PERIODIC REVIEW

Leichner Brothers Landfill
Facility Site ID#: 1017

9411 Northeast 94th Avenue
Vancouver, Washington 98666

Southwest Region Office

TOXICS CLEANUP PROGRAM

April 2011

1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup site conditions and monitoring data at the Leichner Brothers Landfill. Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC).

The purpose of this periodic review is to determine whether the cleanup remedy at the Leichner Brothers Landfill (Site) continues to be protective of human health and the environment.

Cleanup activities at this Site were completed under Cleanup Action Plan Consent Decree No. 96-2-03081-7 between Ecology and Leichner Brothers Land Reclamation Corporation in 1996. The cleanup actions were necessary to address soil and ground water contamination resulting from hazardous materials contained in a municipal solid waste landfill. In addition, the remedy involved the containment of these hazardous materials. The MTCA cleanup levels for soil are established under WAC 173-340-740. The MTCA cleanup levels for ground water are established under WAC 173-340-720.

WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- Whenever the department conducts a cleanup action
- Whenever the department approves a cleanup action under an order, agreed order or consent decree
- Or, as resources permit, whenever the department issues a no further action opinion;
- And one of the following conditions exists:
  - (a) Institutional controls or financial assurance are required as part of the cleanup
  - (b) Where the cleanup level is based on a practical quantitation limit
  - (c) Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

(a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site;
(b) New scientific information for individual hazardous substances of mixtures present at the site;
(c) New applicable state and federal laws for hazardous substances present at the Site;
(d) Current and projected site use;
(e) Availability and practicability of higher preference technologies; and

(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the site register and provide an opportunity for public comment.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site Operational History

The Leichner Brothers Landfill is a solid waste landfill currently owned and historically operated by Leichner Brothers Land Reclamation Corporation (Leichner). The landfill is located in Clark County, Washington. about 5 miles northeast of the City of Vancouver in Section 4, Township 2N, Range 2E; and Section 33 Township 3N Range 2E of the Willamette Meridian. A vicinity map is available as Appendix 6.1 and a site plan is available as Appendix 6.2.

The facility was a gravel pit prior to the start of landfill operations in the late-1930s. Prior to the mid-1960s, waste received at the landfill was burned. The burning of waste was terminated in the mid-1960s and the landfill subsequently operated by compacting waste in areas where sand and gravel had been mined. The majority of the solid waste received at the landfill was collected by the Clark County Disposal Group from residential and commercial customers located within the city limits of Vancouver and throughout unincorporated Clark County. Solid waste was also received from the other cities and towns within Clark County, and the general public and other self-haul customers. The landfill was open and accepted waste for disposal until the end of 1991. Seventy acres of the 100-acre Site have received solid waste. All of the land filled area has received final closure with an engineered composite cap and a landfill gas control recovery system.

2.2 Regulatory History

2.2.1 Consent Order No. DE 86-S131

In 1987, Ecology and Leichner executed Consent Order No. DE 86-S131 under authority of the State of Washington Water Pollution Control Act, Chapter 90.48 Revised Code of Washington (RCW). This order required Leichner to analyze Site conditions and develop a corrective plan to protect public health and the environment. Work completed under the order confirmed the existence of hazardous substances in ground water under the Site. This work is summarized in the February 1988 Remedial Investigation Report (RI) and the April 1988 Feasibility Study Report (FS), both prepared by EMCON.

2.2.2 Consent Order No. DE 89-S119

In November 1988, voters passed MTCA, which requires remedial actions at sites contaminated with hazardous substances. As a result, Ecology issued Order No. DE 89-S119 under MTCA in April 1989. The order, issued to Leichner as a potentially liable person (PLP) for the landfill,

required further investigation and remediation of contaminated ground water beneath the Site. In June 1989, Ecology amended Order No. DE 89-S 119. As required by the order an Interim Report prepared by EMCON was submitted to Ecology in November 1989. The Interim Report summarized hydrogeologic and treatability studies on-going at the time of writing. In August 1990, Ecology issued the Second Amendment to Order No. DE 89-S 119 outlining further required investigations. The results of these further investigations are summarized in the October 1991 Remedial Investigation Amendment prepared by EMCON.

Based on technical considerations and costs, the April 1989 order established that ground water withdrawal and treatment would be part of the final remedial action alternative. It was also established that treated ground water would be discharged to the stormwater control system. Order No. DE 89-S119 also required an evaluation and determination of the most effective pump and treat technology to remediate contaminated ground water at Leichner Landfill.

In April 1992, the former refuse burn area southwest to the Landfill was investigated as a potential source of hazardous substances. Soil samples collected and analyzed from nine excavated test pits indicated that the burn area was a source of ammonia and nitrate. About 68,000 yards of material was excavated from this area. This material was placed within the landfill footprint prior to final closure with a composite cap system. A consent decree was proposed for remedial action at the landfill in July 1992. However, the consent decree was never finalized in court. In addition to the design, implementation and operation of a ground water extraction and treatment system, the proposed consent decree required an amendment to the Closure Plan, post-closure requirements, and a domestic well study. At the time consent decree negotiations were underway, the number of nearby residences still using domestic supply wells completed in the Alluvial or Troutdale aquifers was not known. The lateral and vertical extent of the leachate contaminant plume emanating from the landfill had not been fully defined. Low concentrations of volatile organic compounds (VOCs) had been detected in ground water samples collected from four domestic supply wells that are located downgradient of Leichner landfill.

2.2.3 Agreed Order No. 93TC-S151

In May 1993, Ecology and Leichner entered into Agreed Order No. 93TC-S151 to continue with remedial actions while legal uncertainties regarding ground water extraction and treatment costs were being resolved. This Order required all of the actions specified in the proposed 1992 Consent Decree, except for the design, implementation, and operation of a ground water extraction and treatment system.

Quarterly ground water monitoring has continued since final landfill closure in 1992. Ground water contaminant concentrations have declined since the incomplete Consent Decree and Cleanup Action Plan (CAP) were proposed in July 1992. This CAP reflects the changes that have occurred since the proposed July 1992 CAP. When the Consent Decree implementing this CAP became effective, Agreed Order No. 93TC-S 151 was terminated.

2.2.4 Consent Decree No. 96-2-03081-7

In July 1996, Ecology and Leichner entered into Consent Decree No. 92-2-03081-7. This was the final Decree for the Site, which implemented the final remedial actions. This Decree implemented the final CAP designed to protect the public health and welfare and the environment from the release of hazardous substances at or from the Site.

2.3 Site Investigations

Early investigations between 1987 and 1991 identified groundwater impacts likely due to the release of landfill leachate to the shallow Alluvial aquifer, and to a much lesser degree, the deeper Troutdale Aquifer. Groundwater samples collected from monitoring wells screened in the Alluvial aquifer downgradient (southwest) of the landfill showed elevated concentrations of inorganic water quality parameters (including chlorine [Cl], calcium [Ca], ammonia, iron [Fe], and manganese [Mn]), and detections of several VOCs, including cis-l,2-dichloroethene (cis-1 ,2-DCE), tetrachloroethene (PCE), Trichloroethene (TCE), vinyl chloride (VC), l,4-dichlorobenzene (l,4-DCB), and 1,1-dichloroethene (l,1-DCE). Monitoring wells completed in the Troutdale Aquifer downgradient (south to southwest of the landfill) displayed elevated concentrations of specific conductance, Ca, Cl, and sulfate, along with detections of a few VOCs at concentrations significantly lower than those detected in the Alluvial water bearing zone.

The remedial investigations identified a dissolved VOC plume in the shallow Alluvial water bearing zone resulting from historical landfill operations. The VOC plume was located downgradient of the landfill waste fill areas in the southwest portion of the Site and extended offsite. The highest total VOC concentrations were detected in groundwater collected from well LB-6S (measured in 1989) at 73.8 micrograms per liter (µg/L).

2.4 Remedial Actions

2.4.1 Landfill Cap

The landfill cap was completed prior to the final consent decree in 1996. The final cover system was designed to eliminate infiltration of precipitation into refuse at the Site, and direct clean surface water runoff into the stormwater collection system. This minimized further production and migration of leachate contaminated ground water in order to achieve cleanup standards at the points of compliance.

Capping the landfill was implemented as part of the Washington State Minimum Functional Standards for Solid Waste Handling (MFS) closure requirements. In addition to meeting MFS requirements, the landfill cap, gas control/recovery system, the surface water and erosion control system, and improvements to the dumpster and truck wash areas are remedial actions under MTCA.

Landfill closure was completed in 1991 with the installation of a composite cover. The cover included an impermeable membrane topped with soil and native grasses.

2.4.2 Landfill Gas and Condensate

In the 1970s, a perimeter landfill gas (LFG) control system was installed to mitigate subsurface LFG migration in the southern areas of the Site. In 1987, the older LFG system was replaced with a new state-of-the-art LFG collection and flare system. The LFG collection and flare system consisted of vertical gas extraction wells, an aboveground collection piping system, and two separate, enclosed flare facilities; one located in the north area of the landfill and one in the south. Each flare facility included two LFG blowers and an enclosed flare. Some modifications to the system have occurred over the years, but the system remains in operation to date. In 2002, the north flare facility was taken out of service and decommissioned due to decreasing rates of LFG generation and extraction. All of the extracted LFG was diverted to the remaining south flare facility. In 2007, the original south flare was replaced by a small-capacity, enclosed flare due to the continued reduction in LFG generation.

Prior to 1988, the LFG condensate was originally re-circulated back into the landfill. However, following its review of the Site's draft closure plan, Ecology prohibited this practice after 1988 because of concerns for groundwater quality. In early 1993, a feasibility study was conducted to evaluate a new and innovative method for the onsite disposal of the LFG condensate by injecting it into the enclosed flares where it could be evaporated and its vapors thermally destroyed along with the volatiles in the extracted LFG. The study proved to be successful and the method approved by the regulatory agencies for implementation. This condensate disposal method continued to be utilized until 2006 when the volumes of LFG being extracted from the landfill no longer enabled the method to be practical. Since that time, LFG condensate has been collected in an onsite storage tank from which the material is periodically pumped out and transported offsite to a permitted wastewater treatment facility for disposal.

2.5 Cleanup Levels

Under WAC 173-340-720(1)(a), cleanup levels for ground water are based on the highest beneficial use of the affected ground water, and the reasonable maximum exposure expected to occur under both current and potential future site use conditions. The highest beneficial use of ground water at the Site is for drinking water. Therefore, cleanup standards are based on exposure to hazardous substances via ingestion of drinking water, which represents the reasonable maximum exposure at the Site. Ground water cleanup levels were determined using the MTCA Method B standard. The cleanup of contaminated ground water at Leichner Landfill is not considered a routine cleanup by Ecology, therefore MTCA Method A cleanup levels are not applicable.

The Method B ground water cleanup levels and compliance levels for both the Alluvial and Troutdale aquifers are presented in the table below.

Table 1: Ground Water Compliance Levels

Parameter	Units	Cleanup Level	Compliance Level
Ammonia	mg/L	34	34
Nitrate (as N)	mg/L	10	10
Total Dissolved Solids	mg/L	500	500
Dissolved Iron	mg/L	0.3	0.3
Dissolved Manganese	mg/L	0.05	0.05
1,1,-Dichloroethene	ug/L	0.0729	0.1
1,4-Diclhlorobenzene	ug/L	1.8	1.8
Tetrachloroethene (PCE)	ug/L	5	5
Trichloroethene (TCE)	ug/L	5	5
Vinyl Chloride	ug/L	0.023	0.1
Specific Conductance	µmho/cm	700	700

These parameters require cleanup levels because they were consistently detected in ground water at the Site in concentrations that exceed cleanup levels. The cleanup levels for vinyl chloride and l,1-dichloroethylene were calculated using the Method B equations in WAC 173-340-720 (3)(a)(ii) because the concentrations established under applicable state and federal laws are not sufficiently protective. To be considered sufficiently protective, all individual concentrations established under applicable state and federal laws must have an excess cancer risk less than 1 in 100,000 and a hazard quotient less than 1. The cancer risk and hazard quotient are calculated by solving the ground water equations (WAC 173-340-720(3)(a)(i) for cancer risk and hazard quotient using the concentration established under applicable state and federal laws. If the concentration established under applicable state and federal laws is not sufficiently protective, then a protective cleanup level is calculated by solving the equations in WAC 173-340-720(3)(a)(ii) using a cancer risk of 1 in 1,000,000 and a hazard quotient of 1. All of the other cleanup levels are maximum or secondary maximum contaminant levels established under the Safe Drinking Water Act and are sufficiently protective.

The Method B cleanup levels for both vinyl chloride and 1,1-dichloroethylene are lower than the current practical quantitation limit (PQL). In these cases, the cleanup level may be considered to be attained if the parameter is undetected at the PQL, and the conditions outlined in WAC 173-340-707 are met to Ecology's satisfaction. The current PQL for both vinyl chloride and 1,1-dichloroethylene is 0.1 ppb, and is considered to be the compliance level for these two contaminants.

The ground water cleanup levels and compliance levels in the table above do not exceed a total excess cancer risk of 1 in 100,000 and do not exceed a total hazard quotient of 1, as required in WAC 173-340-720 (5).

2.5.1 Ground Water Point of Compliance

The point of compliance for ground water cleanup at Leichner Landfill will be the existing property boundary. Ground water cleanup levels shall be achieved from the point of compliance to the outer boundary of the existing contaminant plume.

2.6 Ground Water Conditions

2.6.1 Ground Water Sampling

The groundwater monitoring network consists of monitoring wells screened in the Alluvial water bearing zone, the Troutdale Formation aquifer, and at the contact of the base of the alluvium with the top of the Troutdale Formation.

Selected Site wells are monitored annually or semiannually in accordance with the schedule defined in the Compliance Monitoring Plan (CMP). For this periodic review the groundwater results were reviewed from 1987 to 2009. There are 20 groundwater monitoring wells in monitoring network. Appendix 6.2 shows the groundwater monitoring locations, groundwater flow direction in the Alluvial water bearing zone and the Troutdale aquifer and groundwater monitoring results from 1987 to 2009.

Below is a discussion of each individual contaminant of concern specified in the CAP and shown in Table 1.

2.6.2 VOCs in Ground Water

The groundwater data for the Alluvial water bearing zone and the Troutdale Formation aquifer were reviewed from 1987 to 2009 for 1,1,-Dichloroethene, 1,4-Dichlorobenzene, Tetrachloroethene (PCE), Trichloroethene (TCE), Vinyl Chloride, 1,1 DCA, 1,1,1-TCA, Chloroethane, cis-1,2 DCE and Chlorobenzene. Since mid-1990's, the groundwater data were reported to be non-detect at PQLs.

The Vinyl Chloride and 1,1,-Dichloroethene compliance level was set to be at PQL of 0.1 ppb in the CAP. But the PQLs used in these tests were above the compliance levels of 0.1 ppb for both parameters. The review of the groundwater (1987-2009) data showed the PQLs used in testing were ranged from 0.08 ppb to 1 ppb and since year 2000, the PQLs for these two compounds were reported to be 0.5 ppb.

Presently, for water, Methods 624 and 624/SM6200B have PQLs values of 2 ppb for Vinyl Chloride and 1,1-Dichloroethene as required under the Water Quality NPDES permit. The Manchester Lab manual reports a PQLs of 1-5 ppb for VOCs using EPA Methods SW-846, Methods 8260 and 5035A. Vinyl Chloride and 1,1,-Dichloroethene were non-detected in PQLs range of 0.08 ppb to 1 ppb. Therefore, it is reasonable to assume that these two parameters are

not present in Alluvial water bearing zone and the Troutdale Formation aquifer underlying the landfill.

2.6.3 Inorganics in Ground Water

Dissolved Iron

The CAP set a compliance level of 0.3 mg/l for soluble Iron. For the Alluvial aquifer, four down gradient wells are not in compliance with the compliance level and one up gradient well which is located off the property is also not in compliance with the compliance level. In the Troutdale aquifer, one down gradient well is not in compliance with the compliance level. The Troutdale aquifer shows less impact from the landfill.

In reviewing the data from 1987-2009, the landfill appears to have impacted the non-compliant wells, but the soluble Iron concentration is declining and beginning to stabilize.

Dissolved Manganese

The CAP set a compliance level of 0.05 mg/l for soluble Manganese. For the Alluvial aquifer, four down gradient wells are not in compliance with the compliance level. One of the downgradient non-compliant wells is located approximately 600 feet off the property. In the Troutdale aquifer, three down gradient wells are not in compliance with the compliance level. One of the downgradient non-complaints well is located approximately 600 feet off the property.

In reviewing the data from 1987-2009, the landfill appears to have impacted the non-compliant wells, but the soluble Manganese concentration is declining and beginning to stabilize

Ammonia

The CAP set a compliance level of 34 mg/l for Ammonia. Ammonia was tested in the Alluvial and Troutdale aquifers from 1987 to year 2000. All the test results for Ammonia showed non-detect at the PQL. The only wells showed detection was LB-17D and LB-17I. The range of measurements was between PQL of 0.05 mg/l to 13.90 mg/l which is below the compliance level for Ammonia. The Ammonia testing was discontinued in year 2000.

Nitrate (as N)

The CAP set a compliance level of 10 mg/l for Nitrate. Only two groundwater monitoring wells No. LB-27I (down gradient) and LB-4SR (cross gradient) showed non-compliance with the cleanup level. These wells are in the Alluvial water bearing zone. The Nitrate concentration measured in the Troutdale aquifer showed compliance with the Nitrate cleanup level.

The review of data from 1987-2009 shows the Nitrate concentration declining and showing stabilizing trend except in two wells No. LB-4D (cross gradient, but below the compliance level)

and LB-27D (down gradient) in Troutdale aquifer show increasing trend. Even though these two wells are increasing, they both are in compliance with the clean level.

Total Dissolved Solids

The CAP set a compliance level of 500 mg/l for Total Dissolved Solids. The statistical analysis shows all the wells in the Alluvial and Troutdale aquifers show compliance with the Total Dissolved Solids compliance level.

Specific Conductivity

The CAP set a compliance level of 700 µmho/cm for Specific Conductivity. The Specific Conductivity tests were conducted until year 2000. The review of the data showed the Specific Conductivity results in some cases were measured above the compliance level of 700 µmho/cm.

The Specific Conductivity testing was discontinued without any justification.

Chloride

The CAP did not require Chloride monitoring. But Chloride was tested from 1987-2009. The review of the data showed compliance with the drinking water standard of 250 mg/l for Chloride in Alluvial water bearing zone and Troutdale aquifer.

2.6.4 Ground Water Summary

Laboratory analytical results for groundwater samples collected from Site monitoring wells in 1987-2009 indicate that groundwater quality is generally not being affected by the closed landfill as evidenced by the following:

- The concentrations of most inorganic indicator parameters in groundwater samples collected from monitoring wells located downgradient of the former waste cells have either remained generally stable or show decreasing trends.

- VOCs were not detected in groundwater samples collected from the Site monitoring wells since mid-1990s'.

2.7 Surface Water Quality

Site stormwater accumulates in the north detention basin (See Appendix 6.2) and is pumped from the north detention basin to a grass-lined ditch that drains to nearby Curtin Creek. The pump(s) are automatically activated to discharge stormwater from the north detention basin based on the water level in the basin.

The stormwater runoff was regulated with the landfill's General Stormwater Permit No. SO3-005572A, and sampled and analyzed quarterly for turbidity, pH, oil and grease, biological

oxygen demand, total suspended solids, ammonia, alpha terpineol, benzoic acid, p-cresol, phenol, and total zinc.

Stormwater Discharge Monitoring Reports describing the results of stormwater analytical results were submitted to Ecology on a quarterly basis in accordance with the General Permit. The analytical results of stormwater samples collected in 2009 indicate that stormwater quality benchmarks for the parameters listed above were not exceeded.

Currently the stormwater runoff from the landfill cover is regulated under the new industrial General Stormwater Permit No. WAR-005572B. This permit was issued in October 2009 and was effective in January 2010.

2.8 Landfill Gas Monitoring

LFG probes were monitored monthly in 2009. Probes constructed as dual-completion are designated with an "A" for the shallow probe and "B" for the deep probe. Shallow and deep probes that are installed in separate borings are identified with "S" and "D", respectively. Parameters measured at each probe include LFG composition (percent methane, carbon dioxide, oxygen and balance gas [assumed to be nitrogen]) and static pressure.

During 2009, the LFG probes were in compliance with the Minimum Functional Standards (MFS) (Chapter 173-304 WAC) requirement that methane concentrations shall not exceed 5 percent methane by volume along the Site property boundary. Periodic concentrations exceeding 5 percent by volume were measured at probes GP-6 and GP-8. However, these probes are not located along the Site's point of compliance; rather, they are located in the northwest closure area near the edge of the waste limits. Methane concentrations in these probes have historically shown periodic elevated LFG concentrations due to their proximity to the waste limits, the shallow depth of the waste in this area, and a relatively shallow water table that inhibits the GCCS collection efficiency in this area. Whenever methane concentrations in LFG probes GP-6 or GP-8 exceed 5 percent by volume, the nearby LFG extractions wells are adjusted to increase the vacuum in the area, and the probes are re-monitored at least weekly until the methane concentrations at the probe(s) decrease below 5 percent by volume. The following is a summary of the monitoring events performed during 2009 in which methane concentrations were measured at or above 5 percent by volume at LFG probes GP-6 and GP-8:

- GP-6 methane concentrations measured ıı January (9.7%), August (6.4%), and September (8.5%).
- GP-8 methane concentrations measured in January (10.2%) and May (5.4%).

Historical re-monitoring at LFG probes GP-6 and GP-8 generally show that methane concentrations decline to below the compliance threshold within several days to a week following adjustments to the adjacent LFG extraction wells. However, methane concentrations measured at probe GP-6 and GP-8 persisted intermittently above 5 percent, by volume, during January and early February 2009.

Positive static pressures were not measured at probes GP-6 and GP-8 during instances when the methane concentrations exceeded 5 percent, by volume. The lack of positive static gas pressures at the higher methane concentrations is indicative of a very low rate of biological decomposition near the probe locations which is consistent with other municipal solid waste landfills of this age. The lack of positive pressure also suggests the subsurface methane plume is likely not being driven laterally over any sizable distance from the edge of the waste limits.

2.9 Environmental Covenant

An Environmental Covenant was recorded for the Site in 1998. It was determined that contamination at the Site posed a limited threat to human health and the environment that could be mitigated by the use of institutional controls in the form of an Environmental Covenant. The Environmental Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibits any use of the property that is inconsistent with the covenant. The covenant also requires fencing to restrict public access to the Site and restricts ground water for any use other than compliance monitoring. This Environmental Covenant serves to assure the long term property use and integrity of the property surface. The recorded copy of Environmental Covenant is in Appendix 6.3.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

3.1.1 Soil and Direct Contact

Based upon the Site visit conducted on March 8, 2010, the landfill cover appears in excellent condition. Site personnel regularly perform well-head maintenance, vegetation control on the cap surface, fence maintenance and Site security control.

The landfill cap continues to eliminate direct exposure pathways (ingestion, contact) to contaminated soils. No repair, maintenance or contingency actions have been required. A photo log is available as Appendix 6.4.

The Environmental Covenant for the Site was recorded and is in place. This Environmental Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibits any use of the property that is inconsistent with the Covenant. The Covenant also requires fencing to restrict public access to the Site and restricts ground water for any use other than compliance monitoring. This Environmental Covenant serves to assure the long term property use and integrity of the property surface.

3.1.2 Ground Water

Remedial actions at the Site appear generally protective of human health and the environment. Only Dissolved Iron and Dissolved Manganese currently exceed compliance levels at the Site. Concentrations of Dissolved Iron and Dissolved Manganese in groundwater at the Site have generally shown a stable or downward trend since the final closure plan was implemented. Those contaminants that appear stable at elevated concentrations also appear stable at similar concentrations in upgradient wells.

3.1.3 Summary

The remedy at the Leichner Brothers Landfill can be considered protective of human health and the environment with respect to refuse encapsulation, landfill gas control, surface water quality maintenance, and ground water quality protection.

The presence of engineered controls in the form of fencing and a landfill cap, combined with institutional controls in the form of a restrictive covenant serves to protect human health and the environment from soil or ground water contamination remaining at the Site at concentrations exceeding regulatory standards.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

Cleanup levels at the Site were based on regulatory standards rather than calculated risk for chemicals and/or media. These standards were sufficient to be protective of Site-specific conditions.

3.3 New applicable state and federal laws for hazardous substances present at the Site

There is no new relevant state or federal standards applicable to the Site.

3.4 Current and projected Site use

The Site is currently fenced and vacant.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous substances and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The Method B cleanup levels for both vinyl chloride and 1,1-dichloroethylene are lower than their current PQLs. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site appear to be protective of human health and the environment and the following are the more specific reasoning:

- **Surface Water** – Stormwater Discharge generated from the landfill cover is regulated with the General Industrial Stormwater Permit No. WAR-005572B. The discharge monitoring reports submitted under the permit were reviewed. The data collected showed that stormwater quality benchmarks required under the permit were not exceeded. This shows the landfill cover has worked as designed.

- **Threat to Drinking Water –** The most downgradient well in the Alluvial aquifer showing impact is located approximately 600 feet from the property boundary line. This downgradient well has shown exceedance for dissolved Iron and dissolved Manganese above drinking water standards.

  Based on evaluating groundwater data 1987-2009, comparison of groundwater concentrations of dissolved Iron, Manganese and Nitrate with a typical leachate concentration **(**Present and Long-Term Composition of MSW Landfill Leachate: A Review, 2002 in *Critical Reviews in Environmental Science and Technology*), and WAC 173-160-171 (3)(b)(vi) (prohibits installation of groundwater drinking water well 1000 feet from a boundary of a permitted or previously permitted solid waste landfill), there is no threat from the closed Leichner Landfill to drinking water source.

- **Compliance with Cleanup Levels** - Ground water cleanup levels have not been met at the Site; however, under WAC 173-340-740(6) (d), the cleanup action is determined to comply with cleanup standards, since the long-term integrity of the containment system is ensured and the requirements for containment technologies in WAC 173-340-360(8) have been met.

- **Landfill Gas** – The landfill gas production is reduced by approximately 89% from year 2000 (annual gas generation rate of 953,815,680 standard cubic feet (scf)) to year 2009 (annual gas generation rate 102,483,561 standard cubic feet (scf)). The Methane lower explosive limit (LEL) of 5% as specified in WAC 173-351-200 (4)(a)(ii) at the points of compliance which is the property boundary line have been met. The landfill gas monitoring will be reduced from monthly to quarterly.

- **Environmental Covenant** - The Environmental Covenant for the property is in place and will be effective in protecting public health from exposure to hazardous substances and protecting the integrity of the cleanup action. Based on this review, the Department of Ecology has determined that the requirements of the Environmental Covenant are being satisfactorily met. It is the property owner's

responsibility to continue to inspect the Site to assure that the integrity of the cap is maintained.

- **Alluvial Water Bearing Groundwater** - The review of the data since 1987 shows the trend for concentration for every parameter is stabilized/downward. The risk to human health and environment from the Alluvial water bearing groundwater has been reduced. The parameters that still persist above cleanup levels in Alluvial groundwater are Dissolved Iron and Dissolved Manganese. Only two groundwater monitoring wells No. LB-27I (down gradient) and LB-4SR (cross gradient) showed non-compliance with Nitrate cleanup level of 10 mg/l.

- **Troutdale Aquifer (Deep Groundwater) -** The review of the data since 1987 shows the trend for concentration of every parameter is stabilized/downward. The risk to human health and environment from Troutdale Aquifer has been reduced. Down gradient wells are showing non-compliance with Dissolved Iron and Dissolved Manganese concentrations above cleanup levels specified in the CAP. For Nitrate, one cross gradient well and one down gradient well are showing increasing trend. Even though these two wells are showing increasing concentrations, they both are in compliance with the cleanup level for Nitrate set in the CAP.

  Future Monitoring – The groundwater monitoring will continue semiannually to cover dry and wet seasons. The monitoring wells and the frequency of the testing will be the same as stated in Page 2-1 of the 2009 fourth quarter and annual report. The parameters that will be monitored are Dissolved Iron, Dissolved Manganese, Nitrate, Total Dissolved Solids and Specific Conductivity. Ecology will also require the Vinyl Chloride and 1,1-Dichloroethene to be tested at PQLs of 0.1 µg/l in order to show compliance with the values established in the CAP. If after two years of testing, the results showed non-detect at PQLs, than the testing for these parameters can discontinue. The landfill gas air monitoring will be quarterly.

Next Review

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Ecology. *Amended Consent Order No. 86-S131.* December 14, 1987.

Ecology. *Consent Order No. DE89-S119.* August 10, 1990.

Ecology. *Agreed Order No. 93TC-S151.* May 11, 1993.

Ecology. *Consent Decree No. 96-2-03081-7.* July 17, 1996.

Ecology. *Restrictive Covenant*. April 9, 1998.

Shaw Environmental, Inc. *Second Quarterly 2003 Progress Report.* July 1, 2003.

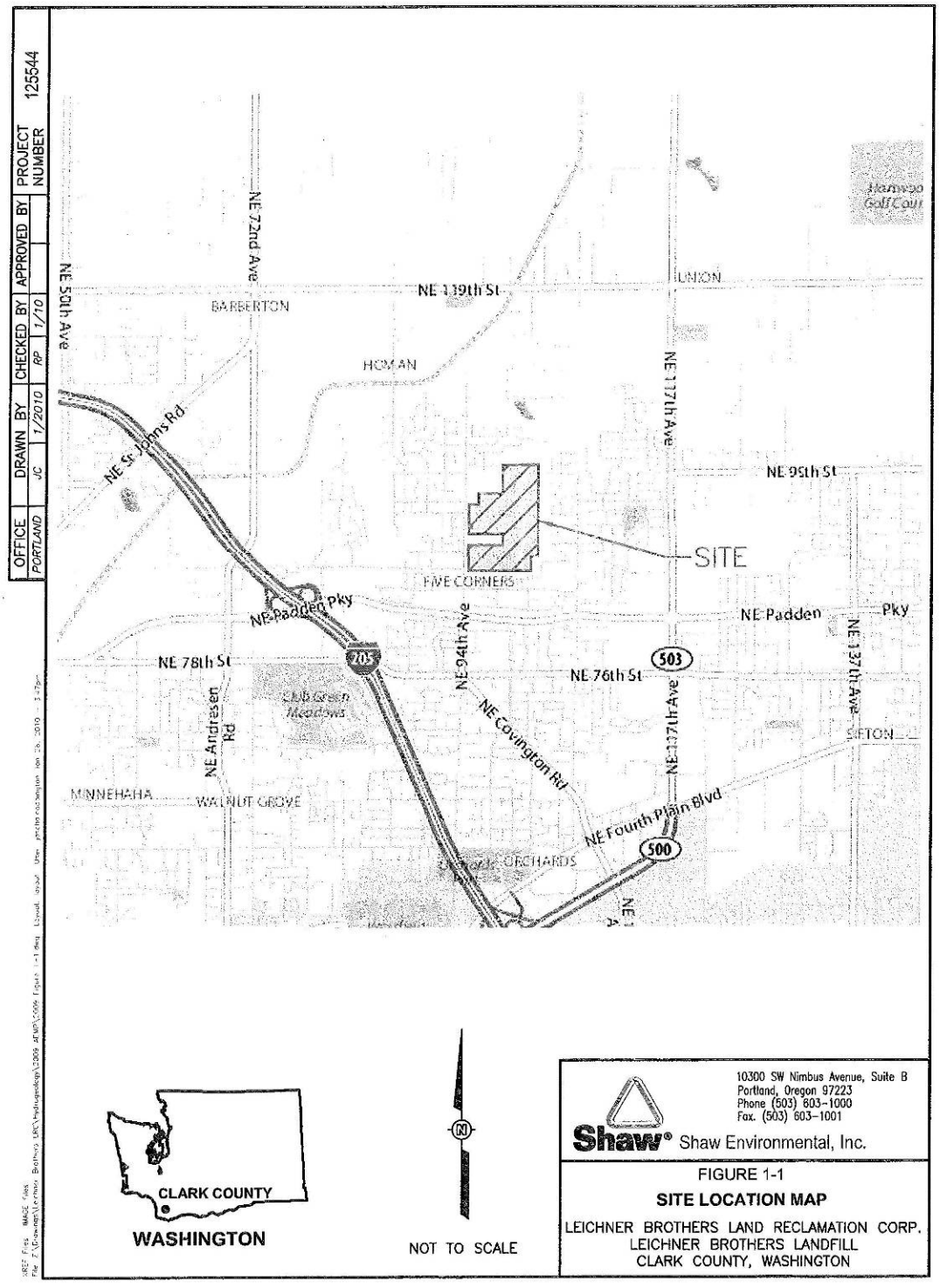
Shaw Environmental, Inc. *Remedial Action Five-Year Progress Report.* June 2008.

Shaw Environmental, Inc. *2009 Fourth Quarter and Annual Report.* February 2010.

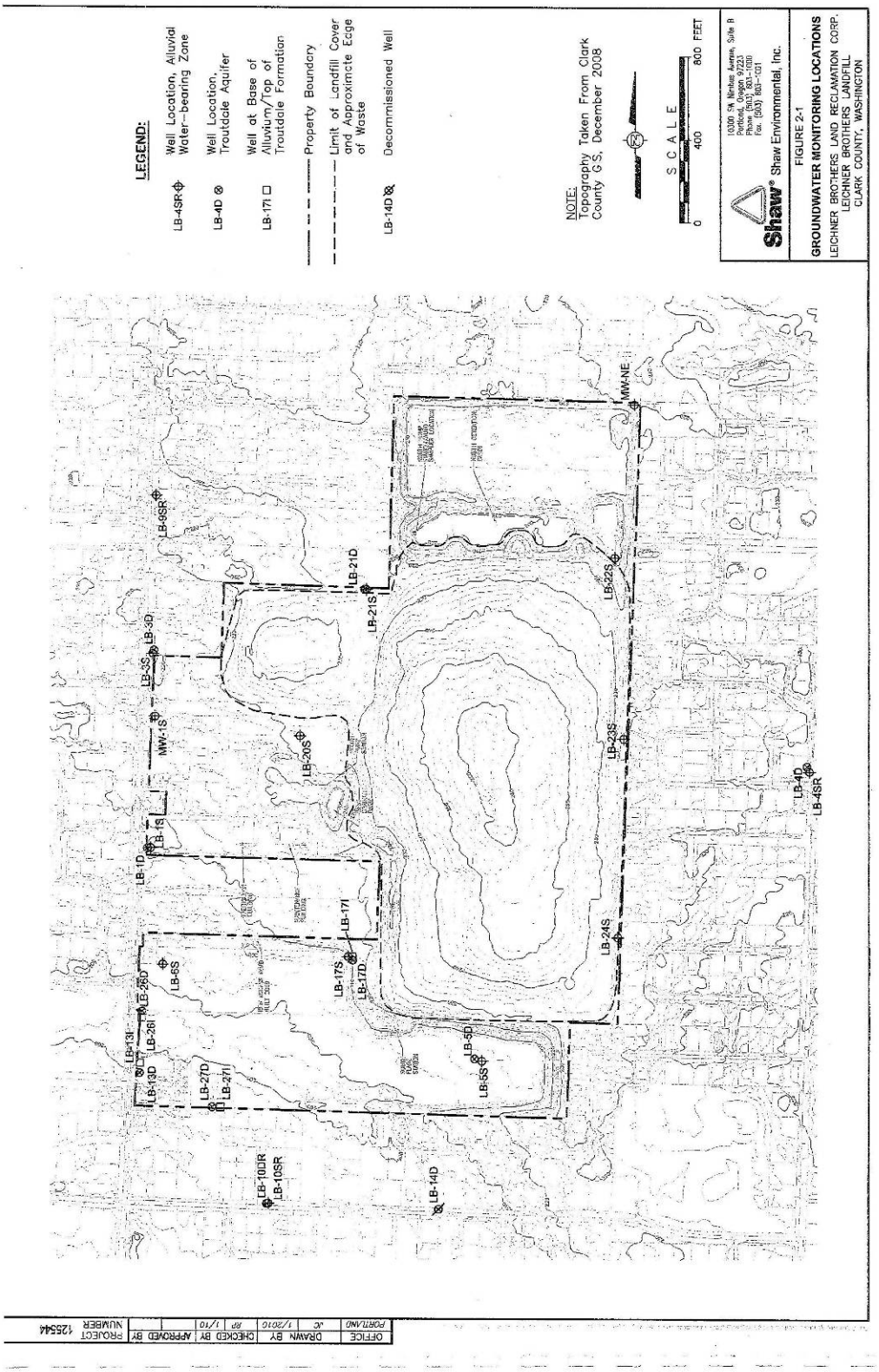
Ecology. *Site Visit.* November 17, 2009.

6.0 APPENDICES

6.1 Vicinity Map



6.2 Site Plan


LEGEND:
LB-4SR Well Location, Alluvial Water-bearing Zone
LB-4D Well Location, Troutdale Aquifer
LB-17I Well at Base of Alluvium/Top of Troutdale Formation
Property Boundary
Limit of Landfill Cover and Approximate Edge of Waste
LB-14D Decommissioned Well
NOTE:
Topography Taken From Clark County GIS, December 2008
SCALE
0 400 800 FEET
Shaw Shaw Environmental, Inc.
10300 SW Nimbus Avenue, Suite B
Portland, Oregon 97223
Phone: (503) 803-1000
Fax: (503) 803-1021
FIGURE 2-1
GROUNDWATER MONITORING LOCATIONS
LEICHNER BROTHERS LAND RECLAMATION CORP.
LEICHNER BROTHERS LANDFILL
CLARK COUNTY, WASHINGTON
MW-NE
MW-1S
LB-1S
LB-1D
LB-2S
LB-2D
LB-2I
LB-3S
LB-3D
LB-4SR
LB-4D
LB-5S
LB-5D
LB-6S
LB-6SR
LB-10SR
LB-10DR
LB-13S
LB-13D
LB-14D
LB-17S
LB-17D
LB-17I
LB-20S
LB-21S
LB-21D
LB-22S
LB-23S
LB-24S
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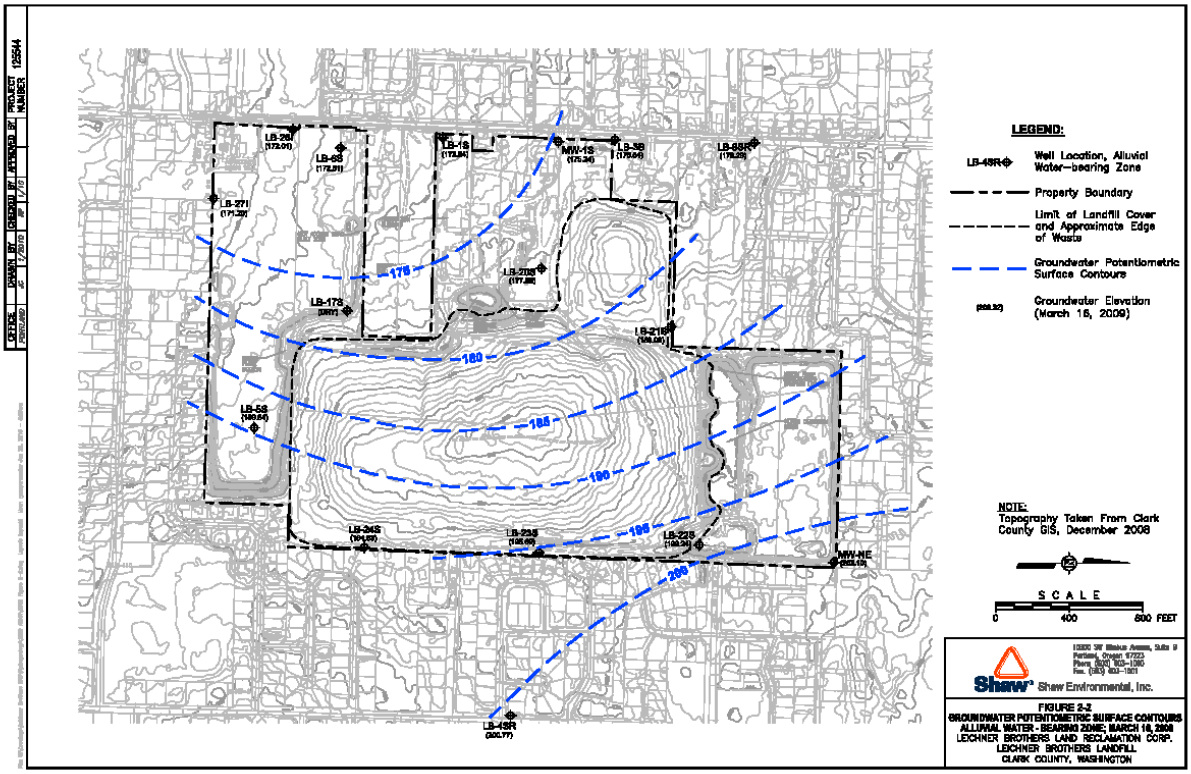
LB-27I
OFFICE PORTLAND
DRAWN BY JC 1/2010
CHECKED BY RP 1/10
APPROVED BY
PROJECT NUMBER 12554


