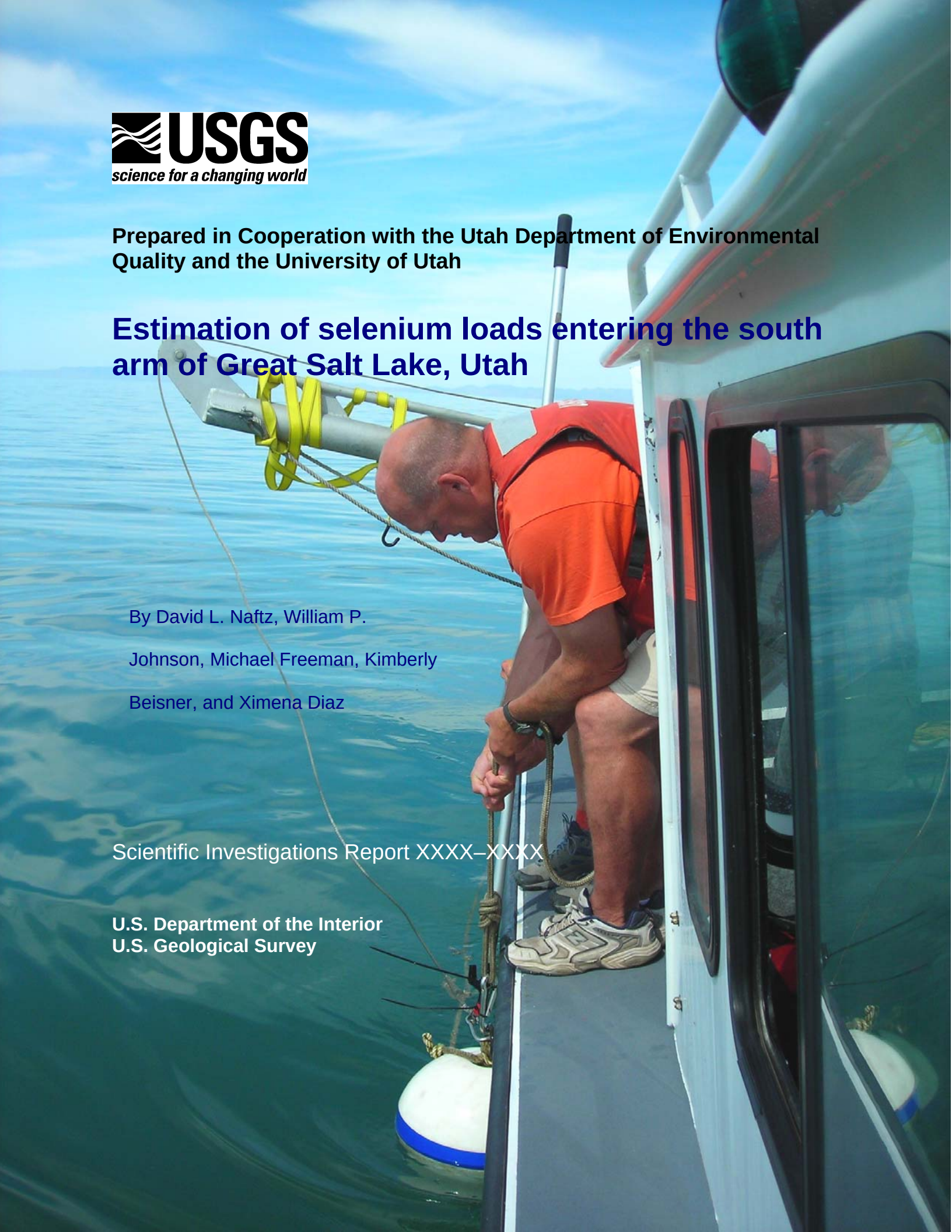

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Estimation of selenium loads entering the south arm of Great Salt Lake, Utah

By David L. Naftz[a], William P. Johnson[b], Michael Freeman[a], Kimberly Beisner[b], and Ximena Diaz[b]

[a]*U.S. Geological Survey, 2329 West Orton Circle, Salt Lake City, Utah, 84119, USA*

[b]*University of Utah, Department of Geology and Geophysics, Salt Lake City, Utah 84112, USA*

Abstract

Discharge and water-quality data from six gages were used in combination with the LOADEST software to provide an estimate of total (dissolved + particulate) selenium (Se) load to the south arm of Great Salt Lake (GSL) during the period of May 2006 through July 2007. Total estimated Se load to GSL during this time period was 1,540 kilograms (kg). The 12-month estimated Se load to GSL for the time period from May 1, 2006 to April 30, 2007 was 1,480 kg. The largest cumulative monthly Se load occurred during May 2006 (304 kg), and the smallest cumulative monthly load occurred during July 2007 (21 kg). During the 15-month monitoring period, inflows from the Kennecott Utah Copper Corporation (KUCC) Outfall and Goggin Drain contributed equally to the largest proportion of total Se load to GSL, accounting for 54 percent of the total Se load. Current (2006 and 2007) median Se loadings from Lee Creek (0.28 kg/day) have increased by more than an order of magnitude relative to historic Se loads (< 0.025 kg/day) calculated from data collected during 1972 through 1984. Historic Se loads during peak flow periods (1972-1984) for the Goggin Drain outflow site were about 50 percent lower than current (2006-2007) daily Se loads during peak runoff periods. Five instantaneous discharge measurements at three sites along the railroad causeway during the 15-month monitoring period

indicate a consistent net loss of Se mass from the south arm to the north arm of GSL (mean = 2.4 kg/day, n = 5). Application of the average daily loss rate equates to annual Se loss rate to the north arm of 880 kg (55 % of the annual Se input to the south arm); however, without continuous measurement of discharge the error associated with this annual loss estimate is high. The majority of Se in water entering GSL is in the dissolved (< 0.45 micron) state and ranges in concentration from 0.06 to 35.7 ug/L. Particulate Se concentration ranged from < 0.05 to 2.5 ug/L. Except for the KUCC gage site, dissolved (< 0.45 um) inflow samples were comprised of 21 % selenite (SeO_3^{2-}) during two sampling events (May 2006 and 2007).

Selenium concentrations in water samples collected from four monitoring sites within GSL during May 2006 through June 2007 were used to understand how the cumulative Se load was being processed by various biogeochemical processes within the lake. Based on the Mann-Kendall test, changes in dissolved Se concentration at the four monitoring sites indicate a statistically significant (90 % confidence interval) upward trend in Se concentration with time. Furthermore, the upward trend at two of the four GSL sites was also significant at the 95 % confidence interval. Regression models for each lake monitoring site indicated a net increase in Se concentration that ranged from 0.16 to 0.34 ug/L during the 15-month monitoring period. The net increase expected from measured riverine Se influx (without accounting for sedimentation and gas losses) over the same monitoring period was + 0.17 ug/L. The expected net increase in open-water Se concentration of 0.17 ug/L is approximately half of the net concentration change measured at 3 of the 4 lake monitoring sites. This comparison indicates an unmeasured source of Se contributing a minimum of an additional 1500 kg of Se load to the south arm. This value for the unmeasured Se contribution does not consider measured Se loss mechanisms that include: (1)

Se export to the north arm of GSL; (2) Se loss via permanent sedimentation; and (3) Se loss via gas flux to the atmosphere. Potential source(s) of this unmeasured Se load could include: (1) Se loads entering GSL from unmeasured surface inflows; (2) submarine groundwater discharge; (3) wind-blown dust that is deposited directly on the lake surface; (4) wet and dry atmospheric deposition falling directly on the lake surface; and (5) lake sediment pore water diffusion into the overlying water column. Processes and sources of additional Se loads and Se concentration from the unmeasured sources and processes identified during the study were further assessed with existing and recently available data: (1) Additional Se loads from the Weber River system are small and would only contribute an additional 46 kg of Se during the 15-month monitoring period; (2) resistivity surveys in the south part of GSL indicate areas of potential submarine groundwater discharge to the open water of GSL and previous work has found elevated (exceeding 10,000 ug/L) Se in groundwater within 1 mile of the south shore of GSL; and (3) comparison between salinity and dissolved (< 0.45 micron) Se concentrations at the four lake monitoring sites show a negative correlation, indicative that evaporative processes play a limited role in the statistically significant increase in open-water Se observed during the study period.

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1. Introduction

Great Salt Lake (GSL), in the western United States, is a terminal lake with a surface area that can exceed 5,100-km^2 (fig. 1). The GSL ecosystem receives industrial, urban, mining, and agricultural discharge from a 37,500-km^2 watershed that includes over 1.7 million people. The open water and adjacent wetlands of the GSL ecosystem support millions of migratory waterfowl and shorebirds from throughout the Western Hemisphere (Aldrich and Paul, 2002). In addition to supporting migratory waterbirds, the brine shrimp (*Artemia franciscana*) population residing in

GSL supports a shrimp industry with annual revenues as high as 60 million dollars (Isaacson et al., 2002). Other industries supported by GSL include mineral production (sodium chloride, potassium salts, magnesium metal, chlorine gas, magnesium chloride, and nutritional supplements) and recreation that includes waterfowl hunting (Anderson and Anders, 2002; Butts, 2002; Isaacson et al., 2002; and Tripp, 2002). Natural oil seeps and potential oil reserves also exist within and adjacent to the shoreline of GSL (Bortz, 2002; Hunt and Chidsey, 2002). Full production of these reserves has been limited by high production and refining costs; however, increasing trends in the market value of crude oil could strengthen the economic viability of these reserves. Despite the ecological and economic importance of GSL, little is known about the input and biogeochemical cycling of trace elements, including selenium (Se) in the lake. Information on the input and biogeochemical cycling of trace elements is needed to understand potential geochemical and biological affects from increased loadings.

Figure 1. Location of continuous and non-continuous stream gages, lake monitoring sites, and exposed sediment transects adjacent to and within Great Salt Lake, Utah.

Domagalski et al. (1990) evaluated the geochemical response of a suite of trace metals (Cd, Co, Cu, Fe, Mn, Mo, Pb, V, and Zn) to diagenetic processes in the bottom sediments of GSL. Results from their research found that most trace metals were associated with sulfide mineral phases in conjunction with decomposition of organic matter and production of hydrogen sulfide that occurred in the near-surface sediments. Enrichment of Co, Cu, Pb, and Zn in near-surface bottom sediments was attributed to anthropogenic sources in the GSL watershed. Most of the organic

matter at the sediment/anoxic water interface was mineralized to carbon dioxide due to excess sulfate in the system.

Work completed by Tayler et al. (1980) postulated that the GSL acts as a “natural disposal system” with respect to the immobilization of dissolved and suspended heavy metals and metalloids (Ag, As, Cd, Cu, Hg, Mn, Mo, Pb, Se, and Zn) in the water column. Concentration factors (concentration in lake/concentration in inflow) for selected heavy metals and mettalloids in the water column of GSL indicated accumulation (> 1.0) or depletion (< 1.0). The concentration factors calculated by Tayler et al. (1980) ranged from 0.1 for Cd to 2.5 for Se to 11.5 for As; however, industrial inflows were not considered during their calculations. In general, the highest enrichments of heavy metals and metalloids in GSL sediments were found in areas beneath an anoxic layer, likely due to the production of sulfide and subsequent precipitation of insoluble metal sulfides.

From 1998 to 2001, the U.S. Geological Survey (USGS) conducted a water quality and biological assessment within the GSL watershed (Waddell et al., 2004). Results from that study indicated that most streambed sediment, collected from areas affected by mine tailing and metal smelters, had elevated concentrations of selected trace elements that exceeded aquatic life guidelines for As, Cd, Cu, Pb, Hg, Ag, and Zn. Elevated P concentrations were found in 12 of the 27 streams in the GSL watershed that were sampled. Pesticides were found in about 95 % of the sampled streams, with the concentrations of carbaryl, diazinon, and malathion exceeding guidelines for the protection of aquatic life.

Sediment cores collected from the Farmington Bay area of GSL (Naftz et al., 2000) were used to reconstruct changes in the water quality entering GSL from the early 1700s to 1998. The 28-cm core indicated that deposition of contaminated sediments (elevated concentrations of Cd, Cu, Pb, Zn, N, organic C, and P) began to occur sometime in the early to mid-1900s and concentrations became progressively greater in recently deposited sediments. Selenium was not included in this analytical schedule. The most contaminated sediments were deposited from 1979-98. Prior to the early 1900s, uncontaminated sediments were deposited in Farmington Bay. The historical trends observed in the GSL core were attributed to the increase in anthropogenic activities in the Salt Lake Valley.

In response to increasing public concern regarding Se input to the GSL ecosystem, the Utah Department of Environmental Quality (UDEQ) initiated coordinated studies to quantify and evaluate the significance of current and future inputs of Se to GSL. Although a number of USGS stream gages existed on upstream reaches of inflow sources to GSL, additional gage sites were needed to allow the measurement of Se loads that are input directly to the lake after passing through the perimeter wetlands systems. The specific objectives of this project are to: (1) accurately measure water discharge and Se concentration at all major inflow sites to GSL; (2) utilize the data collected in objective one in combination with regression modeling techniques to simulate daily, monthly, and annual Se loads to Gilbert Bay of Great Salt Lake; (3) compare current and historic Se load data from selected inflow sites; and (4) model in-lake Se concentration expected from monitored loading rates and compare to observed water column Se concentration and temporal trends.

2. Methodology

2.1 Field methods

The FB and BR gages (fig. 1 and table 1) were already operating prior to the initiation of this study in May 2006. Four additional gages (GD, WR, LC, and KUCC) were reactivated during May and June 2006 (fig. 1 and table 1). Prior to the reactivation of the KUCC gage, discharge and Se data collected by KUCC were used. Stream discharge at the GD, WR, and LC gages was measured using standard USGS methods (Buchanan and Somers, 1968, 1969; Carter and Davidian, 1968) using a continuous record of water stage calibrated to periodic measurements of streamflow. Due to the low channel gradients and wind influence on inflow rates at the BR, FB, and KUCC gage sites, normal stage-to-discharge relationships did not exist. Instead, hydroacoustic equipment in combination with velocity index methods (Simpson, 2001) was used to accurately gage discharge at those sites. The period of operation for each gage is summarized in Table 1. Discharge data from each gage site can be accessed at: http://waterdata.usgs.gov/ut/nwis/sw.

Table 1. Streamflow-gaging stations with continuous records adjacent to Great Salt Lake, Utah, where stream discharge and water-quality samples were collected to simulate selenium loads.

Water samples (filtered and unfiltered) were collected from each gage site at monthly to bimonthly intervals (May 2006 through July 2007) for the analysis of dissolved and total Se. Water samples from each inflow site were composited using the equal discharge increment (EDI)

or equal width increment (EWI) methods (Wilde et al., 1999). Water samples were composited into a churn splitter and processed on site using standard USGS procedures (U.S. Geological Survey, variously dated). Automated samplers were installed at the GD, FB, and BR gage sites (fig. 1) to collect daily water-quality samples during the peak runoff period (unfiltered samples only). The stream hydrograph was used to select which samples collected by the autosamplers were submitted for chemical analyses. Filtered water samples (dissolved Se and selenite (SeO_3^{2-})) were passed through a 0.45-micron capsule filter and placed into acid- and field-rinsed polyethylene bottles and acidified to a pH of less than 2 with ultra-pure nitric acid. Unfiltered water samples (total Se) were placed directly into acid- and field-rinsed polyethylene bottles and acidified to a pH of less than 2 with ultra-pure nitric acid.

Daily water samples collected from the autosamplers were processed every two to three weeks in a similar manner as the composite water samples. Only unfiltered water samples were collected from the autosamplers. Sample bottles used in the autosamplers were cleaned with a 10% HCl solution and then triple rinsed with deionized water prior to redeployment. Specific conductance and pH were also measured on each water sample collected by the autosampler.

2.2 Laboratory methods

Dissolved and total (dissolved + particulate) Se, as well as SeO_3^{2-}, concentration was measured by hydride generation atomic fluoresence (HG-AF) at Frontier GeoSciences, Inc. in Seattle, Washington. The concentration of dissolved selenate (SeO_4^{2-}) was determined by difference (dissolved Se – SeO_3^{2-}).

2.3 Quality assurrance

Thirty-six process blanks were collected during the inflow site sampling from May 2006 through July 2007, and analyzed for Se. The Se concentration in the process blanks did not exceed the lower reporting limit (0.05 ug/L) in 34 of the 36 samples. The only two process blanks to exceed the lower reporting limit, contained a Se concentration of 0.05 ug/L. Based on the process blank results, there was no Se contamination above the lower reporting limit introduced during sample processing at the inflow sites.

Table 2. Results of field process blanks and sample replicates collected at inflow sites to Great Salt Lake from May 2006 through July 2007.

Twenty-one sample replicates were collected during the inflow site sampling from May 2006 through July 2007. The Se concentration for each sample replicate was compared to the Se concentration in the original sample collected from the churn splitter approximately 5 minutes prior to collection of the sample replicate. The absolute difference between the original and replicate samples ranged from 0.002 to 0.457 ug/L and the median difference was 0.023 ug/L (table 2).

2.4 Mass loading estimation method

The USGS loading software, LOADEST (Runkel et al., 2004), was used to estimate the mass loading of total Se at each gage site. The automated model selection in LOADEST was used to select the best regression model from the set of nine predefined models (table 3). Under the

automated selection option, adjusted maximum likelihood estimation (AMLE) (Cohn, 1988; Cohn et al., 1992), is used to determine model coefficients and estimates of log load. The predefined model with the lowest value of the Akaike Information Criterion (AIC) statistic was then used for final load estimation (Judge et al., 1988).

Table 3. Regression models considered during the automated selection option in LOADEST (Runkel et al., 2004).

2.5 Exposed sediment collection and processing

Sediment samples from mud flats surrounding the Great Salt Lake were collected at three transect sites (fig 1). Five samples were collected at each site along a transect perpendicular to the shoreline. Samples at each transect were seperated by variable distances: (transect 1) samples seperatred by 60-m intervals; (transect 2) samples seperatred by 120-m intervals; and (transect 3) samples seperatred by 180-m intervals. The samples closest to shoreline were numbered GSL #-1 sequentially up to GSL #-5 (sample farthest from shoreline).

Samples were processed according to methods in Hageman and Briggs, 2000. Each sample was dried at 60°C for 7 days before processing. After drying, 50 grams of sediment was added to 1 liter of deionized water and mixed for one hour. After settling, the samples were processed as unfiltered acidified (RA) and filtered (< 0.45 micron) acidified (FA). Samples were acidified with ultrapure nitric acid to a pH < 2.0 units. Water samples were analyzed for Se at Frontier

GeoSciences, Inc. A split of the sediment taken before extraction with deionized water was sent to LET, Inc. for analysis of total available Se using a strong acid digestion.

3. Results and Discussion

3.1 Simulation of Se loadings from inflow sites

Lee Creek near Magna, Utah: The LOADEST model calibration file contained 14 observations for total (dissolved + particulate) Se during the time period of May 2006 through July 2007 (fig. 2). The LOADEST estimation file contained 440 measurements of mean daily discharge. Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 8 (table 3) was determined to best simulate daily total Se loads from Lee Creek to GSL with an R^2 value of 0.9289 (Appendix A).

Figure 2. Stream discharge and dates when selenium samples were collected at the Lee Creek gaging station.

Comparisons between the measured and simulated loads of total Se at the Lee Creek gage indicate reasonable agreement (fig. 3). For example, the measured total Se load on 03/06/2007 was 0.24 kg/day and the simulated load was 0.29 kg/day (fig. 3), resulting in an underestimation in daily Se loading of 50 g. The complete output of LOADEST model results can be found in Appendix A.

Figure 3. Measured and simulated loads of total Se at the Lee Creek streamflow-gaging station near Magna, Utah during May 2006 through July 2007.

Goggin Drain near Magna, Utah: The LOADEST model calibration file contained 41 observations for total (dissolved + particulate) Se during the time period of May 2006 through July 2007 (fig. 4). The LOADEST estimation file contained 455 measurements of mean daily discharge. Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 4 (table 3) was determined to best simulate daily total Se loads from the Goggin Drain to GSL with an R^2 value of 0.9946 (Appendix A).

Figure 4. Stream discharge and dates when selenium samples were collected at the Goggin Drain gaging station.

Comparisons between the measured and simulated loads of total Se at the Goggin Drain gage indicate reasonable agreement (fig. 5). For example, the measured total Se load on 03/06/2007 was 3.6 kg/day and the simulated load was 3.8 kg/day (fig. 5), resulting in an underestimation in Se loading of 200 g. The complete output of LOADEST model results can be found in Appendix A.

Figure 5. Measured and simulated loads of total Se at the Goggin Drain streamflow-gaging station near Magna, Utah during May 2006 through July 2007.

Weber River near West Warren, Utah: The LOADEST model calibration file contained 12 observations for total (dissolved + particulate) Se during the time period from May 2006 through July 2007 (fig. 6). The LOADEST estimation file contained 447 measurements of mean daily discharge. Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 2 (table 3) was determined to best simulate daily total Se loads from the Weber River with an R^2 value of 0.9332 (Appendix A).

Figure 6. Stream discharge and dates when selenium samples were collected at the Weber River gaging station.

Comparisons between the measured and simulated loads of total Se at the Weber River gage indicate reasonable agreement (fig. 7). For example, the measured total Se load on 05/17/2007 was 0.021 kg/day and the simulated load was 0.020 kg/day (fig. 7), resulting in an underestimation in Se loading of 1 g. The complete output of LOADEST model results can be found in Appendix A.

Figure 7. Measured and simulated loads of total Se at the Weber River streamflow-gaging station near West Warren, Utah during May 2006 through July 2007.

Kennecott Drain near Magna, Utah: Because of the large number of samples collected by KUCC at the Kennecott Drain gaging station from October 2005 through September 2006 (fig. 8), the LOADEST software was used to estimate total Se loads only during the time period from October 1, 2006 through July 31, 2007. The LOADEST model calibration file contained 134 observations for total (dissolved + particulate) Se during the time period from July 2006 through July 2007. The LOADEST estimation file contained 399 measurements of mean daily discharge measured by the USGS from June 2006 through July 2007. Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 9 (table 3) was determined to best simulate daily total Se loads from the Kennecott Drain to GSL with an R^2 value of 0.9774 (Appendix A).

Figure 8. Stream discharge and dates when selenium samples were collected at the KUCC gaging station. Discharge and selenium data prior to June 30, 2006 provided by KUCC (K. Payne, written commun., 2006 and 2007). Selenium data after June 30, 2006 provided by KUCC and USGS.

Comparisons between the measured and simulated loads of total Se at the Kennecott Drain gage indicate reasonable agreement (fig. 9) during water year 2007. For example, the measured total Se load on 04/27/2007 was 2.4 kg/day and the simulated Se load was 2.4 kg/day (fig. 9). The complete output of LOADEST model results can be found in Appendix A.

Figure 9. Measured and simulated loads of total Se at the Kennecott Drain streamflow-gaging station near Magna, Utah during October 2005 through July 2007.

Bear River Bay Outflow at GSL Minerals Corp. Bridge: The LOADEST model calibration file contained 42 observations for total (dissolved + particulate) Se during the time period from May 2006 through July 2007 (fig. 10). The LOADEST estimation file contained 498 measurements of mean daily discharge collected from March 2006 through July 2007. Because of equipment failure and gage removal in November 2006 due to ice conditions, daily discharge measurements from October 1, 2006 through April 15, 2007 were estimated from an upstream gage (Bear River near Corinne, Utah). Mean daily discharge for the missing time period was estimated from the linear relationship between measured discharge at both sites from March 21, 2006 through September 30, 2006 (fig. 11). The regression equation developed from this comparison explained 80 percent of the variance ($p < 0.0001$, $N = 194$).

Figure 10. Stream discharge and dates when selenium samples were collected at the Bear River Bay outflow gaging station. Negative mean daily discharge values (wind-driven flow into Bear River Bay) were assigned a discharge value of 0.0001 cubic feet per second. Discharge data between October 1, 2006 and April 15, 2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

Figure 11. Stream discharge and dates when selenium samples were collected at the Bear River Bay outflow gaging station. Negative mean daily discharge values (wind-driven flow into Bear River Bay) were assigned a discharge value of 0.0001 cubic feet per second. Discharge data between October 1, 2006 and April 15, 2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 7 (table 3) was determined to best simulate daily total Se loads from the Bear River to GSL with an R^2 value of 0.9987 (Appendix A).

Comparisons between the measured and simulated loads of total Se at the Bear River Bay outflow gage during water year 2006 indicate reasonable agreement for most sample dates (fig.

12). For example, the measured total Se load on 05/28/2007 was 1.9 kg/day and the simulated load was 2.0 kg/day (fig. 12), resulting in an underestimation in selenium loading of 100 g. Comparisons between the measured and simulated loads of total Se from October 1, 2006 to April 15, 2007 indicate some slight differences, likely due to the estimated discharge during this time period. For example, the measured total Se load on 10/10/2006 was 2.1 kg/day and the simulated load was 2.0 kg/day (fig. 12), resulting in an underestimation in Se loading of 100 g. The complete output of LOADEST model results can be found in Appendix A.

Figure 12. Measured and simulated loads of total selenium at the Bear River Bay Outflow streamflow-gaging station. Load estimates between 10/1/2006 and 04/14/2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

Farmington Bay Outflow at Causeway Bridge: The LOADEST model calibration file contained 47 observations for total (dissolved + particulate) Se during the time period from May 2006 through July 2007 (fig. 13). The LOADEST estimation file contained 455 measurements of mean daily discharge measured from May 2006 through July 2007. Because of intermittent equipment failures, selected mean daily discharge records were reconstructed from three existing USGS gages (fig. 14), using the formula:

$$Q_{FB} = (Q_{SC} + Q_{JR}) - Q_{GD} \quad (1)$$

where, Q_{FB} is the calculated discharge at Farmington Bay outflow, in cubic feet per second; Q_{SC} is the mean daily discharge measured at the Surplus Canal gage, in cubic feet per second; Q_{JR} is the mean daily discharge measured at the Jordan River gage, in cubic feet per second; and Q_{GD} is the mean daily discharge measured at the Goggin Drain gage, in cubic feet per second. This formula estimates the amount of water from the Jordan River system that is discharged into Farmington Bay and was used to estimate discharge when mean daily discharge records for FB were missing prior to 10/10/2006. After 10/10/2006 discharge data were missing only for short time periods, and the mean daily discharge was estimated by interpolating between last and next mean daily discharge value that was measured.

Figure 13. Stream discharge and dates when selenium samples were collected at the Farmington Bay Outflow gaging station. Negative mean daily discharge values (wind-driven flow into Farmington Bay) were assigned a discharge value of 0.0001 cubic feet per second.

Figure 14. Locations of gages used to estimate mean daily discharge at the Farmington Bay Outflow gage site during periods of missing record.

Both the calibration and estimation file used in the LOADEST model can be found in Appendix A. Regression model 4 (table 3) was determined to best simulate daily total Se loads from the Farmington Bay to GSL with an R^2 value of 0.9990 (Appendix A).

Comparisons between the measured and simulated loads of total Se at the Farmington Bay outflow gage during water year 2006 indicate reasonable agreement (fig. 15). For example, the measured total Se load on 03/05/2007 was 0.36 kg/day and the simulated load was 0.35 kg/day (fig. 15), resulting in a slight underestimation of Se loading of 10 g. The complete output of LOADEST model results can be found in Appendix A.

Figure 15. Measured and simulated loads of total selenium at the Farmington Bay outflow streamflow-gaging station. Because of intermittent periods of missing discharge record during 2006, selected selenium load estimates were based on calculated discharge estimates using the following formula: ($Q_{FB} = Q_{SC} + Q_{JR}$) – Q_{GD}; where Q is the mean daily discharge in cubic feet per second, FB is Farmington Bay Outflow; SC, is the Surplus Canal; JR, is the Jordan River at 1700 South; and GD, is the Goggin Drain. Locations of these additional gage sites are shown in Figure 14.

Wetting of Shoreline Sediments: Solubilization of Se into the water column due to lake level increase likely occurs on an annual cycle during the seasonal rise of lake level during spring runoff. Lake level increased from 4196.5 ft in November, 2006 to 4197.5 ft in April, 2007. The observed increase in lake level during this time period corresponds to a lake area increase of 14,976 acres and a lake volume increase of 463,415 acre-ft (Baskin 2005).

Average total Se concentration from sediment samples was 0.37±0.31 μg/g. Total Se concentrations in exposed sediment samples were identical from two transect sites (GSL 1 and GSL 3) 0.20±0 μg/g and was significantly higher at the other transect site (GSL 2) 0.70±0.37 μg/g. Average water soluble Se concentration in the raw acidified (RA) samples was 0.52±0.42 μg/L, whereas the average water soluble Se concentration in the filtered acidified (FA) samples was slightly lower at 0.45±0.32 μg/L.

The following equations were used to estimate the Se mass input contributed to GSL during the resaturation of near-shore sediments during the 1-foot lake level increase recorded from Novebmer 2006 to April 2007. Assuming a sediment bulk density (ρ_b) of 1.6 g/ cm^3 and an effective leaching depth of 1 cm:

$$\mathrm{kg_{Se}} = \frac{\mu\mathrm{g_{solubilized}}}{\text{unit surface area (cm}^2)}(\text{area}_{\text{mud flat}})\left(\frac{\mathrm{kg}}{10^9\,\mu\mathrm{g}}\right)$$

Where the unit surface area refers to the interaction (top) surface of a rectangular prism made up of the leached sediment mass (50 g).

$$\text{unit surface area (cm}^2) = \frac{\text{leached sediment mass (g)}}{\rho_b\left(\mathrm{g/cm^3}\right)}\left(\frac{1}{\text{leaching depth (cm)}}\right)$$

$$\text{unit surface area (cm}^2) = \frac{50\ \mathrm{g}}{1.6\ \mathrm{g/cm^3}}\left(\frac{1}{1\ \mathrm{cm}}\right)$$

$$\text{unit surface area (cm}^2) = 31.25\,\mathrm{cm}^2$$

Using the average value obtained from the unfiltered water soluble Se tests (0.52 ug) over a mudflat area of 14,976 acres results in a calculated total Se mass contributed by the observed water-level increase.

$$\mathrm{kg}_{\mathrm{Se}} = \frac{0.52\,\mu\mathrm{g}_{\mathrm{solubilized}}}{31.25\,\mathrm{cm}^2}(14{,}976\,\mathrm{acres})\left(\frac{4.05\mathrm{E}7\,\mathrm{cm}^2}{1\,\mathrm{acre}}\right)\left(\frac{\mathrm{kg}}{10^9\,\mu\mathrm{g}}\right)$$
$$\mathrm{kg}_{\mathrm{Se}} = 10$$

The addition of 10 kg of Se from the flooding of near-shore sediments is not significant relative to the annual Se loads contributed by riverine inflow to GSL. Higher Se loads from near-shore sediments to GSL could be contributed by larger lake level increases that could occur in future years.

The amount of extractable Se present in each sample was small relative to the total available Se (strong acid leachable) in each lake-shore sample. The average percent of water soluble Se relative to the total Se in each lake-shore sample was 3.12±1.63 % (unfiltered sediment extracts) and 2.72±1.62 % (filtered sediment extracts). The small amount of water soluble Se relative to total Se (acid soluble) in lake-shore samples indicates that additional water soluble Se will likely be made available during future wet/dry cycles.

3.2 Cumulative Se loadings

The Se input models developed for each gage site were used to estimate the cumulative daily total (dissolved + particulate) Se load to GSL from May 2006 through July 2007 (fig. 16). Total estimated Se load to GSL during this 15-month time period was 1,540 kg. The estimated 12-

month Se load to GSL for the time period from May 1, 2006 to April 30, 2007 was 1,480 kg. This calculated annual loading is within the range of the initial projected annual Se load to GSL (990 to 1,490 kg/year) estimated from input load modeling from data collected from May to December, 2006.

The largest estimated cumulative monthly Se load occurred in May 2006 (304 kg), and the smallest estimated cumulative monthly load occurred in July 2007 (21 kg). The large Se loads during May 2006 can be attributed to the large river inflows resulting from snowmelt runoff combined with active discharge from the KUCC Outfall. In contrast, the low runoff conditions experienced during 2007 resulted in a May 2007 cumulative Se load of only 82 kg. As shown in Figure 16, the largest single-day Se load to GSL occurred on May 26, 2006 (14.4 kg).

Figure 16. Modeled total (dissolved + particulate) daily selenium loads from May through December, 2006, at the six major inflow sites to Great Salt Lake, Utah. Pie charts indicate relative load contributed by each inflow site.

The low runoff conditions during 2007 relative to 2006 are further exemplified by comparing the date when Bear River discharge dropped to zero during both years (fig. 10). During water year 2006, there was measurable discharge from Bear River to GSL until July 31. In contrast, during water year 2007 no measurable discharge to GSL was recorded after May 29.

During the monitoring period from May 2006 through July 2007, the KUCC Outfall and Goggin Drain contributed equally to the largest proportion of total Se load to GSL (fig. 17). The combined input to GSL from both the KUCC Outfall and Goggin Drain accounted for 54 percent of the total Se load during the 15-month monitoring period. The Se load from Bear River during this same time period contributed 26 percent of the total Se load to GSL. This overall trend in loading was not consistent on a month-by-month basis. For example, the Se load from the Goggin Drain was the major loading source during May and June, 2006, and the Bear River was the major loading source during July 2006 (fig. 16). The high proportion of Se loadings contributed by the Bear River from October 1, 2006 through April 15, 2007, is partly the result of the estimated streamflows from the upstream gage; however, equipment removal during winter "ice over" prevented site-specific measurements during this time period.

Figure 17. Distribution of total selenium loads contributed to Great Salt Lake from each inflow site from May 18, 2006 to July 31, 2007.

An additional Se-loading factor to the open water of GSL is the interaction of water with perimeter wetland systems. Prior to entering GSL, water in the Bear River, Goggin Drain, Lee Creek, Farmington Bay, and Weber River systems flow through wetland complexes on the perimeter of GSL. In contrast, water entering GSL from the KUCC Outfall is piped directly into GSL and has little or no opportunity to interact with Se removal processes in natural wetland systems (this is a function of lake elevation). By dividing the total Se load by the cumulative discharge from each inflow site (May 18 through December 31, 2006), the impact of Se removal

by wetland systems is evident (fig. 18). Outflow sites flowing through natural wetlands adjacent to GSL display a low amount of Se load relative to the cumulative discharge. In contrast, the KUCC outflow site that is piped directly to GSL, with no wetland interaction, displays a high amount of Se load relative to the cumulative discharge (fig. 18).

Figure 18. Comparison of cumulative selenium load (May thru December, 2006) divided by cumulative discharge (May 18 thru December 31, 2006) for the six major inflow sources to Great Salt Lake, Utah.

3.3 Trends in Se loads over time

Prior to the start of the current study, the USGS operated gages at Lee Creek, Goggin drain, and KUCC outfall sites. Dissolved (0.45 micron) Se concentration was determined from water samples collected on an intermittent basis from these gage sites from 1972 through 1984. Because of improvements in analytical sensitivity and sample collection procedures, historic trace-element data must be interpreted with caution; however, it is likely that the historic USGS data from these sites are representative of actual Se concentrations and associated loadings. Current (2006-07) loadings from Lee Creek have increased by more than an order of magnitude relative to historic Se loads (fig. 19). Most historic Se loads were less than 0.025 kg/day relative to the median Se load from May 2006 through July 2007 of 0.28 kg/day. Although the historic Se loading data did not measure particulate Se, this would not account for the order-of-magnitude increase that is observed in the 2006-2007 Se-load data.

Figure 19. Comparison of simulated daily total (dissolved + particulate) selenium loads (May 2006 through April 2007) with measured historic dissolved (0.45 micron) selenium loads (1972 through 1982) at the Lee Creek gage site.

The process(es) causing the increased Se loadings in Lee Creek are unknown. In the 1990s, KUCC stopped diverting water from their mine tailings impoundments into Lee Creek (Hillwalker, 2004). These diversions should have decreased the Se loading to Lee Creek instead of the observed increase in 2006 Se loads. It is likely that other processes may be causing the increased Se loadings to Lee Creek. These processes could include canal tailwater input from KUCC outfall to Lee Creek, increases in wastewater treatment plant effluent, and increased discharge of groundwater with elevated Se concentrations to selected stream reaches.

The historic Se load data from the Goggin Drain gage site during low-flow periods compares favorably with current (2006-2007) daily Se loads (fig. 20). In contrast, historic Se loads during peak flow periods appear to be about 50 percent lower than current (2006-2007) daily Se loads. This trend may be related to an increase in available Se within the contributing watershed to Goggin Drain resulting from increased development over the past 35 years.

Figure 20. Comparison of simulated daily total (dissolved + particulate) selenium loads (May 2006 through April 2007) with measured historic dissolved (0.45 micron) selenium loads (1972 through 1984) at the Goggin Drain gage site.

The median Se load from the KUCC outfall from 1972 through 1984 was 3.8 kg/day (fig. 21). Comparison of this median Se load value with measured and modeled Se loading data collected from 2005 to 2007 suggest an overall decrease in recent Se loads from the KUCC outfall (fig. 21).

Figure 21. Comparison of present day measured and simulated loads of total Se at the Kennecott Drain streamflow-gaging station to the median dissolved Se loads measured from 1972 to 1984.

3.4 Se concentration and loads from miscellaneous sites

The railroad causeway that separates GSL into a north and a south arm has two culverts (WC and EC) and a breach (CB) that allow water to flow between the two arms (fig. 1). Although permanent streamflow gages are not installed on these openings, instantaneous discharge measurements were measured five times from May 2006 through May 2007 (table 4). Because of the higher salinities present in the north arm of GSL, bidirectional flow in the causeway openings can occur. Unfiltered water samples collected during the discharge measurements were analyzed

for total Se (dissolved + particulate) concentration. The instantaneous discharge data were combined with the concentration of Se in the water to calculate the Se load (kg/day) moving into the north arm of GSL (south-to-north flow) and south arm of GSL (north-to-south flow).

Table 4. Instantaneous discharge and associated total (dissolved + particulate) selenium loads measured from May 2006 through May 2007, at measurement sites along the railroad causeway, Great Salt Lake, Utah.

During the five measurement periods, a net loss of total Se to the north arm was observed (table 4). The net Se losses were: > 4.1 kg/day on May 25, 2006; 1.9 kg/day on September 28, 2006; 2.2 kg/day on January 9, 2007; 2.4 kg/day on March 19, 2007: and 1.5 kg/day on May 30, 2007. These data provide a "snapshot" of Se exchange between the north and south arms; however, without a continuous discharge record at each site, an annual estimate of Se exchange cannot be determined. With this qualification, the average annual Se loss from the south to the north arm during the monitoring period would be about 2.4 kg/day. Applying the average daily Se loss to an annual cycle would equate to 880 kg of Se loss to the north arm. This would account for more than 55 % of the total Se input to the south arm of GSL during an annual loading cycle.

Samples for total Se were collected and analyzed at two additional miscellaneous sites, Morton Salt (MS) and the salt canal at Great Salt Lake Minerals (SC) (fig. 1). The sample collected at the MS site on November 3, 2006 contained a total Se concentration of 0.99 ug/L. Three samples were collected and analyzed for total Se from the SC site. The total Se concentrations in these

samples were 0.35 ug/L (May 25, 2006); 1.08 ug/L (September 7, 2006); and <0.25 ug/L (December 16, 2006).

The amount of Se load contributed from groundwater inflow as well as dry and wet deposition falling directly on the open waters of GSL was not measured during this study; hence, no selenium loads associated with these potential sources were determined.

3.5 Distribution of Se species and particulate fractions

Dissolved (0.45 micron) and total Se concentrations were determined from samples collected from inflow sites to GSL during the monitoring period from May 2006 through July 2007. Particulate Se was calculated by subtracting the dissolved Se concentration from the total Se concentration (fig. 22). If the dissolved Se concentration was greater than the total Se concentration, it was assumed that this was caused by analytical variability and the particulate Se concentration was set to 0.0. Most of Se in water entering GSL was in the dissolved (0.45 micron) state and ranged from 0.06 to 35.7 ug/L. Particulate Se concentration entering GSL ranged from 0 to 2.5 ug/L.

Figure 22. Distribution of dissolved and particulate selenium in water samples collected from inflow sites to Great Salt Lake during May 2006 through July 2007. Note the difference in scale for the KUCC Drain in comparison to other sites.

Filtered water samples collected during May 2006 and May 2007 were analyzed for selenite (SeO_3^{2-}). The concentration of selenate (SeO_4^{2-}) was then calculated by subtracting SeO_3^{2-} from the total dissolved (0.45 micron) Se. With the exception of the KUCC outflow, each inflow site contained a substantial proportion of SeO_3^{2-}, which averaged 21 percent of the total dissolved Se during the two monitoring periods. (fig. 23). Although the KUCC discharge contained > 35 ug/L total dissolved Se in May 2006 and > 20 ug/L in May 2007, less than 5.1 percent was present as SeO_3^{2-}.

Figure 23. Distribution of selenate and selenite, in ug/L and (percentage of total selenium) in filtered water samples collected from inflow sites to Great Salt Lake during May 2006 (A) and May 2007 (B).

3.6 Impacts of Se load to observed Se concentrations in Great Salt Lake

The loading data collected over a 15-month period indicate that about 1,540 kg of total (dissolved + particulate) Se entered the south arm of GSL. The Se concentration in water samples collected from GSL during the 14-month monitoring period from May 2006 through June 2007 were used to understand how the cumulative Se load was being processed by various biogeochemical processes within the lake. Changes in dissolved (0.45 micron) and total Se concentration at the four monitoring sites (2267, 2565, 2767, and 3510) from May 2006 through June 2007 indicate an increasing concentration with time (fig. 24). The correlation coefficient (R) for the linear regression line through the filtered (< 0.45 micron) water samples ranged from 0.33 ($p = 0.32219$, $n = 11$) at site 2565 to 0.82 ($p = 0.00191$, $n = 11$) at site 2767. The two

shallow monitoring sites of 2267 and 2767 (total water depth < 5 m) have the highest correlation coefficients indicating a statistically significant trend of increasing dissolved Se concentration concurrent with the measured riverine loads of Se.

Figure 24. Trends in dissolved (0.45 micron) selenium concentration (A) and total selenium concentration (B) from May 2006 through June 2007 at open water sites, Great Salt Lake, Utah.

The dissolved + particulate Se data exhibited similar trends as the filtered Se data (fig. 24). The correlation coefficient (R) for the linear regression line through the unfiltered (dissolved + particulate) water samples ranged from 0.46 ($p = 0.13082$, $n = 12$) at site 2767 to 0.62 ($p = 0.04072$, $n = 11$) at site 2565.

The Mann-Kendall statistical test (Helsel and Hirsch, 1992) was applied to the Se data from filtered (< 0.45 microns) water samples collected from the monitoring sites in GSL to determine if the occurrence of increasing concentrations over time was statistically significant. The Mann-Kendall test is a non-parametric test that is suitable for censored data sets. The test was performed at both the 95- and 90-percent confidence levels. The Z score calculated for each data set was compared to the expected Z score at both the 95- and 90-percent confidence levels. If the calculated Z score exceeded the expected Z score, the occurrence of an upward trend in Se concentration with time was indicated.

Results of the Mann-Kendall statistical analysis for the Se data collected from sites 2267, 2565, 2767, and 3510 are summarized in Table 5. Statistically significant upward trend in dissolved (< 0.45 micron) Se concentration was indicated at all four sites at the 90-percent confidence level (table 5). In addition, the upward trend in dissolved (< 0.45 micron) Se concentration over the 14-month monitoring period was statistically significant at the 95-percent confidence level for sites 2267 and 2767.

Table 5. Summary of Mann-Kendall statistical trend analysis conducted on water samples analyzed for dissolved selenium, Great Salt Lake, Utah.

A potential contributing source of variance in the observed increases in Se concentration over time could be associated with analytical error. To address the analytical error, a series of laboratory replicates of water samples collected from GSL were analyzed throughout the 14-month monitoring period. The Se concentration measured in 15 laboratory replicates was compared to the dissolved (< 0.45 micron) Se concentration in the corresponding routine water sample (fig. 25). Results of these comparisons indicated that the mean difference between the routine and replicate samples was ± 15 percent. Elimination of the clear outlier from this data set resulted in a mean difference of ± 12 percent. Based on similar Se concentration between the routine and replicate samples, it is clear that laboratory error could not explain the large observed dissolved (< 0.45 micron) Se concentration increases of over 0.3 ug/L during the 14-month monitoring period.

Figure 25. Comparison of dissolved (< 0.45 micron) selenium concentration in laboratory replicates with routine samples collected from near-surface depths at sites 2267, 2767, 2565, and 3510 from May 2006 through June 2007. The mean difference between routine and replicate samples is +/- 15 percent (n = 15). Elimination of the outlier results in a mean difference of +/- 12 percent (n = 14).

The observed net increase in dissolved + particulate Se observed from May 2006 through July 2007 at each lake monitoring site was compared to the Se concentration increase expected from the cumulative Se mass added during the same time period for both dissolved (< 0.45 micron) and total (dissolved + particulate) Se in water. For the purpose of the following calculations, the biogeochemical behavior of Se in GSL is assumed to be conservative, which is certainly not the case, but provides a useful "worst case" end point to evaluate the impacts of annual Se loads to the open-water of GSL. The non-conservative behavior of Se in GSL is evidenced from the sediment core records and the gaseous Se flux measured from the lake surface (Johnson et al., 2007).

Based on the regression models for each lake monitoring site, the net change in dissolved (< 0.45 micron) Se concentration ranged from 0.16 to 0.34 ug/L and the net change in total (dissolved + particulate) Se concentration ranged from 0.25 to 0.28 ug/L (table 6). Mixing the cumulative riverine Se input (dissolved + particulate) over the same 15-month monitoring period with the lake volume of the south arm of GSL measured on July 31, 2007 (Baskin 2005), the expected net

increase in Se concentration would be 0.17 ug/L. This expected net increase in open-water Se concentration is approximately equal to the net change of 0.16 ug/L observed at site 2565 (dissolved Se only), but approximately half of the observed net change for both the dissolved (0.45 micron) at 3 lake-monitoring sites and total (dissolved + particulate) Se data at all 4 lake-monitoring sites (table 6). This suggests an additional, unquantified source(s) of Se should be contributing an additional 1500 kg of Se load to the south arm of GSL over the 15-month monitoring period. If Se export to the north arm as well as sedimentation and gaseous flux removal processes are considered, the unquantified source contribution would be substantially higher than 1500 kg/year. Potential source(s) of this additional Se load could include: (1) Se loads entering GSL from unmeasured surface inflows; (2) submarine groundwater discharge; (3) wind-blown dust that is deposited directly on the lake surface; (4) wet and dry atmospheric deposition falling directly on the lake surface; and (5) lake sediment pore water diffusion into the overlying water column. Evaporative concentration of Se due to falling lake levels would not increase the mass loading of Se to GSL; however, evaporation could be causing some of the observed increasing trends in Se concentration in water column samples. Additional supporting information regarding additional Se loads and concentration from a few of the unmeasured sources and processes listed previously is presented in the subsequent material. This supporting information was limited to the unmeasured sources and processes where site-specific supporting data were available: (1) unmeasured surface inflows; (2) submarine groundwater discharge; and (3) evaporative concentration.

Table 6. Selenium concentration increases expected from riverine inputs compared to observed selenium concentration increase at four lake sites from May 15, 2006 through July 31, 2007, Great Salt Lake, Utah.

The cumulative Se load to GSL contributed by the Weber River inflow may not have been measured during this study. Due to multiple diversion structures, flow in the Weber River is extensively diverted downstream of USGS gage site 10141000 (Weber River near Plain City, Utah) (fig. 1). The total discharge from May 11, 2006 through July 31, 2007, measured at Weber River near Plain City (upstream) was about 6.8 times larger than the total discharge measured at Weber River near West Warren, Utah (downstream gage monitored for Se load to GSL) during the same time period. Assuming that all the water flow measured at the upstream gage discharged to the open water of GSL (worst case scenario) and that this additional surface-water discharge had a similar Se concentration to what was measured at the downstream gage, an additional Se load of 46 kg was calculated for the 15-month monitoring period. This additional Se load of 46 kg is inconsequential relative to the unmeasured Se of 1500 kg.

The potential for submarine groundwater discharge was assessed with a preliminary resistivity survey conducted by the USGS in September 2007 along the southerly shoreline of GSL. The resistivity survey was designed to utilize a 35-m string of electrodes that was towed behind a boat to view areas of high resistivity (non-saline) water in the near-surface sediments underlying the low resistivity (highly saline) water in the south and east sides of GSL (fig. 26). Although

additional follow-up work is needed for verification, high resistivity zones were detected that could indicate areas of non-saline, submarine groundwater discharge and corresponding unmeasured Se loads to the open water of GSL. For example, regions of high and low resistivity were found in the near-surface sediments on the south end of GSL (figs. 27 and 28). The high resistivity zones indicate potential areas of ground-water discharge that may justify the installation of nested piezometers to measure the shallow groundwater gradient and associated Se flux from these regions to the open water of GSL.

Figure 26. Location of continuous resistivity survey profiles collected during September 2007, Great Salt Lake, Utah.

Figure 27. Location of high resistivity zone along transect l1f1 (A) and cross section of resistivity values (B). White horizontal line on resistivity cross section denotes approximate position of surface water/sediment interface.

Figure 28. Location of low resistivity zone along transect l1f1 (A) and cross section of resistivity values (B). White horizontal line on resistivity cross section denotes approximate position of surface water/sediment interface.

Previous work (KUCC, 1999) has found elevated (exceeding 10,000 ug/L) Se in groundwater beneath KUCC smelter and refinery facilities within 1 mile of the south shore of GSL (fig. 29). Ground-water modeling of this contaminant plume has indicated minimal discharge to GSL (KUCC, 1999); however, no ground-water monitoring data have been collected beneath GSL to verify the ground-water modeling results. Based on KUCC estimates, total water volume in the contaminant plume may exceed 64,000 acre feet and contain a Se concentration ranging between 50 and 17,000 ug/L. Assuming that 30 percent of the contaminant plume eventually discharged to GSL and the plume contained an average Se concentration of 8,500 ug/L, this would represent a Se mass of 208,000 kg. This Se mass would represent over 138 years of cumulative annual Se loads measured during the current study. Without monitoring data beneath GSL, the Se load to the open water associated with potential groundwater source(s) cannot be assessed.

Figure 29. Predicted and observed extent of groundwater contaminant plume containing elevated concentrations of selenium located on the south margin of GSL (KUCC, 1999).

Evaporation of the water from GSL could also contribute to the observed increases in dissolved (< 0.45 micron) Se concentration during the monitoring period (table 6). In order to assess the impact of evaporation, comparison between salinity and dissolved (< 0.45 micron) Se were made at the four lake monitoring sites (fig. 30). The salinity data represents water samples collected from the Saltair gage site (January 2006 through May 2007) and individual lake monitoring sites (September 2006 through June 2007). For the period of record, comparison of the salinity and Se

data from the four lake-monitoring stations indicates a negative relationship (fig. 30). Additional salinity and Se data are needed to determine if this negative relationship continues through the summer and fall seasons of 2007.

Figure 30. Comparison between salinity and dissolved (< 0.45 micron) selenium concentration in water samples from lake monitoring stations, Great Salt Lake, Utah. Salinity data represents water samples from Saltair gage site (January 2006 through May 2007) and individual lake monitoring sites (September 2006 through June 2007).

4.0 Summary

Discharge and water-quality data from six gages were used in combination with the LOADEST software to provide an estimate of total (dissolved + particulate) selenium (Se) load to the south arm of Great Salt Lake (GSL) during the period of May 2006 through July 2007. The six USGS gages used for the Se loading calculations included: (1) Bear River Bay Outflow at GSL Minerals Corp Bridge (BR); (2) North Fork Weber River near West Warren, Utah (WR); (3) Goggin Drain near Magna, Utah (GD); (4) Lee Creek near Magna, Utah (LC); (5) Kennecott Drain near Magna, Utah (KUCC); and (6) GSL Farmington Bay Outflow at Causeway Bridge (FB). Due to the low channel gradients and wind influence on inflow rates, hydroacoustic equipment in combination with velocity index methods were used to accurately gage discharge at the KUCC, FB, and BR gage sites. Discharge data can be accessed at: http://waterdata.usgs.gov/ut/nwis/sw. Measured Se loads from the flooding of near-shore

sediments during annual water-level increases were small (10 kg) and not considered significant relative to the measured surface-water loadings.

Total estimated Se load to GSL during 15-month monitoring period was 1,540 kilograms (kg). The 12-month estimated Se load to GSL for the time period from May 1, 2006 to April 30, 2007 was 1,480 kg. The largest cumulative monthly Se load occurred during May 2006 (304 kg) and the smallest cumulative monthly load occurred during July 2007 (21 kg). During the 15-month monitoring period, inflows from the Kennecott Utah Copper Corporation (KUCC) Outfall, Goggin Drain, and Bear River contributed equally to the largest proportion of total Se load to GSL, accounting for 80 percent of the total Se load. Current (2006 and 2007) median Se loadings from Lee Creek (0.28 kg/day) have increased by more than an order of magnitude relative to historic Se loads (< 0.025 kg/day) calculated from data collected during 1972 through 1984. Historic Se loads during peak flow periods (1972-1984) for the Goggin Drain outflow site were about 50 percent lower than current (2006-2007) daily Se loads during peak runoff periods.

Five instantaneous discharge measurements at three sites along the railroad causeway during the 15-month monitoring period indicate a consistent net loss of Se mass from the south arm to the north arm of GSL (mean = 2.4 kg/day, n = 5). Application of the average daily loss rate equates to annual Se loss rate to the north arm of 880 kg (55 % of the annual Se input to the south arm); however, without continuous measurement of discharge the error associated with this annual loss estimate is high. The majority of Se in water entering GSL is in the dissolved (0.45 micron) state and ranges in concentration from 0.06 to 35.7 ug/L. Particulate Se concentration ranged from <

0.05 to 2.5 ug/L. Except for the KUCC gage site, dissolved (0.45 um) inflow samples were comprised of 21 % selenite (SeO_3^{2-}) during two sampling events (May 2006 and 2007).

Selenium concentration in water samples collected from four monitoring sites within GSL during from May 2006 through June 2007 were used to understand how the cumulative Se load was being processed by various biogeochemical processes within the lake. Based on the Mann-Kendall test, changes in dissolved Se concentration at the four monitoring sites indicate a statistically significant (90 % confidence interval) upward trend in Se concentration with time. Furthermore, the upward trend at two of the four GSL sites was also significant at the 95 % confidence interval. Regression models for each lake monitoring site indicated a net change in Se concentration that ranged from 0.16 to 0.34 ug/L during the 15-month monitoring period. Comparison of the observed net increase in Se concentration with the net increase expected from measured riverine Se influx over the same monitoring period was + 0.17 ug/L. The expected net increase in open-water Se concentration of 0.17 ug/L is approximately half of the net concentration change measured at 3 of the 4 lake monitoring sites.

An unmeasured source of Se contributing a minimum of an additional 1,500 kg of Se load to the south arm is indicated by the previous comparison. The value for the unmeasured Se contribution does not consider measured Se loss mechanisms that include: (1) Se export to the north arm of GSL; (2) Se loss via permanent sedimentation; and (3) Se loss via gas flux to the atmosphere. Potential source(s) of this unmeasured Se load could include: (1) Se loads entering GSL from unmeasured surface inflows; (2) submarine groundwater discharge; (3) wind-blown dust that is deposited directly on the lake surface; (4) wet and dry atmospheric deposition falling directly on

the lake surface; and (5) lake sediment pore water diffusion into the overlying water column. Evaporative concentration of Se due to falling lake levels would not increase the mass loading of Se to GSL; however, evaporation could be causing some of the observed increasing trends in Se concentration in water column samples.

Processes and sources of additional Se loads and Se concentration from the unmeasured sources and processes identified during the study were further assessed with existing and recently available data. The findings are listed below:

1. Additional Se loads from the Weber River system are small and would only contribute an additional 46 kg of Se during the 15-month monitoring period.
2. Resistivity surveys in the south part of GSL indicate high resistivity areas of potential submarine groundwater discharge to the open water of GSL. Previous work has found elevated (exceeding 10,000 ug/L) Se in groundwater beneath KUCC smelter and refinery facilities within 1 mile of the south shore of GSL. Total water volume in this contaminant plume may exceed 64,000 acre feet and contain a Se concentration ranging between 50 and 17,000 ug/L.
3. Comparison between salinity and dissolved (< 0.45 micron) Se concentrations at the four lake monitoring sites show a negative correlation, indicative that evaporative processes play a limited role in the statistically significant increase in open-water Se observed during the study period.

Acknowledgments. Use of brand names in this article is for identification purposes only and does not constitute endorsement by the USGS.

