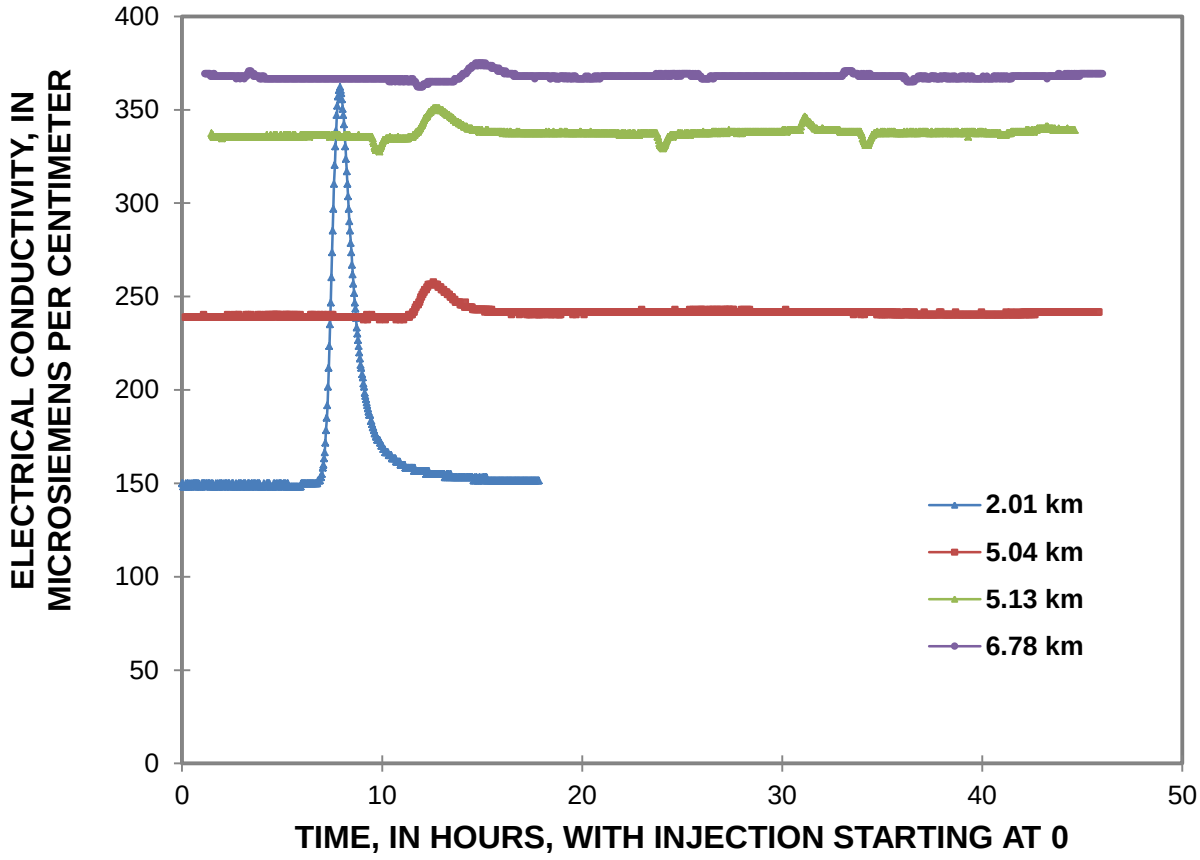

Figure 3.1 Revised electrical conductivity data as a function of time during the Fourmile Creek tracer injection test. Field-measured electrical conductivity data were revised by developing relationships with the lab-measured electrical conductivity of water samples as described in Chapter 2.

Average background electrical conductivity values at each sample site were 149 µS cm^{-1} at 2.01 km, 239 µS cm^{-1} at 5.04 km, 335 µS cm^{-1} at 5.13 km, and 367 µS cm^{-1} at 6.78 km. Changes in electrical conductivity normalized from background are shown separately in Figure 3.2. Bromide breakthrough curves were evident at 2.01 km and 5.04 km. Fluctuating electrical conductivity at 5.13 km and 6.78 km made it difficult to discern if the bromide tracer or other sources caused changes in electrical conductivity. For example, at 5.13 km, positive peaks in electrical conductivity were observed around hours 1, 12, 31, and 45 of the experiment and negative peaks in electrical conductivity were observed around hours 10, 24, and 34 of the

experiment (Figure 3.2). The source of the ion contributions and dilutions is unknown and does not appear to follow a temporal pattern. It appears that Gold Run Creek may contribute intermittent flows of high and low ionic strength waters to Fourmile Creek, which cause sharp increases and decreases in electrical conductivity at 5.13 km and less pronounced imprints of increases and decreases in electrical conductivity downstream at 6.78 km. Background electrical conductivity fluctuated (± 1 µS cm^{-1}) at each site prior to tracer arrival and after tracer departure as best viewed at 5.04 km (Figure 3.2).

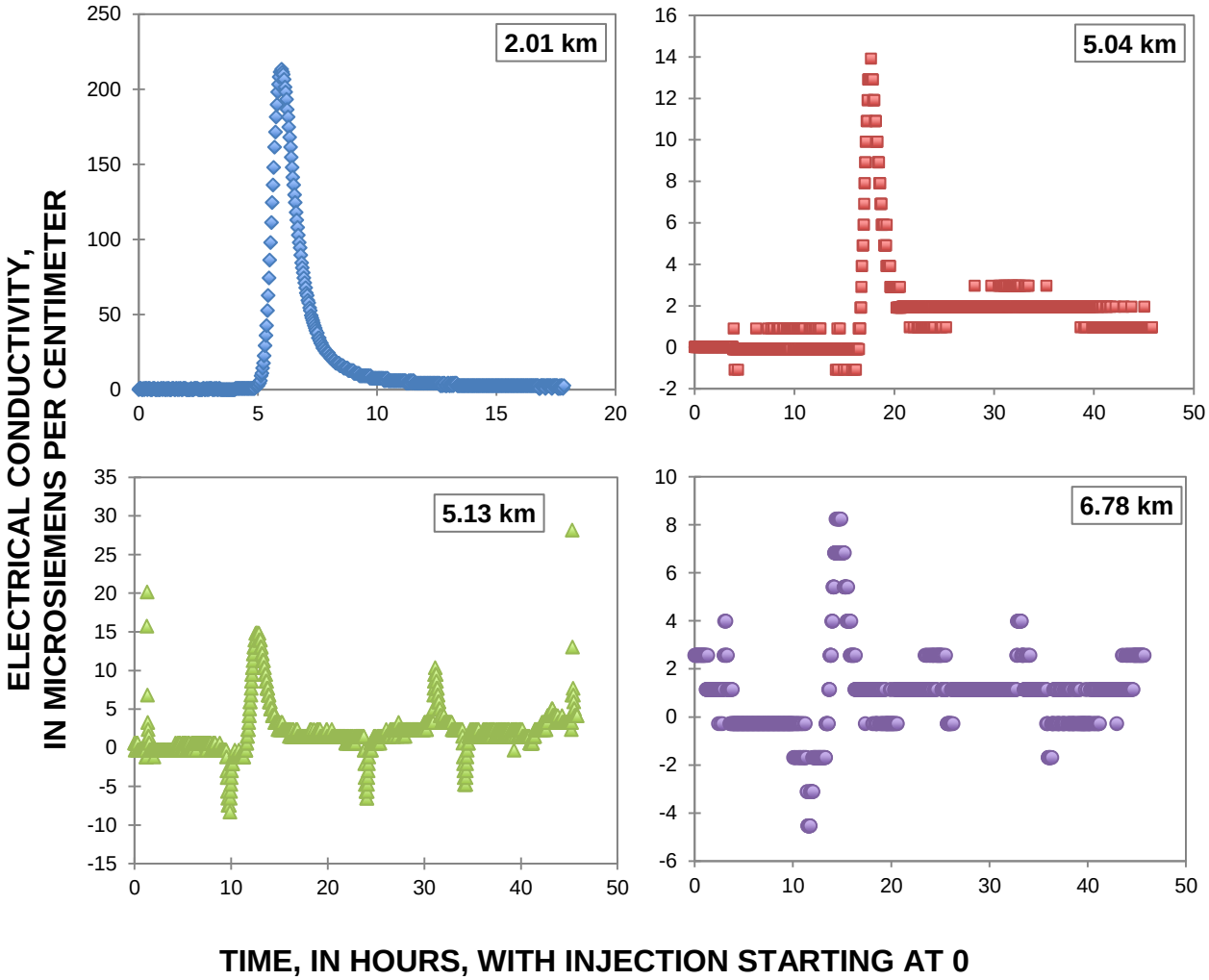

Figure 3.2 Revised electrical conductivity data normalized from background electrical conductivity values at four sample sites during the Fourmile Creek tracer injection test. Note that the scales of the time and electrical conductivity axes vary in each plot.

Stream Discharge

Prior to tracer injection, measured discharge increased over the experimental reach of Fourmile Creek. Discharge ranged from a minimum estimated discharge of 17.3 L s^{-1} at the injection location to a maximum discharge of 25.2 L s^{-1} at 6.78 km (Figure 3.3). No precipitation events occurred and the water level loggers at each sample site measured steady levels of stage during the duration of the study. Discharge of Gold Run Creek was measured at the culvert pipe that discharges into Fourmile Creek as 3.0 L $s^{-1}$with a 6 L bucket and stopwatch. Similarly, discharge of Gold Run Creek was estimated as 3.4 L s^{-1} based on the difference in flow rate of Fourmile Creek upstream and downstream of Gold Run Creek. Lateral inflow of each stream reach was computed based on the measured change in flow and distance between sampling sites (Table 3.1).

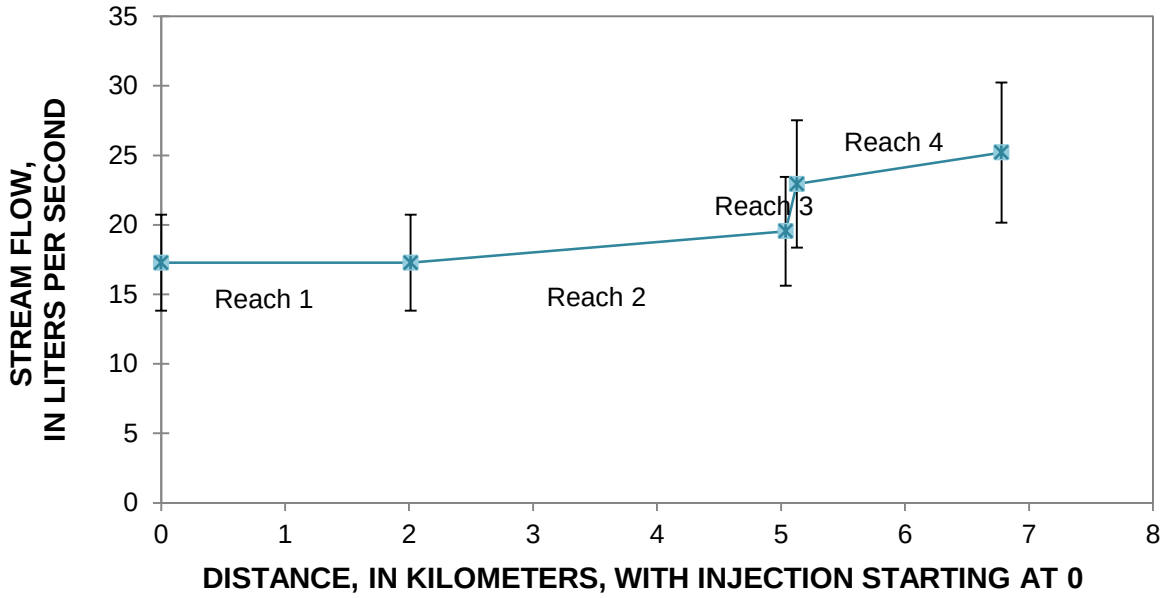

Figure 3.3 Discharge of Fourmile Creek measured just prior to tracer injection. Error bars of ± 20% are displayed to represent pygmy meter discharge measurement error associated with narrow stream channels and low flow. Discharge increases downstream the experimental reach indicating lateral inflows.

Table 3.2 Measured increase in discharge by pygmy meter and calculated lateral inflow rate over the four reaches during the Fourmile Creek tracer injection experiment. It was assumed that there was negligible change in discharge over Reach 1.

Reach No.	Δ discharge ($m^3 s^{-1}$)	Lateral inflow rate ($m^3 s^{-1} m^{-1}$)
1	0	0
2	+ 2.27	7.49×10^{-7}
3	+ 3.40	3.78×10^{-5}
4	+ 2.27	1.37×10^{-6}

Measured Bromide Concentrations

Measured bromide concentrations of the 145 collected water samples are shown as a function of time together (Figure 3.4) and separately for each sample site (Figure 3.5). The plots are bell-shaped but slightly steeper on the leading edge than on the trailing edge, which is the typical shape of an instantaneous-release tracer breakthrough curve (Kilpatrick and Cobb, 1989).

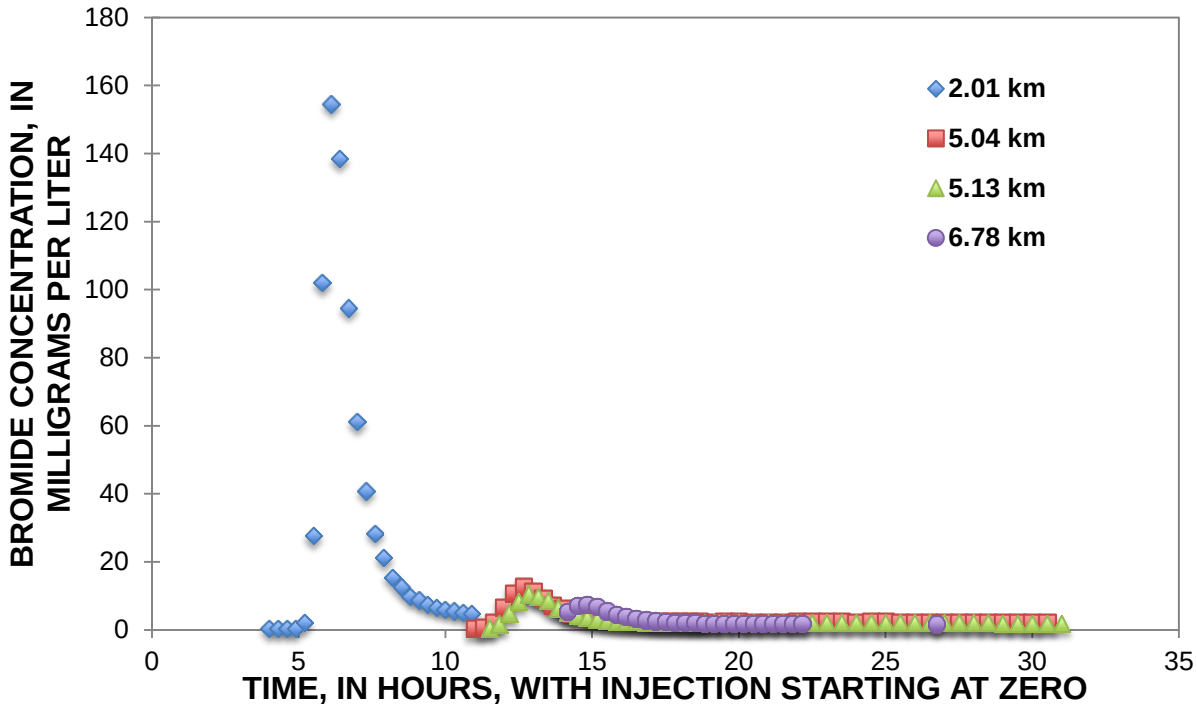

Figure 3.4 Measured bromide concentrations during Fourmile Creek tracer injection test.

In this experiment, bromide did not return to background concentrations within the time of sampling at any of the sample sites. The average background bromide concentration in Fourmile Creek was 0.090 mg L^{-1} (Appendix C.1). The first bromide samples at 5.13 km and 6.78 km were collected after tracer arrival because the tracer arrived earlier than expected but the background bromide concentrations were assumed to be 0.090 mg L^{-1} (the same as upstream).

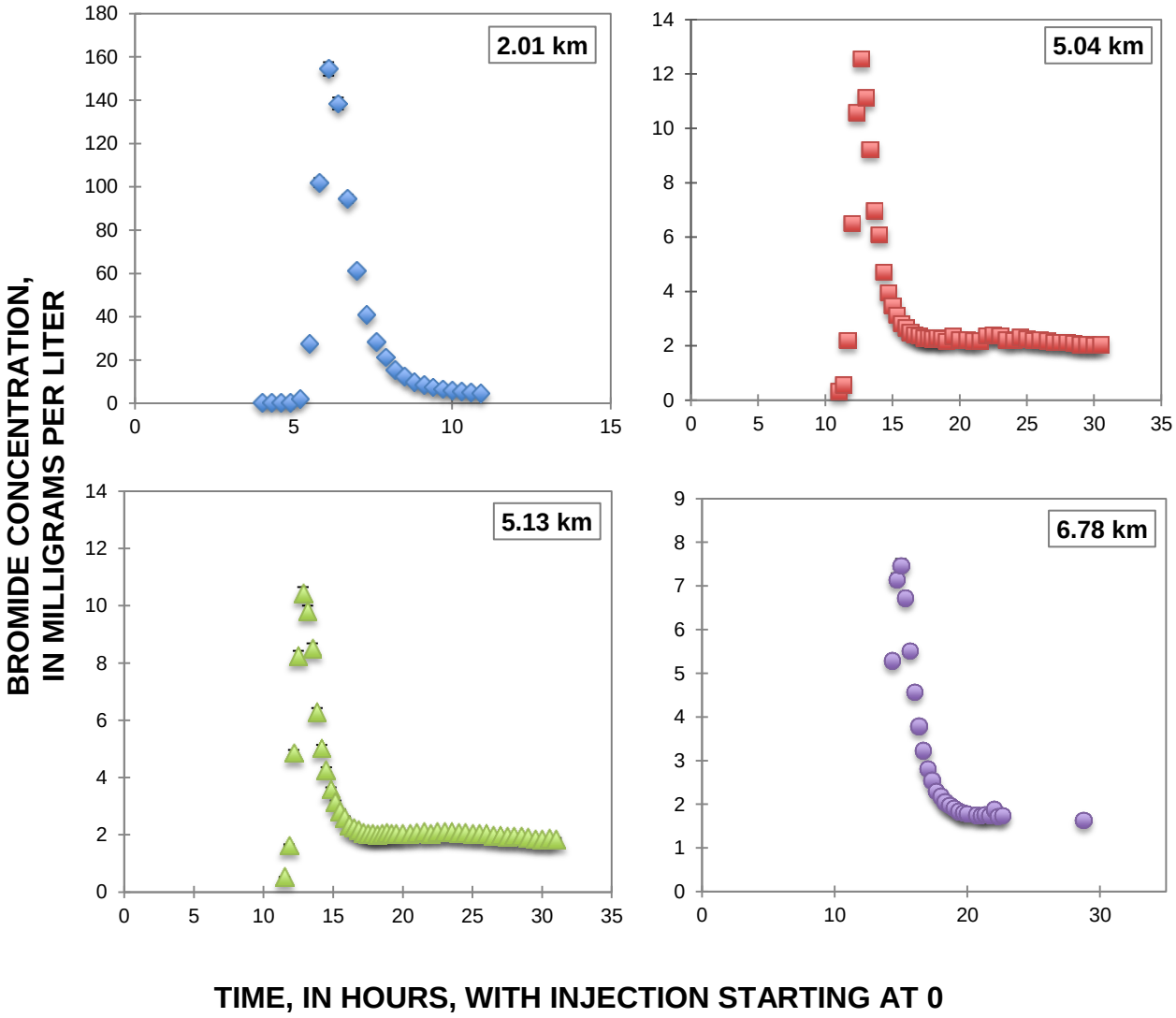

Figure 3.5 Measured bromide concentrations at the four sampling sites during the Fourmile Creek tracer injection test. Error bars of ± 2% are displayed to represent the analytical error in bromide concentrations. Note that the scales of the time and bromide concentration axes vary in each plot.

Solute loads

In-stream loads of major cations (Figure 3.6) and anions (Figure 3.7) increased down the experimental reach of Fourmile Creek. Sulfate loading dominated the experimental reach followed by alkalinity (measured as bicarbonate) and calcium (Table 3.3, Appendix C.3). In-stream loads of the trace metals zinc and manganese increased down Fourmile Creek in the first three reaches and decreased in the last reach (Figure 3.8). The greatest portion of in-stream solute loading corresponded to Reach 3 (5.04 – 5.13 km). These changes in the chemical character of Fourmile Creek indicate that Gold Run Creek surface inflow has a significant influence on in-stream water quality. However, the greatest portion of zinc and manganese loading corresponded to Reach 2 (2.01 – 5.04 km), a location influenced by mining, which indicates that subsurface inflows also influence in-stream water quality.

Table 3.3 The eight largest in-stream loads of solute mass in Fourmile Creek prior to tracer injection.

Distance from Injection (km)	Calcium (kg day^{-1})	Sodium (kg day^{-1})	Magnesium (kg day^{-1})	Alkalinity (as bicarbonate) (kg day^{-1})	Sulfate (kg day^{-1})	Chloride (kg day^{-1})	Zinc (g day^{-1})	Manganese (g day^{-1})
2.01	0.803	0.422	0.351	2.92	1.55	0.239	0.187	0.125
5.04	1.63	0.639	0.670	4.76	3.53	0.400	2.60	2.11
5.13	2.76	0.932	1.13	6.24	7.32	0.819	3.21	4.70
6.78	3.48	1.10	1.44	1.10	7.32	1.11	2.09	2.27

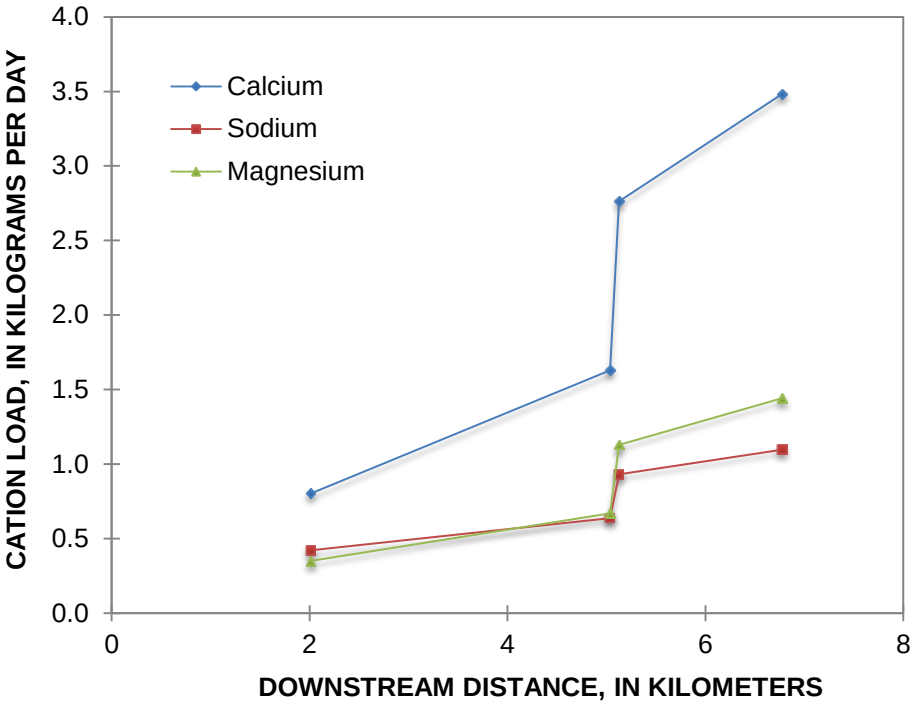

Figure 3.6 In-stream loading of calcium, sodium, and magnesium in Fourmile Creek prior to tracer arrival.

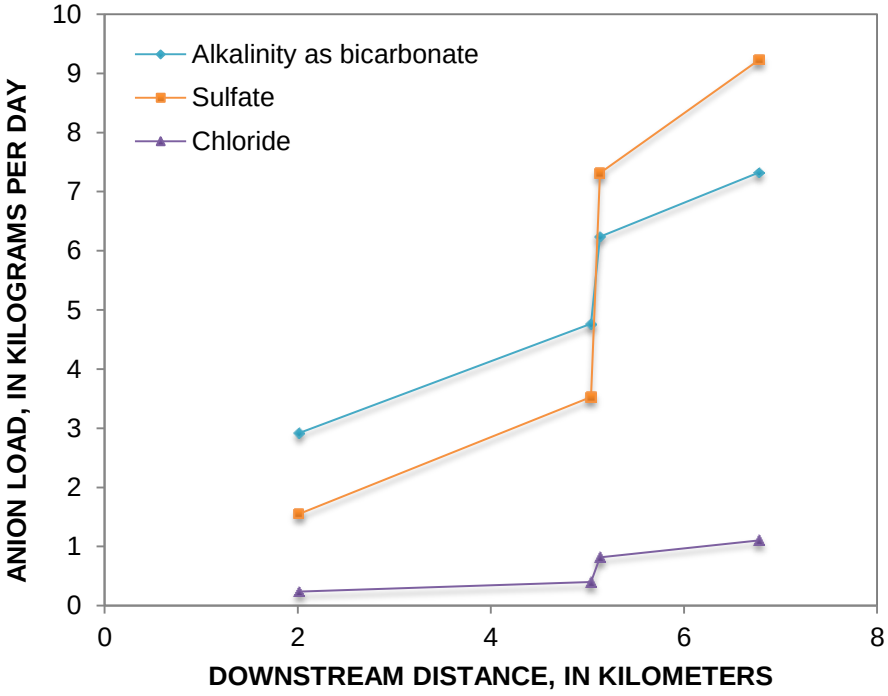

Figure 3.7 In-stream loading of alkalinity (as bicarbonate), sulfate, and chloride in Fourmile Creek prior to tracer arrival.

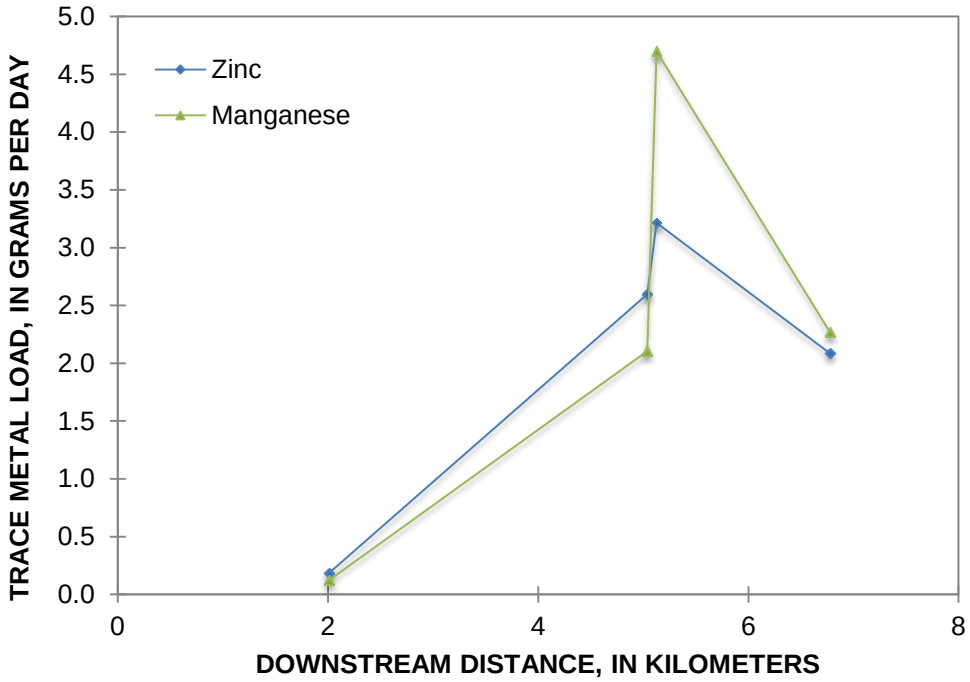

Figure 3.8 In-stream loading of zinc and manganese in Fourmile Creek prior to tracer arrival.

Transport Numbers

Consistent with the in-stream solute loading results, calcium, sulfate, and bicarbonate are the ions that contribute the most to electrical conductivity in Fourmile Creek prior to bromide tracer arrival (Table 3.4). At peak bromide concentration, sodium and bromide ions contributed the most to electrical conductivity at the first sample site (2.01 km) and less so at downstream sample sites.

Table 3.4 Transport numbers (t_i) at background bromide concentration and at peak bromide concentration during the Fourmile Creek tracer injection experiment show the fraction of the contributions of chloride, sodium, calcium, magnesium, sulfate, bromide, and bicarbonate ions to electrical conductivity.

Distance from Injection (km)	t_{Cl}	t_{Na}	t_{Ca}	t_{Mg}	t_{SO_4}	t_{Br}	t_{HCO_3}	Total
2.01 at background	0.05	0.10	0.23	0.15	0.24	0.00	0.22	0.99
2.01 at peak bromide	0.02	0.27	0.09	0.06	0.09	0.39	0.08	1.00
5.04 at background	0.05	0.08	0.24	0.15	0.28	0.00	0.19	1.00
5.04 at peak bromide	0.05	0.10	0.22	0.14	0.25	0.05	0.18	1.00
5.13 at background	0.06	0.07	0.23	0.15	0.33	0.00	0.15	1.00
5.13 at peak bromide	0.06	0.08	0.22	0.14	0.31	0.03	0.14	1.00
6.78 at background	0.07	0.06	0.24	0.15	0.33	0.00	0.14	1.00
6.78 at peak bromide	0.06	0.07	0.23	0.14	0.32	0.02	0.14	1.00

The contribution of injected NaBr ions to electrical conductivity at each site were estimated and compared to the measured difference between background and peak electrical conductivity. Injected NaBr contributions were calculated as the difference between the product of the transport number and measured electrical conductivity at peak bromide concentration and the product of the transport number and measured electrical conductivity at background bromide concentration (Table 3.5). The transport numbers confirm that changes in electrical conductivity from background electrical conductivity are predominantly caused by the NaBr tracer injectate.

Table 3.5 Contributions of injected NaBr ions to electrical conductivity were estimated and compared to the measured difference between background and peak electrical conductivity. The estimates were similar to the measured changes in electrical conductivity, which supports the assumption that changes in electrical conductivity were caused by injected NaBr.

Distance from injection (km)	Contribution of injected NaBr ions to peak electrical conductivity ($\mu S\ cm^{-1}$)	Measured peak electrical conductivity (normalized from background) ($\mu S\ cm^{-1}$)
2.01	224	213
5.04	19	19
5.13	16	15
6.78	11	9

Calculated Bromide Concentrations

Bromide concentrations were calculated for each sampling site's entire dataset of electrical conductivity data using the equations of McCleskey *et al*. (2012a). Each of the calculated bromide curves was smoothed using a 1-hour moving average prior to tracer arrival and after the tracer had decreased to a steady concentration to reduce background noise caused by electrical conductivity fluctuations (± 1 μS cm^{-1}).

The calculated and smoothed bromide concentrations at 2.01 km and 5.04 km were similar to the measured bromide concentrations (Figures 3.9 and 3.10). Initially, the calculated bromide concentrations at 5.13 km and 6.78 km varied dramatically from the measured bromide concentrations caused by the positive and negative peaks in measured electrical conductivity. Recall that the bromide concentration calculation method assumes that any change in electrical conductivity from background is caused by the tracer injectate. To illustrate, the raw data of calculated bromide concentrations at 5.13 km and 6.78 km are shown in Figures 3.11 and 3.12. The sharp increases and decreases of the calculated bromide concentrations that were not caused by bromide tracer (as shown by the measured bromide concentrations) at 5.13 km and 6.78 were removed to show that calculated bromide concentrations were similar to the measured bromide concentrations (Figures 3.13 and 3.14). The positive and negative peaks of electrical conductivity measured at 5.13 km and 6.78 km were presumably caused by high and low ionic strength flow contributions of Gold Run Creek but the source is unknown.

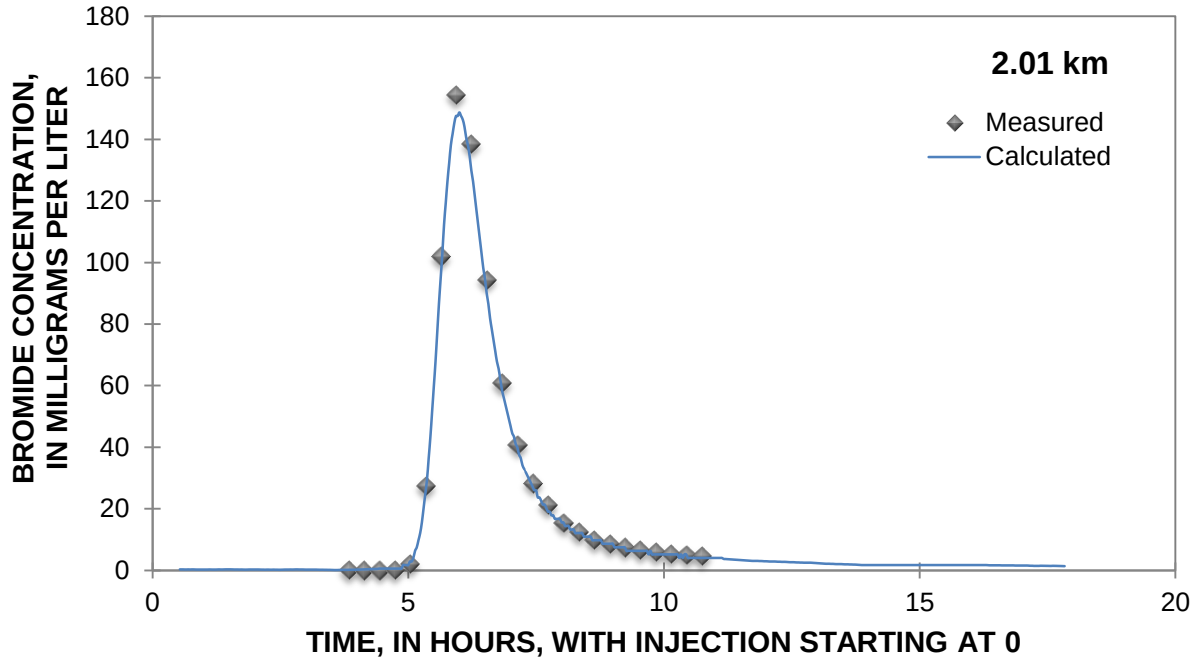

Figure 3.9 Calculated and measured bromide concentrations as a function of time at 2.01 km using a 1-hour moving average filter before tracer arrival and after the tracer decreased to a steady concentration.

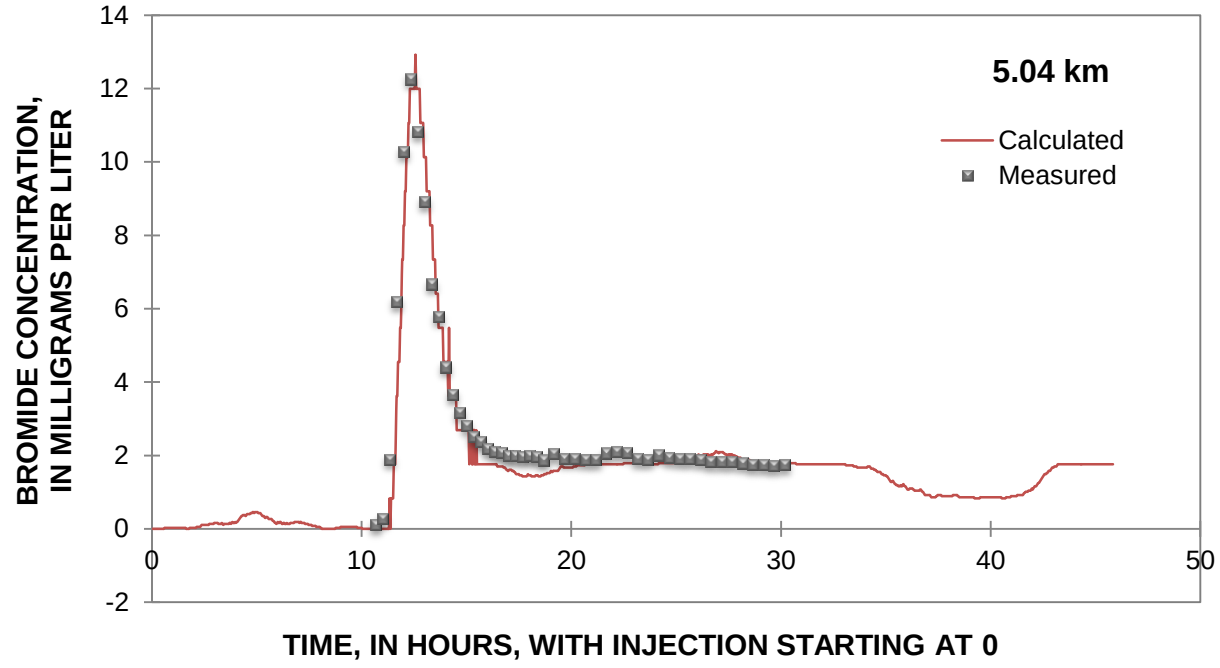

Figure 3.10 Calculated and measured bromide concentrations as a function of time at 5.04 km using a 1-hour moving average filter before tracer arrival and after the tracer decreased to a steady concentration.

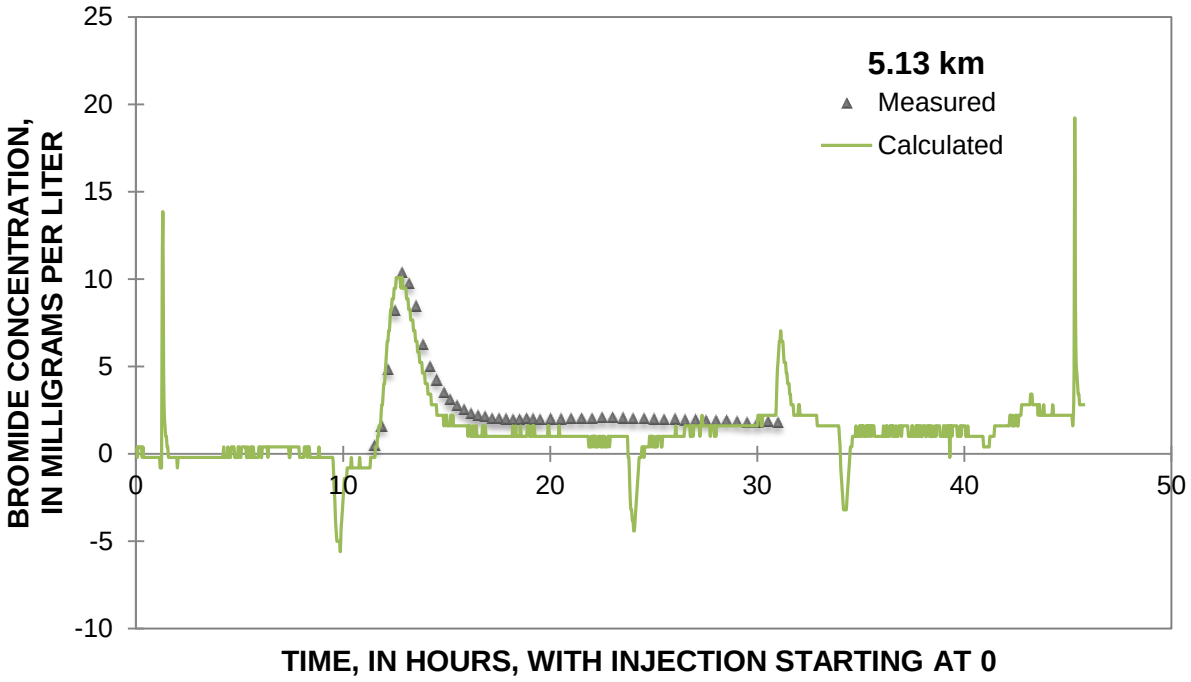

Figure 3.11 Calculated and measured bromide concentrations as a function of time at 5.13 km showing discrepancies caused by intermittent increases and decreases in measured electrical conductivity.

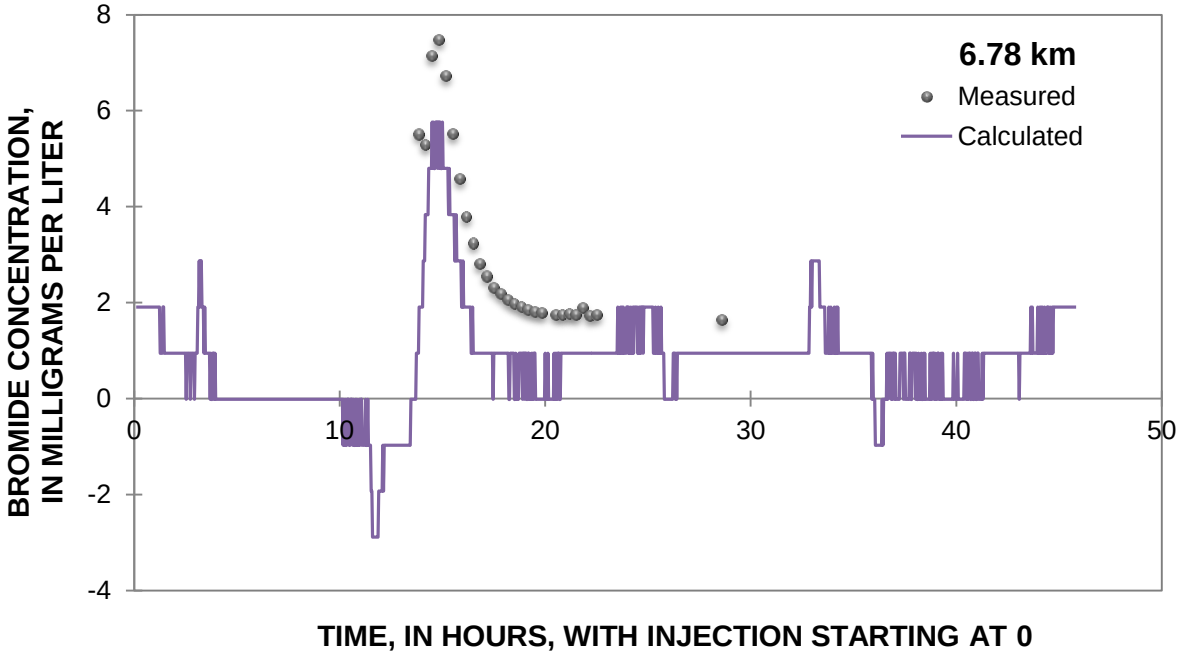

Figure 3.12 Calculated and measured bromide concentrations as a function of time at 6.78 km showing discrepancies caused by intermittent increases and decreases in measured electrical conductivity.

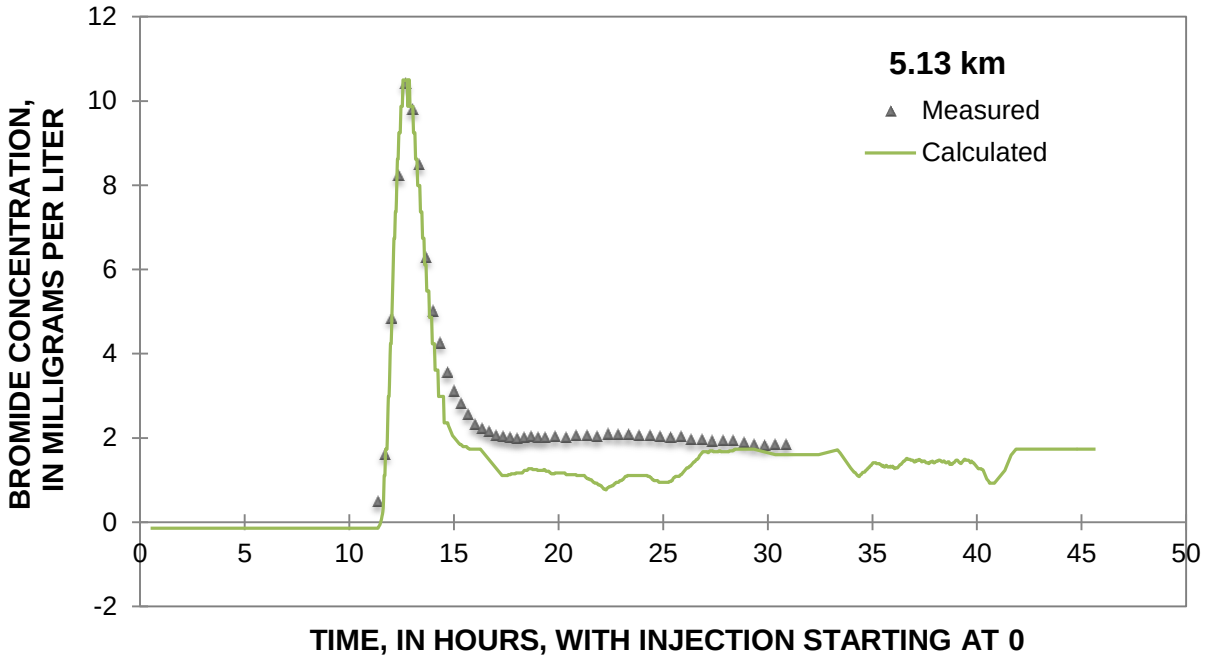

Figure 3.13 Calculated and measured bromide concentrations as a function of time at 5.13 km. Calculated bromide concentrations are isolated from intermittent increases and decreases in measured electrical conductivity and are smoothed using a 1-hour moving average filter before tracer arrival and after the tracer decreased to a steady concentration.

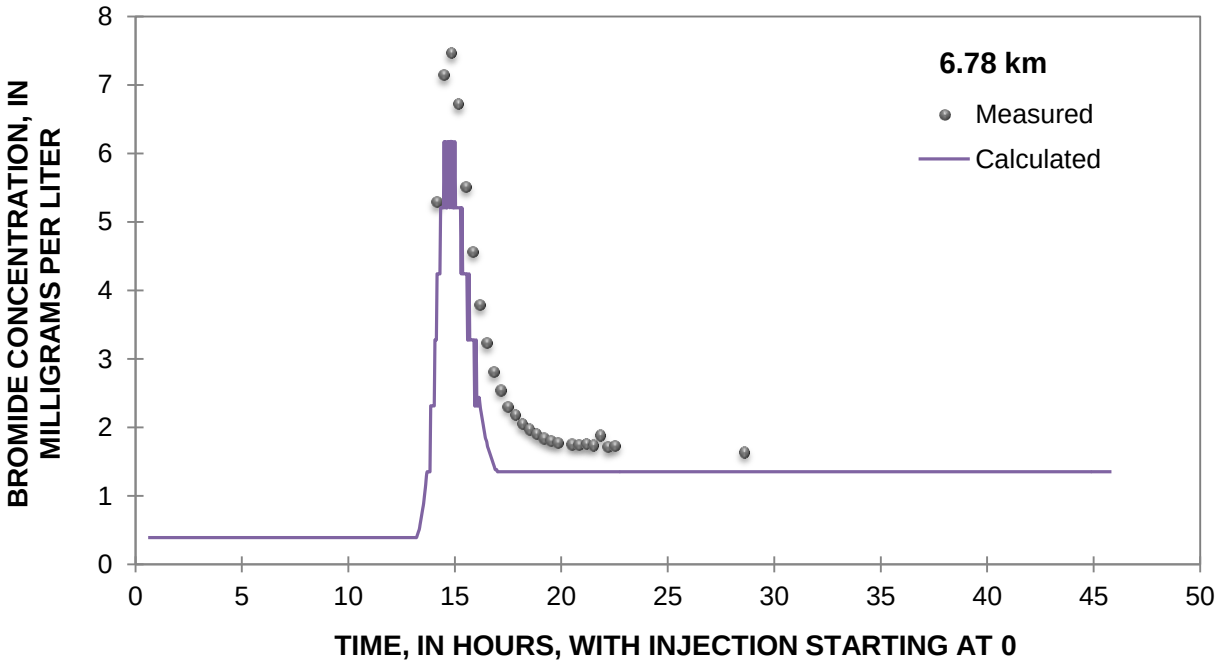

Figure 3.14 Calculated and measured bromide concentrations as a function of time at 6.78 km. Calculated bromide concentrations are isolated from intermittent increases and decreases in measured electrical conductivity and are smoothed using a 1-hour moving average filter before tracer arrival and after the tracer decreased to a steady concentration.

Analysis of breakthrough curves

Tracer Mass Recovery

Because bromide concentrations did not decrease to background concentrations following the breakthrough of bromide at any of the sites during experimental sampling, tails were extrapolated using exponential regression until bromide decreased to background concentrations. As shown in Figure 3.15, bromide tail concentrations were extrapolated from the both measured and calculated bromide concentrations in the "shoulder" of the tail of the bromide breakthrough curve. Exponential decay decreases a quantity by a fixed percent at regular intervals and is an appropriate fit for the tail of a tracer breakthrough curve. Bromide tails were extrapolated in order to more accurately estimate the mass of injected bromide that passed each sample site using Eq. 2.5 and in order to more accurately estimate mixing and transient storage parameters from model simulations. Bromide mass recovery calculations, in this case, were dependent on the assumptions made for the breakthrough curve tail concentrations. The extrapolated tail concentrations did not add a great deal of bromide mass to the mass recovered at 2.01 km but added substantial amounts to the masses recovered at downstream sample sites (Table 3.6).

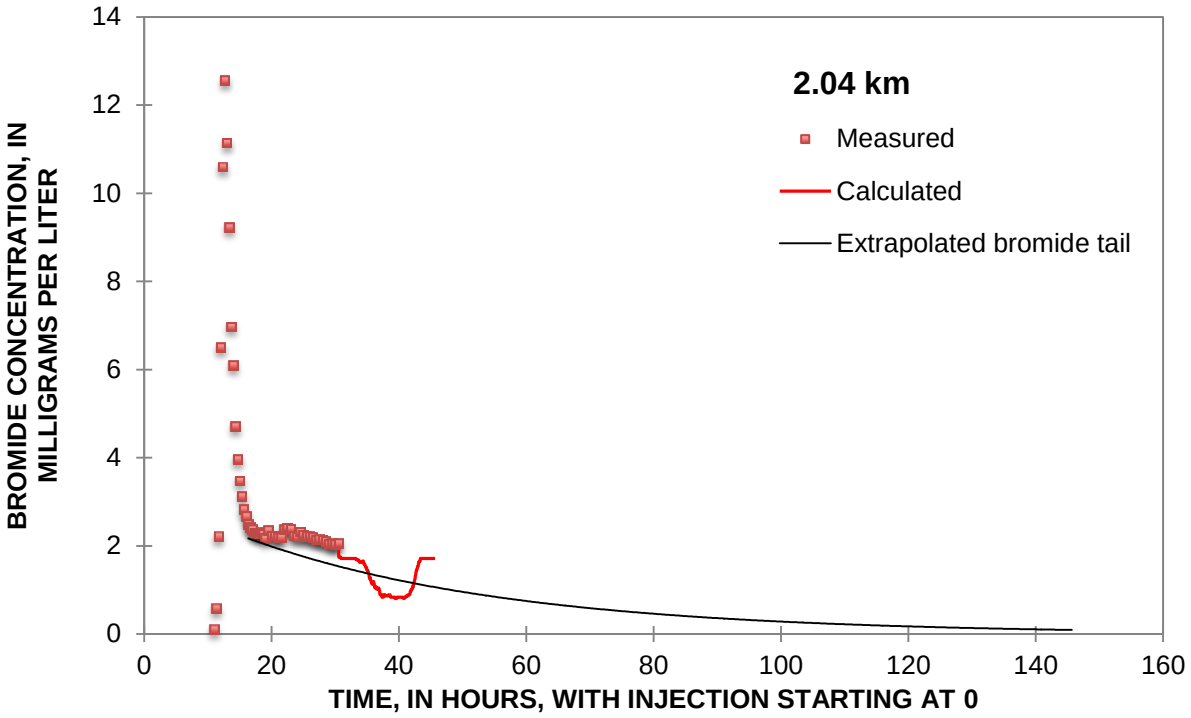

Figure 3.15 Bromide tail concentrations were extrapolated for each sample site using exponential regression in order to more accurately estimate the mass recovery of bromide and estimate more reliable solute transport parameters from the Fourmile Creek tracer injection test.

Table 3.6 Estimated time at which bromide concentrations returned to background using exponential regression and estimated bromide tracer mass recovery using Eq. 2.5 during the Fourmile Creek tracer injection test. A bromide mass of 30.0 kg was injected at 0 km.

Distance from injection (km)	Measured discharge ($L\ s^{-1}$)	Estimated time to background Br^- concentration (h)	Mass of injected Br^- recovered (kg)	Mass of injected Br^- recovered (%)	Fraction of mass added by extrapolation relative to the total mass of injected Br^- recovered (%)
2.01	17.3	36	15.7	52	4.9
5.04	19.5	140	11.7	39	51
5.13	22.9	100	11.0	37	41
6.78	25.2	100	10.0	33	41

A substantial amount of bromide mass was not recovered downstream of the injection despite efforts to predict bromide tail concentrations after experimental sampling was complete. The greatest difference in bromide mass recovered from the upstream boundary to the

downstream boundary occurred in Reach 1 and was followed by Reach 2. There was no significant change between the masses of bromide tracer recovered at 5.04 km, 5.13 km, and 6.78 km (Reach 3 and 4) indicating that the majority of tracer was lost in Reach 1 and 2.

Transient Storage Model Results

Transient storage model simulations were generated for each study reach of Fourmile Creek for measured bromide (the low temporal resolution simulation) and for calculated bromide (the high temporal resolution simulation). The model would not converge to a solution for Reach 1 or Reach 2 given the substantial amount of tracer mass that was not recovered; first-order decay was used to simulate the bromide mass loss and to allow convergence. First-order decay was not used in Reach 3 or 4 because there was no significant change in tracer mass recovery from upstream boundary to downstream boundary. In Reach 3 and 4, the model would not converge when using transient storage parameters (A_S and α); simulations were estimated by considering advection and dispersion only.

Model parameters should be evaluated with caution due to the uncertainties associated with estimated breakthrough curve tails and use of first-order decay in Reach 1 and 2. Still, the calculated ratios of parameter estimates to their standard deviation (Table 3.4) and metrics to estimate the importance of transient storage (Table 3.5) provide an evaluation tool to compare measured bromide (low temporal resolution simulation) to calculated bromide (high temporal resolution simulation).

Table 3.7 Solute transport parameter estimates using OTIS-P from the Fourmile Creek tracer injection experiment. Ratios of each parameter estimate to its standard deviation are shown next to the parameter estimate value. High ratios indicate less uncertainty in the parameter value estimate.

model simulation	# upstream data	# downstream data	dispersion D (m^2 s^{-1})		cross-sectional area of the stream A (m^2)		cross-sectional area of the storage zone A_s (m^2)		storage exchange coefficient α (s^{-1})		first-order decay coefficient λ (s^{-1})	
	-	-	value	ratio	value	ratio	value	ratio	value	ratio	value	ratio
Reach 1												
measured Br^-	4	28	0.268	6.65	0.179	141	0.0183	14.9	5.65×10^{-5}	6.14	3.24×10^{-5}	27.7
calculated Br^-	4	521	0.385	72.9	0.175	1417	0.0172	89.5	3.77×10^{-5}	53.4	4.72×10^{-5}	275
Reach 2												
measured Br^-	28	50	0.823	12.1	0.141	458	0.585	6.36	6.85×10^{-5}	17.7	2.48×10^{-5}	6.0
calculated Br^-	536	1375	0.645	22.7	0.141	1032	1.01	15.5	7.49×10^{-5}	44.0	1.66×10^{-5}	9.21
Reach 3												
measured Br^-	50	50	1.38	2.2	0.218	23.4	N/A		N/A		N/A	
calculated Br^-	1375	1362	1.08	3.7	0.165	18.8	N/A		N/A		N/A	
Reach 4												
measured Br^-	50	29	36.8	5.5	0.090	7.5	N/A		N/A		N/A	
calculated Br^-	1362	1363	40.1	17.0	0.129	56.7	N/A		N/A		N/A	

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Table 3.8 Calculated metrics for quantifying the importance of transient storage in Fourmile Creek. Reach 3 and 4 are not included because transient storage was assumed to be negligible.

model simulation	median travel time, t_{med} (h)	fraction of median travel time due to storage, F_{med} (%)	median travel time due to storage, t_{med}^{s} ($t_{med} \times F_{med}$) (h)	F_{med}^{200} (%)
Reach 1				
measured Br^-	5.80	6.2	0.35	0.97
calculated Br^-	5.63	4.9	0.27	0.49
Reach 2				
measured Br^-	6.47	70.9	4.59	9.55
calculated Br^-	6.57	72.6	4.77	9.67

CHAPTER 4

DISCUSSION

Comparison of Breakthrough Curves

The differences between calculated and measured bromide concentrations were expressed as a fraction of the measured bromide concentrations in percent

$$\text{Difference } (\%) = \frac{Br^-_{calculated} - Br^-_{measured}}{Br^-_{measured}} \times 100 \quad (4.1)$$

and in mg L^{-1}

$$\text{Difference } \left(\text{mg } L^{-1}\right) = \frac{Br^-_{calculated} - Br^-_{measured}}{Br^-_{measured}} \quad (4.2)$$

for 145 bromide concentrations calculated from electrical conductivity measurements recorded near the same time as collection occurred for the 145 water samples in which bromide was measured (Figures 4.1 and 4.2).

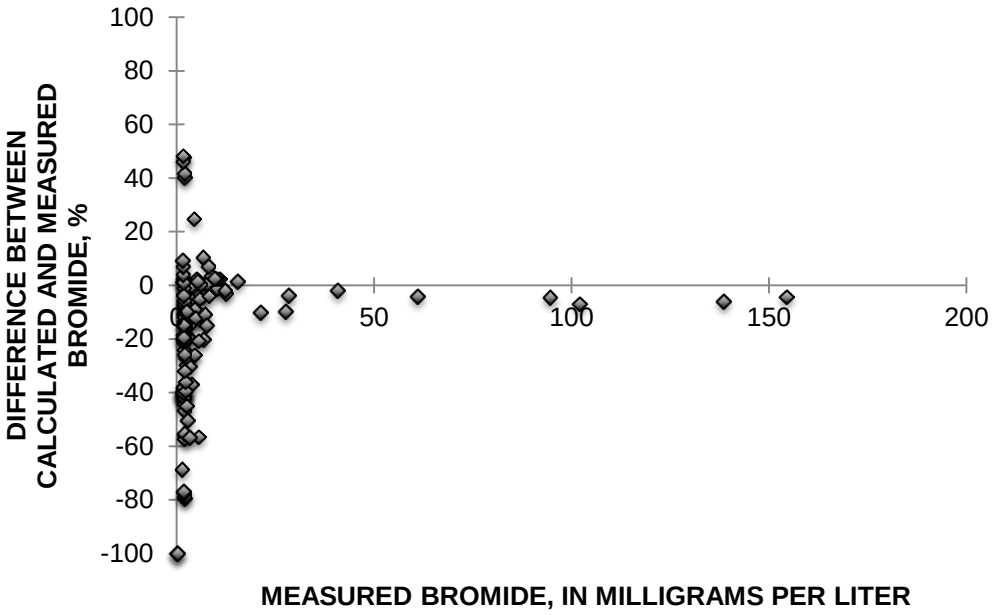

Figure 4.1 Difference between calculated and measured bromide concentrations expressed as a fraction of measured bromide concentrations in %.

The highest differences between calculated and measured bromide concentrations (in %) occurred at very low concentrations of measured bromide (0 – 2.0 mg L^{-1}). These higher differences were caused by small changes in electrical conductivity (± 1 µS cm^{-1}) on the leading edge and trailing edge of the breakthrough curves. The lack of precision on the leading edge and trailing edge of the calculated bromide breakthrough curves may be attributed to how electrical conductivity data was collected. The electrical conductivity meters used during the Fourmile Creek tracer injection experiment were precise to 1 µS cm^{-1}. There are meters that measure electrical conductivity more precisely, and more precise measurements of electrical conductivity would yield more accurate calculated bromide concentrations in the leading edge and trailing edge of the breakthrough curves, but these more precise meters are typically not available for field use.

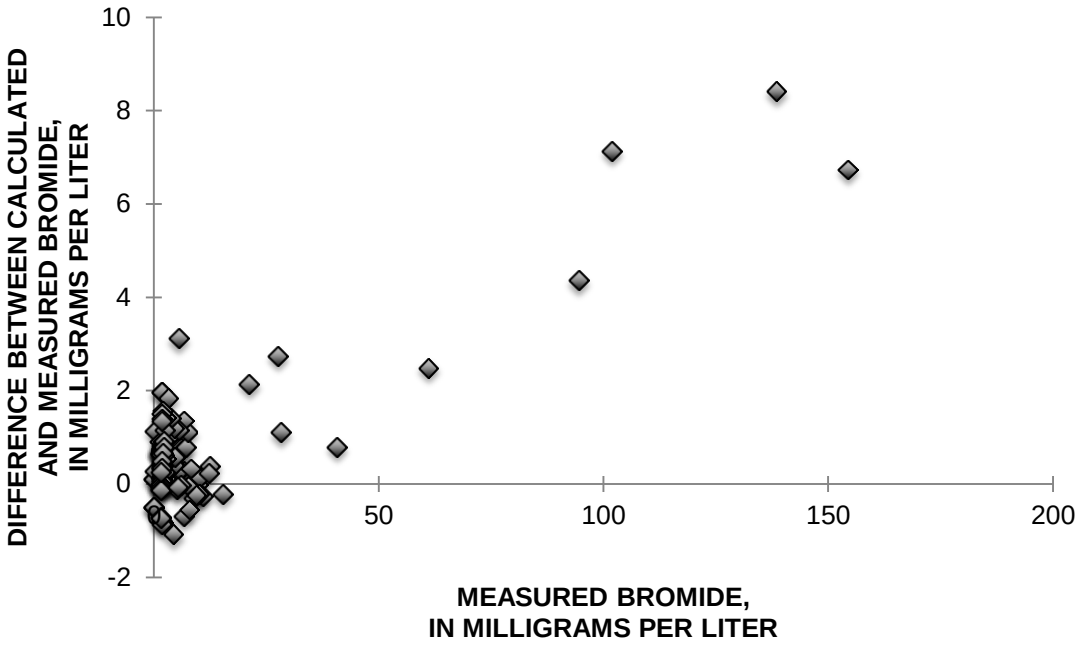

Figure 4.2 Difference between calculated and measured bromide concentrations expressed as a fraction of measured bromide concentrations in mg L^{-1}.

The highest differences between calculated and measured bromide (in mg L^{-1}) concentrations occurred at high concentrations of measured bromide (95 – 150 mg L^{-1}). These higher differences at larger concentrations were caused by analytical error associated with laboratory analysis of bromide (2%) and accuracy of measured electrical conductivity (± 1 µS cm^{-1} + 0.5%). High concentrations of bromide were only measured at the first sample site, 2.01 km.

The visual fits between the calculated and measured bromide concentrations were good at each breakthrough curve (Figures 3.9, 3.10, 3.13, and 3.14). The least squares regression analysis showed that the sum of squared residuals (RSS) and the standard error was highest at 2.01 km and smallest at 5.04 (Table 4.1) (Appendix C.3). The RSS and standard error increased slightly at 5.13 km and again at 6.78 km indicating that there is an optimal sample distance between 2.01

km and 5.13 km where calculated bromide concentrations fit measured bromide concentrations the best. The correlation coefficient (R^2) between measured and calculated bromide concentrations were very close to 1.0 at each site indicating that the regression line approximated the measured bromide concentration data points very well.

Table 4.1 Results of least squares regression analysis to determine how calculated bromide concentrations fit the measured bromide concentrations during Fourmile Creek tracer injection test. Low values of residual sum of squares (RSS) and standard error indicate the best fit between calculated and measured bromide concentrations.

Distance from injection (km)	RSS	R^2	Standard Error
2.01	16.7	0.999	0.871
5.04	7.57	0.977	0.406
5.13	9.98	0.955	0.465
6.78	11.6	0.876	0.680

Solute-Loading Influences

Measured increases of in-stream solute loading mostly consisted of calcium, sulfate, and bicarbonate, which contribute substantially to electrical conductivity as shown by their transport numbers (Table 3.2). The use of electrical conductivity alone to measure ionic tracer breakthrough does not account for temporal or spatial changes in electrical conductivity due to solutes from subsurface flows. Sources of solutes may include surface and subsurface inflows (Kimball, 1997), and in-stream processes such as the release of dissolved solutes caused by diel changes in pH and temperature (Gammons *et al.,* 2005a; Gammons *et al.,* 2005b; Nimick *et al.,* 2005; Nimick *et al.,* 2007). However, one could derive a lateral inflow loading value for electrical conductivity along each reach based on the long-term electrical conductivity trend recorded at the sampling sites (Gooseff and McGlynn, 2005). This exercise would reduce uncertainty in determining background electrical conductivity values.

Transient storage modeling

Values of the solute transport model parameters D, A_S, and α, indicate the degree of mixing due to stagnant pools and flow through porous areas of the streambed (Runkel, 2000). The effect of storage zones is imprinted on the leading edge and tail of the tracer breakthrough curve (Figure 4.2). The rate of exchange, α, is reflected in the early curvature of the shoulder and tail, while the storage zone area, A_S, is reflected in the slope at which the shoulder and tail approach the plateau or background concentration.

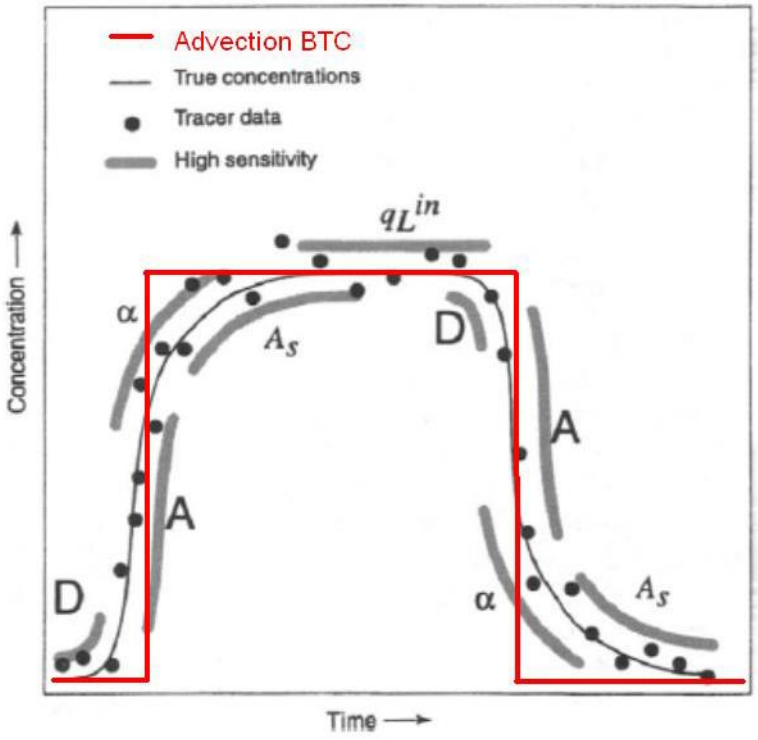

Figure 4.3 Solute transport parameters determined from model simulation are reflected in particular regions of stream tracer breakthrough curves. Regions of high sensitivity are shown as shaded bars for each parameter of the transport model. The red line represents an ideal tracer unaffected by mixing or storage processes (modified from Harvey and Wagner, 2000).

A measure of parameter uncertainty is the dimensionless ratio of the parameter estimate to its standard deviation. A highly reliable parameter estimate should have a ratio equal to or more than 10.0 (i.e., 10 times the parameter's value). Typical ratios for transient storage parameters are in the range of 3.0 – 10.0, which is accepted as a reasonable amount of uncertainty (Harvey and Wagner, 2000). A ratio of 1.0 or less indicates that the uncertainty is as large as the parameter estimate itself, and the parameter estimate is meaningless (Runkel, 2011). Further interpretation of model parameters F_{med} and t_{med}^{s} attempt to relate the relevant parameters to physical stream characteristics by quantifying the importance of transient storage (Runkel, 2002).

Three major issues prevented the Fourmile Creek tracer injection experimental data from yielding reliable solute transport model parameters. First, undissolved NaBr may have entered Fourmile Creek due to incomplete mixing of the tracer injectate. Second, bromide concentrations remained above background levels long after the tracer had passed sample sites. Third, a substantial amount of tracer mass was not recovered over the first two reaches during the time of sampling. These issues are directly related and challenging when developing reliable interpretations of solute transport model parameters.

Undissolved NaBr may have entered Fourmile Creek due to incomplete mixing of the tracer injectate, which would contribute to elevated bromide breakthrough curve tail concentrations. The NaBr tracer injectate was pumped into the stream using a peristaltic pump with 4 mm diameter tubing. Small amounts of undissolved NaBr may have traveled through the tubing and gotten caught in the gravels of the streambed (but remained in the main channel) and dissolved slowly in the stream's cold waters. These small amounts of undissolved bromide in the stream may have essentially changed the background concentration of bromide in Fourmile

Creek, making it difficult to decipher whether elevated breakthrough curve tails were indicative of transient storage or improper execution of the tracer injection.

When a salt tracer is injected properly (completely dissolved), elevated tracer breakthrough curve tails are indicative of transient storage (Runkel, 2002; Harvey and Wagner, 2000). However, water and solute that leave the channel may return over time and space scales longer than can be quantified in the typical tracer study (Bencala *et al.,* 2011). This scale dependence is related to the ‘‘window of detection’’ of transient storage analyses, which suggests that estimates of transient storage are only sensitive to channel storage and hyporheic flow paths at relatively small spatial scales and short temporal scales (Harvey *et al.*, 1996; Wagner and Harvey, 1997). In mountain streams, especially during baseflow conditions, the dimension of the storage zone is often much larger than the stream (Mulholland *et al*., 1997). Hence, it is likely that hyporheic flow paths retained bromide tracer longer than the duration of sampling and possibly longer than the estimated time at which the extrapolated bromide tails returned to background concentrations.

Bromide usually behaves conservatively in hydrologic systems (Levy and Chambers, 1987), which means that 100% of bromide mass should pass downstream sampling points. Bromide mass recovery over Reach 1and 2 were calculated as 52% and 39%, respectively. Calculations were based on pygmy meter stream discharge methods that have 20% errors when measuring flow in small, tortuous stream channels and extrapolated bromide tail concentrations that extended for 36 and 140 h after tracer injection, respectively.

Further explanation of low tracer mass recovery may be tracer mass loss caused by hyporheic flow paths that transport tracer beyond the downstream end of the reach and flow paths do not return to the channel (Payn *et al.,* 2009). Streamflow losses that do not return to the

channel are difficult to identify because they are not visible and they do not influence stream tracer concentrations (Bencala *et. al*, 2011). The geologic structure of the stream and catchment is the primary control on the fate of streamflow gains and losses. As detailed in Appendix A, a significant portion of Reach 1 and 2 are underlain by an east-west trending Laramide fault of unpublished displacement and several north-south trending faults (Figure A.2) (Gable, 1980). Geologic faults allow for a rapid loss of streamflow that does not return to the channel (Bencala *et. al*, 2011). Additionally, Fourmile Creek has been re-worked by past mining-related activities including placer mining and dredge mining (Wohl, 2001) as described in Appendix A, which can affect the natural surface flow path and hyporheic flow paths of the stream (Wohl, 2005).

Tracer mass loss in Reach 1 and 2 cannot be explained by net loss in flow because a net gain in flow was measured over these reaches. However, it is possible that there was a concurrent streamflow loss of water containing bromide tracer and gain of water not containing bromide tracer over these reaches. Streamflow gain and loss are rarely reported explicitly in stream hydrologic studies (exceptions being Zellweger *et al.*,1989; Ruehl *et al.*, 2006; Covino and McGlynn, 2007; and Payn *et al.*, 2009), despite their inclusion in popular conceptual (Harvey and Wagner, 2000) and quantitative (Runkel, 1998) models of stream-subsurface interaction. Results from Payn *et al.* (2009) and Ruehl *et al.* (2006) indicate that streamflow losses and gains may occur in the presence of net gains of flow. This interpretation is consistent with the heterogeneous geology in the Fourmile Creek catchment.

Comparison of Simulations

Comparing the two simulations, all of the parameter estimates from calculated bromide concentrations (the high temporal resolution simulations) had higher ratios than parameter estimates from measured bromide concentrations (the low temporal resolution simulations)

(Table 3.3). High ratios indicate less uncertainty in parameter estimates and suggest that more data within breakthrough curves provides more reliable parameter estimates.

High temporal resolution model simulations fit the data better in the early curvature of the shoulder and tail than the low temporal resolution simulations (Figures 4.3 and 4.4). These regions of the breakthrough curve are sensitive to storage parameters α and A_S.

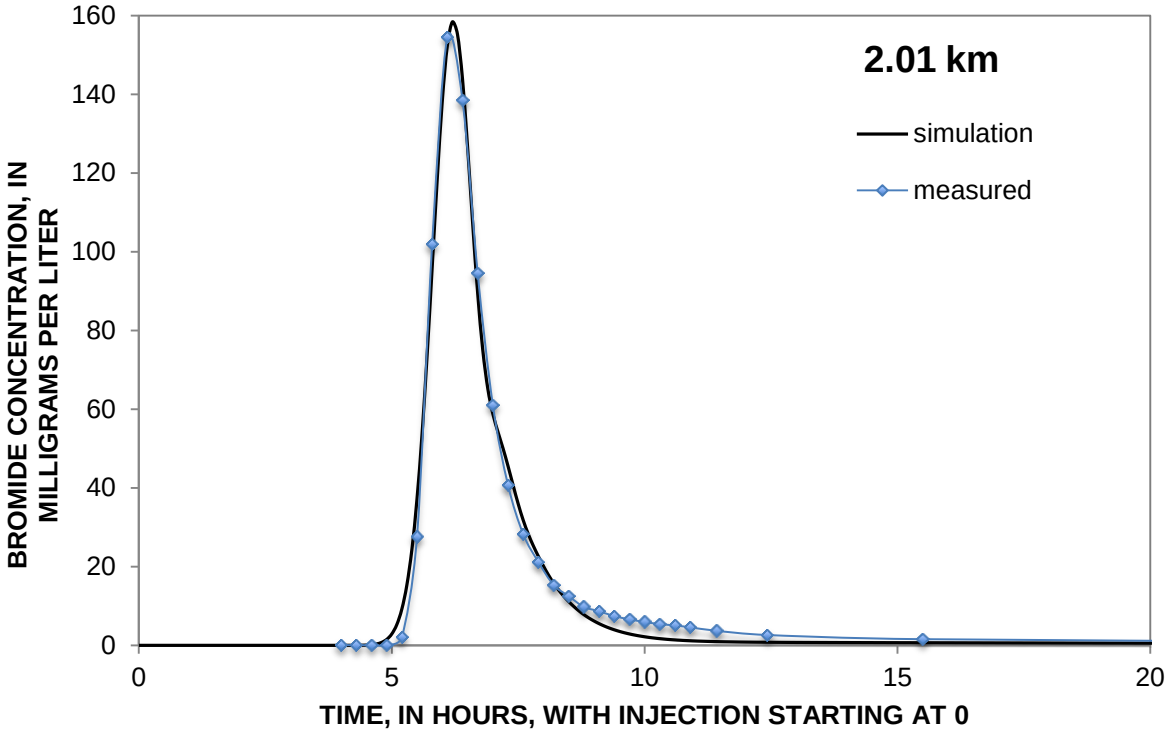

Figure 4.4 Measured and simulated bromide data at 2.01 km during Fourmile Creek tracer injection test. The simulated data varies from the measured data in the early curvature of the shoulder and tail of the breakthrough curve – regions of high sensitivity to transient storage parameter estimates.

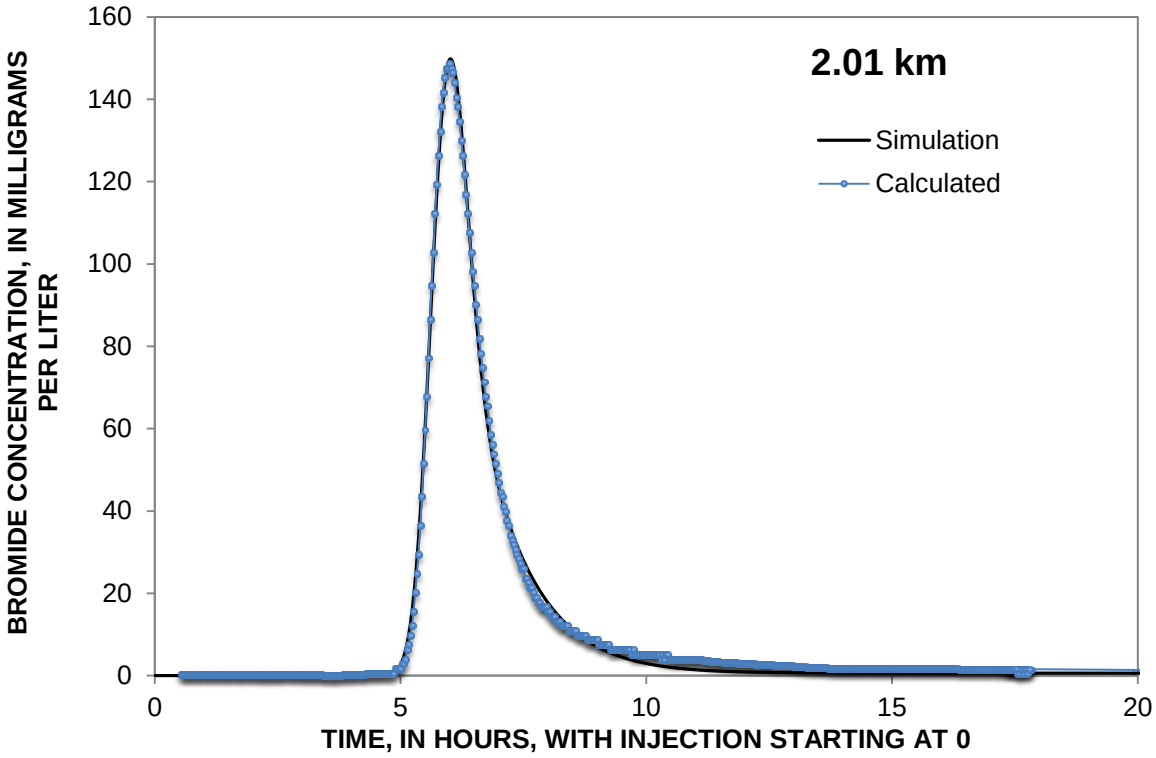

Figure 4.5 Calculated and simulated bromide concentration data at 2.01 km during Fourmile Creek tracer injection test. The simulated data fits the calculated bromide data in the early curvature of the shoulder and tail of the breakthrough curve, regions of high sensitivity to transient storage parameters.

Importance of Transient Storage

Transient storage was only optimized in Reach 1 and 2 because bromide tracer mass was presumably not stored in Reach 3 or 4. Negligible transient storage in Reach 3 and 4 is likely because those reaches are steeper with faster flows than Reach 1 and 2 (Harvey and Wagner, 2000). The computed metrics for determining the importance of transient storage were similar between measured bromide concentrations and calculated bromide concentrations, but they varied distinctly between study reaches (Table 3.4). In Reach 1, the fraction of median travel time due to transient storage (F_{med}) was 6% and 5% for measured and calculated bromide concentrations, respectively. This indicates that during the 5.6 – 5.8 h of travel time (t_{med}) from

the injection to 2.01 km, the tracer spent 16 – 21 min in storage (t_{med}^{s}). This short amount of time in storage indicates transient storage is not important in Reach 1, which is not valid as evidenced by the bromide mass recovery rates and elevated tail concentrations. In Reach 2, the fraction of median travel time due to transient storage (F_{med}) was 71% and 73% for measured and calculated bromide concentrations, respectively. This indicates that during the 6.5 – 6.6 h of travel time (t_{med}) from 2.01 km to 5.04 km, the tracer spent 4.6 – 4.8 h in storage (t_{med}^{s}). This ratio of time in storage is more credible than the low F_{med} value calculated for Reach 1. The discrepancy in F_{med} between Reach 1 and 2 may be caused by the large difference in time (36 h and 140 h) estimated that the extrapolated bromide tail concentrations to return to background.

The uncertainties associated with the computed metrics (F_{med} , t_{med}, and t_{med}^{s}) are sensitive to the uncertainties associated with the parameter estimates (D, A_s, α) (Scott *et al.*, 2003). So when comparing metrics between the calculated and measured bromide concentration simulations, those computed for the calculated bromide (high temporal resolution) simulation are less uncertain than for the measured bromide (low temporal resolution) simulation.

CHAPTER 5

CONCLUSIONS

In this study, it was determined that accurate stream tracer (bromide) concentrations can be calculated from electrical conductivity measurements and used as a surrogate for dissolved tracer samples in stream tracer experiment data collection. The calculation method uses the equations of McCleskey *et al.* (2012a) that relate chemical composition and electrical conductivity of natural waters. Small changes in background electrical conductivity produced the highest difference (%) between calculated and measured bromide concentrations as evidenced by the fluctuating bromide concentrations in the leading edge and trailing edge of the breakthrough curves. Calculated bromide concentrations are only as precise as the electrical conductivity measurement. The varied stream reaches in Fourmile Creek provided several conditions in which to evaluate the calculated bromide method. The method is most robust in situations in which changes in background electrical conductivity data can be accounted for.

Transient storage model simulations were run for measured and calculated bromide concentration data. The use of calculated bromide concentrations (a high-temporal resolution dataset) within the model provided more reliable transient storage model parameter estimates. Parameter estimates are most certain when samples are collected at points where the imprint of that parameter – the parameter sensitivity – is greatest (Harvey and Wagner, 2000). A high-temporal resolution data set created from electrical conductivity data loggers provides concentration data in the regions of sensitivity necessary to acquire reliable parameters.

The greatest advantages and implications of the calculated bromide method are (1) ease of data collection, (2) improved data resolution, and (3) reduction of resources used in the field and at the sample analysis stage. Lastly, the calculated bromide method can be used as an accurate substitute for determining ionic tracer concentrations if an automatic sampler stops working in the field.

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APPENDIX

A. Fourmile Creek Study Area

Fourmile Creek is located in the upper basin of the Boulder Creek watershed and is a major tributary of Boulder Creek. Both streams provide drinking water for downstream communities. The Fourmile Creek watershed is 63.2 km^2 in area and ranges in elevation from 1,746 to 3,515 m, with a mean elevation of 2,435 m (McCleskey *et al.,* 2012b). The Continental Divide lies just west of the watershed boundary, causing Fourmile Creek, like most streams in the Colorado Front Range, to flow east (Lovering and Goddard, 1950). Fourmile Creek and Gold Run Creek are major drainages within the watershed (Figure A.1). Fourmile Creek runs west to

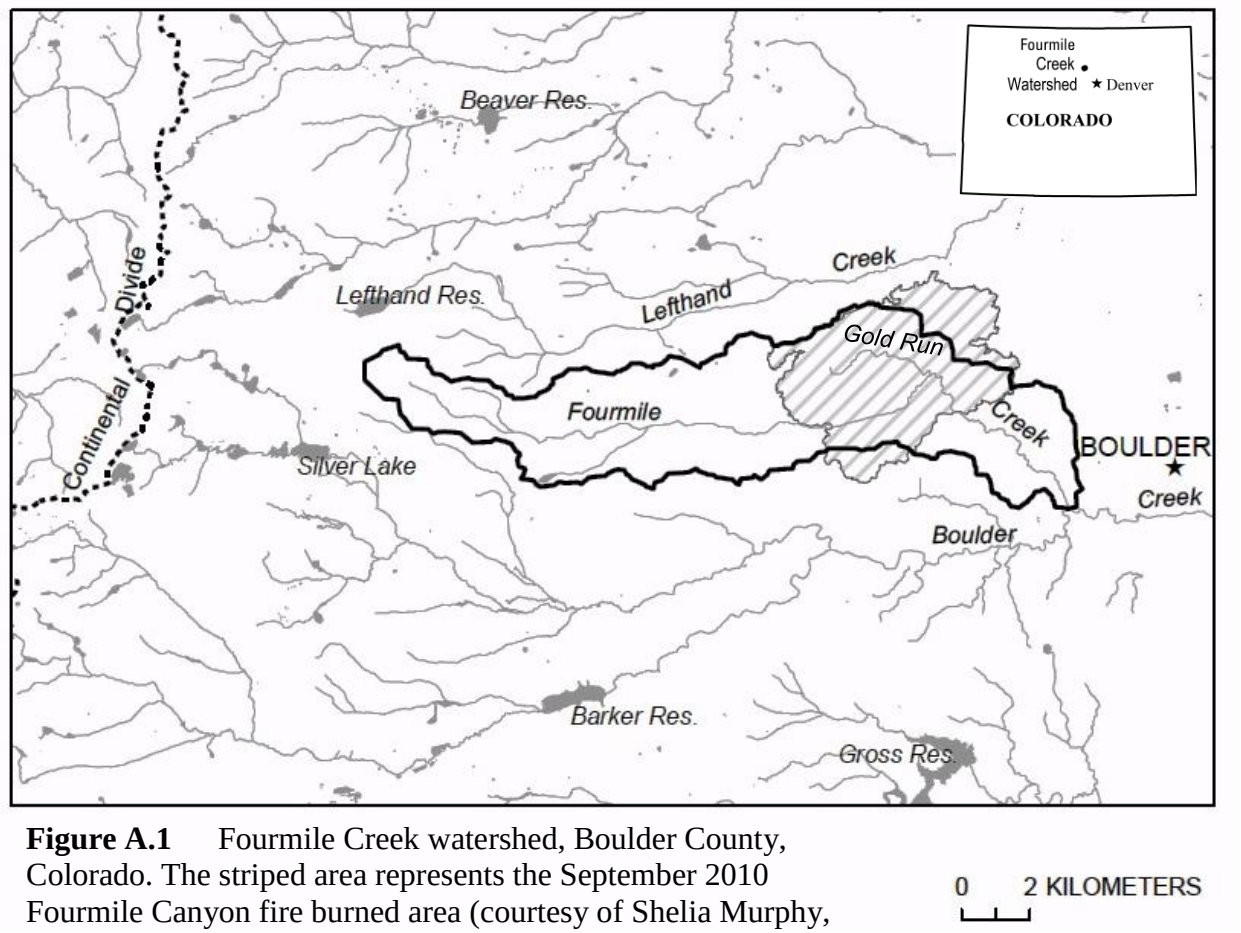

Figure A.1 Fourmile Creek watershed, Boulder County, Colorado. The striped area represents the September 2010 Fourmile Canyon fire burned area (courtesy of Shelia Murphy, U.S. Geological Survey).

east and then turns to the southeast as Gold Run Creek enters from the northwest. Narrow (< 30 m) riparian areas and long stream expanses of steep southerly slopes (some exceeding nearly 45º) characterize the watershed (Graham *et al.,* 2012).

Climate varies in the upper Boulder Creek watershed with elevation. Fourmile Creek is located in the foothills climate zone (Verplank *et al*., 2008). An average of 47.5 cm of precipitation falls each year and the mean annual temperature is 10.7 °C with a mean summer temperature of 21.2 °C (Boulder Station 050848, 1893-2010, Western Regional Climate Center, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?co0848). Fourmile Creek discharge is dominated by snowmelt in the spring and transient high flows during summer convective storms. Stream baseflow conditions occur in the fall and winter months (Writer *et al.,* 2012).

