Public Comment
Draft IGP
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April 29, 2011

Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814
VIA ELECTRONIC MAIL: commentletters@waterboards.ca.gov

Re: Comment Letter – Draft Industrial General Permit: Submitted on behalf of California Coastkeeper Alliance and California Sportfishing Protection Alliance

Dear Ms. Townsend and State Board Members,

On behalf of California Coastkeeper Alliance ("CCKA"), which represents 12 Waterkeepers spanning the coast from the Oregon border to San Diego,[1] and California Sportfishing Protection Alliance ("CSPA") (collectively ("CCKA")), we are pleased to finally see the long-awaited draft permit proposing to update the 14-year old general permit for storm water discharges associated with industrial facilities in California. Although CCKA believes that the existing permit has made some significant strides in bringing industrial storm water pollution under control around the state, CCKA strongly disagrees that few "low-hanging fruit" remain, as urged by the California Association of Stormwater Quality Agencies ("CASQA") and other dischargers at the recent hearing and workshops hosted by the State Board and its staff. More than any other entities in the State – including even the regional boards' combined storm water staffs – the California Waterkeepers, California Sportfishing Protection Alliance and other environmental organizations have reviewed, inspected, negotiated best management practices ("BMPs") and monitored industrial facilities discharging storm water since the original permit in 1991. Our collective on-the-ground experience walking and assessing facilities indicates that many facilities still hope to get by with the barest of "BMPs," even after they have measured for many years pollution levels well above EPA's benchmark values or applicable water quality standards. Our experience further indicates that the primary reason for the significant percentage of facilities pointed out by CASQA as exceeding EPA's benchmark values is because facilities have failed to implement best available technology economically achievable ("BAT"). Hence, it

[1] The referenced Waterkeepers are: Klamath Riverkeeper, Humboldt Baykeeper, Russian Riverkeeper, San Francisco Baykeeper, Monterey Coastkeeper, San Luis Obispo Coastkeeper, Santa Barbara Channelkeeper, Ventura Coastkeeper, Santa Monica Baykeeper, Orange County Coastkeeper, Inland Empire Waterkeeper, and San Diego Coastkeeper.

is our consistent and direct experience from these years of enforcement efforts that numerous actions remain to be taken to ensure that the permit protects water quality and complies with the law.

CCKA, its member Waterkeepers and allies have put their collective experience together to develop these comments on the proposed draft permit. CCKA also has retained Matt Hagemann, P.G., Ch.G., of SWAPE, to review some of the technical components of the proposed permit, in particular the proposed numeric effluent limitations and their consistency with the Federal Water Pollution Control Act's ("Act" or "CWA"), 33 U.S.C. § 1251 *et seq.*, BAT, and best conventional pollutant control technology ("BCT") requirements. Our comments are summarized as follows:

- Contrary to the arguments by many of the dischargers, the State Board is entirely justified in establishing numeric BAT/BCT effluent limitations based on limits equivalent to EPA's published benchmark values. CCKA looks forward to reviewing the completed BAT/BCT analysis being prepared by staff.

- Ample monitoring data exists on which the State Board can rely in assessing the statutory criteria for establishing BAT and BCT-based numeric effluent limitations.

- A technical review of media treatment systems currently used by the best performers and adjustable to all industrial storm water facilities shows that compliance with staff's proposed numeric effluent limitations ("NELs") is feasible and reasonably expected to be achieved by the best performing facilities.

- CCKA agrees that a daily average may be applied to measure compliance with numeric BAT/BCT effluent limitations.

- The State Board should clarify that monitoring for compliance with applicable water quality standards must be located at the point where discharges leave a facility.

- The Permit should require analysis of the dissolved fraction of metals present in discharges.

- The Proposed corrective action levels improperly delay implementation of BAT/BCT. Level 1 operational source control should already have been accomplished and cannot reasonably be described as "over and above" minimum BMPs. At a minimum, Level 2 structural and/or treatment controls already should be implemented by all industrial facilities in order to have achieved BAT/BCT. Numeric effluent limitations must be established now, without the proposed three-year compliance schedule. And, even assuming there is a logical place for corrective action levels in the permit, the proposed scheme's various loopholes should be closed.

- Because the State Board has no authority to exclude any industrial activities from the permitting requirements, the Board needs to clarify that the permit is not limited to the listed SIC industrial categories but rather extends to any industrial activities. The State Board also should specify other SIC categories that pose significant pollution threats or are plainly industrial in nature.

- BMPs designed to only a 10-Year, 24-Hour storm event are not BAT/BCT. A 25-year, 24-hour compliance storm event is reasonably achievable by the best performing facilities.

- The Permit should not contain any exclusions based upon the implementation of LID or other measures that may not prove effective in most industrial contexts.

- The Permit's proposed monitoring scheme should be strengthened. Four samples should be required during the rainy season rather than spread out over the entire year. The expectation that all facilities will properly maintain and review an on-site rainfall measurement device is overly optimistic – monitoring should be conducted when discharges are occurring based on government rainfall devices. The State Board needs to expand the list of monitored parameters to address all of the pollutants likely to be discharged from some facilities, including boatyards and landfills. No reductions in storm water sampling frequency should be included in the Permit. The Permit should not allow monitoring from separate drainages at a facility to be combined. And sampling should not be limited to "scheduled facility operating hours."

- CCKA agrees that the State Board should eliminate the group monitoring provisions.

- CCKA agrees with the proposed storm event design for No Discharge Certification, but the no discharge exclusion should be verified through appropriate photographic and visual monitoring in addition to certification.

- The State Board should clarify that the 90-day public comment period for new coverage notices does not alter the federal prerequisite for a citizen to bring an enforcement action under the CWA.

- Facilities should be required to submit revised storm water pollution prevention plans ("SWPPPs") to SMARTS, and all documents submitted to the State Board's Storm Water Multi-Application and Report Tracking System ("SMARTS") must be accessible via SMARTs to the public.

CCKA looks forward to a new draft permit later this year that maintains the improvements to the current permit proposed by staff and includes changes consistent with the comments below that will better assure steady progress toward eliminating the pervasive threat currently posed to the State's waters by inadequately controlled industrial storm water discharges.

A. The State Board is Justified in Establishing Numeric BAT/BCT Effluent Limitations Based on Limits Equivalent To EPA's Published Benchmark Values.

Staff proposes to establish numeric BAT effluent limitations for any dischargers under the permit who cannot achieve compliance with specified numeric effluent limitations based on EPA's benchmark values originally published by that agency in 1995. Fact Sheet, p. 8;[2] *Id.*, p. 29; Draft Permit, § V.D (p. 15). The proposed permit would allow all dischargers up to three years and, in many cases, longer to achieve the proposed numeric effluent limitations. Fact Sheet, pp. 29-33; Draft Permit, § VII.B-C (pp. 38-41). Indeed, if a discharger achieves the limits within two years, they would never be subject to the effluent limits. *Id.*

Although CCKA believes that the compliance schedule proposed by staff is unnecessary and the concept of allowing a discharger's compliance efforts to determine the length of the schedule is unprecedented under the CWA, CCKA strongly concurs that numeric effluent limitations are entirely appropriate and indeed mandated under Sections 301, 304 and 402(p) of the CWA, 33 U.S.C. §§ 1311, 1314, 1342(p). Although staff frankly acknowledges that they have not yet completed drafting their BAT/BCT analysis, CCKA's independent analysis indicates that staff will have little difficulty considering the CWA's listed BAT and BCT factors and determining that the best performing industrial storm water dischargers around the State can reasonably achieve the numeric effluent limitations proposed by staff.

1. The Best Available Technology Standard.

By March 31, 1989, the CWA required all point source dischargers, including those discharging polluted storm water, to achieve effluent limitations based upon BAT for toxic and nonconventional pollutants and BCT for "conventional" pollutants. 33 U.S.C. § 1311(b); 40 C.F.R. §§ 125.3(a)(2)(ii), 125.3(a)(2)(iii), 125.3(a)(2)(iii). Conventional pollutants are TSS, oil and grease ("O&G"), pH, biochemical oxygen demand ("BOD"), and fecal coliform. 40 C.F.R. § 401.16. All other pollutants are either toxic or nonconventional. *Id.*; 40 C.F.R. § 401.15. These are the minimum levels of pollution control required by the Act. 40 C.F.R. § 125.3(a). In 1987, when Congress amended the Act to address EPA's failure to properly regulate storm water discharges in the previous fifteen years, Congress did not alter any of these deadlines for any "discharge associated with industrial activity." 33 U.S.C. § 1342(p)(2)(B). To the extent industrial dischargers in California have not implemented BAT or BCT, they are now 22 years overdue. *See American Frozen Food Institute v. Train*, 539 F.2d 107, 120 (D.C. Cir. 1976)

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2 As the Fact Sheet explains: "the [numeric action levels] NAL(s) which trigger this corrective action level becomes a technology-based numeric effluent limitation (NEL). This is due to the fact that each NAL in this General Permit reflects the technology needed to reduce the pollutant to either BAT or BCT, respectively. It is the best professional judgment (BPJ) of the State Water Board staff that dischargers employing BAT and BCT can reduce the pollutants in their storm water effluent to achieve concentrations at or below the NALs." Fact Sheet, p. 8.

(BAT intended to be "levels of control which approach and achieve the elimination of the discharge of pollutants").

The State Board may establish BAT and BCT for a category of industrial stormwater discharges on a case-by-case basis. 40 C.F.R. § 125.3(c)(2). The Act sets forth the specific criteria that the State Board must take into account when establishing BAT/BCT effluent limitations. 33 U.S.C. § 1314(b)(2)(B). This is the process proposed by staff.

As for BAT, "[f]actors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate." *Id. See also* 40 C.F.R. § 153.2(c)(3). Unlike the lesser standard of best practicable control technology established for the early years of implementation of the Clean Water Act, a BAT-based effluent limitation does not take into account any cost/benefit analysis. *See American Paper Institute v. Train*, 543 F.2d 328, 346 (D.C. Cir. 1976). Indeed, Congress fully expected that, for any given category of dischargers, application of BAT would result in the closure of some facilities. "Congress clearly contemplated that cleaning up the nation's waters might necessitate the closing of some marginal plants." *American Iron & Steel Institute v. EPA*, 526 F.2d 1027, 1051-1052 (3d Cir. 1975). Although the State Board must consider costs associated with its proposed BAT limitations, "some amount of economic disruption was contemplated as a necessary price to pay in the effort to clean up the nation's waters" and the State Board has "considerable discretion in weighing costs." *Id.*

Nor is the average performer within a category of dischargers representative of BAT. "[R]ather than establishing the range of levels in reference to the average of the best performers in an industrial category, the range should, ***at a minimum***, be established with reference to the ***best performer*** in any industrial category." *American Paper Institute*, 543 F.2d at 346 (emphasis added). *See also American Meat Institute v. EPA*, 526 F.2d 442, 462-463 (7th Cir. 1975); *American Frozen Food Institute*, 539 F.2d at 120-21. Thus, even for a nation-wide BAT effluent limitation established by EPA, data from as little as three facilities employing an, at the time, state of the art, "experimental" technology, was sufficient for EPA to make an achievability finding for the entire industrial category (in that instance pulp mills). 543 F.3d at 348 ("[t]he industry has been experimenting with this technique in a number of locations on a pilot-plant scale. We [the D.C. Circuit Court of Appeal] would agree that based on the very limited testing that we have seen, that this level of percentage reduction is achievable[,]" upholding EPA's BAT limitation based on such data). Anticipated application of technologies resulting from public and private research is a proper basis for establishing a BAT limitation. *See American Meat Institute*, 526 F.2d at 462-463 ("the 1983 effluent limitations are to be based on 'a broader range of technological alternatives,' including techniques 'which exist in operation ***or which can be applied as a result of public and private research efforts***'") (quoting Leg. Hist. at 170); *American Iron & Steel Institute*, 526 F.2d at 1061 ("reliance on pilot plant technology" was "proper in establishing [BAT] limitations for existing sources"). The State Board's determination of BAT-based effluent limitations "must be upheld if it can show the existence of some technology which, if implemented, ***may reasonably be expected*** to achieve the [BAT] standards." *American Meat Institute*, 526 F.2d at 462-463 (emphasis added).

The inclusion of the term "economically achievable" also does not mean that the agency must evaluate the impacts of a state-wide BAT effluent limitation on every single industrial stormwater discharger. Rather, "the reasonableness of what is 'economically achievable' should reflect an evaluation of what needs to be done to move toward the elimination of the discharge of pollutants and what is achievable through the application of available technology - without regard to cost." *American Frozen Food*, 539 F.2d at 120-21.

Congress' "intent is that effluent limitations applicable to individual point sources within a given category or class be as uniform as possible." *American Frozen Food*, 539 F.2d at 120 (citing Congressional Research Service, a Legislative History of the Water Pollution Control Act Amendments of 1972 (Comm. Print 1973) ("Leg. Hist."), pp. 171-72). As the legislative history emphasizes, "similar point sources with similar characteristics, regardless of their location or the nature of the water into which the discharge is made, will meet similar effluent limitations." *Id.* Leg. Hist. at 171-72 (emphasis added). Where, as here, the permitting vehicle is the reissuance of a statewide general permit for all industrial storm water dischargers, the State Board already has determined that industrial storm water point sources throughout the State:

> (A) Involve the same or substantially similar types of operations;
> (B) Discharge the same types of wastes or engage in the same types of sludge use or disposal practices;
> (C) Require the same effluent limitations, operating conditions, or standards for sewage sludge use or disposal; [and]
> (D) Require the same or similar monitoring; and (E) In the opinion of the Director, are more appropriately controlled under a general permit than under individual permits.

40 C.F.R. § 122.28(a)(2)(i). Because all industrial storm water discharges share similar characteristics, the same BAT effluent limitations should apply to each of them. Staff's proposed NELs are consistent with this requirement.

2. <u>The Best Conventional Technology Standard</u>.

Some of the basic parameters discharged by industrial storm water discharges are subject to the Act's BCT standard. These parameters include TSS, O&G, pH – long-regulated by the industrial storm water permit – as well as BOD and fecal coliform. 40 C.F.R. § 401.16. The factors that must be considered by the State Board when adopting a BCT-based effluent limitation include:

> consideration of the reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived, and the comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of

> reduction of such pollutants from a class or category of industrial sources, and shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate.

33 U.S.C. § 1314. *See also* 40 C.F.R. § 153.2(c)(2). The State Board must determine that the proposed BCT limitations "will directly - not just incidentally - reduce [the relevant pollutant] and do so better than any other pollutant control technology." *Waterkeeper Alliance, Inc. v. United States EPA*, 399 F.3d 486, 519 (2d Cir. 2005).

Where, as is frequently the case with TSS and pH in storm water discharges, the conventional pollutant is an indicator of the presence of toxic pollutants, the State Board "may set a permit limit for a conventional pollutant at a level more stringent than the best conventional pollution control technology (BCT). . . ." 40 C.F.R. § 125.3(h)(1). Three criteria would have to apply:

> (A) The limitation reflects BAT-level control of discharges of one or more toxic pollutants which are present in the waste stream, and a specific BAT limitation upon the toxic pollutant(s) is not feasible for economic or technical reasons;
> (B) The permit identifies which toxic pollutants are intended to be controlled by use of the limitation; and
> (C) The fact sheet required by § 124.56 sets forth the basis for the limitation, including a finding that compliance with the limitation will result in BAT-level control of the toxic pollutant discharges identified in paragraph (h)(1)(ii)(B) of this section, and a finding that it would be economically or technically infeasible to directly limit the toxic pollutant(s).

40 C.F.R. § 125.3(h)(1). Thus, for those SIC categories where heavy metals may be present in their storm water discharges and a substantial percentage of those metals likely are bound up with sediment, even in the absence of metals data, the State Board may establish BAT limit for TSS based on the available TSS monitoring data. Although the State Board "may not set a more stringent limit [BCT limitation] if the method of treatment required to comply with the limit differs from that which would be required if the toxic pollutant(s) or hazardous substance(s) controlled by the limit were limited directly," as is discussed below, the same technologies apply to control TSS as well as metals levels in storm water discharged from industrial facilities. 40 C.F.R. § 125.3(h)(3).

3. <u>The State Board Must Issue Numeric BAT or BCT Limitations Unless Such Limitations are Infeasible.</u>

The State Board must issue numeric BAT/BCT effluent limitations – such as the NELs proposed by staff -- unless it can make specific determinations set forth in the federal regulations allowing for non-numeric limitations. Although usually required as supplements to other

NPDES permit conditions, EPA's regulations do provide for effluent limitations to be established as best management practices ("BMPs") requirements only when "[n]umeric effluent limitations are infeasible. . . ." 40 C.F.R. § 122.44(k)(3). Any determination by the State Board that numeric limitations are infeasible must be supported by the weight of the evidence. As proposed, the draft permit includes an initial approximately three-year (possibly longer) BMP phase supported by Numeric Action Levels ("NALs"). For those facilities who do not implement sufficient BMPs to achieve the NALs after the initial BMP phase, the permit's proposed NELs become applicable.

4. Ample Monitoring Data Exists on which the State Board Can Rely in Assessing the Statutory Criteria for Establishing BAT and BCT-Based Numeric Effluent Limitations.