LEGEND:
Well Location, Alluvial Water-bearing Zone
Property Boundary
Limit of Landfill Cover and Approximate Edge of Waste
Groundwater Potentiometric Surface Contours
Groundwater Elevation (March 16, 2009)
NOTE:
Topography Taken From Clark County GIS, December 2008
SCALE
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800 FEET
Shaw Environmental, Inc.
FIGURE 2-2
GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS
ALLUVIAL WATER - BEARING ZONE: MARCH 16, 2009
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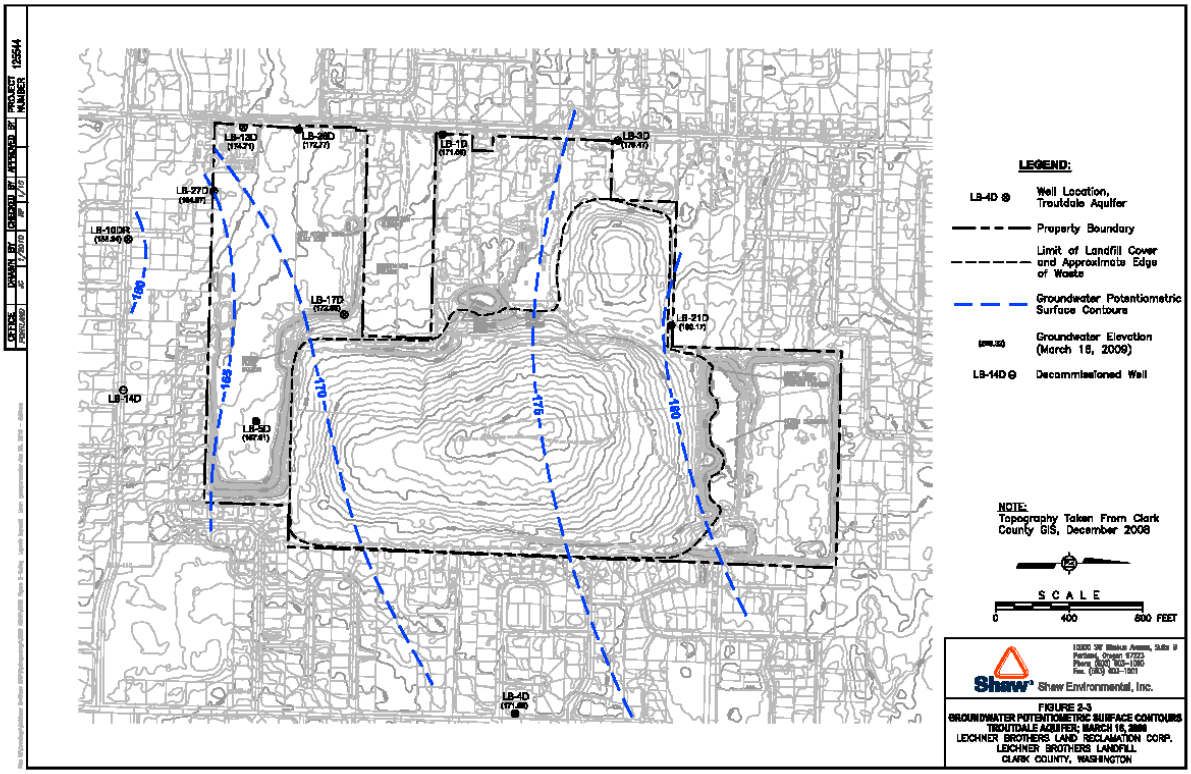
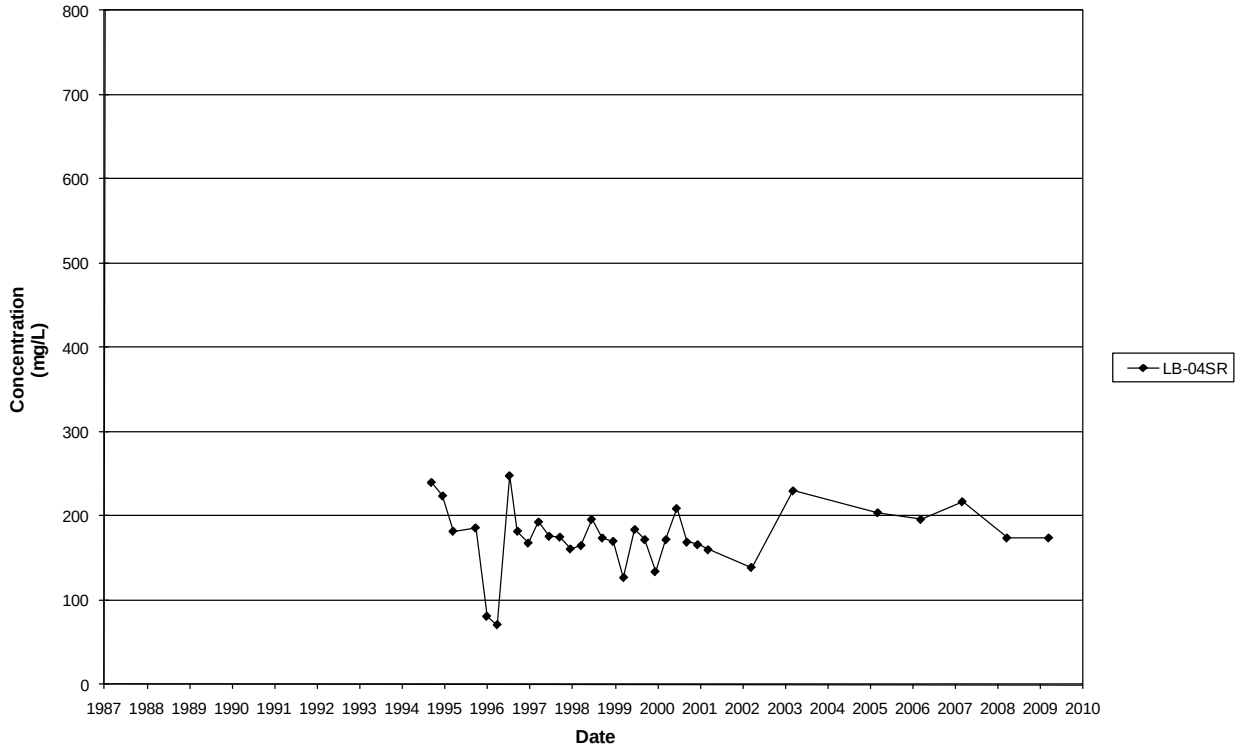
LEICHNER BROTHERS LANDFILL
CLARK COUNTY, WASHINGTON


LEGEND:
Well Location, Troutdale Aquifer
Property Boundary
Limit of Landfill Cover and Approximate Edge of Waste
Groundwater Potentiometric Surface Contours
Groundwater Elevation (March 16, 2009)
Decommissioned Well
NOTE:
Topography Taken From Clark County GIS, December 2008
SCALE
0
400
800 FEET
Shaw Environmental, Inc.
FIGURE 2-3
GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS
TROUTDALE AQUIFER: MARCH 16, 2009
LEICHNER BROTHERS LAND RECLAMATION CORP.
LEICHNER BROTHERS LANDFILL
CLARK COUNTY, WASHINGTON

Total Dissolved Solids Data 1987-2009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1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
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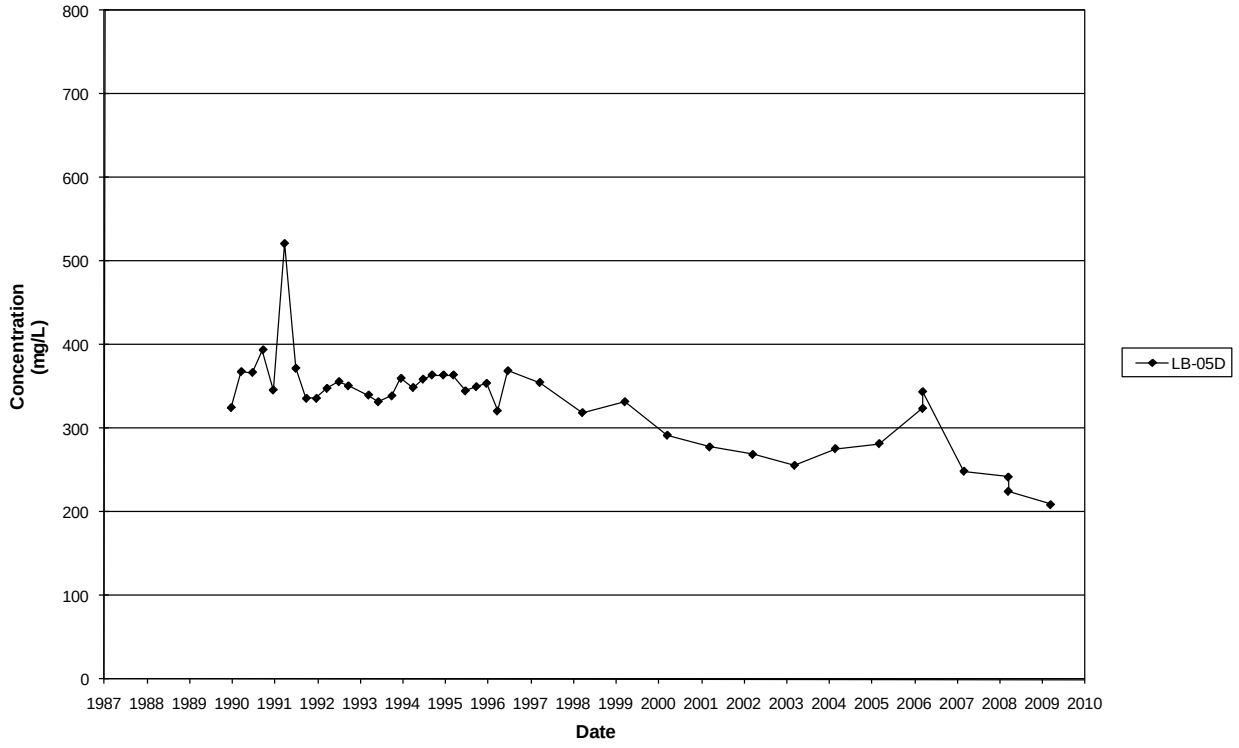
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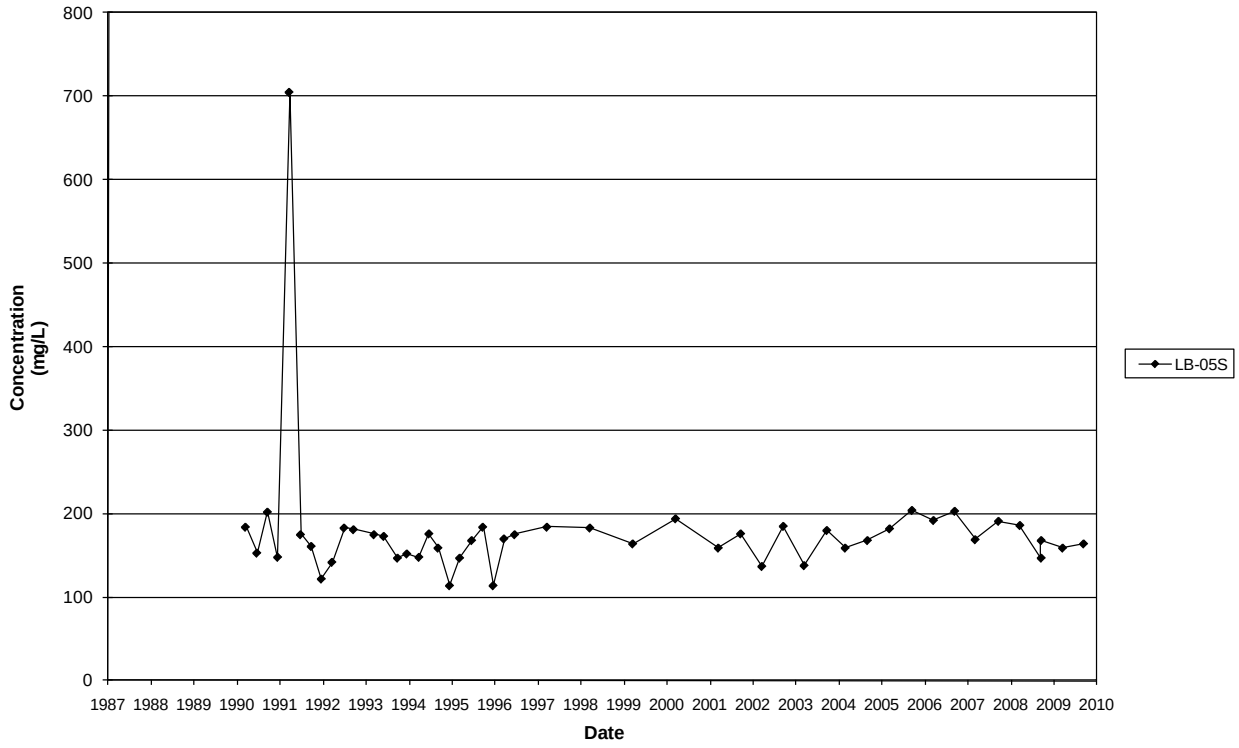
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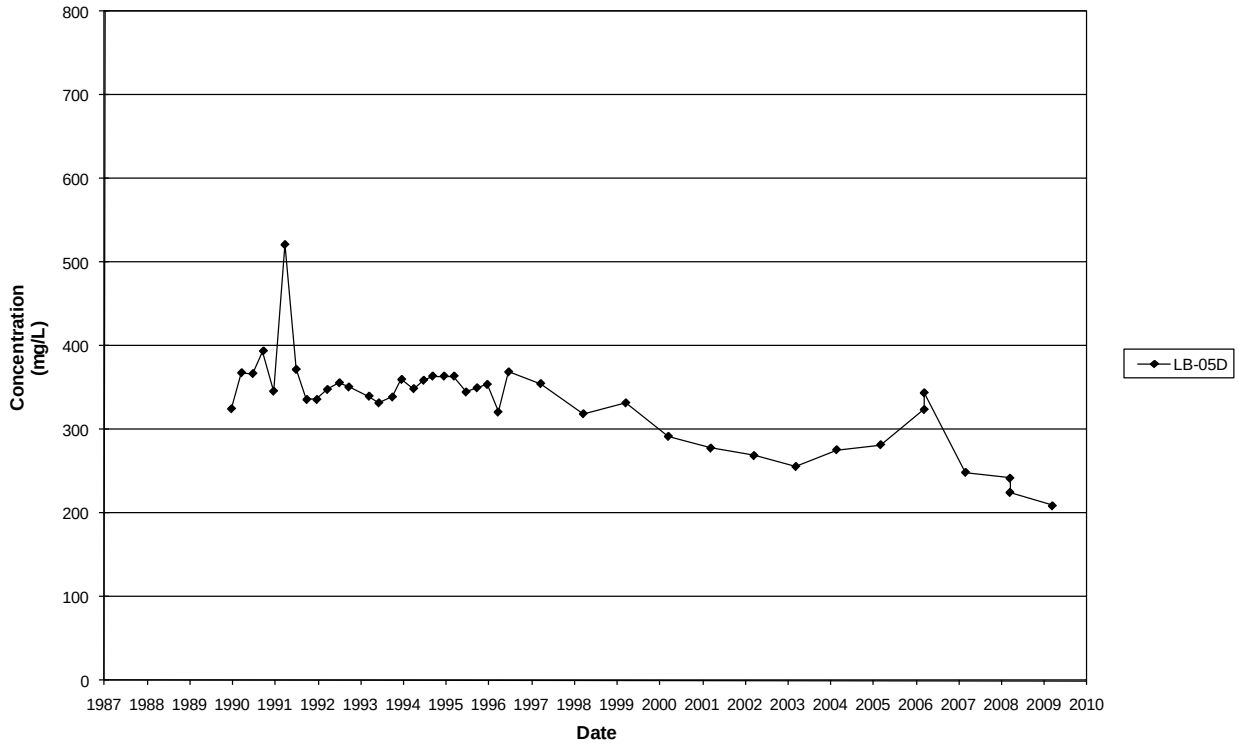
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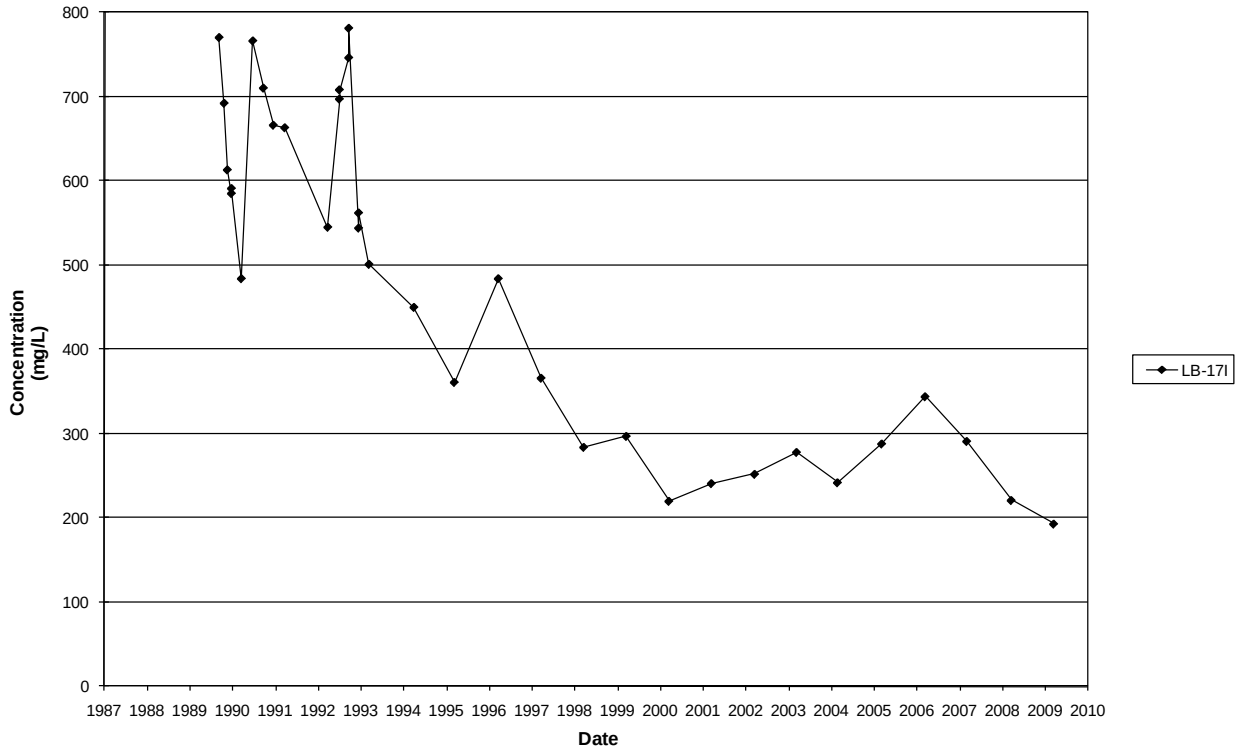
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Concentration (mg/L)