Soils in this area are largely derived from in-place weathering of metamorphic and igneous bedrock; they tend to be coarse textured, sandy soils that are poorly developed, shallow, and well drained (Graham *et al.*, 2012). North-facing slopes are moister than their south-facing counterparts. Vegetation is dominated by ponderosa pine and Douglas-fir forests, and the rich understory consists of common juniper, mountain mahogany, and grasses (Graham *et al.,* 2012).

The upper Boulder Creek watershed, including Fourmile Creek, is primarily underlain by metamorphic and plutonic rocks including Precambrian gneisses and schists (~1800 Ma), Boulder Creek Granodiorite (~1715 Ma), and Silver Plume Granite (~1412 Ma) (Gable, 1980; Murphy *et al*., 2003; Verplank *et al*., 2008). Boulder Creek Granodiorite is well exposed in the lower Fourmile Creek watershed (Verplank *et al*., 2008). Late Cretaceous- and Tertiary-age (68-27 Ma) dikes and stocks intruded the basement rocks and are associated with ore deposits that mark the north eastern boundary of the Colorado mineral belt, which extends southwestward from Boulder to Breckenridge (Lovering and Goddard, 1950; Verplank *et al*., 2008). A portion

of the Fourmile Creek experimental reach is underlain by an east-west trending Laramide fault of unpublished displacement (Figure A.2) (Gable, 1980).

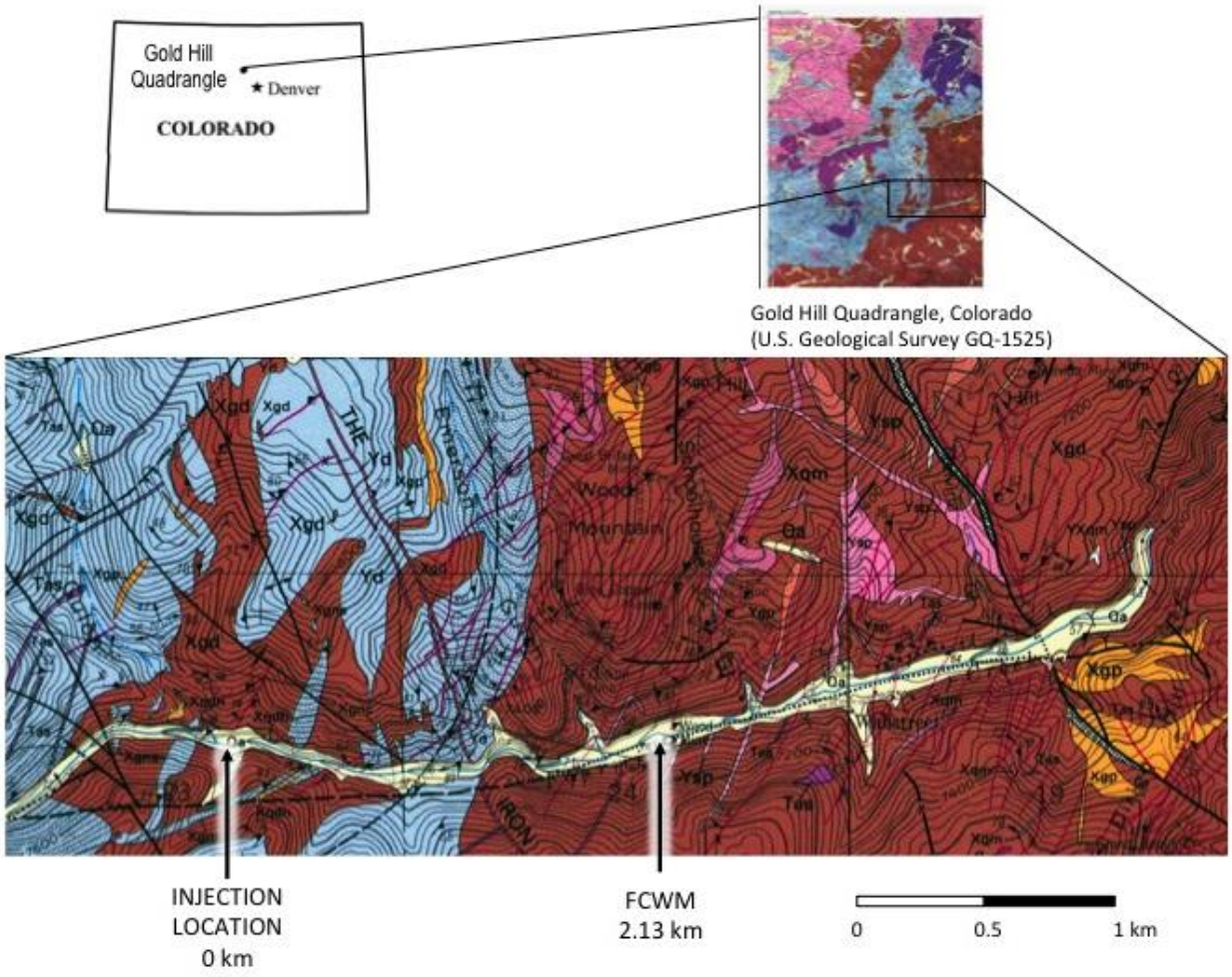

Figure A.2 Geologic map of Gold Hill Quadrangle, Colorado showing a concealed east-west trending fault that underlies Fourmile Creek in portions of experimental Reach 1 and 2. Additionally, several north-south trending faults cross the experimental reach of Fourmile Creek. Use Figure A.3 Geologic map key (Gable, 1980).

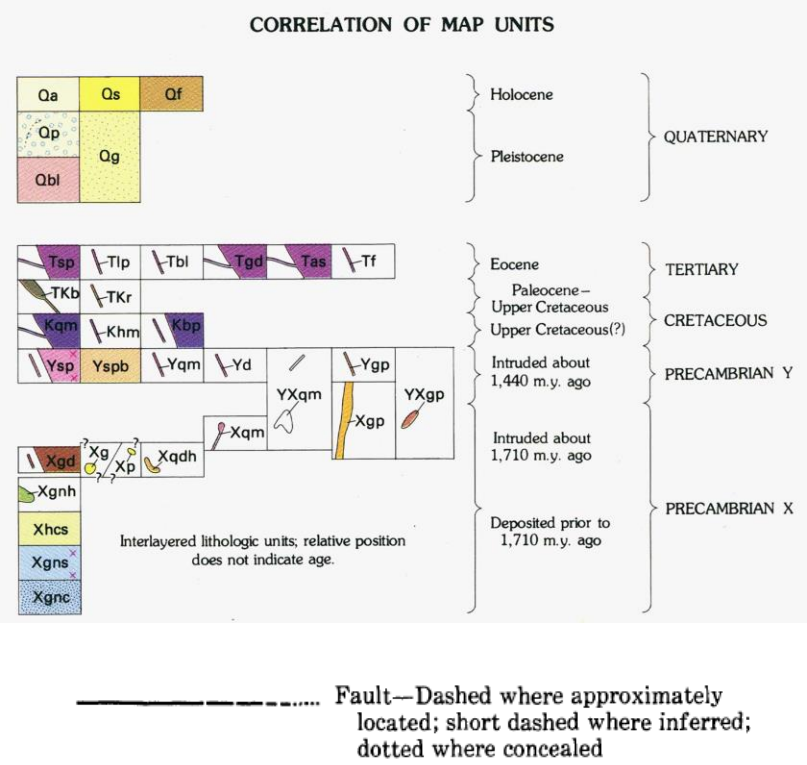

Figure A.3 Geologic map key of the Gold Hill Quadrangle, Colorado (Gable, 1980).

Gold deposits were discovered in Gold Run Creek in 1859 and mining activities continued in the study area through the 1930s (Wohl, 2001). The first types of mines were placer mines, where sediment was dumped into rocker boxes or large scale sluice boxes, broken apart with water, and processed with mercury. Placer mining involved digging diversion ditches into Fourmile Creek to increase flow through the sluice boxes (Figures A.3 and A.4). Lode mining followed; this involved crushing chunks of bedrock and processing it with chlorine, mercury, and cyanide in mills (Cobb, 1988). Lode mining allowed much greater production; gold production reached its peak in 1892 (Wohl, 2001). Toxic chemicals used in processing lode mining, primarily along Fourmile Creek, were disposed of on the ground or in streams (Murphy, 2006). In 1902, the Wall Street Gold Extraction Company built a mill that operated for two years,

running tailings directly into Fourmile Creek (Wohl, 2001). The old Wall Street mill site is located along Reach 2 of the Fourmile Creek experimental study area.

Figure A.4 Placer mining on Fourmile Creek, circa 1890−1900 (by J.B. Sturtevant; courtesy Carnegie Branch Library for Local History, Boulder Historical Society Collection)

Figure A.5 Extensive reworking of the streambed of Fourmile Creek associated with placer mining. (courtesy Carnegie Branch Library for Local History, Boulder Historical Society Collection)

In the 1930s, a dredging operation that extended above the Wall Street Mill used a 1 m flume to divert Fourmile Creek so that miners could use a stream shovel to scoop up channel sediment and two sluice boxes to separate the gold (Wohl, 2001). In this area of Colorado, mine drainage is not very acidic because carbonate in mined ore bodies is readily available to buffer acid produced from the weathering of sulfides (Murphy *et al.*, 2003). However, lasting effects of mining that may affect this research include disturbance of channel bed and bank sediment of Fourmile Creek and anthropogenic stressors associated with increased development in the area.

Fourmile Creek is a long-term hydrological research site in the Colorado Front Range. Much of the hydrological research to date has been directed towards wildfire impacts from the September 2010 Fourmile Canyon fire (Ruddy et al., 2010; Murphy and Writer, 2011; Graham et al., 2012; McCleskey et al., 2012b; Writer et al., 2012; Moody and Ebel, 2012). The Fourmile

Canyon fire burned more than 26 km2 and destroyed more than 160 homes (Graham et al., 2012). The burned area encompasses several past extraction related sites and the fire exposed many mines and tailings piles (Figure A.6). The area did not experience a major post-fire precipitation event until July 13, 2011, when a severe convective storm caused severe flooding and debris flows in the burned area. Large increases in nutrients and DOC loading transferred from burned areas to Fourmile Creek was 1 to 2 orders of magnitude as great as loading from unburned areas (Writer et al., 2012).

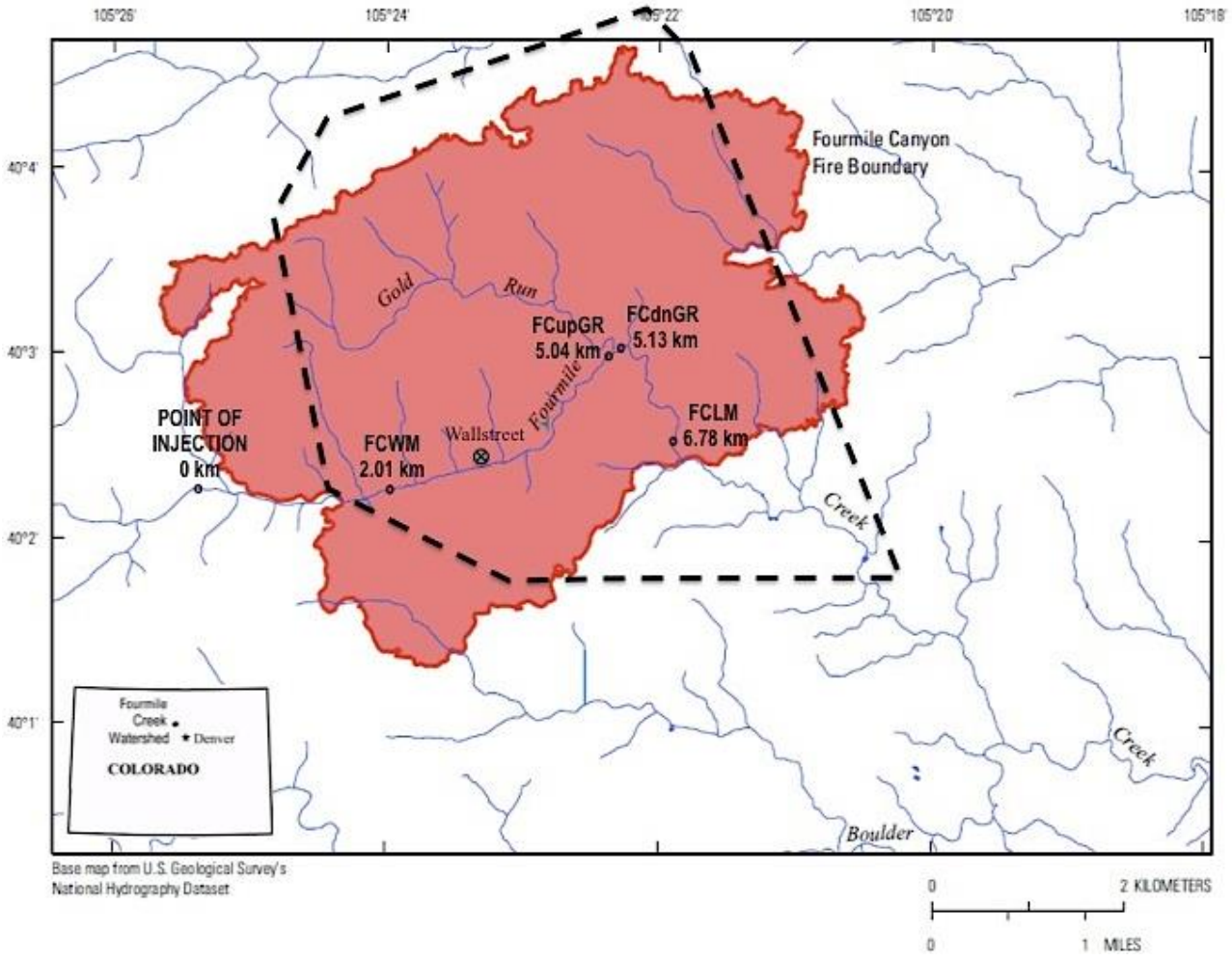

Figure A.6 Fourmile Creek experimental reach with sample sites and the historic Wallstreet Mill site indicated. The shaded red area represents the 2010 Fourmile Canyon fire burned area. The dashed line indicates the Gold Hill mining district that started operating in 1859 (courtesy of Shelia Murphy, U.S. Geological Survey).

Typically, pre-fire data is limited and has hampered the ability to understand and predict the water quality and ecological consequences of wildfires. In this case, important pre-fire data sets, including soil properties and nutrient pools, forest stand composition and ecosystem health, and stream water quality and discharge, were available from locations within and adjacent to the Fourmile Canyon burned area (Murphy and Writer, 2011). Hydrologists continue to monitor Fourmile Creek to evaluate how water quality changes as the burned watershed recovers.

B.1 Electrical Conductivity Corrections

Table B.1.1 Linear relationship development between field-measured electrical conductivity data and lab-measured electrical conductivity of water samples collected during Fourmile Creek tracer injection test.

Sample ID	Date/Time Sample Taken	Specific Conductivity, µS/cm	
		measured in field	measured in lab
Sample Site no. 1 (2.01 km)			
12FTWM001	12/6/12 4:00 PM	84	148
12FTWM002	12/6/12 4:18 PM	85	149
12FTWM003	12/6/12 4:36 PM	85	150
12FTWM004	12/6/12 4:54 PM	85	150
12FTWM005	12/6/12 5:12 PM	87	152
12FTWM006	12/6/12 5:30 PM	106	188
12FTWM007	12/6/12 5:48 PM	166	288
12FTWM008	12/6/12 6:06 PM	211	359
12FTWM009	12/6/12 6:24 PM	196	334
12FTWM010	12/6/12 6:42 PM	162	279
12FTWM011	12/6/12 7:00 PM	135	235
12FTWM012	12/6/12 7:18 PM	119	205
12FTWM013	12/6/12 7:36 PM	108	188
12FTWM014	12/6/12 7:54 PM	101	177
12FTWM015	12/6/12 8:12 PM	98	171
12FTWM016	12/6/12 8:30 PM	95	167
12FTWM017	12/6/12 8:48 PM	93	164
12FTWM018	12/6/12 9:06 PM	92	162
12FTWM019	12/6/12 9:24 PM	91	159
12FTWM020	12/6/12 9:42 PM	90	158
12FTWM021	12/6/12 10:00 PM	89	157
12FTWM022	12/6/12 10:18 PM	89	156
12FTWM023	12/6/12 10:36 PM	89	155
12FTWM024	12/6/12 10:54 PM	88	155
Linear relationship: $y = 1.6714x + 7.7854$			
Sample Site no. 2 (5.04 km)			
12FTUPGR001	12/6/12 11:00 PM	176	235
12FTUPGR002	12/6/12 11:20 PM	176	243
12FTUPGR003	12/6/12 11:40 PM	177	244
12FTUPGR004	12/7/12 12:00 AM	182	248
12FTUPGR005	12/7/12 12:20 AM	187	255
12FTUPGR006	12/7/12 12:40 AM	189	256
12FTUPGR007	12/7/12 1:00 AM	188	255
12FTUPGR008	12/7/12 1:20 AM	186	252
12FTUPGR009	12/7/12 1:40 AM	184	250
12FTUPGR010	12/7/12 2:00 AM	182	250
12FTUPGR011	12/7/12 2:20 AM	182	245
12FTUPGR012	12/7/12 2:40 AM	180	245
12FTUPGR013	12/7/12 3:00 AM	179	245

Sample ID	Date/Time Sample Taken	Specific Conductivity, µS/cm	
		measured in field	measured in lab
12FTUPGR014	12/7/12 3:20 AM	179	244
12FTUPGR015	12/7/12 3:40 AM	178	243
12FTUPGR016	12/7/12 4:00 AM	178	243
12FTUPGR017	12/7/12 4:20 AM	178	242
12FTUPGR018	12/7/12 4:40 AM	178	242
12FTUPGR019	12/7/12 5:00 AM	178	242
12FTUPGR020	12/7/12 5:20 AM	178	243
12FTUPGR021	12/7/12 5:40 AM	178	243
12FTUPGR022	12/7/12 6:00 AM	177	242
12FTUPGR023	12/7/12 6:20 AM	178	242
12FTUPGR024	12/7/12 6:40 AM	178	240
12FTUPGR025	12/7/12 7:00 AM	177	242
12FTUPGR026	12/7/12 7:30 AM	178	241
12FTUPGR027	12/7/12 8:00 AM	178	242
12FTUPGR028	12/7/12 8:30 AM	178	241
12FTUPGR029	12/7/12 9:00 AM	178	240
12FTUPGR030	12/7/12 9:30 AM	178	242
12FTUPGR031	12/7/12 10:00 AM	178	240
12FTUPGR032	12/7/12 10:30 AM	178	242
12FTUPGR033	12/7/12 11:00 AM	178	240
12FTUPGR034	12/7/12 11:30 AM	178	242
12FTUPGR035	12/7/12 12:00 PM	178	240
12FTUPGR036	12/7/12 12:30 PM	178	241
12FTUPGR037	12/7/12 1:00 PM	178	240
12FTUPGR038	12/7/12 1:30 PM	178	241
12FTUPGR039	12/7/12 2:00 PM	179	240
12FTUPGR040	12/7/12 2:30 PM	178	241
12FTUPGR041	12/7/12 3:00 PM	178	241
12FTUPGR042	12/7/12 3:30 PM	179	241
12FTUPGR043	12/7/12 4:00 PM	178	241
12FTUPGR044	12/7/12 4:30 PM	178	242
12FTUPGR045	12/7/12 5:00 PM	178	240
12FTUPGR046	12/7/12 5:30 PM	178	241
12FTUPGR047	12/7/12 6:00 PM	178	241
12FTUPGR048	12/7/12 6:30 PM	178	241
Linear relationship: y = 1.34 + 3.196			
Sample Site no. 3 (5.13 km)			
12FTGR001	12/6/12 11:30 PM	360	334
12FTGR002	12/6/12 11:50 PM	362	339
12FTGR003	12/7/12 12:10 AM	367	343
12FTGR004	12/7/12 12:30 AM	374	348
12FTGR005	12/7/12 12:50 AM	377	349
12FTGR006	12/7/12 1:10 AM	376	349
12FTGR007	12/7/12 1:30 AM	373	346
12FTGR008	12/7/12 1:50 AM	370	343
12FTGR009	12/7/12 2:10 AM	367	342
12FTGR010	12/7/12 2:30 AM	365	339

Sample ID	Date/Time Sample Taken	Specific Conductivity, µS/cm	
		measured in field	measured in lab
12FTGR011	12/7/12 2:50 AM	364	339
12FTGR012	12/7/12 3:10 AM	364	339
12FTGR013	12/7/12 3:30 AM	363	337
12FTGR014	12/7/12 3:50 AM	363	337
12FTGR015	12/7/12 4:10 AM	363	338
12FTGR016	12/7/12 4:30 AM	362	338
12FTGR017	12/7/12 4:50 AM	362	337
12FTGR018	12/7/12 5:10 AM	362	338
12FTGR019	12/7/12 5:30 AM	362	337
12FTGR020	12/7/12 5:50 AM	362	336
12FTGR021	12/7/12 6:10 AM	362	338
12FTGR022	12/7/12 6:30 AM	363	337
12FTGR023	12/7/12 6:50 AM	362	337
12FTGR024	12/7/12 7:10 AM	362	337
12FTGR025	12/7/12 7:30 AM	363	337
12FTGR026	12/7/12 8:00 AM	362	337
12FTGR027	12/7/12 8:30 AM	362	337
12FTGR028	12/7/12 9:00 AM	362	337
12FTGR029	12/7/12 9:30 AM	362	336
12FTGR030	12/7/12 10:00 AM	362	335
12FTGR031	12/7/12 10:30 AM	361	336
12FTGR032	12/7/12 11:00 AM	362	336
12FTGR033	12/7/12 11:30 AM	362	336
12FTGR034	12/7/12 12:00 PM	358	333
12FTGR035	12/7/12 12:30 PM	360	334
12FTGR036	12/7/12 1:00 PM	362	336
12FTGR037	12/7/12 1:30 PM	362	336
12FTGR038	12/7/12 2:00 PM	362	336
12FTGR039	12/7/12 2:30 PM	362	336
12FTGR040	12/7/12 3:00 PM	363	335
12FTGR041	12/7/12 3:30 PM	364	338
12FTGR042	12/7/12 4:00 PM	363	337
12FTGR043	12/7/12 4:30 PM	363	337
12FTGR044	12/7/12 5:00 PM	363	337
12FTGR045	12/7/12 5:30 PM	363	338
12FTGR046	12/7/12 6:00 PM	363	337
12FTGR047	12/7/12 6:30 PM	364	338
12FTGR048	12/7/12 7:00 PM	364	338
Linear relationship: y = 0.89x + 15.13			
Sample Site no. 4 (6.78 km)			
12FTLM001	12/7/12 2:00 AM	241	371
12FTLM002	12/7/12 2:20 AM	244	373
12FTLM003	12/7/12 2:40 AM	246	376
12FTLM004	12/7/12 3:00 AM	246	377
12FTLM005	12/7/12 3:20 AM	245	376
12FTLM006	12/7/12 3:40 AM	244	373
12FTLM007	12/7/12 4:00 AM	243	369

Sample ID	Date/Time Sample Taken	Specific Conductivity, µS/cm	
		measured in field	measured in lab
12FTLM008	12/7/12 4:20 AM	242	367
12FTLM009	12/7/12 4:40 AM	241	370
12FTLM010	12/7/12 5:00 AM	241	370
12FTLM011	12/7/12 5:20 AM	241	370
12FTLM012	12/7/12 5:40 AM	241	370
12FTLM013	12/7/12 6:00 AM	241	370
12FTLM014	12/7/12 6:20 AM	241	370
12FTLM015	12/7/12 6:40 AM	240	367
12FTLM016	12/7/12 7:00 AM	241	368
12FTLM017	12/7/12 7:20 AM	241	367
12FTLM018	12/7/12 7:40 AM	241	369
12FTLM019	12/7/12 8:00 AM	240	369
12FTLM020	12/7/12 8:40 AM	241	368
12FTLM021	12/7/12 9:00 AM	241	369
12FTLM022	12/7/12 9:20 AM	241	369
12FTLM023	12/7/12 9:40 AM	241	369
12FTLM024	12/7/12 10:00 AM	241	368
12FTLM025	12/7/12 10:20 AM	241	370
12FTLM026	12/7/12 10:40 AM	241	369
12FTLM027	12/7/12 4:45 PM	241	369
Linear relationship: y = 1.42 + 25.78			

B.2 Field-Measured Parameters and Calculated Bromide Concentrations

Table B.2.1 Field measured parameters and calculated bromide concentrations at 2.01 km

Sample Site No. 1 (2.01 km)							
		Measurements					***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 10:24 AM	-	11.3	7.60	2.98	148		-
12/6/12 10:26 AM	-	11.3	7.60	2.96	148		-
12/6/12 10:28 AM	-	11.3	7.61	2.97	150		-
12/6/12 10:30 AM	-	11.3	7.61	2.96	148		-
12/6/12 10:32 AM	-	11.3	7.60	2.96	150		-
12/6/12 10:34 AM	-	11.3	7.61	2.97	150		-
12/6/12 10:36 AM	-	11.6	7.60	2.98	148		-
12/6/12 10:38 AM	-	11.3	7.61	2.99	148		-
12/6/12 10:40 AM	-	11.6	7.61	3.01	150		-
12/6/12 10:42 AM	-	11.6	7.62	3.04	148		-
12/6/12 10:44 AM	-	11.6	7.61	3.07	148		-
12/6/12 10:46 AM	-	11.6	7.62	3.09	150		-
12/6/12 10:48 AM	-	11.6	7.62	3.13	148		-
12/6/12 10:50 AM	-	11.6	7.61	3.16	150		-
12/6/12 10:52 AM	-	11.6	7.62	3.18	150		-
12/6/12 10:54 AM	-	11.6	7.62	3.21	150		-
12/6/12 10:56 AM	-	11.6	7.62	3.22	150		-
12/6/12 10:58 AM	-	11.6	7.63	3.24	150		-
12/6/12 11:00 AM	-	11.6	7.63	3.25	150		-
12/6/12 11:02 AM	-	11.6	7.64	3.26	150		-
12/6/12 11:04 AM	-	11.6	7.65	3.27	148		-
12/6/12 11:06 AM	-	11.6	7.64	3.28	150		-
12/6/12 11:08 AM	-	11.6	7.65	3.30	148		-
12/6/12 11:10 AM	-	11.6	7.64	3.31	148		-
12/6/12 11:12 AM	-	11.6	7.65	3.31	148		-
12/6/12 11:14 AM	-	11.6	7.65	3.31	148		-
12/6/12 11:16 AM	-	11.6	7.65	3.31	150		-
12/6/12 11:18 AM	-	11.6	7.66	3.31	150		-
12/6/12 11:20 AM	-	11.6	7.65	3.30	150		-
12/6/12 11:22 AM	-	11.6	7.66	3.30	150		-
12/6/12 11:24 AM	-	11.6	7.66	3.30	150		-
12/6/12 11:26 AM	-	11.6	7.66	3.30	148		-
12/6/12 11:28 AM	-	11.6	7.66	3.31	150		-
12/6/12 11:30 AM	-	11.6	7.68	3.31	150		-
12/6/12 11:32 AM	-	11.6	7.68	3.32	148		-
12/6/12 11:34 AM	-	11.6	7.68	3.32	150		-
12/6/12 11:36 AM	-	11.6	7.67	3.31	150		-
12/6/12 11:38 AM	-	11.6	7.68	3.32	150		-
12/6/12 11:40 AM	-	11.6	7.68	3.33	150		-
12/6/12 11:42 AM	-	11.6	7.69	3.33	148		-
12/6/12 11:44 AM	-	11.6	7.68	3.33	150		-
12/6/12 11:46 AM	-	11.6	7.69	3.33	148		-
12/6/12 11:48 AM	-	11.6	7.69	3.34	150		-

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 11:50 AM	-	11.6	7.69	3.34	148		-
12/6/12 11:52 AM	-	11.6	7.69	3.34	148		-
12/6/12 11:54 AM	-	11.6	7.69	3.35	148		-
12/6/12 11:56 AM	-	11.6	7.71	3.36	148		-
12/6/12 11:58 AM	-	11.6	7.70	3.36	150		-
12/6/12 12:00 PM	-	11.6	7.70	3.37	148		-
12/6/12 12:02 PM	-	11.6	7.70	3.39	148		-
12/6/12 12:04 PM	-	11.6	7.71	3.40	150		-
12/6/12 12:06 PM	-	11.6	7.71	3.39	148		-
12/6/12 12:08 PM	-	11.6	7.71	3.39	150		-
12/6/12 12:10 PM	0.000	11.6	7.72	3.40	148		0.313
12/6/12 12:12 PM	0.033	11.6	7.71	3.41	150		0.313
12/6/12 12:14 PM	0.067	11.6	7.71	3.40	150		0.313
12/6/12 12:16 PM	0.100	11.6	7.71	3.40	150		0.313
12/6/12 12:18 PM	0.133	11.6	7.72	3.41	148		0.313
12/6/12 12:20 PM	0.167	11.6	7.72	3.42	148		0.313
12/6/12 12:22 PM	0.200	11.6	7.72	3.43	150		0.313
12/6/12 12:24 PM	0.233	11.6	7.72	3.44	148		0.313
12/6/12 12:26 PM	0.267	11.6	7.73	3.45	150		0.313
12/6/12 12:28 PM	0.300	11.6	7.73	3.45	150		0.313
12/6/12 12:30 PM	0.333	11.6	7.73	3.45	150		0.313
12/6/12 12:32 PM	0.367	11.6	7.73	3.45	148		0.313
12/6/12 12:34 PM	0.400	11.6	7.72	3.46	150		0.313
12/6/12 12:36 PM	0.433	11.6	7.74	3.46	150		0.313
12/6/12 12:38 PM	0.467	11.6	7.74	3.47	150		0.313
12/6/12 12:40 PM	0.500	11.6	7.73	3.47	148		0.313
12/6/12 12:42 PM	0.533	11.6	7.75	3.48	148		0.313
12/6/12 12:44 PM	0.567	11.6	7.74	3.49	148		0.313
12/6/12 12:46 PM	0.600	11.6	7.74	3.50	150		0.313
12/6/12 12:48 PM	0.633	11.6	7.74	3.50	150		0.293
12/6/12 12:50 PM	0.667	11.6	7.74	3.51	150		0.293
12/6/12 12:52 PM	0.700	11.6	7.75	3.51	148		0.313
12/6/12 12:54 PM	0.733	11.6	7.75	3.52	148		0.293
12/6/12 12:56 PM	0.767	11.6	7.74	3.52	148		0.313
12/6/12 12:58 PM	0.800	11.6	7.75	3.52	150		0.313
12/6/12 1:00 PM	0.833	11.6	7.76	3.53	148		0.293
12/6/12 1:02 PM	0.867	11.6	7.75	3.54	148		0.274
12/6/12 1:04 PM	0.900	11.6	7.76	3.54	148		0.274
12/6/12 1:06 PM	0.933	11.6	7.75	3.55	150		0.274
12/6/12 1:08 PM	0.967	11.6	7.76	3.56	150		0.274
12/6/12 1:10 PM	1.000	11.6	7.76	3.56	148		0.274
12/6/12 1:12 PM	1.033	11.6	7.76	3.57	150		0.274
12/6/12 1:14 PM	1.067	11.6	7.77	3.57	150		0.274
12/6/12 1:16 PM	1.100	11.6	7.77	3.58	148		0.293
12/6/12 1:18 PM	1.133	11.6	7.77	3.59	148		0.293
12/6/12 1:20 PM	1.167	11.6	7.77	3.59	150		0.274
12/6/12 1:22 PM	1.200	11.6	7.77	3.60	148		0.274
12/6/12 1:24 PM	1.233	11.6	7.77	3.61	150		0.274

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 1:26 PM	1.267	11.6	7.77	3.61	150		0.293
12/6/12 1:28 PM	1.300	11.6	7.77	3.62	148		0.313
12/6/12 1:30 PM	1.333	11.9	7.78	3.63	148		0.293
12/6/12 1:32 PM	1.367	11.6	7.78	3.63	148		0.293
12/6/12 1:34 PM	1.400	11.6	7.78	3.64	150		0.313
12/6/12 1:36 PM	1.433	11.6	7.77	3.64	150		0.332
12/6/12 1:38 PM	1.467	11.6	7.77	3.65	150		0.332
12/6/12 1:40 PM	1.500	11.6	7.77	3.67	148		0.332
12/6/12 1:42 PM	1.533	11.6	7.78	3.69	148		0.332
12/6/12 1:44 PM	1.567	11.6	7.77	3.70	150		0.313
12/6/12 1:46 PM	1.600	11.6	7.78	3.71	150		0.293
12/6/12 1:48 PM	1.633	11.6	7.78	3.72	148		0.293
12/6/12 1:50 PM	1.667	11.6	7.78	3.73	150		0.293
12/6/12 1:52 PM	1.700	11.6	7.78	3.74	148		0.274
12/6/12 1:54 PM	1.733	11.9	7.79	3.73	150		0.293
12/6/12 1:56 PM	1.767	11.6	7.78	3.73	150		0.274
12/6/12 1:58 PM	1.800	11.6	7.79	3.73	148		0.254
12/6/12 2:00 PM	1.833	11.6	7.79	3.74	148		0.254
12/6/12 2:02 PM	1.867	11.6	7.79	3.74	150		0.274
12/6/12 2:04 PM	1.900	11.6	7.79	3.74	150		0.293
12/6/12 2:06 PM	1.933	11.6	7.79	3.74	150		0.293
12/6/12 2:08 PM	1.967	11.6	7.79	3.74	150		0.293
12/6/12 2:10 PM	2.000	11.6	7.78	3.74	148		0.293
12/6/12 2:12 PM	2.033	11.6	7.79	3.73	148		0.293
12/6/12 2:14 PM	2.067	11.6	7.79	3.73	148		0.293
12/6/12 2:16 PM	2.100	11.6	7.79	3.72	148		0.274
12/6/12 2:18 PM	2.133	11.6	7.79	3.71	148		0.254
12/6/12 2:20 PM	2.167	11.6	7.79	3.71	148		0.254
12/6/12 2:22 PM	2.200	11.6	7.78	3.70	150		0.235
12/6/12 2:24 PM	2.233	11.6	7.78	3.69	148		0.254
12/6/12 2:26 PM	2.267	11.6	7.79	3.68	148		0.254
12/6/12 2:28 PM	2.300	11.6	7.79	3.67	148		0.235
12/6/12 2:30 PM	2.333	11.6	7.79	3.66	150		0.235
12/6/12 2:32 PM	2.367	11.6	7.79	3.65	150		0.254
12/6/12 2:34 PM	2.400	11.6	7.79	3.64	150		0.235
12/6/12 2:36 PM	2.433	11.6	7.79	3.63	150		0.235
12/6/12 2:38 PM	2.467	11.6	7.79	3.62	150		0.215
12/6/12 2:40 PM	2.500	11.6	7.79	3.62	148		0.215
12/6/12 2:42 PM	2.533	11.6	7.79	3.61	148		0.235
12/6/12 2:44 PM	2.567	11.6	7.79	3.60	148		0.254
12/6/12 2:46 PM	2.600	11.6	7.80	3.59	148		0.274
12/6/12 2:48 PM	2.633	11.6	7.80	3.58	148		0.274
12/6/12 2:50 PM	2.667	11.6	7.79	3.57	148		0.274
12/6/12 2:52 PM	2.700	11.6	7.79	3.57	150		0.293
12/6/12 2:54 PM	2.733	11.6	7.80	3.56	150		0.274
12/6/12 2:56 PM	2.767	11.6	7.80	3.55	148		0.293
12/6/12 2:58 PM	2.800	11.6	7.80	3.54	148		0.313
12/6/12 3:00 PM	2.833	11.6	7.80	3.53	150		0.313

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 3:02 PM	2.867	11.6	7.80	3.52	148		0.293
12/6/12 3:04 PM	2.900	11.6	7.80	3.51	150		0.293
12/6/12 3:06 PM	2.933	11.6	7.80	3.51	148		0.293
12/6/12 3:08 PM	2.967	11.6	7.79	3.50	150		0.274
12/6/12 3:10 PM	3.000	11.6	7.79	3.49	150		0.254
12/6/12 3:12 PM	3.033	11.6	7.79	3.48	150		0.254
12/6/12 3:14 PM	3.067	11.6	7.80	3.47	150		0.254
12/6/12 3:16 PM	3.100	11.6	7.80	3.46	148		0.254
12/6/12 3:18 PM	3.133	11.6	7.80	3.45	148		0.254
12/6/12 3:20 PM	3.167	11.6	7.80	3.44	150		0.254
12/6/12 3:22 PM	3.200	11.6	7.80	3.43	148		0.254
12/6/12 3:24 PM	3.233	11.6	7.80	3.42	150		0.235
12/6/12 3:26 PM	3.267	11.6	7.80	3.41	150		0.215
12/6/12 3:28 PM	3.300	11.6	7.80	3.40	148		0.215
12/6/12 3:30 PM	3.333	11.6	7.80	3.39	148		0.215
12/6/12 3:32 PM	3.367	11.9	7.80	3.38	150		0.195
12/6/12 3:34 PM	3.400	11.6	7.80	3.37	150		0.195
12/6/12 3:36 PM	3.433	11.6	7.80	3.36	148		0.176
12/6/12 3:38 PM	3.467	11.6	7.80	3.35	148		0.176
12/6/12 3:40 PM	3.500	11.6	7.80	3.34	148		0.156
12/6/12 3:42 PM	3.533	11.6	7.80	3.34	148		0.137
12/6/12 3:44 PM	3.567	11.6	7.79	3.33	148		0.117
12/6/12 3:46 PM	3.600	11.3	7.79	3.32	148		0.117
12/6/12 3:48 PM	3.633	11.6	7.79	3.30	148		0.137
12/6/12 3:50 PM	3.667	11.6	7.79	3.30	148		0.156
12/6/12 3:52 PM	3.700	11.6	7.79	3.29	148		0.156
12/6/12 3:54 PM	3.733	11.6	7.79	3.28	148		0.176
12/6/12 3:56 PM	3.767	11.6	7.79	3.27	148		0.176
12/6/12 3:58 PM	3.800	11.6	7.79	3.26	148		0.176
12/6/12 4:00 PM	3.833	11.6	7.79	3.25	148		0.195
12/6/12 4:02 PM	3.867	11.6	7.79	3.24	148		0.215
12/6/12 4:04 PM	3.900	11.6	7.79	3.23	148		0.215
12/6/12 4:06 PM	3.933	11.6	7.79	3.22	148		0.215
12/6/12 4:08 PM	3.967	11.6	7.79	3.21	148		0.235
12/6/12 4:10 PM	4.000	11.6	7.78	3.20	148		0.254
12/6/12 4:12 PM	4.033	11.6	7.78	3.19	148		0.274
12/6/12 4:14 PM	4.067	11.6	7.78	3.19	150		0.293
12/6/12 4:16 PM	4.100	11.9	7.78	3.18	150		0.313
12/6/12 4:18 PM	4.133	11.9	7.87	3.17	150		0.332
12/6/12 4:20 PM	4.167	11.9	7.78	3.16	150		0.352
12/6/12 4:22 PM	4.200	11.9	7.79	3.15	150		0.371
12/6/12 4:24 PM	4.233	11.9	7.78	3.14	150		0.391
12/6/12 4:26 PM	4.267	11.9	7.78	3.13	150		0.410
12/6/12 4:28 PM	4.300	11.9	7.78	3.11	150		0.430
12/6/12 4:30 PM	4.333	11.9	7.78	3.11	150		0.450
12/6/12 4:32 PM	4.367	11.9	7.78	3.09	150		0.469
12/6/12 4:34 PM	4.400	11.9	7.77	3.08	150		0.489
12/6/12 4:36 PM	4.433	11.9	7.77	3.07	150		0.586

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 4:38 PM	4.467	12.2	7.77	3.06	150		0.586
12/6/12 4:40 PM	4.500	11.9	7.78	3.05	150		0.586
12/6/12 4:42 PM	4.533	11.9	7.78	3.04	150		0.586
12/6/12 4:44 PM	4.567	11.9	7.78	3.03	150		0.586
12/6/12 4:46 PM	4.600	11.9	7.78	3.02	150		0.586
12/6/12 4:48 PM	4.633	12.2	7.78	3.01	150		0.586
12/6/12 4:50 PM	4.667	11.9	7.78	2.99	150		0.586
12/6/12 4:52 PM	4.700	12.2	7.78	2.99	150		0.586
12/6/12 4:54 PM	4.733	11.9	7.77	2.97	150		0.586
12/6/12 4:56 PM	4.767	11.9	7.78	2.96	150		0.586
12/6/12 4:58 PM	4.800	11.9	7.77	2.96	150		0.586
12/6/12 5:00 PM	4.833	11.9	7.77	2.94	150		0.586
12/6/12 5:02 PM	4.867	11.9	7.77	2.93	150		0.586
12/6/12 5:04 PM	4.900	11.9	7.77	2.92	152		1.74
12/6/12 5:06 PM	4.933	11.9	7.77	2.90	152		1.74
12/6/12 5:08 PM	4.967	11.9	7.77	2.89	152		1.74
12/6/12 5:10 PM	5.000	11.9	7.77	2.88	152		1.74
12/6/12 5:12 PM	5.033	11.9	7.77	2.86	153		2.89
12/6/12 5:14 PM	5.067	11.9	7.76	2.86	153		2.89
12/6/12 5:16 PM	5.100	11.9	7.78	2.85	155		4.05
12/6/12 5:18 PM	5.133	11.9	7.77	2.83	158		6.35
12/6/12 5:20 PM	5.167	11.9	7.76	2.83	160		7.51
12/6/12 5:22 PM	5.200	11.9	7.76	2.82	163		9.82
12/6/12 5:24 PM	5.233	11.9	7.76	2.81	167		12.1
12/6/12 5:26 PM	5.267	11.9	7.76	2.80	172		15.6
12/6/12 5:28 PM	5.300	11.9	7.75	2.79	178		20.2
12/6/12 5:30 PM	5.333	11.9	7.76	2.77	185		24.9
12/6/12 5:32 PM	5.367	11.9	7.75	2.77	192		29.5
12/6/12 5:34 PM	5.400	11.9	7.75	2.75	202		36.4
12/6/12 5:36 PM	5.433	12.2	7.75	2.74	212		43.4
12/6/12 5:38 PM	5.467	11.9	7.75	2.73	223		51.5
12/6/12 5:40 PM	5.500	11.9	7.74	2.72	235		59.7
12/6/12 5:42 PM	5.533	11.9	7.74	2.71	247		67.9
12/6/12 5:44 PM	5.567	11.9	7.74	2.70	260		77.2
12/6/12 5:46 PM	5.600	11.9	7.74	2.69	274		86.5
12/6/12 5:48 PM	5.633	11.9	7.73	2.68	285		94.7
12/6/12 5:50 PM	5.667	11.9	7.73	2.67	297		103
12/6/12 5:52 PM	5.700	11.9	7.74	2.67	310		112
12/6/12 5:54 PM	5.733	11.9	7.73	2.66	320		119
12/6/12 5:56 PM	5.767	11.9	7.73	2.65	330		126
12/6/12 5:58 PM	5.800	11.9	7.74	2.64	339		132
12/6/12 6:00 PM	5.833	11.9	7.74	2.63	347		138
12/6/12 6:02 PM	5.867	11.9	7.73	2.62	352		142
12/6/12 6:04 PM	5.900	11.9	7.74	2.61	357		145
12/6/12 6:06 PM	5.933	11.9	7.73	2.60	360		148
12/6/12 6:08 PM	5.967	11.9	7.73	2.60	360		148
12/6/12 6:10 PM	6.000	11.9	7.74	2.59	362		149
12/6/12 6:12 PM	6.033	11.9	7.74	2.58	360		148

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 6:14 PM	6.067	11.9	7.74	2.57	359		146
12/6/12 6:16 PM	6.100	12.2	7.75	2.56	355		144
12/6/12 6:18 PM	6.133	11.9	7.75	2.55	350		140
12/6/12 6:20 PM	6.167	11.9	7.75	2.54	347		138
12/6/12 6:22 PM	6.200	11.9	7.76	2.54	342		135
12/6/12 6:24 PM	6.233	11.9	7.75	2.53	335		130
12/6/12 6:26 PM	6.267	11.9	7.76	2.53	330		126
12/6/12 6:28 PM	6.300	11.9	7.76	2.52	324		122
12/6/12 6:30 PM	6.333	11.9	7.76	2.51	317		117
12/6/12 6:32 PM	6.367	11.9	7.76	2.50	310		112
12/6/12 6:34 PM	6.400	11.9	7.76	2.49	304		108
12/6/12 6:36 PM	6.433	11.9	7.77	2.48	297		103
12/6/12 6:38 PM	6.467	11.9	7.77	2.47	290		98.2
12/6/12 6:40 PM	6.500	11.9	7.77	2.47	285		94.7
12/6/12 6:42 PM	6.533	12.2	7.77	2.46	279		90.0
12/6/12 6:44 PM	6.567	11.9	7.78	2.45	274		86.5
12/6/12 6:46 PM	6.600	11.9	7.78	2.45	267		81.9
12/6/12 6:48 PM	6.633	11.9	7.78	2.44	262		78.4
12/6/12 6:50 PM	6.667	11.9	7.78	2.43	257		74.9
12/6/12 6:52 PM	6.700	12.2	7.78	2.42	252		71.4
12/6/12 6:54 PM	6.733	11.9	7.78	2.41	247		67.9
12/6/12 6:56 PM	6.767	12.2	7.78	2.40	243		65.5
12/6/12 6:58 PM	6.800	11.9	7.78	2.39	238		62.0
12/6/12 7:00 PM	6.833	11.9	7.78	2.38	233		58.5
12/6/12 7:02 PM	6.867	11.9	7.78	2.37	230		56.2
12/6/12 7:04 PM	6.900	11.9	7.78	2.36	227		53.9
12/6/12 7:06 PM	6.933	11.9	7.77	2.35	223		51.5
12/6/12 7:08 PM	6.967	11.9	7.78	2.34	220		49.2
12/6/12 7:10 PM	7.000	11.9	7.77	2.32	217		46.9
12/6/12 7:12 PM	7.033	11.9	7.78	2.32	213		44.6
12/6/12 7:14 PM	7.067	11.9	7.78	2.31	212		43.4
12/6/12 7:16 PM	7.100	12.2	7.78	2.31	208		41.1
12/6/12 7:18 PM	7.133	11.9	7.78	2.30	207		39.9
12/6/12 7:20 PM	7.167	11.9	7.78	2.28	203		37.6
12/6/12 7:22 PM	7.200	11.9	7.79	2.28	202		36.4
12/6/12 7:24 PM	7.233	11.9	7.79	2.28	198		34.1
12/6/12 7:26 PM	7.267	11.9	7.78	2.27	197		33.0
12/6/12 7:28 PM	7.300	11.9	7.77	2.26	195		31.8
12/6/12 7:30 PM	7.333	11.9	7.78	2.26	193		30.6
12/6/12 7:32 PM	7.367	12.2	7.78	2.25	192		29.5
12/6/12 7:34 PM	7.400	11.9	7.78	2.24	190		28.3
12/6/12 7:36 PM	7.433	11.9	7.77	2.23	188		27.2
12/6/12 7:38 PM	7.467	11.9	7.77	2.23	187		26.0
12/6/12 7:40 PM	7.500	11.9	7.78	2.23	187		26.0
12/6/12 7:42 PM	7.533	11.9	7.78	2.22	183		23.7
12/6/12 7:44 PM	7.567	11.9	7.78	2.21	183		23.7
12/6/12 7:46 PM	7.600	12.2	7.78	2.20	182		22.5
12/6/12 7:48 PM	7.633	12.2	7.78	2.20	180		21.4

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 7:50 PM	7.667	11.9	7.78	2.19	180		21.4
12/6/12 7:52 PM	7.700	11.9	7.78	2.18	178		20.2
12/6/12 7:54 PM	7.733	11.9	7.78	2.18	177		19.1
12/6/12 7:56 PM	7.767	11.9	7.78	2.18	177		19.1
12/6/12 7:58 PM	7.800	11.9	7.78	2.17	175		17.9
12/6/12 8:00 PM	7.833	11.9	7.78	2.16	175		17.9
12/6/12 8:02 PM	7.867	12.2	7.78	2.15	173		16.7
12/6/12 8:04 PM	7.900	11.9	7.78	2.15	173		16.7
12/6/12 8:06 PM	7.933	12.2	7.78	2.15	173		16.7
12/6/12 8:08 PM	7.967	11.9	7.78	2.13	173		16.7
12/6/12 8:10 PM	8.000	11.9	7.78	2.13	172		15.6
12/6/12 8:12 PM	8.033	12.2	7.78	2.13	172		15.6
12/6/12 8:14 PM	8.067	11.9	7.78	2.12	170		14.4
12/6/12 8:16 PM	8.100	11.9	7.78	2.11	170		14.4
12/6/12 8:18 PM	8.133	11.9	7.78	2.11	170		14.4
12/6/12 8:20 PM	8.167	11.9	7.78	2.10	168		13.3
12/6/12 8:22 PM	8.200	11.9	7.78	2.10	168		13.3
12/6/12 8:24 PM	8.233	11.9	7.79	2.08	168		13.3
12/6/12 8:26 PM	8.267	11.9	7.78	2.07	167		12.1
12/6/12 8:28 PM	8.300	11.9	7.78	2.06	167		12.1
12/6/12 8:30 PM	8.333	11.9	7.79	2.06	167		12.1
12/6/12 8:32 PM	8.367	11.9	7.78	2.05	167		12.1
12/6/12 8:34 PM	8.400	11.9	7.78	2.04	167		12.1
12/6/12 8:36 PM	8.433	11.9	7.79	2.03	165		11.0
12/6/12 8:38 PM	8.467	11.9	7.78	2.03	165		11.0
12/6/12 8:40 PM	8.500	11.9	7.78	2.02	165		11.0
12/6/12 8:42 PM	8.533	11.9	7.78	2.01	165		11.0
12/6/12 8:44 PM	8.567	11.9	7.78	2.00	165		11.0
12/6/12 8:46 PM	8.600	11.9	7.78	1.99	163		9.82
12/6/12 8:48 PM	8.633	11.9	7.78	1.98	163		9.82
12/6/12 8:50 PM	8.667	12.2	7.78	1.97	163		9.82
12/6/12 8:52 PM	8.700	11.9	7.78	1.97	163		9.82
12/6/12 8:54 PM	8.733	11.9	7.79	1.95	163		9.82
12/6/12 8:56 PM	8.767	11.9	7.79	1.95	163		9.82
12/6/12 8:58 PM	8.800	11.9	7.78	1.95	162		8.66
12/6/12 9:00 PM	8.833	12.2	7.78	1.94	162		8.66
12/6/12 9:02 PM	8.867	12.2	7.78	1.93	162		8.66
12/6/12 9:04 PM	8.900	11.9	7.78	1.92	162		8.66
12/6/12 9:06 PM	8.933	11.9	7.78	1.92	162		8.66
12/6/12 9:08 PM	8.967	11.9	7.78	1.91	162		8.66
12/6/12 9:10 PM	9.000	11.9	7.78	1.90	162		8.66
12/6/12 9:12 PM	9.033	11.9	7.78	1.89	160		7.51
12/6/12 9:14 PM	9.067	11.9	7.79	1.89	160		7.51
12/6/12 9:16 PM	9.100	12.2	7.78	1.87	160		7.51
12/6/12 9:18 PM	9.133	12.2	7.78	1.87	160		7.51
12/6/12 9:20 PM	9.167	11.9	7.78	1.86	160		7.51
12/6/12 9:22 PM	9.200	11.9	7.78	1.86	160		7.51
12/6/12 9:24 PM	9.233	11.9	7.78	1.85	160		7.51

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 9:26 PM	9.267	11.9	7.78	1.84	158		6.35
12/6/12 9:28 PM	9.300	11.9	7.78	1.83	158		6.35
12/6/12 9:30 PM	9.333	11.9	7.78	1.82	158		6.35
12/6/12 9:32 PM	9.367	12.2	7.79	1.81	158		6.35
12/6/12 9:34 PM	9.400	11.9	7.79	1.81	158		6.35
12/6/12 9:36 PM	9.433	11.9	7.78	1.81	158		6.35
12/6/12 9:38 PM	9.467	11.9	7.78	1.79	158		6.35
12/6/12 9:40 PM	9.500	11.9	7.79	1.78	158		6.35
12/6/12 9:42 PM	9.533	11.9	7.79	1.77	158		6.35
12/6/12 9:44 PM	9.567	11.9	7.78	1.77	158		6.35
12/6/12 9:46 PM	9.600	11.9	7.79	1.76	158		6.35
12/6/12 9:48 PM	9.633	11.9	7.79	1.76	158		6.35
12/6/12 9:50 PM	9.667	11.9	7.79	1.75	158		6.35
12/6/12 9:52 PM	9.700	11.9	7.79	1.74	157		5.20
12/6/12 9:54 PM	9.733	11.9	7.79	1.74	158		6.35
12/6/12 9:56 PM	9.767	11.9	7.79	1.73	157		5.20
12/6/12 9:58 PM	9.800	11.9	7.79	1.72	157		5.20
12/6/12 10:00 PM	9.833	11.9	7.79	1.72	157		5.20
12/6/12 10:02 PM	9.867	11.9	7.79	1.71	157		5.20
12/6/12 10:04 PM	9.900	11.9	7.79	1.71	157		5.20
12/6/12 10:06 PM	9.933	11.9	7.79	1.71	157		5.20
12/6/12 10:08 PM	9.967	11.9	7.79	1.71	157		5.20
12/6/12 10:10 PM	10.000	11.9	7.78	1.71	157		5.20
12/6/12 10:12 PM	10.033	12.2	7.79	1.70	157		5.20
12/6/12 10:14 PM	10.067	11.9	7.79	1.70	157		5.20
12/6/12 10:16 PM	10.100	11.9	7.79	1.70	157		5.20
12/6/12 10:18 PM	10.133	11.9	7.79	1.70	157		5.20
12/6/12 10:20 PM	10.167	11.9	7.79	1.69	157		5.20
12/6/12 10:22 PM	10.200	11.9	7.79	1.68	157		5.20
12/6/12 10:24 PM	10.233	11.9	7.79	1.67	157		5.20
12/6/12 10:26 PM	10.267	11.9	7.79	1.67	157		5.20
12/6/12 10:28 PM	10.300	11.9	7.79	1.67	155		4.05
12/6/12 10:30 PM	10.333	11.9	7.79	1.67	157		5.20
12/6/12 10:32 PM	10.367	11.9	7.79	1.66	155		4.05
12/6/12 10:34 PM	10.400	12.2	7.79	1.66	157		5.20
12/6/12 10:36 PM	10.433	12.2	7.79	1.66	157		5.20
12/6/12 10:38 PM	10.467	11.9	7.79	1.65	155		4.05
12/6/12 10:40 PM	10.500	12.2	7.79	1.65	155		4.05
12/6/12 10:42 PM	10.533	11.9	7.79	1.65	155		4.05
12/6/12 10:44 PM	10.567	11.9	7.79	1.64	155		4.05
12/6/12 10:46 PM	10.600	12.2	7.79	1.63	155		4.05
12/6/12 10:48 PM	10.633	12.2	7.80	1.63	155		4.05
12/6/12 10:50 PM	10.667	12.2	7.80	1.63	155		4.05
12/6/12 10:52 PM	10.700	11.9	7.80	1.62	155		4.05
12/6/12 10:54 PM	10.733	11.9	7.80	1.62	155		4.05
12/6/12 10:56 PM	10.767	12.2	7.81	1.61	155		4.05
12/6/12 10:58 PM	10.800	11.9	7.79	1.61	155		4.05
12/6/12 11:00 PM	10.833	11.9	7.79	1.60	155		4.05

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/6/12 11:02 PM	10.867	11.9	7.80	1.60	155		4.05
12/6/12 11:04 PM	10.900	11.9	7.80	1.60	155		4.05
12/6/12 11:06 PM	10.933	11.9	7.80	1.59	155		4.05
12/6/12 11:08 PM	10.967	12.2	7.80	1.59	155		4.05
12/6/12 11:10 PM	11.000	12.2	7.80	1.59	155		4.05
12/6/12 11:12 PM	11.033	11.9	7.80	1.59	155		4.05
12/6/12 11:14 PM	11.067	11.9	7.79	1.58	155		4.05
12/6/12 11:16 PM	11.100	12.2	7.80	1.59	155		4.05
12/6/12 11:18 PM	11.133	12.2	7.79	1.58	155		4.05
12/6/12 11:20 PM	11.167	11.9	7.80	1.58	155		3.74
12/6/12 11:22 PM	11.200	11.9	7.80	1.56	155		3.70
12/6/12 11:24 PM	11.233	11.9	7.79	1.57	153		3.66
12/6/12 11:26 PM	11.267	11.9	7.79	1.56	153		3.62
12/6/12 11:28 PM	11.300	11.9	7.79	1.56	153		3.58
12/6/12 11:30 PM	11.333	11.9	7.80	1.55	155		3.55
12/6/12 11:32 PM	11.367	11.9	7.79	1.55	153		3.51
12/6/12 11:34 PM	11.400	11.9	7.79	1.54	155		3.47
12/6/12 11:36 PM	11.433	11.9	7.79	1.53	155		3.43
12/6/12 11:38 PM	11.467	11.9	7.80	1.53	153		3.39
12/6/12 11:40 PM	11.500	11.9	7.80	1.52	155		3.35
12/6/12 11:42 PM	11.533	11.9	7.80	1.51	155		3.32
12/6/12 11:44 PM	11.567	11.9	7.80	1.51	153		3.28
12/6/12 11:46 PM	11.600	11.9	7.80	1.51	153		3.24
12/6/12 11:48 PM	11.633	11.9	7.80	1.50	153		3.20
12/6/12 11:50 PM	11.667	12.2	7.79	1.50	153		3.16
12/6/12 11:52 PM	11.700	11.9	7.79	1.48	153		3.12
12/6/12 11:54 PM	11.733	12.2	7.79	1.49	153		3.08
12/6/12 11:56 PM	11.767	11.9	7.79	1.47	153		3.08
12/6/12 11:58 PM	11.800	11.9	7.79	1.47	153		3.08
12/7/12 12:00 AM	11.833	11.9	7.79	1.47	153		3.08
12/7/12 12:02 AM	11.867	12.2	7.79	1.46	153		3.05
12/7/12 12:04 AM	11.900	11.9	7.79	1.46	153		3.05
12/7/12 12:06 AM	11.933	11.9	7.79	1.45	153		3.01
12/7/12 12:08 AM	11.967	11.9	7.79	1.45	153		2.97
12/7/12 12:10 AM	12.000	11.9	7.79	1.44	153		2.97
12/7/12 12:12 AM	12.033	11.9	7.79	1.43	153		2.93
12/7/12 12:14 AM	12.067	12.2	7.79	1.42	153		2.89
12/7/12 12:16 AM	12.100	11.9	7.80	1.42	153		2.89
12/7/12 12:18 AM	12.133	11.9	7.80	1.41	153		2.89
12/7/12 12:20 AM	12.167	11.9	7.80	1.41	153		2.89
12/7/12 12:22 AM	12.200	11.9	7.80	1.40	153		2.85
12/7/12 12:24 AM	12.233	12.2	7.79	1.40	153		2.82
12/7/12 12:26 AM	12.267	11.9	7.79	1.40	153		2.82
12/7/12 12:28 AM	12.300	11.9	7.79	1.40	153		2.78
12/7/12 12:30 AM	12.333	11.9	7.79	1.39	153		2.78
12/7/12 12:32 AM	12.367	11.9	7.80	1.38	153		2.78
12/7/12 12:34 AM	12.400	11.9	7.79	1.38	153		2.74
12/7/12 12:36 AM	12.433	11.9	7.80	1.38	153		2.70

Sample Site No. 1 (2.01 km)							
		Measurements					***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/7/12 12:38 AM	12.467	11.9	7.80	1.37	153		2.66
12/7/12 12:40 AM	12.500	11.9	7.80	1.37	153		2.66
12/7/12 12:42 AM	12.533	11.9	7.80	1.36	153		2.66
12/7/12 12:44 AM	12.567	11.9	7.80	1.36	153		2.62
12/7/12 12:46 AM	12.600	11.9	7.79	1.35	153		2.58
12/7/12 12:48 AM	12.633	11.9	7.80	1.36	153		2.58
12/7/12 12:50 AM	12.667	11.9	7.80	1.35	152		2.55
12/7/12 12:52 AM	12.700	11.9	7.80	1.35	152		2.55
12/7/12 12:54 AM	12.733	11.9	7.80	1.35	153		2.51
12/7/12 12:56 AM	12.767	11.9	7.79	1.35	152		2.51
12/7/12 12:58 AM	12.800	11.9	7.79	1.35	153		2.51
12/7/12 1:00 AM	12.833	12.2	7.79	1.34	153		2.51
12/7/12 1:02 AM	12.867	11.9	7.80	1.33	152		2.51
12/7/12 1:04 AM	12.900	11.9	7.79	1.33	152		2.47
12/7/12 1:06 AM	12.933	11.9	7.80	1.33	152		2.43
12/7/12 1:08 AM	12.967	11.9	7.80	1.32	153		2.39
12/7/12 1:10 AM	13.000	11.9	7.80	1.32	153		2.35
12/7/12 1:12 AM	13.033	11.9	7.80	1.32	152		2.32
12/7/12 1:14 AM	13.067	11.9	7.80	1.32	152		2.28
12/7/12 1:16 AM	13.100	12.2	7.81	1.32	153		2.24
12/7/12 1:18 AM	13.133	11.9	7.81	1.31	152		2.20
12/7/12 1:20 AM	13.167	11.9	7.80	1.31	153		2.16
12/7/12 1:22 AM	13.200	11.9	7.80	1.31	152		2.16
12/7/12 1:24 AM	13.233	12.2	7.81	1.31	153		2.16
12/7/12 1:26 AM	13.267	11.9	7.80	1.31	153		2.12
12/7/12 1:28 AM	13.300	11.9	7.80	1.29	153		2.12
12/7/12 1:30 AM	13.333	11.9	7.80	1.30	153		2.09
12/7/12 1:32 AM	13.367	11.9	7.80	1.30	152		2.05
12/7/12 1:34 AM	13.400	11.9	7.80	1.29	152		2.05
12/7/12 1:36 AM	13.433	11.9	7.80	1.29	152		2.05
12/7/12 1:38 AM	13.467	11.9	7.80	1.29	152		2.05
12/7/12 1:40 AM	13.500	11.9	7.80	1.29	152		2.01
12/7/12 1:42 AM	13.533	11.9	7.79	1.29	152		1.97
12/7/12 1:44 AM	13.567	11.9	7.79	1.29	152		1.97
12/7/12 1:46 AM	13.600	11.9	7.80	1.29	152		1.97
12/7/12 1:48 AM	13.633	11.9	7.80	1.29	152		1.93
12/7/12 1:50 AM	13.667	11.9	7.80	1.29	152		1.93
12/7/12 1:52 AM	13.700	11.9	7.80	1.29	152		1.89
12/7/12 1:54 AM	13.733	11.9	7.80	1.29	152		1.89
12/7/12 1:56 AM	13.767	11.9	7.80	1.29	152		1.85
12/7/12 1:58 AM	13.800	11.9	7.79	1.29	152		1.82
12/7/12 2:00 AM	13.833	11.9	7.80	1.29	152		1.78
12/7/12 2:02 AM	13.867	11.9	7.80	1.28	152		1.74
12/7/12 2:04 AM	13.900	11.9	7.79	1.28	152		1.74
12/7/12 2:06 AM	13.933	11.9	7.79	1.28	152		1.74
12/7/12 2:08 AM	13.967	11.9	7.80	1.27	152		1.74
12/7/12 2:10 AM	14.000	11.9	7.80	1.27	152		1.74
12/7/12 2:12 AM	14.033	11.9	7.80	1.27	152		1.74

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/7/12 2:14 AM	14.067	12.2	7.80	1.26	152		1.74
12/7/12 2:16 AM	14.100	11.9	7.79	1.27	152		1.74
12/7/12 2:18 AM	14.133	12.2	7.79	1.26	152		1.74
12/7/12 2:20 AM	14.167	12.2	7.79	1.27	152		1.74
12/7/12 2:22 AM	14.200	11.9	7.79	1.26	152		1.74
12/7/12 2:24 AM	14.233	11.9	7.79	1.26	152		1.74
12/7/12 2:26 AM	14.267	11.9	7.79	1.26	152		1.74
12/7/12 2:28 AM	14.300	11.9	7.80	1.26	152		1.74
12/7/12 2:30 AM	14.333	11.9	7.80	1.25	152		1.74
12/7/12 2:32 AM	14.367	11.9	7.80	1.25	152		1.74
12/7/12 2:34 AM	14.400	12.2	7.80	1.25	152		1.74
12/7/12 2:36 AM	14.433	12.2	7.80	1.26	152		1.74
12/7/12 2:38 AM	14.467	12.2	7.80	1.26	152		1.74
12/7/12 2:40 AM	14.500	11.9	7.79	1.26	152		1.74
12/7/12 2:42 AM	14.533	11.9	7.80	1.25	152		1.74
12/7/12 2:44 AM	14.567	12.2	7.80	1.25	152		1.74
12/7/12 2:46 AM	14.600	11.9	7.79	1.25	152		1.74
12/7/12 2:48 AM	14.633	12.2	7.80	1.25	152		1.74
12/7/12 2:50 AM	14.667	12.2	7.80	1.25	152		1.74
12/7/12 2:52 AM	14.700	11.9	7.80	1.25	152		1.74
12/7/12 2:54 AM	14.733	12.2	7.80	1.25	152		1.74
12/7/12 2:56 AM	14.767	11.9	7.80	1.25	152		1.74
12/7/12 2:58 AM	14.800	12.2	7.80	1.25	152		1.74
12/7/12 3:00 AM	14.833	11.9	7.81	1.25	152		1.74
12/7/12 3:02 AM	14.867	11.9	7.81	1.24	152		1.74
12/7/12 3:04 AM	14.900	12.2	7.80	1.24	152		1.74
12/7/12 3:06 AM	14.933	11.9	7.80	1.24	152		1.74
12/7/12 3:08 AM	14.967	11.9	7.81	1.24	152		1.74
12/7/12 3:10 AM	15.000	11.9	7.80	1.24	152		1.74
12/7/12 3:12 AM	15.033	11.9	7.81	1.24	152		1.74
12/7/12 3:14 AM	15.067	11.9	7.80	1.24	152		1.74
12/7/12 3:16 AM	15.100	12.2	7.80	1.24	152		1.74
12/7/12 3:18 AM	15.133	11.9	7.80	1.24	152		1.74
12/7/12 3:20 AM	15.167	11.9	7.80	1.23	152		1.74
12/7/12 3:22 AM	15.200	11.9	7.80	1.23	152		1.74
12/7/12 3:24 AM	15.233	11.9	7.81	1.23	152		1.74
12/7/12 3:26 AM	15.267	11.9	7.80	1.23	152		1.74
12/7/12 3:28 AM	15.300	12.2	7.80	1.23	152		1.74
12/7/12 3:30 AM	15.333	11.9	7.80	1.23	152		1.74
12/7/12 3:32 AM	15.367	12.2	7.81	1.24	152		1.74
12/7/12 3:34 AM	15.400	12.2	7.81	1.24	152		1.74
12/7/12 3:36 AM	15.433	11.9	7.80	1.24	152		1.74
12/7/12 3:38 AM	15.467	11.9	7.81	1.24	152		1.74
12/7/12 3:40 AM	15.500	11.9	7.81	1.24	152		1.74
12/7/12 3:42 AM	15.533	11.9	7.81	1.24	152		1.74
12/7/12 3:44 AM	15.567	11.9	7.80	1.24	152		1.74
12/7/12 3:46 AM	15.600	11.9	7.81	1.24	152		1.74
12/7/12 3:48 AM	15.633	12.2	7.81	1.24	152		1.74

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/7/12 3:50 AM	15.667	12.2	7.81	1.25	152		1.74
12/7/12 3:52 AM	15.700	11.9	7.82	1.24	152		1.74
12/7/12 3:54 AM	15.733	12.2	7.81	1.25	152		1.74
12/7/12 3:56 AM	15.767	12.2	7.81	1.25	152		1.74
12/7/12 3:58 AM	15.800	11.9	7.80	1.25	152		1.74
12/7/12 4:00 AM	15.833	11.9	7.81	1.26	152		1.74
12/7/12 4:02 AM	15.867	11.9	7.81	1.26	152		1.74
12/7/12 4:04 AM	15.900	11.9	7.81	1.26	152		1.74
12/7/12 4:06 AM	15.933	12.2	7.81	1.27	152		1.74
12/7/12 4:08 AM	15.967	11.9	7.81	1.27	152		1.74
12/7/12 4:10 AM	16.000	12.2	7.81	1.27	152		1.74
12/7/12 4:12 AM	16.033	11.9	7.81	1.28	152		1.74
12/7/12 4:14 AM	16.067	11.9	7.81	1.28	152		1.74
12/7/12 4:16 AM	16.100	11.9	7.81	1.29	152		1.74
12/7/12 4:18 AM	16.133	11.9	7.81	1.29	152		1.74
12/7/12 4:20 AM	16.167	11.9	7.81	1.29	152		1.74
12/7/12 4:22 AM	16.200	11.9	7.81	1.29	152		1.74
12/7/12 4:24 AM	16.233	11.9	7.81	1.30	152		1.74
12/7/12 4:26 AM	16.267	11.9	7.81	1.30	152		1.74
12/7/12 4:28 AM	16.300	11.9	7.81	1.30	152		1.74
12/7/12 4:30 AM	16.333	11.9	7.81	1.31	152		1.70
12/7/12 4:32 AM	16.367	11.9	7.81	1.31	152		1.66
12/7/12 4:34 AM	16.400	11.9	7.82	1.31	152		1.66
12/7/12 4:36 AM	16.433	11.9	7.82	1.32	152		1.66
12/7/12 4:38 AM	16.467	11.9	7.81	1.33	152		1.66
12/7/12 4:40 AM	16.500	11.9	7.81	1.33	152		1.66
12/7/12 4:42 AM	16.533	11.9	7.81	1.33	152		1.66
12/7/12 4:44 AM	16.567	11.9	7.81	1.34	152		1.66
12/7/12 4:46 AM	16.600	11.9	7.81	1.34	152		1.62
12/7/12 4:48 AM	16.633	11.9	7.81	1.34	152		1.62
12/7/12 4:50 AM	16.667	11.9	7.81	1.35	152		1.62
12/7/12 4:52 AM	16.700	11.9	7.81	1.35	152		1.62
12/7/12 4:54 AM	16.733	11.9	7.81	1.36	152		1.62
12/7/12 4:56 AM	16.767	11.9	7.82	1.36	152		1.62
12/7/12 4:58 AM	16.800	11.9	7.81	1.37	150		1.62
12/7/12 5:00 AM	16.833	11.9	7.81	1.37	150		1.62
12/7/12 5:02 AM	16.867	11.9	7.82	1.38	152		1.59
12/7/12 5:04 AM	16.900	12.2	7.82	1.38	152		1.59
12/7/12 5:06 AM	16.933	11.9	7.81	1.39	152		1.59
12/7/12 5:08 AM	16.967	11.9	7.82	1.39	152		1.59
12/7/12 5:10 AM	17.000	11.9	7.82	1.40	152		1.59
12/7/12 5:12 AM	17.033	11.9	7.83	1.41	152		1.59
12/7/12 5:14 AM	17.067	11.9	7.83	1.41	150		1.59
12/7/12 5:16 AM	17.100	11.9	7.83	1.42	152		1.59
12/7/12 5:18 AM	17.133	11.9	7.84	1.42	152		1.55
12/7/12 5:20 AM	17.167	11.9	7.83	1.43	152		1.51
12/7/12 5:22 AM	17.200	11.9	7.83	1.43	152		1.51
12/7/12 5:24 AM	17.233	11.9	7.84	1.44	152		1.47

Sample Site No. 1 (2.01 km)							
		Measurements					*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1		mg L-1
12/7/12 5:26 AM	17.267	11.9	7.84	1.44	152		1.47
12/7/12 5:28 AM	17.300	11.9	7.83	1.45	152		1.47
12/7/12 5:30 AM	17.333	11.9	7.83	1.45	150		1.47
12/7/12 5:32 AM	17.367	11.9	7.83	1.45	152		1.51
12/7/12 5:34 AM	17.400	11.9	7.83	1.46	152		1.50
12/7/12 5:36 AM	17.433	11.9	7.83	1.47	152		1.49
12/7/12 5:38 AM	17.467	11.9	7.83	1.47	152		1.48
12/7/12 5:40 AM	17.500	11.9	7.83	1.48	152		1.47
12/7/12 5:42 AM	17.533	11.9	7.83	1.48	152		1.46
12/7/12 5:44 AM	17.567	11.9	7.83	1.48	152		1.45
12/7/12 5:46 AM	17.600	11.9	7.83	1.49	150		1.49
12/7/12 5:48 AM	17.633	11.9	7.83	1.50	150		1.48
12/7/12 5:50 AM	17.667	11.9	7.83	1.50	152		1.46
12/7/12 5:52 AM	17.700	11.9	7.83	1.51	150		1.45
12/7/12 5:54 AM	17.733	11.9	7.84	1.51	152		1.44
12/7/12 5:56 AM	17.767	11.9	7.83	1.51	152		1.42
12/7/12 5:58 AM	17.800	11.9	7.84	1.51	150		1.40
12/7/12 6:00 AM	17.833	11.9	7.84	1.52	152		1.38

Table B.2.2 Field measured parameters and calculated bromide concentrations at 5.04 km.

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	°C	µS cm-1		mg L-1
12/6/12 10:56 AM	-	13.1	3.94	239		-
12/6/12 10:58 AM	-	13.4	3.92	239		-
12/6/12 11:00 AM	-	13.4	3.92	240		-
12/6/12 11:02 AM	-	13.4	3.91	239		-
12/6/12 11:04 AM	-	13.4	3.91	239		-
12/6/12 11:06 AM	-	13.4	3.91	238		-
12/6/12 11:08 AM	-	13.4	3.92	239		-
12/6/12 11:10 AM	-	13.4	3.92	239		-
12/6/12 11:12 AM	-	13.4	3.91	239		-
12/6/12 11:14 AM	-	13.4	3.92	239		-
12/6/12 11:16 AM	-	13.4	3.92	239		-
12/6/12 11:18 AM	-	13.4	3.93	239		-
12/6/12 11:20 AM	-	13.4	3.93	239		-
12/6/12 11:22 AM	-	13.4	3.94	239		-
12/6/12 11:24 AM	-	13.4	3.95	239		-
12/6/12 11:26 AM	-	13.4	3.95	238		-
12/6/12 11:28 AM	-	13.4	3.95	239		-
12/6/12 11:30 AM	-	13.4	3.96	239		-
12/6/12 11:32 AM	-	13.4	3.96	239		-
12/6/12 11:34 AM	-	13.4	3.95	239		-
12/6/12 11:36 AM	-	13.4	3.96	239		-

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 11:38 AM	-	13.4	3.96	239		-
12/6/12 11:40 AM	-	13.4	3.97	239		-
12/6/12 11:42 AM	-	13.4	3.98	239		-
12/6/12 11:44 AM	-	13.4	3.98	239		-
12/6/12 11:46 AM	-	13.4	3.98	239		-
12/6/12 11:48 AM	-	13.4	3.99	239		-
12/6/12 11:50 AM	-	13.4	3.99	239		-
12/6/12 11:52 AM	-	13.4	4.0	239		-
12/6/12 11:54 AM	-	13.4	4.01	239		-
12/6/12 11:56 AM	-	13.4	4.01	239		-
12/6/12 11:58 AM	-	13.4	4.02	239		-
12/6/12 12:00 PM	-	13.4	4.02	239		-
12/6/12 12:02 PM	-	13.4	4.03	239		-
12/6/12 12:04 PM	-	13.4	4.04	239		-
12/6/12 12:06 PM	-	13.4	4.04	239		-
12/6/12 12:08 PM	-	13.4	4.05	239		-
12/6/12 12:10 PM	0.000	13.4	4.05	239		0.027
12/6/12 12:12 PM	0.033	13.4	4.05	239		0.027
12/6/12 12:14 PM	0.067	13.4	4.06	239		0.027
12/6/12 12:16 PM	0.100	13.4	4.07	239		0.027
12/6/12 12:18 PM	0.133	13.4	4.07	239		0.027
12/6/12 12:20 PM	0.167	13.4	4.08	239		0.027
12/6/12 12:22 PM	0.200	13.4	4.08	239		0.027
12/6/12 12:24 PM	0.233	13.4	4.08	239		0.027
12/6/12 12:26 PM	0.267	13.4	4.08	239		0.027
12/6/12 12:28 PM	0.300	13.4	4.09	239		0.027
12/6/12 12:30 PM	0.333	13.4	4.09	239		0.027
12/6/12 12:32 PM	0.367	13.4	4.09	239		0.027
12/6/12 12:34 PM	0.400	13.4	4.1	239		0.027
12/6/12 12:36 PM	0.433	13.4	4.1	239		0.027
12/6/12 12:38 PM	0.467	13.4	4.1	239		0.027
12/6/12 12:40 PM	0.500	13.4	4.11	239		0.027
12/6/12 12:42 PM	0.533	13.4	4.12	239		0.027
12/6/12 12:44 PM	0.567	13.4	4.13	239		0.027
12/6/12 12:46 PM	0.600	13.4	4.14	239		0.027
12/6/12 12:48 PM	0.633	13.4	4.14	239		0.027
12/6/12 12:50 PM	0.667	13.7	4.15	239		0.027
12/6/12 12:52 PM	0.700	13.4	4.16	239		0.027
12/6/12 12:54 PM	0.733	13.7	4.16	239		0.027
12/6/12 12:56 PM	0.767	13.4	4.17	239		0.027
12/6/12 12:58 PM	0.800	13.7	4.17	239		0.027
12/6/12 1:00 PM	0.833	13.7	4.18	239		0.027
12/6/12 1:02 PM	0.867	13.7	4.18	239		0.027
12/6/12 1:04 PM	0.900	13.7	4.19	239		0.027
12/6/12 1:06 PM	0.933	13.4	4.2	239		0.027
12/6/12 1:08 PM	0.967	13.7	4.19	239		0.027
12/6/12 1:10 PM	1.000	13.7	4.2	239		0.027
12/6/12 1:12 PM	1.033	13.7	4.21	239		0.027
12/6/12 1:14 PM	1.067	13.7	4.21	240		0.027
12/6/12 1:16 PM	1.100	13.7	4.21	239		0.027

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 1:18 PM	1.133	13.7	4.22	239		0.027
12/6/12 1:20 PM	1.167	13.7	4.22	239		0.027
12/6/12 1:22 PM	1.200	13.7	4.23	239		0.027
12/6/12 1:24 PM	1.233	13.7	4.24	239		0.027
12/6/12 1:26 PM	1.267	13.7	4.24	239		0.027
12/6/12 1:28 PM	1.300	13.7	4.24	239		0.027
12/6/12 1:30 PM	1.333	13.7	4.25	239		0.027
12/6/12 1:32 PM	1.367	13.7	4.26	239		0.027
12/6/12 1:34 PM	1.400	13.7	4.26	239		0.027
12/6/12 1:36 PM	1.433	13.7	4.26	239		0.027
12/6/12 1:38 PM	1.467	13.7	4.26	239		0.027
12/6/12 1:40 PM	1.500	13.7	4.26	239		0.027
12/6/12 1:42 PM	1.533	13.7	4.26	239		0.027
12/6/12 1:44 PM	1.567	13.7	4.27	239		0.027
12/6/12 1:46 PM	1.600	13.7	4.27	239		0.027
12/6/12 1:48 PM	1.633	13.7	4.27	239		0.000
12/6/12 1:50 PM	1.667	13.7	4.27	239		0.000
12/6/12 1:52 PM	1.700	13.7	4.27	239		0.000
12/6/12 1:54 PM	1.733	13.7	4.28	239		0.000
12/6/12 1:56 PM	1.767	13.7	4.29	239		0.000
12/6/12 1:58 PM	1.800	13.7	4.29	239		0.027
12/6/12 2:00 PM	1.833	13.7	4.29	239		0.027
12/6/12 2:02 PM	1.867	13.7	4.29	239		0.027
12/6/12 2:04 PM	1.900	13.7	4.3	239		0.027
12/6/12 2:06 PM	1.933	13.7	4.31	239		0.027
12/6/12 2:08 PM	1.967	13.7	4.3	239		0.027
12/6/12 2:10 PM	2.000	13.7	4.3	239		0.027
12/6/12 2:12 PM	2.033	13.7	4.3	239		0.027
12/6/12 2:14 PM	2.067	13.7	4.3	239		0.027
12/6/12 2:16 PM	2.100	13.7	4.3	239		0.027
12/6/12 2:18 PM	2.133	13.7	4.31	239		0.054
12/6/12 2:20 PM	2.167	13.7	4.3	239		0.054
12/6/12 2:22 PM	2.200	13.7	4.3	239		0.054
12/6/12 2:24 PM	2.233	13.7	4.29	239		0.054
12/6/12 2:26 PM	2.267	13.7	4.29	240		0.054
12/6/12 2:28 PM	2.300	13.7	4.28	239		0.054
12/6/12 2:30 PM	2.333	13.7	4.27	239		0.080
12/6/12 2:32 PM	2.367	13.7	4.27	239		0.107
12/6/12 2:34 PM	2.400	13.7	4.27	239		0.107
12/6/12 2:36 PM	2.433	13.7	4.25	239		0.107
12/6/12 2:38 PM	2.467	13.7	4.25	239		0.107
12/6/12 2:40 PM	2.500	13.7	4.25	239		0.107
12/6/12 2:42 PM	2.533	13.7	4.25	239		0.107
12/6/12 2:44 PM	2.567	13.7	4.25	239		0.107
12/6/12 2:46 PM	2.600	13.7	4.26	240		0.107
12/6/12 2:48 PM	2.633	13.7	4.25	239		0.107
12/6/12 2:50 PM	2.667	13.7	4.25	239		0.107
12/6/12 2:52 PM	2.700	13.7	4.25	239		0.107
12/6/12 2:54 PM	2.733	13.7	4.25	239		0.134
12/6/12 2:56 PM	2.767	13.7	4.25	239		0.134

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 2:58 PM	2.800	13.7	4.24	240		0.134
12/6/12 3:00 PM	2.833	13.7	4.24	240		0.134
12/6/12 3:02 PM	2.867	13.7	4.23	239		0.134
12/6/12 3:04 PM	2.900	13.7	4.23	239		0.134
12/6/12 3:06 PM	2.933	13.7	4.23	239		0.134
12/6/12 3:08 PM	2.967	13.7	4.23	239		0.161
12/6/12 3:10 PM	3.000	13.7	4.23	239		0.161
12/6/12 3:12 PM	3.033	13.7	4.23	239		0.161
12/6/12 3:14 PM	3.067	13.7	4.22	239		0.161
12/6/12 3:16 PM	3.100	13.7	4.21	239		0.161
12/6/12 3:18 PM	3.133	13.7	4.2	239		0.161
12/6/12 3:20 PM	3.167	13.7	4.19	239		0.134
12/6/12 3:22 PM	3.200	13.7	4.18	240		0.134
12/6/12 3:24 PM	3.233	13.7	4.17	239		0.134
12/6/12 3:26 PM	3.267	13.7	4.15	239		0.134
12/6/12 3:28 PM	3.300	13.7	4.14	240		0.134
12/6/12 3:30 PM	3.333	13.7	4.12	239		0.161
12/6/12 3:32 PM	3.367	13.7	4.11	239		0.134
12/6/12 3:34 PM	3.400	13.7	4.09	239		0.107
12/6/12 3:36 PM	3.433	13.7	4.08	240		0.134
12/6/12 3:38 PM	3.467	13.7	4.06	239		0.134
12/6/12 3:40 PM	3.500	13.7	4.04	239		0.134
12/6/12 3:42 PM	3.533	13.7	4.03	239		0.134
12/6/12 3:44 PM	3.567	13.7	4.01	239		0.134
12/6/12 3:46 PM	3.600	13.7	4	239		0.134
12/6/12 3:48 PM	3.633	13.7	3.99	239		0.134
12/6/12 3:50 PM	3.667	13.7	3.98	239		0.134
12/6/12 3:52 PM	3.700	13.7	3.97	239		0.161
12/6/12 3:54 PM	3.733	13.7	3.96	239		0.161
12/6/12 3:56 PM	3.767	13.7	3.95	239		0.134
12/6/12 3:58 PM	3.800	13.7	3.94	240		0.161
12/6/12 4:00 PM	3.833	13.7	3.93	239		0.188
12/6/12 4:02 PM	3.867	13.7	3.92	239		0.161
12/6/12 4:04 PM	3.900	13.7	3.91	240		0.161
12/6/12 4:06 PM	3.933	13.7	3.9	239		0.161
12/6/12 4:08 PM	3.967	13.7	3.89	239		0.188
12/6/12 4:10 PM	4.000	13.7	3.88	239		0.161
12/6/12 4:12 PM	4.033	13.7	3.87	239		0.188
12/6/12 4:14 PM	4.067	13.7	3.86	239		0.188
12/6/12 4:16 PM	4.100	13.7	3.85	239		0.214
12/6/12 4:18 PM	4.133	13.7	3.84	239		0.241
12/6/12 4:20 PM	4.167	13.7	3.83	240		0.268
12/6/12 4:22 PM	4.200	13.7	3.82	239		0.295
12/6/12 4:24 PM	4.233	13.7	3.81	239		0.322
12/6/12 4:26 PM	4.267	13.7	3.8	240		0.348
12/6/12 4:28 PM	4.300	13.7	3.78	240		0.348
12/6/12 4:30 PM	4.333	13.7	3.77	239		0.375
12/6/12 4:32 PM	4.367	13.7	3.76	239		0.375
12/6/12 4:34 PM	4.400	13.7	3.74	239		0.375
12/6/12 4:36 PM	4.433	13.7	3.73	240		0.375