One of the main complaints aired by the dischargers is that the State Board should not rely upon EPA's benchmark values as BAT effluent limitations. *See* CASQA Draft Industrial Permit Hearing Testimony, p. 15 (March 29, 2011) (slide presentation). In fact, an incredible amount of effluent monitoring data has been gathered in support of these figures over the last 19 years, and EPA itself draws a direct link between the multi-sector permit's benchmark values and implementation of BAT and BCT:

> The benchmark values are concentrations which are used to evaluate whether a generally effective SWPPP is being implemented. The SWPPP is required to ensure compliance with the technology-based discharge requirements of the Clean Water Act.

65 FR 64746, 64781 (Oct. 30, 2000). In publishing the benchmarks, "EPA . . . sought to develop values which can realistically be measured and achieved by industrial facilities." 60 FR 50804, 50825 (Sept. 29, 1995). For each of the benchmark values, EPA determined that they were "reasonably achievable." *See id.* ("EPA believes this level ... is reasonably achievable by industrial storm water dischargers"). Likewise, federal courts have acknowledged the utility of using EPA's benchmarks in evaluating a facility's compliance with the existing permit's BAT/BCT standard. *Baykeeper v. Kramer Metals, Inc.*, 619 F. Supp. 2d 914, 924 (C.D. Cal. 2009) ("[t]here can be no reasonable dispute that the Benchmarks are relevant to the inquiry as to whether a facility implemented BMPs"); *Waterkeepers Northern California v. AG Industrial Mfg. Inc.*, 375 F.3d 913, 919 n.5 (9th Cir. 2004) (suggesting that the plaintiff appropriately pointed to EPA Benchmark values "as evidence to support its claim that [the defendant] failed to implement adequate BMPs").

Although EPA did not choose in its multi-sector permit to adopt numeric BAT or BCT effluent limitations, given the large amount of data available to the State Board, there is nothing precluding the State Board from completing the necessary BAT analysis (as staff indicates is already being prepared) and concluding that the best industrial storm water treatment performers in the State may reasonably achieve staff's proposed BAT effluent limitations based on EPA's benchmark values.

Since the State Board first issued the General Permit in 1992, tens of thousands of samples have been taken and the resulting analytical data provided to the Regional and State Boards. As representatives of CASQA have underscored at the workshops held by the State Board on the draft permit, the tens of thousands of data points available to the Board and the public can be evaluated to determine the achievability of a range of possible technology-based limitations. CASQA's analysis shows that greater than 40 percent of the samples taken by dischargers already are achieving all of the effluent limitations proposed in the draft permit. CASQA Testimony, p. 28. More than 80 percent of the samples are complying with the proposed lead limitation. *Id.* Although CASQA's analysis does not indicate what levels of technology have been employed by each reporting facility, the fact that, without regard to specific technologies, a significant number of all facilities under the current permit are achieving the proposed numeric effluent limitations indicates that the "best performers" in the category of industrial storm water discharges can reasonably achieve the benchmark-based limitations proposed in the draft permit.

With the exception perhaps of a few consultants working on storm water control issues, CCKA's member organizations as well as CSPA have perhaps the most experience of any third-party groups reviewing storm water annual reports and conducting site inspections of facilities subject to the current general permit. Together, the organizations represented by this comment have reviewed thousands of facility annual reports. For example, since January, 2005, CSPA's investigators alone have reviewed over 850 industrial facility files in the Central Valley, San Francisco Bay, North Coast and Los Angeles Regions. In its review of those files, the investigators systematically compare reported monitoring results with EPA's benchmark values. Of those approximately 850 reviewed files, monitoring reports for about half of the facilities indicated general compliance with the benchmark values. Of the approximately 50 percent that did not achieve the benchmark values, a small percentage, roughly 30 percent, indicated consistent or substantial exceedances. These are the files for which CSPA would conduct further investigation and possibly prepare notices of intent to sue under the CWA. Since January 2005, approximately 150 facilities have fallen into this category. Invariably, for these facilities, the investigators determined that the storm water control measures employed at the facilities were either nonexistent, inadequate, or did not address the entire facility. Based on the available information, none of the facilities in this category employed available media filtration systems on discharges of concern. As discussed below, once these facilities employed the best available treatment technology, whether in the form of a properly designed and sized media filtration system along with vigorous housekeeping, coverage, and inlet protection, they either met, or had a reasonable expectation of meeting the benchmark values.

The dischargers' presentations at the State Board's workshops demonstrate several fundamental misconceptions about the CWA's requirements for adopting BAT/BCT effluent limitations. Rather than the State Board seeking out examples of the best performing facilities, the various discharger associations appear to argue that the State Board has to rely on the performance of every single industrial storm water discharger – even the worst performers. For example, CASQA criticizes staff's proposed effluent limitations because, based on data over the life of the general permit, over 40 percent of facilities' monitoring results did not meet the proposed numbers for copper and zinc and less than 20 percent of the monitoring results did not meet the proposed lead number. Fundamentally, CASQA appears to be arguing that all performers' efforts to date – even those facilities who have made only the bare minimum of effort to comply with the permit – must be able to meet any BAT/BCT limitation adopted by the State Board. This, of course, is not the standard. BAT and BCT both focus on best performers and a reasonable expectation that facilities employing the same technologies and techniques observed at the best performing facilities also will achieve the limitations. The draft permit's proposed NELs are entirely consistent with that mandated BAT/BCT focus. A proper BAT limitation looks forward to what the industrial facilities can achieve. It does not set a bar based on poor performing facilities or even the average facility.

Based on CCKA's and CSPA's review of thousands of facility files, the reason facilities are not already achieving discharge levels lower than the benchmarks is because they have not implemented available management practices, prevented storm water from falling on polluted areas of their facilities and/or installed effective pollution treatment systems at their outfall(s). Invariably, the groups' investigations of poorly performing facilities show that the sites are not well-maintained, or are visibly dirty usually with extensive cracking of their ground covering. Invariably, these facilities will be clinging to the fiction that a piece of cloth filter or, more recently, the installation of a Triton-type filter, that buckles in large rain events and is capable of removing only a small percentage of storm water pollution, somehow qualify as BAT or BCT. They do not. The monitoring data cited by CASQA as demonstrating that facilities are not currently meeting staff's proposed limitations likely are, in large part, monitoring results from facilities employing these less than BAT or BCT levels of pollution control.[3]

5. <u>Numeric Effluent Limitations are Plainly Feasible.</u>

There can be no reasonable dispute that numeric effluent limitations are feasible. As a result, the State Board may no longer rely upon an industrial stormwater permit that relies exclusively on BMPs. See 40 C.F.R. §§ 122.44(k)(3). As the technical panel convened by the State Board in 2006 found, "[t]he Panel believes that Numeric Limits are feasible for some industrial categories. Industries have control over their facilities. They control access, construction practices, product substitution to affect pollution prevention and the types of treatment systems to be used to mitigate stormwater runoff." Storm Water Panel Recommendations to the California State Water Resources Control Board, "The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities," p. 19 (June 19, 2006). "There are many treatment systems or prevention practices that have been in place for lengthy periods, extending back to the 1980s in many cases." *Id.* The panel did not indicate what it meant by "some industrial categories." Based on CCKA's experience walking through and reviewing hundreds of facilities' storm water measures, there is no discernable difference in the range of storm water treatment options available to all of the industrial facilities currently covered by the General Permit. Although the scale and necessary mix of management practices, coverage options and

3 CASQA's review of the data also includes monitoring from the initial years of the program, results which on average would be higher than pollution levels currently being achieved under the permit.

treatment obviously is different from facility to facility, the range of options, techniques and equipment is essentially the same for all facilities. All facilities can usually cover substantial portions of their operations. All facilities can contain and treat storm water if necessary, at least up to a specified design storm (for example, 25-year, 24-hour). All facilities can select from a wide range of housekeeping practices. Numeric limitations are feasible for all industrial storm water dischargers.

The panel, however, approaching the questions presented from an engineering perspective, articulates effluent-setting options that are inconsistent with the CWA. For example, for the industrial storm water dischargers, the Panel suggests keying any numeric limits into the TMDL program. *See* Panel Report, p. 19. This is not a legal option under the CWA. The NELs proposed by staff are BAT and BCT limitations, not water quality-based effluent limitations. Any TMDL-based approach, by definition, is not a BAT or BCT limitation. The draft Fact Sheet also is careless about the two different types of effluent limitations (and should be cleaned up in this regard). In those watersheds where industrial facilities are discharging polluted stormwater contributing to identified impairments, the permit must require even more stringent limitations that go beyond and are not limited to the implementation of BAT or BCT. The Panel's concept that, in order to adopt numeric BAT and BCT effluent limitations, the State Board should focus on a subset of impaired waterbodies and must engage in the more complicated and costly development or implementation of waste load allocations, is not consistent with adopting BAT and BCT limitations under the CWA.

The panel's second option for establishing numeric effluent limitations would appear to better track the CWA's BAT and BCT criteria but still errs in several substantive ways and ultimately places too much weight on the average performers rather than the best performers. For example, the Panel places great store in the need for a reliable database assessing BMPs employed by all of the dischargers. The task suggested by the panel is not necessary for the State Board to adopt appropriate BAT and BCT limitations. As the court of appeal rulings described above make clear, the State Board need only review the best performers in the industrial storm water discharge category. Moreover, the Board's adoption of BAT or BCT limitations is not constrained by current permitted facility's resistance to installing media filtration systems and other more costly treatment options. Even technologies that have only been pilot tested and are not yet installed by facilities whose discharges would benefit from their installation, can and should be the basis for appropriate BAT and BCT limitations.

Applying the CWA's BAT and BCT factors correctly does not require the State Board to redo the 19 years of data collected by industrial facilities to date. The factors require the Board to only review the best performers and the best available technologies, even if those technologies are not widely implemented as yet. The BAT/BCT analysis being prepared by staff should clarify that this is what staff has done in proposing the NELs.

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6. A Technical Review of Media Treatment Systems Currently Used by the Best Performers and Adjustable to All Industrial Storm Water Facilities Shows That Compliance with Staff's Proposed NELs Is Feasible and Reasonably Expected to Be Achieved.

Staff states that "[i]t is the best professional judgment (BPJ) of the State Water Board staff that dischargers employing BAT and BCT can reduce the pollutants in their storm water effluent to achieve concentrations at or below the NALs." Fact Sheet, p. 8. CCKA has retained Matt Hagemann of SWAPE,to review existing effluent data from advanced treatment systems in place at facilities throughout California, as well as in Oregon and Washington. Mr. Hagemann's review corroborates staff's best professional judgment that the best performers in the industrial storm water discharger category can reasonably be expected to achieve numeric BAT effluent limitations consistent with the proposed NELs. *See* M. Hagemann, SWAPE, "Comments on the Draft California NPDES Industrial General Permit (April 28, 2011) (enclosed with these comments and incorporated by reference).

Mr. Hagemann obtained and reviewed data from a leading technology provider, StormwateRx, who manufactures and installs stormwater treatment systems.[4] Hagemann, p. 2. The data set included all of the data obtained by the company from all facilities where the StormwateRx systems have been installed in California, Oregon and Washington. *Id.* The types of facilities where the equipment has been utilized involve some of the most polluting sectors included in the general permit, including boatyards, scrap yards (ferrous and non-ferrous), galvanizing facilities, plastic fabrication, a power plant, shipyard and trucking facilities. All the data was real world data – not data from pilot projects. *Id.*

As Mr. Hagemann explains, the complete StormwateRx treatment train includes an oil-water separator (Clara), a media filtration step (Aquip) and a polishing stage (Purus). *See* http://www.stormwaterx.com. Hagemann, p. 2. Reviewing the data collected from facilities employing some or all of those components, Mr. Hagemann concludes that, even when applied to some of the most challenging storm water pollution sources, the best performing facilities can reasonably comply with the proposed NELs. Some of the tested facilities can comply with the proposed NELs with only one or two of the StormwateRx components. *Id.*, p. 4. Mr. Hagemann's review indicates that all of these more problematic pollution sources would be able to comply with staff's proposed NELs with the implementation of the full StormwateRx treatment train as well as aggressive housekeeping and BMPs upstream of the treatment systems. *Id.* Mr. Hagemann emphasizes that, because the data is limited to the most difficult storm water pollution sources, the best performing facilities from outside the scrap yards, galvanizers and other more challenging facilities would reasonably achieve compliance with the proposed NELs without treatment or fewer treatment components. *Id.* Mr. Hagemann concludes:

> The data presented in Attachment 1 show that NELs were achieved at those sites where the full treatment train (the Clara, Aquip, and Purus) was implemented . . . .

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[4] Other comparable treatment systems are manufactured by Storminator. *See* http://swonline.org.

> With implementation of a full treatment train or where the polishing stage (Purus) is installed, we believe the StormwateRx data show that achieving NELs is feasible for the full range of industrial facilities covered under the proposed Industrial General Permit.

Hagemann, p. 4. Mr. Hagemann also makes clear that the facilities which have, thus far, installed treatment systems like the Clara, Aquip and Purus are worst case storm water pollution sources. As he notes,

> We have concluded that achieving the NELs is feasible for not only the most contaminated sites but also for the vast majority of sites where influent concentrations are not as high as for those for which StormwateRx data were submitted. Implementation of one or two components of the full StormwateRx system (or of a similar system) would allow for facilities covered under the Industrial General Permit to achieve NELs. Where influent concentrations are particularly high, the full StormwateRx treatment train may be necessary to achieve NELs. At other sites, where concentrations of metals are lower, use of velocity separation devices, inlet filters and vegetated swales, along with aggressive source control BMPs, would allow for NEL concentrations to be achieved.

Hagemann, p. 5. "We believe the proposed NELs can be reliably achieved using available best management practices and treatment technology and concur with State Water Board staff who state (Fact Sheet, p. 8)…[i]t is the best professional judgment (BPJ) of the State Water Board staff that dischargers employing BAT … and BCT … can reduce the pollutants in their storm water effluent to achieve concentrations at or below the NALs." *Id.* Finally, if averaging of samples is allowed for specific individual outfalls, that too will make it even more reasonable to expect compliance with proposed NELs. Hagemann, p. 5. Mr. Hagemann's review and comments provide staff useful evidence to apply as they complete their BAT/BCT analysis for the proposed NELs.

7. <u>The TSS Limitation to Be Included in the Permit Also Must Reflect the Best Performers.</u>

A large number of industrial storm water dischargers currently do not monitor for metals or other pollutants. For those facilities that do not monitor for additional parameters, the TSS limitation must be established based on BAT as well. It is well-understood that some metals readily bind to sediments. *See, e.g.* Norberg, Gunnar, "Handbook on the Toxicology of Metals" (3d. ed. Academic Press 2007), p. 256. As a result, effectively controlling TSS levels may serve to control and reduce heavy metals in a discharge as well. Based on CCKA's review of discharger reports, every discharger can achieve an effluent limitation of 100 mg/L. The best media treatment systems available consistently reduce TSS in storm water discharges to 50 mg/L or less.

In addition, the permit should establish a turbidity limitation as well, complimenting the turbidity standards in place in every regional board's basin plan. Comments prepared on behalf of Lozeau Drury LLP and the Northern California Carpenter Regional Council for the construction storm water general permit demonstrate that a turbidity limitation of 50 NTU is readily achievable effectively employing existing best management practices. *See* Carpenter Environmental Associates, Inc., "Comments on State Water Resources Control Board National Pollution Discharge Elimination System, Draft General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (June 10, 2008). That limitation should be added to the permit.

8. <u>CCKA Agrees That a Daily Average May Be Applied to Measure Compliance With Numeric BAT/BCT Effluent Limitations</u>.

Staff proposes generally to allow dischargers to apply daily averages. *See* Fact Sheet, p. 30. CCKA agrees that, to the extent a discharger takes more than one sample of a specific storm discharge on any given day, the facility may average the total samples for that day. However, as detailed below in Section G.7, CCKA does not agree that dischargers should be allowed to average their analytical results from different drainages within a facility.

B. The Proposed Provisions to Determine Whether a Facility is Causing or Contributing to an Exceedance of a Water Quality Standard Complicates the Assessment of Standards at Specific Facilities.

Staff proposes to continue to rely on a narrative standard to require industrial storm water dischargers to comply with applicable water quality standards. See Draft Permit, Section VI.A. With the exception of hardness monitoring, no specific monitoring is identified in the permit or Fact Sheet as applicable to implementing the permit's receiving water limitations. The Fact Sheet and permit do describe a process for following up on violations of the permit's receiving water limitations. Fact Sheet, p. 9. *See* Permit, ¶ VII.E.2. As described, a discharger would have to undertake facility improvements when it is notified by a regional board or when the facility "determines that the discharge is causing or contributing to an exceedance of water quality standards. . . ." *Id.* This cumbersome process does not alter the permit's receiving water limitations. *See, e.g. Baykeeper v. Kramer Metals, Inc.*, 619 F.Supp.2d at 927. It does however complicate and confuse the appropriate reaction of a violating facility.

1. <u>The State Board Should Clarify that Compliance Monitoring Must Occur at the Point Where Discharges Leave the Facility</u>.

Rather than avoiding mention of monitoring and the response outlined in the permit, the permit should instead clarify that the receiving water limitation must be measured where storm water discharges leave the facility, either at a drop inlet or outfall, *i.e.*, the same current monitoring locations included in the existing permit. This is the only appropriate monitoring location because the facilities storm water discharges cannot take credit for any mixing or dilution that may result once its storm water combines with upstream storm water in a municipal system or in a receiving water.