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Appendix A

LOADEST input and output files

Kennecott Drain near Magna, Utah

```
##########################################################################
#
#  LOADEST Calibration File
#
#  KUCC outfall (used to est. loads from 10/1/06 thru 07/31/07)
#
#  Total Se (dissolved + particulate)
#  Contract lab data added = 12/4/06; 1/3/07; 3/6/07; and 5/16/07
#
##########################################################################
#
#CDATE     CTIME     CFLOW     CCONC
#
##########################################################################
20060718    1200    0.18   3.06
20060720    1200    12     28
20060727    1200    27     26
20060728    1200    27     39
20060729    1200    12     33
20060803    1200    14     35
20060816    1200    20     30
20060819    1200    27     31
20060820    1200    27     28
20060821    1200    24     31
20060822    1200    26     29
20060823    1200    26     34
20060824    1200    17     31
20060825    1200    18     35
20060826    1200    32     31
20060827    1200    29     31
20060828    1200    16     30
20060829    1200    26     32
20060830    1200    25     34
20060902    1200    56     30
20060903    1200    49     29
20060904    1200    14     29
20060912    1200    13     27
20060913    1200    0.1    32
20060930    1200    0.26   33
20061011    1200    27     29
20061012    1200    28     29
20061013    1200    30     29
20061014    1200    33     21
20061015    1200    34     22
20061016    1200    3.7    21
20061031    1200    20     28
20061101    1200    0.28   28
20061108    1200    28     27
```

20061109	1200	29	28
20061110	1200	30	27
20061111	1200	34	27
20061112	1200	39	25
20061113	1200	17	26
20061202	1200	44	25
20061203	1200	45	26
20061204	0920	46	18.4
20061205	1200	47	23
20061206	1200	39	23
20061207	1200	44	22
20061208	1200	45	23
20061209	1200	45	22
20061210	1200	33	23
20061211	1200	34	22
20061212	1200	35	22
20061213	1200	25	25
20061214	1200	17	25
20061221	1200	38	24
20061222	1200	40	25
20061223	1200	65	26
20061224	1200	8.1	28
20061229	1200	43	25
20061230	1200	74	22
20061231	1200	74	23
20070101	1200	74	21
20070102	1200	74	23
20070103	1115	74	20.3
20070104	1200	74	21
20070105	1200	75	21
20070106	1200	74	21
20070107	1200	74	20
20070108	1200	69	20
20070109	1200	46	20
20070110	1200	0.52	20
20070208	1200	59	23
20070209	1200	78	23
20070210	1200	77	22
20070211	1200	76	23
20070212	1200	70	23
20070213	1200	79	22
20070214	1200	78	22
20070215	1200	65	21
20070216	1200	68	22
20070217	1200	78	20
20070218	1200	78	20
20070219	1200	9.4	20
20070303	1200	44	20
20070304	1200	43	19
20070305	1200	39	18
20070306	1235	35	19.4
20070307	1200	29	21
20070308	1200	25	22
20070309	1200	25	21
20070310	1200	26	21
20070311	1200	26	20

20070312	1200	15	21
20070314	1200	37	21
20070315	1200	18	21
20070324	1200	0.54	20
20070331	1200	25	21
20070401	1200	27	22
20070402	1200	28	21
20070403	1200	28	20
20070404	1200	26	20
20070405	1200	26	20
20070406	1200	14	21
20070413	1200	24	20
20070414	1200	14	20
20070417	1200	4.5	23
20070421	1200	26	19
20070422	1200	27	20
20070423	1200	35	20
20070424	1200	43	23
20070425	1200	39	22
20070426	1200	16	21
20070502	1200	36	21
20070503	1200	0.72	22
20070509	1200	36	23
20070510	1200	40	26
20070511	1200	24	22
20070516	1430	20	22.5
20070517	1200	30	24
20070518	1200	14	24
20070522	1200	24	23
20070523	1200	25	23
20070524	1200	23	23
20070525	1200	22	19
20070526	1200	21	20
20070527	1200	29	20
20070528	1200	33	21
20070529	1200	27	23
20070530	1200	27	24
20070531	1200	25	24
20070601	1200	23	22
20070602	1200	16	21
20070614	1200	30	22
20070615	1200	17	23
20070616	1200	24	23
20070617	1200	9.1	21

```
##########################################################################
#
#  LOADEST Estimation File
#
#  KUCC outfall (data prior to 6/28/06 is not USGS)
#
#  0 or negative discharges replaced with 0.0001
#
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE     ETIME   EFLOW
#
##########################################################################
20060628     1200     0.0001
20060629     1200     0.0001
20060630     1200     0.29
20060701     1200     0.36
20060702     1200     0.29
20060703     1200     0.29
20060704     1200     0.25
20060705     1200     0.15
20060706     1200     0.18
20060707     1200     0.12
20060708     1200     0.16
20060709     1200     0.14
20060710     1200     0.13
20060711     1200     0.12
20060712     1200     0.18
20060713     1200     0.13
20060714     1200     0.19
20060715     1200     0.17
20060716     1200     0.18
20060717     1200     0.19
20060718     1200     0.18
20060719     1200     12
20060720     1200     12
20060721     1200     5.7
20060722     1200     0.19
20060723     1200     0.17
20060724     1200     0.22
20060725     1200     4.4
20060726     1200     17
20060727     1200     27
20060728     1200     27
20060729     1200     12
20060730     1200     0.14
20060731     1200     0.14
20060801     1200     6.8
20060802     1200     13
```

20060803	1200	14
20060804	1200	0.18
20060805	1200	0.11
20060806	1200	0.25
20060807	1200	0.0001
20060808	1200	0.35
20060809	1200	0.25
20060810	1200	0.05
20060811	1200	4.2
20060812	1200	0.16
20060813	1200	0.13
20060814	1200	0.02
20060815	1200	15
20060816	1200	0.22
20060817	1200	8.9
20060818	1200	15
20060819	1200	27
20060820	1200	27
20060821	1200	24
20060822	1200	26
20060823	1200	26
20060824	1200	17
20060825	1200	18
20060826	1200	32
20060827	1200	29
20060828	1200	16
20060829	1200	26
20060830	1200	25
20060831	1200	0.1
20060901	1200	23
20060902	1200	56
20060903	1200	49
20060904	1200	14
20060905	1200	0.13
20060906	1200	0.1
20060907	1200	7
20060908	1200	0.07
20060909	1200	0.11
20060910	1200	0.1
20060911	1200	16
20060912	1200	13
20060913	1200	0.1
20060914	1200	0.08
20060915	1200	0.3
20060916	1200	0.3
20060917	1200	0.3
20060918	1200	0.3
20060919	1200	0.4
20060920	1200	0.4
20060921	1200	0.41
20060922	1200	0.4
20060923	1200	0.4
20060924	1200	0.4
20060925	1200	0.3
20060926	1200	0.3
20060927	1200	0.3

20060928	1200	0.28
20060929	1200	3.6
20060930	1200	0.26
20061001	1200	0.35
20061002	1200	0.28
20061003	1200	0.29
20061004	1200	0.22
20061005	1200	0.31
20061006	1200	0.28
20061007	1200	0.41
20061008	1200	0.3
20061009	1200	0.26
20061010	1200	9.4
20061011	1200	27
20061012	1200	28
20061013	1200	30
20061014	1200	33
20061015	1200	34
20061016	1200	3.7
20061017	1200	0.33
20061018	1200	0.3
20061019	1200	0.28
20061020	1200	0.39
20061021	1200	0.21
20061022	1200	0.36
20061023	1200	0.22
20061024	1200	0.36
20061025	1200	0.32
20061026	1200	0.32
20061027	1200	0.28
20061028	1200	0.29
20061029	1200	0.39
20061030	1200	14
20061031	1200	20
20061101	1200	0.28
20061102	1200	0.32
20061103	1200	0.28
20061104	1200	0.32
20061105	1200	0.34
20061106	1200	0.87
20061107	1200	12
20061108	1200	28
20061109	1200	29
20061110	1200	30
20061111	1200	34
20061112	1200	39
20061113	1200	17
20061114	1200	0.41
20061115	1200	0.43
20061116	1200	0.33
20061117	1200	0.27
20061118	1200	0.38
20061119	1200	0.39
20061120	1200	0.39
20061121	1200	0.38
20061122	1200	0.46

20061123	1200	0.48
20061124	1200	0.37
20061125	1200	0.41
20061126	1200	0.4
20061127	1200	0.44
20061128	1200	0.47
20061129	1200	0.4
20061130	1200	0.38
20061201	1200	19
20061202	1200	44
20061203	1200	45
20061204	1200	46
20061205	1200	47
20061206	1200	39
20061207	1200	44
20061208	1200	45
20061209	1200	45
20061210	1200	33
20061211	1200	34
20061212	1200	35
20061213	1200	25
20061214	1200	17
20061215	1200	0.53
20061216	1200	0.41
20061217	1200	0.42
20061218	1200	0.49
20061219	1200	5.5
20061220	1200	14
20061221	1200	38
20061222	1200	40
20061223	1200	65
20061224	1200	8.1
20061225	1200	0.47
20061226	1200	0.38
20061227	1200	0.36
20061228	1200	49
20061229	1200	43
20061230	1200	74
20061231	1200	74
20070101	1200	74
20070102	1200	74
20070103	1200	74
20070104	1200	74
20070105	1200	75
20070106	1200	74
20070107	1200	74
20070108	1200	69
20070109	1200	46
20070110	1200	0.52
20070111	1200	0.35
20070112	1200	0.35
20070113	1200	0.39
20070114	1200	0.38
20070115	1200	0.26
20070116	1200	11
20070117	1200	0.37

20070118	1200	0.37
20070119	1200	0.33
20070120	1200	0.29
20070121	1200	0.33
20070122	1200	0.28
20070123	1200	0.3
20070124	1200	0.46
20070125	1200	0.43
20070126	1200	0.41
20070127	1200	0.4
20070128	1200	0.27
20070129	1200	8.6
20070130	1200	0.37
20070131	1200	0.28
20070201	1200	0.27
20070202	1200	0.34
20070203	1200	0.34
20070204	1200	0.28
20070205	1200	0.27
20070206	1200	3.6
20070207	1200	47
20070208	1200	59
20070209	1200	78
20070210	1200	77
20070211	1200	76
20070212	1200	70
20070213	1200	79
20070214	1200	78
20070215	1200	65
20070216	1200	68
20070217	1200	78
20070218	1200	78
20070219	1200	9.4
20070220	1200	0.72
20070221	1200	0.57
20070222	1200	0.62
20070223	1200	0.87
20070224	1200	0.86
20070225	1200	0.73
20070226	1200	0.95
20070227	1200	1.2
20070228	1200	8.7
20070301	1200	0.99
20070302	1200	22
20070303	1200	44
20070304	1200	43
20070305	1200	39
20070306	1200	35
20070307	1200	29
20070308	1200	25
20070309	1200	25
20070310	1200	26
20070311	1200	26
20070312	1200	15
20070313	1200	25
20070314	1200	37

20070315	1200	18
20070316	1200	0.53
20070317	1200	0.4
20070318	1200	0.33
20070319	1200	0.27
20070320	1200	0.24
20070321	1200	0.24
20070322	1200	0.22
20070323	1200	16
20070324	1200	0.54
20070325	1200	0.55
20070326	1200	0.34
20070327	1200	0.31
20070328	1200	0.29
20070329	1200	6.3
20070330	1200	18
20070331	1200	25
20070401	1200	27
20070402	1200	28
20070403	1200	28
20070404	1200	26
20070405	1200	26
20070406	1200	14
20070407	1200	0.54
20070408	1200	0.43
20070409	1200	0.39
20070410	1200	0.33
20070411	1200	4.8
20070412	1200	18
20070413	1200	24
20070414	1200	14
20070415	1200	0.38
20070416	1200	6.9
20070417	1200	4.5
20070418	1200	0.41
20070419	1200	0.31
20070420	1200	12
20070421	1200	26
20070422	1200	27
20070423	1200	35
20070424	1200	43
20070425	1200	39
20070426	1200	16
20070427	1200	0.39
20070428	1200	0.4
20070429	1200	0.26
20070430	1200	0.27
20070501	1200	31
20070502	1200	36
20070503	1200	0.72
20070504	1200	0.34
20070505	1200	0.21
20070506	1200	0.22
20070507	1200	5.7
20070508	1200	24
20070509	1200	36

20070510	1200	40
20070511	1200	24
20070512	1200	0.31
20070513	1200	0.35
20070514	1200	0.18
20070515	1200	0.15
20070516	1200	20
20070517	1200	30
20070518	1200	14
20070519	1200	0.27
20070520	1200	0.25
20070521	1200	15
20070522	1200	24
20070523	1200	25
20070524	1200	23
20070525	1200	22
20070526	1200	21
20070527	1200	29
20070528	1200	33
20070529	1200	27
20070530	1200	27
20070531	1200	25
20070601	1200	23
20070602	1200	16
20070603	1200	0.24
20070604	1200	0.16
20070605	1200	0.2
20070606	1200	0.26
20070607	1200	0.33
20070608	1200	0.17
20070609	1200	0.23
20070610	1200	0.13
20070611	1200	0.21
20070612	1200	3
20070613	1200	11
20070614	1200	30
20070615	1200	17
20070616	1200	24
20070617	1200	9.1
20070618	1200	0.19
20070619	1200	0.24
20070620	1200	0.18
20070621	1200	0.15
20070622	1200	0.2
20070623	1200	0.13
20070624	1200	0.1
20070625	1200	0.08
20070626	1200	0.08
20070627	1200	0.17
20070628	1200	0.1
20070629	1200	0.12
20070630	1200	0.09
20070701	1200	0.15
20070702	1200	0.02
20070703	1200	0.0001
20070704	1200	0.0001

20070705	1200	0.07
20070706	1200	0.0001
20070707	1200	0.0001
20070708	1200	0.0001
20070709	1200	0.02
20070710	1200	0.07
20070711	1200	0.0001
20070712	1200	0.0001
20070713	1200	0.0001
20070714	1200	0.15
20070715	1200	0.0001
20070716	1200	0.0001
20070717	1200	0.0001
20070718	1200	0.06
20070719	1200	0.17
20070720	1200	0.01
20070721	1200	0.03
20070722	1200	0.08
20070723	1200	0.07
20070724	1200	0.09
20070725	1200	0.0001
20070726	1200	0.34
20070727	1200	0.3
20070728	1200	0.0001
20070729	1200	0.0001
20070730	1200	0.0001
20070731	1200	0.04

```
                                   LOADEST
                         A Program to Estimate Constituent Loads
                      U.S. Geological Survey, Version: MOD36 (Sep 2004)
                      -------------------------------------------------


KUCC Outfall


Constituent: selenium



-----------------------------------------------------------------------

    Constituent Output File Part Ia: Calibration (Load Regression)

-----------------------------------------------------------------------

Number of Observations           :   134
Number of Uncensored Observations:   134
"center" of Decimal Time         :   2007.014
"center" of Ln(Q)                :    1.5768
Period of record                 :    2006-2007


Model Evaluation Criteria Based on AMLE Results
-----------------------------------------------

Model #     AIC           SPPC
----------------------------------
 1           0.001          -2.984
 2          -0.055          -0.667
 3          -0.156           6.116
 4          -0.303          14.508
 5          -0.262          11.780
 6          -0.349          16.140
 7          -0.288          12.062
 8          -0.334          13.677
 9          -0.426          18.367

Model # 9 selected


Selected Model:
---------------

Ln(Load) = a0 + a1 LnQ + a2 LnQ^2 + a3 Sin(2 pi dtime) + a4 Cos(2 pi dtime)

           + a5 dtime + a6 dtime^2

where:
      Load  = constituent load [kg/d]
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


      Model Coefficients

       a0        a1        a2        a3        a4        a5        a6
```

AMLE	-0.9034	1.0523	-0.0186	-0.1739	-0.4856	-0.0343	-4.7003
MLE	-0.9034	1.0523	-0.0186	-0.1739	-0.4856	-0.0343	-4.7003
LAD	-1.1277	0.9995	0.0028	-0.1197	-0.2548	-0.1833	-1.5670

AMLE Regression Statistics

R-Squared [%] : 97.74
Prob. Plot Corr. Coeff. (PPCC) : 0.8063
Serial Correlation of Residuals: 0.2170

Coeff.	Std.Dev.	t-ratio	P Value
a0	0.1008	-8.96	5.310E-16
a1	0.0151	69.88	4.124-109
a2	0.0080	-2.31	1.877E-02
a3	0.0460	-3.78	1.567E-04
a4	0.1186	-4.09	4.582E-05
a5	0.1239	-0.28	7.763E-01
a6	1.2416	-3.79	1.535E-04

Correlation Between Explanatory Variables

Explanatory variable corresponding to:

	a1	a2	a3	a4	a5
a2	0.0000				
a3	0.1123	-0.0722			
a4	0.3024	0.4492	-0.0481		
a5	0.1266	-0.1139	0.8613	-0.0354	
a6	-0.2836	-0.4078	0.0135	-0.9769	0.0000

Additional Regression Statistics

	Residual Variance	Turnbull-Weiss Stat	DF	PL
AMLE	0.036	82.64	23	1.180E-08
MLE	0.036	82.64	23	1.180E-08

Constituent Output File Part Ib: Calibration (Concentration Regression)

AMLE Regression Statistics

Model # 9 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 LnQ^2 + a3 Sin(2 pi dtime) + a4 Cos(2 pi dtime)

+ a5 dtime + a6 dtime^2

where:
Conc = constituent concentration
LnQ = Ln(Q) - center of Ln(Q)
dtime = decimal time - center of decimal time

Concentration Regression Results

R-Squared [%] : 40.48
Residual Variance : 0.0363

Coeff.	Value	Std.Dev.	t-ratio	P Value
a0	3.5328	0.1008	35.05	5.690E-71
a1	0.0523	0.0151	3.47	4.856E-04
a2	-0.0186	0.0080	-2.31	1.877E-02
a3	-0.1739	0.0460	-3.78	1.567E-04
a4	-0.4856	0.1186	-4.09	4.582E-05
a5	-0.0343	0.1239	-0.28	7.763E-01
a6	-4.7003	1.2416	-3.79	1.535E-04

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060628-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	34.	0.	12.	21.	28.	43.	74.	79.
Est.	13.	0.	0.	0.	0.	24.	40.	79.

The maximum estimation data set steamflow does not exceed the maximum calibration data set streamflow. No extrapolation is required.

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060628-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

95% Conf.Intervals

	N	Mean Load	Lower	Upper	Std Error Prediction	Standard Error
Est. Period	399	0.74	0.71	0.78	0.02	0.01

MLE Load Estimates

	N	Mean Load	Standard Error
Est. Period	399	0.74	0.01

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	399	0.73	0.01

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.000	0.010	0.021	1.348	2.378	3.614	3.955	4.259
MLE	0.000	0.010	0.021	1.348	2.378	3.614	3.955	4.259
LAD	0.000	0.014	0.026	1.287	2.292	3.548	3.950	4.262

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.56	15.77	20.65	22.98	26.74	30.66	31.87	32.47
MLE	0.56	15.77	20.65	22.98	26.74	30.66	31.87	32.47
LAD	20.	21.	23.	29.	31.	31.	33.	41.

Individual Load Estimates for KUCC outfall in kg/day

			Loads Estimated by:		
Date	Time	Flow	AMLE	MLE	LAD
20060628	1200	1.000E-04	1.6453E-07	1.6454E-07	8.3776E-06
20060629	1200	1.000E-04	1.6744E-07	1.6745E-07	8.4337E-06
20060630	1200	2.900E-01	8.2662E-03	8.2662E-03	1.8076E-02
20060701	1200	3.600E-01	1.0798E-02	1.0798E-02	2.2508E-02
20060702	1200	2.900E-01	8.5618E-03	8.5618E-03	1.8310E-02
20060703	1200	2.900E-01	8.7105E-03	8.7105E-03	1.8426E-02
20060704	1200	2.500E-01	7.4571E-03	7.4571E-03	1.6023E-02
20060705	1200	1.500E-01	4.1620E-03	4.1620E-03	9.7652E-03
20060706	1200	1.800E-01	5.2480E-03	5.2480E-03	1.1747E-02
20060707	1200	1.200E-01	3.2982E-03	3.2982E-03	7.9423E-03
20060708	1200	1.600E-01	4.7172E-03	4.7172E-03	1.0589E-02
20060709	1200	1.400E-01	4.0910E-03	4.0910E-03	9.3433E-03
20060710	1200	1.300E-01	3.8047E-03	3.8047E-03	8.7381E-03
20060711	1200	1.200E-01	3.5118E-03	3.5118E-03	8.1242E-03
20060712	1200	1.800E-01	5.7664E-03	5.7664E-03	1.2153E-02
20060713	1200	1.300E-01	3.9811E-03	3.9811E-03	8.8810E-03
20060714	1200	1.900E-01	6.3294E-03	6.3294E-03	1.2950E-02
20060715	1200	1.700E-01	5.6330E-03	5.6330E-03	1.1671E-02
20060716	1200	1.800E-01	6.1117E-03	6.1117E-03	1.2406E-02
20060717	1200	1.900E-01	6.6046E-03	6.6046E-03	1.3146E-02
20060718	1200	1.800E-01	6.2831E-03	6.2831E-03	1.2526E-02
20060719	1200	1.200E+01	6.3869E-01	6.3869E-01	8.1390E-01
20060720	1200	1.200E+01	6.4722E-01	6.4722E-01	8.1763E-01
20060721	1200	5.700E+00	3.0394E-01	3.0394E-01	3.8940E-01
20060722	1200	1.900E-01	7.0570E-03	7.0570E-03	1.3450E-02
20060723	1200	1.700E-01	6.2687E-03	6.2687E-03	1.2111E-02
20060724	1200	2.200E-01	8.5918E-03	8.5918E-03	1.5663E-02
20060725	1200	4.400E+00	2.4335E-01	2.4335E-01	3.0572E-01
20060726	1200	1.700E+01	9.9237E-01	9.9237E-01	1.1903E+00
20060727	1200	2.700E+01	1.5925E+00	1.5925E+00	1.9046E+00
20060728	1200	2.700E+01	1.6108E+00	1.6108E+00	1.9117E+00
20060729	1200	1.200E+01	7.2173E-01	7.2173E-01	8.4800E-01
20060730	1200	1.400E-01	5.4030E-03	5.4030E-03	1.0285E-02
20060731	1200	1.400E-01	5.4611E-03	5.4611E-03	1.0321E-02
20060801	1200	6.800E+00	4.1531E-01	4.1531E-01	4.8466E-01
20060802	1200	1.300E+01	8.1687E-01	8.1687E-01	9.3146E-01
20060803	1200	1.400E+01	8.8953E-01	8.8953E-01	1.0066E+00
20060804	1200	1.800E-01	7.6558E-03	7.6558E-03	1.3371E-02
20060805	1200	1.100E-01	4.3054E-03	4.3054E-03	8.2775E-03
20060806	1200	2.500E-01	1.1463E-02	1.1463E-02	1.8565E-02
20060807	1200	1.000E-04	2.7882E-07	2.7884E-07	1.0116E-05
20060808	1200	3.500E-01	1.7233E-02	1.7233E-02	2.5985E-02
20060809	1200	2.500E-01	1.1773E-02	1.1773E-02	1.8708E-02
20060810	1200	5.000E-02	1.7262E-03	1.7262E-03	3.8838E-03
20060811	1200	4.200E+00	2.7476E-01	2.7476E-01	3.0760E-01
20060812	1200	1.600E-01	7.1456E-03	7.1456E-03	1.2154E-02
20060813	1200	1.300E-01	5.6279E-03	5.6279E-03	9.9366E-03
20060814	1200	2.000E-02	5.6480E-04	5.6481E-04	1.6084E-03
20060815	1200	1.500E+01	1.0569E+00	1.0569E+00	1.1105E+00
20060816	1200	2.200E-01	1.0707E-02	1.0707E-02	1.6736E-02
20060817	1200	8.900E+00	6.2925E-01	6.2925E-01	6.5956E-01
20060818	1200	1.500E+01	1.0790E+00	1.0790E+00	1.1158E+00
20060819	1200	2.700E+01	1.9541E+00	1.9541E+00	2.0202E+00
20060820	1200	2.700E+01	1.9663E+00	1.9663E+00	2.0228E+00

20060821	1200	2.400E+01	1.7604E+00	1.7604E+00	1.7983E+00
20060822	1200	2.600E+01	1.9169E+00	1.9169E+00	1.9517E+00
20060823	1200	2.600E+01	1.9277E+00	1.9277E+00	1.9536E+00
20060824	1200	1.700E+01	1.2684E+00	1.2684E+00	1.2743E+00
20060825	1200	1.800E+01	1.3504E+00	1.3504E+00	1.3508E+00
20060826	1200	3.200E+01	2.4026E+00	2.4026E+00	2.4149E+00
20060827	1200	2.900E+01	2.1913E+00	2.1913E+00	2.1877E+00
20060828	1200	1.600E+01	1.2169E+00	1.2169E+00	1.2020E+00
20060829	1200	2.600E+01	1.9850E+00	1.9850E+00	1.9611E+00
20060830	1200	2.500E+01	1.9174E+00	1.9174E+00	1.8856E+00
20060831	1200	1.000E-01	4.5569E-03	4.5569E-03	7.8334E-03
20060901	1200	2.300E+01	1.7788E+00	1.7788E+00	1.7340E+00
20060902	1200	5.600E+01	4.2591E+00	4.2591E+00	4.2625E+00
20060903	1200	4.900E+01	3.7582E+00	3.7582E+00	3.7229E+00
20060904	1200	1.400E+01	1.0918E+00	1.0918E+00	1.0516E+00
20060905	1200	1.300E-01	6.3450E-03	6.3450E-03	1.0121E-02
20060906	1200	1.000E-01	4.6478E-03	4.6478E-03	7.8270E-03
20060907	1200	7.000E+00	5.4067E-01	5.4067E-01	5.2397E-01
20060908	1200	7.000E-02	3.0337E-03	3.0337E-03	5.5191E-03
20060909	1200	1.100E-01	5.2496E-03	5.2496E-03	8.5773E-03
20060910	1200	1.000E-01	4.6917E-03	4.6917E-03	7.8083E-03
20060911	1200	1.600E+01	1.2711E+00	1.2711E+00	1.1982E+00
20060912	1200	1.300E+01	1.0320E+00	1.0320E+00	9.7149E-01
20060913	1200	1.000E-01	4.7160E-03	4.7160E-03	7.7870E-03
20060914	1200	8.000E-02	3.6072E-03	3.6072E-03	6.2548E-03
20060915	1200	3.000E-01	1.7285E-02	1.7285E-02	2.2821E-02
20060916	1200	3.000E-01	1.7303E-02	1.7303E-02	2.2792E-02
20060917	1200	3.000E-01	1.7317E-02	1.7317E-02	2.2762E-02
20060918	1200	3.000E-01	1.7330E-02	1.7330E-02	2.2730E-02
20060919	1200	4.000E-01	2.4152E-02	2.4152E-02	3.0128E-02
20060920	1200	4.000E-01	2.4161E-02	2.4161E-02	3.0080E-02
20060921	1200	4.100E-01	2.4859E-02	2.4859E-02	3.0770E-02
20060922	1200	4.000E-01	2.4167E-02	2.4167E-02	2.9979E-02
20060923	1200	4.000E-01	2.4164E-02	2.4164E-02	2.9924E-02
20060924	1200	4.000E-01	2.4158E-02	2.4158E-02	2.9868E-02
20060925	1200	3.000E-01	1.7336E-02	1.7336E-02	2.2456E-02
20060926	1200	3.000E-01	1.7327E-02	1.7327E-02	2.2411E-02
20060927	1200	3.000E-01	1.7314E-02	1.7314E-02	2.2364E-02
20060928	1200	2.800E-01	1.5970E-02	1.5970E-02	2.0851E-02
20060929	1200	3.600E+00	2.7262E-01	2.7262E-01	2.6116E-01
20060930	1200	2.600E-01	1.4622E-02	1.4622E-02	1.9298E-02
20061001	1200	3.500E-01	2.0600E-02	2.0600E-02	2.5792E-02
20061002	1200	2.800E-01	1.5894E-02	1.5894E-02	2.0657E-02
20061003	1200	2.900E-01	1.6529E-02	1.6529E-02	2.1328E-02
20061004	1200	2.200E-01	1.1962E-02	1.1962E-02	1.6215E-02
20061005	1200	3.100E-01	1.7794E-02	1.7794E-02	2.2657E-02
20061006	1200	2.800E-01	1.5785E-02	1.5785E-02	2.0443E-02
20061007	1200	4.100E-01	2.4451E-02	2.4451E-02	2.9676E-02
20061008	1200	3.000E-01	1.7027E-02	1.7027E-02	2.1757E-02
20061009	1200	2.600E-01	1.4389E-02	1.4389E-02	1.8847E-02
20061010	1200	9.400E+00	7.2945E-01	7.2945E-01	6.6281E-01
20061011	1200	2.700E+01	2.1086E+00	2.1086E+00	1.9105E+00
20061012	1200	2.800E+01	2.1800E+00	2.1800E+00	1.9760E+00
20061013	1200	3.000E+01	2.3271E+00	2.3271E+00	2.1120E+00
20061014	1200	3.300E+01	2.5484E+00	2.5484E+00	2.3181E+00
20061015	1200	3.400E+01	2.6164E+00	2.6164E+00	2.3815E+00
20061016	1200	3.700E+00	2.7068E-01	2.7068E-01	2.5594E-01
20061017	1200	3.300E-01	1.8552E-02	1.8552E-02	2.3244E-02
20061018	1200	3.000E-01	1.6564E-02	1.6564E-02	2.1093E-02
20061019	1200	2.800E-01	1.5240E-02	1.5240E-02	1.9643E-02
20061020	1200	3.900E-01	2.2261E-02	2.2261E-02	2.7126E-02
20061021	1200	2.100E-01	1.0823E-02	1.0823E-02	1.4705E-02
20061022	1200	3.600E-01	2.0162E-02	2.0162E-02	2.4896E-02
20061023	1200	2.200E-01	1.1346E-02	1.1346E-02	1.5285E-02

20061024	1200	3.600E-01	2.0014E-02	2.0014E-02	2.4720E-02
20061025	1200	3.200E-01	1.7407E-02	1.7407E-02	2.1935E-02
20061026	1200	3.200E-01	1.7339E-02	1.7339E-02	2.1855E-02
20061027	1200	2.800E-01	1.4797E-02	1.4797E-02	1.9095E-02
20061028	1200	2.900E-01	1.5350E-02	1.5350E-02	1.9693E-02
20061029	1200	3.900E-01	2.1511E-02	2.1511E-02	2.6264E-02
20061030	1200	1.400E+01	1.0233E+00	1.0233E+00	9.2385E-01
20061031	1200	2.000E+01	1.4592E+00	1.4592E+00	1.3178E+00
20061101	1200	2.800E-01	1.4493E-02	1.4493E-02	1.8741E-02
20061102	1200	3.200E-01	1.6842E-02	1.6842E-02	2.1291E-02
20061103	1200	2.800E-01	1.4367E-02	1.4367E-02	1.8598E-02
20061104	1200	3.200E-01	1.6695E-02	1.6695E-02	2.1127E-02
20061105	1200	3.400E-01	1.7824E-02	1.7824E-02	2.2340E-02
20061106	1200	8.700E-01	5.1506E-02	5.1506E-02	5.6260E-02
20061107	1200	1.200E+01	8.4463E-01	8.4463E-01	7.6729E-01
20061108	1200	2.800E+01	1.9674E+00	1.9674E+00	1.7939E+00
20061109	1200	2.900E+01	2.0272E+00	2.0272E+00	1.8512E+00
20061110	1200	3.000E+01	2.0863E+00	2.0863E+00	1.9081E+00
20061111	1200	3.400E+01	2.3482E+00	2.3482E+00	2.1567E+00
20061112	1200	3.900E+01	2.6725E+00	2.6725E+00	2.4677E+00
20061113	1200	1.700E+01	1.1685E+00	1.1685E+00	1.0636E+00
20061114	1200	4.100E-01	2.1189E-02	2.1189E-02	2.5926E-02
20061115	1200	4.300E-01	2.2268E-02	2.2268E-02	2.7064E-02
20061116	1200	3.300E-01	1.6352E-02	1.6352E-02	2.0769E-02
20061117	1200	2.700E-01	1.2900E-02	1.2900E-02	1.6980E-02
20061118	1200	3.800E-01	1.9048E-02	1.9048E-02	2.3675E-02
20061119	1200	3.900E-01	1.9529E-02	1.9529E-02	2.4192E-02
20061120	1200	3.900E-01	1.9433E-02	1.9433E-02	2.4095E-02
20061121	1200	3.800E-01	1.8770E-02	1.8770E-02	2.3393E-02
20061122	1200	4.600E-01	2.3242E-02	2.3242E-02	2.8128E-02
20061123	1200	4.800E-01	2.4278E-02	2.4278E-02	2.9218E-02
20061124	1200	3.700E-01	1.7938E-02	1.7938E-02	2.2516E-02
20061125	1200	4.100E-01	2.0080E-02	2.0080E-02	2.4814E-02
20061126	1200	4.000E-01	1.9425E-02	1.9425E-02	2.4122E-02
20061127	1200	4.400E-01	2.1557E-02	2.1557E-02	2.6394E-02
20061128	1200	4.700E-01	2.3128E-02	2.3128E-02	2.8058E-02
20061129	1200	4.000E-01	1.9142E-02	1.9142E-02	2.3840E-02
20061130	1200	3.800E-01	1.7960E-02	1.7960E-02	2.2577E-02
20061201	1200	1.900E+01	1.1967E+00	1.1967E+00	1.1077E+00
20061202	1200	4.400E+01	2.7266E+00	2.7266E+00	2.5757E+00
20061203	1200	4.500E+01	2.7733E+00	2.7733E+00	2.6249E+00
20061204	1200	4.600E+01	2.8195E+00	2.8195E+00	2.6737E+00
20061205	1200	4.700E+01	2.8651E+00	2.8651E+00	2.7221E+00
20061206	1200	3.900E+01	2.3789E+00	2.3789E+00	2.2454E+00
20061207	1200	4.400E+01	2.6625E+00	2.6625E+00	2.5272E+00
20061208	1200	4.500E+01	2.7084E+00	2.7084E+00	2.5757E+00
20061209	1200	4.500E+01	2.6959E+00	2.6959E+00	2.5662E+00
20061210	1200	3.300E+01	1.9829E+00	1.9829E+00	1.8685E+00
20061211	1200	3.400E+01	2.0325E+00	2.0325E+00	1.9187E+00
20061212	1200	3.500E+01	2.0816E+00	2.0816E+00	1.9686E+00
20061213	1200	2.500E+01	1.4873E+00	1.4873E+00	1.3966E+00
20061214	1200	1.700E+01	1.0071E+00	1.0071E+00	9.4354E-01
20061215	1200	5.300E-01	2.4480E-02	2.4480E-02	2.9642E-02
20061216	1200	4.100E-01	1.8189E-02	1.8189E-02	2.2931E-02
20061217	1200	4.200E-01	1.8617E-02	1.8617E-02	2.3401E-02
20061218	1200	4.900E-01	2.2102E-02	2.2102E-02	2.7151E-02
20061219	1200	5.500E+00	3.0913E-01	3.0913E-01	2.9890E-01
20061220	1200	1.400E+01	8.0666E-01	8.0666E-01	7.6030E-01
20061221	1200	3.800E+01	2.1698E+00	2.1698E+00	2.0738E+00
20061222	1200	4.000E+01	2.2718E+00	2.2718E+00	2.1771E+00
20061223	1200	6.500E+01	3.6144E+00	3.6144E+00	3.5483E+00
20061224	1200	8.100E+00	4.5324E-01	4.5324E-01	4.3329E-01
20061225	1200	4.700E-01	2.0485E-02	2.0485E-02	2.5469E-02
20061226	1200	3.800E-01	1.6003E-02	1.6003E-02	2.0590E-02

20061227	1200	3.600E-01	1.4982E-02	1.4982E-02	1.9463E-02
20061228	1200	4.900E+01	2.7028E+00	2.7028E+00	2.6239E+00
20061229	1200	4.300E+01	2.3728E+00	2.3728E+00	2.2922E+00
20061230	1200	7.400E+01	3.9831E+00	3.9831E+00	3.9616E+00
20061231	1200	7.400E+01	3.9691E+00	3.9691E+00	3.9503E+00
20070101	1200	7.400E+01	3.9555E+00	3.9555E+00	3.9392E+00
20070102	1200	7.400E+01	3.9421E+00	3.9421E+00	3.9283E+00
20070103	1200	7.400E+01	3.9291E+00	3.9291E+00	3.9176E+00
20070104	1200	7.400E+01	3.9164E+00	3.9164E+00	3.9072E+00
20070105	1200	7.500E+01	3.9541E+00	3.9541E+00	3.9504E+00
20070106	1200	7.400E+01	3.8920E+00	3.8920E+00	3.8870E+00
20070107	1200	7.400E+01	3.8803E+00	3.8803E+00	3.8772E+00
20070108	1200	6.900E+01	3.6197E+00	3.6197E+00	3.6027E+00
20070109	1200	4.600E+01	2.4447E+00	2.4447E+00	2.3832E+00
20070110	1200	5.200E-01	2.1787E-02	2.1787E-02	2.6934E-02
20070111	1200	3.500E-01	1.3818E-02	1.3818E-02	1.8189E-02
20070112	1200	3.500E-01	1.3782E-02	1.3782E-02	1.8148E-02
20070113	1200	3.900E-01	1.5566E-02	1.5566E-02	2.0146E-02
20070114	1200	3.800E-01	1.5072E-02	1.5072E-02	1.9595E-02
20070115	1200	2.600E-01	9.6993E-03	9.6993E-03	1.3460E-02
20070116	1200	1.100E+01	5.7752E-01	5.7752E-01	5.5476E-01
20070117	1200	3.700E-01	1.4516E-02	1.4516E-02	1.8971E-02
20070118	1200	3.700E-01	1.4484E-02	1.4484E-02	1.8935E-02
20070119	1200	3.300E-01	1.2671E-02	1.2671E-02	1.6887E-02
20070120	1200	2.900E-01	1.0891E-02	1.0891E-02	1.4844E-02
20070121	1200	3.300E-01	1.2621E-02	1.2621E-02	1.6827E-02
20070122	1200	2.800E-01	1.0418E-02	1.0418E-02	1.4291E-02
20070123	1200	3.000E-01	1.1265E-02	1.1265E-02	1.5270E-02
20070124	1200	4.600E-01	1.8375E-02	1.8375E-02	2.3229E-02
20070125	1200	4.300E-01	1.6987E-02	1.6987E-02	2.1702E-02
20070126	1200	4.100E-01	1.6062E-02	1.6062E-02	2.0677E-02
20070127	1200	4.000E-01	1.5592E-02	1.5592E-02	2.0152E-02
20070128	1200	2.700E-01	9.8953E-03	9.8953E-03	1.3669E-02
20070129	1200	8.600E+00	4.3841E-01	4.3841E-01	4.2437E-01
20070130	1200	3.700E-01	1.4204E-02	1.4204E-02	1.8592E-02
20070131	1200	2.800E-01	1.0285E-02	1.0285E-02	1.4116E-02
20070201	1200	2.700E-01	9.8505E-03	9.8505E-03	1.3605E-02
20070202	1200	3.400E-01	1.2848E-02	1.2848E-02	1.7051E-02
20070203	1200	3.400E-01	1.2837E-02	1.2837E-02	1.7035E-02
20070204	1200	2.800E-01	1.0249E-02	1.0249E-02	1.4060E-02
20070205	1200	2.700E-01	9.8186E-03	9.8186E-03	1.3555E-02
20070206	1200	3.600E+00	1.7480E-01	1.7480E-01	1.7621E-01
20070207	1200	4.700E+01	2.3783E+00	2.3783E+00	2.3287E+00
20070208	1200	5.900E+01	2.9594E+00	2.9594E+00	2.9299E+00
20070209	1200	7.800E+01	3.8604E+00	3.8604E+00	3.8865E+00
20070210	1200	7.700E+01	3.8123E+00	3.8123E+00	3.8339E+00
20070211	1200	7.600E+01	3.7645E+00	3.7645E+00	3.7815E+00
20070212	1200	7.000E+01	3.4809E+00	3.4809E+00	3.4773E+00
20070213	1200	7.900E+01	3.9044E+00	3.9044E+00	3.9300E+00
20070214	1200	7.800E+01	3.8575E+00	3.8575E+00	3.8783E+00
20070215	1200	6.500E+01	3.2434E+00	3.2434E+00	3.2225E+00
20070216	1200	6.800E+01	3.3866E+00	3.3866E+00	3.3728E+00
20070217	1200	7.800E+01	3.8592E+00	3.8592E+00	3.8760E+00
20070218	1200	7.800E+01	3.8603E+00	3.8603E+00	3.8757E+00
20070219	1200	9.400E+00	4.7668E-01	4.7668E-01	4.5812E-01
20070220	1200	7.200E-01	3.0069E-02	3.0069E-02	3.5456E-02
20070221	1200	5.700E-01	2.3116E-02	2.3116E-02	2.8150E-02
20070222	1200	6.200E-01	2.5436E-02	2.5436E-02	3.0592E-02
20070223	1200	8.700E-01	3.7231E-02	3.7231E-02	4.2774E-02
20070224	1200	8.600E-01	3.6780E-02	3.6780E-02	4.2297E-02
20070225	1200	7.300E-01	3.0636E-02	3.0636E-02	3.5978E-02
20070226	1200	9.500E-01	4.1162E-02	4.1162E-02	4.6708E-02
20070227	1200	1.200E+00	5.3378E-02	5.3378E-02	5.8899E-02
20070228	1200	8.700E+00	4.4297E-01	4.4297E-01	4.2485E-01

20070301	1200	9.900E-01	4.3217E-02	4.3217E-02	4.8722E-02
20070302	1200	2.200E+01	1.1372E+00	1.1372E+00	1.0808E+00
20070303	1200	4.400E+01	2.2510E+00	2.2510E+00	2.1779E+00
20070304	1200	4.300E+01	2.2039E+00	2.2039E+00	2.1292E+00
20070305	1200	3.900E+01	2.0066E+00	2.0066E+00	1.9303E+00
20070306	1200	3.500E+01	1.8076E+00	1.8076E+00	1.7316E+00
20070307	1200	2.900E+01	1.5046E+00	1.5046E+00	1.4332E+00
20070308	1200	2.500E+01	1.3010E+00	1.3010E+00	1.2349E+00
20070309	1200	2.500E+01	1.3028E+00	1.3028E+00	1.2360E+00
20070310	1200	2.600E+01	1.3564E+00	1.3564E+00	1.2870E+00
20070311	1200	2.600E+01	1.3585E+00	1.3585E+00	1.2883E+00
20070312	1200	1.500E+01	7.8464E-01	7.8464E-01	7.4099E-01
20070313	1200	2.500E+01	1.3107E+00	1.3107E+00	1.2409E+00
20070314	1200	3.700E+01	1.9310E+00	1.9310E+00	1.8456E+00
20070315	1200	1.800E+01	9.4742E-01	9.4742E-01	8.9314E-01
20070316	1200	5.300E-01	2.1875E-02	2.1875E-02	2.6614E-02
20070317	1200	4.000E-01	1.5896E-02	1.5896E-02	2.0189E-02
20070318	1200	3.300E-01	1.2763E-02	1.2763E-02	1.6725E-02
20070319	1200	2.700E-01	1.0135E-02	1.0135E-02	1.3746E-02
20070320	1200	2.400E-01	8.8527E-03	8.8527E-03	1.2259E-02
20070321	1200	2.400E-01	8.8687E-03	8.8687E-03	1.2276E-02
20070322	1200	2.200E-01	8.0262E-03	8.0262E-03	1.1286E-02
20070323	1200	1.600E+01	8.5350E-01	8.5350E-01	8.0154E-01
20070324	1200	5.400E-01	2.2666E-02	2.2666E-02	2.7399E-02
20070325	1200	5.500E-01	2.3186E-02	2.3186E-02	2.7941E-02
20070326	1200	3.400E-01	1.3405E-02	1.3405E-02	1.7416E-02
20070327	1200	3.100E-01	1.2072E-02	1.2072E-02	1.5927E-02
20070328	1200	2.900E-01	1.1196E-02	1.1196E-02	1.4938E-02
20070329	1200	6.300E+00	3.3181E-01	3.3181E-01	3.1742E-01
20070330	1200	1.800E+01	9.7367E-01	9.7367E-01	9.1207E-01
20070331	1200	2.500E+01	1.3539E+00	1.3539E+00	1.2721E+00
20070401	1200	2.700E+01	1.4639E+00	1.4639E+00	1.3770E+00
20070402	1200	2.800E+01	1.5203E+00	1.5203E+00	1.4309E+00
20070403	1200	2.800E+01	1.5232E+00	1.5232E+00	1.4333E+00
20070404	1200	2.600E+01	1.4182E+00	1.4182E+00	1.3322E+00
20070405	1200	2.600E+01	1.4209E+00	1.4209E+00	1.3345E+00
20070406	1200	1.400E+01	7.6568E-01	7.6568E-01	7.1663E-01
20070407	1200	5.400E-01	2.3273E-02	2.3273E-02	2.8026E-02
20070408	1200	4.300E-01	1.7987E-02	1.7987E-02	2.2425E-02
20070409	1200	3.900E-01	1.6112E-02	1.6112E-02	2.0403E-02
20070410	1200	3.300E-01	1.3318E-02	1.3318E-02	1.7339E-02
20070411	1200	4.800E+00	2.5563E-01	2.5563E-01	2.4722E-01
20070412	1200	1.800E+01	9.9718E-01	9.9718E-01	9.3259E-01
20070413	1200	2.400E+01	1.3312E+00	1.3312E+00	1.2484E+00
20070414	1200	1.400E+01	7.7650E-01	7.7650E-01	7.2682E-01
20070415	1200	3.800E-01	1.5799E-02	1.5799E-02	2.0101E-02
20070416	1200	6.900E+00	3.7679E-01	3.7679E-01	3.5863E-01
20070417	1200	4.500E+00	2.4116E-01	2.4116E-01	2.3428E-01
20070418	1200	4.100E-01	1.7317E-02	1.7317E-02	2.1781E-02
20070419	1200	3.100E-01	1.2570E-02	1.2570E-02	1.6568E-02
20070420	1200	1.200E+01	6.6993E-01	6.6993E-01	6.2922E-01
20070421	1200	2.600E+01	1.4585E+00	1.4585E+00	1.3729E+00
20070422	1200	2.700E+01	1.5159E+00	1.5159E+00	1.4287E+00
20070423	1200	3.500E+01	1.9590E+00	1.9590E+00	1.8600E+00
20070424	1200	4.300E+01	2.3969E+00	2.3969E+00	2.2944E+00
20070425	1200	3.900E+01	2.1822E+00	2.1822E+00	2.0823E+00
20070426	1200	1.600E+01	9.0317E-01	9.0317E-01	8.4914E-01
20070427	1200	3.900E-01	1.6531E-02	1.6531E-02	2.1063E-02
20070428	1200	4.000E-01	1.7033E-02	1.7033E-02	2.1632E-02
20070429	1200	2.600E-01	1.0365E-02	1.0365E-02	1.4180E-02
20070430	1200	2.700E-01	1.0838E-02	1.0838E-02	1.4741E-02
20070501	1200	3.100E+01	1.7520E+00	1.7520E+00	1.6679E+00
20070502	1200	3.600E+01	2.0297E+00	2.0297E+00	1.9430E+00
20070503	1200	7.200E-01	3.3304E-02	3.3304E-02	3.8961E-02

20070504	1200	3.400E-01	1.4182E-02	1.4182E-02	1.8613E-02
20070505	1200	2.100E-01	8.1025E-03	8.1025E-03	1.1608E-02
20070506	1200	2.200E-01	8.5581E-03	8.5581E-03	1.2168E-02
20070507	1200	5.700E+00	3.1473E-01	3.1473E-01	3.0687E-01
20070508	1200	2.400E+01	1.3636E+00	1.3636E+00	1.3022E+00
20070509	1200	3.600E+01	2.0328E+00	2.0328E+00	1.9637E+00
20070510	1200	4.000E+01	2.2523E+00	2.2523E+00	2.1875E+00
20070511	1200	2.400E+01	1.3628E+00	1.3628E+00	1.3076E+00
20070512	1200	3.100E-01	1.2745E-02	1.2745E-02	1.7192E-02
20070513	1200	3.500E-01	1.4654E-02	1.4654E-02	1.9398E-02
20070514	1200	1.800E-01	6.7485E-03	6.7485E-03	1.0103E-02
20070515	1200	1.500E-01	5.4360E-03	5.4360E-03	8.4596E-03
20070516	1200	2.000E+01	1.1330E+00	1.1330E+00	1.0949E+00
20070517	1200	3.000E+01	1.6923E+00	1.6923E+00	1.6499E+00
20070518	1200	1.400E+01	7.8967E-01	7.8967E-01	7.6637E-01
20070519	1200	2.700E-01	1.0794E-02	1.0794E-02	1.5130E-02
20070520	1200	2.500E-01	9.8559E-03	9.8559E-03	1.4041E-02
20070521	1200	1.500E+01	8.4336E-01	8.4336E-01	8.2385E-01
20070522	1200	2.400E+01	1.3482E+00	1.3482E+00	1.3238E+00
20070523	1200	2.500E+01	1.4015E+00	1.4015E+00	1.3806E+00
20070524	1200	2.300E+01	1.2877E+00	1.2877E+00	1.2702E+00
20070525	1200	2.200E+01	1.2295E+00	1.2295E+00	1.2154E+00
20070526	1200	2.100E+01	1.1712E+00	1.1712E+00	1.1605E+00
20070527	1200	2.900E+01	1.6093E+00	1.6093E+00	1.6081E+00
20070528	1200	3.300E+01	1.8227E+00	1.8227E+00	1.8333E+00
20070529	1200	2.700E+01	1.4921E+00	1.4921E+00	1.4978E+00
20070530	1200	2.700E+01	1.4880E+00	1.4880E+00	1.4984E+00
20070531	1200	2.500E+01	1.3748E+00	1.3748E+00	1.3870E+00
20070601	1200	2.300E+01	1.2617E+00	1.2617E+00	1.2755E+00
20070602	1200	1.600E+01	8.7444E-01	8.7444E-01	8.8524E-01
20070603	1200	2.400E-01	9.0847E-03	9.0847E-03	1.3598E-02
20070604	1200	1.600E-01	5.6212E-03	5.6212E-03	9.1349E-03
20070605	1200	2.000E-01	7.2850E-03	7.2850E-03	1.1371E-02
20070606	1200	2.600E-01	9.8610E-03	9.8610E-03	1.4713E-02
20070607	1200	3.300E-01	1.2946E-02	1.2946E-02	1.8600E-02
20070608	1200	1.700E-01	5.9426E-03	5.9426E-03	9.6921E-03
20070609	1200	2.300E-01	8.4383E-03	8.4383E-03	1.3037E-02
20070610	1200	1.300E-01	4.2836E-03	4.2836E-03	7.4476E-03
20070611	1200	2.100E-01	7.5146E-03	7.5146E-03	1.1914E-02
20070612	1200	3.000E+00	1.4719E-01	1.4719E-01	1.6535E-01
20070613	1200	1.100E+01	5.7022E-01	5.7022E-01	6.0630E-01
20070614	1200	3.000E+01	1.5520E+00	1.5520E+00	1.6640E+00
20070615	1200	1.700E+01	8.7701E-01	8.7701E-01	9.3795E-01
20070616	1200	2.400E+01	1.2307E+00	1.2307E+00	1.3266E+00
20070617	1200	9.100E+00	4.5891E-01	4.5891E-01	4.9977E-01
20070618	1200	1.900E-01	6.4258E-03	6.4258E-03	1.0747E-02
20070619	1200	2.400E-01	8.3952E-03	8.3952E-03	1.3504E-02
20070620	1200	1.800E-01	5.9522E-03	5.9522E-03	1.0170E-02
20070621	1200	1.500E-01	4.7658E-03	4.7658E-03	8.4949E-03
20070622	1200	2.000E-01	6.6458E-03	6.6458E-03	1.1250E-02
20070623	1200	1.300E-01	3.9639E-03	3.9639E-03	7.3643E-03
20070624	1200	1.000E-01	2.8741E-03	2.8741E-03	5.6888E-03
20070625	1200	8.000E-02	2.1786E-03	2.1786E-03	4.5673E-03
20070626	1200	8.000E-02	2.1617E-03	2.1617E-03	4.5599E-03
20070627	1200	1.700E-01	5.2840E-03	5.2840E-03	9.5177E-03
20070628	1200	1.000E-01	2.7847E-03	2.7847E-03	5.6506E-03
20070629	1200	1.200E-01	3.4359E-03	3.4359E-03	6.7409E-03
20070630	1200	9.000E-02	2.4111E-03	2.4111E-03	5.0778E-03
20070701	1200	1.500E-01	4.4033E-03	4.4033E-03	8.3530E-03
20070702	1200	2.000E-02	3.6657E-04	3.6657E-04	1.1704E-03
20070703	1200	1.000E-04	1.8963E-07	1.8965E-07	7.4605E-06
20070704	1200	1.000E-04	1.8789E-07	1.8790E-07	7.4427E-06
20070705	1200	7.000E-02	1.6968E-03	1.6968E-03	3.9277E-03
20070706	1200	1.000E-04	1.8433E-07	1.8434E-07	7.4051E-06

20070707	1200	1.000E-04	1.8251E-07	1.8252E-07	7.3853E-06
20070708	1200	1.000E-04	1.8067E-07	1.8068E-07	7.3648E-06
20070709	1200	2.000E-02	3.4187E-04	3.4187E-04	1.1494E-03
20070710	1200	7.000E-02	1.6104E-03	1.6104E-03	3.8735E-03
20070711	1200	1.000E-04	1.7503E-07	1.7504E-07	7.2993E-06
20070712	1200	1.000E-04	1.7311E-07	1.7312E-07	7.2761E-06
20070713	1200	1.000E-04	1.7117E-07	1.7119E-07	7.2523E-06
20070714	1200	1.500E-01	3.8422E-03	3.8422E-03	8.0563E-03
20070715	1200	1.000E-04	1.6725E-07	1.6726E-07	7.2027E-06
20070716	1200	1.000E-04	1.6526E-07	1.6527E-07	7.1769E-06
20070717	1200	1.000E-04	1.6326E-07	1.6327E-07	7.1504E-06
20070718	1200	6.000E-02	1.2120E-03	1.2120E-03	3.2425E-03
20070719	1200	1.700E-01	4.1828E-03	4.1828E-03	8.9414E-03
20070720	1200	1.000E-02	1.2232E-04	1.2232E-04	5.6601E-04
20070721	1200	3.000E-02	4.9320E-04	4.9320E-04	1.6323E-03
20070722	1200	8.000E-02	1.6304E-03	1.6304E-03	4.2239E-03
20070723	1200	7.000E-02	1.3670E-03	1.3670E-03	3.6918E-03
20070724	1200	9.000E-02	1.8273E-03	1.8273E-03	4.6977E-03
20070725	1200	1.000E-04	1.4684E-07	1.4685E-07	6.9161E-06
20070726	1200	3.400E-01	8.5044E-03	8.5044E-03	1.7142E-02
20070727	1200	3.000E-01	7.2494E-03	7.2494E-03	1.5083E-02
20070728	1200	1.000E-04	1.4057E-07	1.4058E-07	6.8183E-06
20070729	1200	1.000E-04	1.3847E-07	1.3848E-07	6.7846E-06
20070730	1200	1.000E-04	1.3636E-07	1.3637E-07	6.7503E-06
20070731	1200	4.000E-02	6.0842E-04	6.0842E-04	2.0598E-03

Bear River Bay Outflow at GSL Minerals Corp Bridge

```
##########################################################################
#
#  LOADEST Calibration File
#
#  Bear River going into GSL
#
#  Total Se (dissolved + particulate)
#  2007 autosampler data added
#  Zero or negative discharge = 0.0001 cfs
#
##########################################################################
#
#CDATE     CTIME      CFLOW      CCONC
#
##########################################################################
20060503    1425       5300       0.366
20060504    1400       3940       0.321
20060506    1400       3460       0.35
20060510    1400       4760       0.318
20060516    1400       2670       0.506
20060519    1400        369       0.363
20060523    1400       2810       0.435
20060525    1007       2380       0.423
20060526    1007       3500       0.419
20060528    1007         77       0.468
20060603    1007       2800       0.313
20060607    1005         57       0.512
20060611    1005       2430       0.734
20060619    1005       1550       0.614
20060621    1005       1490       0.39
20061010    1515       1790       0.479
20061120    1200       2950       0.326
20061220    1100       1592       0.541
20070202    1030       1033       0.409
20070302    1050        938       0.405
20070416    1130         11       0.381
20070417    1215      0.001       0.422
20070418    1130       1480       0.506
20070419    1130       1270       0.506
20070420    1130       1920       0.456
20070421    1130       1300       0.401
20070422    1130       1360       0.378
20070423    1130       3040       0.355
20070425    1130       1340       0.354
20070509    1315        471       0.42
20070511    1315       1140       0.463
20070513    1315       1410       0.42
20070515    1315        176       0.365
20070517    1230      0.001       0.548
20070525    1040        284       0.654
20070526    1040        219       0.53
20070528    1040       1490       0.512
20070529    1040     0.0001       0.505
```

20070603	1040	178	0.662
20070613	1040	0.0001	0.777
20070619	1045	0.0001	0.72
20070716	1100	0.0001	1.39

```
##########################################################################
#
#  LOADEST Estimation File
#
#  Bear River at GSL Minerals Bridge
#  Discharge estimated from Corrinne gage from 10/1/2006 to 4/15/2007
#  All negative or no flow data (from GSL) asigned a 0.0001 value
#  Missing days from Corrinne gage were interpolated
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE        ETIME      EFLOW
#
##########################################################################
20060321      1200      2990
20060322      1200      3570
20060323      1200      2760
20060324      1200      2820
20060325      1200      1760
20060326      1200      3870
20060327      1200      3700
20060328      1200      1420
20060329      1200      3890
20060330      1200      4450
20060331      1200      4070
20060401      1200      2790
20060402      1200      4570
20060403      1200      3790
20060404      1200      1300
20060405      1200      734
20060406      1200      5980
20060407      1200      8390
20060408      1200      7490
20060409      1200      7350
20060410      1200      5540
20060411      1200      4890
20060412      1200      5700
20060413      1200      5100
20060414      1200      7480
20060415      1200      3750
20060416      1200      2670
20060417      1200      11000
20060418      1200      7060
20060419      1200      6360
20060420      1200      6450
20060421      1200      6820
20060422      1200      6980
20060423      1200      6170
20060424      1200      5350
20060425      1200      6400
```

20060426	1200	7020
20060427	1200	7910
20060428	1200	6630
20060429	1200	3600
20060430	1200	5440
20060501	1200	4470
20060502	1200	6740
20060503	1200	5300
20060504	1200	3940
20060505	1200	4650
20060506	1200	3460
20060507	1200	6460
20060508	1200	5230
20060509	1200	6020
20060510	1200	4760
20060511	1200	4440
20060512	1200	4650
20060513	1200	4980
20060514	1200	3530
20060515	1200	3020
20060516	1200	2670
20060517	1200	1950
20060518	1200	1970
20060519	1200	369
20060520	1200	861
20060521	1200	1440
20060522	1200	174
20060523	1200	2810
20060524	1200	2670
20060525	1200	2380
20060526	1200	3500
20060527	1200	2730
20060528	1200	77
20060529	1200	3350
20060530	1200	3460
20060531	1200	3240
20060601	1200	2850
20060602	1200	2500
20060603	1200	2800
20060604	1200	1810
20060605	1200	2010
20060606	1200	1140
20060607	1200	57
20060608	1200	568
20060609	1200	1350
20060610	1200	3120
20060611	1200	2430
20060612	1200	1350
20060613	1200	923
20060614	1200	1990
20060615	1200	1890
20060616	1200	88
20060617	1200	1680
20060618	1200	2430
20060619	1200	1550
20060620	1200	205

20060621	1200	1490
20060622	1200	370
20060623	1200	519
20060624	1200	793
20060625	1200	871
20060626	1200	1080
20060627	1200	113
20060628	1200	20
20060629	1200	79
20060630	1200	1780
20060701	1200	432
20060702	1200	200
20060703	1200	189
20060704	1200	1200
20060705	1200	1100
20060706	1200	515
20060707	1200	596
20060708	1200	928
20060709	1200	596
20060710	1200	225
20060711	1200	1380
20060712	1200	385
20060713	1200	669
20060714	1200	58
20060715	1200	322
20060716	1200	33
20060717	1200	622
20060718	1200	1260
20060719	1200	292
20060720	1200	807
20060721	1200	462
20060722	1200	444
20060723	1200	452
20060724	1200	135
20060725	1200	524
20060726	1200	122
20060727	1200	202
20060728	1200	40
20060729	1200	485
20060730	1200	68
20060731	1200	149
20060801	1200	120
20060802	1200	27
20060803	1200	42
20060804	1200	63
20060805	1200	91
20060806	1200	108
20060807	1200	665
20060808	1200	166
20060809	1200	131
20060810	1200	174
20060811	1200	31
20060812	1200	24
20060813	1200	253
20060814	1200	20
20060815	1200	123

20060816	1200	142
20060817	1200	184
20060818	1200	166
20060819	1200	33
20060820	1200	52
20060821	1200	8.8
20060822	1200	19
20060823	1200	18
20060824	1200	80
20060825	1200	7
20060826	1200	26
20060827	1200	12
20060828	1200	68
20060829	1200	161
20060830	1200	5.9
20060831	1200	86
20060901	1200	65
20060902	1200	60
20060903	1200	201
20060904	1200	43
20060905	1200	1.3
20060906	1200	3.9
20060907	1200	1.4
20060908	1200	76
20060909	1200	100
20060910	1200	17
20060911	1200	109
20060912	1200	151
20060913	1200	120
20060914	1200	3.5
20060915	1200	49
20060916	1200	230
20060917	1200	57
20060918	1200	79
20060919	1200	101
20060920	1200	124
20060921	1200	53
20060922	1200	47
20060923	1200	109
20060924	1200	79
20060925	1200	93
20060926	1200	4.7
20060927	1200	18
20060928	1200	20
20060929	1200	20
20060930	1200	20
20061001	1200	395
20061002	1200	670
20061003	1200	652
20061004	1200	671
20061005	1200	703
20061006	1200	994
20061007	1200	904
20061008	1200	870
20061009	1200	847
20061010	1200	1344

20061011	1200	1107
20061012	1200	859
20061013	1200	881
20061014	1200	949
20061015	1200	792
20061016	1200	647
20061017	1200	1129
20061018	1200	1220
20061019	1200	1186
20061020	1200	926
20061021	1200	870
20061022	1200	825
20061023	1200	994
20061024	1200	1242
20061025	1200	983
20061026	1200	788
20061027	1200	983
20061028	1200	1005
20061029	1200	698
20061030	1200	1220
20061031	1200	1378
20061101	1200	1118
20061102	1200	1039
20061103	1200	926
20061104	1200	915
20061105	1200	926
20061106	1200	825
20061107	1200	1208
20061108	1200	938
20061109	1200	971
20061110	1200	1062
20061111	1200	892
20061112	1200	1039
20061113	1200	1186
20061114	1200	1513
20061115	1200	1332
20061116	1200	1231
20061117	1200	1299
20061118	1200	1615
20061119	1200	915
20061120	1200	1175
20061121	1200	1389
20061122	1200	1197
20061123	1200	1220
20061124	1200	994
20061125	1200	1366
20061126	1200	1062
20061127	1200	1445
20061128	1200	1378
20061129	1200	781
20061130	1200	1084
20061201	1200	1231
20061202	1200	1163
20061203	1200	1017
20061204	1200	1017
20061205	1200	1045

20061206	1200	1073
20061207	1200	1101
20061208	1200	1129
20061209	1200	1304
20061210	1200	1479
20061211	1200	859
20061212	1200	1513
20061213	1200	1220
20061214	1200	1287
20061215	1200	1310
20061216	1200	1468
20061217	1200	1411
20061218	1200	904
20061219	1200	1547
20061220	1200	1592
20061221	1200	1411
20061222	1200	1569
20061223	1200	1513
20061224	1200	1445
20061225	1200	1107
20061226	1200	1028
20061227	1200	1332
20061228	1200	1705
20061229	1200	1434
20061230	1200	1411
20061231	1200	1152
20070101	1200	1163
20070102	1200	983
20070103	1200	1457
20070104	1200	1287
20070105	1200	1096
20070106	1200	1028
20070107	1200	529
20070108	1200	533
20070109	1200	1400
20070110	1200	1671
20070111	1200	1276
20070112	1200	1332
20070113	1200	1524
20070114	1200	1062
20070115	1200	1400
20070116	1200	1141
20070117	1200	971
20070118	1200	739
20070119	1200	994
20070120	1200	1096
20070121	1200	1118
20070122	1200	1084
20070123	1200	1065
20070124	1200	1046
20070125	1200	1028
20070126	1200	1005
20070127	1200	1009
20070128	1200	1013
20070129	1200	1017
20070130	1200	1021

20070131	1200	1025
20070201	1200	1029
20070202	1200	1033
20070203	1200	1037
20070204	1200	1041
20070205	1200	1044
20070206	1200	1048
20070207	1200	1052
20070208	1200	1056
20070209	1200	1062
20070210	1200	1107
20070211	1200	1230
20070212	1200	1355
20070213	1200	1479
20070214	1200	1615
20070215	1200	1705
20070216	1200	1397
20070217	1200	1089
20070218	1200	781
20070219	1200	938
20070220	1200	1615
20070221	1200	1310
20070222	1200	1411
20070223	1200	1310
20070224	1200	1265
20070225	1200	758
20070226	1200	1310
20070227	1200	1400
20070228	1200	1434
20070301	1200	762
20070302	1200	938
20070303	1200	1084
20070304	1200	760
20070305	1200	1637
20070306	1200	1485
20070307	1200	1332
20070308	1200	1180
20070309	1200	1028
20070310	1200	1637
20070311	1200	1976
20070312	1200	2551
20070313	1200	1998
20070314	1200	2246
20070315	1200	1660
20070316	1200	1930
20070317	1200	1750
20070318	1200	1660
20070319	1200	1727
20070320	1200	2122
20070321	1200	1885
20070322	1200	2246
20070323	1200	1953
20070324	1200	2066
20070325	1200	2258
20070326	1200	2111
20070327	1200	1942

20070328	1200	2077
20070329	1200	1930
20070330	1200	2032
20070331	1200	2009
20070401	1200	2009
20070402	1200	1321
20070403	1200	1976
20070404	1200	1581
20070405	1200	1400
20070406	1200	1637
20070407	1200	1355
20070408	1200	1197
20070409	1200	1152
20070410	1200	1626
20070411	1200	1332
20070412	1200	1761
20070413	1200	2449
20070414	1200	1930
20070415	1200	1727
20070416	1200	11
20070417	1200	0.0001
20070418	1200	1480
20070419	1200	1270
20070420	1200	1920
20070421	1200	1300
20070422	1200	1360
20070423	1200	3040
20070424	1200	1100
20070425	1200	1340
20070426	1200	1770
20070427	1200	464
20070428	1200	542
20070429	1200	452
20070430	1200	515
20070501	1200	336
20070502	1200	0.0001
20070503	1200	2150
20070504	1200	2180
20070505	1200	1650
20070506	1200	0.0001
20070507	1200	0.0001
20070508	1200	540
20070509	1200	471
20070510	1200	346
20070511	1200	1140
20070512	1200	0.0001
20070513	1200	1410
20070514	1200	604
20070515	1200	176
20070516	1200	0.0001
20070517	1200	0.0001
20070518	1200	379
20070519	1200	394
20070520	1200	558
20070521	1200	1350
20070522	1200	0.0001

20070523	1200	0.0001
20070524	1200	0.0001
20070525	1200	284
20070526	1200	219
20070527	1200	0.0001
20070528	1200	1490
20070529	1200	0.0001
20070530	1200	0.0001
20070531	1200	0.0001
20070601	1200	0.0001
20070602	1200	42
20070603	1200	178
20070604	1200	0.0001
20070605	1200	63
20070606	1200	403
20070607	1200	0.0001
20070608	1200	0.0001
20070609	1200	25
20070610	1200	286
20070611	1200	410
20070612	1200	0.0001
20070613	1200	0.0001
20070614	1200	72
20070615	1200	25
20070616	1200	21
20070617	1200	103
20070618	1200	0.0001
20070619	1200	0.0001
20070620	1200	0.0001
20070621	1200	33
20070622	1200	0.0001
20070623	1200	0.0001
20070624	1200	25
20070625	1200	54
20070626	1200	40
20070627	1200	15
20070628	1200	1
20070629	1200	23
20070630	1200	0.0001
20070701	1200	0.0001
20070702	1200	0.0001
20070703	1200	0.0001
20070704	1200	53
20070705	1200	120
20070706	1200	187
20070707	1200	564
20070708	1200	0.0001
20070709	1200	0.0001
20070710	1200	0.0001
20070711	1200	0.0001
20070712	1200	0.0001
20070713	1200	0.0001
20070714	1200	0.0001
20070715	1200	0.0001
20070716	1200	0.0001
20070717	1200	0.0001

20070718	1200	0.0001
20070719	1200	0.0001
20070720	1200	0.0001
20070721	1200	0.0001
20070722	1200	0.0001
20070723	1200	0.0001
20070724	1200	0.0001
20070725	1200	0.0001
20070726	1200	0.0001
20070727	1200	0.0001
20070728	1200	0.0001
20070729	1200	0.0001
20070730	1200	0.0001
20070731	1200	0.0001

LOADEST

A Program to Estimate Constituent Loads
U.S. Geological Survey, Version: MOD36 (Sep 2004)

Bear River at GSL Minerals Bridge

Constituent: selenium

Constituent Output File Part Ia: Calibration (Load Regression)

Number of Observations : 42
Number of Uncensored Observations: 42
"center" of Decimal Time : 2006.886
"center" of Ln(Q) : -0.4316
Period of record : 2006-2007

Model Evaluation Criteria Based on AMLE Results

Model #	AIC	SPPC
1	0.055	-2.887
2	0.103	-4.773
3	0.087	-4.439
4	-0.095	-1.490
5	0.133	-6.276
6	-0.048	-3.338
7	-0.200	-0.138
8	-0.150	-2.072
9	-0.157	-2.781

Model # 7 selected

Selected Model:

Ln(Load) = a0 + a1 LnQ + a2 Sin(2 pi dtime) + a3 Cos(2 pi dtime) + a4 dtime

where:
Load = constituent load [kg/d]
LnQ = Ln(Q) - center of Ln(Q)
dtime = decimal time - center of decimal time

Model Coefficients

	a0	a1	a2	a3	a4
AMLE	-7.1100	0.9870	-0.3795	0.0268	0.2175
MLE	-7.1100	0.9870	-0.3795	0.0268	0.2175
LAD	-6.9599	0.9893	-0.4168	0.2043	0.1621

```
AMLE Regression Statistics
--------------------------
R-Squared [%]                   : 99.87
Prob. Plot Corr. Coeff. (PPCC) : 0.9918
Serial Correlation of Residuals: 0.1058

Coeff.    Std.Dev.    t-ratio      P Value
-------------------------------------------
a0        0.0731       -97.31      1.292E-52
a1        0.0074       134.16      1.763E-58
a2        0.0908        -4.18      5.549E-05
a3        0.0634         0.42      6.525E-01
a4        0.0870         2.50      1.042E-02


Correlation Between Explanatory Variables
-----------------------------------------

      Explanatory variable corresponding to:

       a1        a2        a3
      ------------------------------
  a2   0.3142
  a3   0.1156    0.1142
  a4  -0.4645    0.1888    0.0290


Additional Regression Statistics
--------------------------------
      Residual                  Turnbull-Weiss
      Variance               Stat    DF    PL
      ----------------------------------------------
AMLE     0.043               5.27    5     3.835E-01
MLE      0.043               5.27    5     3.835E-01



----------------------------------------------------------------------

Constituent Output File Part Ib: Calibration (Concentration Regression)

----------------------------------------------------------------------



AMLE Regression Statistics
--------------------------

Model # 7 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 Sin( pi dtime) + a3 Cos(2 pi dtime) + a4 dtime

where:
      Conc  = constituent concentration
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


Concentration Regression Results
--------------------------------
R-Squared [%]                   : 54.90
Residual Variance               : 0.0425

Coeff.    Value         Std.Dev.     t-ratio     P Value
```

a0	-0.6654	0.0731	-9.11	2.102E-12
a1	-0.0130	0.0074	-1.77	6.509E-02
a2	-0.3795	0.0908	-4.18	5.549E-05
a3	0.0268	0.0634	0.42	6.525E-01
a4	0.2175	0.0870	2.50	1.042E-02

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060321-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	1500.	0.	0.	178.	1350.	2490.	3488.	5300.
Est.	1316.	0.	0.	118.	1019.	1530.	3251.	11000.