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 4:38 PM	4.467	13.7	3.72	239		0.348
12/6/12 4:40 PM	4.500	13.7	3.71	240		0.375
12/6/12 4:42 PM	4.533	13.7	3.69	239		0.402
12/6/12 4:44 PM	4.567	13.7	3.68	240		0.402
12/6/12 4:46 PM	4.600	13.7	3.66	240		0.402
12/6/12 4:48 PM	4.633	13.7	3.65	240		0.402
12/6/12 4:50 PM	4.667	13.7	3.63	240		0.402
12/6/12 4:52 PM	4.700	13.7	3.62	240		0.429
12/6/12 4:54 PM	4.733	13.7	3.61	240		0.429
12/6/12 4:56 PM	4.767	13.7	3.59	239		0.429
12/6/12 4:58 PM	4.800	13.7	3.58	240		0.456
12/6/12 5:00 PM	4.833	13.7	3.57	240		0.456
12/6/12 5:02 PM	4.867	13.7	3.55	239		0.429
12/6/12 5:04 PM	4.900	13.7	3.54	239		0.456
12/6/12 5:06 PM	4.933	13.7	3.52	239		0.456
12/6/12 5:08 PM	4.967	13.7	3.51	240		0.456
12/6/12 5:10 PM	5.000	13.7	3.49	240		0.456
12/6/12 5:12 PM	5.033	13.7	3.48	239		0.456
12/6/12 5:14 PM	5.067	13.7	3.46	239		0.429
12/6/12 5:16 PM	5.100	13.7	3.45	239		0.429
12/6/12 5:18 PM	5.133	13.7	3.44	239		0.429
12/6/12 5:20 PM	5.167	13.7	3.43	240		0.429
12/6/12 5:22 PM	5.200	13.7	3.41	240		0.402
12/6/12 5:24 PM	5.233	13.7	3.39	239		0.375
12/6/12 5:26 PM	5.267	13.7	3.38	240		0.348
12/6/12 5:28 PM	5.300	13.7	3.36	240		0.348
12/6/12 5:30 PM	5.333	13.7	3.35	239		0.348
12/6/12 5:32 PM	5.367	13.7	3.34	240		0.322
12/6/12 5:34 PM	5.400	13.7	3.32	239		0.295
12/6/12 5:36 PM	5.433	13.7	3.31	239		0.322
12/6/12 5:38 PM	5.467	13.7	3.3	240		0.322
12/6/12 5:40 PM	5.500	13.7	3.28	239		0.322
12/6/12 5:42 PM	5.533	13.7	3.27	239		0.295
12/6/12 5:44 PM	5.567	13.7	3.25	239		0.268
12/6/12 5:46 PM	5.600	13.7	3.24	240		0.268
12/6/12 5:48 PM	5.633	13.7	3.23	240		0.268
12/6/12 5:50 PM	5.667	13.7	3.21	239		0.268
12/6/12 5:52 PM	5.700	13.7	3.19	239		0.268
12/6/12 5:54 PM	5.733	13.7	3.18	239		0.241
12/6/12 5:56 PM	5.767	13.7	3.17	240		0.214
12/6/12 5:58 PM	5.800	13.7	3.15	239		0.214
12/6/12 6:00 PM	5.833	13.7	3.14	239		0.188
12/6/12 6:02 PM	5.867	13.7	3.12	239		0.161
12/6/12 6:04 PM	5.900	13.7	3.11	240		0.161
12/6/12 6:06 PM	5.933	13.7	3.1	239		0.134
12/6/12 6:08 PM	5.967	13.7	3.08	239		0.161
12/6/12 6:10 PM	6.000	13.7	3.07	239		0.188
12/6/12 6:12 PM	6.033	13.7	3.06	239		0.161
12/6/12 6:14 PM	6.067	13.7	3.04	239		0.161
12/6/12 6:16 PM	6.100	13.7	3.03	239		0.188

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 6:18 PM	6.133	13.7	3.02	239		0.188
12/6/12 6:20 PM	6.167	13.7	3.01	239		0.161
12/6/12 6:22 PM	6.200	13.7	2.99	239		0.134
12/6/12 6:24 PM	6.233	13.7	2.98	239		0.134
12/6/12 6:26 PM	6.267	13.7	2.97	239		0.161
12/6/12 6:28 PM	6.300	13.7	2.96	239		0.161
12/6/12 6:30 PM	6.333	13.7	2.94	239		0.134
12/6/12 6:32 PM	6.367	13.7	2.93	239		0.134
12/6/12 6:34 PM	6.400	13.7	2.92	239		0.134
12/6/12 6:36 PM	6.433	13.7	2.91	240		0.161
12/6/12 6:38 PM	6.467	13.7	2.89	240		0.134
12/6/12 6:40 PM	6.500	13.7	2.88	239		0.134
12/6/12 6:42 PM	6.533	13.7	2.86	239		0.134
12/6/12 6:44 PM	6.567	13.7	2.86	240		0.134
12/6/12 6:46 PM	6.600	13.7	2.84	239		0.161
12/6/12 6:48 PM	6.633	13.7	2.83	239		0.161
12/6/12 6:50 PM	6.667	13.7	2.82	239		0.161
12/6/12 6:52 PM	6.700	13.7	2.81	239		0.161
12/6/12 6:54 PM	6.733	13.7	2.8	240		0.161
12/6/12 6:56 PM	6.767	13.7	2.78	239		0.161
12/6/12 6:58 PM	6.800	13.7	2.77	239		0.188
12/6/12 7:00 PM	6.833	13.7	2.76	239		0.188
12/6/12 7:02 PM	6.867	13.7	2.75	239		0.188
12/6/12 7:04 PM	6.900	13.7	2.74	240		0.188
12/6/12 7:06 PM	6.933	13.7	2.72	239		0.188
12/6/12 7:08 PM	6.967	13.7	2.71	239		0.188
12/6/12 7:10 PM	7.000	13.7	2.7	239		0.188
12/6/12 7:12 PM	7.033	13.7	2.69	239		0.161
12/6/12 7:14 PM	7.067	13.7	2.68	240		0.188
12/6/12 7:16 PM	7.100	13.7	2.66	239		0.188
12/6/12 7:18 PM	7.133	13.7	2.65	239		0.161
12/6/12 7:20 PM	7.167	13.7	2.64	239		0.161
12/6/12 7:22 PM	7.200	13.7	2.63	239		0.161
12/6/12 7:24 PM	7.233	13.7	2.61	239		0.161
12/6/12 7:26 PM	7.267	13.7	2.61	240		0.161
12/6/12 7:28 PM	7.300	13.7	2.59	239		0.134
12/6/12 7:30 PM	7.333	13.7	2.58	239		0.134
12/6/12 7:32 PM	7.367	13.7	2.57	239		0.134
12/6/12 7:34 PM	7.400	13.7	2.56	239		0.134
12/6/12 7:36 PM	7.433	13.7	2.55	239		0.134
12/6/12 7:38 PM	7.467	13.7	2.55	240		0.107
12/6/12 7:40 PM	7.500	13.7	2.53	239		0.107
12/6/12 7:42 PM	7.533	13.7	2.53	240		0.107
12/6/12 7:44 PM	7.567	13.7	2.52	239		0.107
12/6/12 7:46 PM	7.600	13.7	2.51	239		0.107
12/6/12 7:48 PM	7.633	13.7	2.5	239		0.080
12/6/12 7:50 PM	7.667	13.7	2.49	239		0.080
12/6/12 7:52 PM	7.700	13.7	2.48	239		0.080
12/6/12 7:54 PM	7.733	13.7	2.47	239		0.080
12/6/12 7:56 PM	7.767	13.7	2.46	239		0.080

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 7:58 PM	7.800	13.7	2.46	239		0.080
12/6/12 8:00 PM	7.833	13.7	2.44	239		0.054
12/6/12 8:02 PM	7.867	13.7	2.43	239		0.054
12/6/12 8:04 PM	7.900	13.7	2.43	239		0.054
12/6/12 8:06 PM	7.933	13.7	2.41	239		0.054
12/6/12 8:08 PM	7.967	13.7	2.41	239		0.054
12/6/12 8:10 PM	8.000	13.7	2.4	239		0.054
12/6/12 8:12 PM	8.033	13.7	2.39	239		0.027
12/6/12 8:14 PM	8.067	13.7	2.38	239		0.027
12/6/12 8:16 PM	8.100	13.7	2.38	239		0.000
12/6/12 8:18 PM	8.133	13.7	2.37	239		0.000
12/6/12 8:20 PM	8.167	13.7	2.35	239		0.000
12/6/12 8:22 PM	8.200	13.7	2.34	239		0.000
12/6/12 8:24 PM	8.233	13.7	2.34	239		0.000
12/6/12 8:26 PM	8.267	13.7	2.33	239		0.000
12/6/12 8:28 PM	8.300	13.7	2.32	239		0.000
12/6/12 8:30 PM	8.333	13.7	2.31	239		0.000
12/6/12 8:32 PM	8.367	13.7	2.3	239		0.000
12/6/12 8:34 PM	8.400	13.7	2.29	239		0.000
12/6/12 8:36 PM	8.433	13.7	2.29	239		0.000
12/6/12 8:38 PM	8.467	13.7	2.28	239		0.000
12/6/12 8:40 PM	8.500	13.7	2.27	239		0.000
12/6/12 8:42 PM	8.533	13.7	2.26	239		0.000
12/6/12 8:44 PM	8.567	13.7	2.25	239		0.000
12/6/12 8:46 PM	8.600	13.7	2.24	239		0.000
12/6/12 8:48 PM	8.633	13.7	2.23	239		0.000
12/6/12 8:50 PM	8.667	13.7	2.22	239		0.000
12/6/12 8:52 PM	8.700	13.7	2.21	239		0.000
12/6/12 8:54 PM	8.733	13.7	2.21	239		0.000
12/6/12 8:56 PM	8.767	13.7	2.2	239		0.027
12/6/12 8:58 PM	8.800	13.7	2.19	239		0.027
12/6/12 9:00 PM	8.833	13.7	2.18	239		0.027
12/6/12 9:02 PM	8.867	13.7	2.17	239		0.027
12/6/12 9:04 PM	8.900	13.7	2.16	239		0.027
12/6/12 9:06 PM	8.933	13.7	2.16	239		0.027
12/6/12 9:08 PM	8.967	13.7	2.15	239		0.027
12/6/12 9:10 PM	9.000	13.7	2.14	239		0.054
12/6/12 9:12 PM	9.033	13.7	2.13	239		0.054
12/6/12 9:14 PM	9.067	13.7	2.12	238		0.054
12/6/12 9:16 PM	9.100	13.7	2.12	239		0.054
12/6/12 9:18 PM	9.133	14.0	2.11	239		0.054
12/6/12 9:20 PM	9.167	13.7	2.1	239		0.054
12/6/12 9:22 PM	9.200	13.7	2.09	239		0.054
12/6/12 9:24 PM	9.233	13.7	2.09	240		0.054
12/6/12 9:26 PM	9.267	14.0	2.08	238		0.054
12/6/12 9:28 PM	9.300	13.7	2.07	239		0.054
12/6/12 9:30 PM	9.333	13.7	2.07	239		0.054
12/6/12 9:32 PM	9.367	13.7	2.06	239		0.054
12/6/12 9:34 PM	9.400	13.7	2.05	239		0.054
12/6/12 9:36 PM	9.433	13.7	2.05	239		0.054

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 9:38 PM	9.467	14.0	2.05	240		0.054
12/6/12 9:40 PM	9.500	13.7	2.04	239		0.054
12/6/12 9:42 PM	9.533	13.7	2.03	239		0.054
12/6/12 9:44 PM	9.567	13.7	2.03	239		0.054
12/6/12 9:46 PM	9.600	13.7	2.02	239		0.054
12/6/12 9:48 PM	9.633	13.7	2.02	239		0.054
12/6/12 9:50 PM	9.667	13.7	2.02	239		0.054
12/6/12 9:52 PM	9.700	13.7	2.01	239		0.054
12/6/12 9:54 PM	9.733	13.7	2	239		0.054
12/6/12 9:56 PM	9.767	13.7	2	239		0.054
12/6/12 9:58 PM	9.800	13.7	1.99	239		0.027
12/6/12 10:00 PM	9.833	13.7	1.99	239		0.027
12/6/12 10:02 PM	9.867	13.7	1.98	238		0.027
12/6/12 10:04 PM	9.900	13.7	1.98	239		0.027
12/6/12 10:06 PM	9.933	13.7	1.97	239		0.027
12/6/12 10:08 PM	9.967	14.0	1.97	239		0.027
12/6/12 10:10 PM	10.000	14.0	1.96	239		0.027
12/6/12 10:12 PM	10.033	13.7	1.96	239		0.000
12/6/12 10:14 PM	10.067	13.7	1.95	239		0.000
12/6/12 10:16 PM	10.100	13.7	1.95	239		0.000
12/6/12 10:18 PM	10.133	13.7	1.94	239		0.000
12/6/12 10:20 PM	10.167	13.7	1.93	238		0.000
12/6/12 10:22 PM	10.200	13.7	1.92	239		0.000
12/6/12 10:24 PM	10.233	14.0	1.92	239		0.000
12/6/12 10:26 PM	10.267	13.7	1.91	239		0.000
12/6/12 10:28 PM	10.300	14.0	1.9	239		0.000
12/6/12 10:30 PM	10.333	13.7	1.9	239		0.000
12/6/12 10:32 PM	10.367	14.0	1.89	239		0.000
12/6/12 10:34 PM	10.400	13.7	1.89	239		0.000
12/6/12 10:36 PM	10.433	13.7	1.89	239		0.000
12/6/12 10:38 PM	10.467	13.7	1.88	239		0.000
12/6/12 10:40 PM	10.500	14.0	1.88	239		0.000
12/6/12 10:42 PM	10.533	14.0	1.87	239		0.000
12/6/12 10:44 PM	10.567	14.0	1.87	239		0.000
12/6/12 10:46 PM	10.600	14.0	1.87	239		0.000
12/6/12 10:48 PM	10.633	14.0	1.86	239		0.000
12/6/12 10:50 PM	10.667	13.7	1.85	239		0.000
12/6/12 10:52 PM	10.700	13.7	1.85	238		0.000
12/6/12 10:54 PM	10.733	14.0	1.85	239		0.000
12/6/12 10:56 PM	10.767	14.0	1.84	239		0.000
12/6/12 10:58 PM	10.800	14.0	1.84	239		0.000
12/6/12 11:00 PM	10.833	13.7	1.84	239		0.000
12/6/12 11:02 PM	10.867	13.7	1.83	239		0.000
12/6/12 11:04 PM	10.900	14.0	1.83	238		0.000
12/6/12 11:06 PM	10.933	14.0	1.83	239		0.000
12/6/12 11:08 PM	10.967	14.0	1.83	239		0.000
12/6/12 11:10 PM	11.000	13.7	1.83	239		0.000
12/6/12 11:12 PM	11.033	13.7	1.82	239		0.000
12/6/12 11:14 PM	11.067	14.0	1.82	238		0.000
12/6/12 11:16 PM	11.100	14.0	1.82	239		0.000

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/6/12 11:18 PM	11.133	13.7	1.82	239		0.000
12/6/12 11:20 PM	11.167	14.0	1.81	239		0.000
12/6/12 11:22 PM	11.200	14.0	1.81	239		0.000
12/6/12 11:24 PM	11.233	14.0	1.81	239		0.000
12/6/12 11:26 PM	11.267	14.0	1.8	239		0.000
12/6/12 11:28 PM	11.300	14.0	1.8	239		0.000
12/6/12 11:30 PM	11.333	14.0	1.8	240		0.831
12/6/12 11:32 PM	11.367	13.7	1.79	239		0.000
12/6/12 11:34 PM	11.400	14.0	1.79	240		0.831
12/6/12 11:36 PM	11.433	14.0	1.79	240		0.831
12/6/12 11:38 PM	11.467	14.0	1.79	240		0.831
12/6/12 11:40 PM	11.500	14.0	1.79	240		0.831
12/6/12 11:42 PM	11.533	14.0	1.78	242		1.76
12/6/12 11:44 PM	11.567	14.0	1.77	242		1.76
12/6/12 11:46 PM	11.600	14.0	1.77	242		1.76
12/6/12 11:48 PM	11.633	14.0	1.77	243		2.69
12/6/12 11:50 PM	11.667	14.0	1.76	244		3.62
12/6/12 11:52 PM	11.700	14.0	1.76	244		3.62
12/6/12 11:54 PM	11.733	14.0	1.75	246		4.55
12/6/12 11:56 PM	11.767	14.0	1.74	246		4.55
12/6/12 11:58 PM	11.800	14.0	1.74	246		4.55
12/7/12 12:00 AM	11.833	14.0	1.73	247		5.48
12/7/12 12:02 AM	11.867	14.0	1.73	247		5.48
12/7/12 12:04 AM	11.900	14.0	1.73	248		6.41
12/7/12 12:06 AM	11.933	14.0	1.72	250		7.34
12/7/12 12:08 AM	11.967	14.0	1.72	250		7.34
12/7/12 12:10 AM	12.000	14.0	1.71	251		8.27
12/7/12 12:12 AM	12.033	14.0	1.71	251		8.27
12/7/12 12:14 AM	12.067	14.0	1.7	252		9.20
12/7/12 12:16 AM	12.100	14.0	1.69	252		9.20
12/7/12 12:18 AM	12.133	14.0	1.69	254		10.13
12/7/12 12:20 AM	12.167	14.0	1.68	254		10.13
12/7/12 12:22 AM	12.200	14.0	1.68	254		10.13
12/7/12 12:24 AM	12.233	14.0	1.68	255		11.06
12/7/12 12:26 AM	12.267	14.0	1.67	255		11.06
12/7/12 12:28 AM	12.300	14.0	1.67	256		11.99
12/7/12 12:30 AM	12.333	14.0	1.67	256		11.99
12/7/12 12:32 AM	12.367	14.0	1.67	256		11.99
12/7/12 12:34 AM	12.400	14.0	1.66	256		11.99
12/7/12 12:36 AM	12.433	14.0	1.65	256		11.99
12/7/12 12:38 AM	12.467	14.0	1.65	256		11.99
12/7/12 12:40 AM	12.500	14.0	1.65	256		11.99
12/7/12 12:42 AM	12.533	14.0	1.64	256		11.99
12/7/12 12:44 AM	12.567	14.0	1.64	258		12.93
12/7/12 12:46 AM	12.600	14.0	1.64	256		11.99
12/7/12 12:48 AM	12.633	14.0	1.64	256		11.99
12/7/12 12:50 AM	12.667	14.0	1.63	256		11.99
12/7/12 12:52 AM	12.700	14.0	1.63	256		11.99
12/7/12 12:54 AM	12.733	14.0	1.62	256		11.99
12/7/12 12:56 AM	12.767	14.0	1.62	256		11.99

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 12:58 AM	12.800	14.0	1.62	255		11.06
12/7/12 1:00 AM	12.833	14.0	1.61	255		11.06
12/7/12 1:02 AM	12.867	14.0	1.62	255		11.06
12/7/12 1:04 AM	12.900	14.0	1.61	255		11.06
12/7/12 1:06 AM	12.933	14.0	1.61	255		11.06
12/7/12 1:08 AM	12.967	14.0	1.61	254		10.13
12/7/12 1:10 AM	13.000	14.0	1.61	254		10.13
12/7/12 1:12 AM	13.033	14.0	1.61	254		10.13
12/7/12 1:14 AM	13.067	14.0	1.6	254		10.13
12/7/12 1:16 AM	13.100	14.0	1.6	252		9.20
12/7/12 1:18 AM	13.133	14.0	1.6	252		9.20
12/7/12 1:20 AM	13.167	14.0	1.59	252		9.20
12/7/12 1:22 AM	13.200	14.0	1.59	252		9.20
12/7/12 1:24 AM	13.233	14.0	1.59	252		9.20
12/7/12 1:26 AM	13.267	14.0	1.59	251		8.27
12/7/12 1:28 AM	13.300	14.0	1.58	251		8.27
12/7/12 1:30 AM	13.333	14.0	1.58	251		8.27
12/7/12 1:32 AM	13.367	14.0	1.58	251		8.27
12/7/12 1:34 AM	13.400	14.0	1.58	250		7.34
12/7/12 1:36 AM	13.433	14.0	1.57	250		7.34
12/7/12 1:38 AM	13.467	14.0	1.57	250		7.34
12/7/12 1:40 AM	13.500	14.0	1.56	250		7.34
12/7/12 1:42 AM	13.533	14.0	1.57	248		6.41
12/7/12 1:44 AM	13.567	14.0	1.56	248		6.41
12/7/12 1:46 AM	13.600	14.0	1.56	248		6.41
12/7/12 1:48 AM	13.633	14.0	1.56	248		6.41
12/7/12 1:50 AM	13.667	14.0	1.56	247		5.48
12/7/12 1:52 AM	13.700	14.0	1.56	247		5.48
12/7/12 1:54 AM	13.733	14.0	1.55	247		5.48
12/7/12 1:56 AM	13.767	14.0	1.55	247		5.48
12/7/12 1:58 AM	13.800	14.0	1.55	247		5.48
12/7/12 2:00 AM	13.833	14.0	1.54	247		5.48
12/7/12 2:02 AM	13.867	14.0	1.54	247		5.48
12/7/12 2:04 AM	13.900	14.0	1.54	246		4.55
12/7/12 2:06 AM	13.933	14.0	1.54	246		4.55
12/7/12 2:08 AM	13.967	14.0	1.53	246		4.55
12/7/12 2:10 AM	14.000	14.0	1.53	246		4.55
12/7/12 2:12 AM	14.033	14.0	1.53	246		4.55
12/7/12 2:14 AM	14.067	14.0	1.53	246		4.55
12/7/12 2:16 AM	14.100	14.0	1.53	246		4.55
12/7/12 2:18 AM	14.133	14.0	1.52	244		3.62
12/7/12 2:20 AM	14.167	14.0	1.52	247		5.48
12/7/12 2:22 AM	14.200	14.0	1.52	244		3.62
12/7/12 2:24 AM	14.233	14.0	1.51	244		3.62
12/7/12 2:26 AM	14.267	14.0	1.5	244		3.62
12/7/12 2:28 AM	14.300	14.0	1.5	244		3.62
12/7/12 2:30 AM	14.333	14.0	1.49	244		3.62
12/7/12 2:32 AM	14.367	14.0	1.49	244		3.62
12/7/12 2:34 AM	14.400	14.0	1.49	244		3.62
12/7/12 2:36 AM	14.433	14.0	1.49	244		3.62

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 2:38 AM	14.467	14.0	1.48	244		3.62
12/7/12 2:40 AM	14.500	14.0	1.49	244		3.62
12/7/12 2:42 AM	14.533	14.0	1.48	243		2.69
12/7/12 2:44 AM	14.567	14.0	1.47	243		2.69
12/7/12 2:46 AM	14.600	14.0	1.47	243		2.69
12/7/12 2:48 AM	14.633	14.0	1.47	243		2.69
12/7/12 2:50 AM	14.667	14.0	1.46	243		2.69
12/7/12 2:52 AM	14.700	14.0	1.46	243		2.69
12/7/12 2:54 AM	14.733	14.0	1.46	243		2.69
12/7/12 2:56 AM	14.767	14.0	1.46	243		2.69
12/7/12 2:58 AM	14.800	14.0	1.45	243		2.69
12/7/12 3:00 AM	14.833	14.0	1.45	243		2.69
12/7/12 3:02 AM	14.867	14.0	1.45	243		2.69
12/7/12 3:04 AM	14.900	14.0	1.45	243		2.69
12/7/12 3:06 AM	14.933	14.0	1.44	243		2.69
12/7/12 3:08 AM	14.967	14.0	1.44	243		2.69
12/7/12 3:10 AM	15.000	14.0	1.44	243		2.69
12/7/12 3:12 AM	15.033	14.0	1.44	243		2.69
12/7/12 3:14 AM	15.067	14.0	1.43	243		2.69
12/7/12 3:16 AM	15.100	14.0	1.43	243		2.69
12/7/12 3:18 AM	15.133	14.0	1.43	242		1.76
12/7/12 3:20 AM	15.167	14.0	1.43	243		2.69
12/7/12 3:22 AM	15.200	14.0	1.43	243		2.69
12/7/12 3:24 AM	15.233	14.0	1.43	243		2.69
12/7/12 3:26 AM	15.267	14.0	1.43	242		1.76
12/7/12 3:28 AM	15.300	14.0	1.43	242		1.76
12/7/12 3:30 AM	15.333	14.0	1.43	243		2.69
12/7/12 3:32 AM	15.367	14.0	1.43	243		2.69
12/7/12 3:34 AM	15.400	14.0	1.43	242		1.76
12/7/12 3:36 AM	15.433	14.0	1.43	242		1.76
12/7/12 3:38 AM	15.467	14.0	1.43	243		2.69
12/7/12 3:40 AM	15.500	14.0	1.43	242		1.76
12/7/12 3:42 AM	15.533	14.0	1.42	242		1.76
12/7/12 3:44 AM	15.567	14.0	1.42	242		1.76
12/7/12 3:46 AM	15.600	14.0	1.42	242		1.76
12/7/12 3:48 AM	15.633	14.0	1.42	242		1.76
12/7/12 3:50 AM	15.667	14.0	1.42	242		1.76
12/7/12 3:52 AM	15.700	14.0	1.42	242		1.76
12/7/12 3:54 AM	15.733	14.0	1.42	242		1.76
12/7/12 3:56 AM	15.767	14.0	1.41	242		1.76
12/7/12 3:58 AM	15.800	14.0	1.41	242		1.76
12/7/12 4:00 AM	15.833	14.0	1.41	242		1.76
12/7/12 4:02 AM	15.867	14.0	1.41	242		1.76
12/7/12 4:04 AM	15.900	14.0	1.41	242		1.76
12/7/12 4:06 AM	15.933	14.0	1.41	242		1.76
12/7/12 4:08 AM	15.967	14.0	1.41	242		1.76
12/7/12 4:10 AM	16.000	14.0	1.41	242		1.76
12/7/12 4:12 AM	16.033	14.0	1.41	242		1.76
12/7/12 4:14 AM	16.067	14.0	1.41	242		1.76
12/7/12 4:16 AM	16.100	14.0	1.4	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 4:18 AM	16.133	14.0	1.4	242		1.76
12/7/12 4:20 AM	16.167	14.0	1.41	242		1.76
12/7/12 4:22 AM	16.200	14.0	1.4	242		1.76
12/7/12 4:24 AM	16.233	14.0	1.4	242		1.76
12/7/12 4:26 AM	16.267	14.0	1.4	242		1.76
12/7/12 4:28 AM	16.300	14.0	1.4	242		1.76
12/7/12 4:30 AM	16.333	14.0	1.4	242		1.76
12/7/12 4:32 AM	16.367	14.0	1.4	242		1.76
12/7/12 4:34 AM	16.400	14.0	1.41	242		1.76
12/7/12 4:36 AM	16.433	14.0	1.4	242		1.76
12/7/12 4:38 AM	16.467	14.0	1.41	240		1.70
12/7/12 4:40 AM	16.500	14.0	1.41	242		1.70
12/7/12 4:42 AM	16.533	14.0	1.41	242		1.70
12/7/12 4:44 AM	16.567	14.0	1.4	242		1.70
12/7/12 4:46 AM	16.600	14.0	1.41	242		1.70
12/7/12 4:48 AM	16.633	14.0	1.42	242		1.70
12/7/12 4:50 AM	16.667	14.0	1.42	242		1.70
12/7/12 4:52 AM	16.700	14.0	1.42	242		1.70
12/7/12 4:54 AM	16.733	14.0	1.42	242		1.70
12/7/12 4:56 AM	16.767	14.0	1.42	242		1.67
12/7/12 4:58 AM	16.800	14.0	1.42	242		1.67
12/7/12 5:00 AM	16.833	14.0	1.43	242		1.67
12/7/12 5:02 AM	16.867	14.0	1.43	240		1.64
12/7/12 5:04 AM	16.900	14.0	1.44	242		1.61
12/7/12 5:06 AM	16.933	14.0	1.44	242		1.61
12/7/12 5:08 AM	16.967	14.0	1.44	242		1.58
12/7/12 5:10 AM	17.000	14.0	1.45	242		1.58
12/7/12 5:12 AM	17.033	14.0	1.45	242		1.61
12/7/12 5:14 AM	17.067	14.0	1.45	242		1.61
12/7/12 5:16 AM	17.100	14.0	1.46	242		1.61
12/7/12 5:18 AM	17.133	14.0	1.46	242		1.61
12/7/12 5:20 AM	17.167	14.0	1.47	242		1.58
12/7/12 5:22 AM	17.200	14.0	1.47	242		1.58
12/7/12 5:24 AM	17.233	14.0	1.48	240		1.58
12/7/12 5:26 AM	17.267	14.0	1.48	242		1.55
12/7/12 5:28 AM	17.300	14.0	1.49	242		1.55
12/7/12 5:30 AM	17.333	14.0	1.5	240		1.52
12/7/12 5:32 AM	17.367	14.0	1.51	240		1.49
12/7/12 5:34 AM	17.400	14.0	1.51	242		1.49
12/7/12 5:36 AM	17.433	14.0	1.52	240		1.49
12/7/12 5:38 AM	17.467	14.0	1.53	242		1.49
12/7/12 5:40 AM	17.500	14.0	1.53	242		1.49
12/7/12 5:42 AM	17.533	14.0	1.54	242		1.46
12/7/12 5:44 AM	17.567	14.0	1.53	242		1.46
12/7/12 5:46 AM	17.600	14.0	1.54	242		1.46
12/7/12 5:48 AM	17.633	14.0	1.54	240		1.46
12/7/12 5:50 AM	17.667	14.0	1.55	242		1.43
12/7/12 5:52 AM	17.700	14.0	1.56	242		1.43
12/7/12 5:54 AM	17.733	14.0	1.56	240		1.43
12/7/12 5:56 AM	17.767	14.0	1.57	242		1.43

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 5:58 AM	17.800	14.0	1.57	240		1.43
12/7/12 6:00 AM	17.833	14.0	1.57	240		1.43
12/7/12 6:02 AM	17.867	14.0	1.58	242		1.43
12/7/12 6:04 AM	17.900	14.0	1.58	240		1.46
12/7/12 6:06 AM	17.933	14.0	1.59	242		1.49
12/7/12 6:08 AM	17.967	14.0	1.59	242		1.46
12/7/12 6:10 AM	18.000	14.0	1.59	240		1.46
12/7/12 6:12 AM	18.033	14.0	1.59	242		1.46
12/7/12 6:14 AM	18.067	14.0	1.59	242		1.46
12/7/12 6:16 AM	18.100	14.0	1.59	242		1.43
12/7/12 6:18 AM	18.133	14.0	1.59	240		1.43
12/7/12 6:20 AM	18.167	14.0	1.6	242		1.43
12/7/12 6:22 AM	18.200	14.0	1.6	242		1.43
12/7/12 6:24 AM	18.233	14.0	1.61	242		1.43
12/7/12 6:26 AM	18.267	14.0	1.61	240		1.43
12/7/12 6:28 AM	18.300	14.0	1.61	242		1.46
12/7/12 6:30 AM	18.333	14.0	1.62	242		1.46
12/7/12 6:32 AM	18.367	14.0	1.61	242		1.46
12/7/12 6:34 AM	18.400	14.0	1.62	242		1.46
12/7/12 6:36 AM	18.433	14.0	1.62	240		1.43
12/7/12 6:38 AM	18.467	14.0	1.62	240		1.43
12/7/12 6:40 AM	18.500	14.0	1.62	242		1.43
12/7/12 6:42 AM	18.533	14.0	1.62	242		1.43
12/7/12 6:44 AM	18.567	14.0	1.62	240		1.46
12/7/12 6:46 AM	18.600	14.0	1.63	242		1.46
12/7/12 6:48 AM	18.633	14.0	1.63	242		1.46
12/7/12 6:50 AM	18.667	14.0	1.62	240		1.46
12/7/12 6:52 AM	18.700	14.0	1.63	242		1.49
12/7/12 6:54 AM	18.733	14.0	1.63	242		1.49
12/7/12 6:56 AM	18.767	14.9	1.63	242		1.49
12/7/12 6:58 AM	18.800	15.2	1.63	242		1.49
12/7/12 7:00 AM	18.833	14.9	1.63	240		1.52
12/7/12 7:02 AM	18.867	14.9	1.63	240		1.52
12/7/12 7:04 AM	18.900	14.9	1.63	240		1.52
12/7/12 7:06 AM	18.933	14.9	1.64	240		1.52
12/7/12 7:08 AM	18.967	15.2	1.64	242		1.52
12/7/12 7:10 AM	19.000	14.0	1.64	242		1.55
12/7/12 7:12 AM	19.033	14.0	1.64	242		1.58
12/7/12 7:14 AM	19.067	14.0	1.64	242		1.55
12/7/12 7:16 AM	19.100	14.0	1.64	242		1.55
12/7/12 7:18 AM	19.133	14.0	1.64	242		1.58
12/7/12 7:20 AM	19.167	14.0	1.64	242		1.58
12/7/12 7:22 AM	19.200	14.0	1.64	242		1.58
12/7/12 7:24 AM	19.233	14.0	1.65	242		1.58
12/7/12 7:26 AM	19.267	14.0	1.65	242		1.58
12/7/12 7:28 AM	19.300	14.0	1.65	242		1.58
12/7/12 7:30 AM	19.333	14.0	1.65	242		1.58
12/7/12 7:32 AM	19.367	14.0	1.65	242		1.58
12/7/12 7:34 AM	19.400	14.0	1.65	242		1.61
12/7/12 7:36 AM	19.433	14.0	1.65	242		1.64

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 7:38 AM	19.467	14.0	1.65	242		1.67
12/7/12 7:40 AM	19.500	14.0	1.65	242		1.70
12/7/12 7:42 AM	19.533	14.0	1.65	240		1.70
12/7/12 7:44 AM	19.567	14.0	1.65	242		1.70
12/7/12 7:46 AM	19.600	14.0	1.65	242		1.70
12/7/12 7:48 AM	19.633	14.0	1.65	242		1.67
12/7/12 7:50 AM	19.667	14.0	1.65	242		1.67
12/7/12 7:52 AM	19.700	14.0	1.66	240		1.67
12/7/12 7:54 AM	19.733	14.0	1.66	242		1.67
12/7/12 7:56 AM	19.767	14.0	1.66	242		1.67
12/7/12 7:58 AM	19.800	14.0	1.67	242		1.67
12/7/12 8:00 AM	19.833	14.0	1.67	242		1.67
12/7/12 8:02 AM	19.867	14.0	1.68	242		1.67
12/7/12 8:04 AM	19.900	14.0	1.69	242		1.67
12/7/12 8:06 AM	19.933	14.0	1.69	242		1.67
12/7/12 8:08 AM	19.967	14.0	1.7	242		1.67
12/7/12 8:10 AM	20.000	14.0	1.71	242		1.67
12/7/12 8:12 AM	20.033	14.0	1.72	242		1.67
12/7/12 8:14 AM	20.067	14.0	1.72	242		1.67
12/7/12 8:16 AM	20.100	14.0	1.73	240		1.70
12/7/12 8:18 AM	20.133	14.0	1.73	242		1.70
12/7/12 8:20 AM	20.167	14.0	1.74	242		1.70
12/7/12 8:22 AM	20.200	14.0	1.75	242		1.70
12/7/12 8:24 AM	20.233	14.0	1.75	242		1.70
12/7/12 8:26 AM	20.267	14.0	1.75	242		1.73
12/7/12 8:28 AM	20.300	14.0	1.76	242		1.73
12/7/12 8:30 AM	20.333	14.0	1.76	242		1.73
12/7/12 8:32 AM	20.367	14.0	1.76	242		1.73
12/7/12 8:34 AM	20.400	14.0	1.75	242		1.73
12/7/12 8:36 AM	20.433	14.0	1.75	242		1.73
12/7/12 8:38 AM	20.467	14.0	1.75	242		1.73
12/7/12 8:40 AM	20.500	14.0	1.75	242		1.73
12/7/12 8:42 AM	20.533	14.0	1.75	242		1.73
12/7/12 8:44 AM	20.567	14.0	1.74	242		1.73
12/7/12 8:46 AM	20.600	14.0	1.74	242		1.73
12/7/12 8:48 AM	20.633	14.0	1.74	242		1.73
12/7/12 8:50 AM	20.667	14.0	1.74	242		1.76
12/7/12 8:52 AM	20.700	14.0	1.73	242		1.76
12/7/12 8:54 AM	20.733	14.0	1.73	242		1.76
12/7/12 8:56 AM	20.767	14.0	1.73	242		1.76
12/7/12 8:58 AM	20.800	14.0	1.73	242		1.76
12/7/12 9:00 AM	20.833	14.0	1.73	242		1.76
12/7/12 9:02 AM	20.867	14.0	1.73	242		1.76
12/7/12 9:04 AM	20.900	14.0	1.73	242		1.76
12/7/12 9:06 AM	20.933	14.0	1.73	242		1.76
12/7/12 9:08 AM	20.967	14.0	1.73	242		1.76
12/7/12 9:10 AM	21.000	14.0	1.73	242		1.76
12/7/12 9:12 AM	21.033	14.0	1.73	242		1.76
12/7/12 9:14 AM	21.067	14.0	1.73	242		1.76
12/7/12 9:16 AM	21.100	14.0	1.73	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 9:18 AM	21.133	14.0	1.74	242		1.76
12/7/12 9:20 AM	21.167	14.0	1.74	242		1.76
12/7/12 9:22 AM	21.200	14.0	1.75	242		1.76
12/7/12 9:24 AM	21.233	14.0	1.75	242		1.76
12/7/12 9:26 AM	21.267	14.0	1.76	242		1.76
12/7/12 9:28 AM	21.300	14.0	1.77	242		1.76
12/7/12 9:30 AM	21.333	14.0	1.77	242		1.76
12/7/12 9:32 AM	21.367	14.0	1.77	242		1.76
12/7/12 9:34 AM	21.400	14.0	1.78	242		1.76
12/7/12 9:36 AM	21.433	14.0	1.78	242		1.76
12/7/12 9:38 AM	21.467	14.0	1.78	242		1.76
12/7/12 9:40 AM	21.500	14.0	1.79	242		1.76
12/7/12 9:42 AM	21.533	14.0	1.79	242		1.76
12/7/12 9:44 AM	21.567	14.0	1.79	242		1.76
12/7/12 9:46 AM	21.600	14.0	1.8	242		1.76
12/7/12 9:48 AM	21.633	14.0	1.8	242		1.76
12/7/12 9:50 AM	21.667	14.0	1.8	242		1.76
12/7/12 9:52 AM	21.700	14.0	1.8	242		1.76
12/7/12 9:54 AM	21.733	14.0	1.8	242		1.76
12/7/12 9:56 AM	21.767	14.0	1.81	242		1.76
12/7/12 9:58 AM	21.800	14.0	1.81	242		1.76
12/7/12 10:00 AM	21.833	14.0	1.81	242		1.76
12/7/12 10:02 AM	21.867	14.0	1.81	242		1.76
12/7/12 10:04 AM	21.900	14.0	1.81	242		1.76
12/7/12 10:06 AM	21.933	14.0	1.81	242		1.76
12/7/12 10:08 AM	21.967	14.0	1.81	242		1.76
12/7/12 10:10 AM	22.000	14.0	1.81	242		1.76
12/7/12 10:12 AM	22.033	14.0	1.81	242		1.76
12/7/12 10:14 AM	22.067	14.0	1.82	242		1.76
12/7/12 10:16 AM	22.100	14.0	1.81	242		1.76
12/7/12 10:18 AM	22.133	14.0	1.81	242		1.76
12/7/12 10:20 AM	22.167	14.0	1.81	242		1.76
12/7/12 10:22 AM	22.200	14.0	1.81	242		1.76
12/7/12 10:24 AM	22.233	14.0	1.82	242		1.76
12/7/12 10:26 AM	22.267	14.0	1.83	242		1.76
12/7/12 10:28 AM	22.300	14.0	1.83	242		1.76
12/7/12 10:30 AM	22.333	14.0	1.83	242		1.76
12/7/12 10:32 AM	22.367	14.0	1.83	242		1.76
12/7/12 10:34 AM	22.400	14.0	1.84	242		1.76
12/7/12 10:36 AM	22.433	14.0	1.84	242		1.76
12/7/12 10:38 AM	22.467	14.0	1.85	242		1.76
12/7/12 10:40 AM	22.500	14.0	1.85	242		1.79
12/7/12 10:42 AM	22.533	14.0	1.85	242		1.79
12/7/12 10:44 AM	22.567	14.0	1.85	242		1.79
12/7/12 10:46 AM	22.600	14.0	1.86	242		1.79
12/7/12 10:48 AM	22.633	14.0	1.87	242		1.79
12/7/12 10:50 AM	22.667	14.0	1.87	242		1.79
12/7/12 10:52 AM	22.700	14.0	1.87	242		1.79
12/7/12 10:54 AM	22.733	14.0	1.88	242		1.79
12/7/12 10:56 AM	22.767	14.0	1.89	242		1.79

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 10:58 AM	22.800	14.0	1.89	242		1.79
12/7/12 11:00 AM	22.833	14.0	1.9	242		1.79
12/7/12 11:02 AM	22.867	14.0	1.9	242		1.79
12/7/12 11:04 AM	22.900	14.0	1.9	242		1.79
12/7/12 11:06 AM	22.933	14.0	1.9	242		1.79
12/7/12 11:08 AM	22.967	14.0	1.91	243		1.79
12/7/12 11:10 AM	23.000	14.0	1.91	242		1.79
12/7/12 11:12 AM	23.033	14.0	1.91	242		1.79
12/7/12 11:14 AM	23.067	14.0	1.92	242		1.79
12/7/12 11:16 AM	23.100	14.0	1.93	242		1.79
12/7/12 11:18 AM	23.133	14.0	1.94	242		1.79
12/7/12 11:20 AM	23.167	14.0	1.95	242		1.79
12/7/12 11:22 AM	23.200	14.0	1.96	242		1.79
12/7/12 11:24 AM	23.233	14.0	1.97	242		1.79
12/7/12 11:26 AM	23.267	14.0	1.97	242		1.79
12/7/12 11:28 AM	23.300	14.0	1.99	242		1.79
12/7/12 11:30 AM	23.333	14.0	2	242		1.79
12/7/12 11:32 AM	23.367	14.0	2.01	242		1.79
12/7/12 11:34 AM	23.400	14.0	2.03	242		1.79
12/7/12 11:36 AM	23.433	14.0	2.04	242		1.79
12/7/12 11:38 AM	23.467	14.0	2.04	242		1.79
12/7/12 11:40 AM	23.500	14.0	2.05	242		1.79
12/7/12 11:42 AM	23.533	14.0	2.05	242		1.76
12/7/12 11:44 AM	23.567	14.0	2.06	242		1.76
12/7/12 11:46 AM	23.600	14.0	2.07	242		1.76
12/7/12 11:48 AM	23.633	14.0	2.08	242		1.76
12/7/12 11:50 AM	23.667	14.0	2.1	242		1.76
12/7/12 11:52 AM	23.700	14.0	2.11	242		1.76
12/7/12 11:54 AM	23.733	14.0	2.11	242		1.76
12/7/12 11:56 AM	23.767	14.0	2.12	242		1.76
12/7/12 11:58 AM	23.800	14.0	2.12	242		1.76
12/7/12 12:00 PM	23.833	14.0	2.14	242		1.76
12/7/12 12:02 PM	23.867	14.0	2.15	242		1.76
12/7/12 12:04 PM	23.900	14.0	2.16	242		1.76
12/7/12 12:06 PM	23.933	14.0	2.17	242		1.76
12/7/12 12:08 PM	23.967	14.0	2.18	242		1.76
12/7/12 12:10 PM	24.000	14.0	2.19	242		1.76
12/7/12 12:12 PM	24.033	14.0	2.21	242		1.76
12/7/12 12:14 PM	24.067	14.0	2.21	242		1.76
12/7/12 12:16 PM	24.100	14.0	2.23	242		1.76
12/7/12 12:18 PM	24.133	14.0	2.24	242		1.76
12/7/12 12:20 PM	24.167	14.0	2.25	242		1.79
12/7/12 12:22 PM	24.200	14.0	2.26	242		1.79
12/7/12 12:24 PM	24.233	14.0	2.27	242		1.79
12/7/12 12:26 PM	24.267	14.0	2.28	242		1.79
12/7/12 12:28 PM	24.300	14.0	2.29	242		1.79
12/7/12 12:30 PM	24.333	14.0	2.3	242		1.79
12/7/12 12:32 PM	24.367	14.0	2.3	242		1.79
12/7/12 12:34 PM	24.400	14.0	2.31	242		1.79
12/7/12 12:36 PM	24.433	14.0	2.32	242		1.79

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 12:38 PM	24.467	14.0	2.34	242		1.79
12/7/12 12:40 PM	24.500	14.0	2.35	242		1.79
12/7/12 12:42 PM	24.533	14.0	2.36	242		1.79
12/7/12 12:44 PM	24.567	14.0	2.37	242		1.79
12/7/12 12:46 PM	24.600	14.0	2.38	242		1.79
12/7/12 12:48 PM	24.633	14.0	2.39	243		1.79
12/7/12 12:50 PM	24.667	14.0	2.41	242		1.79
12/7/12 12:52 PM	24.700	14.0	2.42	242		1.79
12/7/12 12:54 PM	24.733	14.0	2.43	242		1.79
12/7/12 12:56 PM	24.767	14.0	2.45	242		1.79
12/7/12 12:58 PM	24.800	14.0	2.46	242		1.79
12/7/12 1:00 PM	24.833	14.0	2.46	242		1.79
12/7/12 1:02 PM	24.867	14.0	2.48	242		1.79
12/7/12 1:04 PM	24.900	14.0	2.49	242		1.82
12/7/12 1:06 PM	24.933	14.0	2.51	242		1.82
12/7/12 1:08 PM	24.967	14.0	2.52	242		1.82
12/7/12 1:10 PM	25.000	14.0	2.53	242		1.82
12/7/12 1:12 PM	25.033	14.0	2.55	242		1.82
12/7/12 1:14 PM	25.067	14.0	2.57	242		1.85
12/7/12 1:16 PM	25.100	14.0	2.58	242		1.85
12/7/12 1:18 PM	25.133	14.0	2.59	242		1.85
12/7/12 1:20 PM	25.167	14.0	2.6	242		1.85
12/7/12 1:22 PM	25.200	14.0	2.6	242		1.85
12/7/12 1:24 PM	25.233	14.0	2.61	242		1.85
12/7/12 1:26 PM	25.267	14.0	2.62	242		1.85
12/7/12 1:28 PM	25.300	14.0	2.63	242		1.85
12/7/12 1:30 PM	25.333	14.0	2.64	242		1.85
12/7/12 1:32 PM	25.367	14.0	2.66	243		1.88
12/7/12 1:34 PM	25.400	14.0	2.67	242		1.88
12/7/12 1:36 PM	25.433	14.0	2.68	242		1.88
12/7/12 1:38 PM	25.467	14.0	2.68	242		1.91
12/7/12 1:40 PM	25.500	14.0	2.69	242		1.91
12/7/12 1:42 PM	25.533	14.0	2.69	243		1.94
12/7/12 1:44 PM	25.567	14.0	2.7	242		1.94
12/7/12 1:46 PM	25.600	14.0	2.7	242		1.94
12/7/12 1:48 PM	25.633	14.0	2.7	242		1.94
12/7/12 1:50 PM	25.667	14.0	2.7	243		1.97
12/7/12 1:52 PM	25.700	14.0	2.7	242		1.97
12/7/12 1:54 PM	25.733	14.0	2.7	242		1.97
12/7/12 1:56 PM	25.767	14.0	2.72	242		1.97
12/7/12 1:58 PM	25.800	14.0	2.72	242		1.97
12/7/12 2:00 PM	25.833	14.0	2.73	243		1.97
12/7/12 2:02 PM	25.867	14.0	2.73	242		1.97
12/7/12 2:04 PM	25.900	14.0	2.74	242		2.00
12/7/12 2:06 PM	25.933	14.0	2.76	243		1.97
12/7/12 2:08 PM	25.967	14.0	2.77	242		1.97
12/7/12 2:10 PM	26.000	14.0	2.78	243		2.00
12/7/12 2:12 PM	26.033	14.0	2.8	242		2.00
12/7/12 2:14 PM	26.067	14.0	2.81	242		2.03
12/7/12 2:16 PM	26.100	14.0	2.82	242		2.00

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 2:18 PM	26.133	14.0	2.83	243		2.00
12/7/12 2:20 PM	26.167	14.0	2.84	242		2.00
12/7/12 2:22 PM	26.200	14.0	2.85	242		2.00
12/7/12 2:24 PM	26.233	14.0	2.86	242		2.00
12/7/12 2:26 PM	26.267	14.0	2.87	242		2.00
12/7/12 2:28 PM	26.300	14.0	2.88	242		2.03
12/7/12 2:30 PM	26.333	14.0	2.89	242		2.03
12/7/12 2:32 PM	26.367	14.0	2.89	243		2.03
12/7/12 2:34 PM	26.400	14.0	2.9	242		2.03
12/7/12 2:36 PM	26.433	14.0	2.9	242		2.03
12/7/12 2:38 PM	26.467	14.0	2.91	243		2.03
12/7/12 2:40 PM	26.500	14.0	2.91	242		2.00
12/7/12 2:42 PM	26.533	14.0	2.91	243		2.03
12/7/12 2:44 PM	26.567	14.0	2.91	242		2.00
12/7/12 2:46 PM	26.600	14.0	2.91	242		2.00
12/7/12 2:48 PM	26.633	14.0	2.91	242		2.00
12/7/12 2:50 PM	26.667	14.0	2.91	242		2.03
12/7/12 2:52 PM	26.700	14.0	2.91	243		2.00
12/7/12 2:54 PM	26.733	14.0	2.9	242		2.03
12/7/12 2:56 PM	26.767	14.0	2.89	243		2.03
12/7/12 2:58 PM	26.800	14.0	2.89	242		2.06
12/7/12 3:00 PM	26.833	14.0	2.88	242		2.06
12/7/12 3:02 PM	26.867	14.0	2.87	243		2.09
12/7/12 3:04 PM	26.900	14.0	2.86	242		2.12
12/7/12 3:06 PM	26.933	14.0	2.85	242		2.09
12/7/12 3:08 PM	26.967	14.0	2.84	242		2.09
12/7/12 3:10 PM	27.000	14.0	2.84	243		2.09
12/7/12 3:12 PM	27.033	14.0	2.83	242		2.06
12/7/12 3:14 PM	27.067	14.0	2.83	242		2.09
12/7/12 3:16 PM	27.100	14.0	2.82	242		2.09
12/7/12 3:18 PM	27.133	14.0	2.82	243		2.09
12/7/12 3:20 PM	27.167	14.0	2.82	242		2.09
12/7/12 3:22 PM	27.200	14.0	2.82	243		2.09
12/7/12 3:24 PM	27.233	14.0	2.81	242		2.09
12/7/12 3:26 PM	27.267	14.0	2.81	243		2.06
12/7/12 3:28 PM	27.300	14.0	2.8	242		2.06
12/7/12 3:30 PM	27.333	14.0	2.8	243		2.03
12/7/12 3:32 PM	27.367	14.0	2.79	243		2.03
12/7/12 3:34 PM	27.400	14.0	2.78	242		2.03
12/7/12 3:36 PM	27.433	14.0	2.78	242		2.00
12/7/12 3:38 PM	27.467	14.0	2.78	242		2.00
12/7/12 3:40 PM	27.500	14.0	2.78	242		2.03
12/7/12 3:42 PM	27.533	14.0	2.78	243		2.03
12/7/12 3:44 PM	27.567	14.0	2.77	243		2.00
12/7/12 3:46 PM	27.600	14.0	2.76	242		2.03
12/7/12 3:48 PM	27.633	14.0	2.76	242		2.03
12/7/12 3:50 PM	27.667	14.0	2.75	242		2.03
12/7/12 3:52 PM	27.700	14.0	2.75	242		2.00
12/7/12 3:54 PM	27.733	14.0	2.75	242		2.00
12/7/12 3:56 PM	27.767	14.0	2.74	242		1.97

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 3:58 PM	27.800	14.0	2.73	242		2.00
12/7/12 4:00 PM	27.833	14.0	2.72	242		1.97
12/7/12 4:02 PM	27.867	14.0	2.72	242		1.97
12/7/12 4:04 PM	27.900	14.0	2.71	242		1.97
12/7/12 4:06 PM	27.933	14.0	2.7	242		1.94
12/7/12 4:08 PM	27.967	14.0	2.69	243		1.94
12/7/12 4:10 PM	28.000	14.0	2.68	242		1.94
12/7/12 4:12 PM	28.033	14.0	2.68	242		1.94
12/7/12 4:14 PM	28.067	14.0	2.67	243		1.94
12/7/12 4:16 PM	28.100	14.0	2.66	242		1.91
12/7/12 4:18 PM	28.133	14.0	2.65	242		1.88
12/7/12 4:20 PM	28.167	14.0	2.63	242		1.88
12/7/12 4:22 PM	28.200	14.0	2.63	242		1.88
12/7/12 4:24 PM	28.233	14.0	2.61	242		1.88
12/7/12 4:26 PM	28.267	14.0	2.6	243		1.88
12/7/12 4:28 PM	28.300	14.0	2.59	242		1.88
12/7/12 4:30 PM	28.333	14.0	2.59	242		1.88
12/7/12 4:32 PM	28.367	14.0	2.58	243		1.88
12/7/12 4:34 PM	28.400	14.0	2.57	242		1.88
12/7/12 4:36 PM	28.433	14.0	2.56	242		1.88
12/7/12 4:38 PM	28.467	14.0	2.55	242		1.88
12/7/12 4:40 PM	28.500	14.0	2.54	242		1.88
12/7/12 4:42 PM	28.533	14.0	2.53	242		1.85
12/7/12 4:44 PM	28.567	14.0	2.52	242		1.85
12/7/12 4:46 PM	28.600	14.0	2.52	242		1.85
12/7/12 4:48 PM	28.633	14.0	2.5	242		1.82
12/7/12 4:50 PM	28.667	14.0	2.5	242		1.82
12/7/12 4:52 PM	28.700	14.0	2.49	242		1.82
12/7/12 4:54 PM	28.733	14.0	2.47	242		1.82
12/7/12 4:56 PM	28.767	14.0	2.46	242		1.82
12/7/12 4:58 PM	28.800	14.0	2.45	242		1.82
12/7/12 5:00 PM	28.833	14.0	2.44	242		1.79
12/7/12 5:02 PM	28.867	14.0	2.43	242		1.79
12/7/12 5:04 PM	28.900	14.0	2.42	242		1.79
12/7/12 5:06 PM	28.933	14.0	2.41	242		1.76
12/7/12 5:08 PM	28.967	14.0	2.4	242		1.76
12/7/12 5:10 PM	29.000	14.0	2.39	242		1.76
12/7/12 5:12 PM	29.033	14.0	2.38	242		1.76
12/7/12 5:14 PM	29.067	14.0	2.37	242		1.76
12/7/12 5:16 PM	29.100	14.0	2.36	242		1.76
12/7/12 5:18 PM	29.133	14.0	2.35	242		1.76
12/7/12 5:20 PM	29.167	14.0	2.35	242		1.76
12/7/12 5:22 PM	29.200	14.0	2.35	242		1.76
12/7/12 5:24 PM	29.233	14.0	2.34	242		1.76
12/7/12 5:26 PM	29.267	14.0	2.34	242		1.76
12/7/12 5:28 PM	29.300	14.0	2.33	242		1.76
12/7/12 5:30 PM	29.333	14.0	2.33	242		1.76
12/7/12 5:32 PM	29.367	14.0	2.33	242		1.76
12/7/12 5:34 PM	29.400	14.0	2.33	242		1.76
12/7/12 5:36 PM	29.433	14.0	2.33	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 5:38 PM	29.467	14.0	2.33	242		1.76
12/7/12 5:40 PM	29.500	14.0	2.33	242		1.76
12/7/12 5:42 PM	29.533	14.0	2.33	242		1.76
12/7/12 5:44 PM	29.567	14.0	2.33	242		1.76
12/7/12 5:46 PM	29.600	14.0	2.33	242		1.76
12/7/12 5:48 PM	29.633	14.0	2.32	242		1.76
12/7/12 5:50 PM	29.667	14.0	2.32	242		1.76
12/7/12 5:52 PM	29.700	14.0	2.32	242		1.79
12/7/12 5:54 PM	29.733	14.0	2.32	242		1.79
12/7/12 5:56 PM	29.767	14.0	2.31	242		1.79
12/7/12 5:58 PM	29.800	14.0	2.31	242		1.79
12/7/12 6:00 PM	29.833	14.0	2.32	242		1.79
12/7/12 6:02 PM	29.867	14.0	2.31	242		1.79
12/7/12 6:04 PM	29.900	14.0	2.31	242		1.79
12/7/12 6:06 PM	29.933	14.0	2.31	242		1.79
12/7/12 6:08 PM	29.967	14.0	2.31	242		1.79
12/7/12 6:10 PM	30.000	14.0	2.3	242		1.79
12/7/12 6:12 PM	30.033	14.0	2.3	242		1.79
12/7/12 6:14 PM	30.067	14.0	2.29	242		1.79
12/7/12 6:16 PM	30.100	14.0	2.29	242		1.79
12/7/12 6:18 PM	30.133	14.0	2.28	242		1.79
12/7/12 6:20 PM	30.167	14.0	2.27	243		1.79
12/7/12 6:22 PM	30.200	14.0	2.26	242		1.79
12/7/12 6:24 PM	30.233	14.0	2.26	242		1.79
12/7/12 6:26 PM	30.267	14.0	2.25	242		1.79
12/7/12 6:28 PM	30.300	14.0	2.25	242		1.79
12/7/12 6:30 PM	30.333	14.0	2.25	242		1.79
12/7/12 6:32 PM	30.367	14.0	2.23	242		1.79
12/7/12 6:34 PM	30.400	14.0	2.23	242		1.79
12/7/12 6:36 PM	30.433	14.0	2.22	242		1.79
12/7/12 6:38 PM	30.467	14.0	2.21	242		1.79
12/7/12 6:40 PM	30.500	14.0	2.2	242		1.79
12/7/12 6:42 PM	30.533	14.0	2.19	242		1.79
12/7/12 6:44 PM	30.567	14.0	2.19	242		1.79
12/7/12 6:46 PM	30.600	14.0	2.19	242		1.79
12/7/12 6:48 PM	30.633	14.0	2.18	242		1.79
12/7/12 6:50 PM	30.667	14.0	2.18	242		1.79
12/7/12 6:52 PM	30.700	14.0	2.17	242		1.79
12/7/12 6:54 PM	30.733	14.0	2.16	242		1.76
12/7/12 6:56 PM	30.767	14.0	2.15	242		1.76
12/7/12 6:58 PM	30.800	14.0	2.14	242		1.76
12/7/12 7:00 PM	30.833	14.0	2.13	242		1.76
12/7/12 7:02 PM	30.867	14.0	2.13	242		1.76
12/7/12 7:04 PM	30.900	14.0	2.12	242		1.76
12/7/12 7:06 PM	30.933	14.0	2.12	242		1.76
12/7/12 7:08 PM	30.967	14.0	2.11	242		1.76
12/7/12 7:10 PM	31.000	14.0	2.1	242		1.76
12/7/12 7:12 PM	31.033	14.0	2.09	242		1.76
12/7/12 7:14 PM	31.067	14.0	2.09	242		1.76
12/7/12 7:16 PM	31.100	14.0	2.09	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 7:18 PM	31.133	14.0	2.08	242		1.76
12/7/12 7:20 PM	31.167	14.0	2.08	242		1.76
12/7/12 7:22 PM	31.200	14.0	2.07	242		1.76
12/7/12 7:24 PM	31.233	14.0	2.07	242		1.76
12/7/12 7:26 PM	31.267	14.0	2.06	242		1.76
12/7/12 7:28 PM	31.300	14.0	2.05	242		1.76
12/7/12 7:30 PM	31.333	14.0	2.04	242		1.76
12/7/12 7:32 PM	31.367	14.0	2.04	242		1.76
12/7/12 7:34 PM	31.400	14.0	2.04	242		1.76
12/7/12 7:36 PM	31.433	14.0	2.03	242		1.76
12/7/12 7:38 PM	31.467	14.0	2.03	242		1.76
12/7/12 7:40 PM	31.500	14.0	2.02	242		1.76
12/7/12 7:42 PM	31.533	14.0	2.01	242		1.76
12/7/12 7:44 PM	31.567	14.0	2.01	242		1.76
12/7/12 7:46 PM	31.600	14.0	2.01	242		1.76
12/7/12 7:48 PM	31.633	14.0	2	242		1.76
12/7/12 7:50 PM	31.667	14.0	1.99	242		1.76
12/7/12 7:52 PM	31.700	14.0	1.99	242		1.76
12/7/12 7:54 PM	31.733	14.0	1.98	242		1.76
12/7/12 7:56 PM	31.767	14.0	1.97	242		1.76
12/7/12 7:58 PM	31.800	14.0	1.97	242		1.76
12/7/12 8:00 PM	31.833	14.0	1.96	242		1.76
12/7/12 8:02 PM	31.867	14.0	1.95	242		1.76
12/7/12 8:04 PM	31.900	14.0	1.95	242		1.76
12/7/12 8:06 PM	31.933	14.0	1.94	242		1.76
12/7/12 8:08 PM	31.967	14.0	1.94	242		1.76
12/7/12 8:10 PM	32.000	14.0	1.93	242		1.76
12/7/12 8:12 PM	32.033	14.0	1.93	242		1.76
12/7/12 8:14 PM	32.067	14.0	1.92	242		1.76
12/7/12 8:16 PM	32.100	14.0	1.91	242		1.76
12/7/12 8:18 PM	32.133	14.0	1.91	242		1.76
12/7/12 8:20 PM	32.167	14.0	1.89	242		1.76
12/7/12 8:22 PM	32.200	14.0	1.89	242		1.76
12/7/12 8:24 PM	32.233	14.0	1.88	242		1.76
12/7/12 8:26 PM	32.267	14.0	1.87	242		1.76
12/7/12 8:28 PM	32.300	14.0	1.86	242		1.76
12/7/12 8:30 PM	32.333	14.0	1.86	242		1.76
12/7/12 8:32 PM	32.367	14.0	1.85	242		1.76
12/7/12 8:34 PM	32.400	14.0	1.84	242		1.76
12/7/12 8:36 PM	32.433	14.0	1.83	242		1.76
12/7/12 8:38 PM	32.467	14.0	1.83	242		1.76
12/7/12 8:40 PM	32.500	14.0	1.82	242		1.76
12/7/12 8:42 PM	32.533	14.0	1.82	242		1.76
12/7/12 8:44 PM	32.567	14.0	1.81	242		1.76
12/7/12 8:46 PM	32.600	14.0	1.8	242		1.76
12/7/12 8:48 PM	32.633	14.0	1.79	242		1.76
12/7/12 8:50 PM	32.667	14.0	1.79	242		1.76
12/7/12 8:52 PM	32.700	14.0	1.78	242		1.76
12/7/12 8:54 PM	32.733	14.0	1.77	242		1.76
12/7/12 8:56 PM	32.767	14.0	1.77	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 8:58 PM	32.800	14.0	1.76	242		1.76
12/7/12 9:00 PM	32.833	14.0	1.76	242		1.76
12/7/12 9:02 PM	32.867	14.0	1.75	242		1.76
12/7/12 9:04 PM	32.900	14.0	1.74	242		1.76
12/7/12 9:06 PM	32.933	14.0	1.74	242		1.76
12/7/12 9:08 PM	32.967	14.0	1.73	242		1.76
12/7/12 9:10 PM	33.000	14.0	1.72	242		1.76
12/7/12 9:12 PM	33.033	14.0	1.72	242		1.76
12/7/12 9:14 PM	33.067	14.0	1.71	242		1.76
12/7/12 9:16 PM	33.100	14.0	1.7	242		1.73
12/7/12 9:18 PM	33.133	14.0	1.69	242		1.73
12/7/12 9:20 PM	33.167	14.0	1.69	242		1.73
12/7/12 9:22 PM	33.200	14.0	1.69	242		1.73
12/7/12 9:24 PM	33.233	14.0	1.68	242		1.73
12/7/12 9:26 PM	33.267	14.0	1.68	242		1.73
12/7/12 9:28 PM	33.300	14.0	1.68	242		1.73
12/7/12 9:30 PM	33.333	14.0	1.67	242		1.73
12/7/12 9:32 PM	33.367	14.0	1.67	242		1.73
12/7/12 9:34 PM	33.400	14.0	1.67	242		1.73
12/7/12 9:36 PM	33.433	14.0	1.66	242		1.73
12/7/12 9:38 PM	33.467	14.0	1.66	242		1.70
12/7/12 9:40 PM	33.500	14.0	1.65	242		1.70
12/7/12 9:42 PM	33.533	14.0	1.64	242		1.70
12/7/12 9:44 PM	33.567	14.0	1.64	240		1.70
12/7/12 9:46 PM	33.600	14.0	1.64	242		1.70
12/7/12 9:48 PM	33.634	14.0	1.63	242		1.67
12/7/12 9:50 PM	33.667	14.0	1.63	242		1.67
12/7/12 9:52 PM	33.700	14.0	1.62	242		1.67
12/7/12 9:54 PM	33.734	14.0	1.62	242		1.67
12/7/12 9:56 PM	33.767	14.0	1.61	242		1.67
12/7/12 9:58 PM	33.800	14.0	1.61	242		1.67
12/7/12 10:00 PM	33.834	14.0	1.6	242		1.67
12/7/12 10:02 PM	33.867	14.0	1.59	242		1.67
12/7/12 10:04 PM	33.900	14.0	1.59	242		1.67
12/7/12 10:06 PM	33.934	14.0	1.58	240		1.67
12/7/12 10:08 PM	33.967	14.0	1.58	242		1.67
12/7/12 10:10 PM	34.000	14.0	1.58	242		1.67
12/7/12 10:12 PM	34.034	14.0	1.58	242		1.67
12/7/12 10:14 PM	34.067	14.0	1.57	242		1.67
12/7/12 10:16 PM	34.100	14.0	1.57	240		1.67
12/7/12 10:18 PM	34.134	14.0	1.56	242		1.70
12/7/12 10:20 PM	34.167	14.0	1.56	242		1.70
12/7/12 10:22 PM	34.200	14.0	1.55	242		1.70
12/7/12 10:24 PM	34.234	14.0	1.55	242		1.70
12/7/12 10:26 PM	34.267	14.0	1.54	242		1.67
12/7/12 10:28 PM	34.300	14.0	1.53	242		1.64
12/7/12 10:30 PM	34.334	14.0	1.53	242		1.64
12/7/12 10:32 PM	34.367	14.0	1.53	242		1.64
12/7/12 10:34 PM	34.400	14.0	1.53	242		1.64
12/7/12 10:36 PM	34.434	14.0	1.52	242		1.61

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/7/12 10:38 PM	34.467	14.0	1.52	242		1.61
12/7/12 10:40 PM	34.500	14.0	1.51	242		1.61
12/7/12 10:42 PM	34.534	14.0	1.5	242		1.58
12/7/12 10:44 PM	34.567	14.0	1.5	242		1.58
12/7/12 10:46 PM	34.600	14.0	1.5	242		1.55
12/7/12 10:48 PM	34.634	14.0	1.5	242		1.55
12/7/12 10:50 PM	34.667	14.0	1.49	242		1.55
12/7/12 10:52 PM	34.700	14.0	1.49	242		1.55
12/7/12 10:54 PM	34.734	14.0	1.48	240		1.55
12/7/12 10:56 PM	34.767	14.0	1.48	240		1.52
12/7/12 10:58 PM	34.800	14.0	1.48	242		1.49
12/7/12 11:00 PM	34.834	14.0	1.47	242		1.49
12/7/12 11:02 PM	34.867	14.0	1.46	242		1.49
12/7/12 11:04 PM	34.900	14.0	1.46	240		1.46
12/7/12 11:06 PM	34.934	14.0	1.46	242		1.46
12/7/12 11:08 PM	34.967	14.0	1.46	240		1.46
12/7/12 11:10 PM	35.000	14.0	1.45	240		1.46
12/7/12 11:12 PM	35.034	14.0	1.45	242		1.43
12/7/12 11:14 PM	35.067	14.0	1.45	240		1.43
12/7/12 11:16 PM	35.100	14.0	1.45	242		1.40
12/7/12 11:18 PM	35.134	14.0	1.44	240		1.37
12/7/12 11:20 PM	35.167	14.0	1.44	242		1.34
12/7/12 11:22 PM	35.200	14.0	1.44	242		1.31
12/7/12 11:24 PM	35.234	14.0	1.44	240		1.28
12/7/12 11:26 PM	35.267	14.0	1.43	240		1.28
12/7/12 11:28 PM	35.300	14.0	1.43	242		1.28
12/7/12 11:30 PM	35.334	14.0	1.43	242		1.31
12/7/12 11:32 PM	35.367	14.0	1.43	240		1.28
12/7/12 11:34 PM	35.400	14.0	1.42	242		1.25
12/7/12 11:36 PM	35.434	14.0	1.42	242		1.22
12/7/12 11:38 PM	35.467	14.0	1.43	242		1.22
12/7/12 11:40 PM	35.500	14.0	1.42	240		1.19
12/7/12 11:42 PM	35.534	14.0	1.42	242		1.19
12/7/12 11:44 PM	35.567	14.0	1.42	240		1.19
12/7/12 11:46 PM	35.600	14.0	1.41	240		1.16
12/7/12 11:48 PM	35.634	14.0	1.41	240		1.16
12/7/12 11:50 PM	35.667	14.0	1.4	240		1.16
12/7/12 11:52 PM	35.700	14.0	1.4	240		1.19
12/7/12 11:54 PM	35.734	14.0	1.39	242		1.16
12/7/12 11:56 PM	35.767	14.0	1.38	240		1.16
12/7/12 11:58 PM	35.800	14.0	1.38	242		1.19
12/8/12 12:00 AM	35.834	14.0	1.37	240		1.22
12/8/12 12:02 AM	35.867	14.0	1.37	240		1.19
12/8/12 12:04 AM	35.900	14.0	1.37	240		1.16
12/8/12 12:06 AM	35.934	14.0	1.36	240		1.16
12/8/12 12:08 AM	35.967	14.0	1.35	240		1.13
12/8/12 12:10 AM	36.000	14.0	1.34	240		1.10
12/8/12 12:12 AM	36.034	14.0	1.34	240		1.07
12/8/12 12:14 AM	36.067	14.0	1.34	240		1.07
12/8/12 12:16 AM	36.100	14.0	1.33	240		1.07

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 12:18 AM	36.134	14.0	1.33	242		1.10
12/8/12 12:20 AM	36.167	14.0	1.32	242		1.10
12/8/12 12:22 AM	36.200	14.0	1.31	240		1.10
12/8/12 12:24 AM	36.234	14.0	1.3	242		1.10
12/8/12 12:26 AM	36.267	14.0	1.3	242		1.10
12/8/12 12:28 AM	36.300	14.0	1.3	242		1.07
12/8/12 12:30 AM	36.334	14.0	1.29	240		1.07
12/8/12 12:32 AM	36.367	14.0	1.28	240		1.04
12/8/12 12:34 AM	36.400	14.0	1.28	240		1.04
12/8/12 12:36 AM	36.434	14.0	1.27	240		1.04
12/8/12 12:38 AM	36.467	14.0	1.26	240		1.04
12/8/12 12:40 AM	36.500	14.0	1.26	240		1.04
12/8/12 12:42 AM	36.534	14.0	1.25	240		1.04
12/8/12 12:44 AM	36.567	14.0	1.25	242		1.04
12/8/12 12:46 AM	36.600	14.0	1.24	242		1.04
12/8/12 12:48 AM	36.634	14.0	1.23	240		1.07
12/8/12 12:50 AM	36.667	14.0	1.23	240		1.07
12/8/12 12:52 AM	36.700	14.0	1.22	240		1.04
12/8/12 12:54 AM	36.734	14.0	1.21	240		1.01
12/8/12 12:56 AM	36.767	14.0	1.21	240		1.01
12/8/12 12:58 AM	36.800	14.0	1.2	240		0.98
12/8/12 1:00 AM	36.834	14.0	1.19	240		0.95
12/8/12 1:02 AM	36.867	14.0	1.18	240		0.92
12/8/12 1:04 AM	36.900	14.0	1.18	240		0.92
12/8/12 1:06 AM	36.934	14.0	1.17	240		0.92
12/8/12 1:08 AM	36.967	14.0	1.17	240		0.92
12/8/12 1:10 AM	37.000	14.0	1.16	240		0.92
12/8/12 1:12 AM	37.034	14.0	1.16	240		0.92
12/8/12 1:14 AM	37.067	14.0	1.15	240		0.92
12/8/12 1:16 AM	37.100	14.0	1.15	242		0.92
12/8/12 1:18 AM	37.134	14.0	1.13	240		0.89
12/8/12 1:20 AM	37.167	14.0	1.13	240		0.86
12/8/12 1:22 AM	37.200	14.0	1.13	240		0.86
12/8/12 1:24 AM	37.234	14.0	1.12	240		0.86
12/8/12 1:26 AM	37.267	14.0	1.12	240		0.86
12/8/12 1:28 AM	37.300	14.0	1.11	240		0.86
12/8/12 1:30 AM	37.334	14.0	1.11	240		0.86
12/8/12 1:32 AM	37.367	14.0	1.1	240		0.86
12/8/12 1:34 AM	37.400	14.0	1.09	240		0.89
12/8/12 1:36 AM	37.434	14.0	1.09	240		0.89
12/8/12 1:38 AM	37.467	14.0	1.08	240		0.92
12/8/12 1:40 AM	37.500	14.0	1.07	240		0.92
12/8/12 1:42 AM	37.534	14.0	1.07	240		0.92
12/8/12 1:44 AM	37.567	14.0	1.07	240		0.92
12/8/12 1:46 AM	37.600	14.0	1.06	240		0.92
12/8/12 1:48 AM	37.634	14.0	1.06	240		0.92
12/8/12 1:50 AM	37.667	14.0	1.05	240		0.89
12/8/12 1:52 AM	37.700	14.0	1.05	240		0.89
12/8/12 1:54 AM	37.734	14.0	1.04	240		0.89
12/8/12 1:56 AM	37.767	14.0	1.03	240		0.89

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 1:58 AM	37.800	14.0	1.03	240		0.89
12/8/12 2:00 AM	37.834	14.0	1.02	240		0.89
12/8/12 2:02 AM	37.867	14.0	1.02	242		0.89
12/8/12 2:04 AM	37.900	14.0	1.01	240		0.89
12/8/12 2:06 AM	37.934	14.0	1	242		0.89
12/8/12 2:08 AM	37.967	14.0	0.99	240		0.89
12/8/12 2:10 AM	38.000	14.0	0.99	240		0.89
12/8/12 2:12 AM	38.034	14.0	0.98	240		0.89
12/8/12 2:14 AM	38.067	14.0	0.97	240		0.89
12/8/12 2:16 AM	38.100	14.0	0.96	240		0.89
12/8/12 2:18 AM	38.134	14.0	0.95	240		0.89
12/8/12 2:20 AM	38.167	14.0	0.94	240		0.89
12/8/12 2:22 AM	38.200	14.0	0.93	240		0.92
12/8/12 2:24 AM	38.234	14.0	0.93	240		0.92
12/8/12 2:26 AM	38.267	14.0	0.92	240		0.92
12/8/12 2:28 AM	38.300	14.0	0.92	240		0.92
12/8/12 2:30 AM	38.334	14.0	0.91	240		0.92
12/8/12 2:32 AM	38.367	14.0	0.9	240		0.92
12/8/12 2:34 AM	38.400	14.0	0.89	240		0.92
12/8/12 2:36 AM	38.434	14.0	0.88	240		0.89
12/8/12 2:38 AM	38.467	14.0	0.88	240		0.89
12/8/12 2:40 AM	38.500	14.0	0.87	240		0.86
12/8/12 2:42 AM	38.534	14.0	0.86	240		0.86
12/8/12 2:44 AM	38.567	14.0	0.86	240		0.86
12/8/12 2:46 AM	38.600	14.0	0.85	240		0.86
12/8/12 2:48 AM	38.634	14.0	0.85	240		0.86
12/8/12 2:50 AM	38.667	14.0	0.84	242		0.86
12/8/12 2:52 AM	38.700	14.0	0.83	240		0.86
12/8/12 2:54 AM	38.734	14.0	0.82	240		0.86
12/8/12 2:56 AM	38.767	14.0	0.82	240		0.86
12/8/12 2:58 AM	38.800	14.0	0.81	240		0.86
12/8/12 3:00 AM	38.834	14.0	0.81	240		0.86
12/8/12 3:02 AM	38.867	14.0	0.8	240		0.86
12/8/12 3:04 AM	38.900	14.0	0.79	240		0.86
12/8/12 3:06 AM	38.934	14.0	0.78	240		0.86
12/8/12 3:08 AM	38.967	14.0	0.78	240		0.86
12/8/12 3:10 AM	39.000	14.0	0.78	240		0.86
12/8/12 3:12 AM	39.034	14.0	0.77	240		0.86
12/8/12 3:14 AM	39.067	14.0	0.77	240		0.86
12/8/12 3:16 AM	39.100	14.0	0.76	240		0.86
12/8/12 3:18 AM	39.134	14.0	0.75	240		0.86
12/8/12 3:20 AM	39.167	14.0	0.75	240		0.86
12/8/12 3:22 AM	39.200	14.0	0.74	240		0.86
12/8/12 3:24 AM	39.234	14.0	0.73	240		0.83
12/8/12 3:26 AM	39.267	14.0	0.72	240		0.83
12/8/12 3:28 AM	39.300	14.0	0.71	240		0.83
12/8/12 3:30 AM	39.334	14.0	0.71	240		0.83
12/8/12 3:32 AM	39.367	14.0	0.7	240		0.83
12/8/12 3:34 AM	39.400	14.0	0.69	240		0.83
12/8/12 3:36 AM	39.434	14.0	0.68	240		0.83

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 3:38 AM	39.467	14.0	0.67	240		0.83
12/8/12 3:40 AM	39.500	14.0	0.65	240		0.86
12/8/12 3:42 AM	39.534	14.0	0.65	240		0.86
12/8/12 3:44 AM	39.567	14.0	0.64	240		0.86
12/8/12 3:46 AM	39.600	14.0	0.63	240		0.86
12/8/12 3:48 AM	39.634	14.0	0.63	240		0.86
12/8/12 3:50 AM	39.667	14.0	0.62	240		0.86
12/8/12 3:52 AM	39.700	14.0	0.62	240		0.86
12/8/12 3:54 AM	39.734	14.0	0.61	240		0.86
12/8/12 3:56 AM	39.767	14.0	0.6	240		0.86
12/8/12 3:58 AM	39.800	14.0	0.58	240		0.86
12/8/12 4:00 AM	39.834	14.0	0.57	240		0.86
12/8/12 4:02 AM	39.867	14.0	0.57	240		0.86
12/8/12 4:04 AM	39.900	14.0	0.56	240		0.86
12/8/12 4:06 AM	39.934	14.0	0.56	240		0.86
12/8/12 4:08 AM	39.967	14.0	0.56	242		0.86
12/8/12 4:10 AM	40.000	14.0	0.56	240		0.86
12/8/12 4:12 AM	40.034	14.0	0.55	240		0.86
12/8/12 4:14 AM	40.067	14.0	0.55	240		0.86
12/8/12 4:16 AM	40.100	14.0	0.54	240		0.86
12/8/12 4:18 AM	40.134	14.0	0.53	240		0.86
12/8/12 4:20 AM	40.167	14.0	0.52	240		0.86
12/8/12 4:22 AM	40.200	14.0	0.52	240		0.86
12/8/12 4:24 AM	40.234	14.0	0.51	240		0.86
12/8/12 4:26 AM	40.267	14.0	0.51	240		0.86
12/8/12 4:28 AM	40.300	14.0	0.51	240		0.86
12/8/12 4:30 AM	40.334	14.0	0.51	240		0.86
12/8/12 4:32 AM	40.367	14.0	0.5	240		0.86
12/8/12 4:34 AM	40.400	14.0	0.5	240		0.86
12/8/12 4:36 AM	40.434	14.0	0.5	240		0.86
12/8/12 4:38 AM	40.467	14.0	0.49	240		0.86
12/8/12 4:40 AM	40.500	14.0	0.49	240		0.86
12/8/12 4:42 AM	40.534	14.0	0.49	240		0.83
12/8/12 4:44 AM	40.567	14.0	0.49	240		0.83
12/8/12 4:46 AM	40.600	14.0	0.49	240		0.83
12/8/12 4:48 AM	40.634	14.0	0.49	240		0.83
12/8/12 4:50 AM	40.667	14.0	0.49	240		0.83
12/8/12 4:52 AM	40.700	14.0	0.49	240		0.83
12/8/12 4:54 AM	40.734	14.0	0.48	240		0.86
12/8/12 4:56 AM	40.767	14.0	0.48	240		0.86
12/8/12 4:58 AM	40.800	14.0	0.48	240		0.86
12/8/12 5:00 AM	40.834	14.0	0.48	240		0.86
12/8/12 5:02 AM	40.867	14.0	0.49	240		0.86
12/8/12 5:04 AM	40.900	14.0	0.49	240		0.86
12/8/12 5:06 AM	40.934	14.0	0.5	240		0.86
12/8/12 5:08 AM	40.967	14.0	0.51	240		0.89
12/8/12 5:10 AM	41.000	14.0	0.52	240		0.89
12/8/12 5:12 AM	41.034	14.0	0.54	240		0.89
12/8/12 5:14 AM	41.067	14.0	0.55	240		0.89
12/8/12 5:16 AM	41.100	14.0	0.57	240		0.89

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 5:18 AM	41.134	14.0	0.59	240		0.89
12/8/12 5:20 AM	41.167	14.0	0.6	240		0.89
12/8/12 5:22 AM	41.200	14.0	0.62	242		0.89
12/8/12 5:24 AM	41.234	14.0	0.62	240		0.89
12/8/12 5:26 AM	41.267	14.0	0.64	240		0.92
12/8/12 5:28 AM	41.300	14.0	0.65	240		0.92
12/8/12 5:30 AM	41.334	14.0	0.66	240		0.92
12/8/12 5:32 AM	41.367	14.0	0.67	240		0.92
12/8/12 5:34 AM	41.400	14.0	0.69	240		0.92
12/8/12 5:36 AM	41.434	14.0	0.7	242		0.92
12/8/12 5:38 AM	41.467	14.0	0.71	240		0.92
12/8/12 5:40 AM	41.500	14.0	0.73	240		0.92
12/8/12 5:42 AM	41.534	14.0	0.73	240		0.92
12/8/12 5:44 AM	41.567	14.0	0.75	240		0.95
12/8/12 5:46 AM	41.600	14.0	0.76	240		0.98
12/8/12 5:48 AM	41.634	14.0	0.76	240		0.98
12/8/12 5:50 AM	41.667	14.0	0.77	240		1.01
12/8/12 5:52 AM	41.700	14.0	0.79	240		1.01
12/8/12 5:54 AM	41.734	14.0	0.79	242		1.01
12/8/12 5:56 AM	41.767	14.0	0.81	240		1.01
12/8/12 5:58 AM	41.800	14.0	0.81	240		1.04
12/8/12 6:00 AM	41.834	14.0	0.82	240		1.04
12/8/12 6:02 AM	41.867	14.0	0.83	240		1.04
12/8/12 6:04 AM	41.900	14.0	0.83	240		1.04
12/8/12 6:06 AM	41.934	14.0	0.84	240		1.07
12/8/12 6:08 AM	41.967	14.0	0.84	240		1.10
12/8/12 6:10 AM	42.000	14.0	0.84	240		1.07
12/8/12 6:12 AM	42.034	14.0	0.84	242		1.10
12/8/12 6:14 AM	42.067	14.0	0.84	242		1.13
12/8/12 6:16 AM	42.100	14.0	0.84	240		1.16
12/8/12 6:18 AM	42.134	14.0	0.84	242		1.16
12/8/12 6:20 AM	42.167	14.0	0.84	240		1.16
12/8/12 6:22 AM	42.200	14.0	0.85	240		1.19
12/8/12 6:24 AM	42.234	14.0	0.85	242		1.22
12/8/12 6:26 AM	42.267	14.0	0.86	242		1.25
12/8/12 6:28 AM	42.300	14.0	0.86	240		1.25
12/8/12 6:30 AM	42.334	14.0	0.86	240		1.28
12/8/12 6:32 AM	42.367	14.0	0.87	240		1.31
12/8/12 6:34 AM	42.400	14.0	0.87	242		1.34
12/8/12 6:36 AM	42.434	14.0	0.88	242		1.37
12/8/12 6:38 AM	42.467	14.0	0.87	240		1.40
12/8/12 6:40 AM	42.500	14.0	0.88	242		1.43
12/8/12 6:42 AM	42.534	14.0	0.87	242		1.46
12/8/12 6:44 AM	42.567	14.0	0.88	242		1.49
12/8/12 6:46 AM	42.600	14.0	0.88	240		1.49
12/8/12 6:48 AM	42.634	14.0	0.88	240		1.49
12/8/12 6:50 AM	42.667	14.0	0.89	242		1.52
12/8/12 6:52 AM	42.700	14.0	0.89	242		1.52
12/8/12 6:54 AM	42.734	14.0	0.89	242		1.55
12/8/12 6:56 AM	42.767	14.0	0.89	242		1.58

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 6:58 AM	42.800	14.0	0.89	242		1.58
12/8/12 7:00 AM	42.834	14.0	0.89	242		1.58
12/8/12 7:02 AM	42.867	14.0	0.89	242		1.61
12/8/12 7:04 AM	42.900	14.0	0.89	242		1.64
12/8/12 7:06 AM	42.934	14.0	0.9	242		1.67
12/8/12 7:08 AM	42.967	14.0	0.91	242		1.67
12/8/12 7:10 AM	43.000	14.0	0.91	242		1.67
12/8/12 7:12 AM	43.034	14.0	0.92	242		1.70
12/8/12 7:14 AM	43.067	14.0	0.93	242		1.70
12/8/12 7:16 AM	43.100	14.0	0.93	242		1.70
12/8/12 7:18 AM	43.134	14.0	0.95	242		1.70
12/8/12 7:20 AM	43.167	14.0	0.95	242		1.73
12/8/12 7:22 AM	43.200	14.0	0.97	242		1.76
12/8/12 7:24 AM	43.234	14.0	0.98	242		1.76
12/8/12 7:26 AM	43.267	14.0	1	242		1.76
12/8/12 7:28 AM	43.300	14.0	1.01	242		1.76
12/8/12 7:30 AM	43.334	14.0	1.03	242		1.76
12/8/12 7:32 AM	43.367	14.0	1.04	242		1.76
12/8/12 7:34 AM	43.400	14.0	1.06	242		1.76
12/8/12 7:36 AM	43.434	14.0	1.07	242		1.76
12/8/12 7:38 AM	43.467	14.0	1.09	242		1.76
12/8/12 7:40 AM	43.500	14.0	1.1	242		1.76
12/8/12 7:42 AM	43.534	14.0	1.12	242		1.76
12/8/12 7:44 AM	43.567	14.0	1.14	242		1.76
12/8/12 7:46 AM	43.600	14.0	1.15	242		1.76
12/8/12 7:48 AM	43.634	14.0	1.17	242		1.76
12/8/12 7:50 AM	43.667	14.0	1.18	242		1.76
12/8/12 7:52 AM	43.700	14.0	1.2	242		1.76
12/8/12 7:54 AM	43.734	14.0	1.21	242		1.76
12/8/12 7:56 AM	43.767	14.0	1.22	242		1.76
12/8/12 7:58 AM	43.800	14.0	1.23	242		1.76
12/8/12 8:00 AM	43.834	14.0	1.24	242		1.76
12/8/12 8:02 AM	43.867	14.0	1.25	242		1.76
12/8/12 8:04 AM	43.900	14.0	1.25	242		1.76
12/8/12 8:06 AM	43.934	14.0	1.26	242		1.76
12/8/12 8:08 AM	43.967	14.0	1.27	242		1.76
12/8/12 8:10 AM	44.000	14.0	1.27	242		1.76
12/8/12 8:12 AM	44.034	14.0	1.28	242		1.76
12/8/12 8:14 AM	44.067	14.0	1.29	242		1.76
12/8/12 8:16 AM	44.100	14.0	1.3	242		1.76
12/8/12 8:18 AM	44.134	14.0	1.31	242		1.76
12/8/12 8:20 AM	44.167	14.0	1.32	242		1.76
12/8/12 8:22 AM	44.200	14.0	1.33	242		1.76
12/8/12 8:24 AM	44.234	14.0	1.34	242		1.76
12/8/12 8:26 AM	44.267	14.0	1.35	242		1.76
12/8/12 8:28 AM	44.300	14.0	1.36	242		1.76
12/8/12 8:30 AM	44.334	14.0	1.37	242		1.76
12/8/12 8:32 AM	44.367	14.0	1.37	242		1.76
12/8/12 8:34 AM	44.400	14.0	1.39	242		1.76
12/8/12 8:36 AM	44.434	14.0	1.39	242		1.76

Sample Site No. 2 (5.04 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
12/8/12 8:38 AM	44.467	14.0	1.4	242		1.76
12/8/12 8:40 AM	44.500	14.0	1.41	242		1.76
12/8/12 8:42 AM	44.534	14.0	1.42	242		1.76
12/8/12 8:44 AM	44.567	14.0	1.43	242		1.76
12/8/12 8:46 AM	44.600	14.0	1.43	242		1.76
12/8/12 8:48 AM	44.634	14.0	1.44	242		1.76
12/8/12 8:50 AM	44.667	14.0	1.45	242		1.76
12/8/12 8:52 AM	44.700	14.0	1.47	242		1.76
12/8/12 8:54 AM	44.734	14.0	1.48	242		1.76
12/8/12 8:56 AM	44.767	14.0	1.49	242		1.76
12/8/12 8:58 AM	44.800	14.0	1.51	242		1.76
12/8/12 9:00 AM	44.834	14.0	1.53	242		1.76
12/8/12 9:02 AM	44.867	14.0	1.54	242		1.76
12/8/12 9:04 AM	44.900	14.0	1.55	242		1.76
12/8/12 9:06 AM	44.934	14.0	1.56	242		1.76
12/8/12 9:08 AM	44.967	14.0	1.57	242		1.76
12/8/12 9:10 AM	45.000	14.0	1.58	242		1.76
12/8/12 9:12 AM	45.034	14.0	1.6	242		1.76
12/8/12 9:14 AM	45.067	14.0	1.61	242		1.76
12/8/12 9:16 AM	45.100	14.0	1.62	242		1.76
12/8/12 9:18 AM	45.134	14.0	1.63	242		1.76
12/8/12 9:20 AM	45.167	14.0	1.65	242		1.76
12/8/12 9:22 AM	45.200	14.0	1.65	242		1.76
12/8/12 9:24 AM	45.234	14.0	1.67	242		1.76
12/8/12 9:26 AM	45.267	14.0	1.68	242		1.76
12/8/12 9:28 AM	45.300	14.0	1.69	242		1.76
12/8/12 9:30 AM	45.334	14.0	1.71	242		1.76
12/8/12 9:32 AM	45.367	14.0	1.72	242		1.76
12/8/12 9:34 AM	45.400	14.0	1.74	242		1.76
12/8/12 9:36 AM	45.434	14.0	1.75	242		1.76
12/8/12 9:38 AM	45.467	14.0	1.77	242		1.76
12/8/12 9:40 AM	45.500	14.0	1.79	242		1.76
12/8/12 9:42 AM	45.534	14.0	1.81	242		1.76
12/8/12 9:44 AM	45.567	14.0	1.82	242		1.76
12/8/12 9:46 AM	45.600	14.0	1.84	242		1.76
12/8/12 9:48 AM	45.634	14.0	1.85	242		1.76
12/8/12 9:50 AM	45.667	14.0	1.86	242		1.76
12/8/12 9:52 AM	45.700	14.0	1.88	242		1.76
12/8/12 9:54 AM	45.734	14.0	1.89	242		1.76
12/8/12 9:56 AM	45.767	14.0	1.91	242		1.76
12/8/12 9:58 AM	45.800	14.0	1.93	242		1.76
12/8/12 10:00 AM	45.834	14.0	1.94	242		1.76

Table B.2.3 Field measured parameters and calculated bromide concentrations at 5.13 km.