The federal courts that have considered these issues have uniformly applied applicable water quality standards at the point where storm water leaves the facilities. *See Santa Monica Baykeeper v. Sunlite Salvage, Inc.*, Case No. 99-04578 WDK (slip op. Dec. 12, 1999); *Baykeeper v. Kramer Metals, Inc.*, 619 F.Supp.2d at 927 (finding facility liable for discharging stormwater in violation of receiving water limitation based on samples taken at facility's discharge to municipal storm drain system); *Waterkeepers N. Cal. v. AG Indus. Mfg.*, 2005 U.S. Dist. LEXIS 43006, 24-25 (E.D. Cal. Aug. 19, 2005) (compliance with general permit, including water quality standard requirement, must be measured at location where storm water exits the facility because no dilution credit or mixing zone authorized). Staff should align the permit's requirements for monitoring the water quality-based effluent limit with the courts' rulings.

The proposed permit does make reference to the need for dischargers to analyze for hardness in order to properly compare their storm water's pollution levels of six hardness dependent metals (Cadmium, Copper, Lead, Nickel, Silver, and Zinc) to water quality standards. *See* Draft Permit, ¶ XIV. However, staff's proposed method for addressing hardness is arbitrary and errs as a matter of law. First, staff applies the hardness measurements to its proposed BAT effluent limitations. Hardness only applies to the permit's receiving water limitations which prohibit facilities from causing or contributing to any exceedance of hardness dependent metal standards. The BAT effluent limitations are technology-based and the anticipated performance is not dependent on hardness.

Second, staff proposes to have facilities measure hardness in downstream receiving waters or to compile existing hardness data for those waters. Although ideally the hardness of ambient receiving waters unaffected by permitted discharges should be the basis for a water quality-based effluent limitation for the six metals, this additional monitoring burden is not warranted ***if*** monitoring is conducted at the point where the stormwater leaves the facility. In the case of storm water discharges that are not subject to any dilution credits or mixing zones, the State Board may and should provide for measuring hardness of the discharges at the facility. CCKA believes the hardness value at the point where stormwater leaves the facility is more consistent with the absence of a mixing zone or dilution credit. In the context of storm water, the receiving water's hardness presumably is greatly affected by the storm water discharges that would be occurring when samples are taken. Relying on dry weather hardness numbers in the receiving water likely would be no more representative than hardness numbers derived from the facility's storm water effluent. Lastly, as a practical matter, it may turn out that the hardness values in a facility's storm water are generally higher than the hardness of receiving waters on non-rain days. In that event, CCKA's proposed hardness measurements would result in a slightly higher receiving water limit for the six metals and help to facilitate permit compliance by the facilities measuring these pollutants.

2. <u>The Permit Should Require Analysis of the Dissolved Fraction of Metals Present in Discharges.</u>

Although staff at least addresses the benefit of hardness measurements when implementing water quality standards, staff does not provide for facilities to analyze for the dissolved fraction of metals in their stormwater discharges. The California Toxics Rule as well as a number of Basin Plans establish numeric water quality standards based on levels of dissolved metals. *See, e.g.* 65 Fed. Reg. 31682, 31712 & 31716 n. m (May 18, 2000). CCKA recommends that the permit require facilities discharging metals to analyze for the dissolved fraction of metals present in their discharge. This measurement would allow a more direct comparison of the facility's effluent to the existing water quality standards. It also again would facilitate compliance with the permit limitation by removing the non-dissolved fraction of metals from the comparison, effectively lowering the facility's reported pollution level applicable to the receiving water limitation for metals.

C. The Proposed Corrective Action Levels Improperly Delay Implementation of BAT/BCT.

CCKA has a number of serious concerns regarding the proposed three-year corrective action procedures. Staff proposes to defer the effectiveness of the proposed numeric effluent limitations for three years or more. Fact Sheet, pp. 29-33. Staff proposes that in the interim, the proposed numbers be treated as numeric action levels. *Id.*, p. 29. Staff then provides for a procedure where, if a facility exceeds the action levels by specified amounts, corrective actions are required and, as of the third exceedance, numeric effluent limitations are triggered. *Id.* ***CCKA believes the first two levels of corrective action should have been completed many years ago by all dischargers and, given the express deadlines for achieving BAT and BCT in the CWA as well as the 19 years that have passed since the State's adoption of the original general permit, the State Board cannot justify any compliance schedule.*** BAT and BCT already are mandated by the current permit, and the new permit should continue to require BAT and BCT immediately upon adoption. As discussed above, facilities implementing true BAT and BCT already are achieving the pollution levels that comply with the proposed NELs. There is no legitimate policy reason to coddle dischargers who have failed to implement BAT and BCT 19 years after the requirement was adopted in a permit.

1. Level 1 Operational Source Control Should Already Have Been Accomplished and Cannot Reasonably Be Described as "Over and Above" Minimum BMPs.

Dischargers who have not already accomplished the actions listed out in the proposed Level 1 corrective actions are in blatant violation of the existing permit. Staff's proposed Level 1 lists out the most basic measures that a facility has to have in place – actions that alone likely will fall well short of BAT or BCT. "Level 1 corrective action emphasizes operational source control BMPs such as better good housekeeping practices, minimizing pollutant exposure, better training, etc." Fact Sheet, p. 30. *See* Draft Permit, ¶ VII.B. Any discharger who already has monitored pollution levels at their facility in excess of EPA benchmarks who has not already done this is in blatant violation of the general permit. This level will not improve anything on the ground. It simply rewards existing violators with a year's grace period from the proposed effluent limitations.

2. At a Minimum, Level 2 Structural and/or Treatment Controls Already Should Be Implemented by All Industrial Facilities to Achieve BAT/BCT.

The same is true for Level 2. "Level 2 corrective actions require the consideration of structural source control BMPs (additional overhead coverage, containment of certain areas, etc) and treatment BMPs." Fact Sheet, p. 30. *See* Draft Permit, ¶ VII.C. Under the existing permit, the basic structural review proposed by staff had to be part of any facility's consideration of its compliance with the BAT/BCT requirement.

3. Numeric Effluent Limitations Must Be Established Now, without the Proposed Three-Year Compliance Schedule.

There is no authority in the CWA for the State Board to adopt a schedule of compliance to achieve a technology-based effluent limitation. Effluent limitations achieving BAT and BCT were required to be implemented not later than March 31, 1989. 33 U.S.C. § 1311(b). Hence, the State Board has no authority to extend that firm compliance deadline established by Congress. Schedules to achieve water quality-based effluent limitations are extremely limited as well this late in the CWA's implementation. *See* State Board Resolution No. 2008-0025, "Policy For Compliance Schedules In National Pollutant Discharge Elimination System Permits." The State Board may not adopt a permit that is less stringent than the requirements of the CWA. 33 U.S.C. § 1370.

4. The Proposal to Condition the Application of the NELs to a Specific Facility Based on the Facility First Exceeding the NALs is Inconsistent With the Definition of Compliance Schedules and the State Board's Duty to Establish BAT and BCT Limits.

The long-passed deadline for implementing BAT and BCT effluent limitations also precludes the Board from making the applicability of the NELs contingent on exceedances of NALs. Staff proposes an essentially open-ended compliance schedule for facilities that already are achieving the proposed NELs. CCKA is unaware of any permits allowing a facility to control the applicability of effluent limitations to its facility. The proposal, of course, makes little sense where compliance schedules are only necessary where a facility needs time to come into compliance. *See* 40 C.F.R. § 122.47(a)(1). In addition, because these facilities are achieving the NELs, there is no question of about the reasonableness of their complying with the NELs. Making the NELs applicable to all dischargers, including those already in compliance, would assure those complying facilities remain in compliance and assure that the possible repercussions of noncompliance are borne equally by all of the industrial storm water dischargers.

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5. Even Assuming There Is a Logical Place for Corrective Action Levels in the Permit, the Proposed Scheme's Loopholes Should Be Closed.

Assuming there is a valid reason for the State Board to include some version of the proposed corrective action levels, the timing of each level and the prevalence of numerous loop holes must be clarified or eliminated.

a. *As written, the corrective action levels may allow more than one year for a discharger to stay at the lower action levels.*

Language in the permit would appear to allow a discharger to prolong their stay in the lower corrective action levels, even without complying with the action level limitations.

For proposed Level 1, the permit allows the discharger to select additional housekeeping and control measures on their own initially, and they must implement those additional measures by October 1 prior to the following rainy season. The proposal calls for review by Regional Board staff and the possibility that the Regional Board will require additional measures beyond those identified by the discharger. The proposed timelines give the Regional Board 30 days from the submission of the corrective action level report, which is due on July 15[th] of each year, to provide for additional measures. The discharger then has "90 days after receiving comments from the Regional Water Board **or October 1 of the next reporting period** (whichever is later)." Draft Permit, ¶ VII.B.6 (emphasis added). Adding up 30 days, plus 90 days as well as a few days for the comment to arrive, puts the deadline for implementing the additional regional board actions in late November. Because that date is after October 1, any such additional measurers will not be implemented until the next rainy season. This language would create significant confusion and delay about when the corrective action level actually must completed.

Proposed Level 2 would allow the Regional Board to extend the October 1 deadline for constructing additional BMPs. CCKA does not see any reason to extend the permit deadline beyond October 1. Dischargers at this level would have been well aware of their exceedance of the action levels for almost two years. Even the second triggering events would have happened some time during the rainy season. The facility should then be planning on additional measures in order to prepare the required "exceedance evaluation report" by July 15. There is no reason that the facility cannot plan, purchase and schedule implementation or construction of these basic, and widely available, additional measures by October 1. If a facility has made a good faith effort to comply and nevertheless misses the deadline, the Regional Board can take that into account when exercising its enforcement authority, rather than have to expend scarce staff resources reviewing and responding to the wave of extension requests encouraged by this provision.

b. *The Permit should not allow an exception for an industrial facilities' NAL exceedance based on claim that exceedances are not related to industrial activities.*

The proposed Level 1 corrective actions include what amounts to an exception from the permit for "non-industrial" activities associated with an otherwise permitted facility. The exception assumes that the non-industrial activities are actually polluting at levels above the NALs/NELs. Draft Permit, ¶ 7.B.2.c (where NAL exceeded, discharger can certify that the cause of the exceedance is "not related to the facility's industrial activities and no additional BMPs or SWPPP implementation measures are required to reduce or prevent pollutants in storm water discharges in compliance with BAT/BCT. The certification shall describe the non-industrial related source(s)"). *See* Fact Sheet, p. 31. This provision strikes CCKA as oxymoronic – by definition, if the source(s) of pollutants exceeding the limits are at an industrial facility, then they must be related to the industrial facility. CCKA has a difficult time imagining an example of non-industrial-related pollution that is completely unlinked to operations at the facility. For example, discharges from corrugated metal roofs high in zinc surely are related to the industrial activity of the facility, the roof forming an integral part of the operation. Any vehicle parking at the facility, including employees' cars, is obviously related to the industrial activities, being necessary to make sure the workers arrive to carry out the business of the facility.

The better interpretation would be that, if any industrial activity occurs at a facility, all sources of pollution resulting in exceedances of the permit's limits must be addressed as all activities at the facility are by their very presence, associated with the industrial facility and its operations. That is EPA's position in its multi-sector permit. 65 FR 64746, 64769 (Oct. 30, 2000) (structural sources of pollution at industrial facilities not exempted from multi-sector permit's requirements). This would further the goals of the statute to prevent excessive pollution in situations where the facility plainly has control over the discharge. This would be one less burden on staff, who already lack the resources to implement the current permit. Lastly, this position is consistent wither the CWA, which requires NPDES permits for pollution discharges from all point sources, regardless of the source of the pollution. *See Environmental Protection Information Center v. Pacific Lumber Co.*, 469 F.Supp.2d 803, 819 (N.D.Cal. 2006) (Court held that plaintiff did not need to measure pollution concentrations in run-on to prove discharge of pollutants from logging road).

c. *The permit should not allow an excuse for an industrial facilities' NAL exceedance based on run-on.*

Under Level 3, when the proposed effluent limitations become effective, the permit provides an exception where the exceedance is caused by "run-on." Draft Permit, ¶ VII.D.2 ("NELs do not apply if the industrial facility receives run-on . . ."). The current draft permit appropriately does not provide any such exception. The proposed exception is much too broad, and could indeed provide an incentive for facilities to ask their neighbors to discharge storm water to their property so that they can excuse themselves from the proposed permit's effluent limitations. Among the hundreds of facilities that the Waterkeepers and CSPA have visited over the years, only a small percentage had run-on issues. However, in each instance, the run-on of storm water from a neighbor's property was easily addressed by measures to route that storm water around the facility or otherwise prevent the run-on. That should be the express requirement of the proposed permit. In those rare instances that a facility has run-on that cannot be routed around or past the facility, then the permit should require representative monitoring of the storm water discharges from the industrial facility where the NELs would apply. A functional and enforceable permit that actually addresses the polluted storm water associated with the industrial facility cannot simply excuse the facility's entire stormwater flow from the NELs based on the facility's failure to control run-on onto its facility.

The State Board's permit should follow the lead of EPA on this issue. The multi-sector permit makes clear that neither run-on nor atmospheric deposition (as noted in more detail below) are appropriate excuses for controlling pollution levels in an industrial facility's stormwater discharges. As EPA states:

> The fact that storm water discharge pollutant levels could be affected by atmospheric/dry deposition, run on and fate in transport, as well as structural sources, was a concern of a few commenters. EPA acknowledges the potential for adding pollutants to a facility's discharges from external or structural sources. Permittees are, nonetheless, still legally responsible for the quality of all discharges from their sites (or any runoff that comes into contact with their structures, industrial activities or materials, regardless of where these are located)-but not from pollutants that may be introduced into their discharges outside the boundaries of their properties. Pollutant levels, whether elevated from air deposition, run-on from nearby sites, or leachate from on-site structures, remain the responsibility of permittees. This was affirmed in the ruling by the Environmental Appeals Board against the General Motors Corporation CPC-Pontiac Fiero Plant in December 1997.

65 FR 64746, 64769 (Oct. 30, 2000). Certainly for run-on, EPA has correctly construed the statute.

d. *Any excuse for an industrial facilities' NAL exceedance based on atmospheric deposition from a forest fire or any other natural disaster must be limited and documented by aerial deposition monitoring.*

The permit also would exempt pollution levels of atmospheric deposition from a forest fire or other natural disaster from the proposed effluent limitations. Draft Permit, ¶ VII.D.2 ("NELs do not apply if the industrial facility receives ... atmospheric deposition from a forest fire or any other natural disaster"). The permit should clarify that the proposed exception would be limited in time to the duration and after effect of a forest fire or natural disaster and should not exempt pollutants that are not fire or disaster-related but from the facility. For example, CCKA does not believe that high levels of metals would be deposited on an industrial facility from a forest fire. Nor should allegations of elevated pollution levels from distant fires be allowed by the Board. In addition, the Board should place the burden on facilities seeking to take advantage of this exception to provide aerial monitoring data clearly documenting that the pollutants for which an exemption is claimed were from a recent forest fire. Given these numerous caveats, it likely makes more sense for the Regional Board to delete this exemption and rely instead on its enforcement discretion to address specific instances where forest fires may have affected a facility's performance.

e. *The only method available to the Regional Boards to suspend any numeric effluent limitations included in the general permit should be the issuance of an individual permit based on a facility-specific BAT/BCT and water quality-based effluent limitation determinations.*

The draft permit proposes a procedure for facilities that have triggered the effluent limitation requirement, Level 3, to request a "Suspension of Numeric Effluent Limitations" or "SNEL." Draft Permit, ¶ VII.D.5 – 8. The draft permit sets out several categories of information that the SNEL would demand, including documentation that the facility's discharge is not causing or contributing to a violation of a water quality standard, documentation that the facility has complied with Levels 1 and 2, a description and cost analysis of additional BMPs necessary to meet the effluent limitations, and certification from a registered civil engineer. *Id.*; Fact Sheet, p. 33.

In effect, what staff proposes is to amend the permit in violation of the process established in the regulations to amend the permit for specific facilities. The proposal is both illegal and another component that will swamp the regional boards with numerous, meritless requests. When a NPDES permit is modified, the Regional Board must follow the decision-making steps set forth in the Code of Federal Regulations for draft NPDES permits. *See* 40 C.F.R. § 122.62. Unless a modification qualifies as a "minor modification," in order to modify a NPDES permit, "a draft permit must be prepared and other procedures in part 124 (or procedures of an approved State program) followed." *Id.*[5] The procedures include, for example, the preparation of a draft permit (40 C.F.R. § 124.6),[6] a fact sheet (40 C.F.R. § 124.8), public notice and an opportunity for the public to comment on the proposed modification (40 C.F.R. § 124.10), and an agency response to comments (40 C.F.R. § 124.17). A permit may only be modified for one or more of the causes specifically listed at 40 C.F.R. § 122.62 ("If cause exists, the Director may modify or revoke and reissue the permit accordingly. . ."). Obviously, deleting an otherwise applicable numeric effluent limitation which the facility already has exceeded can hardly amount to good cause for an amendment. The State Board should adopt defensible numeric effluent limitations and make them applicable. The technology and measures are available for all facilities to meet the effluent limitations proposed by staff. If a specific facility believes that the stormwater falling on its facility is somehow unique from that falling on the other facilities in the state, then the facility can seek an individual NPDES permit to address those idiosyncrasies. An inducement for run-of-the-mill facilities to seek to delay implementation of the numeric effluent limitations is not consistent with the regulations and not necessary.