WARNING: The maximum estimation data set steamflow exceeds the maximum calibration data set streamflow. Load estimates require extrapolation.

Maximum Estimation Streamflow : 1.1000E+04
Maximum Calibration Streamflow: 5.3000E+03

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060321-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

	N	Mean Load	95% Conf.Intervals Lower	Upper	Std Error Prediction	Standard Error
Est. Period	498	1.26	1.14	1.39	0.06	0.06

MLE Load Estimates

N	Mean Load	Standard Error

	N	Mean Load	Standard Error
Est. Period	498	1.26	0.06

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	498	1.40	0.33

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.000	0.181	1.065	1.625	2.952	4.389	5.852	8.637
MLE	0.000	0.181	1.065	1.625	2.952	4.389	5.852	8.637
LAD	0.000	0.214	1.231	1.903	2.995	4.477	5.918	8.826

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.29	0.37	0.48	0.64	0.70	0.85	0.95	0.96
MLE	0.29	0.37	0.48	0.64	0.70	0.85	0.95	0.96
LAD	0.31	0.40	0.55	0.75	0.87	0.89	0.99	1.01

Individual Load Estimates for Bear River Bay Outflow (kg/day)

			Loads Estimated by:		
Date	Time	Flow	AMLE	MLE	LAD
20060321	1200	2.990E+03	2.0995E+00	2.0995E+00	2.2603E+00
20060322	1200	3.570E+03	2.5100E+00	2.5100E+00	2.6963E+00
20060323	1200	2.760E+03	1.9540E+00	1.9540E+00	2.0926E+00
20060324	1200	2.820E+03	2.0035E+00	2.0035E+00	2.1403E+00
20060325	1200	1.760E+03	1.2627E+00	1.2627E+00	1.3444E+00
20060326	1200	3.870E+03	2.7599E+00	2.7599E+00	2.9359E+00
20060327	1200	3.700E+03	2.6509E+00	2.6509E+00	2.8130E+00
20060328	1200	1.420E+03	1.0341E+00	1.0341E+00	1.0926E+00
20060329	1200	3.890E+03	2.8088E+00	2.8088E+00	2.9669E+00
20060330	1200	4.450E+03	3.2216E+00	3.2216E+00	3.3962E+00
20060331	1200	4.070E+03	2.9630E+00	2.9630E+00	3.1161E+00
20060401	1200	2.790E+03	2.0502E+00	2.0502E+00	2.1497E+00
20060402	1200	4.570E+03	3.3526E+00	3.3526E+00	3.5114E+00
20060403	1200	3.790E+03	2.8001E+00	2.8001E+00	2.9256E+00
20060404	1200	1.300E+03	9.7829E-01	9.7829E-01	1.0178E+00
20060405	1200	7.340E+02	5.5910E-01	5.5910E-01	5.7985E-01
20060406	1200	5.980E+03	4.4573E+00	4.4573E+00	4.6334E+00
20060407	1200	8.390E+03	6.2581E+00	6.2581E+00	6.4976E+00
20060408	1200	7.490E+03	5.6237E+00	5.6237E+00	5.8266E+00
20060409	1200	7.350E+03	5.5487E+00	5.5487E+00	5.7383E+00
20060410	1200	5.540E+03	4.2197E+00	4.2197E+00	4.3535E+00
20060411	1200	4.890E+03	3.7507E+00	3.7507E+00	3.8619E+00
20060412	1200	5.700E+03	4.3872E+00	4.3872E+00	4.5112E+00
20060413	1200	5.100E+03	3.9527E+00	3.9527E+00	4.0569E+00
20060414	1200	7.480E+03	5.8013E+00	5.8014E+00	5.9497E+00
20060415	1200	3.750E+03	2.9509E+00	2.9510E+00	3.0174E+00
20060416	1200	2.670E+03	2.1224E+00	2.1224E+00	2.1654E+00
20060417	1200	1.100E+04	8.6366E+00	8.6366E+00	8.8258E+00
20060418	1200	7.060E+03	5.6076E+00	5.6076E+00	5.7171E+00
20060419	1200	6.360E+03	5.0886E+00	5.0886E+00	5.1799E+00
20060420	1200	6.450E+03	5.1907E+00	5.1907E+00	5.2773E+00
20060421	1200	6.820E+03	5.5179E+00	5.5180E+00	5.6039E+00
20060422	1200	6.980E+03	5.6804E+00	5.6804E+00	5.7625E+00
20060423	1200	6.170E+03	5.0604E+00	5.0605E+00	5.1264E+00
20060424	1200	5.350E+03	4.4235E+00	4.4235E+00	4.4751E+00
20060425	1200	6.400E+03	5.3129E+00	5.3129E+00	5.3715E+00
20060426	1200	7.020E+03	5.8578E+00	5.8578E+00	5.9180E+00
20060427	1200	7.910E+03	6.6327E+00	6.6327E+00	6.6966E+00
20060428	1200	6.630E+03	5.6082E+00	5.6082E+00	5.6553E+00
20060429	1200	3.600E+03	3.0893E+00	3.0893E+00	3.1086E+00
20060430	1200	5.440E+03	4.6740E+00	4.6740E+00	4.7041E+00
20060501	1200	4.470E+03	3.8759E+00	3.8759E+00	3.8964E+00
20060502	1200	6.740E+03	5.8521E+00	5.8521E+00	5.8848E+00
20060503	1200	5.300E+03	4.6471E+00	4.6471E+00	4.6679E+00
20060504	1200	3.940E+03	3.4913E+00	3.4913E+00	3.5028E+00
20060505	1200	4.650E+03	4.1396E+00	4.1396E+00	4.1529E+00
20060506	1200	3.460E+03	3.1131E+00	3.1131E+00	3.1198E+00
20060507	1200	6.460E+03	5.8052E+00	5.8052E+00	5.8239E+00
20060508	1200	5.230E+03	4.7453E+00	4.7453E+00	4.7569E+00
20060509	1200	6.020E+03	5.4899E+00	5.4899E+00	5.5038E+00
20060510	1200	4.760E+03	4.3844E+00	4.3844E+00	4.3923E+00
20060511	1200	4.440E+03	4.1219E+00	4.1219E+00	4.1283E+00
20060512	1200	4.650E+03	4.3446E+00	4.3446E+00	4.3514E+00
20060513	1200	4.980E+03	4.6815E+00	4.6815E+00	4.6895E+00

20060514	1200	3.530E+03	3.3568E+00	3.3568E+00	3.3600E+00
20060515	1200	3.020E+03	2.8980E+00	2.8980E+00	2.9001E+00
20060516	1200	2.670E+03	2.5845E+00	2.5845E+00	2.5860E+00
20060517	1200	1.950E+03	1.9087E+00	1.9087E+00	1.9089E+00
20060518	1200	1.970E+03	1.9418E+00	1.9418E+00	1.9425E+00
20060519	1200	3.690E+02	3.7433E-01	3.7433E-01	3.7318E-01
20060520	1200	8.610E+02	8.7013E-01	8.7013E-01	8.6942E-01
20060521	1200	1.440E+03	1.4560E+00	1.4560E+00	1.4571E+00
20060522	1200	1.740E+02	1.8209E-01	1.8209E-01	1.8146E-01
20060523	1200	2.810E+03	2.8571E+00	2.8571E+00	2.8667E+00
20060524	1200	2.670E+03	2.7361E+00	2.7361E+00	2.7466E+00
20060525	1200	2.380E+03	2.4601E+00	2.4601E+00	2.4704E+00
20060526	1200	3.500E+03	3.6254E+00	3.6254E+00	3.6466E+00
20060527	1200	2.730E+03	2.8573E+00	2.8574E+00	2.8745E+00
20060528	1200	7.700E+01	8.5006E-02	8.5006E-02	8.4898E-02
20060529	1200	3.350E+03	3.5472E+00	3.5472E+00	3.5762E+00
20060530	1200	3.460E+03	3.6882E+00	3.6883E+00	3.7222E+00
20060531	1200	3.240E+03	3.4814E+00	3.4814E+00	3.5163E+00
20060601	1200	2.850E+03	3.0893E+00	3.0893E+00	3.1225E+00
20060602	1200	2.500E+03	2.7338E+00	2.7338E+00	2.7654E+00
20060603	1200	2.800E+03	3.0790E+00	3.0790E+00	3.1189E+00
20060604	1200	1.810E+03	2.0159E+00	2.0159E+00	2.0423E+00
20060605	1200	2.010E+03	2.2513E+00	2.2514E+00	2.2842E+00
20060606	1200	1.140E+03	1.2954E+00	1.2954E+00	1.3142E+00
20060607	1200	5.700E+01	6.7809E-02	6.7809E-02	6.8414E-02
20060608	1200	5.680E+02	6.6047E-01	6.6047E-01	6.7077E-01
20060609	1200	1.350E+03	1.5629E+00	1.5629E+00	1.5928E+00
20060610	1200	3.120E+03	3.5974E+00	3.5974E+00	3.6791E+00
20060611	1200	2.430E+03	2.8304E+00	2.8304E+00	2.8973E+00
20060612	1200	1.350E+03	1.5954E+00	1.5954E+00	1.6334E+00
20060613	1200	9.230E+02	1.1037E+00	1.1037E+00	1.1308E+00
20060614	1200	1.990E+03	2.3718E+00	2.3718E+00	2.4385E+00
20060615	1200	1.890E+03	2.2693E+00	2.2693E+00	2.3369E+00
20060616	1200	8.800E+01	1.1071E-01	1.1071E-01	1.1338E-01
20060617	1200	1.680E+03	2.0473E+00	2.0473E+00	2.1152E+00
20060618	1200	2.430E+03	2.9664E+00	2.9664E+00	3.0733E+00
20060619	1200	1.550E+03	1.9159E+00	1.9159E+00	1.9864E+00
20060620	1200	2.050E+02	2.6188E-01	2.6188E-01	2.7073E-01
20060621	1200	1.490E+03	1.8667E+00	1.8667E+00	1.9428E+00
20060622	1200	3.700E+02	4.7510E-01	4.7510E-01	4.9380E-01
20060623	1200	5.190E+02	6.6770E-01	6.6770E-01	6.9598E-01
20060624	1200	7.930E+02	1.0210E+00	1.0210E+00	1.0675E+00
20060625	1200	8.710E+02	1.1270E+00	1.1270E+00	1.1812E+00
20060626	1200	1.080E+03	1.4021E+00	1.4021E+00	1.4735E+00
20060627	1200	1.130E+02	1.5203E-01	1.5203E-01	1.5925E-01
20060628	1200	2.000E+01	2.7687E-02	2.7687E-02	2.8952E-02
20060629	1200	7.900E+01	1.0808E-01	1.0808E-01	1.1363E-01
20060630	1200	1.780E+03	2.3516E+00	2.3516E+00	2.4970E+00
20060701	1200	4.320E+02	5.8487E-01	5.8487E-01	6.2032E-01
20060702	1200	2.000E+02	2.7511E-01	2.7511E-01	2.9193E-01
20060703	1200	1.890E+02	2.6166E-01	2.6166E-01	2.7830E-01
20060704	1200	1.200E+03	1.6307E+00	1.6307E+00	1.7466E+00
20060705	1200	1.100E+03	1.5049E+00	1.5049E+00	1.6155E+00
20060706	1200	5.150E+02	7.1555E-01	7.1555E-01	7.6864E-01
20060707	1200	5.960E+02	8.3100E-01	8.3101E-01	8.9526E-01
20060708	1200	9.280E+02	1.2933E+00	1.2933E+00	1.3984E+00
20060709	1200	5.960E+02	8.3988E-01	8.3988E-01	9.0953E-01
20060710	1200	2.250E+02	3.2283E-01	3.2283E-01	3.4968E-01
20060711	1200	1.380E+03	1.9432E+00	1.9432E+00	2.1200E+00
20060712	1200	3.850E+02	5.5411E-01	5.5411E-01	6.0421E-01
20060713	1200	6.690E+02	9.6061E-01	9.6061E-01	1.0518E+00
20060714	1200	5.800E+01	8.6419E-02	8.6419E-02	9.4312E-02
20060715	1200	3.220E+02	4.7136E-01	4.7136E-01	5.1799E-01
20060716	1200	3.300E+01	5.0005E-02	5.0005E-02	5.4802E-02

20060717	1200	6.220E+02	9.1107E-01	9.1107E-01	1.0085E+00
20060718	1200	1.260E+03	1.8367E+00	1.8367E+00	2.0425E+00
20060719	1200	2.920E+02	4.3587E-01	4.3587E-01	4.8430E-01
20060720	1200	8.070E+02	1.1937E+00	1.1937E+00	1.3336E+00
20060721	1200	4.620E+02	6.9138E-01	6.9138E-01	7.7352E-01
20060722	1200	4.440E+02	6.6755E-01	6.6755E-01	7.4896E-01
20060723	1200	4.520E+02	6.8218E-01	6.8218E-01	7.6764E-01
20060724	1200	1.350E+02	2.0784E-01	2.0784E-01	2.3386E-01
20060725	1200	5.240E+02	7.9550E-01	7.9550E-01	9.0078E-01
20060726	1200	1.220E+02	1.8952E-01	1.8952E-01	2.1445E-01
20060727	1200	2.020E+02	3.1286E-01	3.1286E-01	3.5552E-01
20060728	1200	4.000E+01	6.3511E-02	6.3511E-02	7.2099E-02
20060729	1200	4.850E+02	7.4779E-01	7.4779E-01	8.5673E-01
20060730	1200	6.800E+01	1.0796E-01	1.0796E-01	1.2345E-01
20060731	1200	1.490E+02	2.3489E-01	2.3489E-01	2.6993E-01
20060801	1200	1.200E+02	1.9032E-01	1.9032E-01	2.1925E-01
20060802	1200	2.700E+01	4.3801E-02	4.3801E-02	5.0429E-02
20060803	1200	4.200E+01	6.7943E-02	6.7943E-02	7.8545E-02
20060804	1200	6.300E+01	1.0166E-01	1.0166E-01	1.1800E-01
20060805	1200	9.100E+01	1.4654E-01	1.4654E-01	1.7076E-01
20060806	1200	1.080E+02	1.7399E-01	1.7399E-01	2.0345E-01
20060807	1200	6.650E+02	1.0486E+00	1.0486E+00	1.2355E+00
20060808	1200	1.660E+02	2.6724E-01	2.6724E-01	3.1473E-01
20060809	1200	1.310E+02	2.1204E-01	2.1204E-01	2.5034E-01
20060810	1200	1.740E+02	2.8122E-01	2.8122E-01	3.3326E-01
20060811	1200	3.100E+01	5.1359E-02	5.1359E-02	6.0789E-02
20060812	1200	2.400E+01	3.9975E-02	3.9975E-02	4.7430E-02
20060813	1200	2.530E+02	4.0933E-01	4.0933E-01	4.8997E-01
20060814	1200	2.000E+01	3.3515E-02	3.3515E-02	3.9989E-02
20060815	1200	1.230E+02	2.0160E-01	2.0160E-01	2.4234E-01
20060816	1200	1.420E+02	2.3266E-01	2.3266E-01	2.8063E-01
20060817	1200	1.840E+02	3.0088E-01	3.0088E-01	3.6424E-01
20060818	1200	1.660E+02	2.7218E-01	2.7218E-01	3.3040E-01
20060819	1200	3.300E+01	5.5338E-02	5.5338E-02	6.7108E-02
20060820	1200	5.200E+01	8.6777E-02	8.6777E-02	1.0566E-01
20060821	1200	8.800E+00	1.5046E-02	1.5046E-02	1.8297E-02
20060822	1200	1.900E+01	3.2189E-02	3.2189E-02	3.9332E-02
20060823	1200	1.800E+01	3.0541E-02	3.0541E-02	3.7422E-02
20060824	1200	8.000E+01	1.3320E-01	1.3320E-01	1.6428E-01
20060825	1200	7.000E+00	1.2039E-02	1.2039E-02	1.4805E-02
20060826	1200	2.600E+01	4.3976E-02	4.3976E-02	5.4406E-02
20060827	1200	1.200E+01	2.0510E-02	2.0510E-02	2.5400E-02
20060828	1200	6.800E+01	1.1364E-01	1.1364E-01	1.4173E-01
20060829	1200	1.610E+02	2.6605E-01	2.6605E-01	3.3347E-01
20060830	1200	5.900E+00	1.0181E-02	1.0181E-02	1.2695E-02
20060831	1200	8.600E+01	1.4328E-01	1.4328E-01	1.8031E-01
20060901	1200	6.500E+01	1.0867E-01	1.0867E-01	1.3704E-01
20060902	1200	6.000E+01	1.0038E-01	1.0038E-01	1.2692E-01
20060903	1200	2.010E+02	3.3082E-01	3.3082E-01	4.2068E-01
20060904	1200	4.300E+01	7.2182E-02	7.2182E-02	9.1688E-02
20060905	1200	1.300E+00	2.2824E-03	2.2824E-03	2.8833E-03
20060906	1200	3.900E+00	6.7453E-03	6.7453E-03	8.5652E-03
20060907	1200	1.400E+00	2.4516E-03	2.4516E-03	3.1140E-03
20060908	1200	7.600E+01	1.2621E-01	1.2621E-01	1.6225E-01
20060909	1200	1.000E+02	1.6529E-01	1.6529E-01	2.1317E-01
20060910	1200	1.700E+01	2.8725E-02	2.8725E-02	3.6981E-02
20060911	1200	1.090E+02	1.7951E-01	1.7951E-01	2.3274E-01
20060912	1200	1.510E+02	2.4727E-01	2.4727E-01	3.2164E-01
20060913	1200	1.200E+02	1.9680E-01	1.9680E-01	2.5648E-01
20060914	1200	3.500E+00	6.0013E-03	6.0014E-03	7.7745E-03
20060915	1200	4.900E+01	8.1038E-02	8.1038E-02	1.0589E-01
20060916	1200	2.300E+02	3.7205E-01	3.7205E-01	4.8914E-01
20060917	1200	5.700E+01	9.3728E-02	9.3728E-02	1.2309E-01
20060918	1200	7.900E+01	1.2909E-01	1.2909E-01	1.7004E-01

20060919	1200	1.010E+02	1.6415E-01	1.6415E-01	2.1685E-01
20060920	1200	1.240E+02	2.0054E-01	2.0054E-01	2.6564E-01
20060921	1200	5.300E+01	8.6473E-02	8.6473E-02	1.1456E-01
20060922	1200	4.700E+01	7.6617E-02	7.6617E-02	1.0169E-01
20060923	1200	1.090E+02	1.7529E-01	1.7529E-01	2.3362E-01
20060924	1200	7.900E+01	1.2725E-01	1.2725E-01	1.6980E-01
20060925	1200	9.300E+01	1.4907E-01	1.4907E-01	1.9940E-01
20060926	1200	4.700E+00	7.8104E-03	7.8104E-03	1.0395E-02
20060927	1200	1.800E+01	2.9309E-02	2.9309E-02	3.9205E-02
20060928	1200	2.000E+01	3.2423E-02	3.2423E-02	4.3464E-02
20060929	1200	2.000E+01	3.2323E-02	3.2323E-02	4.3409E-02
20060930	1200	2.000E+01	3.2219E-02	3.2219E-02	4.3349E-02
20061001	1200	3.950E+02	6.0995E-01	6.0995E-01	8.2803E-01
20061002	1200	6.700E+02	1.0239E+00	1.0239E+00	1.3943E+00
20061003	1200	6.520E+02	9.9336E-01	9.9336E-01	1.3548E+00
20061004	1200	6.710E+02	1.0183E+00	1.0183E+00	1.3912E+00
20061005	1200	7.030E+02	1.0623E+00	1.0623E+00	1.4538E+00
20061006	1200	9.940E+02	1.4897E+00	1.4897E+00	2.0436E+00
20061007	1200	9.040E+02	1.3514E+00	1.3514E+00	1.8561E+00
20061008	1200	8.700E+02	1.2962E+00	1.2962E+00	1.7827E+00
20061009	1200	8.470E+02	1.2574E+00	1.2574E+00	1.7316E+00
20061010	1200	1.344E+03	1.9750E+00	1.9750E+00	2.7268E+00
20061011	1200	1.107E+03	1.6242E+00	1.6242E+00	2.2443E+00
20061012	1200	8.590E+02	1.2593E+00	1.2593E+00	1.7411E+00
20061013	1200	8.810E+02	1.2856E+00	1.2856E+00	1.7797E+00
20061014	1200	9.490E+02	1.3775E+00	1.3775E+00	1.9095E+00
20061015	1200	7.920E+02	1.1473E+00	1.1473E+00	1.5914E+00
20061016	1200	6.470E+02	9.3552E-01	9.3552E-01	1.2984E+00
20061017	1200	1.129E+03	1.6132E+00	1.6132E+00	2.2442E+00
20061018	1200	1.220E+03	1.7334E+00	1.7334E+00	2.4142E+00
20061019	1200	1.186E+03	1.6778E+00	1.6778E+00	2.3387E+00
20061020	1200	9.260E+02	1.3081E+00	1.3081E+00	1.8237E+00
20061021	1200	8.700E+02	1.2241E+00	1.2241E+00	1.7077E+00
20061022	1200	8.250E+02	1.1559E+00	1.1559E+00	1.6136E+00
20061023	1200	9.940E+02	1.3824E+00	1.3824E+00	1.9321E+00
20061024	1200	1.242E+03	1.7137E+00	1.7137E+00	2.3979E+00
20061025	1200	9.830E+02	1.3537E+00	1.3537E+00	1.8941E+00
20061026	1200	7.880E+02	1.0828E+00	1.0828E+00	1.5150E+00
20061027	1200	9.830E+02	1.3399E+00	1.3399E+00	1.8767E+00
20061028	1200	1.005E+03	1.3623E+00	1.3623E+00	1.9091E+00
20061029	1200	6.980E+02	9.4572E-01	9.4572E-01	1.3246E+00
20061030	1200	1.220E+03	1.6322E+00	1.6322E+00	2.2899E+00
20061031	1200	1.378E+03	1.8308E+00	1.8308E+00	2.5700E+00
20061101	1200	1.118E+03	1.4815E+00	1.4815E+00	2.0790E+00
20061102	1200	1.039E+03	1.3706E+00	1.3706E+00	1.9234E+00
20061103	1200	9.260E+02	1.2167E+00	1.2167E+00	1.7071E+00
20061104	1200	9.150E+02	1.1958E+00	1.1958E+00	1.6778E+00
20061105	1200	9.260E+02	1.2033E+00	1.2033E+00	1.6884E+00
20061106	1200	8.250E+02	1.0677E+00	1.0677E+00	1.4976E+00
20061107	1200	1.208E+03	1.5468E+00	1.5468E+00	2.1714E+00
20061108	1200	9.380E+02	1.1983E+00	1.1983E+00	1.6808E+00
20061109	1200	9.710E+02	1.2328E+00	1.2328E+00	1.7290E+00
20061110	1200	1.062E+03	1.3391E+00	1.3391E+00	1.8780E+00
20061111	1200	8.920E+02	1.1208E+00	1.1208E+00	1.5707E+00
20061112	1200	1.039E+03	1.2954E+00	1.2954E+00	1.8154E+00
20061113	1200	1.186E+03	1.4676E+00	1.4676E+00	2.0565E+00
20061114	1200	1.513E+03	1.8555E+00	1.8555E+00	2.6002E+00
20061115	1200	1.332E+03	1.6267E+00	1.6267E+00	2.2777E+00
20061116	1200	1.231E+03	1.4962E+00	1.4962E+00	2.0932E+00
20061117	1200	1.299E+03	1.5685E+00	1.5685E+00	2.1932E+00
20061118	1200	1.615E+03	1.9331E+00	1.9331E+00	2.7026E+00
20061119	1200	9.150E+02	1.0969E+00	1.0969E+00	1.5303E+00
20061120	1200	1.175E+03	1.3957E+00	1.3957E+00	1.9468E+00
20061121	1200	1.389E+03	1.6366E+00	1.6366E+00	2.2817E+00

20061122	1200	1.197E+03	1.4048E+00	1.4048E+00	1.9561E+00
20061123	1200	1.220E+03	1.4230E+00	1.4230E+00	1.9796E+00
20061124	1200	9.940E+02	1.1556E+00	1.1556E+00	1.6052E+00
20061125	1200	1.366E+03	1.5722E+00	1.5722E+00	2.1832E+00
20061126	1200	1.062E+03	1.2191E+00	1.2191E+00	1.6899E+00
20061127	1200	1.445E+03	1.6423E+00	1.6423E+00	2.2757E+00
20061128	1200	1.378E+03	1.5579E+00	1.5579E+00	2.1558E+00
20061129	1200	7.810E+02	8.8426E-01	8.8426E-01	1.2205E+00
20061130	1200	1.084E+03	1.2149E+00	1.2149E+00	1.6759E+00
20061201	1200	1.231E+03	1.3693E+00	1.3693E+00	1.8869E+00
20061202	1200	1.163E+03	1.2871E+00	1.2871E+00	1.7708E+00
20061203	1200	1.017E+03	1.1209E+00	1.1209E+00	1.5394E+00
20061204	1200	1.017E+03	1.1143E+00	1.1143E+00	1.5281E+00
20061205	1200	1.045E+03	1.1380E+00	1.1380E+00	1.5582E+00
20061206	1200	1.073E+03	1.1613E+00	1.1613E+00	1.5877E+00
20061207	1200	1.101E+03	1.1844E+00	1.1844E+00	1.6166E+00
20061208	1200	1.129E+03	1.2071E+00	1.2071E+00	1.6450E+00
20061209	1200	1.304E+03	1.3837E+00	1.3837E+00	1.8829E+00
20061210	1200	1.479E+03	1.5579E+00	1.5579E+00	2.1168E+00
20061211	1200	8.590E+02	9.0608E-01	9.0608E-01	1.2273E+00
20061212	1200	1.513E+03	1.5754E+00	1.5754E+00	2.1327E+00
20061213	1200	1.220E+03	1.2667E+00	1.2667E+00	1.7107E+00
20061214	1200	1.287E+03	1.3280E+00	1.3280E+00	1.7901E+00
20061215	1200	1.310E+03	1.3440E+00	1.3440E+00	1.8080E+00
20061216	1200	1.468E+03	1.4956E+00	1.4956E+00	2.0084E+00
20061217	1200	1.411E+03	1.4305E+00	1.4305E+00	1.9167E+00
20061218	1200	9.040E+02	9.1680E-01	9.1681E-01	1.2246E+00
20061219	1200	1.547E+03	1.5497E+00	1.5497E+00	2.0680E+00
20061220	1200	1.592E+03	1.5858E+00	1.5858E+00	2.1115E+00
20061221	1200	1.411E+03	1.4003E+00	1.4003E+00	1.8598E+00
20061222	1200	1.569E+03	1.5469E+00	1.5469E+00	2.0503E+00
20061223	1200	1.513E+03	1.4847E+00	1.4847E+00	1.9631E+00
20061224	1200	1.445E+03	1.4116E+00	1.4116E+00	1.8618E+00
20061225	1200	1.107E+03	1.0797E+00	1.0797E+00	1.4197E+00
20061226	1200	1.028E+03	9.9862E-01	9.9862E-01	1.3097E+00
20061227	1200	1.332E+03	1.2833E+00	1.2833E+00	1.6797E+00
20061228	1200	1.705E+03	1.6295E+00	1.6295E+00	2.1287E+00
20061229	1200	1.434E+03	1.3669E+00	1.3669E+00	1.7805E+00
20061230	1200	1.411E+03	1.3389E+00	1.3389E+00	1.7394E+00
20061231	1200	1.152E+03	1.0909E+00	1.0909E+00	1.4128E+00
20070101	1200	1.163E+03	1.0961E+00	1.0961E+00	1.4158E+00
20070102	1200	9.830E+02	9.2429E-01	9.2430E-01	1.1902E+00
20070103	1200	1.457E+03	1.3570E+00	1.3570E+00	1.7441E+00
20070104	1200	1.287E+03	1.1953E+00	1.1953E+00	1.5317E+00
20070105	1200	1.096E+03	1.0156E+00	1.0156E+00	1.2973E+00
20070106	1200	1.028E+03	9.4936E-01	9.4936E-01	1.2091E+00
20070107	1200	5.290E+02	4.9067E-01	4.9067E-01	6.2224E-01
20070108	1200	5.330E+02	4.9231E-01	4.9231E-01	6.2254E-01
20070109	1200	1.400E+03	1.2721E+00	1.2721E+00	1.6073E+00
20070110	1200	1.671E+03	1.5089E+00	1.5089E+00	1.9017E+00
20070111	1200	1.276E+03	1.1518E+00	1.1518E+00	1.4465E+00
20070112	1200	1.332E+03	1.1971E+00	1.1971E+00	1.4991E+00
20070113	1200	1.524E+03	1.3623E+00	1.3623E+00	1.7013E+00
20070114	1200	1.062E+03	9.5031E-01	9.5031E-01	1.1823E+00
20070115	1200	1.400E+03	1.2439E+00	1.2439E+00	1.5438E+00
20070116	1200	1.141E+03	1.0130E+00	1.0130E+00	1.2528E+00
20070117	1200	9.710E+02	8.6100E-01	8.6100E-01	1.0611E+00
20070118	1200	7.390E+02	6.5546E-01	6.5546E-01	8.0484E-01
20070119	1200	9.940E+02	8.7552E-01	8.7552E-01	1.0724E+00
20070120	1200	1.096E+03	9.6121E-01	9.6121E-01	1.1739E+00
20070121	1200	1.118E+03	9.7735E-01	9.7735E-01	1.1899E+00
20070122	1200	1.084E+03	9.4529E-01	9.4529E-01	1.1471E+00
20070123	1200	1.065E+03	9.2637E-01	9.2637E-01	1.1205E+00
20070124	1200	1.046E+03	9.0762E-01	9.0762E-01	1.0943E+00

20070125	1200	1.028E+03	8.8991E-01	8.8991E-01	1.0695E+00
20070126	1200	1.005E+03	8.6810E-01	8.6810E-01	1.0398E+00
20070127	1200	1.009E+03	8.6944E-01	8.6944E-01	1.0381E+00
20070128	1200	1.013E+03	8.7086E-01	8.7087E-01	1.0364E+00
20070129	1200	1.017E+03	8.7236E-01	8.7236E-01	1.0348E+00
20070130	1200	1.021E+03	8.7394E-01	8.7394E-01	1.0333E+00
20070131	1200	1.025E+03	8.7560E-01	8.7560E-01	1.0319E+00
20070201	1200	1.029E+03	8.7734E-01	8.7734E-01	1.0305E+00
20070202	1200	1.033E+03	8.7916E-01	8.7916E-01	1.0293E+00
20070203	1200	1.037E+03	8.8107E-01	8.8107E-01	1.0281E+00
20070204	1200	1.041E+03	8.8306E-01	8.8306E-01	1.0271E+00
20070205	1200	1.044E+03	8.8430E-01	8.8430E-01	1.0251E+00
20070206	1200	1.048E+03	8.8647E-01	8.8647E-01	1.0242E+00
20070207	1200	1.052E+03	8.8873E-01	8.8873E-01	1.0235E+00
20070208	1200	1.056E+03	8.9107E-01	8.9107E-01	1.0228E+00
20070209	1200	1.062E+03	8.9518E-01	8.9518E-01	1.0241E+00
20070210	1200	1.107E+03	9.3178E-01	9.3178E-01	1.0625E+00
20070211	1200	1.230E+03	1.0331E+00	1.0331E+00	1.1745E+00
20070212	1200	1.355E+03	1.1359E+00	1.1359E+00	1.2874E+00
20070213	1200	1.479E+03	1.2378E+00	1.2378E+00	1.3984E+00
20070214	1200	1.615E+03	1.3495E+00	1.3495E+00	1.5199E+00
20070215	1200	1.705E+03	1.4232E+00	1.4232E+00	1.5979E+00
20070216	1200	1.397E+03	1.1688E+00	1.1688E+00	1.3074E+00
20070217	1200	1.089E+03	9.1397E-01	9.1397E-01	1.0184E+00
20070218	1200	7.810E+02	6.5828E-01	6.5828E-01	7.3059E-01
20070219	1200	9.380E+02	7.8885E-01	7.8885E-01	8.7299E-01
20070220	1200	1.615E+03	1.3490E+00	1.3490E+00	1.4899E+00
20070221	1200	1.310E+03	1.0976E+00	1.0976E+00	1.2077E+00
20070222	1200	1.411E+03	1.1816E+00	1.1816E+00	1.2962E+00
20070223	1200	1.310E+03	1.0987E+00	1.0987E+00	1.2012E+00
20070224	1200	1.265E+03	1.0622E+00	1.0622E+00	1.1574E+00
20070225	1200	7.580E+02	6.4119E-01	6.4119E-01	6.9569E-01
20070226	1200	1.310E+03	1.1013E+00	1.1013E+00	1.1926E+00
20070227	1200	1.400E+03	1.1772E+00	1.1772E+00	1.2709E+00
20070228	1200	1.434E+03	1.2068E+00	1.2068E+00	1.2989E+00
20070301	1200	7.620E+02	6.4731E-01	6.4732E-01	6.9357E-01
20070302	1200	9.380E+02	7.9578E-01	7.9578E-01	8.5040E-01
20070303	1200	1.084E+03	9.1928E-01	9.1928E-01	9.7967E-01
20070304	1200	7.600E+02	6.4850E-01	6.4850E-01	6.8845E-01
20070305	1200	1.637E+03	1.3854E+00	1.3854E+00	1.4688E+00
20070306	1200	1.485E+03	1.2606E+00	1.2606E+00	1.3322E+00
20070307	1200	1.332E+03	1.1345E+00	1.1345E+00	1.1951E+00
20070308	1200	1.180E+03	1.0087E+00	1.0087E+00	1.0591E+00
20070309	1200	1.028E+03	8.8218E-01	8.8218E-01	9.2329E-01
20070310	1200	1.637E+03	1.3995E+00	1.3995E+00	1.4620E+00
20070311	1200	1.976E+03	1.6892E+00	1.6892E+00	1.7603E+00
20070312	1200	2.551E+03	2.1789E+00	2.1789E+00	2.2655E+00
20070313	1200	1.998E+03	1.7164E+00	1.7164E+00	1.7785E+00
20070314	1200	2.246E+03	1.9317E+00	1.9317E+00	1.9966E+00
20070315	1200	1.660E+03	1.4373E+00	1.4373E+00	1.4805E+00
20070316	1200	1.930E+03	1.6726E+00	1.6726E+00	1.7188E+00
20070317	1200	1.750E+03	1.5231E+00	1.5231E+00	1.5606E+00
20070318	1200	1.660E+03	1.4503E+00	1.4503E+00	1.4818E+00
20070319	1200	1.727E+03	1.5129E+00	1.5129E+00	1.5418E+00
20070320	1200	2.122E+03	1.8601E+00	1.8601E+00	1.8917E+00
20070321	1200	1.885E+03	1.6605E+00	1.6605E+00	1.6840E+00
20070322	1200	2.246E+03	1.9810E+00	1.9810E+00	2.0047E+00
20070323	1200	1.953E+03	1.7319E+00	1.7319E+00	1.7477E+00
20070324	1200	2.066E+03	1.8376E+00	1.8376E+00	1.8501E+00
20070325	1200	2.258E+03	2.0137E+00	2.0137E+00	2.0229E+00
20070326	1200	2.111E+03	1.8916E+00	1.8916E+00	1.8955E+00
20070327	1200	1.942E+03	1.7491E+00	1.7491E+00	1.7482E+00
20070328	1200	2.077E+03	1.8767E+00	1.8767E+00	1.8718E+00
20070329	1200	1.930E+03	1.7529E+00	1.7529E+00	1.7440E+00

20070330	1200	2.032E+03	1.8522E+00	1.8522E+00	1.8390E+00
20070331	1200	2.009E+03	1.8395E+00	1.8395E+00	1.8224E+00
20070401	1200	2.009E+03	1.8478E+00	1.8478E+00	1.8267E+00
20070402	1200	1.321E+03	1.2272E+00	1.2272E+00	1.2095E+00
20070403	1200	1.976E+03	1.8346E+00	1.8346E+00	1.8062E+00
20070404	1200	1.581E+03	1.4792E+00	1.4792E+00	1.4526E+00
20070405	1200	1.400E+03	1.3182E+00	1.3182E+00	1.2916E+00
20070406	1200	1.637E+03	1.5458E+00	1.5458E+00	1.5123E+00
20070407	1200	1.355E+03	1.2891E+00	1.2891E+00	1.2583E+00
20070408	1200	1.197E+03	1.1464E+00	1.1464E+00	1.1167E+00
20070409	1200	1.152E+03	1.1096E+00	1.1096E+00	1.0788E+00
20070410	1200	1.626E+03	1.5673E+00	1.5673E+00	1.5224E+00
20070411	1200	1.332E+03	1.2941E+00	1.2941E+00	1.2543E+00
20070412	1200	1.761E+03	1.7139E+00	1.7139E+00	1.6596E+00
20070413	1200	2.449E+03	2.3862E+00	2.3862E+00	2.3089E+00
20070414	1200	1.930E+03	1.8968E+00	1.8968E+00	1.8316E+00
20070415	1200	1.727E+03	1.7094E+00	1.7094E+00	1.6477E+00
20070416	1200	1.100E+01	1.1693E-02	1.1693E-02	1.1124E-02
20070417	1200	1.000E-04	1.2366E-07	1.2366E-07	1.1498E-07
20070418	1200	1.480E+03	1.4934E+00	1.4934E+00	1.4331E+00
20070419	1200	1.270E+03	1.2916E+00	1.2916E+00	1.2375E+00
20070420	1200	1.920E+03	1.9537E+00	1.9537E+00	1.8714E+00
20070421	1200	1.300E+03	1.3376E+00	1.3376E+00	1.2786E+00
20070422	1200	1.360E+03	1.4071E+00	1.4071E+00	1.3436E+00
20070423	1200	3.040E+03	3.1312E+00	3.1312E+00	2.9928E+00
20070424	1200	1.100E+03	1.1554E+00	1.1554E+00	1.1004E+00
20070425	1200	1.340E+03	1.4126E+00	1.4126E+00	1.3448E+00
20070426	1200	1.770E+03	1.8708E+00	1.8708E+00	1.7807E+00
20070427	1200	4.640E+02	5.0232E-01	5.0232E-01	4.7614E-01
20070428	1200	5.420E+02	5.8933E-01	5.8933E-01	5.5839E-01
20070429	1200	4.520E+02	4.9584E-01	4.9584E-01	4.6925E-01
20070430	1200	5.150E+02	5.6766E-01	5.6766E-01	5.3703E-01
20070501	1200	3.360E+02	3.7489E-01	3.7489E-01	3.5407E-01
20070502	1200	1.000E-04	1.3597E-07	1.3597E-07	1.2447E-07
20070503	1200	2.150E+03	2.3720E+00	2.3720E+00	2.2483E+00
20070504	1200	2.180E+03	2.4208E+00	2.4208E+00	2.2936E+00
20070505	1200	1.650E+03	1.8514E+00	1.8514E+00	1.7522E+00
20070506	1200	1.000E-04	1.3971E-07	1.3971E-07	1.2763E-07
20070507	1200	1.000E-04	1.4068E-07	1.4068E-07	1.2846E-07
20070508	1200	5.400E+02	6.2754E-01	6.2754E-01	5.9174E-01
20070509	1200	4.710E+02	5.5211E-01	5.5211E-01	5.2034E-01
20070510	1200	3.460E+02	4.1005E-01	4.1005E-01	3.8611E-01
20070511	1200	1.140E+03	1.3391E+00	1.3391E+00	1.2647E+00
20070512	1200	1.000E-04	1.4567E-07	1.4567E-07	1.3288E-07
20070513	1200	1.410E+03	1.6747E+00	1.6747E+00	1.5826E+00
20070514	1200	6.040E+02	7.3056E-01	7.3056E-01	6.8894E-01
20070515	1200	1.760E+02	2.1789E-01	2.1789E-01	2.0487E-01
20070516	1200	1.000E-04	1.4985E-07	1.4985E-07	1.3671E-07
20070517	1200	1.000E-04	1.5092E-07	1.5092E-07	1.3772E-07
20070518	1200	3.790E+02	4.7439E-01	4.7439E-01	4.4727E-01
20070519	1200	3.940E+02	4.9640E-01	4.9640E-01	4.6825E-01
20070520	1200	5.580E+02	7.0474E-01	7.0475E-01	6.6567E-01
20070521	1200	1.350E+03	1.6971E+00	1.6971E+00	1.6075E+00
20070522	1200	1.000E-04	1.5642E-07	1.5642E-07	1.4298E-07
20070523	1200	1.000E-04	1.5755E-07	1.5755E-07	1.4408E-07
20070524	1200	1.000E-04	1.5868E-07	1.5868E-07	1.4520E-07
20070525	1200	2.840E+02	3.7496E-01	3.7496E-01	3.5462E-01
20070526	1200	2.190E+02	2.9220E-01	2.9220E-01	2.7638E-01
20070527	1200	1.000E-04	1.6214E-07	1.6214E-07	1.4866E-07
20070528	1200	1.490E+03	1.9656E+00	1.9656E+00	1.8717E+00
20070529	1200	1.000E-04	1.6448E-07	1.6448E-07	1.5105E-07
20070530	1200	1.000E-04	1.6566E-07	1.6566E-07	1.5227E-07
20070531	1200	1.000E-04	1.6684E-07	1.6685E-07	1.5351E-07
20070601	1200	1.000E-04	1.6804E-07	1.6804E-07	1.5476E-07

20070602	1200	4.200E+01	6.0180E-02	6.0180E-02	5.7069E-02
20070603	1200	1.780E+02	2.5197E-01	2.5197E-01	2.4012E-01
20070604	1200	1.000E-04	1.7165E-07	1.7165E-07	1.5861E-07
20070605	1200	6.300E+01	9.1691E-02	9.1691E-02	8.7363E-02
20070606	1200	4.030E+02	5.7622E-01	5.7622E-01	5.5244E-01
20070607	1200	1.000E-04	1.7531E-07	1.7531E-07	1.6260E-07
20070608	1200	1.000E-04	1.7654E-07	1.7654E-07	1.6396E-07
20070609	1200	2.500E+01	3.7866E-02	3.7866E-02	3.6196E-02
20070610	1200	2.860E+02	4.2226E-01	4.2226E-01	4.0684E-01
20070611	1200	4.100E+02	6.0654E-01	6.0654E-01	5.8588E-01
20070612	1200	1.000E-04	1.8148E-07	1.8148E-07	1.6955E-07
20070613	1200	1.000E-04	1.8272E-07	1.8272E-07	1.7098E-07
20070614	1200	7.200E+01	1.1124E-01	1.1124E-01	1.0749E-01
20070615	1200	2.500E+01	3.9434E-02	3.9434E-02	3.8068E-02
20070616	1200	2.100E+01	3.3422E-02	3.3422E-02	3.2308E-02
20070617	1200	1.030E+02	1.6156E-01	1.6156E-01	1.5711E-01
20070618	1200	1.000E-04	1.8894E-07	1.8894E-07	1.7834E-07
20070619	1200	1.000E-04	1.9018E-07	1.9018E-07	1.7985E-07
20070620	1200	1.000E-04	1.9142E-07	1.9142E-07	1.8137E-07
20070621	1200	3.300E+01	5.3929E-02	5.3929E-02	5.2700E-02
20070622	1200	1.000E-04	1.9390E-07	1.9390E-07	1.8445E-07
20070623	1200	1.000E-04	1.9514E-07	1.9514E-07	1.8601E-07
20070624	1200	2.500E+01	4.1788E-02	4.1788E-02	4.1064E-02
20070625	1200	5.400E+01	8.9894E-02	8.9894E-02	8.8711E-02
20070626	1200	4.000E+01	6.7266E-02	6.7266E-02	6.6475E-02
20070627	1200	1.500E+01	2.5712E-02	2.5712E-02	2.5401E-02
20070628	1200	1.000E+00	1.7873E-03	1.7873E-03	1.7576E-03
20070629	1200	2.300E+01	3.9672E-02	3.9672E-02	3.9419E-02
20070630	1200	1.000E-04	2.0368E-07	2.0368E-07	1.9716E-07
20070701	1200	1.000E-04	2.0488E-07	2.0488E-07	1.9879E-07
20070702	1200	1.000E-04	2.0607E-07	2.0607E-07	2.0042E-07
20070703	1200	1.000E-04	2.0726E-07	2.0726E-07	2.0206E-07
20070704	1200	5.300E+01	9.3038E-02	9.3038E-02	9.3786E-02
20070705	1200	1.200E+02	2.0951E-01	2.0951E-01	2.1220E-01
20070706	1200	1.870E+02	3.2632E-01	3.2632E-01	3.3177E-01
20070707	1200	5.640E+02	9.7488E-01	9.7488E-01	9.9684E-01
20070708	1200	1.000E-04	2.1304E-07	2.1304E-07	2.1033E-07
20070709	1200	1.000E-04	2.1417E-07	2.1417E-07	2.1199E-07
20070710	1200	1.000E-04	2.1529E-07	2.1529E-07	2.1366E-07
20070711	1200	1.000E-04	2.1639E-07	2.1640E-07	2.1532E-07
20070712	1200	1.000E-04	2.1749E-07	2.1749E-07	2.1699E-07
20070713	1200	1.000E-04	2.1857E-07	2.1857E-07	2.1866E-07
20070714	1200	1.000E-04	2.1964E-07	2.1964E-07	2.2033E-07
20070715	1200	1.000E-04	2.2069E-07	2.2069E-07	2.2200E-07
20070716	1200	1.000E-04	2.2173E-07	2.2173E-07	2.2367E-07
20070717	1200	1.000E-04	2.2275E-07	2.2275E-07	2.2533E-07
20070718	1200	1.000E-04	2.2376E-07	2.2376E-07	2.2699E-07
20070719	1200	1.000E-04	2.2475E-07	2.2475E-07	2.2865E-07
20070720	1200	1.000E-04	2.2573E-07	2.2573E-07	2.3030E-07
20070721	1200	1.000E-04	2.2669E-07	2.2669E-07	2.3195E-07
20070722	1200	1.000E-04	2.2763E-07	2.2763E-07	2.3359E-07
20070723	1200	1.000E-04	2.2856E-07	2.2856E-07	2.3522E-07
20070724	1200	1.000E-04	2.2947E-07	2.2947E-07	2.3685E-07
20070725	1200	1.000E-04	2.3035E-07	2.3035E-07	2.3847E-07
20070726	1200	1.000E-04	2.3122E-07	2.3122E-07	2.4008E-07
20070727	1200	1.000E-04	2.3207E-07	2.3207E-07	2.4168E-07
20070728	1200	1.000E-04	2.3290E-07	2.3290E-07	2.4327E-07
20070729	1200	1.000E-04	2.3371E-07	2.3371E-07	2.4484E-07
20070730	1200	1.000E-04	2.3450E-07	2.3450E-07	2.4641E-07
20070731	1200	1.000E-04	2.3526E-07	2.3526E-07	2.4796E-07

Lee Creek near Magna, Utah

```
##########################################################################
#
#  LOADEST Calibration File
#
#  Lee Creek (2007 data thru 6/2007)
#
#
#  Total Se (dissolved + particulate)
#
##########################################################################
#
#CDATE     CTIME    CFLOW     CCONC
#
##########################################################################
20060512    1015    32.40    1.28
20060606    1445    69.00    1.46
20060712    1330    52.00    1.66
20060810    0900    52.00    1.64
20060905    0930    79.00    1.51
20060915    1245    68.00    1.64
20061012    1350   120.00    1.42
20061115    1030    87.00    1.61
20061221    1215    53.00    2.30
20070201    0920     52      2.47
20070306    1510     60      1.62
20070418    1210     55      1.89
20070516    1230     82      1.72
20070618    1315     63      1.96
```

```
##########################################################################
#
#  LOADEST Estimation File
#
#  Lee Creek
#
#
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE     ETIME   EFLOW
#
##########################################################################
20060518    1200    67
20060519    1200    66
20060520    1200    79
20060521    1200    71
20060522    1200    74
20060523    1200    58
20060524    1200    59
20060525    1200    52
20060526    1200    65
20060527    1200    80
20060528    1200    83
20060529    1200    97
20060530    1200    84
20060531    1200    78
20060601    1200    64
20060602    1200    73
20060603    1200    68
20060604    1200    59
20060605    1200    70
20060606    1200    69
20060607    1200    78
20060608    1200    87
20060609    1200    96
20060610    1200    82
20060611    1200    88
20060612    1200    64
20060613    1200    58
20060614    1200    51
20060615    1200    45
20060616    1200    66
20060617    1200    69
20060618    1200    59
20060619    1200    56
20060620    1200    52
20060621    1200    48
20060622    1200    43
20060623    1200    51
```

20060624	1200	44
20060625	1200	42
20060626	1200	44
20060627	1200	41
20060628	1200	46
20060629	1200	45
20060630	1200	47
20060701	1200	49
20060702	1200	46
20060703	1200	55
20060704	1200	46
20060705	1200	61
20060706	1200	49
20060707	1200	39
20060708	1200	38
20060709	1200	52
20060710	1200	47
20060711	1200	49
20060712	1200	52
20060713	1200	51
20060714	1200	56
20060715	1200	51
20060716	1200	54
20060717	1200	46
20060718	1200	44
20060719	1200	43
20060720	1200	36
20060721	1200	36
20060722	1200	38
20060723	1200	41
20060724	1200	44
20060725	1200	47
20060726	1200	50
20060727	1200	53
20060728	1200	56
20060729	1200	59
20060730	1200	62
20060731	1200	65
20060801	1200	68
20060802	1200	71
20060803	1200	74
20060804	1200	73
20060805	1200	70
20060806	1200	68
20060807	1200	62
20060808	1200	52
20060809	1200	42
20060810	1200	52
20060811	1200	60
20060812	1200	60
20060813	1200	56
20060814	1200	61
20060815	1200	50
20060816	1200	51
20060817	1200	48
20060818	1200	61

20060819	1200	60
20060820	1200	66
20060821	1200	68
20060822	1200	66
20060823	1200	66
20060824	1200	70
20060825	1200	77
20060826	1200	65
20060827	1200	64
20060828	1200	65
20060829	1200	58
20060830	1200	60
20060831	1200	61
20060901	1200	78
20060902	1200	92
20060903	1200	94
20060904	1200	80
20060905	1200	79
20060906	1200	62
20060907	1200	63
20060908	1200	83
20060909	1200	76
20060910	1200	72
20060911	1200	75
20060912	1200	66
20060913	1200	70
20060914	1200	55
20060915	1200	68
20060916	1200	82
20060917	1200	95
20060918	1200	95
20060919	1200	83
20060920	1200	83
20060921	1200	83
20060922	1200	61
20060923	1200	80
20060924	1200	78
20060925	1200	92
20060926	1200	105
20060927	1200	96
20060928	1200	86
20060929	1200	83
20060930	1200	117
20061001	1200	98
20061002	1200	70
20061003	1200	79
20061004	1200	92
20061005	1200	78
20061006	1200	74
20061007	1200	99
20061008	1200	90
20061009	1200	101
20061010	1200	120
20061011	1200	103
20061012	1200	120
20061013	1200	124

20061014	1200	112
20061015	1200	81
20061016	1200	69
20061017	1200	57
20061018	1200	48
20061019	1200	47
20061020	1200	51
20061021	1200	57
20061022	1200	73
20061023	1200	73
20061024	1200	55
20061025	1200	42
20061026	1200	28
20061027	1200	36
20061028	1200	63
20061029	1200	54
20061030	1200	56
20061031	1200	51
20061101	1200	47
20061102	1200	49
20061103	1200	50
20061104	1200	51
20061105	1200	48
20061106	1200	49
20061107	1200	52
20061108	1200	52
20061109	1200	58
20061110	1200	60
20061111	1200	56
20061112	1200	62
20061113	1200	63
20061114	1200	75
20061115	1200	87
20061116	1200	61
20061117	1200	59
20061118	1200	58
20061119	1200	58
20061120	1200	55
20061121	1200	53
20061122	1200	50
20061123	1200	51
20061124	1200	52
20061125	1200	55
20061126	1200	56
20061127	1200	58
20061128	1200	61
20061129	1200	56
20061130	1200	62
20061201	1200	52
20061202	1200	63
20061203	1200	52
20061204	1200	46
20061205	1200	46
20061206	1200	46
20061207	1200	46
20061208	1200	47

20061209	1200	49
20061210	1200	50
20061211	1200	60
20061212	1200	54
20061213	1200	53
20061214	1200	58
20061215	1200	50
20061216	1200	60
20061217	1200	58
20061218	1200	60
20061219	1200	55
20061220	1200	53
20061221	1200	53
20061222	1200	51
20061223	1200	53
20061224	1200	54
20061225	1200	52
20061226	1200	52
20061227	1200	55
20061228	1200	59
20061229	1200	59
20061230	1200	57
20061231	1200	53
20070101	1200	56
20070102	1200	56
20070103	1200	55
20070104	1200	57
20070105	1200	58
20070106	1200	57
20070107	1200	57
20070108	1200	57
20070109	1200	56
20070110	1200	55
20070111	1200	57
20070112	1200	58
20070113	1200	58
20070114	1200	58
20070115	1200	56
20070116	1200	54
20070117	1200	52
20070118	1200	52
20070119	1200	53
20070120	1200	54
20070121	1200	56
20070122	1200	55
20070123	1200	54
20070124	1200	50
20070125	1200	51
20070126	1200	50
20070127	1200	50
20070128	1200	51
20070129	1200	51
20070130	1200	52
20070131	1200	54
20070201	1200	52
20070202	1200	50

20070203	1200	49
20070204	1200	54
20070205	1200	55
20070206	1200	55
20070207	1200	56
20070208	1200	58
20070209	1200	58
20070210	1200	65
20070211	1200	61
20070212	1200	56
20070213	1200	60
20070214	1200	60
20070215	1200	58
20070216	1200	57
20070217	1200	57
20070218	1200	56
20070219	1200	65
20070220	1200	66
20070221	1200	58
20070222	1200	53
20070223	1200	57
20070224	1200	74
20070225	1200	62
20070226	1200	64
20070227	1200	67
20070228	1200	64
20070301	1200	56
20070302	1200	57
20070303	1200	60
20070304	1200	60
20070305	1200	59
20070306	1200	60
20070307	1200	60
20070308	1200	60
20070309	1200	59
20070310	1200	57
20070311	1200	55
20070312	1200	55
20070313	1200	54
20070314	1200	53
20070315	1200	52
20070316	1200	50
20070317	1200	51
20070318	1200	52
20070319	1200	51
20070320	1200	52
20070321	1200	61
20070322	1200	63
20070323	1200	57
20070324	1200	61
20070325	1200	65
20070326	1200	66
20070327	1200	63
20070328	1200	93
20070329	1200	116
20070330	1200	81

20070331	1200	69
20070401	1200	60
20070402	1200	57
20070403	1200	55
20070404	1200	55
20070405	1200	50
20070406	1200	44
20070407	1200	43
20070408	1200	45
20070409	1200	44
20070410	1200	35
20070411	1200	41
20070412	1200	36
20070413	1200	37
20070414	1200	34
20070415	1200	33
20070416	1200	37
20070417	1200	41
20070418	1200	55
20070419	1200	62
20070420	1200	53
20070421	1200	55
20070422	1200	61
20070423	1200	58
20070424	1200	78
20070425	1200	60
20070426	1200	70
20070427	1200	64
20070428	1200	67
20070429	1200	66
20070430	1200	71
20070501	1200	67
20070502	1200	52
20070503	1200	70
20070504	1200	66
20070505	1200	74
20070506	1200	64
20070507	1200	73
20070508	1200	72
20070509	1200	84
20070510	1200	78
20070511	1200	85
20070512	1200	82
20070513	1200	72
20070514	1200	77
20070515	1200	70
20070516	1200	82
20070517	1200	77
20070518	1200	78
20070519	1200	78
20070520	1200	68
20070521	1200	68
20070522	1200	69
20070523	1200	82
20070524	1200	75
20070525	1200	75

20070526	1200	76
20070527	1200	71
20070528	1200	64
20070529	1200	61
20070530	1200	54
20070531	1200	57
20070601	1200	61
20070602	1200	63
20070603	1200	67
20070604	1200	63
20070605	1200	62
20070606	1200	62
20070607	1200	74
20070608	1200	74
20070609	1200	71
20070610	1200	71
20070611	1200	66
20070612	1200	62
20070613	1200	64
20070614	1200	61
20070615	1200	60
20070616	1200	60
20070617	1200	60
20070618	1200	63
20070619	1200	55
20070620	1200	60
20070621	1200	52
20070622	1200	55
20070623	1200	54
20070624	1200	62
20070625	1200	64
20070626	1200	59
20070627	1200	62
20070628	1200	56
20070629	1200	54
20070630	1200	50
20070701	1200	57
20070702	1200	59
20070703	1200	56
20070704	1200	59
20070705	1200	53
20070706	1200	57
20070707	1200	55
20070708	1200	56
20070709	1200	57
20070710	1200	56
20070711	1200	54
20070712	1200	51
20070713	1200	58
20070714	1200	57
20070715	1200	55
20070716	1200	58
20070717	1200	56
20070718	1200	65
20070719	1200	60
20070720	1200	63

20070721	1200	59
20070722	1200	61
20070723	1200	62
20070724	1200	57
20070725	1200	58
20070726	1200	54
20070727	1200	66
20070728	1200	64
20070729	1200	68
20070730	1200	66
20070731	1200	60

```
                              LOADEST
                   A Program to Estimate Constituent Loads
                 U.S. Geological Survey, Version: MOD36 (Sep 2004)
                 -------------------------------------------------


Lee Creek


Constituent: selenium



---------------------------------------------------------------------

    Constituent Output File Part Ia: Calibration (Load Regression)

---------------------------------------------------------------------

Number of Observations           :    14
Number of Uncensored Observations:    14
"center" of Decimal Time         :   2006.914
"center" of Ln(Q)                :    4.1459
Period of record                 :    2006-2007


Model Evaluation Criteria Based on AMLE Results
-----------------------------------------------

Model #     AIC           SPPC
----------------------------------
 1          -0.392           2.105
 2          -0.611           3.318
 3          -0.809           4.705
 4          -0.396           1.492
 5          -0.854           4.700
 6          -0.789           3.924
 7          -0.906           4.743
 8          -1.079           5.637
 9          -0.883           3.944

Model # 8 selected


Selected Model:
---------------

Ln(Load) = a0 + a1 LnQ + a2 LnQ^2 + a3 Sin(2 pi dtime) + a4 Cos(2 pi dtime)

           + a5 dtime

where:
      Load  = constituent load [kg/d]
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


      Model Coefficients

       a0        a1        a2        a3        a4        a5
      -----------------------------------------------------------
AMLE  -1.2665    0.7324   -0.4506   -0.0047    0.1184    0.2907
```

MLE	-1.2665	0.7324	-0.4506	-0.0047	0.1184	0.2907
LAD	-1.3029	0.8064	-0.5929	-0.0079	0.0444	0.2489

AMLE Regression Statistics

R-Squared [%] : 92.89
Prob. Plot Corr. Coeff. (PPCC) : 0.9730
Serial Correlation of Residuals: -.2987

Coeff.	Std.Dev.	t-ratio	P Value
a0	0.0382	-33.13	9.829E-17
a1	0.1409	5.20	5.443E-06
a2	0.2410	-1.87	2.427E-02
a3	0.0653	-0.07	9.241E-01
a4	0.0471	2.51	4.306E-03
a5	0.1310	2.22	9.565E-03

Correlation Between Explanatory Variables

Explanatory variable corresponding to:

	a1	a2	a3	a4
a2	0.0000			
a3	-0.3846	-0.0712		
a4	0.3787	0.0642	-0.0790	
a5	0.2100	-0.3832	0.4811	-0.0030

Additional Regression Statistics

	Residual Variance	Turnbull-Weiss Stat	DF	PL
AMLE	0.013	5.29	1	2.144E-02
MLE	0.013	5.29	1	2.144E-02

Constituent Output File Part Ib: Calibration (Concentration Regression)

AMLE Regression Statistics

Model # 8 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 LnQ^2 + a3 Sin(2 pi dtime) + a4 Cos(2 pi dtime)

+ a5 dtime

where:
Conc = constituent concentration
LnQ = Ln(Q) - center of Ln(Q)
dtime = decimal time - center of decimal time

Concentration Regression Results

R-Squared [%] : 75.37
Residual Variance : 0.0130

Coeff.	Value	Std.Dev.	t-ratio	P Value
a0	0.6007	0.0382	15.71	3.365E-12
a1	-0.2676	0.1409	-1.90	2.243E-02
a2	-0.4506	0.2410	-1.87	2.427E-02
a3	-0.0047	0.0653	-0.07	9.241E-01
a4	0.1184	0.0471	2.51	4.306E-03
a5	0.2907	0.1310	2.22	9.565E-03

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060518-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	66.	32.	42.	52.	62.	80.	104.	120.
Est.	61.	28.	47.	53.	58.	67.	80.	124.