Sample Site No. 3 (5.13 km)

		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 11:40 AM	-	-	4.14	336		-
12/6/12 11:42 AM	-	-	4.14	336		-
12/6/12 11:44 AM	-	-	4.14	336		-
12/6/12 11:46 AM	-	-	4.14	336		-
12/6/12 11:48 AM	-	-	4.14	336		-
12/6/12 11:50 AM	-	-	4.13	336		-
12/6/12 11:52 AM	-	-	4.14	336		-
12/6/12 11:54 AM	-	-	4.04	336		-
12/6/12 11:56 AM	-	-	3.11	336		-
12/6/12 11:58 AM	-	18.3	4.15	336		-
12/6/12 12:00 PM	-	18.3	4.15	336		-
12/6/12 12:02 PM	-	18.3	4.16	336		-
12/6/12 12:04 PM	-	18.3	4.17	336		-
12/6/12 12:06 PM	-	18.3	4.18	336		-
12/6/12 12:08 PM	-	18.3	4.18	336		-
12/6/12 12:10 PM	0.000	18.3	4.19	336		-
12/6/12 12:12 PM	0.033	18.3	4.19	336		-
12/6/12 12:14 PM	0.067	18.3	4.2	336		-
12/6/12 12:16 PM	0.100	18.3	4.21	336		-
12/6/12 12:18 PM	0.133	18.3	4.23	336		-
12/6/12 12:20 PM	0.167	18.3	4.23	336		-
12/6/12 12:22 PM	0.200	18.3	4.23	336		-
12/6/12 12:24 PM	0.233	18.3	4.23	336		-
12/6/12 12:26 PM	0.267	18.3	4.23	336		-
12/6/12 12:28 PM	0.300	18.3	4.24	336		-
12/6/12 12:30 PM	0.333	18.3	4.24	336		-
12/6/12 12:32 PM	0.367	18.3	4.24	336		-
12/6/12 12:34 PM	0.400	18.3	4.25	336		-
12/6/12 12:36 PM	0.433	18.3	4.26	336		-
12/6/12 12:38 PM	0.467	18.3	4.25	336		-
12/6/12 12:40 PM	0.500	18.3	4.25	336		-0.142
12/6/12 12:42 PM	0.533	18.3	4.26	336		-0.142
12/6/12 12:44 PM	0.567	18.3	4.27	336		-0.142
12/6/12 12:46 PM	0.600	18.3	4.28	336		-0.142
12/6/12 12:48 PM	0.633	18.3	4.29	336		-0.142
12/6/12 12:50 PM	0.667	18.6	4.29	335		-0.142
12/6/12 12:52 PM	0.700	18.3	4.29	335		-0.142
12/6/12 12:54 PM	0.733	18.3	4.31	335		-0.142
12/6/12 12:56 PM	0.767	18.3	4.31	352		-0.142
12/6/12 12:58 PM	0.800	18.3	4.32	356		-0.142
12/6/12 1:00 PM	0.833	18.3	4.32	343		-0.142
12/6/12 1:02 PM	0.867	18.3	4.32	339		-0.142
12/6/12 1:04 PM	0.900	18.6	4.33	338		-0.142
12/6/12 1:06 PM	0.933	18.3	4.33	337		-0.142
12/6/12 1:08 PM	0.967	18.6	4.34	337		-0.142
12/6/12 1:10 PM	1.000	18.3	4.34	336		-0.142
12/6/12 1:12 PM	1.033	18.6	4.35	336		-0.142
12/6/12 1:14 PM	1.067	18.3	4.35	336		-0.142
12/6/12 1:16 PM	1.100	18.3	4.35	336		-0.142
12/6/12 1:18 PM	1.133	18.3	4.35	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 1:20 PM	1.167	18.6	4.36	336		-0.142
12/6/12 1:22 PM	1.200	18.6	4.38	336		-0.142
12/6/12 1:24 PM	1.233	18.6	4.39	336		-0.142
12/6/12 1:26 PM	1.267	18.6	4.39	336		-0.142
12/6/12 1:28 PM	1.300	18.3	4.38	336		-0.142
12/6/12 1:30 PM	1.333	18.3	4.39	336		-0.142
12/6/12 1:32 PM	1.367	18.3	4.39	336		-0.142
12/6/12 1:34 PM	1.400	18.6	4.39	336		-0.142
12/6/12 1:36 PM	1.433	18.3	4.4	336		-0.142
12/6/12 1:38 PM	1.467	18.6	4.4	336		-0.142
12/6/12 1:40 PM	1.500	18.6	4.39	335		-0.142
12/6/12 1:42 PM	1.533	18.6	4.38	336		-0.142
12/6/12 1:44 PM	1.567	18.3	4.39	336		-0.142
12/6/12 1:46 PM	1.600	18.3	4.4	336		-0.142
12/6/12 1:48 PM	1.633	18.6	4.4	336		-0.142
12/6/12 1:50 PM	1.667	18.3	4.4	336		-0.142
12/6/12 1:52 PM	1.700	18.3	4.38	336		-0.142
12/6/12 1:54 PM	1.733	18.3	4.39	336		-0.142
12/6/12 1:56 PM	1.767	18.6	4.41	336		-0.142
12/6/12 1:58 PM	1.800	18.6	4.42	336		-0.142
12/6/12 2:00 PM	1.833	18.3	4.42	336		-0.142
12/6/12 2:02 PM	1.867	18.3	4.42	336		-0.142
12/6/12 2:04 PM	1.900	18.6	4.42	336		-0.142
12/6/12 2:06 PM	1.933	18.6	4.44	336		-0.142
12/6/12 2:08 PM	1.967	18.6	4.44	336		-0.142
12/6/12 2:10 PM	2.000	18.3	4.42	336		-0.142
12/6/12 2:12 PM	2.033	18.6	4.41	336		-0.142
12/6/12 2:14 PM	2.067	18.6	4.4	336		-0.142
12/6/12 2:16 PM	2.100	18.3	4.39	336		-0.142
12/6/12 2:18 PM	2.133	18.6	4.39	336		-0.142
12/6/12 2:20 PM	2.167	18.3	4.38	336		-0.142
12/6/12 2:22 PM	2.200	18.3	4.38	336		-0.142
12/6/12 2:24 PM	2.233	18.6	4.36	336		-0.142
12/6/12 2:26 PM	2.267	18.6	4.37	336		-0.142
12/6/12 2:28 PM	2.300	18.3	4.37	336		-0.142
12/6/12 2:30 PM	2.333	18.3	4.36	336		-0.142
12/6/12 2:32 PM	2.367	18.3	4.35	336		-0.142
12/6/12 2:34 PM	2.400	18.3	4.35	336		-0.142
12/6/12 2:36 PM	2.433	18.6	4.34	336		-0.142
12/6/12 2:38 PM	2.467	18.3	4.33	336		-0.142
12/6/12 2:40 PM	2.500	18.6	4.32	336		-0.142
12/6/12 2:42 PM	2.533	18.6	4.31	336		-0.142
12/6/12 2:44 PM	2.567	18.3	4.31	336		-0.142
12/6/12 2:46 PM	2.600	18.6	4.3	336		-0.142
12/6/12 2:48 PM	2.633	18.6	4.29	336		-0.142
12/6/12 2:50 PM	2.667	18.6	4.29	336		-0.142
12/6/12 2:52 PM	2.700	18.6	4.28	336		-0.142
12/6/12 2:54 PM	2.733	18.6	4.28	336		-0.142
12/6/12 2:56 PM	2.767	18.3	4.28	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 2:58 PM	2.800	18.6	4.28	336		-0.142
12/6/12 3:00 PM	2.833	18.6	4.28	336		-0.142
12/6/12 3:02 PM	2.867	18.6	4.27	336		-0.142
12/6/12 3:04 PM	2.900	18.3	4.27	336		-0.142
12/6/12 3:06 PM	2.933	18.3	4.26	336		-0.142
12/6/12 3:08 PM	2.967	18.3	4.26	336		-0.142
12/6/12 3:10 PM	3.000	18.6	4.25	336		-0.142
12/6/12 3:12 PM	3.033	18.6	4.24	336		-0.142
12/6/12 3:14 PM	3.067	18.3	4.24	336		-0.142
12/6/12 3:16 PM	3.100	18.6	4.24	336		-0.142
12/6/12 3:18 PM	3.133	18.3	4.23	336		-0.142
12/6/12 3:20 PM	3.167	18.3	4.23	336		-0.142
12/6/12 3:22 PM	3.200	18.6	4.22	336		-0.142
12/6/12 3:24 PM	3.233	18.3	4.21	336		-0.142
12/6/12 3:26 PM	3.267	18.3	4.21	336		-0.142
12/6/12 3:28 PM	3.300	18.6	4.2	336		-0.142
12/6/12 3:30 PM	3.333	18.3	4.19	336		-0.142
12/6/12 3:32 PM	3.367	18.6	4.18	336		-0.142
12/6/12 3:34 PM	3.400	18.3	4.17	336		-0.142
12/6/12 3:36 PM	3.433	18.6	4.16	336		-0.142
12/6/12 3:38 PM	3.467	18.6	4.14	336		-0.142
12/6/12 3:40 PM	3.500	18.6	4.13	336		-0.142
12/6/12 3:42 PM	3.533	18.6	4.12	336		-0.142
12/6/12 3:44 PM	3.567	18.6	4.1	336		-0.142
12/6/12 3:46 PM	3.600	18.6	4.09	336		-0.142
12/6/12 3:48 PM	3.633	18.6	4.07	336		-0.142
12/6/12 3:50 PM	3.667	18.6	4.05	336		-0.142
12/6/12 3:52 PM	3.700	18.3	4.04	336		-0.142
12/6/12 3:54 PM	3.733	18.3	4.02	336		-0.142
12/6/12 3:56 PM	3.767	18.3	4.01	336		-0.142
12/6/12 3:58 PM	3.800	18.6	4	336		-0.142
12/6/12 4:00 PM	3.833	18.6	3.99	336		-0.142
12/6/12 4:02 PM	3.867	18.6	3.97	336		-0.142
12/6/12 4:04 PM	3.900	18.6	3.96	336		-0.142
12/6/12 4:06 PM	3.933	18.6	3.95	336		-0.142
12/6/12 4:08 PM	3.967	18.6	3.94	336		-0.142
12/6/12 4:10 PM	4.000	18.6	3.93	336		-0.142
12/6/12 4:12 PM	4.033	18.6	3.91	336		-0.142
12/6/12 4:14 PM	4.067	18.6	3.9	336		-0.142
12/6/12 4:16 PM	4.100	18.6	3.89	336		-0.142
12/6/12 4:18 PM	4.133	18.6	3.88	336		-0.142
12/6/12 4:20 PM	4.167	18.3	3.87	336		-0.142
12/6/12 4:22 PM	4.200	18.6	3.86	336		-0.142
12/6/12 4:24 PM	4.233	18.6	3.85	336		-0.142
12/6/12 4:26 PM	4.267	18.6	3.83	336		-0.142
12/6/12 4:28 PM	4.300	18.6	3.82	336		-0.142
12/6/12 4:30 PM	4.333	18.6	3.81	336		-0.142
12/6/12 4:32 PM	4.367	18.3	3.8	336		-0.142
12/6/12 4:34 PM	4.400	18.6	3.78	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 4:36 PM	4.433	18.6	3.77	336		-0.142
12/6/12 4:38 PM	4.467	18.3	3.75	336		-0.142
12/6/12 4:40 PM	4.500	18.3	3.75	336		-0.142
12/6/12 4:42 PM	4.533	18.6	3.73	336		-0.142
12/6/12 4:44 PM	4.567	18.6	3.72	336		-0.142
12/6/12 4:46 PM	4.600	18.6	3.71	336		-0.142
12/6/12 4:48 PM	4.633	18.6	3.69	336		-0.142
12/6/12 4:50 PM	4.667	18.6	3.68	336		-0.142
12/6/12 4:52 PM	4.700	18.6	3.66	336		-0.142
12/6/12 4:54 PM	4.733	18.6	3.65	336		-0.142
12/6/12 4:56 PM	4.767	18.6	3.64	336		-0.142
12/6/12 4:58 PM	4.800	18.6	3.62	336		-0.142
12/6/12 5:00 PM	4.833	18.6	3.61	336		-0.142
12/6/12 5:02 PM	4.867	18.3	3.6	336		-0.142
12/6/12 5:04 PM	4.900	18.3	3.59	336		-0.142
12/6/12 5:06 PM	4.933	18.3	3.57	336		-0.142
12/6/12 5:08 PM	4.967	18.3	3.56	336		-0.142
12/6/12 5:10 PM	5.000	18.6	3.55	336		-0.142
12/6/12 5:12 PM	5.033	18.6	3.53	336		-0.142
12/6/12 5:14 PM	5.067	18.6	3.52	336		-0.142
12/6/12 5:16 PM	5.100	18.6	3.5	336		-0.142
12/6/12 5:18 PM	5.133	18.6	3.49	336		-0.142
12/6/12 5:20 PM	5.167	18.6	3.47	336		-0.142
12/6/12 5:22 PM	5.200	18.6	3.46	336		-0.142
12/6/12 5:24 PM	5.233	18.6	3.44	336		-0.142
12/6/12 5:26 PM	5.267	18.6	3.44	336		-0.142
12/6/12 5:28 PM	5.300	18.6	3.42	336		-0.142
12/6/12 5:30 PM	5.333	18.6	3.4	336		-0.142
12/6/12 5:32 PM	5.367	18.6	3.39	336		-0.142
12/6/12 5:34 PM	5.400	18.3	3.37	336		-0.142
12/6/12 5:36 PM	5.433	18.6	3.36	336		-0.142
12/6/12 5:38 PM	5.467	18.6	3.35	336		-0.142
12/6/12 5:40 PM	5.500	18.6	3.34	336		-0.142
12/6/12 5:42 PM	5.533	18.6	3.32	336		-0.142
12/6/12 5:44 PM	5.567	18.6	3.3	336		-0.142
12/6/12 5:46 PM	5.600	18.6	3.3	336		-0.142
12/6/12 5:48 PM	5.633	18.6	3.29	336		-0.142
12/6/12 5:50 PM	5.667	18.6	3.26	336		-0.142
12/6/12 5:52 PM	5.700	18.3	3.25	336		-0.142
12/6/12 5:54 PM	5.733	18.6	3.24	336		-0.142
12/6/12 5:56 PM	5.767	18.6	3.23	336		-0.142
12/6/12 5:58 PM	5.800	18.6	3.21	336		-0.142
12/6/12 6:00 PM	5.833	18.6	3.2	336		-0.142
12/6/12 6:02 PM	5.867	18.6	3.19	336		-0.142
12/6/12 6:04 PM	5.900	18.6	3.18	336		-0.142
12/6/12 6:06 PM	5.933	18.6	3.17	336		-0.142
12/6/12 6:08 PM	5.967	18.6	3.16	336		-0.142
12/6/12 6:10 PM	6.000	18.6	3.14	336		-0.142
12/6/12 6:12 PM	6.033	18.6	3.13	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 6:14 PM	6.067	18.6	3.12	336		-0.142
12/6/12 6:16 PM	6.100	18.6	3.11	336		-0.142
12/6/12 6:18 PM	6.133	18.6	3.09	336		-0.142
12/6/12 6:20 PM	6.167	18.6	3.09	336		-0.142
12/6/12 6:22 PM	6.200	18.3	3.06	336		-0.142
12/6/12 6:24 PM	6.233	18.6	3.06	336		-0.142
12/6/12 6:26 PM	6.267	18.6	3.05	336		-0.142
12/6/12 6:28 PM	6.300	18.6	3.02	336		-0.142
12/6/12 6:30 PM	6.333	18.6	3.02	336		-0.142
12/6/12 6:32 PM	6.367	18.6	3.01	336		-0.142
12/6/12 6:34 PM	6.400	18.6	3	336		-0.142
12/6/12 6:36 PM	6.433	18.6	2.98	336		-0.142
12/6/12 6:38 PM	6.467	18.6	2.97	336		-0.142
12/6/12 6:40 PM	6.500	18.6	2.96	336		-0.142
12/6/12 6:42 PM	6.533	18.6	2.95	336		-0.142
12/6/12 6:44 PM	6.567	18.6	2.94	336		-0.142
12/6/12 6:46 PM	6.600	18.6	2.92	336		-0.142
12/6/12 6:48 PM	6.633	18.6	2.91	336		-0.142
12/6/12 6:50 PM	6.667	18.6	2.89	336		-0.142
12/6/12 6:52 PM	6.700	18.6	2.89	336		-0.142
12/6/12 6:54 PM	6.733	18.6	2.88	336		-0.142
12/6/12 6:56 PM	6.767	18.6	2.87	336		-0.142
12/6/12 6:58 PM	6.800	18.6	2.84	336		-0.142
12/6/12 7:00 PM	6.833	18.6	2.84	336		-0.142
12/6/12 7:02 PM	6.867	18.6	2.83	336		-0.142
12/6/12 7:04 PM	6.900	18.6	2.81	336		-0.142
12/6/12 7:06 PM	6.933	18.6	2.8	336		-0.142
12/6/12 7:08 PM	6.967	18.6	2.79	336		-0.142
12/6/12 7:10 PM	7.000	18.6	2.79	336		-0.142
12/6/12 7:12 PM	7.033	18.6	2.77	336		-0.142
12/6/12 7:14 PM	7.067	18.6	2.75	336		-0.142
12/6/12 7:16 PM	7.100	18.6	2.75	336		-0.142
12/6/12 7:18 PM	7.133	18.6	2.73	336		-0.142
12/6/12 7:20 PM	7.167	18.6	2.72	336		-0.142
12/6/12 7:22 PM	7.200	18.6	2.72	336		-0.142
12/6/12 7:24 PM	7.233	18.6	2.7	336		-0.142
12/6/12 7:26 PM	7.267	18.6	2.7	336		-0.142
12/6/12 7:28 PM	7.300	18.6	2.69	336		-0.142
12/6/12 7:30 PM	7.333	18.6	2.67	336		-0.142
12/6/12 7:32 PM	7.367	18.6	2.66	336		-0.142
12/6/12 7:34 PM	7.400	18.6	2.65	336		-0.142
12/6/12 7:36 PM	7.433	18.6	2.64	336		-0.142
12/6/12 7:38 PM	7.467	18.6	2.62	336		-0.142
12/6/12 7:40 PM	7.500	18.6	2.61	336		-0.142
12/6/12 7:42 PM	7.533	18.6	2.61	336		-0.142
12/6/12 7:44 PM	7.567	18.6	2.6	336		-0.142
12/6/12 7:46 PM	7.600	18.6	2.59	336		-0.142
12/6/12 7:48 PM	7.633	18.6	2.58	336		-0.142
12/6/12 7:50 PM	7.667	18.6	2.57	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 7:52 PM	7.700	18.6	2.57	336		-0.142
12/6/12 7:54 PM	7.733	18.6	2.55	336		-0.142
12/6/12 7:56 PM	7.767	18.6	2.55	336		-0.142
12/6/12 7:58 PM	7.800	18.6	2.53	336		-0.142
12/6/12 8:00 PM	7.833	18.6	2.53	336		-0.142
12/6/12 8:02 PM	7.867	18.6	2.51	336		-0.142
12/6/12 8:04 PM	7.900	18.6	2.51	336		-0.142
12/6/12 8:06 PM	7.933	18.6	2.5	336		-0.142
12/6/12 8:08 PM	7.967	18.6	2.49	336		-0.142
12/6/12 8:10 PM	8.000	18.6	2.48	336		-0.142
12/6/12 8:12 PM	8.033	18.6	2.46	336		-0.142
12/6/12 8:14 PM	8.067	18.6	2.45	336		-0.142
12/6/12 8:16 PM	8.100	18.6	2.45	336		-0.142
12/6/12 8:18 PM	8.133	18.6	2.44	336		-0.142
12/6/12 8:20 PM	8.167	18.6	2.43	336		-0.142
12/6/12 8:22 PM	8.200	18.6	2.43	336		-0.142
12/6/12 8:24 PM	8.233	18.6	2.42	336		-0.142
12/6/12 8:26 PM	8.267	18.6	2.41	336		-0.142
12/6/12 8:28 PM	8.300	18.6	2.41	336		-0.142
12/6/12 8:30 PM	8.333	18.6	2.4	336		-0.142
12/6/12 8:32 PM	8.367	18.6	2.39	336		-0.142
12/6/12 8:34 PM	8.400	18.6	2.38	336		-0.142
12/6/12 8:36 PM	8.433	18.6	2.37	336		-0.142
12/6/12 8:38 PM	8.467	18.6	2.35	336		-0.142
12/6/12 8:40 PM	8.500	18.6	2.35	336		-0.142
12/6/12 8:42 PM	8.533	18.6	2.34	336		-0.142
12/6/12 8:44 PM	8.567	18.6	2.34	336		-0.142
12/6/12 8:46 PM	8.600	18.6	2.32	336		-0.142
12/6/12 8:48 PM	8.633	18.6	2.33	336		-0.142
12/6/12 8:50 PM	8.667	18.6	2.31	336		-0.142
12/6/12 8:52 PM	8.700	18.6	2.29	336		-0.142
12/6/12 8:54 PM	8.733	18.6	2.29	336		-0.142
12/6/12 8:56 PM	8.767	18.6	2.28	336		-0.142
12/6/12 8:58 PM	8.800	18.6	2.28	336		-0.142
12/6/12 9:00 PM	8.833	18.9	2.27	336		-0.142
12/6/12 9:02 PM	8.867	18.6	2.26	336		-0.142
12/6/12 9:04 PM	8.900	18.6	2.25	336		-0.142
12/6/12 9:06 PM	8.933	18.6	2.24	336		-0.142
12/6/12 9:08 PM	8.967	18.6	2.24	336		-0.142
12/6/12 9:10 PM	9.000	18.6	2.23	336		-0.142
12/6/12 9:12 PM	9.033	18.6	2.22	335		-0.142
12/6/12 9:14 PM	9.067	18.6	2.2	333		-0.142
12/6/12 9:16 PM	9.100	18.6	2.2	332		-0.142
12/6/12 9:18 PM	9.133	18.6	2.19	330		-0.142
12/6/12 9:20 PM	9.167	18.6	2.18	329		-0.142
12/6/12 9:22 PM	9.200	18.6	2.17	328		-0.142
12/6/12 9:24 PM	9.233	18.9	2.17	328		-0.142
12/6/12 9:26 PM	9.267	18.6	2.16	328		-0.142
12/6/12 9:28 PM	9.300	18.6	2.16	328		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 9:30 PM	9.333	18.6	2.15	328		-0.142
12/6/12 9:32 PM	9.367	18.6	2.13	328		-0.142
12/6/12 9:34 PM	9.400	18.9	2.13	329		-0.142
12/6/12 9:36 PM	9.433	18.6	2.12	330		-0.142
12/6/12 9:38 PM	9.467	18.6	2.13	331		-0.142
12/6/12 9:40 PM	9.500	18.6	2.11	332		-0.142
12/6/12 9:42 PM	9.533	18.6	2.11	333		-0.142
12/6/12 9:44 PM	9.567	18.6	2.11	334		-0.142
12/6/12 9:46 PM	9.600	18.6	2.1	334		-0.142
12/6/12 9:48 PM	9.633	18.6	2.09	334		-0.142
12/6/12 9:50 PM	9.667	18.6	2.1	334		-0.142
12/6/12 9:52 PM	9.700	18.6	2.09	335		-0.142
12/6/12 9:54 PM	9.733	18.6	2.09	335		-0.142
12/6/12 9:56 PM	9.767	18.6	2.08	335		-0.142
12/6/12 9:58 PM	9.800	18.6	2.08	335		-0.142
12/6/12 10:00 PM	9.833	18.6	2.07	335		-0.142
12/6/12 10:02 PM	9.867	18.6	2.07	335		-0.142
12/6/12 10:04 PM	9.900	18.6	2.07	336		-0.142
12/6/12 10:06 PM	9.933	18.6	2.05	335		-0.142
12/6/12 10:08 PM	9.967	18.6	2.05	335		-0.142
12/6/12 10:10 PM	10.000	18.6	2.05	335		-0.142
12/6/12 10:12 PM	10.033	18.6	2.04	335		-0.142
12/6/12 10:14 PM	10.067	18.6	2.04	335		-0.142
12/6/12 10:16 PM	10.100	18.9	2.03	335		-0.142
12/6/12 10:18 PM	10.133	18.9	2.02	335		-0.142
12/6/12 10:20 PM	10.167	18.6	2.02	335		-0.142
12/6/12 10:22 PM	10.200	18.6	2.01	335		-0.142
12/6/12 10:24 PM	10.233	18.9	2.01	335		-0.142
12/6/12 10:26 PM	10.267	18.6	2	335		-0.142
12/6/12 10:28 PM	10.300	18.6	2	336		-0.142
12/6/12 10:30 PM	10.333	18.9	1.98	335		-0.142
12/6/12 10:32 PM	10.367	18.6	1.98	335		-0.142
12/6/12 10:34 PM	10.400	18.6	1.99	335		-0.142
12/6/12 10:36 PM	10.433	18.9	1.98	335		-0.142
12/6/12 10:38 PM	10.467	18.6	1.97	335		-0.142
12/6/12 10:40 PM	10.500	18.6	1.96	335		-0.142
12/6/12 10:42 PM	10.533	18.6	1.95	335		-0.142
12/6/12 10:44 PM	10.567	18.6	1.96	335		-0.142
12/6/12 10:46 PM	10.600	18.9	1.95	335		-0.142
12/6/12 10:48 PM	10.633	18.6	1.95	335		-0.142
12/6/12 10:50 PM	10.667	18.6	1.95	335		-0.142
12/6/12 10:52 PM	10.700	18.6	1.94	335		-0.142
12/6/12 10:54 PM	10.733	18.6	1.94	335		-0.142
12/6/12 10:56 PM	10.767	18.9	1.94	335		-0.142
12/6/12 10:58 PM	10.800	18.9	1.93	335		-0.142
12/6/12 11:00 PM	10.833	18.6	1.93	336		-0.142
12/6/12 11:02 PM	10.867	18.6	1.93	336		-0.142
12/6/12 11:04 PM	10.900	18.6	1.93	336		-0.142
12/6/12 11:06 PM	10.933	18.6	1.92	336		-0.142

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/6/12 11:08 PM	10.967	18.6	1.93	336		-0.142
12/6/12 11:10 PM	11.000	18.6	1.93	336		-0.142
12/6/12 11:12 PM	11.033	18.6	1.92	336		-0.142
12/6/12 11:14 PM	11.067	18.6	1.93	336		-0.142
12/6/12 11:16 PM	11.100	18.6	1.92	336		-0.142
12/6/12 11:18 PM	11.133	18.6	1.91	336		-0.142
12/6/12 11:20 PM	11.167	18.6	1.91	337		-0.142
12/6/12 11:22 PM	11.200	18.9	1.91	337		-0.142
12/6/12 11:24 PM	11.233	18.6	1.91	338		-0.142
12/6/12 11:26 PM	11.267	18.6	1.91	338		-0.142
12/6/12 11:28 PM	11.300	18.6	1.91	338		-0.142
12/6/12 11:30 PM	11.333	18.9	1.91	339		-0.142
12/6/12 11:32 PM	11.367	18.6	1.91	340		-0.142
12/6/12 11:34 PM	11.400	18.9	1.91	340		-0.112
12/6/12 11:36 PM	11.433	18.6	1.89	341		-0.082
12/6/12 11:38 PM	11.467	18.6	1.89	342		-0.053
12/6/12 11:40 PM	11.500	18.9	1.89	342		0.007
12/6/12 11:42 PM	11.533	18.6	1.89	343		0.067
12/6/12 11:44 PM	11.567	18.9	1.88	344		0.156
12/6/12 11:46 PM	11.600	18.6	1.87	344		0.245
12/6/12 11:48 PM	11.633	18.9	1.87	345		0.484
12/6/12 11:50 PM	11.667	18.6	1.86	345		1.11
12/6/12 11:52 PM	11.700	18.6	1.87	346		1.11
12/6/12 11:54 PM	11.733	18.6	1.85	346		1.73
12/6/12 11:56 PM	11.767	18.9	1.85	347		1.73
12/6/12 11:58 PM	11.800	18.9	1.84	348		1.73
12/7/12 12:00 AM	11.833	18.6	1.83	348		2.36
12/7/12 12:02 AM	11.867	18.9	1.83	349		2.99
12/7/12 12:04 AM	11.900	18.9	1.83	349		2.99
12/7/12 12:06 AM	11.933	18.9	1.82	349		3.61
12/7/12 12:08 AM	11.967	18.9	1.81	350		4.24
12/7/12 12:10 AM	12.000	18.6	1.81	350		4.24
12/7/12 12:12 AM	12.033	18.9	1.81	350		4.86
12/7/12 12:14 AM	12.067	18.9	1.79	351		5.49
12/7/12 12:16 AM	12.100	18.9	1.79	351		6.12
12/7/12 12:18 AM	12.133	18.9	1.78	351		6.74
12/7/12 12:20 AM	12.167	18.9	1.78	351		6.74
12/7/12 12:22 AM	12.200	18.6	1.78	351		7.37
12/7/12 12:24 AM	12.233	18.9	1.78	351		7.37
12/7/12 12:26 AM	12.267	18.9	1.77	351		7.99
12/7/12 12:28 AM	12.300	18.9	1.76	350		8.62
12/7/12 12:30 AM	12.333	18.9	1.76	351		8.62
12/7/12 12:32 AM	12.367	18.6	1.75	351		9.25
12/7/12 12:34 AM	12.400	18.9	1.75	350		9.25
12/7/12 12:36 AM	12.433	18.6	1.75	350		9.25
12/7/12 12:38 AM	12.467	18.9	1.75	350		9.87
12/7/12 12:40 AM	12.500	18.6	1.75	350		9.87
12/7/12 12:42 AM	12.533	18.6	1.73	350		9.87
12/7/12 12:44 AM	12.567	18.9	1.74	349		10.5

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 12:46 AM	12.600	18.6	1.75	349		10.5
12/7/12 12:48 AM	12.633	18.9	1.74	349		10.5
12/7/12 12:50 AM	12.667	18.6	1.74	348		10.5
12/7/12 12:52 AM	12.700	18.6	1.73	348		10.5
12/7/12 12:54 AM	12.733	18.9	1.73	348		10.5
12/7/12 12:56 AM	12.767	18.6	1.74	347		10.5
12/7/12 12:58 AM	12.800	18.9	1.71	347		9.9
12/7/12 1:00 AM	12.833	18.6	1.72	347		10.5
12/7/12 1:02 AM	12.867	18.9	1.71	347		10.5
12/7/12 1:04 AM	12.900	18.9	1.72	346		9.87
12/7/12 1:06 AM	12.933	18.6	1.71	346		9.87
12/7/12 1:08 AM	12.967	18.6	1.72	346		9.87
12/7/12 1:10 AM	13.000	18.9	1.71	345		9.87
12/7/12 1:12 AM	13.033	18.9	1.72	345		9.87
12/7/12 1:14 AM	13.067	18.6	1.71	345		9.25
12/7/12 1:16 AM	13.100	18.6	1.72	344		9.25
12/7/12 1:18 AM	13.133	18.9	1.71	344		9.25
12/7/12 1:20 AM	13.167	18.6	1.71	344		8.62
12/7/12 1:22 AM	13.200	18.9	1.71	344		8.62
12/7/12 1:24 AM	13.233	18.6	1.71	344		8.62
12/7/12 1:26 AM	13.267	18.9	1.71	344		7.99
12/7/12 1:28 AM	13.300	18.6	1.69	344		7.99
12/7/12 1:30 AM	13.333	18.6	1.7	343		7.99
12/7/12 1:32 AM	13.367	18.9	1.71	343		7.99
12/7/12 1:34 AM	13.400	18.6	1.7	343		7.37
12/7/12 1:36 AM	13.433	18.9	1.69	343		7.37
12/7/12 1:38 AM	13.467	18.9	1.69	342		7.37
12/7/12 1:40 AM	13.500	18.9	1.69	342		6.74
12/7/12 1:42 AM	13.533	18.9	1.68	342		6.74
12/7/12 1:44 AM	13.567	18.6	1.68	342		6.74
12/7/12 1:46 AM	13.600	18.6	1.68	341		6.12
12/7/12 1:48 AM	13.633	18.9	1.67	341		6.12
12/7/12 1:50 AM	13.667	18.9	1.67	341		6.12
12/7/12 1:52 AM	13.700	18.9	1.67	341		5.49
12/7/12 1:54 AM	13.733	18.9	1.67	341		5.49
12/7/12 1:56 AM	13.767	18.9	1.66	340		5.49
12/7/12 1:58 AM	13.800	18.9	1.66	340		5.49
12/7/12 2:00 AM	13.833	18.9	1.66	340		4.86
12/7/12 2:02 AM	13.867	18.9	1.65	340		4.86
12/7/12 2:04 AM	13.900	18.6	1.65	340		4.86
12/7/12 2:06 AM	13.933	18.9	1.65	340		4.86
12/7/12 2:08 AM	13.967	18.9	1.64	340		4.24
12/7/12 2:10 AM	14.000	18.9	1.63	340		4.24
12/7/12 2:12 AM	14.033	18.9	1.62	339		4.24
12/7/12 2:14 AM	14.067	18.9	1.63	339		4.24
12/7/12 2:16 AM	14.100	18.9	1.63	339		3.61
12/7/12 2:18 AM	14.133	18.9	1.62	339		3.61
12/7/12 2:20 AM	14.167	18.9	1.63	339		3.61
12/7/12 2:22 AM	14.200	18.9	1.62	339		3.61

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 2:24 AM	14.233	18.9	1.61	339		3.61
12/7/12 2:26 AM	14.267	18.9	1.62	339		2.99
12/7/12 2:28 AM	14.300	18.9	1.6	339		2.99
12/7/12 2:30 AM	14.333	18.9	1.59	339		2.99
12/7/12 2:32 AM	14.367	18.6	1.59	338		2.99
12/7/12 2:34 AM	14.400	18.9	1.58	339		2.99
12/7/12 2:36 AM	14.433	18.9	1.59	338		2.99
12/7/12 2:38 AM	14.467	18.9	1.58	339		2.99
12/7/12 2:40 AM	14.500	18.9	1.57	339		2.99
12/7/12 2:42 AM	14.533	18.6	1.57	338		2.36
12/7/12 2:44 AM	14.567	18.9	1.56	338		2.36
12/7/12 2:46 AM	14.600	18.9	1.55	338		2.36
12/7/12 2:48 AM	14.633	18.6	1.55	338		2.36
12/7/12 2:50 AM	14.667	18.9	1.55	338		2.36
12/7/12 2:52 AM	14.700	18.9	1.55	339		2.36
12/7/12 2:54 AM	14.733	18.9	1.54	339		2.30
12/7/12 2:56 AM	14.767	18.9	1.55	338		2.26
12/7/12 2:58 AM	14.800	18.9	1.54	339		2.22
12/7/12 3:00 AM	14.833	18.9	1.54	338		2.18
12/7/12 3:02 AM	14.867	18.9	1.54	338		2.14
12/7/12 3:04 AM	14.900	18.9	1.54	338		2.10
12/7/12 3:06 AM	14.933	18.9	1.53	338		2.06
12/7/12 3:08 AM	14.967	18.9	1.53	338		2.04
12/7/12 3:10 AM	15.000	18.9	1.54	338		2.02
12/7/12 3:12 AM	15.033	18.9	1.54	338		2.00
12/7/12 3:14 AM	15.067	18.9	1.53	338		1.98
12/7/12 3:16 AM	15.100	18.9	1.53	338		1.96
12/7/12 3:18 AM	15.133	18.9	1.53	338		1.94
12/7/12 3:20 AM	15.167	18.6	1.53	338		1.92
12/7/12 3:22 AM	15.200	18.9	1.53	338		1.90
12/7/12 3:24 AM	15.233	18.9	1.53	338		1.88
12/7/12 3:26 AM	15.267	18.9	1.54	338		1.86
12/7/12 3:28 AM	15.300	18.6	1.53	338		1.86
12/7/12 3:30 AM	15.333	18.6	1.53	338		1.84
12/7/12 3:32 AM	15.367	18.9	1.53	338		1.84
12/7/12 3:34 AM	15.400	18.9	1.52	338		1.82
12/7/12 3:36 AM	15.433	18.9	1.54	338		1.80
12/7/12 3:38 AM	15.467	18.9	1.52	338		1.80
12/7/12 3:40 AM	15.500	18.9	1.52	338		1.80
12/7/12 3:42 AM	15.533	18.9	1.52	337		1.80
12/7/12 3:44 AM	15.567	18.9	1.52	338		1.80
12/7/12 3:46 AM	15.600	18.9	1.51	338		1.80
12/7/12 3:48 AM	15.633	18.9	1.51	338		1.78
12/7/12 3:50 AM	15.667	18.9	1.52	337		1.75
12/7/12 3:52 AM	15.700	18.9	1.51	337		1.75
12/7/12 3:54 AM	15.733	18.6	1.51	337		1.73
12/7/12 3:56 AM	15.767	18.9	1.51	338		1.73
12/7/12 3:58 AM	15.800	18.6	1.51	337		1.73
12/7/12 4:00 AM	15.833	18.9	1.51	337		1.73

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 4:02 AM	15.867	18.9	1.51	337		1.73
12/7/12 4:04 AM	15.900	18.9	1.51	338		1.73
12/7/12 4:06 AM	15.933	18.9	1.51	338		1.73
12/7/12 4:08 AM	15.967	18.9	1.51	337		1.73
12/7/12 4:10 AM	16.000	18.9	1.51	337		1.73
12/7/12 4:12 AM	16.033	18.9	1.51	337		1.73
12/7/12 4:14 AM	16.067	18.9	1.51	337		1.73
12/7/12 4:16 AM	16.100	18.9	1.51	337		1.73
12/7/12 4:18 AM	16.133	18.9	1.51	337		1.73
12/7/12 4:20 AM	16.167	18.9	1.51	337		1.73
12/7/12 4:22 AM	16.200	18.9	1.51	337		1.73
12/7/12 4:24 AM	16.233	18.9	1.51	338		1.73
12/7/12 4:26 AM	16.267	18.9	1.51	338		1.73
12/7/12 4:28 AM	16.300	18.9	1.51	337		1.71
12/7/12 4:30 AM	16.333	18.9	1.5	337		1.69
12/7/12 4:32 AM	16.367	18.9	1.5	338		1.67
12/7/12 4:34 AM	16.400	18.9	1.5	337		1.65
12/7/12 4:36 AM	16.433	18.9	1.5	337		1.63
12/7/12 4:38 AM	16.467	18.9	1.5	337		1.61
12/7/12 4:40 AM	16.500	18.9	1.5	337		1.59
12/7/12 4:42 AM	16.533	18.9	1.51	337		1.57
12/7/12 4:44 AM	16.567	18.9	1.51	337		1.55
12/7/12 4:46 AM	16.600	18.9	1.51	337		1.53
12/7/12 4:48 AM	16.633	18.9	1.51	337		1.51
12/7/12 4:50 AM	16.667	18.9	1.51	337		1.49
12/7/12 4:52 AM	16.700	18.9	1.52	337		1.47
12/7/12 4:54 AM	16.733	18.9	1.52	337		1.45
12/7/12 4:56 AM	16.767	18.9	1.52	337		1.43
12/7/12 4:58 AM	16.800	18.9	1.53	337		1.41
12/7/12 5:00 AM	16.833	18.9	1.53	337		1.39
12/7/12 5:02 AM	16.867	18.9	1.54	337		1.37
12/7/12 5:04 AM	16.900	18.9	1.54	337		1.35
12/7/12 5:06 AM	16.933	18.9	1.54	337		1.33
12/7/12 5:08 AM	16.967	18.9	1.54	337		1.31
12/7/12 5:10 AM	17.000	18.9	1.55	337		1.29
12/7/12 5:12 AM	17.033	18.9	1.55	337		1.27
12/7/12 5:14 AM	17.067	18.9	1.57	337		1.25
12/7/12 5:16 AM	17.100	18.6	1.57	337		1.23
12/7/12 5:18 AM	17.133	18.9	1.58	337		1.21
12/7/12 5:20 AM	17.167	18.9	1.58	337		1.19
12/7/12 5:22 AM	17.200	18.9	1.59	337		1.17
12/7/12 5:24 AM	17.233	18.9	1.6	337		1.15
12/7/12 5:26 AM	17.267	18.6	1.6	337		1.13
12/7/12 5:28 AM	17.300	18.9	1.61	337		1.11
12/7/12 5:30 AM	17.333	18.9	1.63	337		1.11
12/7/12 5:32 AM	17.367	18.9	1.63	337		1.11
12/7/12 5:34 AM	17.400	18.9	1.64	337		1.11
12/7/12 5:36 AM	17.433	18.9	1.65	337		1.11
12/7/12 5:38 AM	17.467	18.9	1.65	337		1.11

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 5:40 AM	17.500	18.9	1.66	337		1.11
12/7/12 5:42 AM	17.533	18.9	1.67	337		1.11
12/7/12 5:44 AM	17.567	18.9	1.68	337		1.11
12/7/12 5:46 AM	17.600	18.9	1.68	337		1.13
12/7/12 5:48 AM	17.633	18.9	1.68	337		1.13
12/7/12 5:50 AM	17.667	18.9	1.68	337		1.13
12/7/12 5:52 AM	17.700	18.9	1.7	338		1.13
12/7/12 5:54 AM	17.733	18.9	1.7	337		1.15
12/7/12 5:56 AM	17.767	18.9	1.71	337		1.15
12/7/12 5:58 AM	17.800	18.9	1.71	337		1.15
12/7/12 6:00 AM	17.833	18.9	1.72	338		1.15
12/7/12 6:02 AM	17.867	18.9	1.72	337		1.15
12/7/12 6:04 AM	17.900	18.9	1.73	337		1.15
12/7/12 6:06 AM	17.933	18.9	1.73	337		1.15
12/7/12 6:08 AM	17.967	18.6	1.73	337		1.17
12/7/12 6:10 AM	18.000	18.9	1.74	337		1.17
12/7/12 6:12 AM	18.033	18.9	1.74	337		1.17
12/7/12 6:14 AM	18.067	18.9	1.73	338		1.17
12/7/12 6:16 AM	18.100	18.9	1.73	337		1.17
12/7/12 6:18 AM	18.133	18.6	1.73	337		1.17
12/7/12 6:20 AM	18.167	18.9	1.73	337		1.17
12/7/12 6:22 AM	18.200	18.6	1.74	337		1.17
12/7/12 6:24 AM	18.233	18.9	1.74	337		1.17
12/7/12 6:26 AM	18.267	18.9	1.75	337		1.17
12/7/12 6:28 AM	18.300	18.9	1.74	337		1.19
12/7/12 6:30 AM	18.333	18.9	1.74	337		1.21
12/7/12 6:32 AM	18.367	18.6	1.75	337		1.23
12/7/12 6:34 AM	18.400	18.9	1.74	338		1.23
12/7/12 6:36 AM	18.433	18.9	1.75	338		1.23
12/7/12 6:38 AM	18.467	18.9	1.74	338		1.23
12/7/12 6:40 AM	18.500	18.6	1.74	337		1.23
12/7/12 6:42 AM	18.533	18.9	1.74	337		1.25
12/7/12 6:44 AM	18.567	18.9	1.75	337		1.27
12/7/12 6:46 AM	18.600	18.9	1.74	337		1.27
12/7/12 6:48 AM	18.633	18.9	1.74	338		1.27
12/7/12 6:50 AM	18.667	18.9	1.74	338		1.27
12/7/12 6:52 AM	18.700	18.9	1.74	337		1.27
12/7/12 6:54 AM	18.733	18.6	1.75	338		1.27
12/7/12 6:56 AM	18.767	18.9	1.75	337		1.25
12/7/12 6:58 AM	18.800	18.9	1.74	337		1.25
12/7/12 7:00 AM	18.833	18.6	1.75	337		1.25
12/7/12 7:02 AM	18.867	18.9	1.76	337		1.25
12/7/12 7:04 AM	18.900	18.6	1.76	337		1.25
12/7/12 7:06 AM	18.933	18.6	1.76	337		1.25
12/7/12 7:08 AM	18.967	18.9	1.76	337		1.25
12/7/12 7:10 AM	19.000	18.9	1.76	337		1.23
12/7/12 7:12 AM	19.033	18.9	1.75	337		1.23
12/7/12 7:14 AM	19.067	18.9	1.75	337		1.23
12/7/12 7:16 AM	19.100	18.6	1.76	337		1.23

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 7:18 AM	19.133	18.6	1.76	337		1.23
12/7/12 7:20 AM	19.167	18.6	1.76	337		1.23
12/7/12 7:22 AM	19.200	18.9	1.76	337		1.23
12/7/12 7:24 AM	19.233	18.9	1.76	337		1.23
12/7/12 7:26 AM	19.267	18.9	1.76	337		1.23
12/7/12 7:28 AM	19.300	18.9	1.76	337		1.25
12/7/12 7:30 AM	19.333	18.9	1.76	337		1.25
12/7/12 7:32 AM	19.367	18.9	1.77	337		1.23
12/7/12 7:34 AM	19.400	18.9	1.77	338		1.21
12/7/12 7:36 AM	19.433	18.9	1.77	338		1.21
12/7/12 7:38 AM	19.467	18.9	1.77	337		1.21
12/7/12 7:40 AM	19.500	18.9	1.77	337		1.21
12/7/12 7:42 AM	19.533	18.9	1.77	337		1.21
12/7/12 7:44 AM	19.567	18.9	1.78	337		1.19
12/7/12 7:46 AM	19.600	18.9	1.77	337		1.17
12/7/12 7:48 AM	19.633	18.9	1.77	337		1.17
12/7/12 7:50 AM	19.667	18.9	1.77	337		1.15
12/7/12 7:52 AM	19.700	18.9	1.78	337		1.15
12/7/12 7:54 AM	19.733	18.9	1.78	337		1.15
12/7/12 7:56 AM	19.767	18.9	1.79	337		1.15
12/7/12 7:58 AM	19.800	18.9	1.79	337		1.15
12/7/12 8:00 AM	19.833	18.6	1.8	337		1.17
12/7/12 8:02 AM	19.867	18.9	1.81	337		1.17
12/7/12 8:04 AM	19.900	18.9	1.81	337		1.17
12/7/12 8:06 AM	19.933	18.9	1.82	338		1.17
12/7/12 8:08 AM	19.967	18.9	1.83	337		1.17
12/7/12 8:10 AM	20.000	18.9	1.84	337		1.17
12/7/12 8:12 AM	20.033	18.6	1.85	337		1.17
12/7/12 8:14 AM	20.067	18.9	1.86	337		1.17
12/7/12 8:16 AM	20.100	18.9	1.86	337		1.17
12/7/12 8:18 AM	20.133	18.9	1.87	337		1.17
12/7/12 8:20 AM	20.167	18.9	1.87	337		1.17
12/7/12 8:22 AM	20.200	18.9	1.88	337		1.17
12/7/12 8:24 AM	20.233	18.9	1.88	337		1.17
12/7/12 8:26 AM	20.267	18.9	1.89	337		1.17
12/7/12 8:28 AM	20.300	18.9	1.89	337		1.17
12/7/12 8:30 AM	20.333	18.9	1.89	337		1.15
12/7/12 8:32 AM	20.367	18.9	1.89	337		1.13
12/7/12 8:34 AM	20.400	18.6	1.89	337		1.13
12/7/12 8:36 AM	20.433	18.9	1.89	337		1.13
12/7/12 8:38 AM	20.467	18.6	1.89	337		1.13
12/7/12 8:40 AM	20.500	18.9	1.89	337		1.13
12/7/12 8:42 AM	20.533	18.9	1.89	337		1.13
12/7/12 8:44 AM	20.567	18.9	1.88	337		1.13
12/7/12 8:46 AM	20.600	18.9	1.87	337		1.13
12/7/12 8:48 AM	20.633	18.9	1.87	337		1.13
12/7/12 8:50 AM	20.667	18.9	1.87	337		1.13
12/7/12 8:52 AM	20.700	18.6	1.86	337		1.13
12/7/12 8:54 AM	20.733	18.9	1.85	337		1.13

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 8:56 AM	20.767	18.9	1.84	337		1.13
12/7/12 8:58 AM	20.800	18.9	1.83	337		1.13
12/7/12 9:00 AM	20.833	18.9	1.84	337		1.13
12/7/12 9:02 AM	20.867	18.9	1.83	337		1.11
12/7/12 9:04 AM	20.900	18.9	1.83	337		1.11
12/7/12 9:06 AM	20.933	18.9	1.83	337		1.11
12/7/12 9:08 AM	20.967	18.9	1.82	337		1.11
12/7/12 9:10 AM	21.000	18.9	1.83	337		1.11
12/7/12 9:12 AM	21.033	18.9	1.83	337		1.11
12/7/12 9:14 AM	21.067	18.9	1.83	337		1.11
12/7/12 9:16 AM	21.100	18.9	1.83	337		1.11
12/7/12 9:18 AM	21.133	18.9	1.84	337		1.11
12/7/12 9:20 AM	21.167	18.9	1.85	337		1.11
12/7/12 9:22 AM	21.200	18.9	1.85	337		1.11
12/7/12 9:24 AM	21.233	18.6	1.85	337		1.11
12/7/12 9:26 AM	21.267	18.9	1.86	337		1.09
12/7/12 9:28 AM	21.300	18.9	1.86	337		1.07
12/7/12 9:30 AM	21.333	18.6	1.87	337		1.05
12/7/12 9:32 AM	21.367	18.9	1.88	336		1.05
12/7/12 9:34 AM	21.400	18.9	1.89	336		1.03
12/7/12 9:36 AM	21.433	18.9	1.89	336		1.03
12/7/12 9:38 AM	21.467	18.9	1.89	337		1.03
12/7/12 9:40 AM	21.500	18.9	1.89	336		1.01
12/7/12 9:42 AM	21.533	18.9	1.89	337		1.01
12/7/12 9:44 AM	21.567	18.9	1.89	337		1.01
12/7/12 9:46 AM	21.600	18.9	1.9	336		0.99
12/7/12 9:48 AM	21.633	18.9	1.91	337		0.97
12/7/12 9:50 AM	21.667	18.6	1.91	337		0.95
12/7/12 9:52 AM	21.700	18.9	1.91	336		0.95
12/7/12 9:54 AM	21.733	18.9	1.91	336		0.93
12/7/12 9:56 AM	21.767	18.9	1.92	336		0.93
12/7/12 9:58 AM	21.800	18.9	1.92	337		0.93
12/7/12 10:00 AM	21.833	18.9	1.92	336		0.93
12/7/12 10:02 AM	21.867	18.9	1.92	337		0.91
12/7/12 10:04 AM	21.900	18.9	1.92	337		0.89
12/7/12 10:06 AM	21.933	18.9	1.92	337		0.89
12/7/12 10:08 AM	21.967	18.6	1.92	336		0.89
12/7/12 10:10 AM	22.000	18.6	1.92	336		0.87
12/7/12 10:12 AM	22.033	18.6	1.93	337		0.87
12/7/12 10:14 AM	22.067	18.6	1.92	337		0.85
12/7/12 10:16 AM	22.100	18.9	1.93	336		0.83
12/7/12 10:18 AM	22.133	18.9	1.92	337		0.81
12/7/12 10:20 AM	22.167	18.9	1.92	336		0.79
12/7/12 10:22 AM	22.200	18.9	1.91	336		0.79
12/7/12 10:24 AM	22.233	18.9	1.92	336		0.79
12/7/12 10:26 AM	22.267	18.9	1.93	336		0.77
12/7/12 10:28 AM	22.300	18.9	1.93	337		0.79
12/7/12 10:30 AM	22.333	18.9	1.94	337		0.81
12/7/12 10:32 AM	22.367	18.9	1.94	336		0.83

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 10:34 AM	22.400	18.9	1.94	337		0.83
12/7/12 10:36 AM	22.433	18.6	1.94	337		0.85
12/7/12 10:38 AM	22.467	18.9	1.95	337		0.85
12/7/12 10:40 AM	22.500	18.6	1.96	337		0.85
12/7/12 10:42 AM	22.533	18.6	1.96	337		0.87
12/7/12 10:44 AM	22.567	18.9	1.98	337		0.87
12/7/12 10:46 AM	22.600	18.9	1.98	337		0.87
12/7/12 10:48 AM	22.633	18.9	1.99	337		0.89
12/7/12 10:50 AM	22.667	18.9	1.98	337		0.91
12/7/12 10:52 AM	22.700	18.9	1.98	337		0.93
12/7/12 10:54 AM	22.733	18.9	1.99	337		0.93
12/7/12 10:56 AM	22.767	18.9	2	337		0.95
12/7/12 10:58 AM	22.800	18.9	2.01	337		0.95
12/7/12 11:00 AM	22.833	18.9	2	337		0.95
12/7/12 11:02 AM	22.867	18.9	2	337		0.95
12/7/12 11:04 AM	22.900	18.9	2.01	337		0.97
12/7/12 11:06 AM	22.933	18.6	2.01	337		0.99
12/7/12 11:08 AM	22.967	18.9	2.01	337		0.99
12/7/12 11:10 AM	23.000	18.9	2.02	337		0.99
12/7/12 11:12 AM	23.033	18.9	2.03	337		1.01
12/7/12 11:14 AM	23.067	18.9	2.04	337		1.01
12/7/12 11:16 AM	23.100	18.9	2.05	337		1.03
12/7/12 11:18 AM	23.133	18.6	2.07	337		1.05
12/7/12 11:20 AM	23.167	18.9	2.07	337		1.07
12/7/12 11:22 AM	23.200	18.9	2.09	337		1.09
12/7/12 11:24 AM	23.233	18.9	2.1	337		1.09
12/7/12 11:26 AM	23.267	18.9	2.12	336		1.09
12/7/12 11:28 AM	23.300	18.9	2.14	336		1.11
12/7/12 11:30 AM	23.333	18.9	2.16	334		1.11
12/7/12 11:32 AM	23.367	18.6	2.18	332		1.11
12/7/12 11:34 AM	23.400	18.9	2.19	331		1.11
12/7/12 11:36 AM	23.433	18.6	2.2	331		1.11
12/7/12 11:38 AM	23.467	18.9	2.22	330		1.11
12/7/12 11:40 AM	23.500	18.9	2.22	330		1.11
12/7/12 11:42 AM	23.533	18.9	2.24	329		1.11
12/7/12 11:44 AM	23.567	18.9	2.24	329		1.11
12/7/12 11:46 AM	23.600	18.9	2.26	330		1.11
12/7/12 11:48 AM	23.633	18.6	2.27	331		1.11
12/7/12 11:50 AM	23.667	18.9	2.28	332		1.11
12/7/12 11:52 AM	23.700	18.9	2.29	333		1.11
12/7/12 11:54 AM	23.733	18.6	2.3	334		1.11
12/7/12 11:56 AM	23.767	18.6	2.3	335		1.11
12/7/12 11:58 AM	23.800	18.9	2.31	336		1.11
12/7/12 12:00 PM	23.833	18.9	2.32	336		1.11
12/7/12 12:02 PM	23.867	18.9	2.32	336		1.11
12/7/12 12:04 PM	23.900	18.9	2.33	336		1.11
12/7/12 12:06 PM	23.933	18.9	2.34	336		1.11
12/7/12 12:08 PM	23.967	18.9	2.35	336		1.11
12/7/12 12:10 PM	24.000	18.9	2.36	336		1.11

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 12:12 PM	24.033	18.6	2.37	336		1.11
12/7/12 12:14 PM	24.067	18.6	2.38	336		1.11
12/7/12 12:16 PM	24.100	18.9	2.39	336		1.11
12/7/12 12:18 PM	24.133	18.9	2.41	336		1.11
12/7/12 12:20 PM	24.167	18.6	2.42	336		1.11
12/7/12 12:22 PM	24.200	18.9	2.44	336		1.11
12/7/12 12:24 PM	24.233	18.9	2.45	336		1.11
12/7/12 12:26 PM	24.267	18.6	2.46	336		1.09
12/7/12 12:28 PM	24.300	18.9	2.47	337		1.09
12/7/12 12:30 PM	24.333	18.9	2.48	337		1.09
12/7/12 12:32 PM	24.367	18.9	2.47	336		1.07
12/7/12 12:34 PM	24.400	18.9	2.48	337		1.07
12/7/12 12:36 PM	24.433	18.9	2.48	337		1.05
12/7/12 12:38 PM	24.467	18.9	2.49	336		1.03
12/7/12 12:40 PM	24.500	18.9	2.49	337		1.01
12/7/12 12:42 PM	24.533	18.9	2.49	336		1.01
12/7/12 12:44 PM	24.567	18.9	2.5	336		0.988
12/7/12 12:46 PM	24.600	18.9	2.52	336		0.988
12/7/12 12:48 PM	24.633	18.9	2.54	337		0.988
12/7/12 12:50 PM	24.667	18.9	2.55	336		0.988
12/7/12 12:52 PM	24.700	18.6	2.56	337		0.988
12/7/12 12:54 PM	24.733	18.9	2.56	337		0.988
12/7/12 12:56 PM	24.767	18.9	2.58	337		0.968
12/7/12 12:58 PM	24.800	18.9	2.59	337		0.948
12/7/12 1:00 PM	24.833	18.9	2.6	337		0.948
12/7/12 1:02 PM	24.867	18.9	2.61	336		0.948
12/7/12 1:04 PM	24.900	18.9	2.63	336		0.948
12/7/12 1:06 PM	24.933	18.9	2.65	337		0.948
12/7/12 1:08 PM	24.967	18.6	2.67	337		0.948
12/7/12 1:10 PM	25.000	18.9	2.68	337		0.948
12/7/12 1:12 PM	25.033	18.9	2.69	337		0.948
12/7/12 1:14 PM	25.067	18.9	2.7	337		0.948
12/7/12 1:16 PM	25.100	18.6	2.71	337		0.948
12/7/12 1:18 PM	25.133	18.6	2.72	337		0.948
12/7/12 1:20 PM	25.167	18.9	2.73	337		0.948
12/7/12 1:22 PM	25.200	18.9	2.73	337		0.948
12/7/12 1:24 PM	25.233	18.9	2.75	337		0.948
12/7/12 1:26 PM	25.267	18.9	2.75	337		0.948
12/7/12 1:28 PM	25.300	18.9	2.76	337		0.968
12/7/12 1:30 PM	25.333	18.9	2.76	337		0.968
12/7/12 1:32 PM	25.367	18.9	2.77	337		0.968
12/7/12 1:34 PM	25.400	18.9	2.79	337		0.988
12/7/12 1:36 PM	25.433	18.9	2.8	337		0.988
12/7/12 1:38 PM	25.467	18.9	2.81	337		1.03
12/7/12 1:40 PM	25.500	18.6	2.81	337		1.05
12/7/12 1:42 PM	25.533	18.9	2.82	337		1.07
12/7/12 1:44 PM	25.567	18.9	2.82	338		1.07
12/7/12 1:46 PM	25.600	18.9	2.82	337		1.09
12/7/12 1:48 PM	25.633	18.6	2.82	337		1.09

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 1:50 PM	25.667	18.6	2.82	337		1.09
12/7/12 1:52 PM	25.700	18.6	2.83	337		1.09
12/7/12 1:54 PM	25.733	18.9	2.83	337		1.09
12/7/12 1:56 PM	25.767	18.9	2.83	337		1.09
12/7/12 1:58 PM	25.800	18.9	2.84	337		1.11
12/7/12 2:00 PM	25.833	18.9	2.85	337		1.13
12/7/12 2:02 PM	25.867	18.6	2.85	337		1.13
12/7/12 2:04 PM	25.900	18.9	2.86	337		1.15
12/7/12 2:06 PM	25.933	18.9	2.86	337		1.17
12/7/12 2:08 PM	25.967	18.9	2.86	337		1.19
12/7/12 2:10 PM	26.000	18.9	2.88	338		1.21
12/7/12 2:12 PM	26.033	18.6	2.88	338		1.23
12/7/12 2:14 PM	26.067	18.9	2.89	338		1.25
12/7/12 2:16 PM	26.100	18.9	2.89	338		1.27
12/7/12 2:18 PM	26.133	18.6	2.9	338		1.29
12/7/12 2:20 PM	26.167	18.9	2.9	338		1.29
12/7/12 2:22 PM	26.200	18.9	2.9	338		1.29
12/7/12 2:24 PM	26.233	18.9	2.9	338		1.31
12/7/12 2:26 PM	26.267	18.6	2.91	337		1.33
12/7/12 2:28 PM	26.300	18.9	2.92	337		1.33
12/7/12 2:30 PM	26.333	18.6	2.94	338		1.35
12/7/12 2:32 PM	26.367	18.6	2.95	338		1.37
12/7/12 2:34 PM	26.400	18.9	2.95	337		1.39
12/7/12 2:36 PM	26.433	18.6	2.96	338		1.41
12/7/12 2:38 PM	26.467	18.6	2.97	338		1.43
12/7/12 2:40 PM	26.500	18.6	2.97	338		1.43
12/7/12 2:42 PM	26.533	18.6	2.97	338		1.45
12/7/12 2:44 PM	26.567	18.6	2.98	338		1.47
12/7/12 2:46 PM	26.600	18.6	2.98	338		1.49
12/7/12 2:48 PM	26.633	18.6	2.98	338		1.49
12/7/12 2:50 PM	26.667	18.6	2.99	338		1.51
12/7/12 2:52 PM	26.700	18.6	2.99	338		1.53
12/7/12 2:54 PM	26.733	18.9	2.99	337		1.57
12/7/12 2:56 PM	26.767	18.9	2.98	338		1.59
12/7/12 2:58 PM	26.800	18.9	2.97	338		1.61
12/7/12 3:00 PM	26.833	18.9	2.97	339		1.63
12/7/12 3:02 PM	26.867	18.6	2.96	338		1.65
12/7/12 3:04 PM	26.900	18.9	2.95	338		1.67
12/7/12 3:06 PM	26.933	18.9	2.94	338		1.67
12/7/12 3:08 PM	26.967	18.6	2.93	338		1.67
12/7/12 3:10 PM	27.000	18.6	2.92	338		1.67
12/7/12 3:12 PM	27.033	18.9	2.92	338		1.67
12/7/12 3:14 PM	27.067	18.6	2.92	338		1.67
12/7/12 3:16 PM	27.100	18.9	2.92	338		1.67
12/7/12 3:18 PM	27.133	18.9	2.92	338		1.65
12/7/12 3:20 PM	27.167	18.6	2.91	338		1.65
12/7/12 3:22 PM	27.200	18.6	2.91	338		1.67
12/7/12 3:24 PM	27.233	18.9	2.9	337		1.69
12/7/12 3:26 PM	27.267	18.9	2.89	338		1.69

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 3:28 PM	27.300	18.6	2.89	338		1.69
12/7/12 3:30 PM	27.333	18.9	2.88	338		1.69
12/7/12 3:32 PM	27.367	18.6	2.87	338		1.69
12/7/12 3:34 PM	27.400	18.9	2.86	338		1.67
12/7/12 3:36 PM	27.433	18.9	2.85	337		1.67
12/7/12 3:38 PM	27.467	18.6	2.85	338		1.67
12/7/12 3:40 PM	27.500	18.6	2.85	337		1.67
12/7/12 3:42 PM	27.533	18.9	2.84	338		1.67
12/7/12 3:44 PM	27.567	18.9	2.84	338		1.67
12/7/12 3:46 PM	27.600	18.6	2.82	338		1.67
12/7/12 3:48 PM	27.633	18.9	2.81	338		1.67
12/7/12 3:50 PM	27.667	18.6	2.79	338		1.69
12/7/12 3:52 PM	27.700	18.9	2.79	338		1.69
12/7/12 3:54 PM	27.733	18.9	2.78	338		1.69
12/7/12 3:56 PM	27.767	18.9	2.78	338		1.67
12/7/12 3:58 PM	27.800	18.6	2.78	338		1.67
12/7/12 4:00 PM	27.833	18.9	2.78	338		1.67
12/7/12 4:02 PM	27.867	18.6	2.77	338		1.67
12/7/12 4:04 PM	27.900	18.9	2.76	338		1.67
12/7/12 4:06 PM	27.933	18.6	2.76	338		1.67
12/7/12 4:08 PM	27.967	18.9	2.75	338		1.67
12/7/12 4:10 PM	28.000	18.6	2.74	338		1.67
12/7/12 4:12 PM	28.033	18.9	2.73	338		1.67
12/7/12 4:14 PM	28.067	18.9	2.72	338		1.67
12/7/12 4:16 PM	28.100	18.6	2.71	338		1.67
12/7/12 4:18 PM	28.133	18.6	2.7	338		1.67
12/7/12 4:20 PM	28.167	18.6	2.69	338		1.69
12/7/12 4:22 PM	28.200	18.9	2.68	338		1.69
12/7/12 4:24 PM	28.233	18.9	2.67	338		1.69
12/7/12 4:26 PM	28.267	18.6	2.66	338		1.69
12/7/12 4:28 PM	28.300	18.9	2.64	338		1.69
12/7/12 4:30 PM	28.333	18.9	2.63	338		1.69
12/7/12 4:32 PM	28.367	18.9	2.63	338		1.71
12/7/12 4:34 PM	28.400	18.9	2.62	338		1.71
12/7/12 4:36 PM	28.433	18.6	2.61	338		1.73
12/7/12 4:38 PM	28.467	18.9	2.6	338		1.73
12/7/12 4:40 PM	28.500	18.9	2.59	338		1.73
12/7/12 4:42 PM	28.533	18.9	2.58	338		1.73
12/7/12 4:44 PM	28.567	18.9	2.58	338		1.73
12/7/12 4:46 PM	28.600	18.6	2.57	338		1.73
12/7/12 4:48 PM	28.633	18.9	2.57	338		1.73
12/7/12 4:50 PM	28.667	18.6	2.55	338		1.73
12/7/12 4:52 PM	28.700	18.6	2.54	338		1.73
12/7/12 4:54 PM	28.733	18.9	2.53	338		1.73
12/7/12 4:56 PM	28.767	18.9	2.52	338		1.73
12/7/12 4:58 PM	28.800	18.9	2.5	338		1.73
12/7/12 5:00 PM	28.833	18.9	2.49	338		1.73
12/7/12 5:02 PM	28.867	18.9	2.48	338		1.73
12/7/12 5:04 PM	28.900	18.9	2.47	338		1.73

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 5:06 PM	28.933	18.9	2.45	338		1.73
12/7/12 5:08 PM	28.967	18.9	2.45	338		1.73
12/7/12 5:10 PM	29.000	18.9	2.44	338		1.73
12/7/12 5:12 PM	29.033	18.6	2.43	338		1.73
12/7/12 5:14 PM	29.067	18.6	2.42	338		1.73
12/7/12 5:16 PM	29.100	18.9	2.41	338		1.73
12/7/12 5:18 PM	29.133	18.9	2.41	338		1.73
12/7/12 5:20 PM	29.167	18.6	2.41	338		1.73
12/7/12 5:22 PM	29.200	18.9	2.41	338		1.73
12/7/12 5:24 PM	29.233	18.9	2.4	338		1.73
12/7/12 5:26 PM	29.267	18.6	2.4	338		1.73
12/7/12 5:28 PM	29.300	18.6	2.4	338		1.73
12/7/12 5:30 PM	29.333	18.6	2.4	338		1.73
12/7/12 5:32 PM	29.367	18.6	2.39	338		1.73
12/7/12 5:34 PM	29.400	18.9	2.39	338		1.73
12/7/12 5:36 PM	29.433	18.6	2.39	338		1.72
12/7/12 5:38 PM	29.467	18.9	2.39	338		1.72
12/7/12 5:40 PM	29.500	18.9	2.39	338		1.71
12/7/12 5:42 PM	29.533	18.9	2.4	339		1.71
12/7/12 5:44 PM	29.567	18.9	2.4	339		1.71
12/7/12 5:46 PM	29.600	18.6	2.4	339		1.70
12/7/12 5:48 PM	29.633	18.9	2.4	339		1.70
12/7/12 5:50 PM	29.667	18.6	2.4	339		1.69
12/7/12 5:52 PM	29.700	18.9	2.4	338		1.69
12/7/12 5:54 PM	29.733	18.9	2.4	338		1.68
12/7/12 5:56 PM	29.767	18.6	2.4	339		1.68
12/7/12 5:58 PM	29.800	18.9	2.39	339		1.68
12/7/12 6:00 PM	29.833	18.9	2.39	339		1.67
12/7/12 6:02 PM	29.867	18.9	2.39	339		1.67
12/7/12 6:04 PM	29.900	18.9	2.39	339		1.66
12/7/12 6:06 PM	29.933	18.9	2.39	339		1.66
12/7/12 6:08 PM	29.967	18.9	2.4	339		1.65
12/7/12 6:10 PM	30.000	18.9	2.4	339		1.65
12/7/12 6:12 PM	30.033	18.9	2.39	339		1.65
12/7/12 6:14 PM	30.067	18.9	2.38	339		1.64
12/7/12 6:16 PM	30.100	18.6	2.38	339		1.64
12/7/12 6:18 PM	30.133	18.6	2.36	339		1.63
12/7/12 6:20 PM	30.167	18.6	2.36	339		1.63
12/7/12 6:22 PM	30.200	18.9	2.35	339		1.63
12/7/12 6:24 PM	30.233	18.9	2.35	339		1.62
12/7/12 6:26 PM	30.267	18.9	2.34	339		1.62
12/7/12 6:28 PM	30.300	18.9	2.34	339		1.61
12/7/12 6:30 PM	30.333	18.9	2.34	339		1.61
12/7/12 6:32 PM	30.367	18.9	2.33	339		1.60
12/7/12 6:34 PM	30.400	18.9	2.31	339		1.60
12/7/12 6:36 PM	30.433	18.6	2.31	341		1.60
12/7/12 6:38 PM	30.467	18.9	2.3	343		1.60
12/7/12 6:40 PM	30.500	18.9	2.3	344		1.60
12/7/12 6:42 PM	30.533	18.9	2.28	344		1.60

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 6:44 PM	30.567	18.9	2.28	345		1.60
12/7/12 6:46 PM	30.600	18.9	2.28	345		1.60
12/7/12 6:48 PM	30.633	18.6	2.28	346		1.60
12/7/12 6:50 PM	30.667	18.9	2.28	345		1.60
12/7/12 6:52 PM	30.700	18.6	2.27	345		1.60
12/7/12 6:54 PM	30.733	18.9	2.26	345		1.60
12/7/12 6:56 PM	30.767	18.9	2.25	344		1.60
12/7/12 6:58 PM	30.800	18.6	2.24	344		1.60
12/7/12 7:00 PM	30.833	18.9	2.23	344		1.60
12/7/12 7:02 PM	30.867	18.6	2.23	344		1.60
12/7/12 7:04 PM	30.900	18.9	2.22	343		1.60
12/7/12 7:06 PM	30.933	18.9	2.21	343		1.60
12/7/12 7:08 PM	30.967	18.9	2.21	342		1.60
12/7/12 7:10 PM	31.000	18.9	2.2	342		1.60
12/7/12 7:12 PM	31.033	18.9	2.19	342		1.60
12/7/12 7:14 PM	31.067	18.9	2.18	341		1.60
12/7/12 7:16 PM	31.100	18.9	2.19	341		1.60
12/7/12 7:18 PM	31.133	18.9	2.18	340		1.60
12/7/12 7:20 PM	31.167	18.9	2.18	340		1.60
12/7/12 7:22 PM	31.200	18.9	2.17	340		1.60
12/7/12 7:24 PM	31.233	18.9	2.16	340		1.60
12/7/12 7:26 PM	31.267	18.9	2.15	339		1.60
12/7/12 7:28 PM	31.300	18.9	2.15	339		1.60
12/7/12 7:30 PM	31.333	18.9	2.14	339		1.60
12/7/12 7:32 PM	31.367	18.9	2.13	339		1.60
12/7/12 7:34 PM	31.400	18.9	2.12	339		1.60
12/7/12 7:36 PM	31.433	18.9	2.11	339		1.60
12/7/12 7:38 PM	31.467	18.9	2.1	339		1.60
12/7/12 7:40 PM	31.500	18.6	2.09	340		1.60
12/7/12 7:42 PM	31.533	18.9	2.09	340		1.60
12/7/12 7:44 PM	31.567	18.9	2.09	339		1.60
12/7/12 7:46 PM	31.600	18.6	2.09	339		1.60
12/7/12 7:48 PM	31.633	18.6	2.08	339		1.60
12/7/12 7:50 PM	31.667	18.9	2.07	339		1.60
12/7/12 7:52 PM	31.700	18.9	2.07	339		1.60
12/7/12 7:54 PM	31.733	18.9	2.06	339		1.60
12/7/12 7:56 PM	31.767	18.9	2.06	339		1.60
12/7/12 7:58 PM	31.800	18.9	2.05	339		1.60
12/7/12 8:00 PM	31.833	18.9	2.04	339		1.60
12/7/12 8:02 PM	31.867	18.9	2.03	339		1.60
12/7/12 8:04 PM	31.900	18.6	2.02	339		1.60
12/7/12 8:06 PM	31.933	18.9	2.02	339		1.60
12/7/12 8:08 PM	31.967	18.9	2.01	339		1.60
12/7/12 8:10 PM	32.000	18.6	2.01	339		1.60
12/7/12 8:12 PM	32.033	18.6	2	339		1.60
12/7/12 8:14 PM	32.067	18.6	1.99	339		1.60
12/7/12 8:16 PM	32.100	18.6	1.99	339		1.60
12/7/12 8:18 PM	32.133	18.9	1.98	339		1.60
12/7/12 8:20 PM	32.167	18.9	1.97	339		1.60

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 8:22 PM	32.200	18.9	1.97	339		1.60
12/7/12 8:24 PM	32.233	18.9	1.95	339		1.60
12/7/12 8:26 PM	32.267	18.9	1.94	339		1.60
12/7/12 8:28 PM	32.300	18.9	1.93	339		1.60
12/7/12 8:30 PM	32.333	18.9	1.92	339		1.60
12/7/12 8:32 PM	32.367	18.9	1.91	339		1.60
12/7/12 8:34 PM	32.400	18.9	1.9	338		1.60
12/7/12 8:36 PM	32.433	18.6	1.9	338		1.60
12/7/12 8:38 PM	32.467	18.9	1.89	338		1.61
12/7/12 8:40 PM	32.500	18.9	1.88	338		1.61
12/7/12 8:42 PM	32.533	18.9	1.88	338		1.62
12/7/12 8:44 PM	32.567	18.9	1.87	338		1.62
12/7/12 8:46 PM	32.600	18.6	1.86	338		1.63
12/7/12 8:48 PM	32.633	18.9	1.85	338		1.63
12/7/12 8:50 PM	32.667	18.9	1.85	338		1.63
12/7/12 8:52 PM	32.700	18.9	1.84	338		1.64
12/7/12 8:54 PM	32.733	18.9	1.83	338		1.64
12/7/12 8:56 PM	32.767	18.9	1.82	338		1.65
12/7/12 8:58 PM	32.800	18.9	1.82	338		1.65
12/7/12 9:00 PM	32.833	18.9	1.81	338		1.65
12/7/12 9:02 PM	32.867	18.6	1.81	338		1.66
12/7/12 9:04 PM	32.900	18.9	1.8	338		1.66
12/7/12 9:06 PM	32.933	18.6	1.79	338		1.67
12/7/12 9:08 PM	32.967	18.6	1.79	338		1.67
12/7/12 9:10 PM	33.000	18.9	1.78	338		1.68
12/7/12 9:12 PM	33.033	18.9	1.77	338		1.68
12/7/12 9:14 PM	33.067	18.9	1.77	338		1.68
12/7/12 9:16 PM	33.100	18.9	1.76	338		1.69
12/7/12 9:18 PM	33.133	18.9	1.75	338		1.69
12/7/12 9:20 PM	33.167	18.9	1.75	338		1.70
12/7/12 9:22 PM	33.200	18.9	1.74	338		1.70
12/7/12 9:24 PM	33.233	18.9	1.74	338		1.71
12/7/12 9:26 PM	33.267	18.9	1.74	338		1.71
12/7/12 9:28 PM	33.300	18.9	1.74	338		1.71
12/7/12 9:30 PM	33.333	18.9	1.72	338		1.72
12/7/12 9:32 PM	33.367	18.9	1.73	338		1.70
12/7/12 9:34 PM	33.400	18.9	1.72	338		1.68
12/7/12 9:36 PM	33.433	18.9	1.72	338		1.66
12/7/12 9:38 PM	33.467	18.6	1.71	337		1.64
12/7/12 9:40 PM	33.500	18.9	1.71	336		1.62
12/7/12 9:42 PM	33.533	18.9	1.7	335		1.59
12/7/12 9:44 PM	33.567	18.9	1.7	334		1.57
12/7/12 9:46 PM	33.600	18.9	1.7	333		1.55
12/7/12 9:48 PM	33.634	18.9	1.7	332		1.52
12/7/12 9:50 PM	33.667	18.6	1.69	331		1.50
12/7/12 9:52 PM	33.700	18.6	1.68	331		1.47
12/7/12 9:54 PM	33.734	18.6	1.68	331		1.45
12/7/12 9:56 PM	33.767	18.9	1.67	331		1.43
12/7/12 9:58 PM	33.800	18.9	1.67	331		1.40

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 10:00 PM	33.834	18.6	1.66	332		1.38
12/7/12 10:02 PM	33.867	18.9	1.66	333		1.36
12/7/12 10:04 PM	33.900	18.9	1.65	334		1.33
12/7/12 10:06 PM	33.934	18.9	1.65	335		1.31
12/7/12 10:08 PM	33.967	18.9	1.64	336		1.28
12/7/12 10:10 PM	34.000	18.9	1.64	336		1.26
12/7/12 10:12 PM	34.034	18.9	1.64	336		1.24
12/7/12 10:14 PM	34.067	18.9	1.63	336		1.22
12/7/12 10:16 PM	34.100	18.6	1.63	337		1.20
12/7/12 10:18 PM	34.134	18.9	1.62	337		1.18
12/7/12 10:20 PM	34.167	18.9	1.61	337		1.18
12/7/12 10:22 PM	34.200	18.9	1.61	337		1.16
12/7/12 10:24 PM	34.234	18.6	1.6	337		1.14
12/7/12 10:26 PM	34.267	18.6	1.6	338		1.12
12/7/12 10:28 PM	34.300	18.9	1.59	337		1.10
12/7/12 10:30 PM	34.334	18.9	1.59	337		1.10
12/7/12 10:32 PM	34.367	18.9	1.59	337		1.08
12/7/12 10:34 PM	34.400	18.6	1.58	337		1.11
12/7/12 10:36 PM	34.434	18.9	1.57	338		1.13
12/7/12 10:38 PM	34.467	18.9	1.57	337		1.13
12/7/12 10:40 PM	34.500	18.9	1.57	338		1.16
12/7/12 10:42 PM	34.534	18.9	1.56	338		1.18
12/7/12 10:44 PM	34.567	18.9	1.55	337		1.18
12/7/12 10:46 PM	34.600	18.9	1.55	338		1.19
12/7/12 10:48 PM	34.634	18.6	1.55	338		1.19
12/7/12 10:50 PM	34.667	18.9	1.55	337		1.22
12/7/12 10:52 PM	34.700	18.9	1.55	337		1.24
12/7/12 10:54 PM	34.734	18.9	1.54	337		1.24
12/7/12 10:56 PM	34.767	18.9	1.54	338		1.27
12/7/12 10:58 PM	34.800	18.6	1.54	338		1.29
12/7/12 11:00 PM	34.834	18.9	1.53	337		1.29
12/7/12 11:02 PM	34.867	18.9	1.54	338		1.32
12/7/12 11:04 PM	34.900	18.9	1.53	338		1.34
12/7/12 11:06 PM	34.934	18.9	1.53	337		1.34
12/7/12 11:08 PM	34.967	18.9	1.52	338		1.37
12/7/12 11:10 PM	35.000	18.6	1.51	338		1.39
12/7/12 11:12 PM	35.034	18.9	1.5	337		1.41
12/7/12 11:14 PM	35.067	18.9	1.49	338		1.41
12/7/12 11:16 PM	35.100	18.9	1.49	338		1.41
12/7/12 11:18 PM	35.134	18.9	1.49	338		1.41
12/7/12 11:20 PM	35.167	18.9	1.5	337		1.41
12/7/12 11:22 PM	35.200	18.9	1.51	337		1.39
12/7/12 11:24 PM	35.234	18.9	1.5	337		1.39
12/7/12 11:26 PM	35.267	18.9	1.5	337		1.39
12/7/12 11:28 PM	35.300	18.9	1.5	337		1.39
12/7/12 11:30 PM	35.334	18.9	1.5	337		1.39
12/7/12 11:32 PM	35.367	18.9	1.51	337		1.37
12/7/12 11:34 PM	35.400	18.9	1.5	337		1.37
12/7/12 11:36 PM	35.434	18.9	1.5	337		1.35

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/7/12 11:38 PM	35.467	18.9	1.5	337		1.33
12/7/12 11:40 PM	35.500	18.9	1.49	337		1.35
12/7/12 11:42 PM	35.534	18.9	1.48	337		1.33
12/7/12 11:44 PM	35.567	18.9	1.48	337		1.31
12/7/12 11:46 PM	35.600	18.9	1.47	338		1.31
12/7/12 11:48 PM	35.634	18.9	1.46	337		1.33
12/7/12 11:50 PM	35.667	18.9	1.46	337		1.35
12/7/12 11:52 PM	35.700	18.9	1.46	337		1.33
12/7/12 11:54 PM	35.734	18.9	1.45	338		1.31
12/7/12 11:56 PM	35.767	18.9	1.45	338		1.31
12/7/12 11:58 PM	35.800	18.9	1.45	337		1.31
12/8/12 12:00 AM	35.834	18.9	1.44	337		1.31
12/8/12 12:02 AM	35.867	18.9	1.44	337		1.33
12/8/12 12:04 AM	35.900	18.9	1.43	338		1.31
12/8/12 12:06 AM	35.934	18.9	1.42	338		1.31
12/8/12 12:08 AM	35.967	18.9	1.42	338		1.33
12/8/12 12:10 AM	36.000	18.9	1.41	337		1.31
12/8/12 12:12 AM	36.034	18.6	1.41	338		1.29
12/8/12 12:14 AM	36.067	18.9	1.39	338		1.27
12/8/12 12:16 AM	36.100	18.9	1.4	337		1.29
12/8/12 12:18 AM	36.134	18.9	1.39	337		1.29
12/8/12 12:20 AM	36.167	18.9	1.39	337		1.29
12/8/12 12:22 AM	36.200	18.9	1.38	338		1.29
12/8/12 12:24 AM	36.234	18.9	1.37	337		1.31
12/8/12 12:26 AM	36.267	18.9	1.36	337		1.33
12/8/12 12:28 AM	36.300	18.9	1.36	337		1.35
12/8/12 12:30 AM	36.334	18.9	1.35	338		1.37
12/8/12 12:32 AM	36.367	18.9	1.34	338		1.37
12/8/12 12:34 AM	36.400	18.9	1.33	338		1.39
12/8/12 12:36 AM	36.434	18.9	1.33	338		1.41
12/8/12 12:38 AM	36.467	18.9	1.32	337		1.43
12/8/12 12:40 AM	36.500	18.9	1.31	338		1.45
12/8/12 12:42 AM	36.534	18.9	1.3	338		1.45
12/8/12 12:44 AM	36.567	18.9	1.3	338		1.47
12/8/12 12:46 AM	36.600	18.9	1.3	338		1.49
12/8/12 12:48 AM	36.634	18.9	1.29	338		1.51
12/8/12 12:50 AM	36.667	18.9	1.27	338		1.51
12/8/12 12:52 AM	36.700	18.9	1.27	338		1.49
12/8/12 12:54 AM	36.734	18.9	1.26	338		1.49
12/8/12 12:56 AM	36.767	18.9	1.26	338		1.49
12/8/12 12:58 AM	36.800	18.9	1.25	337		1.49
12/8/12 1:00 AM	36.834	18.9	1.25	337		1.47
12/8/12 1:02 AM	36.867	18.9	1.24	337		1.47
12/8/12 1:04 AM	36.900	18.9	1.24	337		1.47
12/8/12 1:06 AM	36.934	18.9	1.22	337		1.47
12/8/12 1:08 AM	36.967	18.9	1.22	338		1.45
12/8/12 1:10 AM	37.000	18.9	1.22	338		1.43
12/8/12 1:12 AM	37.034	18.9	1.22	337		1.43
12/8/12 1:14 AM	37.067	18.9	1.2	337		1.45