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[5] Minor modifications are limited to specific permit alterations not applicable to the Executive Director's action, including for example typographical errors, changes in ownership, additional monitoring or reporting or deleting terminated outfalls. 40 C.F.R. § 122.63. The removal of limitations implementing a TMDL can hardly be deemed a minor modification.

[6] "Draft permit means a document prepared under Sec. 124.6 indicating the Director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a 'permit.'" 40 C.F.R. § 122.2.

Given the basic requirements set forth in Levels 1 and 2, one can expect many facilities to delay the more stringent measures necessary to meet the proposed effluent limitations and a deluge of SNELs pouring into the regional boards about two years after the proposed permit is adopted. By adhering to the regulations' existing procedures for issuing individual permits, the proposed permit's inducement for facilities to file SNELs will be limited to those very few facilities so unique that perhaps individual permits may be appropriate.

f. *The Fact Sheet should clarify that the permit does not limit the proposed first trigger to exceedances in two consecutive storm events.*

The proposed permit establishes three triggering events that would move a facility from one corrective action level to another. These include:

> The Daily Average for any one constituent exceed the NAL value for two or more storm events of a reporting year, or;
> The DA for any two constituents exceed the NAL values for any single storm event within a reporting year, or;
> The concentration for any one constituent exceeds 2.5 times the NAL value for any one individual or allowable combined sample (or is more than one pH unit outside the NAL pH range)

Draft Permit, ¶ VII.E.1. However, the Fact Sheet suggests that the two NAL exceedances are for consecutive storm events. Fact Sheet, p. 30 ("Trigger 1(above): Any particular parameter exceeds the NAL twice. If sampling results (for one parameter) over two consecutive storm events demonstrate characteristics that meet trigger 1, this indicates the possibility of a larger compliance problem"). The Fact Sheet should be edited to make it clear that any two - even nonconsecutive - exceedances in a given rain year would meet this trigger event. After all, the permit only calls for four samples total. If half of the samples exceed the limits, that is significant.

D. The State Board Needs to Clarify That the Permit Is Not Limited to the Listed SIC Industrial Categories.

1. <u>The State Board Has No Authority to Exclude Any Industrial Activities from the Permitting Requirements.</u>

The State Board should clarify that, by attaching a list of specific categories of industrial facilities that are covered under the Draft Permit, the Board is not excluding any industrial activities from the permitting requirements (Attachment A). This list of specific SIC codes and categories of facilities, which mirrors the categories of facilities considered to be engaging in "industrial activity" set forth in 40 C.F.R. § 122.26(b)(14), could be read to implicitly exempt industrial activities that are not on this list. However, the State Board has no authority to make such exemptions, and in fact it must clarify that the types of facilities covered by the Permit to include all discharges which are industrial in nature. Indeed, as the Blue Ribbon Panel noted, "SIC categories are not a satisfactory way of identifying industrial activities at any given site.

The Board should develop a better method of characterizing industrial activities that can impact storm water." Fact Sheet, p.3.

CWA § 402(p)(2)(B) explicitly requires an NPDES Permit for discharges associated with industrial activity. Thus, all discharges which are *industrial in nature* are subject to CWA NPDES permitting requirements. *Northwest Envtl. Def. Ctr. v. Brown*, 617 F.3d 1176, 1196 (9th Cir. 2010). In finding that an EPA regulation exempting logging from NPDES permitting requirements was invalid, the Ninth Circuit explained: "if [logging] activity is industrial in nature . . . EPA is not free to create exemptions from permitting requirements for such activity." *Id.* at 1196, *citing NRDC v. EPA,* 966 F.2d 1292, 1304 (9th Cir. 1992).

Brown and prior Ninth Circuit decisions make plain that while EPA has some discretion to define what constitutes an industrial activity, EPA's discretion does not extend to exempting stormwater point source discharges from CWA NPDES regulation that are plainly industrial in nature. The courts independently scrutinize whether an activity is industrial to ensure that EPA respects Congress' plain intent to mandate NPDES regulation of *all* stormwater discharges from industrial sources. *See, e.g., Northwest Envtl. Def. Ctr*, 617 F.3d at 1197; *see also NRDC v. Costle,* 568 F.2d 1369 (D.C. Cir. 1977). Thus, in *NRDC v. EPA*, the Ninth Circuit struck down the exemption in EPA's Phase I regulations of point source discharges from construction sites of less than five acres, holding that because construction activity is industrial in nature, EPA cannot exempt it from NPDES regulation. 966 F.2d at 1306. The court explained that to be subject to NPDES regulation, "[i]t is not necessary that stormwater be contaminated or come into direct contact with pollutants: *only association with any type of industrial activity is necessary*." *Id.* (emphasis added). Similarly, the Ninth Circuit held that stormwater discharges from inactive mines were still subject to CWA NPDES regulation even if EPA had not classified such mines as industrial sources of stormwater discharge. *See Am. Mining Congress v. Envtl. Protection Agency*, 965 F.2d 759, 772 (9th Cir. 1992) ("In the [1987 Water Quality Act], Congress provided a temporary [permitting] exemption for some sources of stormwater discharge, but not for discharges associated with industrial activity"). These decisions recite the extensive CWA legislative history, which makes plain Congress' intent that all discharges associated with industrial activity be subject to NPDES regulation. *See* H.R. Rep. No. 99-189 at 62 (July 2, 1985) ("[we] believe that stormwater associated with industrial areas must be regulated by permit"); H.R. Conf. Rep. No. 1004 at 157 (Oct. 15, 1999) ("The permit requirements of the Clean Water Act respecting [industrial] stormwater discharges are not affected by this amendment"); 133 Cong. Rec. H. 168 (Jan 8, 1987) (Statement of Rep. Strangeland) ("[The 1987 amendments] do[] not provide a specific permit exemption for stormwater discharges associated with industrial activity").

For EPA's regulation at 40 C.F.R. § 122.26(b) to be consistent with the CWA, its legislative history, and Ninth Circuit case law, the State Board may not limit the Permit to only stormwater dischargers from facilities that would be classified as being within the SIC Codes referred to in 40 C.F.R. § 122.26(b)(14)(i) - (xi). 40 C.F.R. § 122.26(b)(14) itself does not expressly exclude non-listed SIC codes from the Multi-Sector permit. *See* 40 C.F.R. § 122.26(b)(14) ("The following categories of facilities are considered to be engaging in 'industrial activity' . . ."). *See also supra*., Section D.1. In its current form, the Draft Permit invites arguments that stormwater discharges that are unmistakably industrial in nature yet nonetheless not expressly listed in Attachment A are not covered by the permit. As shown above, under Ninth Circuit precedent, the State Board acting on behalf of the EPA cannot exempt industrial stormwater discharges from NPDES regulation. *See, e.g., Brown*, 617 F.3d at 1194. Rather than inviting arguments that the permit excludes any industrial activities, the State Board should add language clarifying that any facilities engaged in any industrial activity are governed by the permit.

CCKA proposes that dischargers who conduct activities like those conducted by the businesses whose primary or secondary purposes would place them within the SIC Codes listed in 40 C.F.R. § 122.26(b)(14)(i) - (xi) would be subject to the General Permit. *See Brown*, 617 F.3d at 1191 (approving of Judge Patel's expansive construction in *Environmental Protection Information Center v. Pacific Lumber Co.*, 2003 U.S. Dist. LEXIS 25734, 2003 WL 25506817 (N.D. Cal. Oct. 14, 2003) of EPA's stormwater regulations so as to harmonize the regulation with the CWA's statutory mandates). Under this approach, 40 C.F.R. § 122.26(b)(14)'s recitation of SIC Codes should be read as merely providing illustrative examples of the types of industrial activities that warrant deeming a business subject to the General Permit. The Board should keep the list in Attachment A with an explanation stating that the categories and SIC codes set forth are examples of industrial activities covered by the Permit, and that the Permit is not limited to those SIC codes.

2. <u>The State Board Should Specify Other SIC Categories That Include Significant Pollution or are Plainly Industrial in Nature</u>.

In addition to making sure the list of SIC codes is illustrative rather than exhaustive, CCKA requests that the State Board add a number of additional SIC codes to the list that are plainly industrial in nature. Although specific monitoring results for these industry categories are not yet available, the activities engaged in at these facilities are similar to facilities in listed SIC codes, monitoring of which confirms their potential for discharging polluted storm water. CCKA recommends adding the following SIC Codes to Attachment A's list.

First, <u>SIC Code 5032</u>, which includes Brick, Stone, and Related Construction Materials, should be added. These facilities are defined as "[e]stablishments primarily engaged in the wholesale distribution of stone, cement, lime, construction sand, and gravel; brick (except refractory); asphalt and concrete mixtures; and concrete, stone, and structural clay products (other than refractories)." These facilities almost always involve outdoor storage of construction-related materials. Potential pollution from facilities engaged in bulk storage of these materials is indistinguishable from construction sites. Potential pollutants include TSS, pH, metals (either naturally occurring in the stored materials or from pigments uses to dye, for example, some clay products). Many of these facilities are midway points between a mining operation and a manufacturing facility, both of which are listed in the permit. For example, numerous aggregate and sand distribution facilities around the State are used to store quarried or mined materials for use by nearby cement plants. The potential pollutants from the storage and distribution facilities are the same pollutants already regulated at the quarry or mine site and the cement manufacturing facility. Of course, construction activities are governed by their own storm water permit. The distribution activities in SIC Code 5032 form an integral component of those industrial activities with similar, potential pollutants that should be specifically listed in the draft permit.

Similarly, a number of other bulk storage facilities involved in industry or storing and distributing materials that are known threats to California's waters should be specifically identified in the draft permit's list of facilities. SIC Code 5085 includes "[e]stablishments primarily engaged in the wholesale distribution of industrial supplies, not elsewhere classified," including for example, industrial sand. Like SIC Code 5032, where such supplies are stored outdoors, they pose similar pollution risks and should be covered by the general permit.

SIC Code 5052 includes facilities engaged in the wholesale distribution of "Coal and Other Minerals and Ores." This category includes "[e]stablishments primarily engaged in the wholesale distribution of coal and coke; copper, iron, lead, and other metallic ores, including precious metal ores; and crude nonmetallic minerals (including concentrates), except crude petroleum." For example, open air coke piles are found in different locations around the State. To the extent facilities in the State are engaged in wholesale distribution of copper, zinc, lead or other metals, given those metals propensity for mobilizing in storm water, such facilities should be specifically listed in the general permit.

Another category of wholesale distribution facilities that handle pollutants already known to pose a threat to California's waters are Farm Supplies Establishments – SIC Code 5191. SIC Code 5191 includes "[e]stablishments primarily engaged in the wholesale distribution of animal feeds, fertilizers, agricultural chemicals, pesticides, seeds, and other farm supplies, except grains. Especially in regard to those facilities engaged in wholesale distribution of agricultural chemicals, fertilizer and fertilizer materials, insecticides, pesticides, and phosphate rock, the storage and handling of these materials may pose threats of significant pollution discharges. Given that vast swaths of the Central Valley's waters as well as almost every creek in the Bay area already are identified as impaired by various pesticides or high nutrient levels, the need to make sure these wholesale facilities are not contributing to those impairments or other localized pollution appears self-evident.

Lumber yards also should be specifically listed in the permit. The pollutants associated with lumber mills or wood-treating facilities, including TSS, COD, copper and other metals. *See* Dep't of Toxic Substances Control, "Sampling and Analysis Study of Treated Wood (Draft)" (July 2008). SIC Code 5031 includes "[e]stablishments, with or without yards, primarily engaged in the wholesale distribution of rough, dressed, and finished lumber (but not timber); plywood; reconstituted wood fiber products; doors and windows and their frames (all materials); wood fencing; and other wood or metal millwork. For those facilities with yards, lumber is generally stored outside with heavy reliance on forklifts and trucks. Copper is likely leached from treated wood stored outdoors. Zinc and other metals will be found in oil dripping from forklifts and other vehicles. These facilities should be specifically listed in the permit.

Each of the above wholesale facilities is the last step in the industrial process to bring products to market. Given their link to the actual manufacturers and their generally larger size, these facilities are more industrial in nature than commercial. Given their potential pollution threats, they should be specifically listed in the general permit.

The general permit should include service stations, especially those engaged in vehicle maintenance and oil changing. The existing permit and draft permit already note the potential pollution coming off of maintenance and fueling areas of trucking facilities. The same is true for commercial gas stations. Gas stations are identified as SIC Code 5541. "Gasoline service stations primarily engaged in selling gasoline and lubricating oils. These establishments frequently sell other merchandise, such as tires, batteries, and other automobile parts, or perform minor repair work." SIC Code 5541. Every Basin Plan in the state prohibits any visual sheen on surface waters. It is a common site to observe oil stains and spills adjacent to garages and fueling areas at gas stations. The permit should specifically list these facilities.

Lastly, the draft permit identifies SIC Codes 40XX (except 4221-25) and 5171 as governed by the permit if they "have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations." Draft Permit, Att. A. In addition, the permit then limits its application to the portions of those transportation facilities involved in vehicle rehabilitation, mechanical repairs, painting, fueling and lubrication. All transportation facilities and all areas of such facilities should be included, not just those with fueling and maintenance activities. All of the transportation facilities listed in the SIC codes are industrial in scale. All storm water associated with those facilities, including portions of the facility used for parking vehicles, are associated with the industrial activity that occurs at the facility. Indeed, oil and grease as well as metals deposited on these sites are just as likely to come from the parked vehicles as any prescribed maintenance or fueling areas. Certainly with regard to trucking, railroads, and airports, each of these facilities is industrial in scale and involved in transporting bulk materials that are still part of industrial activity rather than the sale of a finished product.

E. BMPs Designed to Only a 10-Year, 24-Hour Storm Event Are Not BAT/BCT.

The permit proposes to establish a "Compliance Storm Event" as a 10-year, 24-hour storm event for TSS. Draft Permit, V.E; *Id.*, VIII.C.3. In addition, the permit proposes that "all treatment BMPs for any other pollutants shall be designed for no less than a 10-year, 24-hour storm event." *Id.* The Fact Sheet does not provide an explanation of the basis for the proposed storm events. CCKA agrees that the general permit should establish a specific compliance storm event that assures facilities' treatment facilities and BMPs are properly sized to address pollution in all but the largest storm events and that suspends numeric effluent limitations during such large storm events. However, this permit requirement also must be established based on the BAT and BCT criteria. Looking to the best performing facilities throughout the state, the most effective and achievable storm design for such facilities is a 25-year, 24-hour storm event.

It is not clear to CCKA why the proposed permit differentiates between TSS and other pollutants. Presumably, staff's proposal is based on a belief that addressing TSS may not require BMPs or treatment designed to accommodate a certain size storm event. CCKA does not believe this is the case. Facilities should be required to apply BMPs – including treatment where necessary – to all flows from its facility up to a certain size storm event.

Members of CCKA and CSPA have direct experience with this permit component, having negotiated a number of settlements with facilities throughout the State which include a compliance storm event. The consent decrees for several of the best-performing facilities establish a 25-year, 24-hour storm event as the minimum design standard for BMPs and treatment equipment. *See, e.g. California Sportfishing Protection Alliance v. Sims Group U.S.A. Corporation*, Case No. 2:05-CV-02382-GEB-DAD, Consent Decree (March 29, 2007) (providing for a retention and infiltration system at scrap metal yard capable of handling a 25-year/24-hour storm); *California Sportfishing Protection Alliance v. Oldcastle Precast, Inc.*, Case No. 2:07-CV-02534 WBS JFM (Settlement Agreement) (Dec. 3, 2008) (storm water retention system designed to 25-year/24-hour storm event). In addition, storm water treatment systems – including non-industrial facilities – have been installed or proposed in the Tahoe Basin that will capture greater than 50-year storm events. *See, e.g. http://www.boulderbayresort.com/pdf/ TMDL_Reduction_Plan.pdf* (treatment and infiltration of 100-Year, 1-Hour storm). *See also* California Regional Board Water Quality Control Board, Lahontan Region, Water Quality Control Plan, p. 5.6-1 (even for non-industrial storm water dischargers, "[t]he 'design storm' for stormwater control facilities in the Lake Tahoe Basin is the 20-year, 1-hour storm").

A 25-year, 24-hour compliance storm event is reasonably achievable. In its hearing comments, CASQA appears to correlate the proposed compliance storm event as directly proportionate to the size of treatment systems that may be necessary for some facilities to comply with numeric action levels (NALs) and NELs. *See* CASQA Testimony, pp. 34-35. CASQA's claim fails to account for the fact that any storm event standard would require treatment equipment and BMPs to be sized proportionate only to the area of a facility actually discharging pollutants. A true BAT-based compliance storm event would encourage every facility to minimize the exposure of pollution sources to rain in the first place. No matter how sophisticated a treatment system may be, locating pollution sources indoors or under roofing will always be more effective. The smaller the facility, the more feasible roofing or enclosures become. Even if complete covering is not possible, a facility may still cover its more significant pollution sources. Thus, although the facility may be required to achieve NALs and NELs for the entire facility for storm events less than or equal to the compliance event, even where treatment is necessary to achieve NALs or NELs, that treatment would be limited to a portion of the facility, reducing its size accordingly. Where a facility has routed cleaner storm water away from its pollution sources or moved those sources undercover, where treatment is necessary to achieve the NALs and NELs, it would be focused on a smaller area of the facility.

For those facilities where it is infeasible to move all of its pollution sources indoors or under roofing, the 25-year, 24-hour compliance storm event is still feasible. Even assuming the facility must install a full media treatment system, the facility may limit the size of the treatment unit by providing rainwater storage facilities consistent with the compliance storm event size.