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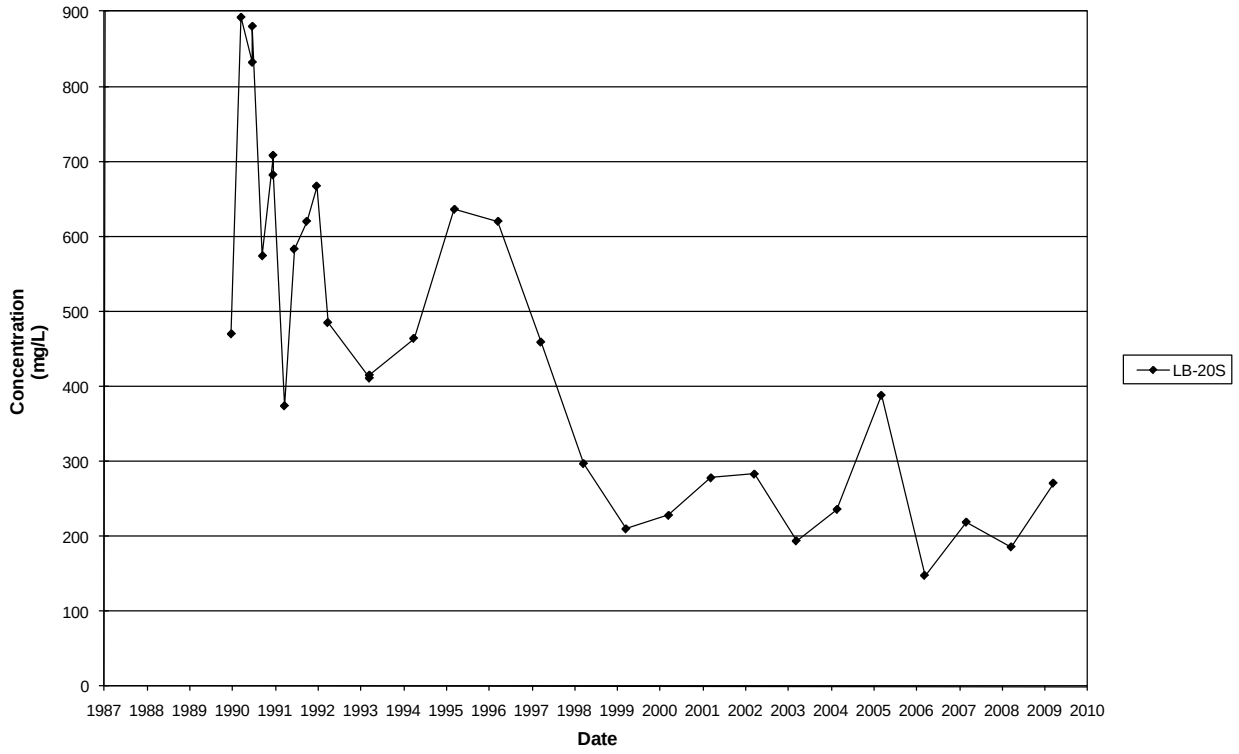
Date
LB-17I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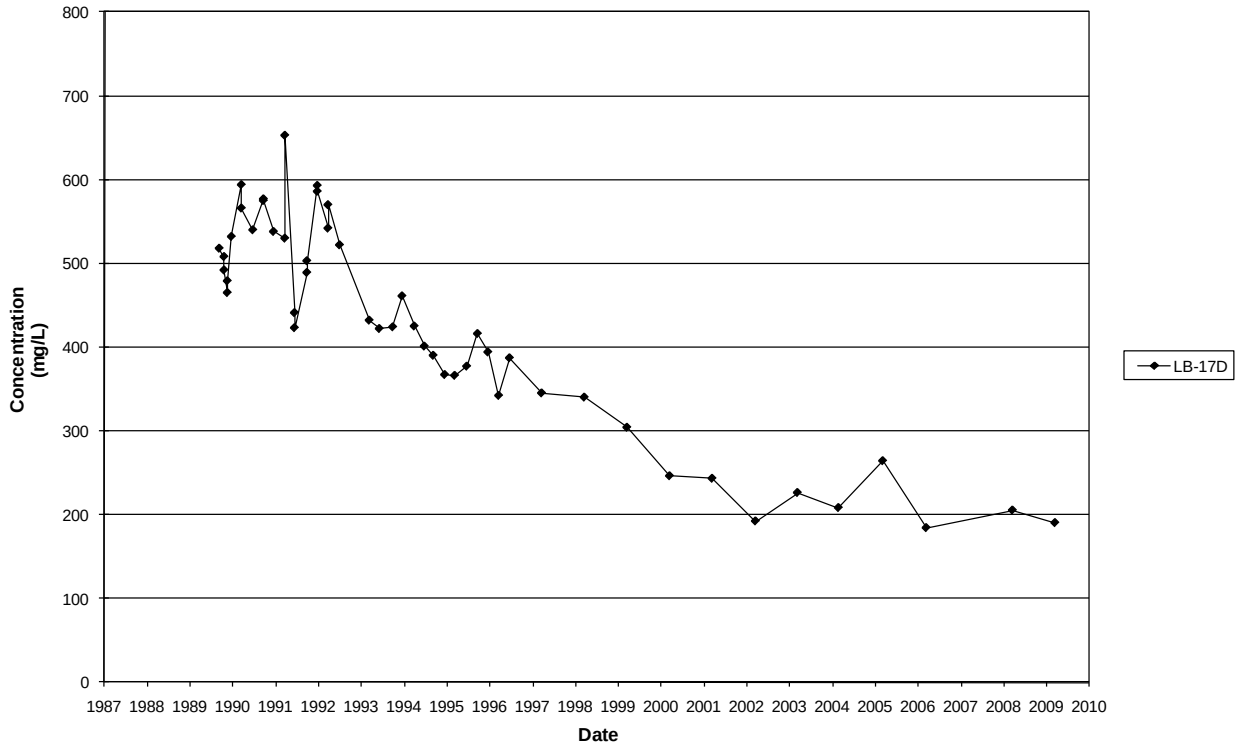
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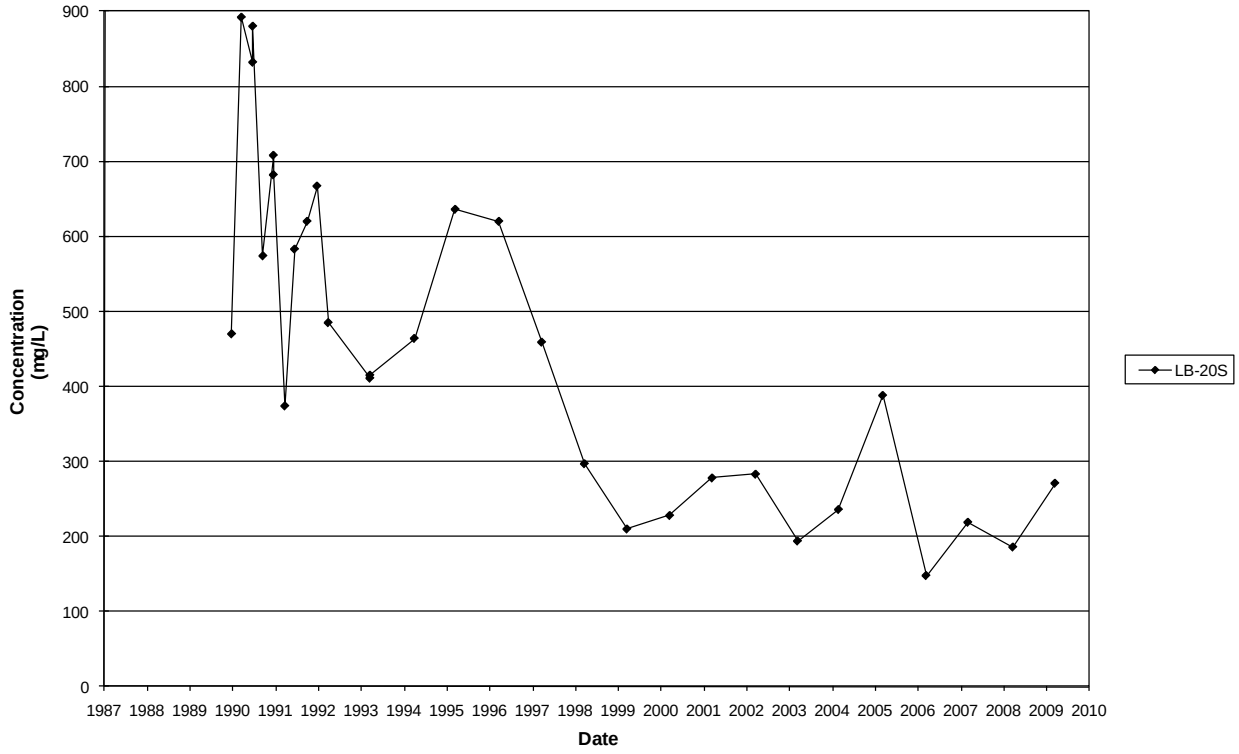
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1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Date
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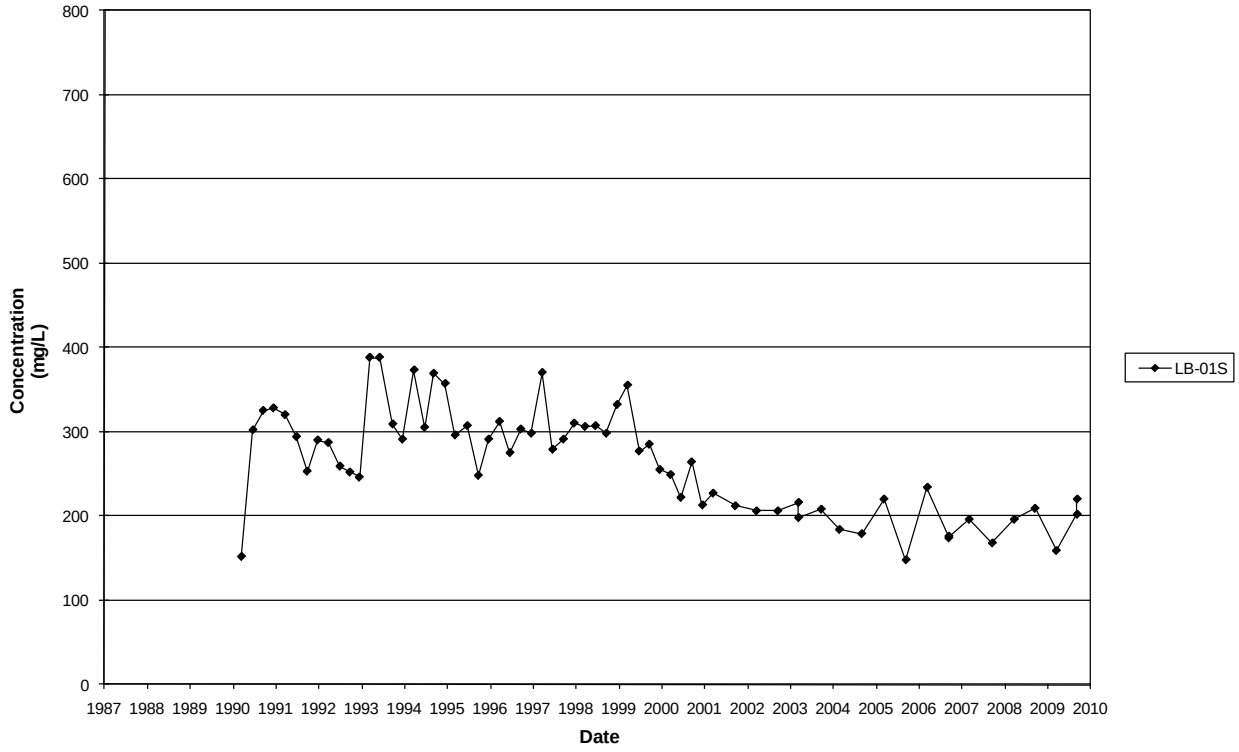
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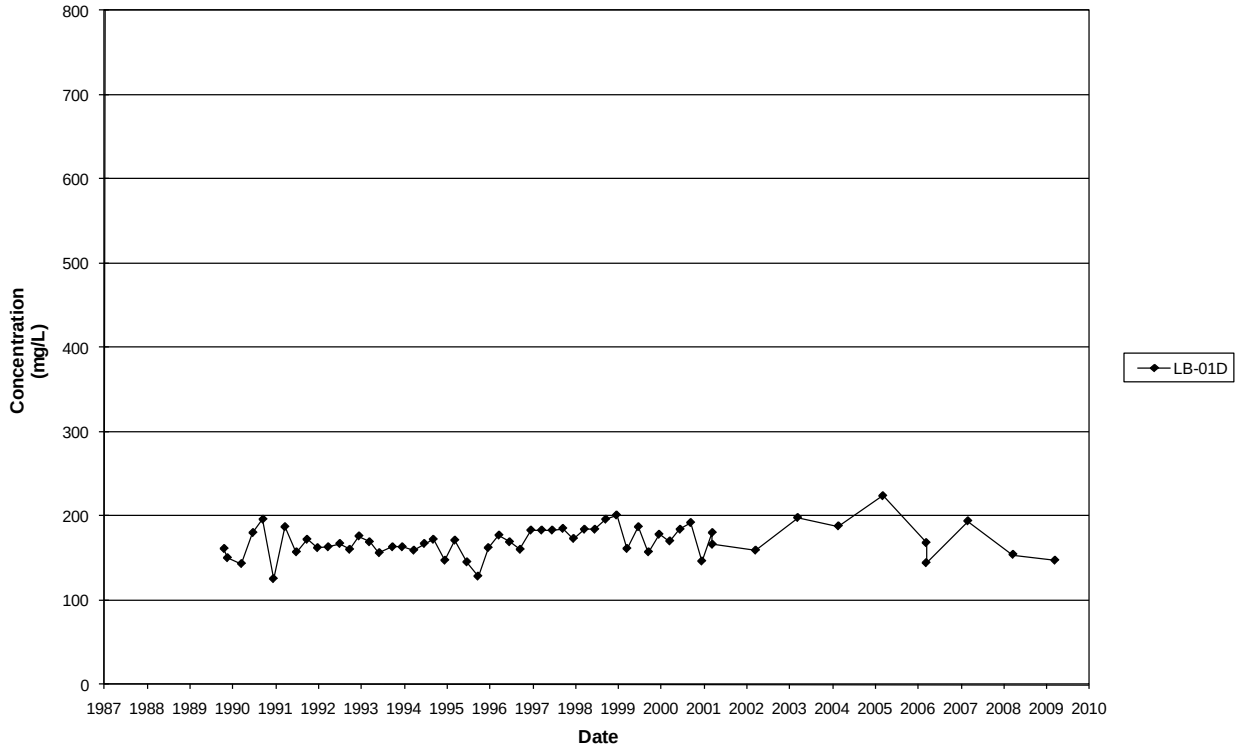
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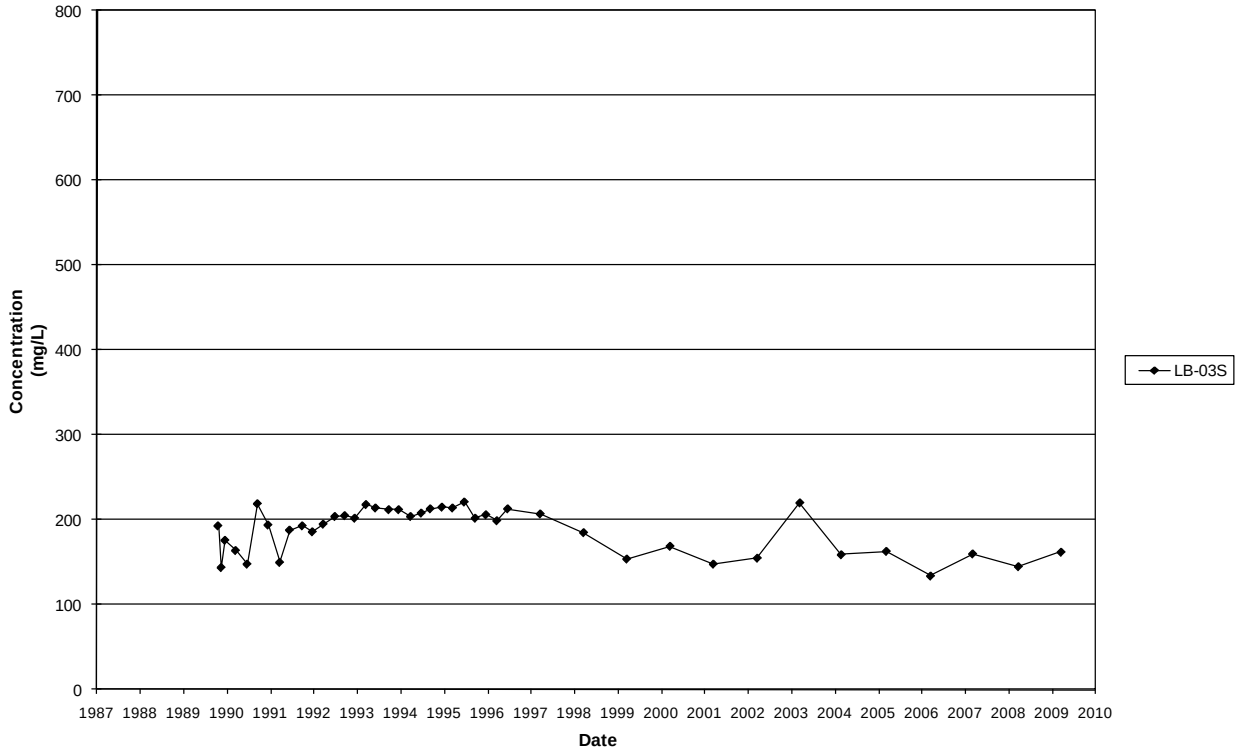
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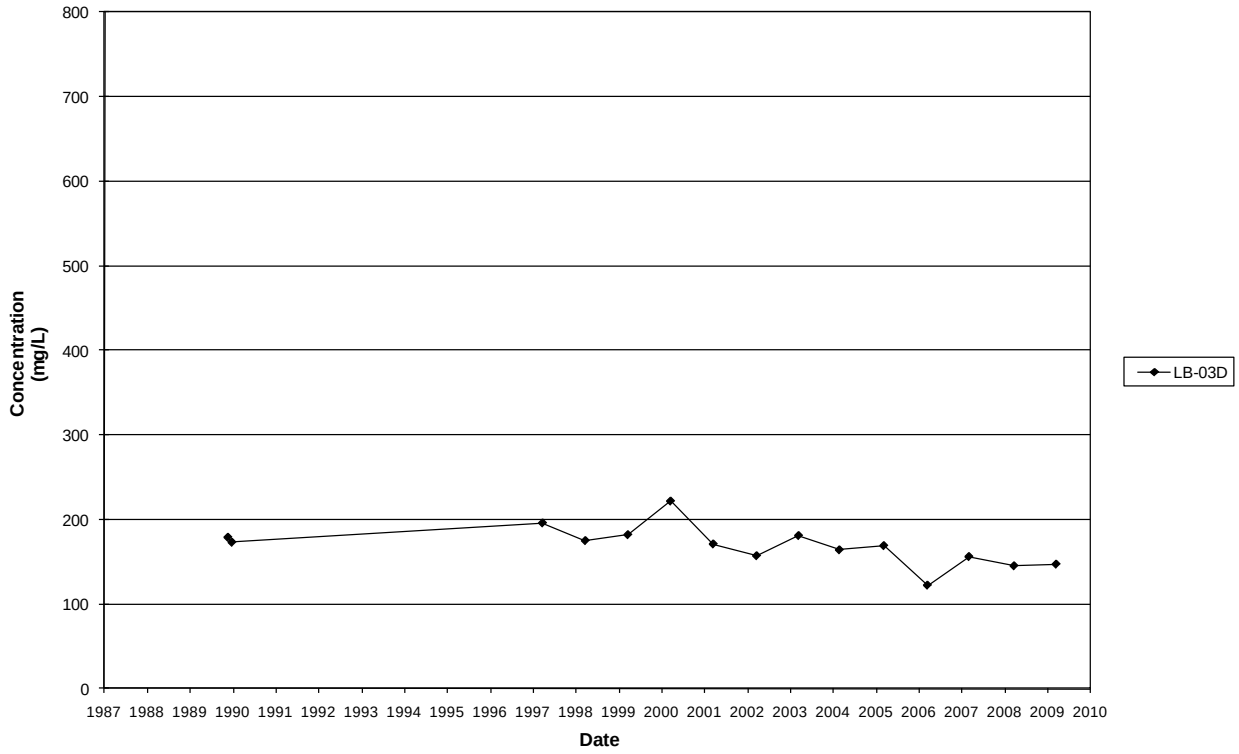
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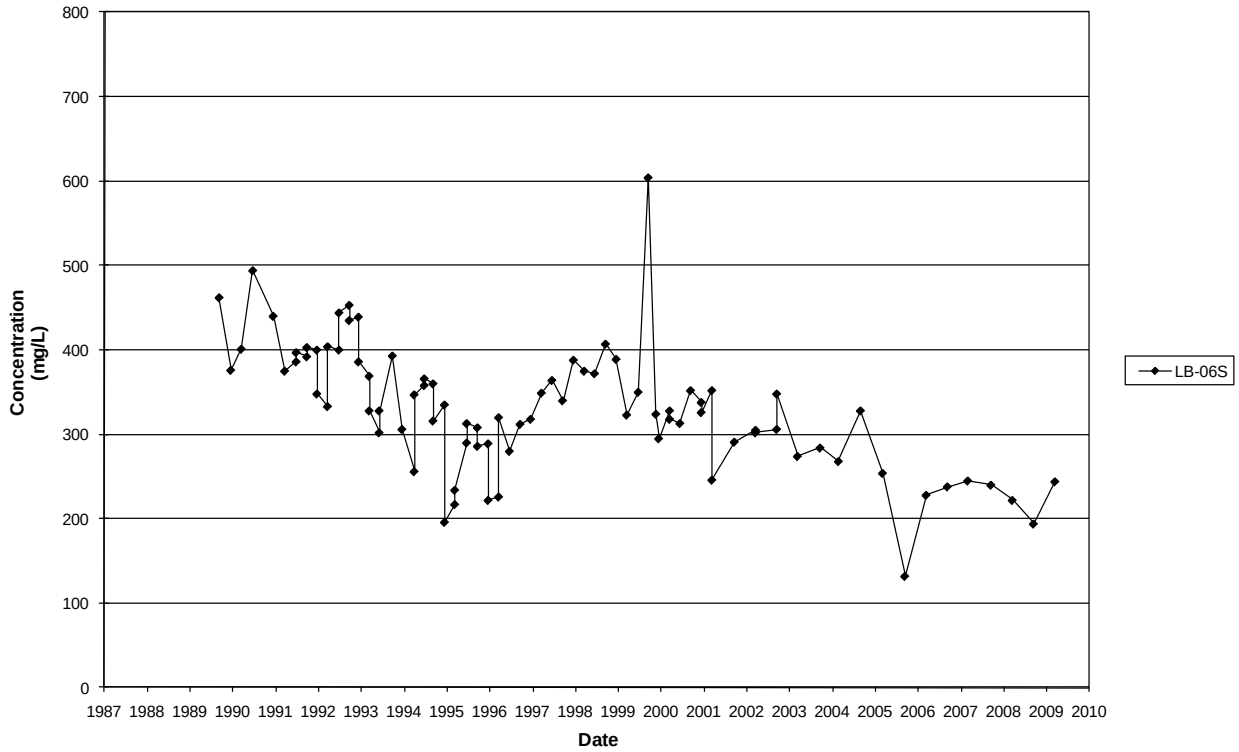
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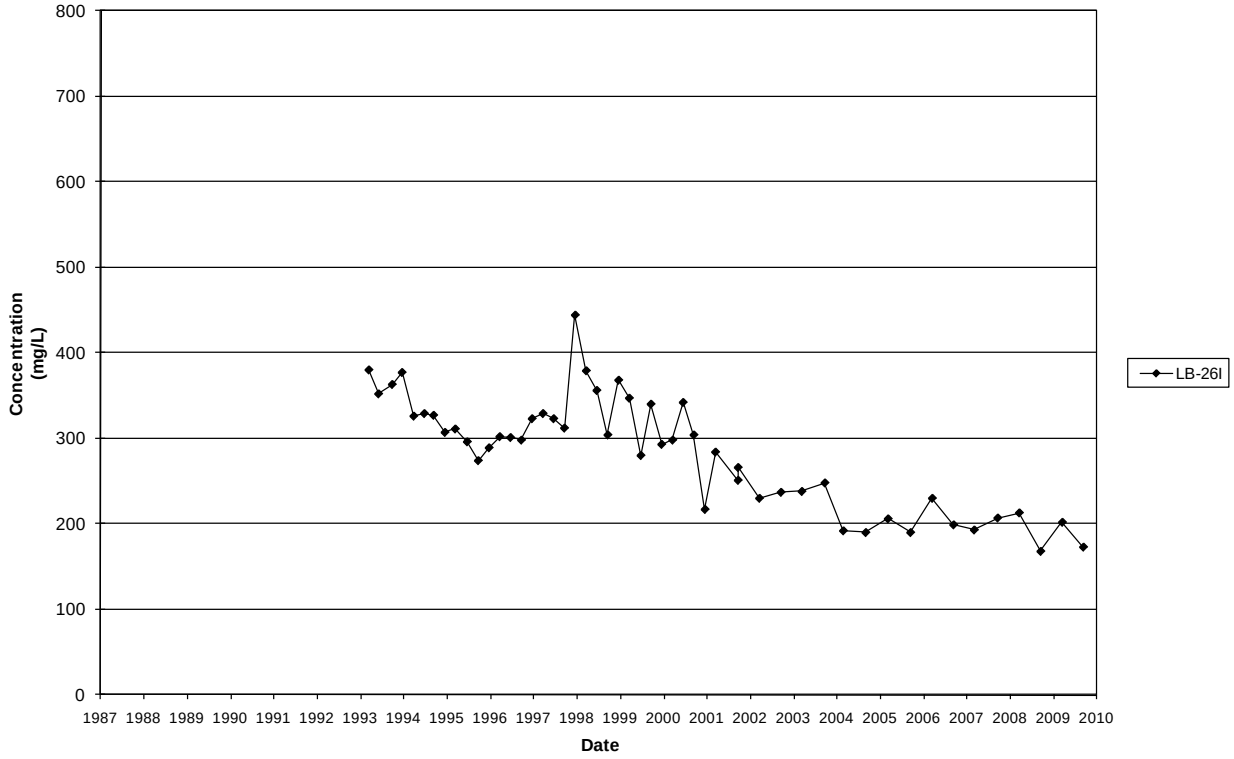
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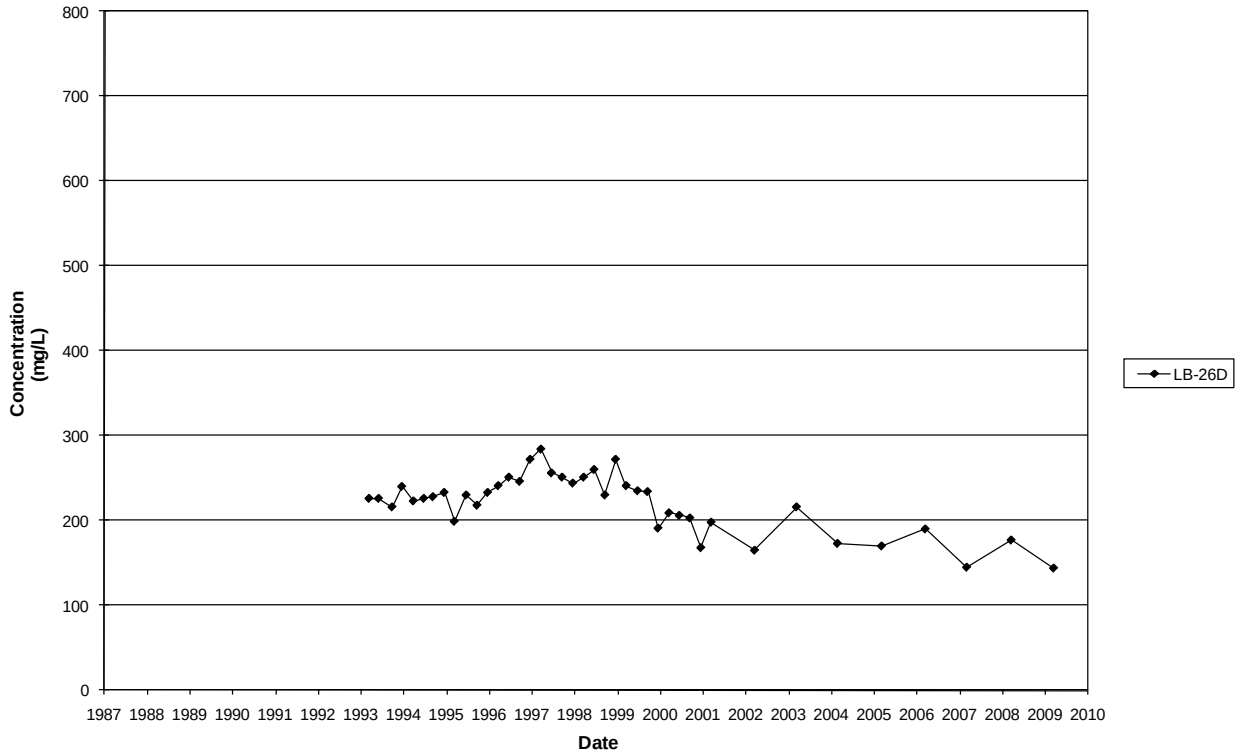
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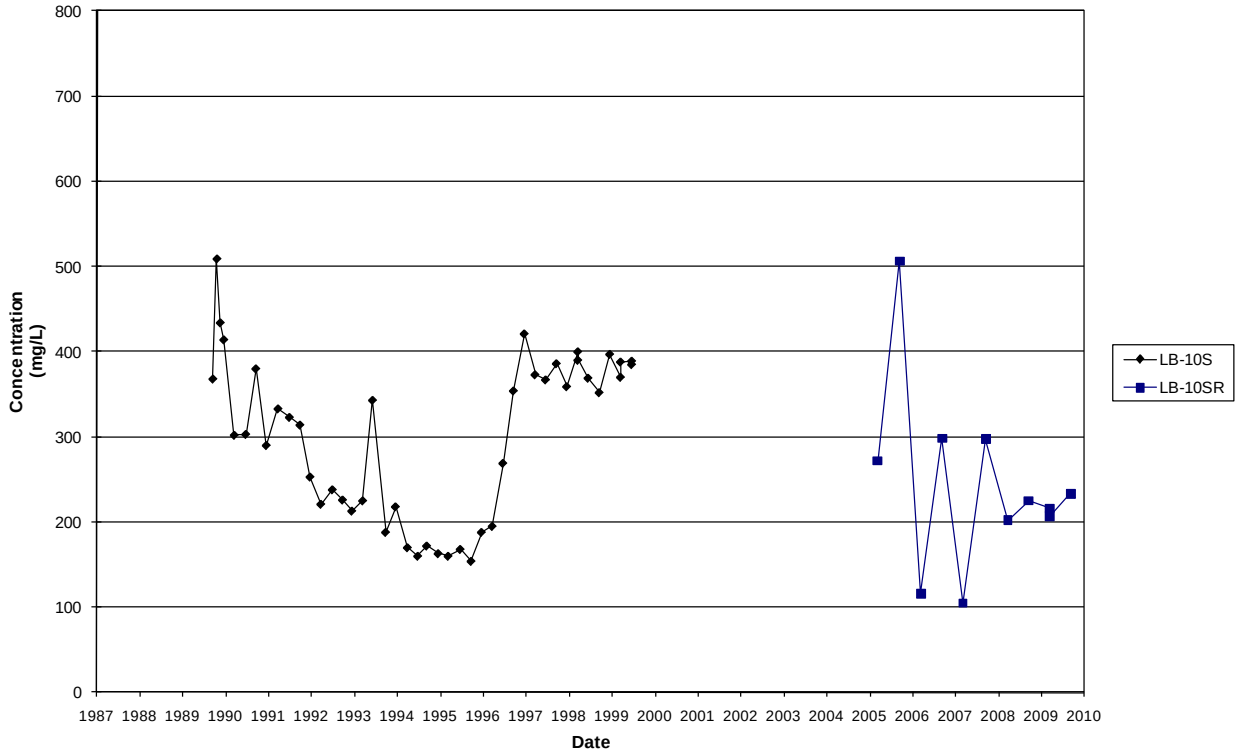
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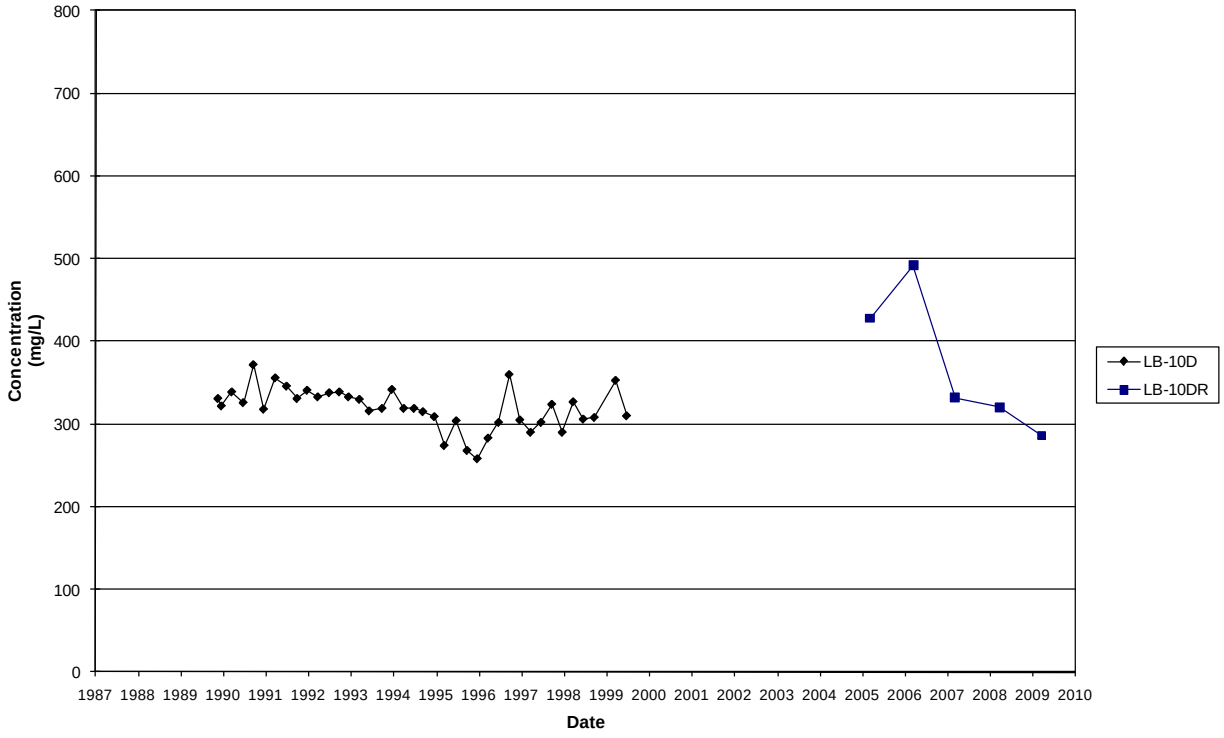
LB-10SR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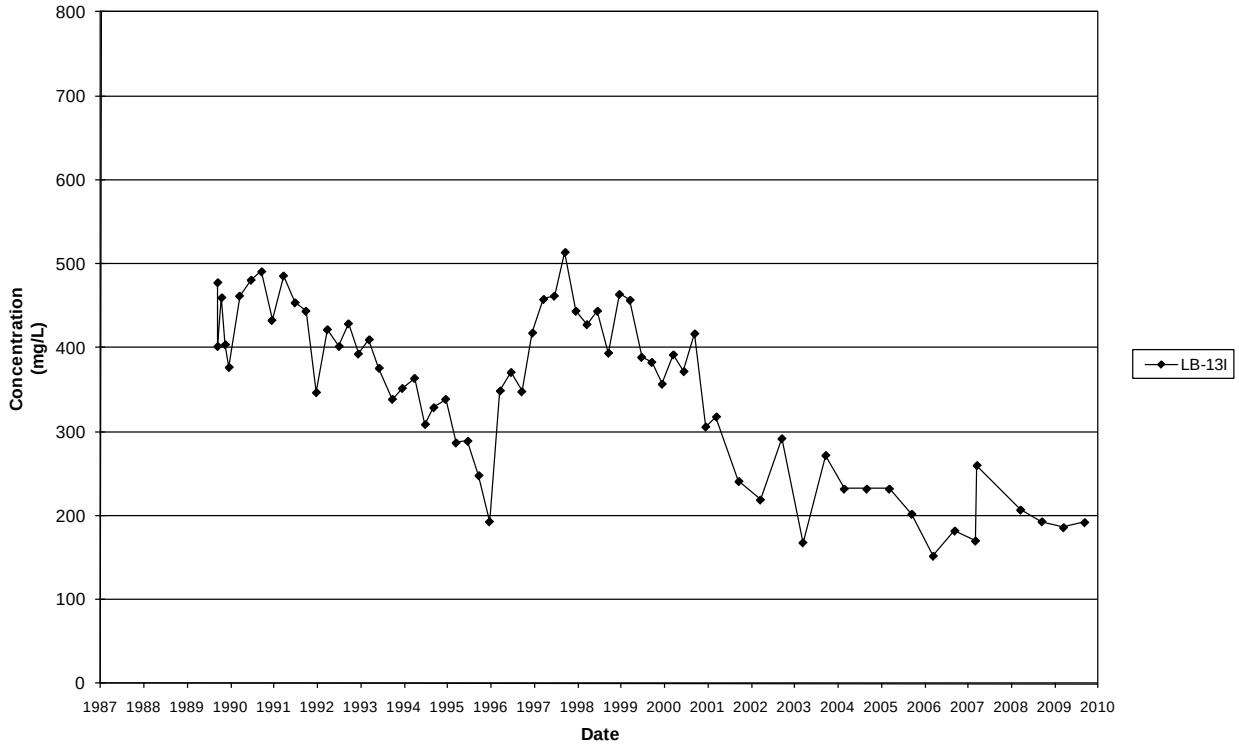
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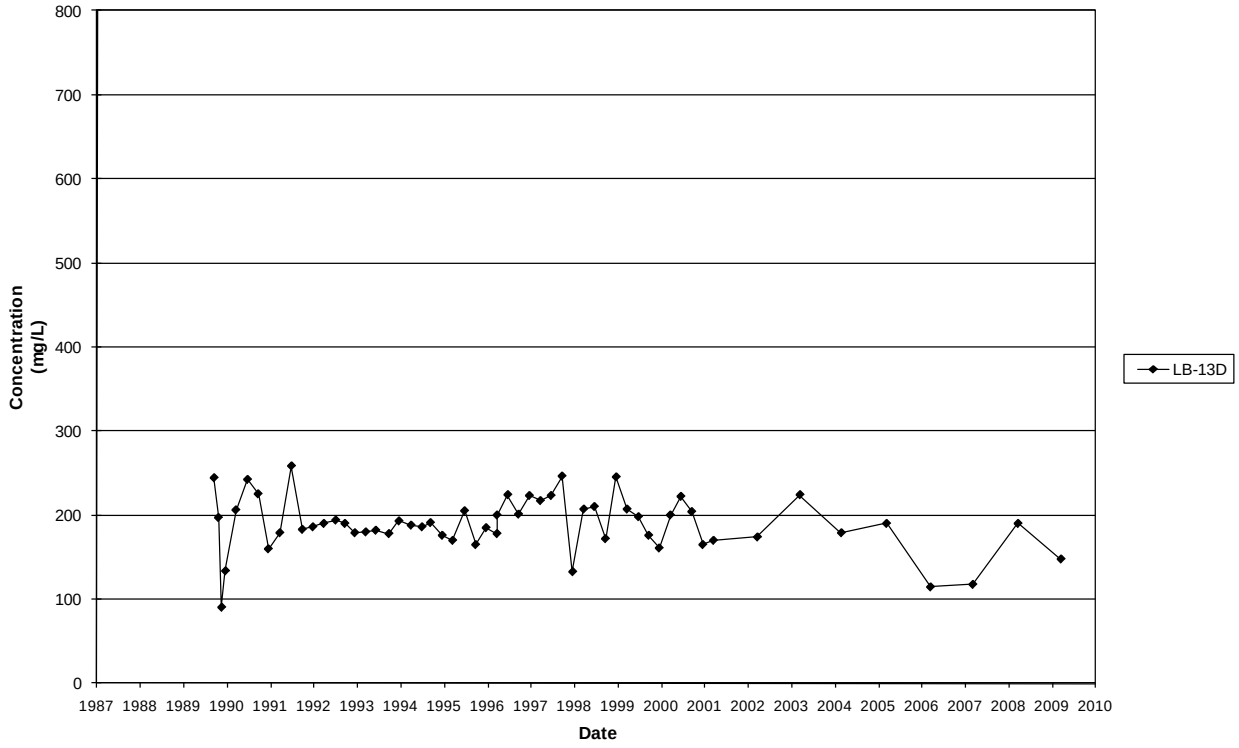
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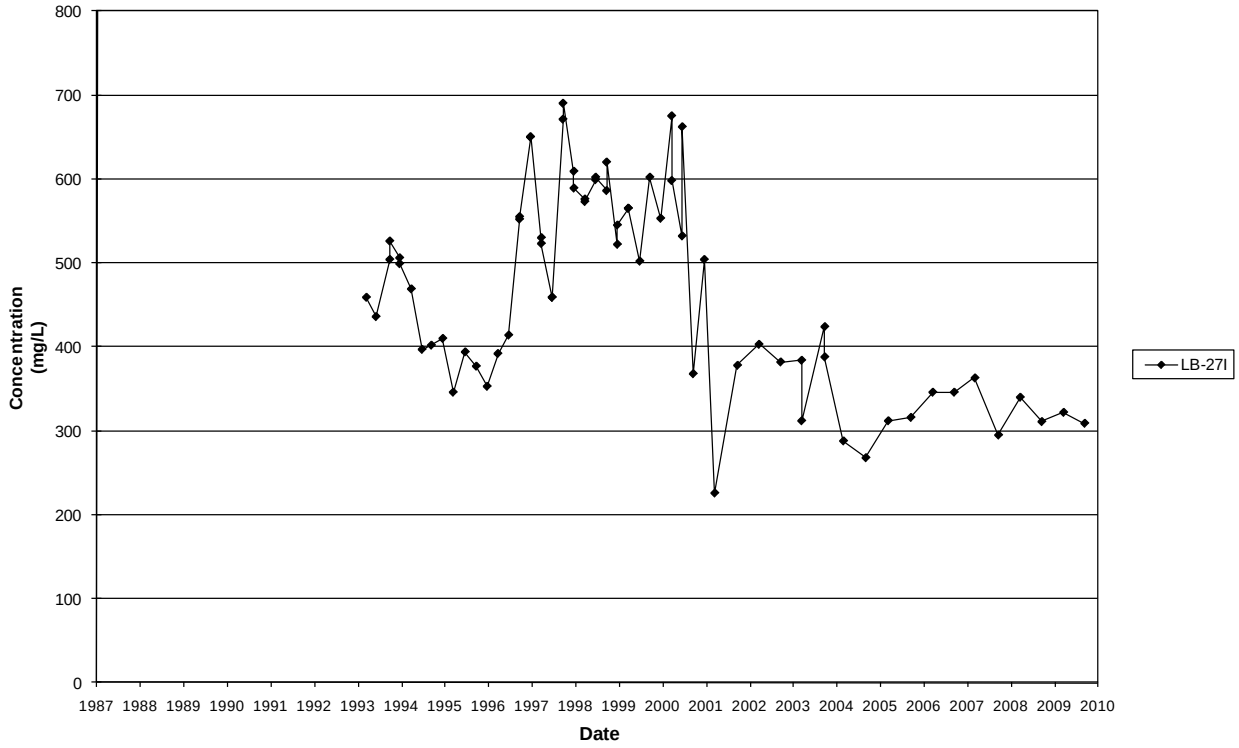
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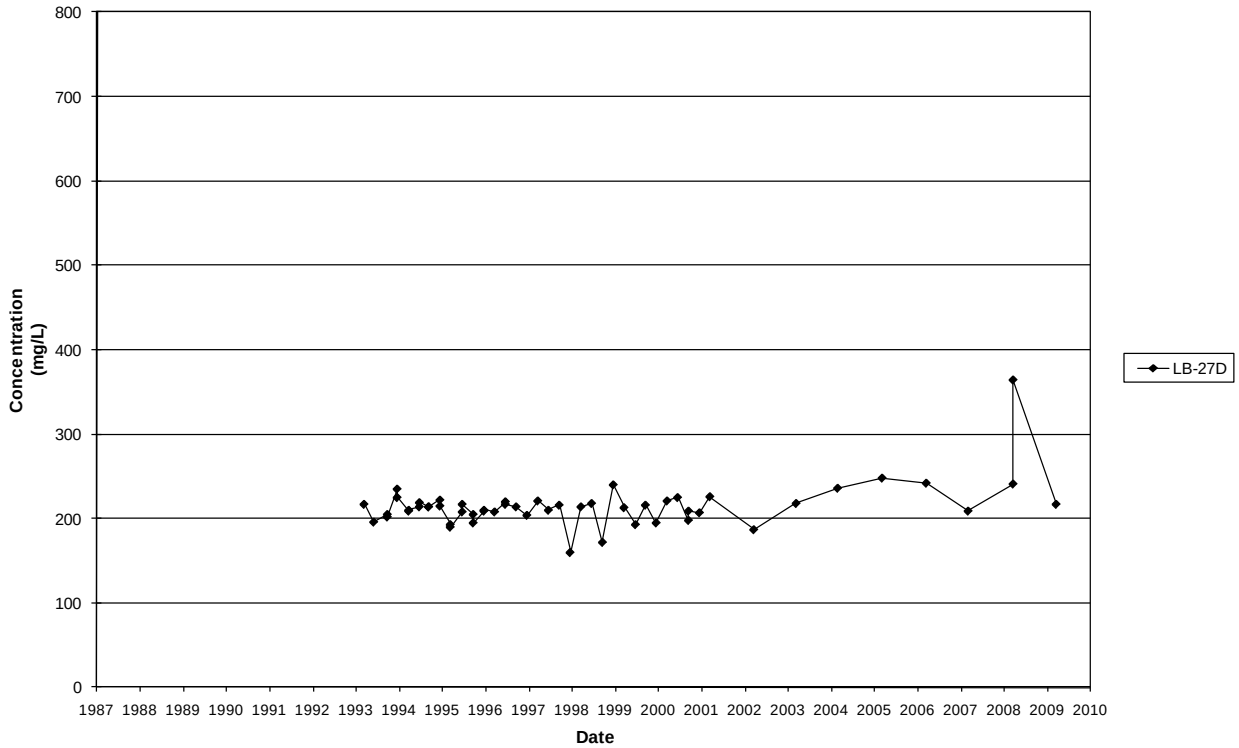
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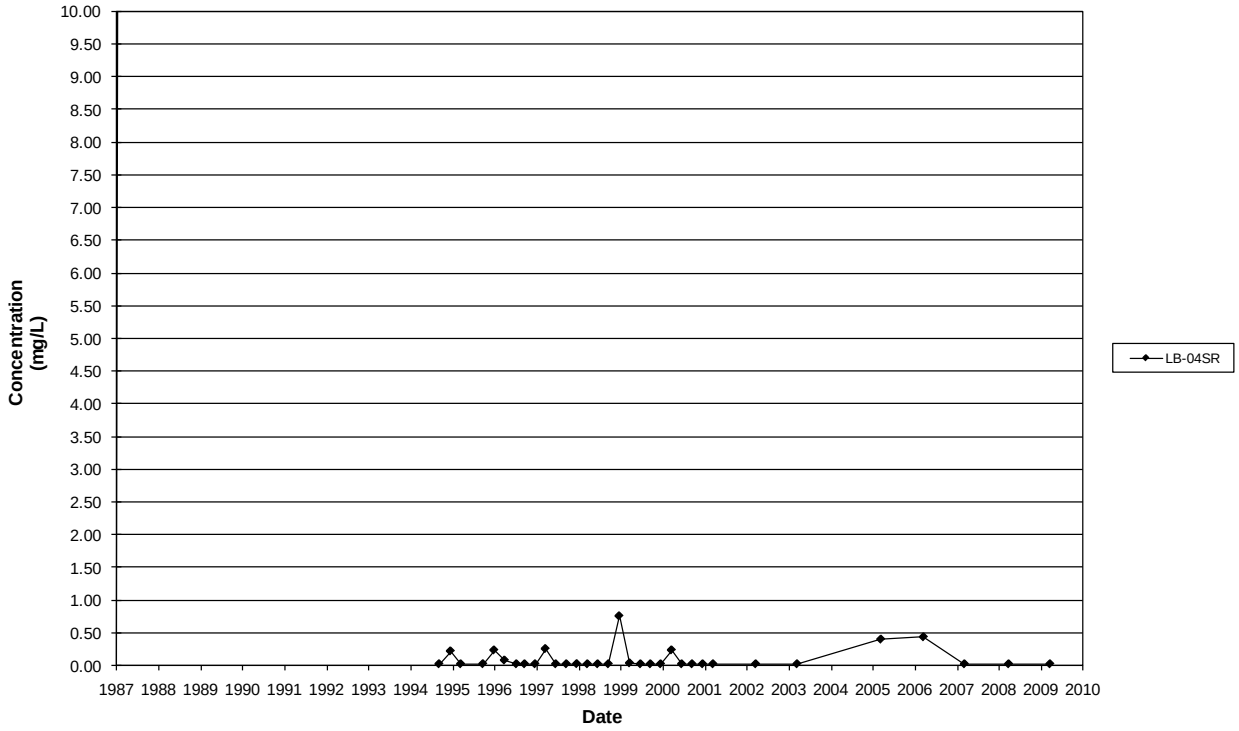
LB-27D