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 1:16 AM	37.100	18.9	1.2	337		1.47
12/8/12 1:18 AM	37.134	18.9	1.19	337		1.45
12/8/12 1:20 AM	37.167	18.6	1.18	338		1.47
12/8/12 1:22 AM	37.200	18.9	1.18	338		1.47
12/8/12 1:24 AM	37.234	18.9	1.18	337		1.49
12/8/12 1:26 AM	37.267	18.9	1.17	338		1.47
12/8/12 1:28 AM	37.300	18.9	1.16	337		1.47
12/8/12 1:30 AM	37.334	18.9	1.16	338		1.45
12/8/12 1:32 AM	37.367	18.9	1.15	337		1.43
12/8/12 1:34 AM	37.400	18.9	1.14	338		1.45
12/8/12 1:36 AM	37.434	18.9	1.14	337		1.45
12/8/12 1:38 AM	37.467	18.9	1.14	337		1.45
12/8/12 1:40 AM	37.500	18.9	1.13	338		1.45
12/8/12 1:42 AM	37.534	18.9	1.12	338		1.43
12/8/12 1:44 AM	37.567	18.9	1.12	338		1.41
12/8/12 1:46 AM	37.600	18.6	1.12	338		1.41
12/8/12 1:48 AM	37.634	18.9	1.11	337		1.41
12/8/12 1:50 AM	37.667	18.9	1.11	337		1.41
12/8/12 1:52 AM	37.700	18.9	1.1	338		1.39
12/8/12 1:54 AM	37.734	18.9	1.1	338		1.41
12/8/12 1:56 AM	37.767	18.9	1.09	338		1.43
12/8/12 1:58 AM	37.800	18.9	1.08	337		1.43
12/8/12 2:00 AM	37.834	18.9	1.07	338		1.43
12/8/12 2:02 AM	37.867	18.9	1.07	338		1.45
12/8/12 2:04 AM	37.900	18.9	1.06	337		1.43
12/8/12 2:06 AM	37.934	18.9	1.05	337		1.41
12/8/12 2:08 AM	37.967	18.9	1.04	338		1.41
12/8/12 2:10 AM	38.000	18.9	1.04	337		1.43
12/8/12 2:12 AM	38.034	18.9	1.03	337		1.43
12/8/12 2:14 AM	38.067	18.6	1.02	337		1.45
12/8/12 2:16 AM	38.100	18.9	1.01	338		1.45
12/8/12 2:18 AM	38.134	18.9	1	337		1.45
12/8/12 2:20 AM	38.167	18.9	1	338		1.47
12/8/12 2:22 AM	38.200	18.9	1	338		1.47
12/8/12 2:24 AM	38.234	18.9	0.98	338		1.47
12/8/12 2:26 AM	38.267	18.9	0.97	338		1.45
12/8/12 2:28 AM	38.300	18.9	0.97	338		1.45
12/8/12 2:30 AM	38.334	18.6	0.96	337		1.43
12/8/12 2:32 AM	38.367	18.9	0.94	337		1.43
12/8/12 2:34 AM	38.400	18.9	0.94	337		1.45
12/8/12 2:36 AM	38.434	18.9	0.93	337		1.45
12/8/12 2:38 AM	38.467	18.9	0.92	337		1.43
12/8/12 2:40 AM	38.500	18.9	0.92	338		1.41
12/8/12 2:42 AM	38.534	18.9	0.91	338		1.41
12/8/12 2:44 AM	38.567	18.9	0.9	337		1.41
12/8/12 2:46 AM	38.600	18.9	0.9	337		1.43
12/8/12 2:48 AM	38.634	18.9	0.89	338		1.43
12/8/12 2:50 AM	38.667	18.9	0.88	337		1.43
12/8/12 2:52 AM	38.700	18.9	0.86	338		1.37

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 2:54 AM	38.734	18.9	0.86	338		1.39
12/8/12 2:56 AM	38.767	18.9	0.85	338		1.39
12/8/12 2:58 AM	38.800	18.9	0.84	336		1.37
12/8/12 3:00 AM	38.834	18.9	0.84	338		1.39
12/8/12 3:02 AM	38.867	18.9	0.83	338		1.41
12/8/12 3:04 AM	38.900	18.9	0.83	337		1.41
12/8/12 3:06 AM	38.934	18.9	0.83	338		1.43
12/8/12 3:08 AM	38.967	18.9	0.81	338		1.45
12/8/12 3:10 AM	39.000	18.9	0.81	338		1.47
12/8/12 3:12 AM	39.034	18.9	0.8	338		1.47
12/8/12 3:14 AM	39.067	18.9	0.8	338		1.47
12/8/12 3:16 AM	39.100	18.9	0.79	338		1.45
12/8/12 3:18 AM	39.134	18.9	0.79	338		1.43
12/8/12 3:20 AM	39.167	18.9	0.78	337		1.41
12/8/12 3:22 AM	39.200	18.9	0.78	337		1.41
12/8/12 3:24 AM	39.234	18.9	0.77	337		1.39
12/8/12 3:26 AM	39.267	18.9	0.77	337		1.41
12/8/12 3:28 AM	39.300	18.9	0.76	338		1.43
12/8/12 3:30 AM	39.334	18.9	0.75	337		1.45
12/8/12 3:32 AM	39.367	18.9	0.74	338		1.47
12/8/12 3:34 AM	39.400	18.9	0.74	338		1.49
12/8/12 3:36 AM	39.434	18.9	0.73	338		1.49
12/8/12 3:38 AM	39.467	18.9	0.72	338		1.47
12/8/12 3:40 AM	39.500	18.9	0.7	338		1.47
12/8/12 3:42 AM	39.534	18.9	0.69	338		1.47
12/8/12 3:44 AM	39.567	18.9	0.68	337		1.47
12/8/12 3:46 AM	39.600	18.9	0.66	337		1.47
12/8/12 3:48 AM	39.634	18.9	0.66	337		1.45
12/8/12 3:50 AM	39.667	18.9	0.63	338		1.43
12/8/12 3:52 AM	39.700	18.9	0.62	337		1.41
12/8/12 3:54 AM	39.734	18.9	0.61	337		1.45
12/8/12 3:56 AM	39.767	18.9	0.61	337		1.43
12/8/12 3:58 AM	39.800	18.9	0.61	337		1.41
12/8/12 4:00 AM	39.834	18.9	0.6	337		1.41
12/8/12 4:02 AM	39.867	18.9	0.59	337		1.39
12/8/12 4:04 AM	39.900	18.9	0.58	337		1.37
12/8/12 4:06 AM	39.934	18.9	0.56	337		1.35
12/8/12 4:08 AM	39.967	18.6	0.56	337		1.33
12/8/12 4:10 AM	40.000	18.9	0.55	337		1.31
12/8/12 4:12 AM	40.034	18.9	0.55	337		1.29
12/8/12 4:14 AM	40.067	18.9	0.55	337		1.27
12/8/12 4:16 AM	40.100	18.9	0.55	337		1.27
12/8/12 4:18 AM	40.134	18.9	0.55	337		1.27
12/8/12 4:20 AM	40.167	18.9	0.55	337		1.27
12/8/12 4:22 AM	40.200	18.6	0.54	337		1.27
12/8/12 4:24 AM	40.234	18.9	0.53	337		1.25
12/8/12 4:26 AM	40.267	18.9	0.53	337		1.25
12/8/12 4:28 AM	40.300	18.9	0.53	337		1.23
12/8/12 4:30 AM	40.334	18.9	0.51	337		1.19

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 4:32 AM	40.367	18.9	0.51	337		1.15
12/8/12 4:34 AM	40.400	18.9	0.51	337		1.11
12/8/12 4:36 AM	40.434	18.9	0.52	336		1.07
12/8/12 4:38 AM	40.467	18.9	0.51	336		1.03
12/8/12 4:40 AM	40.500	18.9	0.51	336		1.01
12/8/12 4:42 AM	40.534	18.9	0.52	336		0.99
12/8/12 4:44 AM	40.567	18.9	0.52	336		0.97
12/8/12 4:46 AM	40.600	18.9	0.52	336		0.93
12/8/12 4:48 AM	40.634	18.9	0.53	336		0.93
12/8/12 4:50 AM	40.667	18.9	0.53	336		0.93
12/8/12 4:52 AM	40.700	18.9	0.52	336		0.93
12/8/12 4:54 AM	40.734	18.9	0.52	337		0.93
12/8/12 4:56 AM	40.767	18.9	0.52	337		0.93
12/8/12 4:58 AM	40.800	18.9	0.54	337		0.93
12/8/12 5:00 AM	40.834	18.9	0.52	337		0.93
12/8/12 5:02 AM	40.867	18.9	0.52	337		0.95
12/8/12 5:04 AM	40.900	18.9	0.53	337		0.97
12/8/12 5:06 AM	40.934	18.6	0.54	337		0.99
12/8/12 5:08 AM	40.967	18.9	0.55	338		1.01
12/8/12 5:10 AM	41.000	18.9	0.55	338		1.03
12/8/12 5:12 AM	41.034	18.9	0.56	338		1.05
12/8/12 5:14 AM	41.067	18.9	0.58	338		1.07
12/8/12 5:16 AM	41.100	18.9	0.6	338		1.09
12/8/12 5:18 AM	41.134	18.9	0.62	338		1.11
12/8/12 5:20 AM	41.167	18.9	0.63	338		1.13
12/8/12 5:22 AM	41.200	18.9	0.65	338		1.15
12/8/12 5:24 AM	41.234	18.9	0.66	338		1.17
12/8/12 5:26 AM	41.267	18.9	0.68	338		1.19
12/8/12 5:28 AM	41.300	18.9	0.7	338		1.21
12/8/12 5:30 AM	41.334	18.6	0.71	338		1.23
12/8/12 5:32 AM	41.367	18.9	0.72	338		1.27
12/8/12 5:34 AM	41.400	18.6	0.74	338		1.31
12/8/12 5:36 AM	41.434	18.9	0.75	338		1.35
12/8/12 5:38 AM	41.467	18.9	0.76	338		1.39
12/8/12 5:40 AM	41.500	18.9	0.77	338		1.43
12/8/12 5:42 AM	41.534	18.9	0.79	338		1.47
12/8/12 5:44 AM	41.567	18.9	0.8	338		1.51
12/8/12 5:46 AM	41.600	18.9	0.81	338		1.55
12/8/12 5:48 AM	41.634	18.9	0.82	338		1.59
12/8/12 5:50 AM	41.667	18.9	0.83	338		1.61
12/8/12 5:52 AM	41.700	18.9	0.84	339		1.63
12/8/12 5:54 AM	41.734	18.9	0.85	339		1.65
12/8/12 5:56 AM	41.767	18.9	0.86	339		1.67
12/8/12 5:58 AM	41.800	18.9	0.87	338		1.69
12/8/12 6:00 AM	41.834	18.9	0.87	339		1.71
12/8/12 6:02 AM	41.867	18.9	0.87	338		1.73
12/8/12 6:04 AM	41.900	18.9	0.88	338		1.73
12/8/12 6:06 AM	41.934	18.9	0.89	338		1.73
12/8/12 6:08 AM	41.967	18.9	0.89	339		1.73

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 6:10 AM	42.000	18.9	0.89	339		1.73
12/8/12 6:12 AM	42.034	18.9	0.89	339		1.73
12/8/12 6:14 AM	42.067	18.9	0.9	338		1.73
12/8/12 6:16 AM	42.100	18.9	0.89	338		1.73
12/8/12 6:18 AM	42.134	18.9	0.89	339		1.73
12/8/12 6:20 AM	42.167	18.9	0.9	339		1.73
12/8/12 6:22 AM	42.200	18.9	0.89	339		1.73
12/8/12 6:24 AM	42.234	18.9	0.9	339		1.73
12/8/12 6:26 AM	42.267	18.9	0.91	340		1.73
12/8/12 6:28 AM	42.300	18.9	0.91	340		1.73
12/8/12 6:30 AM	42.334	18.9	0.91	340		1.73
12/8/12 6:32 AM	42.367	18.9	0.91	340		1.73
12/8/12 6:34 AM	42.400	18.9	0.92	340		1.73
12/8/12 6:36 AM	42.434	18.9	0.93	340		1.73
12/8/12 6:38 AM	42.467	18.9	0.93	340		1.73
12/8/12 6:40 AM	42.500	18.9	0.93	340		1.73
12/8/12 6:42 AM	42.534	18.9	0.93	340		1.73
12/8/12 6:44 AM	42.567	18.9	0.93	340		1.74
12/8/12 6:46 AM	42.600	18.9	0.93	340		1.74
12/8/12 6:48 AM	42.634	18.9	0.93	340		1.74
12/8/12 6:50 AM	42.667	18.9	0.93	340		1.74
12/8/12 6:52 AM	42.700	18.9	0.93	341		1.74
12/8/12 6:54 AM	42.734	18.9	0.94	341		1.74
12/8/12 6:56 AM	42.767	18.9	0.94	341		1.74
12/8/12 6:58 AM	42.800	18.9	0.94	340		1.74
12/8/12 7:00 AM	42.834	18.9	0.95	340		1.74
12/8/12 7:02 AM	42.867	18.9	0.95	340		1.74
12/8/12 7:04 AM	42.900	18.9	0.94	340		1.74
12/8/12 7:06 AM	42.934	18.9	0.95	340		1.74
12/8/12 7:08 AM	42.967	18.9	0.96	340		1.74
12/8/12 7:10 AM	43.000	18.9	0.97	340		1.74
12/8/12 7:12 AM	43.034	18.6	0.97	340		1.74
12/8/12 7:14 AM	43.067	18.6	0.98	339		1.74
12/8/12 7:16 AM	43.100	18.9	0.99	340		1.74
12/8/12 7:18 AM	43.134	18.6	1.01	340		1.74
12/8/12 7:20 AM	43.167	18.9	1.03	339		1.74
12/8/12 7:22 AM	43.200	18.9	1.04	339		1.74
12/8/12 7:24 AM	43.234	18.9	1.05	339		1.74
12/8/12 7:26 AM	43.267	18.9	1.07	339		1.74
12/8/12 7:28 AM	43.300	18.9	1.08	339		1.74
12/8/12 7:30 AM	43.334	18.9	1.11	340		1.74
12/8/12 7:32 AM	43.367	18.9	1.12	339		1.74
12/8/12 7:34 AM	43.400	18.9	1.14	339		1.74
12/8/12 7:36 AM	43.434	18.9	1.15	339		1.74
12/8/12 7:38 AM	43.467	18.9	1.17	339		1.74
12/8/12 7:40 AM	43.500	18.6	1.18	339		1.74
12/8/12 7:42 AM	43.534	18.9	1.21	339		1.74
12/8/12 7:44 AM	43.567	18.9	1.23	339		1.74
12/8/12 7:46 AM	43.600	18.9	1.24	339		1.74

Sample Site No. 3 (5.13 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 7:48 AM	43.634	18.9	1.26	339		1.74
12/8/12 7:50 AM	43.667	18.9	1.28	339		1.74
12/8/12 7:52 AM	43.700	18.9	1.3	339		1.74
12/8/12 7:54 AM	43.734	18.9	1.31	339		1.74
12/8/12 7:56 AM	43.767	18.9	1.32	340		1.74
12/8/12 7:58 AM	43.800	18.9	1.34	339		1.74
12/8/12 8:00 AM	43.834	18.6	1.35	339		1.74
12/8/12 8:02 AM	43.867	18.9	1.36	339		1.74
12/8/12 8:04 AM	43.900	18.9	1.36	339		1.74
12/8/12 8:06 AM	43.934	18.9	1.36	339		1.74
12/8/12 8:08 AM	43.967	18.9	1.37	339		1.74
12/8/12 8:10 AM	44.000	18.9	1.37	339		1.74
12/8/12 8:12 AM	44.034	18.9	1.37	339		1.74
12/8/12 8:14 AM	44.067	18.9	1.38	339		1.74
12/8/12 8:16 AM	44.100	18.9	1.38	339		1.74
12/8/12 8:18 AM	44.134	18.9	1.39	339		1.74
12/8/12 8:20 AM	44.167	18.9	1.41	339		1.74
12/8/12 8:22 AM	44.200	18.9	1.42	339		1.74
12/8/12 8:24 AM	44.234	18.9	1.43	339		1.74
12/8/12 8:26 AM	44.267	18.9	1.44	339		1.74
12/8/12 8:28 AM	44.300	18.9	1.45	339		1.74
12/8/12 8:30 AM	44.334	18.9	1.46	339		1.74
12/8/12 8:32 AM	44.367	18.9	1.48	339		1.74
12/8/12 8:34 AM	44.400	18.9	1.48	339		1.74
12/8/12 8:36 AM	44.434	18.9	1.48	339		1.74
12/8/12 8:38 AM	44.467	18.9	1.5	339		1.74
12/8/12 8:40 AM	44.500	18.9	1.5	339		1.74
12/8/12 8:42 AM	44.534	18.9	1.51	339		1.74
12/8/12 8:44 AM	44.567	18.9	1.51	339		1.74
12/8/12 8:46 AM	44.600	18.9	1.51	339		1.74
12/8/12 8:48 AM	44.634	18.9	1.52	339		1.74
12/8/12 8:50 AM	44.667	18.9	1.53	339		1.74
12/8/12 8:52 AM	44.700	18.9	1.54	339		1.74
12/8/12 8:54 AM	44.734	18.9	1.56	338		1.74
12/8/12 8:56 AM	44.767	18.9	1.57	339		1.74
12/8/12 8:58 AM	44.800	18.9	1.59	343		1.74
12/8/12 9:00 AM	44.834	18.9	1.61	364		1.74
12/8/12 9:02 AM	44.867	18.9	1.61	349		1.74
12/8/12 9:04 AM	44.900	18.9	1.62	344		1.74
12/8/12 9:06 AM	44.934	18.9	1.64	343		1.74
12/8/12 9:08 AM	44.967	18.9	1.65	342		1.74
12/8/12 9:10 AM	45.000	18.9	1.66	341		1.74
12/8/12 9:12 AM	45.034	18.9	1.67	341		1.74
12/8/12 9:14 AM	45.067	18.9	1.69	340		1.74
12/8/12 9:16 AM	45.100	18.9	1.71	340		1.74
12/8/12 9:18 AM	45.134	18.9	1.72	340		1.74
12/8/12 9:20 AM	45.167	18.9	1.73	340		1.74
12/8/12 9:22 AM	45.200	18.9	1.74	340		1.74
12/8/12 9:24 AM	45.234	18.9	1.76	340		1.74

Sample Site No. 3 (5.13 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**Temp**	**Corrected Electrical Conductivity @ 25°C**		**Calculated bromide concentration**
MST	h	cm	**°C**	µS cm-1		mg L-1
12/8/12 9:26 AM	45.267	18.9	1.78	340		1.74
12/8/12 9:28 AM	45.300	18.9	1.79	340		1.74
12/8/12 9:30 AM	45.334	18.9	1.81	340		1.74
12/8/12 9:32 AM	45.367	18.9	1.82	375		1.74
12/8/12 9:34 AM	45.400	18.9	1.84	369		1.74
12/8/12 9:36 AM	45.434	18.9	1.86	368		1.74
12/8/12 9:38 AM	45.467	18.9	1.89	367		1.74
12/8/12 9:40 AM	45.500	18.9	1.92	366		1.74
12/8/12 9:42 AM	45.534	18.9	1.94	366		1.74
12/8/12 9:44 AM	45.567	18.9	1.95	365		1.74
12/8/12 9:46 AM	45.600	18.9	1.96	365		1.74
12/8/12 9:48 AM	45.634	18.9	1.97	365		1.74
12/8/12 9:50 AM	45.667	18.9	1.98	365		1.74
12/8/12 9:52 AM	45.700	18.9	2	365		1.74
12/8/12 9:54 AM	45.734	18.9	2.02	365		1.74
12/8/12 9:56 AM	45.767	18.9	2.04	365		1.74
12/8/12 9:58 AM	45.800	18.9	2.07	365		1.74
12/8/12 10:00 AM	45.834	18.9	2.08	365		1.74

Table B.2.4 Field measured parameters and calculated bromide concentrations at 6.78 km.

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		**°C**	µS cm-1	mg L-1
12/6/12 12:16 PM	0.100	16.8	7.86	4.57	369	0.392
12/6/12 12:18 PM	0.133	16.5	7.79	4.58	369	0.392
12/6/12 12:20 PM	0.167	16.5	7.76	4.59	369	0.392
12/6/12 12:22 PM	0.200	16.5	7.76	4.60	369	0.392
12/6/12 12:24 PM	0.233	16.5	7.76	4.61	369	0.392
12/6/12 12:26 PM	0.267	16.5	7.76	4.63	369	0.392
12/6/12 12:28 PM	0.300	16.8	7.77	4.64	369	0.392
12/6/12 12:30 PM	0.333	16.8	7.77	4.66	369	0.392
12/6/12 12:32 PM	0.367	16.5	7.78	4.67	369	0.392
12/6/12 12:34 PM	0.400	16.8	7.78	4.68	369	0.392
12/6/12 12:36 PM	0.433	16.8	7.78	4.68	369	0.392
12/6/12 12:38 PM	0.467	16.5	7.79	4.67	369	0.392
12/6/12 12:40 PM	0.500	16.5	7.79	4.67	369	0.392
12/6/12 12:42 PM	0.533	16.5	7.80	4.67	369	0.392
12/6/12 12:44 PM	0.567	16.5	7.80	4.68	369	0.392
12/6/12 12:46 PM	0.600	16.5	7.80	4.68	369	0.392
12/6/12 12:48 PM	0.633	16.5	7.80	4.67	369	0.392
12/6/12 12:50 PM	0.667	16.5	7.81	4.67	369	0.392
12/6/12 12:52 PM	0.700	16.5	7.81	4.68	369	0.392
12/6/12 12:54 PM	0.733	16.5	7.81	4.68	369	0.392
12/6/12 12:56 PM	0.767	16.5	7.81	4.66	369	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 12:58 PM	0.800	16.5	7.81	4.66	369	0.392
12/6/12 1:00 PM	0.833	16.5	7.81	4.66	369	0.392
12/6/12 1:02 PM	0.867	16.5	7.81	4.66	369	0.392
12/6/12 1:04 PM	0.900	16.5	7.82	4.67	369	0.392
12/6/12 1:06 PM	0.933	16.5	7.82	4.68	369	0.392
12/6/12 1:08 PM	0.967	16.5	7.82	4.68	369	0.392
12/6/12 1:10 PM	1.000	16.5	7.82	4.69	369	0.392
12/6/12 1:12 PM	1.033	16.5	7.82	4.7	369	0.392
12/6/12 1:14 PM	1.067	16.5	7.83	4.7	369	0.392
12/6/12 1:16 PM	1.100	16.5	7.83	4.69	369	0.392
12/6/12 1:18 PM	1.133	16.5	7.83	4.69	369	0.392
12/6/12 1:20 PM	1.167	16.5	7.83	4.69	369	0.392
12/6/12 1:22 PM	1.200	16.5	7.83	4.69	369	0.392
12/6/12 1:24 PM	1.233	16.5	7.83	4.7	369	0.392
12/6/12 1:26 PM	1.267	16.5	7.83	4.69	368	0.392
12/6/12 1:28 PM	1.300	16.5	7.83	4.69	368	0.392
12/6/12 1:30 PM	1.333	16.5	7.83	4.72	368	0.392
12/6/12 1:32 PM	1.367	16.5	7.84	4.74	368	0.392
12/6/12 1:34 PM	1.400	16.5	7.84	4.75	369	0.392
12/6/12 1:36 PM	1.433	16.8	7.84	4.76	369	0.392
12/6/12 1:38 PM	1.467	16.5	7.84	4.77	368	0.392
12/6/12 1:40 PM	1.500	16.5	7.84	4.8	368	0.392
12/6/12 1:42 PM	1.533	16.8	7.85	4.82	368	0.392
12/6/12 1:44 PM	1.567	16.5	7.85	4.82	368	0.392
12/6/12 1:46 PM	1.600	16.5	7.85	4.84	368	0.392
12/6/12 1:48 PM	1.633	16.5	7.85	4.84	368	0.392
12/6/12 1:50 PM	1.667	16.5	7.85	4.85	368	0.392
12/6/12 1:52 PM	1.700	16.5	7.85	4.84	368	0.392
12/6/12 1:54 PM	1.733	16.5	7.85	4.85	368	0.392
12/6/12 1:56 PM	1.767	16.5	7.85	4.85	368	0.392
12/6/12 1:58 PM	1.800	16.5	7.86	4.85	368	0.392
12/6/12 2:00 PM	1.833	16.8	7.86	4.82	368	0.392
12/6/12 2:02 PM	1.867	16.5	7.86	4.81	368	0.392
12/6/12 2:04 PM	1.900	16.5	7.86	4.81	368	0.392
12/6/12 2:06 PM	1.933	16.5	7.86	4.83	368	0.392
12/6/12 2:08 PM	1.967	16.5	7.86	4.84	368	0.392
12/6/12 2:10 PM	2.000	16.5	7.86	4.84	368	0.392
12/6/12 2:12 PM	2.033	16.5	7.86	4.84	368	0.392
12/6/12 2:14 PM	2.067	16.5	7.86	4.84	368	0.392
12/6/12 2:16 PM	2.100	16.5	7.86	4.83	368	0.392
12/6/12 2:18 PM	2.133	16.5	7.86	4.81	368	0.392
12/6/12 2:20 PM	2.167	16.5	7.86	4.8	368	0.392
12/6/12 2:22 PM	2.200	16.5	7.86	4.78	368	0.392
12/6/12 2:24 PM	2.233	16.5	7.86	4.74	368	0.392
12/6/12 2:26 PM	2.267	16.5	7.86	4.71	368	0.392
12/6/12 2:28 PM	2.300	16.5	7.86	4.7	368	0.392
12/6/12 2:30 PM	2.333	16.5	7.86	4.67	368	0.392
12/6/12 2:32 PM	2.367	16.5	7.86	4.64	368	0.392
12/6/12 2:34 PM	2.400	16.5	7.86	4.62	368	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 2:36 PM	2.433	16.5	7.86	4.61	368	0.392
12/6/12 2:38 PM	2.467	16.5	7.86	4.6	368	0.392
12/6/12 2:40 PM	2.500	16.5	7.86	4.6	368	0.392
12/6/12 2:42 PM	2.533	16.5	7.86	4.59	367	0.392
12/6/12 2:44 PM	2.567	16.5	7.86	4.58	368	0.392
12/6/12 2:46 PM	2.600	16.5	7.85	4.57	368	0.392
12/6/12 2:48 PM	2.633	16.5	7.86	4.56	368	0.392
12/6/12 2:50 PM	2.667	16.5	7.86	4.55	368	0.392
12/6/12 2:52 PM	2.700	16.5	7.86	4.54	368	0.392
12/6/12 2:54 PM	2.733	16.5	7.86	4.53	367	0.392
12/6/12 2:56 PM	2.767	16.5	7.86	4.51	368	0.392
12/6/12 2:58 PM	2.800	16.5	7.86	4.51	368	0.392
12/6/12 3:00 PM	2.833	16.5	7.86	4.5	368	0.392
12/6/12 3:02 PM	2.867	16.5	7.86	4.49	368	0.392
12/6/12 3:04 PM	2.900	16.5	7.86	4.48	368	0.392
12/6/12 3:06 PM	2.933	16.5	7.86	4.47	367	0.392
12/6/12 3:08 PM	2.967	16.5	7.86	4.45	368	0.392
12/6/12 3:10 PM	3.000	16.5	7.86	4.44	368	0.392
12/6/12 3:12 PM	3.033	16.5	7.86	4.43	368	0.392
12/6/12 3:14 PM	3.067	16.5	7.86	4.41	368	0.392
12/6/12 3:16 PM	3.100	16.5	7.86	4.39	369	0.392
12/6/12 3:18 PM	3.133	16.5	7.86	4.38	369	0.392
12/6/12 3:20 PM	3.167	16.5	7.86	4.36	371	0.392
12/6/12 3:22 PM	3.200	16.5	7.86	4.34	369	0.392
12/6/12 3:24 PM	3.233	16.5	7.86	4.33	371	0.392
12/6/12 3:26 PM	3.267	16.5	7.86	4.32	371	0.392
12/6/12 3:28 PM	3.300	16.5	7.86	4.3	369	0.392
12/6/12 3:30 PM	3.333	16.2	7.86	4.29	369	0.392
12/6/12 3:32 PM	3.367	16.5	7.86	4.27	369	0.392
12/6/12 3:34 PM	3.400	16.5	7.86	4.26	368	0.392
12/6/12 3:36 PM	3.433	16.5	7.86	4.24	369	0.392
12/6/12 3:38 PM	3.467	16.5	7.86	4.22	368	0.392
12/6/12 3:40 PM	3.500	16.5	7.86	4.21	368	0.392
12/6/12 3:42 PM	3.533	16.5	7.86	4.19	368	0.392
12/6/12 3:44 PM	3.567	16.5	7.85	4.17	368	0.392
12/6/12 3:46 PM	3.600	16.5	7.86	4.16	368	0.392
12/6/12 3:48 PM	3.633	16.5	7.85	4.14	368	0.392
12/6/12 3:50 PM	3.667	16.5	7.85	4.13	368	0.392
12/6/12 3:52 PM	3.700	16.5	7.85	4.11	367	0.392
12/6/12 3:54 PM	3.733	16.5	7.85	4.09	368	0.392
12/6/12 3:56 PM	3.767	16.5	7.85	4.08	367	0.392
12/6/12 3:58 PM	3.800	16.2	7.85	4.06	367	0.392
12/6/12 4:00 PM	3.833	16.5	7.85	4.05	368	0.392
12/6/12 4:02 PM	3.867	16.5	7.85	4.04	368	0.392
12/6/12 4:04 PM	3.900	16.2	7.85	4.02	367	0.392
12/6/12 4:06 PM	3.933	16.5	7.85	4.01	368	0.392
12/6/12 4:08 PM	3.967	16.5	7.85	3.99	367	0.392
12/6/12 4:10 PM	4.000	16.5	7.85	3.98	367	0.392
12/6/12 4:12 PM	4.033	16.5	7.85	3.97	367	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 4:14 PM	4.067	16.2	7.85	3.95	367	0.392
12/6/12 4:16 PM	4.100	16.2	7.85	3.94	367	0.392
12/6/12 4:18 PM	4.133	16.5	7.85	3.92	367	0.392
12/6/12 4:20 PM	4.167	16.2	7.85	3.91	367	0.392
12/6/12 4:22 PM	4.200	16.5	7.85	3.89	367	0.392
12/6/12 4:24 PM	4.233	16.5	7.85	3.88	367	0.392
12/6/12 4:26 PM	4.267	16.2	7.85	3.86	367	0.392
12/6/12 4:28 PM	4.300	16.2	7.85	3.85	367	0.392
12/6/12 4:30 PM	4.333	16.2	7.85	3.84	367	0.392
12/6/12 4:32 PM	4.367	16.5	7.85	3.82	367	0.392
12/6/12 4:34 PM	4.400	16.2	7.85	3.81	367	0.392
12/6/12 4:36 PM	4.433	16.2	7.85	3.8	367	0.392
12/6/12 4:38 PM	4.467	16.2	7.85	3.78	367	0.392
12/6/12 4:40 PM	4.500	16.2	7.85	3.77	367	0.392
12/6/12 4:42 PM	4.533	16.5	7.84	3.75	367	0.392
12/6/12 4:44 PM	4.567	16.2	7.85	3.74	367	0.392
12/6/12 4:46 PM	4.600	16.2	7.84	3.73	367	0.392
12/6/12 4:48 PM	4.633	16.2	7.84	3.71	367	0.392
12/6/12 4:50 PM	4.667	16.2	7.84	3.7	367	0.392
12/6/12 4:52 PM	4.700	16.2	7.84	3.68	367	0.392
12/6/12 4:54 PM	4.733	16.5	7.84	3.67	367	0.392
12/6/12 4:56 PM	4.767	16.2	7.84	3.66	367	0.392
12/6/12 4:58 PM	4.800	16.2	7.84	3.65	367	0.392
12/6/12 5:00 PM	4.833	16.2	7.84	3.64	367	0.392
12/6/12 5:02 PM	4.867	16.2	7.84	3.62	367	0.392
12/6/12 5:04 PM	4.900	16.2	7.84	3.61	367	0.392
12/6/12 5:06 PM	4.933	16.2	7.84	3.59	367	0.392
12/6/12 5:08 PM	4.967	16.2	7.84	3.59	367	0.392
12/6/12 5:10 PM	5.000	16.2	7.84	3.58	367	0.392
12/6/12 5:12 PM	5.033	16.2	7.84	3.57	367	0.392
12/6/12 5:14 PM	5.067	16.2	7.84	3.55	367	0.392
12/6/12 5:16 PM	5.100	16.2	7.84	3.54	367	0.392
12/6/12 5:18 PM	5.133	16.2	7.84	3.52	367	0.392
12/6/12 5:20 PM	5.167	16.2	7.84	3.51	367	0.392
12/6/12 5:22 PM	5.200	16.2	7.84	3.5	367	0.392
12/6/12 5:24 PM	5.233	16.2	7.84	3.49	367	0.392
12/6/12 5:26 PM	5.267	16.2	7.84	3.48	367	0.392
12/6/12 5:28 PM	5.300	16.2	7.84	3.47	367	0.392
12/6/12 5:30 PM	5.333	16.2	7.84	3.46	367	0.392
12/6/12 5:32 PM	5.367	16.2	7.84	3.44	367	0.392
12/6/12 5:34 PM	5.400	16.2	7.84	3.43	367	0.392
12/6/12 5:36 PM	5.433	16.2	7.84	3.42	367	0.392
12/6/12 5:38 PM	5.467	15.8	7.84	3.41	367	0.392
12/6/12 5:40 PM	5.500	16.2	7.84	3.4	367	0.392
12/6/12 5:42 PM	5.533	16.2	7.84	3.39	367	0.392
12/6/12 5:44 PM	5.567	16.2	7.84	3.38	367	0.392
12/6/12 5:46 PM	5.600	16.2	7.84	3.37	367	0.392
12/6/12 5:48 PM	5.633	16.2	7.84	3.35	367	0.392
12/6/12 5:50 PM	5.667	16.2	7.84	3.34	367	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 5:52 PM	5.700	16.5	7.84	3.33	367	0.392
12/6/12 5:54 PM	5.733	16.2	7.84	3.31	367	0.392
12/6/12 5:56 PM	5.767	16.2	7.84	3.3	367	0.392
12/6/12 5:58 PM	5.800	16.2	7.84	3.28	367	0.392
12/6/12 6:00 PM	5.833	16.2	7.84	3.27	367	0.392
12/6/12 6:02 PM	5.867	16.2	7.84	3.26	367	0.392
12/6/12 6:04 PM	5.900	16.2	7.84	3.24	367	0.392
12/6/12 6:06 PM	5.933	16.2	7.84	3.23	367	0.392
12/6/12 6:08 PM	5.967	16.2	7.84	3.22	367	0.392
12/6/12 6:10 PM	6.000	16.2	7.84	3.2	367	0.392
12/6/12 6:12 PM	6.033	16.2	7.84	3.2	367	0.392
12/6/12 6:14 PM	6.067	16.2	7.84	3.18	367	0.392
12/6/12 6:16 PM	6.100	16.2	7.84	3.17	367	0.392
12/6/12 6:18 PM	6.133	16.2	7.84	3.16	367	0.392
12/6/12 6:20 PM	6.167	16.2	7.84	3.15	367	0.392
12/6/12 6:22 PM	6.200	16.2	7.84	3.14	367	0.392
12/6/12 6:24 PM	6.233	16.2	7.84	3.13	367	0.392
12/6/12 6:26 PM	6.267	16.2	7.84	3.11	367	0.392
12/6/12 6:28 PM	6.300	16.2	7.84	3.1	367	0.392
12/6/12 6:30 PM	6.333	16.2	7.84	3.09	367	0.392
12/6/12 6:32 PM	6.367	16.2	7.84	3.07	367	0.392
12/6/12 6:34 PM	6.400	16.2	7.84	3.06	367	0.392
12/6/12 6:36 PM	6.433	16.2	7.84	3.05	367	0.392
12/6/12 6:38 PM	6.467	16.2	7.84	3.04	367	0.392
12/6/12 6:40 PM	6.500	16.2	7.84	3.03	367	0.392
12/6/12 6:42 PM	6.533	16.2	7.84	3.02	367	0.392
12/6/12 6:44 PM	6.567	16.2	7.84	3	367	0.392
12/6/12 6:46 PM	6.600	16.2	7.84	2.99	367	0.392
12/6/12 6:48 PM	6.633	16.2	7.84	2.98	367	0.392
12/6/12 6:50 PM	6.667	16.2	7.84	2.97	367	0.392
12/6/12 6:52 PM	6.700	16.2	7.84	2.96	367	0.392
12/6/12 6:54 PM	6.733	16.2	7.84	2.94	367	0.392
12/6/12 6:56 PM	6.767	16.2	7.84	2.93	367	0.392
12/6/12 6:58 PM	6.800	16.2	7.84	2.92	367	0.392
12/6/12 7:00 PM	6.833	16.2	7.84	2.91	367	0.392
12/6/12 7:02 PM	6.867	16.2	7.84	2.89	367	0.392
12/6/12 7:04 PM	6.900	16.2	7.84	2.88	367	0.392
12/6/12 7:06 PM	6.933	16.2	7.84	2.87	367	0.392
12/6/12 7:08 PM	6.967	16.2	7.84	2.86	367	0.392
12/6/12 7:10 PM	7.000	16.2	7.84	2.85	367	0.392
12/6/12 7:12 PM	7.033	16.2	7.84	2.83	367	0.392
12/6/12 7:14 PM	7.067	16.2	7.84	2.82	367	0.392
12/6/12 7:16 PM	7.100	15.8	7.84	2.81	367	0.392
12/6/12 7:18 PM	7.133	16.2	7.84	2.8	367	0.392
12/6/12 7:20 PM	7.167	16.2	7.84	2.78	367	0.392
12/6/12 7:22 PM	7.200	16.2	7.84	2.77	367	0.392
12/6/12 7:24 PM	7.233	16.2	7.84	2.76	367	0.392
12/6/12 7:26 PM	7.267	16.2	7.84	2.75	367	0.392
12/6/12 7:28 PM	7.300	16.2	7.84	2.73	367	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 7:30 PM	7.333	16.2	7.84	2.73	367	0.392
12/6/12 7:32 PM	7.367	16.2	7.84	2.71	367	0.392
12/6/12 7:34 PM	7.400	16.2	7.84	2.71	367	0.392
12/6/12 7:36 PM	7.433	15.8	7.84	2.69	367	0.392
12/6/12 7:38 PM	7.467	16.2	7.84	2.68	367	0.392
12/6/12 7:40 PM	7.500	16.2	7.84	2.67	367	0.392
12/6/12 7:42 PM	7.533	15.8	7.84	2.66	367	0.392
12/6/12 7:44 PM	7.567	16.2	7.84	2.65	367	0.392
12/6/12 7:46 PM	7.600	16.2	7.84	2.64	367	0.392
12/6/12 7:48 PM	7.633	16.5	7.84	2.63	367	0.392
12/6/12 7:50 PM	7.667	16.2	7.84	2.62	367	0.392
12/6/12 7:52 PM	7.700	16.2	7.84	2.6	367	0.392
12/6/12 7:54 PM	7.733	16.2	7.84	2.59	367	0.392
12/6/12 7:56 PM	7.767	16.2	7.84	2.58	367	0.392
12/6/12 7:58 PM	7.800	16.2	7.84	2.57	367	0.392
12/6/12 8:00 PM	7.833	16.2	7.84	2.56	367	0.392
12/6/12 8:02 PM	7.867	16.2	7.84	2.55	367	0.392
12/6/12 8:04 PM	7.900	16.2	7.84	2.54	367	0.392
12/6/12 8:06 PM	7.933	16.2	7.84	2.53	367	0.392
12/6/12 8:08 PM	7.967	15.8	7.84	2.52	367	0.392
12/6/12 8:10 PM	8.000	16.2	7.84	2.5	367	0.392
12/6/12 8:12 PM	8.033	16.5	7.84	2.49	367	0.392
12/6/12 8:14 PM	8.067	16.2	7.84	2.49	367	0.392
12/6/12 8:16 PM	8.100	16.2	7.84	2.47	367	0.392
12/6/12 8:18 PM	8.133	16.2	7.84	2.46	367	0.392
12/6/12 8:20 PM	8.167	16.2	7.84	2.45	367	0.392
12/6/12 8:22 PM	8.200	16.2	7.84	2.44	367	0.392
12/6/12 8:24 PM	8.233	16.2	7.84	2.43	367	0.392
12/6/12 8:26 PM	8.267	16.2	7.84	2.42	367	0.392
12/6/12 8:28 PM	8.300	16.2	7.84	2.41	367	0.392
12/6/12 8:30 PM	8.333	16.2	7.84	2.4	367	0.392
12/6/12 8:32 PM	8.367	16.2	7.84	2.39	367	0.392
12/6/12 8:34 PM	8.400	16.2	7.84	2.38	367	0.392
12/6/12 8:36 PM	8.433	16.2	7.84	2.36	367	0.392
12/6/12 8:38 PM	8.467	16.2	7.84	2.36	367	0.392
12/6/12 8:40 PM	8.500	16.2	7.84	2.34	367	0.392
12/6/12 8:42 PM	8.533	16.2	7.84	2.33	367	0.392
12/6/12 8:44 PM	8.567	16.2	7.84	2.32	367	0.392
12/6/12 8:46 PM	8.600	16.2	7.84	2.31	367	0.392
12/6/12 8:48 PM	8.633	16.2	7.84	2.3	367	0.392
12/6/12 8:50 PM	8.667	16.5	7.84	2.29	367	0.392
12/6/12 8:52 PM	8.700	16.2	7.84	2.28	367	0.392
12/6/12 8:54 PM	8.733	16.2	7.84	2.26	367	0.392
12/6/12 8:56 PM	8.767	16.2	7.84	2.25	367	0.392
12/6/12 8:58 PM	8.800	16.2	7.84	2.24	367	0.392
12/6/12 9:00 PM	8.833	16.2	7.84	2.23	367	0.392
12/6/12 9:02 PM	8.867	16.5	7.84	2.23	367	0.392
12/6/12 9:04 PM	8.900	16.2	7.84	2.22	367	0.392
12/6/12 9:06 PM	8.933	16.2	7.84	2.21	367	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 9:08 PM	8.967	15.8	7.84	2.19	367	0.392
12/6/12 9:10 PM	9.000	16.2	7.84	2.18	367	0.392
12/6/12 9:12 PM	9.033	16.2	7.84	2.17	367	0.392
12/6/12 9:14 PM	9.067	16.2	7.84	2.16	367	0.392
12/6/12 9:16 PM	9.100	16.2	7.84	2.15	367	0.392
12/6/12 9:18 PM	9.133	16.2	7.84	2.15	367	0.392
12/6/12 9:20 PM	9.167	16.2	7.84	2.14	367	0.392
12/6/12 9:22 PM	9.200	16.2	7.84	2.12	367	0.392
12/6/12 9:24 PM	9.233	16.2	7.84	2.11	367	0.392
12/6/12 9:26 PM	9.267	16.2	7.84	2.1	367	0.392
12/6/12 9:28 PM	9.300	16.2	7.84	2.09	367	0.392
12/6/12 9:30 PM	9.333	16.2	7.84	2.09	367	0.392
12/6/12 9:32 PM	9.367	15.8	7.84	2.08	367	0.392
12/6/12 9:34 PM	9.400	16.2	7.84	2.07	367	0.392
12/6/12 9:36 PM	9.433	16.2	7.84	2.06	367	0.392
12/6/12 9:38 PM	9.467	15.8	7.84	2.06	367	0.392
12/6/12 9:40 PM	9.500	16.2	7.84	2.05	367	0.392
12/6/12 9:42 PM	9.533	16.2	7.84	2.05	367	0.392
12/6/12 9:44 PM	9.567	16.2	7.84	2.04	367	0.392
12/6/12 9:46 PM	9.600	15.8	7.84	2.03	367	0.392
12/6/12 9:48 PM	9.633	15.8	7.84	2.03	367	0.392
12/6/12 9:50 PM	9.667	15.8	7.84	2.02	367	0.392
12/6/12 9:52 PM	9.700	16.2	7.84	2.02	367	0.392
12/6/12 9:54 PM	9.733	16.2	7.84	2.02	367	0.392
12/6/12 9:56 PM	9.767	15.8	7.84	2.01	367	0.392
12/6/12 9:58 PM	9.800	15.8	7.84	2.01	367	0.392
12/6/12 10:00 PM	9.833	16.2	7.84	2	367	0.392
12/6/12 10:02 PM	9.867	16.2	7.84	2	367	0.392
12/6/12 10:04 PM	9.900	15.8	7.84	1.99	367	0.392
12/6/12 10:06 PM	9.933	16.2	7.84	1.99	367	0.392
12/6/12 10:08 PM	9.967	16.2	7.84	1.98	367	0.392
12/6/12 10:10 PM	10.000	16.2	7.84	1.98	367	0.392
12/6/12 10:12 PM	10.033	15.8	7.84	1.97	367	0.392
12/6/12 10:14 PM	10.067	16.2	7.84	1.96	367	0.392
12/6/12 10:16 PM	10.100	16.2	7.84	1.95	367	0.392
12/6/12 10:18 PM	10.133	15.8	7.84	1.94	367	0.392
12/6/12 10:20 PM	10.167	16.2	7.84	1.93	365	0.392
12/6/12 10:22 PM	10.200	15.8	7.84	1.92	367	0.392
12/6/12 10:24 PM	10.233	16.2	7.84	1.91	365	0.392
12/6/12 10:26 PM	10.267	15.8	7.84	1.91	367	0.392
12/6/12 10:28 PM	10.300	16.2	7.84	1.9	365	0.392
12/6/12 10:30 PM	10.333	15.8	7.84	1.89	365	0.392
12/6/12 10:32 PM	10.367	16.2	7.84	1.89	367	0.392
12/6/12 10:34 PM	10.400	15.8	7.84	1.88	367	0.392
12/6/12 10:36 PM	10.433	16.2	7.84	1.87	367	0.392
12/6/12 10:38 PM	10.467	16.2	7.84	1.87	365	0.392
12/6/12 10:40 PM	10.500	16.2	7.84	1.87	365	0.392
12/6/12 10:42 PM	10.533	15.8	7.84	1.86	367	0.392
12/6/12 10:44 PM	10.567	15.8	7.84	1.85	367	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/6/12 10:46 PM	10.600	15.8	7.84	1.85	367	0.392
12/6/12 10:48 PM	10.633	15.8	7.84	1.84	365	0.392
12/6/12 10:50 PM	10.667	16.2	7.84	1.84	367	0.392
12/6/12 10:52 PM	10.700	15.8	7.84	1.83	365	0.392
12/6/12 10:54 PM	10.733	16.2	7.84	1.83	365	0.392
12/6/12 10:56 PM	10.767	16.2	7.84	1.83	367	0.392
12/6/12 10:58 PM	10.800	15.8	7.84	1.82	365	0.392
12/6/12 11:00 PM	10.833	15.8	7.84	1.83	367	0.392
12/6/12 11:02 PM	10.867	16.2	7.84	1.82	365	0.392
12/6/12 11:04 PM	10.900	16.2	7.84	1.82	365	0.392
12/6/12 11:06 PM	10.933	16.2	7.84	1.81	365	0.392
12/6/12 11:08 PM	10.967	15.8	7.84	1.81	367	0.392
12/6/12 11:10 PM	11.000	16.2	7.84	1.81	365	0.392
12/6/12 11:12 PM	11.033	15.8	7.84	1.81	367	0.392
12/6/12 11:14 PM	11.067	15.8	7.84	1.81	367	0.392
12/6/12 11:16 PM	11.100	16.2	7.84	1.81	365	0.392
12/6/12 11:18 PM	11.133	15.8	7.84	1.8	365	0.392
12/6/12 11:20 PM	11.167	16.2	7.84	1.8	365	0.392
12/6/12 11:22 PM	11.200	15.8	7.84	1.81	365	0.392
12/6/12 11:24 PM	11.233	15.8	7.84	1.8	365	0.392
12/6/12 11:26 PM	11.267	15.8	7.84	1.8	367	0.392
12/6/12 11:28 PM	11.300	16.2	7.84	1.8	365	0.392
12/6/12 11:30 PM	11.333	15.8	7.84	1.8	365	0.392
12/6/12 11:32 PM	11.367	15.8	7.84	1.8	367	0.392
12/6/12 11:34 PM	11.400	15.8	7.84	1.8	365	0.392
12/6/12 11:36 PM	11.433	15.8	7.84	1.8	365	0.392
12/6/12 11:38 PM	11.467	16.2	7.84	1.8	365	0.392
12/6/12 11:40 PM	11.500	16.2	7.84	1.8	365	0.392
12/6/12 11:42 PM	11.533	16.2	7.84	1.79	364	0.392
12/6/12 11:44 PM	11.567	16.2	7.84	1.79	364	0.392
12/6/12 11:46 PM	11.600	16.2	7.84	1.79	362	0.392
12/6/12 11:48 PM	11.633	16.2	7.84	1.79	362	0.392
12/6/12 11:50 PM	11.667	16.2	7.84	1.78	362	0.392
12/6/12 11:52 PM	11.700	16.2	7.84	1.78	362	0.392
12/6/12 11:54 PM	11.733	16.2	7.84	1.78	362	0.392
12/6/12 11:56 PM	11.767	16.2	7.84	1.78	362	0.392
12/6/12 11:58 PM	11.800	16.2	7.84	1.78	362	0.392
12/7/12 12:00 AM	11.833	16.2	7.84	1.78	362	0.392
12/7/12 12:02 AM	11.867	16.2	7.84	1.77	362	0.392
12/7/12 12:04 AM	11.900	15.8	7.84	1.77	364	0.392
12/7/12 12:06 AM	11.933	16.2	7.84	1.76	364	0.392
12/7/12 12:08 AM	11.967	16.2	7.84	1.76	364	0.392
12/7/12 12:10 AM	12.000	16.2	7.84	1.76	364	0.392
12/7/12 12:12 AM	12.033	15.8	7.84	1.75	364	0.392
12/7/12 12:14 AM	12.067	16.2	7.84	1.75	364	0.392
12/7/12 12:16 AM	12.100	16.2	7.85	1.75	365	0.392
12/7/12 12:18 AM	12.133	16.2	7.84	1.75	364	0.392
12/7/12 12:20 AM	12.167	16.2	7.84	1.75	365	0.392
12/7/12 12:22 AM	12.200	15.8	7.84	1.75	365	0.392

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 12:24 AM	12.233	16.2	7.84	1.75	365	0.392
12/7/12 12:26 AM	12.267	16.2	7.84	1.74	365	0.392
12/7/12 12:28 AM	12.300	15.8	7.84	1.74	365	0.392
12/7/12 12:30 AM	12.333	16.2	7.85	1.74	365	0.392
12/7/12 12:32 AM	12.367	16.2	7.84	1.74	365	0.392
12/7/12 12:34 AM	12.400	16.2	7.84	1.74	365	0.392
12/7/12 12:36 AM	12.433	15.8	7.85	1.74	365	0.392
12/7/12 12:38 AM	12.467	16.2	7.84	1.74	365	0.392
12/7/12 12:40 AM	12.500	16.2	7.84	1.73	365	0.392
12/7/12 12:42 AM	12.533	15.8	7.84	1.73	365	0.392
12/7/12 12:44 AM	12.567	16.2	7.85	1.72	365	0.392
12/7/12 12:46 AM	12.600	16.2	7.84	1.72	365	0.392
12/7/12 12:48 AM	12.633	16.2	7.85	1.72	365	0.392
12/7/12 12:50 AM	12.667	16.2	7.85	1.71	365	0.392
12/7/12 12:52 AM	12.700	16.2	7.85	1.71	365	0.392
12/7/12 12:54 AM	12.733	16.2	7.85	1.7	365	0.392
12/7/12 12:56 AM	12.767	16.2	7.85	1.7	365	0.392
12/7/12 12:58 AM	12.800	15.8	7.84	1.69	365	0.392
12/7/12 1:00 AM	12.833	16.2	7.85	1.69	365	0.392
12/7/12 1:02 AM	12.867	15.8	7.85	1.69	365	0.392
12/7/12 1:04 AM	12.900	16.2	7.85	1.69	365	0.392
12/7/12 1:06 AM	12.933	16.2	7.85	1.69	365	0.392
12/7/12 1:08 AM	12.967	15.8	7.85	1.69	365	0.392
12/7/12 1:10 AM	13.000	16.2	7.85	1.69	365	0.392
12/7/12 1:12 AM	13.033	15.8	7.85	1.69	365	0.392
12/7/12 1:14 AM	13.067	16.2	7.85	1.68	365	0.392
12/7/12 1:16 AM	13.100	16.2	7.85	1.68	365	0.392
12/7/12 1:18 AM	13.133	16.2	7.85	1.69	365	0.392
12/7/12 1:20 AM	13.167	16.2	7.85	1.68	365	0.392
12/7/12 1:22 AM	13.200	16.2	7.85	1.68	365	0.392
12/7/12 1:24 AM	13.233	16.2	7.85	1.68	365	0.423
12/7/12 1:26 AM	13.267	16.2	7.85	1.68	365	0.454
12/7/12 1:28 AM	13.300	16.2	7.85	1.68	365	0.485
12/7/12 1:30 AM	13.333	16.2	7.85	1.68	365	0.516
12/7/12 1:32 AM	13.367	16.2	7.85	1.67	365	0.578
12/7/12 1:34 AM	13.400	16.2	7.85	1.67	365	0.640
12/7/12 1:36 AM	13.433	16.2	7.85	1.68	365	0.702
12/7/12 1:38 AM	13.467	16.2	7.85	1.67	367	0.764
12/7/12 1:40 AM	13.500	16.2	7.85	1.67	367	0.826
12/7/12 1:42 AM	13.533	16.2	7.85	1.67	367	0.888
12/7/12 1:44 AM	13.567	16.2	7.85	1.67	367	0.981
12/7/12 1:46 AM	13.600	16.2	7.85	1.66	367	1.07
12/7/12 1:48 AM	13.633	16.2	7.85	1.66	367	1.17
12/7/12 1:50 AM	13.667	16.2	7.85	1.66	367	1.29
12/7/12 1:52 AM	13.700	16.2	7.85	1.65	367	1.35
12/7/12 1:54 AM	13.733	16.2	7.85	1.64	368	1.35
12/7/12 1:56 AM	13.767	16.2	7.85	1.63	368	1.35
12/7/12 1:58 AM	13.800	15.8	7.85	1.63	368	1.35
12/7/12 2:00 AM	13.833	16.2	7.85	1.63	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 2:02 AM	13.867	16.2	7.85	1.62	369	2.31
12/7/12 2:04 AM	13.900	16.2	7.85	1.62	369	2.31
12/7/12 2:06 AM	13.933	16.2	7.85	1.62	369	2.31
12/7/12 2:08 AM	13.967	16.2	7.85	1.61	369	2.31
12/7/12 2:10 AM	14.000	15.8	7.85	1.61	369	2.31
12/7/12 2:12 AM	14.033	16.2	7.85	1.6	369	2.31
12/7/12 2:14 AM	14.067	16.2	7.85	1.6	371	3.28
12/7/12 2:16 AM	14.100	16.2	7.85	1.59	371	3.28
12/7/12 2:18 AM	14.133	16.2	7.85	1.58	371	3.28
12/7/12 2:20 AM	14.167	15.8	7.85	1.58	372	4.24
12/7/12 2:22 AM	14.200	16.2	7.85	1.58	372	4.24
12/7/12 2:24 AM	14.233	15.8	7.85	1.57	372	4.24
12/7/12 2:26 AM	14.267	16.2	7.85	1.57	372	4.24
12/7/12 2:28 AM	14.300	15.8	7.85	1.57	372	4.24
12/7/12 2:30 AM	14.333	15.8	7.85	1.56	374	5.21
12/7/12 2:32 AM	14.367	15.8	7.85	1.56	374	5.21
12/7/12 2:34 AM	14.400	16.2	7.85	1.55	374	5.21
12/7/12 2:36 AM	14.433	16.2	7.85	1.55	374	5.21
12/7/12 2:38 AM	14.467	16.2	7.85	1.54	374	5.21
12/7/12 2:40 AM	14.500	16.2	7.85	1.54	375	6.17
12/7/12 2:42 AM	14.533	16.2	7.85	1.53	374	5.21
12/7/12 2:44 AM	14.567	16.2	7.85	1.53	375	6.17
12/7/12 2:46 AM	14.600	16.2	7.85	1.52	374	5.21
12/7/12 2:48 AM	14.633	15.8	7.85	1.52	374	5.21
12/7/12 2:50 AM	14.667	15.8	7.85	1.51	375	6.17
12/7/12 2:52 AM	14.700	16.2	7.85	1.51	375	6.17
12/7/12 2:54 AM	14.733	16.2	7.85	1.5	375	6.17
12/7/12 2:56 AM	14.767	15.8	7.85	1.49	374	5.21
12/7/12 2:58 AM	14.800	15.8	7.85	1.49	375	6.17
12/7/12 3:00 AM	14.833	15.8	7.85	1.49	375	6.17
12/7/12 3:02 AM	14.867	16.2	7.85	1.49	374	5.21
12/7/12 3:04 AM	14.900	16.2	7.85	1.49	375	6.17
12/7/12 3:06 AM	14.933	15.8	7.85	1.49	374	5.21
12/7/12 3:08 AM	14.967	15.8	7.85	1.49	374	5.21
12/7/12 3:10 AM	15.000	15.8	7.85	1.49	375	6.17
12/7/12 3:12 AM	15.033	15.8	7.85	1.48	374	5.21
12/7/12 3:14 AM	15.067	15.8	7.85	1.49	374	5.21
12/7/12 3:16 AM	15.100	15.8	7.85	1.48	374	5.21
12/7/12 3:18 AM	15.133	15.8	7.85	1.48	374	5.21
12/7/12 3:20 AM	15.167	15.8	7.85	1.48	374	5.21
12/7/12 3:22 AM	15.200	15.8	7.85	1.48	374	5.21
12/7/12 3:24 AM	15.233	15.8	7.85	1.48	374	5.21
12/7/12 3:26 AM	15.267	16.2	7.85	1.48	374	5.21
12/7/12 3:28 AM	15.300	16.2	7.85	1.48	372	4.24
12/7/12 3:30 AM	15.333	16.2	7.85	1.48	374	5.21
12/7/12 3:32 AM	15.367	16.2	7.85	1.47	372	4.24
12/7/12 3:34 AM	15.400	15.8	7.85	1.47	372	4.24
12/7/12 3:36 AM	15.433	16.2	7.85	1.47	372	4.24
12/7/12 3:38 AM	15.467	15.8	7.85	1.46	372	4.24

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 3:40 AM	15.500	16.2	7.85	1.45	372	4.24
12/7/12 3:42 AM	15.533	16.2	7.85	1.44	372	4.24
12/7/12 3:44 AM	15.567	15.8	7.85	1.44	372	4.24
12/7/12 3:46 AM	15.600	16.2	7.85	1.43	371	3.28
12/7/12 3:48 AM	15.633	16.2	7.85	1.43	371	3.28
12/7/12 3:50 AM	15.667	16.2	7.85	1.43	372	4.24
12/7/12 3:52 AM	15.700	16.2	7.85	1.43	371	3.28
12/7/12 3:54 AM	15.733	16.2	7.85	1.42	371	3.28
12/7/12 3:56 AM	15.767	15.8	7.85	1.42	371	3.28
12/7/12 3:58 AM	15.800	15.8	7.85	1.42	371	3.28
12/7/12 4:00 AM	15.833	15.8	7.85	1.42	371	3.28
12/7/12 4:02 AM	15.867	15.8	7.85	1.41	371	3.28
12/7/12 4:04 AM	15.900	16.2	7.85	1.42	371	3.28
12/7/12 4:06 AM	15.933	16.2	7.85	1.41	369	2.31
12/7/12 4:08 AM	15.967	16.2	7.85	1.41	369	2.31
12/7/12 4:10 AM	16.000	15.8	7.85	1.41	371	3.28
12/7/12 4:12 AM	16.033	15.8	7.85	1.4	369	2.31
12/7/12 4:14 AM	16.067	16.2	7.85	1.4	369	2.31
12/7/12 4:16 AM	16.100	15.8	7.85	1.4	369	2.31
12/7/12 4:18 AM	16.133	15.8	7.85	1.4	369	2.44
12/7/12 4:20 AM	16.167	16.2	7.85	1.4	369	2.38
12/7/12 4:22 AM	16.200	15.8	7.85	1.4	369	2.28
12/7/12 4:24 AM	16.233	16.2	7.85	1.4	369	2.22
12/7/12 4:26 AM	16.267	15.8	7.85	1.4	369	2.16
12/7/12 4:28 AM	16.300	16.2	7.85	1.39	369	2.10
12/7/12 4:30 AM	16.333	16.2	7.85	1.39	369	2.04
12/7/12 4:32 AM	16.367	16.2	7.85	1.39	369	1.97
12/7/12 4:34 AM	16.400	15.8	7.85	1.38	368	1.91
12/7/12 4:36 AM	16.433	16.2	7.85	1.38	368	1.85
12/7/12 4:38 AM	16.467	16.2	7.85	1.37	369	1.82
12/7/12 4:40 AM	16.500	16.2	7.85	1.38	368	1.79
12/7/12 4:42 AM	16.533	15.8	7.85	1.38	368	1.73
12/7/12 4:44 AM	16.567	15.8	7.85	1.38	368	1.69
12/7/12 4:46 AM	16.600	16.2	7.85	1.38	368	1.66
12/7/12 4:48 AM	16.633	15.8	7.85	1.38	368	1.63
12/7/12 4:50 AM	16.667	16.2	7.85	1.37	368	1.60
12/7/12 4:52 AM	16.700	16.2	7.85	1.37	368	1.57
12/7/12 4:54 AM	16.733	16.2	7.85	1.38	368	1.54
12/7/12 4:56 AM	16.767	16.2	7.85	1.38	368	1.51
12/7/12 4:58 AM	16.800	16.2	7.85	1.38	368	1.48
12/7/12 5:00 AM	16.833	16.2	7.85	1.38	368	1.45
12/7/12 5:02 AM	16.867	16.2	7.85	1.38	368	1.41
12/7/12 5:04 AM	16.900	16.2	7.85	1.39	368	1.38
12/7/12 5:06 AM	16.933	16.2	7.85	1.39	368	1.38
12/7/12 5:08 AM	16.967	16.2	7.85	1.39	368	1.35
12/7/12 5:10 AM	17.000	16.2	7.85	1.4	368	1.32
12/7/12 5:12 AM	17.033	16.2	7.85	1.4	368	1.32
12/7/12 5:14 AM	17.067	16.2	7.85	1.41	368	1.32
12/7/12 5:16 AM	17.100	16.2	7.86	1.42	368	1.32

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 5:18 AM	17.133	16.2	7.86	1.43	368	1.32
12/7/12 5:20 AM	17.167	15.8	7.86	1.44	368	1.32
12/7/12 5:22 AM	17.200	15.8	7.86	1.45	368	1.32
12/7/12 5:24 AM	17.233	16.2	7.86	1.46	368	1.32
12/7/12 5:26 AM	17.267	16.2	7.86	1.47	368	1.32
12/7/12 5:28 AM	17.300	16.2	7.86	1.48	368	1.32
12/7/12 5:30 AM	17.333	16.2	7.86	1.49	368	1.32
12/7/12 5:32 AM	17.367	16.2	7.86	1.5	368	1.32
12/7/12 5:34 AM	17.400	15.8	7.86	1.51	368	1.32
12/7/12 5:36 AM	17.433	15.8	7.86	1.52	368	1.32
12/7/12 5:38 AM	17.467	16.2	7.86	1.53	367	1.32
12/7/12 5:40 AM	17.500	15.8	7.86	1.53	368	1.32
12/7/12 5:42 AM	17.533	15.8	7.86	1.54	368	1.32
12/7/12 5:44 AM	17.567	16.2	7.86	1.55	368	1.32
12/7/12 5:46 AM	17.600	16.2	7.86	1.55	368	1.32
12/7/12 5:48 AM	17.633	16.2	7.86	1.56	368	1.32
12/7/12 5:50 AM	17.667	15.8	7.86	1.56	368	1.32
12/7/12 5:52 AM	17.700	16.2	7.86	1.57	368	1.32
12/7/12 5:54 AM	17.733	16.2	7.86	1.58	368	1.29
12/7/12 5:56 AM	17.767	16.2	7.86	1.58	368	1.26
12/7/12 5:58 AM	17.800	16.2	7.86	1.59	368	1.26
12/7/12 6:00 AM	17.833	15.8	7.86	1.59	368	1.26
12/7/12 6:02 AM	17.867	16.2	7.86	1.6	368	1.26
12/7/12 6:04 AM	17.900	16.2	7.86	1.61	368	1.26
12/7/12 6:06 AM	17.933	16.2	7.86	1.61	368	1.26
12/7/12 6:08 AM	17.967	16.2	7.86	1.61	368	1.26
12/7/12 6:10 AM	18.000	16.2	7.86	1.6	368	1.26
12/7/12 6:12 AM	18.033	16.2	7.86	1.6	368	1.23
12/7/12 6:14 AM	18.067	16.2	7.86	1.6	368	1.23
12/7/12 6:16 AM	18.100	15.8	7.86	1.6	368	1.20
12/7/12 6:18 AM	18.133	15.8	7.86	1.6	368	1.17
12/7/12 6:20 AM	18.167	15.8	7.86	1.59	368	1.14
12/7/12 6:22 AM	18.200	15.8	7.86	1.59	368	1.10
12/7/12 6:24 AM	18.233	16.2	7.86	1.6	367	1.10
12/7/12 6:26 AM	18.267	16.2	7.86	1.6	367	1.10
12/7/12 6:28 AM	18.300	15.8	7.86	1.6	368	1.10
12/7/12 6:30 AM	18.333	15.8	7.86	1.59	368	1.10
12/7/12 6:32 AM	18.367	15.8	7.86	1.6	368	1.10
12/7/12 6:34 AM	18.400	15.8	7.86	1.6	368	1.07
12/7/12 6:36 AM	18.433	15.8	7.86	1.59	368	1.07
12/7/12 6:38 AM	18.467	16.2	7.86	1.59	368	1.07
12/7/12 6:40 AM	18.500	15.8	7.86	1.59	367	1.04
12/7/12 6:42 AM	18.533	15.8	7.86	1.59	367	1.04
12/7/12 6:44 AM	18.567	16.2	7.86	1.59	368	1.04
12/7/12 6:46 AM	18.600	16.2	7.86	1.59	367	1.01
12/7/12 6:48 AM	18.633	16.2	7.86	1.59	367	0.98
12/7/12 6:50 AM	18.667	15.8	7.86	1.59	367	0.98
12/7/12 6:52 AM	18.700	15.8	7.86	1.59	367	0.98
12/7/12 6:54 AM	18.733	15.8	7.86	1.59	368	0.95

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 6:56 AM	18.767	15.8	7.86	1.59	368	0.95
12/7/12 6:58 AM	18.800	16.2	7.86	1.59	368	0.95
12/7/12 7:00 AM	18.833	16.2	7.86	1.59	368	0.95
12/7/12 7:02 AM	18.867	16.2	7.86	1.6	368	0.92
12/7/12 7:04 AM	18.900	15.8	7.86	1.6	367	0.92
12/7/12 7:06 AM	18.933	16.2	7.86	1.6	368	0.89
12/7/12 7:08 AM	18.967	15.8	7.86	1.61	368	0.89
12/7/12 7:10 AM	19.000	15.8	7.86	1.61	367	0.89
12/7/12 7:12 AM	19.033	15.8	7.86	1.61	368	0.89
12/7/12 7:14 AM	19.067	16.2	7.86	1.61	368	0.89
12/7/12 7:16 AM	19.100	15.8	7.86	1.61	367	0.86
12/7/12 7:18 AM	19.133	15.8	7.86	1.62	367	0.86
12/7/12 7:20 AM	19.167	16.2	7.86	1.62	368	0.86
12/7/12 7:22 AM	19.200	15.8	7.86	1.62	368	0.86
12/7/12 7:24 AM	19.233	16.2	7.86	1.61	367	0.86
12/7/12 7:26 AM	19.267	15.8	7.86	1.61	367	0.83
12/7/12 7:28 AM	19.300	15.8	7.86	1.62	367	0.79
12/7/12 7:30 AM	19.333	16.2	7.86	1.61	368	0.76
12/7/12 7:32 AM	19.367	15.8	7.86	1.61	367	0.73
12/7/12 7:34 AM	19.400	15.8	7.86	1.62	368	0.70
12/7/12 7:36 AM	19.433	16.2	7.86	1.63	367	0.70
12/7/12 7:38 AM	19.467	15.8	7.86	1.62	368	0.67
12/7/12 7:40 AM	19.500	15.8	7.86	1.62	368	0.67
12/7/12 7:42 AM	19.533	15.8	7.86	1.63	367	0.67
12/7/12 7:44 AM	19.567	15.8	7.86	1.63	367	0.64
12/7/12 7:46 AM	19.600	15.8	7.86	1.64	367	0.61
12/7/12 7:48 AM	19.633	15.8	7.86	1.64	367	0.64
12/7/12 7:50 AM	19.667	15.8	7.87	1.65	367	0.64
12/7/12 7:52 AM	19.700	15.8	7.86	1.65	367	0.61
12/7/12 7:54 AM	19.733	15.8	7.86	1.65	367	0.58
12/7/12 7:56 AM	19.767	15.8	7.87	1.66	367	0.58
12/7/12 7:58 AM	19.800	15.8	7.87	1.66	367	0.58
12/7/12 8:00 AM	19.833	15.8	7.87	1.67	367	0.58
12/7/12 8:02 AM	19.867	15.8	7.87	1.68	367	0.55
12/7/12 8:04 AM	19.900	16.2	7.87	1.7	367	0.55
12/7/12 8:06 AM	19.933	16.2	7.87	1.71	367	0.55
12/7/12 8:08 AM	19.967	15.8	7.87	1.72	367	0.55
12/7/12 8:10 AM	20.000	16.2	7.87	1.73	368	0.55
12/7/12 8:12 AM	20.033	15.8	7.87	1.75	367	0.52
12/7/12 8:14 AM	20.067	15.8	7.87	1.75	367	0.55
12/7/12 8:16 AM	20.100	16.2	7.87	1.77	367	0.55
12/7/12 8:18 AM	20.133	15.8	7.87	1.78	368	0.58
12/7/12 8:20 AM	20.167	15.8	7.87	1.8	367	0.61
12/7/12 8:22 AM	20.200	15.8	7.87	1.81	367	0.61
12/7/12 8:24 AM	20.233	15.8	7.88	1.82	367	0.61
12/7/12 8:26 AM	20.267	15.8	7.87	1.83	367	0.64
12/7/12 8:28 AM	20.300	15.8	7.87	1.83	367	0.67
12/7/12 8:30 AM	20.333	15.8	7.87	1.84	367	0.70
12/7/12 8:32 AM	20.367	15.8	7.87	1.84	367	0.73

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 8:34 AM	20.400	15.8	7.88	1.84	367	0.76
12/7/12 8:36 AM	20.433	15.8	7.87	1.85	368	0.79
12/7/12 8:38 AM	20.467	15.8	7.87	1.85	367	0.83
12/7/12 8:40 AM	20.500	15.5	7.87	1.85	368	0.86
12/7/12 8:42 AM	20.533	15.8	7.87	1.85	367	0.86
12/7/12 8:44 AM	20.567	15.5	7.87	1.85	368	0.89
12/7/12 8:46 AM	20.600	15.8	7.87	1.84	367	0.92
12/7/12 8:48 AM	20.633	15.8	7.87	1.84	368	0.95
12/7/12 8:50 AM	20.667	15.5	7.87	1.83	368	0.95
12/7/12 8:52 AM	20.700	15.5	7.87	1.83	367	0.98
12/7/12 8:54 AM	20.733	15.5	7.87	1.83	367	1.01
12/7/12 8:56 AM	20.767	15.8	7.87	1.83	368	1.04
12/7/12 8:58 AM	20.800	15.8	7.87	1.83	368	1.07
12/7/12 9:00 AM	20.833	15.5	7.87	1.83	368	1.10
12/7/12 9:02 AM	20.867	15.8	7.87	1.84	368	1.14
12/7/12 9:04 AM	20.900	15.8	7.87	1.85	368	1.17
12/7/12 9:06 AM	20.933	15.8	7.87	1.85	368	1.20
12/7/12 9:08 AM	20.967	15.8	7.87	1.86	368	1.20
12/7/12 9:10 AM	21.000	15.8	7.87	1.87	368	1.23
12/7/12 9:12 AM	21.033	15.8	7.87	1.87	368	1.23
12/7/12 9:14 AM	21.067	15.8	7.87	1.89	368	1.26
12/7/12 9:16 AM	21.100	15.8	7.87	1.89	368	1.26
12/7/12 9:18 AM	21.133	15.8	7.87	1.91	368	1.29
12/7/12 9:20 AM	21.167	15.8	7.87	1.92	368	1.29
12/7/12 9:22 AM	21.200	15.8	7.87	1.93	368	1.29
12/7/12 9:24 AM	21.233	15.8	7.87	1.93	368	1.32
12/7/12 9:26 AM	21.267	15.8	7.87	1.95	368	1.35
12/7/12 9:28 AM	21.300	15.8	7.88	1.96	368	1.35
12/7/12 9:30 AM	21.333	15.8	7.88	1.97	368	1.35
12/7/12 9:32 AM	21.367	15.8	7.88	1.99	368	1.35
12/7/12 9:34 AM	21.400	15.8	7.88	1.99	368	1.35
12/7/12 9:36 AM	21.433	15.8	7.88	2	368	1.35
12/7/12 9:38 AM	21.467	15.8	7.88	2.02	368	1.35
12/7/12 9:40 AM	21.500	15.8	7.88	2.03	368	1.35
12/7/12 9:42 AM	21.533	16.2	7.88	2.04	368	1.35
12/7/12 9:44 AM	21.567	15.8	7.88	2.05	368	1.35
12/7/12 9:46 AM	21.600	15.8	7.88	2.06	368	1.35
12/7/12 9:48 AM	21.633	15.8	7.88	2.07	368	1.35
12/7/12 9:50 AM	21.667	15.8	7.88	2.09	368	1.35
12/7/12 9:52 AM	21.700	15.8	7.88	2.1	368	1.35
12/7/12 9:54 AM	21.733	15.8	7.88	2.12	368	1.35
12/7/12 9:56 AM	21.767	15.8	7.89	2.13	368	1.35
12/7/12 9:58 AM	21.800	15.8	7.89	2.13	368	1.35
12/7/12 10:00 AM	21.833	15.8	7.89	2.13	368	1.35
12/7/12 10:02 AM	21.867	15.8	7.88	2.14	368	1.35
12/7/12 10:04 AM	21.900	15.8	7.89	2.13	368	1.35
12/7/12 10:06 AM	21.933	15.8	7.88	2.13	368	1.35
12/7/12 10:08 AM	21.967	15.8	7.88	2.13	368	1.35
12/7/12 10:10 AM	22.000	15.8	7.88	2.12	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 10:12 AM	22.033	15.8	7.88	2.12	368	1.35
12/7/12 10:14 AM	22.067	15.8	7.88	2.12	368	1.35
12/7/12 10:16 AM	22.100	15.8	7.88	2.12	368	1.35
12/7/12 10:18 AM	22.133	15.8	7.88	2.14	368	1.35
12/7/12 10:20 AM	22.167	15.8	7.88	2.17	368	1.35
12/7/12 10:22 AM	22.200	15.8	7.88	2.19	368	1.35
12/7/12 10:24 AM	22.233	15.8	7.88	2.19	368	1.35
12/7/12 10:26 AM	22.267	15.8	7.88	2.21	368	1.35
12/7/12 10:28 AM	22.300	15.8	7.89	2.24	368	1.35
12/7/12 10:30 AM	22.333	15.8	7.89	2.27	368	1.35
12/7/12 10:32 AM	22.367	15.8	7.89	2.29	368	1.35
12/7/12 10:34 AM	22.400	15.8	7.89	2.3	368	1.35
12/7/12 10:36 AM	22.433	15.8	7.89	2.32	368	1.35
12/7/12 10:38 AM	22.467	15.8	7.89	2.34	368	1.35
12/7/12 10:40 AM	22.500	15.8	7.89	2.36	368	1.35
12/7/12 10:42 AM	22.533	15.8	7.89	2.39	368	1.35
12/7/12 10:44 AM	22.567	15.8	7.89	2.41	368	1.35
12/7/12 10:46 AM	22.600	15.8	7.89	2.44	368	1.35
12/7/12 10:48 AM	22.633	15.8	7.89	2.46	368	1.35
12/7/12 10:50 AM	22.667	15.8	7.89	2.48	368	1.35
12/7/12 10:52 AM	22.700	15.8	7.89	2.5	368	1.35
12/7/12 10:54 AM	22.733	15.8	7.89	2.52	368	1.35
12/7/12 10:56 AM	22.767	15.8	7.89	2.52	368	1.35
12/7/12 10:58 AM	22.800	15.8	7.89	2.53	368	1.35
12/7/12 11:00 AM	22.833	15.8	7.90	2.54	368	1.35
12/7/12 11:02 AM	22.867	16.2	7.90	2.56	368	1.35
12/7/12 11:04 AM	22.900	15.8	7.90	2.57	368	1.35
12/7/12 11:06 AM	22.933	15.8	7.89	2.58	368	1.35
12/7/12 11:08 AM	22.967	16.2	7.90	2.58	368	1.35
12/7/12 11:10 AM	23.000	15.8	7.90	2.59	368	1.35
12/7/12 11:12 AM	23.033	15.8	7.90	2.59	368	1.35
12/7/12 11:14 AM	23.067	15.8	7.90	2.6	368	1.35
12/7/12 11:16 AM	23.100	15.8	7.90	2.62	368	1.35
12/7/12 11:18 AM	23.133	15.8	7.90	2.64	368	1.35
12/7/12 11:20 AM	23.167	15.8	7.90	2.66	368	1.35
12/7/12 11:22 AM	23.200	15.8	7.90	2.68	368	1.35
12/7/12 11:24 AM	23.233	16.2	7.90	2.72	368	1.38
12/7/12 11:26 AM	23.267	15.8	7.90	2.76	368	1.38
12/7/12 11:28 AM	23.300	15.8	7.90	2.8	368	1.41
12/7/12 11:30 AM	23.333	15.8	7.90	2.83	368	1.41
12/7/12 11:32 AM	23.367	15.8	7.90	2.87	368	1.41
12/7/12 11:34 AM	23.400	15.8	7.90	2.89	368	1.41
12/7/12 11:36 AM	23.433	15.8	7.90	2.92	368	1.41
12/7/12 11:38 AM	23.467	16.2	7.91	2.95	368	1.45
12/7/12 11:40 AM	23.500	15.8	7.91	2.97	368	1.48
12/7/12 11:42 AM	23.533	15.8	7.91	2.99	369	1.48
12/7/12 11:44 AM	23.567	15.8	7.91	3.02	368	1.51
12/7/12 11:46 AM	23.600	15.8	7.91	3.06	368	1.51
12/7/12 11:48 AM	23.633	15.8	7.91	3.1	368	1.51

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		**°C**	µS cm-1	mg L-1
12/7/12 11:50 AM	23.667	15.8	7.91	3.14	369	1.54
12/7/12 11:52 AM	23.700	15.8	7.91	3.18	368	1.54
12/7/12 11:54 AM	23.733	15.8	7.91	3.21	369	1.54
12/7/12 11:56 AM	23.767	15.8	7.91	3.23	368	1.57
12/7/12 11:58 AM	23.800	15.8	7.91	3.25	369	1.57
12/7/12 12:00 PM	23.833	16.2	7.91	3.27	368	1.60
12/7/12 12:02 PM	23.867	16.2	7.91	3.29	368	1.63
12/7/12 12:04 PM	23.900	15.8	7.91	3.3	368	1.66
12/7/12 12:06 PM	23.933	15.8	7.91	3.31	368	1.69
12/7/12 12:08 PM	23.967	15.8	7.91	3.35	369	1.73
12/7/12 12:10 PM	24.000	16.2	7.91	3.38	369	1.73
12/7/12 12:12 PM	24.033	16.2	7.91	3.43	368	1.73
12/7/12 12:14 PM	24.067	15.8	7.92	3.47	369	1.76
12/7/12 12:16 PM	24.100	16.2	7.92	3.52	368	1.76
12/7/12 12:18 PM	24.133	15.8	7.92	3.57	368	1.79
12/7/12 12:20 PM	24.167	16.2	7.92	3.62	369	1.79
12/7/12 12:22 PM	24.200	15.8	7.92	3.67	368	1.82
12/7/12 12:24 PM	24.233	15.8	7.92	3.72	368	1.85
12/7/12 12:26 PM	24.267	15.8	7.92	3.75	369	1.82
12/7/12 12:28 PM	24.300	16.2	7.92	3.78	368	1.85
12/7/12 12:30 PM	24.333	15.8	7.92	3.81	369	1.85
12/7/12 12:32 PM	24.367	16.2	7.92	3.82	369	1.88
12/7/12 12:34 PM	24.400	15.8	7.92	3.83	369	1.91
12/7/12 12:36 PM	24.433	16.2	7.92	3.84	369	1.94
12/7/12 12:38 PM	24.467	16.2	7.92	3.84	369	1.97
12/7/12 12:40 PM	24.500	16.2	7.92	3.85	368	1.97
12/7/12 12:42 PM	24.533	16.2	7.92	3.85	368	1.97
12/7/12 12:44 PM	24.567	15.8	7.92	3.85	369	2.00
12/7/12 12:46 PM	24.600	15.8	7.92	3.86	368	2.00
12/7/12 12:48 PM	24.633	16.2	7.92	3.85	369	2.04
12/7/12 12:50 PM	24.667	15.8	7.92	3.83	368	2.07
12/7/12 12:52 PM	24.700	15.8	7.92	3.82	369	2.07
12/7/12 12:54 PM	24.733	16.2	7.92	3.8	369	2.10
12/7/12 12:56 PM	24.767	15.8	7.92	3.8	368	2.10
12/7/12 12:58 PM	24.800	15.8	7.92	3.79	369	2.07
12/7/12 1:00 PM	24.833	15.8	7.92	3.77	369	2.07
12/7/12 1:02 PM	24.867	15.8	7.92	3.77	369	2.07
12/7/12 1:04 PM	24.900	16.2	7.92	3.76	369	2.04
12/7/12 1:06 PM	24.933	15.8	7.92	3.76	369	2.00
12/7/12 1:08 PM	24.967	15.8	7.91	3.76	369	1.97
12/7/12 1:10 PM	25.000	16.2	7.92	3.74	369	1.97
12/7/12 1:12 PM	25.033	15.8	7.91	3.73	369	1.97
12/7/12 1:14 PM	25.067	15.8	7.92	3.72	369	1.97
12/7/12 1:16 PM	25.100	16.2	7.91	3.71	369	1.94
12/7/12 1:18 PM	25.133	16.2	7.91	3.69	369	1.97
12/7/12 1:20 PM	25.167	15.8	7.91	3.68	369	1.94
12/7/12 1:22 PM	25.200	15.8	7.91	3.65	369	1.94
12/7/12 1:24 PM	25.233	16.2	7.91	3.64	369	1.91
12/7/12 1:26 PM	25.267	15.8	7.91	3.61	368	1.88

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 1:28 PM	25.300	15.8	7.91	3.59	368	1.85
12/7/12 1:30 PM	25.333	15.8	7.91	3.58	368	1.79
12/7/12 1:32 PM	25.367	15.8	7.91	3.56	369	1.73
12/7/12 1:34 PM	25.400	15.8	7.91	3.55	368	1.66
12/7/12 1:36 PM	25.433	15.8	7.91	3.54	368	1.60
12/7/12 1:38 PM	25.467	15.8	7.91	3.53	368	1.54
12/7/12 1:40 PM	25.500	16.2	7.91	3.52	369	1.48
12/7/12 1:42 PM	25.533	15.8	7.91	3.52	368	1.42
12/7/12 1:44 PM	25.567	15.8	7.91	3.52	368	1.35
12/7/12 1:46 PM	25.600	15.8	7.91	3.53	368	1.29
12/7/12 1:48 PM	25.633	15.8	7.91	3.53	369	1.23
12/7/12 1:50 PM	25.667	15.8	7.91	3.53	368	1.17
12/7/12 1:52 PM	25.700	15.8	7.91	3.54	368	1.11
12/7/12 1:54 PM	25.733	15.8	7.91	3.54	368	1.07
12/7/12 1:56 PM	25.767	15.8	7.91	3.54	368	1.04
12/7/12 1:58 PM	25.800	15.8	7.91	3.54	367	1.04
12/7/12 2:00 PM	25.833	15.8	7.91	3.54	367	1.01
12/7/12 2:02 PM	25.867	15.8	7.91	3.53	367	1.01
12/7/12 2:04 PM	25.900	16.2	7.91	3.53	367	0.95
12/7/12 2:06 PM	25.933	15.8	7.90	3.52	367	0.95
12/7/12 2:08 PM	25.967	15.8	7.91	3.51	367	0.95
12/7/12 2:10 PM	26.000	15.8	7.91	3.5	367	0.95
12/7/12 2:12 PM	26.033	15.8	7.91	3.48	367	0.92
12/7/12 2:14 PM	26.067	15.8	7.90	3.47	367	0.92
12/7/12 2:16 PM	26.100	16.2	7.90	3.44	367	0.92
12/7/12 2:18 PM	26.133	15.8	7.90	3.42	367	0.92
12/7/12 2:20 PM	26.167	15.8	7.90	3.4	367	0.89
12/7/12 2:22 PM	26.200	15.8	7.90	3.38	367	0.89
12/7/12 2:24 PM	26.233	15.8	7.90	3.36	368	0.89
12/7/12 2:26 PM	26.267	15.8	7.90	3.35	368	0.89
12/7/12 2:28 PM	26.300	15.8	7.90	3.32	368	0.89
12/7/12 2:30 PM	26.333	16.2	7.90	3.3	367	0.92
12/7/12 2:32 PM	26.367	15.8	7.90	3.28	368	0.95
12/7/12 2:34 PM	26.400	15.8	7.90	3.26	367	0.98
12/7/12 2:36 PM	26.433	15.8	7.90	3.24	368	1.01
12/7/12 2:38 PM	26.467	15.8	7.90	3.23	368	1.04
12/7/12 2:40 PM	26.500	15.8	7.90	3.22	368	1.07
12/7/12 2:42 PM	26.533	15.8	7.90	3.21	368	1.10
12/7/12 2:44 PM	26.567	16.2	7.90	3.19	368	1.14
12/7/12 2:46 PM	26.600	15.8	7.90	3.18	368	1.17
12/7/12 2:48 PM	26.633	15.8	7.90	3.16	368	1.20
12/7/12 2:50 PM	26.667	15.8	7.90	3.14	368	1.23
12/7/12 2:52 PM	26.700	15.8	7.90	3.13	368	1.26
12/7/12 2:54 PM	26.733	15.8	7.90	3.11	368	1.29
12/7/12 2:56 PM	26.767	15.8	7.89	3.1	368	1.29
12/7/12 2:58 PM	26.800	15.8	7.89	3.08	368	1.29
12/7/12 3:00 PM	26.833	16.2	7.89	3.07	368	1.29
12/7/12 3:02 PM	26.867	15.8	7.89	3.05	368	1.32
12/7/12 3:04 PM	26.900	16.2	7.89	3.04	368	1.32