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F. The Permit Should Not Contain Any Exclusions Based upon the Implementation Of LID or Other Measures That May Not Prove Effective in Most Industrial Contexts.

The State Board should not carve out an exception for facilities using low-impact development (LID)/green infrastructure (GI). The Fact Sheet proposes a vague process for granting exclusions from all or part of the permit based on the implementation of LID and GI design features. Fact Sheet, p. 35. The Fact Sheet claims that "[t]he best way to minimize pollutants and prevent pollution problems associated with storm water runoff from industrial activities is to design (or redesign) the facility using low impact development (LID) or green infrastructure (GI) techniques." *Id.*

To begin, CCKA supports the use of LID, especially in development and redevelopment projects. CCKA agrees with the California Ocean Protection Council, for instance, which has strongly endorsed LID last by "resolv[ing] to promote the policy that new developments and redevelopments should be designed consistent with LID principles" because "LID is a practicable and superior approach ... to minimize and mitigate increases in runoff and runoff pollutants and the resulting impacts on downstream uses, coastal resources and communities." California Ocean Protection Council *Resolution of the California Ocean Protection Council Regarding Low Impact Development*, p. 2 (May 15, 2008).

In order to justify an exception to the permit's requirements based on an industrial facilities use of LID/GI techniques, however, the State Board's decision must be accompanied by findings that allow the court reviewing the order or decision to "bridge the analytic gap between the raw evidence and ultimate decision or order." *Topanga Ass'n for a Scenic Cmty. v. County of Los Angeles* (1974) 11 Cal.3d 506, 515. Currently, the Permit's proposal to allow some form of exemptions for facilities claiming to have installed effective LID/GI measures is not supported by necessary evidence, and the Board has failed to explain its decision.

While LID/GI techniques can have a place in some properly-designed facilities, their use does not translate to excluding BMPs from the permit. For example, to the extent LID refers to infiltration basins, such features should be monitored and controlled within the proposed permit or with individual permits. Infiltration is not the same as treatment. Simply allowing polluted water to flow into the ground can end up transferring the pollution problem to groundwater. Such BMPs normally would include pretreatment and, unless treated to NELs, should involve as much or more monitoring than discharges to surface water, including lysimeter monitoring.

It also is not clear from which of the permit's proposed requirements such facilities would be relieved. If it is the monitoring requirements that staff has in mind, eliminating those provisions would simply make it unable for the State Board to determine with any objectivity whether the LID and GI features are effective at reducing the industrial facility's storm water pollutants. If staff is thinking the exception would provide relief from the numeric limitations, that approach would entirely defeat the permit's purpose of reducing storm water to levels based on BAT and complying with water quality standards. Even a facility incorporating LID and GI cannot be allowed to release pollutants above the applicable BAT/BCT limitations and still be in compliance with the CWA. Attempting to use the industrial permit as a vehicle to promote LID and GI is an effort to fit a square peg in a round hole. Given the resource limitations of the State and regional boards – especially when it comes to implementing the stormwater programs – it is entirely unrealistic for the State Board to burden either its staff or regional board staff with another exclusion process. The State Board should leave these policy inducements to efforts outside of the permit requirements.

A true BAT-based permit with numeric effluent limitations driving the implementation of treatment facilities, aggressive roofing and coverage and other effective BMPs, will encourage those facilities predisposed to more holistic design approaches to consider and apply LID and GI where it may prove effective. To the extent a facility has sufficient space and the intensity of its operations may allow the effective use of LIDs or GIs, use of those measures still does not provide any rationale for excluding facilities from the permit's monitoring and reporting requirements or, in particular, numeric effluent limitations.

G. The Permit's Proposed Monitoring Scheme Should Be Strengthened.

A rational and effective monitoring program is absolutely critical if the proposed permit is going to improve on the gaps in the existing permit. Although some of the draft permit's monitoring proposals appear well-intentioned, CCKA believes the monitoring requirements need to be adjusted to address the following concerns.

1. Quarterly Sampling Scheme Should Be Adjusted for the Majority of the State Where Essentially No or Very Little Rain Falls Outside of the Wet Season.

CCKA disagrees with the Draft Permit's proposal to require all dischargers to collect storm water samples from a qualifying storm event during each calendar quarter. Draft Permit, ¶ X(A). This ignores the reality of annual rainfall patterns throughout California. The vast majority of California, including the geographic regions where industrial dischargers are concentrated, experiences a Mediterranean climate characterized by wet winters and dry summers.[7] There is hardly any rain throughout the entire state outside of the wet season as defined by the current General Permit (June through September).[8] The sampling scheme proposed in the Draft Permit would cover few qualifying storm events in the 2nd Quarter (April, May, June) and close to zero during the 3rd Quarter (July, August, September). *See id.* CCKA thus proposes that the Board continue the current policy of requiring storm water sampling

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[7] See http://iaspub.epa.gov/urbanbmp/index.jsp?action=bmpSearch, a site maintained by the EPA which helps stormwater managers identify BMPs based partially on a particular ecoregion. The map shows that the majority of California is typified as "Mediterranean California." *See* The New Oxford American Dictionary (Oxford Univ. Press 2d ed.), p. 1055 (defining "Mediterranean climate" as "a climate distinguished by warm, wet winters under prevailing westerly winds and calm, hot, dry summers, as is characteristic of the Mediterranean region and parts of California, Chile, South Africa, and SW Australia").

[8] See http://www.emwd.org/learning/rainfall/cal_rain_y.html which presents a comparison of monthly rainfall compiled by the National Climatic Data Center for rainfall from a thirty-year period throughout the entire state.

during the wet season as defined from October 1 through May 30. General Permit, ¶¶ B(4)(a), B(5)(a). ***CCKA agrees with the Board's proposal to require four storm water sampling events per year, but that the year must be limited to the confines of the wet season, so that the four sampling events each provide useful information***. For those regions of the state that regularly experience meaningful rainfall throughout the entire year, a quarterly sampling scheme would be useful—but only with respect to those geographic regions.

2. The Expectation that All Facilities Will Properly Maintain and Review an On-Site Rainfall Measurement Device Is Overly Optimistic – Monitoring Should Be Conducted When Discharges Are Occurring Based on Government Rainfall Devices.

To best meet the goal of the proposed monitoring program of helping dischargers evaluate BMP effectiveness by determining whether pollutants are being discharged, the permit must contain stronger provisions to ensure that dischargers sample the requisite amount of discharges – namely to take samples when discharges are occurring. The qualifying events and reporting specifications in the current permit have given dischargers a loophole to easily bypass the sampling requirements. Specifically, CCKA has reviewed hundreds of Annual Reports where dischargers fail to conduct any monthly visual observations or take any storm water discharge samples simply by saying that there were no qualifying events. Modifying the definition of qualifying storm events to require dischargers to maintain an onsite rainfall measurement device and conduct sampling based on specific measuring of rainfall will continue this pattern; it is a recipe for failure. Draft Permit, ¶ X(E)(1).

Official government rainfall measurement devices and associated hourly rain data are readily available near nearly every industrial site.[9] Requiring discharges to maintain their own rainfall measurement devices would be complicated to track, unreliable, rife with potential for human error or tampering, onerous for many smaller dischargers that have fewer employees, and duplicative of data easily obtained from established weather stations. Moreover, besides requiring dischargers to employ them, the draft permit and Fact Sheet do not offer any further guidance or comments regarding rainfall measurement devices, exacerbating the confusion. Draft Permit, ¶ X(E)(1); Fact Sheet, p.6.

CCKA believes that requiring dischargers to use onsite-measured rainfall data to determine what constitutes a qualifying storm event is a layer of abstraction that would interfere with the required sampling of storm water discharges – the primary way that dischargers can determine whether pollutants are being discharged. Rather, dischargers should sample storm water and conduct visual observations when discharges are occurring. Sections X.E.1 and X.E.2 of the draft permit should be changed to read: "A qualifying storm event is a discharge of storm water that occurs 1. From a storm event that has produced any discharge of storm water from the facility ~~a minimum of 1/4 inch of rainfall as measured by an on-site rainfall measurement device~~,

[9] *See e.g.* http://www.ipm.ucdavis.edu/WEATHER/SITES/, a University of California site that provides links to access precipitation and other climate data from weather stations in every county in California.

and 2. Dry weather shall be defined as two consecutive days (48 hours) ~~of combined rainfall of less than 1/8 inch as measured by the closest an on-site rainfall measurement device or rain dates~~ where no discharges have occurred from the facility." Like the current General Permit, if there are discharges occurring preceded by two consecutive days without a discharge, then a storm event would be considered qualifying.

To remedy the potential for dischargers to abuse the Permit and avoid taking samples by simply writing on their Annual Reports that there were no qualifying events, CCKA proposes that whenever dischargers claim there are no qualifying storm events during a month, they must submit all rainfall data derived from nearby weather stations to corroborate that no rain occurred in the area.

3. <u>Increasing Qualifying Storm Events by Only Requiring That an Event Be Preceded by Two Consecutive Days of Dry Weather Is Warranted; However, No Previous Dry Days Should Be Required after March 1 of Each Wet Season.</u>

CCKA agrees that a qualifying storm event should be defined as being preceded by two consecutive days of dry weather (when the facility is operating), rather than three days as currently required. Draft Permit, X.E.2. However, in order to ensure that a facility collects four samples during the rainy season, after March 1 of each wet season, the definition should be amended to eliminate the requirement of two dry days prior to a storm event. As demonstrated above, far less rainfall is observed throughout the state during March through May. To meet the goal of monitoring discharges for pollutants, CCKA's proposal would increase the likelihood that a discharger will monitor and sample discharges during this latter portion of the wet season, when rain is less likely or may only come in a few spurts of consecutive days.

4. <u>CCKA Agrees That the State Board Should Eliminate the Group Monitoring Provisions.</u>

CCKA agrees that group monitoring would not comport with the improved training baseline in the Draft Permit and would allow many facilities to avoid the sampling and analysis that is the key method to determine compliance with BAT/BCT. Fact Sheet, p. 6. Group monitoring prevents many dischargers from having to demonstrate their own performance. CCKA has observed many facilities that are part of group monitoring plans that appear contaminated and lacking in crucial BMPs. Most of these dischargers have conducted little to no storm water sampling, and thus it is impossible to hold them accountable to a lack of BMPs that approximate BAT/BCT. The group monitoring provision has thus interfered with water quality protection; CCKA agrees that it should be eliminated.

5. <u>The State Board Needs to Expand the List of Parameters to Address All of the Pollutants Likely to Be Discharged from Certain Facilities.</u>

CCKA has regularly reviewed data from dischargers in certain SIC categories which consistently discharge storm water containing additional parameters than those listed in Table 2 of the Draft Permit, which mirrors Table XX of the current General Permit. For example, dischargers in the SIC Category 4953 – "Landfills & Land Application Facilities" – are required to monitor only for the additional parameter of iron. However, CCKA has observed at least three dischargers in SIC Category 4953 who have regularly discharged parameters other than iron in excess of the NAL values in Table 4 of the Draft Permit. Keller Canyon Landfill, in Pittsburg, has regularly observed excess levels of chemical oxygen demand.[10] West Contra Costa Sanitary Landfill, in Richmond, has regularly observed excess levels of copper, lead, zinc, and chemical oxygen demand.[11] Central Valley Waste Services, in Lodi, has regularly observed excess levels of zinc, aluminum, and chemical oxygen demand.[12] Therefore, at a minimum, dischargers in SIC code 4953 should be additionally monitoring for chemical oxygen demand, zinc, copper, aluminum, and lead.

Facilities within SIC Code 3399, classified as "Miscellaneous Primary Metal Products," should be required to monitor additional metals. Although not as common a category as SIC Code 4953, the one facility that the groups have encountered measured levels of aluminum, iron, zinc and manganese above EPA's benchmark values. *See* Valimet, Inc., WDID 5S391000261, 2009-10 Annual Report (June 28, 2010).

The existing permit does not specify any additional parameters for the "Ship and Boat Building and Repairing" –SIC Code 3732. The Waterkeepers and CSPA have encountered a number of boat yards, all of which consistently measure several metals in their storm water discharges, including high levels of copper, lead, zinc. The presence of these metals is not surprising. Copper and zinc are both primary ingredients in boat hull paints. Lead also is common in hulls and keels. Because boat construction, maintenance, and repair is virtually certain to generate these pollutants on a regular basis, a number of existing stormwater permittees actively monitor for copper, lead, and zinc in their stormwater discharges, pursuant to the existing permit's requirement to "Collect and analyze samples of storm water . . . pollutants which are likely to be present in storm water discharges in significant quantities." Annual reports showing Region 2 permittees currently sampling for copper, lead, or zinc include:

- BAE, San Francisco: copper, lead, zinc (2009, 2010)
- Bay Marine, Richmond: copper, lead, zinc (2009, 2010)
- KKMI, Sausalito: copper, lead, zinc (2010)
- KKMI, Pt. Richmond: copper, lead, zinc (2009, 2010)
- Nelson's Marine, Alameda: copper, lead, zinc (2009, 2010)
- San Rafael Yacht Harbor: zinc (2009, 2010)

While these facilities did comply with the permit by sampling for copper, lead, and zinc, the 14 other boat yards in Region 2 did not. Moreover, San Francisco Baykeeper has taken the following samples from other area boat yards showing high levels of copper, lead, and zinc:

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[10] WDID 207S006887. See 2005-2006, 2006-2007 Annual Reports. Note that, likely as a result of additional BMPs worked out with CSPA, the most recent annual report for this facility shows COD levels have reduced to below the draft permit's proposed NAL and NEL.

[11] WDID 207I005532. See 2009-2010 Annual Report.

[12] WDID 5S39I002193. See 2008-2009, 2009-2010 Annual Reports.

- December 13, 2010: Cu 68,000 ug/L, Pb 2,600 ug/L, Zn 15,000 ug/L
- December 14, 2010: Cu 1,100 ug/L, Pb 34 ug/L, Zn 260 ug/L
- December 14, 2010: Cu 7700 ug/L, Pb 810 ug/L, Zn 780 ug/L

Because widespread evidence shows that copper, lead, and zinc are likely to be present in significant quantities in stormwater discharges from boat yards, each boat yard permittee must be required to monitor for these pollutants.

In addition, the Permit should specify that refuse vehicle maintenance and storage facilities, refuse container maintenance and storage facilities, and refuse transfer facilities should be required to sample storm water discharges from their facilities for pollutants associated with operations at their facilities, including, in addition to the basic parameters: E. coli, fecal coliform, total coliform, BOD, COD, aluminum, copper and zinc. These facilities are usually identified under SIC Code 5093. On occasion, some facilities with these activities may list SIC Code 4212. The presence of coliform in refuse containers is common from disposal of bacterial sources of waste. The presence of trucks, metal bins, and fork lifts and other equipment that frequently drip oil and other lubricant or expose metal to storm water also will frequently result in detectable levels of aluminum, copper, zinc and possibly other metals at these facilities.

One last category that the groups have come across which should include additional specified monitoring parameters is SIC Code 3273 – "Concrete, Gypsum, and Plaster Products (Except Lime)." The current permit only requires iron in addition to the basic parameters. Although the groups have not encountered a lot of these types of facilities, the one that CSPA has worked with measured high levels of aluminum and N+N (Nitrate & Nitrite Nitrogen). *See* Syar Industries, Inc., Lake Herman, WDID 248I005112, 2007-2008 Annual Report & 2008-2009 Annual Report.

6. <u>No Reductions in Storm Water Sampling Frequency Should Be Included in the Permit.</u>

CCKA refutes the Board's claim that a discharger whose samples are in compliance for ten consecutive quarters with qualifying events would not pose a significant threat to water quality. Fact Sheet, pp. 28-29. Through CCKA's and CSPA's close review of data from hundreds of dischargers, it has observed a number of instances where dischargers have had consecutive years of storm water sampling with all pollutant levels in compliance and then suddenly began observing discharges with high levels of pollutants. Significantly, the sampling event with the exceedances was not always the first sample of the wet season (*i.e.* the first discharge after October 1). With frequent inconsistencies in discharges and anomalies in sampling, the first sample may not be representative of the actual level of pollutants coming off a particular facility. Thus, the Board's proposed sampling reduction scheme of permitting dischargers to sample only the first qualifying event after October 1 annually could permit a discharger to continue negatively impacting water quality while slipping under the radar of the Permit's monitoring scheme.

CCKA sees no usefulness in the reduced sampling proposal – annual sampling would not demonstrate anything meaningful in terms of water quality protection and at best would allow dischargers a way to avoid a requirement to take affirmative action regarding the actual impact of their storm water discharges. Conditions and practices frequently change at industrial facilities, and CCKA's proposed requirement to collect four annual samples of storm water discharges during the rainy season (*see* Section G.1 *supra*) would not be difficult or expensive for facilities that are already required to have developed detailed monitoring programs with qualified personnel to implement them. Moreover, as demonstrated above in Section G.1, there is only a small likelihood that there would be qualifying storm events in each quarter (there is usually no rain observed during the summer months, for example), so there is little potential that any discharger would experience ten consecutive quarters with qualifying events and hence qualify for this reduction.