Total Dissolved Iron Data 1987-2009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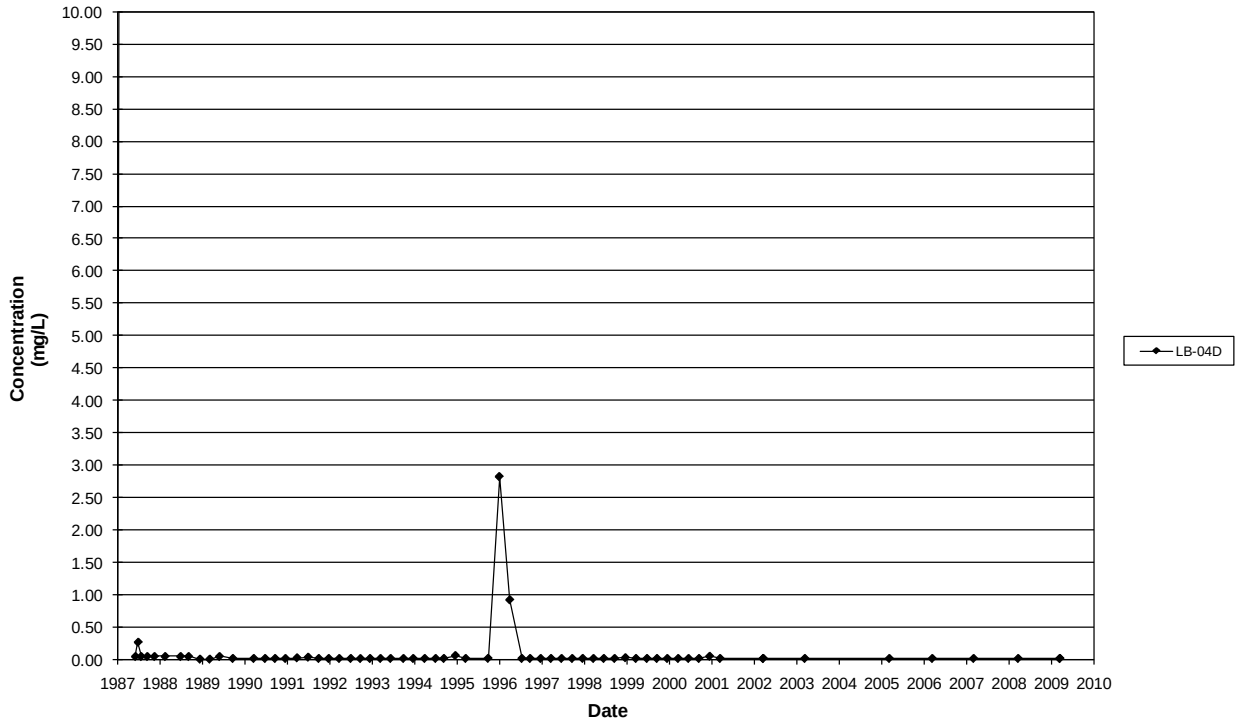
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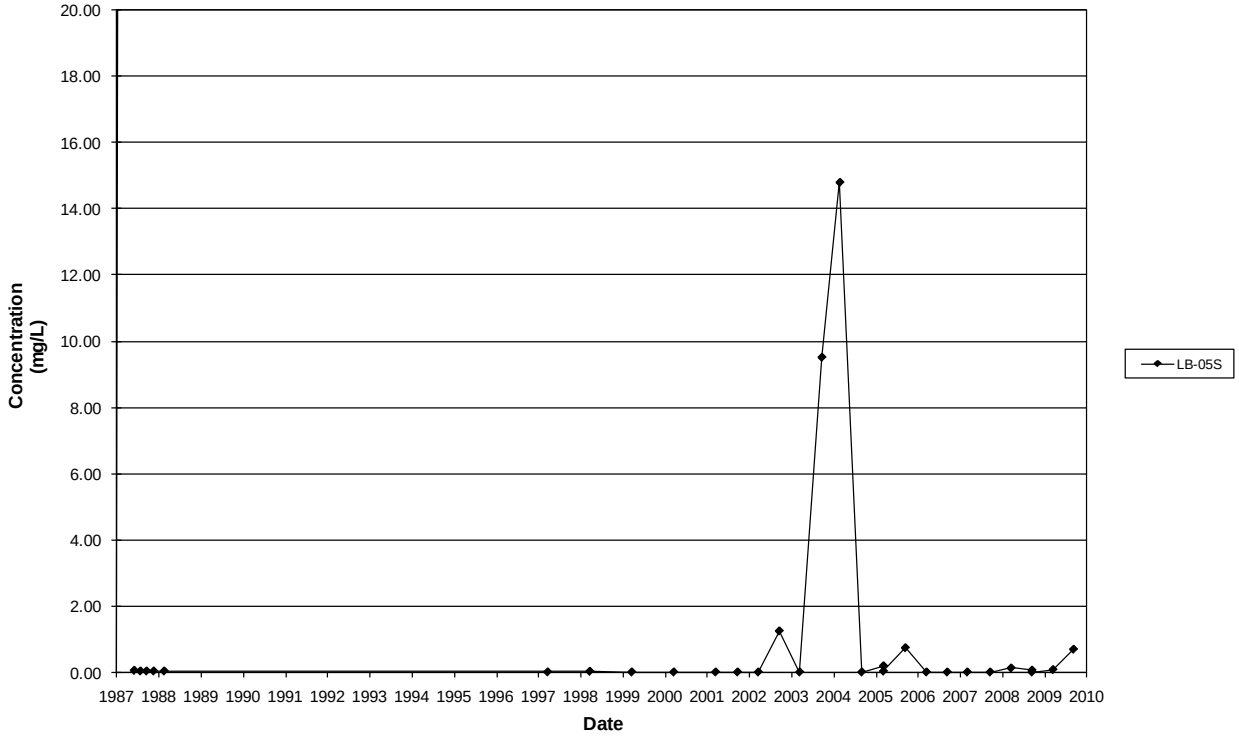
LB-04D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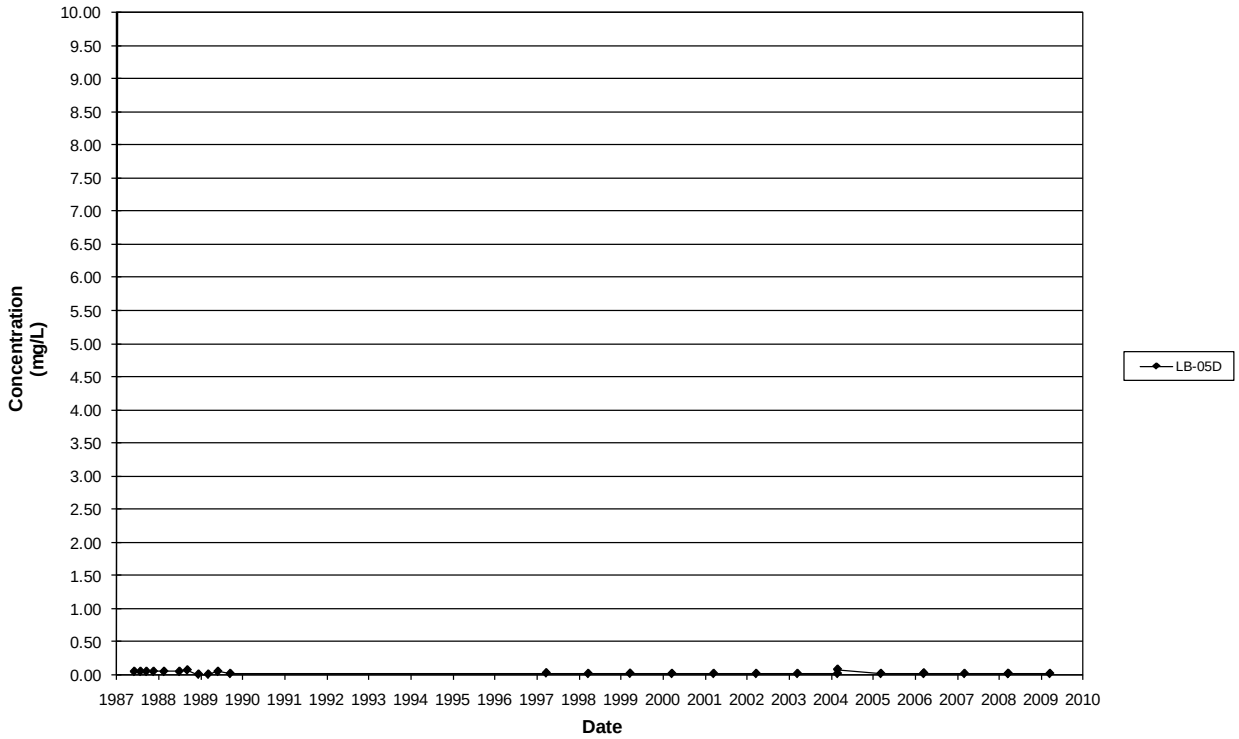
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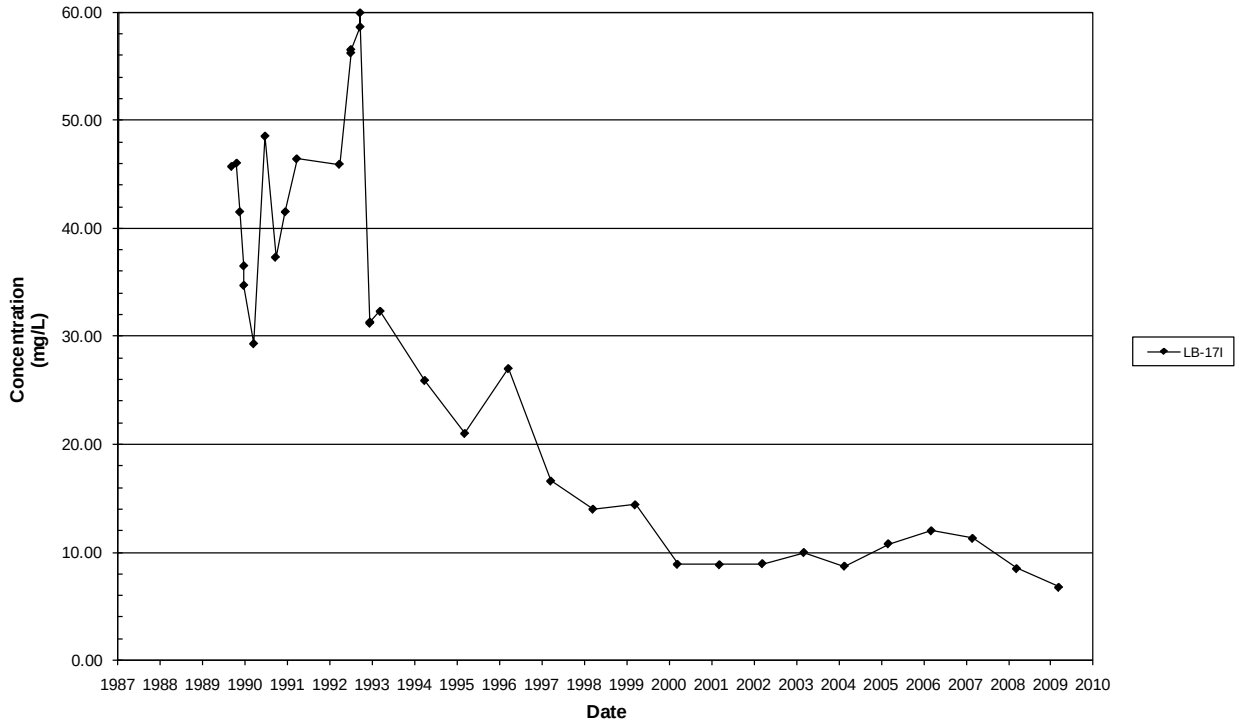
LB-05D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Date
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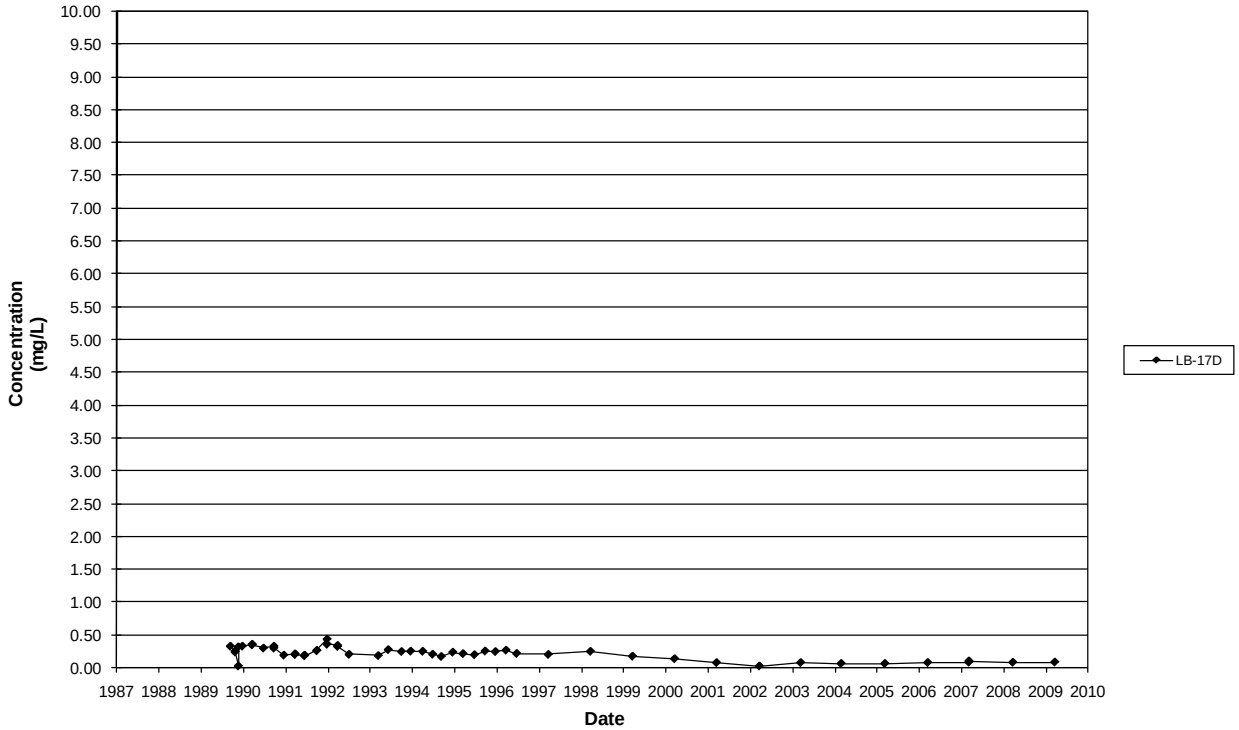
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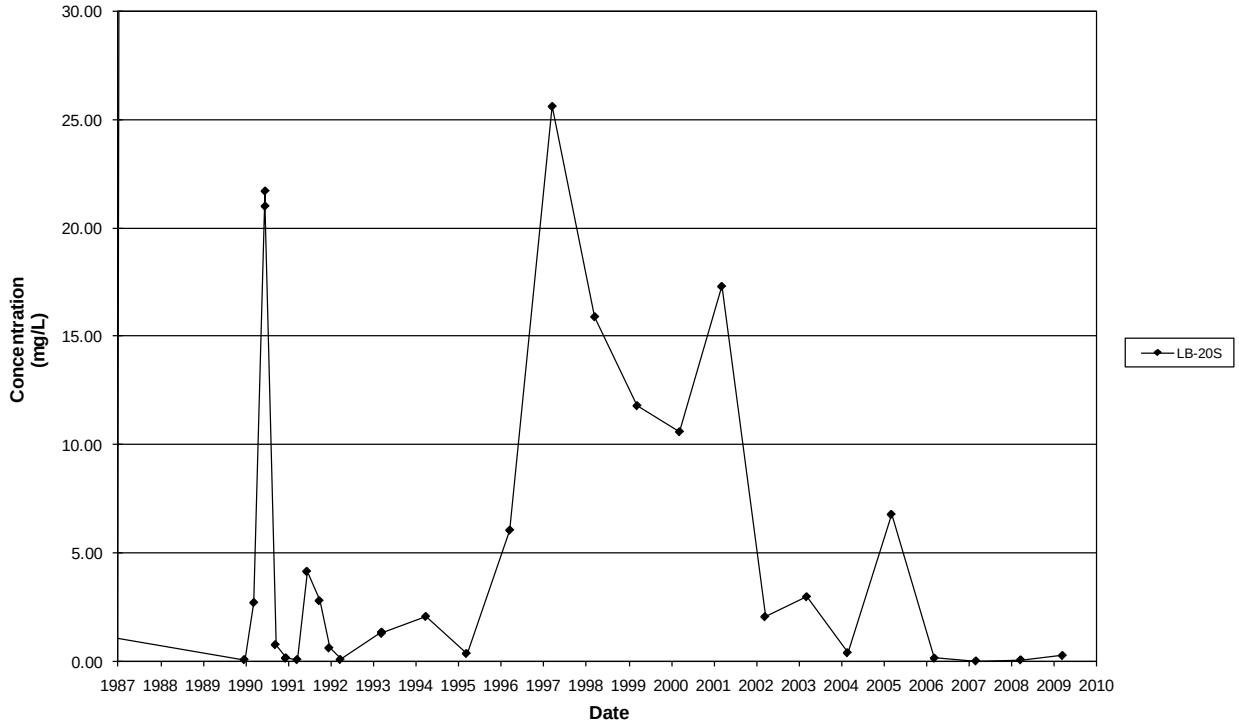
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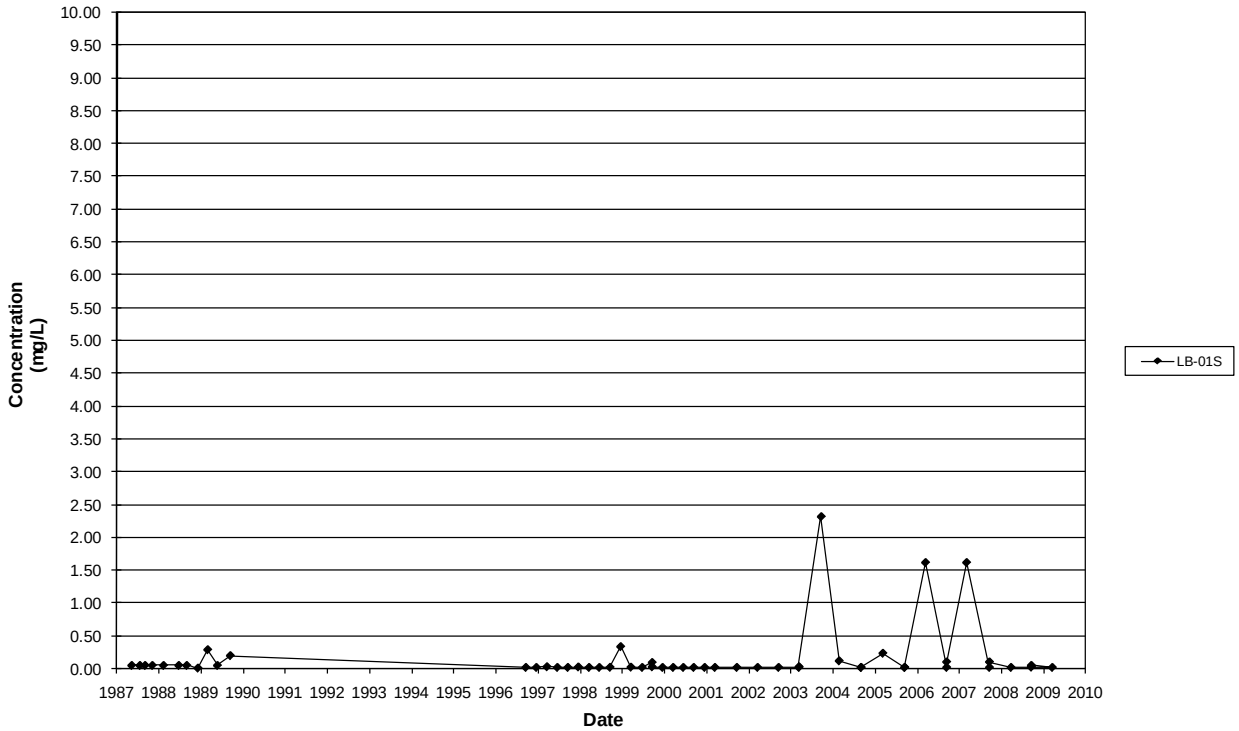
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Concentration (mg/L)
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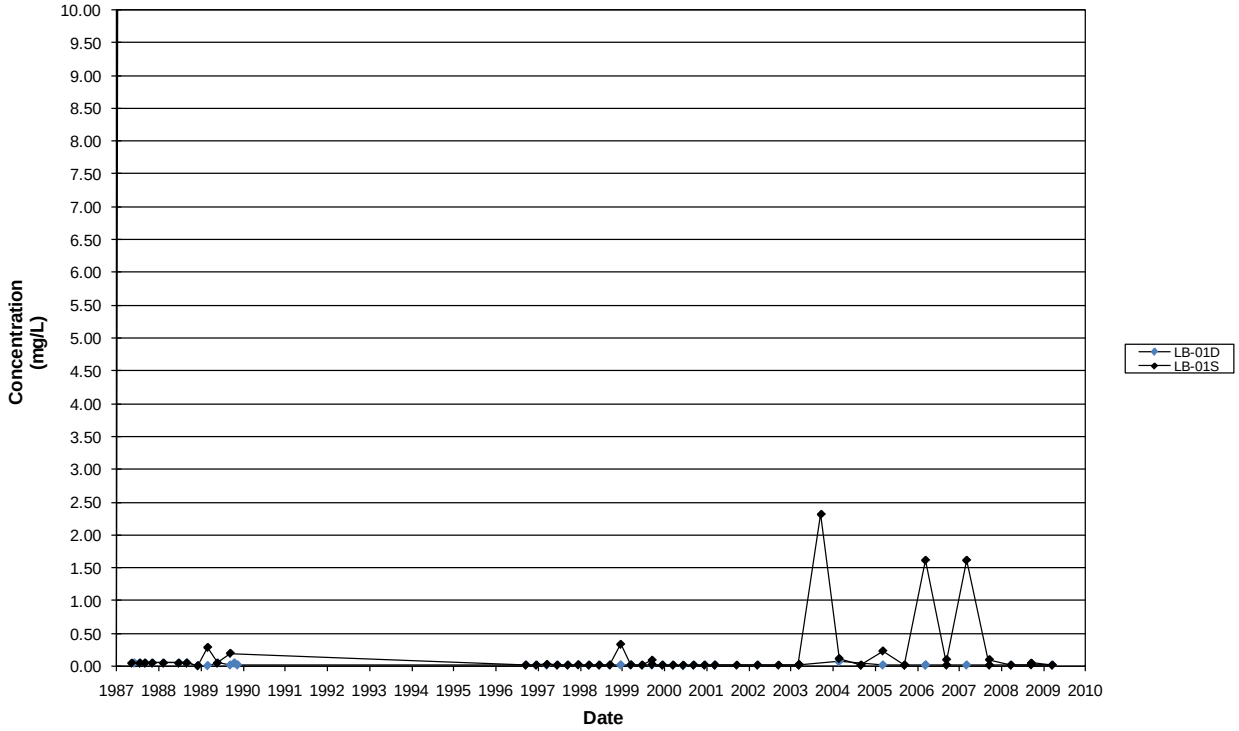
Date
LB-01S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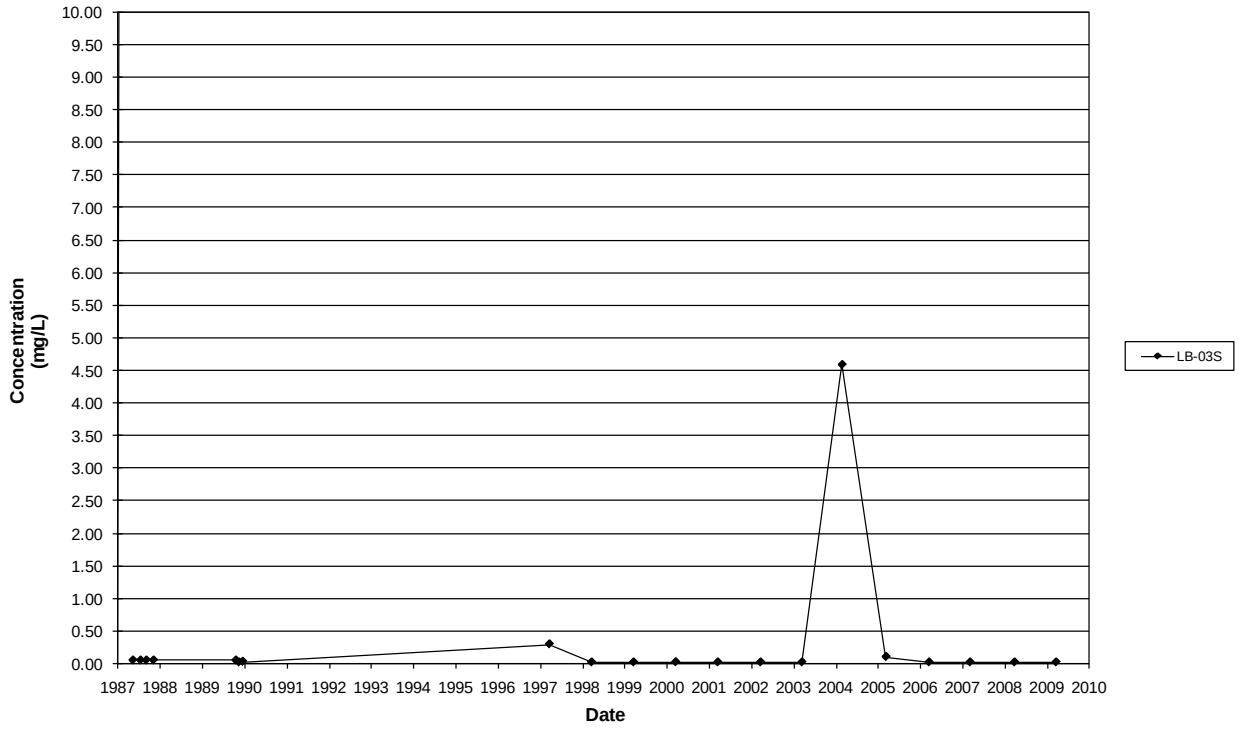
Concentration (mg/L)
1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Date
LB-01D
LB-01S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Concentration (mg/L)
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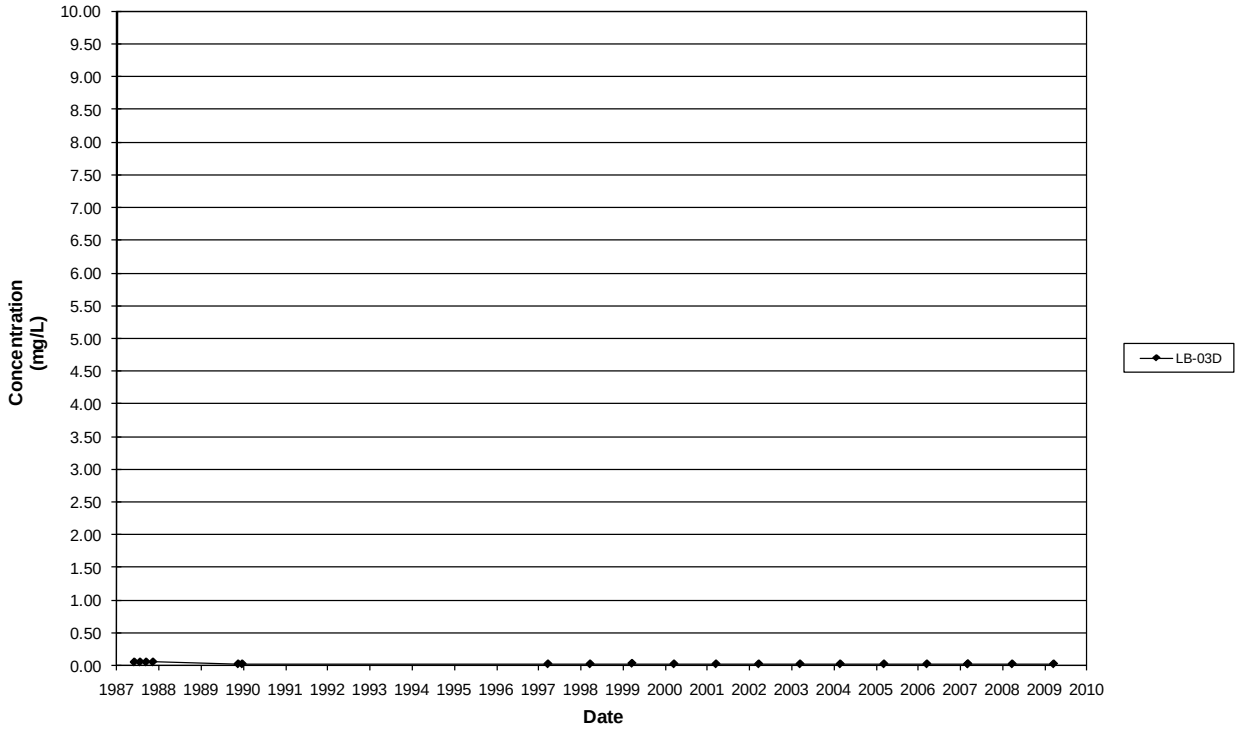
Date
LB-03S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Concentration (mg/L)
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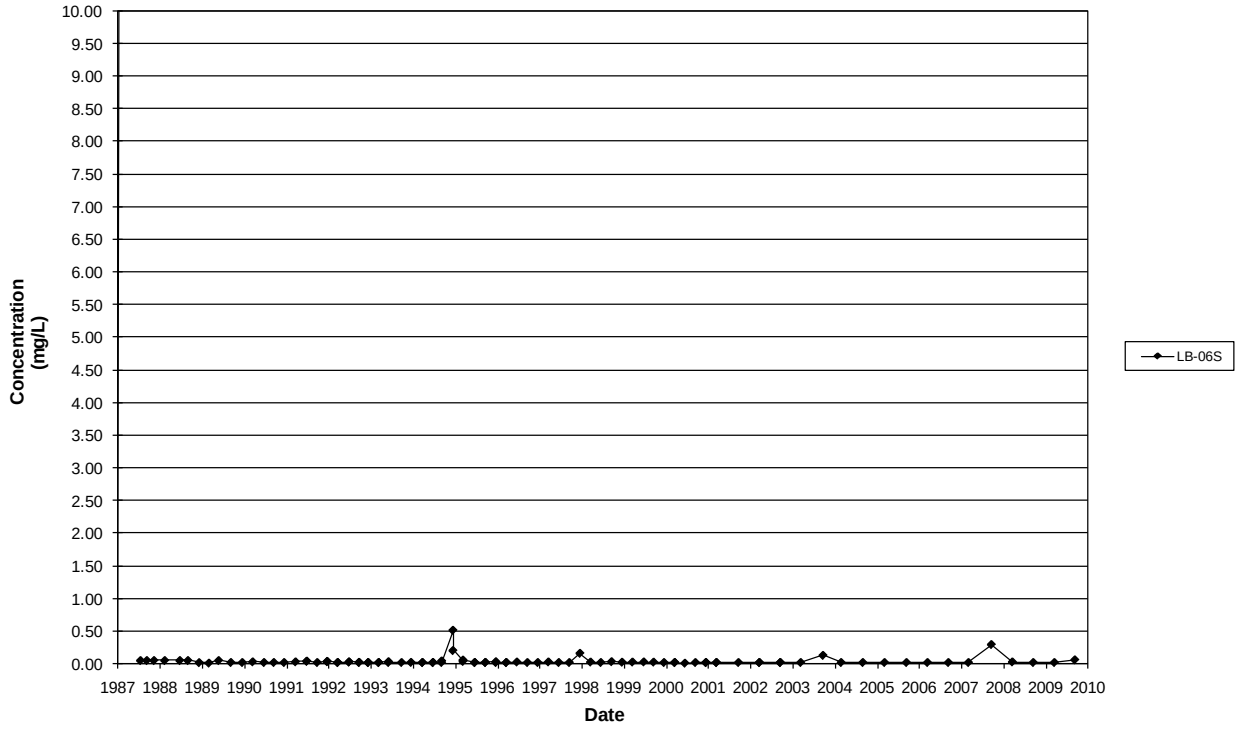
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Concentration (mg/L)
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Date
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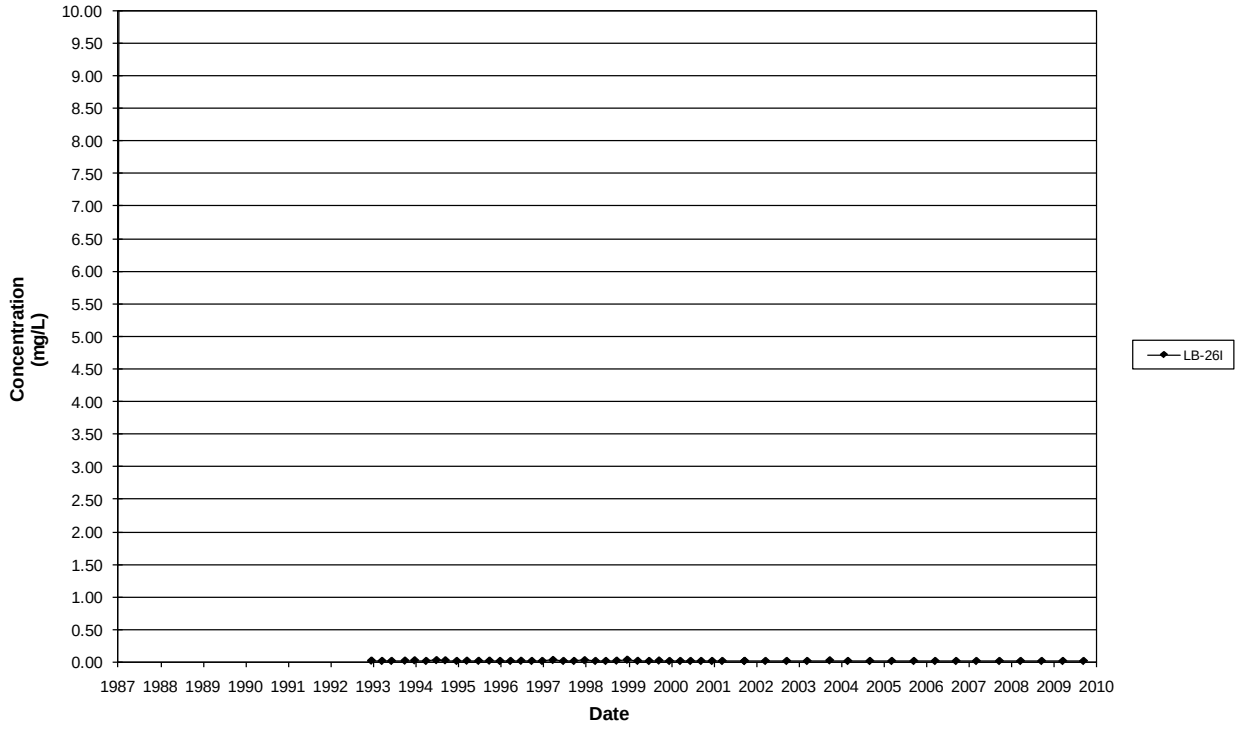
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Concentration (mg/L)
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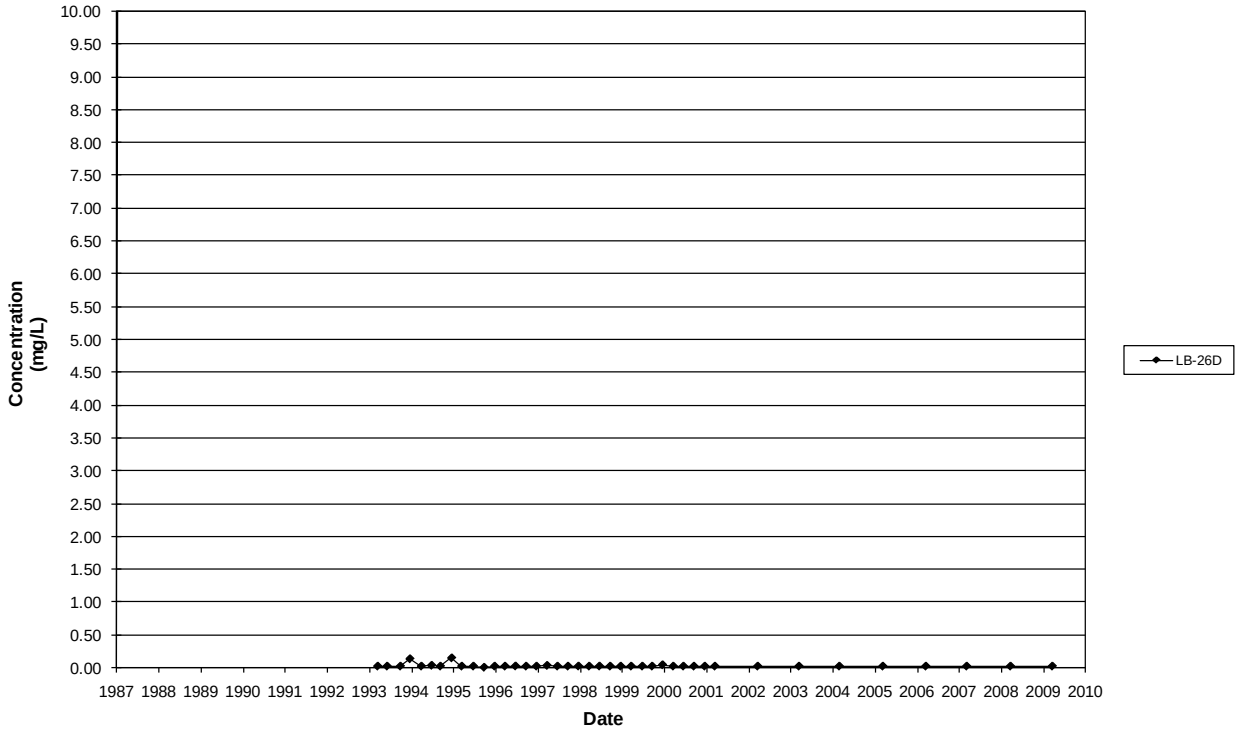
Date
LB-26I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Concentration (mg/L)
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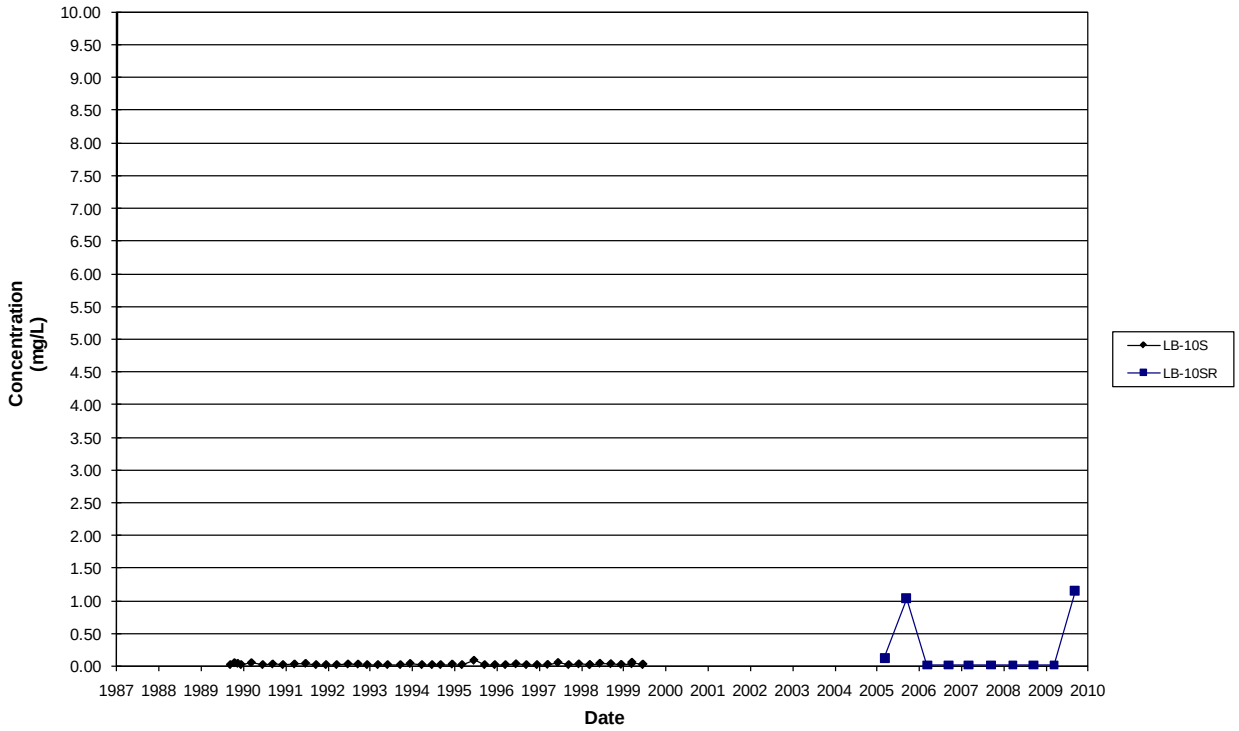
LB-26D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Date
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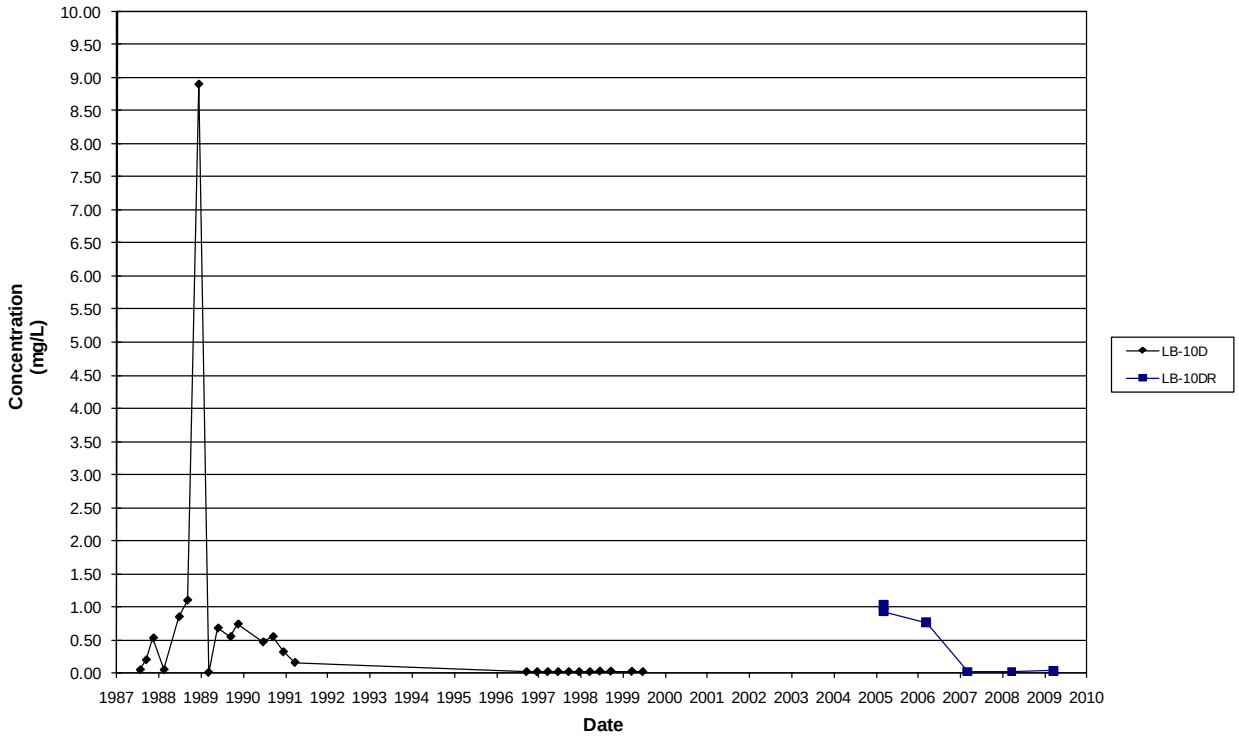
LB-10SR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Date
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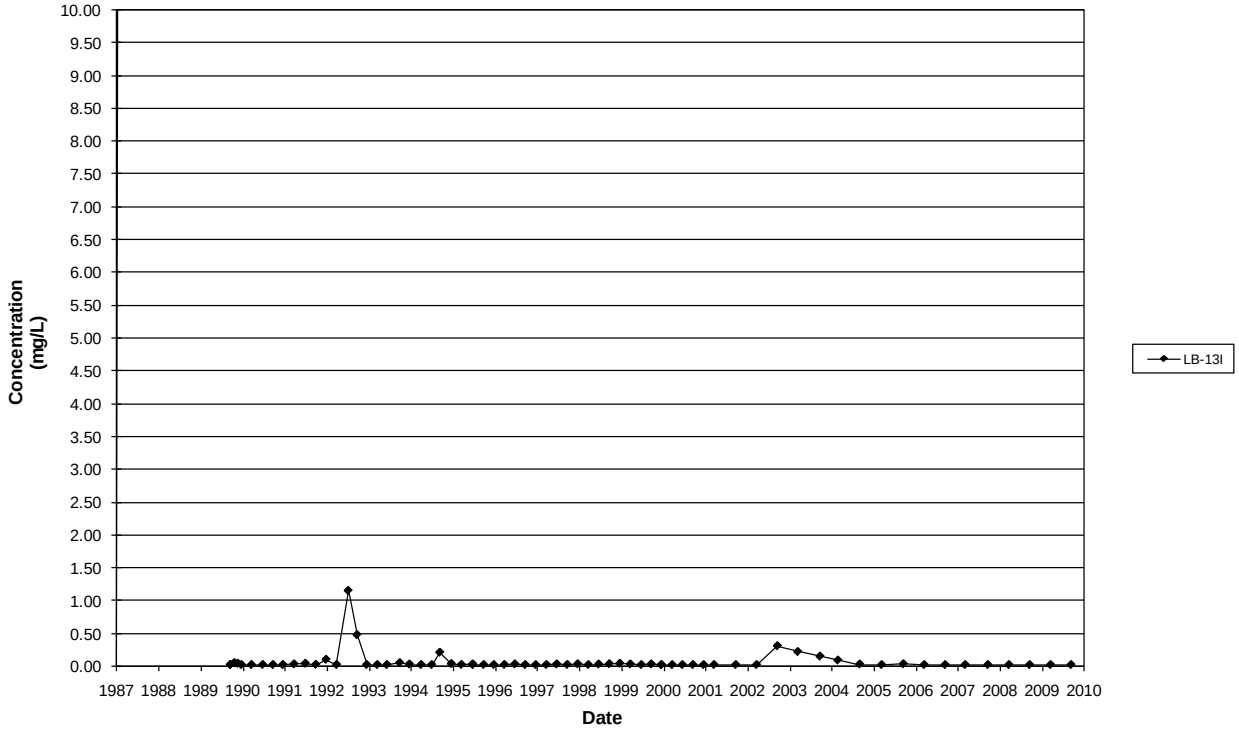
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Date
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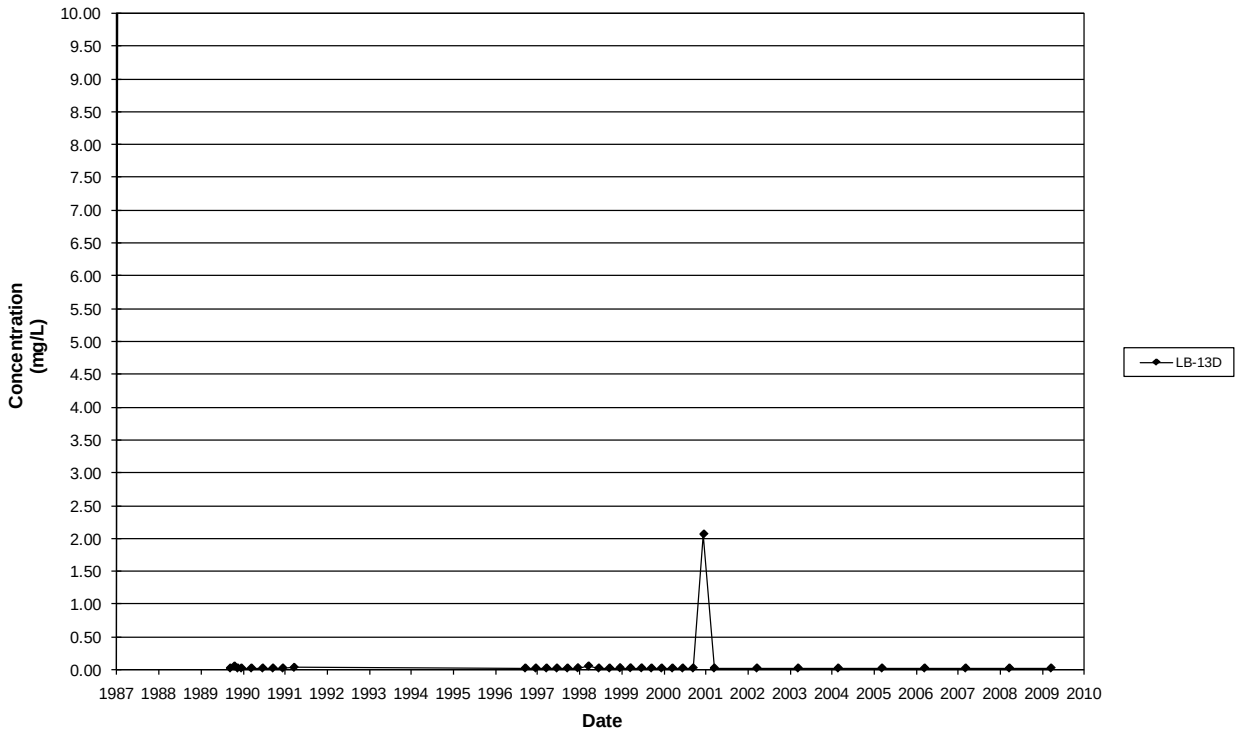
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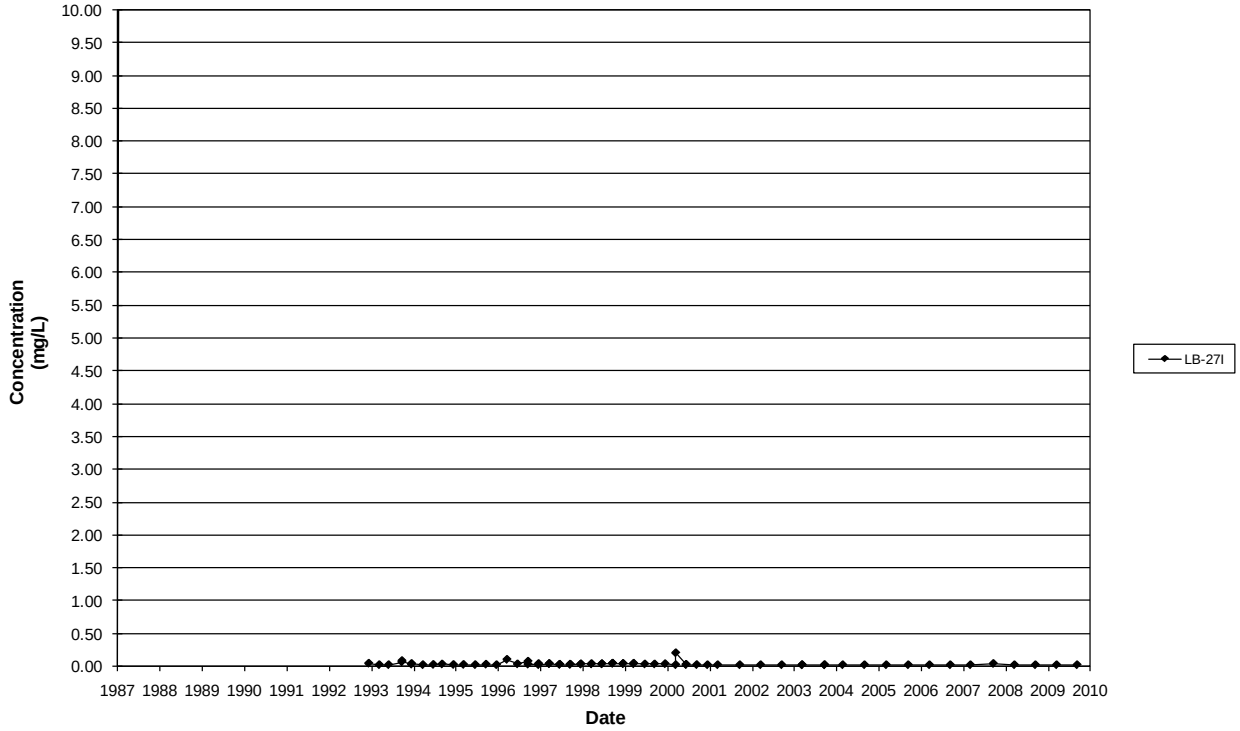
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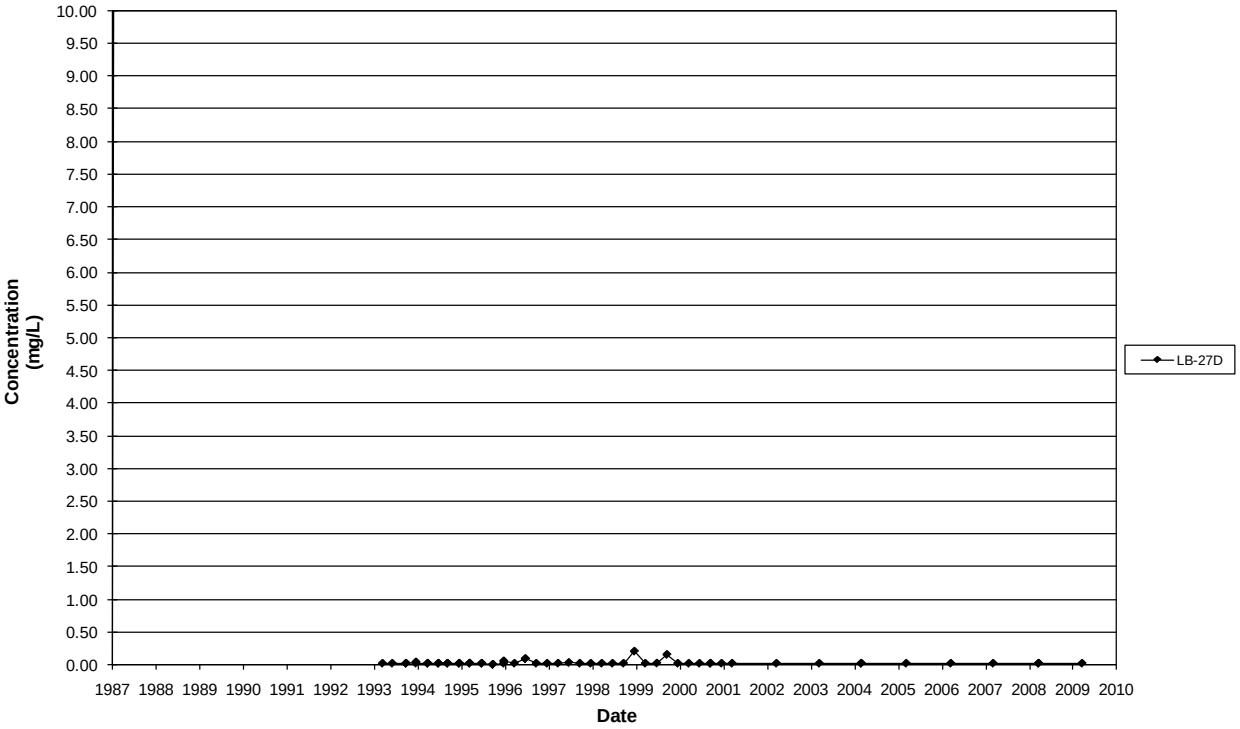
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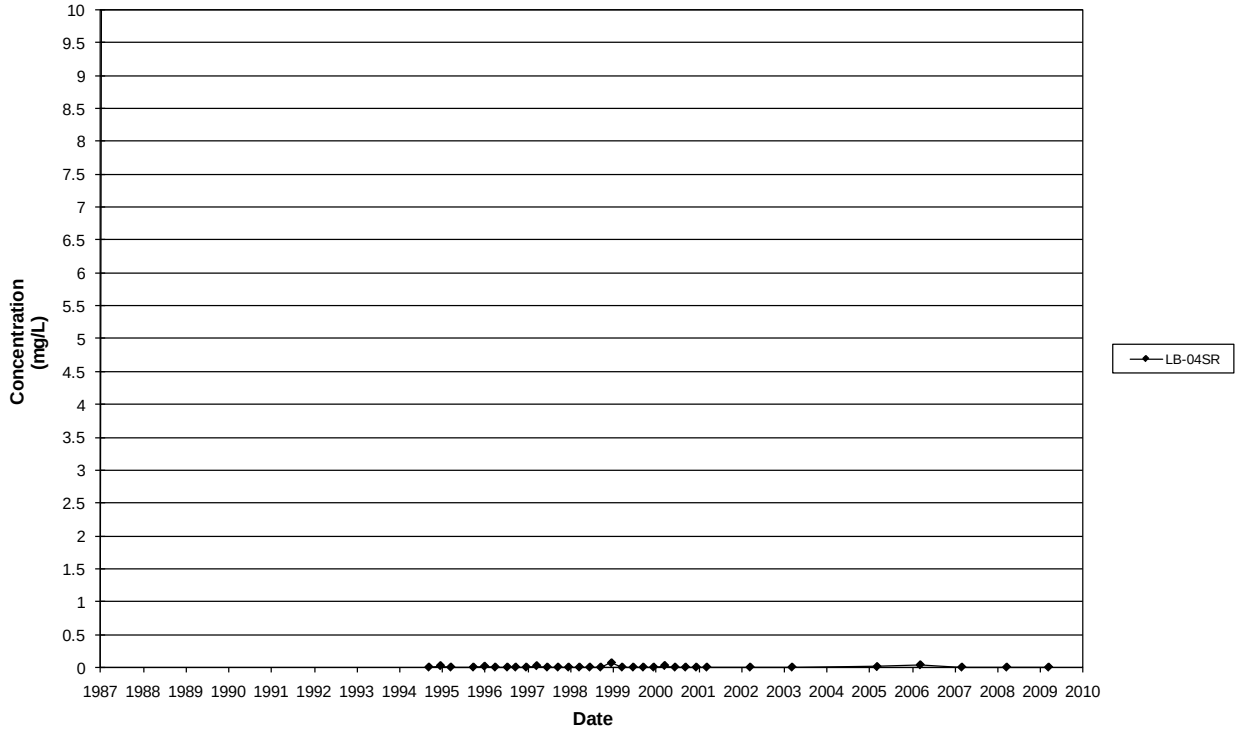
Concentration (mg/L)
1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Date
LB-27D