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 3:06 PM	26.933	15.8	7.89	3.02	368	1.35
12/7/12 3:08 PM	26.967	15.8	7.89	3.01	368	1.35
12/7/12 3:10 PM	27.000	15.8	7.89	3	368	1.35
12/7/12 3:12 PM	27.033	15.8	7.89	3	368	1.35
12/7/12 3:14 PM	27.067	15.8	7.89	2.99	368	1.35
12/7/12 3:16 PM	27.100	15.8	7.89	2.99	368	1.35
12/7/12 3:18 PM	27.133	15.8	7.89	2.97	368	1.35
12/7/12 3:20 PM	27.167	15.8	7.89	2.96	368	1.35
12/7/12 3:22 PM	27.200	15.8	7.89	2.96	368	1.35
12/7/12 3:24 PM	27.233	15.8	7.89	2.94	368	1.35
12/7/12 3:26 PM	27.267	15.8	7.89	2.92	368	1.35
12/7/12 3:28 PM	27.300	15.8	7.88	2.91	368	1.35
12/7/12 3:30 PM	27.333	15.8	7.88	2.9	368	1.35
12/7/12 3:32 PM	27.367	15.8	7.88	2.87	368	1.35
12/7/12 3:34 PM	27.400	15.8	7.88	2.86	368	1.35
12/7/12 3:36 PM	27.433	15.8	7.88	2.84	368	1.35
12/7/12 3:38 PM	27.467	15.8	7.88	2.84	368	1.35
12/7/12 3:40 PM	27.500	15.8	7.88	2.83	368	1.35
12/7/12 3:42 PM	27.533	15.8	7.88	2.82	368	1.35
12/7/12 3:44 PM	27.567	15.8	7.88	2.81	368	1.35
12/7/12 3:46 PM	27.600	15.8	7.88	2.8	368	1.35
12/7/12 3:48 PM	27.633	15.8	7.88	2.79	368	1.35
12/7/12 3:50 PM	27.667	15.8	7.88	2.78	368	1.35
12/7/12 3:52 PM	27.700	15.8	7.88	2.77	368	1.35
12/7/12 3:54 PM	27.733	16.2	7.88	2.76	368	1.35
12/7/12 3:56 PM	27.767	15.8	7.88	2.75	368	1.35
12/7/12 3:58 PM	27.800	15.8	7.87	2.74	368	1.35
12/7/12 4:00 PM	27.833	15.8	7.87	2.73	368	1.35
12/7/12 4:02 PM	27.867	15.8	7.87	2.72	368	1.35
12/7/12 4:04 PM	27.900	16.2	7.87	2.72	368	1.35
12/7/12 4:06 PM	27.933	15.8	7.87	2.7	368	1.35
12/7/12 4:08 PM	27.967	15.8	7.87	2.69	368	1.35
12/7/12 4:10 PM	28.000	15.8	7.87	2.68	368	1.35
12/7/12 4:12 PM	28.033	15.8	7.87	2.67	368	1.35
12/7/12 4:14 PM	28.067	16.2	7.87	2.66	368	1.35
12/7/12 4:16 PM	28.100	15.8	7.87	2.65	368	1.35
12/7/12 4:18 PM	28.133	15.8	7.87	2.64	368	1.35
12/7/12 4:20 PM	28.167	15.8	7.87	2.63	368	1.35
12/7/12 4:22 PM	28.200	15.8	7.87	2.62	368	1.35
12/7/12 4:24 PM	28.233	15.8	7.87	2.6	368	1.35
12/7/12 4:26 PM	28.267	15.8	7.87	2.59	368	1.35
12/7/12 4:28 PM	28.300	15.8	7.87	2.58	368	1.35
12/7/12 4:30 PM	28.333	15.8	7.87	2.57	368	1.35
12/7/12 4:32 PM	28.367	15.8	7.86	2.56	368	1.35
12/7/12 4:34 PM	28.400	15.8	7.87	2.55	368	1.35
12/7/12 4:36 PM	28.433	15.8	7.86	2.54	368	1.35
12/7/12 4:38 PM	28.467	15.8	7.86	2.53	368	1.35
12/7/12 4:40 PM	28.500	15.8	7.86	2.52	368	1.35
12/7/12 4:42 PM	28.533	16.2	7.86	2.51	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 4:44 PM	28.567	15.8	7.86	2.49	368	1.35
12/7/12 4:46 PM	28.600	15.8	7.86	2.49	368	1.35
12/7/12 4:48 PM	28.633	16.2	7.86	2.48	368	1.35
12/7/12 4:50 PM	28.667	16.2	7.86	2.46	368	1.35
12/7/12 4:52 PM	28.700	16.8	7.83	2.46	368	1.35
12/7/12 4:54 PM	28.733	16.2	7.80	2.44	368	1.35
12/7/12 4:56 PM	28.767	16.2	7.80	2.43	368	1.35
12/7/12 4:58 PM	28.800	16.2	7.80	2.42	368	1.35
12/7/12 5:00 PM	28.833	16.2	7.81	2.41	368	1.35
12/7/12 5:02 PM	28.867	16.2	7.81	2.4	368	1.35
12/7/12 5:04 PM	28.900	16.2	7.81	2.38	368	1.35
12/7/12 5:06 PM	28.933	16.2	7.81	2.37	368	1.35
12/7/12 5:08 PM	28.967	16.2	7.80	2.35	368	1.35
12/7/12 5:10 PM	29.000	16.2	7.80	2.35	368	1.35
12/7/12 5:12 PM	29.033	16.8	7.88	2.33	368	1.35
12/7/12 5:14 PM	29.067	16.5	7.96	2.32	368	1.35
12/7/12 5:16 PM	29.100	16.5	7.89	2.32	368	1.35
12/7/12 5:18 PM	29.133	16.2	7.89	2.32	368	1.35
12/7/12 5:20 PM	29.167	16.5	7.89	2.32	368	1.35
12/7/12 5:22 PM	29.200	16.5	7.89	2.32	368	1.35
12/7/12 5:24 PM	29.233	16.2	7.89	2.32	368	1.35
12/7/12 5:26 PM	29.267	16.5	7.89	2.32	368	1.35
12/7/12 5:28 PM	29.300	16.5	7.89	2.32	368	1.35
12/7/12 5:30 PM	29.333	16.5	7.89	2.32	368	1.35
12/7/12 5:32 PM	29.367	16.5	7.89	2.32	368	1.35
12/7/12 5:34 PM	29.400	16.5	7.89	2.31	368	1.35
12/7/12 5:36 PM	29.433	16.5	7.89	2.31	368	1.35
12/7/12 5:38 PM	29.467	16.5	7.89	2.31	368	1.35
12/7/12 5:40 PM	29.500	16.5	7.89	2.32	368	1.35
12/7/12 5:42 PM	29.533	16.2	7.89	2.32	368	1.35
12/7/12 5:44 PM	29.567	16.5	7.88	2.32	368	1.35
12/7/12 5:46 PM	29.600	16.5	7.88	2.32	368	1.35
12/7/12 5:48 PM	29.633	16.5	7.89	2.31	368	1.35
12/7/12 5:50 PM	29.667	16.2	7.88	2.31	368	1.35
12/7/12 5:52 PM	29.700	16.5	7.89	2.31	368	1.35
12/7/12 5:54 PM	29.733	16.5	7.89	2.31	368	1.35
12/7/12 5:56 PM	29.767	16.5	7.89	2.31	368	1.35
12/7/12 5:58 PM	29.800	16.2	7.89	2.31	368	1.35
12/7/12 6:00 PM	29.833	16.2	7.88	2.31	368	1.35
12/7/12 6:02 PM	29.867	16.2	7.89	2.31	368	1.35
12/7/12 6:04 PM	29.900	16.2	7.89	2.31	368	1.35
12/7/12 6:06 PM	29.933	16.5	7.89	2.31	368	1.35
12/7/12 6:08 PM	29.967	16.5	7.89	2.32	368	1.35
12/7/12 6:10 PM	30.000	16.5	7.89	2.32	368	1.35
12/7/12 6:12 PM	30.033	16.5	7.89	2.32	368	1.35
12/7/12 6:14 PM	30.067	16.2	7.89	2.32	368	1.35
12/7/12 6:16 PM	30.100	16.5	7.89	2.32	368	1.35
12/7/12 6:18 PM	30.133	16.5	7.89	2.32	368	1.35
12/7/12 6:20 PM	30.167	16.5	7.89	2.32	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 6:22 PM	30.200	16.2	7.89	2.32	368	1.35
12/7/12 6:24 PM	30.233	16.5	7.89	2.31	368	1.35
12/7/12 6:26 PM	30.267	16.2	7.89	2.31	368	1.35
12/7/12 6:28 PM	30.300	16.2	7.89	2.31	368	1.35
12/7/12 6:30 PM	30.333	16.2	7.89	2.31	368	1.35
12/7/12 6:32 PM	30.367	16.5	7.89	2.31	368	1.35
12/7/12 6:34 PM	30.400	16.2	7.89	2.32	368	1.35
12/7/12 6:36 PM	30.433	16.5	7.89	2.32	368	1.35
12/7/12 6:38 PM	30.467	16.5	7.89	2.32	368	1.35
12/7/12 6:40 PM	30.500	16.5	7.89	2.32	368	1.35
12/7/12 6:42 PM	30.533	16.2	7.89	2.31	368	1.35
12/7/12 6:44 PM	30.567	16.2	7.89	2.31	368	1.35
12/7/12 6:46 PM	30.600	16.2	7.89	2.3	368	1.35
12/7/12 6:48 PM	30.633	16.5	7.89	2.3	368	1.35
12/7/12 6:50 PM	30.667	16.5	7.89	2.3	368	1.35
12/7/12 6:52 PM	30.700	16.5	7.89	2.31	368	1.35
12/7/12 6:54 PM	30.733	16.5	7.89	2.31	368	1.35
12/7/12 6:56 PM	30.767	16.5	7.89	2.3	368	1.35
12/7/12 6:58 PM	30.800	16.5	7.89	2.3	368	1.35
12/7/12 7:00 PM	30.833	16.2	7.89	2.29	368	1.35
12/7/12 7:02 PM	30.867	16.2	7.89	2.28	368	1.35
12/7/12 7:04 PM	30.900	16.2	7.89	2.27	368	1.35
12/7/12 7:06 PM	30.933	16.2	7.89	2.27	368	1.35
12/7/12 7:08 PM	30.967	16.2	7.89	2.26	368	1.35
12/7/12 7:10 PM	31.000	16.5	7.89	2.25	368	1.35
12/7/12 7:12 PM	31.033	16.5	7.89	2.25	368	1.35
12/7/12 7:14 PM	31.067	16.2	7.89	2.24	368	1.35
12/7/12 7:16 PM	31.100	16.2	7.89	2.23	368	1.35
12/7/12 7:18 PM	31.133	16.2	7.89	2.22	368	1.35
12/7/12 7:20 PM	31.167	16.5	7.89	2.22	368	1.35
12/7/12 7:22 PM	31.200	16.2	7.89	2.22	368	1.35
12/7/12 7:24 PM	31.233	16.2	7.89	2.22	368	1.35
12/7/12 7:26 PM	31.267	16.2	7.89	2.21	368	1.35
12/7/12 7:28 PM	31.300	16.2	7.89	2.2	368	1.35
12/7/12 7:30 PM	31.333	16.2	7.89	2.2	368	1.35
12/7/12 7:32 PM	31.367	16.2	7.89	2.19	368	1.35
12/7/12 7:34 PM	31.400	16.2	7.89	2.19	368	1.35
12/7/12 7:36 PM	31.433	16.5	7.89	2.18	368	1.35
12/7/12 7:38 PM	31.467	16.2	7.89	2.18	368	1.35
12/7/12 7:40 PM	31.500	16.2	7.89	2.17	368	1.35
12/7/12 7:42 PM	31.533	16.2	7.89	2.16	368	1.35
12/7/12 7:44 PM	31.567	16.2	7.89	2.15	368	1.35
12/7/12 7:46 PM	31.600	16.2	7.89	2.14	368	1.35
12/7/12 7:48 PM	31.633	16.2	7.89	2.13	368	1.35
12/7/12 7:50 PM	31.667	16.5	7.89	2.13	368	1.35
12/7/12 7:52 PM	31.700	16.2	7.89	2.12	368	1.35
12/7/12 7:54 PM	31.733	16.2	7.89	2.12	368	1.35
12/7/12 7:56 PM	31.767	16.2	7.89	2.1	368	1.35
12/7/12 7:58 PM	31.800	16.2	7.89	2.09	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 8:00 PM	31.833	16.2	7.89	2.09	368	1.35
12/7/12 8:02 PM	31.867	16.2	7.89	2.08	368	1.35
12/7/12 8:04 PM	31.900	16.2	7.89	2.07	368	1.35
12/7/12 8:06 PM	31.933	16.2	7.89	2.06	368	1.35
12/7/12 8:08 PM	31.967	16.5	7.89	2.05	368	1.35
12/7/12 8:10 PM	32.000	16.5	7.89	2.04	368	1.35
12/7/12 8:12 PM	32.033	16.5	7.88	2.03	368	1.35
12/7/12 8:14 PM	32.067	16.2	7.89	2.02	368	1.35
12/7/12 8:16 PM	32.100	16.2	7.89	2.01	368	1.35
12/7/12 8:18 PM	32.133	16.2	7.88	2	368	1.35
12/7/12 8:20 PM	32.167	16.2	7.89	1.99	368	1.35
12/7/12 8:22 PM	32.200	16.5	7.88	1.99	368	1.35
12/7/12 8:24 PM	32.233	16.5	7.89	1.97	368	1.35
12/7/12 8:26 PM	32.267	16.5	7.88	1.97	368	1.35
12/7/12 8:28 PM	32.300	16.5	7.88	1.96	368	1.35
12/7/12 8:30 PM	32.333	16.2	7.88	1.95	368	1.35
12/7/12 8:32 PM	32.367	16.2	7.88	1.93	368	1.35
12/7/12 8:34 PM	32.400	16.5	7.89	1.91	368	1.35
12/7/12 8:36 PM	32.433	16.5	7.89	1.91	368	1.35
12/7/12 8:38 PM	32.467	16.5	7.89	1.9	368	1.35
12/7/12 8:40 PM	32.500	16.5	7.88	1.88	368	1.35
12/7/12 8:42 PM	32.533	16.5	7.88	1.87	368	1.35
12/7/12 8:44 PM	32.567	16.5	7.88	1.86	368	1.35
12/7/12 8:46 PM	32.600	16.5	7.88	1.85	368	1.35
12/7/12 8:48 PM	32.633	16.5	7.88	1.84	368	1.35
12/7/12 8:50 PM	32.667	16.2	7.88	1.83	368	1.35
12/7/12 8:52 PM	32.700	16.2	7.88	1.81	368	1.35
12/7/12 8:54 PM	32.733	16.5	7.88	1.8	368	1.35
12/7/12 8:56 PM	32.767	16.5	7.88	1.79	368	1.35
12/7/12 8:58 PM	32.800	16.2	7.88	1.78	368	1.35
12/7/12 9:00 PM	32.833	16.2	7.88	1.77	368	1.35
12/7/12 9:02 PM	32.867	16.5	7.88	1.76	369	1.35
12/7/12 9:04 PM	32.900	16.5	7.88	1.75	369	1.35
12/7/12 9:06 PM	32.933	16.2	7.88	1.74	371	1.35
12/7/12 9:08 PM	32.967	16.2	7.88	1.73	369	1.35
12/7/12 9:10 PM	33.000	16.2	7.88	1.72	371	1.35
12/7/12 9:12 PM	33.033	16.5	7.88	1.7	371	1.35
12/7/12 9:14 PM	33.067	16.2	7.88	1.69	371	1.35
12/7/12 9:16 PM	33.100	16.2	7.88	1.68	371	1.35
12/7/12 9:18 PM	33.133	16.5	7.88	1.67	371	1.35
12/7/12 9:20 PM	33.167	16.2	7.88	1.66	371	1.35
12/7/12 9:22 PM	33.200	16.2	7.88	1.65	371	1.35
12/7/12 9:24 PM	33.233	16.2	7.88	1.65	371	1.35
12/7/12 9:26 PM	33.267	16.2	7.88	1.63	371	1.35
12/7/12 9:28 PM	33.300	16.5	7.88	1.63	371	1.35
12/7/12 9:30 PM	33.333	16.2	7.88	1.63	371	1.35
12/7/12 9:32 PM	33.367	16.2	7.88	1.63	369	1.35
12/7/12 9:34 PM	33.400	16.2	7.88	1.62	369	1.35
12/7/12 9:36 PM	33.433	16.2	7.88	1.61	369	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 9:38 PM	33.467	16.5	7.88	1.6	369	1.35
12/7/12 9:40 PM	33.500	16.2	7.88	1.59	369	1.35
12/7/12 9:42 PM	33.533	16.5	7.88	1.59	369	1.35
12/7/12 9:44 PM	33.567	16.2	7.88	1.58	369	1.35
12/7/12 9:46 PM	33.600	16.2	7.88	1.58	369	1.35
12/7/12 9:48 PM	33.634	16.5	7.88	1.58	368	1.35
12/7/12 9:50 PM	33.667	16.5	7.88	1.57	368	1.35
12/7/12 9:52 PM	33.700	16.5	7.88	1.56	368	1.35
12/7/12 9:54 PM	33.734	16.5	7.88	1.56	368	1.35
12/7/12 9:56 PM	33.767	16.2	7.88	1.55	368	1.35
12/7/12 9:58 PM	33.800	16.5	7.88	1.54	369	1.35
12/7/12 10:00 PM	33.834	16.2	7.88	1.53	368	1.35
12/7/12 10:02 PM	33.867	16.5	7.88	1.53	368	1.35
12/7/12 10:04 PM	33.900	16.2	7.88	1.52	369	1.35
12/7/12 10:06 PM	33.934	16.5	7.88	1.51	368	1.35
12/7/12 10:08 PM	33.967	16.5	7.88	1.51	368	1.35
12/7/12 10:10 PM	34.000	16.5	7.88	1.5	368	1.35
12/7/12 10:12 PM	34.034	16.5	7.88	1.49	368	1.35
12/7/12 10:14 PM	34.067	16.5	7.88	1.48	369	1.35
12/7/12 10:16 PM	34.100	16.5	7.88	1.48	368	1.35
12/7/12 10:18 PM	34.134	16.5	7.88	1.47	368	1.35
12/7/12 10:20 PM	34.167	16.5	7.88	1.47	369	1.35
12/7/12 10:22 PM	34.200	16.2	7.88	1.46	368	1.35
12/7/12 10:24 PM	34.234	16.5	7.88	1.46	369	1.35
12/7/12 10:26 PM	34.267	16.5	7.88	1.45	368	1.35
12/7/12 10:28 PM	34.300	16.5	7.88	1.45	368	1.35
12/7/12 10:30 PM	34.334	16.5	7.88	1.44	368	1.35
12/7/12 10:32 PM	34.367	16.5	7.88	1.44	368	1.35
12/7/12 10:34 PM	34.400	16.5	7.88	1.43	368	1.35
12/7/12 10:36 PM	34.434	16.5	7.88	1.42	368	1.35
12/7/12 10:38 PM	34.467	16.5	7.88	1.42	368	1.35
12/7/12 10:40 PM	34.500	16.5	7.88	1.41	368	1.35
12/7/12 10:42 PM	34.534	16.5	7.88	1.41	368	1.35
12/7/12 10:44 PM	34.567	16.5	7.88	1.41	368	1.35
12/7/12 10:46 PM	34.600	16.5	7.88	1.41	368	1.35
12/7/12 10:48 PM	34.634	16.5	7.88	1.4	368	1.35
12/7/12 10:50 PM	34.667	16.5	7.88	1.4	368	1.35
12/7/12 10:52 PM	34.700	16.2	7.88	1.39	368	1.35
12/7/12 10:54 PM	34.734	16.5	7.88	1.39	368	1.35
12/7/12 10:56 PM	34.767	16.2	7.88	1.39	368	1.35
12/7/12 10:58 PM	34.800	16.5	7.88	1.38	368	1.35
12/7/12 11:00 PM	34.834	16.5	7.88	1.38	368	1.35
12/7/12 11:02 PM	34.867	16.5	7.88	1.38	368	1.35
12/7/12 11:04 PM	34.900	16.2	7.88	1.38	368	1.35
12/7/12 11:06 PM	34.934	16.2	7.88	1.37	368	1.35
12/7/12 11:08 PM	34.967	16.2	7.88	1.37	368	1.35
12/7/12 11:10 PM	35.000	16.5	7.88	1.37	368	1.35
12/7/12 11:12 PM	35.034	16.5	7.88	1.36	368	1.35
12/7/12 11:14 PM	35.067	16.5	7.88	1.36	368	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/7/12 11:16 PM	35.100	16.5	7.88	1.35	368	1.35
12/7/12 11:18 PM	35.134	16.5	7.88	1.35	368	1.35
12/7/12 11:20 PM	35.167	16.5	7.88	1.34	368	1.35
12/7/12 11:22 PM	35.200	16.5	7.88	1.33	368	1.35
12/7/12 11:24 PM	35.234	16.5	7.88	1.33	368	1.35
12/7/12 11:26 PM	35.267	16.5	7.88	1.33	368	1.35
12/7/12 11:28 PM	35.300	16.5	7.88	1.33	368	1.35
12/7/12 11:30 PM	35.334	16.5	7.88	1.32	368	1.35
12/7/12 11:32 PM	35.367	16.5	7.88	1.32	368	1.35
12/7/12 11:34 PM	35.400	16.2	7.88	1.32	368	1.35
12/7/12 11:36 PM	35.434	16.5	7.88	1.32	368	1.35
12/7/12 11:38 PM	35.467	16.5	7.88	1.32	368	1.35
12/7/12 11:40 PM	35.500	16.2	7.88	1.31	368	1.35
12/7/12 11:42 PM	35.534	16.5	7.88	1.3	368	1.32
12/7/12 11:44 PM	35.567	16.5	7.88	1.3	368	1.26
12/7/12 11:46 PM	35.600	16.5	7.88	1.3	368	1.20
12/7/12 11:48 PM	35.634	16.2	7.88	1.29	368	1.14
12/7/12 11:50 PM	35.667	16.5	7.88	1.28	368	1.07
12/7/12 11:52 PM	35.700	16.5	7.88	1.27	368	1.01
12/7/12 11:54 PM	35.734	16.2	7.88	1.27	368	0.95
12/7/12 11:56 PM	35.767	16.5	7.88	1.26	368	0.89
12/7/12 11:58 PM	35.800	16.5	7.88	1.25	368	0.83
12/8/12 12:00 AM	35.834	16.5	7.88	1.25	368	0.76
12/8/12 12:02 AM	35.867	16.2	7.88	1.24	368	0.70
12/8/12 12:04 AM	35.900	16.5	7.88	1.24	367	0.67
12/8/12 12:06 AM	35.934	16.2	7.88	1.23	368	0.61
12/8/12 12:08 AM	35.967	16.2	7.88	1.22	367	0.58
12/8/12 12:10 AM	36.000	16.5	7.88	1.21	367	0.55
12/8/12 12:12 AM	36.034	16.5	7.88	1.21	367	0.52
12/8/12 12:14 AM	36.067	16.2	7.88	1.2	365	0.49
12/8/12 12:16 AM	36.100	16.2	7.88	1.2	365	0.45
12/8/12 12:18 AM	36.134	16.2	7.88	1.19	365	0.45
12/8/12 12:20 AM	36.167	16.5	7.88	1.19	365	0.42
12/8/12 12:22 AM	36.200	16.2	7.88	1.18	365	0.42
12/8/12 12:24 AM	36.234	16.2	7.88	1.17	365	0.42
12/8/12 12:26 AM	36.267	16.2	7.88	1.17	365	0.42
12/8/12 12:28 AM	36.300	16.2	7.88	1.16	365	0.42
12/8/12 12:30 AM	36.334	16.2	7.88	1.15	365	0.39
12/8/12 12:32 AM	36.367	16.2	7.88	1.14	365	0.39
12/8/12 12:34 AM	36.400	16.2	7.88	1.13	367	0.36
12/8/12 12:36 AM	36.434	16.2	7.88	1.13	365	0.36
12/8/12 12:38 AM	36.467	16.2	7.88	1.12	367	0.36
12/8/12 12:40 AM	36.500	16.2	7.88	1.11	367	0.33
12/8/12 12:42 AM	36.534	16.2	7.88	1.1	367	0.33
12/8/12 12:44 AM	36.567	16.2	7.88	1.09	367	0.33
12/8/12 12:46 AM	36.600	16.2	7.88	1.08	367	0.36
12/8/12 12:48 AM	36.634	16.2	7.88	1.08	368	0.39
12/8/12 12:50 AM	36.667	16.2	7.88	1.06	367	0.42
12/8/12 12:52 AM	36.700	16.2	7.88	1.06	368	0.45

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/8/12 12:54 AM	36.734	16.2	7.88	1.05	368	0.49
12/8/12 12:56 AM	36.767	16.2	7.88	1.05	368	0.55
12/8/12 12:58 AM	36.800	16.2	7.88	1.03	368	0.61
12/8/12 1:00 AM	36.834	16.2	7.88	1.03	367	0.67
12/8/12 1:02 AM	36.867	16.2	7.88	1.01	368	0.73
12/8/12 1:04 AM	36.900	16.2	7.88	1.01	367	0.80
12/8/12 1:06 AM	36.934	16.2	7.88	1	368	0.80
12/8/12 1:08 AM	36.967	16.2	7.88	0.99	368	0.86
12/8/12 1:10 AM	37.000	16.2	7.87	0.98	367	0.89
12/8/12 1:12 AM	37.034	16.2	7.87	0.97	368	0.89
12/8/12 1:14 AM	37.067	16.2	7.87	0.96	367	0.89
12/8/12 1:16 AM	37.100	16.2	7.87	0.96	367	0.89
12/8/12 1:18 AM	37.134	16.2	7.87	0.95	367	0.89
12/8/12 1:20 AM	37.167	16.2	7.87	0.95	367	0.86
12/8/12 1:22 AM	37.200	16.2	7.87	0.94	367	0.86
12/8/12 1:24 AM	37.234	16.2	7.87	0.93	367	0.86
12/8/12 1:26 AM	37.267	16.2	7.87	0.93	368	0.86
12/8/12 1:28 AM	37.300	16.2	7.87	0.92	368	0.83
12/8/12 1:30 AM	37.334	16.2	7.87	0.92	368	0.79
12/8/12 1:32 AM	37.367	16.2	7.87	0.91	368	0.83
12/8/12 1:34 AM	37.400	16.2	7.88	0.9	368	0.83
12/8/12 1:36 AM	37.434	16.2	7.87	0.89	367	0.86
12/8/12 1:38 AM	37.467	16.2	7.87	0.88	368	0.86
12/8/12 1:40 AM	37.500	16.5	7.87	0.88	368	0.86
12/8/12 1:42 AM	37.534	16.2	7.87	0.87	367	0.86
12/8/12 1:44 AM	37.567	16.2	7.87	0.86	367	0.86
12/8/12 1:46 AM	37.600	16.2	7.87	0.86	367	0.86
12/8/12 1:48 AM	37.634	16.2	7.87	0.85	367	0.86
12/8/12 1:50 AM	37.667	16.2	7.87	0.85	367	0.89
12/8/12 1:52 AM	37.700	16.2	7.87	0.84	367	0.89
12/8/12 1:54 AM	37.734	16.5	7.87	0.83	368	0.89
12/8/12 1:56 AM	37.767	16.5	7.88	0.82	368	0.89
12/8/12 1:58 AM	37.800	16.2	7.87	0.81	367	0.89
12/8/12 2:00 AM	37.834	16.2	7.87	0.8	367	0.86
12/8/12 2:02 AM	37.867	16.2	7.88	0.79	368	0.83
12/8/12 2:04 AM	37.900	16.2	7.87	0.78	368	0.83
12/8/12 2:06 AM	37.934	16.2	7.87	0.78	368	0.79
12/8/12 2:08 AM	37.967	16.2	7.87	0.77	368	0.83
12/8/12 2:10 AM	38.000	16.2	7.87	0.76	368	0.79
12/8/12 2:12 AM	38.034	16.5	7.88	0.75	367	0.76
12/8/12 2:14 AM	38.067	16.5	7.88	0.74	368	0.76
12/8/12 2:16 AM	38.100	16.2	7.87	0.73	367	0.76
12/8/12 2:18 AM	38.134	16.5	7.88	0.72	367	0.76
12/8/12 2:20 AM	38.167	16.5	7.87	0.71	368	0.76
12/8/12 2:22 AM	38.200	16.2	7.87	0.7	367	0.76
12/8/12 2:24 AM	38.234	16.2	7.87	0.69	367	0.79
12/8/12 2:26 AM	38.267	16.2	7.87	0.68	367	0.76
12/8/12 2:28 AM	38.300	16.2	7.87	0.67	368	0.76
12/8/12 2:30 AM	38.334	16.2	7.87	0.66	367	0.76

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/8/12 2:32 AM	38.367	16.5	7.87	0.65	367	0.79
12/8/12 2:34 AM	38.400	16.2	7.88	0.65	368	0.79
12/8/12 2:36 AM	38.434	16.5	7.87	0.64	367	0.76
12/8/12 2:38 AM	38.467	16.2	7.87	0.63	368	0.76
12/8/12 2:40 AM	38.500	16.5	7.87	0.62	367	0.73
12/8/12 2:42 AM	38.534	16.2	7.87	0.61	367	0.70
12/8/12 2:44 AM	38.567	16.2	7.87	0.6	367	0.70
12/8/12 2:46 AM	38.600	16.2	7.87	0.59	367	0.70
12/8/12 2:48 AM	38.634	16.2	7.87	0.58	367	0.73
12/8/12 2:50 AM	38.667	16.5	7.87	0.58	367	0.73
12/8/12 2:52 AM	38.700	16.5	7.87	0.57	367	0.70
12/8/12 2:54 AM	38.734	16.2	7.87	0.56	368	0.70
12/8/12 2:56 AM	38.767	16.2	7.87	0.55	367	0.73
12/8/12 2:58 AM	38.800	16.2	7.87	0.54	368	0.73
12/8/12 3:00 AM	38.834	16.5	7.87	0.54	367	0.73
12/8/12 3:02 AM	38.867	16.2	7.87	0.53	368	0.73
12/8/12 3:04 AM	38.900	16.2	7.87	0.52	368	0.73
12/8/12 3:06 AM	38.934	16.2	7.87	0.51	367	0.70
12/8/12 3:08 AM	38.967	16.2	7.87	0.5	368	0.70
12/8/12 3:10 AM	39.000	16.2	7.87	0.5	367	0.67
12/8/12 3:12 AM	39.034	16.2	7.87	0.49	367	0.67
12/8/12 3:14 AM	39.067	16.2	7.87	0.48	367	0.67
12/8/12 3:16 AM	39.100	16.2	7.87	0.48	368	0.67
12/8/12 3:18 AM	39.134	16.2	7.87	0.47	368	0.67
12/8/12 3:20 AM	39.167	16.2	7.87	0.46	367	0.67
12/8/12 3:22 AM	39.200	16.2	7.87	0.45	367	0.67
12/8/12 3:24 AM	39.234	16.2	7.87	0.44	367	0.67
12/8/12 3:26 AM	39.267	16.2	7.87	0.43	368	0.64
12/8/12 3:28 AM	39.300	16.5	7.87	0.43	367	0.64
12/8/12 3:30 AM	39.334	16.2	7.87	0.42	368	0.61
12/8/12 3:32 AM	39.367	16.2	7.87	0.41	367	0.64
12/8/12 3:34 AM	39.400	16.2	7.87	0.41	367	0.61
12/8/12 3:36 AM	39.434	16.2	7.87	0.4	367	0.58
12/8/12 3:38 AM	39.467	16.2	7.87	0.4	367	0.58
12/8/12 3:40 AM	39.500	16.2	7.87	0.38	367	0.55
12/8/12 3:42 AM	39.534	16.2	7.87	0.38	367	0.55
12/8/12 3:44 AM	39.567	16.2	7.87	0.37	367	0.58
12/8/12 3:46 AM	39.600	16.2	7.87	0.35	367	0.58
12/8/12 3:48 AM	39.634	16.2	7.87	0.35	367	0.55
12/8/12 3:50 AM	39.667	16.2	7.87	0.34	367	0.52
12/8/12 3:52 AM	39.700	16.2	7.87	0.33	367	0.52
12/8/12 3:54 AM	39.734	16.2	7.87	0.32	367	0.52
12/8/12 3:56 AM	39.767	16.2	7.87	0.31	367	0.52
12/8/12 3:58 AM	39.800	16.2	7.87	0.3	367	0.48
12/8/12 4:00 AM	39.834	16.2	7.87	0.29	367	0.48
12/8/12 4:02 AM	39.867	16.2	7.87	0.29	368	0.45
12/8/12 4:04 AM	39.900	16.2	7.87	0.28	367	0.48
12/8/12 4:06 AM	39.934	16.2	7.87	0.28	367	0.52
12/8/12 4:08 AM	39.967	16.2	7.87	0.27	367	0.52

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/8/12 4:10 AM	40.000	16.2	7.87	0.27	367	0.55
12/8/12 4:12 AM	40.034	16.2	7.88	0.27	367	0.55
12/8/12 4:14 AM	40.067	16.2	7.87	0.27	368	0.58
12/8/12 4:16 AM	40.100	16.2	7.87	0.26	367	0.58
12/8/12 4:18 AM	40.134	16.2	7.87	0.26	367	0.61
12/8/12 4:20 AM	40.167	16.2	7.87	0.26	367	0.64
12/8/12 4:22 AM	40.200	16.2	7.87	0.25	367	0.64
12/8/12 4:24 AM	40.234	16.2	7.87	0.25	367	0.64
12/8/12 4:26 AM	40.267	16.2	7.87	0.25	367	0.67
12/8/12 4:28 AM	40.300	16.2	7.87	0.24	367	0.70
12/8/12 4:30 AM	40.334	16.2	7.87	0.24	367	0.70
12/8/12 4:32 AM	40.367	16.2	7.87	0.23	367	0.70
12/8/12 4:34 AM	40.400	16.2	7.87	0.23	368	0.70
12/8/12 4:36 AM	40.434	16.2	7.87	0.23	368	0.73
12/8/12 4:38 AM	40.467	16.2	7.87	0.23	367	0.73
12/8/12 4:40 AM	40.500	16.2	7.87	0.22	368	0.73
12/8/12 4:42 AM	40.534	16.2	7.87	0.22	367	0.76
12/8/12 4:44 AM	40.567	16.2	7.87	0.21	368	0.79
12/8/12 4:46 AM	40.600	16.2	7.87	0.2	367	0.76
12/8/12 4:48 AM	40.634	16.2	7.87	0.21	368	0.76
12/8/12 4:50 AM	40.667	16.2	7.88	0.2	368	0.76
12/8/12 4:52 AM	40.700	16.2	7.87	0.2	367	0.76
12/8/12 4:54 AM	40.734	16.2	7.87	0.2	367	0.76
12/8/12 4:56 AM	40.767	16.2	7.87	0.2	368	0.79
12/8/12 4:58 AM	40.800	16.2	7.88	0.2	368	0.79
12/8/12 5:00 AM	40.834	16.2	7.87	0.2	367	0.83
12/8/12 5:02 AM	40.867	16.2	7.88	0.2	367	0.86
12/8/12 5:04 AM	40.900	16.2	7.87	0.2	368	0.89
12/8/12 5:06 AM	40.934	16.2	7.88	0.2	368	0.89
12/8/12 5:08 AM	40.967	16.2	7.87	0.2	367	0.89
12/8/12 5:10 AM	41.000	16.2	7.88	0.2	367	0.92
12/8/12 5:12 AM	41.034	16.2	7.88	0.2	368	0.92
12/8/12 5:14 AM	41.067	16.2	7.88	0.2	368	0.95
12/8/12 5:16 AM	41.100	16.2	7.88	0.2	367	0.95
12/8/12 5:18 AM	41.134	16.2	7.87	0.2	367	0.98
12/8/12 5:20 AM	41.167	16.2	7.87	0.21	367	0.98
12/8/12 5:22 AM	41.200	16.2	7.88	0.21	367	0.98
12/8/12 5:24 AM	41.234	16.2	7.88	0.2	367	1.01
12/8/12 5:26 AM	41.267	16.2	7.88	0.21	368	1.04
12/8/12 5:28 AM	41.300	16.2	7.88	0.2	367	1.04
12/8/12 5:30 AM	41.334	16.2	7.88	0.21	368	1.04
12/8/12 5:32 AM	41.367	16.2	7.88	0.21	368	1.07
12/8/12 5:34 AM	41.400	16.2	7.88	0.23	368	1.10
12/8/12 5:36 AM	41.434	16.2	7.88	0.24	368	1.10
12/8/12 5:38 AM	41.467	16.2	7.88	0.25	368	1.10
12/8/12 5:40 AM	41.500	16.2	7.88	0.25	368	1.14
12/8/12 5:42 AM	41.534	16.2	7.88	0.26	368	1.17
12/8/12 5:44 AM	41.567	16.2	7.88	0.27	368	1.17
12/8/12 5:46 AM	41.600	16.2	7.88	0.28	368	1.17

Sample Site No. 4 (6.78 km)						
		Measurements				*Calculations*
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/8/12 5:48 AM	41.634	16.2	7.88	0.29	368	1.20
12/8/12 5:50 AM	41.667	16.2	7.88	0.31	368	1.23
12/8/12 5:52 AM	41.700	16.2	7.88	0.32	368	1.26
12/8/12 5:54 AM	41.734	16.2	7.88	0.33	368	1.29
12/8/12 5:56 AM	41.767	16.2	7.88	0.35	368	1.32
12/8/12 5:58 AM	41.800	16.2	7.88	0.36	368	1.32
12/8/12 6:00 AM	41.834	16.2	7.88	0.37	368	1.35
12/8/12 6:02 AM	41.867	15.8	7.89	0.38	368	1.35
12/8/12 6:04 AM	41.900	15.8	7.88	0.39	368	1.35
12/8/12 6:06 AM	41.934	16.2	7.89	0.41	368	1.35
12/8/12 6:08 AM	41.967	16.2	7.89	0.42	368	1.35
12/8/12 6:10 AM	42.000	16.2	7.89	0.42	368	1.35
12/8/12 6:12 AM	42.034	16.2	7.89	0.43	368	1.35
12/8/12 6:14 AM	42.067	16.2	7.89	0.44	368	1.35
12/8/12 6:16 AM	42.100	16.2	7.89	0.44	368	1.35
12/8/12 6:18 AM	42.134	16.2	7.89	0.45	368	1.35
12/8/12 6:20 AM	42.167	15.8	7.89	0.45	368	1.35
12/8/12 6:22 AM	42.200	16.2	7.89	0.46	368	1.35
12/8/12 6:24 AM	42.234	16.2	7.89	0.46	368	1.35
12/8/12 6:26 AM	42.267	15.8	7.89	0.47	368	1.35
12/8/12 6:28 AM	42.300	16.2	7.89	0.48	368	1.35
12/8/12 6:30 AM	42.334	16.2	7.89	0.49	368	1.35
12/8/12 6:32 AM	42.367	16.2	7.89	0.5	368	1.35
12/8/12 6:34 AM	42.400	16.2	7.89	0.51	368	1.35
12/8/12 6:36 AM	42.434	16.2	7.89	0.52	368	1.35
12/8/12 6:38 AM	42.467	16.2	7.89	0.53	368	1.35
12/8/12 6:40 AM	42.500	16.2	7.89	0.53	368	1.35
12/8/12 6:42 AM	42.534	15.8	7.89	0.53	368	1.35
12/8/12 6:44 AM	42.567	16.2	7.89	0.53	368	1.32
12/8/12 6:46 AM	42.600	16.2	7.89	0.54	368	1.32
12/8/12 6:48 AM	42.634	15.8	7.89	0.54	368	1.32
12/8/12 6:50 AM	42.667	16.2	7.90	0.55	368	1.32
12/8/12 6:52 AM	42.700	16.2	7.89	0.56	368	1.32
12/8/12 6:54 AM	42.734	16.2	7.89	0.56	368	1.32
12/8/12 6:56 AM	42.767	16.2	7.89	0.56	368	1.32
12/8/12 6:58 AM	42.800	16.2	7.89	0.57	368	1.32
12/8/12 7:00 AM	42.834	15.8	7.90	0.57	368	1.32
12/8/12 7:02 AM	42.867	16.2	7.89	0.57	368	1.32
12/8/12 7:04 AM	42.900	16.2	7.89	0.58	368	1.32
12/8/12 7:06 AM	42.934	16.2	7.89	0.58	368	1.32
12/8/12 7:08 AM	42.967	16.2	7.90	0.59	368	1.32
12/8/12 7:10 AM	43.000	16.2	7.89	0.6	368	1.32
12/8/12 7:12 AM	43.034	16.2	7.89	0.61	368	1.32
12/8/12 7:14 AM	43.067	16.2	7.89	0.63	367	1.32
12/8/12 7:16 AM	43.100	16.2	7.90	0.64	368	1.32
12/8/12 7:18 AM	43.134	16.2	7.90	0.65	368	1.35
12/8/12 7:20 AM	43.167	16.2	7.90	0.66	368	1.35
12/8/12 7:22 AM	43.200	16.2	7.90	0.67	368	1.38
12/8/12 7:24 AM	43.234	16.2	7.90	0.69	368	1.38

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		°C	µS cm-1	mg L-1
12/8/12 7:26 AM	43.267	16.2	7.90	0.71	368	1.38
12/8/12 7:28 AM	43.300	15.8	7.90	0.73	368	1.38
12/8/12 7:30 AM	43.334	16.2	7.90	0.74	368	1.38
12/8/12 7:32 AM	43.367	16.2	7.90	0.76	368	1.38
12/8/12 7:34 AM	43.400	16.2	7.90	0.78	368	1.38
12/8/12 7:36 AM	43.434	16.2	7.90	0.8	368	1.38
12/8/12 7:38 AM	43.467	16.2	7.90	0.82	368	1.41
12/8/12 7:40 AM	43.500	16.2	7.90	0.84	368	1.41
12/8/12 7:42 AM	43.534	16.2	7.91	0.86	368	1.41
12/8/12 7:44 AM	43.567	16.2	7.91	0.87	368	1.45
12/8/12 7:46 AM	43.600	16.2	7.91	0.89	368	1.48
12/8/12 7:48 AM	43.634	16.2	7.91	0.91	369	1.51
12/8/12 7:50 AM	43.667	16.2	7.91	0.92	368	1.51
12/8/12 7:52 AM	43.700	16.2	7.91	0.94	369	1.51
12/8/12 7:54 AM	43.734	16.2	7.91	0.94	368	1.51
12/8/12 7:56 AM	43.767	16.2	7.91	0.95	368	1.51
12/8/12 7:58 AM	43.800	16.2	7.91	0.97	368	1.51
12/8/12 8:00 AM	43.834	16.2	7.91	0.97	368	1.51
12/8/12 8:02 AM	43.867	16.2	7.91	0.98	368	1.51
12/8/12 8:04 AM	43.900	16.2	7.92	0.99	368	1.51
12/8/12 8:06 AM	43.934	16.2	7.92	1	368	1.51
12/8/12 8:08 AM	43.967	16.2	7.91	1.01	369	1.51
12/8/12 8:10 AM	44.000	16.2	7.91	1.02	368	1.51
12/8/12 8:12 AM	44.034	16.2	7.92	1.03	368	1.51
12/8/12 8:14 AM	44.067	16.2	7.92	1.04	369	1.51
12/8/12 8:16 AM	44.100	16.2	7.92	1.05	368	1.51
12/8/12 8:18 AM	44.134	16.2	7.92	1.07	369	1.51
12/8/12 8:20 AM	44.167	16.2	7.92	1.08	368	1.48
12/8/12 8:22 AM	44.200	16.2	7.92	1.1	369	1.48
12/8/12 8:24 AM	44.234	16.2	7.92	1.12	368	1.45
12/8/12 8:26 AM	44.267	16.2	7.92	1.14	368	1.45
12/8/12 8:28 AM	44.300	16.2	7.92	1.15	369	1.45
12/8/12 8:30 AM	44.334	16.2	7.92	1.16	368	1.45
12/8/12 8:32 AM	44.367	16.2	7.92	1.16	368	1.45
12/8/12 8:34 AM	44.400	16.2	7.92	1.18	368	1.45
12/8/12 8:36 AM	44.434	16.2	7.92	1.18	369	1.45
12/8/12 8:38 AM	44.467	16.2	7.92	1.2	369	1.45
12/8/12 8:40 AM	44.500	16.2	7.92	1.2	368	1.42
12/8/12 8:42 AM	44.534	16.2	7.92	1.21	368	1.42
12/8/12 8:44 AM	44.567	15.8	7.92	1.23	369	1.42
12/8/12 8:46 AM	44.600	16.2	7.92	1.24	368	1.38
12/8/12 8:48 AM	44.634	16.2	7.92	1.25	368	1.38
12/8/12 8:50 AM	44.667	16.2	7.92	1.25	369	1.35
12/8/12 8:52 AM	44.700	16.2	7.92	1.26	368	1.35
12/8/12 8:54 AM	44.734	16.2	7.92	1.27	369	1.35
12/8/12 8:56 AM	44.767	16.2	7.92	1.28	369	1.35
12/8/12 8:58 AM	44.800	16.2	7.92	1.29	369	1.35
12/8/12 9:00 AM	44.834	16.2	7.92	1.32	369	1.35
12/8/12 9:02 AM	44.867	16.2	7.92	1.33	369	1.35

Sample Site No. 4 (6.78 km)						
		Measurements				***Calculations***
Date/Time	**Time after Release**	**Depth**	**pH**	**Temp**	**Corrected Electrical Conductivity @ 25°C**	**Calculated bromide concentration**
MST	h	cm		**°C**	µS cm-1	mg L-1
12/8/12 9:04 AM	44.900	16.2	7.92	1.35	369	1.35
12/8/12 9:06 AM	44.934	16.2	7.93	1.36	369	1.35
12/8/12 9:08 AM	44.967	16.2	7.93	1.37	369	1.35
12/8/12 9:10 AM	45.000	16.2	7.93	1.39	369	1.35
12/8/12 9:12 AM	45.034	16.2	7.93	1.4	369	1.35
12/8/12 9:14 AM	45.067	16.2	7.93	1.41	369	1.35
12/8/12 9:16 AM	45.100	16.2	7.93	1.43	369	1.35
12/8/12 9:18 AM	45.134	16.2	7.93	1.45	369	1.35
12/8/12 9:20 AM	45.167	16.2	7.93	1.46	369	1.35
12/8/12 9:22 AM	45.200	16.2	7.93	1.47	369	1.35
12/8/12 9:24 AM	45.234	16.2	7.93	1.49	369	1.35
12/8/12 9:26 AM	45.267	16.2	7.93	1.51	369	1.35
12/8/12 9:28 AM	45.300	16.2	7.93	1.52	369	1.35
12/8/12 9:30 AM	45.334	16.2	7.93	1.55	369	1.35
12/8/12 9:32 AM	45.367	16.2	7.93	1.56	369	1.35
12/8/12 9:34 AM	45.400	16.2	7.93	1.58	369	1.35
12/8/12 9:36 AM	45.434	16.2	7.93	1.6	369	1.35
12/8/12 9:38 AM	45.467	16.2	7.93	1.63	369	1.35
12/8/12 9:40 AM	45.500	16.2	7.93	1.65	369	1.35
12/8/12 9:42 AM	45.534	16.2	7.93	1.68	369	1.35
12/8/12 9:44 AM	45.567	16.2	7.93	1.7	369	1.35
12/8/12 9:46 AM	45.600	16.2	7.93	1.71	369	1.35
12/8/12 9:48 AM	45.634	16.2	7.94	1.73	369	1.35
12/8/12 9:50 AM	45.667	16.2	7.94	1.75	369	1.35
12/8/12 9:52 AM	45.700	16.5	7.93	1.78	369	1.35
12/8/12 9:54 AM	45.734	16.5	7.94	1.8	369	1.35
12/8/12 9:56 AM	45.767	16.2	7.94	1.82	369	1.35
12/8/12 9:58 AM	45.800	16.2	7.94	1.85	369	1.35
12/8/12 10:00 AM	45.834	16.2	7.94	1.87	369	1.35

C.1 Anions

Table C.1 Anion concentrations measured in Fourmile Creek using ion chromatography.

Sample ID	Time after Injection hours	Bromide mg L^{-1}	Fluoride mg L^{-1}	Chloride mg L^{-1}	Nitrate mg L^{-1}	Sulfate mg L^{-1}
Sample Site no. 1 (2.01 km)						
12FTWM001	4	0.07	0.413	3.84	0.0733	24.9
12FTWM002	4.3	0.09	0.420	3.89	0.0733	24.8
12FTWM003	4.6	0.10	0.409	3.91	0.0733	25.1
12FTWM004	4.9	0.08	0.442	3.92	0.0733	25.5
12FTWM005	5.2	2.06	0.388	3.86	0.0733	25.3
12FTWM006	5.5	27.8	0.413	3.18	0.0733	25.2
12FTWM007	5.8	127	0.525	3.19	0.0733	25.4
12FTWM008	6.1	194	0.484	3.25	0.0733	25.3
12FTWM009	6.4	170	0.523	3.25	0.0733	25.4
12FTWM010	6.7	115	0.525	3.13	0.0733	24.6
12FTWM011	7	72.2	0.468	3.09	0.0733	25.2
12FTWM012	7.3	45.2	0.452	3.14	0.0733	25.3
12FTWM013	7.6	30.0	0.433	3.73	0.0733	25.0
12FTWM014	7.9	20.8	0.441	3.72	0.0733	24.9
12FTWM015	8.2	15.5	0.404	3.78	0.0733	25.2
12FTWM016	8.5	12.2	0.451	3.84	0.0733	25.6
12FTWM017	8.8	9.81	0.428	3.77	0.104	25.0
12FTWM018	9.1	8.70	0.449	3.23	0.0733	25.5
12FTWM019	9.4	7.47	0.443	3.18	0.0733	25.2
12FTWM020	9.7	6.63	0.438	3.17	0.0733	25.2
12FTWM021	10	5.97	0.465	3.18	0.0733	25.1
12FTWM022	10.3	5.43	0.412	3.15	0.0733	25.3
12FTWM023	10.6	5.09	0.430	3.22	0.0733	25.6
12FTWM024	10.9	4.62	0.433	3.16	0.0733	25.1
Sample Site no. 2 (5.04 km)						
12FTUPGR001	11.0	0.30	0.463	5.70	0.199	50.2
12FTUPGR002	11.3	0.58	0.463	5.90	0.145	52.0
12FTUPGR003	11.7	2.21	0.471	5.90	0.139	52.0
12FTUPGR004	12.0	6.50	0.456	5.86	0.135	51.5
12FTUPGR005	12.3	10.6	0.448	5.75	0.073	50.8
12FTUPGR006	12.7	12.6	0.463	5.83	0.073	51.5
12FTUPGR007	13.0	11.1	0.469	5.81	0.136	51.0
12FTUPGR008	13.3	9.22	0.469	5.99	0.073	52.7
12FTUPGR009	13.7	6.98	0.465	5.81	0.174	51.3
12FTUPGR010	14.0	6.10	0.474	5.87	0.144	51.8
12FTUPGR011	14.3	4.72	0.461	5.78	0.134	51.2
12FTUPGR012	14.7	3.96	0.477	4.76	0.144	51.3
12FTUPGR013	15.0	3.48	0.468	5.78	0.141	51.3
12FTUPGR014	15.3	3.13	0.476	5.85	0.152	51.8
12FTUPGR015	15.7	2.83	0.453	4.80	0.158	51.5
12FTUPGR016	16.0	2.67	0.468	4.93	0.160	52.8
12FTUPGR017	16.3	2.49	0.463	5.81	0.138	51.4
12FTUPGR018	16.7	2.42	0.490	4.81	0.148	52.1
12FTUPGR019	17.0	2.38	0.458	4.92	0.159	52.4
12FTUPGR020	17.3	2.29	0.460	4.74	0.155	51.5
12FTUPGR021	17.7	2.30	0.449	4.86	0.158	52.2

Sample ID	Time after Injection hours	Bromide mg L^{-1}	Fluoride mg L^{-1}	Chloride mg L^{-1}	Nitrate mg L^{-1}	Sulfate mg L^{-1}
12FTUPGR022	18.0	2.27	0.453	4.85	0.159	51.7
12FTUPGR023	18.3	2.30	0.487	4.95	0.150	51.3
12FTUPGR024	18.7	2.28	0.449	4.99	0.155	51.3
12FTUPGR025	19.0	2.18	0.470	5.22	0.128	52.5
12FTUPGR026	19.5	2.35	0.458	4.98	0.132	52.2
12FTUPGR027	20.0	2.24	0.446	5.34	0.139	52.8
12FTUPGR028	20.5	2.22	0.472	5.18	0.129	52.9
12FTUPGR029	21.0	2.20	0.472	5.21	0.073	52.0
12FTUPGR030	21.5	2.19	0.477	5.24	0.140	51.9
12FTUPGR031	22.0	2.37	0.471	5.10	0.129	51.8
12FTUPGR032	22.5	2.41	0.452	5.10	0.129	52.6
12FTUPGR033	23.0	2.38	0.452	5.04	0.121	51.9
12FTUPGR034	23.5	2.23	0.445	5.13	0.126	52.8
12FTUPGR035	24.0	2.21	0.433	5.14	0.073	52.7
12FTUPGR036	24.5	2.32	0.420	4.92	0.124	51.1
12FTUPGR037	25.0	2.25	0.484	5.27	0.191	50.5
12FTUPGR038	25.5	2.21	0.464	5.33	0.135	50.7
12FTUPGR039	26.0	2.22	0.465	5.39	0.135	51.4
12FTUPGR040	26.5	2.19	0.474	5.25	0.135	51.3
12FTUPGR041	27.0	2.14	0.465	5.27	0.135	51.1
12FTUPGR042	27.5	2.14	0.472	5.28	0.177	50.9
12FTUPGR043	28.0	2.14	0.464	5.23	0.135	50.3
12FTUPGR044	28.5	2.10	0.453	5.26	0.185	50.2
12FTUPGR045	29.0	2.05	0.472	5.18	0.185	50.4
12FTUPGR046	29.5	2.06	0.464	5.36	0.185	51.4
12FTUPGR047	30.0	2.04	0.479	5.26	0.183	50.4
12FTUPGR048	30.5	2.06	0.463	5.49	0.195	51.6
Sample Site no. 3 (5.13 km)						
12FTGR001	11.5	0.52	0.533	9.93	0.290	88.7
12FTGR002	11.8	1.63	0.549	10.2	0.248	90.4
12FTGR003	12.2	4.87	0.540	10.1	0.271	90.1
12FTGR004	12.5	8.26	0.539	9.92	0.217	90.4
12FTGR005	12.8	10.4	0.552	10.0	0.239	90.0
12FTGR006	13.2	9.81	0.538	9.90	0.270	89.2
12FTGR007	13.5	8.51	0.537	9.69	0.278	89.8
12FTGR008	13.8	6.30	0.538	9.94	0.235	88.7
12FTGR009	14.2	5.04	0.538	10.2	0.266	89.9
12FTGR010	14.5	4.27	0.539	9.84	0.303	90.8
12FTGR011	14.8	3.58	0.529	9.81	0.205	91.1
12FTGR012	15.2	3.13	0.527	10.1	0.244	90.3
12FTGR013	15.5	2.84	0.541	10.2	0.302	91.6
12FTGR014	15.8	2.58	0.539	10.2	0.287	90.9
12FTGR015	16.2	2.34	0.537	9.79	0.321	90.8
12FTGR016	16.5	2.25	0.549	10.3	0.317	91.9
12FTGR017	16.8	2.17	0.540	10.2	0.289	92.1
12FTGR018	17.2	2.08	0.539	10.0	0.324	90.9
12FTGR019	17.5	2.05	0.538	10.0	0.245	90.9
12FTGR020	17.8	2.04	0.549	10.3	0.274	92.3
12FTGR021	18.2	2.01	0.528	10.0	0.269	90.7
12FTGR022	18.5	2.03	0.528	9.92	0.135	90.5
12FTGR023	18.8	2.06	0.542	10.3	0.275	93.5

Sample ID	Time after Injection hours	Bromide mg L^{-1}	Fluoride mg L^{-1}	Chloride mg L^{-1}	Nitrate mg L^{-1}	Sulfate mg L^{-1}
12FTGR024	19.2	2.04	0.540	10.0	0.287	91.8
12FTGR025	19.5	2.03	0.527	9.94	0.308	90.4
12FTGR026	20.0	2.05	0.529	10.1	0.332	91.6
12FTGR027	20.5	2.04	0.527	10.0	0.288	90.6
12FTGR028	21.0	2.08	0.549	10.4	0.302	92.4
12FTGR029	21.5	2.09	0.540	10.3	0.319	92.3
12FTGR030	22.0	2.05	0.537	9.84	0.319	90.3
12FTGR031	22.5	2.11	0.529	10.3	0.309	92.6
12FTGR032	23.0	2.11	0.529	10.1	0.346	93.0
12FTGR033	23.5	2.10	0.529	10.3	0.304	92.3
12FTGR034	24.0	2.07	0.537	9.83	0.306	90.1
12FTGR035	24.5	2.08	0.539	10.2	0.316	92.3
12FTGR036	25.0	2.05	0.554	10.1	0.313	91.7
12FTGR037	25.5	2.03	0.538	10.1	0.307	91.5
12FTGR038	26.0	2.04	0.542	10.4	0.294	93.4
12FTGR039	26.5	1.98	0.529	10.1	0.300	91.8
12FTGR040	27.0	1.99	0.540	10.1	0.316	92.3
12FTGR041	27.5	1.95	0.538	10.2	0.298	91.2
12FTGR042	28.0	1.95	0.517	10.2	0.306	92.4
12FTGR043	28.5	1.95	0.541	10.4	0.327	93.8
12FTGR044	29.0	1.91	0.530	10.3	0.335	91.6
12FTGR045	29.5	1.86	0.528	10.2	0.337	91.1
12FTGR046	30.0	1.83	0.552	10.2	0.315	90.3
12FTGR047	30.5	1.88	0.541	10.4	0.339	94.1
12FTGR048	31.0	1.85	0.541	10.5	0.343	93.1
Sample Site no. 4 (6.78 km)						
12FTLM001	13.8	5.50	0.399	11.83	0.209	100
12FTLM002	14.2	5.29	0.381	11.82	0.298	101
12FTLM003	14.5	7.14	0.379	11.90	0.281	101
12FTLM004	14.8	7.47	0.385	11.81	0.209	100
12FTLM005	15.2	6.72	0.397	12.19	0.317	101
12FTLM006	15.5	5.52	0.383	11.94	0.333	100
12FTLM007	15.8	4.57	0.375	11.91	0.266	101
12FTLM008	16.2	3.79	0.388	12.15	0.355	101
12FTLM009	16.5	3.23	0.381	12.13	0.460	102
12FTLM010	16.8	2.81	0.379	12.07	0.314	101
12FTLM011	17.2	2.55	0.381	12.36	0.414	102
12FTLM012	17.5	2.31	0.373	12.08	0.331	101
12FTLM013	17.8	2.19	0.385	12.45	0.324	103
12FTLM014	18.2	2.05	0.376	12.40	0.644	103
12FTLM015	18.5	1.97	0.382	12.17	0.370	101
12FTLM016	18.8	1.91	0.394	12.21	0.330	102
12FTLM017	19.2	1.84	0.394	12.34	0.360	102
12FTLM018	19.5	1.80	0.393	12.20	0.349	102
12FTLM019	19.8	1.78	0.412	12.20	0.295	102
12FTLM020	20.2	1.75	0.376	12.20	0.300	102
12FTLM021	20.5	1.75	0.372	12.19	0.380	102
12FTLM022	20.8	1.76	0.375	12.07	0.209	102
12FTLM023	21.2	1.74	0.375	12.27	0.273	103
12FTLM024	21.5	1.89	0.375	12.15	0.209	102
12FTLM025	21.8	1.72	0.395	12.44	0.209	101

Sample ID	Time after Injection hours	Bromide mg L^{-1}	Fluoride mg L^{-1}	Chloride mg L^{-1}	Nitrate mg L^{-1}	Sulfate mg L^{-1}
12FTLM026	22.2	1.74	0.367	12.54	0.435	103
12FTLM027	26.8	1.64	0.378	12.31	0.305	103

C.2 Dissolved Cations and Trace Elements

Table C.2.1 Alkalinity, cations, and trace element concentrations at 2.01 km and 5.04 km.

Sample Location	2.01 km			5.04 km				
Sample ID	001	010	020	001	010	020	030	040
Time after Injection (hours)	4.0	6.7	9.7	11.0	14.0	17.3	21.5	26.5
Analytical Technique: Autotitration								
Alkalinity (mg/L HCO3)	80.9	81.4	80.7	67.9	70.6	69.6	69.8	69.7
Analytical Technique: ICP-OES								
Aluminum (mg/L)	0.010	0.005	0.003	0.005	0.007	0.004	0.004	0.004
Antimony (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic (mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Barium (mg/L)	0.037	0.044	0.037	0.054	0.054	0.055	0.054	0.056
Beryllium (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Boron (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (mg/L)	12.9	13.9	12.8	23.2	23.4	23.3	23.4	23.6
Chromium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Copper (mg/L)	<0.001	<0.001	<0.001	0.003	0.005	0.004	<0.001	<0.001
Iron (mg/L)	0.007	0.003	0.003	0.007	0.007	0.01	0.009	0.01
Lead (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lithium (mg/L)	0.002	0.002	0.002	0.003	0.002	0.003	0.002	0.002
Magnesium (mg/L)	5.64	6.12	5.72	9.54	9.6	9.69	9.68	9.69
Manganese (mg/L)	0.002	0.002	0.002	0.030	0.058	0.027	0.027	0.008
Molybdenum (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (mg/L)	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002
Potassium (mg/L)	0.881	1.06	0.886	1.41	2.04	2.2	1.4	5.05
Rubidium (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Selenium (mg/L)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Silicon Dioxide (mg/L)	11.3	11.3	11.2	12.1	11.9	12.2	12.1	12.2
Sodium (mg/L)	6.78	33.2	8.96	9.1	10.6	9.53	9.56	9.53
Strontium (mg/L)	0.188	0.204	0.187	0.334	0.337	0.337	0.339	0.341
Sulfur (mg/L)	8.43	8.79	8.56	16.3	16.3	15.9	16.3	16.3
Tungsten (mg/L)	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005
Uranium (mg/L)	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Vanadium (mg/L)	<0.004	0.005	<0.004	<0.004	0.005	0.005	0.005	0.005
Zinc (mg/L)	0.003	0.003	0.003	0.037	0.111	0.074	0.006	0.005

Table C.2.2 Alkalinity, cations, and trace element concentrations at 5.13 km and 6.78 km

Sample Location	**5.13 km**					**6.78 km**		
Sample ID	001	010	020	030	040	001	010	020
Time after Injection (hours)	11.5	14.5	17.8	22.0	27.0	12.0	15.0	18.7
Analytical Technique: Autotitration								
Alkalinity (mg/L HCO3)	75.7	76.1	75.5	74.9	74.5	46.9	47.1	47.4
Analytical Technique: ICP-OES								
Aluminum (mg/L)	0.014	0.015	0.015	0.011	0.011	0.010	0.006	0.009
Antimony (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic (mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Barium (mg/L)	0.052	0.054	0.053	0.053	0.053	0.053	0.053	0.052
Beryllium (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Boron (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (mg/L)	33.5	33.6	33.4	33.6	33.7	37.5	38.2	38.4
Chromium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Copper (mg/L)	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (mg/L)	0.007	0.007	0.007	0.009	0.012	0.008	0.009	0.009
Lead (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lithium (mg/L)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Magnesium (mg/L)	13.7	13.8	13.8	13.8	13.7	15.4	15.1	15.9
Manganese (mg/L)	0.057	0.054	0.058	0.062	0.059	0.025	0.048	0.025
Molybdenum (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002
Nickel (mg/L)	0.006	0.005	0.006	0.005	0.006	0.004	0.004	0.002
Potassium (mg/L)	1.97	1.93	1.92	1.92	1.95	2.12	2.17	2.29
Rubidium (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Selenium (mg/L)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Silicon Dioxide (mg/L)	12.7	12.7	12.6	12.7	13	13.1	13.1	12.7
Sodium (mg/L)	11.3	12.2	11.7	11.8	11.7	13.0	12.6	12.1
Strontium (mg/L)	0.377	0.38	0.375	0.379	0.382	0.413	0.415	0.407
Sulfur (mg/L)	27.2	27.3	27.2	27.4	27.3	31.2	30.9	64.7
Tungsten (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium (mg/L)	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Vanadium (mg/L)	0.005	0.006	0.006	0.005	0.005	0.006	0.006	0.006
Zinc (mg/L)	0.039	0.043	0.040	0.035	0.035	0.029	0.029	0.023

D. OTIS-P Solute Transport Model Data

Table D.1 OTIS-P input data for Reach 1 (0-2.01 km) measured bromide concentrations.

Print Option	2	Upstream Boundary Conditions		Observed Downstream Concentration Data	
Requested Print Interval (hr)	0.1	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.1	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0.0	0.00	0.33	4.0	0.3
Ending Time (hr)	21.0	0.16	1616	4.3	0.3
Starting Distance (m)	0	0.50	0.33	4.6	0.3
Downstream Boundary Condition (mg L-1)	0	21.50	0.33	4.9	0.3
Simulation Type	Dynamic			5.2	2.1
Number of Reaches	1			5.5	27.6
End Distance (m)	2213.0			5.8	102.0
Number of Spatial Segments	2213			6.1	154.4
Reach Length (m)	2213.0			6.4	138.5
Dispersion Coefficient (m^2 s-1)	0.283			6.7	94.5
Storage Zone Area (m2)	0.0186			7.0	61.1
Storage Exchange Rate (sec-1)	5.24E-05			7.3	40.8
Decay Coefficient Channel	2.65E-05			7.6	28.3
Decay Coefficient Storage	0			7.9	21.2
Requested Print Location (m)	2013			8.2	15.4
Flow Option	Steady			8.5	12.5
Flow Interval (hr)	0			8.8	9.8
Flowrate at Upstream Boundary (m3 s-1)	1.73E-02			9.1	8.7
Lateral Inflow (m3 s-1)	0			9.4	7.5
Lateral Outflow (m3 s-1)	0			9.7	6.6
Cross-sectional Area (m2)	0.179			10.0	6.0
Lateral Inflow Concentration (mg L-1)	0			10.3	5.4
Number of Upstream Boundary Conditions	4			10.6	5.1
Boundary Condition Option	3			10.9	4.6
Number of Observed Concentration Data	28			11.4	3.7
				12.4	2.7
				15.5	1.6
				21.0	0.3

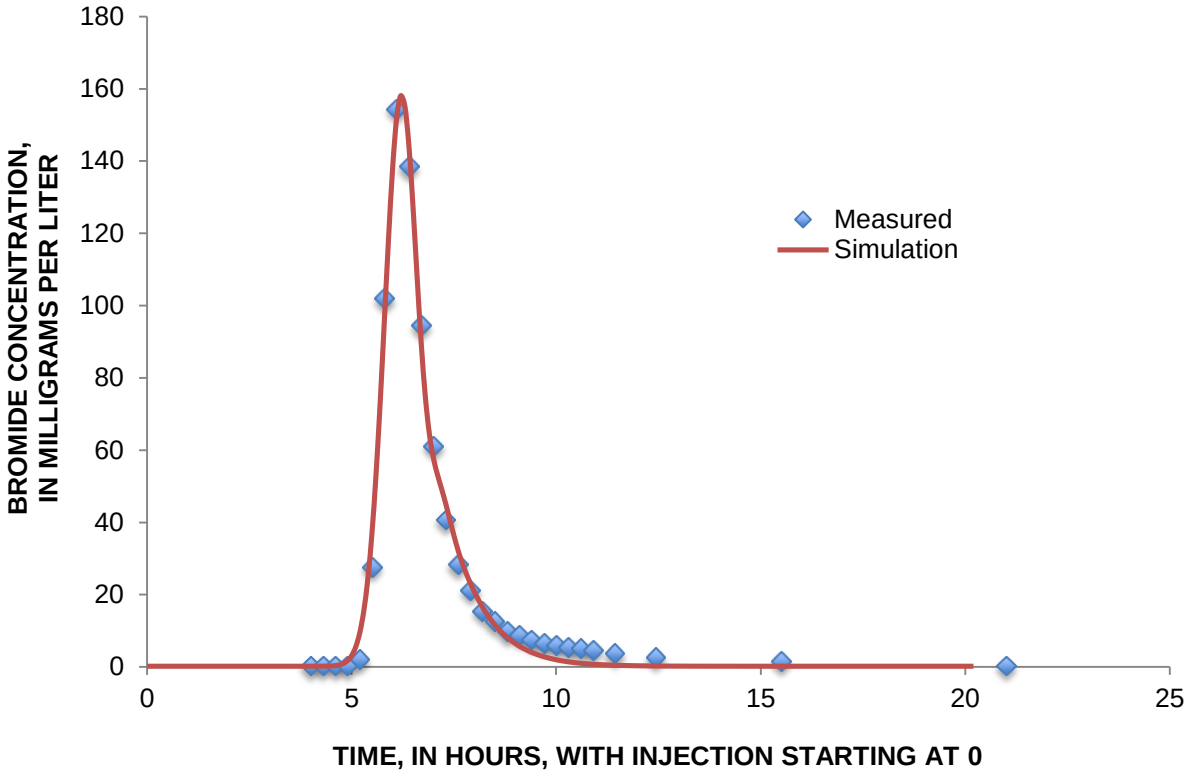

Figure D.1 OTIS-P output data for Reach 1 (0-2.01 km) measured bromide concentrations.

Table D.2 OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.

OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.					
Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.01	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.01	hour	mg L^{-1}	hour	mg L^{-1}
Starting Time (hr)	0.0	0	0.33	0.13	0.00
Ending Time (hr)	21.0	0.16	1616	0.17	0.54
Starting Distance (m)	0.0	0.5	0.33	0.20	0.00
Downstream Boundary Condition (mg L^{-1})	0.0	21.5	0.33	0.23	0.54
Simulation Type	Dynamic			0.27	0.54
Number of Reaches	1			0.30	0.54
End Distance (m)	2213.0			0.33	0.00
Number of Spatial Segments	2213			0.37	0.54
Reach Length (m)	2213.0			0.40	0.54
Dispersion Coefficient (m^2 s-1)	0.39			0.43	0.54
Storage Zone Area (m2)	0.017			0.47	0.00
Storage Exchange Rate (sec-1)	3.82E-05			0.50	0.00
Decay Coefficient Channel	0.0000265			0.53	0.00
Decay Coefficient Storage	0			0.57	0.54
Requested Print Location (m)	2013			0.60	0.54
Flow Option	Steady			0.63	0.54
Flow Interval (hr)	0			0.67	0.00
Flowrate at Upstream Boundary (m3 s-1)	0.0173			0.70	0.00
Lateral Inflow (m3 s-1)	0			0.73	0.00
Lateral Outflow (m3 s-1)	0			0.77	0.54
Cross-sectional Area (m2)	0.179			0.80	0.00
Lateral Inflow Concentration (mg L-1)	0			0.83	0.00
Number of Upstream Boundary Conditions	4			0.87	0.00
Boundary Condition Option	3			0.90	0.54
Number of Observed Concentration Data	532			0.93	0.54
				0.97	0.00
				1.00	0.54
				1.03	0.54
				1.07	0.00
				1.10	0.00
				1.13	0.54
				1.17	0.00
				1.20	0.54
				1.23	0.54
				1.27	0.00
				1.30	0.00
				1.33	0.00
				1.37	0.54
				1.40	0.54
				1.43	0.54

OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.					
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L^{-1}	hour	mg L^{-1}	hour	mg L^{-1}
1.47	0.00	3.07	0.00	4.67	0.54
1.50	0.00	3.10	0.00	4.70	0.54
1.70	0.54	3.13	0.54	4.73	0.54
1.57	0.54	3.17	0.00	4.77	0.54
1.60	0.00	3.20	0.54	4.80	0.54
1.63	0.54	3.23	0.54	4.83	0.54
1.67	0.00	3.27	0.00	4.87	1.60
1.70	0.54	3.30	0.00	4.90	1.60
1.73	0.54	3.33	0.54	4.93	1.60
1.77	0.00	3.37	0.54	4.97	1.60
1.80	0.00	3.40	0.00	5.00	2.66
1.83	0.54	3.43	0.00	5.03	2.66
1.87	0.54	3.47	0.00	5.07	3.72
1.90	0.54	3.50	0.00	5.10	5.85
1.93	0.54	3.53	0.00	5.13	6.91
1.97	0.00	3.57	0.00	5.17	9.04
2.00	0.00	3.60	0.00	5.20	11.16
2.03	0.00	3.63	0.00	5.23	14.36
2.07	0.00	3.67	0.00	5.27	18.62
2.10	0.00	3.70	0.00	5.30	22.88
2.13	0.00	3.73	0.00	5.33	27.15
2.17	0.54	3.77	0.00	5.37	33.55
2.20	0.00	3.80	0.00	5.40	39.97
2.23	0.00	3.83	0.00	5.43	47.46
2.27	0.00	3.87	0.00	5.47	54.96
2.30	0.54	3.90	0.00	5.50	62.47
2.33	0.54	3.93	0.00	5.53	71.07
2.37	0.54	3.97	0.00	5.57	79.68
2.40	0.54	4.00	0.00	5.60	87.22
2.43	0.54	4.03	0.54	5.63	94.76
2.47	0.00	4.07	0.54	5.67	103.40
2.50	0.00	4.10	0.54	5.70	109.88
2.53	0.00	4.13	0.54	5.73	116.37
2.57	0.00	4.17	0.54	5.77	121.78
2.60	0.00	4.20	0.54	5.80	127.20
2.63	0.00	4.23	0.54	5.83	130.45
2.67	0.54	4.27	0.54	5.87	133.70
2.70	0.54	4.30	0.54	5.90	135.87
2.73	0.00	4.33	0.54	5.93	135.87
2.77	0.00	4.37	0.54	5.97	136.96
2.80	0.54	4.40	0.54	6.00	135.87
2.83	0.00	4.43	0.54	6.03	134.79
2.87	0.54	4.47	0.54	6.07	132.62
2.90	0.00	4.50	0.54	6.10	129.37
2.93	0.54	4.53	0.54	6.13	127.20
2.97	0.54	4.57	0.54	6.17	123.95
3.00	0.54	4.60	0.54	6.20	119.62
3.03	0.54	4.63	0.54	6.23	116.37

OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.					
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L^{-1}	hour	mg L^{-1}	hour	mg L^{-1}
6.27	112.05	7.87	15.42	9.47	5.85
6.30	107.72	7.90	15.42	9.50	5.85
6.33	103.40	7.93	15.42	9.53	5.85
6.37	99.08	7.97	14.36	9.57	5.85
6.40	94.76	8.00	14.36	9.60	5.85
6.43	90.45	8.03	13.29	9.63	5.85
6.47	87.22	8.07	13.29	9.67	4.79
6.50	82.91	8.10	13.29	9.70	5.85
6.53	79.68	8.13	12.23	9.73	4.79
6.57	75.37	8.17	12.23	9.77	4.79
6.60	72.14	8.20	12.23	9.80	4.79
6.63	68.92	8.23	11.16	9.83	4.79
6.67	65.69	8.27	11.16	9.87	4.79
6.70	62.47	8.30	11.16	9.90	4.79
6.73	60.33	8.33	11.16	9.93	4.79
6.77	57.11	8.37	11.16	9.97	4.79
6.80	53.89	8.40	10.10	10.00	4.79
6.83	51.75	8.43	10.10	10.03	4.79
6.87	49.60	8.47	10.10	10.07	4.79
6.90	47.46	8.50	10.10	10.10	4.79
6.93	45.32	8.53	10.10	10.13	4.79
6.97	43.18	8.57	9.04	10.17	4.79
7.00	41.04	8.60	9.04	10.20	4.79
7.03	39.97	8.63	9.04	10.23	4.79
7.07	37.83	8.67	9.04	10.27	3.72
7.10	36.76	8.70	9.04	10.30	4.79
7.13	34.62	8.73	9.04	10.33	3.72
7.17	33.55	8.77	7.97	10.37	4.79
7.20	31.42	8.80	7.97	10.40	4.79
7.23	30.35	8.83	7.97	10.43	3.72
7.27	29.28	8.87	7.97	10.47	3.72
7.30	28.21	8.90	7.97	10.50	3.72
7.33	27.15	8.93	7.97	10.53	3.72
7.37	26.08	8.97	7.97	10.57	3.72
7.40	25.01	9.00	6.91	10.60	3.72
7.43	23.95	9.03	6.91	10.63	3.72
7.47	23.95	9.07	6.91	10.67	3.72
7.50	21.81	9.10	6.91	10.70	3.72
7.53	21.81	9.13	6.91	10.73	3.72
7.57	20.75	9.17	6.91	10.77	3.72
7.60	19.68	9.20	6.91	10.80	3.72
7.63	19.68	9.23	5.85	10.83	3.72
7.67	18.62	9.27	5.85	10.87	3.72
7.70	17.55	9.30	5.85	10.90	3.72
7.73	17.55	9.33	5.85	10.93	3.72
7.77	16.49	9.37	5.85	10.97	3.72
7.80	16.49	9.40	5.85	11.00	3.72
7.83	15.42	9.43	5.85	11.03	3.72

OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.					
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L^{-1}	hour	mg L^{-1}	hour	mg L^{-1}
11.07	3.72	12.67	1.60	14.27	1.60
11.10	3.72	12.70	2.66	14.30	1.60
11.13	3.72	12.73	1.60	14.33	1.60
11.17	3.72	12.77	2.66	14.37	1.60
11.20	2.66	12.80	2.66	14.40	1.60
11.23	2.66	12.83	1.60	14.43	1.60
11.27	2.66	12.87	1.60	14.47	1.60
11.30	3.72	12.90	1.60	14.50	1.60
11.33	2.66	12.93	2.66	14.53	1.60
11.37	3.72	12.97	2.66	14.57	1.60
11.40	3.72	13.00	1.60	14.60	1.60
11.43	2.66	13.03	1.60	14.63	1.60
11.47	3.72	13.07	2.66	14.67	1.60
11.50	3.72	13.10	1.60	14.70	1.60
11.53	2.66	13.13	2.66	14.73	1.60
11.57	2.66	13.17	1.60	14.77	1.60
11.60	2.66	13.20	2.66	14.80	1.60
11.63	2.66	13.23	2.66	14.83	1.60
11.67	2.66	13.27	2.66	14.87	1.60
11.70	2.66	13.30	2.66	14.90	1.60
11.73	2.66	13.33	1.60	14.93	1.60
11.77	2.66	13.37	1.60	14.97	1.60
11.80	2.66	13.40	1.60	15.00	1.60
11.83	2.66	13.43	1.60	15.03	1.60
11.87	2.66	13.47	1.60	15.07	1.60
11.90	2.66	13.50	1.60	15.10	1.60
11.93	2.66	13.53	1.60	15.13	1.60
11.97	2.66	13.57	1.60	15.17	1.60
12.00	2.66	13.60	1.60	15.20	1.60
12.03	2.66	13.63	1.60	15.23	1.60
12.07	2.66	13.67	1.60	15.27	1.60
12.10	2.66	13.70	1.60	15.30	1.60
12.13	2.66	13.73	1.60	15.33	1.60
12.17	2.66	13.77	1.60	15.37	1.60
12.20	2.66	13.80	1.60	15.40	1.60
12.23	2.66	13.83	1.60	15.43	1.60
12.27	2.66	13.87	1.60	15.47	1.60
12.30	2.66	13.90	1.60	15.50	1.60
12.33	2.66	13.93	1.60	15.53	1.60
12.37	2.66	13.97	1.60	15.57	1.60
12.40	2.66	14.00	1.60	15.60	1.60
12.43	2.66	14.03	1.60	15.63	1.60
12.47	2.66	14.07	1.60	15.67	1.60
12.50	2.66	14.10	1.60	15.70	1.60
12.53	2.66	14.13	1.60	15.73	1.60
12.57	2.66	14.17	1.60	15.77	1.60
12.60	2.66	14.20	1.60	15.80	1.60
12.63	1.60	14.23	1.60	15.83	1.60

OTIS-P input data for Reach 1 (0-2.01 km) calculated bromide concentrations.					
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L^{-1}	hour	mg L^{-1}	hour	mg L^{-1}
15.87	1.60	17.47	1.60		
15.90	1.60	17.50	1.60		
15.93	1.60	17.53	1.60		
15.97	1.60	17.57	0.54		
16.00	1.60	17.60	0.54		
16.03	1.60	17.63	1.60		
16.07	1.60	17.67	0.54		
16.10	1.60	17.70	1.60		
16.13	1.60	17.73	1.60		
16.17	1.60	17.77	0.54		
16.20	1.60	17.80	1.60		
16.23	1.60	21.00	0.33		
16.27	1.60				
16.30	1.60				
16.33	1.60				
16.37	1.60				
16.40	1.60				
16.43	1.60				
16.47	1.60				
16.50	1.60				
16.53	1.60				
16.57	1.60				
16.60	1.60				
16.63	1.60				
16.67	1.60				
16.70	1.60				
16.73	1.60				
16.77	0.54				
16.80	0.54				
16.83	1.60				
16.87	1.60				
16.90	1.60				
16.93	1.60				
16.97	1.60				
17.00	1.60				
17.03	0.54				
17.07	1.60				
17.10	1.60				
17.13	1.60				
17.17	1.60				
17.20	1.60				
17.23	1.60				
17.27	1.60				
17.30	0.54				
17.33	1.60				
17.37	1.60				
17.40	1.60				
17.43	1.60				

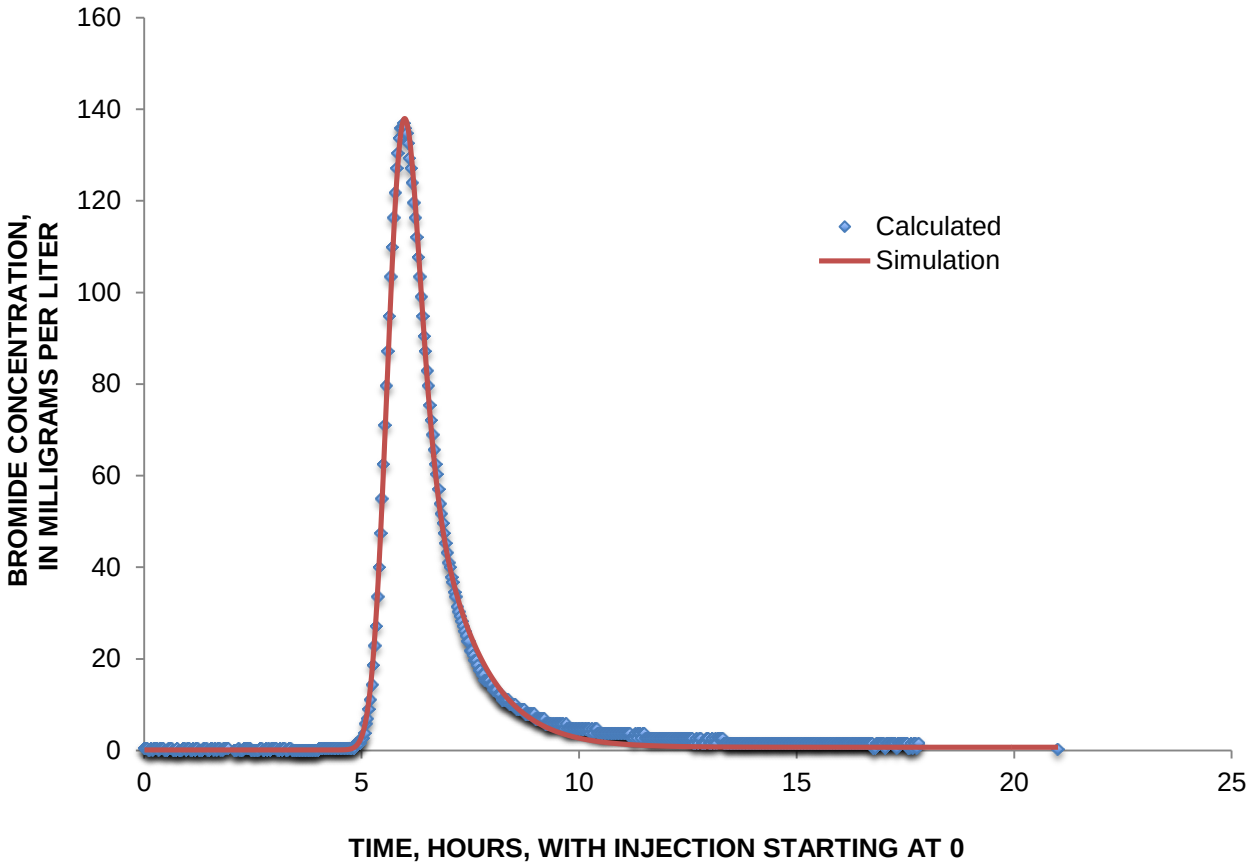

Figure D.2 OTIS-P output data for Reach 1 (0-2.01 km) calculated bromide concentrations.

Table D.3 OTIS-P input data for Reach 2 (2.01-5.04 km) measured bromide concentrations.

Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.1	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.1	hour	mg L-1	hour	mg L-1
Starting Time (hr)	4.0	4.0	0.33	11.0	0.34
Ending Time (hr)	80.0	4.3	0.31	11.3	0.58
Starting Distance (m)	2013.0	4.6	0.32	11.7	2.21
Downstream Boundary Condition (mg L-1)	0	4.9	0.32	12.0	6.50
Simulation Type	Dynamic	5.2	2.06	12.3	10.59
Number of Reaches	1	5.5	27.61	12.7	12.57
End Distance (m)	5238.0	5.8	101.95	13.0	11.14
Number of Spatial Segments	3225	6.1	154.45	13.3	9.22
Reach Length (m)	3225.0	6.4	138.46	13.7	6.98
Dispersion Coefficient (m^2 s-1)	0.801	6.7	94.49	14.0	6.10
Storage Zone Area (m2)	0.797	7.0	61.08	14.3	4.72
Storage Exchange Rate (sec-1)	7.74E-05	7.3	40.75	14.7	3.96
Decay Coefficient Channel	1.64E-05	7.6	28.30	15.0	3.48
Decay Coefficient Storage	0	7.9	21.22	15.3	3.13
Requested Print Location (m)	5038.0	8.2	15.39	15.7	2.83
Flow Option	Steady	8.5	12.52	16.0	2.67
Flow Interval (hr)	0	8.8	9.81	16.3	2.49
Flowrate at Upstream Boundary (m3 s-1)	1.73E-02	9.1	8.70	16.7	2.42
Lateral Inflow (m3 s-1)	7.27E-07	9.4	7.47	17.0	2.38
Lateral Outflow (m3 s-1)	0	9.7	6.63	17.3	2.29
Cross-sectional Area (m2)	0.141	10.0	5.97	17.7	2.30
Lateral Inflow Concentration (mg L-1)	0	10.3	5.43	18.0	2.27
Number of Upstream Boundary Conditions	29	10.6	5.09	18.3	2.30
Boundary Condition Option	3	10.9	4.62	18.7	2.28
Number of Observed Concentration Data	49	11.4	3.72	19.0	2.18
		12.4	2.66	19.5	2.35
		15.5	1.60	20.0	2.24
		21.0	0.33	20.5	2.22
		81.0	0.33	21.0	2.20
				21.5	2.19
				22.0	2.37
				22.5	2.41
				23.0	2.38
				23.5	2.23
				24.0	2.21
				24.5	2.32
				25.0	2.25
				25.5	2.21
				26.0	2.22
				26.5	2.19
				27.0	2.14
				27.5	2.14

					Observed Downstream Concentration Data	
					Time	Concentration
					hour	mg L-1
					28.0	2.14
					28.5	2.10
					29.0	2.05
					29.5	2.06
					30.0	2.04
					30.5	2.06
					42.0	1.62
					81.0	0.33

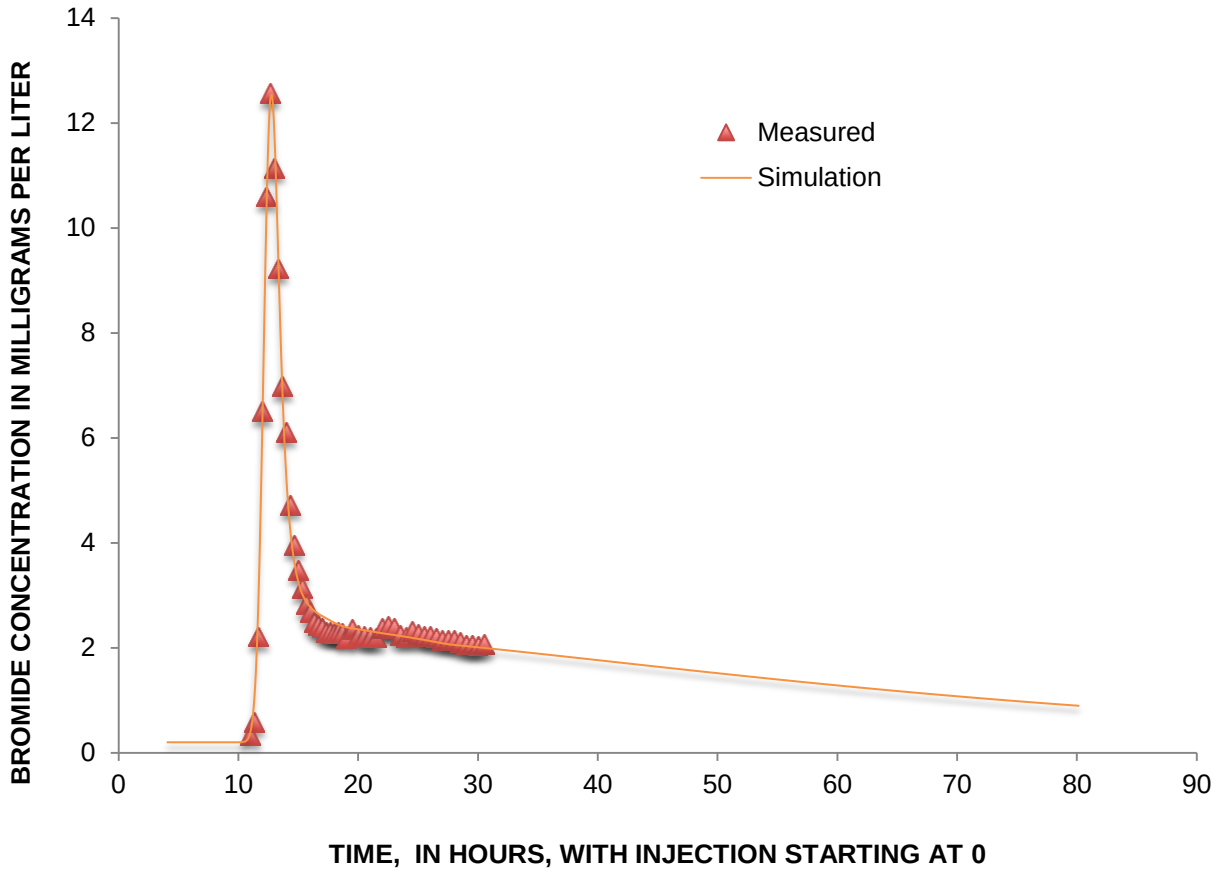

Figure D.3 OTIS-P output data for Reach 2 (2.01-5.04 km) measured bromide concentrations.

Table D.4 OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.					
Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.01	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.01	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0	0.000	0.00	0.133	0.00
Ending Time (hr)	81.00	0.233	0.54	0.167	0.00
Starting Distance (m)	2013.00	0.267	0.54	0.200	0.00
Downstream Boundary Condition (mg L-1)	0	0.300	0.54	0.233	0.00
Simulation Type	Dynamic	0.333	0.00	0.267	0.00
Number of Reaches	1	0.367	0.54	0.300	0.00
End Distance (m)	5238.00	0.400	0.54	0.333	0.00
Number of Spatial Segments	3225.00	0.433	0.54	0.367	0.00
Reach Length (m)	3225.00	0.467	0.00	0.400	0.00
Dispersion Coefficient (m^2 s-1)	0.65	0.500	0.00	0.433	0.00
Storage Zone Area (m2)	1.01	0.533	0.00	0.467	0.00
Storage Exchange Rate (sec-1)	7.49E-05	0.567	0.54	0.500	0.00
Decay Coefficient Channel	1.66E-05	0.600	0.54	0.533	0.00
Decay Coefficient Storage	0.00	0.633	0.54	0.567	0.00
Requested Print Location (m)	5038.00	0.667	0.00	0.600	0.00
Flow Option	Steady	0.700	0.00	0.633	0.00
Flow Interval (hr)	0	0.733	0.00	0.667	0.00
Flowrate at Upstream Boundary (m3 s-1)	1.73E-02	0.767	0.54	0.700	0.00
Lateral Inflow (m3 s-1)	7.48E-07	0.800	0.00	0.733	0.00
Lateral Outflow (m3 s-1)	0	0.833	0.00	0.767	0.00
Cross-sectional Area (m2)	0.14	0.867	0.00	0.800	0.00
Lateral Inflow Concentration (mg L-1)	0	0.900	0.54	0.833	0.00
Number of Upstream Boundary Conditions	534	0.933	0.54	0.867	0.00
Boundary Condition Option	3	0.967	0.00	0.900	0.00
Number of Observed Concentration Data	1372	1.000	0.54	0.933	0.00
		1.033	0.54	0.967	0.00
		1.067	0.00	1.000	0.00
		1.100	0.00	1.033	0.00
		1.133	0.54	1.067	0.75
		1.167	0.00	1.100	0.00
		1.200	0.54	1.133	0.00
		1.233	0.54	1.167	0.00
		1.267	0.00	1.200	0.00
		1.300	0.00	1.233	0.00
		1.333	0.00	1.267	0.00
		1.367	0.54	1.300	0.00
		1.400	0.54	1.333	0.00
		1.433	0.54	1.367	0.00

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
1.500	0.00	1.433	0.00	3.100	0.00	3.033	0.00
1.533	0.54	1.467	0.00	3.133	0.54	3.067	0.00
1.567	0.54	1.500	0.00	3.167	0.00	3.100	0.00
1.600	0.00	1.533	0.00	3.200	0.54	3.133	0.00
1.633	0.54	1.567	0.00	3.233	0.54	3.167	0.00
1.667	0.00	1.600	0.00	3.267	0.00	3.200	0.75
1.700	0.54	1.633	0.00	3.300	0.00	3.233	0.00
1.733	0.54	1.667	0.00	3.333	0.54	3.267	0.00
1.767	0.00	1.700	0.00	3.367	0.54	3.300	0.75
1.800	0.00	1.733	0.00	3.400	0.00	3.333	0.00
1.833	0.54	1.767	0.00	3.433	0.00	3.367	0.00
1.867	0.54	1.800	0.00	3.467	0.00	3.400	0.00
1.900	0.54	1.833	0.00	3.500	0.00	3.433	0.75
1.933	0.54	1.867	0.00	3.533	0.00	3.467	0.00
1.967	0.00	1.900	0.00	3.567	0.00	3.500	0.00
2.000	0.00	1.933	0.00	3.600	0.00	3.533	0.00
2.033	0.00	1.967	0.00	3.633	0.00	3.567	0.00
2.067	0.00	2.000	0.00	3.667	0.00	3.600	0.00
2.100	0.00	2.033	0.00	3.700	0.00	3.633	0.00
2.133	0.00	2.067	0.00	3.733	0.00	3.667	0.00
2.167	0.54	2.100	0.00	3.767	0.00	3.700	0.00
2.200	0.00	2.133	0.00	3.800	0.00	3.733	0.00
2.233	0.00	2.167	0.00	3.833	0.00	3.767	0.00
2.267	0.00	2.200	0.00	3.867	0.00	3.800	0.75
2.300	0.54	2.233	0.00	3.900	0.00	3.833	0.00
2.333	0.54	2.267	0.75	3.933	0.00	3.867	0.00
2.367	0.54	2.300	0.00	3.967	0.00	3.900	0.75
2.400	0.54	2.333	0.00	4.000	0.00	3.933	0.00
2.433	0.54	2.367	0.00	4.033	0.54	3.967	0.00
2.467	0.00	2.400	0.00	4.067	0.54	4.000	0.00
2.500	0.00	2.433	0.00	4.100	0.54	4.033	0.00
2.533	0.00	2.467	0.00	4.133	0.54	4.067	0.00
2.567	0.00	2.500	0.00	4.167	0.54	4.100	0.00
2.600	0.00	2.533	0.00	4.200	0.54	4.133	0.00
2.633	0.00	2.567	0.00	4.233	0.54	4.167	0.75
2.667	0.54	2.600	0.75	4.267	0.54	4.200	0.00
2.700	0.54	2.633	0.00	4.300	0.54	4.233	0.00
2.733	0.00	2.667	0.00	4.333	0.54	4.267	0.75
2.767	0.00	2.700	0.00	4.367	0.54	4.300	0.75
2.800	0.54	2.733	0.00	4.400	0.54	4.333	0.00
2.833	0.00	2.767	0.00	4.433	0.54	4.367	0.00
2.867	0.54	2.800	0.75	4.467	0.54	4.400	0.00
2.900	0.00	2.833	0.75	4.500	0.54	4.433	0.75
2.933	0.54	2.867	0.00	4.533	0.54	4.467	0.00
2.967	0.54	2.900	0.00	4.567	0.54	4.500	0.75
3.000	0.54	2.933	0.00	4.600	0.54	4.533	0.00
3.033	0.54	2.967	0.00	4.633	0.54	4.567	0.75

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
4.700	0.54	4.633	0.75	6.400	94.76	6.333	0.00
4.733	0.54	4.667	0.75	6.433	90.45	6.367	0.00
4.833	0.54	4.767	0.00	6.467	87.22	6.400	0.00
4.867	1.60	4.800	0.75	6.500	82.91	6.433	0.75
4.900	1.60	4.833	0.75	6.533	79.68	6.467	0.75
4.933	1.60	4.867	0.00	6.567	75.37	6.500	0.00
4.967	1.60	4.900	0.00	6.600	72.14	6.533	0.00
5.000	2.66	4.933	0.00	6.633	68.92	6.567	0.75
5.033	2.66	4.967	0.75	6.667	65.69	6.600	0.00
5.067	3.72	5.000	0.75	6.700	62.47	6.633	0.00
5.100	5.85	5.033	0.00	6.733	60.33	6.667	0.00
5.133	6.91	5.067	0.00	6.767	57.11	6.700	0.00
5.167	9.04	5.100	0.00	6.800	53.89	6.733	0.75
5.200	11.16	5.133	0.00	6.833	51.75	6.767	0.00
5.233	14.36	5.167	0.75	6.867	49.60	6.800	0.00
5.267	18.62	5.200	0.75	6.900	47.46	6.833	0.00
5.300	22.88	5.233	0.00	6.933	45.32	6.867	0.00
5.333	27.15	5.267	0.75	6.967	43.18	6.900	0.75
5.367	33.55	5.300	0.75	7.000	41.04	6.933	0.00
5.400	39.97	5.333	0.00	7.033	39.97	6.967	0.00
5.433	47.46	5.367	0.75	7.067	37.83	7.000	0.00
5.467	54.96	5.400	0.00	7.100	36.76	7.033	0.00
5.500	62.47	5.433	0.00	7.133	34.62	7.067	0.75
5.533	71.07	5.467	0.75	7.167	33.55	7.100	0.00
5.567	79.68	5.500	0.00	7.200	31.42	7.133	0.00
5.600	87.22	5.533	0.00	7.233	30.35	7.167	0.00
5.633	94.76	5.567	0.00	7.267	29.28	7.200	0.00
5.667	103.40	5.600	0.75	7.300	28.21	7.233	0.00
5.700	109.88	5.633	0.75	7.333	27.15	7.267	0.75
5.733	116.37	5.667	0.00	7.367	26.08	7.300	0.00
5.767	121.78	5.700	0.00	7.400	25.01	7.333	0.00
5.800	127.20	5.733	0.00	7.433	23.95	7.367	0.00
5.833	130.45	5.767	0.75	7.467	23.95	7.400	0.00
5.867	133.70	5.800	0.00	7.500	21.81	7.433	0.00
5.900	135.87	5.833	0.00	7.533	21.81	7.467	0.75
5.933	135.87	5.867	0.00	7.567	20.75	7.500	0.00
5.967	136.96	5.900	0.75	7.600	19.68	7.533	0.75
6.000	135.87	5.933	0.00	7.633	19.68	7.567	0.00
6.033	134.79	5.967	0.00	7.667	18.62	7.600	0.00
6.067	132.62	6.000	0.00	7.700	17.55	7.633	0.00
6.100	129.37	6.033	0.00	7.733	17.55	7.667	0.00
6.133	127.20	6.067	0.00	7.767	16.49	7.700	0.00
6.167	123.95	6.100	0.00	7.800	16.49	7.733	0.00
6.200	119.62	6.133	0.00	7.833	15.42	7.767	0.00
6.233	116.37	6.167	0.00	7.867	15.42	7.800	0.00
6.267	112.05	6.200	0.00	7.900	15.42	7.833	0.00
6.300	107.72	6.233	0.00	7.933	15.42	7.867	0.00

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
8.033	13.29	7.967	0.00	9.633	5.85	9.567	0.00
8.067	13.29	8.000	0.00	9.667	4.79	9.600	0.00
8.100	13.29	8.033	0.00	9.700	5.85	9.633	0.00
8.133	12.23	8.067	0.00	9.733	4.79	9.667	0.00
8.167	12.23	8.100	0.00	9.767	4.79	9.700	0.00
8.200	12.23	8.133	0.00	9.800	4.79	9.733	0.00
8.233	11.16	8.167	0.00	9.833	4.79	9.767	0.00
8.267	11.16	8.200	0.00	9.867	4.79	9.800	0.00
8.300	11.16	8.233	0.00	9.900	4.79	9.833	0.00
8.333	11.16	8.267	0.00	9.933	4.79	9.867	0.00
8.367	11.16	8.300	0.00	9.967	4.79	9.900	0.00
8.400	10.10	8.333	0.00	10.000	4.79	9.933	0.00
8.433	10.10	8.367	0.00	10.033	4.79	9.967	0.00
8.467	10.10	8.400	0.00	10.067	4.79	10.000	0.00
8.500	10.10	8.433	0.00	10.100	4.79	10.033	0.00
8.533	10.10	8.467	0.00	10.133	4.79	10.067	0.00
8.567	9.04	8.500	0.00	10.167	4.79	10.100	0.00
8.600	9.04	8.533	0.00	10.200	4.79	10.133	0.00
8.633	9.04	8.567	0.00	10.233	4.79	10.167	0.00
8.667	9.04	8.600	0.00	10.267	3.72	10.200	0.00
8.700	9.04	8.633	0.00	10.300	4.79	10.233	0.00
8.733	9.04	8.667	0.00	10.333	3.72	10.267	0.00
8.767	7.97	8.700	0.00	10.367	4.79	10.300	0.00
8.800	7.97	8.733	0.00	10.400	4.79	10.333	0.00
8.833	7.97	8.767	0.00	10.433	3.72	10.367	0.00
8.867	7.97	8.800	0.00	10.467	3.72	10.400	0.00
8.900	7.97	8.833	0.00	10.500	3.72	10.433	0.00
8.933	7.97	8.867	0.00	10.533	3.72	10.467	0.00
8.967	7.97	8.900	0.00	10.567	3.72	10.500	0.00
9.000	6.91	8.933	0.00	10.600	3.72	10.533	0.00
9.033	6.91	8.967	0.00	10.633	3.72	10.567	0.00
9.067	6.91	9.000	0.00	10.667	3.72	10.600	0.00
9.100	6.91	9.033	0.00	10.700	3.72	10.633	0.00
9.133	6.91	9.067	0.00	10.733	3.72	10.667	0.00
9.167	6.91	9.100	0.00	10.767	3.72	10.700	0.00
9.200	6.91	9.133	0.00	10.800	3.72	10.733	0.00
9.233	5.85	9.167	0.00	10.833	3.72	10.767	0.00
9.267	5.85	9.200	0.00	10.867	3.72	10.800	0.00
9.300	5.85	9.233	0.75	10.900	3.72	10.833	0.00
9.333	5.85	9.267	0.00	10.933	3.72	10.867	0.00
9.367	5.85	9.300	0.00	10.967	3.72	10.900	0.00
9.400	5.85	9.333	0.00	11.000	3.72	10.933	0.00
9.433	5.85	9.367	0.00	11.033	3.72	10.967	0.00
9.467	5.85	9.400	0.00	11.067	3.72	11.000	0.00
9.500	5.85	9.433	0.00	11.100	3.72	11.033	0.00
9.533	5.85	9.467	0.75	11.133	3.72	11.067	0.00
9.567	5.85	9.500	0.00	11.167	3.72	11.100	0.00

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
11.200	2.66	11.133	0.00	12.767	2.66	12.700	10.81
11.233	2.66	11.167	0.00	12.800	2.66	12.733	10.81
11.267	2.66	11.200	0.00	12.833	1.60	12.767	10.81
11.300	3.72	11.233	0.00	12.867	1.60	12.800	9.97
11.333	2.66	11.267	0.00	12.900	1.60	12.833	9.97
11.367	3.72	11.300	0.00	12.933	2.66	12.867	9.97
11.400	3.72	11.333	0.75	12.967	2.66	12.900	9.97
11.433	2.66	11.367	0.00	13.000	1.60	12.933	9.97
11.467	3.72	11.400	0.75	13.033	1.60	12.967	9.13
11.500	3.72	11.433	0.75	13.067	2.66	13.000	9.13
11.533	2.66	11.467	0.75	13.100	1.60	13.033	9.13
11.567	2.66	11.500	0.75	13.133	2.66	13.067	9.13
11.600	2.66	11.533	1.58	13.167	1.60	13.100	8.29
11.633	2.66	11.567	1.58	13.200	2.66	13.133	8.29
11.667	2.66	11.600	1.58	13.233	2.66	13.167	8.29
11.700	2.66	11.633	2.42	13.267	2.66	13.200	8.29
11.733	2.66	11.667	3.25	13.300	2.66	13.233	8.29
11.767	2.66	11.700	3.25	13.333	1.60	13.267	7.45
11.800	2.66	11.733	4.09	13.367	1.60	13.300	7.45
11.833	2.66	11.767	4.09	13.400	1.60	13.333	7.45
11.867	2.66	11.800	4.09	13.433	1.60	13.367	7.45
11.900	2.66	11.833	4.93	13.467	1.60	13.400	6.61
11.933	2.66	11.867	4.93	13.500	1.60	13.433	6.61
11.967	2.66	11.900	5.77	13.533	1.60	13.467	6.61
12.000	2.66	11.933	6.61	13.567	1.60	13.500	6.61
12.033	2.66	11.967	6.61	13.600	1.60	13.533	5.77
12.067	2.66	12.000	7.45	13.633	1.60	13.567	5.77
12.100	2.66	12.033	7.45	13.667	1.60	13.600	5.77
12.133	2.66	12.067	8.29	13.700	1.60	13.633	5.77
12.167	2.66	12.100	8.29	13.733	1.60	13.667	4.93
12.200	2.66	12.133	9.13	13.767	1.60	13.700	4.93
12.233	2.66	12.167	9.13	13.800	1.60	13.733	4.93
12.267	2.66	12.200	9.13	13.833	1.60	13.767	4.93
12.300	2.66	12.233	9.97	13.867	1.60	13.800	4.93
12.333	2.66	12.267	9.97	13.900	1.60	13.833	4.93
12.367	2.66	12.300	10.81	13.933	1.60	13.867	4.93
12.400	2.66	12.333	10.81	13.967	1.60	13.900	4.09
12.433	2.66	12.367	10.81	14.000	1.60	13.933	4.09
12.467	2.66	12.400	10.81	14.033	1.60	13.967	4.09
12.500	2.66	12.433	10.81	14.067	1.60	14.000	4.09
12.533	2.66	12.467	10.81	14.100	1.60	14.033	4.09
12.567	2.66	12.500	10.81	14.133	1.60	14.067	4.09
12.600	2.66	12.533	10.81	14.167	1.60	14.100	4.09
12.633	1.60	12.567	11.65	14.200	1.60	14.133	3.25
12.667	1.60	12.600	10.81	14.233	1.60	14.167	4.93
12.700	2.66	12.633	10.81	14.267	1.60	14.200	3.25
12.733	1.60	12.667	10.81	14.300	1.60	14.233	3.25

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
14.333	1.60	14.267	3.25	15.867	1.60	15.833	1.58
14.367	1.60	14.300	3.25	15.900	1.60	15.867	1.58
14.400	1.60	14.333	3.25	15.933	1.60	15.900	1.58
14.433	1.60	14.367	3.25	15.967	1.60	15.933	1.58
14.467	1.60	14.400	3.25	16.000	1.60	15.967	1.58
14.500	1.60	14.433	3.25	16.033	1.60	16.000	1.58
14.533	1.60	14.467	3.25	16.067	1.60	16.033	1.58
14.567	1.60	14.500	3.25	16.100	1.60	16.067	1.58
14.600	1.60	14.533	2.42	16.133	1.60	16.100	1.58
14.633	1.60	14.567	2.42	16.167	1.60	16.133	1.58
14.667	1.60	14.600	2.42	16.200	1.60	16.167	1.58
14.700	1.60	14.633	2.42	16.233	1.60	16.200	1.58
14.733	1.60	14.667	2.42	16.267	1.60	16.233	1.58
		14.700	2.42	16.300	1.60	16.267	1.58
14.767	1.60	14.733	2.42	16.333	1.60	16.300	1.58
14.800	1.60	14.767	2.42	16.367	1.60	16.333	1.58
14.833	1.60	14.800	2.42	16.400	1.60	16.367	1.58
14.867	1.60	14.833	2.42	16.433	1.60	16.400	1.58
14.900	1.60	14.867	2.42	16.467	1.60	16.433	1.58
14.933	1.60	14.900	2.42	16.500	1.60	16.467	0.75
14.967	1.60	14.933	2.42	16.533	1.60	16.500	1.58
15.000	1.60	14.967	2.42	16.567	1.60	16.533	1.58
15.033	1.60	15.000	2.42	16.600	1.60	16.567	1.58
15.067	1.60	15.033	2.42	16.633	1.60	16.600	1.58
15.100	1.60	15.067	2.42	16.667	1.60	16.633	1.58
15.133	1.60	15.100	2.42	16.700	1.60	16.667	1.58
15.167	1.60	15.133	1.58	16.733	1.60	16.700	1.58
15.200	1.60	15.167	2.42	16.767	0.54	16.733	1.58
15.233	1.60	15.200	2.42	16.800	0.54	16.767	1.58
15.267	1.60	15.233	2.42	16.833	1.60	16.800	1.58
15.300	1.60	15.267	1.58	16.867	1.60	16.833	1.58
15.333	1.60	15.300	1.58	16.900	1.60	16.867	0.75
15.367	1.60	15.333	2.42	16.933	1.60	16.900	1.58
15.400	1.60	15.367	2.42	16.967	1.60	16.933	1.58
15.433	1.60	15.400	1.58	17.000	1.60	16.967	1.58
15.467	1.60	15.433	1.58	17.033	0.54	17.000	1.58
15.500	1.60	15.467	2.42	17.067	1.60	17.033	1.58
15.533	1.60	15.500	1.58	17.100	1.60	17.067	1.58
15.567	1.60	15.533	1.58	17.133	1.60	17.100	1.58
15.600	1.60	15.567	1.58	17.167	1.60	17.133	1.58
15.633	1.60	15.600	1.58	17.200	1.60	17.167	1.58
15.667	1.60	15.633	1.58	17.233	1.60	17.200	1.58
15.700	1.60	15.667	1.58	17.267	1.60	17.233	0.75
15.733	1.60	15.700	1.58	17.300	0.54	17.267	1.58
15.767	1.60	15.733	1.58	17.333	1.60	17.300	1.58
15.800	1.60	15.767	1.58	17.367	1.60	17.333	0.75
15.833	1.60	15.800	1.58	17.400	1.60	17.367	0.75

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
17.433	1.60	17.400	1.58	18.967	1.58	20.533	1.58
17.467	1.60	17.433	0.75	19.000	1.58	20.567	1.58
17.500	1.60	17.467	1.58	19.033	1.58	20.600	1.58
17.533	1.60	17.500	1.58	19.067	1.58	20.633	1.58
17.567	0.54	17.533	1.58	19.100	1.58	20.667	1.58
17.600	0.54	17.567	1.58	19.133	1.58	20.700	1.58
17.633	1.60	17.600	1.58	19.167	1.58	20.733	1.58
17.667	0.54	17.633	0.75	19.200	1.58	20.767	1.58
17.700	1.60	17.667	1.58	19.233	1.58	20.800	1.58
17.733	1.60	17.700	1.58	19.267	1.58	20.833	1.58
17.767	0.54	17.733	0.75	19.300	1.58	20.867	1.58
17.800	1.60	17.767	1.58	19.333	1.58	20.900	1.58
21.000	0.33	17.800	0.75	19.367	1.58	20.933	1.58
81.100	0.33	17.833	0.75	19.400	1.58	20.967	1.58
		17.867	1.58	19.433	1.58	21.000	1.58
		17.900	0.75	19.467	1.58	21.033	1.58
		17.933	1.58	19.500	1.58	21.067	1.58
		17.967	1.58	19.533	0.75	21.100	1.58
		18.000	0.75	19.567	1.58	21.133	1.58
		18.033	1.58	19.600	1.58	21.167	1.58
		18.067	1.58	19.633	1.58	21.200	1.58
		18.100	1.58	19.667	1.58	21.233	1.58
		18.133	0.75	19.700	0.75	21.267	1.58
		18.167	1.58	19.733	1.58	21.300	1.58
		18.200	1.58	19.767	1.58	21.333	1.58
		18.233	1.58	19.800	1.58	21.367	1.58
		18.267	0.75	19.833	1.58	21.400	1.58
		18.300	1.58	19.867	1.58	21.433	1.58
		18.333	1.58	19.900	1.58	21.467	1.58
		18.367	1.58	19.933	1.58	21.500	1.58
		18.400	1.58	19.967	1.58	21.533	1.58
		18.433	0.75	20.000	1.58	21.567	1.58
		18.467	0.75	20.033	1.58	21.600	1.58
		18.500	1.58	20.067	1.58	21.633	1.58
		18.533	1.58	20.100	0.75	21.667	1.58
		18.567	0.75	20.133	1.58	21.700	1.58
		18.600	1.58	20.167	1.58	21.733	1.58
		18.633	1.58	20.200	1.58	21.767	1.58
		18.667	0.75	20.233	1.58	21.800	1.58
		18.700	1.58	20.267	1.58	21.833	1.58
		18.733	1.58	20.300	1.58	21.867	1.58
		18.767	1.58	20.333	1.58	21.900	1.58
		18.800	1.58	20.367	1.58	21.933	1.58
		18.833	0.75	20.400	1.58	21.967	1.58
		18.867	0.75	20.433	1.58	22.000	1.58
		18.900	0.75	20.467	1.58	22.033	1.58
		18.933	0.75	20.500	1.58	22.067	1.58

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
22.100	1.58	23.700	1.58	25.267	1.58	26.833	1.58
22.133	1.58	23.733	1.58	25.300	1.58	26.867	2.42
22.167	1.58	23.767	1.58	25.333	1.58	26.900	1.58
22.233	1.58	23.800	1.58	25.367	2.42	26.933	1.58
22.267	1.58	23.833	1.58	25.400	1.58	26.967	1.58
22.300	1.58	23.867	1.58	25.433	1.58	27.000	2.42
22.333	1.58	23.900	1.58	25.467	1.58	27.033	1.58
22.367	1.58	23.933	1.58	25.500	1.58	27.067	1.58
22.400	1.58	23.967	1.58	25.533	2.42	27.100	1.58
22.433	1.58	24.000	1.58	25.567	1.58	27.133	2.42
22.467	1.58	24.033	1.58	25.600	1.58	27.167	1.58
22.500	1.58	24.067	1.58	25.633	1.58	27.200	2.42
22.533	1.58	24.100	1.58	25.667	2.42	27.233	1.58
22.567	1.58	24.133	1.58	25.700	1.58	27.267	2.42
22.600	1.58	24.167	1.58	25.733	1.58	27.300	1.58
22.633	1.58	24.200	1.58	25.767	1.58	27.333	2.42
22.667	1.58	24.233	1.58	25.800	1.58	27.367	2.42
22.700	1.58	24.267	1.58	25.833	2.42	27.400	1.58
22.733	1.58	24.300	1.58	25.867	1.58	27.433	1.58
22.767	1.58	24.333	1.58	25.900	1.58	27.467	1.58
22.800	1.58	24.367	1.58	25.933	2.42	27.500	1.58
22.833	1.58	24.400	1.58	25.967	1.58	27.533	2.42
22.867	1.58	24.433	1.58	26.000	2.42	27.567	2.42
22.900	1.58	24.467	1.58	26.033	1.58	27.600	1.58
22.933	1.58	24.500	1.58	26.067	1.58	27.633	1.58
22.967	2.42	24.533	1.58	26.100	1.58	27.667	1.58
23.000	1.58	24.567	1.58	26.133	2.42	27.700	1.58
23.033	1.58	24.600	1.58	26.167	1.58	27.733	1.58
23.067	1.58	24.633	2.42	26.200	1.58	27.767	1.58
23.100	1.58	24.667	1.58	26.233	1.58	27.800	1.58
23.133	1.58	24.700	1.58	26.267	1.58	27.833	1.58
23.167	1.58	24.733	1.58	26.300	1.58	27.867	1.58
23.200	1.58	24.767	1.58	26.333	1.58	27.900	1.58
23.233	1.58	24.800	1.58	26.367	2.42	27.933	1.58
23.267	1.58	24.833	1.58	26.400	1.58	27.967	2.42
23.300	1.58	24.867	1.58	26.433	1.58	28.000	1.58
23.333	1.58	24.900	1.58	26.467	2.42	28.033	1.58
23.367	1.58	24.933	1.58	26.500	1.58	28.067	2.42
23.400	1.58	24.967	1.58	26.533	2.42	28.100	1.58
23.433	1.58	25.000	1.58	26.567	1.58	28.133	1.58
23.467	1.58	25.033	1.58	26.600	1.58	28.167	1.58
23.500	1.58	25.067	1.58	26.633	1.58	28.200	1.58
23.533	1.58	25.100	1.58	26.667	1.58	28.233	1.58
23.567	1.58	25.133	1.58	26.700	2.42	28.267	2.42
23.600	1.58	25.167	1.58	26.733	1.58	28.300	1.58
23.633	1.58	25.200	1.58	26.767	2.42	28.333	1.58
23.667	1.58	25.233	1.58	26.800	1.58	28.367	2.42

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
28.400	1.58	29.867	1.58	31.333	1.58	32.800	1.58
28.433	1.58	29.900	1.58	31.367	1.58	32.833	1.58
28.467	1.58	29.933	1.58	31.400	1.58	32.867	1.58
28.500	1.58	29.967	1.58	31.433	1.58	32.900	1.58
28.533	1.58	30.000	1.58	31.467	1.58	32.933	1.58
28.567	1.58	30.033	1.58	31.500	1.58	32.967	1.58
28.600	1.58	30.067	1.58	31.533	1.58	33.000	1.58
28.633	1.58	30.100	1.58	31.567	1.58	33.033	1.58
28.667	1.58	30.133	1.58	31.600	1.58	33.067	1.58
28.700	1.58	30.167	2.42	31.633	1.58	33.100	1.58
28.733	1.58	30.200	1.58	31.667	1.58	33.133	1.58
28.767	1.58	30.233	1.58	31.700	1.58	33.167	1.58
28.800	1.58	30.267	1.58	31.733	1.58	33.200	1.58
28.833	1.58	30.300	1.58	31.767	1.58	33.233	1.58
28.867	1.58	30.333	1.58	31.800	1.58	33.267	1.58
28.900	1.58	30.367	1.58	31.833	1.58	33.300	1.58
28.933	1.58	30.400	1.58	31.867	1.58	33.333	1.58
28.967	1.58	30.433	1.58	31.900	1.58	33.367	1.58
29.000	1.58	30.467	1.58	31.933	1.58	33.400	1.58
29.033	1.58	30.500	1.58	31.967	1.58	33.433	1.58
29.067	1.58	30.533	1.58	32.000	1.58	33.467	1.58
29.100	1.58	30.567	1.58	32.033	1.58	33.500	1.58
29.133	1.58	30.600	1.58	32.067	1.58	33.533	1.58
29.167	1.58	30.633	1.58	32.100	1.58	33.567	0.75
29.200	1.58	30.667	1.58	32.133	1.58	33.600	1.58
29.233	1.58	30.700	1.58	32.167	1.58	33.634	1.58
29.267	1.58	30.733	1.58	32.200	1.58	33.667	1.58
29.300	1.58	30.767	1.58	32.233	1.58	33.700	1.58
29.333	1.58	30.800	1.58	32.267	1.58	33.734	1.58
29.367	1.58	30.833	1.58	32.300	1.58	33.767	1.58
29.400	1.58	30.867	1.58	32.333	1.58	33.800	1.58
29.433	1.58	30.900	1.58	32.367	1.58	33.834	1.58
29.467	1.58	30.933	1.58	32.400	1.58	33.867	1.58
29.500	1.58	30.967	1.58	32.433	1.58	33.900	1.58
29.533	1.58	31.000	1.58	32.467	1.58	33.934	0.75
29.567	1.58	31.033	1.58	32.500	1.58	33.967	1.58
29.600	1.58	31.067	1.58	32.533	1.58	34.000	1.58
29.633	1.58	31.100	1.58	32.567	1.58	34.034	1.58
29.667	1.58	31.133	1.58	32.600	1.58	34.067	1.58
29.700	1.58	31.167	1.58	32.633	1.58	34.100	0.75
29.733	1.58	31.200	1.58	32.667	1.58	34.134	1.58
29.767	1.58	31.233	1.58	32.700	1.58	34.167	1.58
29.800	1.58	31.267	1.58	32.733	1.58	34.200	1.58
29.833	1.58	31.300	1.58	32.767	1.58	34.234	1.58
						34.267	1.58
						34.300	1.58
						34.334	1.58

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
34.367	1.58	35.967	0.75	37.534	0.75	39.100	0.75
34.400	1.58	36.000	0.75	37.567	0.75	39.134	0.75
34.434	1.58	36.034	0.75	37.600	0.75	39.167	0.75
34.467	1.58	36.067	0.75	37.634	0.75	39.200	0.75
34.500	1.58	36.100	0.75	37.667	0.75	39.234	0.75
34.534	1.58	36.134	1.58	37.700	0.75	39.267	0.75
34.567	1.58	36.167	1.58	37.734	0.75	39.300	0.75
34.600	1.58	36.200	0.75	37.767	0.75	39.334	0.75
34.634	1.58	36.234	1.58	37.800	0.75	39.367	0.75
34.667	1.58	36.267	1.58	37.834	0.75	39.400	0.75
34.700	1.58	36.300	1.58	37.867	1.58	39.434	0.75
34.734	0.75	36.334	0.75	37.900	0.75	39.467	0.75
34.767	0.75	36.367	0.75	37.934	1.58	39.500	0.75
34.800	1.58	36.400	0.75	37.967	0.75	39.534	0.75
34.834	1.58	36.434	0.75	38.000	0.75	39.567	0.75
34.867	1.58	36.467	0.75	38.034	0.75	39.600	0.75
34.900	0.75	36.500	0.75	38.067	0.75	39.634	0.75
34.934	1.58	36.534	0.75	38.100	0.75	39.667	0.75
34.967	0.75	36.567	1.58	38.134	0.75	39.700	0.75
35.000	0.75	36.600	1.58	38.167	0.75	39.734	0.75
35.034	1.58	36.634	0.75	38.200	0.75	39.767	0.75
35.067	0.75	36.667	0.75	38.234	0.75	39.800	0.75
35.100	1.58	36.700	0.75	38.267	0.75	39.834	0.75
35.134	0.75	36.734	0.75	38.300	0.75	39.867	0.75
35.167	1.58	36.767	0.75	38.334	0.75	39.900	0.75
35.200	1.58	36.800	0.75	38.367	0.75	39.934	0.75
35.234	0.75	36.834	0.75	38.400	0.75	39.967	1.58
35.267	0.75	36.867	0.75	38.434	0.75	40.000	0.75
35.300	1.58	36.900	0.75	38.467	0.75	40.034	0.75
35.334	1.58	36.934	0.75	38.500	0.75	40.067	0.75
35.367	0.75	36.967	0.75	38.534	0.75	40.100	0.75
35.400	1.58	37.000	0.75	38.567	0.75	40.134	0.75
35.434	1.58	37.034	0.75	38.600	0.75	40.167	0.75
35.467	1.58	37.067	0.75	38.634	0.75	40.200	0.75
35.500	0.75	37.100	1.58	38.667	1.58	40.234	0.75
35.534	1.58	37.134	0.75	38.700	0.75	40.267	0.75
35.567	0.75	37.167	0.75	38.734	0.75	40.300	0.75
35.600	0.75	37.200	0.75	38.767	0.75	40.334	0.75
35.634	0.75	37.234	0.75	38.800	0.75	40.367	0.75
35.667	0.75	37.267	0.75	38.834	0.75	40.400	0.75
35.700	0.75	37.300	0.75	38.867	0.75	40.434	0.75
35.734	1.58	37.334	0.75	38.900	0.75	40.467	0.75
35.767	0.75	37.367	0.75	38.934	0.75	40.500	0.75
35.800	1.58	37.400	0.75	38.967	0.75	40.534	0.75
35.834	0.75	37.434	0.75	39.000	0.75	40.567	0.75
35.867	0.75	37.467	0.75	39.034	0.75	40.600	0.75
35.900	0.75	37.500	0.75	39.067	0.75	40.634	0.75

OTIS-P input data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.							
Observed Downstream Concentration Data		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
40.667	0.75	42.234	1.58	43.800	1.58	45.367	1.58
40.700	0.75	42.267	1.58	43.834	1.58	45.400	1.58
40.734	0.75	42.300	0.75	43.867	1.58	45.434	1.58
40.767	0.75	42.334	0.75	43.900	1.58	45.467	1.58
40.800	0.75	42.367	0.75	43.934	1.58	45.500	1.58
40.834	0.75	42.400	1.58	43.967	1.58	45.534	1.58
40.867	0.75	42.434	1.58	44.000	1.58	45.567	1.58
40.900	0.75	42.467	0.75	44.034	1.58	45.600	1.58
40.934	0.75	42.500	1.58	44.067	1.58	45.634	1.58
40.967	0.75	42.534	1.58	44.100	1.58	45.667	1.58
41.000	0.75	42.567	1.58	44.134	1.58	45.700	1.58
41.034	0.75	42.600	0.75	44.167	1.58	45.734	1.58
41.067	0.75	42.634	0.75	44.200	1.58	45.767	1.58
41.100	0.75	42.667	1.58	44.234	1.58	45.800	1.58
41.134	0.75	42.700	1.58	44.267	1.58	45.834	1.58
41.167	0.75	42.734	1.58	44.300	1.58		
41.200	1.58	42.767	1.58	44.334	1.58		
41.234	0.75	42.800	1.58	44.367	1.58		
41.267	0.75	42.834	1.58	44.400	1.58		
41.300	0.75	42.867	1.58	44.434	1.58		
41.334	0.75	42.900	1.58	44.467	1.58		
41.367	0.75	42.934	1.58	44.500	1.58		
41.400	0.75	42.967	1.58	44.534	1.58		
41.434	1.58	43.000	1.58	44.567	1.58		
41.467	0.75	43.034	1.58	44.600	1.58		
41.500	0.75	43.067	1.58	44.634	1.58		
41.534	0.75	43.100	1.58	44.667	1.58		
41.567	0.75	43.134	1.58	44.700	1.58		
41.600	0.75	43.167	1.58	44.734	1.58		
41.634	0.75	43.200	1.58	44.767	1.58		
41.667	0.75	43.234	1.58	44.800	1.58		
41.700	0.75	43.267	1.58	44.834	1.58		
41.734	1.58	43.300	1.58	44.867	1.58		
41.767	0.75	43.334	1.58	44.900	1.58		
41.800	0.75	43.367	1.58	44.934	1.58		
41.834	0.75	43.400	1.58	44.967	1.58		
41.867	0.75	43.434	1.58	45.000	1.58		
41.900	0.75	43.467	1.58	45.034	1.58		
41.934	0.75	43.500	1.58	45.067	1.58		
41.967	0.75	43.534	1.58	45.100	1.58		
42.000	0.75	43.567	1.58	45.134	1.58		
42.034	1.58	43.600	1.58	45.167	1.58		
42.067	1.58	43.634	1.58	45.200	1.58		
42.100	0.75	43.667	1.58	45.234	1.58		
42.134	1.58	43.700	1.58	45.267	1.58		
42.167	0.75	43.734	1.58	45.300	1.58		
42.200	0.75	43.767	1.58	45.334	1.58		

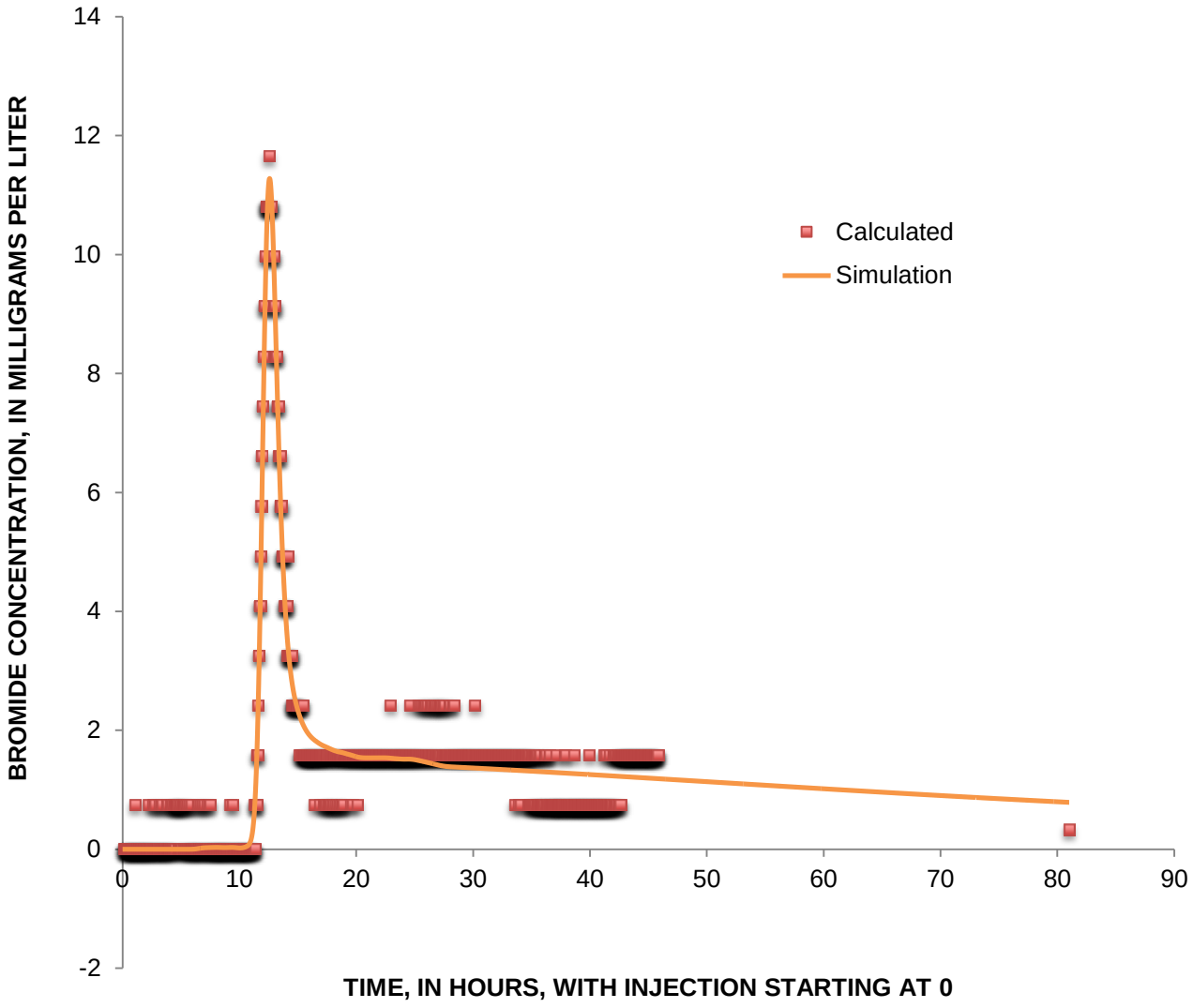

Figure D.4 OTIS-P output data for Reach 2 (2.01-5.04 km) calculated bromide concentrations.

Table D.5 OTIS-P input data for Reach 3 (5.04-5.13 km) measured bromide concentrations.

Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.01	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.01	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0.0	0.0	0.33	11.5	0.52
Ending Time (hr)	81.0	11.0	0.34	11.8	1.63
Starting Distance (m)	5039.0	11.3	0.58	12.2	4.87
Downstream Boundary Condition (mg L-1)	0.0	11.7	2.21	12.5	8.26
Simulation Type	Dynamic	12.0	6.50	12.8	10.44
Number of Reaches	1	12.3	10.6	13.2	9.81
End Distance (m)	5329.0	12.7	12.6	13.5	8.51
Number of Spatial Segments	290	13.0	11.1	13.8	6.30
Reach Length (m)	290.0	13.3	9.22	14.2	5.04
Dispersion Coefficient (m^2 s-1)	1.38	13.7	6.98	14.5	4.27
Storage Zone Area (m2)	0.016	14.0	6.10	14.8	3.58
Storage Exchange Rate (sec-1)	0	14.3	4.72	15.2	3.13
Decay Coefficient Channel	0	14.7	3.96	15.5	2.84
Decay Coefficient Storage	0	15.0	3.48	15.8	2.58
Requested Print Location (m)	5128.0	15.3	3.13	16.2	2.34
Flow Option	Steady	15.7	2.83	16.5	2.25
Flow Interval (hr)	0	16.0	2.68	16.8	2.17
Flowrate at Upstream Boundary (m3 s-1)	1.95E-02	16.3	2.49	17.2	2.08
Lateral Inflow (m3 s-1)	3.78E-05	16.7	2.42	17.5	2.05
Lateral Outflow (m3 s-1)	0	17.0	2.38	17.8	2.04
Cross-sectional Area (m2)	0.22	17.3	2.29	18.2	2.01
Lateral Inflow Concentration (mg L-1)	0	17.7	2.30	18.5	2.03
Number of Upstream Boundary Conditions	51	18.0	2.27	18.8	2.06
Boundary Condition Option	3	18.3	2.30	19.2	2.04
Number of Observed Concentration Data	49	18.7	2.28	19.5	2.03
		19.0	2.18	20.0	2.05
		19.5	2.35	20.5	2.04
		20.0	2.24	21.0	2.08
		20.5	2.22	21.5	2.09
		21.0	2.20	22.0	2.05
		21.5	2.19	22.5	2.11
		22.0	2.37	23.0	2.11
		22.5	2.41	23.5	2.10
		23.0	2.38	24.0	2.07
		23.5	2.23	24.5	2.08
		24.0	2.21	25.0	2.05
		24.5	2.32	25.5	2.03
		25.0	2.25	26.0	2.04
		25.5	2.21	26.5	1.98
		26.0	2.22	27.0	1.99
		26.5	2.19	27.5	1.95

		Upstream Boundary Conditions		Observed Downstream Concentration Data	
		27.0	2.14	28.0	1.95
		27.5	2.15	28.5	1.95
		28.0	2.14	29.0	1.91
		28.5	2.10	29.5	1.86
		29.0	2.05	30.0	1.83
		29.5	2.06	30.5	1.88
		30.0	2.04	31.0	1.85
		30.5	2.06		
		42.0	1.62		
		81.0	0.33		

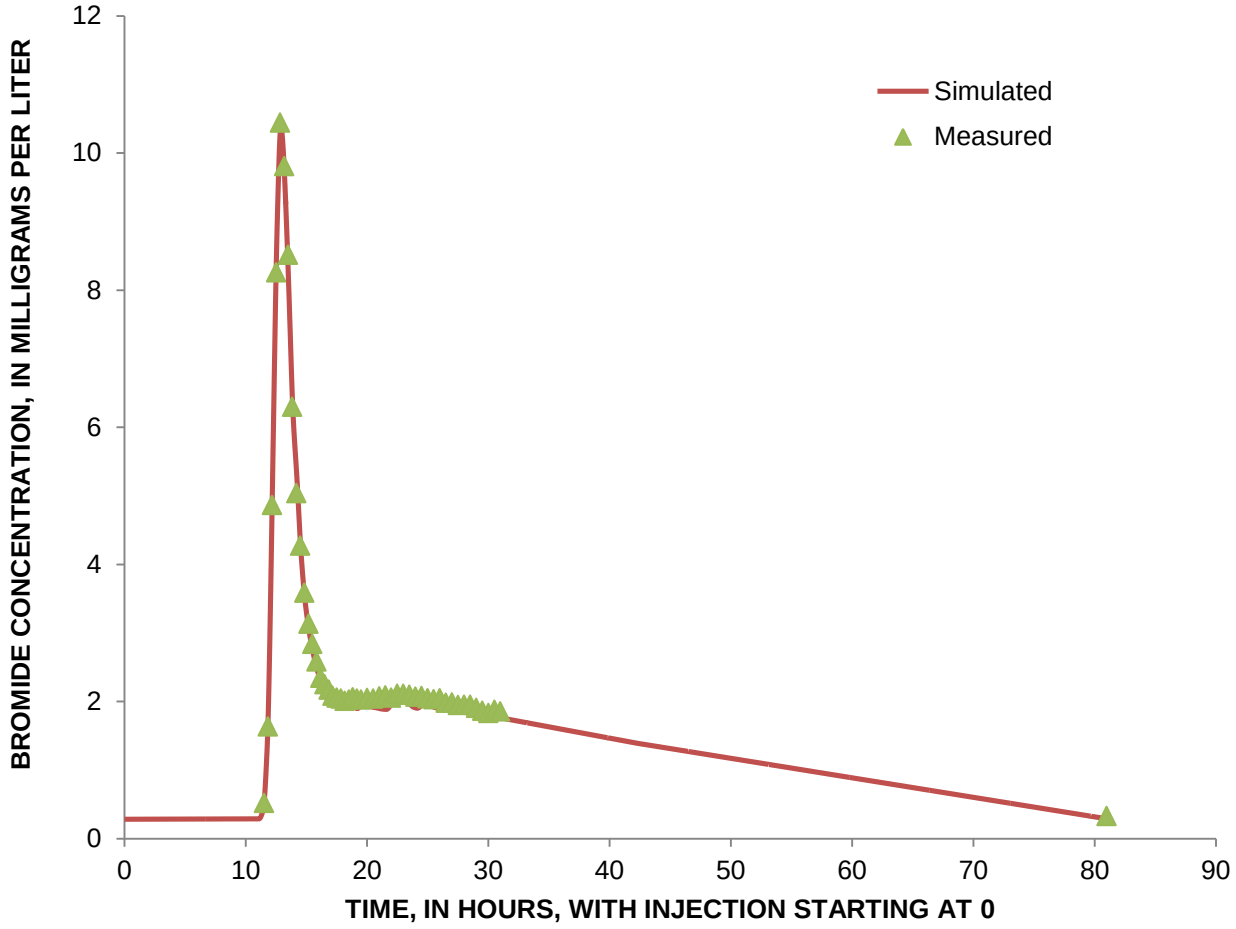

Figure D.5 OTIS-P output data for Reach 3 (5.04-5.13 km) measured bromide concentrations.

Table D.6 OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations).

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.					
Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.01	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.01	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0.0	0.033	0.000	0.500	-0.142
Ending Time (hr)	81.0	0.067	0.000	0.533	-0.142
Starting Distance (m)	5039.0	0.100	0.000	0.567	-0.142
Downstream Boundary Condition (mg L-1)	0.0	0.133	0.000	0.600	-0.142
Simulation Type	Dynamic	0.167	0.000	0.633	-0.142
Number of Reaches	1	0.200	0.000	0.667	-0.142
End Distance (m)	5329.0	0.233	0.000	0.700	-0.142
Number of Spatial Segments	290	0.267	0.000	0.733	-0.142
Reach Length (m)	290.0	0.300	0.000	0.767	-0.142
Dispersion Coefficient (m^2 s-1)	1.603	0.333	0.000	0.800	-0.142
Storage Zone Area (m2)	1	0.367	0.000	0.833	-0.142
Storage Exchange Rate (sec-1)	0	0.400	0.000	0.867	-0.142
Decay Coefficient Channel	0	0.433	0.000	0.900	-0.142
Decay Coefficient Storage	0	0.467	0.000	0.933	-0.142
Requested Print Location (m)	5128.0	0.500	0.000	0.967	-0.142
Flow Option	Steady	0.533	0.000	1.000	-0.142
Flow Interval (hr)	0	0.567	0.000	1.033	-0.142
Flowrate at Upstream Boundary (m3 s-1)	0.0195	0.600	0.026	1.067	-0.142
Lateral Inflow (m3 s-1)	3.78E-05	0.633	0.026	1.100	-0.142
Lateral Outflow (m3 s-1)	0	0.667	0.026	1.133	-0.142
Cross-sectional Area (m2)	0.154	0.700	0.026	1.167	-0.142
Lateral Inflow Concentration (mg L-1)	0	0.733	0.026	1.200	-0.142
Number of Upstream Boundary Conditions	1362	0.767	0.026	1.233	-0.142
Boundary Condition Option	3	0.800	0.026	1.267	-0.142
Number of Observed Concentration Data	1361	0.833	0.026	1.300	-0.142
		0.867	0.026	1.333	-0.142
		0.900	0.026	1.367	-0.142
		0.933	0.026	1.400	-0.142
		0.967	0.026	1.433	-0.142
		1.000	0.026	1.467	-0.142
		1.033	0.026	1.500	-0.142
		1.067	0.026	1.533	-0.142
		1.100	0.026	1.567	-0.142
		1.133	0.026	1.600	-0.142
		1.167	0.026	1.633	-0.142
		1.200	0.026	1.667	-0.142
		1.233	0.026	1.700	-0.142
		1.267	0.026	1.733	-0.142

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
1.300	0.026	1.767	-0.142	2.900	0.131	3.367	-0.142
1.333	0.026	1.800	-0.142	2.933	0.131	3.400	-0.142
1.367	0.026	1.833	-0.142	2.967	0.157	3.433	-0.142
1.400	0.026	1.867	-0.142	3.000	0.157	3.467	-0.142
1.433	0.026	1.900	-0.142	3.033	0.157	3.500	-0.142
1.467	0.026	1.933	-0.142	3.067	0.157	3.533	-0.142
1.500	0.026	1.967	-0.142	3.100	0.157	3.567	-0.142
1.533	0.026	2.000	-0.142	3.133	0.157	3.600	-0.142
1.567	0.026	2.033	-0.142	3.167	0.131	3.633	-0.142
1.600	0.026	2.067	-0.142	3.200	0.131	3.667	-0.142
1.633	0.000	2.100	-0.142	3.233	0.131	3.700	-0.142
1.667	0.000	2.133	-0.142	3.267	0.131	3.733	-0.142
1.700	0.000	2.167	-0.142	3.300	0.131	3.767	-0.142
1.733	0.000	2.200	-0.142	3.333	0.157	3.800	-0.142
1.767	0.000	2.233	-0.142	3.367	0.131	3.833	-0.142
1.800	0.026	2.267	-0.142	3.400	0.104	3.867	-0.142
1.833	0.026	2.300	-0.142	3.433	0.131	3.900	-0.142
1.867	0.026	2.333	-0.142	3.467	0.131	3.933	-0.142
1.900	0.026	2.367	-0.142	3.500	0.131	3.967	-0.142
1.933	0.026	2.400	-0.142	3.533	0.131	4.000	-0.142
1.967	0.026	2.433	-0.142	3.567	0.131	4.033	-0.142
2.000	0.026	2.467	-0.142	3.600	0.131	4.067	-0.142
2.033	0.026	2.500	-0.142	3.633	0.131	4.100	-0.142
2.067	0.026	2.533	-0.142	3.667	0.131	4.133	-0.142
2.100	0.026	2.567	-0.142	3.700	0.157	4.167	-0.142
2.133	0.052	2.600	-0.142	3.733	0.157	4.200	-0.142
2.167	0.052	2.633	-0.142	3.767	0.131	4.233	-0.142
2.200	0.052	2.667	-0.142	3.800	0.157	4.267	-0.142
2.233	0.052	2.700	-0.142	3.833	0.183	4.300	-0.142
2.267	0.052	2.733	-0.142	3.867	0.157	4.333	-0.142
2.300	0.052	2.767	-0.142	3.900	0.157	4.367	-0.142
2.333	0.078	2.800	-0.142	3.933	0.157	4.400	-0.142
2.367	0.104	2.833	-0.142	3.967	0.183	4.433	-0.142
2.400	0.104	2.867	-0.142	4.000	0.157	4.467	-0.142
2.433	0.104	2.900	-0.142	4.033	0.183	4.500	-0.142
2.467	0.104	2.933	-0.142	4.067	0.183	4.533	-0.142
2.500	0.104	2.967	-0.142	4.100	0.209	4.567	-0.142
2.533	0.104	3.000	-0.142	4.133	0.235	4.600	-0.142
2.567	0.104	3.033	-0.142	4.167	0.261	4.633	-0.142
2.600	0.104	3.067	-0.142	4.200	0.287	4.667	-0.142
2.633	0.104	3.100	-0.142	4.233	0.313	4.700	-0.142
2.667	0.104	3.133	-0.142	4.267	0.340	4.733	-0.142
2.700	0.104	3.167	-0.142	4.300	0.340	4.767	-0.142
2.733	0.131	3.200	-0.142	4.333	0.366	4.800	-0.142
2.767	0.131	3.233	-0.142	4.367	0.366	4.833	-0.142
2.800	0.131	3.267	-0.142	4.400	0.366	4.867	-0.142
2.833	0.131	3.300	-0.142	4.433	0.366	4.900	-0.142
2.867	0.131	3.333	-0.142	4.467	0.340	4.933	-0.142

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
4.500	0.366	4.967	-0.142	6.100	0.183	6.567	-0.142
4.533	0.392	5.000	-0.142	6.133	0.183	6.600	-0.142
4.567	0.392	5.033	-0.142	6.167	0.157	6.633	-0.142
4.600	0.392	5.067	-0.142	6.200	0.131	6.667	-0.142
4.633	0.392	5.100	-0.142	6.233	0.131	6.700	-0.142
4.667	0.392	5.133	-0.142	6.267	0.157	6.733	-0.142
4.700	0.418	5.167	-0.142	6.300	0.157	6.767	-0.142
4.733	0.418	5.200	-0.142	6.333	0.131	6.800	-0.142
4.767	0.418	5.233	-0.142	6.367	0.131	6.833	-0.142
4.800	0.444	5.267	-0.142	6.400	0.131	6.867	-0.142
4.833	0.444	5.300	-0.142	6.433	0.157	6.900	-0.142
4.867	0.418	5.333	-0.142	6.467	0.131	6.933	-0.142
4.900	0.444	5.367	-0.142	6.500	0.131	6.967	-0.142
4.933	0.444	5.400	-0.142	6.533	0.131	7.000	-0.142
4.967	0.444	5.433	-0.142	6.567	0.131	7.033	-0.142
5.000	0.444	5.467	-0.142	6.600	0.157	7.067	-0.142
5.033	0.444	5.500	-0.142	6.633	0.157	7.100	-0.142
5.067	0.418	5.533	-0.142	6.667	0.157	7.133	-0.142
5.100	0.418	5.567	-0.142	6.700	0.157	7.167	-0.142
5.133	0.418	5.600	-0.142	6.733	0.157	7.200	-0.142
5.167	0.418	5.633	-0.142	6.767	0.157	7.233	-0.142
5.200	0.392	5.667	-0.142	6.800	0.183	7.267	-0.142
5.233	0.366	5.700	-0.142	6.833	0.183	7.300	-0.142
5.267	0.340	5.733	-0.142	6.867	0.183	7.333	-0.142
5.300	0.340	5.767	-0.142	6.900	0.183	7.367	-0.142
5.333	0.340	5.800	-0.142	6.933	0.183	7.400	-0.142
5.367	0.313	5.833	-0.142	6.967	0.183	7.433	-0.142
5.400	0.287	5.867	-0.142	7.000	0.183	7.467	-0.142
5.433	0.313	5.900	-0.142	7.033	0.157	7.500	-0.142
5.467	0.313	5.933	-0.142	7.067	0.183	7.533	-0.142
5.500	0.313	5.967	-0.142	7.100	0.183	7.567	-0.142
5.533	0.287	6.000	-0.142	7.133	0.157	7.600	-0.142
5.567	0.261	6.033	-0.142	7.167	0.157	7.633	-0.142
5.600	0.261	6.067	-0.142	7.200	0.157	7.667	-0.142
5.633	0.261	6.100	-0.142	7.233	0.157	7.700	-0.142
5.667	0.261	6.133	-0.142	7.267	0.157	7.733	-0.142
5.700	0.261	6.167	-0.142	7.300	0.131	7.767	-0.142
5.733	0.235	6.200	-0.142	7.333	0.131	7.800	-0.142
5.767	0.209	6.233	-0.142	7.367	0.131	7.833	-0.142
5.800	0.209	6.267	-0.142	7.400	0.131	7.867	-0.142
5.833	0.183	6.300	-0.142	7.433	0.131	7.900	-0.142
5.867	0.157	6.333	-0.142	7.467	0.104	7.933	-0.142
5.900	0.157	6.367	-0.142	7.500	0.104	7.967	-0.142
5.933	0.131	6.400	-0.142	7.533	0.104	8.000	-0.142
5.967	0.157	6.433	-0.142	7.567	0.104	8.033	-0.142
6.000	0.183	6.467	-0.142	7.600	0.104	8.067	-0.142
6.033	0.157	6.500	-0.142	7.633	0.078	8.100	-0.142
6.067	0.157	6.533	-0.142	7.667	0.078	8.133	-0.142

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
7.700	0.078	8.167	-0.142	9.300	0.052	9.767	-0.142
7.733	0.078	8.200	-0.142	9.333	0.052	9.800	-0.142
7.767	0.078	8.233	-0.142	9.367	0.052	9.833	-0.142
7.800	0.078	8.267	-0.142	9.400	0.052	9.867	-0.142
7.833	0.052	8.300	-0.142	9.433	0.052	9.900	-0.142
7.867	0.052	8.333	-0.142	9.467	0.052	9.933	-0.142
7.900	0.052	8.367	-0.142	9.500	0.052	9.967	-0.142
7.933	0.052	8.400	-0.142	9.533	0.052	10.000	-0.142
7.967	0.052	8.433	-0.142	9.567	0.052	10.033	-0.142
8.000	0.052	8.467	-0.142	9.600	0.052	10.067	-0.142
8.033	0.026	8.500	-0.142	9.633	0.052	10.100	-0.142
8.067	0.026	8.533	-0.142	9.667	0.052	10.133	-0.142
8.100	0.000	8.567	-0.142	9.700	0.052	10.167	-0.142
8.133	0.000	8.600	-0.142	9.733	0.052	10.200	-0.142
8.167	0.000	8.633	-0.142	9.767	0.052	10.233	-0.142
8.200	0.000	8.667	-0.142	9.800	0.026	10.267	-0.142
8.233	0.000	8.700	-0.142	9.833	0.026	10.300	-0.142
8.267	0.000	8.733	-0.142	9.867	0.026	10.333	-0.142
8.300	0.000	8.767	-0.142	9.900	0.026	10.367	-0.142
8.333	0.000	8.800	-0.142	9.933	0.026	10.400	-0.142
8.367	0.000	8.833	-0.142	9.967	0.026	10.433	-0.142
8.400	0.000	8.867	-0.142	10.000	0.026	10.467	-0.142
8.433	0.000	8.900	-0.142	10.033	0.000	10.500	-0.142
8.467	0.000	8.933	-0.142	10.067	0.000	10.533	-0.142
8.500	0.000	8.967	-0.142	10.100	0.000	10.567	-0.142
8.533	0.000	9.000	-0.142	10.133	0.000	10.600	-0.142
8.567	0.000	9.033	-0.142	10.167	0.000	10.633	-0.142
8.600	0.000	9.067	-0.142	10.200	0.000	10.667	-0.142
8.633	0.000	9.100	-0.142	10.233	0.000	10.700	-0.142
8.667	0.000	9.133	-0.142	10.267	0.000	10.733	-0.142
8.700	0.000	9.167	-0.142	10.300	0.000	10.767	-0.142
8.733	0.000	9.200	-0.142	10.333	0.000	10.800	-0.142
8.767	0.026	9.233	-0.142	10.367	0.000	10.833	-0.142
8.800	0.026	9.267	-0.142	10.400	0.000	10.867	-0.142
8.833	0.026	9.300	-0.142	10.433	0.000	10.900	-0.142
8.867	0.026	9.333	-0.142	10.467	0.000	10.933	-0.142
8.900	0.026	9.367	-0.142	10.500	0.000	10.967	-0.142
8.933	0.026	9.400	-0.142	10.533	0.000	11.000	-0.142
8.967	0.026	9.433	-0.142	10.567	0.000	11.033	-0.142
9.000	0.052	9.467	-0.142	10.600	0.000	11.067	-0.142
9.033	0.052	9.500	-0.142	10.633	0.000	11.100	-0.142
9.067	0.052	9.533	-0.142	10.667	0.000	11.133	-0.142
9.100	0.052	9.567	-0.142	10.700	0.000	11.167	-0.142
9.133	0.052	9.600	-0.142	10.733	0.000	11.200	-0.142
9.167	0.052	9.633	-0.142	10.767	0.000	11.233	-0.142
9.200	0.052	9.667	-0.142	10.800	0.000	11.267	-0.142
9.233	0.052	9.700	-0.142	10.833	0.000	11.300	-0.142
9.267	0.052	9.733	-0.142	10.867	0.000	11.333	-0.142

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
10.900	0.000	11.367	-0.142	12.500	11.741	12.967	9.873
10.933	0.000	11.400	-0.112	12.533	11.741	13.000	9.873
10.967	0.000	11.433	-0.082	12.567	12.655	13.033	9.873
11.000	0.000	11.467	-0.053	12.600	11.741	13.067	9.246
11.033	0.000	11.500	0.007	12.633	11.741	13.100	9.246
11.067	0.000	11.533	0.067	12.667	11.741	13.133	9.246
11.100	0.000	11.567	0.156	12.700	11.741	13.167	8.620
11.133	0.000	11.600	0.245	12.733	11.741	13.200	8.620
11.167	0.000	11.633	0.484	12.767	11.741	13.233	8.620
11.200	0.000	11.667	1.109	12.800	10.827	13.267	7.994
11.233	0.000	11.700	1.109	12.833	10.827	13.300	7.994
11.267	0.000	11.733	1.735	12.867	10.827	13.333	7.994
11.300	0.000	11.767	1.735	12.900	10.827	13.367	7.994
11.333	0.810	11.800	1.735	12.933	10.827	13.400	7.367
11.367	0.000	11.833	2.360	12.967	9.914	13.433	7.367
11.400	0.810	11.867	2.986	13.000	9.914	13.467	7.367
11.433	0.810	11.900	2.986	13.033	9.914	13.500	6.741
11.467	0.810	11.933	3.612	13.067	9.914	13.533	6.741
11.500	0.810	11.967	4.237	13.100	9.001	13.567	6.741
11.533	1.717	12.000	4.237	13.133	9.001	13.600	6.115
11.567	1.717	12.033	4.863	13.167	9.001	13.633	6.115
11.600	1.717	12.067	5.489	13.200	9.001	13.667	6.115
11.633	2.625	12.100	6.115	13.233	9.001	13.700	5.489
11.667	3.534	12.133	6.741	13.267	8.089	13.733	5.489
11.700	3.534	12.167	6.741	13.300	8.089	13.767	5.489
11.733	4.444	12.200	7.367	13.333	8.089	13.800	5.489
11.767	4.444	12.233	7.367	13.367	8.089	13.833	4.863
11.800	4.444	12.267	7.994	13.400	7.177	13.867	4.863
11.833	5.354	12.300	8.620	13.433	7.177	13.900	4.863
11.867	5.354	12.333	8.620	13.467	7.177	13.933	4.863
11.900	6.265	12.367	9.246	13.500	7.177	13.967	4.237
11.933	7.177	12.400	9.246	13.533	6.265	14.000	4.237
11.967	7.177	12.433	9.246	13.567	6.265	14.033	4.237
12.000	8.089	12.467	9.873	13.600	6.265	14.067	4.237
12.033	8.089	12.500	9.873	13.633	6.265	14.100	3.612
12.067	9.001	12.533	9.873	13.667	5.354	14.133	3.612
12.100	9.001	12.567	10.499	13.700	5.354	14.167	3.612
12.133	9.914	12.600	10.499	13.733	5.354	14.200	3.612
12.167	9.914	12.633	10.499	13.767	5.354	14.233	3.612
12.200	9.914	12.667	10.499	13.800	5.354	14.267	2.986
12.233	10.827	12.700	10.499	13.833	5.354	14.300	2.986
12.267	10.827	12.733	10.499	13.867	5.354	14.333	2.986
12.300	11.741	12.767	10.499	13.900	4.444	14.367	2.986
12.333	11.741	12.800	9.873	13.933	4.444	14.400	2.986
12.367	11.741	12.833	10.499	13.967	4.444	14.433	2.986
12.400	11.741	12.867	10.499	14.000	4.444	14.467	2.986
12.433	11.741	12.900	9.873	14.033	4.444	14.500	2.986
12.467	11.741	12.933	9.873	14.067	4.444	14.533	2.360

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
14.100	4.444	14.567	2.360	15.700	1.717	16.167	1.735
14.133	3.534	14.600	2.360	15.733	1.717	16.200	1.735
14.167	5.354	14.633	2.360	15.767	1.717	16.233	1.735
14.200	3.534	14.667	2.360	15.800	1.717	16.267	1.735
14.233	3.534	14.700	2.360	15.833	1.717	16.300	1.715
14.267	3.534	14.733	2.300	15.867	1.717	16.333	1.695
14.300	3.534	14.767	2.259	15.900	1.717	16.367	1.674
14.333	3.534	14.800	2.219	15.933	1.717	16.400	1.654
14.367	3.534	14.833	2.179	15.967	1.717	16.433	1.634
14.400	3.534	14.867	2.138	16.000	1.717	16.467	1.614
14.433	3.534	14.900	2.098	16.033	1.717	16.500	1.594
14.467	3.534	14.933	2.058	16.067	1.717	16.533	1.573
14.500	3.534	14.967	2.037	16.100	1.717	16.567	1.553
14.533	2.625	15.000	2.017	16.133	1.717	16.600	1.533
14.567	2.625	15.033	1.997	16.167	1.717	16.633	1.513
14.600	2.625	15.067	1.977	16.200	1.717	16.667	1.493
14.633	2.625	15.100	1.957	16.233	1.717	16.700	1.473
14.667	2.625	15.133	1.936	16.267	1.717	16.733	1.452
14.700	2.625	15.167	1.916	16.300	1.717	16.767	1.432
14.733	2.625	15.200	1.896	16.333	1.717	16.800	1.412
14.767	2.625	15.233	1.876	16.367	1.717	16.833	1.392
14.800	2.625	15.267	1.856	16.400	1.717	16.867	1.372
14.833	2.625	15.300	1.856	16.433	1.717	16.900	1.351
14.867	2.625	15.333	1.836	16.467	1.658	16.933	1.331
14.900	2.625	15.367	1.836	16.500	1.658	16.967	1.311
14.933	2.625	15.400	1.815	16.533	1.658	17.000	1.291
14.967	2.625	15.433	1.795	16.567	1.658	17.033	1.271
15.000	2.625	15.467	1.795	16.600	1.658	17.067	1.250
15.033	2.625	15.500	1.795	16.633	1.658	17.100	1.230
15.067	2.625	15.533	1.795	16.667	1.658	17.133	1.210
15.100	2.625	15.567	1.795	16.700	1.658	17.167	1.190
15.133	1.717	15.600	1.795	16.733	1.658	17.200	1.170
15.167	2.625	15.633	1.775	16.767	1.629	17.233	1.150
15.200	2.625	15.667	1.755	16.800	1.629	17.267	1.129
15.233	2.625	15.700	1.755	16.833	1.629	17.300	1.109
15.267	1.717	15.733	1.735	16.867	1.600	17.333	1.109
15.300	1.717	15.767	1.735	16.900	1.571	17.367	1.109
15.333	2.625	15.800	1.735	16.933	1.571	17.400	1.109
15.367	2.625	15.833	1.735	16.967	1.541	17.433	1.109
15.400	1.717	15.867	1.735	17.000	1.541	17.467	1.109
15.433	1.717	15.900	1.735	17.033	1.571	17.500	1.109
15.467	2.625	15.933	1.735	17.067	1.571	17.533	1.109
15.500	1.717	15.967	1.735	17.100	1.571	17.567	1.109
15.533	1.717	16.000	1.735	17.133	1.571	17.600	1.129
15.567	1.717	16.033	1.735	17.167	1.541	17.633	1.129
15.600	1.717	16.067	1.735	17.200	1.541	17.667	1.129
15.633	1.717	16.100	1.735	17.233	1.541	17.700	1.129
15.667	1.717	16.133	1.735	17.267	1.512	17.733	1.150

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
17.300	1.512	17.767	1.150	18.900	1.483	19.367	1.230
17.333	1.483	17.800	1.150	18.933	1.483	19.400	1.210
17.367	1.454	17.833	1.150	18.967	1.483	19.433	1.210
17.400	1.454	17.867	1.150	19.000	1.512	19.467	1.210
17.433	1.454	17.900	1.150	19.033	1.541	19.500	1.210
17.467	1.454	17.933	1.150	19.067	1.512	19.533	1.210
17.500	1.454	17.967	1.170	19.100	1.512	19.567	1.190
17.533	1.424	18.000	1.170	19.133	1.541	19.600	1.170
17.567	1.424	18.033	1.170	19.167	1.541	19.633	1.170
17.600	1.424	18.067	1.170	19.200	1.541	19.667	1.150
17.633	1.424	18.100	1.170	19.233	1.541	19.700	1.150
17.667	1.395	18.133	1.170	19.267	1.541	19.733	1.150
17.700	1.395	18.167	1.170	19.300	1.541	19.767	1.150
17.733	1.395	18.200	1.170	19.333	1.541	19.800	1.150
17.767	1.395	18.233	1.170	19.367	1.541	19.833	1.170
17.800	1.395	18.267	1.170	19.400	1.571	19.867	1.170
17.833	1.395	18.300	1.190	19.433	1.600	19.900	1.170
17.867	1.395	18.333	1.210	19.467	1.629	19.933	1.170
17.900	1.424	18.367	1.230	19.500	1.658	19.967	1.170
17.933	1.454	18.400	1.230	19.533	1.658	20.000	1.170
17.967	1.424	18.433	1.230	19.567	1.658	20.033	1.170
18.000	1.424	18.467	1.230	19.600	1.658	20.067	1.170
18.033	1.424	18.500	1.230	19.633	1.629	20.100	1.170
18.067	1.424	18.533	1.250	19.667	1.629	20.133	1.170
18.100	1.395	18.567	1.271	19.700	1.629	20.167	1.170
18.133	1.395	18.600	1.271	19.733	1.629	20.200	1.170
18.167	1.395	18.633	1.271	19.767	1.629	20.233	1.170
18.200	1.395	18.667	1.271	19.800	1.629	20.267	1.170
18.233	1.395	18.700	1.271	19.833	1.629	20.300	1.170
18.267	1.395	18.733	1.271	19.867	1.629	20.333	1.150
18.300	1.424	18.767	1.250	19.900	1.629	20.367	1.129
18.333	1.424	18.800	1.250	19.933	1.629	20.400	1.129
18.367	1.424	18.833	1.250	19.967	1.629	20.433	1.129
18.400	1.424	18.867	1.250	20.000	1.629	20.467	1.129
18.433	1.395	18.900	1.250	20.033	1.629	20.500	1.129
18.467	1.395	18.933	1.250	20.067	1.629	20.533	1.129
18.500	1.395	18.967	1.250	20.100	1.658	20.567	1.129
18.533	1.395	19.000	1.230	20.133	1.658	20.600	1.129
18.567	1.424	19.033	1.230	20.167	1.658	20.633	1.129
18.600	1.424	19.067	1.230	20.200	1.658	20.667	1.129
18.633	1.424	19.100	1.230	20.233	1.658	20.700	1.129
18.667	1.424	19.133	1.230	20.267	1.688	20.733	1.129
18.700	1.454	19.167	1.230	20.300	1.688	20.767	1.129
18.733	1.454	19.200	1.230	20.333	1.688	20.800	1.129
18.767	1.454	19.233	1.230	20.367	1.688	20.833	1.129
18.800	1.454	19.267	1.230	20.400	1.688	20.867	1.109
18.833	1.483	19.300	1.250	20.433	1.688	20.900	1.109
18.867	1.483	19.333	1.250	20.467	1.688	20.933	1.109

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
20.500	1.688	20.967	1.109	22.100	1.717	22.567	0.867
20.533	1.688	21.000	1.109	22.133	1.717	22.600	0.867
20.567	1.688	21.033	1.109	22.167	1.717	22.633	0.887
20.600	1.688	21.067	1.109	22.200	1.717	22.667	0.907
20.633	1.688	21.100	1.109	22.233	1.717	22.700	0.928
20.667	1.717	21.133	1.109	22.267	1.717	22.733	0.928
20.700	1.717	21.167	1.109	22.300	1.717	22.767	0.948
20.733	1.717	21.200	1.109	22.333	1.717	22.800	0.948
20.767	1.717	21.233	1.109	22.367	1.717	22.833	0.948
20.800	1.717	21.267	1.089	22.400	1.717	22.867	0.948
20.833	1.717	21.300	1.069	22.433	1.717	22.900	0.968
20.867	1.717	21.333	1.049	22.467	1.717	22.933	0.988
20.900	1.717	21.367	1.049	22.500	1.746	22.967	0.988
20.933	1.717	21.400	1.028	22.533	1.746	23.000	0.988
20.967	1.717	21.433	1.028	22.567	1.746	23.033	1.008
21.000	1.717	21.467	1.028	22.600	1.746	23.067	1.008
21.033	1.717	21.500	1.008	22.633	1.746	23.100	1.028
21.067	1.717	21.533	1.008	22.667	1.746	23.133	1.049
21.100	1.717	21.567	1.008	22.700	1.746	23.167	1.069
21.133	1.717	21.600	0.988	22.733	1.746	23.200	1.089
21.167	1.717	21.633	0.968	22.767	1.746	23.233	1.089
21.200	1.717	21.667	0.948	22.800	1.746	23.267	1.089
21.233	1.717	21.700	0.948	22.833	1.746	23.300	1.109
21.267	1.717	21.733	0.928	22.867	1.746	23.333	1.109
21.300	1.717	21.767	0.928	22.900	1.746	23.367	1.109
21.333	1.717	21.800	0.928	22.933	1.746	23.400	1.109
21.367	1.717	21.833	0.928	22.967	1.746	23.433	1.109
21.400	1.717	21.867	0.907	23.000	1.746	23.467	1.109
21.433	1.717	21.900	0.887	23.033	1.746	23.500	1.109
21.467	1.717	21.933	0.887	23.067	1.746	23.533	1.109
21.500	1.717	21.967	0.887	23.100	1.746	23.567	1.109
21.533	1.717	22.000	0.867	23.133	1.746	23.600	1.109
21.567	1.717	22.033	0.867	23.167	1.746	23.634	1.109
21.600	1.717	22.067	0.847	23.200	1.746	23.667	1.109
21.633	1.717	22.100	0.827	23.233	1.746	23.700	1.109
21.667	1.717	22.133	0.807	23.267	1.746	23.734	1.109
21.700	1.717	22.167	0.786	23.300	1.746	23.767	1.109
21.733	1.717	22.200	0.786	23.333	1.746	23.800	1.109
21.767	1.717	22.233	0.786	23.367	1.746	23.834	1.109
21.800	1.717	22.267	0.766	23.400	1.746	23.867	1.109
21.833	1.717	22.300	0.786	23.433	1.746	23.900	1.109
21.867	1.717	22.333	0.807	23.467	1.746	23.934	1.109
21.900	1.717	22.367	0.827	23.500	1.746	23.967	1.109
21.933	1.717	22.400	0.827	23.533	1.717	24.000	1.109
21.967	1.717	22.433	0.847	23.567	1.717	24.034	1.109
22.000	1.717	22.467	0.847	23.600	1.717	24.067	1.109
22.033	1.717	22.500	0.847	23.633	1.717	24.100	1.109
22.067	1.717	22.533	0.867	23.667	1.717	24.134	1.109

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
23.700	1.717	24.167	1.109	25.300	1.805	25.767	1.089
23.733	1.717	24.200	1.109	25.333	1.805	25.800	1.109
23.767	1.717	24.234	1.109	25.367	1.834	25.834	1.129
23.800	1.717	24.267	1.089	25.400	1.834	25.867	1.129
23.833	1.717	24.300	1.089	25.433	1.834	25.900	1.150
23.867	1.717	24.334	1.089	25.467	1.863	25.934	1.170
23.900	1.717	24.367	1.069	25.500	1.863	25.967	1.190
23.933	1.717	24.400	1.069	25.533	1.893	26.000	1.210
23.967	1.717	24.434	1.049	25.567	1.893	26.034	1.230
24.000	1.717	24.467	1.028	25.600	1.893	26.067	1.250
24.033	1.717	24.500	1.008	25.633	1.893	26.100	1.271
24.067	1.717	24.534	1.008	25.667	1.922	26.134	1.291
24.100	1.717	24.567	0.988	25.700	1.922	26.167	1.291
24.133	1.717	24.600	0.988	25.733	1.922	26.200	1.291
24.167	1.746	24.634	0.988	25.767	1.922	26.234	1.311
24.200	1.746	24.667	0.988	25.800	1.922	26.267	1.331
24.233	1.746	24.700	0.988	25.833	1.922	26.300	1.331
24.267	1.746	24.734	0.988	25.867	1.922	26.334	1.351
24.300	1.746	24.767	0.968	25.900	1.951	26.367	1.371
24.333	1.746	24.800	0.948	25.933	1.922	26.400	1.392
24.367	1.746	24.834	0.948	25.967	1.922	26.434	1.412
24.400	1.746	24.867	0.948	26.000	1.951	26.467	1.432
24.433	1.746	24.900	0.948	26.033	1.951	26.500	1.432
24.467	1.746	24.934	0.948	26.067	1.981	26.534	1.452
24.500	1.746	24.967	0.948	26.100	1.951	26.567	1.472
24.533	1.746	25.000	0.948	26.133	1.951	26.600	1.493
24.567	1.746	25.034	0.948	26.167	1.951	26.634	1.493
24.600	1.746	25.067	0.948	26.200	1.951	26.667	1.513
24.633	1.746	25.100	0.948	26.233	1.951	26.700	1.533
24.667	1.746	25.134	0.948	26.267	1.951	26.734	1.573
24.700	1.746	25.167	0.948	26.300	1.981	26.767	1.593
24.733	1.746	25.200	0.948	26.333	1.981	26.800	1.614
24.767	1.746	25.234	0.948	26.367	1.981	26.834	1.634
24.800	1.746	25.267	0.948	26.400	1.981	26.867	1.654
24.833	1.746	25.300	0.968	26.433	1.981	26.900	1.674
24.867	1.746	25.334	0.968	26.467	1.981	26.934	1.674
24.900	1.776	25.367	0.968	26.500	1.951	26.967	1.674
24.933	1.776	25.400	0.988	26.533	1.981	27.000	1.674
24.967	1.776	25.434	0.988	26.567	1.951	27.034	1.674
25.000	1.776	25.467	1.028	26.600	1.951	27.067	1.674
25.033	1.776	25.500	1.049	26.633	1.951	27.100	1.674
25.067	1.805	25.534	1.069	26.667	1.981	27.134	1.654
25.100	1.805	25.567	1.069	26.700	1.951	27.167	1.654
25.133	1.805	25.600	1.089	26.733	1.981	27.200	1.674
25.167	1.805	25.634	1.089	26.767	1.981	27.234	1.694
25.200	1.805	25.667	1.089	26.800	2.010	27.267	1.694
25.233	1.805	25.700	1.089	26.833	2.010	27.300	1.694
25.267	1.805	25.734	1.089	26.867	2.039	27.334	1.694