WARNING: The maximum estimation data set steamflow exceeds the maximum calibration data set streamflow. Load estimates require extrapolation.

Maximum Estimation Streamflow : 1.2400E+02
Maximum Calibration Streamflow: 1.2000E+02

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060518-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

N	Mean Load	95% Conf.Intervals Lower	95% Conf.Intervals Upper	Std Error Prediction	Standard Error

Est. Period	440	0.27	0.25	0.29	0.01	0.01

MLE Load Estimates

	N	Mean Load	Standard Error
Est. Period	440	0.27	0.01

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	440	0.27	0.02

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.12	0.25	0.28	0.30	0.33	0.34	0.39	0.39
MLE	0.12	0.25	0.28	0.30	0.33	0.34	0.39	0.39
LAD	0.10	0.25	0.27	0.30	0.34	0.35	0.37	0.39

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	1.	2.	2.	2.	2.	2.	2.	2.
MLE	1.	2.	2.	2.	2.	2.	2.	2.
LAD	1.	2.	2.	2.	2.	2.	2.	2.

Lee Creek gage

Loads Estimated by:

Date	Time	Flow	AMLE	MLE	LAD
20060518	1200	6.700E+01	2.2369E-01	2.2369E-01	2.4755E-01
20060519	1200	6.600E+01	2.2154E-01	2.2154E-01	2.4495E-01
20060520	1200	7.900E+01	2.4707E-01	2.4707E-01	2.7539E-01
20060521	1200	7.100E+01	2.3261E-01	2.3261E-01	2.5835E-01
20060522	1200	7.400E+01	2.3861E-01	2.3861E-01	2.6550E-01
20060523	1200	5.800E+01	2.0179E-01	2.0179E-01	2.2061E-01
20060524	1200	5.900E+01	2.0468E-01	2.0468E-01	2.2418E-01
20060525	1200	5.200E+01	1.8416E-01	1.8416E-01	1.9867E-01
20060526	1200	6.500E+01	2.2025E-01	2.2025E-01	2.4329E-01
20060527	1200	8.000E+01	2.4994E-01	2.4994E-01	2.7863E-01
20060528	1200	8.300E+01	2.5476E-01	2.5476E-01	2.8407E-01
20060529	1200	9.700E+01	2.7167E-01	2.7167E-01	3.0212E-01
20060530	1200	8.400E+01	2.5667E-01	2.5667E-01	2.8614E-01
20060531	1200	7.800E+01	2.4755E-01	2.4755E-01	2.7570E-01
20060601	1200	6.400E+01	2.1902E-01	2.1902E-01	2.4150E-01
20060602	1200	7.300E+01	2.3894E-01	2.3894E-01	2.6547E-01
20060603	1200	6.800E+01	2.2878E-01	2.2878E-01	2.5323E-01
20060604	1200	5.900E+01	2.0670E-01	2.0670E-01	2.2613E-01
20060605	1200	7.000E+01	2.3362E-01	2.3362E-01	2.5888E-01
20060606	1200	6.900E+01	2.3175E-01	2.3175E-01	2.5654E-01
20060607	1200	7.800E+01	2.4945E-01	2.4945E-01	2.7735E-01
20060608	1200	8.700E+01	2.6337E-01	2.6337E-01	2.9291E-01
20060609	1200	9.600E+01	2.7403E-01	2.7403E-01	3.0401E-01
20060610	1200	8.200E+01	2.5691E-01	2.5691E-01	2.8554E-01
20060611	1200	8.800E+01	2.6571E-01	2.6571E-01	2.9515E-01
20060612	1200	6.400E+01	2.2186E-01	2.2186E-01	2.4388E-01
20060613	1200	5.800E+01	2.0618E-01	2.0618E-01	2.2454E-01
20060614	1200	5.100E+01	1.8481E-01	1.8481E-01	1.9804E-01
20060615	1200	4.500E+01	1.6372E-01	1.6372E-01	1.7200E-01
20060616	1200	6.600E+01	2.2799E-01	2.2799E-01	2.5074E-01
20060617	1200	6.900E+01	2.3521E-01	2.3521E-01	2.5925E-01
20060618	1200	5.900E+01	2.1053E-01	2.1053E-01	2.2916E-01
20060619	1200	5.600E+01	2.0211E-01	2.0211E-01	2.1867E-01
20060620	1200	5.200E+01	1.8979E-01	1.8979E-01	2.0336E-01
20060621	1200	4.800E+01	1.7630E-01	1.7630E-01	1.8665E-01
20060622	1200	4.300E+01	1.5766E-01	1.5766E-01	1.6380E-01
20060623	1200	5.100E+01	1.8737E-01	1.8737E-01	1.9991E-01
20060624	1200	4.400E+01	1.6212E-01	1.6212E-01	1.6894E-01
20060625	1200	4.200E+01	1.5441E-01	1.5441E-01	1.5948E-01
20060626	1200	4.400E+01	1.6268E-01	1.6268E-01	1.6932E-01
20060627	1200	4.100E+01	1.5082E-01	1.5082E-01	1.5489E-01
20060628	1200	4.600E+01	1.7098E-01	1.7098E-01	1.7907E-01
20060629	1200	4.500E+01	1.6746E-01	1.6746E-01	1.7463E-01
20060630	1200	4.700E+01	1.7538E-01	1.7538E-01	1.8406E-01
20060701	1200	4.900E+01	1.8303E-01	1.8303E-01	1.9318E-01
20060702	1200	4.600E+01	1.7226E-01	1.7226E-01	1.7991E-01
20060703	1200	5.500E+01	2.0405E-01	2.0405E-01	2.1834E-01
20060704	1200	4.600E+01	1.7293E-01	1.7293E-01	1.8034E-01
20060705	1200	6.100E+01	2.2273E-01	2.2273E-01	2.4047E-01
20060706	1200	4.900E+01	1.8484E-01	1.8484E-01	1.9435E-01
20060707	1200	3.900E+01	1.4505E-01	1.4505E-01	1.4652E-01
20060708	1200	3.800E+01	1.4090E-01	1.4090E-01	1.4149E-01
20060709	1200	5.200E+01	1.9661E-01	1.9661E-01	2.0791E-01
20060710	1200	4.700E+01	1.7891E-01	1.7891E-01	1.8632E-01
20060711	1200	4.900E+01	1.8679E-01	1.8679E-01	1.9557E-01
20060712	1200	5.200E+01	1.9789E-01	1.9789E-01	2.0871E-01
20060713	1200	5.100E+01	1.9483E-01	1.9483E-01	2.0476E-01

20060714	1200	5.600E+01	2.1207E-01	2.1207E-01	2.2523E-01
20060715	1200	5.100E+01	1.9570E-01	1.9570E-01	2.0530E-01
20060716	1200	5.400E+01	2.0650E-01	2.0650E-01	2.1799E-01
20060717	1200	4.600E+01	1.7779E-01	1.7779E-01	1.8335E-01
20060718	1200	4.400E+01	1.7011E-01	1.7011E-01	1.7399E-01
20060719	1200	4.300E+01	1.6633E-01	1.6634E-01	1.6929E-01
20060720	1200	3.600E+01	1.3526E-01	1.3526E-01	1.3294E-01
20060721	1200	3.600E+01	1.3557E-01	1.3557E-01	1.3312E-01
20060722	1200	3.800E+01	1.4531E-01	1.4531E-01	1.4410E-01
20060723	1200	4.100E+01	1.5925E-01	1.5925E-01	1.6006E-01
20060724	1200	4.400E+01	1.7255E-01	1.7255E-01	1.7541E-01
20060725	1200	4.700E+01	1.8520E-01	1.8520E-01	1.9007E-01
20060726	1200	5.000E+01	1.9720E-01	1.9720E-01	2.0399E-01
20060727	1200	5.300E+01	2.0857E-01	2.0857E-01	2.1715E-01
20060728	1200	5.600E+01	2.1932E-01	2.1932E-01	2.2953E-01
20060729	1200	5.900E+01	2.2947E-01	2.2947E-01	2.4114E-01
20060730	1200	6.200E+01	2.3904E-01	2.3904E-01	2.5197E-01
20060731	1200	6.500E+01	2.4804E-01	2.4804E-01	2.6206E-01
20060801	1200	6.800E+01	2.5651E-01	2.5651E-01	2.7141E-01
20060802	1200	7.100E+01	2.6446E-01	2.6446E-01	2.8005E-01
20060803	1200	7.400E+01	2.7191E-01	2.7191E-01	2.8802E-01
20060804	1200	7.300E+01	2.7044E-01	2.7044E-01	2.8598E-01
20060805	1200	7.000E+01	2.6420E-01	2.6420E-01	2.7857E-01
20060806	1200	6.800E+01	2.5994E-01	2.5994E-01	2.7335E-01
20060807	1200	6.200E+01	2.4414E-01	2.4414E-01	2.5486E-01
20060808	1200	5.200E+01	2.1153E-01	2.1153E-01	2.1660E-01
20060809	1200	4.200E+01	1.7086E-01	1.7086E-01	1.6918E-01
20060810	1200	5.200E+01	2.1268E-01	2.1268E-01	2.1723E-01
20060811	1200	6.000E+01	2.4070E-01	2.4070E-01	2.4930E-01
20060812	1200	6.000E+01	2.4136E-01	2.4136E-01	2.4967E-01
20060813	1200	5.600E+01	2.2884E-01	2.2884E-01	2.3484E-01
20060814	1200	6.100E+01	2.4581E-01	2.4581E-01	2.5397E-01
20060815	1200	5.000E+01	2.0788E-01	2.0788E-01	2.0990E-01
20060816	1200	5.100E+01	2.1237E-01	2.1237E-01	2.1471E-01
20060817	1200	4.800E+01	2.0092E-01	2.0092E-01	2.0120E-01
20060818	1200	6.100E+01	2.4856E-01	2.4856E-01	2.5545E-01
20060819	1200	6.000E+01	2.4609E-01	2.4609E-01	2.5222E-01
20060820	1200	6.600E+01	2.6475E-01	2.6475E-01	2.7289E-01
20060821	1200	6.800E+01	2.7095E-01	2.7095E-01	2.7936E-01
20060822	1200	6.600E+01	2.6625E-01	2.6625E-01	2.7369E-01
20060823	1200	6.600E+01	2.6700E-01	2.6700E-01	2.7409E-01
20060824	1200	7.000E+01	2.7849E-01	2.7849E-01	2.8636E-01
20060825	1200	7.700E+01	2.9565E-01	2.9565E-01	3.0447E-01
20060826	1200	6.500E+01	2.6640E-01	2.6640E-01	2.7210E-01
20060827	1200	6.400E+01	2.6421E-01	2.6421E-01	2.6921E-01
20060828	1200	6.500E+01	2.6791E-01	2.6791E-01	2.7289E-01
20060829	1200	5.800E+01	2.4636E-01	2.4636E-01	2.4834E-01
20060830	1200	6.000E+01	2.5382E-01	2.5382E-01	2.5629E-01
20060831	1200	6.100E+01	2.5782E-01	2.5782E-01	2.6033E-01
20060901	1200	7.800E+01	3.0372E-01	3.0372E-01	3.0982E-01
20060902	1200	9.200E+01	3.2896E-01	3.2896E-01	3.3466E-01
20060903	1200	9.400E+01	3.3259E-01	3.3260E-01	3.3766E-01
20060904	1200	8.000E+01	3.1046E-01	3.1046E-01	3.1546E-01
20060905	1200	7.900E+01	3.0928E-01	3.0928E-01	3.1380E-01
20060906	1200	6.200E+01	2.6547E-01	2.6547E-01	2.6619E-01
20060907	1200	6.300E+01	2.6940E-01	2.6940E-01	2.7009E-01
20060908	1200	8.300E+01	3.1984E-01	3.1984E-01	3.2321E-01
20060909	1200	7.600E+01	3.0620E-01	3.0620E-01	3.0877E-01
20060910	1200	7.200E+01	2.9738E-01	2.9738E-01	2.9903E-01
20060911	1200	7.500E+01	3.0558E-01	3.0558E-01	3.0721E-01
20060912	1200	6.600E+01	2.8244E-01	2.8244E-01	2.8208E-01
20060913	1200	7.000E+01	2.9459E-01	2.9459E-01	2.9469E-01
20060914	1200	5.500E+01	2.4638E-01	2.4638E-01	2.4171E-01
20060915	1200	6.800E+01	2.9064E-01	2.9064E-01	2.8956E-01

20060916	1200	8.200E+01	3.2507E-01	3.2507E-01	3.2492E-01
20060917	1200	9.500E+01	3.4718E-01	3.4718E-01	3.4559E-01
20060918	1200	9.500E+01	3.4812E-01	3.4812E-01	3.4607E-01
20060919	1200	8.300E+01	3.2968E-01	3.2968E-01	3.2820E-01
20060920	1200	8.300E+01	3.3057E-01	3.3057E-01	3.2865E-01
20060921	1200	8.300E+01	3.3146E-01	3.3146E-01	3.2909E-01
20060922	1200	6.100E+01	2.7393E-01	2.7393E-01	2.6849E-01
20060923	1200	8.000E+01	3.2710E-01	3.2710E-01	3.2391E-01
20060924	1200	7.800E+01	3.2358E-01	3.2358E-01	3.1992E-01
20060925	1200	9.200E+01	3.5044E-01	3.5044E-01	3.4553E-01
20060926	1200	1.050E+02	3.6685E-01	3.6685E-01	3.5914E-01
20060927	1200	9.600E+01	3.5785E-01	3.5785E-01	3.5142E-01
20060928	1200	8.600E+01	3.4326E-01	3.4326E-01	3.3764E-01
20060929	1200	8.300E+01	3.3844E-01	3.3844E-01	3.3258E-01
20060930	1200	1.170E+02	3.7910E-01	3.7910E-01	3.6650E-01
20061001	1200	9.800E+01	3.6404E-01	3.6404E-01	3.5541E-01
20061002	1200	7.000E+01	3.0972E-01	3.0972E-01	3.0226E-01
20061003	1200	7.900E+01	3.3335E-01	3.3335E-01	3.2593E-01
20061004	1200	9.200E+01	3.5851E-01	3.5851E-01	3.4954E-01
20061005	1200	7.800E+01	3.3270E-01	3.3270E-01	3.2447E-01
20061006	1200	7.400E+01	3.2367E-01	3.2367E-01	3.1497E-01
20061007	1200	9.900E+01	3.7064E-01	3.7064E-01	3.5909E-01
20061008	1200	9.000E+01	3.5880E-01	3.5880E-01	3.4838E-01
20061009	1200	1.010E+02	3.7471E-01	3.7471E-01	3.6184E-01
20061010	1200	1.200E+02	3.8978E-01	3.8978E-01	3.7162E-01
20061011	1200	1.030E+02	3.7860E-01	3.7860E-01	3.6440E-01
20061012	1200	1.200E+02	3.9157E-01	3.9157E-01	3.7249E-01
20061013	1200	1.240E+02	3.9389E-01	3.9389E-01	3.7324E-01
20061014	1200	1.120E+02	3.8891E-01	3.8891E-01	3.7113E-01
20061015	1200	8.100E+01	3.4730E-01	3.4730E-01	3.3501E-01
20061016	1200	6.900E+01	3.1700E-01	3.1700E-01	3.0430E-01
20061017	1200	5.700E+01	2.7562E-01	2.7563E-01	2.6071E-01
20061018	1200	4.800E+01	2.3621E-01	2.3621E-01	2.1865E-01
20061019	1200	4.700E+01	2.3177E-01	2.3177E-01	2.1368E-01
20061020	1200	5.100E+01	2.5144E-01	2.5144E-01	2.3419E-01
20061021	1200	5.700E+01	2.7793E-01	2.7793E-01	2.6185E-01
20061022	1200	7.300E+01	3.3259E-01	3.3259E-01	3.1805E-01
20061023	1200	7.300E+01	3.3325E-01	3.3325E-01	3.1838E-01
20061024	1200	5.500E+01	2.7126E-01	2.7126E-01	2.5392E-01
20061025	1200	4.200E+01	2.0809E-01	2.0809E-01	1.8738E-01
20061026	1200	2.800E+01	1.2154E-01	1.2154E-01	1.0083E-01
20061027	1200	3.600E+01	1.7367E-01	1.7367E-01	1.5174E-01
20061028	1200	6.300E+01	3.0473E-01	3.0473E-01	2.8769E-01
20061029	1200	5.400E+01	2.6947E-01	2.6947E-01	2.5063E-01
20061030	1200	5.600E+01	2.7856E-01	2.7856E-01	2.5989E-01
20061031	1200	5.100E+01	2.5676E-01	2.5676E-01	2.3680E-01
20061101	1200	4.700E+01	2.3758E-01	2.3758E-01	2.1651E-01
20061102	1200	4.900E+01	2.4801E-01	2.4801E-01	2.2718E-01
20061103	1200	5.000E+01	2.5330E-01	2.5330E-01	2.3247E-01
20061104	1200	5.100E+01	2.5849E-01	2.5850E-01	2.3767E-01
20061105	1200	4.800E+01	2.4424E-01	2.4424E-01	2.2259E-01
20061106	1200	4.900E+01	2.4962E-01	2.4962E-01	2.2799E-01
20061107	1200	5.200E+01	2.6442E-01	2.6442E-01	2.4320E-01
20061108	1200	5.200E+01	2.6481E-01	2.6481E-01	2.4340E-01
20061109	1200	5.800E+01	2.9146E-01	2.9146E-01	2.7090E-01
20061110	1200	6.000E+01	2.9988E-01	2.9988E-01	2.7940E-01
20061111	1200	5.600E+01	2.8389E-01	2.8389E-01	2.6264E-01
20061112	1200	6.200E+01	3.0838E-01	3.0838E-01	2.8774E-01
20061113	1200	6.300E+01	3.1249E-01	3.1249E-01	2.9177E-01
20061114	1200	7.500E+01	3.5098E-01	3.5098E-01	3.3025E-01
20061115	1200	8.700E+01	3.7910E-01	3.7910E-01	3.5674E-01
20061116	1200	6.100E+01	3.0615E-01	3.0615E-01	2.8471E-01
20061117	1200	5.900E+01	2.9862E-01	2.9862E-01	2.7680E-01
20061118	1200	5.800E+01	2.9488E-01	2.9488E-01	2.7278E-01

20061119	1200	5.800E+01	2.9521E-01	2.9521E-01	2.7297E-01
20061120	1200	5.500E+01	2.8267E-01	2.8267E-01	2.5986E-01
20061121	1200	5.300E+01	2.7390E-01	2.7390E-01	2.5065E-01
20061122	1200	5.000E+01	2.5982E-01	2.5982E-01	2.3594E-01
20061123	1200	5.100E+01	2.6497E-01	2.6497E-01	2.4116E-01
20061124	1200	5.200E+01	2.7002E-01	2.7002E-01	2.4628E-01
20061125	1200	5.500E+01	2.8407E-01	2.8407E-01	2.6071E-01
20061126	1200	5.600E+01	2.8873E-01	2.8873E-01	2.6542E-01
20061127	1200	5.800E+01	2.9751E-01	2.9751E-01	2.7437E-01
20061128	1200	6.100E+01	3.0985E-01	3.0985E-01	2.8695E-01
20061129	1200	5.600E+01	2.8944E-01	2.8944E-01	2.6588E-01
20061130	1200	6.200E+01	3.1417E-01	3.1417E-01	2.9122E-01
20061201	1200	5.200E+01	2.7158E-01	2.7158E-01	2.4728E-01
20061202	1200	6.300E+01	3.1837E-01	3.1837E-01	2.9537E-01
20061203	1200	5.200E+01	2.7194E-01	2.7194E-01	2.4754E-01
20061204	1200	4.600E+01	2.4157E-01	2.4157E-01	2.1616E-01
20061205	1200	4.600E+01	2.4171E-01	2.4171E-01	2.1626E-01
20061206	1200	4.600E+01	2.4184E-01	2.4184E-01	2.1636E-01
20061207	1200	4.600E+01	2.4197E-01	2.4197E-01	2.1646E-01
20061208	1200	4.700E+01	2.4744E-01	2.4744E-01	2.2208E-01
20061209	1200	4.900E+01	2.5796E-01	2.5796E-01	2.3291E-01
20061210	1200	5.000E+01	2.6311E-01	2.6312E-01	2.3823E-01
20061211	1200	6.000E+01	3.0816E-01	3.0816E-01	2.8472E-01
20061212	1200	5.400E+01	2.8248E-01	2.8248E-01	2.5825E-01
20061213	1200	5.300E+01	2.7792E-01	2.7792E-01	2.5355E-01
20061214	1200	5.800E+01	3.0021E-01	3.0021E-01	2.7660E-01
20061215	1200	5.000E+01	2.6351E-01	2.6351E-01	2.3869E-01
20061216	1200	6.000E+01	3.0855E-01	3.0855E-01	2.8525E-01
20061217	1200	5.800E+01	3.0038E-01	3.0038E-01	2.7689E-01
20061218	1200	6.000E+01	3.0864E-01	3.0864E-01	2.8544E-01
20061219	1200	5.500E+01	2.8740E-01	2.8740E-01	2.6359E-01
20061220	1200	5.300E+01	2.7823E-01	2.7823E-01	2.5415E-01
20061221	1200	5.300E+01	2.7824E-01	2.7824E-01	2.5422E-01
20061222	1200	5.100E+01	2.6865E-01	2.6865E-01	2.4435E-01
20061223	1200	5.300E+01	2.7823E-01	2.7823E-01	2.5436E-01
20061224	1200	5.400E+01	2.8286E-01	2.8286E-01	2.5924E-01
20061225	1200	5.200E+01	2.7344E-01	2.7344E-01	2.4956E-01
20061226	1200	5.200E+01	2.7341E-01	2.7341E-01	2.4962E-01
20061227	1200	5.500E+01	2.8728E-01	2.8728E-01	2.6414E-01
20061228	1200	5.900E+01	3.0440E-01	3.0440E-01	2.8200E-01
20061229	1200	5.900E+01	3.0433E-01	3.0433E-01	2.8206E-01
20061230	1200	5.700E+01	2.9586E-01	2.9586E-01	2.7342E-01
20061231	1200	5.300E+01	2.7784E-01	2.7784E-01	2.5481E-01
20070101	1200	5.600E+01	2.9135E-01	2.9135E-01	2.6901E-01
20070102	1200	5.600E+01	2.9125E-01	2.9125E-01	2.6905E-01
20070103	1200	5.500E+01	2.8671E-01	2.8671E-01	2.6448E-01
20070104	1200	5.700E+01	2.9535E-01	2.9535E-01	2.7364E-01
20070105	1200	5.800E+01	2.9945E-01	2.9945E-01	2.7808E-01
20070106	1200	5.700E+01	2.9509E-01	2.9509E-01	2.7371E-01
20070107	1200	5.700E+01	2.9494E-01	2.9494E-01	2.7374E-01
20070108	1200	5.700E+01	2.9479E-01	2.9479E-01	2.7377E-01
20070109	1200	5.600E+01	2.9032E-01	2.9032E-01	2.6928E-01
20070110	1200	5.500E+01	2.8574E-01	2.8574E-01	2.6469E-01
20070111	1200	5.700E+01	2.9429E-01	2.9429E-01	2.7384E-01
20070112	1200	5.800E+01	2.9832E-01	2.9832E-01	2.7827E-01
20070113	1200	5.800E+01	2.9813E-01	2.9813E-01	2.7829E-01
20070114	1200	5.800E+01	2.9793E-01	2.9793E-01	2.7830E-01
20070115	1200	5.600E+01	2.8922E-01	2.8922E-01	2.6939E-01
20070116	1200	5.400E+01	2.8014E-01	2.8014E-01	2.6006E-01
20070117	1200	5.200E+01	2.7066E-01	2.7066E-01	2.5029E-01
20070118	1200	5.200E+01	2.7046E-01	2.7046E-01	2.5030E-01
20070119	1200	5.300E+01	2.7492E-01	2.7492E-01	2.5524E-01
20070120	1200	5.400E+01	2.7928E-01	2.7928E-01	2.6008E-01
20070121	1200	5.600E+01	2.8789E-01	2.8789E-01	2.6943E-01

20070122	1200	5.500E+01	2.8328E-01	2.8328E-01	2.6481E-01
20070123	1200	5.400E+01	2.7857E-01	2.7857E-01	2.6008E-01
20070124	1200	5.000E+01	2.5950E-01	2.5950E-01	2.4010E-01
20070125	1200	5.100E+01	2.6412E-01	2.6412E-01	2.4525E-01
20070126	1200	5.000E+01	2.5903E-01	2.5903E-01	2.4009E-01
20070127	1200	5.000E+01	2.5878E-01	2.5879E-01	2.4009E-01
20070128	1200	5.100E+01	2.6338E-01	2.6338E-01	2.4523E-01
20070129	1200	5.100E+01	2.6312E-01	2.6312E-01	2.4522E-01
20070130	1200	5.200E+01	2.6759E-01	2.6759E-01	2.5025E-01
20070131	1200	5.400E+01	2.7646E-01	2.7646E-01	2.6001E-01
20070201	1200	5.200E+01	2.6704E-01	2.6704E-01	2.5022E-01
20070202	1200	5.000E+01	2.5724E-01	2.5724E-01	2.4002E-01
20070203	1200	4.900E+01	2.5206E-01	2.5206E-01	2.3475E-01
20070204	1200	5.400E+01	2.7530E-01	2.7530E-01	2.5994E-01
20070205	1200	5.500E+01	2.7941E-01	2.7941E-01	2.6465E-01
20070206	1200	5.500E+01	2.7910E-01	2.7910E-01	2.6463E-01
20070207	1200	5.600E+01	2.8308E-01	2.8308E-01	2.6923E-01
20070208	1200	5.800E+01	2.9106E-01	2.9106E-01	2.7812E-01
20070209	1200	5.800E+01	2.9073E-01	2.9073E-01	2.7810E-01
20070210	1200	6.500E+01	3.1651E-01	3.1651E-01	3.0601E-01
20070211	1200	6.100E+01	3.0177E-01	3.0177E-01	2.9063E-01
20070212	1200	5.600E+01	2.8147E-01	2.8147E-01	2.6911E-01
20070213	1200	6.000E+01	2.9726E-01	2.9726E-01	2.8649E-01
20070214	1200	6.000E+01	2.9691E-01	2.9691E-01	2.8647E-01
20070215	1200	5.800E+01	2.8870E-01	2.8870E-01	2.7795E-01
20070216	1200	5.700E+01	2.8430E-01	2.8430E-01	2.7352E-01
20070217	1200	5.700E+01	2.8395E-01	2.8395E-01	2.7349E-01
20070218	1200	5.600E+01	2.7947E-01	2.7947E-01	2.6896E-01
20070219	1200	6.500E+01	3.1313E-01	3.1313E-01	3.0575E-01
20070220	1200	6.600E+01	3.1609E-01	3.1609E-01	3.0931E-01
20070221	1200	5.800E+01	2.8661E-01	2.8661E-01	2.7779E-01
20070222	1200	5.300E+01	2.6518E-01	2.6518E-01	2.5471E-01
20070223	1200	5.700E+01	2.8189E-01	2.8189E-01	2.7334E-01
20070224	1200	7.400E+01	3.3833E-01	3.3833E-01	3.3446E-01
20070225	1200	6.200E+01	3.0037E-01	3.0037E-01	2.9424E-01
20070226	1200	6.400E+01	3.0705E-01	3.0705E-01	3.0187E-01
20070227	1200	6.700E+01	3.1661E-01	3.1661E-01	3.1260E-01
20070228	1200	6.400E+01	3.0629E-01	3.0629E-01	3.0182E-01
20070301	1200	5.600E+01	2.7572E-01	2.7572E-01	2.6869E-01
20070302	1200	5.700E+01	2.7946E-01	2.7947E-01	2.7317E-01
20070303	1200	6.000E+01	2.9081E-01	2.9081E-01	2.8602E-01
20070304	1200	6.000E+01	2.9045E-01	2.9045E-01	2.8600E-01
20070305	1200	5.900E+01	2.8630E-01	2.8630E-01	2.8179E-01
20070306	1200	6.000E+01	2.8974E-01	2.8974E-01	2.8596E-01
20070307	1200	6.000E+01	2.8939E-01	2.8939E-01	2.8594E-01
20070308	1200	6.000E+01	2.8904E-01	2.8904E-01	2.8592E-01
20070309	1200	5.900E+01	2.8491E-01	2.8491E-01	2.8172E-01
20070310	1200	5.700E+01	2.7676E-01	2.7676E-01	2.7302E-01
20070311	1200	5.500E+01	2.6827E-01	2.6827E-01	2.6390E-01
20070312	1200	5.500E+01	2.6795E-01	2.6795E-01	2.6389E-01
20070313	1200	5.400E+01	2.6342E-01	2.6342E-01	2.5917E-01
20070314	1200	5.300E+01	2.5881E-01	2.5881E-01	2.5434E-01
20070315	1200	5.200E+01	2.5412E-01	2.5412E-01	2.4941E-01
20070316	1200	5.000E+01	2.4477E-01	2.4477E-01	2.3924E-01
20070317	1200	5.100E+01	2.4907E-01	2.4907E-01	2.4437E-01
20070318	1200	5.200E+01	2.5325E-01	2.5325E-01	2.4940E-01
20070319	1200	5.100E+01	2.4850E-01	2.4851E-01	2.4437E-01
20070320	1200	5.200E+01	2.5269E-01	2.5269E-01	2.4939E-01
20070321	1200	6.100E+01	2.8837E-01	2.8837E-01	2.8988E-01
20070322	1200	6.300E+01	2.9508E-01	2.9508E-01	2.9774E-01
20070323	1200	5.700E+01	2.7270E-01	2.7270E-01	2.7295E-01
20070324	1200	6.100E+01	2.8745E-01	2.8745E-01	2.8990E-01
20070325	1200	6.500E+01	3.0081E-01	3.0081E-01	3.0521E-01
20070326	1200	6.600E+01	3.0372E-01	3.0372E-01	3.0880E-01

20070327	1200	6.300E+01	2.9355E-01	2.9355E-01	2.9779E-01
20070328	1200	9.300E+01	3.6375E-01	3.6375E-01	3.7308E-01
20070329	1200	1.160E+02	3.8530E-01	3.8530E-01	3.9141E-01
20070330	1200	8.100E+01	3.4177E-01	3.4177E-01	3.5163E-01
20070331	1200	6.900E+01	3.1137E-01	3.1137E-01	3.1906E-01
20070401	1200	6.000E+01	2.8160E-01	2.8160E-01	2.8595E-01
20070402	1200	5.700E+01	2.7003E-01	2.7003E-01	2.7310E-01
20070403	1200	5.500E+01	2.6182E-01	2.6182E-01	2.6402E-01
20070404	1200	5.500E+01	2.6159E-01	2.6159E-01	2.6405E-01
20070405	1200	5.000E+01	2.3986E-01	2.3986E-01	2.3945E-01
20070406	1200	4.400E+01	2.1072E-01	2.1072E-01	2.0649E-01
20070407	1200	4.300E+01	2.0538E-01	2.0538E-01	2.0068E-01
20070408	1200	4.500E+01	2.1543E-01	2.1543E-01	2.1231E-01
20070409	1200	4.400E+01	2.1021E-01	2.1021E-01	2.0659E-01
20070410	1200	3.500E+01	1.6023E-01	1.6023E-01	1.5098E-01
20070411	1200	4.100E+01	1.9416E-01	1.9416E-01	1.8884E-01
20070412	1200	3.600E+01	1.6589E-01	1.6589E-01	1.5751E-01
20070413	1200	3.700E+01	1.7158E-01	1.7158E-01	1.6396E-01
20070414	1200	3.400E+01	1.5378E-01	1.5378E-01	1.4457E-01
20070415	1200	3.300E+01	1.4761E-01	1.4761E-01	1.3803E-01
20070416	1200	3.700E+01	1.7123E-01	1.7123E-01	1.6407E-01
20070417	1200	4.100E+01	1.9338E-01	1.9338E-01	1.8908E-01
20070418	1200	5.500E+01	2.5902E-01	2.5902E-01	2.6474E-01
20070419	1200	6.200E+01	2.8500E-01	2.8500E-01	2.9494E-01
20070420	1200	5.300E+01	2.5050E-01	2.5050E-01	2.5532E-01
20070421	1200	5.500E+01	2.5863E-01	2.5863E-01	2.6496E-01
20070422	1200	6.100E+01	2.8113E-01	2.8113E-01	2.9120E-01
20070423	1200	5.800E+01	2.7010E-01	2.7010E-01	2.7868E-01
20070424	1200	7.800E+01	3.2957E-01	3.2957E-01	3.4628E-01
20070425	1200	6.000E+01	2.7726E-01	2.7726E-01	2.8738E-01
20070426	1200	7.000E+01	3.0909E-01	3.0909E-01	3.2401E-01
20070427	1200	6.400E+01	2.9079E-01	2.9079E-01	3.0339E-01
20070428	1200	6.700E+01	3.0016E-01	3.0016E-01	3.1431E-01
20070429	1200	6.600E+01	2.9702E-01	2.9702E-01	3.1093E-01
20070430	1200	7.100E+01	3.1156E-01	3.1156E-01	3.2763E-01
20070501	1200	6.700E+01	2.9998E-01	2.9998E-01	3.1469E-01
20070502	1200	5.200E+01	2.4527E-01	2.4527E-01	2.5144E-01
20070503	1200	7.000E+01	3.0866E-01	3.0866E-01	3.2491E-01
20070504	1200	6.600E+01	2.9681E-01	2.9681E-01	3.1158E-01
20070505	1200	7.400E+01	3.1929E-01	3.1929E-01	3.3720E-01
20070506	1200	6.400E+01	2.9041E-01	2.9041E-01	3.0455E-01
20070507	1200	7.300E+01	3.1672E-01	3.1672E-01	3.3466E-01
20070508	1200	7.200E+01	3.1411E-01	3.1411E-01	3.3187E-01
20070509	1200	8.400E+01	3.4141E-01	3.4141E-01	3.6197E-01
20070510	1200	7.800E+01	3.2895E-01	3.2895E-01	3.4866E-01
20070511	1200	8.500E+01	3.4338E-01	3.4338E-01	3.6433E-01
20070512	1200	8.200E+01	3.3764E-01	3.3764E-01	3.5836E-01
20070513	1200	7.200E+01	3.1433E-01	3.1433E-01	3.3276E-01
20070514	1200	7.700E+01	3.2691E-01	3.2691E-01	3.4690E-01
20070515	1200	7.000E+01	3.0900E-01	3.0900E-01	3.2694E-01
20070516	1200	8.200E+01	3.3800E-01	3.3800E-01	3.5919E-01
20070517	1200	7.700E+01	3.2722E-01	3.2722E-01	3.4753E-01
20070518	1200	7.800E+01	3.2965E-01	3.2965E-01	3.5029E-01
20070519	1200	7.800E+01	3.2978E-01	3.2978E-01	3.5052E-01
20070520	1200	6.800E+01	3.0378E-01	3.0378E-01	3.2136E-01
20070521	1200	6.800E+01	3.0392E-01	3.0392E-01	3.2158E-01
20070522	1200	6.900E+01	3.0701E-01	3.0701E-01	3.2515E-01
20070523	1200	8.200E+01	3.3906E-01	3.3906E-01	3.6085E-01
20070524	1200	7.500E+01	3.2348E-01	3.2348E-01	3.4381E-01
20070525	1200	7.500E+01	3.2368E-01	3.2368E-01	3.4406E-01
20070526	1200	7.600E+01	3.2634E-01	3.2634E-01	3.4704E-01
20070527	1200	7.100E+01	3.1361E-01	3.1361E-01	3.3278E-01
20070528	1200	6.400E+01	2.9263E-01	2.9263E-01	3.0875E-01
20070529	1200	6.100E+01	2.8257E-01	2.8257E-01	2.9707E-01

20070530	1200	5.400E+01	2.5579E-01	2.5579E-01	2.6576E-01
20070531	1200	5.700E+01	2.6809E-01	2.6809E-01	2.8015E-01
20070601	1200	6.100E+01	2.8324E-01	2.8324E-01	2.9779E-01
20070602	1200	6.300E+01	2.9044E-01	2.9044E-01	3.0611E-01
20070603	1200	6.700E+01	3.0366E-01	3.0366E-01	3.2130E-01
20070604	1200	6.300E+01	2.9097E-01	2.9097E-01	3.0663E-01
20070605	1200	6.200E+01	2.8780E-01	2.8780E-01	3.0290E-01
20070606	1200	6.200E+01	2.8808E-01	2.8808E-01	3.0317E-01
20070607	1200	7.400E+01	3.2471E-01	3.2471E-01	3.4489E-01
20070608	1200	7.400E+01	3.2506E-01	3.2506E-01	3.4520E-01
20070609	1200	7.100E+01	3.1733E-01	3.1733E-01	3.3644E-01
20070610	1200	7.100E+01	3.1769E-01	3.1769E-01	3.3676E-01
20070611	1200	6.600E+01	3.0307E-01	3.0307E-01	3.2002E-01
20070612	1200	6.200E+01	2.9000E-01	2.9000E-01	3.0486E-01
20070613	1200	6.400E+01	2.9725E-01	2.9725E-01	3.1310E-01
20070614	1200	6.100E+01	2.8715E-01	2.8715E-01	3.0132E-01
20070615	1200	6.000E+01	2.8385E-01	2.8385E-01	2.9738E-01
20070616	1200	6.000E+01	2.8423E-01	2.8423E-01	2.9767E-01
20070617	1200	6.000E+01	2.8461E-01	2.8461E-01	2.9798E-01
20070618	1200	6.300E+01	2.9579E-01	2.9579E-01	3.1074E-01
20070619	1200	5.500E+01	2.6563E-01	2.6563E-01	2.7565E-01
20070620	1200	6.000E+01	2.8582E-01	2.8582E-01	2.9891E-01
20070621	1200	5.200E+01	2.5339E-01	2.5339E-01	2.6111E-01
20070622	1200	5.500E+01	2.6680E-01	2.6680E-01	2.7653E-01
20070623	1200	5.400E+01	2.6295E-01	2.6295E-01	2.7189E-01
20070624	1200	6.200E+01	2.9491E-01	2.9491E-01	3.0868E-01
20070625	1200	6.400E+01	3.0241E-01	3.0241E-01	3.1707E-01
20070626	1200	5.900E+01	2.8467E-01	2.8467E-01	2.9648E-01
20070627	1200	6.200E+01	2.9636E-01	2.9636E-01	3.0972E-01
20070628	1200	5.600E+01	2.7357E-01	2.7357E-01	2.8325E-01
20070629	1200	5.400E+01	2.6553E-01	2.6553E-01	2.7374E-01
20070630	1200	5.000E+01	2.4778E-01	2.4778E-01	2.5302E-01
20070701	1200	5.700E+01	2.7913E-01	2.7913E-01	2.8901E-01
20070702	1200	5.900E+01	2.8764E-01	2.8764E-01	2.9855E-01
20070703	1200	5.600E+01	2.7600E-01	2.7600E-01	2.8492E-01
20070704	1200	5.900E+01	2.8870E-01	2.8870E-01	2.9927E-01
20070705	1200	5.300E+01	2.6396E-01	2.6396E-01	2.7058E-01
20070706	1200	5.700E+01	2.8173E-01	2.8173E-01	2.9075E-01
20070707	1200	5.500E+01	2.7381E-01	2.7381E-01	2.8141E-01
20070708	1200	5.600E+01	2.7864E-01	2.7864E-01	2.8667E-01
20070709	1200	5.700E+01	2.8339E-01	2.8339E-01	2.9184E-01
20070710	1200	5.600E+01	2.7975E-01	2.7975E-01	2.8740E-01
20070711	1200	5.400E+01	2.7160E-01	2.7160E-01	2.7778E-01
20070712	1200	5.100E+01	2.5830E-01	2.5830E-01	2.6229E-01
20070713	1200	5.800E+01	2.8987E-01	2.8987E-01	2.9806E-01
20070714	1200	5.700E+01	2.8633E-01	2.8633E-01	2.9372E-01
20070715	1200	5.500E+01	2.7833E-01	2.7833E-01	2.8429E-01
20070716	1200	5.800E+01	2.9174E-01	2.9174E-01	2.9923E-01
20070717	1200	5.600E+01	2.8392E-01	2.8392E-01	2.9002E-01
20070718	1200	6.500E+01	3.1979E-01	3.1979E-01	3.3016E-01
20070719	1200	6.000E+01	3.0180E-01	3.0180E-01	3.0960E-01
20070720	1200	6.300E+01	3.1400E-01	3.1400E-01	3.2296E-01
20070721	1200	5.900E+01	2.9914E-01	2.9914E-01	3.0589E-01
20070722	1200	6.100E+01	3.0783E-01	3.0783E-01	3.1529E-01
20070723	1200	6.200E+01	3.1241E-01	3.1241E-01	3.2006E-01
20070724	1200	5.700E+01	2.9282E-01	2.9282E-01	2.9767E-01
20070725	1200	5.800E+01	2.9778E-01	2.9778E-01	3.0288E-01
20070726	1200	5.400E+01	2.8079E-01	2.8079E-01	2.8339E-01
20070727	1200	6.600E+01	3.3012E-01	3.3012E-01	3.3815E-01
20070728	1200	6.400E+01	3.2373E-01	3.2373E-01	3.3067E-01
20070729	1200	6.800E+01	3.3861E-01	3.3861E-01	3.4664E-01
20070730	1200	6.600E+01	3.3256E-01	3.3256E-01	3.3957E-01
20070731	1200	6.000E+01	3.1052E-01	3.1052E-01	3.1476E-01

Goggin Drain near Magna, Utah

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##########################################################################
#
#  LOADEST Calibration File
#
#  Goggin Drain
#
#  Total Se (dissolved + particulate)
#  Autosampler data from 2007 added
#
##########################################################################
#
#CDATE     CTIME    CFLOW    CCONC
#
##########################################################################
20060512    1500    1340    1.17
20060515    1500    1480    1.12
20060517    1045    1580    0.837
20060521    1500    1800    0.927
20060524    1311    1760    1.01
20060529    1311    1660    1.08
20060601    1311    1340    1.24
20060604    1311    1440    1
20060606    1330    1580    0.753
20060607    1400    1620    1.13
20060611    1400    1800    1.05
20060615    1400    1430    1.02
20060728    1420      15    1.16
20060810    1130      19    1.27
20060905    0820      33    1.17
20061012    1220      18    1.08
20061109    1300      41    1.38
20061219    0940      27    1.48
20070131    1435     178    1.68
20070306    1405    1240    1.17
20070413    1530     466    1.27
20070415    1500     372    1.14
20070420    1500     196    1.29
20070421    1500     154    1.4
20070422    1500      91    1.35
20070424    1500     159    1.4
20070508    1130     115    1.32
20070509    1130      63    1.33
20070513    1130      49    1.39
20070514    1130     131    1.17
20070516    1000     202    0.991
20070517    1130     178    1.13
20070519    1130     190    1.09
20070522    1130     253    0.984
20070524    1130     187    1.05
20070527    1130      84    1.37
20070530    1130     232    1.38
20070531    1130     149    1.35
20070601    1130      48    1.34
20070618    1130      19    1.22
```

20070629	1130	21	1.37

```
##########################################################################
#
#  LOADEST Estimation File
#
#  Goggin Drain
#
#
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE      ETIME     EFLOW
#
##########################################################################
20060503      1200      1290
20060504      1200      1290
20060505      1200      1500
20060506      1200      1460
20060507      1200      1420
20060508      1200      1420
20060509      1200      1430
20060510      1200      1410
20060511      1200      1360
20060512      1200      1340
20060513      1200      1360
20060514      1200      1390
20060515      1200      1480
20060516      1200      1550
20060517      1200      1580
20060518      1200      1620
20060519      1200      1670
20060520      1200      1760
20060521      1200      1800
20060522      1200      1820
20060523      1200      1810
20060524      1200      1760
20060525      1200      1710
20060526      1200      1710
20060527      1200      1720
20060528      1200      1740
20060529      1200      1660
20060530      1200      1550
20060531      1200      1410
20060601      1200      1340
20060602      1200      1330
20060603      1200      1380
20060604      1200      1440
20060605      1200      1530
20060606      1200      1580
20060607      1200      1620
20060608      1200      1660
```

20060609	1200	1730
20060610	1200	1830
20060611	1200	1800
20060612	1200	1720
20060613	1200	1580
20060614	1200	1500
20060615	1200	1430
20060616	1200	1280
20060617	1200	1170
20060618	1200	1160
20060619	1200	1170
20060620	1200	1140
20060621	1200	1090
20060622	1200	1060
20060623	1200	972
20060624	1200	926
20060625	1200	894
20060626	1200	867
20060627	1200	846
20060628	1200	765
20060629	1200	666
20060630	1200	623
20060701	1200	523
20060702	1200	403
20060703	1200	332
20060704	1200	309
20060705	1200	283
20060706	1200	319
20060707	1200	285
20060708	1200	227
20060709	1200	198
20060710	1200	147
20060711	1200	85
20060712	1200	60
20060713	1200	40
20060714	1200	20
20060715	1200	16
20060716	1200	26
20060717	1200	14
20060718	1200	12
20060719	1200	14
20060720	1200	21
20060721	1200	17
20060722	1200	16
20060723	1200	18
20060724	1200	17
20060725	1200	22
20060726	1200	28
20060727	1200	18
20060728	1200	15
20060729	1200	13
20060730	1200	14
20060731	1200	11
20060801	1200	179
20060802	1200	335
20060803	1200	181

20060804	1200	114
20060805	1200	35
20060806	1200	19
20060807	1200	20
20060808	1200	26
20060809	1200	22
20060810	1200	19
20060811	1200	17
20060812	1200	22
20060813	1200	123
20060814	1200	42
20060815	1200	42
20060816	1200	33
20060817	1200	25
20060818	1200	21
20060819	1200	23
20060820	1200	24
20060821	1200	20
20060822	1200	24
20060823	1200	30
20060824	1200	12
20060825	1200	22
20060826	1200	29
20060827	1200	29
20060828	1200	26
20060829	1200	45
20060830	1200	44
20060831	1200	34
20060901	1200	28
20060902	1200	25
20060903	1200	27
20060904	1200	38
20060905	1200	33
20060906	1200	29
20060907	1200	26
20060908	1200	33
20060909	1200	46
20060910	1200	38
20060911	1200	33
20060912	1200	29
20060913	1200	25
20060914	1200	18
20060915	1200	298
20060916	1200	548
20060917	1200	263
20060918	1200	115
20060919	1200	108
20060920	1200	211
20060921	1200	283
20060922	1200	271
20060923	1200	298
20060924	1200	224
20060925	1200	182
20060926	1200	153
20060927	1200	88
20060928	1200	84

20060929	1200	81
20060930	1200	80
20061001	1200	77
20061002	1200	64
20061003	1200	32
20061004	1200	27
20061005	1200	43
20061006	1200	258
20061007	1200	425
20061008	1200	279
20061009	1200	154
20061010	1200	106
20061011	1200	68
20061012	1200	18
20061013	1200	13
20061014	1200	13
20061015	1200	13
20061016	1200	31
20061017	1200	163
20061018	1200	51
20061019	1200	15
20061020	1200	17
20061021	1200	20
20061022	1200	20
20061023	1200	21
20061024	1200	31
20061025	1200	25
20061026	1200	25
20061027	1200	28
20061028	1200	44
20061029	1200	40
20061030	1200	37
20061031	1200	35
20061101	1200	34
20061102	1200	34
20061103	1200	34
20061104	1200	35
20061105	1200	37
20061106	1200	38
20061107	1200	38
20061108	1200	39
20061109	1200	41
20061110	1200	43
20061111	1200	42
20061112	1200	42
20061113	1200	43
20061114	1200	100
20061115	1200	127
20061116	1200	46
20061117	1200	43
20061118	1200	42
20061119	1200	41
20061120	1200	40
20061121	1200	40
20061122	1200	40
20061123	1200	41

20061124	1200	41
20061125	1200	41
20061126	1200	41
20061127	1200	42
20061128	1200	43
20061129	1200	43
20061130	1200	41
20061201	1200	41
20061202	1200	41
20061203	1200	40
20061204	1200	39
20061205	1200	39
20061206	1200	39
20061207	1200	39
20061208	1200	32
20061209	1200	21
20061210	1200	29
20061211	1200	32
20061212	1200	28
20061213	1200	27
20061214	1200	28
20061215	1200	28
20061216	1200	28
20061217	1200	28
20061218	1200	28
20061219	1200	27
20061220	1200	25
20061221	1200	25
20061222	1200	24
20061223	1200	24
20061224	1200	24
20061225	1200	24
20061226	1200	25
20061227	1200	27
20061228	1200	29
20061229	1200	28
20061230	1200	27
20061231	1200	26
20070101	1200	27
20070102	1200	26
20070103	1200	26
20070104	1200	28
20070105	1200	29
20070106	1200	30
20070107	1200	30
20070108	1200	30
20070109	1200	31
20070110	1200	31
20070111	1200	32
20070112	1200	32
20070113	1200	32
20070114	1200	32
20070115	1200	32
20070116	1200	32
20070117	1200	32
20070118	1200	32

20070119	1200	32
20070120	1200	32
20070121	1200	32
20070122	1200	32
20070123	1200	32
20070124	1200	32
20070125	1200	32
20070126	1200	32
20070127	1200	32
20070128	1200	32
20070129	1200	32
20070130	1200	32
20070131	1200	178
20070201	1200	239
20070202	1200	251
20070203	1200	260
20070204	1200	279
20070205	1200	300
20070206	1200	310
20070207	1200	349
20070208	1200	359
20070209	1200	381
20070210	1200	362
20070211	1200	399
20070212	1200	523
20070213	1200	652
20070214	1200	745
20070215	1200	820
20070216	1200	871
20070217	1200	829
20070218	1200	835
20070219	1200	885
20070220	1200	925
20070221	1200	883
20070222	1200	882
20070223	1200	912
20070224	1200	947
20070225	1200	911
20070226	1200	922
20070227	1200	940
20070228	1200	960
20070301	1200	936
20070302	1200	1010
20070303	1200	1140
20070304	1200	1200
20070305	1200	1230
20070306	1200	1240
20070307	1200	1260
20070308	1200	1270
20070309	1200	1310
20070310	1200	1280
20070311	1200	1270
20070312	1200	1270
20070313	1200	1270
20070314	1200	1270
20070315	1200	1240

20070316	1200	1220
20070317	1200	1210
20070318	1200	1210
20070319	1200	1190
20070320	1200	1190
20070321	1200	1210
20070322	1200	1230
20070323	1200	1210
20070324	1200	1180
20070325	1200	1180
20070326	1200	1180
20070327	1200	1180
20070328	1200	1260
20070329	1200	1370
20070330	1200	1270
20070331	1200	1190
20070401	1200	1100
20070402	1200	1060
20070403	1200	979
20070404	1200	966
20070405	1200	970
20070406	1200	966
20070407	1200	786
20070408	1200	634
20070409	1200	585
20070410	1200	528
20070411	1200	480
20070412	1200	478
20070413	1200	466
20070414	1200	343
20070415	1200	372
20070416	1200	289
20070417	1200	144
20070418	1200	186
20070419	1200	218
20070420	1200	196
20070421	1200	154
20070422	1200	91
20070423	1200	151
20070424	1200	159
20070425	1200	139
20070426	1200	111
20070427	1200	61
20070428	1200	65
20070429	1200	66
20070430	1200	63
20070501	1200	113
20070502	1200	151
20070503	1200	223
20070504	1200	356
20070505	1200	332
20070506	1200	284
20070507	1200	218
20070508	1200	115
20070509	1200	63
20070510	1200	18

20070511	1200	13
20070512	1200	17
20070513	1200	49
20070514	1200	131
20070515	1200	197
20070516	1200	202
20070517	1200	178
20070518	1200	191
20070519	1200	190
20070520	1200	208
20070521	1200	224
20070522	1200	253
20070523	1200	228
20070524	1200	187
20070525	1200	154
20070526	1200	133
20070527	1200	84
20070528	1200	15
20070529	1200	118
20070530	1200	232
20070531	1200	149
20070601	1200	48
20070602	1200	17
20070603	1200	18
20070604	1200	20
20070605	1200	34
20070606	1200	257
20070607	1200	482
20070608	1200	314
20070609	1200	223
20070610	1200	177
20070611	1200	123
20070612	1200	85
20070613	1200	90
20070614	1200	92
20070615	1200	91
20070616	1200	88
20070617	1200	78
20070618	1200	19
20070619	1200	18
20070620	1200	17
20070621	1200	14
20070622	1200	14
20070623	1200	14
20070624	1200	18
20070625	1200	17
20070626	1200	18
20070627	1200	17
20070628	1200	16
20070629	1200	21
20070630	1200	22
20070701	1200	22
20070702	1200	14
20070703	1200	19
20070704	1200	17
20070705	1200	29

20070706	1200	20
20070707	1200	18
20070708	1200	17
20070709	1200	18
20070710	1200	22
20070711	1200	24
20070712	1200	17
20070713	1200	13
20070714	1200	11
20070715	1200	14
20070716	1200	11
20070717	1200	13
20070718	1200	29
20070719	1200	23
20070720	1200	19
20070721	1200	18
20070722	1200	27
20070723	1200	30
20070724	1200	21
20070725	1200	19
20070726	1200	41
20070727	1200	284
20070728	1200	292
20070729	1200	207
20070730	1200	118
20070731	1200	104

LOADEST

A Program to Estimate Constituent Loads
U.S. Geological Survey, Version: MOD36 (Sep 2004)

Goggin Drain

Constituent: selenium

Constituent Output File Part Ia: Calibration (Load Regression)

```
Number of Observations           :    41
Number of Uncensored Observations:    41
"center" of Decimal Time         :   2006.905
"center" of Ln(Q)                :    5.3403
Period of record                 :    2006-2007
```

Model Evaluation Criteria Based on AMLE Results

Model #	AIC	SPPC
1	-1.123	21.318
2	-1.231	22.655
3	-1.171	21.443
4	-1.390	25.078
5	-1.180	20.759
6	-1.344	23.267
7	-1.342	23.218
8	-1.307	21.646
9	-1.274	20.123

Model # 4 selected

Selected Model:

Ln(Load) = a0 + a1 LnQ + a2 Sin(2 pi dtime) + a3 Cos(2 pi dtime)

where:

Load = constituent load [kg/d]
LnQ = Ln(Q) - center of Ln(Q)
dtime = decimal time - center of decimal time

Model Coefficients

	a0	a1	a2	a3
AMLE	-0.4935	0.9318	0.1653	0.0302
MLE	-0.4935	0.9318	0.1653	0.0302
LAD	-0.4750	0.9449	0.1481	0.0283