Total Dissolved Manganese Data 1987-2009


Concentration (mg/L)
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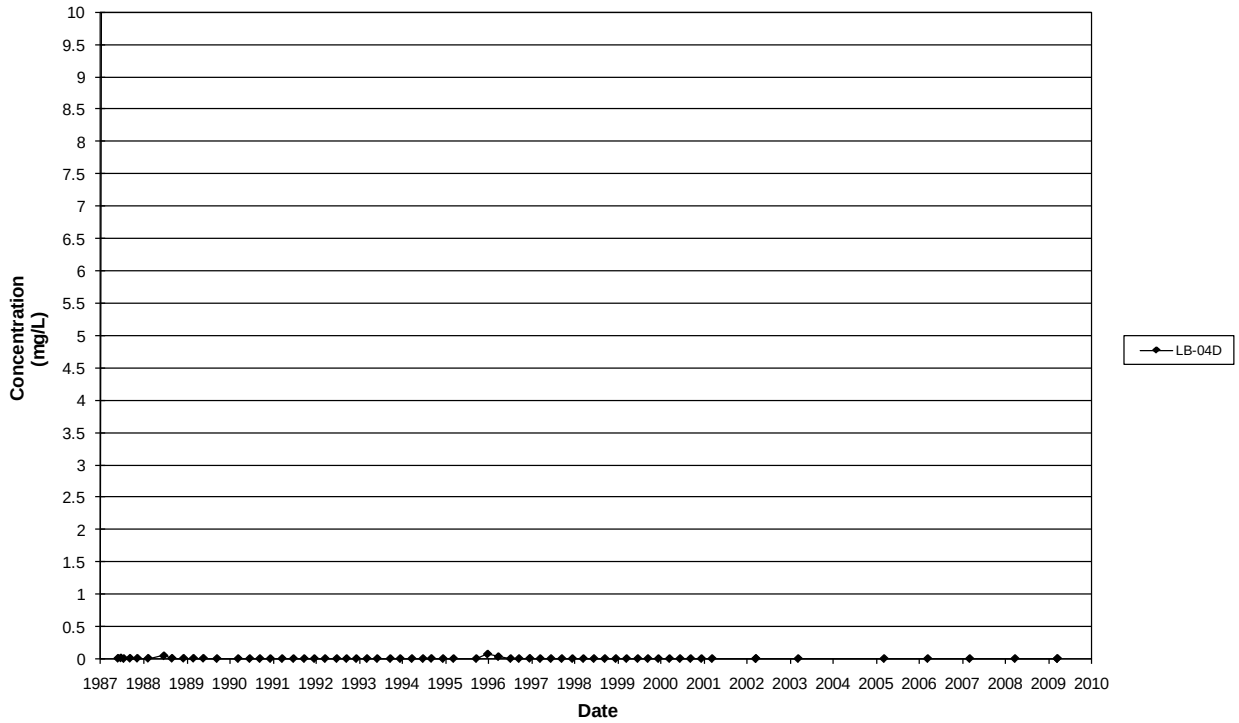
1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Date
LB-04SR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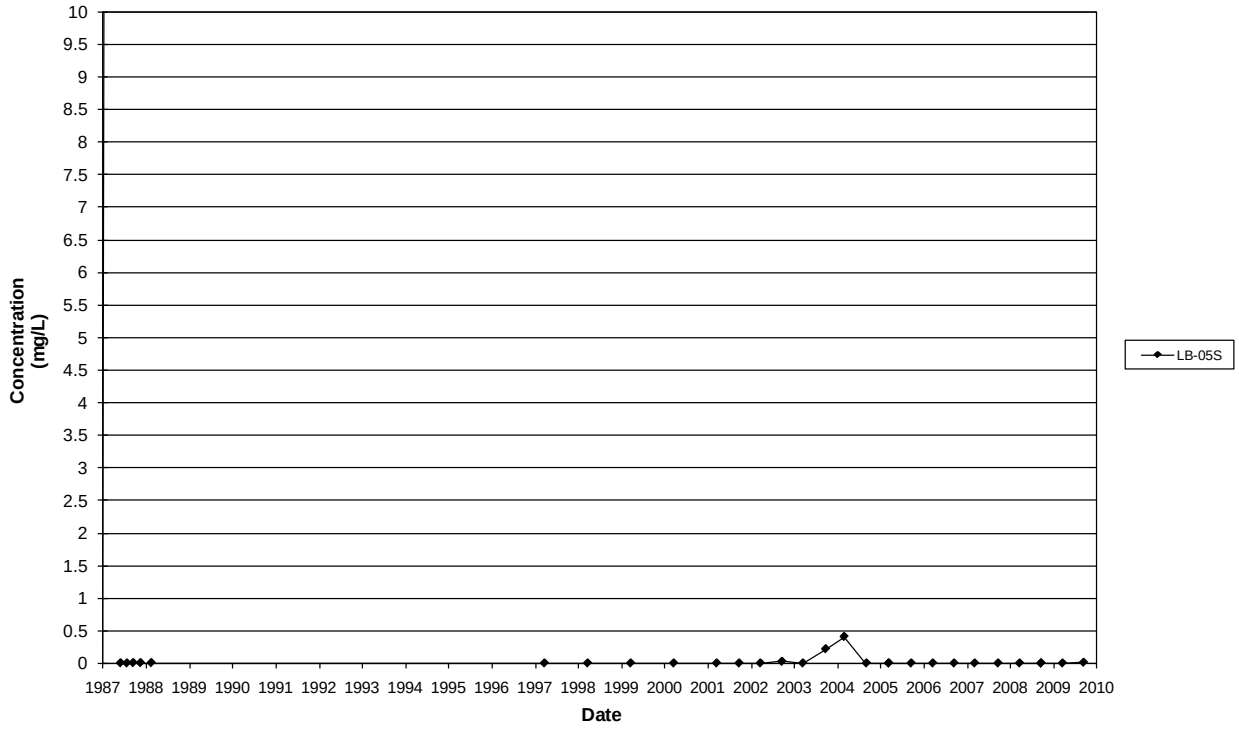
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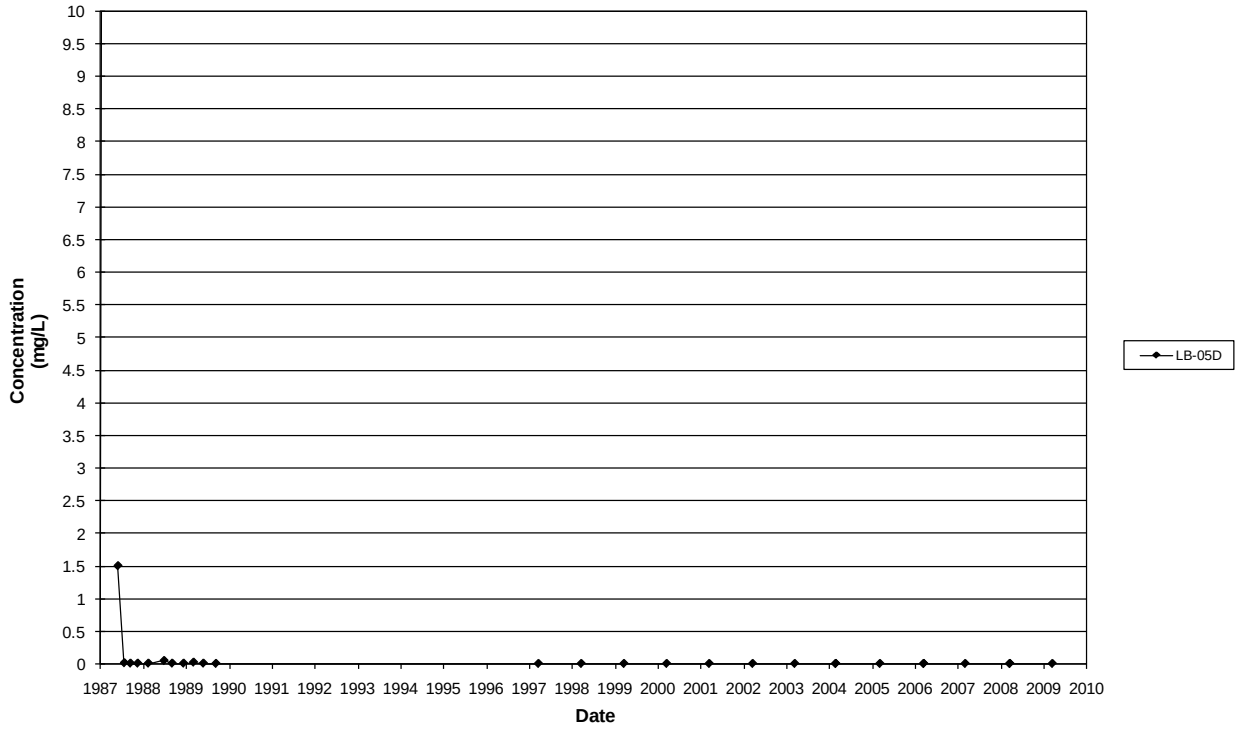
Date
LB-05S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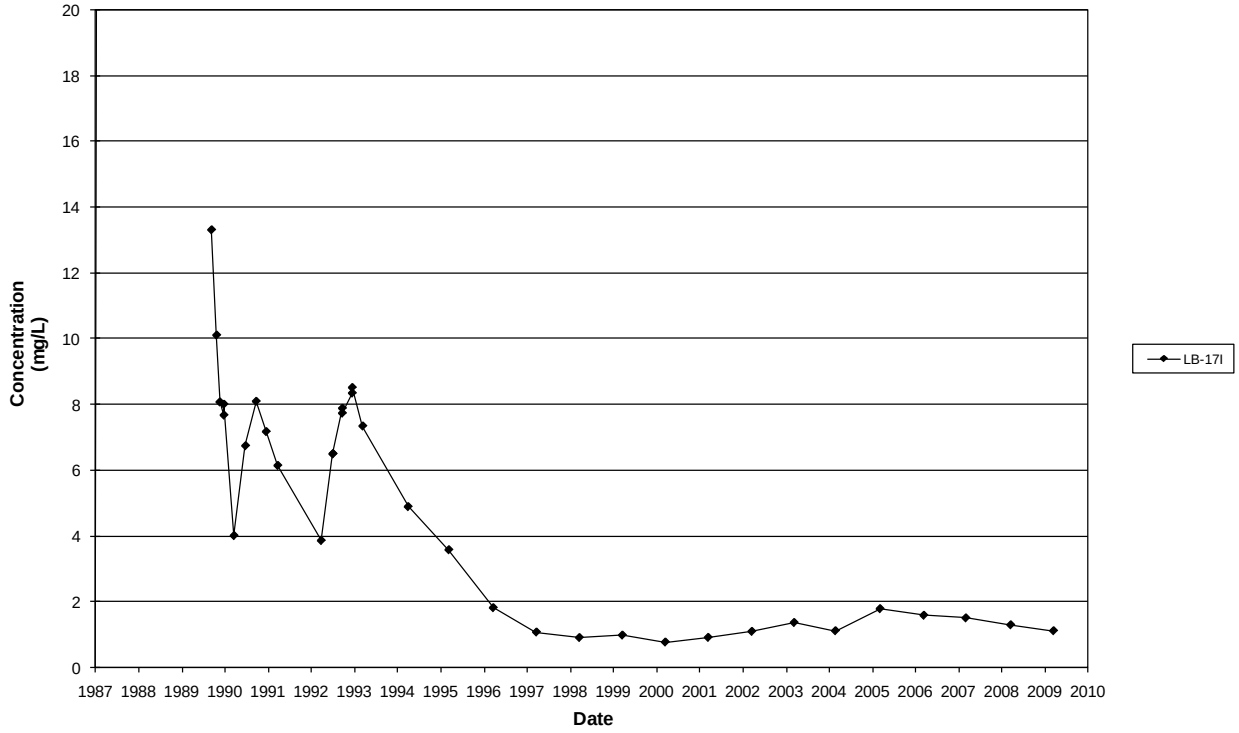
Concentration (mg/L)
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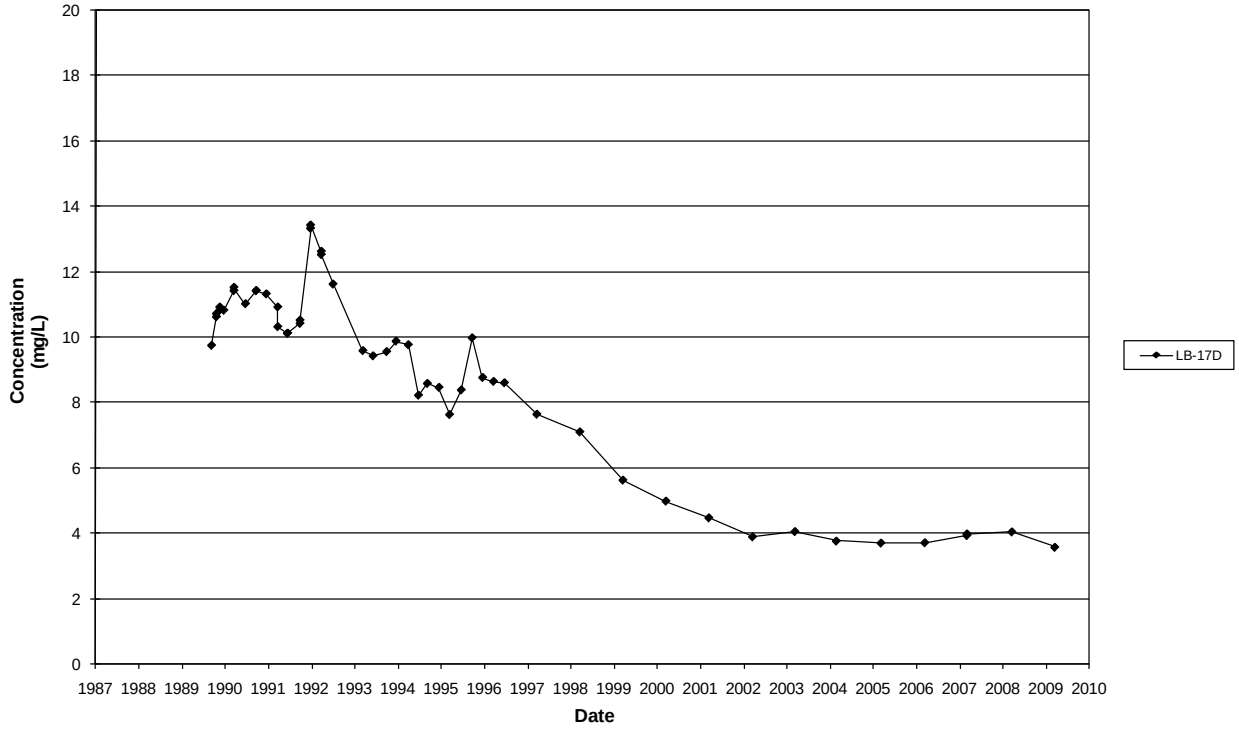
LB-17I


Concentration (mg/L)
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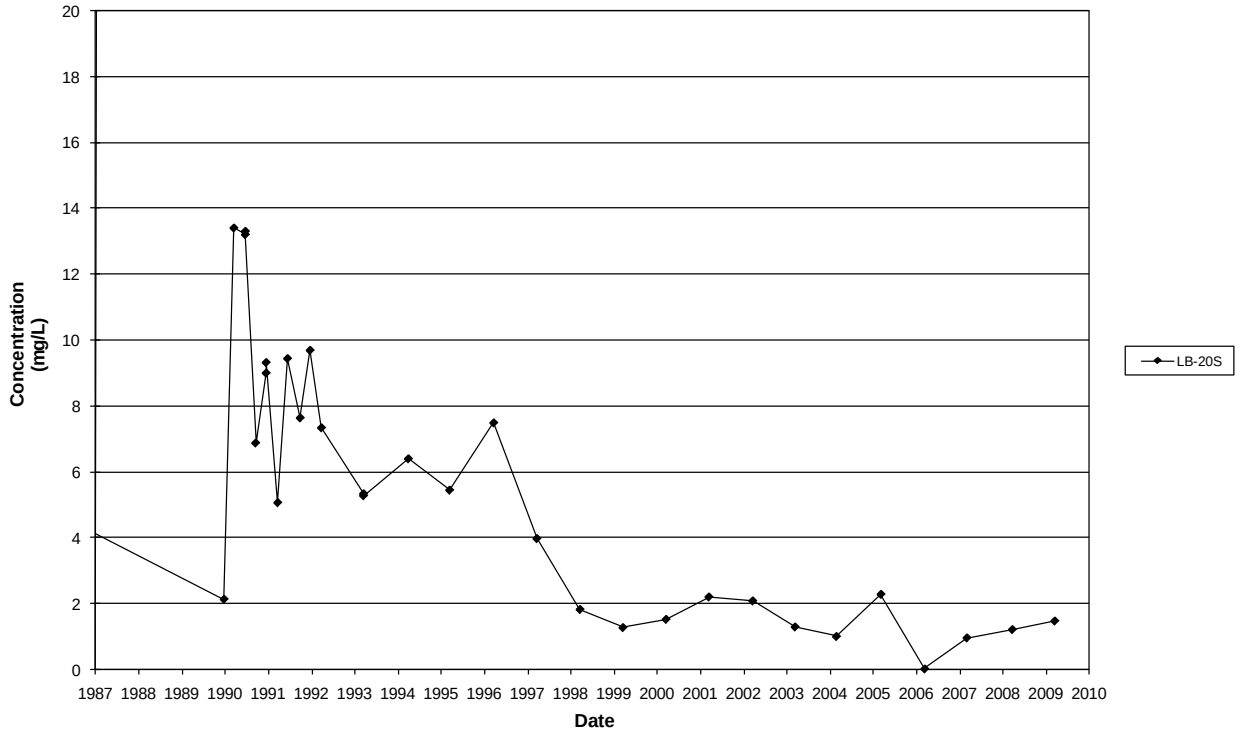
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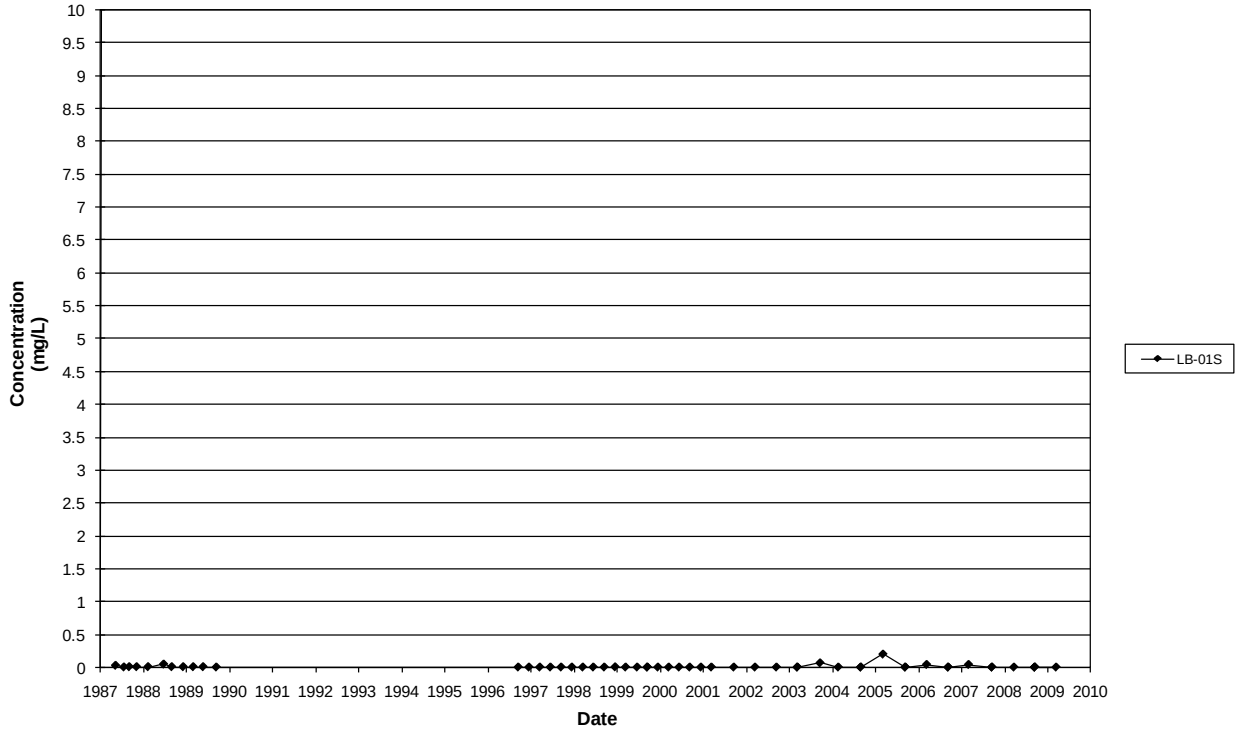
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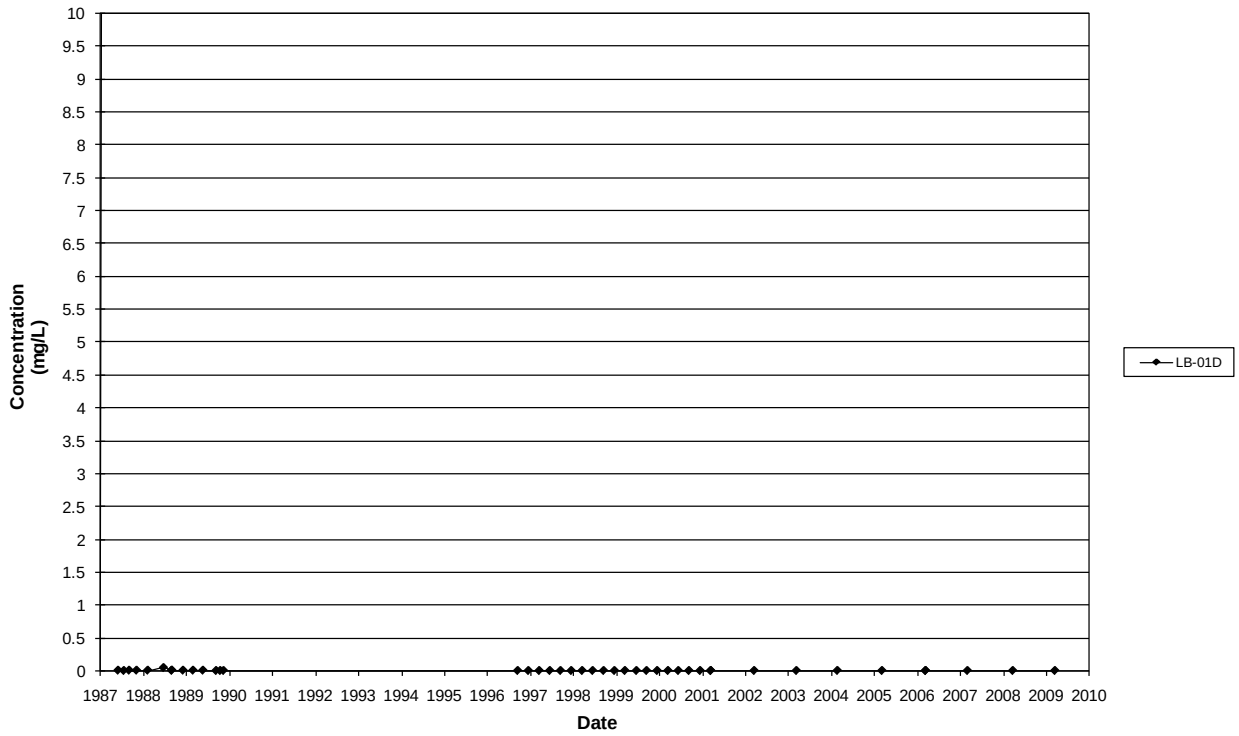
LB-01S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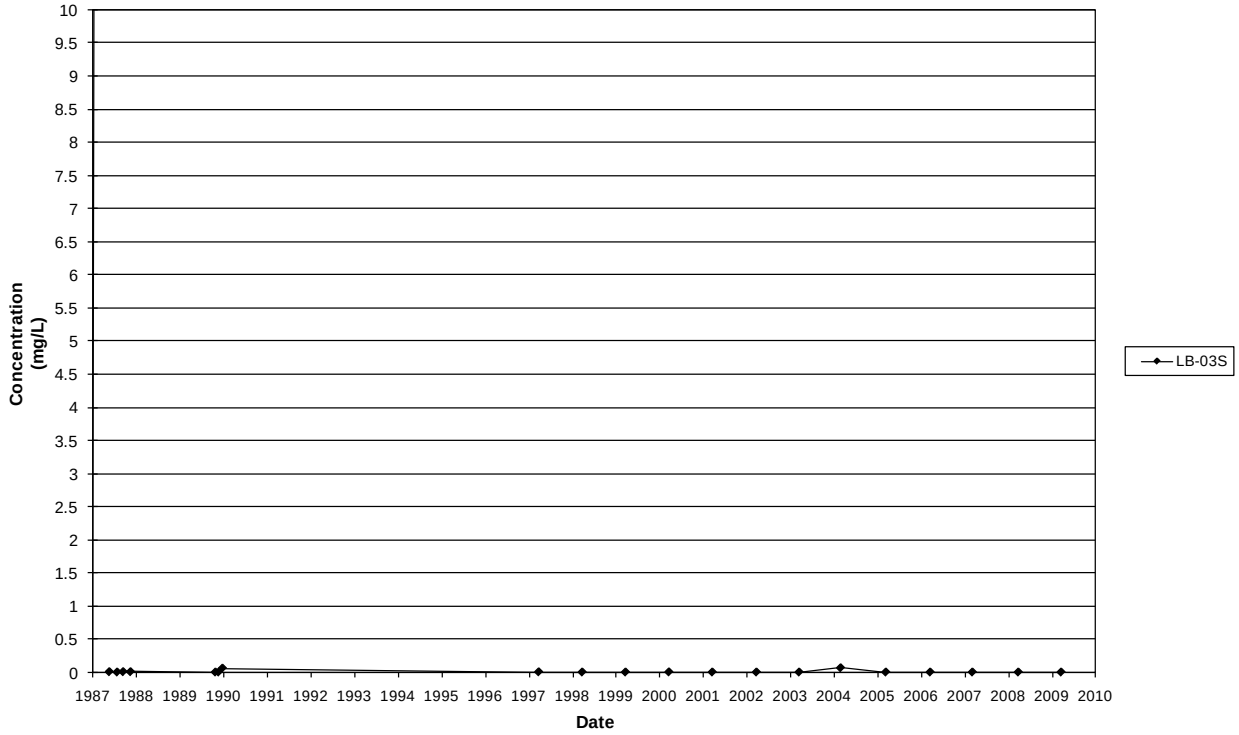
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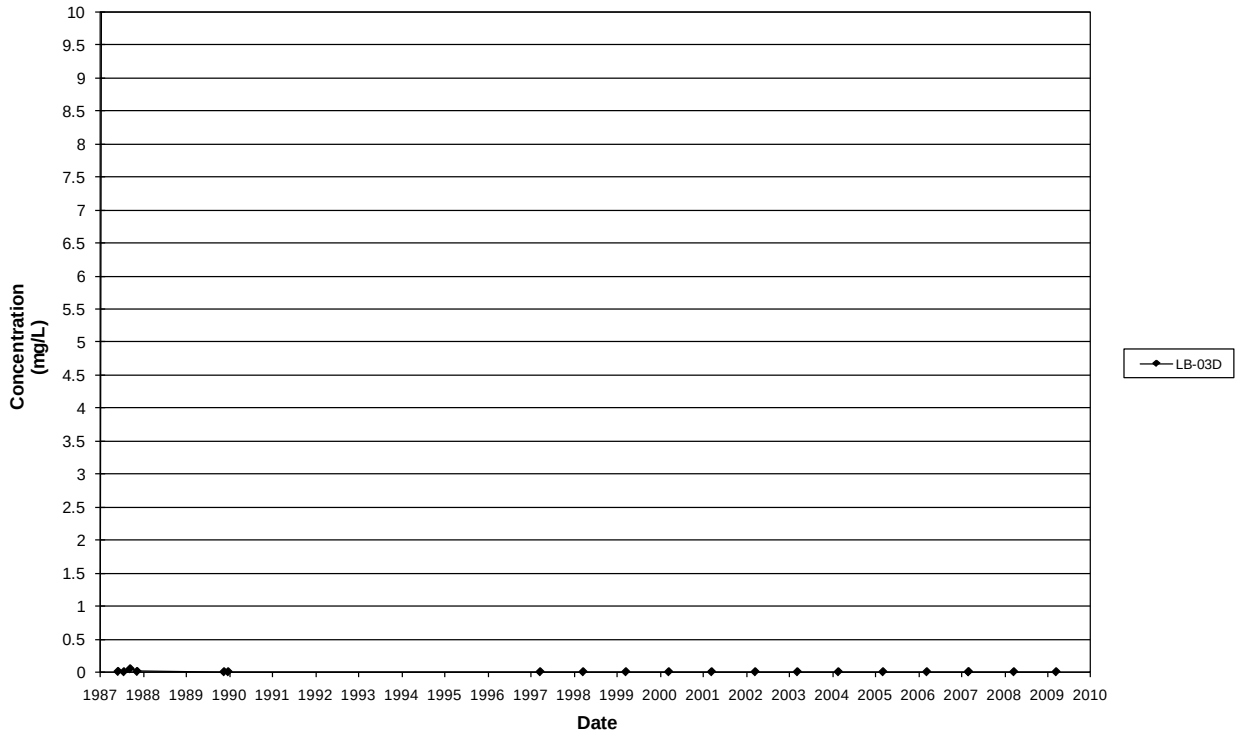
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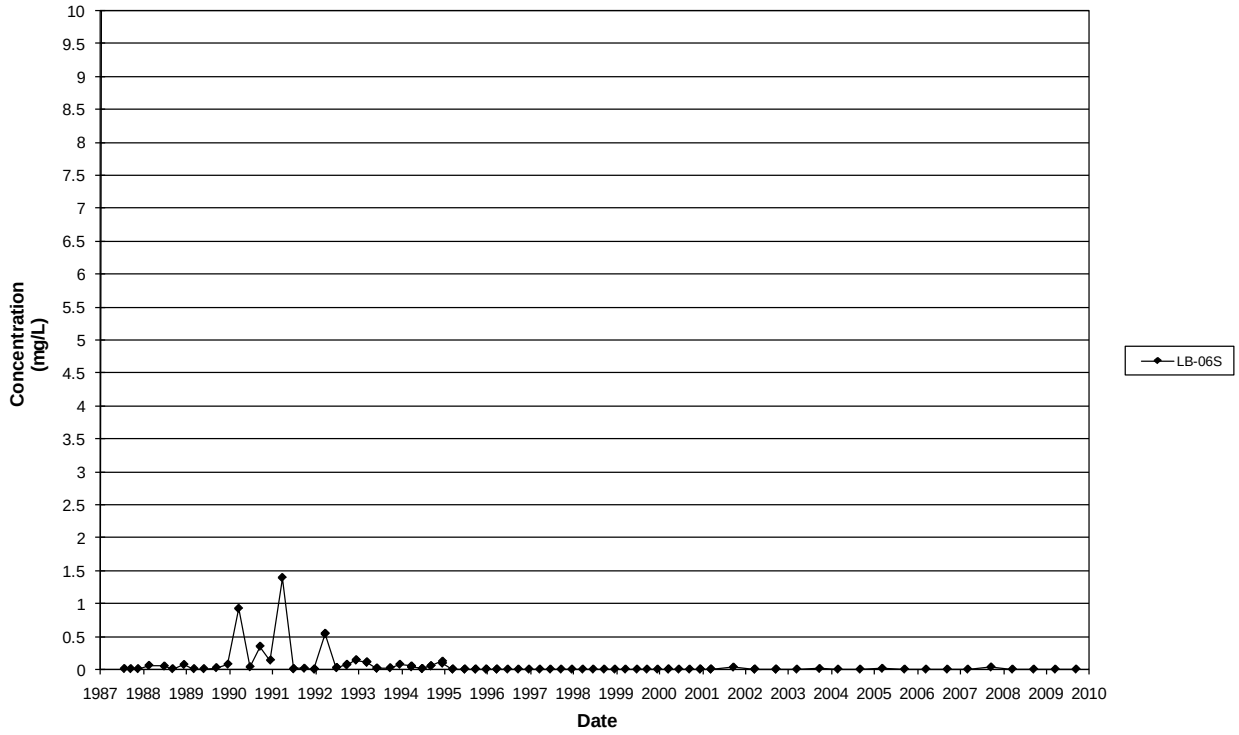
LB-03D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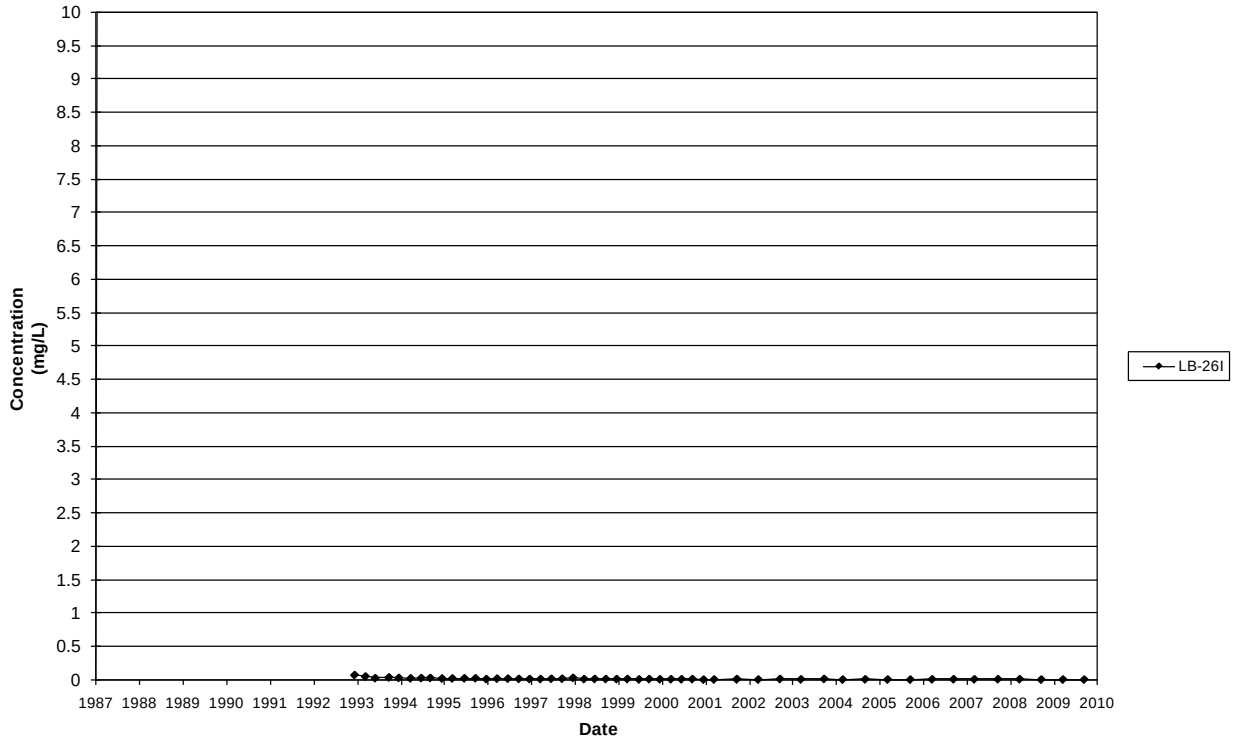
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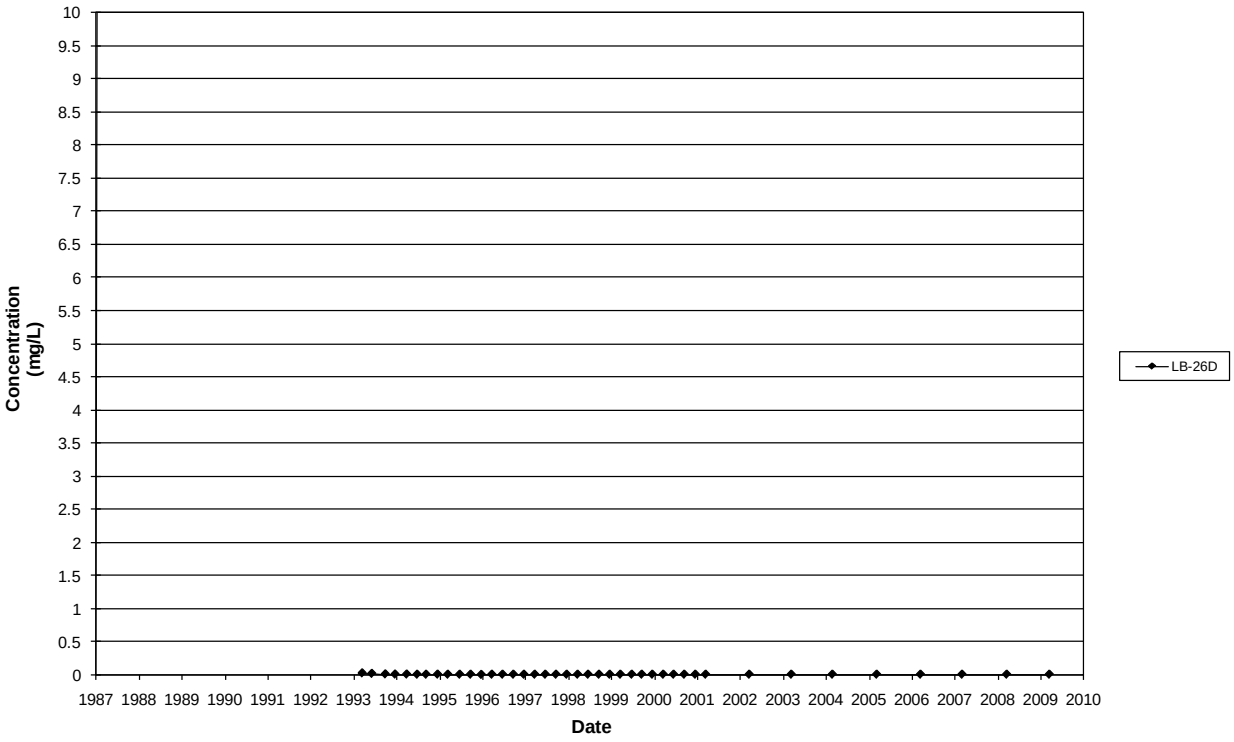
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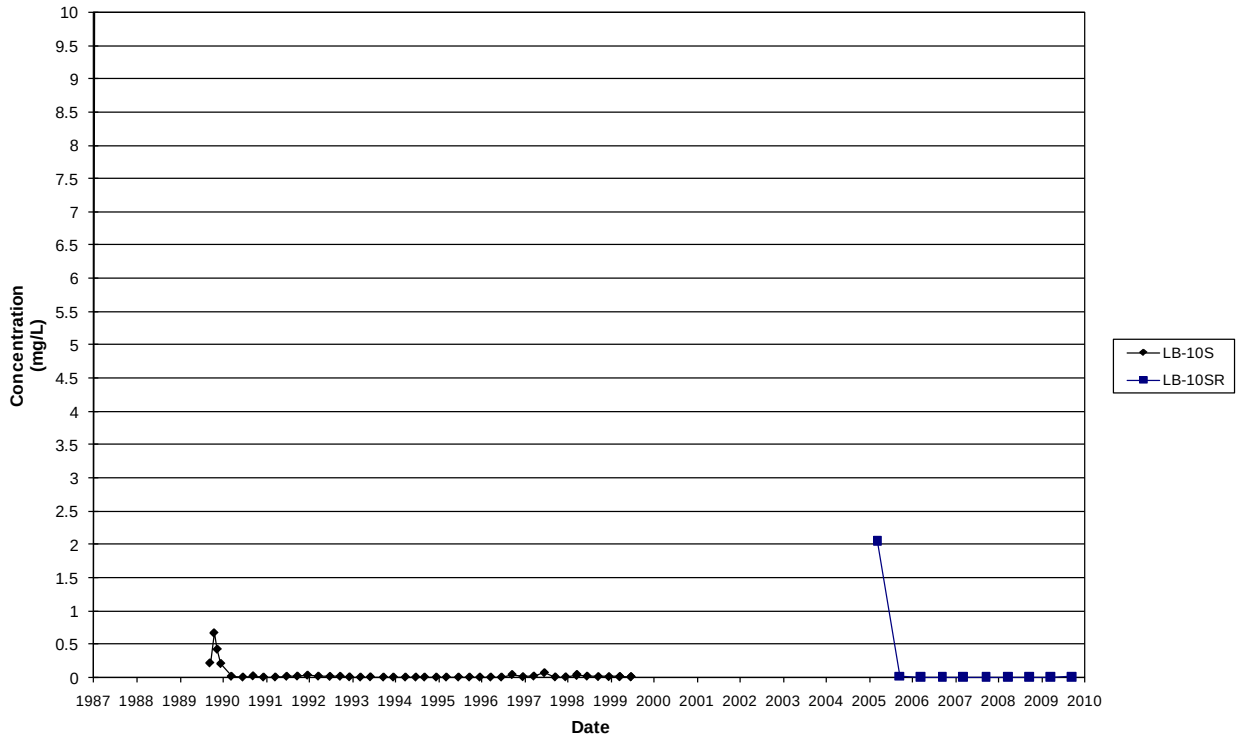
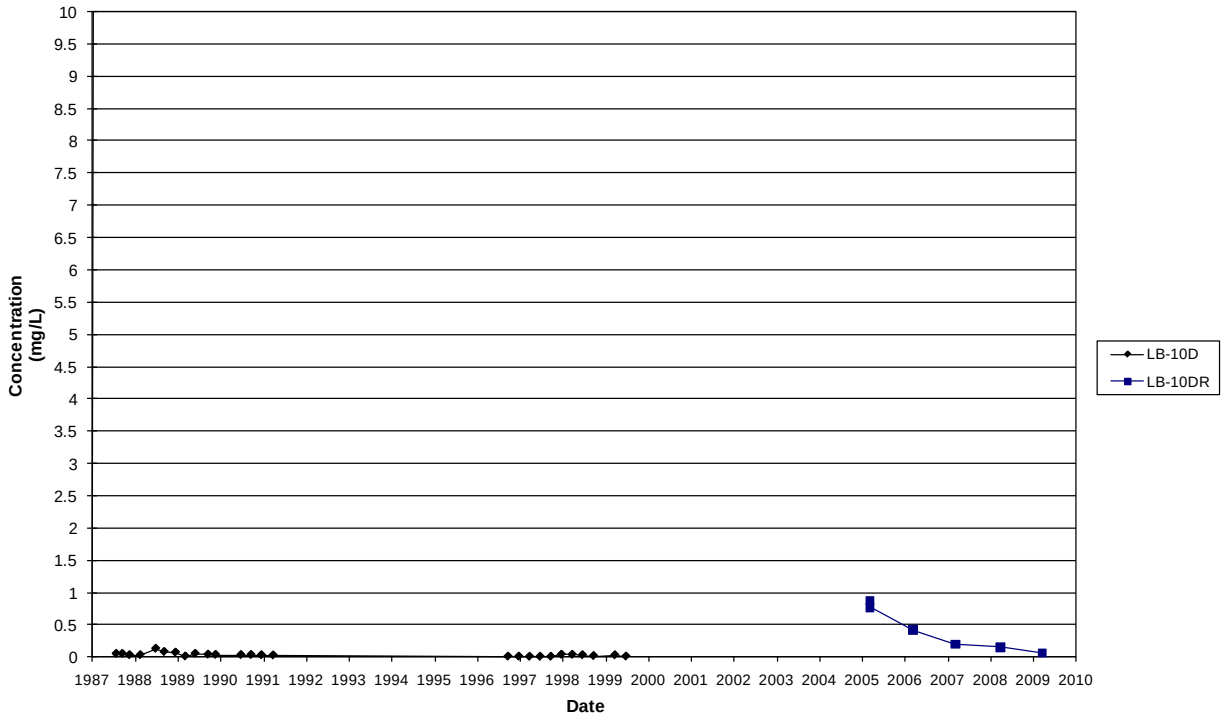
Date
LB-26D


Concentration (mg/L)
Date
LB-10S
LB-10SR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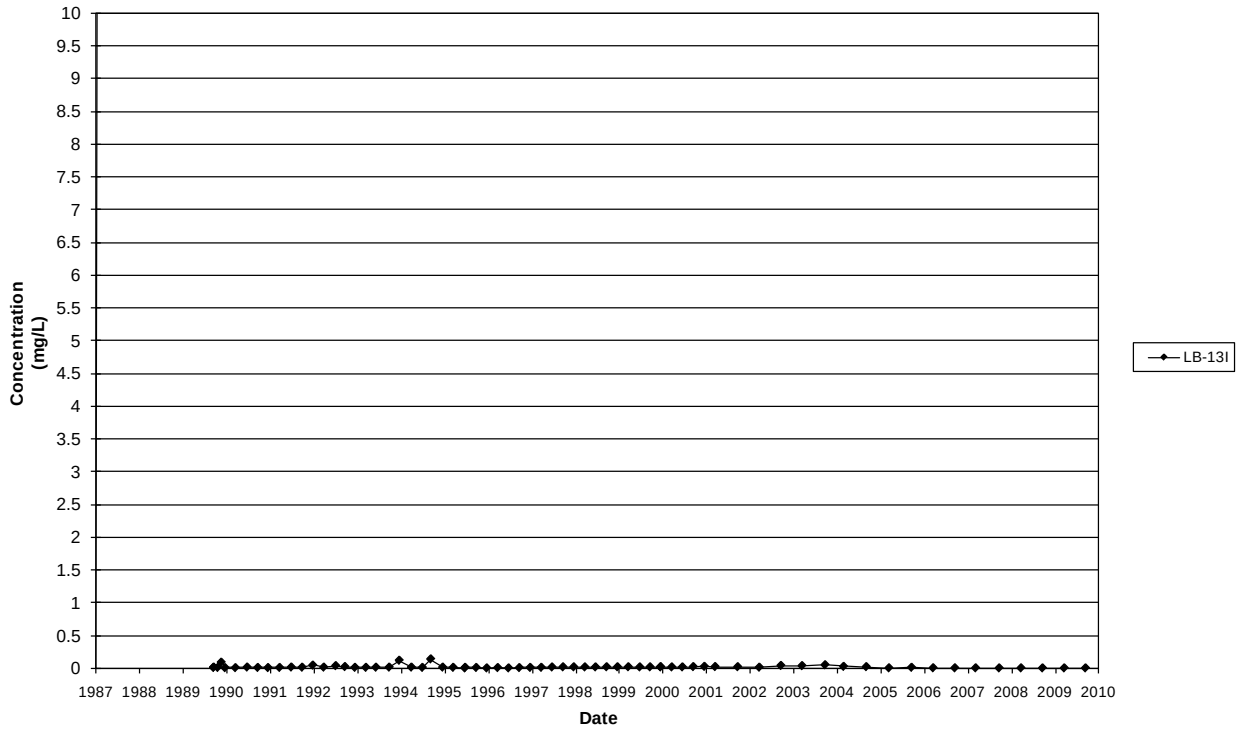
LB-10DR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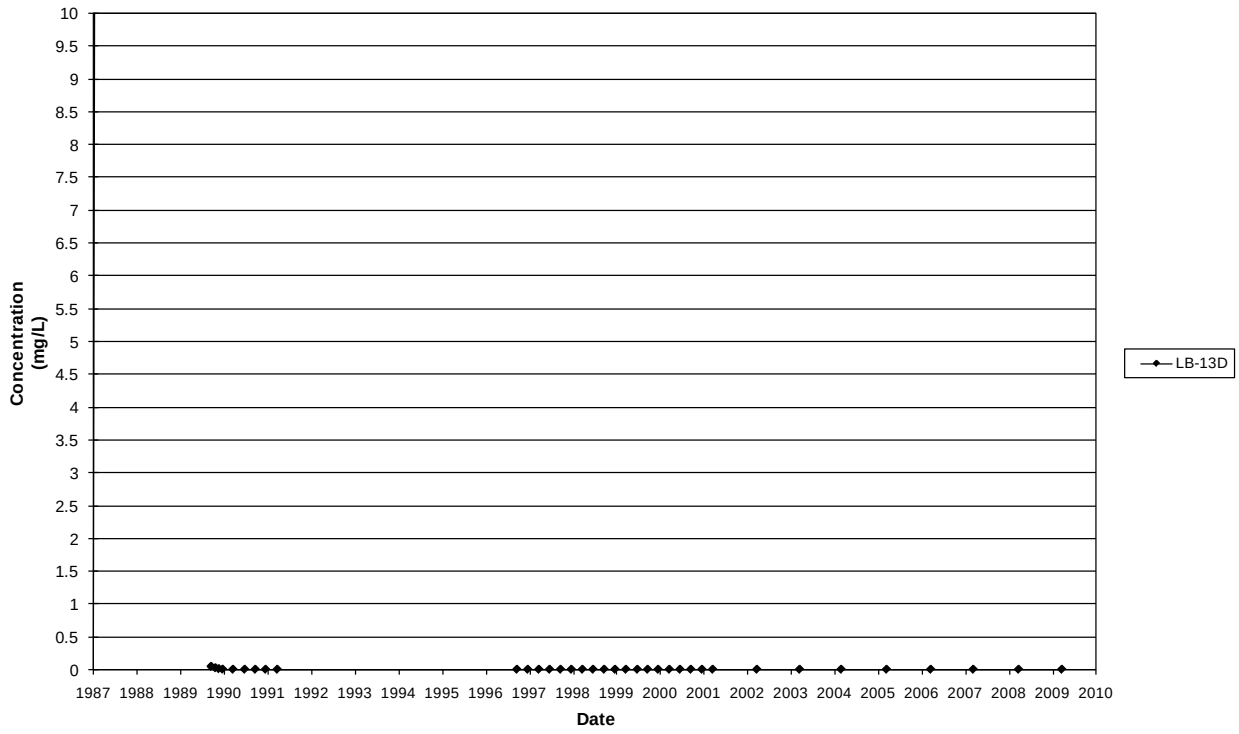
LB-13I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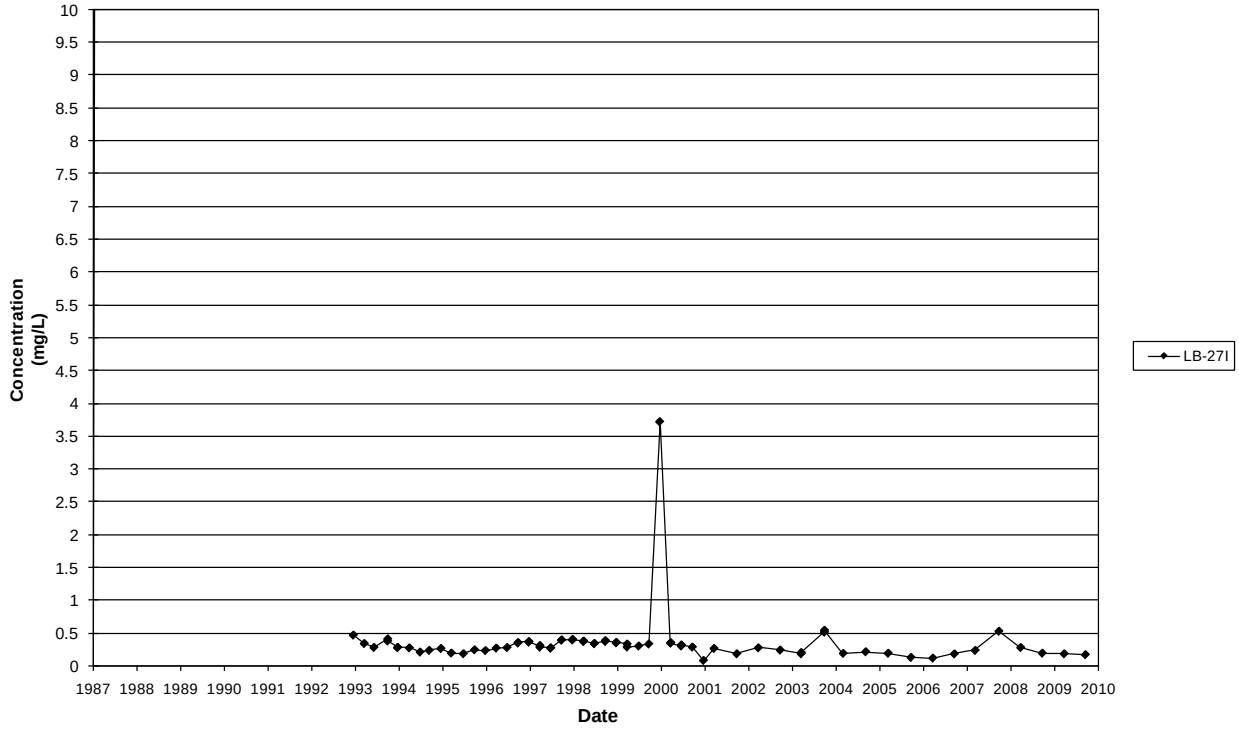
LB-13D