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
26.900	2.069	27.367	1.694	28.500	1.834	28.967	1.735
26.933	2.039	27.400	1.674	28.533	1.805	29.000	1.735
26.967	2.039	27.434	1.674	28.567	1.805	29.034	1.735
27.000	2.039	27.467	1.674	28.600	1.805	29.067	1.735
27.033	2.010	27.500	1.674	28.633	1.776	29.100	1.735
27.067	2.039	27.534	1.674	28.667	1.776	29.134	1.735
27.100	2.039	27.567	1.674	28.700	1.776	29.167	1.735
27.133	2.039	27.600	1.674	28.733	1.776	29.200	1.735
27.167	2.039	27.634	1.674	28.767	1.776	29.234	1.735
27.200	2.039	27.667	1.694	28.800	1.776	29.267	1.735
27.233	2.039	27.700	1.694	28.833	1.746	29.300	1.735
27.267	2.010	27.734	1.694	28.867	1.746	29.334	1.735
27.300	2.010	27.767	1.674	28.900	1.746	29.367	1.730
27.333	1.981	27.800	1.674	28.933	1.717	29.400	1.726
27.367	1.981	27.834	1.674	28.967	1.717	29.434	1.722
27.400	1.981	27.867	1.674	29.000	1.717	29.467	1.718
27.433	1.951	27.900	1.674	29.033	1.717	29.500	1.714
27.467	1.951	27.934	1.674	29.067	1.717	29.534	1.709
27.500	1.981	27.967	1.674	29.100	1.717	29.567	1.705
27.533	1.981	28.000	1.674	29.133	1.717	29.600	1.701
27.567	1.951	28.034	1.674	29.167	1.717	29.634	1.697
27.600	1.981	28.067	1.674	29.200	1.717	29.667	1.693
27.633	1.981	28.100	1.674	29.233	1.717	29.700	1.688
27.667	1.981	28.134	1.674	29.267	1.717	29.734	1.684
27.700	1.951	28.167	1.694	29.300	1.717	29.767	1.680
27.733	1.951	28.200	1.694	29.333	1.717	29.800	1.676
27.767	1.922	28.234	1.694	29.367	1.717	29.834	1.671
27.800	1.951	28.267	1.694	29.400	1.717	29.867	1.667
27.833	1.922	28.300	1.694	29.433	1.717	29.900	1.663
27.867	1.922	28.334	1.694	29.467	1.717	29.934	1.659
27.900	1.922	28.367	1.715	29.500	1.717	29.967	1.655
27.933	1.893	28.400	1.715	29.533	1.717	30.000	1.650
27.967	1.893	28.434	1.735	29.567	1.717	30.034	1.646
28.000	1.893	28.467	1.735	29.600	1.717	30.067	1.642
28.033	1.893	28.500	1.735	29.633	1.717	30.100	1.638
28.067	1.893	28.534	1.735	29.667	1.717	30.134	1.634
28.100	1.863	28.567	1.735	29.700	1.746	30.167	1.629
28.133	1.834	28.600	1.735	29.733	1.746	30.200	1.625
28.167	1.834	28.634	1.735	29.767	1.746	30.234	1.621
28.200	1.834	28.667	1.735	29.800	1.746	30.267	1.617
28.233	1.834	28.700	1.735	29.833	1.746	30.300	1.612
28.267	1.834	28.734	1.735	29.867	1.746	30.334	1.608
28.300	1.834	28.767	1.735	29.900	1.746	30.367	1.604
28.333	1.834	28.800	1.735	29.933	1.746	30.400	1.604
28.367	1.834	28.834	1.735	29.967	1.746	30.434	1.604
28.400	1.834	28.867	1.735	30.000	1.746	30.467	1.604
28.433	1.834	28.900	1.735	30.033	1.746	30.500	1.604
28.467	1.834	28.934	1.735	30.067	1.746	30.534	1.604

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
30.100	1.746	30.567	1.604	31.700	1.717	32.167	1.604
30.133	1.746	30.600	1.604	31.733	1.717	32.200	1.604
30.167	1.746	30.634	1.604	31.767	1.717	32.234	1.604
30.200	1.746	30.667	1.604	31.800	1.717	32.267	1.604
30.233	1.746	30.700	1.604	31.833	1.717	32.300	1.604
30.267	1.746	30.734	1.604	31.867	1.717	32.334	1.604
30.300	1.746	30.767	1.604	31.900	1.717	32.367	1.604
30.333	1.746	30.800	1.604	31.933	1.717	32.400	1.604
30.367	1.746	30.834	1.604	31.967	1.717	32.434	1.604
30.400	1.746	30.867	1.604	32.000	1.717	32.467	1.608
30.433	1.746	30.900	1.604	32.033	1.717	32.500	1.612
30.467	1.746	30.934	1.604	32.067	1.717	32.534	1.617
30.500	1.746	30.967	1.604	32.100	1.717	32.567	1.621
30.533	1.746	31.000	1.604	32.133	1.717	32.600	1.625
30.567	1.746	31.034	1.604	32.167	1.717	32.634	1.629
30.600	1.746	31.067	1.604	32.200	1.717	32.667	1.634
30.633	1.746	31.100	1.604	32.233	1.717	32.700	1.638
30.667	1.746	31.134	1.604	32.267	1.717	32.734	1.642
30.700	1.746	31.167	1.604	32.300	1.717	32.767	1.646
30.733	1.717	31.200	1.604	32.333	1.717	32.800	1.650
30.767	1.717	31.234	1.604	32.367	1.717	32.834	1.655
30.800	1.717	31.267	1.604	32.400	1.717	32.867	1.659
30.833	1.717	31.300	1.604	32.433	1.717	32.900	1.663
30.867	1.717	31.334	1.604	32.467	1.717	32.934	1.667
30.900	1.717	31.367	1.604	32.500	1.717	32.967	1.671
30.933	1.717	31.400	1.604	32.533	1.717	33.000	1.676
30.967	1.717	31.434	1.604	32.567	1.717	33.034	1.680
31.000	1.717	31.467	1.604	32.600	1.717	33.067	1.684
31.033	1.717	31.500	1.604	32.633	1.717	33.100	1.688
31.067	1.717	31.534	1.604	32.667	1.717	33.134	1.693
31.100	1.717	31.567	1.604	32.700	1.717	33.167	1.697
31.133	1.717	31.600	1.604	32.733	1.717	33.200	1.701
31.167	1.717	31.634	1.604	32.767	1.717	33.234	1.705
31.200	1.717	31.667	1.604	32.800	1.717	33.267	1.709
31.233	1.717	31.700	1.604	32.833	1.717	33.300	1.714
31.267	1.717	31.734	1.604	32.867	1.717	33.334	1.718
31.300	1.717	31.767	1.604	32.900	1.717	33.367	1.698
31.333	1.717	31.800	1.604	32.933	1.717	33.400	1.679
31.367	1.717	31.834	1.604	32.967	1.717	33.434	1.659
31.400	1.717	31.867	1.604	33.000	1.717	33.467	1.640
31.433	1.717	31.900	1.604	33.033	1.717	33.500	1.616
31.467	1.717	31.934	1.604	33.067	1.717	33.534	1.592
31.500	1.717	31.967	1.604	33.100	1.688	33.567	1.569
31.533	1.717	32.000	1.604	33.133	1.688	33.600	1.545
31.567	1.717	32.034	1.604	33.167	1.688	33.634	1.521
31.600	1.717	32.067	1.604	33.200	1.688	33.667	1.498
31.633	1.717	32.100	1.604	33.233	1.688	33.700	1.474
31.667	1.717	32.134	1.604	33.267	1.688	33.734	1.450

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
33.300	1.688	33.767	1.427	34.900	1.424	35.367	1.371
33.333	1.688	33.800	1.403	34.934	1.424	35.400	1.371
33.367	1.688	33.834	1.379	34.967	1.424	35.434	1.351
33.400	1.688	33.867	1.355	35.000	1.424	35.467	1.331
33.433	1.688	33.900	1.332	35.034	1.395	35.500	1.351
33.467	1.658	33.934	1.308	35.067	1.395	35.534	1.331
33.500	1.658	33.967	1.284	35.100	1.366	35.567	1.311
33.533	1.658	34.000	1.264	35.134	1.337	35.600	1.311
33.567	1.658	34.034	1.244	35.167	1.307	35.634	1.331
33.600	1.658	34.067	1.224	35.200	1.278	35.667	1.351
33.634	1.629	34.100	1.204	35.234	1.249	35.700	1.331
33.667	1.629	34.134	1.184	35.267	1.249	35.734	1.311
33.700	1.629	34.167	1.184	35.300	1.249	35.767	1.311
33.734	1.629	34.200	1.163	35.334	1.278	35.800	1.311
33.767	1.629	34.234	1.143	35.367	1.249	35.834	1.311
33.800	1.629	34.267	1.123	35.400	1.219	35.867	1.331
33.834	1.629	34.300	1.103	35.434	1.190	35.900	1.311
33.867	1.629	34.334	1.103	35.467	1.190	35.934	1.311
33.900	1.629	34.367	1.083	35.500	1.161	35.967	1.331
33.934	1.629	34.400	1.106	35.534	1.161	36.000	1.311
33.967	1.629	34.434	1.130	35.567	1.161	36.034	1.291
34.000	1.629	34.467	1.134	35.600	1.132	36.067	1.271
34.034	1.629	34.500	1.157	35.634	1.132	36.100	1.291
34.067	1.629	34.534	1.181	35.667	1.132	36.134	1.291
34.100	1.629	34.567	1.184	35.700	1.161	36.167	1.291
34.134	1.658	34.600	1.188	35.734	1.132	36.200	1.291
34.167	1.658	34.634	1.191	35.767	1.132	36.234	1.311
34.200	1.658	34.667	1.215	35.800	1.161	36.267	1.331
34.234	1.658	34.700	1.239	35.834	1.190	36.300	1.351
34.267	1.629	34.734	1.242	35.867	1.161	36.334	1.371
34.300	1.600	34.767	1.266	35.900	1.132	36.367	1.371
34.334	1.600	34.800	1.290	35.934	1.132	36.400	1.392
34.367	1.600	34.834	1.293	35.967	1.102	36.434	1.412
34.400	1.600	34.867	1.317	36.000	1.073	36.467	1.432
34.434	1.571	34.900	1.341	36.034	1.044	36.500	1.452
34.467	1.571	34.934	1.344	36.067	1.044	36.534	1.452
34.500	1.571	34.967	1.368	36.100	1.044	36.567	1.472
34.534	1.541	35.000	1.392	36.134	1.073	36.600	1.493
34.567	1.541	35.034	1.412	36.167	1.073	36.634	1.513
34.600	1.512	35.067	1.412	36.200	1.073	36.667	1.513
34.634	1.512	35.100	1.412	36.234	1.073	36.700	1.493
34.667	1.512	35.134	1.412	36.267	1.073	36.734	1.493
34.700	1.512	35.167	1.412	36.300	1.044	36.767	1.493
34.734	1.512	35.200	1.392	36.334	1.044	36.800	1.493
34.767	1.483	35.234	1.392	36.367	1.015	36.834	1.472
34.800	1.454	35.267	1.392	36.400	1.015	36.867	1.472
34.834	1.454	35.300	1.392	36.434	1.015	36.900	1.472
34.867	1.454	35.334	1.392	36.467	1.015	36.934	1.472

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
36.500	1.015	36.967	1.452	38.100	0.868	38.567	1.412
36.534	1.015	37.000	1.432	38.134	0.868	38.600	1.432
36.567	1.015	37.034	1.432	38.167	0.868	38.634	1.432
36.600	1.015	37.067	1.452	38.200	0.898	38.667	1.432
36.634	1.044	37.100	1.472	38.234	0.898	38.700	1.371
36.667	1.044	37.134	1.452	38.267	0.898	38.734	1.392
36.700	1.015	37.167	1.472	38.300	0.898	38.767	1.392
36.734	0.985	37.200	1.472	38.334	0.898	38.800	1.371
36.767	0.985	37.234	1.493	38.367	0.898	38.834	1.392
36.800	0.956	37.267	1.472	38.400	0.898	38.867	1.412
36.834	0.927	37.300	1.472	38.434	0.868	38.900	1.412
36.867	0.898	37.334	1.452	38.467	0.868	38.934	1.432
36.900	0.898	37.367	1.432	38.500	0.839	38.967	1.452
36.934	0.898	37.400	1.452	38.534	0.839	39.000	1.472
36.967	0.898	37.434	1.452	38.567	0.839	39.034	1.472
37.000	0.898	37.467	1.452	38.600	0.839	39.067	1.472
37.034	0.898	37.500	1.452	38.634	0.839	39.100	1.452
37.067	0.898	37.534	1.432	38.667	0.839	39.134	1.432
37.100	0.898	37.567	1.412	38.700	0.839	39.167	1.412
37.134	0.868	37.600	1.412	38.734	0.839	39.200	1.412
37.167	0.839	37.634	1.412	38.767	0.839	39.234	1.392
37.200	0.839	37.667	1.412	38.800	0.839	39.267	1.412
37.234	0.839	37.700	1.392	38.834	0.839	39.300	1.432
37.267	0.839	37.734	1.412	38.867	0.839	39.334	1.452
37.300	0.839	37.767	1.432	38.900	0.839	39.367	1.472
37.334	0.839	37.800	1.432	38.934	0.839	39.400	1.493
37.367	0.839	37.834	1.432	38.967	0.839	39.434	1.493
37.400	0.868	37.867	1.452	39.000	0.839	39.467	1.472
37.434	0.868	37.900	1.432	39.034	0.839	39.500	1.472
37.467	0.898	37.934	1.412	39.067	0.839	39.534	1.472
37.500	0.898	37.967	1.412	39.100	0.839	39.567	1.472
37.534	0.898	38.000	1.432	39.134	0.839	39.600	1.472
37.567	0.898	38.034	1.432	39.167	0.839	39.634	1.452
37.600	0.898	38.067	1.452	39.200	0.839	39.667	1.432
37.634	0.898	38.100	1.452	39.234	0.810	39.700	1.412
37.667	0.868	38.134	1.452	39.267	0.810	39.734	1.452
37.700	0.868	38.167	1.472	39.300	0.810	39.767	1.432
37.734	0.868	38.200	1.472	39.334	0.810	39.800	1.412
37.767	0.868	38.234	1.472	39.367	0.810	39.834	1.412
37.800	0.868	38.267	1.452	39.400	0.810	39.867	1.392
37.834	0.868	38.300	1.452	39.434	0.810	39.900	1.371
37.867	0.868	38.334	1.432	39.467	0.810	39.934	1.351
37.900	0.868	38.367	1.432	39.500	0.839	39.967	1.331
37.934	0.868	38.400	1.452	39.534	0.839	40.000	1.311
37.967	0.868	38.434	1.452	39.567	0.839	40.034	1.291
38.000	0.868	38.467	1.432	39.600	0.839	40.067	1.271
38.034	0.868	38.500	1.412	39.634	0.839	40.100	1.271
38.067	0.868	38.534	1.412	39.667	0.839	40.134	1.271

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
39.700	0.839	40.167	1.271	41.300	0.898	41.767	1.674
39.734	0.839	40.200	1.271	41.334	0.898	41.800	1.694
39.767	0.839	40.234	1.250	41.367	0.898	41.834	1.715
39.800	0.839	40.267	1.250	41.400	0.898	41.867	1.735
39.834	0.839	40.300	1.230	41.434	0.898	41.900	1.735
39.867	0.839	40.334	1.190	41.467	0.898	41.934	1.735
39.900	0.839	40.367	1.150	41.500	0.898	41.967	1.735
39.934	0.839	40.400	1.109	41.534	0.898	42.000	1.735
39.967	0.839	40.434	1.069	41.567	0.927	42.034	1.735
40.000	0.839	40.467	1.028	41.600	0.956	42.067	1.735
40.034	0.839	40.500	1.008	41.634	0.956	42.100	1.735
40.067	0.839	40.534	0.988	41.667	0.985	42.134	1.735
40.100	0.839	40.567	0.968	41.700	0.985	42.167	1.735
40.134	0.839	40.600	0.928	41.734	0.985	42.200	1.735
40.167	0.839	40.634	0.928	41.767	0.985	42.234	1.735
40.200	0.839	40.667	0.928	41.800	1.015	42.267	1.735
40.234	0.839	40.700	0.928	41.834	1.015	42.300	1.735
40.267	0.839	40.734	0.928	41.867	1.015	42.334	1.735
40.300	0.839	40.767	0.928	41.900	1.015	42.367	1.735
40.334	0.839	40.800	0.928	41.934	1.044	42.400	1.735
40.367	0.839	40.834	0.928	41.967	1.073	42.434	1.735
40.400	0.839	40.867	0.948	42.000	1.044	42.467	1.735
40.434	0.839	40.900	0.968	42.034	1.073	42.500	1.735
40.467	0.839	40.934	0.988	42.067	1.102	42.534	1.735
40.500	0.839	40.967	1.008	42.100	1.132	42.567	1.735
40.534	0.810	41.000	1.028	42.134	1.132	42.600	1.735
40.567	0.810	41.034	1.049	42.167	1.132	42.634	1.735
40.600	0.810	41.067	1.069	42.200	1.161	42.667	1.735
40.634	0.810	41.100	1.089	42.234	1.190	42.700	1.735
40.667	0.810	41.134	1.109	42.267	1.219	42.734	1.735
40.700	0.810	41.167	1.129	42.300	1.219	42.767	1.735
40.734	0.839	41.200	1.150	42.334	1.249	42.800	1.735
40.767	0.839	41.234	1.170	42.367	1.278	42.834	1.735
40.800	0.839	41.267	1.190	42.400	1.307	42.867	1.735
40.834	0.839	41.300	1.210	42.434	1.337	42.900	1.735
40.867	0.839	41.334	1.230	42.467	1.366	42.934	1.735
40.900	0.839	41.367	1.271	42.500	1.395	42.967	1.735
40.934	0.839	41.400	1.311	42.534	1.424	43.000	1.735
40.967	0.868	41.434	1.351	42.567	1.454	43.034	1.735
41.000	0.868	41.467	1.392	42.600	1.454	43.067	1.735
41.034	0.868	41.500	1.432	42.634	1.454	43.100	1.735
41.067	0.868	41.534	1.472	42.667	1.483	43.134	1.735
41.100	0.868	41.567	1.513	42.700	1.483	43.167	1.735
41.134	0.868	41.600	1.553	42.734	1.512	43.200	1.735
41.167	0.868	41.634	1.593	42.767	1.541	43.234	1.735
41.200	0.868	41.667	1.614	42.800	1.541	43.267	1.735
41.234	0.868	41.700	1.634	42.834	1.541	43.300	1.735
41.267	0.898	41.734	1.654	42.867	1.571	43.334	1.735

OTIS-P input data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
42.900	1.600	43.367	1.735	44.500	1.717	44.967	1.735
42.934	1.629	43.400	1.735	44.534	1.717	45.000	1.735
42.967	1.629	43.434	1.735	44.567	1.717	45.034	1.735
43.000	1.629	43.467	1.735	44.600	1.717	45.067	1.735
43.034	1.658	43.500	1.735	44.634	1.717	45.100	1.735
43.067	1.658	43.534	1.735	44.667	1.717	45.134	1.735
43.100	1.658	43.567	1.735	44.700	1.717	45.167	1.735
43.134	1.658	43.600	1.735	44.734	1.717	45.200	1.735
43.167	1.688	43.634	1.735	44.767	1.717	45.234	1.735
43.200	1.717	43.667	1.735	44.800	1.717	45.267	1.735
43.234	1.717	43.700	1.735	44.834	1.717	45.300	1.735
43.267	1.717	43.734	1.735	44.867	1.717	45.334	1.735
43.300	1.717	43.767	1.735	44.900	1.717	45.367	1.735
43.334	1.717	43.800	1.735	44.934	1.717	45.400	1.735
43.367	1.717	43.834	1.735	44.967	1.717	45.434	1.735
43.400	1.717	43.867	1.735	45.000	1.717	45.467	1.735
43.434	1.717	43.900	1.735	45.034	1.717	45.500	1.735
43.467	1.717	43.934	1.735	45.067	1.717	45.534	1.735
43.500	1.717	43.967	1.735	45.100	1.717	45.567	1.735
43.534	1.717	44.000	1.735	45.134	1.717	45.600	1.735
43.567	1.717	44.034	1.735	45.167	1.717	45.634	1.735
43.600	1.717	44.067	1.735	45.200	1.717	45.667	1.735
43.634	1.717	44.100	1.735	45.234	1.717	45.700	1.735
43.667	1.717	44.134	1.735	45.267	1.717	45.734	1.735
43.700	1.717	44.167	1.735	45.300	1.717	45.767	1.735
43.734	1.717	44.200	1.735	45.334	1.717	45.800	1.735
43.767	1.717	44.234	1.735	45.367	1.717	45.834	1.735
43.800	1.717	44.267	1.735	45.400	1.717	81.000	0.330
43.834	1.717	44.300	1.735	45.434	1.717		
43.867	1.717	44.334	1.735	45.467	1.717		
43.900	1.717	44.367	1.735	45.500	1.717		
43.934	1.717	44.400	1.735	45.534	1.717		
43.967	1.717	44.434	1.735	45.567	1.717		
44.000	1.717	44.467	1.735	45.600	1.717		
44.034	1.717	44.500	1.735	81.000	0.330		
44.067	1.717	44.534	1.735	45.634	1.717		
44.100	1.717	44.567	1.735	45.667	1.717		
44.134	1.717	44.600	1.735	45.700	1.717		
44.167	1.717	44.634	1.735	45.734	1.717		
44.200	1.717	44.667	1.735	45.767	1.717		
44.234	1.717	44.700	1.735	45.800	1.717		
44.267	1.717	44.734	1.735	45.834	1.717		
44.300	1.717	44.767	1.735	81.000	0.330		
44.334	1.717	44.800	1.735				
44.367	1.717	44.834	1.735				
44.400	1.717	44.867	1.735				
44.434	1.717	44.900	1.735				
44.467	1.717	44.934	1.735				

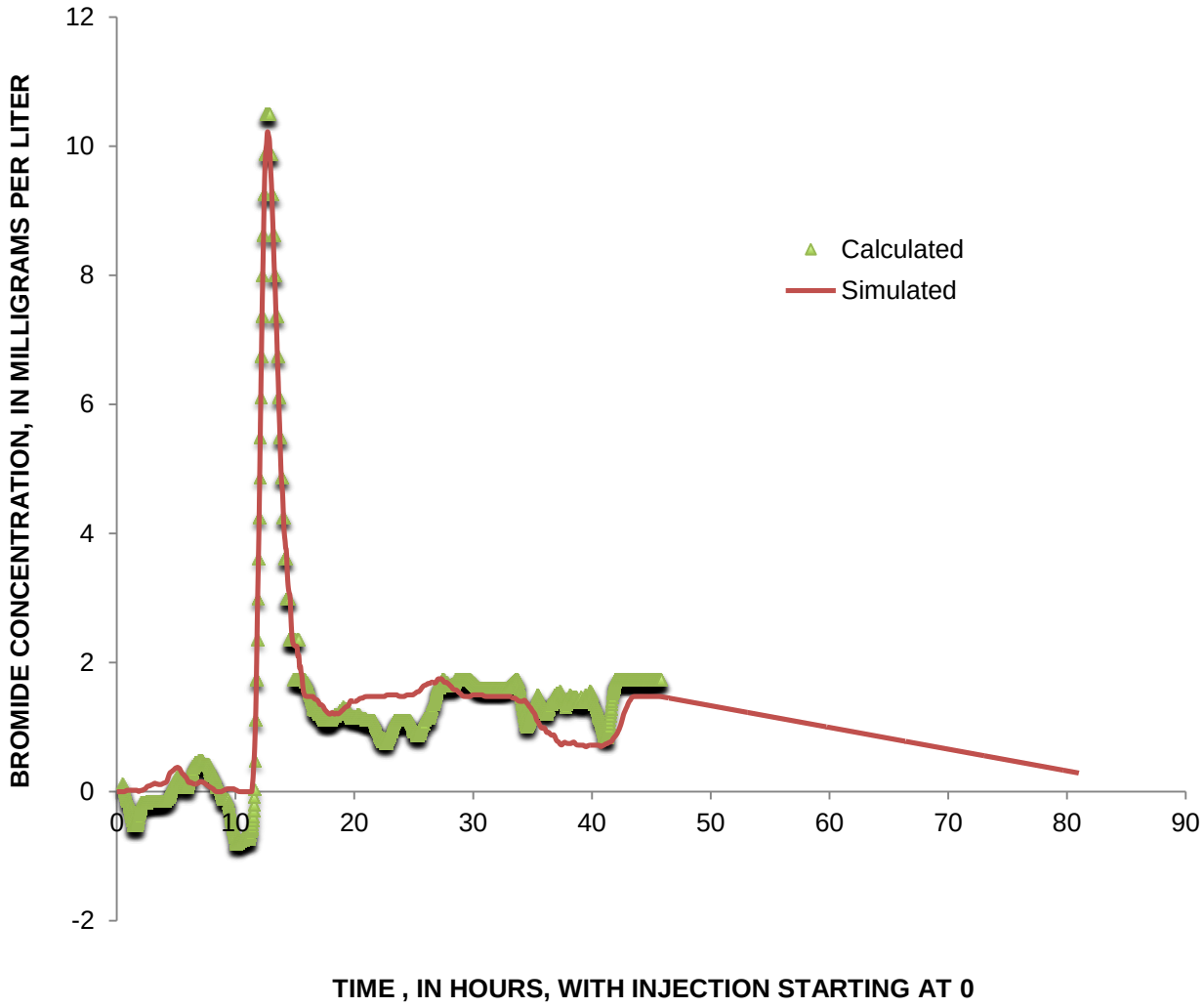

Figure D.6 OTIS-P output data for Reach 3 (5.04-5.13 km) calculated bromide concentrations.

Table D.7 OTIS-P input data for Reach 4 (5.13-6.78 km) measured bromide concentrations.

Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.1	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.1	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0	1.00	0.33	13.83	5.50
Ending Time (hr)	102	11.50	0.52	14.17	5.29
Starting Distance (m)	5128	11.83	1.63	14.50	7.14
Downstream Boundary Condition (mg L-1)	0	12.17	4.87	14.83	7.47
Simulation Type	Dynamic	12.50	8.26	15.17	6.72
Number of Reaches	1	12.83	10.44	15.50	5.52
End Distance (m)	6978	13.17	9.81	15.83	4.57
Number of Spatial Segments	1850	13.50	8.51	16.17	3.79
Reach Length (m)	1850	13.83	6.30	16.50	3.23
Dispersion Coefficient (m^2 s-1)	36.8	14.17	5.04	16.83	2.81
Storage Zone Area (m2)	1	14.50	4.27	17.17	2.55
Storage Exchange Rate (sec-1)	0	14.83	3.58	17.50	2.31
Decay Coefficient Channel	0	15.17	3.13	17.84	2.19
Decay Coefficient Storage	0	15.50	2.84	18.17	2.05
Requested Print Location (m)	6778	15.83	2.58	18.50	1.97
Flow Option	Steady	16.17	2.34	18.84	1.91
Flow Interval (hr)	0	16.50	2.25	19.17	1.84
Flowrate at Upstream Boundary (m3 s-1)	0.0229	16.83	2.17	19.50	1.80
Lateral Inflow (m3 s-1)	1.38E-06	17.17	2.08	19.84	1.78
Lateral Outflow (m3 s-1)	0	17.50	2.05	20.50	1.75
Cross-sectional Area (m2)	0.09	17.83	2.04	20.84	1.75
Lateral Inflow Concentration (mg L-1)	0	18.17	2.01	21.17	1.76
Number of Upstream Boundary Conditions	50	18.50	2.03	21.50	1.74
Boundary Condition Option	3	18.83	2.06	21.84	1.89
Number of Observed Concentration Data	27	19.17	2.04	22.17	1.72
		19.50	2.03	22.50	1.74
		20.00	2.05	28.60	1.64
		20.50	2.04		
		21.00	2.08		
		21.50	2.09		
		22.00	2.05		
		22.50	2.11		
		23.00	2.11		
		23.50	2.10		
		24.00	2.07		
		24.50	2.08		
		25.00	2.05		
		25.50	2.03		
		26.00	2.04		
		26.50	1.98		
		27.00	1.99		
		27.50	1.95		
		28.00	1.95		

		28.50	1.95		
		29.00	1.91		
		29.50	1.86		
		30.00	1.83		
		30.50	1.88		
		31.00	1.85		
		81.00	0.33		

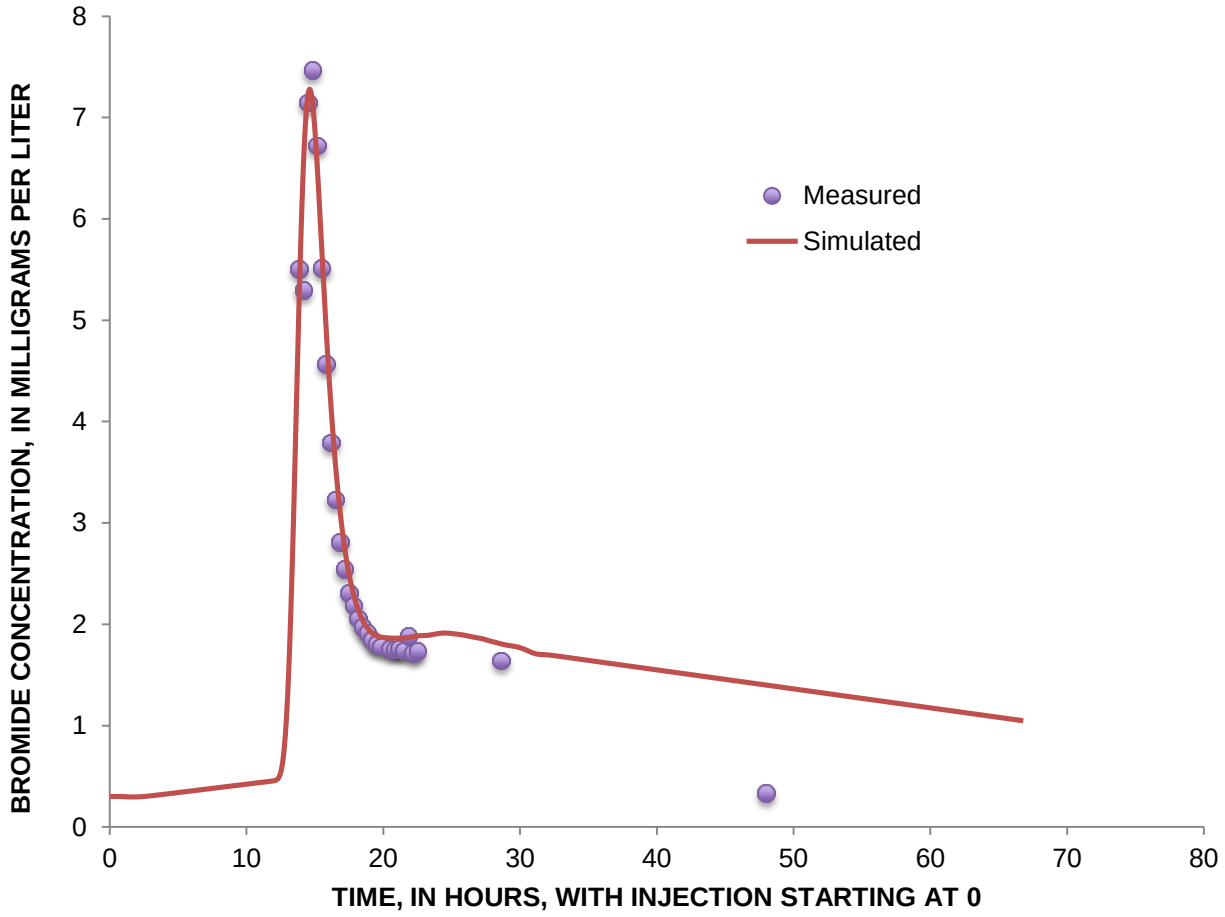

Figure D.7 OTIS-P output data for Reach 4 (5.13-6.78 km) measured bromide concentrations.

Table D.8 OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations.

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations					
Print Option	2	**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Requested Print Interval (hr)	0.01	Begin Time	Concentration	Time	Concentration
Integration Time Step (hr)	0.014	hour	mg L-1	hour	mg L-1
Starting Time (hr)	0	0.11	0.33	0.60	0.39
Ending Time (hr)	105	0.50	-0.14	0.63	0.39
Starting Distance (m)	5128	0.53	-0.14	0.67	0.39
Downstream Boundary Condition (mg L-1)	0	0.57	-0.14	0.70	0.39
Simulation Type	Dynamic	0.60	-0.14	0.73	0.39
Number of Reaches	1	0.63	-0.14	0.77	0.39
End Distance (m)	6978	0.67	-0.14	0.80	0.39
Number of Spatial Segments	1850	0.70	-0.14	0.83	0.39
Reach Length (m)	1850	0.73	-0.14	0.87	0.39
Dispersion Coefficient (m^2 s-1)	21.9	0.77	-0.14	0.90	0.39
Storage Zone Area (m2)	1	0.80	-0.14	0.93	0.39
Storage Exchange Rate (sec-1)	0	0.83	-0.14	0.97	0.39
Decay Coefficient Channel	0	0.87	-0.14	1.00	0.39
Decay Coefficient Storage	0	0.90	-0.14	1.03	0.39
Requested Print Location (m)	6778	0.93	-0.14	1.07	0.39
Flow Option	Steady	0.97	-0.14	1.10	0.39
Flow Interval (hr)	0	1.00	-0.14	1.13	0.39
Flowrate at Upstream Boundary (m3 s-1)	0.0229	1.03	-0.14	1.17	0.39
Lateral Inflow (m3 s-1)	1.38E-06	1.07	-0.14	1.20	0.39
Lateral Outflow (m3 s-1)	0	1.10	-0.14	1.23	0.39
Cross-sectional Area (m2)	0.104	1.13	-0.14	1.27	0.39
Lateral Inflow Concentration (mg L-1)	0	1.17	-0.14	1.30	0.39
Number of Upstream Boundary Conditions	1363	1.20	-0.14	1.33	0.39
Boundary Condition Option	3	1.23	-0.14	1.37	0.39
Number of Observed Concentration Data	1363	1.27	-0.14	1.40	0.39
		1.30	-0.14	1.43	0.39
		1.33	-0.14	1.47	0.39
		1.37	-0.14	1.50	0.39
		1.40	-0.14	1.53	0.39
		1.43	-0.14	1.57	0.39
		1.47	-0.14	1.60	0.39
		1.50	-0.14	1.63	0.39
		1.53	-0.14	1.67	0.39
		1.57	-0.14	1.70	0.39
		1.60	-0.14	1.73	0.39
		1.63	-0.14	1.77	0.39
		1.67	-0.14	1.80	0.39
		1.70	-0.14	1.83	0.39
		1.73	-0.14	1.87	0.39
		1.77	-0.14	1.90	0.39

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
1.83	-0.14	1.97	0.39	3.43	-0.14	3.57	0.39
1.87	-0.14	2.00	0.39	3.47	-0.14	3.60	0.39
1.90	-0.14	2.03	0.39	3.50	-0.14	3.63	0.39
1.93	-0.14	2.07	0.39	3.53	-0.14	3.67	0.39
1.97	-0.14	2.10	0.39	3.57	-0.14	3.70	0.39
2.00	-0.14	2.13	0.39	3.60	-0.14	3.73	0.39
2.03	-0.14	2.17	0.39	3.63	-0.14	3.77	0.39
2.07	-0.14	2.20	0.39	3.67	-0.14	3.80	0.39
2.10	-0.14	2.23	0.39	3.70	-0.14	3.83	0.39
2.13	-0.14	2.27	0.39	3.73	-0.14	3.87	0.39
2.17	-0.14	2.30	0.39	3.77	-0.14	3.90	0.39
2.20	-0.14	2.33	0.39	3.80	-0.14	3.93	0.39
2.23	-0.14	2.37	0.39	3.83	-0.14	3.97	0.39
2.27	-0.14	2.40	0.39	3.87	-0.14	4.00	0.39
2.30	-0.14	2.43	0.39	3.90	-0.14	4.03	0.39
2.33	-0.14	2.47	0.39	3.93	-0.14	4.07	0.39
2.37	-0.14	2.50	0.39	3.97	-0.14	4.10	0.39
2.40	-0.14	2.53	0.39	4.00	-0.14	4.13	0.39
2.43	-0.14	2.57	0.39	4.03	-0.14	4.17	0.39
2.47	-0.14	2.60	0.39	4.07	-0.14	4.20	0.39
2.50	-0.14	2.63	0.39	4.10	-0.14	4.23	0.39
2.53	-0.14	2.67	0.39	4.13	-0.14	4.27	0.39
2.57	-0.14	2.70	0.39	4.17	-0.14	4.30	0.39
2.60	-0.14	2.73	0.39	4.20	-0.14	4.33	0.39
2.63	-0.14	2.77	0.39	4.23	-0.14	4.37	0.39
2.67	-0.14	2.80	0.39	4.27	-0.14	4.40	0.39
2.70	-0.14	2.83	0.39	4.30	-0.14	4.43	0.39
2.73	-0.14	2.87	0.39	4.33	-0.14	4.47	0.39
2.77	-0.14	2.90	0.39	4.37	-0.14	4.50	0.39
2.80	-0.14	2.93	0.39	4.40	-0.14	4.53	0.39
2.83	-0.14	2.97	0.39	4.43	-0.14	4.57	0.39
2.87	-0.14	3.00	0.39	4.47	-0.14	4.60	0.39
2.90	-0.14	3.03	0.39	4.50	-0.14	4.63	0.39
2.93	-0.14	3.07	0.39	4.53	-0.14	4.67	0.39
2.97	-0.14	3.10	0.39	4.57	-0.14	4.70	0.39
3.00	-0.14	3.13	0.39	4.60	-0.14	4.73	0.39
3.03	-0.14	3.17	0.39	4.63	-0.14	4.77	0.39
3.07	-0.14	3.20	0.39	4.67	-0.14	4.80	0.39
3.10	-0.14	3.23	0.39	4.70	-0.14	4.83	0.39
3.13	-0.14	3.27	0.39	4.73	-0.14	4.87	0.39
3.17	-0.14	3.30	0.39	4.77	-0.14	4.90	0.39
3.20	-0.14	3.33	0.39	4.80	-0.14	4.93	0.39
3.23	-0.14	3.37	0.39	4.83	-0.14	4.97	0.39
3.27	-0.14	3.40	0.39	4.87	-0.14	5.00	0.39
3.30	-0.14	3.43	0.39	4.90	-0.14	5.03	0.39
3.33	-0.14	3.47	0.39	4.93	-0.14	5.07	0.39
3.37	-0.14	3.50	0.39	4.97	-0.14	5.10	0.39
3.40	-0.14	3.53	0.39	5.00	-0.14	5.13	0.39

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
5.03	-0.14	5.17	0.39	6.67	-0.14	6.80	0.39
5.07	-0.14	5.20	0.39	6.70	-0.14	6.83	0.39
5.10	-0.14	5.23	0.39	6.73	-0.14	6.87	0.39
5.13	-0.14	5.27	0.39	6.77	-0.14	6.90	0.39
5.17	-0.14	5.30	0.39	6.80	-0.14	6.93	0.39
5.20	-0.14	5.33	0.39	6.83	-0.14	6.97	0.39
5.23	-0.14	5.37	0.39	6.87	-0.14	7.00	0.39
5.27	-0.14	5.40	0.39	6.90	-0.14	7.03	0.39
5.30	-0.14	5.43	0.39	6.93	-0.14	7.07	0.39
5.33	-0.14	5.47	0.39	6.97	-0.14	7.10	0.39
5.37	-0.14	5.50	0.39	7.00	-0.14	7.13	0.39
5.40	-0.14	5.53	0.39	7.03	-0.14	7.17	0.39
5.43	-0.14	5.57	0.39	7.07	-0.14	7.20	0.39
5.47	-0.14	5.60	0.39	7.10	-0.14	7.23	0.39
5.50	-0.14	5.63	0.39	7.13	-0.14	7.27	0.39
5.53	-0.14	5.67	0.39	7.17	-0.14	7.30	0.39
5.57	-0.14	5.70	0.39	7.20	-0.14	7.33	0.39
5.60	-0.14	5.73	0.39	7.23	-0.14	7.37	0.39
5.63	-0.14	5.77	0.39	7.27	-0.14	7.40	0.39
5.67	-0.14	5.80	0.39	7.30	-0.14	7.43	0.39
5.70	-0.14	5.83	0.39	7.33	-0.14	7.47	0.39
5.73	-0.14	5.87	0.39	7.37	-0.14	7.50	0.39
5.77	-0.14	5.90	0.39	7.40	-0.14	7.53	0.39
5.80	-0.14	5.93	0.39	7.43	-0.14	7.57	0.39
5.83	-0.14	5.97	0.39	7.47	-0.14	7.60	0.39
5.87	-0.14	6.00	0.39	7.50	-0.14	7.63	0.39
5.90	-0.14	6.03	0.39	7.53	-0.14	7.67	0.39
5.93	-0.14	6.07	0.39	7.57	-0.14	7.70	0.39
5.97	-0.14	6.10	0.39	7.60	-0.14	7.73	0.39
6.00	-0.14	6.13	0.39	7.63	-0.14	7.77	0.39
6.03	-0.14	6.17	0.39	7.67	-0.14	7.80	0.39
6.07	-0.14	6.20	0.39	7.70	-0.14	7.83	0.39
6.10	-0.14	6.23	0.39	7.73	-0.14	7.87	0.39
6.13	-0.14	6.27	0.39	7.77	-0.14	7.90	0.39
6.17	-0.14	6.30	0.39	7.80	-0.14	7.93	0.39
6.20	-0.14	6.33	0.39	7.83	-0.14	7.97	0.39
6.23	-0.14	6.37	0.39	7.87	-0.14	8.00	0.39
6.27	-0.14	6.40	0.39	7.90	-0.14	8.03	0.39
6.30	-0.14	6.43	0.39	7.93	-0.14	8.07	0.39
6.33	-0.14	6.47	0.39	7.97	-0.14	8.10	0.39
6.37	-0.14	6.50	0.39	8.00	-0.14	8.13	0.39
6.40	-0.14	6.53	0.39	8.03	-0.14	8.17	0.39
6.43	-0.14	6.57	0.39	8.07	-0.14	8.20	0.39
6.47	-0.14	6.60	0.39	8.10	-0.14	8.23	0.39
6.50	-0.14	6.63	0.39	8.13	-0.14	8.27	0.39
6.53	-0.14	6.67	0.39	8.17	-0.14	8.30	0.39
6.57	-0.14	6.70	0.39	8.20	-0.14	8.33	0.39
6.60	-0.14	6.73	0.39	8.23	-0.14	8.37	0.39
6.63	-0.14	6.77	0.39	8.27	-0.14	8.40	0.39

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
8.30	-0.14	8.43	0.39	9.93	-0.14	10.07	0.39
8.33	-0.14	8.47	0.39	9.97	-0.14	10.10	0.39
8.37	-0.14	8.50	0.39	10.00	-0.14	10.13	0.39
8.40	-0.14	8.53	0.39	10.03	-0.14	10.17	0.39
8.43	-0.14	8.57	0.39	10.07	-0.14	10.20	0.39
8.47	-0.14	8.60	0.39	10.10	-0.14	10.23	0.39
8.50	-0.14	8.63	0.39	10.13	-0.14	10.27	0.39
8.53	-0.14	8.67	0.39	10.17	-0.14	10.30	0.39
8.57	-0.14	8.70	0.39	10.20	-0.14	10.33	0.39
8.60	-0.14	8.73	0.39	10.23	-0.14	10.37	0.39
8.63	-0.14	8.77	0.39	10.27	-0.14	10.40	0.39
8.67	-0.14	8.80	0.39	10.30	-0.14	10.43	0.39
8.70	-0.14	8.83	0.39	10.33	-0.14	10.47	0.39
8.73	-0.14	8.87	0.39	10.37	-0.14	10.50	0.39
8.77	-0.14	8.90	0.39	10.40	-0.14	10.53	0.39
8.80	-0.14	8.93	0.39	10.43	-0.14	10.57	0.39
8.83	-0.14	8.97	0.39	10.47	-0.14	10.60	0.39
8.87	-0.14	9.00	0.39	10.50	-0.14	10.63	0.39
8.90	-0.14	9.03	0.39	10.53	-0.14	10.67	0.39
8.93	-0.14	9.07	0.39	10.57	-0.14	10.70	0.39
8.97	-0.14	9.10	0.39	10.60	-0.14	10.73	0.39
9.00	-0.14	9.13	0.39	10.63	-0.14	10.77	0.39
9.03	-0.14	9.17	0.39	10.67	-0.14	10.80	0.39
9.07	-0.14	9.20	0.39	10.70	-0.14	10.83	0.39
9.10	-0.14	9.23	0.39	10.73	-0.14	10.87	0.39
9.13	-0.14	9.27	0.39	10.77	-0.14	10.90	0.39
9.17	-0.14	9.30	0.39	10.80	-0.14	10.93	0.39
9.20	-0.14	9.33	0.39	10.83	-0.14	10.97	0.39
9.23	-0.14	9.37	0.39	10.87	-0.14	11.00	0.39
9.27	-0.14	9.40	0.39	10.90	-0.14	11.03	0.39
9.30	-0.14	9.43	0.39	10.93	-0.14	11.07	0.39
9.33	-0.14	9.47	0.39	10.97	-0.14	11.10	0.39
9.37	-0.14	9.50	0.39	11.00	-0.14	11.13	0.39
9.40	-0.14	9.53	0.39	11.03	-0.14	11.17	0.39
9.43	-0.14	9.57	0.39	11.07	-0.14	11.20	0.39
9.47	-0.14	9.60	0.39	11.10	-0.14	11.23	0.39
9.50	-0.14	9.63	0.39	11.13	-0.14	11.27	0.39
9.53	-0.14	9.67	0.39	11.17	-0.14	11.30	0.39
9.57	-0.14	9.70	0.39	11.20	-0.14	11.33	0.39
9.60	-0.14	9.73	0.39	11.23	-0.14	11.37	0.39
9.63	-0.14	9.77	0.39	11.27	-0.14	11.40	0.39
9.67	-0.14	9.80	0.39	11.30	-0.14	11.43	0.39
9.70	-0.14	9.83	0.39	11.33	-0.14	11.47	0.39
9.73	-0.14	9.87	0.39	11.37	-0.14	11.50	0.39
9.77	-0.14	9.90	0.39	11.40	-0.11	11.53	0.39
9.80	-0.14	9.93	0.39	11.43	-0.08	11.57	0.39
9.83	-0.14	9.97	0.39	11.47	-0.05	11.60	0.39
9.87	-0.14	10.00	0.39	11.50	0.01	11.63	0.39
9.90	-0.14	10.03	0.39	11.53	0.07	11.67	0.39

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
11.57	0.16	11.70	0.39	13.20	8.62	13.33	0.52
11.60	0.25	11.73	0.39	13.23	8.62	13.37	0.58
11.63	0.48	11.77	0.39	13.27	7.99	13.40	0.64
11.667	1.109	11.80	0.39	13.30	7.99	13.43	0.70
11.70	1.11	11.83	0.39	13.33	7.99	13.47	0.76
11.7330	1.7350	11.87	0.39	13.37	7.99	13.50	0.83
11.77	1.74	11.90	0.39	13.40	7.37	13.53	0.89
11.80	1.74	11.93	0.39	13.43	7.37	13.57	0.98
11.83	2.36	11.97	0.39	13.47	7.37	13.60	1.07
11.87	2.99	12.00	0.39	13.50	6.74	13.63	1.17
11.90	2.99	12.03	0.39	13.53	6.74	13.67	1.29
11.93	3.61	12.07	0.39	13.57	6.74	13.70	1.35
11.97	4.24	12.10	0.39	13.60	6.12	13.73	1.35
12.00	4.24	12.13	0.39	13.63	6.12	13.77	1.35
12.03	4.86	12.17	0.39	13.67	6.12	13.80	1.35
12.07	5.49	12.20	0.39	13.70	5.49	13.83	1.35
12.10	6.12	12.23	0.39	13.73	5.49	13.87	2.31
12.13	6.74	12.27	0.39	13.77	5.49	13.90	2.31
12.17	6.74	12.30	0.39	13.80	5.49	13.93	2.31
12.20	7.37	12.33	0.39	13.83	4.86	13.97	2.31
12.23	7.37	12.37	0.39	13.87	4.86	14.00	2.31
12.27	7.99	12.40	0.39	13.97	4.24	13.90	4.86
12.30	8.62	12.43	0.39	14.00	4.24	13.93	4.86
12.33	8.62	12.47	0.39	14.03	4.24	14.10	3.28
12.37	9.25	12.50	0.39	14.07	4.24	14.13	3.28
12.40	9.25	12.53	0.39	14.10	3.61	14.17	4.24
12.43	9.25	12.57	0.39	14.13	3.61	14.20	4.24
12.47	9.87	12.60	0.39	14.17	3.61	14.23	4.24
12.50	9.87	12.63	0.39	14.20	3.61	14.27	4.24
12.53	9.87	12.67	0.39	14.23	3.61	14.30	4.24
12.57	10.50	12.70	0.39	14.27	2.99	14.33	5.21
12.60	10.50	12.73	0.39	14.30	2.99	14.37	5.21
12.63	10.50	12.77	0.39	14.33	2.99	14.40	5.21
12.67	10.50	12.80	0.39	14.37	2.99	14.43	5.21
12.70	10.50	12.83	0.39	14.40	2.99	14.47	5.21
12.73	10.50	12.87	0.39	14.43	2.99	14.50	6.17
12.77	10.50	12.90	0.39	14.47	2.99	14.53	5.21
12.80	9.87	12.93	0.39	14.50	2.99	14.57	6.17
12.83	10.50	12.97	0.39	14.53	2.36	14.60	5.21
12.87	10.50	13.00	0.39	14.57	2.36	14.63	5.21
12.90	9.87	13.03	0.39	14.60	2.36	14.67	6.17
12.93	9.87	13.07	0.39	14.63	2.36	14.70	6.17
12.97	9.87	13.10	0.39	14.67	2.36	14.73	6.17
13.00	9.87	13.13	0.39	14.70	2.36	14.77	5.21
13.03	9.87	13.17	0.39	14.73	2.30	14.80	6.17
13.07	9.25	13.20	0.39	14.77	2.26	14.83	6.17
13.10	9.25	13.23	0.42	14.80	2.22	14.87	5.21
13.13	9.25	13.27	0.45	14.83	2.18	14.90	6.17
13.17	8.62	13.30	0.48	14.87	2.14	14.93	5.21

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
14.90	2.10	14.97	5.21	16.53	1.57	16.60	1.66
14.93	2.06	15.00	6.17	16.57	1.55	16.63	1.63
14.97	2.04	15.03	5.21	16.60	1.53	16.67	1.60
15.00	2.02	15.07	5.21	16.63	1.51	16.70	1.57
15.03	2.00	15.10	5.21	16.67	1.49	16.73	1.54
15.07	1.98	15.13	5.21	16.70	1.47	16.77	1.51
15.10	1.96	15.17	5.21	16.73	1.45	16.80	1.48
15.13	1.94	15.20	5.21	16.77	1.43	16.83	1.45
15.17	1.92	15.23	5.21	16.80	1.41	16.87	1.41
15.20	1.90	15.27	5.21	16.83	1.39	16.90	1.38
15.23	1.88	15.30	4.24	16.87	1.37	16.93	1.38
15.27	1.86	15.33	5.21	16.90	1.35	16.97	1.35
15.30	1.86	15.37	4.24	16.93	1.33	17.00	1.32
15.33	1.84	15.40	4.24	16.97	1.31	17.03	1.32
15.37	1.84	15.43	4.24	17.00	1.29	17.07	1.32
15.40	1.82	15.47	4.24	17.03	1.27	17.10	1.32
15.43	1.80	15.50	4.24	17.07	1.25	17.13	1.32
15.47	1.80	15.53	4.24	17.10	1.23	17.17	1.32
15.50	1.80	15.57	4.24	17.13	1.21	17.20	1.32
15.53	1.80	15.60	3.28	17.17	1.19	17.23	1.32
15.57	1.80	15.63	3.28	17.20	1.17	17.27	1.32
15.60	1.80	15.67	4.24	17.23	1.15	17.30	1.32
15.63	1.78	15.70	3.28	17.27	1.13	17.33	1.32
15.67	1.76	15.73	3.28	17.30	1.11	17.37	1.32
15.70	1.76	15.77	3.28	17.33	1.11	17.40	1.32
15.73	1.74	15.80	3.28	17.37	1.11	17.43	1.32
15.77	1.74	15.83	3.28	17.40	1.11	17.47	1.32
15.80	1.74	15.87	3.28	17.43	1.11	17.50	1.32
15.83	1.74	15.90	3.28	17.47	1.11	17.53	1.32
15.87	1.74	15.93	2.31	17.50	1.11	17.57	1.32
15.90	1.74	15.97	2.31	17.53	1.11	17.60	1.32
15.93	1.74	16.00	3.28	17.57	1.11	17.63	1.32
15.97	1.74	16.03	2.31	17.60	1.13	17.67	1.32
16.00	1.74	16.07	2.31	17.63	1.13	17.70	1.32
16.03	1.74	16.10	2.31	17.67	1.13	17.73	1.29
16.07	1.74	16.13	2.44	17.70	1.13	17.77	1.26
16.10	1.74	16.17	2.38	17.73	1.15	17.80	1.26
16.13	1.74	16.20	2.28	17.77	1.15	17.83	1.26
16.17	1.74	16.23	2.22	17.80	1.15	17.87	1.26
16.20	1.74	16.27	2.16	17.83	1.15	17.90	1.26
16.23	1.74	16.30	2.10	17.87	1.15	17.93	1.26
16.27	1.74	16.33	2.04	17.90	1.15	17.97	1.26
16.30	1.72	16.37	1.97	17.93	1.15	18.00	1.26
16.33	1.70	16.40	1.91	17.97	1.17	18.03	1.23
16.37	1.67	16.43	1.85	18.00	1.17	18.07	1.23
16.40	1.65	16.47	1.82	18.03	1.17	18.10	1.20
16.43	1.63	16.50	1.79	18.07	1.17	18.13	1.17
16.47	1.61	16.53	1.73	18.10	1.17	18.17	1.14
16.50	1.59	16.57	1.69	18.13	1.17	18.20	1.10

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
18.17	1.17	18.23	1.10	19.80	1.15	19.87	0.55
18.20	1.17	18.27	1.10	19.83	1.17	19.90	0.55
18.23	1.17	18.30	1.10	19.87	1.17	19.93	0.55
18.27	1.17	18.33	1.10	19.90	1.17	19.97	0.55
18.30	1.19	18.37	1.10	19.93	1.17	20.00	0.55
18.33	1.21	18.40	1.07	19.97	1.17	20.03	0.52
18.37	1.23	18.43	1.07	20.00	1.17	20.07	0.55
18.40	1.23	18.47	1.07	20.03	1.17	20.10	0.55
18.43	1.23	18.50	1.04	20.07	1.17	20.13	0.58
18.47	1.23	18.53	1.04	20.10	1.17	20.17	0.61
18.50	1.23	18.57	1.04	20.13	1.17	20.20	0.61
18.53	1.25	18.60	1.01	20.17	1.17	20.23	0.61
18.57	1.27	18.63	0.98	20.20	1.17	20.27	0.64
18.60	1.27	18.67	0.98	20.23	1.17	20.30	0.67
18.63	1.27	18.70	0.98	20.27	1.17	20.33	0.70
18.67	1.27	18.73	0.95	20.30	1.17	20.37	0.73
18.70	1.27	18.77	0.95	20.33	1.15	20.40	0.76
18.73	1.27	18.80	0.95	20.37	1.13	20.43	0.79
18.77	1.25	18.83	0.95	20.40	1.13	20.47	0.83
18.80	1.25	18.87	0.92	20.43	1.13	20.50	0.86
18.83	1.25	18.90	0.92	20.47	1.13	20.53	0.86
18.87	1.25	18.93	0.89	20.50	1.13	20.57	0.89
18.90	1.25	18.97	0.89	20.53	1.13	20.60	0.92
18.93	1.25	19.00	0.89	20.57	1.13	20.63	0.95
18.97	1.25	19.03	0.89	20.60	1.13	20.67	0.95
19.00	1.23	19.07	0.89	20.63	1.13	20.70	0.98
19.03	1.23	19.10	0.86	20.67	1.13	20.73	1.01
19.07	1.23	19.13	0.86	20.70	1.13	20.77	1.04
19.10	1.23	19.17	0.86	20.73	1.13	20.80	1.07
19.13	1.23	19.20	0.86	20.77	1.13	20.83	1.10
19.17	1.23	19.23	0.86	20.80	1.13	20.87	1.14
19.20	1.23	19.27	0.83	20.83	1.13	20.90	1.17
19.23	1.23	19.30	0.79	20.87	1.11	20.93	1.20
19.27	1.23	19.33	0.76	20.90	1.11	20.97	1.20
19.30	1.25	19.37	0.73	20.93	1.11	21.00	1.23
19.33	1.25	19.40	0.70	20.97	1.11	21.03	1.23
19.37	1.23	19.43	0.70	21.00	1.11	21.07	1.26
19.40	1.21	19.47	0.67	21.03	1.11	21.10	1.26
19.43	1.21	19.50	0.67	21.07	1.11	21.13	1.29
19.47	1.21	19.53	0.67	21.10	1.11	21.17	1.29
19.50	1.21	19.57	0.64	21.13	1.11	21.20	1.29
19.53	1.21	19.60	0.61	21.17	1.11	21.23	1.32
19.57	1.19	19.63	0.64	21.20	1.11	21.27	1.35
19.60	1.17	19.67	0.64	21.23	1.11	21.30	1.35
19.63	1.17	19.70	0.61	21.27	1.09	21.33	1.35
19.67	1.15	19.73	0.58	21.30	1.07	21.37	1.35
19.70	1.15	19.77	0.58	21.33	1.05	21.40	1.35
19.73	1.15	19.80	0.58	21.37	1.05	21.43	1.35
19.77	1.15	19.83	0.58	21.40	1.03	21.47	1.35

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
21.43	1.03	21.50	1.35	23.07	1.01	23.13	1.35
21.47	1.03	21.53	1.35	23.10	1.03	23.17	1.35
21.50	1.01	21.57	1.35	23.13	1.05	23.20	1.35
21.53	1.01	21.60	1.35	23.17	1.07	23.23	1.38
21.57	1.01	21.63	1.35	23.20	1.09	23.27	1.38
21.60	0.99	21.67	1.35	23.23	1.09	23.30	1.41
21.63	0.97	21.70	1.35	23.27	1.09	23.33	1.41
21.67	0.95	21.73	1.35	23.30	1.11	23.37	1.41
21.70	0.95	21.77	1.35	23.33	1.11	23.40	1.41
21.73	0.93	21.80	1.35	23.37	1.11	23.43	1.41
21.77	0.93	21.83	1.35	23.40	1.11	23.47	1.45
21.80	0.93	21.87	1.35	23.43	1.11	23.50	1.48
21.83	0.93	21.90	1.35	23.47	1.11	23.53	1.48
21.87	0.91	21.93	1.35	23.50	1.11	23.57	1.51
21.90	0.89	21.97	1.35	23.53	1.11	23.60	1.51
21.93	0.89	22.00	1.35	23.57	1.11	23.63	1.51
21.97	0.89	22.03	1.35	23.60	1.11	23.67	1.54
22.00	0.87	22.07	1.35	23.63	1.11	23.70	1.54
22.03	0.87	22.10	1.35	23.67	1.11	23.73	1.54
22.07	0.85	22.13	1.35	23.70	1.11	23.77	1.57
22.10	0.83	22.17	1.35	23.73	1.11	23.80	1.57
22.13	0.81	22.20	1.35	23.77	1.11	23.83	1.60
22.17	0.79	22.23	1.35	23.80	1.11	23.87	1.63
22.20	0.79	22.27	1.35	23.83	1.11	23.90	1.66
22.23	0.79	22.30	1.35	23.87	1.11	23.93	1.69
22.27	0.77	22.33	1.35	23.90	1.11	23.97	1.73
22.30	0.79	22.37	1.35	23.93	1.11	24.00	1.73
22.33	0.81	22.40	1.35	23.97	1.11	24.03	1.73
22.37	0.83	22.43	1.35	24.00	1.11	24.07	1.76
22.40	0.83	22.47	1.35	24.03	1.11	24.10	1.76
22.43	0.85	22.50	1.35	24.07	1.11	24.13	1.79
22.47	0.85	22.53	1.35	24.10	1.11	24.17	1.79
22.50	0.85	22.57	1.35	24.13	1.11	24.20	1.82
22.53	0.87	22.60	1.35	24.17	1.11	24.23	1.85
22.57	0.87	22.63	1.35	24.20	1.11	24.27	1.82
22.60	0.87	22.67	1.35	24.23	1.11	24.30	1.85
22.63	0.89	22.70	1.35	24.27	1.09	24.33	1.85
22.67	0.91	22.73	1.35	24.30	1.09	24.37	1.88
22.70	0.93	22.77	1.35	24.33	1.09	24.40	1.91
22.73	0.93	22.80	1.35	24.37	1.07	24.43	1.94
22.77	0.95	22.83	1.35	24.40	1.07	24.47	1.97
22.80	0.95	22.87	1.35	24.43	1.05	24.50	1.97
22.83	0.95	22.90	1.35	24.47	1.03	24.53	1.97
22.87	0.95	22.93	1.35	24.50	1.01	24.57	2.00
22.90	0.97	22.97	1.35	24.53	1.01	24.60	2.00
22.93	0.99	23.00	1.35	24.57	0.99	24.63	2.04
22.97	0.99	23.03	1.35	24.60	0.99	24.67	2.07
23.00	0.99	23.07	1.35	24.63	0.99	24.70	2.07
23.03	1.01	23.10	1.35	24.67	0.99	24.73	2.10

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
24.70	0.99	24.77	2.10	26.33	1.35	26.40	0.98
24.73	0.99	24.80	2.07	26.37	1.37	26.43	1.01
24.77	0.97	24.83	2.07	26.40	1.39	26.47	1.04
24.80	0.95	24.87	2.07	26.43	1.41	26.50	1.07
24.83	0.95	24.90	2.04	26.47	1.43	26.53	1.10
24.87	0.95	24.93	2.00	26.50	1.43	26.57	1.14
24.90	0.95	24.97	1.97	26.53	1.45	26.60	1.17
24.93	0.95	25.00	1.97	26.57	1.47	26.63	1.20
24.97	0.95	25.03	1.97	26.60	1.49	26.67	1.23
25.00	0.95	25.07	1.97	26.63	1.49	26.70	1.26
25.03	0.95	25.10	1.94	26.67	1.51	26.73	1.29
25.07	0.95	25.13	1.97	26.70	1.53	26.77	1.29
25.10	0.95	25.17	1.94	26.73	1.57	26.80	1.29
25.13	0.95	25.20	1.94	26.77	1.59	26.83	1.29
25.17	0.95	25.23	1.91	26.80	1.61	26.87	1.32
25.20	0.95	25.27	1.88	26.83	1.63	26.90	1.32
25.23	0.95	25.30	1.85	26.87	1.65	26.93	1.35
25.27	0.95	25.33	1.79	26.90	1.67	26.97	1.35
25.30	0.97	25.37	1.73	26.93	1.67	27.00	1.35
25.33	0.97	25.40	1.66	26.97	1.67	27.03	1.35
25.37	0.97	25.43	1.60	27.00	1.67	27.07	1.35
25.40	0.99	25.47	1.54	27.03	1.67	27.10	1.35
25.43	0.99	25.50	1.48	27.07	1.67	27.13	1.35
25.47	1.03	25.53	1.42	27.10	1.67	27.17	1.35
25.50	1.05	25.57	1.35	27.13	1.65	27.20	1.35
25.53	1.07	25.60	1.29	27.17	1.65	27.23	1.35
25.57	1.07	25.63	1.23	27.20	1.67	27.27	1.35
25.60	1.09	25.67	1.17	27.23	1.69	27.30	1.35
25.63	1.09	25.70	1.11	27.27	1.69	27.33	1.35
25.67	1.09	25.73	1.07	27.30	1.69	27.37	1.35
25.70	1.09	25.77	1.04	27.33	1.69	27.40	1.35
25.73	1.09	25.80	1.04	27.37	1.69	27.43	1.35
25.77	1.09	25.83	1.01	27.40	1.67	27.47	1.35
25.80	1.11	25.87	1.01	27.43	1.67	27.50	1.35
25.83	1.13	25.90	0.95	27.47	1.67	27.53	1.35
25.87	1.13	25.93	0.95	27.50	1.67	27.57	1.35
25.90	1.15	25.97	0.95	27.53	1.67	27.60	1.35
25.93	1.17	26.00	0.95	27.57	1.67	27.63	1.35
25.97	1.19	26.03	0.92	27.60	1.67	27.67	1.35
26.00	1.21	26.07	0.92	27.63	1.67	27.70	1.35
26.03	1.23	26.10	0.92	27.67	1.69	27.73	1.35
26.07	1.25	26.13	0.92	27.70	1.69	27.77	1.35
26.10	1.27	26.17	0.89	27.73	1.69	27.80	1.35
26.13	1.29	26.20	0.89	27.77	1.67	27.83	1.35
26.17	1.29	26.23	0.89	27.80	1.67	27.87	1.35
26.20	1.29	26.27	0.89	27.83	1.67	27.90	1.35
26.23	1.31	26.30	0.89	27.87	1.67	27.93	1.35
26.27	1.33	26.33	0.92	27.90	1.67	27.97	1.35
26.30	1.33	26.37	0.95	27.93	1.67	28.00	1.35

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
28.00	1.67	28.07	1.35	29.63	1.70	29.70	1.35
28.03	1.67	28.10	1.35	29.67	1.69	29.73	1.35
28.07	1.67	28.13	1.35	29.70	1.69	29.77	1.35
28.10	1.67	28.17	1.35	29.73	1.68	29.80	1.35
28.13	1.67	28.20	1.35	29.77	1.68	29.83	1.35
28.17	1.69	28.23	1.35	29.80	1.68	29.87	1.35
28.20	1.69	28.27	1.35	29.83	1.67	29.90	1.35
28.23	1.69	28.30	1.35	29.87	1.67	29.93	1.35
28.27	1.69	28.33	1.35	29.90	1.66	29.97	1.35
28.30	1.69	28.37	1.35	29.93	1.66	30.00	1.35
28.33	1.69	28.40	1.35	29.97	1.66	30.03	1.35
28.37	1.72	28.43	1.35	30.00	1.65	30.07	1.35
28.40	1.72	28.47	1.35	30.03	1.65	30.10	1.35
28.43	1.74	28.50	1.35	30.07	1.64	30.13	1.35
28.47	1.74	28.53	1.35	30.10	1.64	30.17	1.35
28.50	1.74	28.57	1.35	30.13	1.63	30.20	1.35
28.53	1.74	28.60	1.35	30.17	1.63	30.23	1.35
28.57	1.74	28.63	1.35	30.20	1.63	30.27	1.35
28.60	1.74	28.67	1.35	30.23	1.62	30.30	1.35
28.63	1.74	28.70	1.35	30.27	1.62	30.33	1.35
28.67	1.74	28.73	1.35	30.30	1.61	30.37	1.35
28.70	1.74	28.77	1.35	30.33	1.61	30.40	1.35
28.73	1.74	28.80	1.35	30.37	1.60	30.43	1.35
28.77	1.74	28.83	1.35	30.40	1.60	30.47	1.35
28.80	1.74	28.87	1.35	30.43	1.60	30.50	1.35
28.83	1.74	28.90	1.35	30.47	1.60	30.53	1.35
28.87	1.74	28.93	1.35	30.50	1.60	30.57	1.35
28.90	1.74	28.97	1.35	30.53	1.60	30.60	1.35
28.93	1.74	29.00	1.35	30.57	1.60	30.63	1.35
28.97	1.74	29.03	1.35	30.60	1.60	30.67	1.35
29.00	1.74	29.07	1.35	30.63	1.60	30.70	1.35
29.03	1.74	29.10	1.35	30.67	1.60	30.73	1.35
29.07	1.74	29.13	1.35	30.70	1.60	30.77	1.35
29.10	1.74	29.17	1.35	30.73	1.60	30.80	1.35
29.13	1.74	29.20	1.35	30.77	1.60	30.83	1.35
29.17	1.74	29.23	1.35	30.80	1.60	30.87	1.35
29.20	1.74	29.27	1.35	30.83	1.60	30.90	1.35
29.23	1.74	29.30	1.35	30.87	1.60	30.93	1.35
29.27	1.74	29.33	1.35	30.90	1.60	30.97	1.35
29.30	1.74	29.37	1.35	30.93	1.60	31.00	1.35
29.33	1.74	29.40	1.35	30.97	1.60	31.03	1.35
29.37	1.73	29.43	1.35	31.00	1.60	31.07	1.35
29.40	1.73	29.47	1.35	31.03	1.60	31.10	1.35
29.43	1.72	29.50	1.35	31.07	1.60	31.13	1.35
29.47	1.72	29.53	1.35	31.10	1.60	31.17	1.35
29.50	1.71	29.57	1.35	31.13	1.60	31.20	1.35
29.53	1.71	29.60	1.35	31.17	1.60	31.23	1.35
29.57	1.71	29.63	1.35	31.20	1.60	31.27	1.35
29.60	1.70	29.67	1.35	31.23	1.60	31.30	1.35

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Upstream Boundary Conditions**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Begin Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
31.27	1.60	31.33	1.35	32.90	1.66	32.97	1.35
31.30	1.60	31.37	1.35	32.93	1.67	33.00	1.35
31.33	1.60	31.40	1.35	32.97	1.67	33.03	1.35
31.37	1.60	31.43	1.35	33.00	1.68	33.07	1.35
31.40	1.60	31.47	1.35	33.03	1.68	33.10	1.35
31.43	1.60	31.50	1.35	33.07	1.68	33.13	1.35
31.47	1.60	31.53	1.35	33.10	1.69	33.17	1.35
31.50	1.60	31.57	1.35	33.13	1.69	33.20	1.35
31.53	1.60	31.60	1.35	33.17	1.70	33.23	1.35
31.57	1.60	31.63	1.35	33.20	1.70	33.27	1.35
31.60	1.60	31.67	1.35	33.23	1.71	33.30	1.35
31.63	1.60	31.70	1.35	33.27	1.71	33.33	1.35
31.67	1.60	31.73	1.35	33.30	1.71	33.37	1.35
31.70	1.60	31.77	1.35	33.33	1.72	33.40	1.35
31.73	1.60	31.80	1.35	33.37	1.70	33.43	1.35
31.77	1.60	31.83	1.35	33.40	1.68	33.47	1.35
31.80	1.60	31.87	1.35	33.43	1.66	33.50	1.35
31.83	1.60	31.90	1.35	33.47	1.64	33.53	1.35
31.87	1.60	31.93	1.35	33.50	1.62	33.57	1.35
31.90	1.60	31.97	1.35	33.53	1.59	33.60	1.35
31.93	1.60	32.00	1.35	33.57	1.57	33.63	1.35
31.97	1.60	32.03	1.35	33.60	1.55	33.67	1.35
32.00	1.60	32.07	1.35	33.63	1.52	33.70	1.35
32.03	1.60	32.10	1.35	33.67	1.50	33.73	1.35
32.07	1.60	32.13	1.35	33.70	1.47	33.77	1.35
32.10	1.60	32.17	1.35	33.73	1.45	33.80	1.35
32.13	1.60	32.20	1.35	33.77	1.43	33.83	1.35
32.17	1.60	32.23	1.35	33.80	1.40	33.87	1.35
32.20	1.60	32.27	1.35	33.83	1.38	33.90	1.35
32.23	1.60	32.30	1.35	33.87	1.36	33.93	1.35
32.27	1.60	32.33	1.35	33.90	1.33	33.97	1.35
32.30	1.60	32.37	1.35	33.93	1.31	34.00	1.35
32.33	1.60	32.40	1.35	33.97	1.28	34.03	1.35
32.37	1.60	32.43	1.35	34.00	1.26	34.07	1.35
32.40	1.60	32.47	1.35	34.03	1.24	34.10	1.35
32.43	1.60	32.50	1.35	34.07	1.22	34.13	1.35
32.47	1.61	32.53	1.35	34.10	1.20	34.17	1.35
32.50	1.61	32.57	1.35	34.13	1.18	34.20	1.35
32.53	1.62	32.60	1.35	34.17	1.18	34.23	1.35
32.57	1.62	32.63	1.35	34.20	1.16	34.27	1.35
32.60	1.63	32.67	1.35	34.23	1.14	34.30	1.35
32.63	1.63	32.70	1.35	34.27	1.12	34.33	1.35
32.67	1.63	32.73	1.35	34.30	1.10	34.37	1.35
32.70	1.64	32.77	1.35	34.33	1.10	34.40	1.35
32.73	1.64	32.80	1.35	34.37	1.08	34.43	1.35
32.77	1.65	32.83	1.35	34.40	1.11	34.47	1.35
32.80	1.65	32.87	1.35	34.43	1.13	34.50	1.35
32.83	1.66	32.90	1.35	34.47	1.13	34.53	1.35
32.87	1.66	32.93	1.35	34.50	1.16	34.57	1.35

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
34.53	1.18	34.60	1.35	38.77	1.39	38.83	0.73
34.57	1.18	34.63	1.35	38.80	1.37	38.87	0.73
34.60	1.19	34.67	1.35	38.83	1.39	38.90	0.73
34.63	1.19	34.70	1.35	38.87	1.41	38.93	0.70
34.67	1.22	34.73	1.35	38.90	1.41	38.97	0.70
34.70	1.24	34.77	1.35	38.93	1.43	39.00	0.67
34.73	1.24	34.80	1.35	38.97	1.45	39.03	0.67
34.77	1.27	34.83	1.35	39.00	1.47	39.07	0.67
34.80	1.29	34.87	1.35	39.03	1.47	39.10	0.67
34.83	1.29	34.90	1.35	39.07	1.47	39.13	0.67
34.87	1.32	34.93	1.35	39.10	1.45	39.17	0.67
34.90	1.34	34.97	1.35	39.13	1.43	39.20	0.67
34.93	1.34	35.00	1.35	39.17	1.41	39.23	0.67
34.97	1.37	35.03	1.35	39.20	1.41	39.27	0.64
35.00	1.39	35.07	1.35	39.23	1.39	39.30	0.64
35.03	1.41	35.10	1.35	39.27	1.41	39.33	0.61
37.67	1.41	37.73	0.89	39.30	1.43	39.37	0.64
37.70	1.39	37.77	0.89	39.33	1.45	39.40	0.61
37.73	1.41	37.80	0.89	39.37	1.47	39.43	0.58
37.77	1.43	37.83	0.86	39.40	1.49	39.47	0.58
37.80	1.43	37.87	0.83	39.43	1.49	39.50	0.55
37.83	1.43	37.90	0.83	39.47	1.47	39.53	0.55
37.87	1.45	37.93	0.79	39.50	1.47	39.57	0.58
37.90	1.43	37.97	0.83	39.53	1.47	39.60	0.58
37.93	1.41	38.00	0.79	39.57	1.47	39.63	0.55
37.97	1.41	38.03	0.76	39.60	1.47	39.67	0.52
38.00	1.43	38.07	0.76	39.63	1.45	39.70	0.52
38.03	1.43	38.10	0.76	39.67	1.43	39.73	0.52
38.07	1.45	38.13	0.76	39.70	1.41	39.77	0.52
38.10	1.45	38.17	0.76	39.73	1.45	39.80	0.48
38.13	1.45	38.20	0.76	39.77	1.43	39.83	0.48
38.17	1.47	38.23	0.79	39.80	1.41	39.87	0.45
38.20	1.47	38.27	0.76	39.83	1.41	39.90	0.48
38.23	1.47	38.30	0.76	39.87	1.39	39.93	0.52
38.27	1.45	38.33	0.76	39.90	1.37	39.97	0.52
38.30	1.45	38.37	0.79	39.93	1.35	40.00	0.55
38.33	1.43	38.40	0.79	39.97	1.33	40.03	0.55
38.37	1.43	38.43	0.76	40.00	1.31	40.07	0.58
38.40	1.45	38.47	0.76	40.03	1.29	40.10	0.58
38.43	1.45	38.50	0.73	40.07	1.27	40.13	0.61
38.47	1.43	38.53	0.70	40.10	1.27	40.17	0.64
38.50	1.41	38.57	0.70	40.13	1.27	40.20	0.64
38.53	1.41	38.60	0.70	40.17	1.27	40.23	0.64
38.57	1.41	38.63	0.73	40.20	1.27	40.27	0.67
38.60	1.43	38.67	0.73	40.23	1.25	40.30	0.70
38.63	1.43	38.70	0.70	40.27	1.25	40.33	0.70
38.67	1.43	38.73	0.70	40.30	1.23	40.37	0.70
38.70	1.37	38.77	0.73	40.33	1.19	40.40	0.70
38.73	1.39	38.80	0.73	40.37	1.15	40.43	0.73

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
40.40	1.11	40.47	0.73	42.03	1.74	42.10	1.35
40.43	1.07	40.50	0.73	42.07	1.74	42.13	1.35
40.47	1.03	40.53	0.76	42.10	1.74	42.17	1.35
40.50	1.01	40.57	0.79	42.13	1.74	42.20	1.35
40.53	0.99	40.60	0.76	42.17	1.74	42.23	1.35
40.57	0.97	40.63	0.76	42.20	1.74	42.27	1.35
40.60	0.93	40.67	0.76	42.23	1.74	42.30	1.35
40.63	0.93	40.70	0.76	42.27	1.74	42.33	1.35
40.67	0.93	40.73	0.76	42.30	1.74	42.37	1.35
40.70	0.93	40.77	0.79	42.33	1.74	42.40	1.35
40.73	0.93	40.80	0.79	42.37	1.74	42.43	1.35
40.77	0.93	40.83	0.83	42.40	1.74	42.47	1.35
40.80	0.93	40.87	0.86	42.43	1.74	42.50	1.35
40.83	0.93	40.90	0.89	42.47	1.74	42.53	1.35
40.87	0.95	40.93	0.89	42.50	1.74	42.57	1.32
40.90	0.97	40.97	0.89	42.53	1.74	42.60	1.32
40.93	0.99	41.00	0.92	42.57	1.74	42.63	1.32
40.97	1.01	41.03	0.92	42.60	1.74	42.67	1.32
41.00	1.03	41.07	0.95	42.63	1.74	42.70	1.32
41.03	1.05	41.10	0.95	42.67	1.74	42.73	1.32
41.07	1.07	41.13	0.98	42.70	1.74	42.77	1.32
41.10	1.09	41.17	0.98	42.73	1.74	42.80	1.32
41.13	1.11	41.20	0.98	42.77	1.74	42.83	1.32
41.17	1.13	41.23	1.01	42.80	1.74	42.87	1.32
41.20	1.15	41.27	1.04	42.83	1.74	42.90	1.32
41.23	1.17	41.30	1.04	42.87	1.74	42.93	1.32
41.27	1.19	41.33	1.04	42.90	1.74	42.97	1.32
41.30	1.21	41.37	1.07	42.93	1.74	43.00	1.32
41.33	1.23	41.40	1.10	42.97	1.74	43.03	1.32
41.37	1.27	41.43	1.10	43.00	1.74	43.07	1.32
41.40	1.31	41.47	1.10	43.03	1.74	43.10	1.32
41.43	1.35	41.50	1.14	43.07	1.74	43.13	1.35
41.47	1.39	41.53	1.17	43.10	1.74	43.17	1.35
41.50	1.43	41.57	1.17	43.13	1.74	43.20	1.38
41.53	1.47	41.60	1.17	43.17	1.74	43.23	1.38
41.57	1.51	41.63	1.20	43.20	1.74	43.27	1.38
41.60	1.55	41.67	1.23	43.23	1.74	43.30	1.38
41.63	1.59	41.70	1.26	43.27	1.74	43.33	1.38
41.67	1.61	41.73	1.29	43.30	1.74	43.37	1.38
41.70	1.63	41.77	1.32	43.33	1.74	43.40	1.38
41.73	1.65	41.80	1.32	43.37	1.74	43.43	1.38
41.77	1.67	41.83	1.35	43.40	1.74	43.47	1.42
41.80	1.69	41.87	1.35	43.43	1.74	43.50	1.42
41.83	1.72	41.90	1.35	43.47	1.74	43.53	1.42
41.87	1.74	41.93	1.35	43.50	1.74	43.57	1.45
41.90	1.74	41.97	1.35	43.53	1.74	43.60	1.48
41.93	1.74	42.00	1.35	43.57	1.74	43.63	1.51
41.97	1.74	42.03	1.35	43.60	1.74	43.67	1.51
42.00	1.74	42.07	1.35	43.63	1.74	43.70	1.51

OTIS-P input data for Reach 4 (5.13-6.78 km) calculated bromide concentrations							
Upstream Boundary Conditions		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**		**Observed Downstream Concentration Data**	
Begin Time	Concentration	Time	Concentration	Time	Concentration	Time	Concentration
hour	mg L-1	hour	mg L-1	hour	mg L-1	hour	mg L-1
43.67	1.74	43.73	1.51	45.30	1.74	45.37	1.35
43.70	1.74	43.77	1.51	45.33	1.74	45.40	1.35
43.73	1.74	43.80	1.51	45.37	1.74	45.43	1.35
43.77	1.74	43.83	1.51	45.40	1.74	45.47	1.35
43.80	1.74	43.87	1.51	45.43	1.74	45.50	1.35
43.83	1.74	43.90	1.51	45.47	1.74	45.53	1.35
43.87	1.74	43.93	1.51	45.50	1.74	45.57	1.35
43.90	1.74	43.97	1.51	45.53	1.74	45.60	1.35
43.93	1.74	44.00	1.51	45.57	1.74	45.63	1.35
43.97	1.74	44.03	1.51	45.60	1.74	45.67	1.35
44.00	1.74	44.07	1.51	45.63	1.74	45.70	1.35
44.03	1.74	44.10	1.51	45.67	1.74	45.73	1.35
44.07	1.74	44.13	1.51	45.70	1.74	45.77	1.35
44.10	1.74	44.17	1.48	45.73	1.74	45.80	1.35
44.13	1.74	44.20	1.48	45.77	1.74	45.83	1.35
44.17	1.74	44.23	1.45	45.80	1.74	45.87	1.35
44.20	1.74	44.27	1.45	81.00	0.33	45.90	1.35
44.23	1.74	44.30	1.45	106.00	0.33	45.93	1.35
44.27	1.74	44.33	1.45			45.97	1.35
44.30	1.74	44.37	1.45			46.00	1.35
44.33	1.74	44.40	1.45				
44.37	1.74	44.43	1.45				
44.40	1.74	44.47	1.45				
44.43	1.74	44.50	1.42				
44.47	1.74	44.53	1.42				
44.50	1.74	44.57	1.42				
44.53	1.74	44.60	1.38				
44.57	1.74	44.63	1.38				
44.60	1.74	44.67	1.35				
44.63	1.74	44.70	1.35				
44.67	1.74	44.73	1.35				
44.70	1.74	44.77	1.35				
44.73	1.74	44.80	1.35				
44.77	1.74	44.83	1.35				
44.80	1.74	44.87	1.35				
44.83	1.74	44.90	1.35				
44.87	1.74	44.93	1.35				
44.90	1.74	44.97	1.35				
44.93	1.74	45.00	1.35				
44.97	1.74	45.03	1.35				
45.00	1.74	45.07	1.35				
45.03	1.74	45.10	1.35				
45.07	1.74	45.13	1.35				
45.10	1.74	45.17	1.35				
45.13	1.74	45.20	1.35				
45.17	1.74	45.23	1.35				
45.20	1.74	45.27	1.35				
45.23	1.74	45.30	1.35				
45.27	1.74	45.33	1.35				

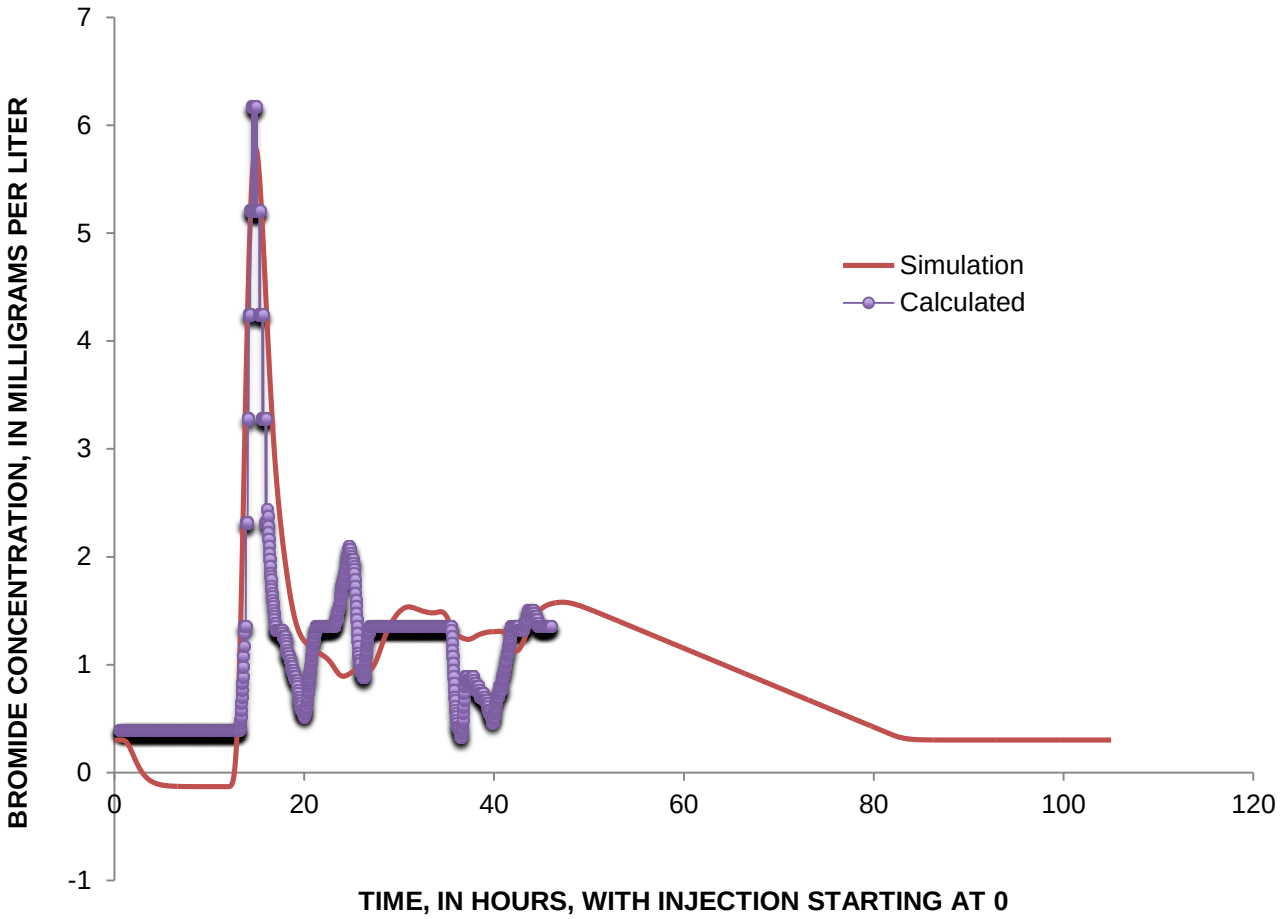

Figure D.8 OTIS-P output data for Reach 4 (5.13-6.78 km) calculated bromide concentrations.