```
AMLE Regression Statistics
--------------------------
R-Squared [%]                   : 99.46
Prob. Plot Corr. Coeff. (PPCC) : 0.9880
Serial Correlation of Residuals: 0.1511

Coeff.    Std.Dev.    t-ratio      P Value
--------------------------------------------
a0        0.0318       -15.53      9.389E-20
a1        0.0136        68.71      3.250E-45
a2        0.0419         3.94      1.487E-04
a3        0.0372         0.81      3.944E-01


Correlation Between Explanatory Variables
-----------------------------------------

      Explanatory variable corresponding to:

       a1        a2
      --------------------
  a2   0.3437
  a3  -0.4511   -0.1232


Additional Regression Statistics
--------------------------------
      Residual                  Turnbull-Weiss
      Variance               Stat    DF    PL
      ----------------------------------------------
AMLE     0.013               3.20    5     6.692E-01
MLE      0.013               3.20    5     6.692E-01



-----------------------------------------------------------------------

Constituent Output File Part Ib: Calibration (Concentration Regression)

-----------------------------------------------------------------------



AMLE Regression Statistics
--------------------------

Model # 4 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 Sin(2 pi dtime) + a3 Cos(2 pi dtime)

where:
      Conc  = constituent concentration
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


Concentration Regression Results
--------------------------------
R-Squared [%]                   : 52.42
Residual Variance               : 0.0132

Coeff.    Value         Std.Dev.     t-ratio     P Value
-------------------------------------------------------
a0        0.1793        0.0318        5.65       4.484E-07
```

a1	-0.0682	0.0136	-5.03	3.782E-06
a2	0.1653	0.0419	3.94	1.487E-04
a3	0.0302	0.0372	0.81	3.944E-01

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060503-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	580.	15.	19.	56.	187.	1385.	1652.	1800.
Est.	385.	11.	18.	28.	77.	623.	1290.	1830.

WARNING: The maximum estimation data set steamflow exceeds the maximum calibration data set streamflow. Load estimates require extrapolation.

Maximum Estimation Streamflow : 1.8300E+03
Maximum Calibration Streamflow: 1.8000E+03

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060503-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

	N	Mean Load	95% Conf.Intervals Lower	Upper	Std Error Prediction	Standard Error
Est. Period	455	1.07	1.01	1.13	0.03	0.03

MLE Load Estimates

	N	Mean Load	Standard Error
Est. Period	455	1.07	0.03

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	455	1.08	0.07

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.034	0.095	0.222	1.709	3.706	3.928	4.423	4.566
MLE	0.034	0.095	0.222	1.709	3.706	3.928	4.423	4.566
LAD	0.033	0.094	0.217	1.701	3.737	4.014	4.546	4.695

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.97	1.14	1.24	1.32	1.50	1.57	1.60	1.61
MLE	0.97	1.14	1.24	1.32	1.50	1.57	1.60	1.61
LAD	1.	1.	1.	1.	1.	2.	2.	2.

Individual Load Estimates for Goggin Drain in kg/day

			Loads Estimated by:		
Date	Time	Flow	AMLE	MLE	LAD
20060503	1200	1.290E+03	3.4994E+00	3.4994E+00	3.5614E+00
20060504	1200	1.290E+03	3.4896E+00	3.4896E+00	3.5524E+00
20060505	1200	1.500E+03	4.0047E+00	4.0047E+00	4.0862E+00
20060506	1200	1.460E+03	3.8941E+00	3.8941E+00	3.9730E+00
20060507	1200	1.420E+03	3.7839E+00	3.7839E+00	3.8602E+00
20060508	1200	1.420E+03	3.7732E+00	3.7732E+00	3.8504E+00
20060509	1200	1.430E+03	3.7871E+00	3.7871E+00	3.8660E+00
20060510	1200	1.410E+03	3.7271E+00	3.7271E+00	3.8051E+00
20060511	1200	1.360E+03	3.5935E+00	3.5935E+00	3.6681E+00
20060512	1200	1.340E+03	3.5340E+00	3.5340E+00	3.6077E+00
20060513	1200	1.360E+03	3.5728E+00	3.5728E+00	3.6491E+00
20060514	1200	1.390E+03	3.6357E+00	3.6357E+00	3.7155E+00
20060515	1200	1.480E+03	3.8434E+00	3.8434E+00	3.9322E+00
20060516	1200	1.550E+03	4.0009E+00	4.0009E+00	4.0971E+00
20060517	1200	1.580E+03	4.0612E+00	4.0612E+00	4.1611E+00
20060518	1200	1.620E+03	4.1449E+00	4.1449E+00	4.2496E+00
20060519	1200	1.670E+03	4.2516E+00	4.2516E+00	4.3621E+00
20060520	1200	1.760E+03	4.4517E+00	4.4517E+00	4.5720E+00
20060521	1200	1.800E+03	4.5327E+00	4.5327E+00	4.6580E+00
20060522	1200	1.820E+03	4.5664E+00	4.5664E+00	4.6947E+00
20060523	1200	1.810E+03	4.5299E+00	4.5299E+00	4.6583E+00
20060524	1200	1.760E+03	4.4006E+00	4.4006E+00	4.5249E+00
20060525	1200	1.710E+03	4.2717E+00	4.2717E+00	4.3920E+00
20060526	1200	1.710E+03	4.2594E+00	4.2594E+00	4.3808E+00
20060527	1200	1.720E+03	4.2704E+00	4.2704E+00	4.3937E+00
20060528	1200	1.740E+03	4.3043E+00	4.3043E+00	4.4306E+00
20060529	1200	1.660E+03	4.1079E+00	4.1079E+00	4.2271E+00
20060530	1200	1.550E+03	3.8429E+00	3.8429E+00	3.9519E+00
20060531	1200	1.410E+03	3.5086E+00	3.5086E+00	3.6047E+00
20060601	1200	1.340E+03	3.3366E+00	3.3366E+00	3.4267E+00
20060602	1200	1.330E+03	3.3041E+00	3.3041E+00	3.3940E+00
20060603	1200	1.380E+03	3.4101E+00	3.4101E+00	3.5057E+00
20060604	1200	1.440E+03	3.5382E+00	3.5382E+00	3.6405E+00
20060605	1200	1.530E+03	3.7334E+00	3.7334E+00	3.8456E+00
20060606	1200	1.580E+03	3.8363E+00	3.8363E+00	3.9545E+00
20060607	1200	1.620E+03	3.9159E+00	3.9159E+00	4.0392E+00
20060608	1200	1.660E+03	3.9950E+00	3.9950E+00	4.1234E+00
20060609	1200	1.730E+03	4.1405E+00	4.1405E+00	4.2772E+00
20060610	1200	1.830E+03	4.3513E+00	4.3513E+00	4.4996E+00
20060611	1200	1.800E+03	4.2734E+00	4.2734E+00	4.4194E+00
20060612	1200	1.720E+03	4.0854E+00	4.0854E+00	4.2236E+00
20060613	1200	1.580E+03	3.7649E+00	3.7649E+00	3.8890E+00
20060614	1200	1.500E+03	3.5777E+00	3.5777E+00	3.6941E+00
20060615	1200	1.430E+03	3.4131E+00	3.4131E+00	3.5229E+00
20060616	1200	1.280E+03	3.0705E+00	3.0705E+00	3.1655E+00
20060617	1200	1.170E+03	2.8168E+00	2.8168E+00	2.9013E+00
20060618	1200	1.160E+03	2.7874E+00	2.7874E+00	2.8714E+00
20060619	1200	1.170E+03	2.8028E+00	2.8028E+00	2.8885E+00
20060620	1200	1.140E+03	2.7291E+00	2.7291E+00	2.8123E+00
20060621	1200	1.090E+03	2.6110E+00	2.6110E+00	2.6898E+00
20060622	1200	1.060E+03	2.5379E+00	2.5379E+00	2.6142E+00
20060623	1200	9.720E+02	2.3355E+00	2.3355E+00	2.4036E+00
20060624	1200	9.260E+02	2.2272E+00	2.2272E+00	2.2912E+00
20060625	1200	8.940E+02	2.1504E+00	2.1504E+00	2.2118E+00

20060626	1200	8.670E+02	2.0851E+00	2.0851E+00	2.1443E+00
20060627	1200	8.460E+02	2.0334E+00	2.0334E+00	2.0910E+00
20060628	1200	7.650E+02	1.8473E+00	1.8473E+00	1.8976E+00
20060629	1200	6.660E+02	1.6200E+00	1.6200E+00	1.6614E+00
20060630	1200	6.230E+02	1.5191E+00	1.5191E+00	1.5569E+00
20060701	1200	5.230E+02	1.2879E+00	1.2879E+00	1.3172E+00
20060702	1200	4.030E+02	1.0082E+00	1.0082E+00	1.0278E+00
20060703	1200	3.320E+02	8.3989E-01	8.3989E-01	8.5426E-01
20060704	1200	3.090E+02	7.8397E-01	7.8397E-01	7.9681E-01
20060705	1200	2.830E+02	7.2091E-01	7.2091E-01	7.3203E-01
20060706	1200	3.190E+02	8.0441E-01	8.0441E-01	8.1831E-01
20060707	1200	2.850E+02	7.2286E-01	7.2286E-01	7.3441E-01
20060708	1200	2.270E+02	5.8368E-01	5.8368E-01	5.9136E-01
20060709	1200	1.980E+02	5.1295E-01	5.1295E-01	5.1888E-01
20060710	1200	1.470E+02	3.8796E-01	3.8796E-01	3.9099E-01
20060711	1200	8.500E+01	2.3247E-01	2.3247E-01	2.3266E-01
20060712	1200	6.000E+01	1.6775E-01	1.6775E-01	1.6716E-01
20060713	1200	4.000E+01	1.1477E-01	1.1477E-01	1.1379E-01
20060714	1200	2.000E+01	6.0059E-02	6.0059E-02	5.9029E-02
20060715	1200	1.600E+01	4.8704E-02	4.8704E-02	4.7741E-02
20060716	1200	2.600E+01	7.6458E-02	7.6458E-02	7.5427E-02
20060717	1200	1.400E+01	4.2874E-02	4.2874E-02	4.1970E-02
20060718	1200	1.200E+01	3.7082E-02	3.7082E-02	3.6235E-02
20060719	1200	1.400E+01	4.2752E-02	4.2752E-02	4.1864E-02
20060720	1200	2.100E+01	6.2300E-02	6.2300E-02	6.1334E-02
20060721	1200	1.700E+01	5.1095E-02	5.1095E-02	5.0175E-02
20060722	1200	1.600E+01	4.8226E-02	4.8226E-02	4.7328E-02
20060723	1200	1.800E+01	5.3756E-02	5.3756E-02	5.2842E-02
20060724	1200	1.700E+01	5.0907E-02	5.0907E-02	5.0012E-02
20060725	1200	2.200E+01	6.4660E-02	6.4660E-02	6.3744E-02
20060726	1200	2.800E+01	8.0867E-02	8.0867E-02	7.9980E-02
20060727	1200	1.800E+01	5.3516E-02	5.3516E-02	5.2636E-02
20060728	1200	1.500E+01	4.5107E-02	4.5107E-02	4.4268E-02
20060729	1200	1.300E+01	3.9437E-02	3.9437E-02	3.8637E-02
20060730	1200	1.400E+01	4.2219E-02	4.2219E-02	4.1407E-02
20060731	1200	1.100E+01	3.3691E-02	3.3691E-02	3.2945E-02
20060801	1200	1.790E+02	4.5293E-01	4.5293E-01	4.5934E-01
20060802	1200	3.350E+02	8.1140E-01	8.1140E-01	8.2990E-01
20060803	1200	1.810E+02	4.5695E-01	4.5695E-01	4.6359E-01
20060804	1200	1.140E+02	2.9685E-01	2.9685E-01	2.9935E-01
20060805	1200	3.500E+01	9.8725E-02	9.8725E-02	9.8038E-02
20060806	1200	1.900E+01	5.5838E-02	5.5838E-02	5.5018E-02
20060807	1200	2.000E+01	5.8542E-02	5.8542E-02	5.7724E-02
20060808	1200	2.600E+01	7.4721E-02	7.4721E-02	7.3934E-02
20060809	1200	2.200E+01	6.3921E-02	6.3921E-02	6.3116E-02
20060810	1200	1.900E+01	5.5737E-02	5.5737E-02	5.4934E-02
20060811	1200	1.700E+01	5.0233E-02	5.0233E-02	4.9441E-02
20060812	1200	2.200E+01	6.3858E-02	6.3858E-02	6.3065E-02
20060813	1200	1.230E+02	3.1738E-01	3.1738E-01	3.2061E-01
20060814	1200	4.200E+01	1.1661E-01	1.1661E-01	1.1614E-01
20060815	1200	4.200E+01	1.1659E-01	1.1659E-01	1.1613E-01
20060816	1200	3.300E+01	9.3119E-02	9.3119E-02	9.2465E-02
20060817	1200	2.500E+01	7.1890E-02	7.1890E-02	7.1130E-02
20060818	1200	2.100E+01	6.1110E-02	6.1110E-02	6.0329E-02
20060819	1200	2.300E+01	6.6521E-02	6.6521E-02	6.5750E-02
20060820	1200	2.400E+01	6.9221E-02	6.9221E-02	6.8457E-02
20060821	1200	2.000E+01	5.8415E-02	5.8415E-02	5.7635E-02
20060822	1200	2.400E+01	6.9247E-02	6.9247E-02	6.8485E-02
20060823	1200	3.000E+01	8.5275E-02	8.5275E-02	8.4582E-02
20060824	1200	1.200E+01	3.6318E-02	3.6318E-02	3.5597E-02
20060825	1200	2.200E+01	6.3915E-02	6.3915E-02	6.3139E-02
20060826	1200	2.900E+01	8.2713E-02	8.2713E-02	8.2003E-02
20060827	1200	2.900E+01	8.2752E-02	8.2752E-02	8.2040E-02
20060828	1200	2.600E+01	7.4784E-02	7.4784E-02	7.4033E-02

20060829	1200	4.500E+01	1.2475E-01	1.2475E-01	1.2438E-01
20060830	1200	4.400E+01	1.2224E-01	1.2224E-01	1.2184E-01
20060831	1200	3.400E+01	9.6197E-02	9.6197E-02	9.5556E-02
20060901	1200	2.800E+01	8.0334E-02	8.0334E-02	7.9593E-02
20060902	1200	2.500E+01	7.2338E-02	7.2338E-02	7.1562E-02
20060903	1200	2.700E+01	7.7779E-02	7.7779E-02	7.7017E-02
20060904	1200	3.800E+01	1.0703E-01	1.0703E-01	1.0645E-01
20060905	1200	3.300E+01	9.3934E-02	9.3934E-02	9.3247E-02
20060906	1200	2.900E+01	8.3358E-02	8.3358E-02	8.2603E-02
20060907	1200	2.600E+01	7.5369E-02	7.5369E-02	7.4574E-02
20060908	1200	3.300E+01	9.4214E-02	9.4214E-02	9.3505E-02
20060909	1200	4.600E+01	1.2852E-01	1.2852E-01	1.2810E-01
20060910	1200	3.800E+01	1.0769E-01	1.0769E-01	1.0706E-01
20060911	1200	3.300E+01	9.4534E-02	9.4534E-02	9.3798E-02
20060912	1200	2.900E+01	8.3914E-02	8.3914E-02	8.3111E-02
20060913	1200	2.500E+01	7.3169E-02	7.3169E-02	7.2320E-02
20060914	1200	1.800E+01	5.3947E-02	5.3947E-02	5.3087E-02
20060915	1200	2.980E+02	7.3801E-01	7.3801E-01	7.5379E-01
20060916	1200	5.480E+02	1.3033E+00	1.3033E+00	1.3421E+00
20060917	1200	2.630E+02	6.5881E-01	6.5881E-01	6.7160E-01
20060918	1200	1.150E+02	3.0535E-01	3.0535E-01	3.0779E-01
20060919	1200	1.080E+02	2.8844E-01	2.8844E-01	2.9046E-01
20060920	1200	2.110E+02	5.3907E-01	5.3907E-01	5.4769E-01
20060921	1200	2.830E+02	7.0972E-01	7.0972E-01	7.2384E-01
20060922	1200	2.710E+02	6.8278E-01	6.8278E-01	6.9586E-01
20060923	1200	2.980E+02	7.4718E-01	7.4718E-01	7.6237E-01
20060924	1200	2.240E+02	5.7375E-01	5.7375E-01	5.8307E-01
20060925	1200	1.820E+02	4.7371E-01	4.7371E-01	4.7997E-01
20060926	1200	1.530E+02	4.0373E-01	4.0373E-01	4.0805E-01
20060927	1200	8.800E+01	2.4163E-01	2.4163E-01	2.4237E-01
20060928	1200	8.400E+01	2.3182E-01	2.3182E-01	2.3235E-01
20060929	1200	8.100E+01	2.2453E-01	2.2453E-01	2.2489E-01
20060930	1200	8.000E+01	2.2238E-01	2.2238E-01	2.2266E-01
20061001	1200	7.700E+01	2.1503E-01	2.1503E-01	2.1516E-01
20061002	1200	6.400E+01	1.8137E-01	1.8137E-01	1.8100E-01
20061003	1200	3.200E+01	9.5287E-02	9.5287E-02	9.4202E-02
20061004	1200	2.700E+01	8.1509E-02	8.1509E-02	8.0385E-02
20061005	1200	4.300E+01	1.2602E-01	1.2602E-01	1.2502E-01
20061006	1200	2.580E+02	6.7015E-01	6.7015E-01	6.8088E-01
20061007	1200	4.250E+02	1.0690E+00	1.0690E+00	1.0933E+00
20061008	1200	2.790E+02	7.2402E-01	7.2402E-01	7.3608E-01
20061009	1200	1.540E+02	4.1723E-01	4.1723E-01	4.2069E-01
20061010	1200	1.060E+02	2.9531E-01	2.9531E-01	2.9621E-01
20061011	1200	6.800E+01	1.9575E-01	1.9575E-01	1.9514E-01
20061012	1200	1.800E+01	5.6879E-02	5.6879E-02	5.5702E-02
20061013	1200	1.300E+01	4.2102E-02	4.2102E-02	4.1046E-02
20061014	1200	1.300E+01	4.2203E-02	4.2203E-02	4.1136E-02
20061015	1200	1.300E+01	4.2306E-02	4.2306E-02	4.1227E-02
20061016	1200	3.100E+01	9.5309E-02	9.5309E-02	9.3919E-02
20061017	1200	1.630E+02	4.4841E-01	4.4841E-01	4.5166E-01
20061018	1200	5.100E+01	1.5231E-01	1.5231E-01	1.5101E-01
20061019	1200	1.500E+01	4.8828E-02	4.8828E-02	4.7625E-02
20061020	1200	1.700E+01	5.5009E-02	5.5009E-02	5.3728E-02
20061021	1200	2.000E+01	6.4168E-02	6.4168E-02	6.2791E-02
20061022	1200	2.000E+01	6.4336E-02	6.4336E-02	6.2939E-02
20061023	1200	2.100E+01	6.7505E-02	6.7505E-02	6.6065E-02
20061024	1200	3.100E+01	9.7292E-02	9.7292E-02	9.5681E-02
20061025	1200	2.500E+01	7.9836E-02	7.9836E-02	7.8271E-02
20061026	1200	2.500E+01	8.0051E-02	8.0051E-02	7.8461E-02
20061027	1200	2.800E+01	8.9207E-02	8.9207E-02	8.7543E-02
20061028	1200	4.400E+01	1.3629E-01	1.3629E-01	1.3451E-01
20061029	1200	4.000E+01	1.2505E-01	1.2505E-01	1.2323E-01
20061030	1200	3.700E+01	1.1661E-01	1.1661E-01	1.1476E-01
20061031	1200	3.500E+01	1.1103E-01	1.1103E-01	1.0917E-01

20061101	1200	3.400E+01	1.0838E-01	1.0838E-01	1.0648E-01
20061102	1200	3.400E+01	1.0868E-01	1.0868E-01	1.0675E-01
20061103	1200	3.400E+01	1.0899E-01	1.0899E-01	1.0702E-01
20061104	1200	3.500E+01	1.1229E-01	1.1229E-01	1.1027E-01
20061105	1200	3.700E+01	1.1859E-01	1.1859E-01	1.1651E-01
20061106	1200	3.800E+01	1.2192E-01	1.2192E-01	1.1979E-01
20061107	1200	3.800E+01	1.2226E-01	1.2226E-01	1.2010E-01
20061108	1200	3.900E+01	1.2562E-01	1.2562E-01	1.2340E-01
20061109	1200	4.100E+01	1.3199E-01	1.3199E-01	1.2971E-01
20061110	1200	4.300E+01	1.3837E-01	1.3837E-01	1.3603E-01
20061111	1200	4.200E+01	1.3576E-01	1.3576E-01	1.3338E-01
20061112	1200	4.200E+01	1.3615E-01	1.3615E-01	1.3373E-01
20061113	1200	4.300E+01	1.3957E-01	1.3957E-01	1.3709E-01
20061114	1200	1.000E+02	3.0725E-01	3.0725E-01	3.0510E-01
20061115	1200	1.270E+02	3.8498E-01	3.8498E-01	3.8339E-01
20061116	1200	4.600E+01	1.4992E-01	1.4992E-01	1.4725E-01
20061117	1200	4.300E+01	1.4119E-01	1.4119E-01	1.3852E-01
20061118	1200	4.200E+01	1.3853E-01	1.3853E-01	1.3582E-01
20061119	1200	4.100E+01	1.3585E-01	1.3585E-01	1.3311E-01
20061120	1200	4.000E+01	1.3314E-01	1.3314E-01	1.3038E-01
20061121	1200	4.000E+01	1.3353E-01	1.3353E-01	1.3072E-01
20061122	1200	4.000E+01	1.3391E-01	1.3391E-01	1.3105E-01
20061123	1200	4.100E+01	1.3742E-01	1.3742E-01	1.3449E-01
20061124	1200	4.100E+01	1.3782E-01	1.3782E-01	1.3484E-01
20061125	1200	4.100E+01	1.3821E-01	1.3821E-01	1.3519E-01
20061126	1200	4.100E+01	1.3861E-01	1.3861E-01	1.3553E-01
20061127	1200	4.200E+01	1.4216E-01	1.4216E-01	1.3901E-01
20061128	1200	4.300E+01	1.4572E-01	1.4572E-01	1.4249E-01
20061129	1200	4.300E+01	1.4613E-01	1.4613E-01	1.4286E-01
20061130	1200	4.100E+01	1.4018E-01	1.4018E-01	1.3692E-01
20061201	1200	4.100E+01	1.4058E-01	1.4058E-01	1.3726E-01
20061202	1200	4.100E+01	1.4097E-01	1.4097E-01	1.3760E-01
20061203	1200	4.000E+01	1.3815E-01	1.3815E-01	1.3476E-01
20061204	1200	3.900E+01	1.3530E-01	1.3530E-01	1.3191E-01
20061205	1200	3.900E+01	1.3567E-01	1.3567E-01	1.3223E-01
20061206	1200	3.900E+01	1.3604E-01	1.3604E-01	1.3255E-01
20061207	1200	3.900E+01	1.3641E-01	1.3641E-01	1.3288E-01
20061208	1200	3.200E+01	1.1376E-01	1.1376E-01	1.1049E-01
20061209	1200	2.100E+01	7.7035E-02	7.7035E-02	7.4391E-02
20061210	1200	2.900E+01	1.0434E-01	1.0434E-01	1.0116E-01
20061211	1200	3.200E+01	1.1467E-01	1.1467E-01	1.1128E-01
20061212	1200	2.800E+01	1.0152E-01	1.0152E-01	9.8322E-02
20061213	1200	2.700E+01	9.8392E-02	9.8392E-02	9.5221E-02
20061214	1200	2.800E+01	1.0205E-01	1.0205E-01	9.8778E-02
20061215	1200	2.800E+01	1.0231E-01	1.0231E-01	9.9004E-02
20061216	1200	2.800E+01	1.0257E-01	1.0257E-01	9.9228E-02
20061217	1200	2.800E+01	1.0282E-01	1.0282E-01	9.9450E-02
20061218	1200	2.800E+01	1.0308E-01	1.0308E-01	9.9671E-02
20061219	1200	2.700E+01	9.9889E-02	9.9889E-02	9.6516E-02
20061220	1200	2.500E+01	9.3202E-02	9.3202E-02	8.9941E-02
20061221	1200	2.500E+01	9.3426E-02	9.3426E-02	9.0135E-02
20061222	1200	2.400E+01	9.0152E-02	9.0152E-02	8.6908E-02
20061223	1200	2.400E+01	9.0364E-02	9.0364E-02	8.7090E-02
20061224	1200	2.400E+01	9.0573E-02	9.0573E-02	8.7270E-02
20061225	1200	2.400E+01	9.0780E-02	9.0780E-02	8.7448E-02
20061226	1200	2.500E+01	9.4513E-02	9.4513E-02	9.1070E-02
20061227	1200	2.700E+01	1.0177E-01	1.0177E-01	9.8134E-02
20061228	1200	2.900E+01	1.0901E-01	1.0901E-01	1.0519E-01
20061229	1200	2.800E+01	1.0573E-01	1.0573E-01	1.0196E-01
20061230	1200	2.700E+01	1.0243E-01	1.0243E-01	9.8701E-02
20061231	1200	2.600E+01	9.9094E-02	9.9094E-02	9.5421E-02
20070101	1200	2.700E+01	1.0285E-01	1.0285E-01	9.9067E-02
20070102	1200	2.600E+01	9.9499E-02	9.9499E-02	9.5768E-02
20070103	1200	2.600E+01	9.9696E-02	9.9696E-02	9.5938E-02

20070104	1200	2.800E+01	1.0703E-01	1.0703E-01	1.0307E-01
20070105	1200	2.900E+01	1.1080E-01	1.1080E-01	1.0673E-01
20070106	1200	3.000E+01	1.1457E-01	1.1457E-01	1.1039E-01
20070107	1200	3.000E+01	1.1478E-01	1.1478E-01	1.1057E-01
20070108	1200	3.000E+01	1.1499E-01	1.1499E-01	1.1075E-01
20070109	1200	3.100E+01	1.1877E-01	1.1877E-01	1.1441E-01
20070110	1200	3.100E+01	1.1897E-01	1.1897E-01	1.1458E-01
20070111	1200	3.200E+01	1.2275E-01	1.2275E-01	1.1825E-01
20070112	1200	3.200E+01	1.2295E-01	1.2295E-01	1.1842E-01
20070113	1200	3.200E+01	1.2315E-01	1.2315E-01	1.1859E-01
20070114	1200	3.200E+01	1.2334E-01	1.2334E-01	1.1875E-01
20070115	1200	3.200E+01	1.2353E-01	1.2353E-01	1.1891E-01
20070116	1200	3.200E+01	1.2371E-01	1.2371E-01	1.1907E-01
20070117	1200	3.200E+01	1.2389E-01	1.2389E-01	1.1922E-01
20070118	1200	3.200E+01	1.2406E-01	1.2406E-01	1.1936E-01
20070119	1200	3.200E+01	1.2422E-01	1.2422E-01	1.1950E-01
20070120	1200	3.200E+01	1.2438E-01	1.2438E-01	1.1964E-01
20070121	1200	3.200E+01	1.2454E-01	1.2454E-01	1.1977E-01
20070122	1200	3.200E+01	1.2469E-01	1.2469E-01	1.1990E-01
20070123	1200	3.200E+01	1.2484E-01	1.2484E-01	1.2002E-01
20070124	1200	3.200E+01	1.2497E-01	1.2497E-01	1.2014E-01
20070125	1200	3.200E+01	1.2511E-01	1.2511E-01	1.2025E-01
20070126	1200	3.200E+01	1.2524E-01	1.2524E-01	1.2036E-01
20070127	1200	3.200E+01	1.2536E-01	1.2536E-01	1.2046E-01
20070128	1200	3.200E+01	1.2548E-01	1.2548E-01	1.2056E-01
20070129	1200	3.200E+01	1.2559E-01	1.2559E-01	1.2065E-01
20070130	1200	3.200E+01	1.2569E-01	1.2569E-01	1.2074E-01
20070131	1200	1.780E+02	6.2250E-01	6.2250E-01	6.1139E-01
20070201	1200	2.390E+02	8.1978E-01	8.1978E-01	8.0820E-01
20070202	1200	2.510E+02	8.5867E-01	8.5867E-01	8.4700E-01
20070203	1200	2.600E+02	8.8790E-01	8.8790E-01	8.7615E-01
20070204	1200	2.790E+02	9.4877E-01	9.4877E-01	9.3700E-01
20070205	1200	3.000E+02	1.0157E+00	1.0157E+00	1.0040E+00
20070206	1200	3.100E+02	1.0477E+00	1.0477E+00	1.0360E+00
20070207	1200	3.490E+02	1.1706E+00	1.1706E+00	1.1592E+00
20070208	1200	3.590E+02	1.2023E+00	1.2023E+00	1.1909E+00
20070209	1200	3.810E+02	1.2712E+00	1.2712E+00	1.2601E+00
20070210	1200	3.620E+02	1.2125E+00	1.2125E+00	1.2010E+00
20070211	1200	3.990E+02	1.3279E+00	1.3279E+00	1.3169E+00
20070212	1200	5.230E+02	1.7090E+00	1.7090E+00	1.7009E+00
20070213	1200	6.520E+02	2.0989E+00	2.0989E+00	2.0950E+00
20070214	1200	7.450E+02	2.3768E+00	2.3768E+00	2.3764E+00
20070215	1200	8.200E+02	2.5991E+00	2.5991E+00	2.6019E+00
20070216	1200	8.710E+02	2.7494E+00	2.7494E+00	2.7545E+00
20070217	1200	8.290E+02	2.6256E+00	2.6256E+00	2.6287E+00
20070218	1200	8.350E+02	2.6431E+00	2.6431E+00	2.6464E+00
20070219	1200	8.850E+02	2.7899E+00	2.7899E+00	2.7954E+00
20070220	1200	9.250E+02	2.9067E+00	2.9067E+00	2.9140E+00
20070221	1200	8.830E+02	2.7829E+00	2.7829E+00	2.7882E+00
20070222	1200	8.820E+02	2.7792E+00	2.7792E+00	2.7844E+00
20070223	1200	9.120E+02	2.8662E+00	2.8662E+00	2.8728E+00
20070224	1200	9.470E+02	2.9674E+00	2.9674E+00	2.9758E+00
20070225	1200	9.110E+02	2.8609E+00	2.8609E+00	2.8675E+00
20070226	1200	9.220E+02	2.8917E+00	2.8917E+00	2.8989E+00
20070227	1200	9.400E+02	2.9427E+00	2.9427E+00	2.9508E+00
20070228	1200	9.600E+02	2.9993E+00	2.9993E+00	3.0084E+00
20070301	1200	9.360E+02	2.9276E+00	2.9276E+00	2.9356E+00
20070302	1200	1.010E+03	3.1405E+00	3.1405E+00	3.1524E+00
20070303	1200	1.140E+03	3.5129E+00	3.5129E+00	3.5320E+00
20070304	1200	1.200E+03	3.6820E+00	3.6820E+00	3.7047E+00
20070305	1200	1.230E+03	3.7646E+00	3.7646E+00	3.7893E+00
20070306	1200	1.240E+03	3.7898E+00	3.7898E+00	3.8153E+00
20070307	1200	1.260E+03	3.8432E+00	3.8432E+00	3.8701E+00
20070308	1200	1.270E+03	3.8679E+00	3.8679E+00	3.8956E+00

20070309	1200	1.310E+03	3.9773E+00	3.9773E+00	4.0076E+00
20070310	1200	1.280E+03	3.8883E+00	3.8883E+00	3.9170E+00
20070311	1200	1.270E+03	3.8558E+00	3.8558E+00	3.8841E+00
20070312	1200	1.270E+03	3.8514E+00	3.8514E+00	3.8800E+00
20070313	1200	1.270E+03	3.8468E+00	3.8468E+00	3.8757E+00
20070314	1200	1.270E+03	3.8421E+00	3.8421E+00	3.8713E+00
20070315	1200	1.240E+03	3.7527E+00	3.7527E+00	3.7803E+00
20070316	1200	1.220E+03	3.6914E+00	3.6914E+00	3.7182E+00
20070317	1200	1.210E+03	3.6582E+00	3.6582E+00	3.6847E+00
20070318	1200	1.210E+03	3.6530E+00	3.6530E+00	3.6799E+00
20070319	1200	1.190E+03	3.5915E+00	3.5915E+00	3.6176E+00
20070320	1200	1.190E+03	3.5861E+00	3.5861E+00	3.6126E+00
20070321	1200	1.210E+03	3.6367E+00	3.6367E+00	3.6647E+00
20070322	1200	1.230E+03	3.6868E+00	3.6868E+00	3.7165E+00
20070323	1200	1.210E+03	3.6250E+00	3.6250E+00	3.6540E+00
20070324	1200	1.180E+03	3.5354E+00	3.5354E+00	3.5629E+00
20070325	1200	1.180E+03	3.5293E+00	3.5293E+00	3.5573E+00
20070326	1200	1.180E+03	3.5232E+00	3.5232E+00	3.5516E+00
20070327	1200	1.180E+03	3.5169E+00	3.5169E+00	3.5458E+00
20070328	1200	1.260E+03	3.7317E+00	3.7317E+00	3.7663E+00
20070329	1200	1.370E+03	4.0268E+00	4.0268E+00	4.0693E+00
20070330	1200	1.270E+03	3.7452E+00	3.7452E+00	3.7815E+00
20070331	1200	1.190E+03	3.5181E+00	3.5181E+00	3.5497E+00
20070401	1200	1.100E+03	3.2632E+00	3.2632E+00	3.2896E+00
20070402	1200	1.060E+03	3.1462E+00	3.1462E+00	3.1706E+00
20070403	1200	9.790E+02	2.9156E+00	2.9156E+00	2.9358E+00
20070404	1200	9.660E+02	2.8736E+00	2.8736E+00	2.8934E+00
20070405	1200	9.700E+02	2.8786E+00	2.8786E+00	2.8992E+00
20070406	1200	9.660E+02	2.8614E+00	2.8614E+00	2.8822E+00
20070407	1200	7.860E+02	2.3561E+00	2.3561E+00	2.3673E+00
20070408	1200	6.340E+02	1.9243E+00	1.9243E+00	1.9284E+00
20070409	1200	5.850E+02	1.7814E+00	1.7814E+00	1.7836E+00
20070410	1200	5.280E+02	1.6154E+00	1.6154E+00	1.6156E+00
20070411	1200	4.800E+02	1.4748E+00	1.4748E+00	1.4734E+00
20070412	1200	4.780E+02	1.4656E+00	1.4656E+00	1.4645E+00
20070413	1200	4.660E+02	1.4279E+00	1.4279E+00	1.4266E+00
20070414	1200	3.430E+02	1.0707E+00	1.0707E+00	1.0657E+00
20070415	1200	3.720E+02	1.1520E+00	1.1520E+00	1.1481E+00
20070416	1200	2.890E+02	9.0827E-01	9.0827E-01	9.0242E-01
20070417	1200	1.440E+02	4.7338E-01	4.7338E-01	4.6621E-01
20070418	1200	1.860E+02	5.9939E-01	5.9939E-01	5.9241E-01
20070419	1200	2.180E+02	6.9320E-01	6.9320E-01	6.8671E-01
20070420	1200	1.960E+02	6.2618E-01	6.2618E-01	6.1961E-01
20070421	1200	1.540E+02	4.9886E-01	4.9886E-01	4.9221E-01
20070422	1200	9.100E+01	3.0473E-01	3.0473E-01	2.9871E-01
20070423	1200	1.510E+02	4.8726E-01	4.8726E-01	4.8087E-01
20070424	1200	1.590E+02	5.0993E-01	5.0993E-01	5.0371E-01
20070425	1200	1.390E+02	4.4869E-01	4.4869E-01	4.4256E-01
20070426	1200	1.110E+02	3.6286E-01	3.6286E-01	3.5696E-01
20070427	1200	6.100E+01	2.0713E-01	2.0713E-01	2.0226E-01
20070428	1200	6.500E+01	2.1917E-01	2.1917E-01	2.1425E-01
20070429	1200	6.600E+01	2.2170E-01	2.2170E-01	2.1682E-01
20070430	1200	6.300E+01	2.1171E-01	2.1171E-01	2.0699E-01
20070501	1200	1.130E+02	3.6395E-01	3.6395E-01	3.5860E-01
20070502	1200	1.510E+02	4.7553E-01	4.7553E-01	4.7041E-01
20070503	1200	2.230E+02	6.8197E-01	6.8197E-01	6.7823E-01
20070504	1200	3.560E+02	1.0516E+00	1.0516E+00	1.0525E+00
20070505	1200	3.320E+02	9.8261E-01	9.8261E-01	9.8284E-01
20070506	1200	2.840E+02	8.4715E-01	8.4715E-01	8.4586E-01
20070507	1200	2.180E+02	6.6023E-01	6.6023E-01	6.5715E-01
20070508	1200	1.150E+02	3.6275E-01	3.6275E-01	3.5819E-01
20070509	1200	6.300E+01	2.0643E-01	2.0643E-01	2.0233E-01
20070510	1200	1.800E+01	6.4026E-02	6.4026E-02	6.1783E-02
20070511	1200	1.300E+01	4.7135E-02	4.7135E-02	4.5312E-02

20070512	1200	1.700E+01	6.0356E-02	6.0356E-02	5.8233E-02
20070513	1200	4.900E+01	1.6146E-01	1.6146E-01	1.5792E-01
20070514	1200	1.310E+02	4.0260E-01	4.0260E-01	3.9888E-01
20070515	1200	1.970E+02	5.8715E-01	5.8715E-01	5.8498E-01
20070516	1200	2.020E+02	5.9929E-01	5.9929E-01	5.9744E-01
20070517	1200	1.780E+02	5.3112E-01	5.3112E-01	5.2877E-01
20070518	1200	1.910E+02	5.6554E-01	5.6554E-01	5.6372E-01
20070519	1200	1.900E+02	5.6116E-01	5.6116E-01	5.5948E-01
20070520	1200	2.080E+02	6.0878E-01	6.0878E-01	6.0785E-01
20070521	1200	2.240E+02	6.5043E-01	6.5043E-01	6.5026E-01
20070522	1200	2.530E+02	7.2647E-01	7.2647E-01	7.2764E-01
20070523	1200	2.280E+02	6.5744E-01	6.5744E-01	6.5781E-01
20070524	1200	1.870E+02	5.4498E-01	5.4498E-01	5.4404E-01
20070525	1200	1.540E+02	4.5348E-01	4.5348E-01	4.5169E-01
20070526	1200	1.330E+02	3.9444E-01	3.9444E-01	3.9226E-01
20070527	1200	8.400E+01	2.5630E-01	2.5630E-01	2.5345E-01
20070528	1200	1.500E+01	5.1296E-02	5.1296E-02	4.9642E-02
20070529	1200	1.180E+02	3.4981E-01	3.4981E-01	3.4765E-01
20070530	1200	2.320E+02	6.5495E-01	6.5495E-01	6.5683E-01
20070531	1200	1.490E+02	4.3230E-01	4.3230E-01	4.3118E-01
20070601	1200	4.800E+01	1.5000E-01	1.5000E-01	1.4748E-01
20070602	1200	1.700E+01	5.6839E-02	5.6839E-02	5.5173E-02
20070603	1200	1.800E+01	5.9784E-02	5.9784E-02	5.8089E-02
20070604	1200	2.000E+01	6.5772E-02	6.5772E-02	6.4011E-02
20070605	1200	3.400E+01	1.0756E-01	1.0756E-01	1.0542E-01
20070606	1200	2.570E+02	7.0655E-01	7.0655E-01	7.1099E-01
20070607	1200	4.820E+02	1.2659E+00	1.2659E+00	1.2849E+00
20070608	1200	3.140E+02	8.4691E-01	8.4691E-01	8.5497E-01
20070609	1200	2.230E+02	6.1402E-01	6.1402E-01	6.1728E-01
20070610	1200	1.770E+02	4.9378E-01	4.9378E-01	4.9504E-01
20070611	1200	1.230E+02	3.5082E-01	3.5082E-01	3.5016E-01
20070612	1200	8.500E+01	2.4796E-01	2.4796E-01	2.4638E-01
20070613	1200	9.000E+01	2.6084E-01	2.6084E-01	2.5944E-01
20070614	1200	9.200E+01	2.6555E-01	2.6555E-01	2.6428E-01
20070615	1200	9.100E+01	2.6218E-01	2.6218E-01	2.6096E-01
20070616	1200	8.800E+01	2.5347E-01	2.5347E-01	2.5225E-01
20070617	1200	7.800E+01	2.2595E-01	2.2595E-01	2.2457E-01
20070618	1200	1.900E+01	6.0431E-02	6.0431E-02	5.9003E-02
20070619	1200	1.800E+01	5.7319E-02	5.7319E-02	5.5941E-02
20070620	1200	1.700E+01	5.4212E-02	5.4212E-02	5.2884E-02
20070621	1200	1.400E+01	4.5128E-02	4.5128E-02	4.3926E-02
20070622	1200	1.400E+01	4.5020E-02	4.5020E-02	4.3832E-02
20070623	1200	1.400E+01	4.4914E-02	4.4914E-02	4.3740E-02
20070624	1200	1.800E+01	5.6639E-02	5.6639E-02	5.5348E-02
20070625	1200	1.700E+01	5.3576E-02	5.3576E-02	5.2330E-02
20070626	1200	1.800E+01	5.6380E-02	5.6380E-02	5.5122E-02
20070627	1200	1.700E+01	5.3335E-02	5.3335E-02	5.2120E-02
20070628	1200	1.600E+01	5.0293E-02	5.0293E-02	4.9122E-02
20070629	1200	2.100E+01	6.4662E-02	6.4662E-02	6.3390E-02
20070630	1200	2.200E+01	6.7383E-02	6.7383E-02	6.6112E-02
20070701	1200	2.200E+01	6.7241E-02	6.7241E-02	6.5988E-02
20070702	1200	1.400E+01	4.4031E-02	4.4031E-02	4.2973E-02
20070703	1200	1.900E+01	5.8412E-02	5.8412E-02	5.7242E-02
20070704	1200	1.700E+01	5.2554E-02	5.2554E-02	5.1440E-02
20070705	1200	2.900E+01	8.6287E-02	8.6287E-02	8.5055E-02
20070706	1200	2.000E+01	6.0911E-02	6.0911E-02	5.9770E-02
20070707	1200	1.800E+01	5.5109E-02	5.5109E-02	5.4016E-02
20070708	1200	1.700E+01	5.2153E-02	5.2153E-02	5.1092E-02
20070709	1200	1.800E+01	5.4907E-02	5.4907E-02	5.3840E-02
20070710	1200	2.200E+01	6.6082E-02	6.6082E-02	6.4977E-02
20070711	1200	2.400E+01	7.1540E-02	7.1540E-02	7.0436E-02
20070712	1200	1.700E+01	5.1787E-02	5.1787E-02	5.0774E-02
20070713	1200	1.300E+01	4.0262E-02	4.0262E-02	3.9348E-02
20070714	1200	1.100E+01	3.4401E-02	3.4401E-02	3.3554E-02

20070715	1200	1.400E+01	4.3004E-02	4.3004E-02	4.2082E-02
20070716	1200	1.100E+01	3.4294E-02	3.4294E-02	3.3462E-02
20070717	1200	1.300E+01	4.0012E-02	4.0012E-02	3.9132E-02
20070718	1200	2.900E+01	8.4399E-02	8.4399E-02	8.3408E-02
20070719	1200	2.300E+01	6.7905E-02	6.7905E-02	6.6919E-02
20070720	1200	1.900E+01	5.6751E-02	5.6751E-02	5.5800E-02
20070721	1200	1.800E+01	5.3891E-02	5.3891E-02	5.2959E-02
20070722	1200	2.700E+01	7.8538E-02	7.8538E-02	7.7595E-02
20070723	1200	3.000E+01	8.6534E-02	8.6534E-02	8.5624E-02
20070724	1200	2.100E+01	6.1988E-02	6.1988E-02	6.1064E-02
20070725	1200	1.900E+01	5.6403E-02	5.6403E-02	5.5499E-02
20070726	1200	4.100E+01	1.1538E-01	1.1538E-01	1.1468E-01
20070727	1200	2.840E+02	6.9947E-01	6.9947E-01	7.1328E-01
20070728	1200	2.920E+02	7.1708E-01	7.1708E-01	7.3161E-01
20070729	1200	2.070E+02	5.1995E-01	5.1995E-01	5.2813E-01
20070730	1200	1.180E+02	3.0773E-01	3.0773E-01	3.1029E-01
20070731	1200	1.040E+02	2.7333E-01	2.7333E-01	2.7518E-01

North Fork Weber River near West Warren, Utah

```
##########################################################################
#
#  LOADEST Calibration File
#
#  Weber River at West Warren
#
#  Total Se (dissolved + particulate)
#  Updated with thru 6/2007; however, no data for 2/2007.
#  Artificial data was removed, because minimum sample size was met
#
##########################################################################
#
#CDATE      CTIME     CFLOW   CCONC
#
##########################################################################
20060517     1325     49      0.184
20060606     1030     48      0.216
20060712     0930     45      0.232
20060808     0945     52      0.148
20060907     0910     38      0.205
20061012     0930     66      0.121
20061109     0930     59      0.193
20061220     1245     27      0.192
20070302     1420     6      0.248
20070416     1245     29      0.269
20070517     1530     39      0.22
20070620     1025     11      0.211
```

```
##########################################################################
#
#  LOADEST Estimation File
#
#  Weber River at West Warren
#
#
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE     ETIME   EFLOW
#
##########################################################################
20060511    1200    101
20060512    1200    92
20060513    1200    67
20060514    1200    49
20060515    1200    47
20060516    1200    47
20060517    1200    49
20060518    1200    54
20060519    1200    68
20060520    1200    73
20060521    1200    55
20060522    1200    55
20060523    1200    55
20060524    1200    59
20060525    1200    53
20060526    1200    41
20060527    1200    28
20060528    1200    31
20060529    1200    69
20060530    1200    95
20060531    1200    96
20060601    1200    77
20060602    1200    52
20060603    1200    43
20060604    1200    38
20060605    1200    35
20060606    1200    48
20060607    1200    93
20060608    1200    107
20060609    1200    103
20060610    1200    108
20060611    1200    120
20060612    1200    127
20060613    1200    115
20060614    1200    97
20060615    1200    70
20060616    1200    47
```

20060617	1200	39
20060618	1200	29
20060619	1200	14
20060620	1200	17
20060621	1200	23
20060622	1200	27
20060623	1200	31
20060624	1200	34
20060625	1200	35
20060626	1200	37
20060627	1200	38
20060628	1200	38
20060629	1200	41
20060630	1200	42
20060701	1200	42
20060702	1200	41
20060703	1200	43
20060704	1200	45
20060705	1200	45
20060706	1200	46
20060707	1200	48
20060708	1200	47
20060709	1200	46
20060710	1200	46
20060711	1200	46
20060712	1200	45
20060713	1200	45
20060714	1200	45
20060715	1200	44
20060716	1200	43
20060717	1200	43
20060718	1200	31
20060719	1200	9.6
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20060721	1200	28
20060722	1200	33
20060723	1200	38
20060724	1200	39
20060725	1200	41
20060726	1200	43
20060727	1200	45
20060728	1200	42
20060729	1200	38
20060730	1200	36
20060731	1200	35
20060801	1200	41
20060802	1200	44
20060803	1200	59
20060804	1200	56
20060805	1200	53
20060806	1200	52
20060807	1200	51
20060808	1200	52
20060809	1200	48
20060810	1200	45
20060811	1200	40

20060812	1200	38
20060813	1200	38
20060814	1200	38
20060815	1200	38
20060816	1200	36
20060817	1200	35
20060818	1200	35
20060819	1200	35
20060820	1200	35
20060821	1200	35
20060822	1200	35
20060823	1200	35
20060824	1200	34
20060825	1200	33
20060826	1200	34
20060827	1200	40
20060828	1200	46
20060829	1200	48
20060830	1200	46
20060831	1200	42
20060901	1200	40
20060902	1200	39
20060903	1200	40
20060904	1200	40
20060905	1200	40
20060906	1200	38
20060907	1200	38
20060908	1200	37
20060909	1200	36
20060910	1200	39
20060911	1200	41
20060912	1200	42
20060913	1200	40
20060914	1200	38
20060915	1200	49
20060916	1200	77
20060917	1200	106
20060918	1200	114
20060919	1200	104
20060920	1200	89
20060921	1200	88
20060922	1200	91
20060923	1200	93
20060924	1200	92
20060925	1200	76
20060926	1200	61
20060927	1200	55
20060928	1200	58
20060929	1200	62
20060930	1200	63
20061001	1200	61
20061002	1200	60
20061003	1200	59
20061004	1200	61
20061005	1200	62
20061006	1200	70

20061007	1200	80
20061008	1200	93
20061009	1200	94
20061010	1200	79
20061011	1200	67
20061012	1200	66
20061013	1200	66
20061014	1200	65
20061015	1200	66
20061016	1200	69
20061017	1200	59
20061018	1200	44
20061019	1200	42
20061020	1200	45
20061021	1200	47
20061022	1200	56
20061023	1200	60
20061024	1200	61
20061025	1200	61
20061026	1200	61
20061027	1200	64
20061028	1200	64
20061029	1200	63
20061030	1200	61
20061031	1200	60
20061101	1200	60
20061102	1200	59
20061103	1200	59
20061104	1200	59
20061105	1200	58
20061106	1200	58
20061107	1200	58
20061108	1200	57
20061109	1200	59
20061110	1200	59
20061111	1200	62
20061112	1200	61
20061113	1200	62
20061114	1200	67
20061115	1200	87
20061116	1200	96
20061117	1200	83
20061118	1200	72
20061119	1200	65
20061120	1200	61
20061121	1200	58
20061122	1200	55
20061123	1200	53
20061124	1200	52
20061125	1200	51
20061126	1200	50
20061127	1200	50
20061128	1200	47
20061129	1200	47
20061130	1200	45
20061201	1200	46

20061202	1200	43
20061203	1200	41
20061204	1200	40
20061205	1200	39
20061206	1200	36
20061207	1200	31
20061208	1200	28
20061209	1200	27
20061210	1200	27
20061211	1200	28
20061212	1200	28
20061213	1200	28
20061214	1200	29
20061215	1200	31
20061216	1200	35
20061217	1200	35
20061218	1200	32
20061219	1200	29
20061220	1200	27
20061221	1200	25
20061222	1200	25
20061223	1200	31
20061224	1200	38
20061225	1200	43
20061226	1200	49
20061227	1200	51
20061228	1200	51
20061229	1200	55
20061230	1200	62
20061231	1200	64
20070101	1200	60
20070102	1200	54
20070103	1200	58
20070104	1200	64
20070105	1200	63
20070106	1200	67
20070107	1200	64
20070108	1200	62
20070109	1200	60
20070110	1200	51
20070111	1200	47
20070112	1200	48
20070113	1200	51
20070114	1200	52
20070115	1200	49
20070116	1200	42
20070117	1200	36
20070118	1200	32
20070119	1200	29
20070120	1200	35
20070121	1200	38
20070122	1200	36
20070123	1200	34
20070124	1200	27
20070125	1200	21
20070126	1200	25

20070127	1200	24
20070128	1200	24
20070129	1200	23
20070130	1200	24
20070131	1200	25
20070201	1200	17
20070202	1200	7
20070203	1200	8
20070204	1200	8
20070205	1200	7
20070206	1200	7
20070207	1200	7
20070208	1200	12
20070209	1200	18
20070210	1200	16
20070211	1200	23
20070212	1200	37
20070213	1200	26
20070214	1200	17
20070215	1200	9.6
20070216	1200	8.4
20070217	1200	13
20070218	1200	13
20070219	1200	9.4
20070220	1200	13
20070221	1200	7.7
20070222	1200	5.3
20070223	1200	5.2
20070224	1200	4.9
20070225	1200	4.1
20070226	1200	3.5
20070227	1200	5
20070228	1200	3.4
20070301	1200	4.7
20070302	1200	6.3
20070303	1200	5
20070304	1200	3.5
20070305	1200	2.6
20070306	1200	4.2
20070307	1200	6.5
20070308	1200	12
20070309	1200	23
20070310	1200	38
20070311	1200	42
20070312	1200	44
20070313	1200	36
20070314	1200	33
20070315	1200	34
20070316	1200	33
20070317	1200	32
20070318	1200	30
20070319	1200	30
20070320	1200	35
20070321	1200	39
20070322	1200	26
20070323	1200	11

20070324	1200	6.6
20070325	1200	6.7
20070326	1200	14
20070327	1200	21
20070328	1200	26
20070329	1200	33
20070330	1200	36
20070331	1200	36
20070401	1200	35
20070402	1200	35
20070403	1200	36
20070404	1200	37
20070405	1200	37
20070406	1200	37
20070407	1200	40
20070408	1200	43
20070409	1200	52
20070410	1200	56
20070411	1200	52
20070412	1200	43
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20070416	1200	29
20070417	1200	29
20070418	1200	29
20070419	1200	29
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20070423	1200	38
20070424	1200	36
20070425	1200	37
20070426	1200	36
20070427	1200	35
20070428	1200	33
20070429	1200	33
20070430	1200	31
20070501	1200	31
20070502	1200	30
20070503	1200	29
20070504	1200	33
20070505	1200	34
20070506	1200	39
20070507	1200	40
20070508	1200	41
20070509	1200	40
20070510	1200	38
20070511	1200	37
20070512	1200	40
20070513	1200	37
20070514	1200	36
20070515	1200	38
20070516	1200	39
20070517	1200	39
20070518	1200	38

20070519	1200	39
20070520	1200	40
20070521	1200	45
20070522	1200	49
20070523	1200	60
20070524	1200	66
20070525	1200	55
20070526	1200	42
20070527	1200	36
20070528	1200	35
20070529	1200	36
20070530	1200	38
20070531	1200	41
20070601	1200	43
20070602	1200	41
20070603	1200	39
20070604	1200	37
20070605	1200	35
20070606	1200	27
20070607	1200	15
20070608	1200	9.7
20070609	1200	7.1
20070610	1200	20
20070611	1200	27
20070612	1200	38
20070613	1200	42
20070614	1200	34
20070615	1200	23
20070616	1200	20
20070617	1200	17
20070618	1200	13
20070619	1200	10
20070620	1200	11
20070621	1200	13
20070622	1200	12
20070623	1200	8.9
20070624	1200	7.2
20070625	1200	8.1
20070626	1200	9.3
20070627	1200	11
20070628	1200	13
20070629	1200	14
20070630	1200	13
20070701	1200	12
20070702	1200	12
20070703	1200	12
20070704	1200	13
20070705	1200	16
20070706	1200	17
20070707	1200	16
20070708	1200	15
20070709	1200	12
20070710	1200	11
20070711	1200	15
20070712	1200	17
20070713	1200	18

20070714	1200	20
20070715	1200	22
20070716	1200	22
20070717	1200	20
20070718	1200	16
20070719	1200	12
20070720	1200	9.8
20070721	1200	10
20070722	1200	11
20070723	1200	12
20070724	1200	13
20070725	1200	16
20070726	1200	20
20070727	1200	23
20070728	1200	25
20070729	1200	26
20070730	1200	26
20070731	1200	26

```
                                LOADEST
                     A Program to Estimate Constituent Loads
                  U.S. Geological Survey, Version: MOD36 (Sep 2004)
                  ------------------------------------------------


Weber River at West Warren


Constituent: selenium



-----------------------------------------------------------------------

    Constituent Output File Part Ia: Calibration (Load Regression)

-----------------------------------------------------------------------

Number of Observations           :    12
Number of Uncensored Observations:    12
"center" of Decimal Time         :   2006.920
"center" of Ln(Q)                :    3.0078
Period of record                 :    2006-2007


Model Evaluation Criteria Based on AMLE Results
-----------------------------------------------

Model #     AIC           SPPC
-----------------------------------
 1          -0.256           1.052
 2          -0.343           1.329
 3          -0.074          -0.283
 4          -0.264           0.614
 5          -0.152          -0.056
 6          -0.256           0.327
 7          -0.050          -0.910
 8          -0.034          -1.250
 9           0.040          -1.937

Model # 2 selected


Selected Model:
---------------

Ln(Load) = a0 + a1 LnQ + a2 LnQ^2

where:
      Load  = constituent load [kg/d]
      LnQ   = Ln(Q) - center of Ln(Q)


      Model Coefficients

       a0        a1        a2
```

```
      ------------------------------
AMLE  -4.4001    0.8402   -0.1997
MLE   -4.4001    0.8402   -0.1997
LAD   -4.5137    0.8881   -0.0149


AMLE Regression Statistics
--------------------------
R-Squared [%]                   : 93.32
Prob. Plot Corr. Coeff. (PPCC) : 0.9508
Serial Correlation of Residuals: -.2685

Coeff.    Std.Dev.    t-ratio      P Value
--------------------------------------------
a0        0.1051       -41.86      1.758E-15
a1        0.0758        11.09      1.376E-08
a2        0.1182        -1.69      6.909E-02


Correlation Between Explanatory Variables
-----------------------------------------

      Explanatory variable corresponding to:

       a1
      ----------
  a2   0.0000


Additional Regression Statistics
--------------------------------
      Residual                 Turnbull-Weiss
      Variance               Stat    DF    PL
      ----------------------------------------------
AMLE     0.032               1.36    1     2.437E-01
MLE      0.032               1.36    1     2.437E-01



---------------------------------------------------------------------

Constituent Output File Part Ib: Calibration (Concentration Regression)

---------------------------------------------------------------------



AMLE Regression Statistics
--------------------------

Model # 2 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 LnQ^2

where:
      Conc  = constituent concentration
      LnQ   = Ln(Q) - center of Ln(Q)