Concentration (mg/L)
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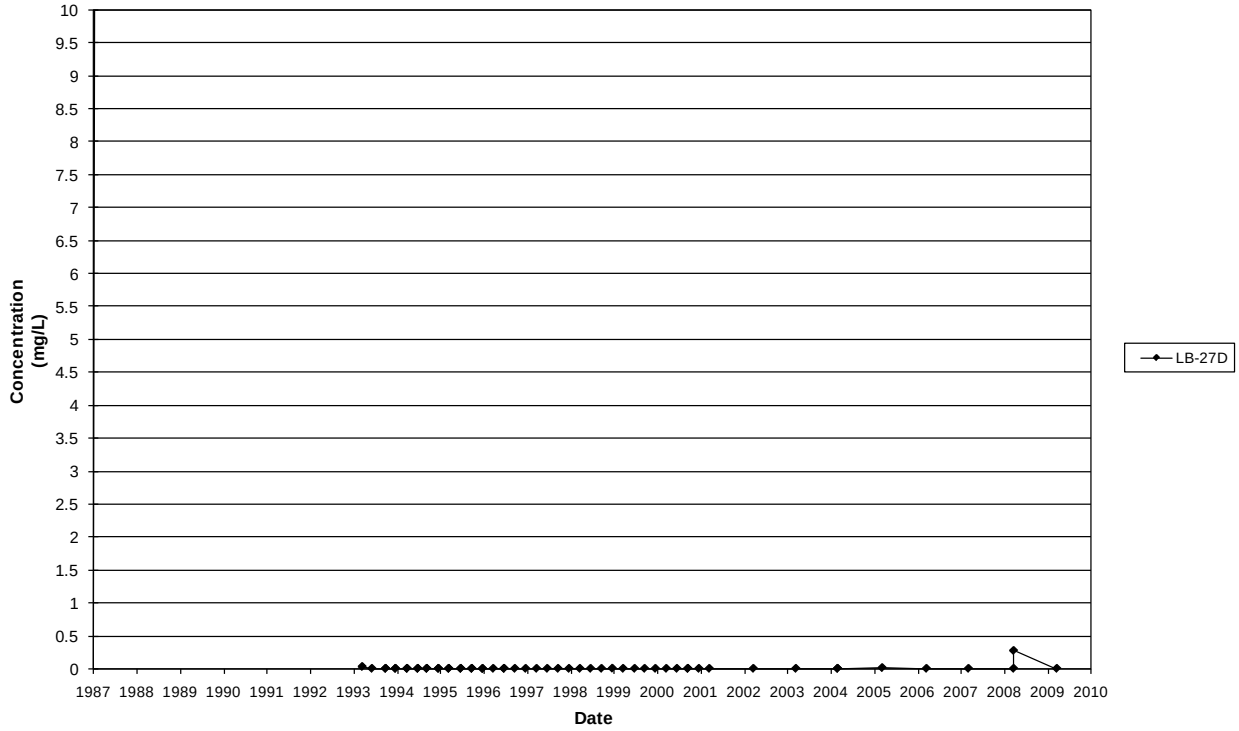
LB-27I


Concentration (mg/L)
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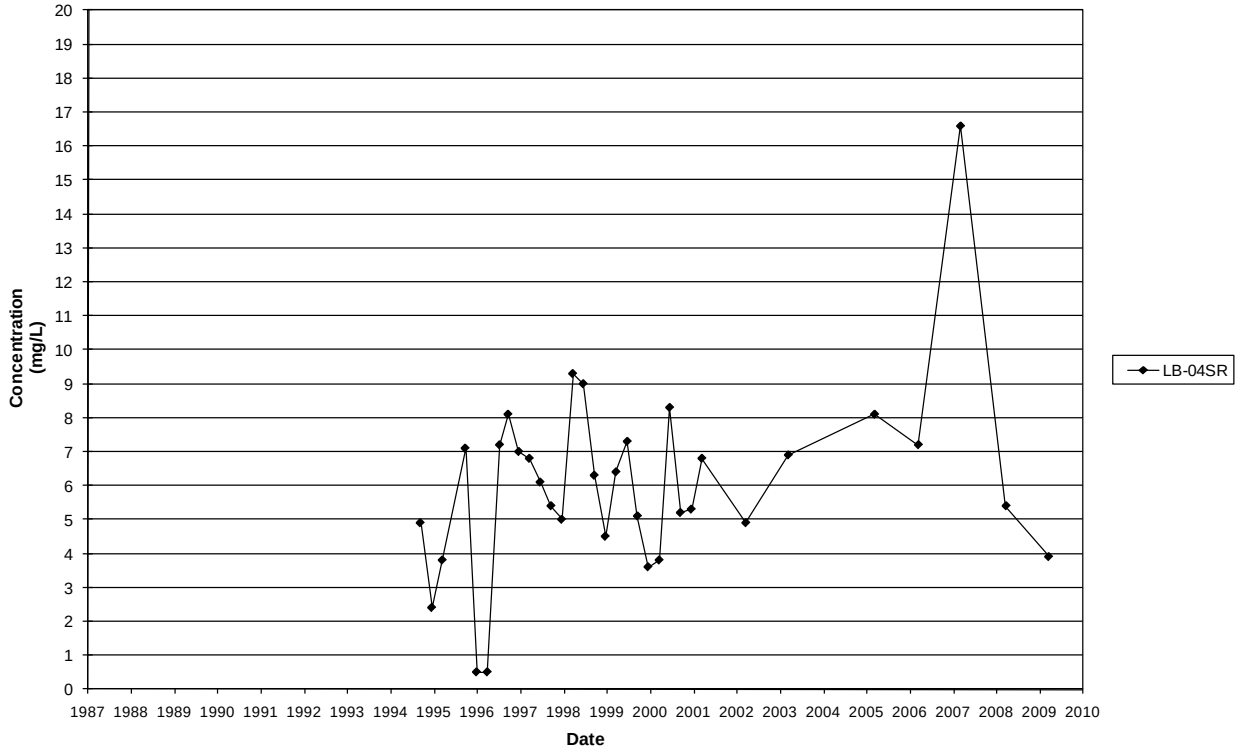
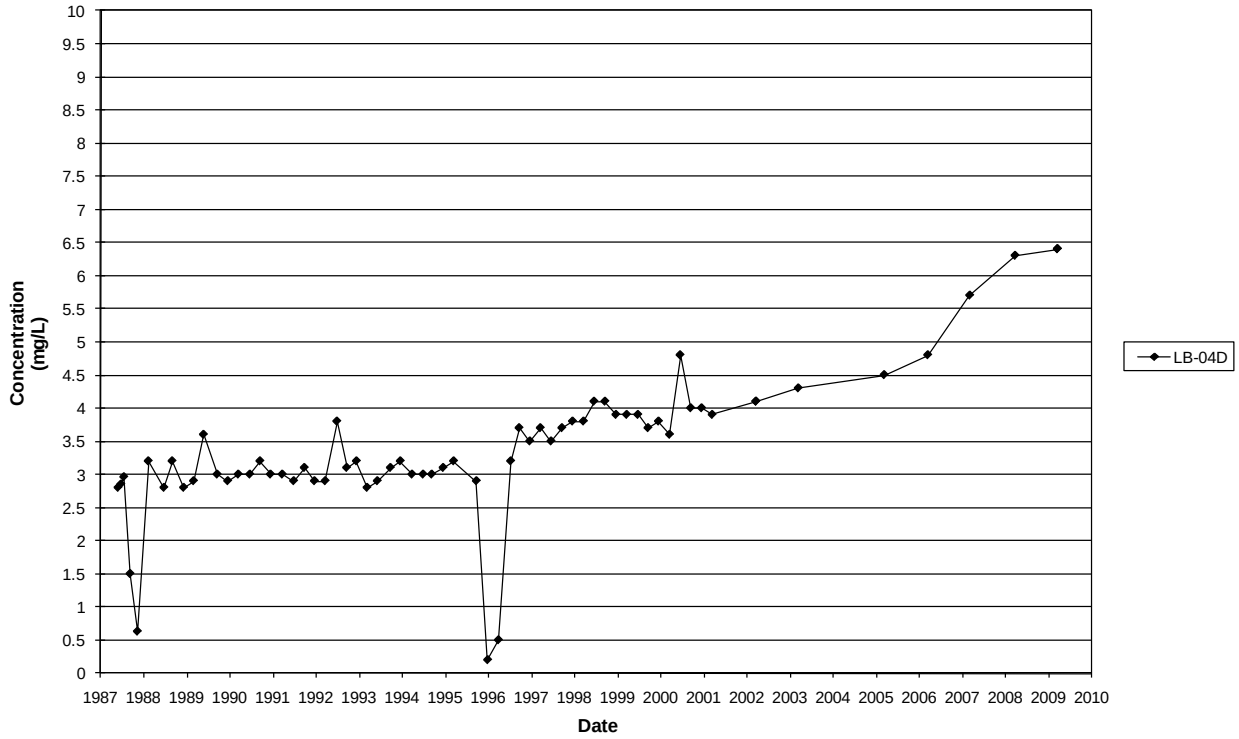
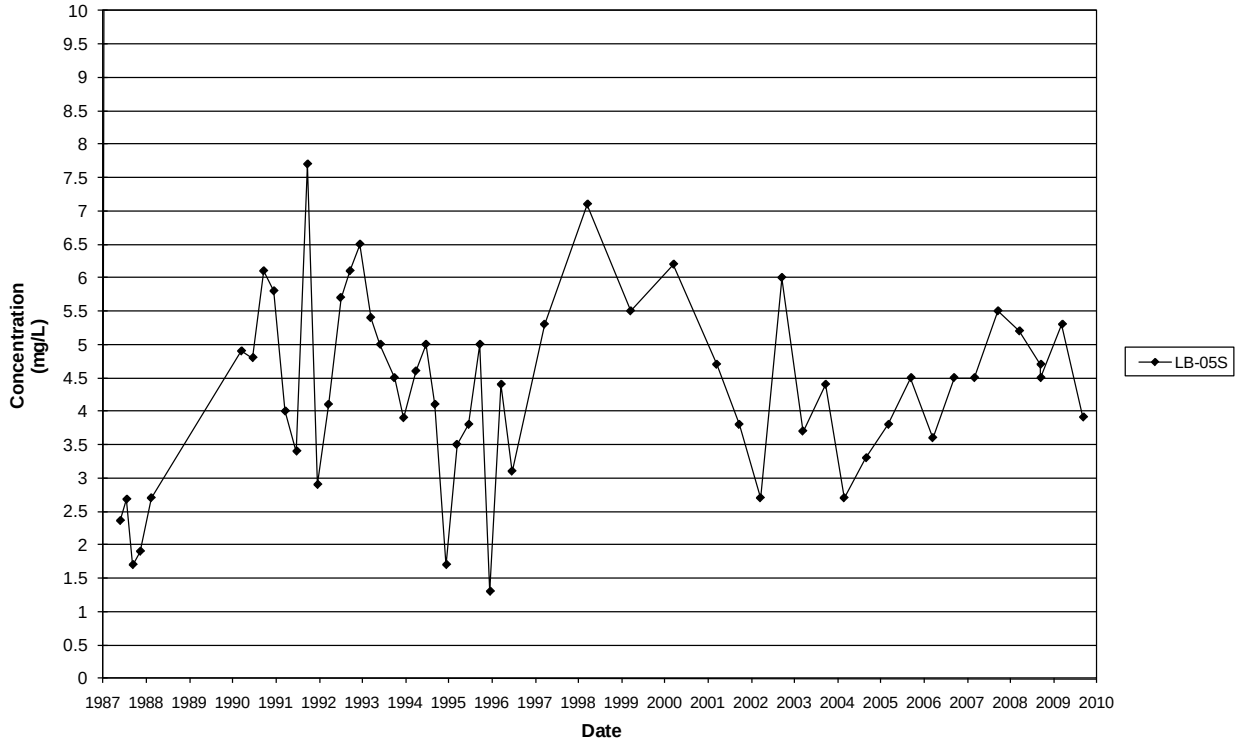
LB-27D

Nitrate (as N) Data 1987-2009






Concentration (mg/L)
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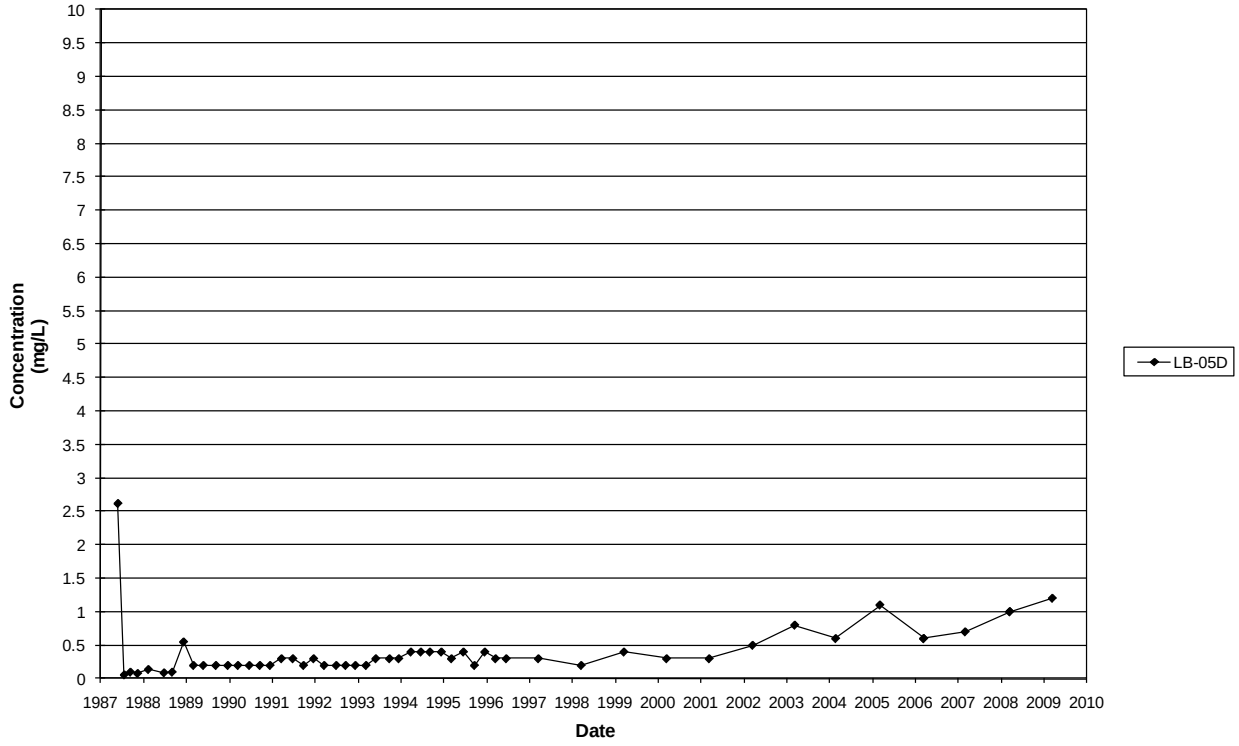
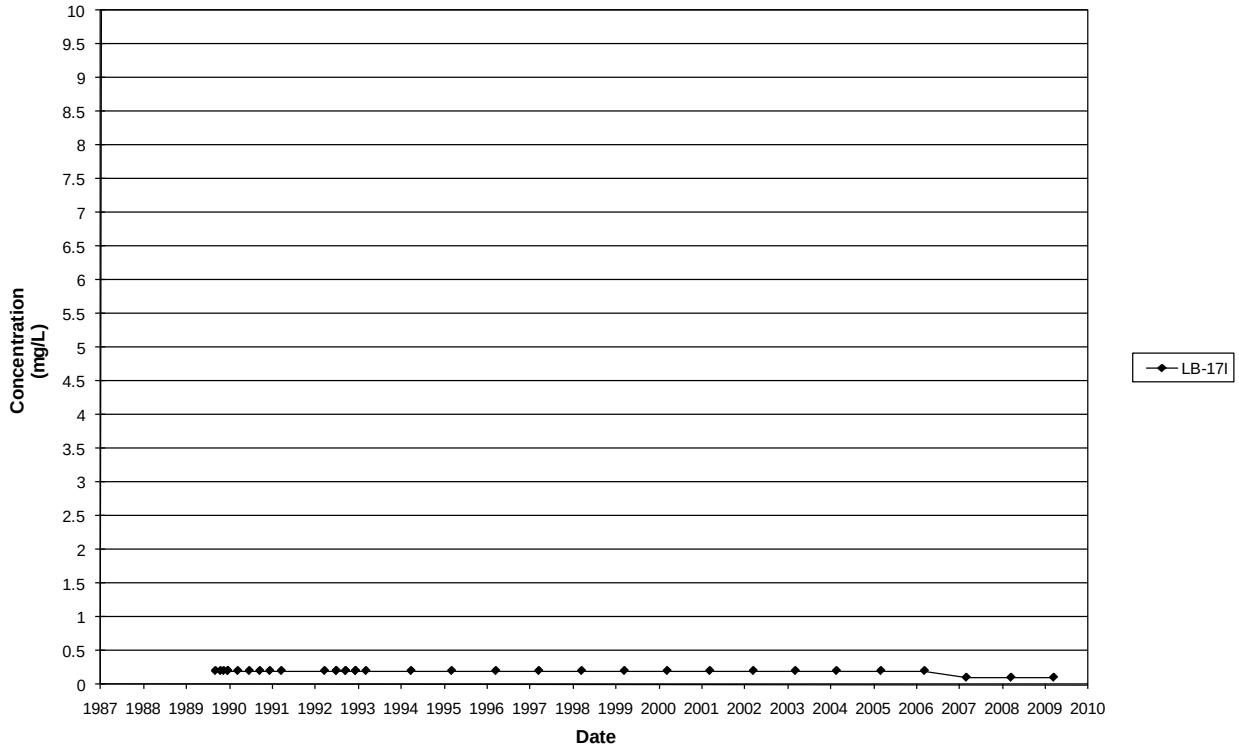
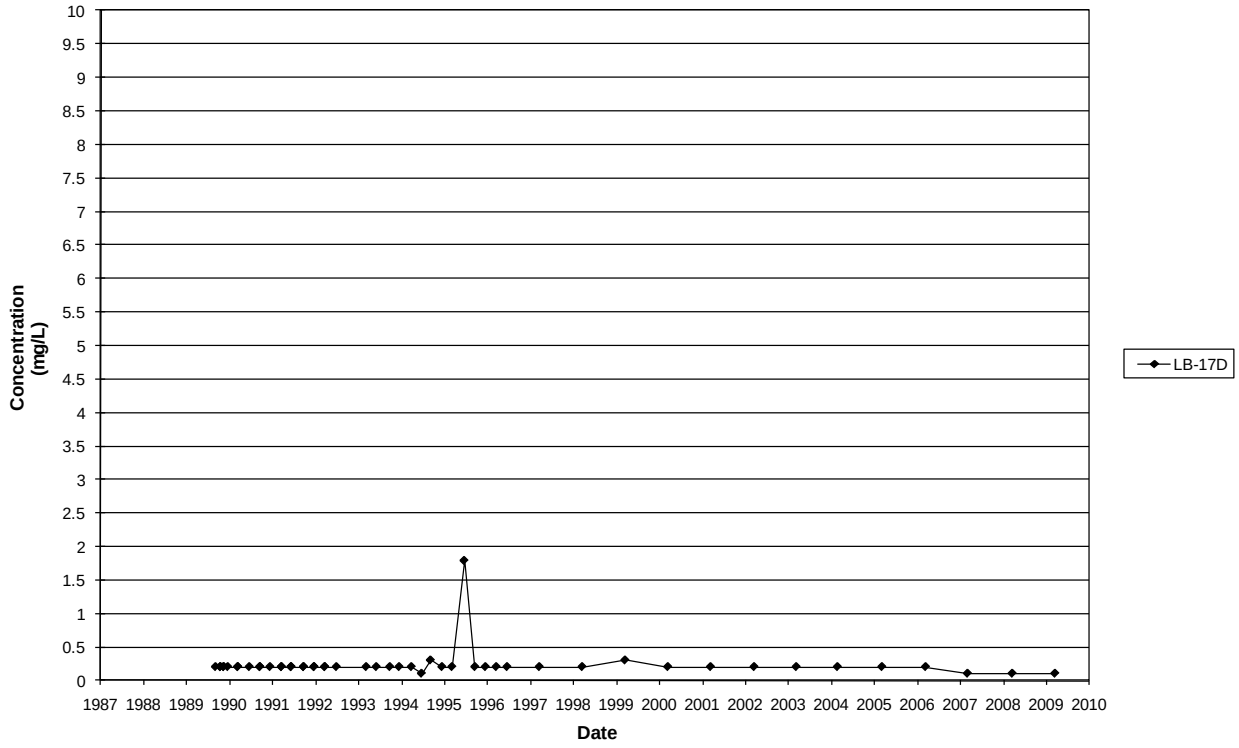
LB-05S


Concentration (mg/L)
Date
LB-05D


Concentration (mg/L)
Date
LB-17I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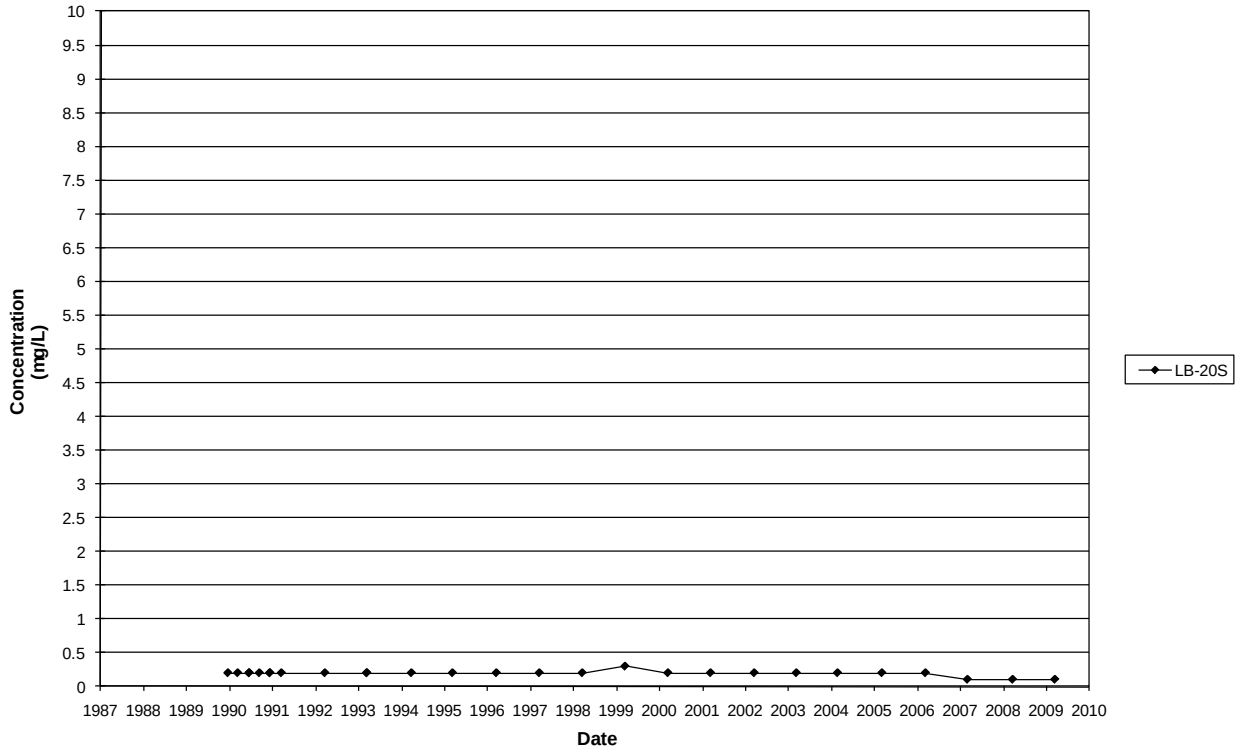
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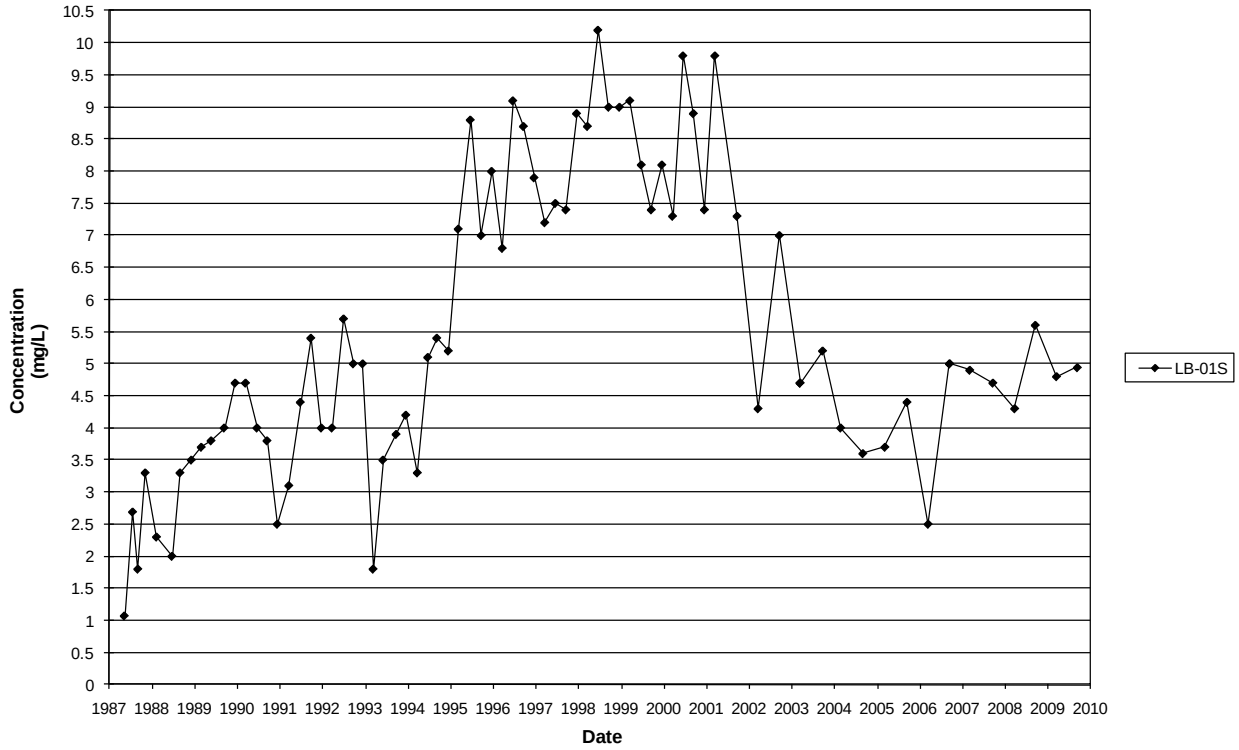
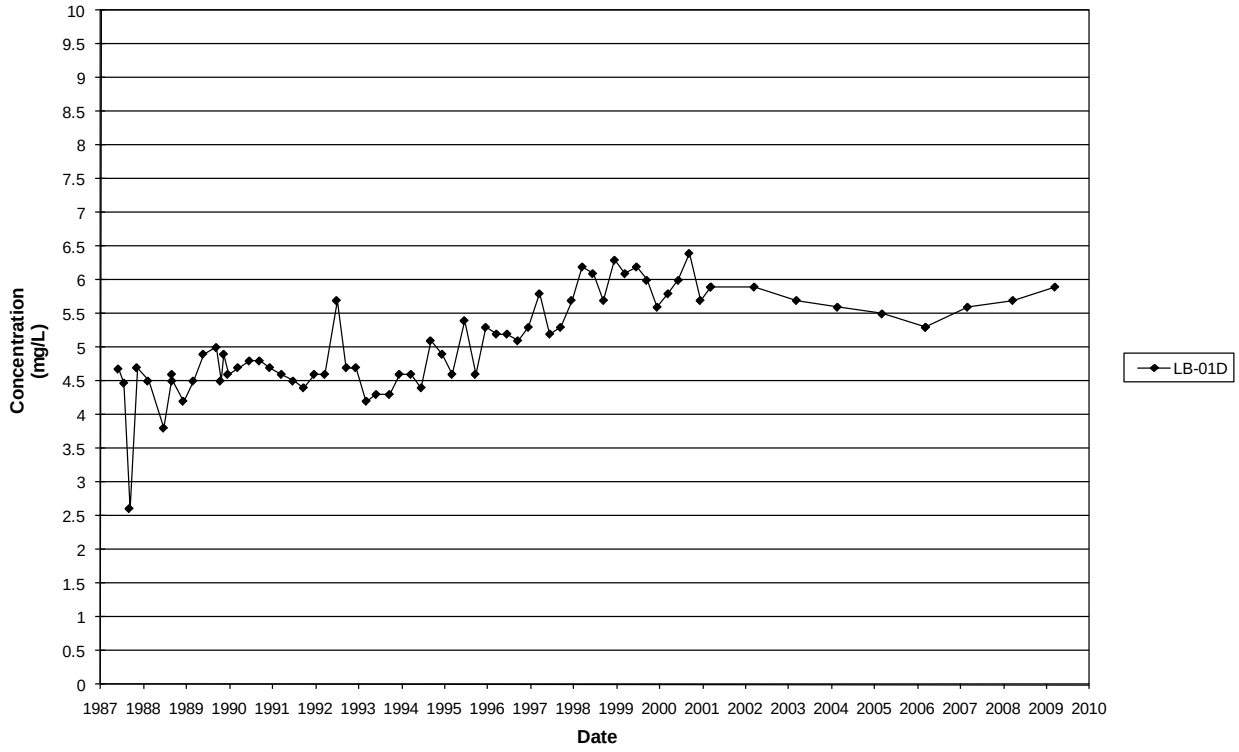

Concentration (mg/L)
Date
LB-01S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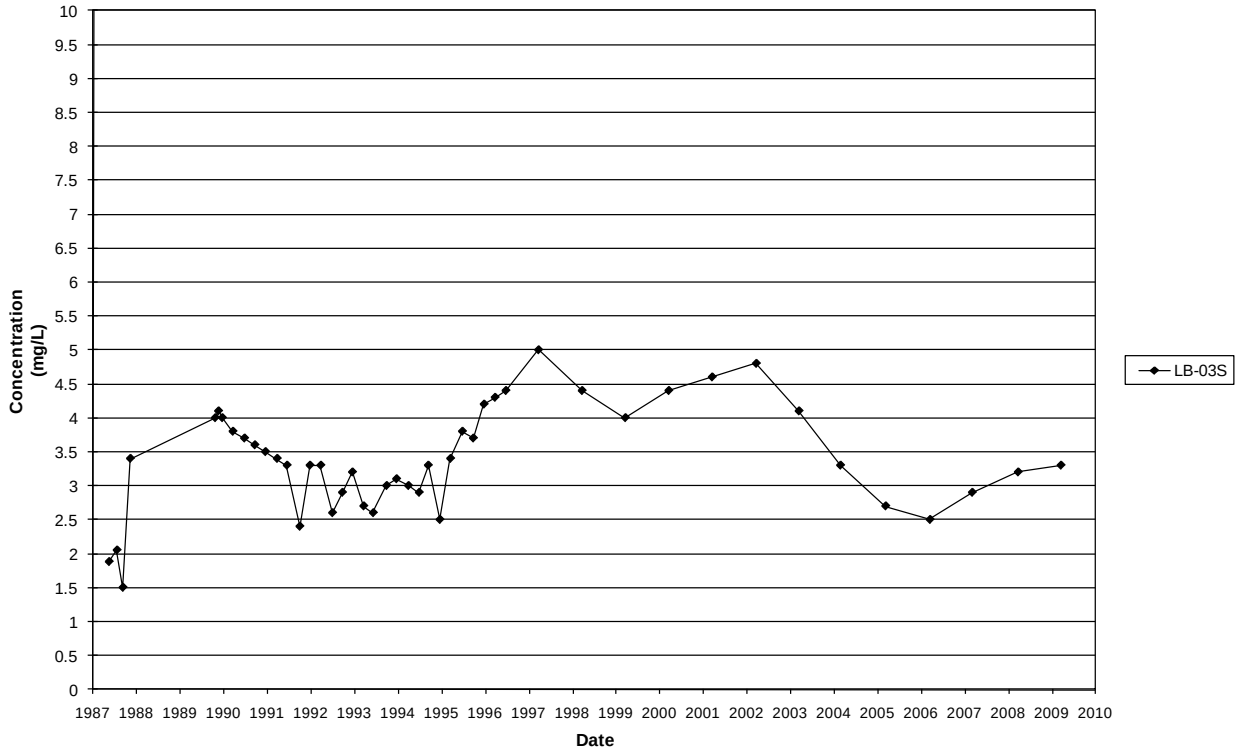
LB-01D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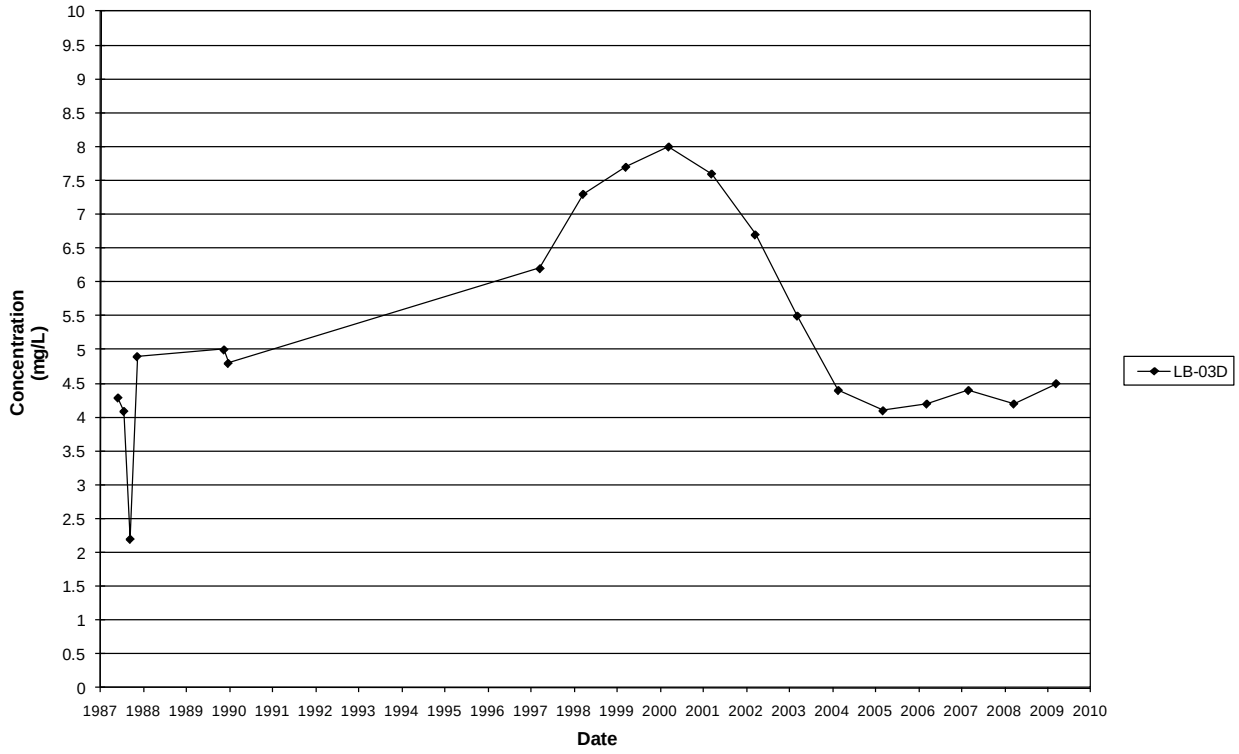
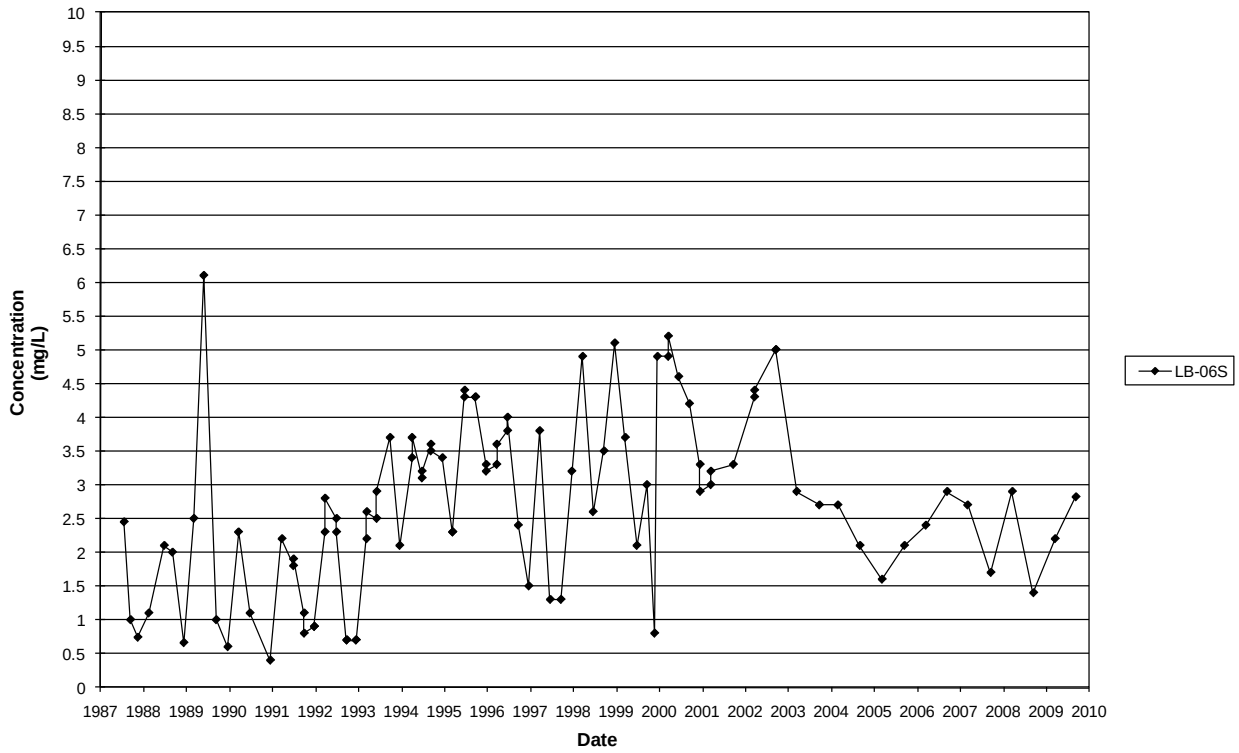