7. <u>The Permit Should Not Allow Monitoring from Separate Drainages at a Facility to Be Combined.</u>

CCKA opposes the Board's proposal for combining samples from separate drainages. Such combinations would not be representative of discharge quality and would only serve to mask the potential pollutants contained in storm water discharges. Draft Permit, ¶ XII(B). The proposal does not take into account the size of a drainage area, whereby excess levels of pollutants from a larger drainage area could be mixed and watered down with cleaner and smaller drainages. Moreover, in some instances, different drainages may be flowing towards different water bodies, and the ability to measure potential downstream effects of the particular discharges would vanish in this scheme. Just as dischargers are required to visually monitor each discharge's location and to observe all drainage areas prior to an anticipated storm event, so should they be required to sample and analyze the discharges from each drainage area. That is the best method to ensure water quality protection.

8. <u>Photographs Documenting Implementation of Physical BMPs Should Be Required to Be Submitted with Each Annual Report.</u>

CCKA proposes that dischargers should be required to take representative photographs of all physical BMPs and include them as attachments to their annual reports. CCKA has reviewed numerous Annual Reports where a discharger indicated that it was updating their facilities with certain BMPs one year, only to report that it was planning to put the same BMPs in the following year's Annual Report. A photograph requirement would keep dischargers honest with respect to the physical BMPs being installed at their facility. It would be simple for the QSP or other facility personnel to take such pictures as part of their regular visual monitoring. Further, this would help relieve the burden on the Regional Boards who are tasked with reviewing data from hundreds of dischargers and have limited resources to conduct physical investigations.

9. <u>Sampling Should Not Be Limited to "Scheduled Facility Operating Hours."</u>

The draft permit continues the current permit's provision that no samples need be taken outside of a facility's "scheduled facility operating hours." Draft Permit, § X.F (sampling "only applies during scheduled facility operating hours"). CCKA proposes that this sampling exception be deleted from the permit.

CCKA and CSPA are frequently surprised at the number of rain events that occur outside of a facility's scheduled operating hours. Many facilities interpret this requirement to those hours when the facility is open to the public, rather than the hours employees are actually at the facility. The consistent absence of monitoring data in some facility's files suggested on occasion that the facility's scheduled hours fluctuated with the rain forecasts. The operating hours exception is one of the leading excuses that facilities have to avoid sampling their discharges. Staff attempts to address this shortcoming by including on-site rainfall measurements and requiring samples within four hours of a facility's determination that a qualifying storm event occurred. Draft Permit, § X.F & n. 3. However, as noted above, CCKA is concerned that the on-site rain gauge proposal will not function as smoothly as staff may desire.

Given that every facility has identified specific personnel or contractors to conduct the monitoring required by the permit, CCKA does not see any logistical reason why the facilities cannot arrange to have samples pulled whenever a significant rain event occurs, even outside of the facility's scheduled operating hours. Rather than have a employees or consultants on call, a facility may choose to install automatic samplers to cover those times where no employees are at a facility.

H. CCKA Agrees with the Proposed Storm Event Design for No Discharge Certification, but the No Discharge Exclusion Should Be Verified Through Appropriate Photographic and Visual Monitoring in Addition to Certification.

The draft permit provides for facilities to submit annual no discharge certifications that would relieve those facilities from the permit's discharge and monitoring requirements. Certification could be submitted by "[d]ischargers who have facilities designed to contain a 100 year 24-hour storm event and three (3) consecutive 20 year 24 hour storm events in a month are not found to have a potential to discharge pollutants, and therefore pose no threat to water quality." Draft Permit, § XII. CCKA believes the second prong of this no exposure standard should be adjusted to require three consecutive 25-year, 24 hour storm events in a month, consistent with the BAT storm design discussed above. In addition, such facilities should still be required to conduct visual monitoring backed up with photographs demonstrating that the containment features are not discharging any stormwater.

I. The State Board Should Clarify That the 90-day Public Comment Period for New Coverage Notices Does Not Alter the Federal Prerequisite for a Citizen to Bring an Enforcement Action Under the CWA.

The general permit is enforceable by third parties pursuant to the Clean Water Act's citizen suit provision. 33 U.S.C. § 1365. The State Board has no authority to alter the 60-day notice procedure established by Congress in the CWA, including requiring comments on SWPPPs or other implementation components prior to a citizen filing a citizen enforcement action. Currently, given the lack of staffing at the regional boards in the storm water program, third parties play a critical role in implementing and enforcing the existing general permit. CCKA's ability to assist the Board in enforcing and implementing the permit relies upon the federal citizen suit provision. CCKA would like to assure that any procedures proposed by the Board for the public to comment on facility's compliance with the permit do not inadvertently undermine or place road blocks in front of the federal citizen suit provision or their existing rights to petition the boards.

The State Board should add language to the Fact Sheet or proposed permit making it clear that, should a citizen fail to provide comments during the 90-day comment period on new coverage notices, the absence of comments does not waive that person's ability to petition a regional board at any time to question a facility's implementation of and compliance with the permit. Additional permit language also should make it clear that, by not submitting comments, an individual does not waive any objections they may have to the facility's SWPPP. The State Board also should make it clear that, by providing the initial comment period, the permit does not intend to alter in any way the notice requirements of the CWA.

J. Facilities Should Be Required to Submit Revised SWPPPs to SMARTS, and All Documents Submitted to SMARTS Must Be Accessible Via SMARTs to the Public.

The State Board must assure that all key documents required by the permit are posted to SMARTs and available to the public. In addition to the initial SWPPP, notice of intent package, subsequent sampling results, annual reports and evaluations, dischargers must be required to submit to SMARTS any updated SWPPPs within a specified number of days from the date of revision. If the current SWPPP is unavailable electronically, the public's right to question its validity either before a regional board or as part of a citizen enforcement action is seriously undermined. Without ready access to the current SWPPP, citizens "would be without means to enforce the terms of the nutrient management plans because they lack access to those terms. This is unacceptable." *Waterkeeper Alliance, Inc. v. United States EPA*, 399 F.3d 486, 503-504 (2d Cir. 2005). Although, unlike the nutrient management plans in *Waterkeepers*, the State Board's proposed permit includes numeric effluent limitations and more specific details of the SWPPP that, together, do not leave the necessary measures entirely to the discretion of the dischargers, a facility's SWPPP will nevertheless provide additional measures, some of which may be unique to a facility. Like any other permit requirement, those fine-tuned measures should be known to the regional boards and the public and should be readily enforceable.

The permit also should specify that all documents submitted to SMARTS, as well as any notices of violations or other enforcement-related documents, are posted ***publicly***. Currently, the permit provides for the dischargers to submit various documents electronically, but does not require that the State and regional boards make those documents available for public review on SMARTS. By expressly requiring public posting online, which should be straightforward for electronically submitted documents, staff will save resources currently expended by staff responding to numerous Public Records Act requests or otherwise fielding document requests from the public.

K. The Recommended Permit Amendments Are Essential to Ensure Clarity and Equity of Implementation and Enforcement.

As described in CCKA's comment letter to the State Water Board dated February 17, 2005, and as is still eminently true today, clear permit language is essential in order to ensure meaningful implementation and full, fair enforcement. "[O]ne of the greatest difficulties faced by enforcement staff is complicated, ambiguous and/or poorly written permits . . . ." Memorandum from Terry Tamminen, Cal/EPA to Cal/EPA BDOs, "Enforcement Initiative" (Nov. 30, 2004). The State Water Board's most recent Enforcement Report notes that "[m]ost non-reporting violations in the storm water program are discovered through site inspections," but that "[e]nsuring that . . . controls are adequate for the nearly 25,000 permitted stormwater permittees would require a large field presence" – which is unlikely to surface in the near future. State Water Resources Control Board, "Annual Enforcement Report: 2009," pp. 35, 72 (May 2010).)

The numbers in the State Water Board's most recent Annual Enforcement Report illustrate critical need for the State Board to adopt staff's proposed NELs without the delays embodies in the corrective action levels. Of the 9,476 industrial facilities reviewed in the report, only 5% were inspected – translating to 20 years on average to visit each of them only once (assuming no staff cuts). *Id.* at 34. This process would take significantly longer in some regions; for example, only 1% of regulated facilities were inspected in Regions 3, 5 South, 7 and 9. *Id.*

Of the 503 Facilities inspected statewide in 2009, enforcement staff found 1,132 violations, and 1,085 of these received enforcement action, or 2.16 enforcement actions per inspection on average. *Id.* at 36. Based on this rate of enforcement, if all of the 9,476 facilities were inspected, staff would be acting on approximately 20,468 violations annually. Given that only 1,085 violations that occurred actually received enforcement (the others were overwhelmingly ignored because of a lack of staff to do the inspections required), only about 5% of likely violations received needed enforcement action - which means that ***95% of enforceable violations go ignored each year on average.*** Even where enforcement occurred, such actions were generally weak. Specifically, there were no recorded time schedule orders, cleanup and abatement orders, 13267 orders, or cease and desist orders, and there were only 15 penalty actions total. Finally, the report concludes that given the lack of site inspections, "most of the violations noted are reporting violations" – but ***fully a quarter of the regulated facilities did not submit even their required annual monitoring reports.*** *Id.* at 33, 35. This demonstrates the spill-over of a lack of visible, meaningful enforcement efforts to other aspects of facilities' required operations.

Rather than futilely relying on unavailable PYs to enforce the proposed Permit's unnecessarily vague provisions, CCKA recommends that the State Board revise the proposed Permit to, among other things, delete the numerous proposed exceptions and unnecessary corrective action layers and adopt the proposed NELs without delay to provide greater certainty to regulated entities, the regulators and the public. In this way, the industrial stormwater permit would more closely reflect the NPDES permits of other facilities, "where the majority of discharge violations are found through a review of SMRs submitted by the dischargers," rather than through staff-intensive site inspections. *Id.* at 35.

CONCLUSION

Historically, industrial facilities have been allowed to "clean" their facilities with rain events by simply letting storm water direct their pollutants into the nearest drain or stream. Although the existing permit has made progress in re-educating industrial facilities to understand that they are legally responsible for preventing discharges of polluted storm water, many facilities still have not implemented storm water controls commensurate with the levels of pollution that they discharge into the public's waters. Staff's proposal has done an admirable job at addressing many of the shortcomings being experienced under the existing general permit. With the above changes outlined in this comment letter, CCKA believes that the new general permit would be able to achieve the goals of a streamlined permit that would be clear and enforceable, and that would assure that industrial facilities' storm water discharges contribute to achieving, rather than violating, the water quality standards for California's rivers, streams and ocean waters. Thank you.

Sincerely,

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Enclosures:

- Letter from Matthew Hagemann to Michael Lozeau, "Comments on the Draft California NPDES Industrial General Permit" (April 28, 2011)
- Matthew Hagemann Curriculum Vitae
- DTSC, "Sampling and Analysis Study of Treated Wood (Draft)" (July 2008)
- BAE Systems, San Francisco Ship Repair, "Annual Report for Storm Water Discharges Associated with Industrial Activities" (2009-10)
- Syar Industries, Inc., Lake Herman Quarry, "Annual Report for Storm Water Discharges Associated with Industrial Activities" (2007-08)
- Syar Industries, Inc., Lake Herman Quarry, "Annual Report for Storm Water Discharges Associated with Industrial Activities" (2008-09)
- Valimet, Inc., "Annual Report for Storm Water Discharges Associated with Industrial Activities" (2009-10)

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April 28, 2011

Mr. Michael Lozeau
Lozeau | Drury LLP
1516 Oak Street
Alameda, California 94501

Subject: Comments on the Draft California NPDES Industrial General Permit

Dear Mr. Lozeau:

We have reviewed the California 2011 Draft Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for the Discharge of Storm Water Associated with Industrial Activities (Industrial General Permit) and have prepared the following comments on the issue of stormwater treatment and the achievability of the proposed numeric effluent limitations.

The Industrial General Permit establishes numeric action levels (NALs) for constituents of stormwater discharge in Table 4 (p. 34). Under the draft, the NALs become a technology-based numeric effluent limitation (NEL) if Corrective Action Level 3 is triggered. An exceedance of the daily average of an NEL is a violation of the Industrial General Permit (p. 15).

We believe the proposed NELs can be reliably achieved using available best management practices and treatment technology and concur with State Water Board staff who state (Fact Sheet, p. 8):

> …[i]t is the best professional judgment (BPJ) of the State Water Board staff that dischargers employing BAT [best available technology economically achievable] and BCT [best conventional pollutant control technology] can reduce the pollutants in their storm water effluent to achieve concentrations at or below the NALs.

The NELs are limits that are BAT based; that is, the NELs can be achieved with use of effective source control and treatment best management practices (BMPs). With use of effective BMPs and with use of stormwater treatment systems, where needed, we believe NELs can be consistently and reasonably achieved.

We have obtained and reviewed data from a leading technology provider, StormwateRx, who manufactures and installs stormwater treatment systems. The data we obtained (Attachment 1), include all data from all facilities where the StormwateRx systems have been installed in California, Oregon and Washington. (Note that Attachment 1 contains the data submittal from StormwateRx as well as Adobe pdf files of a spreadsheet and charts we created from the data.) Facility sectors where the StormwateRx systems were installed include: boatyards, scrapyards (ferrous and non-ferrous), galvanizing facilities, plastic fabrication, a power plant, a shipyard and trucking facilities. We attempted to obtain data from other technology providers but were unable to secure all-inclusive data sets that would cover a range of facilities and a range of site conditions.

A complete StormwateRx treatment train includes an oil-water separator (Clara), a media filtration step (Aquip) and a polishing stage (Purus) (see http://www.stormwaterx.com). Most facilities for which data were obtained include one or two of these components; for example, Clara and Aquip or Aquip and Purus. Only one facility for which data were obtained, a power plant, included a full three-stage treatment train. (Please note: facilities may have installed oil-water separators from other vendors.)

Our review of the StormwateRx data shows that best performing facilities in each of the sectors already achieve or approach the NELs. Where NELs are not currently achieved, we believe that with more aggressive source control BMPs and with regular maintenance, the best performers of even the highly polluted metals sources included in the data set can reasonably be expected to achieve the proposed NELs.

The data submitted by StormwateRx represent facilities with extremely high levels of heavy metals (namely copper, lead and zinc) in stormwater runoff. Influent copper, lead and zinc concentrations each routinely exceeded 1,000 ug/L at the facilities represented in the data that are presented in Attachment 1. These concentrations compare to median values at commercial facilities which were reported at 29 µg/L, 104 µg/L, and 226 µg/L for copper, lead, and zinc, respectively in a comprehensive U.S. EPA study of urban runoff.[1] A comprehensive study of stormwater at permitted industrial facilities in the State of Washington found median concentrations of copper, lead, and zinc of 22,

[1] http://water.epa.gov/scitech/wastetech/guide/stormwater/upload/2006_10_31_guide_stormwater_usw_b.pdf

12 and 139 ug/L respectively.[2] The median values were derived from a review of over a thousand data points for each of the contaminants (copper, lead and zinc).

The results of both studies are well below influent concentrations of the StormwateRx data; therefore, we believe that if these facilities, with significantly elevated concentrations of metals, can achieve NELs through use of this technology, then other less-contaminated runoff can routinely and reasonable achieve the NELs. For those sites where metals concentrations are not as elevated, achieving NELs is a relatively simple (and inexpensive) matter of implementing effective source control BMPs including cover from rainfall and installation of treatment strategies to include velocity separators, inlet filtration and vegetated swales, for example.

The data that were obtained from StormwateRx were comprehensive, i.e., none were redacted, and reflect only real-world conditions. In most cases, influent concentrations are higher than those which would be expected at the vast majority of industrial facilities covered under the Industrial General Permit. No lab or pilot-study data were considered in our review, data which we feel would be unreliable because discharge rates and controlled influent concentrations may not reflect field conditions.

Data obtained from StormwateRx show the following results:

Boatyards (all facilities installed only Aquip systems):

- NELs were achieved for lead and zinc at four of five facilities.
- Copper concentrations were reduced significantly using only the media filtration (Aquip) systems.

Ferrous Scrapyards (all facilities installed only Aquip systems):

- Lead effluent concentrations achieved the NELs
- Average copper and zinc influent concentrations were reduced 94% and 92% respectively.

Non-Ferrous Scrapyards (all facilities installed only Aquip systems)

- Led and zinc NELs achieved at three of five facilities
- Average influent copper and zinc concentrations were reduced 89% and 98% respectively.

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[2] Herrera Environmental Consultant, 2006. Evaluation of Monitoring Data from General NPDES Permits for Industrial and Construction Stormwater (Attachment 2).

Galvanizing Facilities (facilities installed Aquip and Aquip + Purus systems)

- At two facilities where the Aquip +Purus systems were installed, the effluent levels for metals discharged from the Purus unit were reduced to below the NEL.

Power Plant (installed Clara + Aquip + Purus systems)

- Zinc reduced below NAL after Purus system.

Shipyards (all facilities installed only Aquip systems)

- Copper, lead and zinc reduced below NELs at one of three facilities.

Trucking Facilities

- Copper, lead and zinc achieved NELs.

The data presented in Attachment 1 show that NELs were achieved at those sites where the full treatment train (the Clara, Aquip, and Purus) was implemented at the power plant and at the two trucking facilities where the Aquip and Purus systems were installed (note: the trucking facilities installed oil-water separator systems provided by other vendors).