Concentration Regression Results
--------------------------------
R-Squared [%]                   : 44.78
Residual Variance               : 0.0324
```

Coeff.	Value	Std.Dev.	t-ratio	P Value
a0	-1.3948	0.1051	-13.27	1.706E-09
a1	-0.1598	0.0758	-2.11	2.820E-02
a2	-0.1997	0.1182	-1.69	6.909E-02

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060511-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	39.	6.	8.	28.	42.	51.	64.	66.
Est.	41.	3.	12.	27.	38.	52.	66.	127.

WARNING: The maximum estimation data set steamflow exceeds the maximum calibration data set streamflow. Load estimates require extrapolation.

Maximum Estimation Streamflow : 1.2700E+02
Maximum Calibration Streamflow: 6.6000E+01

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060511-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

	N	Mean Load	95% Conf.Intervals Lower	95% Conf.Intervals Upper	Std Error Prediction	Standard Error
Est. Period	447	1.832E-02	1.631E-02	2.051E-02	1.074E-03	1.061E-03

MLE Load Estimates

	N	Mean Load	Standard Error

Est. Period	447	1.832E-02	1.059E-03

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	447	1.922E-02	2.480E-03

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.001	0.016	0.020	0.023	0.025	0.027	0.028	0.028
MLE	0.001	0.016	0.020	0.023	0.025	0.027	0.028	0.028
LAD	0.002	0.014	0.019	0.024	0.030	0.038	0.046	0.052

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.091	0.179	0.208	0.231	0.253	0.258	0.259	0.259
MLE	0.091	0.179	0.208	0.231	0.253	0.258	0.259	0.259
LAD	0.17	0.19	0.20	0.21	0.23	0.24	0.25	0.25

Individual Load Estimates for Weber River near West Warren, uT.
Selenium looad in kg/day

			Loads Estimated by:		
Date	Time	Flow	AMLE	MLE	LAD
20060511	1200	1.010E+02	2.7911E-02	2.7911E-02	4.2865E-02
20060512	1200	9.200E+01	2.7561E-02	2.7561E-02	3.9626E-02
20060513	1200	6.700E+01	2.5458E-02	2.5458E-02	3.0285E-02
20060514	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20060515	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20060516	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20060517	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20060518	1200	5.400E+01	2.3419E-02	2.3419E-02	2.5180E-02
20060519	1200	6.800E+01	2.5583E-02	2.5583E-02	3.0669E-02
20060520	1200	7.300E+01	2.6149E-02	2.6149E-02	3.2578E-02
20060521	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20060522	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20060523	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20060524	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20060525	1200	5.300E+01	2.3226E-02	2.3226E-02	2.4778E-02
20060526	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060527	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20060528	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20060529	1200	6.900E+01	2.5704E-02	2.5704E-02	3.1053E-02
20060530	1200	9.500E+01	2.7697E-02	2.7697E-02	4.0713E-02
20060531	1200	9.600E+01	2.7738E-02	2.7738E-02	4.1073E-02
20060601	1200	7.700E+01	2.6537E-02	2.6537E-02	3.4088E-02
20060602	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20060603	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20060604	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060605	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060606	1200	4.800E+01	2.2169E-02	2.2169E-02	2.2752E-02
20060607	1200	9.300E+01	2.7608E-02	2.7608E-02	3.9989E-02
20060608	1200	1.070E+02	2.8056E-02	2.8056E-02	4.4993E-02
20060609	1200	1.030E+02	2.7966E-02	2.7967E-02	4.3577E-02
20060610	1200	1.080E+02	2.8074E-02	2.8074E-02	4.5345E-02
20060611	1200	1.200E+02	2.8171E-02	2.8172E-02	4.9525E-02
20060612	1200	1.270E+02	2.8139E-02	2.8140E-02	5.1924E-02
20060613	1200	1.150E+02	2.8156E-02	2.8157E-02	4.7794E-02
20060614	1200	9.700E+01	2.7776E-02	2.7776E-02	4.1433E-02
20060615	1200	7.000E+01	2.5821E-02	2.5821E-02	3.1436E-02
20060616	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20060617	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20060618	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20060619	1200	1.400E+01	8.8564E-03	8.8564E-03	7.6860E-03
20060620	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20060621	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20060622	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20060623	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20060624	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20060625	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060626	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20060627	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060628	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060629	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060630	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20060701	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20060702	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060703	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20060704	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02

20060705	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060706	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060707	1200	4.800E+01	2.2169E-02	2.2169E-02	2.2752E-02
20060708	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20060709	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060710	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060711	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060712	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060713	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060714	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060715	1200	4.400E+01	2.1204E-02	2.1204E-02	2.1105E-02
20060716	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20060717	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20060718	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20060719	1200	9.600E+00	5.9299E-03	5.9299E-03	5.4634E-03
20060720	1200	2.200E+01	1.3292E-02	1.3292E-02	1.1505E-02
20060721	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20060722	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20060723	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060724	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20060725	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060726	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20060727	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060728	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20060729	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060730	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20060731	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060801	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060802	1200	4.400E+01	2.1204E-02	2.1204E-02	2.1105E-02
20060803	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20060804	1200	5.600E+01	2.3788E-02	2.3789E-02	2.5978E-02
20060805	1200	5.300E+01	2.3226E-02	2.3226E-02	2.4778E-02
20060806	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20060807	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20060808	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20060809	1200	4.800E+01	2.2169E-02	2.2169E-02	2.2752E-02
20060810	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20060811	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060812	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060813	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060814	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060815	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060816	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20060817	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060818	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060819	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060820	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060821	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060822	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060823	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20060824	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20060825	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20060826	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20060827	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060828	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060829	1200	4.800E+01	2.2169E-02	2.2169E-02	2.2752E-02
20060830	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20060831	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20060901	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060902	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20060903	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060904	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060905	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060906	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02

20060907	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060908	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20060909	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20060910	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20060911	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20060912	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20060913	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20060914	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20060915	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20060916	1200	7.700E+01	2.6537E-02	2.6537E-02	3.4088E-02
20060917	1200	1.060E+02	2.8036E-02	2.8036E-02	4.4640E-02
20060918	1200	1.140E+02	2.8149E-02	2.8149E-02	4.7446E-02
20060919	1200	1.040E+02	2.7992E-02	2.7992E-02	4.3932E-02
20060920	1200	8.900E+01	2.7404E-02	2.7404E-02	3.8533E-02
20060921	1200	8.800E+01	2.7347E-02	2.7347E-02	3.8168E-02
20060922	1200	9.100E+01	2.7511E-02	2.7511E-02	3.9263E-02
20060923	1200	9.300E+01	2.7608E-02	2.7608E-02	3.9989E-02
20060924	1200	9.200E+01	2.7561E-02	2.7561E-02	3.9626E-02
20060925	1200	7.600E+01	2.6445E-02	2.6445E-02	3.3712E-02
20060926	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20060927	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20060928	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20060929	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20060930	1200	6.300E+01	2.4917E-02	2.4917E-02	2.8734E-02
20061001	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061002	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20061003	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061004	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061005	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20061006	1200	7.000E+01	2.5821E-02	2.5821E-02	3.1436E-02
20061007	1200	8.000E+01	2.6793E-02	2.6793E-02	3.5211E-02
20061008	1200	9.300E+01	2.7608E-02	2.7608E-02	3.9989E-02
20061009	1200	9.400E+01	2.7654E-02	2.7654E-02	4.0351E-02
20061010	1200	7.900E+01	2.6711E-02	2.6711E-02	3.4838E-02
20061011	1200	6.700E+01	2.5458E-02	2.5458E-02	3.0285E-02
20061012	1200	6.600E+01	2.5329E-02	2.5329E-02	2.9899E-02
20061013	1200	6.600E+01	2.5329E-02	2.5329E-02	2.9899E-02
20061014	1200	6.500E+01	2.5196E-02	2.5196E-02	2.9512E-02
20061015	1200	6.600E+01	2.5329E-02	2.5329E-02	2.9899E-02
20061016	1200	6.900E+01	2.5704E-02	2.5704E-02	3.1053E-02
20061017	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061018	1200	4.400E+01	2.1204E-02	2.1204E-02	2.1105E-02
20061019	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20061020	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20061021	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20061022	1200	5.600E+01	2.3788E-02	2.3789E-02	2.5978E-02
20061023	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20061024	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061025	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061026	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061027	1200	6.400E+01	2.5059E-02	2.5059E-02	2.9124E-02
20061028	1200	6.400E+01	2.5059E-02	2.5059E-02	2.9124E-02
20061029	1200	6.300E+01	2.4917E-02	2.4917E-02	2.8734E-02
20061030	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061031	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20061101	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20061102	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061103	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061104	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061105	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20061106	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20061107	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20061108	1200	5.700E+01	2.3965E-02	2.3965E-02	2.6376E-02
20061109	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02

20061110	1200	5.900E+01	2.4302E-02	2.4302E-02	2.7167E-02
20061111	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20061112	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061113	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20061114	1200	6.700E+01	2.5458E-02	2.5458E-02	3.0285E-02
20061115	1200	8.700E+01	2.7287E-02	2.7287E-02	3.7801E-02
20061116	1200	9.600E+01	2.7738E-02	2.7738E-02	4.1073E-02
20061117	1200	8.300E+01	2.7022E-02	2.7022E-02	3.6326E-02
20061118	1200	7.200E+01	2.6043E-02	2.6043E-02	3.2199E-02
20061119	1200	6.500E+01	2.5196E-02	2.5196E-02	2.9512E-02
20061120	1200	6.100E+01	2.4619E-02	2.4619E-02	2.7953E-02
20061121	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20061122	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20061123	1200	5.300E+01	2.3226E-02	2.3226E-02	2.4778E-02
20061124	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20061125	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20061126	1200	5.000E+01	2.2611E-02	2.2611E-02	2.3567E-02
20061127	1200	5.000E+01	2.2611E-02	2.2611E-02	2.3567E-02
20061128	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20061129	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20061130	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20061201	1200	4.600E+01	2.1701E-02	2.1701E-02	2.1931E-02
20061202	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20061203	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20061204	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20061205	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20061206	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20061207	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20061208	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20061209	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20061210	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20061211	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20061212	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20061213	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20061214	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20061215	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20061216	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20061217	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20061218	1200	3.200E+01	1.7526E-02	1.7526E-02	1.5999E-02
20061219	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20061220	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20061221	1200	2.500E+01	1.4698E-02	1.4698E-02	1.2880E-02
20061222	1200	2.500E+01	1.4698E-02	1.4698E-02	1.2880E-02
20061223	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20061224	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20061225	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20061226	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20061227	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20061228	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20061229	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20061230	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20061231	1200	6.400E+01	2.5059E-02	2.5059E-02	2.9124E-02
20070101	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20070102	1200	5.400E+01	2.3419E-02	2.3419E-02	2.5180E-02
20070103	1200	5.800E+01	2.4136E-02	2.4136E-02	2.6772E-02
20070104	1200	6.400E+01	2.5059E-02	2.5059E-02	2.9124E-02
20070105	1200	6.300E+01	2.4917E-02	2.4917E-02	2.8734E-02
20070106	1200	6.700E+01	2.5458E-02	2.5458E-02	3.0285E-02
20070107	1200	6.400E+01	2.5059E-02	2.5059E-02	2.9124E-02
20070108	1200	6.200E+01	2.4770E-02	2.4770E-02	2.8344E-02
20070109	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20070110	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20070111	1200	4.700E+01	2.1938E-02	2.1939E-02	2.2343E-02
20070112	1200	4.800E+01	2.2169E-02	2.2169E-02	2.2752E-02

20070113	1200	5.100E+01	2.2822E-02	2.2822E-02	2.3972E-02
20070114	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20070115	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20070116	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20070117	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070118	1200	3.200E+01	1.7526E-02	1.7526E-02	1.5999E-02
20070119	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070120	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070121	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070122	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070123	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20070124	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20070125	1200	2.100E+01	1.2795E-02	1.2795E-02	1.1040E-02
20070126	1200	2.500E+01	1.4698E-02	1.4698E-02	1.2880E-02
20070127	1200	2.400E+01	1.4243E-02	1.4243E-02	1.2425E-02
20070128	1200	2.400E+01	1.4243E-02	1.4243E-02	1.2425E-02
20070129	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20070130	1200	2.400E+01	1.4243E-02	1.4243E-02	1.2425E-02
20070131	1200	2.500E+01	1.4698E-02	1.4698E-02	1.2880E-02
20070201	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20070202	1200	7.000E+00	4.0430E-03	4.0430E-03	4.0921E-03
20070203	1200	8.000E+00	4.7801E-03	4.7801E-03	4.6256E-03
20070204	1200	8.000E+00	4.7801E-03	4.7801E-03	4.6256E-03
20070205	1200	7.000E+00	4.0430E-03	4.0430E-03	4.0921E-03
20070206	1200	7.000E+00	4.0430E-03	4.0430E-03	4.0921E-03
20070207	1200	7.000E+00	4.0430E-03	4.0430E-03	4.0921E-03
20070208	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070209	1200	1.800E+01	1.1209E-02	1.1209E-02	9.6255E-03
20070210	1200	1.600E+01	1.0068E-02	1.0068E-02	8.6641E-03
20070211	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20070212	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070213	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02
20070214	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20070215	1200	9.600E+00	5.9299E-03	5.9299E-03	5.4634E-03
20070216	1200	8.400E+00	5.0713E-03	5.0713E-03	4.8368E-03
20070217	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070218	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070219	1200	9.400E+00	5.7884E-03	5.7884E-03	5.3596E-03
20070220	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070221	1200	7.700E+00	4.5602E-03	4.5602E-03	4.4664E-03
20070222	1200	5.300E+00	2.7734E-03	2.7734E-03	3.1647E-03
20070223	1200	5.200E+00	2.6988E-03	2.6988E-03	3.1093E-03
20070224	1200	4.900E+00	2.4755E-03	2.4755E-03	2.9422E-03
20070225	1200	4.100E+00	1.8879E-03	1.8879E-03	2.4915E-03
20070226	1200	3.500E+00	1.4607E-03	1.4607E-03	2.1478E-03
20070227	1200	5.000E+00	2.5498E-03	2.5498E-03	2.9980E-03
20070228	1200	3.400E+00	1.3912E-03	1.3913E-03	2.0901E-03
20070301	1200	4.700E+00	2.3273E-03	2.3273E-03	2.8302E-03
20070302	1200	6.300E+00	3.5213E-03	3.5213E-03	3.7136E-03
20070303	1200	5.000E+00	2.5498E-03	2.5498E-03	2.9980E-03
20070304	1200	3.500E+00	1.4607E-03	1.4607E-03	2.1478E-03
20070305	1200	2.600E+00	8.6230E-04	8.6246E-04	1.6220E-03
20070306	1200	4.200E+00	1.9604E-03	1.9604E-03	2.5482E-03
20070307	1200	6.500E+00	3.6707E-03	3.6707E-03	3.8222E-03
20070308	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070309	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20070310	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070311	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20070312	1200	4.400E+01	2.1204E-02	2.1204E-02	2.1105E-02
20070313	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070314	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070315	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20070316	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070317	1200	3.200E+01	1.7526E-02	1.7526E-02	1.5999E-02

20070318	1200	3.000E+01	1.6777E-02	1.6777E-02	1.5120E-02
20070319	1200	3.000E+01	1.6777E-02	1.6777E-02	1.5120E-02
20070320	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070321	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070322	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02
20070323	1200	1.100E+01	6.9000E-03	6.9000E-03	6.1824E-03
20070324	1200	6.600E+00	3.7453E-03	3.7453E-03	3.8764E-03
20070325	1200	6.700E+00	3.8199E-03	3.8199E-03	3.9305E-03
20070326	1200	1.400E+01	8.8564E-03	8.8564E-03	7.6860E-03
20070327	1200	2.100E+01	1.2795E-02	1.2795E-02	1.1040E-02
20070328	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02
20070329	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070330	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070331	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070401	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070402	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070403	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070404	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070405	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070406	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070407	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20070408	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20070409	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20070410	1200	5.600E+01	2.3788E-02	2.3789E-02	2.5978E-02
20070411	1200	5.200E+01	2.3027E-02	2.3027E-02	2.4376E-02
20070412	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20070413	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070414	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20070415	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20070416	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070417	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070418	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070419	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070420	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20070421	1200	2.800E+01	1.5982E-02	1.5982E-02	1.4232E-02
20070422	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070423	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070424	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070425	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070426	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070427	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070428	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070429	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070430	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20070501	1200	3.100E+01	1.7157E-02	1.7157E-02	1.5560E-02
20070502	1200	3.000E+01	1.6777E-02	1.6777E-02	1.5120E-02
20070503	1200	2.900E+01	1.6385E-02	1.6385E-02	1.4677E-02
20070504	1200	3.300E+01	1.7884E-02	1.7884E-02	1.6435E-02
20070505	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20070506	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070507	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20070508	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20070509	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20070510	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070511	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070512	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02
20070513	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070514	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070515	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070516	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070517	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070518	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070519	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070520	1200	4.000E+01	2.0118E-02	2.0118E-02	1.9432E-02

20070521	1200	4.500E+01	2.1456E-02	2.1456E-02	2.1519E-02
20070522	1200	4.900E+01	2.2393E-02	2.2393E-02	2.3160E-02
20070523	1200	6.000E+01	2.4463E-02	2.4463E-02	2.7560E-02
20070524	1200	6.600E+01	2.5329E-02	2.5329E-02	2.9899E-02
20070525	1200	5.500E+01	2.3607E-02	2.3607E-02	2.5580E-02
20070526	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20070527	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070528	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070529	1200	3.600E+01	1.8898E-02	1.8898E-02	1.7731E-02
20070530	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070531	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20070601	1200	4.300E+01	2.0944E-02	2.0944E-02	2.0689E-02
20070602	1200	4.100E+01	2.0402E-02	2.0402E-02	1.9853E-02
20070603	1200	3.900E+01	1.9827E-02	1.9827E-02	1.9009E-02
20070604	1200	3.700E+01	1.9217E-02	1.9217E-02	1.8159E-02
20070605	1200	3.500E+01	1.8570E-02	1.8570E-02	1.7301E-02
20070606	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20070607	1200	1.500E+01	9.4713E-03	9.4713E-03	8.1773E-03
20070608	1200	9.700E+00	6.0003E-03	6.0003E-03	5.5151E-03
20070609	1200	7.100E+00	4.1172E-03	4.1172E-03	4.1459E-03
20070610	1200	2.000E+01	1.2282E-02	1.2282E-02	1.0572E-02
20070611	1200	2.700E+01	1.5567E-02	1.5567E-02	1.3784E-02
20070612	1200	3.800E+01	1.9526E-02	1.9526E-02	1.8585E-02
20070613	1200	4.200E+01	2.0677E-02	2.0677E-02	2.0272E-02
20070614	1200	3.400E+01	1.8232E-02	1.8232E-02	1.6869E-02
20070615	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20070616	1200	2.000E+01	1.2282E-02	1.2282E-02	1.0572E-02
20070617	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20070618	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070619	1200	1.000E+01	6.2106E-03	6.2107E-03	5.6701E-03
20070620	1200	1.100E+01	6.9000E-03	6.9000E-03	6.1824E-03
20070621	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070622	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070623	1200	8.900E+00	5.4319E-03	5.4319E-03	5.0991E-03
20070624	1200	7.200E+00	4.1913E-03	4.1913E-03	4.1995E-03
20070625	1200	8.100E+00	4.8531E-03	4.8531E-03	4.6785E-03
20070626	1200	9.300E+00	5.7174E-03	5.7174E-03	5.3077E-03
20070627	1200	1.100E+01	6.9000E-03	6.9000E-03	6.1824E-03
20070628	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070629	1200	1.400E+01	8.8564E-03	8.8564E-03	7.6860E-03
20070630	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070701	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070702	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070703	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070704	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070705	1200	1.600E+01	1.0068E-02	1.0068E-02	8.6641E-03
20070706	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20070707	1200	1.600E+01	1.0068E-02	1.0068E-02	8.6641E-03
20070708	1200	1.500E+01	9.4713E-03	9.4713E-03	8.1773E-03
20070709	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070710	1200	1.100E+01	6.9000E-03	6.9000E-03	6.1824E-03
20070711	1200	1.500E+01	9.4713E-03	9.4713E-03	8.1773E-03
20070712	1200	1.700E+01	1.0647E-02	1.0647E-02	9.1468E-03
20070713	1200	1.800E+01	1.1209E-02	1.1209E-02	9.6255E-03
20070714	1200	2.000E+01	1.2282E-02	1.2282E-02	1.0572E-02
20070715	1200	2.200E+01	1.3292E-02	1.3292E-02	1.1505E-02
20070716	1200	2.200E+01	1.3292E-02	1.3292E-02	1.1505E-02
20070717	1200	2.000E+01	1.2282E-02	1.2282E-02	1.0572E-02
20070718	1200	1.600E+01	1.0068E-02	1.0068E-02	8.6641E-03
20070719	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03
20070720	1200	9.800E+00	6.0706E-03	6.0706E-03	5.5669E-03
20070721	1200	1.000E+01	6.2106E-03	6.2107E-03	5.6701E-03
20070722	1200	1.100E+01	6.9000E-03	6.9000E-03	6.1824E-03
20070723	1200	1.200E+01	7.5709E-03	7.5709E-03	6.6889E-03

20070724	1200	1.300E+01	8.2230E-03	8.2230E-03	7.1900E-03
20070725	1200	1.600E+01	1.0068E-02	1.0068E-02	8.6641E-03
20070726	1200	2.000E+01	1.2282E-02	1.2282E-02	1.0572E-02
20070727	1200	2.300E+01	1.3775E-02	1.3775E-02	1.1966E-02
20070728	1200	2.500E+01	1.4698E-02	1.4698E-02	1.2880E-02
20070729	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02
20070730	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02
20070731	1200	2.600E+01	1.5139E-02	1.5139E-02	1.3333E-02

GSL Farmington Bay Outflow at Causeway Bridge

```
##########################################################################
#
#  LOADEST Calibration File
#
#  Farmington Bay outflow
#
#
#  Total Se (dissolved + particulate)
#
##########################################################################
#
#CDATE     CTIME    CFLOW     CCONC
#
##########################################################################
20060508     1500     118     0.427
20060509     1500     729     0.596
20060510     1500     457     0.853
20060511     1500     412     0.628
20060513     1500     685     0.586
20060517     1500     484     0.755
20060520     1500     210     0.882
20060523     1500     653     0.741
20060524     1130     347     0.608
20060525     1100     361     0.679
20060526     1130     491     0.751
20060529     1130     128     0.646
20060601     1130     306     0.614
20060603     1130     436     0.55
20060609     1129      84     0.662
20060718     1100     186     0.269
20060808     1245      68     0.455
20060907     1220     355     0.503
20061010     1100     474     0.479
20061121     1115     423     0.374
20061220     1615     296     0.468
20070202     1250     273     0.484
20070305     1350     230     0.64
20070419     1045     858     0.543
20070420     1100     398     0.667
20070421     1100     831     0.623
20070422     1100     920     0.622
20070424     1100      50     0.613
20070425     1100     664     0.585
20070427     1100     376     0.682
20070429     1100     562     0.679
20070501     1100     495     0.693
20070503     1100     0.0001     0.702
20070509     1115     0.0001     0.693
20070511     1115     0.0001     0.559
20070514     1115     0.0001     0.624
20070518     1430     442     0.573
20070519     1115     305     0.617
20070524     1215     800     0.615
```

20070527	1215	559	0.556
20070529	1215	0.0001	0.657
20070531	1215	255	0.586
20070602	1215	167	0.57
20070606	1215	0.0001	0.742
20070607	1215	0.0001	0.591
20070619	1410	323	0.389
20070717	1400	125	0.588

```
##########################################################################
#
#  LOADEST Estimation File
#
#  Farmington Bay outflow
# **all negative flow values set to 0.0001**
# Before 10/10/06 Missing discharge values calculated from
# Surplus-Goggin+Jordan. After 10/10/06 missing values average of
# values bordering missing period (usually less than 5 days)
#
#
#
##########################################################################
#
#  Number of observations per day, NOBSPD (col. 1-5)
#
##########################################################################
1
##########################################################################
#
# EDATE        ETIME      EFLOW
#
##########################################################################
20060503       1200       262
20060504       1200       313
20060505       1200       255
20060506       1200       149.2
20060507       1200       150
20060508       1200       118.3
20060509       1200       729
20060510       1200       457
20060511       1200       412
20060512       1200       431
20060513       1200       685
20060514       1200       485
20060515       1200       435
20060516       1200       451
20060517       1200       484
20060518       1200       462
20060519       1200       303
20060520       1200       210
20060521       1200       460
20060522       1200       621
20060523       1200       653
20060524       1200       347
20060525       1200       361
20060526       1200       491
20060527       1200       462
20060528       1200       204
20060529       1200       128
20060530       1200       285
20060531       1200       273
20060601       1200       306
20060602       1200       337
20060603       1200       436
20060604       1200       350
```

20060605	1200	465
20060606	1200	320
20060607	1200	350
20060608	1200	387
20060609	1200	84
20060610	1200	345
20060611	1200	323
20060612	1200	312
20060613	1200	116
20060614	1200	248
20060615	1200	116
20060616	1200	113
20060617	1200	170
20060618	1200	230
20060619	1200	359
20060620	1200	336
20060621	1200	319
20060622	1200	299
20060623	1200	317
20060624	1200	338
20060625	1200	355
20060626	1200	357
20060627	1200	342
20060628	1200	370
20060629	1200	398
20060630	1200	591
20060701	1200	366
20060702	1200	339
20060703	1200	370
20060704	1200	52
20060705	1200	444
20060706	1200	395
20060707	1200	304
20060708	1200	644
20060709	1200	280
20060710	1200	322
20060711	1200	0.0001
20060712	1200	283
20060713	1200	425
20060714	1200	385
20060715	1200	384
20060716	1200	394
20060717	1200	419
20060718	1200	186
20060719	1200	127
20060720	1200	426
20060721	1200	415
20060722	1200	431
20060723	1200	502
20060724	1200	718
20060725	1200	502
20060726	1200	485
20060727	1200	308
20060728	1200	429
20060729	1200	371
20060730	1200	477

20060731	1200	497
20060801	1200	398
20060802	1200	185
20060803	1200	0.0001
20060804	1200	0.0001
20060805	1200	115
20060806	1200	0.0001
20060807	1200	0.0001
20060808	1200	68
20060809	1200	468
20060810	1200	228
20060811	1200	297
20060812	1200	328
20060813	1200	661
20060814	1200	136
20060815	1200	0.0001
20060816	1200	0.0001
20060817	1200	657
20060818	1200	550
20060819	1200	264
20060820	1200	244
20060821	1200	199
20060822	1200	164
20060823	1200	57
20060824	1200	392
20060825	1200	450
20060826	1200	558
20060827	1200	189
20060828	1200	132
20060829	1200	0.0001
20060830	1200	340
20060831	1200	366
20060901	1200	374
20060902	1200	371
20060903	1200	361
20060904	1200	370
20060905	1200	387
20060906	1200	360
20060907	1200	355
20060908	1200	372
20060909	1200	366
20060910	1200	371
20060911	1200	363
20060912	1200	364
20060913	1200	366
20060914	1200	466
20060915	1200	448
20060916	1200	315
20060917	1200	319
20060918	1200	396
20060919	1200	350
20060920	1200	357
20060921	1200	221
20060922	1200	445
20060923	1200	252
20060924	1200	279

20060925	1200	292
20060926	1200	289
20060927	1200	335
20060928	1200	320
20060929	1200	312
20060930	1200	316
20061001	1200	306
20061002	1200	358
20061003	1200	401
20061004	1200	371
20061005	1200	403
20061006	1200	344
20061007	1200	263
20061008	1200	179
20061009	1200	275
20061010	1200	596
20061011	1200	751
20061012	1200	731
20061013	1200	704
20061014	1200	694
20061015	1200	743
20061016	1200	357
20061017	1200	0.0001
20061018	1200	588
20061019	1200	719
20061020	1200	0.0001
20061021	1200	750
20061022	1200	838
20061023	1200	708
20061024	1200	746
20061025	1200	0.0001
20061026	1200	608
20061027	1200	780
20061028	1200	803
20061029	1200	781
20061030	1200	308
20061031	1200	641
20061101	1200	720
20061102	1200	717
20061103	1200	725
20061104	1200	709
20061105	1200	700
20061106	1200	696
20061107	1200	684
20061108	1200	343
20061109	1200	273
20061110	1200	777
20061111	1200	614
20061112	1200	596
20061113	1200	889
20061114	1200	0.0001
20061115	1200	522
20061116	1200	397
20061117	1200	424
20061118	1200	396
20061119	1200	379

20061120	1200	346
20061121	1200	396
20061122	1200	323
20061123	1200	93
20061124	1200	326
20061125	1200	343
20061126	1200	338
20061127	1200	388
20061128	1200	0.0001
20061129	1200	0.0001
20061130	1200	420
20061201	1200	298
20061202	1200	286
20061203	1200	342
20061204	1200	297
20061205	1200	273
20061206	1200	279
20061207	1200	276
20061208	1200	259
20061209	1200	255
20061210	1200	247
20061211	1200	272
20061212	1200	306
20061213	1200	291
20061214	1200	363
20061215	1200	237
20061216	1200	221
20061217	1200	252
20061218	1200	321
20061219	1200	348
20061220	1200	337
20061221	1200	340
20061222	1200	293
20061223	1200	320
20061224	1200	325
20061225	1200	312
20061226	1200	315
20061227	1200	299
20061228	1200	0.0001
20061229	1200	0.0001
20061230	1200	388
20061231	1200	341
20070101	1200	319
20070102	1200	300
20070103	1200	281
20070104	1200	298
20070105	1200	241
20070106	1200	264
20070107	1200	269
20070108	1200	261
20070109	1200	250
20070110	1200	261
20070111	1200	268
20070112	1200	288
20070113	1200	295
20070114	1200	302

20070115	1200	360
20070116	1200	322
20070117	1200	262
20070118	1200	272
20070119	1200	265
20070120	1200	266
20070121	1200	274
20070122	1200	292
20070123	1200	274
20070124	1200	274
20070125	1200	274
20070126	1200	274
20070127	1200	274
20070128	1200	274
20070129	1200	274
20070130	1200	255
20070131	1200	274
20070201	1200	251
20070202	1200	273
20070203	1200	283
20070204	1200	273
20070205	1200	252
20070206	1200	259
20070207	1200	259
20070208	1200	262
20070209	1200	256
20070210	1200	263
20070211	1200	297
20070212	1200	304
20070213	1200	350
20070214	1200	336
20070215	1200	382
20070216	1200	294
20070217	1200	350
20070218	1200	335
20070219	1200	282
20070220	1200	326
20070221	1200	315
20070222	1200	324
20070223	1200	16
20070224	1200	344
20070225	1200	458
20070226	1200	254
20070227	1200	7.3
20070228	1200	114
20070301	1200	0.0001
20070302	1200	0.0001
20070303	1200	383
20070304	1200	204
20070305	1200	230
20070306	1200	257
20070307	1200	207
20070308	1200	227
20070309	1200	118
20070310	1200	0.0001
20070311	1200	201

20070312	1200	187
20070313	1200	166
20070314	1200	60
20070315	1200	0.0001
20070316	1200	169
20070317	1200	148
20070318	1200	63
20070319	1200	37
20070320	1200	0.0001
20070321	1200	0.0001
20070322	1200	0.0001
20070323	1200	0.0001
20070324	1200	0.0001
20070325	1200	256
20070326	1200	156
20070327	1200	432
20070328	1200	0.0001
20070329	1200	0.0001
20070330	1200	591
20070331	1200	400
20070401	1200	101
20070402	1200	0.0001
20070403	1200	0.0001
20070404	1200	265
20070405	1200	58
20070406	1200	182
20070407	1200	225
20070408	1200	416
20070409	1200	637
20070410	1200	637
20070411	1200	637
20070412	1200	637
20070413	1200	637
20070414	1200	637
20070415	1200	637
20070416	1200	637
20070417	1200	637
20070418	1200	637
20070419	1200	858
20070420	1200	398
20070421	1200	831
20070422	1200	920
20070423	1200	108
20070424	1200	50
20070425	1200	664
20070426	1200	97
20070427	1200	376
20070428	1200	594
20070429	1200	562
20070430	1200	140
20070501	1200	495
20070502	1200	469
20070503	1200	0.0001
20070504	1200	0.0001
20070505	1200	0.0001
20070506	1200	0.0001

20070507	1200	0.0001
20070508	1200	0.0001
20070509	1200	0.0001
20070510	1200	0.0001
20070511	1200	0.0001
20070512	1200	0.0001
20070513	1200	0.0001
20070514	1200	0.0001
20070515	1200	0.0001
20070516	1200	126
20070517	1200	744
20070518	1200	442
20070519	1200	305
20070520	1200	27
20070521	1200	0.0001
20070522	1200	0.0001
20070523	1200	0.0001
20070524	1200	800
20070525	1200	580
20070526	1200	472
20070527	1200	559
20070528	1200	0.0001
20070529	1200	0.0001
20070530	1200	301
20070531	1200	255
20070601	1200	258
20070602	1200	167
20070603	1200	123
20070604	1200	274
20070605	1200	408
20070606	1200	0.0001
20070607	1200	0.0001
20070608	1200	855
20070609	1200	724
20070610	1200	374
20070611	1200	0.0001
20070612	1200	298
20070613	1200	500
20070614	1200	200
20070615	1200	139
20070616	1200	216
20070617	1200	0.0001
20070618	1200	471
20070619	1200	323
20070620	1200	374
20070621	1200	178
20070622	1200	286
20070623	1200	179
20070624	1200	59
20070625	1200	0.0001
20070626	1200	158
20070627	1200	316
20070628	1200	426
20070629	1200	287
20070630	1200	91
20070701	1200	121

20070702	1200	62
20070703	1200	0.0001
20070704	1200	108
20070705	1200	177
20070706	1200	320
20070707	1200	51
20070708	1200	122
20070709	1200	163
20070710	1200	71
20070711	1200	73
20070712	1200	272
20070713	1200	204
20070714	1200	265
20070715	1200	101
20070716	1200	242
20070717	1200	125
20070718	1200	470
20070719	1200	165
20070720	1200	64
20070721	1200	132
20070722	1200	51
20070723	1200	239
20070724	1200	157
20070725	1200	97
20070726	1200	29
20070727	1200	98
20070728	1200	0.0001
20070729	1200	121
20070730	1200	182
20070731	1200	127

```
                                LOADEST
                     A Program to Estimate Constituent Loads
                 U.S. Geological Survey, Version: MOD36 (Sep 2004)
                 -------------------------------------------------


Farmington Bay


Constituent: selenium



-----------------------------------------------------------------------

    Constituent Output File Part Ia: Calibration (Load Regression)

-----------------------------------------------------------------------

Number of Observations           :    47
Number of Uncensored Observations:    47
"center" of Decimal Time         :   2006.893
"center" of Ln(Q)                :   -1.5796
Period of record                 :    2006-2007


Model Evaluation Criteria Based on AMLE Results
-----------------------------------------------

Model #     AIC           SPPC
-----------------------------------
 1          -0.214           3.186
 2          -0.222           2.436
 3          -0.178           1.417
 4          -0.552           9.263
 5          -0.194           0.855
 6          -0.516           7.505
 7          -0.540           8.069
 8          -0.508           6.392
 9          -0.481           4.829

Model # 4 selected


Selected Model:
---------------

Ln(Load) = a0 + a1 LnQ + a2 Sin(2 pi dtime) + a3 Cos(2 pi dtime)

where:
      Load  = constituent load [kg/d]
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


      Model Coefficients

       a0        a1        a2        a3
      ----------------------------------------
AMLE  -8.2500    0.9966    0.1500   -0.1918
MLE   -8.2500    0.9966    0.1500   -0.1918
LAD   -8.2055    0.9954    0.0721   -0.1648
```

```
AMLE Regression Statistics
--------------------------
R-Squared [%]                   : 99.90
Prob. Plot Corr. Coeff. (PPCC) : 0.9414
Serial Correlation of Residuals: 0.0295

Coeff.    Std.Dev.    t-ratio      P Value
--------------------------------------------
a0        0.0550      -149.88      5.929E-66
a1        0.0049       205.40      2.134E-72
a2        0.0600         2.50      1.152E-02
a3        0.0511        -3.75      2.636E-04


Correlation Between Explanatory Variables
-----------------------------------------

      Explanatory variable corresponding to:

       a1        a2
      --------------------
  a2   0.0379
  a3   0.1799   -0.1061


Additional Regression Statistics
--------------------------------
      Residual                  Turnbull-Weiss
      Variance               Stat    DF    PL
      ----------------------------------------------
AMLE     0.031              12.70    6     4.808E-02
MLE      0.031              12.70    6     4.808E-02



-----------------------------------------------------------------------

Constituent Output File Part Ib: Calibration (Concentration Regression)

-----------------------------------------------------------------------



AMLE Regression Statistics
--------------------------

Model # 4 was selected for the load regression (PART Ia) and is used here:

Ln(Conc) = a0 + a1 LnQ + a2 Sin(2 pi dtime) + a3 Cos(2 pi dtime)

where:
      Conc  = constituent concentration
      LnQ   = Ln(Q) - center of Ln(Q)
      dtime = decimal time - center of decimal time


Concentration Regression Results
--------------------------------
R-Squared [%]                   : 36.29
Residual Variance               : 0.0310