Concentration (mg/L)
Date
LB-03D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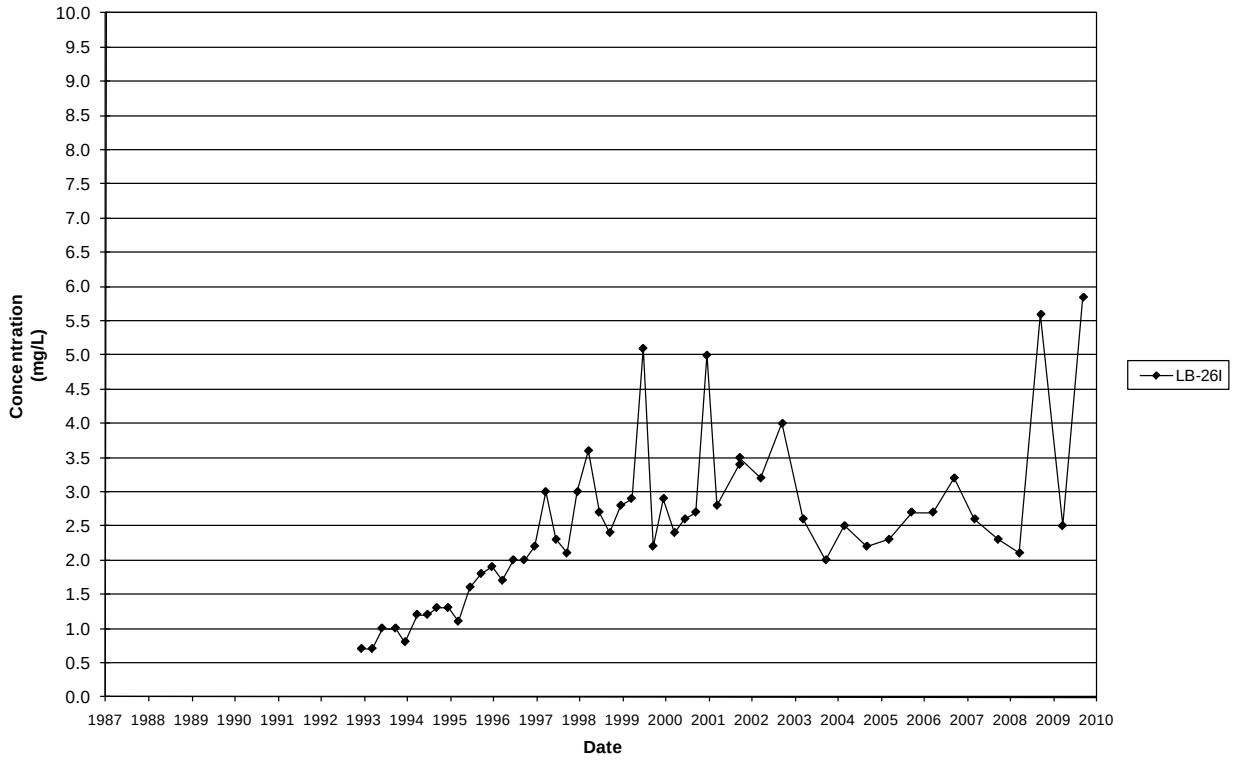
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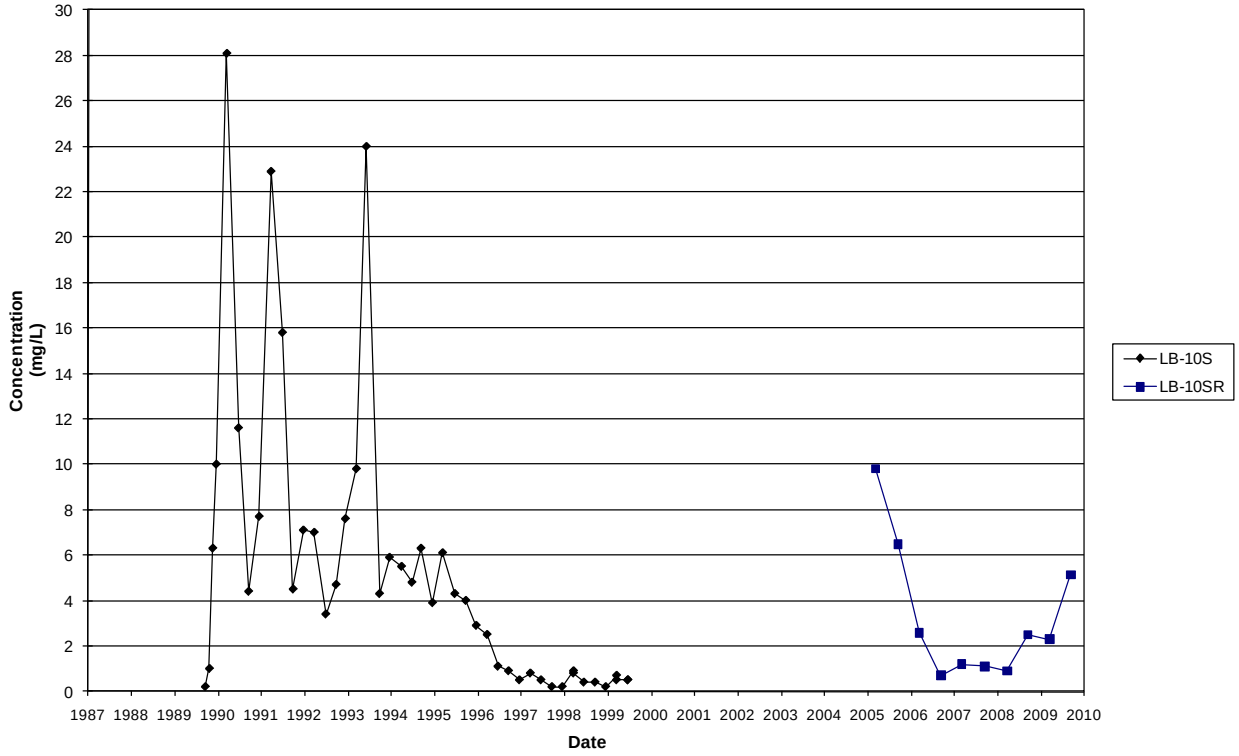
Date
LB-26I


Concentration (mg/L)
Date
LB-26D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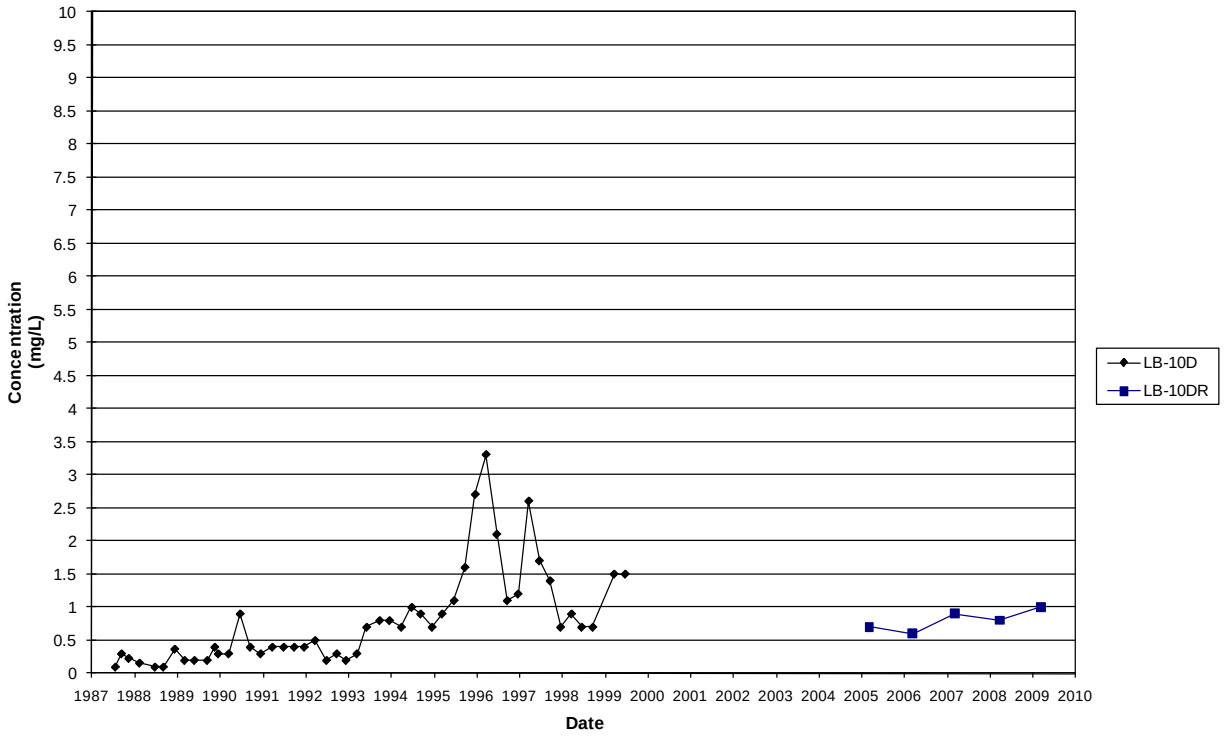
LB-10S
LB-10SR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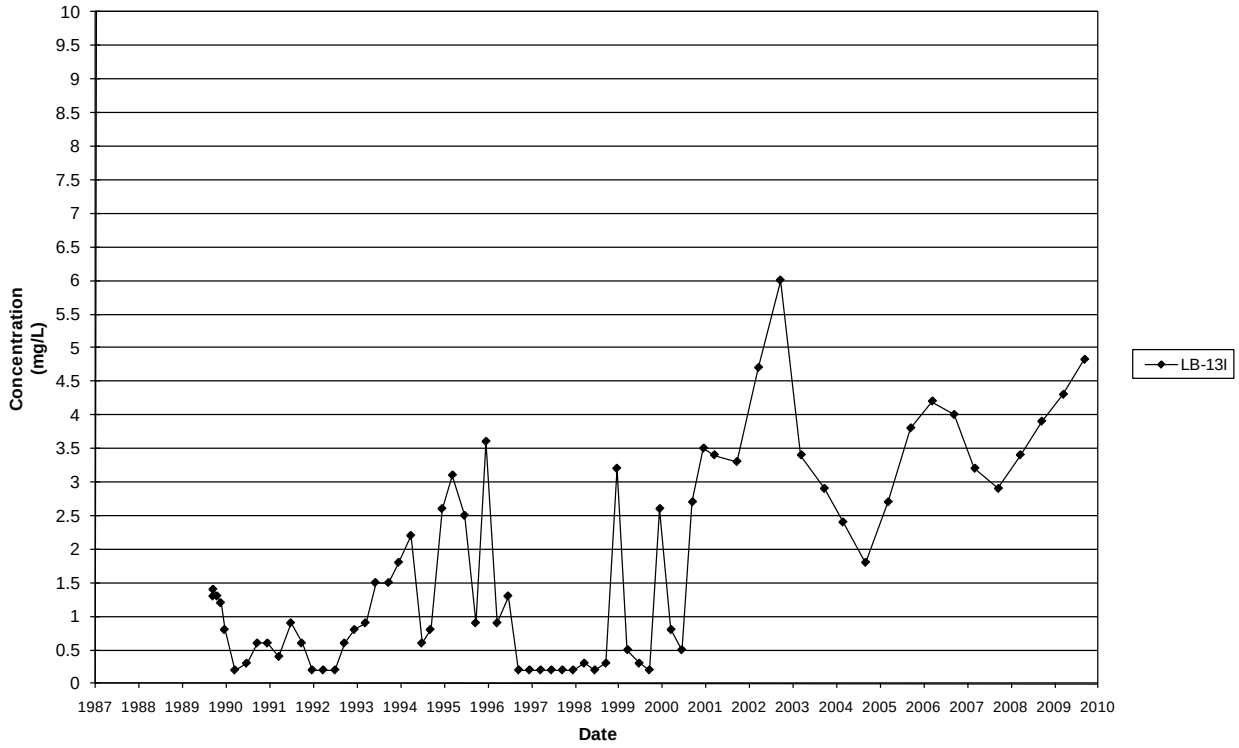
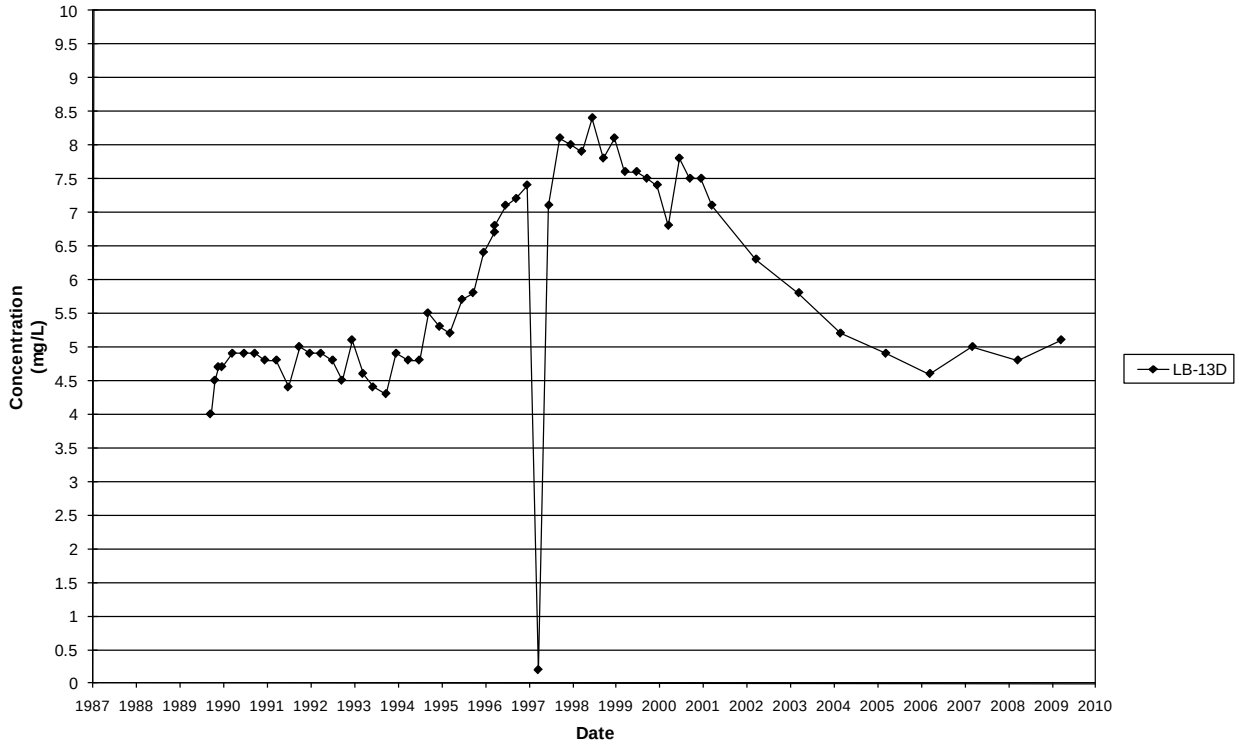
Date
LB-10D
LB-10DR


Concentration (mg/L)
Date
LB-13I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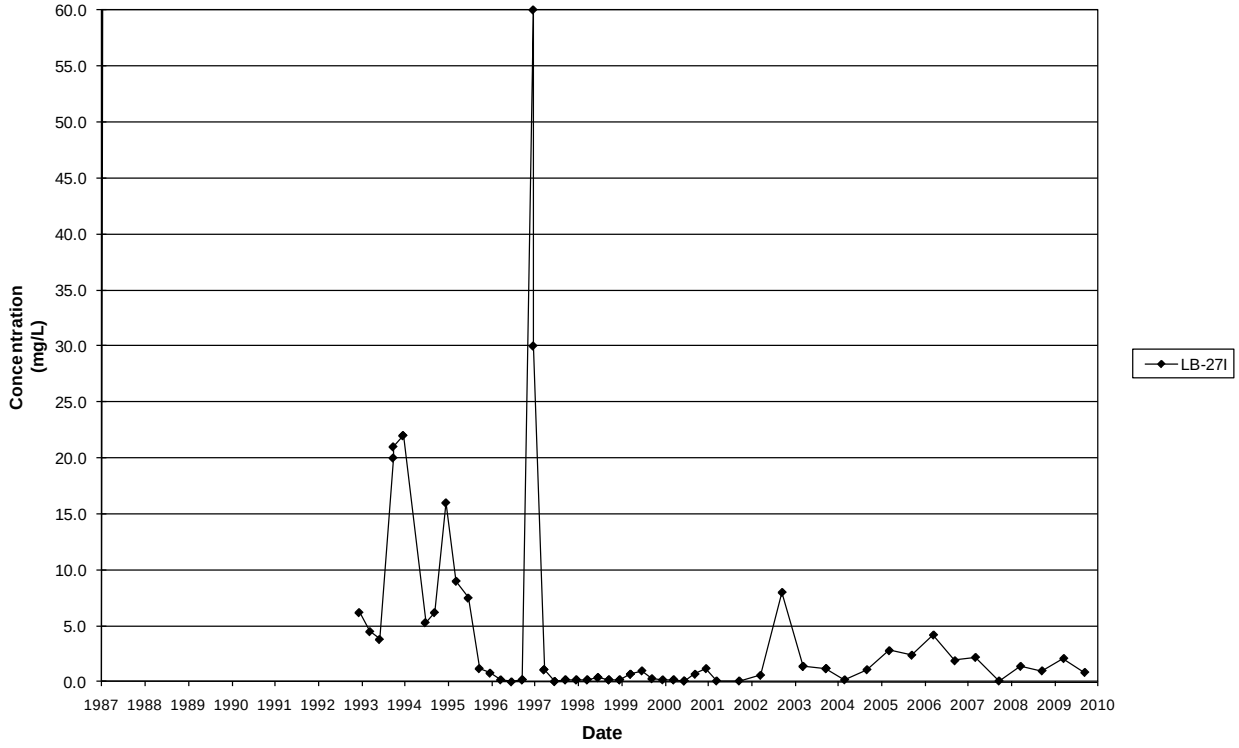
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Concentration (mg/L)
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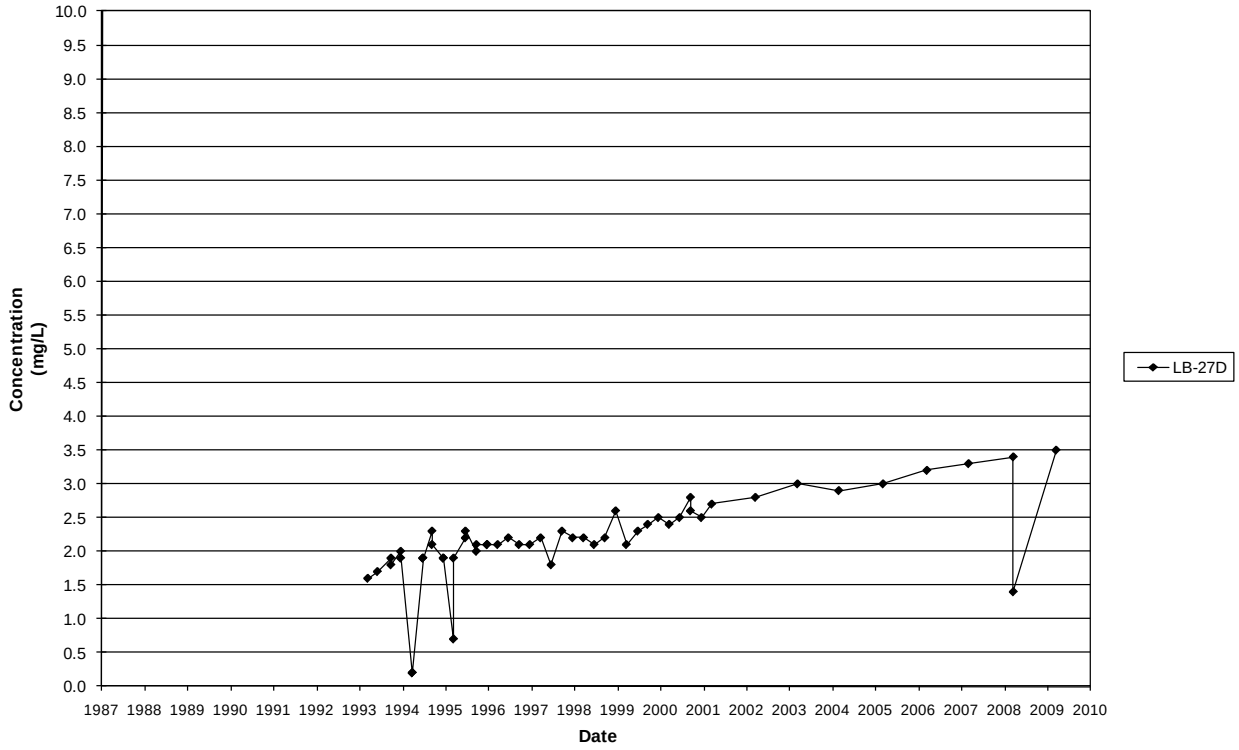
Date
LB-27I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3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Concentration (mg/L)
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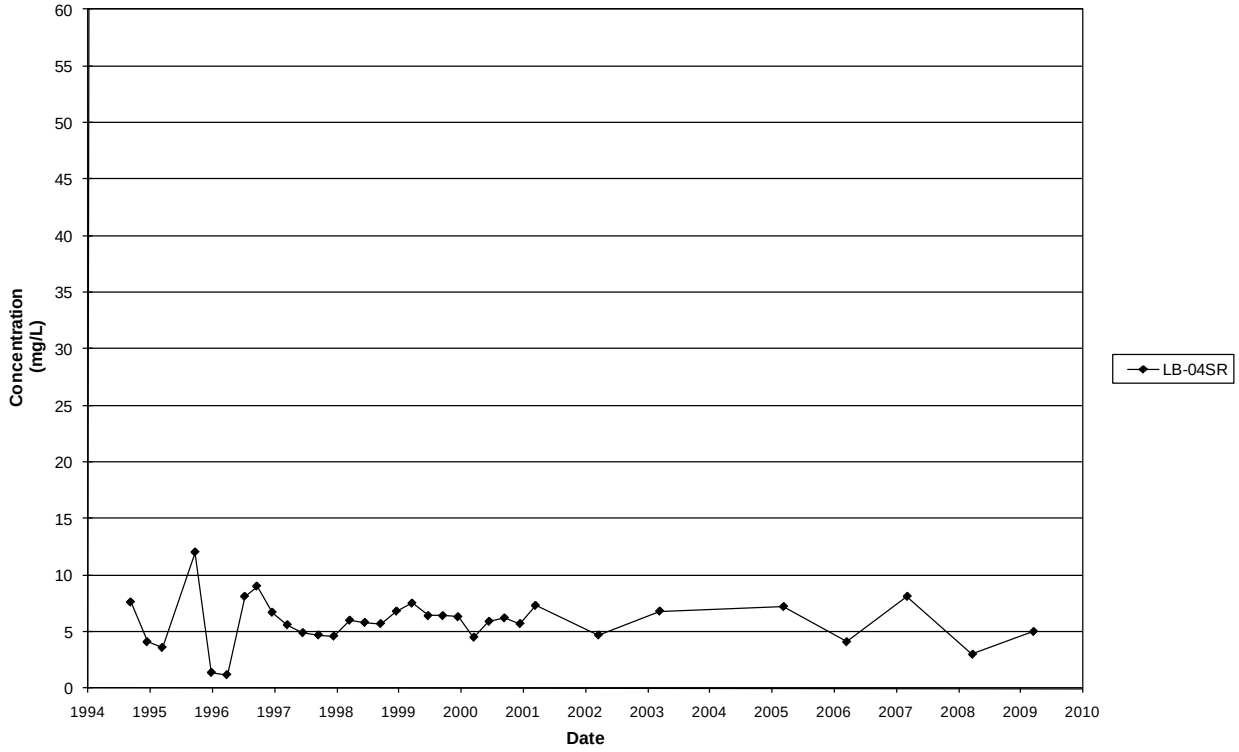
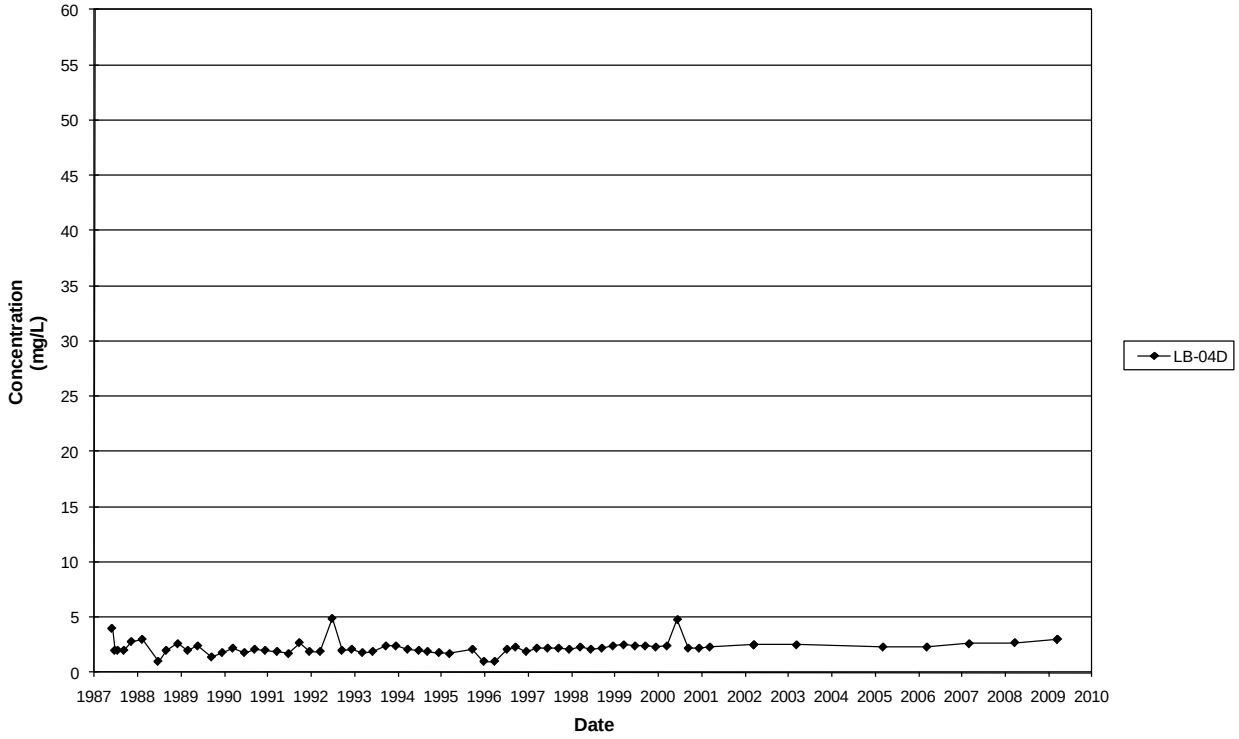
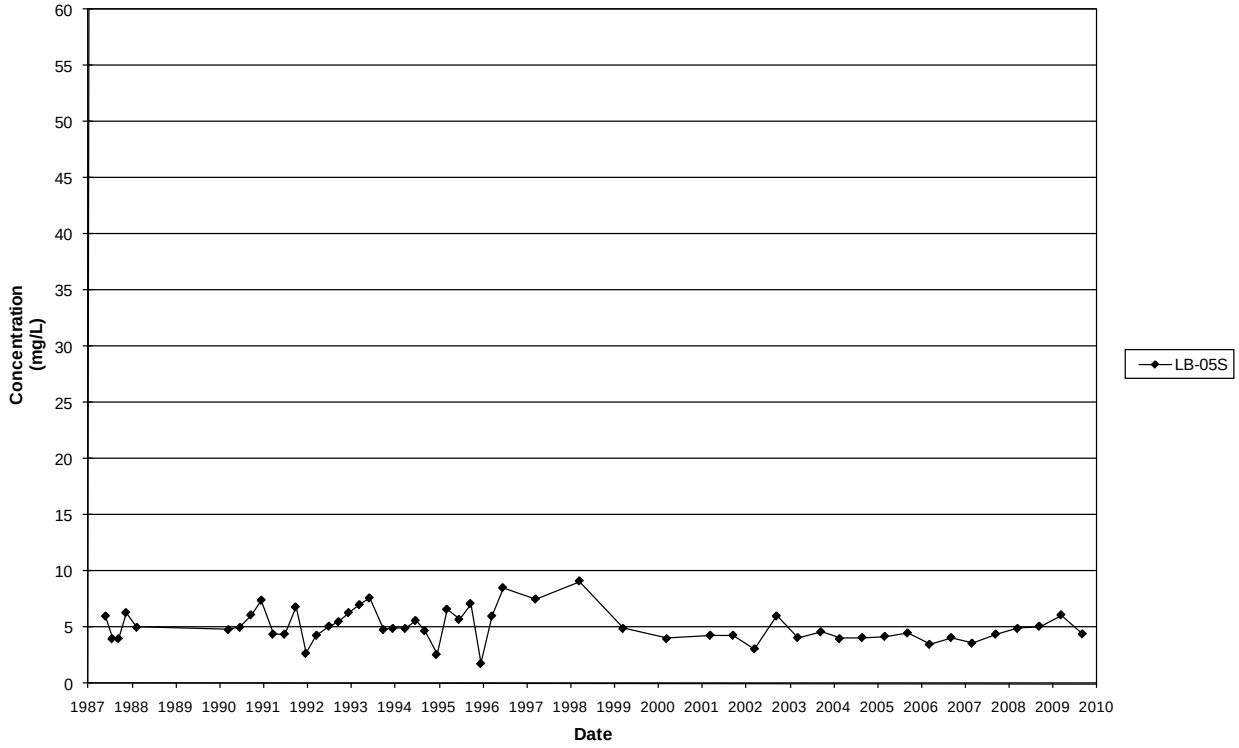
Date
LB-27D

Chloride Data 1987-2009 (not required by the cleanup action plan)



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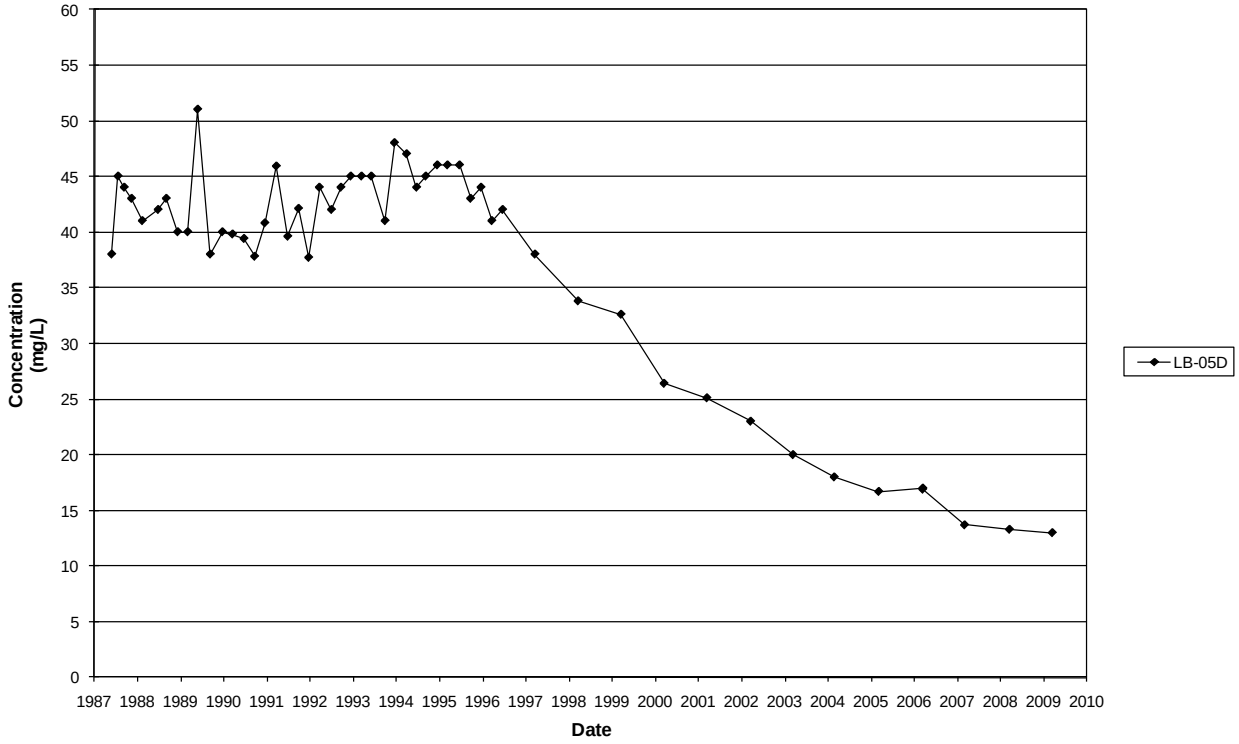
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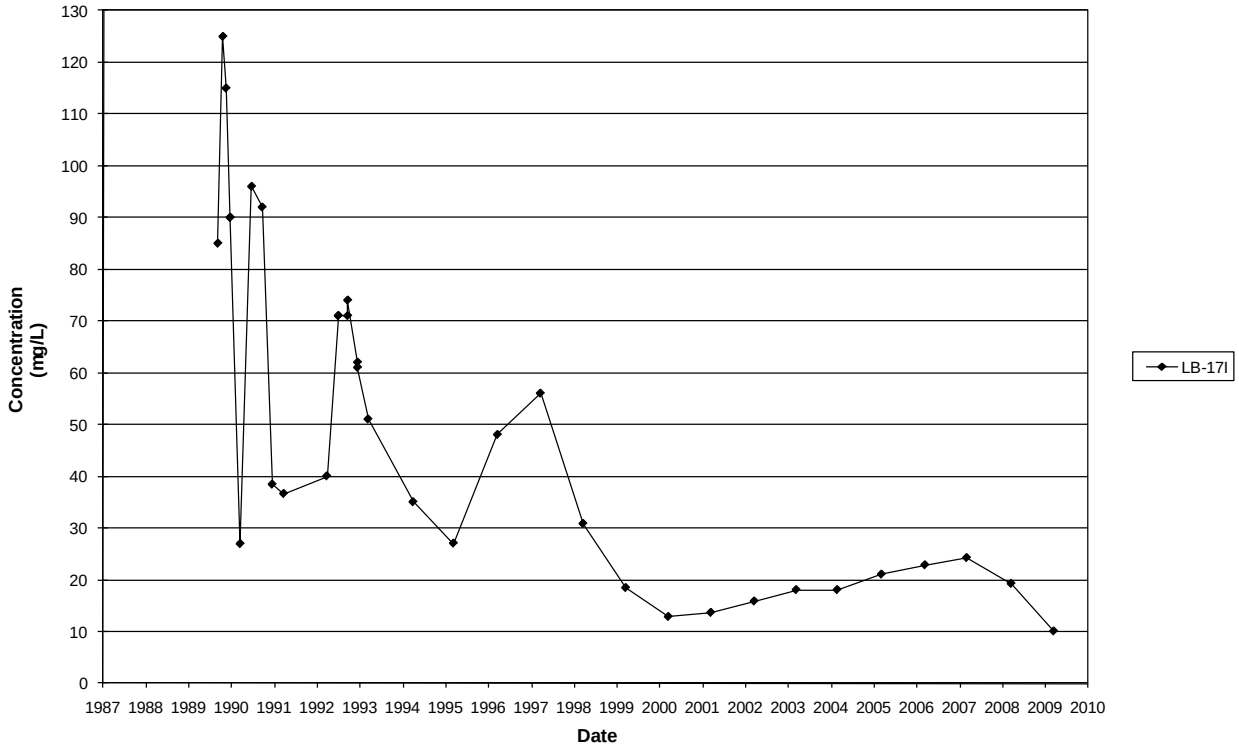
LB-05D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110
100
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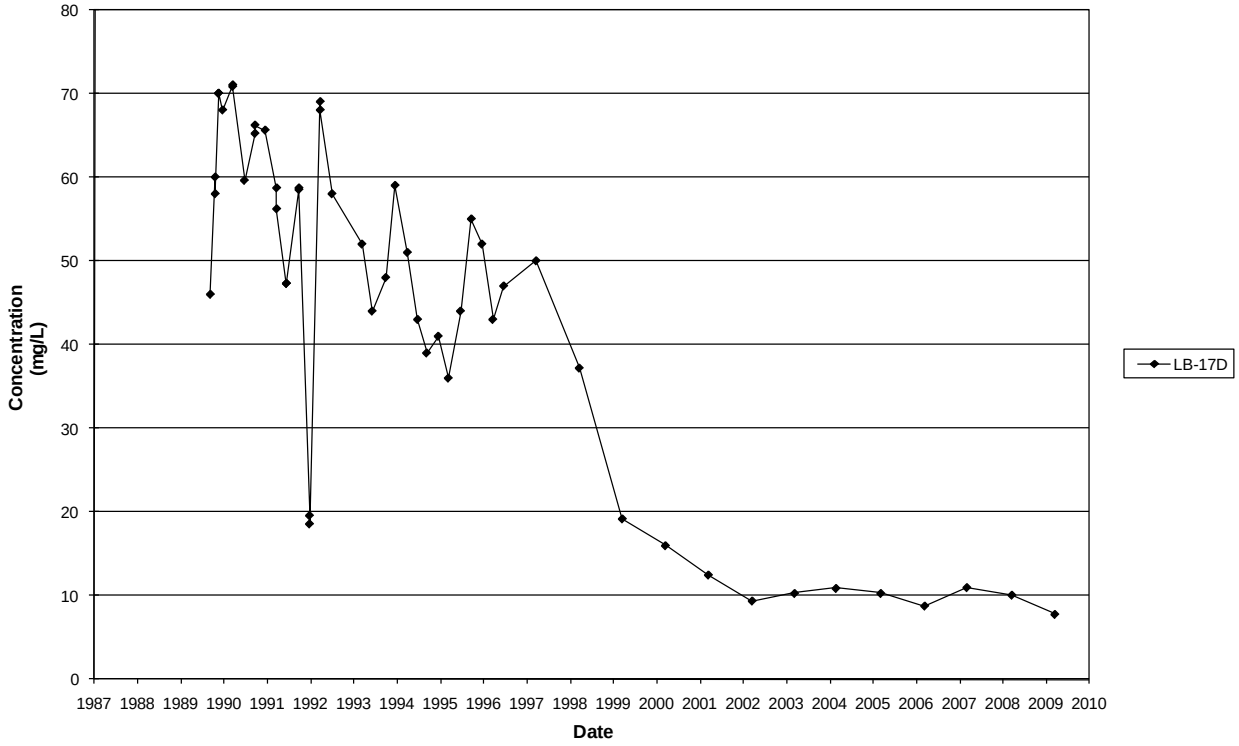
Date
LB-17I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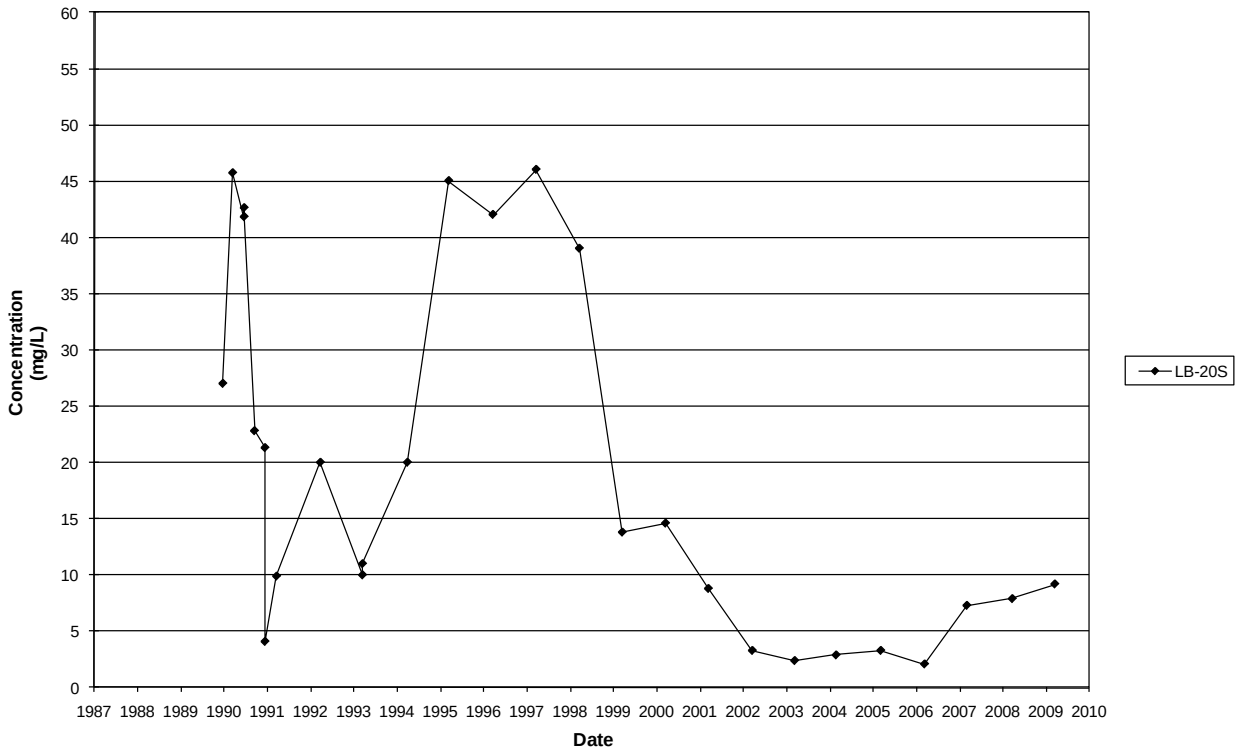
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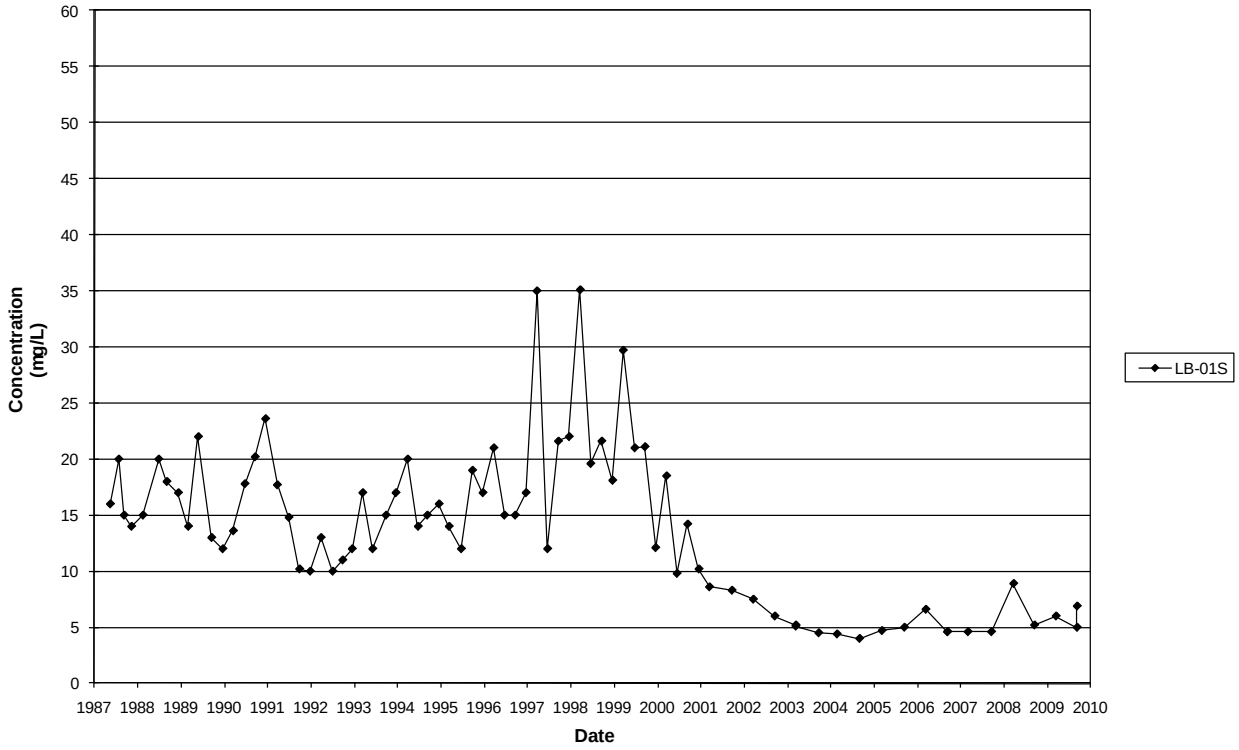
Date
LB-20S