With implementation of a full treatment train or where the polishing stage (Purus) is installed, we believe the StormwateRx data show that achieving NELs is feasible for the full range of industrial facilities covered under the proposed Industrial General Permit. As stated above, it is important to note that the sites for which data was obtained have generally high concentrations of heavy metals in their influent, concentrations much higher than those which we would anticipate at the vast majority of industrial facilities covered under the Industrial General Permit. Additional effort directed at source-control BMPs, including better coverage, aggressive sweeping, and drainage controls will enhance the performance of the StormwateRx systems and other similar systems. Other providers of ex-situ media filtration systems include the Storminator (http://swonline.org). Where ex-situ media filtration systems are not needed, velocity separators (see for example http://www.contech-cpi.com/Products/Stormwater-Management.aspx and http://www.stormceptor.com), inlet filters and vegetated swales may allow for NELs to be achieved.

Regular maintenance is also critical to consistently achieve the NELs over time. The StormwateRx data show that effluent concentrations can increase if maintenance is inadequate. Long term maintenance, along with effective source control BMPs, is critical for achieving NELs.

We have concluded that achieving the NELs is feasible for not only the most contaminated sites but also for the vast majority of sites where influent concentrations are not as high as for those for which StormwateRx data were submitted. Implementation of one or two components of the full StormwateRx system (or of a similar system) would allow for facilities covered under the Industrial General Permit to achieve NELs. Where influent concentrations are particularly high, the full StormwateRx treatment train may be necessary to achieve NELs. At other sites, where concentrations of metals are lower, use of velocity separation devices, inlet filters and vegetated swales, along with aggressive source control BMPs, would allow for NEL concentrations to be achieved. In addition, if under the Industrial General Permit the facilities are allowed to average sampling results from a specific outfall for a single day and storm event, the use of a daily average in many cases will make compliance with the proposed NELs even more likely.

The StormwateRx technology is readily available. Ex-situ media filtration systems such as the StormwateRx, when utilized by the best performers in the industrial storm water discharger category along with source control BMPs, can reasonably be expected to achieve numeric BAT effluent limitations consistent with the proposed NELs, at even the most potentially polluting facilities.

Finally, we believe that sizing active treatment systems to a 25-year, 24-hour storm event is reasonable and can be achieved at most facilities with water storage tanks, underground detention vaults, or through use of detention basins where sufficient area exists. Use of tanks, vaults and basins would allow for the regulated discharge of stormwater to the treatment system so that capacity is not exceeded and so that treatment of greater volumes is achieved.

Sincerely,

Matt Hagemann, P.G., C.Hg.

Attachment 1

stormwateRx®
Reclaiming the world's water.®

StormwateRx Treatment BMP Performance

Volume I: Summary Data

April 2011

clara® An industrial settling system from StormwateRx®

aquip® An industrial filtration system from StormwateRx®

purus™ An industrial polishing system from StormwateRx®

INTRODUCTION

About StormwateRx LLC

StormwateRx LLC, headquartered in Portland Oregon, manufactures stormwater treatment Best Management Practices (BMPs) that enable industrial facilities to better comply with their National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges associated with industrial activity. StormwateRx products are used to remove pollutants from stormwater and protect the nation's waterways.

Treatment Best Management Practices (BMPs)

StormwateRx is a science-based company that has developed a range of stormwater treatment technologies or BMPs designed specifically for use at operating industrial facilities or facilities that generate industrial pollutants that must be removed from the stormwater before it is released to the environment. Industrial facilities use and maintain combinations of BMPs to assure water quality leaving the site meets discharge standards (generically known as benchmarks or water quality criteria). Occasionally facilities use combinations of treatment BMPs known as treatment trains to assist with permit compliance. StormwateRx provides stand-alone treatment BMPs and treatment BMPs in treatment trains. StormwateRx treatment BMP products referenced in this document are:

- Clara® – a patented stormwater plug flow separator system that removes pollutants by settling and floatation. Clara prevents trapped pollutants from washing out by including a high flow bypass structure within the system. Clara removes settleable solids including metals, and floatables such as oil and grease, and trash.

- Aquip® – a patent-pending stormwater filtration system that integrates a pre-treatment chamber and a horizontal bed layered filtration chamber. The system is passive and contains no moving parts nor does it require any chemicals. Aquip is typically installed above ground in a pump and treat configuration for retrofit applications. Aquip removes total and dissolved pollutants including particulates, metals, nutrients, organics and hydrocarbons.

- Purus™ – a group of technologies for stormwater polishing that are typically employed downstream of Aquip filtration. StormwateRx manufactures Purus Metals for reduction of dissolved metals, Purus Organics for reduction of toxic organics, and Purus Bacteria for reduction of pathogens such as E. coli and coliform.

Sector-Specific Treatment BMPs

StormwateRx has developed a set of recommended industry-specific treatment trains (known as "Industry Remedies") that utilize one or more treatment BMPs in series. The industry-specific treatment trains are designed to meet technology and water quality-based standards when implemented in conjunction with other industry-specific structural and operational BMPs. In some cases, facilities will install one or several of the recommended treatment BMP components in the adaptive management process. Technology-based standards are, by definition, evolving as stormwater treatment technologies and knowledge or pollutants and stormwater morphology improve.

Industry Sectors Represented

Site specific performance data are presented for the following industry sectors. In addition, StormwateRx has indicated the recommended treatment train by sector below. It is important to keep the recommended sector-specific treatment train in mind as performance data are analyzed.

Industry Sector	Recommended Treatment Train			
	Clara® Plug Flow Separator (Oil/Trash/Dirt)	Retenu™ Roughing Filter (Particles)	Aquip® Enhanced Filter (Dissolved)	Purus™ Metals Polishing (Dissolved)
Boatyard			YES	YES
Non-ferrous Scrap Metal Recycling	YES	YES	YES	YES
Ferrous Scrap Metal Recycling	YES	YES	YES	YES
Galvanizing Facilities	-	YES	YES	YES
Metal Fabrication	YES	YES	YES	YES
Plastic Manufacturing	-	-	YES	YES
Steam-Electric Power Plant	YES	YES	YES	YES
Shipyard	-	YES	YES	YES
Trucking	YES	YES	YES	-

Measuring Treatment Performance

Performance of StormwateRx treatment BMPs and treatment trains is quantified in several ways. One is by comparing historic trend effluent water quality before and after installation of the treatment BMP(s) on a pollutant specific basis. This approach suggests a long term performance capability by comparing effluent concentrations achieved before the treatment BMP was installed to effluent concentrations achieved after the treatment BMP was installed. A second performance quantification method is by measuring stormwater quality into and out of the treatment BMP. The later requires that inlet/outlet sample pairs be collected relatively proximate in time to one another during a particular storm event.

The data presented in this data summary present all known results using both the above performance verification methodologies: long term effluent quality data, and inlet/outlet pair data.

Performance Data Volumes I and II

The summary data are compiled into two Volumes:

Volume I – Summary Data includes summarized data including plots of historical effluent water quality and inlet/outlet concentration results with calculated removal efficiencies.

Volume II – Supporting Data includes supporting analytical data sheets, chains-of-custody, quality assurance data and publicly available data source references for all results summarized in Volume I.

Performance Data Compilation Methodology

The stormwater quality data presented in this report are industrial stormwater effluent concentrations for facilities that have installed one or more StormwateRx LLC products. Historic trend (pre- and post-StormwateRx installation) effluent data and product performance data are included where available and to the extent available. Every effort has been made to provide a comprehensive data set, however there are various limitations on the available data. These limitations are outlined below.

Site Identification

StormwateRx customer names and discharger identification numbers are absent from the Volume I summary data, and have been redacted from the Volume II supporting data. In lieu of company names, the industry sector, geographic region of the facility, and an internal identification number are provided.

Discharge Monitoring Point

Discharge monitoring points at some facilities have varied over the years. The report documents these changes where possible, but a comprehensive description of the drainage area for each outfall and changes thereto is not possible. Based on the knowledge of each site, and unless noted otherwise, it is generally reasonable to assume that the pre- and post-StormwateRx BMP installation monitoring point discharges are from approximately the same area. To the best of StormwateRx's knowledge, all post-StormwateRx BMP installation effluent data are sampled from the outlet of the StormwateRx BMP.

Treatment Trains

Where more than one type of StormwateRx BMP is in place (StormwateRx treatment train), the post-installation historic trend data reflects the effluent from the downstream-most treatment BMP. Typical treatment train configuration is Clara – Aquip – Purus. For example, for a site that includes both Clara and Aquip, the Aquip effluent is reported on the historic trend spreadsheet. At sites that have a Purus polishing system, the Purus effluent is reported on the historic trend spreadsheet.

BMP Implementation and Maintenance Practices

The facilities presented in this report were selected based on data availability only. As a result, this data includes facilities with a range of maintenance practices and source control implementation. Some sites have neglected to maintain their BMPs (including source control BMPs upstream of the StormwateRx treatment BMP) or have maintained the BMPs on a schedule that differs from the manufacturer's recommendations. A decrease in removal efficiency, or an uptick in post-StormwateRx BMP installation effluent concentrations, after a season of good performance, may indicate that a facility needs to maintain its BMPs.

To assist in this assessment, StormwateRx has noted on the reports whether the facilities' BMPs are "adequate" or "need improvement." This determination is qualitative and based on the frequency of maintenance of the StormwateRx BMPs given the pollutant loading and upstream BMPs for the period of time for which data is provided. Though sites that "need improvement" may not reflect the best possible performance, the dataset has been included to provide the users with a more comprehensive perspective on performance capabilities of our products in a range of maintenance conditions.

Supporting Data Sources

The data presented are compiled from several different sources, all of which are included or referenced within the Volume II data report in unaltered form (with the exception of redactions to protect customer privacy). The sources of supporting data are:

Product Performance Data (influent/effluent pairs):

- Customer (including professional consultant) and StormwateRx LLC sampling reports.

Historic Trend Effluent Data:

- Customer (including professional consultant) and StormwateRx LLC sampling reports.
- California Regional Water Quality Control Board file reviews
    - Region 2 (Oakland office): In person file review; copies of DMRs and supporting lab reports made.
    - Region 4 (Los Angeles): In person file review; copies of DMRs and supporting lab reports made.
    - Region 8 (Santa Anna): Written records request; digital copies of annual reports received via email.
- Oregon Dept. of Environmental Quality
    - Email from Oregon Dept. of Environmental Quality, to StormwateRx LLC (Jan. 3, 2011). Attachment: Excel spreadsheet, central DMR database contents for 1200-Z and 1200-COLS permit holders.[1]
- Washington Dept. of Ecology

[1] The 1200-Z and 1200-COLS permits are the two main industrial stormwater general permits in Oregon. The 1200-COLS applies to facilities that discharge to the Columbia Slough, an impaired water body in the Portland area. The 1200-Z applies to all other areas of the state. The 1200-Z and COLS cover all industrial activities subject to the federal industrial stormwater permit requirement, with the exception of the following sectors: mining and quarrying of nonmetallic minerals (except fuels), asphalt mix batch plants and concrete batch plants.

- Email from Washington Dept. of Ecology to StormwateRx LLC (Jan. 30, 2009). Attachment: Excel spreadsheet, Dept. of Ecology DMR database results from January 2005 – January 2009 for facilities that triggered "Action Levels" via benchmark excursions.
- Washington Dept. of Ecology, Water Quality Permit Search online database, https://fortress.wa.gov/ecy/wqreports/public/f?p=128:1:1918112431375228 (last updated April 19, 2010).[2]
- Washington Dept. of Ecology, Permit and Reporting Information System online database, https://fortress.wa.gov/ecy/wqreports/public/f?p=110:300:1346710057549926 (instituted April 19, 2010).

In Volume II – Supporting Data, DMRs and laboratory reports are included as attachments to the individual facility reports. Excel spreadsheet provided by Washington and Oregon state regulators are provided in the same form StormwateRx received them. (This is necessary to protect customer privacy and maintain the data in an unadulterated form.) Washington state online databases are incorporated by reference. Note that the sampling data for much of the data from Washington and Oregon state databases may not reflect the exact sampling date; often only the start or end date of the monitoring period are available in the databases.

Quality Assurance / Quality Control

All StormwateRx treatment BMP performance data have been checked for quality assurance/quality control (QA/QC) by StormwateRx staff using the laboratory reports that are provided with the dataset.

All historic trend data have been quality checked by StormwateRx staff using laboratory reports, and DMRs where available. Where neither lab reports nor DMRs are available, state databases were used for the QA/QC, to ensure the values in this report match the values in the state databases. The Oregon DMR database was not quality checked by Oregon Dept. of Environmental Quality staff. Any modifications made to the data presented in the report, such as elimination of data suspected to be erroneous, are noted in footnotes to the relevant report.

Use of Data

The data contained in this report are confidential and proprietary in nature.

Volume I – Data Summary is intended for use by regulatory agencies or on a site specific basis to assess performance capability of StormwateRx products under real-world conditions. No two sites are identical in practice or pollutant generation, even within an industry sector, and there will be variations in stormwater quality and treatment BMP performance from time-to-time. Use of Volume I data is permitted only as StormwateRx LLC authorizes in writing.

[2] Washington issues a sector-specific general permit to boatyards that covers stormwater discharges. The Washington industrial stormwater general permit applies to all other industrial activities subject to the federal industrial stormwater permit requirement, with the exception of the following sectors: sectors subject to national effluent limit guidelines, and certain subsectors of mining and quarrying of nonmetallic minerals (except fuels). As in all states, some facilities may have obtained individual permit coverage rather than general permit coverage.

Volume II – Supporting Data contain numerous references to laboratories, laboratory personnel, laboratory reference numbers, monitoring personnel, and other data not publicly available. It is not the intent of StormwateRx to provide this information in a public domain. Accordingly, Volume II is generally not available in digital format but may be reviewed in person at StormwateRx LLC offices with permission to verify the data contained in Volume I Data Summary.

StormwateRx LLC product performance data (influent/effluent pairs and associated removal efficiencies) may not be reproduced in any form without attribution to "StormwateRx LLC, www.stormwaterx.com" and the appropriate product name (i.e. Clara, Aquip and/or Purus). Historic trend data should be attributed to this report or the applicable public source(s) noted *supra.*

StormwateRx LLC Product Cross Reference

Site ID	Sector	Product(s)	Maintenance	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Aluminum (Al)	Iron (Fe)	Cadmium (Cd)	Chromium (III) (Cr3)	Chromium (VI) (Cr6)	Arsenic (As)	Mercury (Hg)	Nickel (Ni)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Hardness (H)	Turbidity (T)	Total Suspended Solids (TS)	Total Dissolved Solids (TD)	Specific Conductance (SC)	Alkalinity (Alk)	pH	BOD5 (B)	COD (C)	Oil & Grease (OG)	Phosphorus (P)	E.coli (E)	Site ID
0101	Boatyard	Aquip	Needs Improvement	Cu	Pb	Zn														TS										0101
0102	Boatyard	Aquip	Adequate	Cu	Pb	Zn														TS				pH						0102
0103	Boatyard	Aquip	Adequate	Cu	Pb	Zn														TS							OG			0103
0104	Boatyard	Aquip	Needs Improvement	Cu	Pb	Zn													T	TS										0104
0105	Boatyard	Aquip	Adequate	Cu	Pb	Zn														TS										0105
0201	Ferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn														TS					B			P		0201
0202	Ferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn													T	TS				pH						0202
0203	Ferrous Scrapyard	Clara + Aquip	Needs Improvement	Cu	Pb	Zn	Al	Fe	Cd	Cr3			Hg	Ni				H		TS		SC		pH		C		P		0203
0204	Ferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn													T					pH						0204
0205	Ferrous Scrapyard	Aquip	Needs Improvement	Cu	Pb	Zn		Fe							Mn					TS				pH	B	C	OG		E	0205
0206	Ferrous Scrapyard	Aquip	Needs Improvement	Cu	Pb	Zn		Fe							Mn	Ca	Mg		T		TD			pH		C	OG			0206
0207	Ferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn														TS				pH	B		OG	P	E	0207
0301	Nonferrous Scrapyard	Clara + Aquip	Adequate	Cu	Pb	Zn														TS				pH			OG			0301
0302	Nonferrous Scrapyard	Clara + Aquip	Needs Improvement	Cu	Pb	Zn	Al	Fe			Cr6	As	Hg	Ni				H		TS		SC		pH		C				0302
0303	Nonferrous Scrapyard	Clara + Aquip	Needs Improvement	Cu	Pb	Zn	Al	Fe		Cr3	Cr6		Hg	Ni				H		TS		SC		pH		C	OG			0303
0304	Nonferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn														TS						C				0304
0305	Nonferrous Scrapyard	Aquip	Adequate	Cu	Pb	Zn														TS						C				0305
0401	Galvanizing	Aquip	Adequate	Cu	Pb	Zn	Al	Fe										H	T	TS			Alk	pH			OG			0401
0402	Galvanizing	Aquip + Purus	Adequate	Cu	Pb	Zn													T					pH						0402
0403	Galvanizing	Aquip	Adequate	Cu	Pb	Zn								Ni	Mn					TS				pH			OG	P	E	0403
0404	Galvanizing	Aquip + Purus	Adequate	Cu		Zn		Fe												TS	TD	SC		pH						0404
0501	Metal Fabrication	Aquip	Adequate	Cu	Pb	Zn													T					pH						0501
0601	Plastic Manufacturer	Aquip	Needs Improvement	Cu		Zn													T					pH						0601
0701	Power Plant	Clara + Aquip + Purus	Adequate	Cu		Zn	Al	Fe												TS				pH		C		P		0701
0801	Shipyard	Aquip	Needs Improvement	Cu		Zn								Ni					T											0801
0802	Shipyard	Aquip	Unknown	Cu	Pb	Zn	Al	Fe											T	TS				pH						0802
0803	Shipyard	Aquip	Adequate	Cu	Pb	Zn						As							T					pH						0803
0804	Shipyard	Aquip	N/A	Cu	Pb	Zn														TS										0804
0901	Trucking	Aquip + Purus	Adequate	Cu	Pb	Zn														TS				pH	B			P	E	0901
0902	Trucking	Aquip + Purus	Needs Improvement	Cu	Pb	Zn														TS				pH	B		OG	P	E	0902