Coeff.    Value         Std.Dev.     t-ratio     P Value
```

a0	-0.6574	0.0550	-11.94	1.122E-16
a1	-0.0034	0.0049	-0.70	4.684E-01
a2	0.1500	0.0600	2.50	1.152E-02
a3	-0.1918	0.0511	-3.75	2.636E-04

Constituent Output File Part IIa: Estimation (test for extrapolation)

Load Estimates for 20060503-20070731

Streamflow Summary Statistics [cfs]

Data	Mean	Minimum	10th Pct	25th Pct	Median	75th Pct	90th Pct	Maximum
Cal.	348.	0.	0.	125.	347.	491.	743.	920.
Est.	307.	0.	0.	166.	299.	397.	637.	920.

The maximum estimation data set steamflow does not exceed the maximum calibration data set streamflow. No extrapolation is required.

Constituent Output File Part IIb: Estimation (Load Estimates)

Load Estimates for 20060503-20070731

Load Estimates [KG/DAY]

AMLE Load Estimates

	N	Mean Load	95% Conf.Intervals Lower	95% Conf.Intervals Upper	Std Error Prediction	Standard Error
Est. Period	455	0.39	0.36	0.42	0.02	0.02

MLE Load Estimates

	N	Mean Load	Standard Error
Est. Period	455	0.39	0.02

LAD Load Estimates

	N	Mean Load	Standard Error
Est. Period	455	0.40	0.04

Summary Statistics - Estimated Loads [KG/DAY]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.000	0.222	0.364	0.510	0.729	0.944	1.224	1.465
MLE	0.000	0.222	0.364	0.510	0.729	0.944	1.224	1.465
LAD	0.000	0.231	0.369	0.525	0.769	0.941	1.227	1.403

Summary Statistics - Estimated Concentrations [UG/L]

	Min.	25th Pct	Med.	75th Pct	90th Pct	95th Pct	99th Pct	Max.
AMLE	0.40	0.45	0.53	0.62	0.65	0.66	0.68	0.68
MLE	0.40	0.45	0.53	0.62	0.65	0.66	0.68	0.68
LAD	0.44	0.47	0.55	0.61	0.63	0.65	0.67	0.67

Individual Load Estimates for Farmington Bay Outflow in kg/day

			Loads Estimated by:		
Date	Time	Flow	AMLE	MLE	LAD
20060503	1200	2.620E+02	4.1518E-01	4.1518E-01	4.0241E-01
20060504	1200	3.130E+02	4.9506E-01	4.9506E-01	4.8026E-01
20060505	1200	2.550E+02	4.0307E-01	4.0307E-01	3.9154E-01
20060506	1200	1.492E+02	2.3593E-01	2.3593E-01	2.2958E-01
20060507	1200	1.500E+02	2.3684E-01	2.3684E-01	2.3073E-01
20060508	1200	1.183E+02	1.8665E-01	1.8665E-01	1.8209E-01
20060509	1200	7.290E+02	1.1412E+00	1.1412E+00	1.1123E+00
20060510	1200	4.570E+02	7.1534E-01	7.1534E-01	6.9841E-01
20060511	1200	4.120E+02	6.4400E-01	6.4400E-01	6.2959E-01
20060512	1200	4.310E+02	6.7237E-01	6.7237E-01	6.5808E-01
20060513	1200	6.850E+02	1.0649E+00	1.0649E+00	1.0430E+00
20060514	1200	4.850E+02	7.5341E-01	7.5341E-01	7.3911E-01
20060515	1200	4.350E+02	6.7463E-01	6.7463E-01	6.6274E-01
20060516	1200	4.510E+02	6.9790E-01	6.9790E-01	6.8644E-01
20060517	1200	4.840E+02	7.4719E-01	7.4719E-01	7.3578E-01
20060518	1200	4.620E+02	7.1177E-01	7.1177E-01	7.0184E-01
20060519	1200	3.030E+02	4.6643E-01	4.6643E-01	4.6074E-01
20060520	1200	2.100E+02	3.2292E-01	3.2292E-01	3.1954E-01
20060521	1200	4.600E+02	7.0376E-01	7.0376E-01	6.9667E-01
20060522	1200	6.210E+02	9.4678E-01	9.4678E-01	9.3816E-01
20060523	1200	6.530E+02	9.9290E-01	9.9290E-01	9.8512E-01
20060524	1200	3.470E+02	5.2742E-01	5.2742E-01	5.2437E-01
20060525	1200	3.610E+02	5.4718E-01	5.4719E-01	5.4473E-01
20060526	1200	4.910E+02	7.4145E-01	7.4145E-01	7.3887E-01
20060527	1200	4.620E+02	6.9590E-01	6.9590E-01	6.9448E-01
20060528	1200	2.040E+02	3.0729E-01	3.0729E-01	3.0737E-01
20060529	1200	1.280E+02	1.9257E-01	1.9257E-01	1.9299E-01
20060530	1200	2.850E+02	4.2635E-01	4.2635E-01	4.2748E-01
20060531	1200	2.730E+02	4.0726E-01	4.0726E-01	4.0893E-01
20060601	1200	3.060E+02	4.5494E-01	4.5494E-01	4.5739E-01
20060602	1200	3.370E+02	4.9933E-01	4.9933E-01	5.0267E-01
20060603	1200	4.360E+02	6.4345E-01	6.4345E-01	6.4847E-01
20060604	1200	3.500E+02	5.1529E-01	5.1529E-01	5.2019E-01
20060605	1200	4.650E+02	6.8175E-01	6.8175E-01	6.8898E-01
20060606	1200	3.200E+02	4.6824E-01	4.6824E-01	4.7408E-01
20060607	1200	3.500E+02	5.1030E-01	5.1030E-01	5.1735E-01
20060608	1200	3.870E+02	5.6217E-01	5.6217E-01	5.7069E-01
20060609	1200	8.400E+01	1.2225E-01	1.2225E-01	1.2450E-01
20060610	1200	3.450E+02	4.9795E-01	4.9795E-01	5.0702E-01
20060611	1200	3.230E+02	4.6469E-01	4.6469E-01	4.7387E-01
20060612	1200	3.120E+02	4.4734E-01	4.4734E-01	4.5685E-01
20060613	1200	1.160E+02	1.6629E-01	1.6629E-01	1.7027E-01
20060614	1200	2.480E+02	3.5333E-01	3.5333E-01	3.6198E-01
20060615	1200	1.160E+02	1.6510E-01	1.6510E-01	1.6953E-01
20060616	1200	1.130E+02	1.6026E-01	1.6026E-01	1.6480E-01
20060617	1200	1.700E+02	2.3987E-01	2.3987E-01	2.4691E-01
20060618	1200	2.300E+02	3.2298E-01	3.2298E-01	3.3282E-01
20060619	1200	3.590E+02	5.0147E-01	5.0147E-01	5.1722E-01
20060620	1200	3.360E+02	4.6767E-01	4.6767E-01	4.8309E-01
20060621	1200	3.190E+02	4.4239E-01	4.4239E-01	4.5765E-01
20060622	1200	2.990E+02	4.1314E-01	4.1314E-01	4.2805E-01
20060623	1200	3.170E+02	4.3623E-01	4.3623E-01	4.5257E-01
20060624	1200	3.380E+02	4.6320E-01	4.6321E-01	4.8121E-01
20060625	1200	3.550E+02	4.8451E-01	4.8451E-01	5.0402E-01
20060626	1200	3.570E+02	4.8530E-01	4.8530E-01	5.0555E-01
20060627	1200	3.420E+02	4.6312E-01	4.6312E-01	4.8315E-01

20060628	1200	3.700E+02	4.9889E-01	4.9889E-01	5.2115E-01
20060629	1200	3.980E+02	5.3435E-01	5.3435E-01	5.5892E-01
20060630	1200	5.910E+02	7.8918E-01	7.8918E-01	8.2624E-01
20060701	1200	3.660E+02	4.8754E-01	4.8754E-01	5.1143E-01
20060702	1200	3.390E+02	4.4985E-01	4.4985E-01	4.7257E-01
20060703	1200	3.700E+02	4.8882E-01	4.8882E-01	5.1416E-01
20060704	1200	5.200E+01	6.8877E-02	6.8877E-02	7.2712E-02
20060705	1200	4.440E+02	5.8139E-01	5.8139E-01	6.1306E-01
20060706	1200	3.950E+02	5.1529E-01	5.1529E-01	5.4415E-01
20060707	1200	3.040E+02	3.9528E-01	3.9528E-01	4.1810E-01
20060708	1200	6.440E+02	8.3173E-01	8.3173E-01	8.8015E-01
20060709	1200	2.800E+02	3.6114E-01	3.6114E-01	3.8303E-01
20060710	1200	3.220E+02	4.1338E-01	4.1338E-01	4.3893E-01
20060711	1200	1.000E-04	1.3424E-07	1.3424E-07	1.4559E-07
20060712	1200	2.830E+02	3.6042E-01	3.6042E-01	3.8374E-01
20060713	1200	4.250E+02	5.3824E-01	5.3824E-01	5.7352E-01
20060714	1200	3.850E+02	4.8570E-01	4.8570E-01	5.1824E-01
20060715	1200	3.840E+02	4.8240E-01	4.8240E-01	5.1536E-01
20060716	1200	3.940E+02	4.9283E-01	4.9283E-01	5.2713E-01
20060717	1200	4.190E+02	5.2178E-01	5.2179E-01	5.5874E-01
20060718	1200	1.860E+02	2.3130E-01	2.3130E-01	2.4821E-01
20060719	1200	1.270E+02	1.5747E-01	1.5747E-01	1.6926E-01
20060720	1200	4.260E+02	5.2380E-01	5.2380E-01	5.6288E-01
20060721	1200	4.150E+02	5.0818E-01	5.0818E-01	5.4674E-01
20060722	1200	4.310E+02	5.2549E-01	5.2549E-01	5.6599E-01
20060723	1200	5.020E+02	6.0918E-01	6.0918E-01	6.5675E-01
20060724	1200	7.180E+02	8.6659E-01	8.6659E-01	9.3491E-01
20060725	1200	5.020E+02	6.0411E-01	6.0411E-01	6.5271E-01
20060726	1200	4.850E+02	5.8130E-01	5.8130E-01	6.2877E-01
20060727	1200	3.080E+02	3.6820E-01	3.6820E-01	3.9890E-01
20060728	1200	4.290E+02	5.1015E-01	5.1015E-01	5.5305E-01
20060729	1200	3.710E+02	4.3959E-01	4.3959E-01	4.7712E-01
20060730	1200	4.770E+02	5.6239E-01	5.6239E-01	6.1084E-01
20060731	1200	4.970E+02	5.8350E-01	5.8350E-01	6.3436E-01
20060801	1200	3.980E+02	4.6573E-01	4.6573E-01	5.0695E-01
20060802	1200	1.850E+02	2.1617E-01	2.1617E-01	2.3574E-01
20060803	1200	1.000E-04	1.2196E-07	1.2196E-07	1.3573E-07
20060804	1200	1.000E-04	1.2147E-07	1.2147E-07	1.3531E-07
20060805	1200	1.150E+02	1.3299E-01	1.3299E-01	1.4551E-01
20060806	1200	1.000E-04	1.2051E-07	1.2051E-07	1.3448E-07
20060807	1200	1.000E-04	1.2003E-07	1.2003E-07	1.3406E-07
20060808	1200	6.800E+01	7.7855E-02	7.7855E-02	8.5455E-02
20060809	1200	4.680E+02	5.3026E-01	5.3026E-01	5.8118E-01
20060810	1200	2.280E+02	2.5798E-01	2.5798E-01	2.8321E-01
20060811	1200	2.970E+02	3.3447E-01	3.3447E-01	3.6735E-01
20060812	1200	3.280E+02	3.6786E-01	3.6786E-01	4.0428E-01
20060813	1200	6.610E+02	7.3679E-01	7.3679E-01	8.0967E-01
20060814	1200	1.360E+02	1.5185E-01	1.5185E-01	1.6730E-01
20060815	1200	1.000E-04	1.1644E-07	1.1644E-07	1.3085E-07
20060816	1200	1.000E-04	1.1601E-07	1.1601E-07	1.3046E-07
20060817	1200	6.570E+02	7.2172E-01	7.2172E-01	7.9525E-01
20060818	1200	5.500E+02	6.0240E-01	6.0240E-01	6.6432E-01
20060819	1200	2.640E+02	2.8886E-01	2.8886E-01	3.1901E-01
20060820	1200	2.440E+02	2.6612E-01	2.6612E-01	2.9410E-01
20060821	1200	1.990E+02	2.1644E-01	2.1644E-01	2.3939E-01
20060822	1200	1.640E+02	1.7789E-01	1.7789E-01	1.9689E-01
20060823	1200	5.700E+01	6.1840E-02	6.1840E-02	6.8570E-02
20060824	1200	3.920E+02	4.2112E-01	4.2112E-01	4.6609E-01
20060825	1200	4.500E+02	4.8162E-01	4.8162E-01	5.3322E-01
20060826	1200	5.580E+02	5.9486E-01	5.9486E-01	6.5871E-01
20060827	1200	1.890E+02	2.0159E-01	2.0159E-01	2.2360E-01
20060828	1200	1.320E+02	1.4052E-01	1.4052E-01	1.5600E-01
20060829	1200	1.000E-04	1.1106E-07	1.1106E-07	1.2573E-07
20060830	1200	3.400E+02	3.5860E-01	3.5860E-01	3.9792E-01

20060831	1200	3.660E+02	3.8478E-01	3.8478E-01	4.2707E-01
20060901	1200	3.740E+02	3.9202E-01	3.9202E-01	4.3521E-01
20060902	1200	3.710E+02	3.8777E-01	3.8777E-01	4.3062E-01
20060903	1200	3.610E+02	3.7629E-01	3.7629E-01	4.1799E-01
20060904	1200	3.700E+02	3.8458E-01	3.8458E-01	4.2727E-01
20060905	1200	3.870E+02	4.0110E-01	4.0110E-01	4.4569E-01
20060906	1200	3.600E+02	3.7222E-01	3.7222E-01	4.1371E-01
20060907	1200	3.550E+02	3.6612E-01	3.6612E-01	4.0699E-01
20060908	1200	3.720E+02	3.8262E-01	3.8262E-01	4.2536E-01
20060909	1200	3.660E+02	3.7554E-01	3.7554E-01	4.1754E-01
20060910	1200	3.710E+02	3.7974E-01	3.7974E-01	4.2222E-01
20060911	1200	3.630E+02	3.7070E-01	3.7070E-01	4.1220E-01
20060912	1200	3.640E+02	3.7087E-01	3.7087E-01	4.1240E-01
20060913	1200	3.660E+02	3.7207E-01	3.7207E-01	4.1372E-01
20060914	1200	4.660E+02	4.7231E-01	4.7231E-01	5.2502E-01
20060915	1200	4.480E+02	4.5317E-01	4.5317E-01	5.0375E-01
20060916	1200	3.150E+02	3.1837E-01	3.1837E-01	3.5402E-01
20060917	1200	3.190E+02	3.2176E-01	3.2176E-01	3.5774E-01
20060918	1200	3.960E+02	3.9836E-01	3.9837E-01	4.4275E-01
20060919	1200	3.500E+02	3.5159E-01	3.5159E-01	3.9076E-01
20060920	1200	3.570E+02	3.5795E-01	3.5795E-01	3.9775E-01
20060921	1200	2.210E+02	2.2157E-01	2.2157E-01	2.4630E-01
20060922	1200	4.450E+02	4.4435E-01	4.4435E-01	4.9342E-01
20060923	1200	2.520E+02	2.5172E-01	2.5172E-01	2.7963E-01
20060924	1200	2.790E+02	2.7817E-01	2.7817E-01	3.0889E-01
20060925	1200	2.920E+02	2.9066E-01	2.9066E-01	3.2265E-01
20060926	1200	2.890E+02	2.8729E-01	2.8729E-01	3.1881E-01
20060927	1200	3.350E+02	3.3241E-01	3.3241E-01	3.6869E-01
20060928	1200	3.200E+02	3.1718E-01	3.1718E-01	3.5169E-01
20060929	1200	3.120E+02	3.0891E-01	3.0891E-01	3.4240E-01
20060930	1200	3.160E+02	3.1251E-01	3.1251E-01	3.4624E-01
20061001	1200	3.060E+02	3.0234E-01	3.0234E-01	3.3483E-01
20061002	1200	3.580E+02	3.5319E-01	3.5319E-01	3.9089E-01
20061003	1200	4.010E+02	3.9511E-01	3.9511E-01	4.3701E-01
20061004	1200	3.710E+02	3.6534E-01	3.6534E-01	4.0392E-01
20061005	1200	4.030E+02	3.9644E-01	3.9644E-01	4.3803E-01
20061006	1200	3.440E+02	3.3835E-01	3.3835E-01	3.7371E-01
20061007	1200	2.630E+02	2.5876E-01	2.5876E-01	2.8572E-01
20061008	1200	1.790E+02	1.7625E-01	1.7625E-01	1.9459E-01
20061009	1200	2.750E+02	2.7025E-01	2.7025E-01	2.9803E-01
20061010	1200	5.960E+02	5.8395E-01	5.8395E-01	6.4296E-01
20061011	1200	7.510E+02	7.3500E-01	7.3500E-01	8.0852E-01
20061012	1200	7.310E+02	7.1531E-01	7.1531E-01	7.8634E-01
20061013	1200	7.040E+02	6.8885E-01	6.8885E-01	7.5676E-01
20061014	1200	6.940E+02	6.7903E-01	6.7903E-01	7.4543E-01
20061015	1200	7.430E+02	7.2678E-01	7.2678E-01	7.9719E-01
20061016	1200	3.570E+02	3.5008E-01	3.5008E-01	3.8404E-01
20061017	1200	1.000E-04	1.0291E-07	1.0291E-07	1.1520E-07
20061018	1200	5.880E+02	5.7580E-01	5.7580E-01	6.3027E-01
20061019	1200	7.190E+02	7.0379E-01	7.0379E-01	7.6953E-01
20061020	1200	1.000E-04	1.0299E-07	1.0299E-07	1.1500E-07
20061021	1200	7.500E+02	7.3456E-01	7.3456E-01	8.0175E-01
20061022	1200	8.380E+02	8.2082E-01	8.2082E-01	8.9499E-01
20061023	1200	7.080E+02	6.9426E-01	6.9426E-01	7.5645E-01
20061024	1200	7.460E+02	7.3184E-01	7.3184E-01	7.9661E-01
20061025	1200	1.000E-04	1.0326E-07	1.0326E-07	1.1479E-07
20061026	1200	6.080E+02	5.9773E-01	5.9773E-01	6.4955E-01
20061027	1200	7.800E+02	7.6681E-01	7.6681E-01	8.3222E-01
20061028	1200	8.030E+02	7.9005E-01	7.9005E-01	8.5656E-01
20061029	1200	7.810E+02	7.6922E-01	7.6922E-01	8.3316E-01
20061030	1200	3.080E+02	3.0462E-01	3.0462E-01	3.2998E-01
20061031	1200	6.410E+02	6.3311E-01	6.3311E-01	6.8447E-01
20061101	1200	7.200E+02	7.1170E-01	7.1170E-01	7.6850E-01
20061102	1200	7.170E+02	7.0962E-01	7.0962E-01	7.6544E-01

20061103	1200	7.250E+02	7.1846E-01	7.1846E-01	7.7411E-01
20061104	1200	7.090E+02	7.0363E-01	7.0363E-01	7.5731E-01
20061105	1200	7.000E+02	6.9574E-01	6.9574E-01	7.4798E-01
20061106	1200	6.960E+02	6.9282E-01	6.9282E-01	7.4401E-01
20061107	1200	6.840E+02	6.8200E-01	6.8200E-01	7.3155E-01
20061108	1200	3.430E+02	3.4336E-01	3.4336E-01	3.6819E-01
20061109	1200	2.730E+02	2.7396E-01	2.7396E-01	2.9351E-01
20061110	1200	7.770E+02	7.7840E-01	7.7840E-01	8.3186E-01
20061111	1200	6.140E+02	6.1673E-01	6.1673E-01	6.5848E-01
20061112	1200	5.960E+02	5.9986E-01	5.9986E-01	6.3971E-01
20061113	1200	8.890E+02	8.9532E-01	8.9532E-01	9.5316E-01
20061114	1200	1.000E-04	1.0619E-07	1.0619E-07	1.1547E-07
20061115	1200	5.220E+02	5.2884E-01	5.2884E-01	5.6196E-01
20061116	1200	3.970E+02	4.0344E-01	4.0344E-01	4.2831E-01
20061117	1200	4.240E+02	4.3175E-01	4.3175E-01	4.5774E-01
20061118	1200	3.960E+02	4.0425E-01	4.0425E-01	4.2807E-01
20061119	1200	3.790E+02	3.8787E-01	3.8787E-01	4.1021E-01
20061120	1200	3.460E+02	3.5506E-01	3.5506E-01	3.7506E-01
20061121	1200	3.960E+02	4.0718E-01	4.0718E-01	4.2948E-01
20061122	1200	3.230E+02	3.3319E-01	3.3319E-01	3.5106E-01
20061123	1200	9.300E+01	9.6582E-02	9.6582E-02	1.0178E-01
20061124	1200	3.260E+02	3.3803E-01	3.3803E-01	3.5521E-01
20061125	1200	3.430E+02	3.5656E-01	3.5656E-01	3.7414E-01
20061126	1200	3.380E+02	3.5235E-01	3.5235E-01	3.6923E-01
20061127	1200	3.880E+02	4.0542E-01	4.0542E-01	4.2419E-01
20061128	1200	1.000E-04	1.0995E-07	1.0995E-07	1.1738E-07
20061129	1200	1.000E-04	1.1027E-07	1.1027E-07	1.1756E-07
20061130	1200	4.200E+02	4.4258E-01	4.4258E-01	4.6112E-01
20061201	1200	2.980E+02	3.1533E-01	3.1533E-01	3.2823E-01
20061202	1200	2.860E+02	3.0360E-01	3.0360E-01	3.1559E-01
20061203	1200	3.420E+02	3.6396E-01	3.6397E-01	3.7773E-01
20061204	1200	2.970E+02	3.1722E-01	3.1722E-01	3.2881E-01
20061205	1200	2.730E+02	2.9261E-01	2.9261E-01	3.0291E-01
20061206	1200	2.790E+02	2.9999E-01	2.9999E-01	3.1010E-01
20061207	1200	2.760E+02	2.9776E-01	2.9776E-01	3.0736E-01
20061208	1200	2.590E+02	2.8041E-01	2.8041E-01	2.8907E-01
20061209	1200	2.550E+02	2.7703E-01	2.7703E-01	2.8519E-01
20061210	1200	2.470E+02	2.6929E-01	2.6929E-01	2.7684E-01
20061211	1200	2.720E+02	2.9748E-01	2.9748E-01	3.0535E-01
20061212	1200	3.060E+02	3.3571E-01	3.3571E-01	3.4405E-01
20061213	1200	2.910E+02	3.2045E-01	3.2045E-01	3.2796E-01
20061214	1200	3.630E+02	4.0087E-01	4.0087E-01	4.0958E-01
20061215	1200	2.370E+02	2.6305E-01	2.6305E-01	2.6853E-01
20061216	1200	2.210E+02	2.4625E-01	2.4625E-01	2.5104E-01
20061217	1200	2.520E+02	2.8171E-01	2.8171E-01	2.8674E-01
20061218	1200	3.210E+02	3.5989E-01	3.5989E-01	3.6569E-01
20061219	1200	3.480E+02	3.9153E-01	3.9153E-01	3.9723E-01
20061220	1200	3.370E+02	3.8063E-01	3.8063E-01	3.8565E-01
20061221	1200	3.400E+02	3.8548E-01	3.8548E-01	3.9001E-01
20061222	1200	2.930E+02	3.3364E-01	3.3364E-01	3.3715E-01
20061223	1200	3.200E+02	3.6570E-01	3.6570E-01	3.6899E-01
20061224	1200	3.250E+02	3.7285E-01	3.7285E-01	3.7567E-01
20061225	1200	3.120E+02	3.5940E-01	3.5940E-01	3.6163E-01
20061226	1200	3.150E+02	3.6428E-01	3.6428E-01	3.6603E-01
20061227	1200	2.990E+02	3.4722E-01	3.4722E-01	3.4843E-01
20061228	1200	1.000E-04	1.2224E-07	1.2224E-07	1.2511E-07
20061229	1200	1.000E-04	1.2273E-07	1.2273E-07	1.2544E-07
20061230	1200	3.880E+02	4.5565E-01	4.5565E-01	4.5522E-01
20061231	1200	3.410E+02	4.0226E-01	4.0226E-01	4.0140E-01
20070101	1200	3.190E+02	3.7794E-01	3.7794E-01	3.7665E-01
20070102	1200	3.000E+02	3.5696E-01	3.5696E-01	3.5530E-01
20070103	1200	2.810E+02	3.3581E-01	3.3581E-01	3.3382E-01
20070104	1200	2.980E+02	3.5753E-01	3.5753E-01	3.5492E-01
20070105	1200	2.410E+02	2.9055E-01	2.9055E-01	2.8813E-01

20070106	1200	2.640E+02	3.1951E-01	3.1951E-01	3.1639E-01
20070107	1200	2.690E+02	3.2690E-01	3.2690E-01	3.2329E-01
20070108	1200	2.610E+02	3.1854E-01	3.1854E-01	3.1462E-01
20070109	1200	2.500E+02	3.0643E-01	3.0643E-01	3.0230E-01
20070110	1200	2.610E+02	3.2122E-01	3.2122E-01	3.1647E-01
20070111	1200	2.680E+02	3.3119E-01	3.3119E-01	3.2587E-01
20070112	1200	2.880E+02	3.5732E-01	3.5732E-01	3.5112E-01
20070113	1200	2.950E+02	3.6752E-01	3.6752E-01	3.6068E-01
20070114	1200	3.020E+02	3.7779E-01	3.7779E-01	3.7031E-01
20070115	1200	3.600E+02	4.5198E-01	4.5198E-01	4.4240E-01
20070116	1200	3.220E+02	4.0613E-01	4.0613E-01	3.9710E-01
20070117	1200	2.620E+02	3.3208E-01	3.3208E-01	3.2439E-01
20070118	1200	2.720E+02	3.4616E-01	3.4616E-01	3.3774E-01
20070119	1200	2.650E+02	3.3870E-01	3.3870E-01	3.3009E-01
20070120	1200	2.660E+02	3.4140E-01	3.4140E-01	3.3235E-01
20070121	1200	2.740E+02	3.5311E-01	3.5311E-01	3.4335E-01
20070122	1200	2.920E+02	3.7780E-01	3.7780E-01	3.6692E-01
20070123	1200	2.740E+02	3.5607E-01	3.5607E-01	3.4547E-01
20070124	1200	2.740E+02	3.5755E-01	3.5755E-01	3.4653E-01
20070125	1200	2.740E+02	3.5904E-01	3.5904E-01	3.4760E-01
20070126	1200	2.740E+02	3.6053E-01	3.6053E-01	3.4868E-01
20070127	1200	2.740E+02	3.6202E-01	3.6202E-01	3.4976E-01
20070128	1200	2.740E+02	3.6351E-01	3.6351E-01	3.5085E-01
20070129	1200	2.740E+02	3.6500E-01	3.6500E-01	3.5193E-01
20070130	1200	2.550E+02	3.4115E-01	3.4115E-01	3.2865E-01
20070131	1200	2.740E+02	3.6797E-01	3.6797E-01	3.5412E-01
20070201	1200	2.510E+02	3.3855E-01	3.3855E-01	3.2553E-01
20070202	1200	2.730E+02	3.6959E-01	3.6959E-01	3.5502E-01
20070203	1200	2.830E+02	3.8462E-01	3.8462E-01	3.6910E-01
20070204	1200	2.730E+02	3.7254E-01	3.7255E-01	3.5722E-01
20070205	1200	2.520E+02	3.4534E-01	3.4534E-01	3.3087E-01
20070206	1200	2.590E+02	3.5629E-01	3.5629E-01	3.4107E-01
20070207	1200	2.590E+02	3.5768E-01	3.5768E-01	3.4211E-01
20070208	1200	2.620E+02	3.6320E-01	3.6320E-01	3.4712E-01
20070209	1200	2.560E+02	3.5628E-01	3.5628E-01	3.4024E-01
20070210	1200	2.630E+02	3.6738E-01	3.6738E-01	3.5056E-01
20070211	1200	2.970E+02	4.1626E-01	4.1627E-01	3.9685E-01
20070212	1200	3.040E+02	4.2764E-01	4.2764E-01	4.0739E-01
20070213	1200	3.500E+02	4.9393E-01	4.9393E-01	4.7013E-01
20070214	1200	3.360E+02	4.7598E-01	4.7598E-01	4.5276E-01
20070215	1200	3.820E+02	5.4288E-01	5.4288E-01	5.1597E-01
20070216	1200	2.940E+02	4.1969E-01	4.1969E-01	3.9876E-01
20070217	1200	3.500E+02	5.0111E-01	5.0111E-01	4.7573E-01
20070218	1200	3.350E+02	4.8140E-01	4.8140E-01	4.5677E-01
20070219	1200	2.820E+02	4.0688E-01	4.0688E-01	3.8592E-01
20070220	1200	3.260E+02	4.7175E-01	4.7175E-01	4.4713E-01
20070221	1200	3.150E+02	4.5743E-01	4.5743E-01	4.3335E-01
20070222	1200	3.240E+02	4.7203E-01	4.7203E-01	4.4694E-01
20070223	1200	1.600E+01	2.3624E-02	2.3624E-02	2.2441E-02
20070224	1200	3.440E+02	5.0437E-01	5.0437E-01	4.7706E-01
20070225	1200	4.580E+02	6.7302E-01	6.7302E-01	6.3609E-01
20070226	1200	2.540E+02	3.7517E-01	3.7517E-01	3.5469E-01
20070227	1200	7.300E+00	1.0945E-02	1.0945E-02	1.0390E-02
20070228	1200	1.140E+02	1.6989E-01	1.6989E-01	1.6065E-01
20070301	1200	1.000E-04	1.5628E-07	1.5628E-07	1.5063E-07
20070302	1200	1.000E-04	1.5675E-07	1.5675E-07	1.5103E-07
20070303	1200	3.830E+02	5.7350E-01	5.7350E-01	5.4100E-01
20070304	1200	2.040E+02	3.0699E-01	3.0699E-01	2.8974E-01
20070305	1200	2.300E+02	3.4695E-01	3.4695E-01	3.2732E-01
20070306	1200	2.570E+02	3.8860E-01	3.8860E-01	3.6649E-01
20070307	1200	2.070E+02	3.1407E-01	3.1407E-01	2.9622E-01
20070308	1200	2.270E+02	3.4522E-01	3.4522E-01	3.2550E-01
20070309	1200	1.180E+02	1.8031E-01	1.8031E-01	1.7012E-01
20070310	1200	1.000E-04	1.6021E-07	1.6021E-07	1.5409E-07

20070311	1200	2.010E+02	3.0813E-01	3.0813E-01	2.9046E-01
20070312	1200	1.870E+02	2.8743E-01	2.8743E-01	2.7095E-01
20070313	1200	1.660E+02	2.5585E-01	2.5585E-01	2.4120E-01
20070314	1200	6.000E+01	9.3006E-02	9.3006E-02	8.7788E-02
20070315	1200	1.000E-04	1.6211E-07	1.6211E-07	1.5586E-07
20070316	1200	1.690E+02	2.6220E-01	2.6220E-01	2.4718E-01
20070317	1200	1.480E+02	2.3021E-01	2.3021E-01	2.1706E-01
20070318	1200	6.300E+01	9.8475E-02	9.8475E-02	9.2957E-02
20070319	1200	3.700E+01	5.8052E-02	5.8052E-02	5.4840E-02
20070320	1200	1.000E-04	1.6378E-07	1.6378E-07	1.5751E-07
20070321	1200	1.000E-04	1.6408E-07	1.6408E-07	1.5783E-07
20070322	1200	1.000E-04	1.6437E-07	1.6437E-07	1.5813E-07
20070323	1200	1.000E-04	1.6466E-07	1.6466E-07	1.5843E-07
20070324	1200	1.000E-04	1.6493E-07	1.6493E-07	1.5873E-07
20070325	1200	2.560E+02	4.0324E-01	4.0324E-01	3.8045E-01
20070326	1200	1.560E+02	2.4651E-01	2.4651E-01	2.3278E-01
20070327	1200	4.320E+02	6.8127E-01	6.8127E-01	6.4271E-01
20070328	1200	1.000E-04	1.6591E-07	1.6591E-07	1.5984E-07
20070329	1200	1.000E-04	1.6613E-07	1.6613E-07	1.6011E-07
20070330	1200	5.910E+02	9.3465E-01	9.3465E-01	8.8234E-01
20070331	1200	4.000E+02	6.3417E-01	6.3417E-01	5.9918E-01
20070401	1200	1.010E+02	1.6106E-01	1.6106E-01	1.5248E-01
20070402	1200	1.000E-04	1.6689E-07	1.6689E-07	1.6109E-07
20070403	1200	1.000E-04	1.6705E-07	1.6705E-07	1.6131E-07
20070404	1200	2.650E+02	4.2239E-01	4.2239E-01	3.9999E-01
20070405	1200	5.800E+01	9.3001E-02	9.3001E-02	8.8273E-02
20070406	1200	1.820E+02	2.9092E-01	2.9092E-01	2.7589E-01
20070407	1200	2.250E+02	3.5963E-01	3.5963E-01	3.4116E-01
20070408	1200	4.160E+02	6.6392E-01	6.6392E-01	6.2973E-01
20070409	1200	6.370E+02	1.0157E+00	1.0157E+00	9.6346E-01
20070410	1200	6.370E+02	1.0161E+00	1.0161E+00	9.6449E-01
20070411	1200	6.370E+02	1.0165E+00	1.0165E+00	9.6547E-01
20070412	1200	6.370E+02	1.0168E+00	1.0168E+00	9.6640E-01
20070413	1200	6.370E+02	1.0171E+00	1.0171E+00	9.6728E-01
20070414	1200	6.370E+02	1.0172E+00	1.0172E+00	9.6812E-01
20070415	1200	6.370E+02	1.0173E+00	1.0173E+00	9.6891E-01
20070416	1200	6.370E+02	1.0173E+00	1.0173E+00	9.6965E-01
20070417	1200	6.370E+02	1.0173E+00	1.0173E+00	9.7033E-01
20070418	1200	6.370E+02	1.0171E+00	1.0171E+00	9.7097E-01
20070419	1200	8.580E+02	1.3683E+00	1.3683E+00	1.3068E+00
20070420	1200	3.980E+02	6.3622E-01	6.3622E-01	6.0868E-01
20070421	1200	8.310E+02	1.3246E+00	1.3246E+00	1.2672E+00
20070422	1200	9.200E+02	1.4653E+00	1.4653E+00	1.4029E+00
20070423	1200	1.080E+02	1.7319E-01	1.7319E-01	1.6638E-01
20070424	1200	5.000E+01	8.0347E-02	8.0347E-02	7.7329E-02
20070425	1200	6.640E+02	1.0570E+00	1.0570E+00	1.0151E+00
20070426	1200	9.700E+01	1.5531E-01	1.5531E-01	1.4964E-01
20070427	1200	3.760E+02	5.9879E-01	5.9879E-01	5.7656E-01
20070428	1200	5.940E+02	9.4367E-01	9.4367E-01	9.0905E-01
20070429	1200	5.620E+02	8.9218E-01	8.9218E-01	8.6037E-01
20070430	1200	1.400E+02	2.2309E-01	2.2309E-01	2.1570E-01
20070501	1200	4.950E+02	7.8453E-01	7.8453E-01	7.5823E-01
20070502	1200	4.690E+02	7.4262E-01	7.4262E-01	7.1852E-01
20070503	1200	1.000E-04	1.6627E-07	1.6627E-07	1.6436E-07
20070504	1200	1.000E-04	1.6606E-07	1.6606E-07	1.6433E-07
20070505	1200	1.000E-04	1.6583E-07	1.6583E-07	1.6429E-07
20070506	1200	1.000E-04	1.6560E-07	1.6560E-07	1.6424E-07
20070507	1200	1.000E-04	1.6536E-07	1.6536E-07	1.6419E-07
20070508	1200	1.000E-04	1.6510E-07	1.6510E-07	1.6412E-07
20070509	1200	1.000E-04	1.6484E-07	1.6484E-07	1.6404E-07
20070510	1200	1.000E-04	1.6456E-07	1.6456E-07	1.6396E-07
20070511	1200	1.000E-04	1.6427E-07	1.6427E-07	1.6387E-07