Concentration (mg/L)
Date
LB-01S
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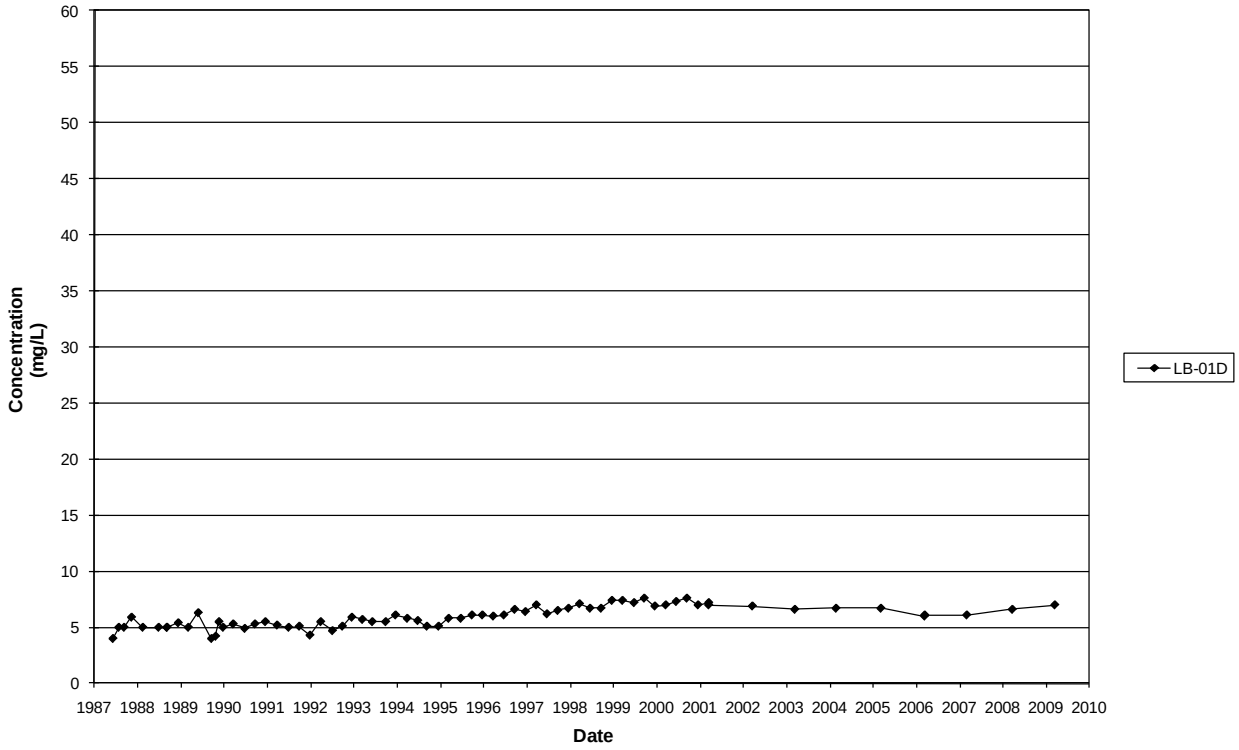
Concentration (mg/L)
Date
LB-01D
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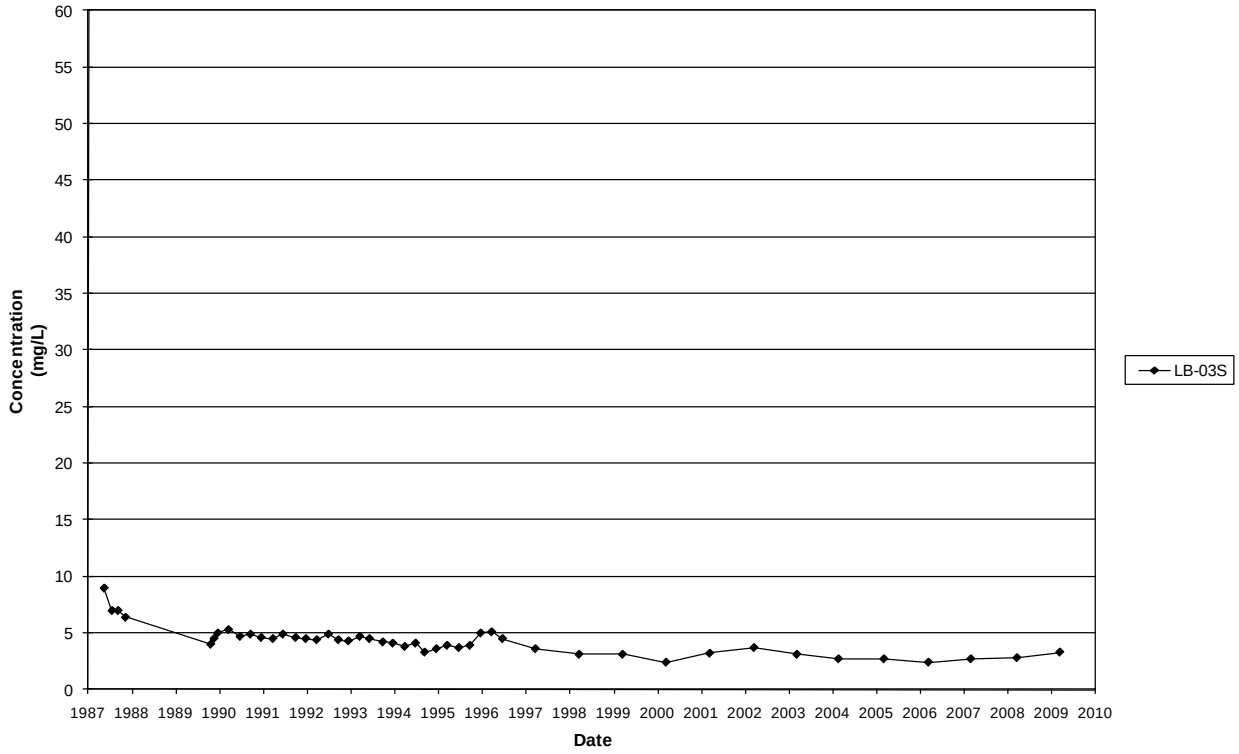
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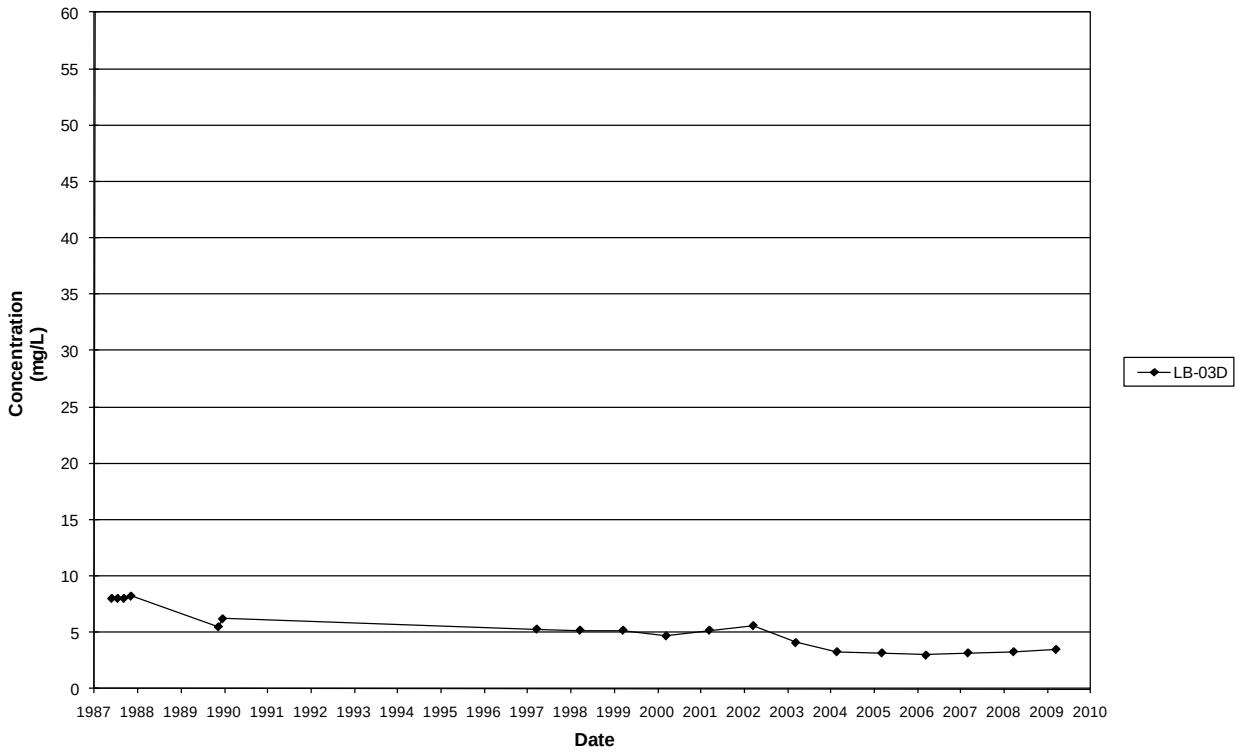
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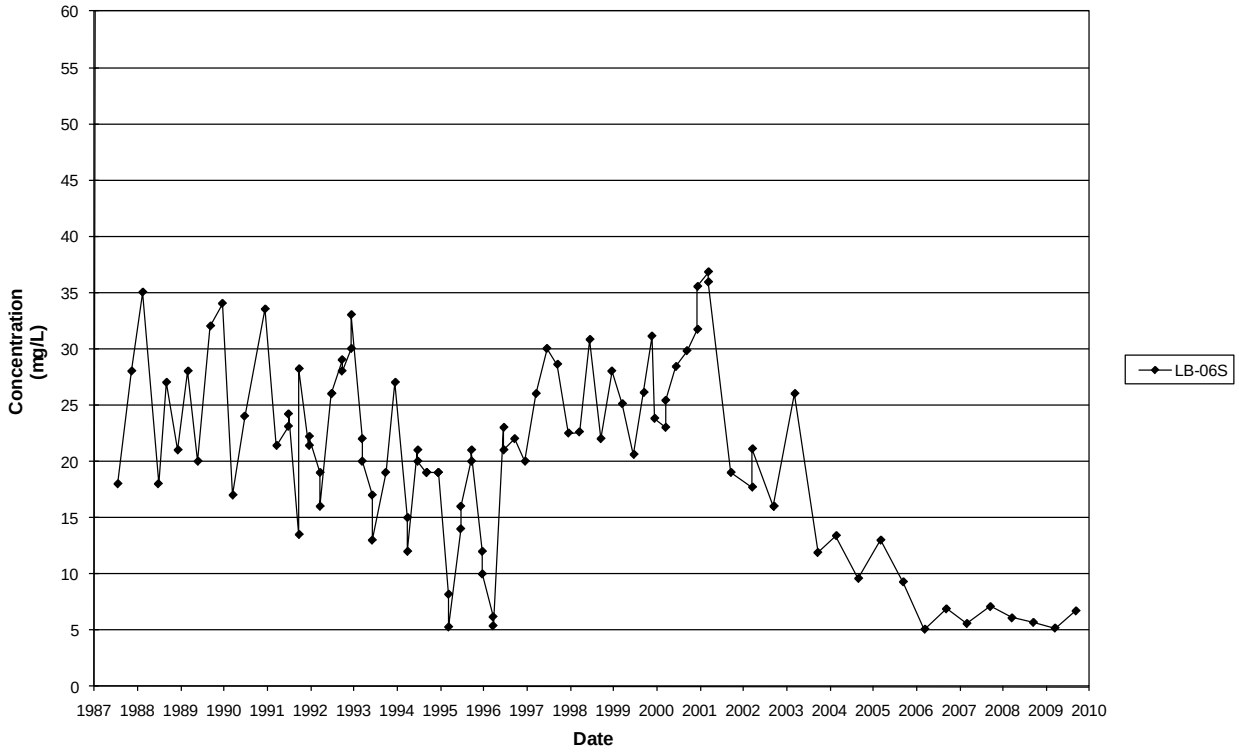
Concentration (mg/L)
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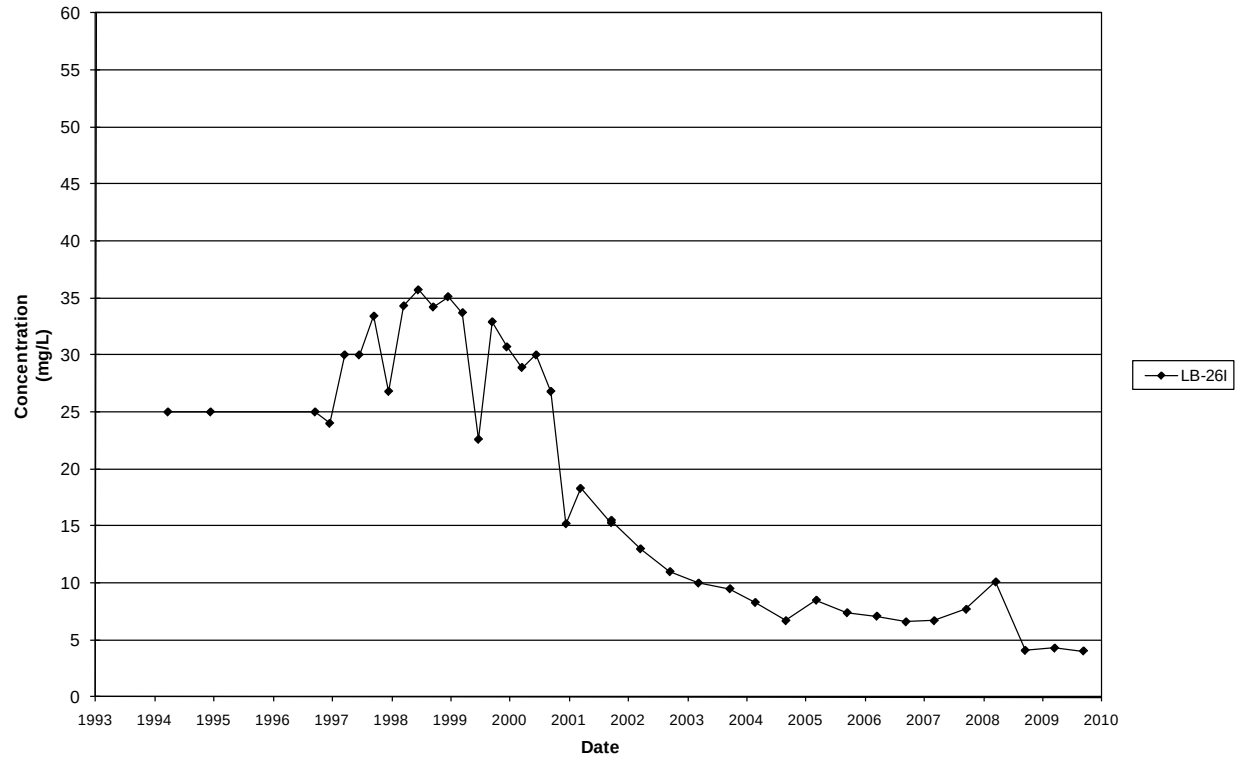
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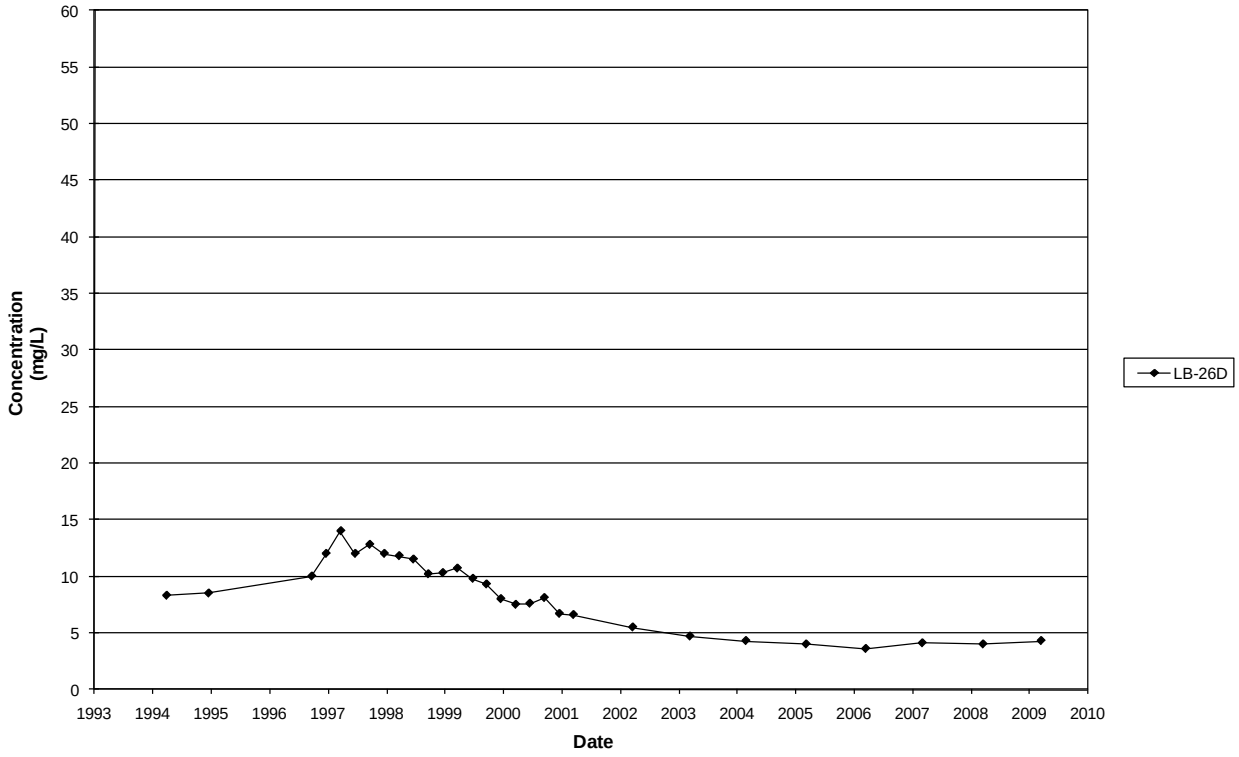
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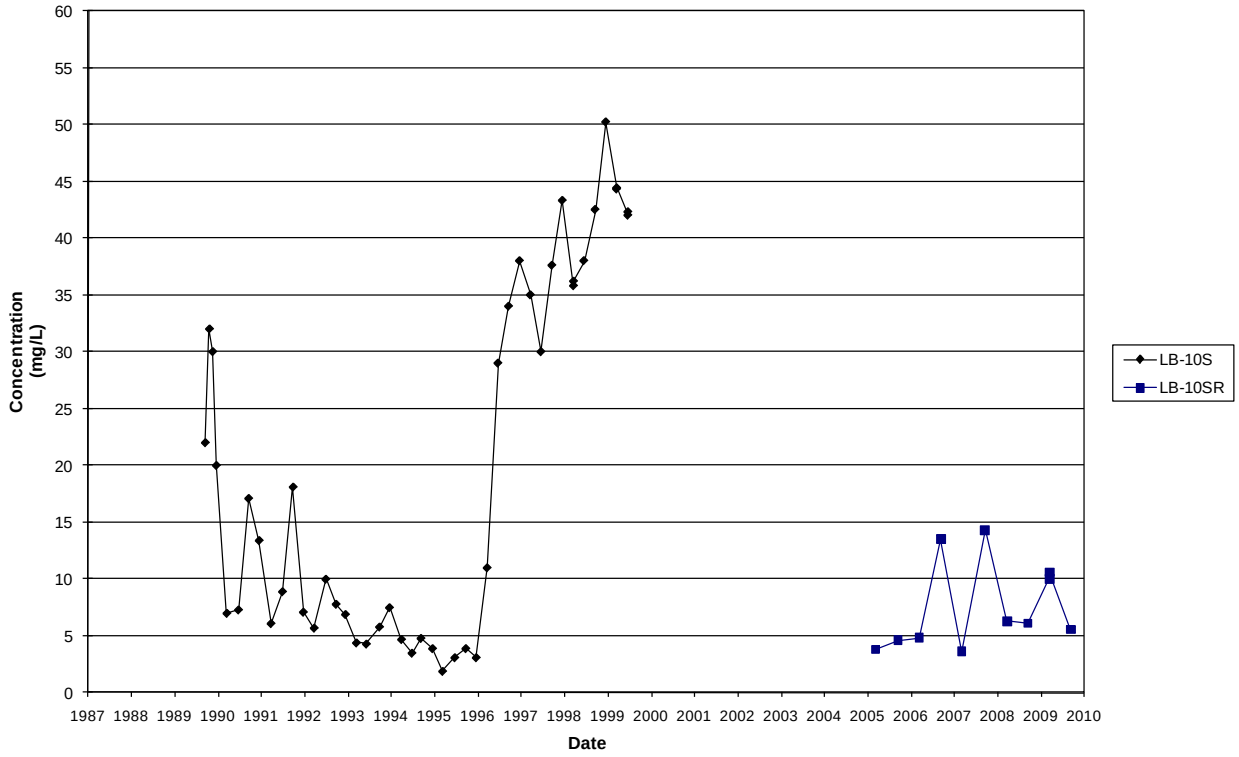
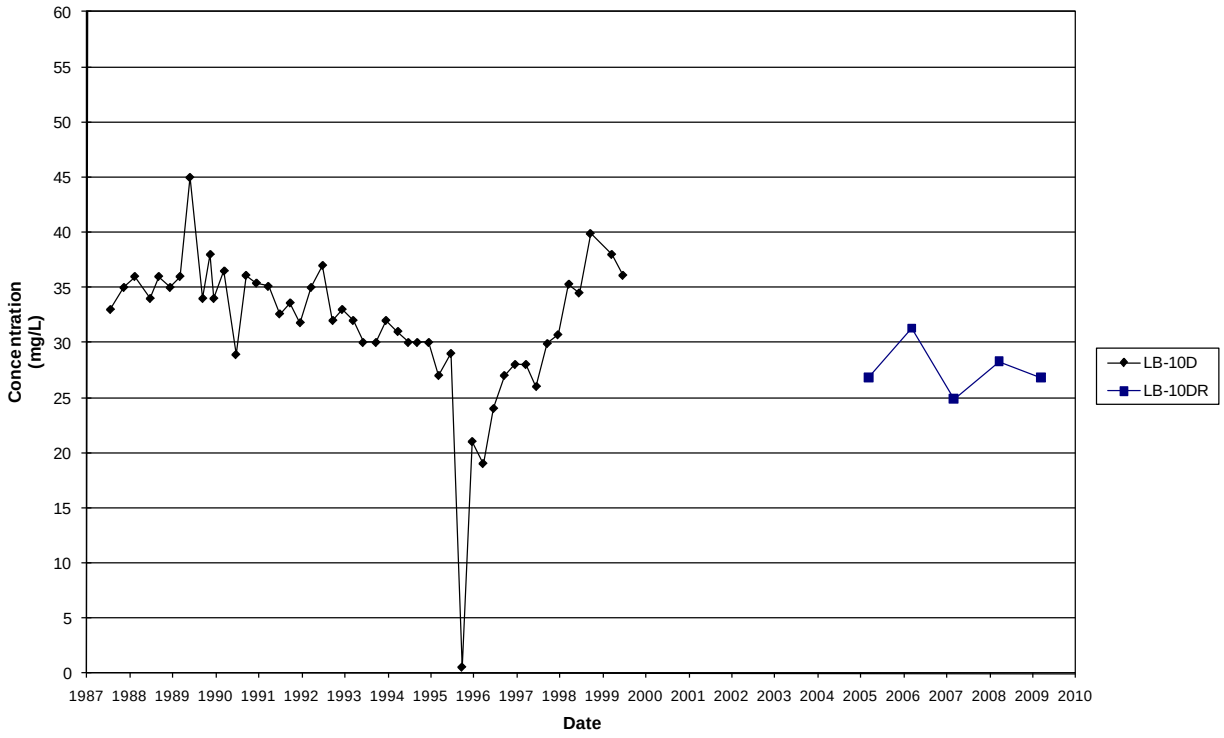

Concentration (mg/L)
Date
LB-10S
LB-10SR


Concentration (mg/L)
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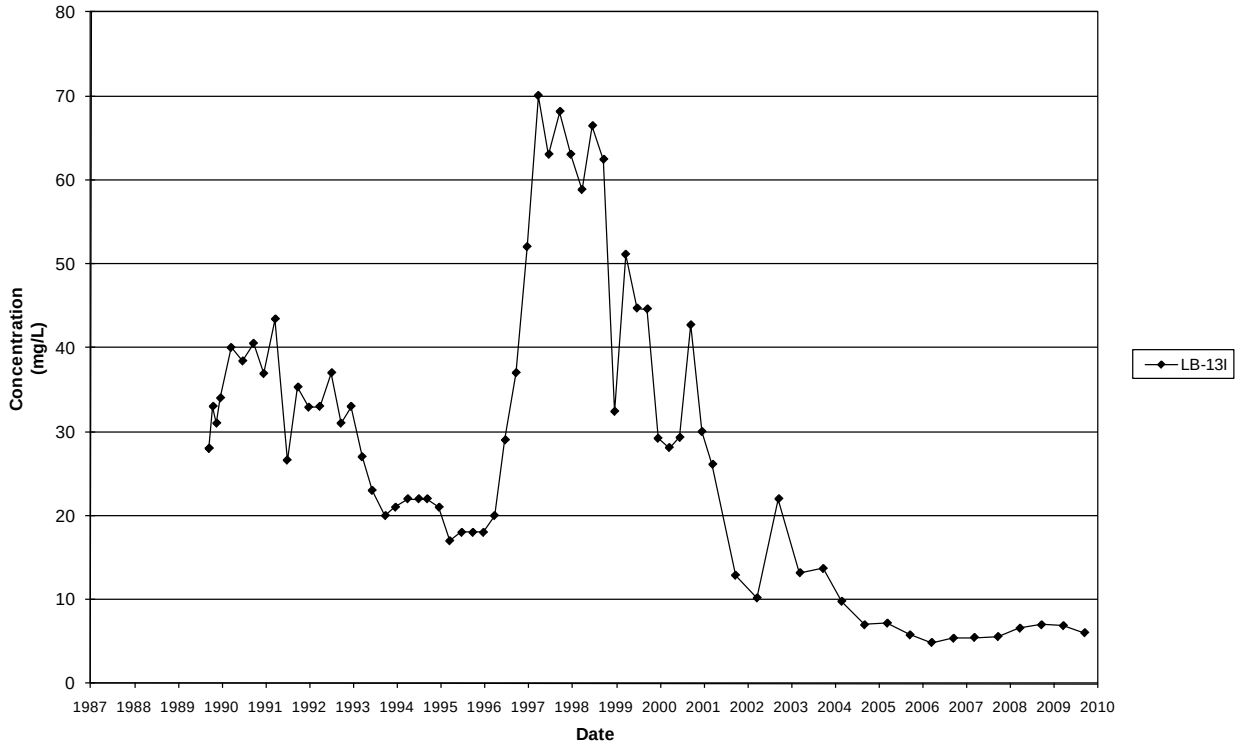
LB-10DR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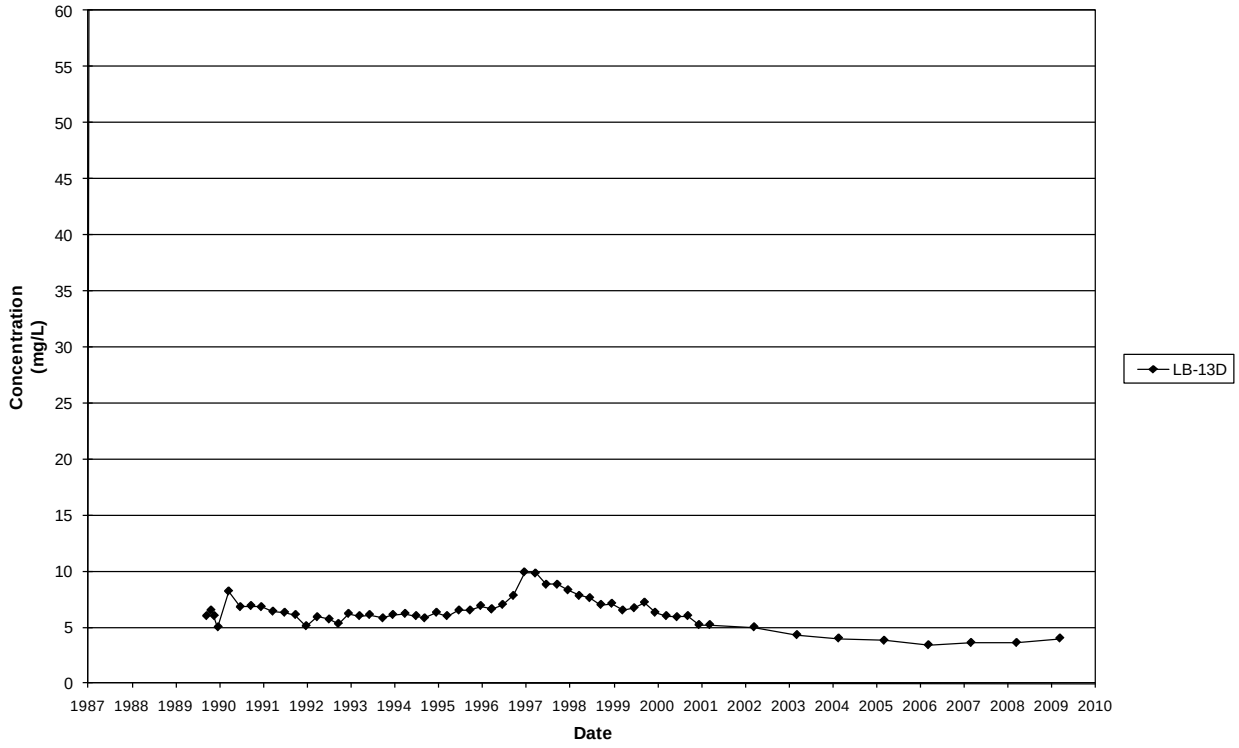
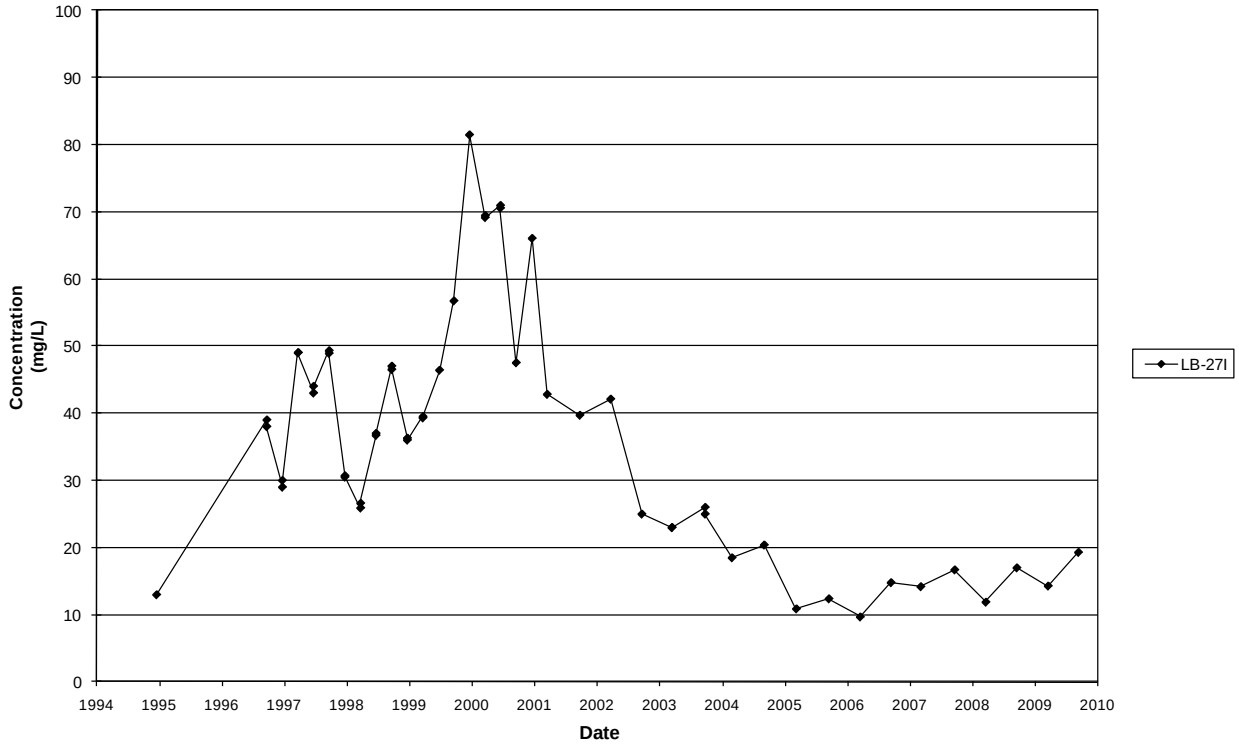

Concentration (mg/L)
Date
LB-13D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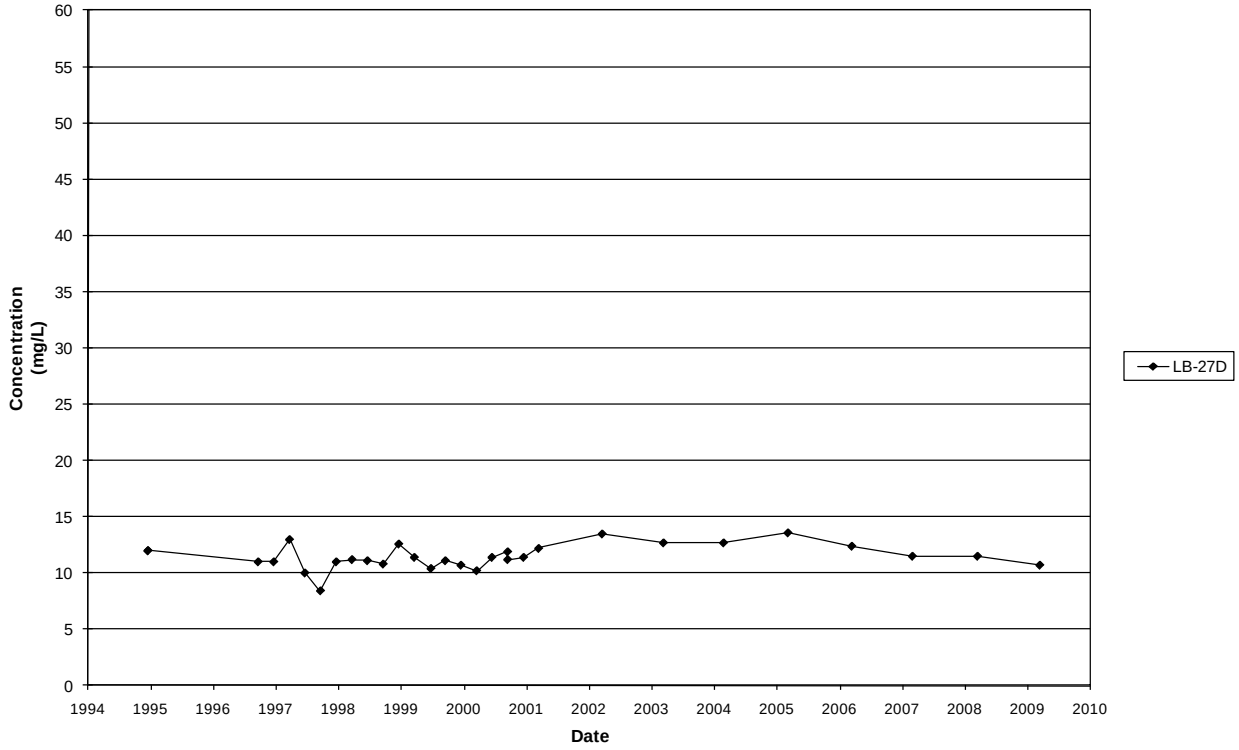
LB-27I


60
55
50
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15
10
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0
Concentration (mg/L)
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Date
LB-27D

6.3 Environmental Covenant

98040900180

FILED FOR RECORD
CLARK CO. WASH
Horenstein & Duggan
98 APR -9 PM 3:11
AUDITOR
ELIZABETH A. LUCE

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

Stephen W. Horenstein, Attorney
Horenstein & Duggan, P.S.
P.O. Box 694
Vancouver, WA 98666

RESTRICTIVE COVENANT

Grantors:	Leichner Brothers Land Reclamation Corporation
Grantees:	The Public
Abbreviated Legal:	Section 4, T2N, R2E and Section 23, T3N, R2E W.M.
Assessor's Tax Parcel #	199843; 199845; 199846; 199847; 199848; 199856; 199857; 199858; 199859; 199860; 199863; 199865; 199866; 199869; 199871; 105740
Other Reference Nos:	N/A

The property that is the subject of this Restrictive Covenant is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in the Consent Decree entered in State of Washington v. Leichner Brothers Land Reclamation Corporation, Clark County Superior Court No. 96-2-03081-7 and in exhibits to the Consent Decree. This Restrictive Covenant is required by the State of Washington Department of Ecology pursuant to WAC 173-340-440 because contaminants will be left in place on the property. This Restrictive Covenant is necessary to assure the continued protection of human health and the environment and the integrity of the Cleanup Action.

The undersigned, Leichner Brothers Land Reclamation Corporation, is the fee owner of real property in the County of Clark, State of Washington (legal description attached hereto as Exhibit "A"), hereafter referred to as the "Property." The Property encompasses both surface and subsurface estates. Leichner Brothers Land Reclamation Corporation makes the following declarations as to limitations, restrictions, and uses to which the Property may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property.

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HORENSTEIN & DUGGAN, P.S.,
ATTORNEYS AT LAW
900 Washington Street, Suite 900
P.O. Box 694
Vancouver, Washington 98666
(360) 699-4771 • (503) 289-2643

699

Section 1. No groundwater may be taken for domestic purposes from any well on the Property.

Section 2. Any activity on the Property that may interfere with the Cleanup Action is prohibited. Any activity on the Property that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action is prohibited, unless allowed under the terms of an NPDES or state waste discharge permit.

Section 3. The owner of the Property must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property may be consummated by the owner without adequate and complete provision for the continued operation, maintenance, and monitoring of the Cleanup Action.

Section 4. The owner of the Property must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology or its successor agency may approve such a use only after public notice and opportunity for comment, and only if the proposed use will not threaten human health or the environment.

Section 5. The owner of the Property shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the Property in accordance with the terms set forth in Section IX of the Consent Decree for the purposes of evaluating compliance with the terms of the Consent Decree and the Cleanup Action Plan, to take samples, to inspect Cleanup Action taken at the Property, and to inspect records that are related to the Cleanup Action.

Section 6. The owner of the Property and the owner's assigns and successors in interest reserve the right under WAC 173-340-440 to record an instrument providing that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology, or of a successor agency. The Department of Ecology or a successor agency may consent to the recording of such an instrument only after public notice and comment, and only if all of Leichner Brothers Land Reclamation Corporation's obligations under the Consent Decree have been satisfactorily completed.

LEICHNER BROTHERS LAND RECLAMATION CORPORATION

By: _____
Craig Leichner, President

Date: April 9, 1998

HORENSTEIN & DUGGAN, P.S.,
ATTORNEYS AT LAW
900 Washington Street, Suite 900
P.O. Box 694
Vancouver, Washington 98666
(360) 699-4771 • (503) 289-2643

STATE OF WASHINGTON)
: ss.
County of Clark)

I certify that Craig Leichner appeared personally before me and that I know or have satisfactory evidence that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the President of Leichner Brothers Land Reclamation Corporation to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

DATED this 9th day of April, 1998.

SUSAN M. SCHRANTZ
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
FEBRUARY 1, 1999

Susan Schrantz
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: Feb 1, 1999

RESTRICTIVE COVENANT - 3
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HORENSTEIN & DUGGAN, P.S.,
ATTORNEYS AT LAW
900 Washington Street, Suite 900
P.O. Box 694
Vancouver, Washington 98666
(360) 699-4771 • (503) 289-2643

701

OLSON

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LEGAL DESCRIPTION FOR LEICHNER
Perimeter Description

July 27, 1993

A parcel of property in the James McAllister and in the William Goldbeck Donation Land Claim and in a portion of the Newton Addition as recorded in Book A of Plats at page 60 of Clark County records, in Section 4, Township 2 North, Range 2 East and in the South half of Section 33, Township 3 North, Range 2 East of the Willamette Meridian described as follows:

BEGINNING at the Southeast corner of the McAllister Donation Land Claim;

THENCE North 88° 29′ 04″ West along the South line of said McAllister Donation Land Claim 227.44 feet to the Northeast corner of the Northwest quarter of Lot 1 of the Newton Addition;

THENCE South 01° 43′ 50″ West along the East line of said Northwest quarter 473.72 feet to that line established by boundary agreement as recorded under Auditor's File # 9108090260 of Clark County records;

THENCE North 88° 16′ 04″ West along said boundary agreement line 981.21 feet;

THENCE South 01° 43′ 50″ West along said boundary agreement line 0.41 feet to the South line of the North half of Lot 3 of said Newton Addition;

THENCE North 88° 16′ 06″ West along said South line and the South lines of the North half of Lot 4 and the North half of Lot 5 of said Newton Addition 1119.46 feet to the centerline of NE 94th Ave;

THENCE North 02° 10′ 22″ East along said centerline 466.22 feet to the Southwest corner of said McAllister Donation Land Claim;

THENCE North 02° 09′ 58″ East along the West line of said McAllister Donation Land Claim 236.55 feet to the Southwest corner of that tract conveyed to Arvid E Koski by deed recorded under Auditor's File # G 18438 of Clark County records;

THENCE South 88° 29′ 04″ East along the South line of said Koski tract 90.00 feet to the Southeast corner thereof;

THENCE North 02° 09′ 58″ East along the East line of said Koski tract 80.01 feet to the Northeast corner thereof;

THENCE North 88° 29′ 04″ West along the North line of said Koski tract 90.00 feet to the West line of said McAllister Donation Land Claim;

EXHIBIT A

LAND SURVEYORS • ENGINEERS
[illegible] BROADWAY • VANCOUVER, WASHINGTON 98660
[illegible] 385 • FAX (360) 695-3477 • 503 289 9936

702

35480011.leg - 2

THENCE North 02° 09′ 58″ East along said West line 60.00 feet to the South line of that tract conveyed to Felix F. Fleischer by deed recorded under Auditor's File # 8403160018 of Clark County records;

THENCE South 88° 29′ 04″ East along said South line 1157.05 feet to a fence line and the Boundary Line Agreement as recorded under Auditor's File # 9302170319 of Clark County records;

THENCE North 01° 43′ 14″ East along said fence and Boundary Line Agreement 376.53 feet to the North line of said Fleisher tract;

THENCE North 88° 29′ 04″ West along said North line 1154.13 feet to said West line of the McAllister Donation Land Claim;

THENCE North 02° 09′ 58″ East along said West line 205.37 feet to the North line of that tract conveyed to Lorry Leichner by deed recorded under Auditor's File # G 336779 of Clark County records;

THENCE South 88° 29′ 04″ East along said North line 122.00 feet to the most Southerly Southwest corner of that tract conveyed to Lorry Leichner by deed recorded under Auditor's File # G 730682 of Clark County records;

THENCE North 02° 09′ 58″ East along the West line of said Leichner tract 102.00 feet;

THENCE North 88° 29′ 04″ West along the South line of said Leichner tract 122.00 feet to said West line of said McAllister Donation Land Claim;

THENCE North 02° 09′ 58″ East along said West line 1023.14 feet to the Westerly extension of the South line of the Kuhnhausen parcel as described in Exhibit D of the Boundary Line Agreement as recorded under Auditor's File # 9108090261 of Clark County records;

THENCE South 87° 10′ 13″ East along said South line 390.06 feet;

THENCE South 87° 51′ 35″ East along said South line 756.61 feet to the East line of said Kuhnhausen parcel;

THENCE North 02° 21′ 36″ East along said East line 380.79 feet to the Northeast corner of said Kuhnhausen parcel;

THENCE North 87° 48′ 39″ West along the North line of said Kuhnhausen parcel 1147.93 feet to the West line of said McAllister Donation Land Claim;

THENCE North 02° 09′ 58″ East along said West line 169.75 feet, more or less, to the South line of that tract conveyed to B. Charles Dorsey by deed recorded under Auditor's File # 8704210088 of Clark County records;

THENCE South 88° 28′ 27″ East along said South line 464.03 feet to the East line of said Dorsey tract;

THENCE North 02° 09′ 58″ East along said East line 25.11 feet;

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THENCE North 02° 02′ 17″ East along said East line 162.90 feet to the South line of that tract conveyed to J.E. O'Flaherty by deed recorded in Book 72 at page 382 of Clark County records;

THENCE South 88° 28′ 27″ East along said South line 716.94 feet, more or less, to the East line of said O'Flaherty tract;

THENCE North 02° 04′ 21″ East along said East line 188.10 feet, more or less, to the North line of the South half of said McAllister Donation Land Claim;

THENCE South 88° 28′ 27″ East along said North line 1140.56 feet, more or less, to the East line of said McAllister Donation Land Claim;

THENCE South 02° 04′ 21″ West along said East line 673.42 feet;

THENCE South 02° 07′ 55″ West along said East line 1839.88 feet to the Northwest corner of the Napoleon McGilvery Donation land Claim;

THENCE South 01° 59′ 43″ West along said East line 492.82 feet to the POINT OF BEGINNING.

7/27/93

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6.3 Photo log

Photo 1: South Flare – from the west

Photo 2: Cap Access Road – from the west

Photo 3: Stormwater Collection Area - from the east

Photo 4: Landfill Cap – from the north