20070512	1200	1.000E-04	1.6397E-07	1.6397E-07	1.6377E-07
20070513	1200	1.000E-04	1.6367E-07	1.6367E-07	1.6366E-07

20070514	1200	1.000E-04	1.6335E-07	1.6335E-07	1.6354E-07
20070515	1200	1.000E-04	1.6302E-07	1.6302E-07	1.6342E-07
20070516	1200	1.260E+02	1.9583E-01	1.9583E-01	1.9290E-01
20070517	1200	7.440E+02	1.1469E+00	1.1469E+00	1.1288E+00
20070518	1200	4.420E+02	6.8106E-01	6.8106E-01	6.7159E-01
20070519	1200	3.050E+02	4.6950E-01	4.6950E-01	4.6377E-01
20070520	1200	2.700E+01	4.1809E-02	4.1809E-02	4.1471E-02
20070521	1200	1.000E-04	1.6085E-07	1.6085E-07	1.6249E-07
20070522	1200	1.000E-04	1.6046E-07	1.6046E-07	1.6231E-07
20070523	1200	1.000E-04	1.6006E-07	1.6006E-07	1.6212E-07
20070524	1200	8.000E+02	1.2124E+00	1.2124E+00	1.2043E+00
20070525	1200	5.800E+02	8.7770E-01	8.7770E-01	8.7329E-01
20070526	1200	4.720E+02	7.1286E-01	7.1286E-01	7.1041E-01
20070527	1200	5.590E+02	8.4146E-01	8.4146E-01	8.3955E-01
20070528	1200	1.000E-04	1.5793E-07	1.5793E-07	1.6105E-07
20070529	1200	1.000E-04	1.5749E-07	1.5749E-07	1.6082E-07
20070530	1200	3.010E+02	4.5020E-01	4.5020E-01	4.5137E-01
20070531	1200	2.550E+02	3.8049E-01	3.8049E-01	3.8208E-01
20070601	1200	2.580E+02	3.8380E-01	3.8380E-01	3.8594E-01
20070602	1200	1.670E+02	2.4804E-01	2.4804E-01	2.4990E-01
20070603	1200	1.230E+02	1.8231E-01	1.8231E-01	1.8401E-01
20070604	1200	2.740E+02	4.0374E-01	4.0374E-01	4.0769E-01
20070605	1200	4.080E+02	5.9845E-01	5.9845E-01	6.0488E-01
20070606	1200	1.000E-04	1.5366E-07	1.5366E-07	1.5869E-07
20070607	1200	1.000E-04	1.5316E-07	1.5316E-07	1.5839E-07
20070608	1200	8.550E+02	1.2386E+00	1.2386E+00	1.2562E+00
20070609	1200	7.240E+02	1.0459E+00	1.0459E+00	1.0625E+00
20070610	1200	3.740E+02	5.3966E-01	5.3966E-01	5.4943E-01
20070611	1200	1.000E-04	1.5109E-07	1.5109E-07	1.5715E-07
20070612	1200	2.980E+02	4.2734E-01	4.2734E-01	4.3645E-01
20070613	1200	5.000E+02	7.1320E-01	7.1320E-01	7.2901E-01
20070614	1200	2.000E+02	2.8516E-01	2.8516E-01	2.9220E-01
20070615	1200	1.390E+02	1.9771E-01	1.9771E-01	2.0298E-01
20070616	1200	2.160E+02	3.0565E-01	3.0565E-01	3.1408E-01
20070617	1200	1.000E-04	1.4785E-07	1.4785E-07	1.5512E-07
20070618	1200	4.710E+02	6.5978E-01	6.5978E-01	6.7932E-01
20070619	1200	3.230E+02	4.5134E-01	4.5134E-01	4.6558E-01
20070620	1200	3.740E+02	5.2036E-01	5.2036E-01	5.3746E-01
20070621	1200	1.780E+02	2.4734E-01	2.4734E-01	2.5605E-01
20070622	1200	2.860E+02	3.9524E-01	3.9524E-01	4.0952E-01
20070623	1200	1.790E+02	2.4681E-01	2.4681E-01	2.5623E-01
20070624	1200	5.900E+01	8.1340E-02	8.1340E-02	8.4673E-02
20070625	1200	1.000E-04	1.4337E-07	1.4337E-07	1.5215E-07
20070626	1200	1.580E+02	2.1538E-01	2.1538E-01	2.2458E-01
20070627	1200	3.160E+02	4.2803E-01	4.2803E-01	4.4658E-01
20070628	1200	4.260E+02	5.7412E-01	5.7412E-01	5.9964E-01
20070629	1200	2.870E+02	3.8576E-01	3.8576E-01	4.0365E-01
20070630	1200	9.100E+01	1.2230E-01	1.2230E-01	1.2832E-01
20070701	1200	1.210E+02	1.6180E-01	1.6180E-01	1.6994E-01
20070702	1200	6.200E+01	8.2753E-02	8.2753E-02	8.7105E-02
20070703	1200	1.000E-04	1.3880E-07	1.3880E-07	1.4894E-07
20070704	1200	1.080E+02	1.4270E-01	1.4270E-01	1.5051E-01
20070705	1200	1.770E+02	2.3250E-01	2.3250E-01	2.4543E-01
20070706	1200	3.200E+02	4.1775E-01	4.1775E-01	4.4126E-01
20070707	1200	5.100E+01	6.6720E-02	6.6720E-02	7.0719E-02
20070708	1200	1.220E+02	1.5847E-01	1.5847E-01	1.6801E-01
20070709	1200	1.630E+02	2.1063E-01	2.1063E-01	2.2353E-01
20070710	1200	7.100E+01	9.1621E-02	9.1621E-02	9.7456E-02
20070711	1200	7.300E+01	9.3797E-02	9.3797E-02	9.9897E-02
20070712	1200	2.720E+02	3.4646E-01	3.4646E-01	3.6889E-01
20070713	1200	2.040E+02	2.5901E-01	2.5901E-01	2.7622E-01
20070714	1200	2.650E+02	3.3474E-01	3.3474E-01	3.5732E-01
20070715	1200	1.010E+02	1.2746E-01	1.2746E-01	1.3638E-01
20070716	1200	2.420E+02	3.0321E-01	3.0321E-01	3.2450E-01

20070717	1200	1.250E+02	1.5631E-01	1.5631E-01	1.6762E-01
20070718	1200	4.700E+02	5.8260E-01	5.8260E-01	6.2453E-01
20070719	1200	1.650E+02	2.0440E-01	2.0440E-01	2.1964E-01
20070720	1200	6.400E+01	7.9205E-02	7.9205E-02	8.5303E-02
20070721	1200	1.320E+02	1.6227E-01	1.6227E-01	1.7482E-01
20070722	1200	5.100E+01	6.2636E-02	6.2636E-02	6.7632E-02
20070723	1200	2.390E+02	2.9077E-01	2.9077E-01	3.1374E-01
20070724	1200	1.570E+02	1.9048E-01	1.9048E-01	2.0586E-01
20070725	1200	9.700E+01	1.1739E-01	1.1739E-01	1.2708E-01
20070726	1200	2.900E+01	3.5093E-02	3.5093E-02	3.8085E-02
20070727	1200	9.800E+01	1.1761E-01	1.1761E-01	1.2759E-01
20070728	1200	1.000E-04	1.2498E-07	1.2498E-07	1.3827E-07
20070729	1200	1.210E+02	1.4392E-01	1.4392E-01	1.5641E-01
20070730	1200	1.820E+02	2.1529E-01	2.1529E-01	2.3410E-01
20070731	1200	1.270E+02	1.4980E-01	1.4980E-01	1.6312E-01

Table 1. Streamflow-gaging stations with continuous records adjacent to Great Salt Lake, Utah, where stream discharge and water-quality samples were collected to simulate selenium loads.

[*, missing discharge record reconstructed with adjacent streamflow gages]

Field ID	USGS station identification number	USGS station name	Number of selenium samples collected for model calibration	Time period for which loads were simulated
BR	411403112200801	Bear River Bay Outflow at GSL Minerals Corp Bridge	42	03/21/06 thru 07/31/2007*
WR	411316112132201	North Fork Weber River near West Warren, Utah	12	05/11/06 thru 07/31/2007
GD	10172630	Goggin Drain near Magna, Utah	41	05/03/06 thru 07/31/2007
LC	10172640	Lee Creek near Magna, Utah	14	05/18/06 thru 07/31/2007
KUCC	10172650	Kennecott Drain near Magna, Utah	134	10/01/2005 thru 07/31/2007
FB	410401112134801	GSL Farmington Bay Outflow at Causeway Bridge	47	05/03/2006 thru 07/31/2007*

Table 2. Results of field process blanks and sample replicates collected at inflow sites to Great Salt Lake from May 2006 through July 2007. Location of each site shown in Figure 1.

[BR, Bear River Bay Outflow at GSL Minerals Corp. Bridge; FB, GSL Farmington Bay Outflow at Causeway Bridge; GD, Goggin Drain near Magna, Utah; LC, Lee Creek near Magna, Utah; WR, North Fork Weber River near West Warren, Utah; FA, filtered and acidified; RA, unfiltered and acidified; ug/L, micrograms per liter; U, analyte was not detected at reporting limit; J, analyte concentration is considered estimated due to QC outlier]

Process blank results

Site ID	Sample type	Sample date (dd/mm/yyyy)	Sample time hh:mm	Se concentration, in ug/L	Validation flag	Reporting limit, in ug/L
BR	FA	6/21/2006	14:20	0.05	U	0.05
BR	FA	10/10/2006	16:30	0.05	U	0.05
BR	RA	6/21/2006	14:20	0.05	U	0.05
FB	FA	5/8/2006	16:00	0.05	U	0.05
FB	FA	9/7/2006	12:25	0.05	U	0.05
FB	FA	11/20/2006	11:20	0.05	U	0.05
FB	RA	5/8/2006	16:00	0.05	U	0.05
FB	RA	9/7/2006	12:25	0.05	U	0.05
FB	RA	11/20/2006	11:20	0.05	U	0.05
GD	FA	5/17/2006	9:40	0.05	U	0.05
GD	FA	11/9/2006	13:05	0.05	U	0.05
GD	RA	5/17/2006	9:40	0.05	U	0.05
GD	RA	11/9/2006	13:05	0.05	U	0.05
LC	FA	8/10/2006	9:10	0.05	U	0.05
LC	FA	12/21/2006	12:20	0.05		0.05
LC	RA	8/10/2006	9:10	0.05	U	0.05
LC	RA	12/21/2006	12:20	0.05	U	0.05
LC	FA	4/18/2007	12:15	0.05		0.05
LC	RA	4/18/2007	12:15	0.05	U	0.05
LC	RA	7/19/2007	11:20	0.05	U	0.05
LC	FA	7/19/2007	11:20	0.05	U	0.05
LC	RA	2/1/2007	9:25	0.05	U	0.05
LC	FA	2/1/2007	9:25	0.05	U	0.05
WR	FA	8/8/2006	10:30	0.05	U	0.05

Site ID	Sample type	Sample date (dd/mm/yyyy)	Sample time hh:mm	Se concentration, in ug/L	Validation flag	Reporting limit, in ug/L
WR	FA	10/12/2006	9:35	0.05	U	0.05
WR	RA	8/8/2006	10:30	0.05	U	0.05
WR	RA	10/12/2006	9:35	0.05	U	0.05
FB	FA	3/5/2007	13:55	0.05	U	0.05
FB	RA	3/5/2007	13:55	0.05	U	0.05
GSL99	FA	4/5/2007	16:20	0.05	U	0.05
GSL99	RA	4/5/2007	16:20	0.05	U	0.05
FB	FA	5/18/2007	13:20	0.05	U	0.05
FB	RA	5/18/2007	13:20	0.05	U	0.05
WR	FA	6/20/2007	10:20	0.05	U	0.05
WR	RA	6/20/2007	10:20	0.05	U	0.05

Table 2. Results of field process blanks and sample replicates collected at inflow sites to Great Salt Lake from May 2006 through July 2007—continued.

Site ID	Sample type	Sample date (mm/dd/yyyy)	Sample time (hh:mm)	Se concentration, in ug/L	Validation flag	Original-replicate, in ug/L
BR	FA	5/3/2006	14:20	0.219		
BR	FA	5/3/2006	14:25	0.242		-0.023
BR	RA	5/3/2006	14:20	0.307		
BR	RA	5/3/2006	14:25	0.366		-0.059
BR	FA	5/25/2006	14:30	0.301		
BR	FA	5/25/2006	14:35	0.460		-0.159
WR	RA	8/8/2006	9:45	0.148	J	
WR	RA	8/8/2006	9:50	0.153	J	-0.005
WR	FA	8/8/2006	9:45	0.062		
WR	FA	8/8/2006	9:50	0.101		-.039
LC	FA	8/10/2006	9:00	1.53		
LC	FA	8/10/2006	9:05	1.57		-0.04
LC	RA	8/10/2006	9:00	1.64		
LC	RA	8/10/2006	9:05	1.62		0.02
GD	FA	9/5/2006	8:20	1.07	J	
GD	FA	9/5/2006	8:25	1.13	J	-0.06
GD	RA	9/5/2006	8:20	1.17	J	
GD	RA	9/5/2006	8:25	1.16	J	0.01
WR	FA	12/20/2006	12:45	0.189		
WR	FA	12/20/2006	12:50	0.646		-0.457
WR	RA	12/20/2006	12:45	0.192		
WR	RA	12/20/2006	12:50	0.195		-0.003
WR	FA	7/16/2007	14:00	0.236		
WR	FA	7/16/2007	14:05	0.232		0.004
WR	RA	7/16/2007	14:00	0.210		
WR	RA	7/16/2007	14:05	0.218		-0.008
WR	FA	5/17/2007	15:30	0.207		
WR	FA	5/17/2007	15:35	0.214		-0.007
WR	RA	5/17/2007	15:30	0.220		
WR	RA	5/17/2007	15:35	0.192		0.028
GD	FA	1/31/2007	14:35	1.67		
GD	FA	1/31/2007	14:40	1.62		0.05
GD	RA	1/31/2007	14:35	1.68		
GD	RA	1/31/2007	14:40	1.57		0.11
GD	FA	6/18/2007	11:25	1.22		
GD	FA	6/18/2007	11:30	1.21		0.01
GD	RA	6/18/2007	11:25	1.19		
GD	RA	6/18/2007	11:30	1.22		-0.03
FB	FA	4/19/2007	10:45	0.372		
FB	FA	4/19/2007	10:50	0.392		-0.020
FB	RA	4/19/2007	10:45	0.543		
FB	RA	4/19/2007	10:50	0.541		0.002

Table 3. Regression models considered during the automated selection option in LOADEST (Runkel et al., 2004).

[a_0 thru a_6, model-determined regression coefficients; ln, natural log; Q, discharge; dtime, decimal time; pi, 3.141593]

Model number	Regression model
1	$a_0 + a_1 \ln Q$
2	$a_0 + a_1 \ln Q + a_2 \ln Q^2$
3	$a_0 + a_1 \ln Q + a_2 dtime$
4	$a_0 + a_1 \ln Q + a_2 \sin(2\pi dtime) + a_3 \cos(2\pi dtime)$
5	$a_0 + a_1 \ln Q + a_2 \ln Q^2 + a_3 dtime$
6	$a_0 + a_1 \ln Q + a_2 \ln Q^2 + a_3 \sin(2\pi dtime) + a_4 \cos(2\pi dtime)$
7	$a_0 + a_1 \ln Q + a_2 \sin(2\pi dtime) + a_3 \cos(2\pi dtime) + a_4 dtime$
8	$a_0 + a_1 \ln Q + a_2 \ln Q^2 + a_3 \sin(2\pi dtime) + a_4 \cos(2\pi dtime) + a_5 dtime$
9	$a_0 + a_1 \ln Q + a_2 \ln Q^2 + a_3 \sin(2\pi dtime) + a_4 \cos(2\pi dtime) + a_5 dtime + a_6 dtime^2$

Table 4. Instantaneous discharge and associated total (dissolved + particulate) selenium loads measured from May 2006 through May 2007, at measurement sites along the railroad causeway, Great Salt Lake, Utah. Locations of measurement sites shown in Figure 1.

[cfs, cubic feet per second; kg, kilograms]

Site	Date (MM/DD/YY)	North-to-south dis-charge, in cfs	South-to-north dis-charge, in cfs	North-to-south selen-ium load, in kg/day	South-to-north selen-ium load, in kg/day*	Net selen-ium load to Gilbert Bay, in kg/day#
Causeway breach (CB)	05/25/06	0	3,120	0.00	3.79	-3.79
East culvert (EC)	05/25/06	98	294	< 0.06	0.36	> -0.30
West culvert (WC)	05/25/06	131	100	0.12	0.12	0.00
Causeway breach (CB)	09/28/06	0	1,380	0.00	2.06	-2.06
East culvert (EC)	09/26/06	151	173	0.11	0.12	0.01
West culvert (WC)	09/26/06	234	39	0.22	0.06	0.16
Causeway breach (CB)	01/09/07	0	1,720	0.00	2.14	-2.14
East culvert (EC)	01/09/07	92	139	0.07	0.17	-0.10
West culvert (WC)	01/09/07	147	56	<0.09	0.07	< 0.02

Table 4. Instantaneous discharge and associated total (dissolved + particulate) selenium loads measured from May 2006 through May 2007, at measurement sites along the railroad causeway, Great Salt Lake, Utah—continued.

Site	Date (MM/DD/YY)	North-to-south dis-charge, in cfs	South-to-north dis-charge, in cfs	North-to-south selen-ium load, in kg/day	South-to-north selen-ium load, in kg/day*	Net selen-ium load to Gilbert Bay, in kg/day#
Causeway breach (CB)	03/19/07	0	1,880	0.00	3.00	-3.00
East culvert (EC)	03/19/07	218	158	0.46	0.25	0.21
West culvert (WC)	03/19/07	285	59	0.54	0.10	0.44
Causeway breach (CB)	05/30/07	0	1,560	0.00	2.44	-2.44
East culvert (EC)	05/30/07	264	186	0.51	0.29	0.22
West culvert (WC)	05/30/07	464	86	0.86	0.14	0.72

* Calculated using unfiltered selenium concentration at 0.2 meter sample depth at site 2565

Negative value indicates a loss of selenium from Gilbert Bay to the North arm of Great Salt Lake

Table 5. Summary of Mann-Kendall statistical trend analysis conducted on water samples analyzed for dissolved selenium, Great Salt Lake, Utah.

Site identi-fication	Sample depth, in meters	Sampling date range	Number of samples	Calc-ulated Z score	Expected Z score at 95-percent confidence level	Occurrence of upward trend in concentra-tion at 95 percent confidence level	Occurrence of upward trend in concentra-tion at 90 percent confidence level
2267	0.2	5/2006 thru 6/2007	12	1.8515	1.6546	Yes	Yes
2767	0.2	5/2006 thru 6/2007	11	2.1798	1.6546	Yes	Yes
3510	0.2	5/2006 thru 6/2007	12	1.5122	1.6546	No	Yes
2565	0.2	5/2006 thru 6/2007	11	1.3275	1.6546	No	Yes

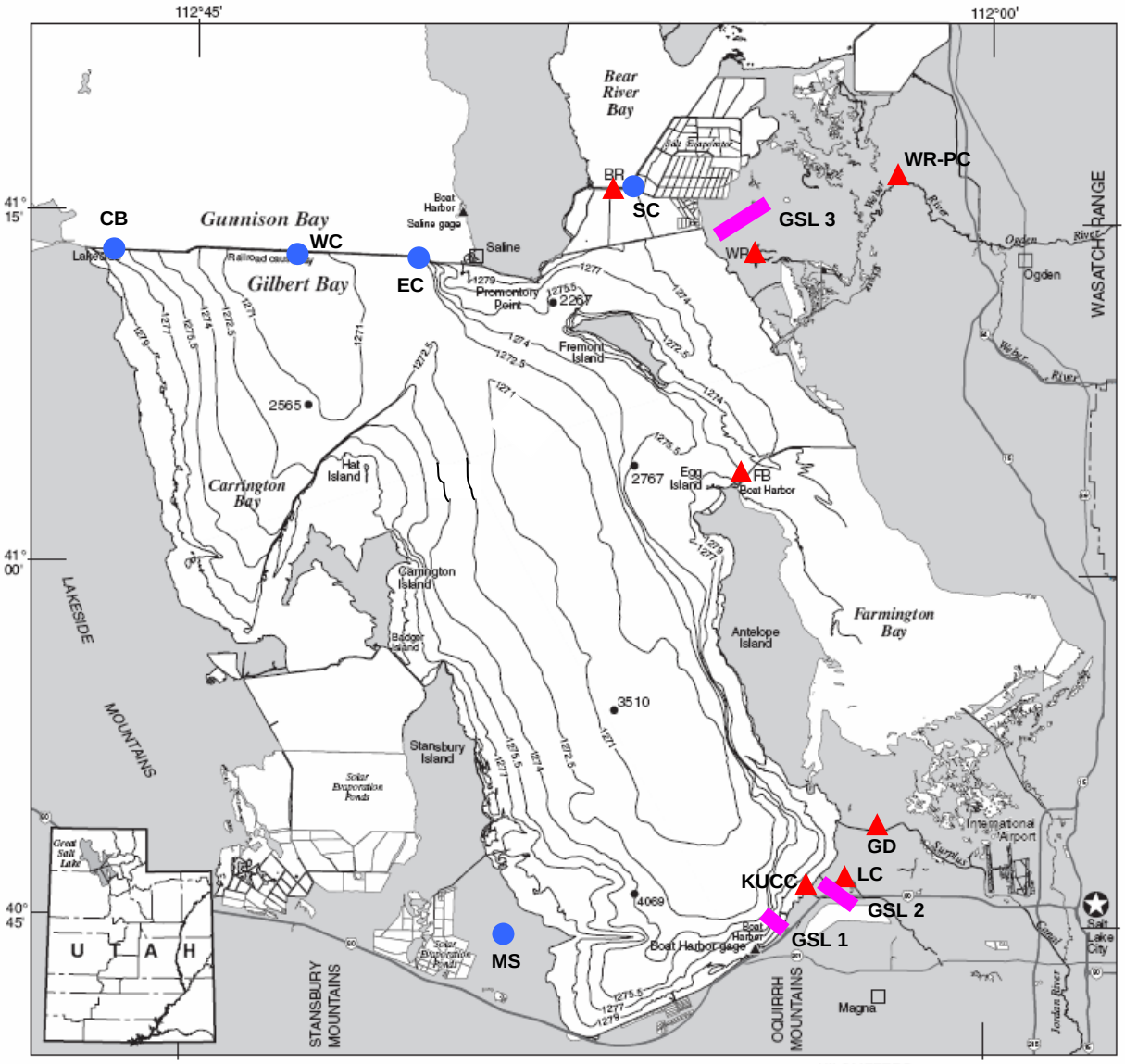
Table 6. Selenium concentration increases expected from riverine inputs compared to observed selenium concentration increase at four lake sites from May 15, 2006 through July 31, 2007, Great Salt Lake, Utah.

Site	#Selenium concentration, in ug/L, on May 15, 2006	#Selenium concentration, in ug/L, on July 31, 2007	^Net change in selenium concentration during monitoring period, in ug/L	*Net change in open water selenium concentration, in ug/L, based on selenium input from May 15, 2006 to July 31, 2007
2767	0.30 (0.50)	0.60 (0.75)	+0.30 (+0.25)	+ 0.17
2267	0.34 (0.50)	0.68 (0.78)	+0.34 (+0.28)	+ 0.17
3510	0.38 (0.48)	0.66 (0.73)	+0.28 (+0.25)	+ 0.17
2565	0.36 (0.46)	0.52 (0.73)	+0.16 (+0.27)	+ 0.17

#Selenium concentration determined from regression model developed from site-specific monitoring data dissolved and (total) collected from May 2006 through July 2007.

^Net change in selenium concentration during monitoring period May 15, 2006 through July 31, 2007, in ug/L dissolved and (total).

*Net change in selenium concentration calculated by dividing total mass of riverine selenium (dissolved + filtered) input to GSL from May 15, 2006 to July 31, 2007 (1,540 kg) divided by measured lake volume on July 31, 2007 of 9.19 X 10^{12} liters (Baskin, 2005).



EXPLANATION

▲ **BR** Continuous stream gage and sample collection site

● **WC** Non-continuous stream gage and sample collection site

—1279— Lake bottom elevation in meters above sea level (Baskin and Allen, 2005)

●2565 Lake-monitoring site

GSL 1 Exposed sediment transect

Figure 1. Location of continuous and non-continuous stream gages, lake monitoring sites, and exposed sediment transects adjacent to and within Great Salt Lake, Utah.

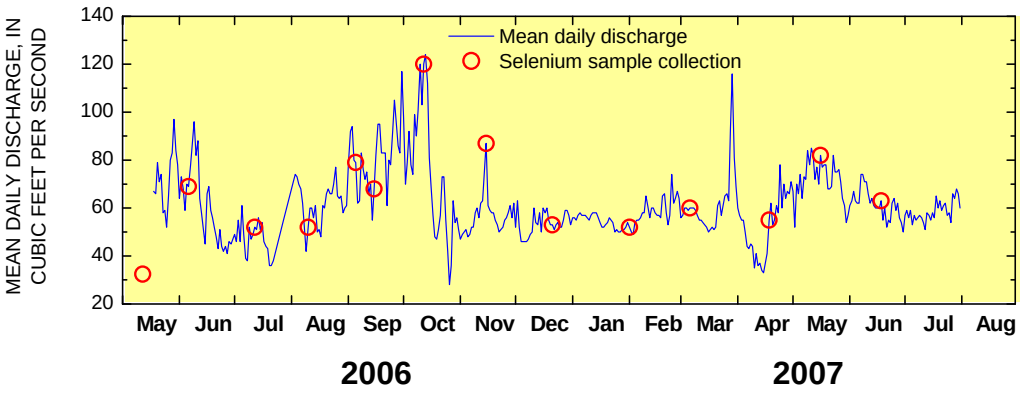


Figure 2. Stream discharge and dates when selenium samples were collected at the Lee Creek gaging station.

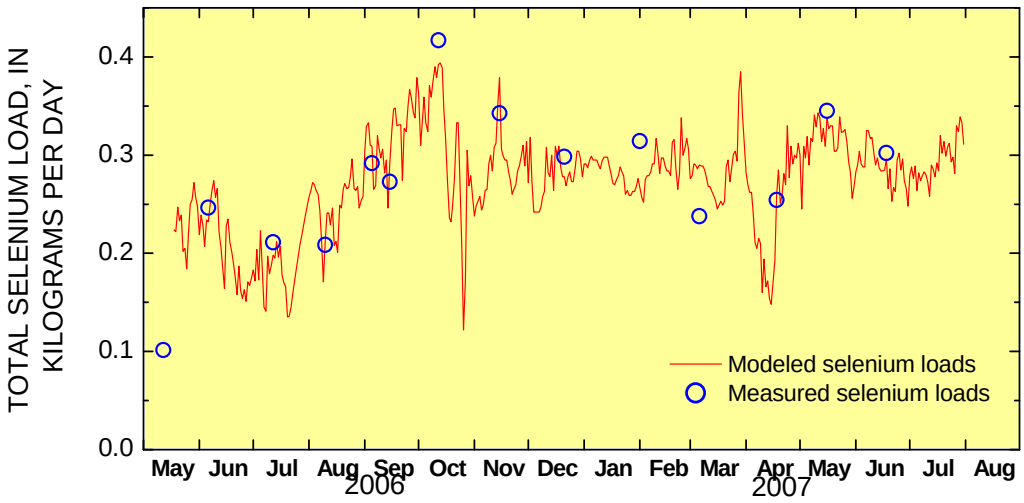


Figure 3. Measured and simulated loads of total Se at the Lee Creek streamflow-gaging station near Magna, Utah during May 2006 through July 2007.

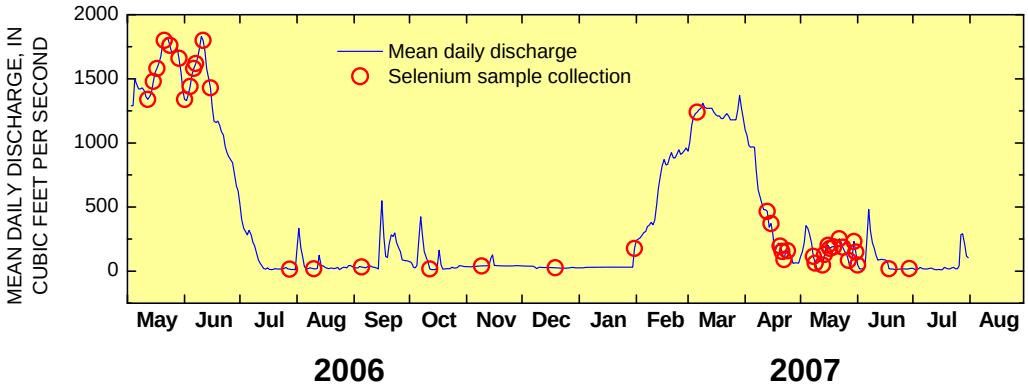


Figure 4. Stream discharge and dates when selenium samples were collected at the Goggin Drain gaging station.

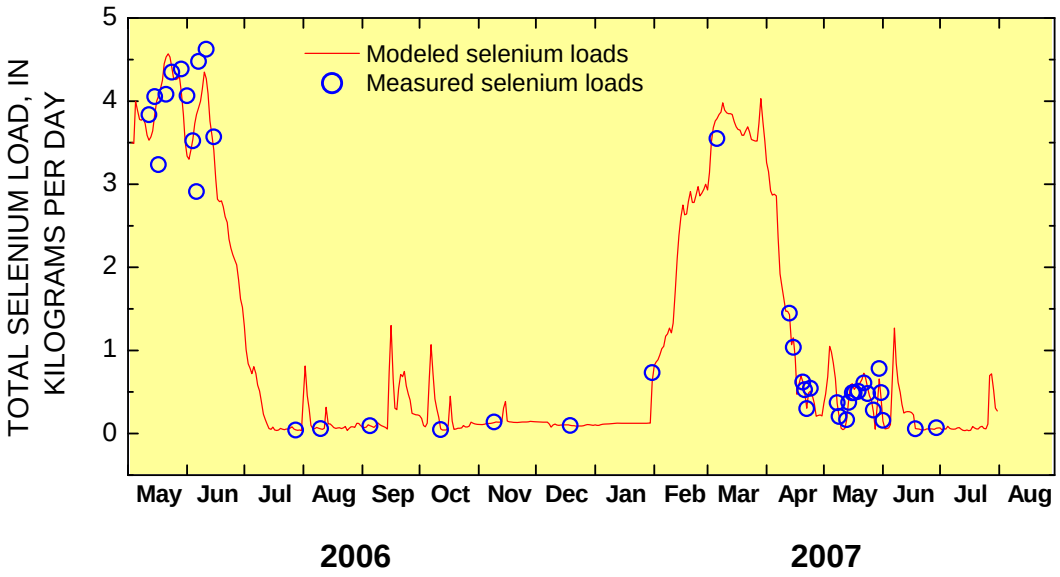


Figure 5. Measured and simulated loads of total Se at the Goggin Drain streamflow-gaging station near Magna, Utah during May 2006 through July 2007.

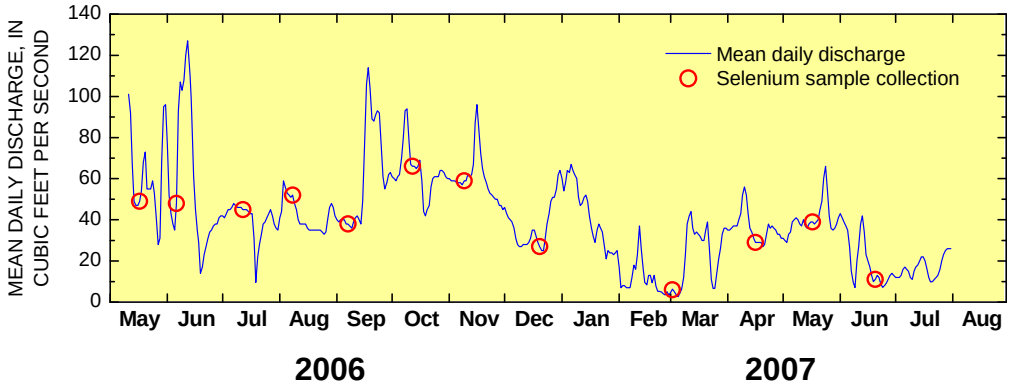


Figure 6. Stream discharge and dates when selenium samples were collected at the Weber River gaging station.

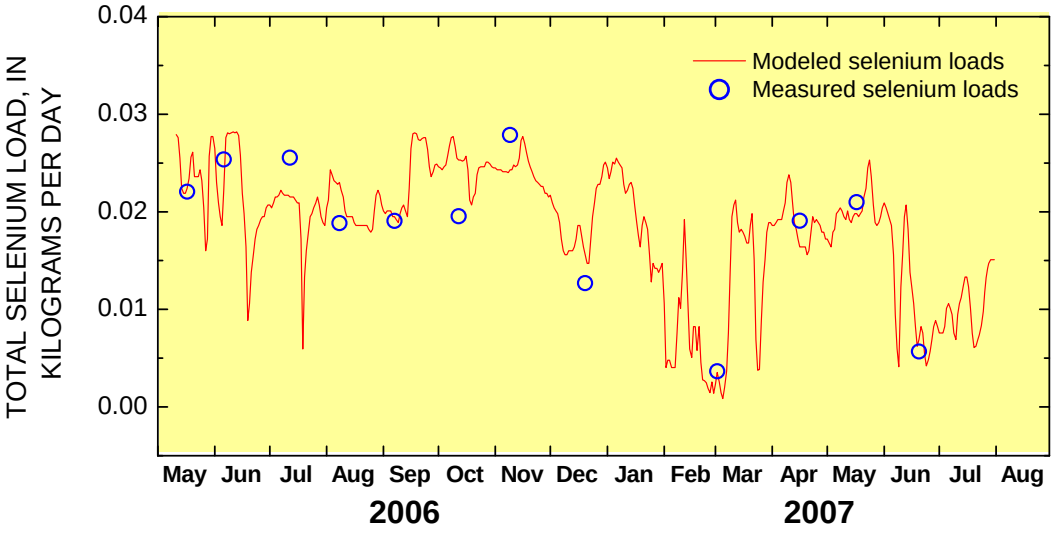


Figure 7. Measured and simulated loads of total Se at the Weber River streamflow-gaging station near West Warren, Utah during May 2006 through July 2007.

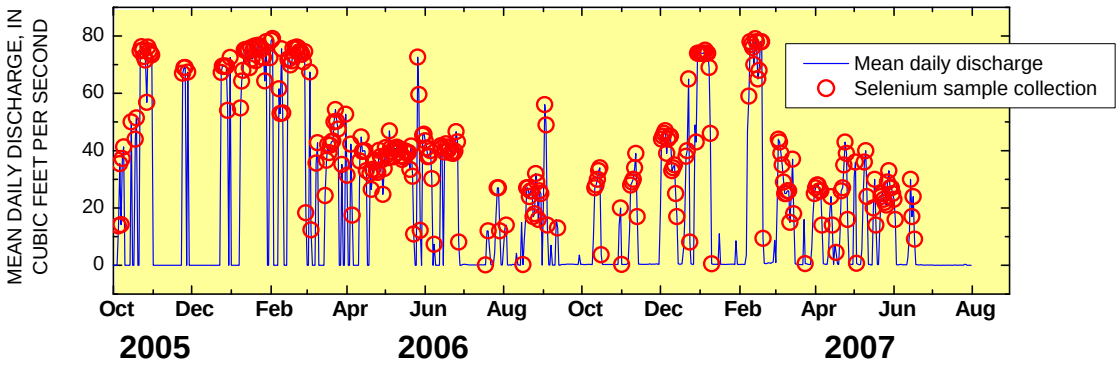


Figure 8. Stream discharge and dates when selenium samples were collected at the KUCC gaging station. Discharge and selenium data prior to June 30, 2006 provided by KUCC (K. Payne, written commun., 2006). Selenium data after June 30, 2006 provided by KUCC and USGS.

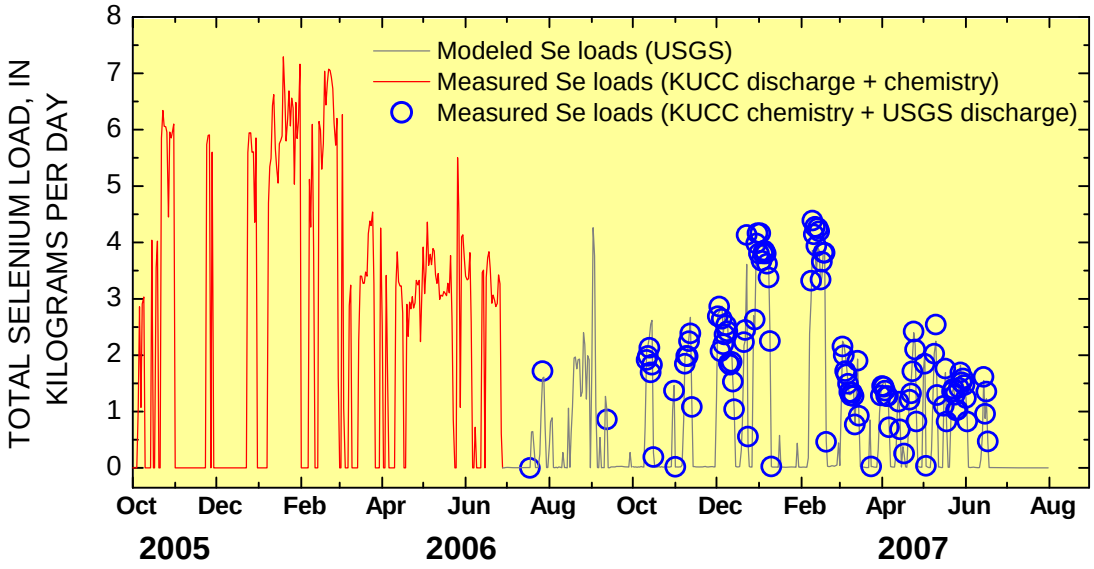


Figure 9. Measured and simulated loads of total Se at the Kennecott Drain streamflow-gaging station near Magna, Utah from October 2005 through July 2007.

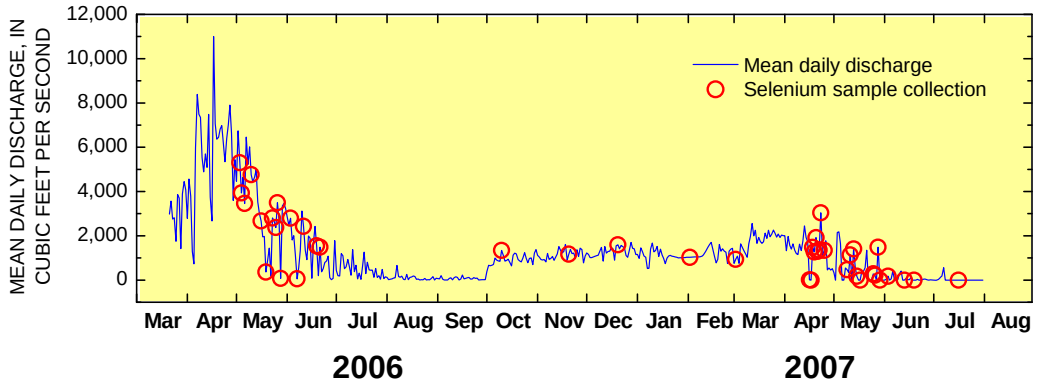


Figure 10. Stream discharge and dates when selenium samples were collected at the Bear River Bay outflow gaging station. Negative mean daily discharge values (wind-driven flow into Bear River Bay) were assigned a discharge value of 0.0001 cubic feet per second. Discharge data between October 1, 2006 and April 15, 2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

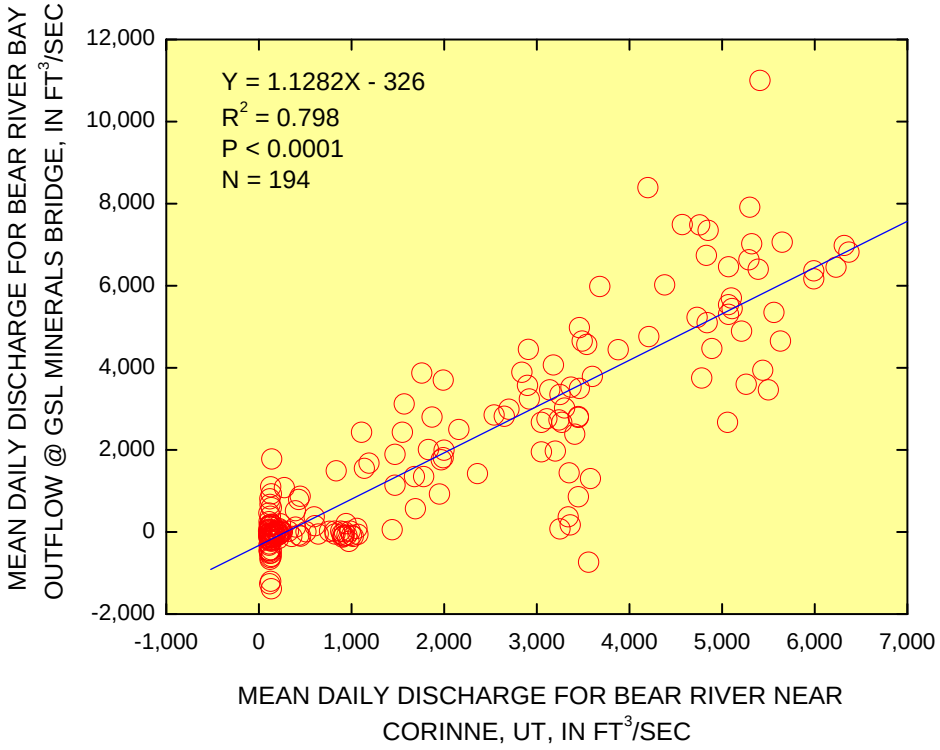


Figure 11. Stream discharge and dates when selenium samples were collected at the Bear River Bay outflow gaging station. Negative mean daily discharge values (wind-driven flow into Bear River Bay) were assigned a discharge value of 0.0001 cubic feet per second. Discharge data between October 1, 2006 and April 15, 2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

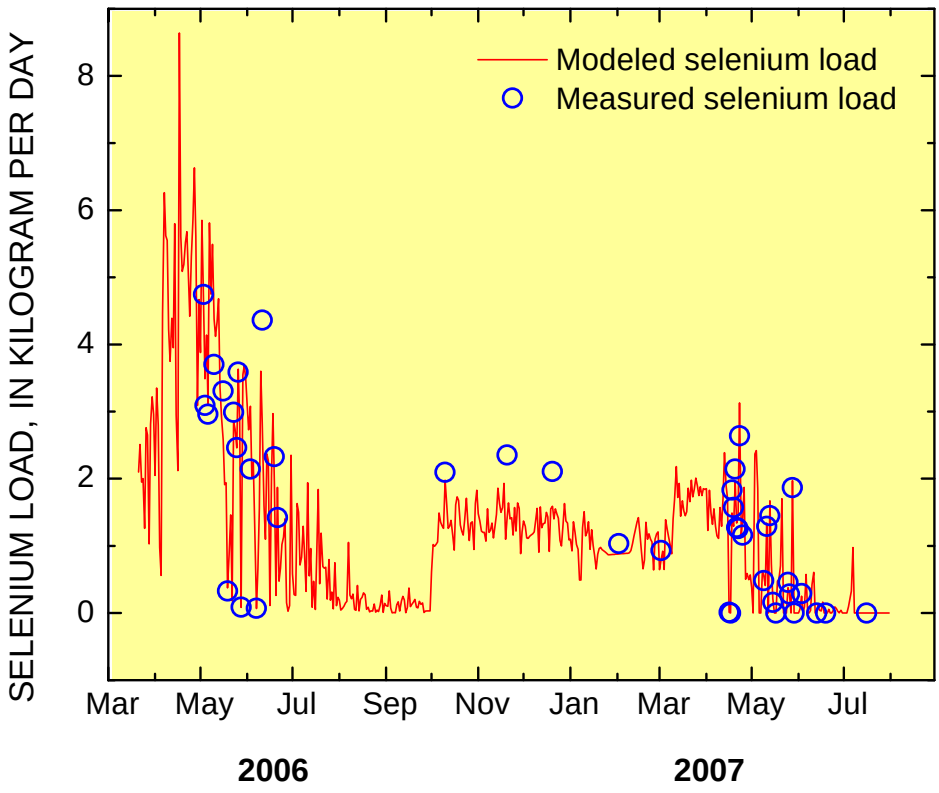


Figure 12. Measured and simulated loads of total selenium at the Bear River Bay Outflow streamflow-gaging station. Load estimates between 10/1/2006 and 04/14/2007 were calculated using a simulated mean daily discharge based on an upstream USGS gage (10126000 Bear River near Corinne, Utah).

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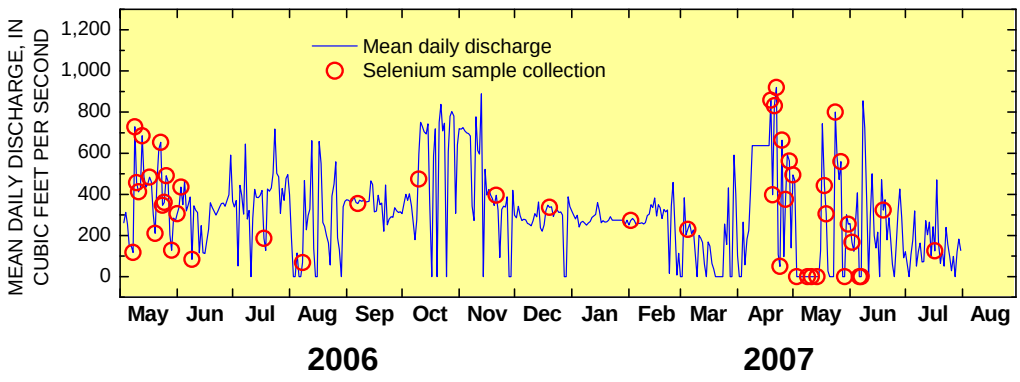

Figure 13. Stream discharge and dates when selenium samples were collected at the Farmington Bay Outflow gaging station. Negative mean daily discharge values (wind-driven flow into Farmington Bay) were assigned a discharge value of 0.0001 cubic feet per second. Because of intermittent periods of missing discharge record, discharge was estimated using the following formula: $Q_{FB} = (Q_{SC} + Q_{JR}) – Q_{GD}$; where Q is the mean daily discharge in cubic feet per second; FB is Farmington Bay Outflow; SC, is the Surplus Canal; JR, is the Jordan River at 1700 South; and GD, is the Goggin Drain. The locations of these sites are shown in Figure 14.

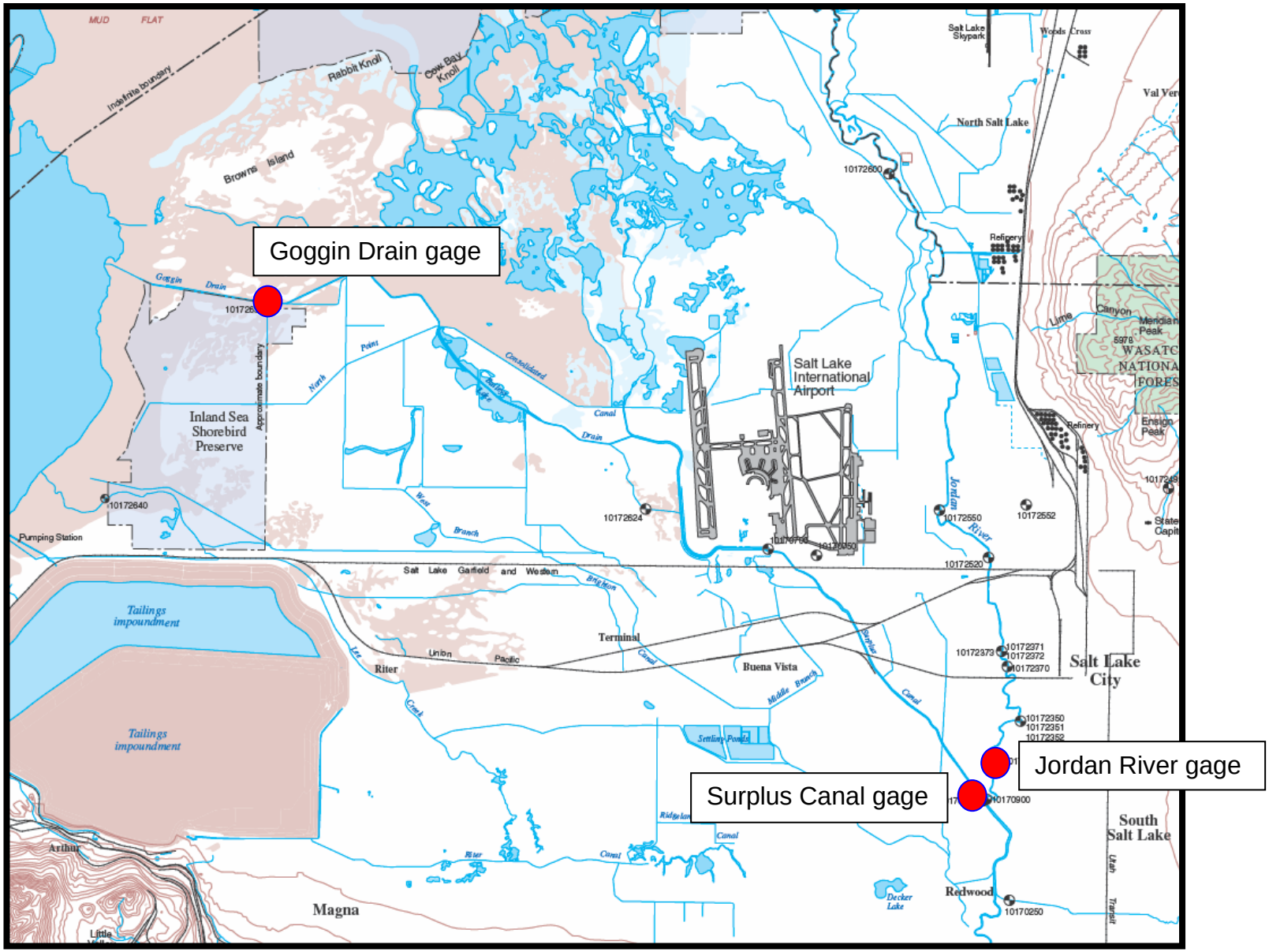

Figure 14. Locations of gages used to estimate mean daily discharge at the Farmington Bay Outflow gage site during periods of missing record.

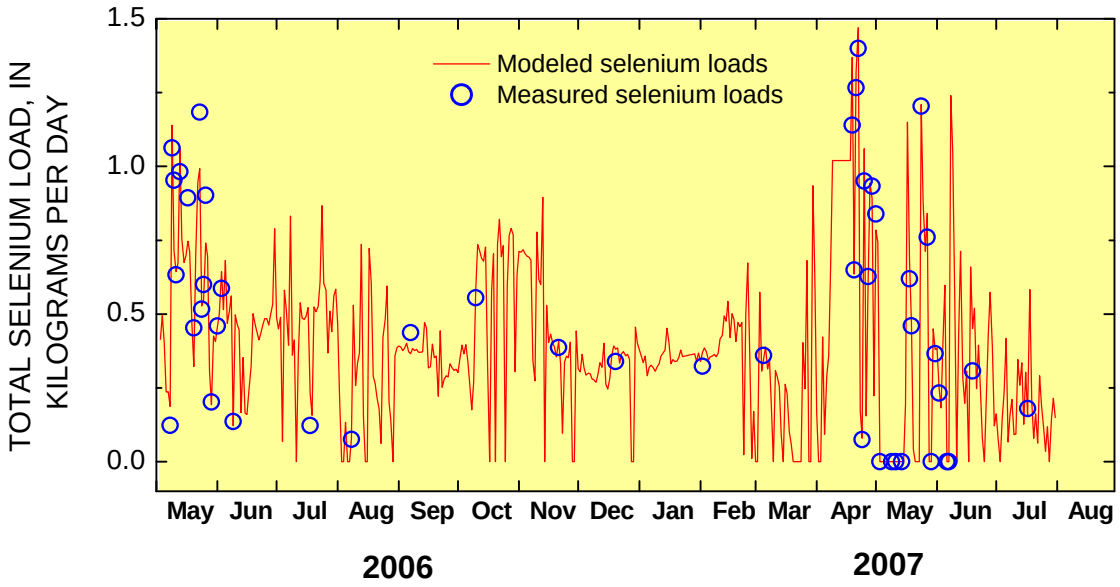

Figure 15. Measured and simulated loads of total selenium at the Farmington Bay outflow streamflow-gaging station. Because of intermittent periods of missing discharge record during 2006, selected selenium load estimates were based on calculated discharge estimates using the following formula: (Q_{FB} = Q_{SC} + Q_{JR}) – Q_{GD}; where Q is the mean daily discharge in cubic feet per second, FB is Farmington Bay Outflow; SC, is the Surplus Canal; JR, is the Jordan River at 1700 South; and GD, is the Goggin Drain. Locations of these additional gage sites are shown in Figure 14.

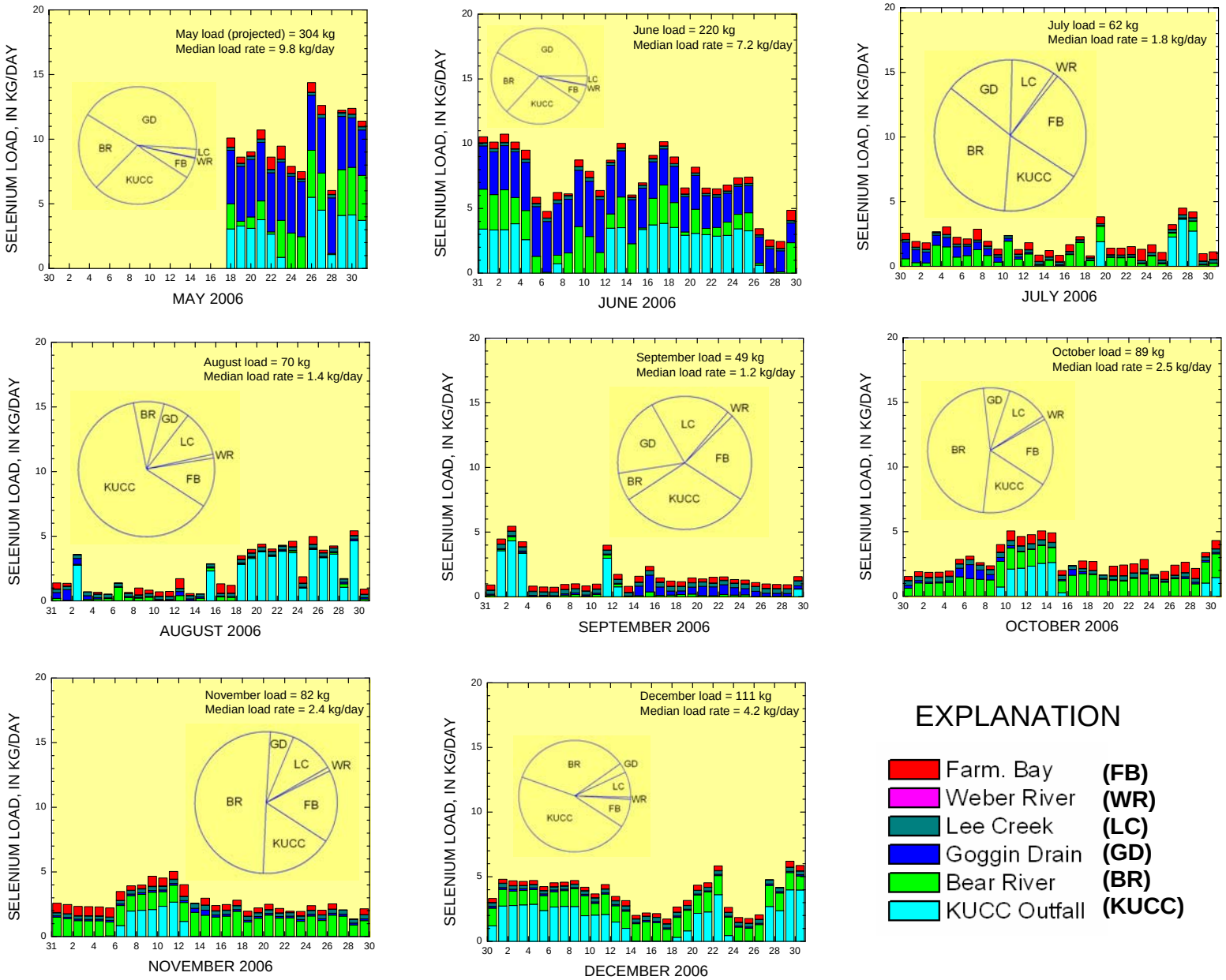

Figure 16. Modeled total (dissolved + particulate) daily selenium loads from May 2006 through July 2007, at the six major inflow sites to Great Salt Lake, Utah. Pie charts indicate relative load contributed by each inflow site.

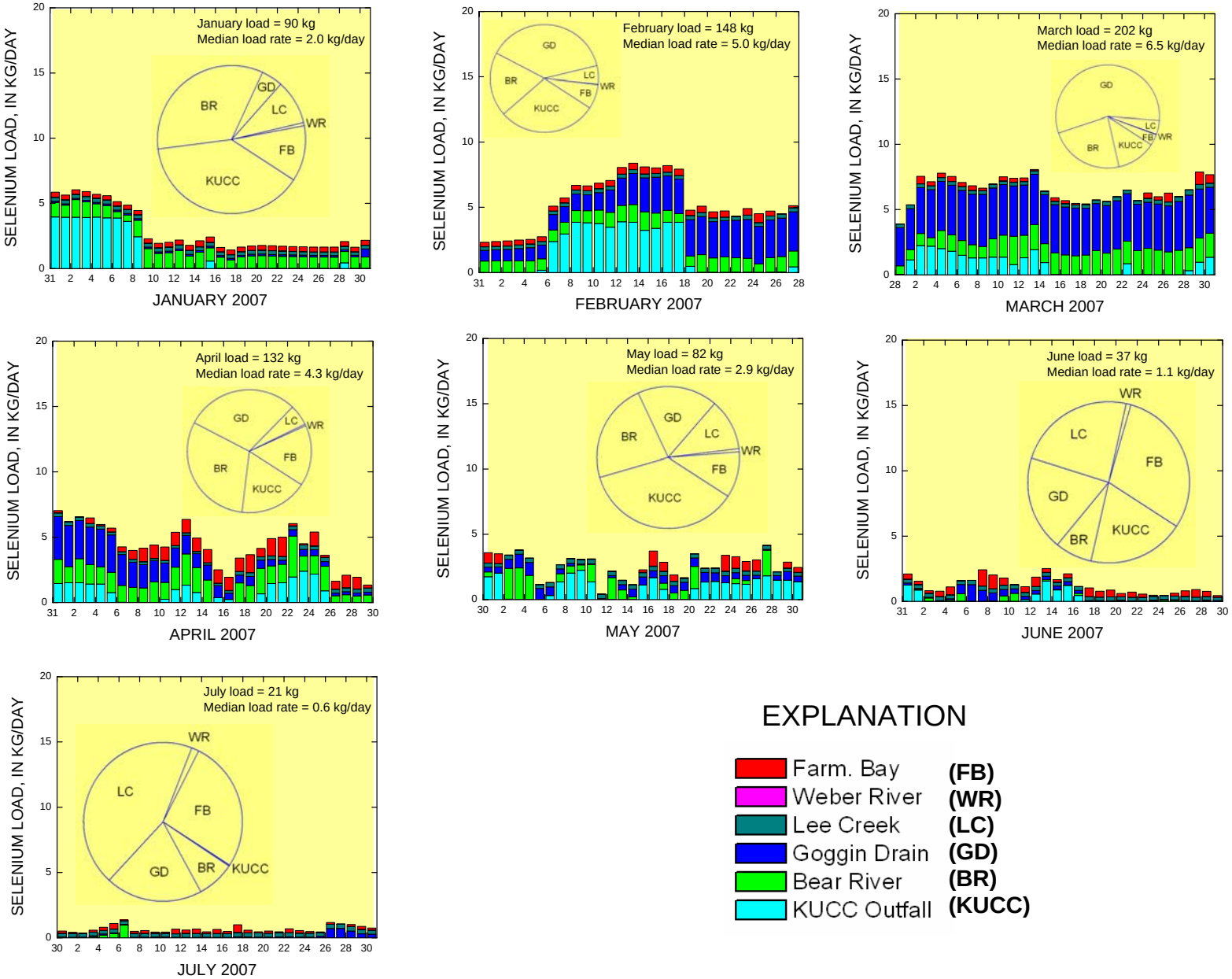

Figure 16. Modeled total (dissolved + particulate) daily selenium loads from May 2006 through July 2007, at the six major inflow sites to Great Salt Lake, Utah—continued.

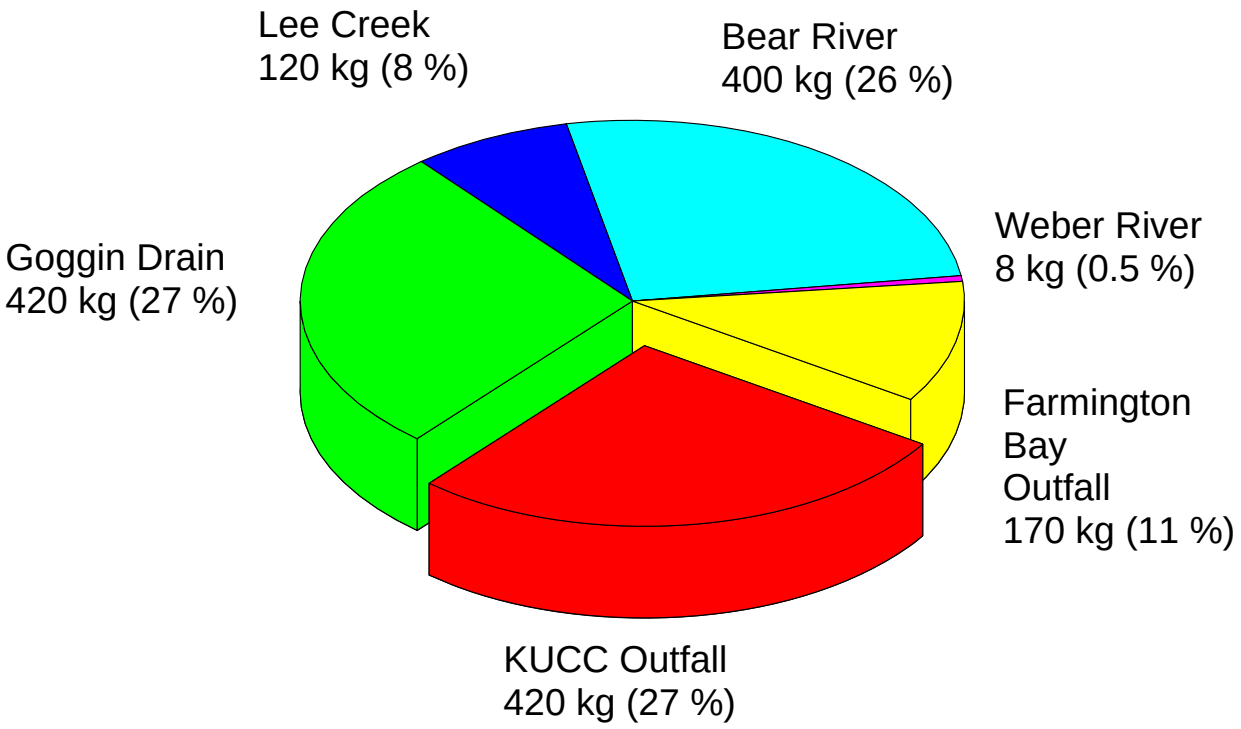

Figure 17. Distribution of total selenium loads contributed to Great Salt Lake from each inflow site from May 18, 2006 to July 31, 2007.

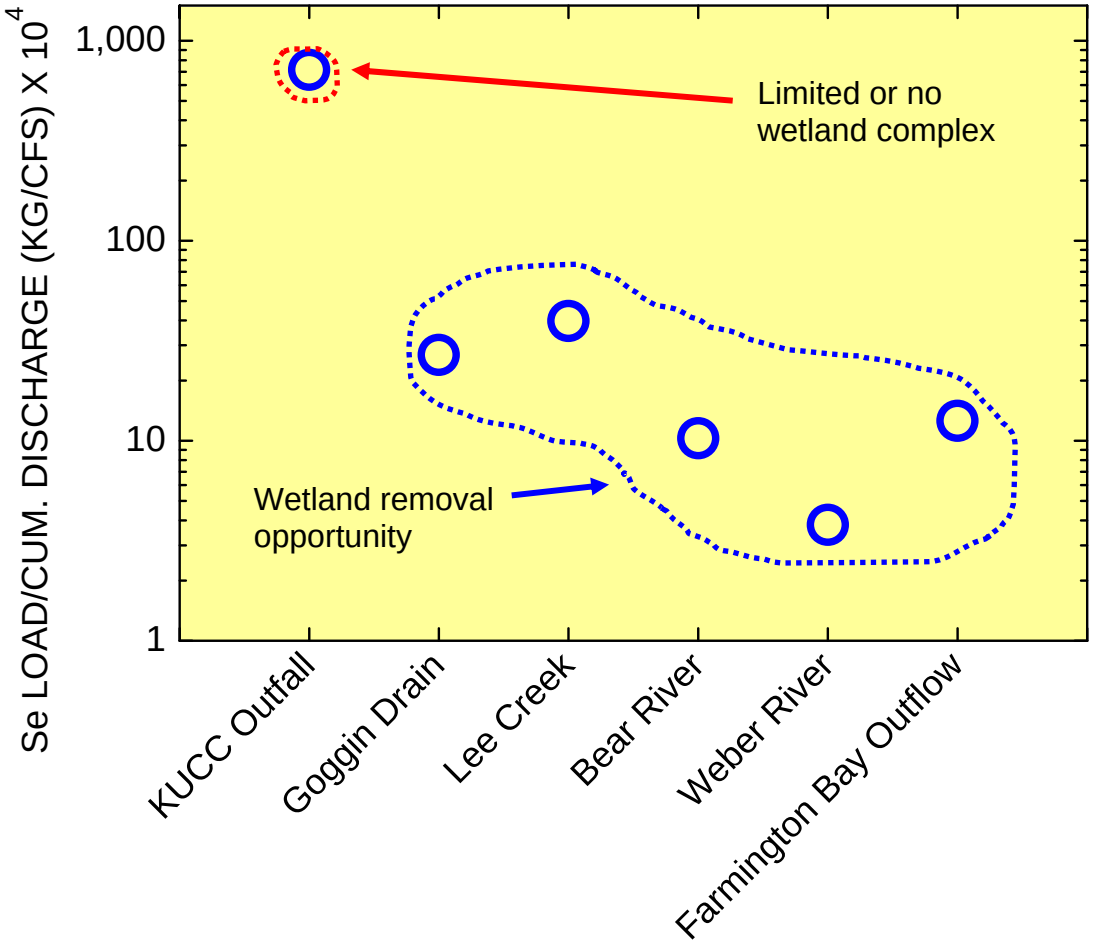

Figure 18. Comparison of cumulative selenium load (May thru December, 2006) divided by cumulative discharge (May 18 thru December 31, 2006) for the six major inflow sources to Great Salt Lake, Utah.

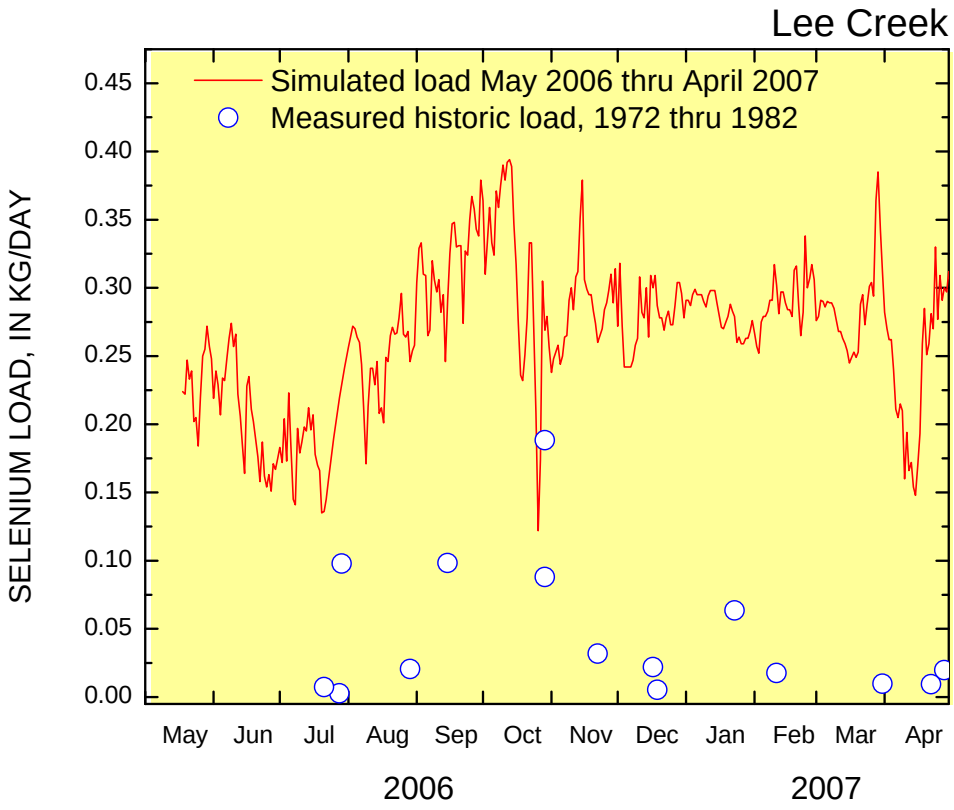

Figure 19. Comparison of simulated daily total (dissolved + particulate) selenium loads (May 2006 through April 2007) with measured historic dissolved (0.45 micron) selenium loads (1972 through 1982) at the Lee Creek gage site.

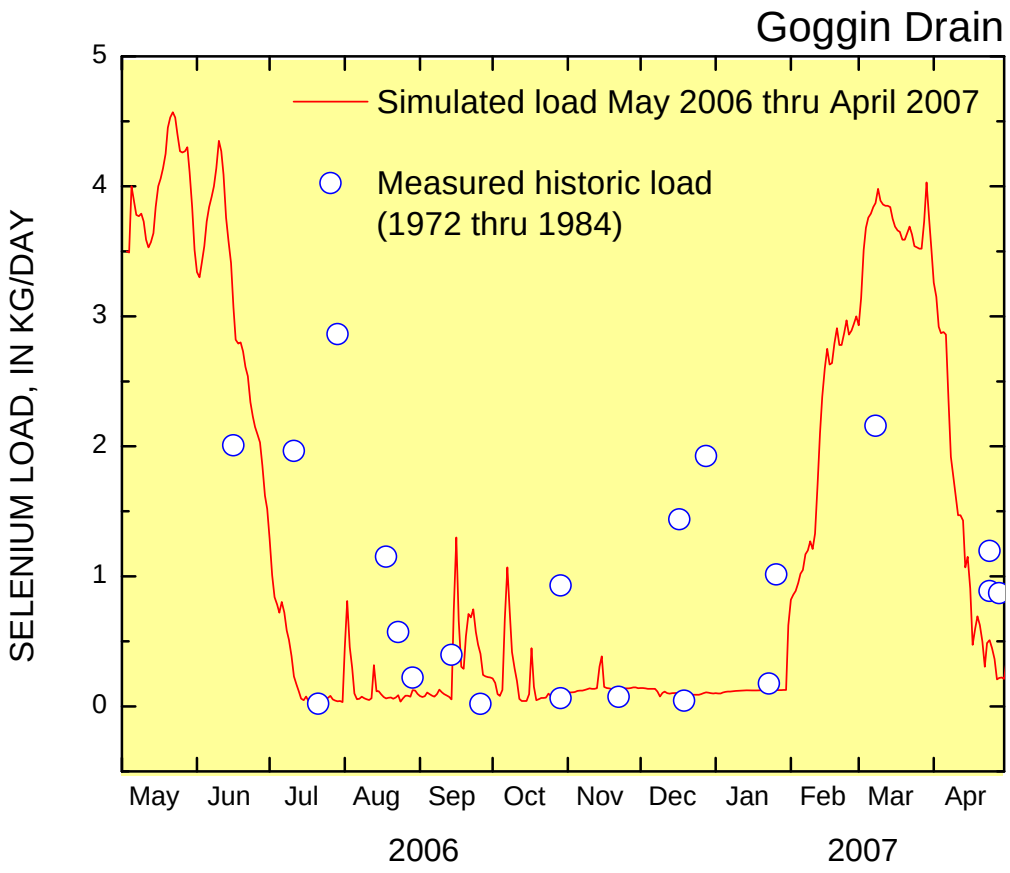

Figure 20. Comparison of simulated daily total (dissolved + particulate) selenium loads (May 2006 through April 2007) with measured historic dissolved (0.45 micron) selenium loads (1972 through 1984) at the Goggin Drain gage site.

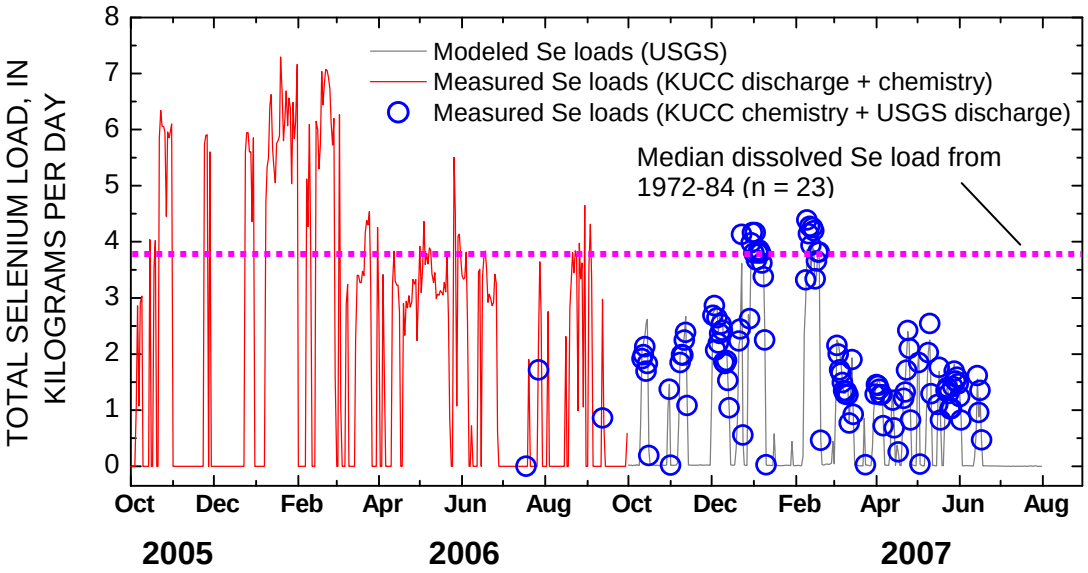

Figure 21. Comparison of present day measured and simulated loads of total Se at the Kennecott Drain streamflow-gaging station to the median dissolved Se loads measured from 1972 to 1984.

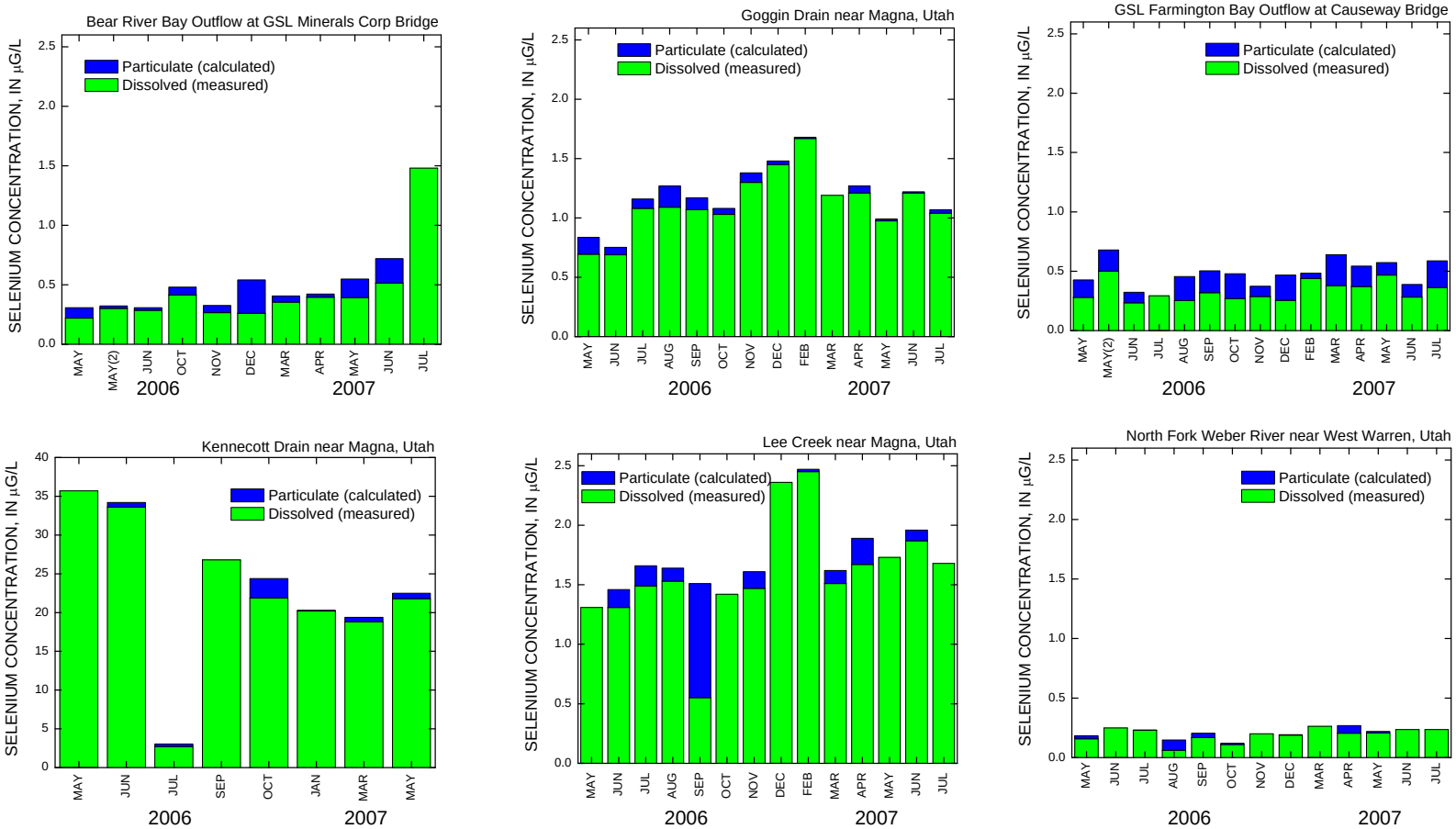

Figure 22. Distribution of dissolved and particulate selenium in water samples collected from inflow sites to Great Salt Lake during May 2006 through July 2007. Note the difference in scale for the KUCC Drain in comparison to other sites.

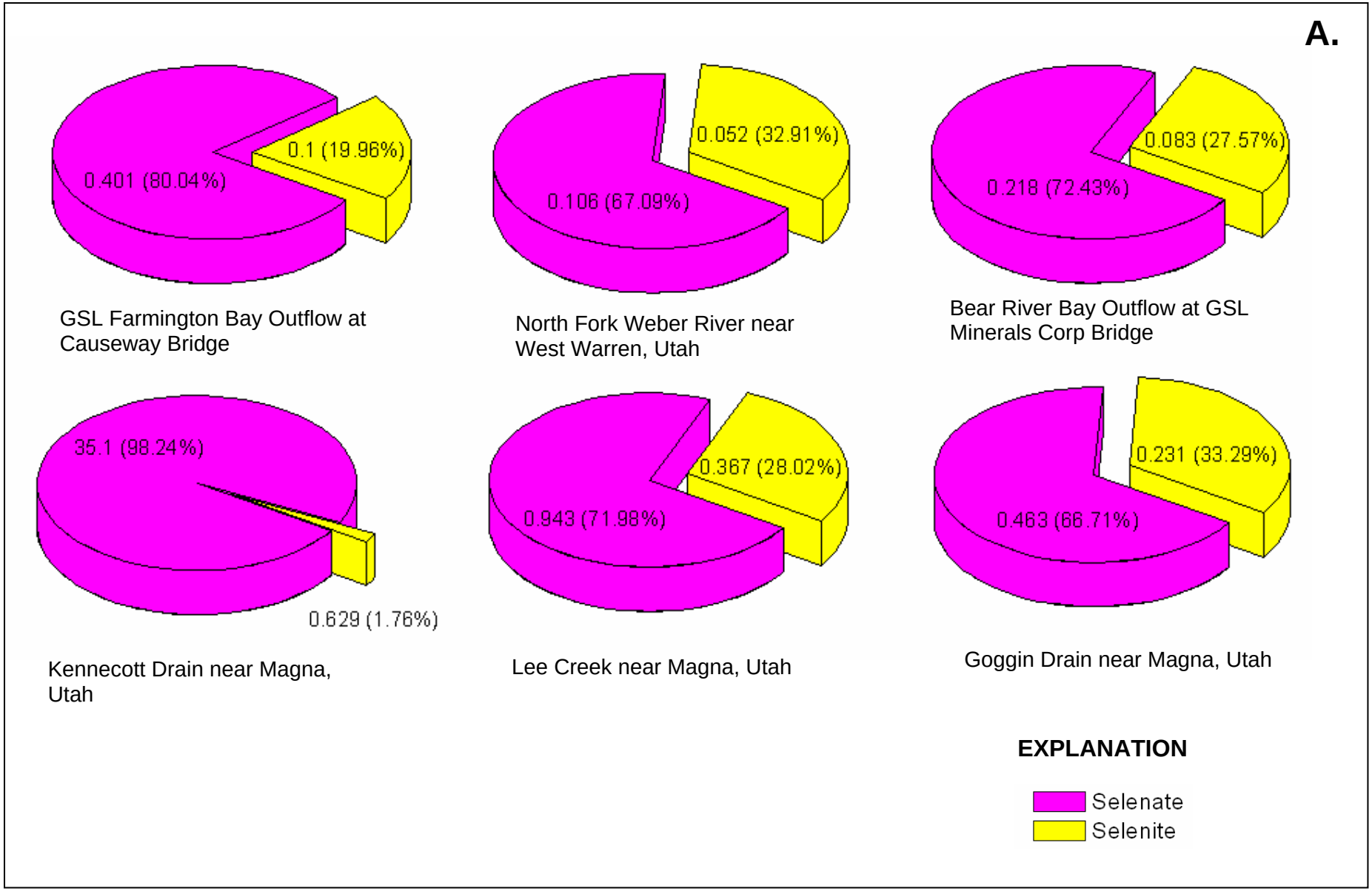

Figure 23. Distribution of selenate and selenite, in ug/L and (percentage of total selenium) in filtered water samples collected from inflow sites to Great Salt Lake during May 2006 (A) and May 2007 (B).

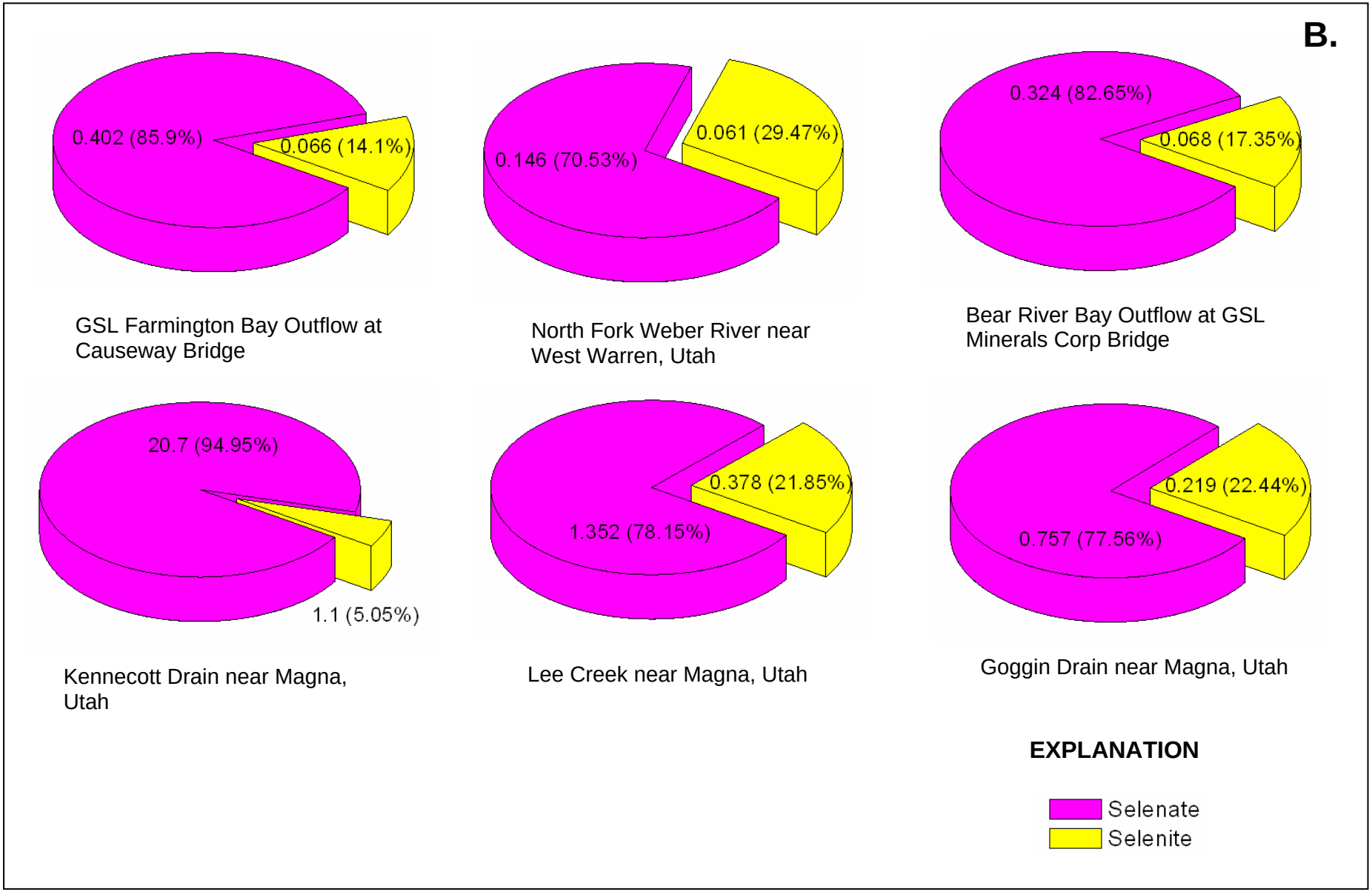

Figure 23. Distribution of selenate and selenite, in ug/L and (percentage of total selenium) in filtered water samples collected from inflow sites to Great Salt Lake during May 2006 (A) and May 2007 (B)--continued.

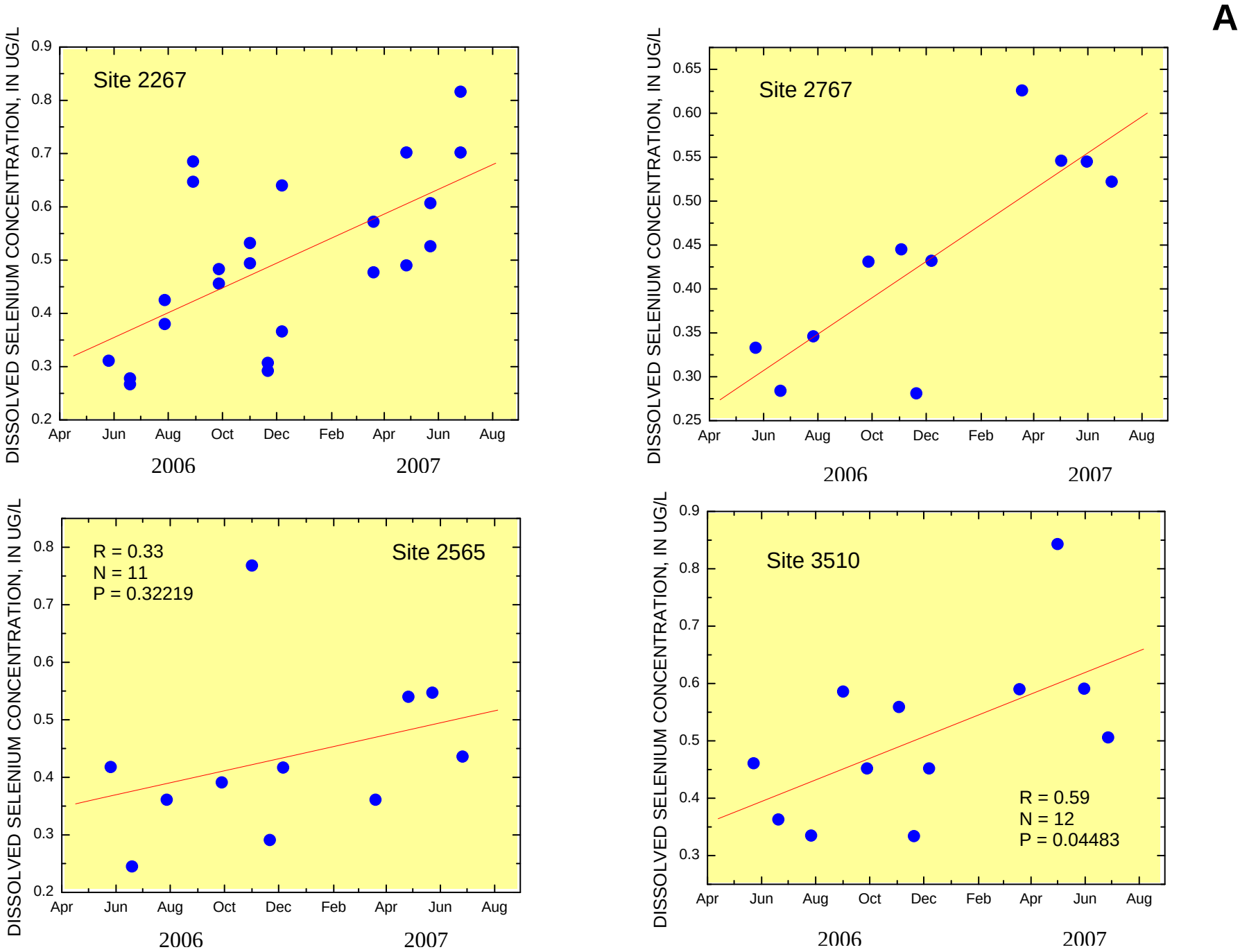

Figure 24. Trends in dissolved (0.45 micron) selenium concentration (A) and total selenium concentration (B) from May 2006 through June 2007 at open water sites, Great Salt Lake, Utah.

B

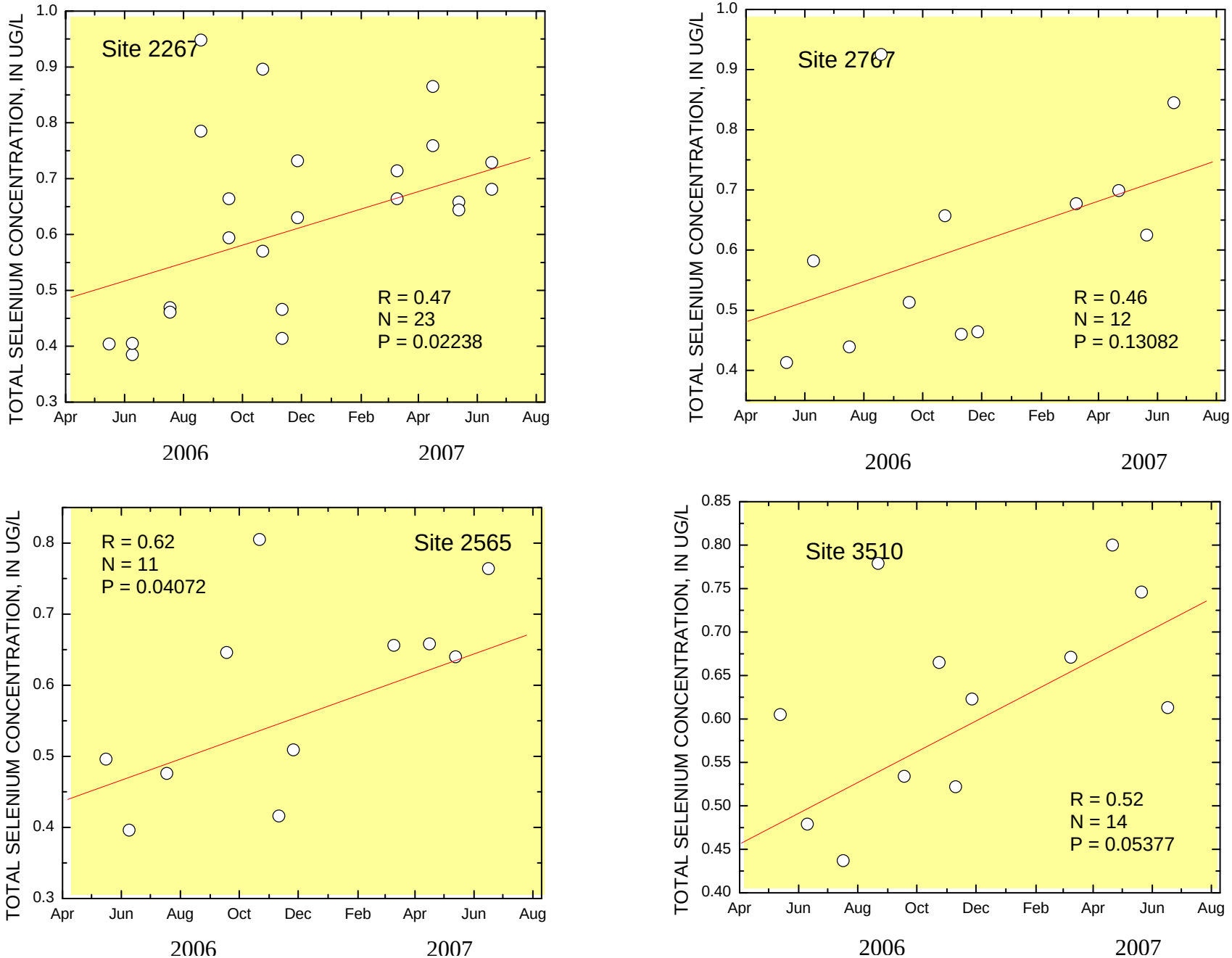

Figure 24. Trends in dissolved (0.45 micron) selenium concentration (A) and total selenium concentration (B) from May 2006 through June 2007 at open water sites, Great Salt Lake, Utah -- continued.

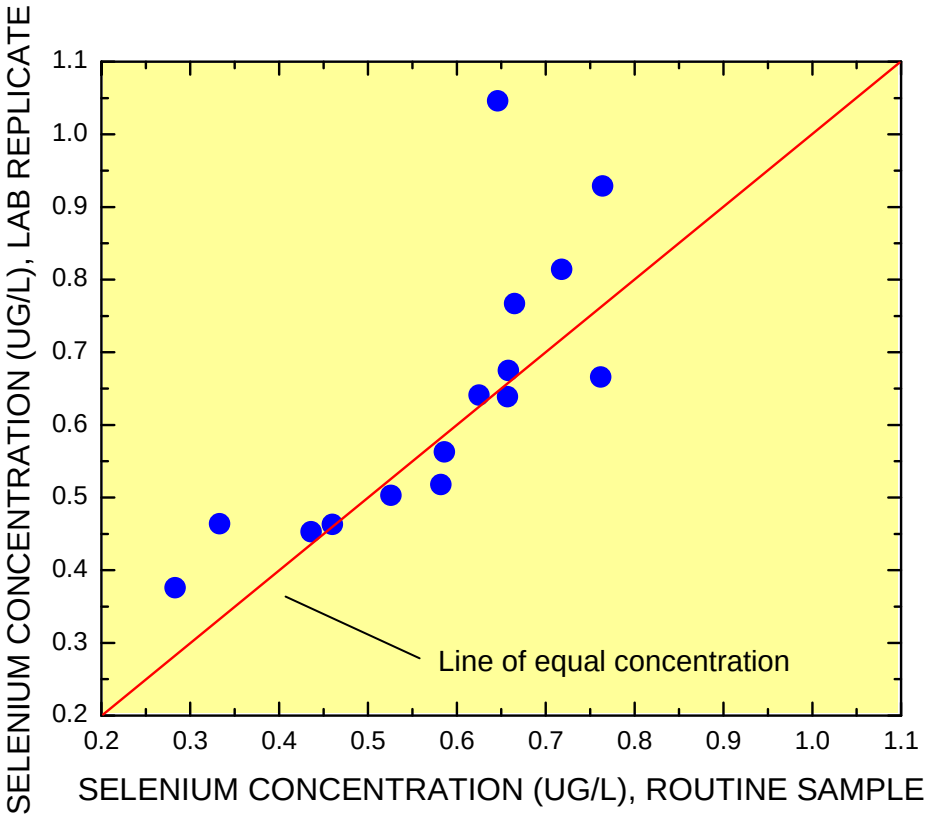

Figure 25. Comparison of dissolved (< 0.45 micron) selenium concentration in laboratory replicates with routine samples collected from near-surface depths at sites 2267, 2767, 2565, and 3510 from May 2006 through June 2007. The mean difference between routine and replicate samples is +/- 15 percent (n = 15). Elimination of the outlier results in a mean difference of +/- 12 percent (n = 14).

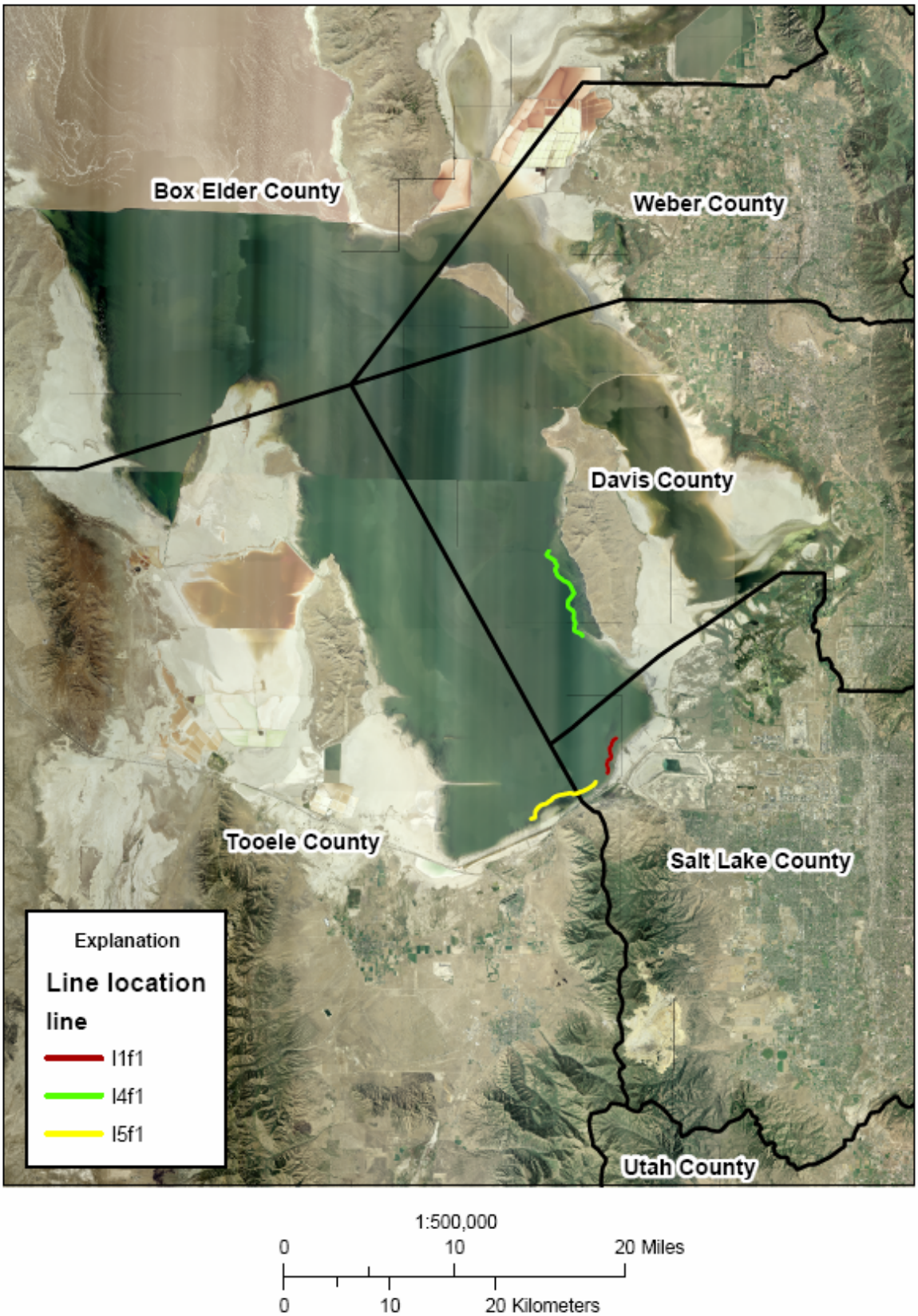

Figure 26. Location of continuous resistivity survey profiles collected during September 2007, Great Salt Lake, Utah.

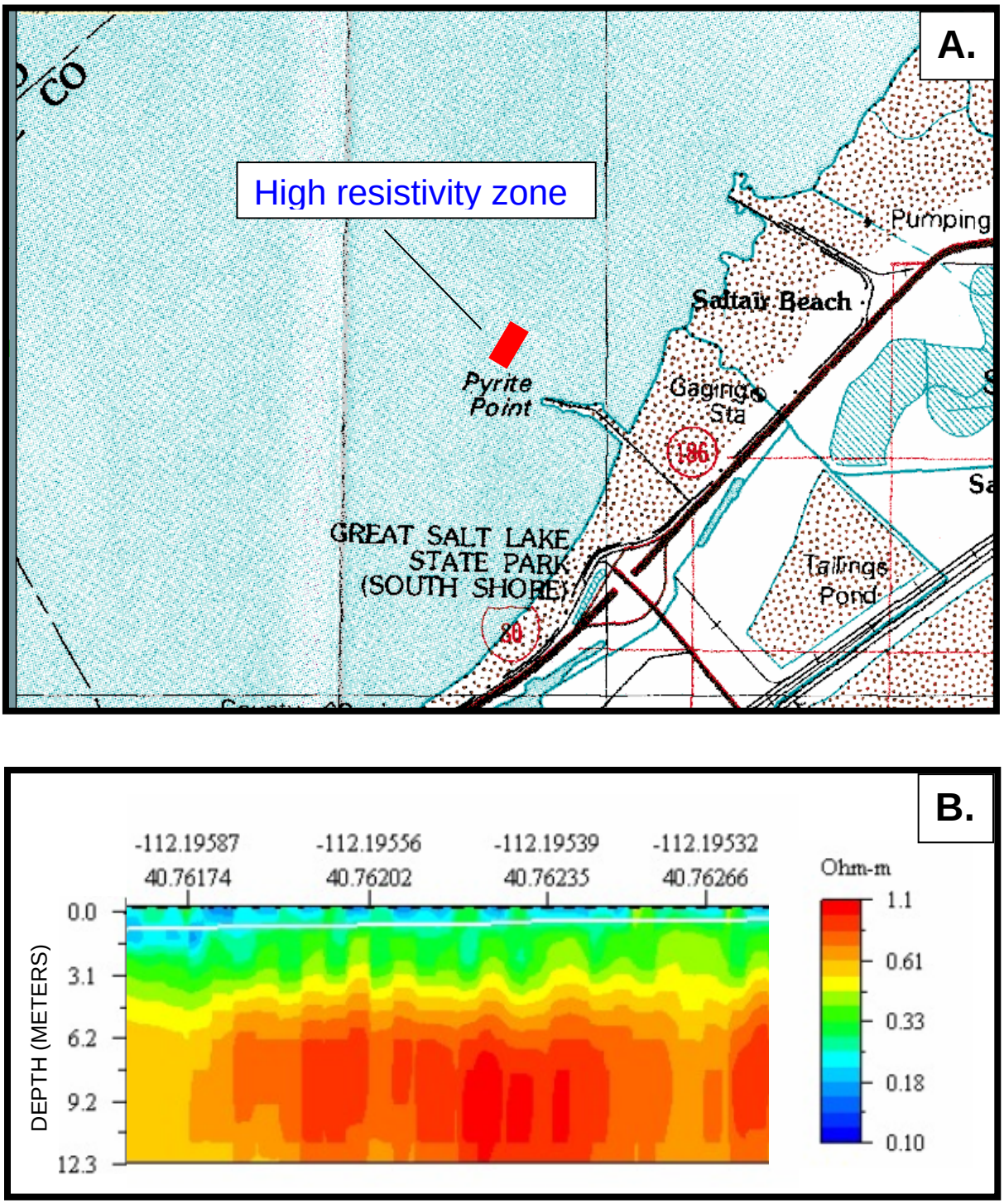

Figure 27. Location of high resistivity zone along transect l1f1 (A) and cross section of resistivity values (B). White horizontal line on resistivity cross section denotes approximate position of surface water/sediment interface.

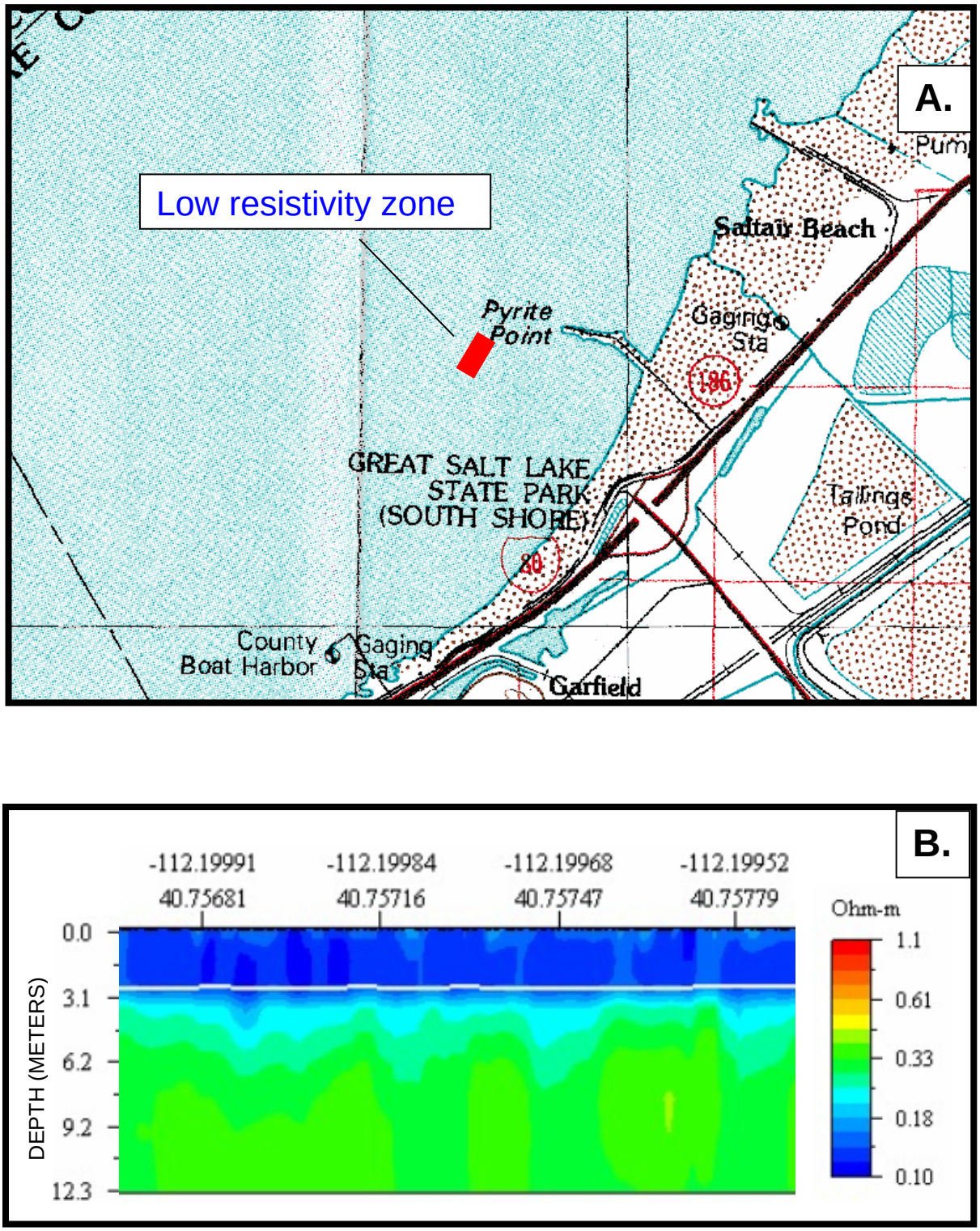

Figure 28. Location of low resistivity zone along transect l1f1 (A) and cross section of resistivity values (B). White horizontal line on resistivity cross section denotes approximate position of surface water/sediment interface.

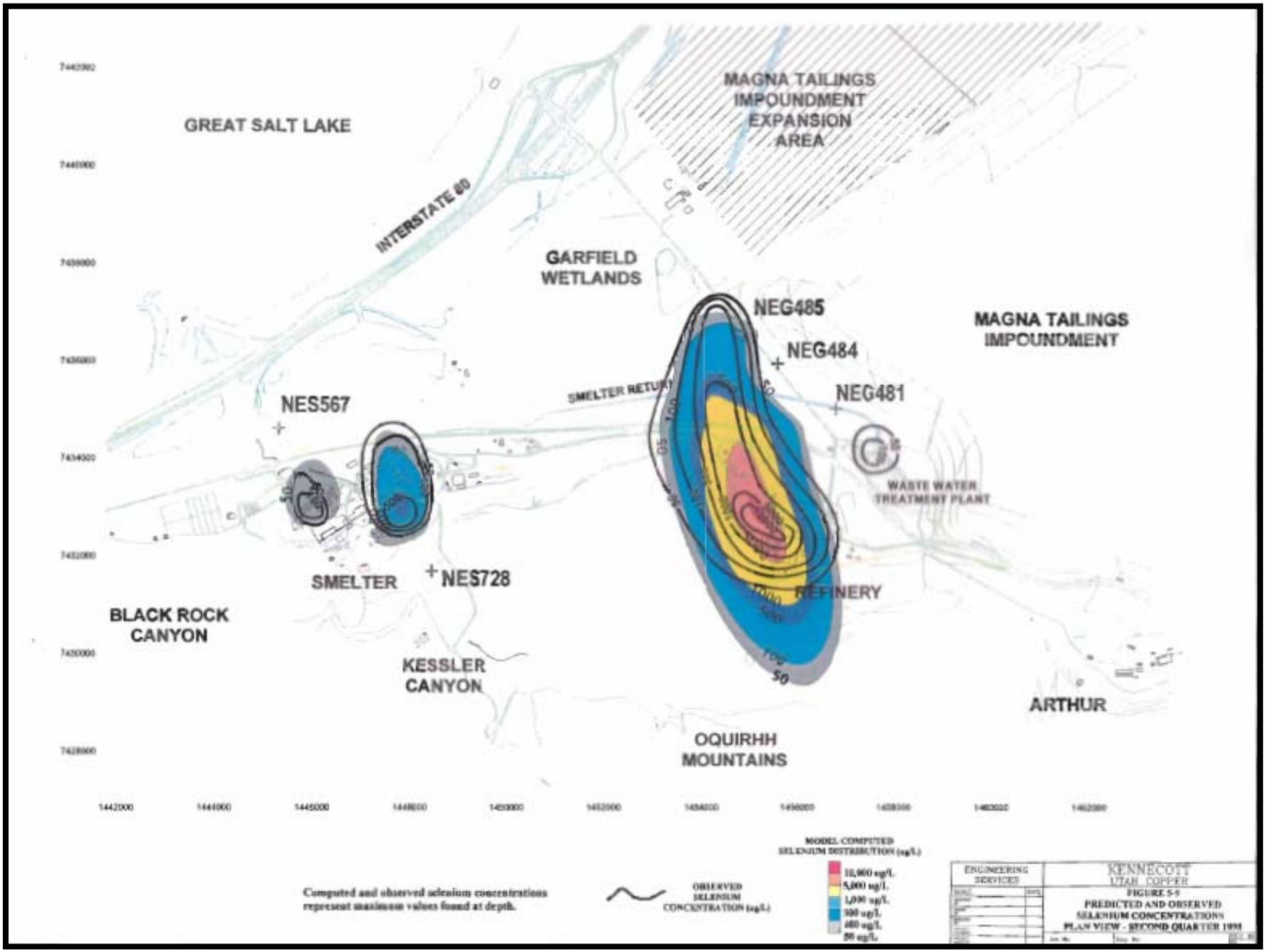

Figure 29. Predicted and observed extent of groundwater contaminant plume containing elevated concentrations of selenium located on the south margin of GSL (KUCC, 1999).