Contents

Site ID	Sector
0101	Boatyard
0102	Boatyard
0103	Boatyard
0104	Boatyard
0105	Boatyard
0201	Ferrous Scrapyard
0202	Ferrous Scrapyard
0203	Ferrous Scrapyard
0204	Ferrous Scrapyard
0205	Ferrous Scrapyard
0206	Ferrous Scrapyard
0207	Ferrous Scrapyard
0301	Nonferrous Scrapyard
0302	Nonferrous Scrapyard
0303	Nonferrous Scrapyard
0304	Nonferrous Scrapyard
0305	Nonferrous Scrapyard
0401	Galvanizing
0402	Galvanizing
0403	Galvanizing
0404	Galvanizing ing
0501	Metal Fabrication
0601	Plastic Manufacturer
0701	Power Plant
0801	Shipyard
0802	Shipyard
0803	Shipyard
0804	Shipyard
0901	Trucking
0902	Trucking

0101
Boatyard

Stormwater Sampling Overview
Site ID #0101

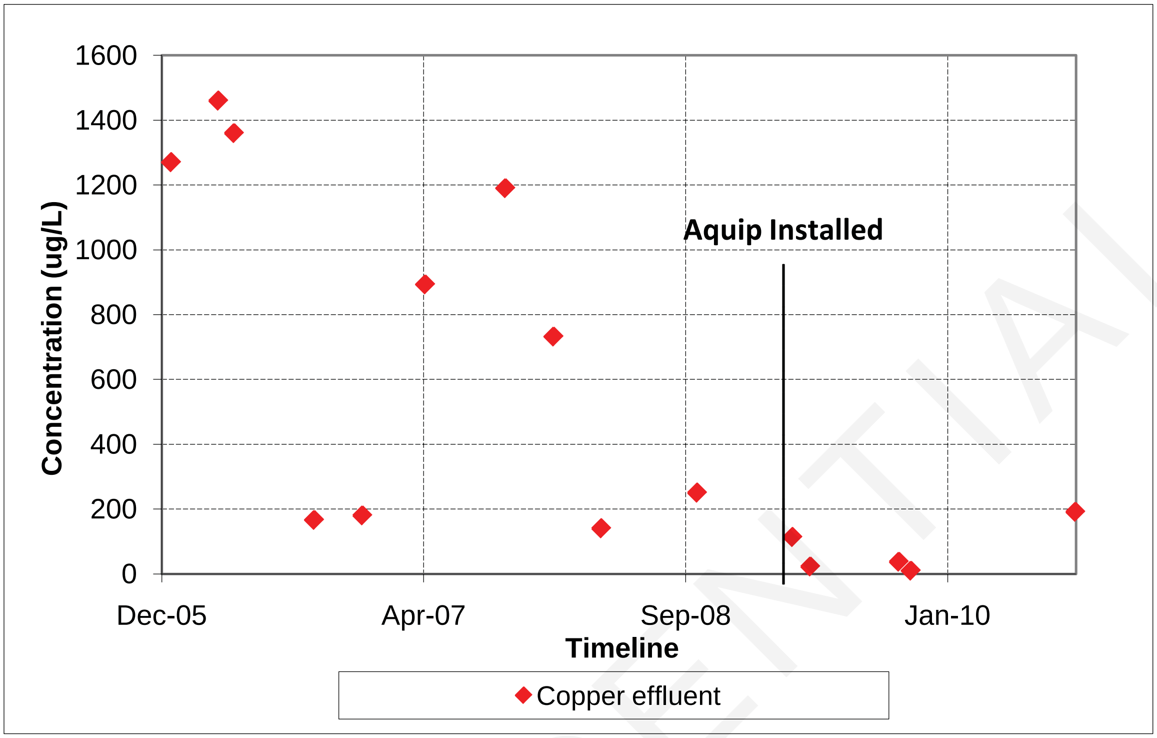
Site Location/Region:	Pacific Northwest
Facility Sector:	Boatyard
StormwateRx Product(s):	Aquip 110SBE (enhanced media filtration system)
Date of Installation:	March 31, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

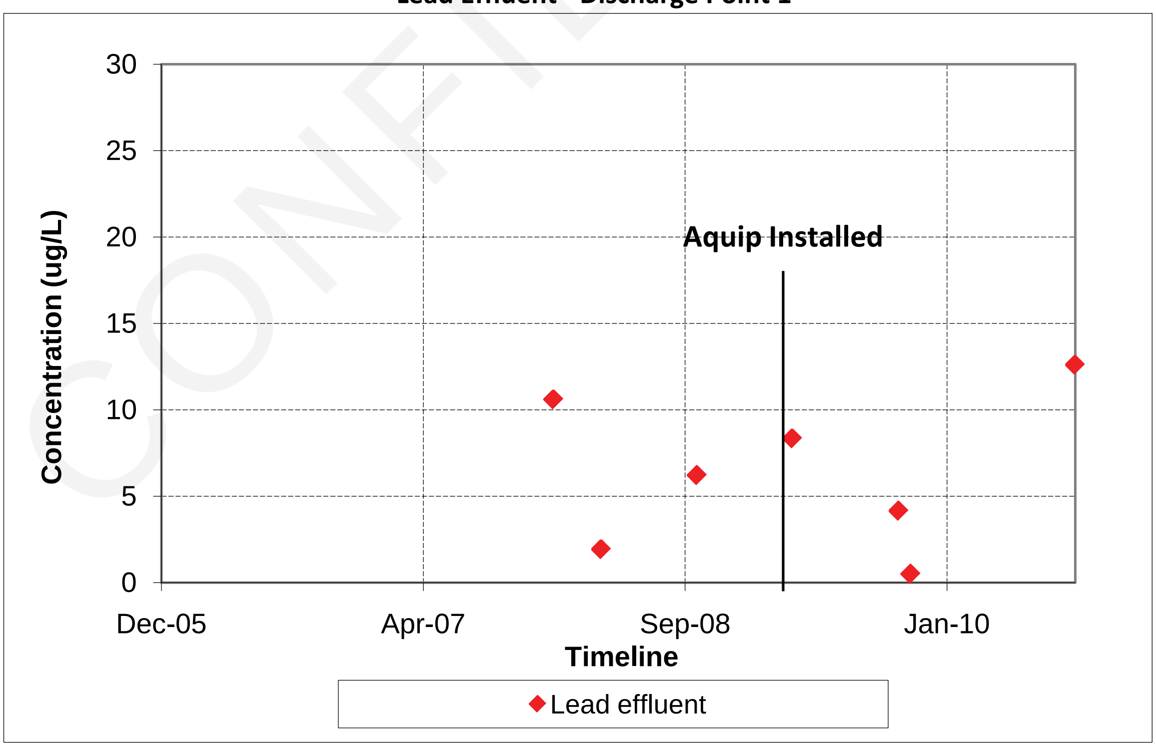
Date	Sampled By	Before/After Aquip Installation
January 1, 2006	Customer	Before
April 1, 2006	Customer	Before
May 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
May 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
October 1, 2008	Customer	Before
April 1, 2009	Customer	After
May 5, 2009	StormwateRx	After
October 21, 2009	Customer	After
November 13, 2009	StormwateRx	After
September 23, 2010	Customer	After

Facility Historical Data
Site ID #0101

Copper Effluent - Discharge Point 1

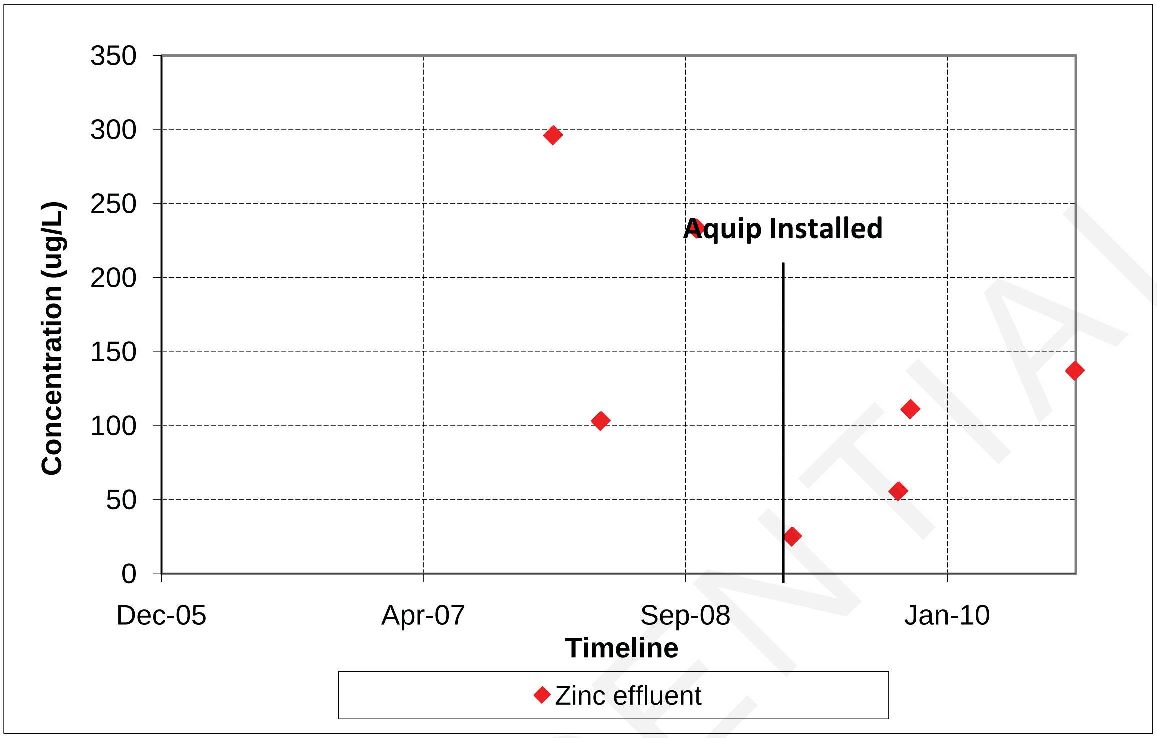


Lead Effluent - Discharge Point 1

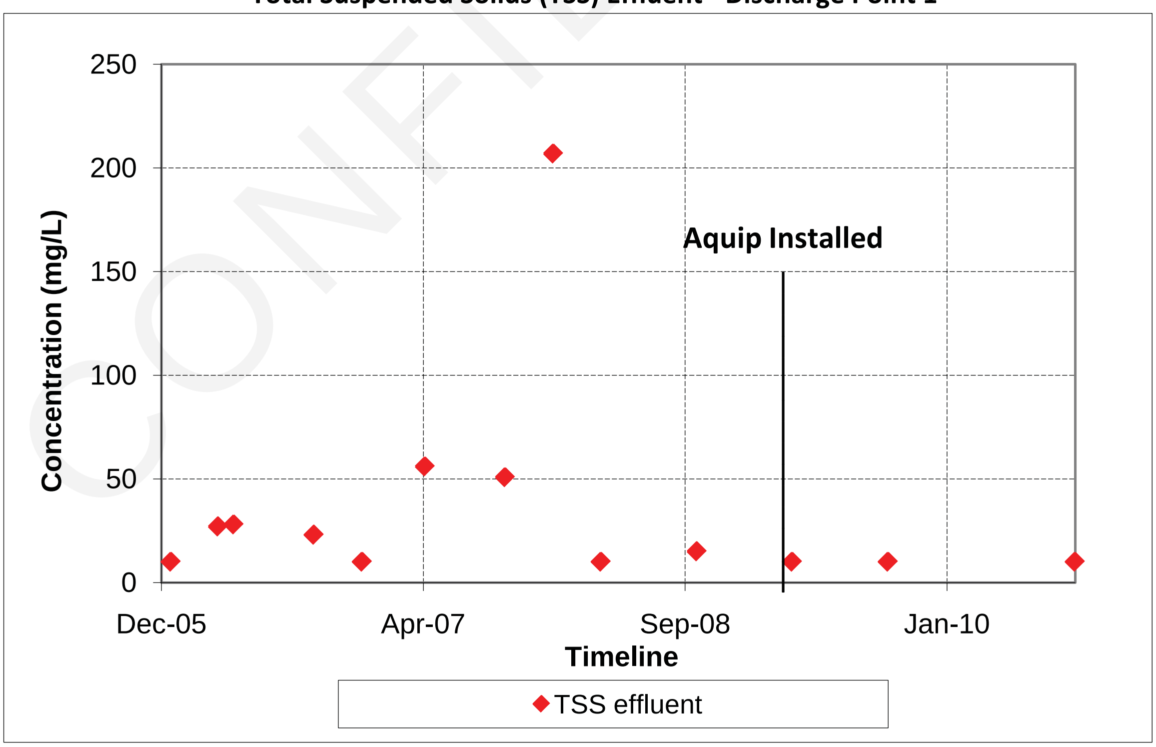


Facility Historical Data
Site ID #0101

Zinc Effluent - Discharge Point 1



Total Suspended Solids (TSS) Effluent - Discharge Point 1



Aquip® Influent and Effluent Data
Site ID #0101

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
05/05/09	Aquip	AQUIP IN	AQUIP OUT	Copper	1.58		0.0223		99%					
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Copper	1.09		0.0370		97%					
11/13/09	Aquip	0080 A-in	0080 A-out	Copper	0.656		0.00933		99%					
09/23/10	Aquip	1 - Inlet	4 - Discharge	Copper	1.67		0.191		89%					
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Lead	0.0253		0.00415		84%					
11/13/09	Aquip	0080 A-in	0080 A-out	Lead	0.0089		0.00050	ND	94%					
09/23/10	Aquip	1 - Inlet	4 - Discharge	Lead	0.0539		0.0126		77%					
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Zinc	0.586		0.0556		91%					
11/13/09	Aquip	0080 A-in	0080 A-out	Zinc	0.411		0.111		73%					
09/23/10	Aquip	1 - Inlet	4 - Discharge	Zinc	1.04		0.137		87%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0102
Boatyard

Stormwater Sampling Overview
Site ID #0102

Site Location/Region: Pacific Northwest

Facility Sector: Boatyard

StormwateRx Product(s): Aquip 110SBE (enhanced media filtration system)

Date of Installation: December 2, 2009

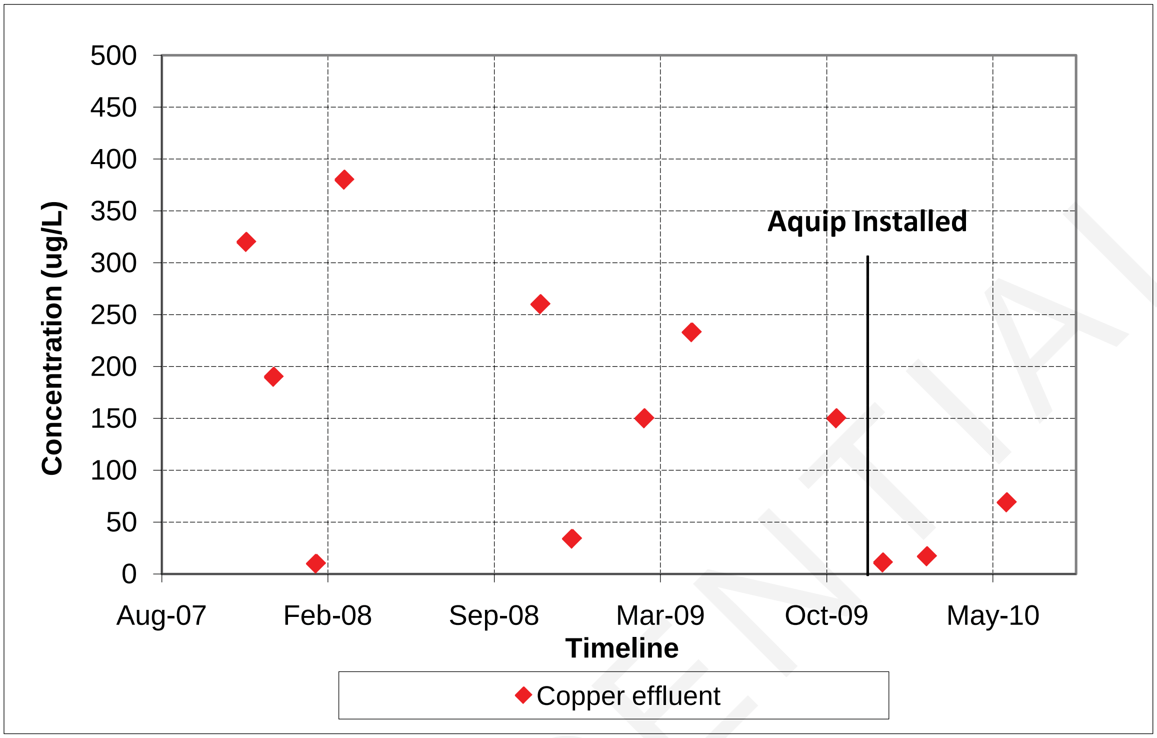
Maintenance Status: Adequate

Sampling Events:

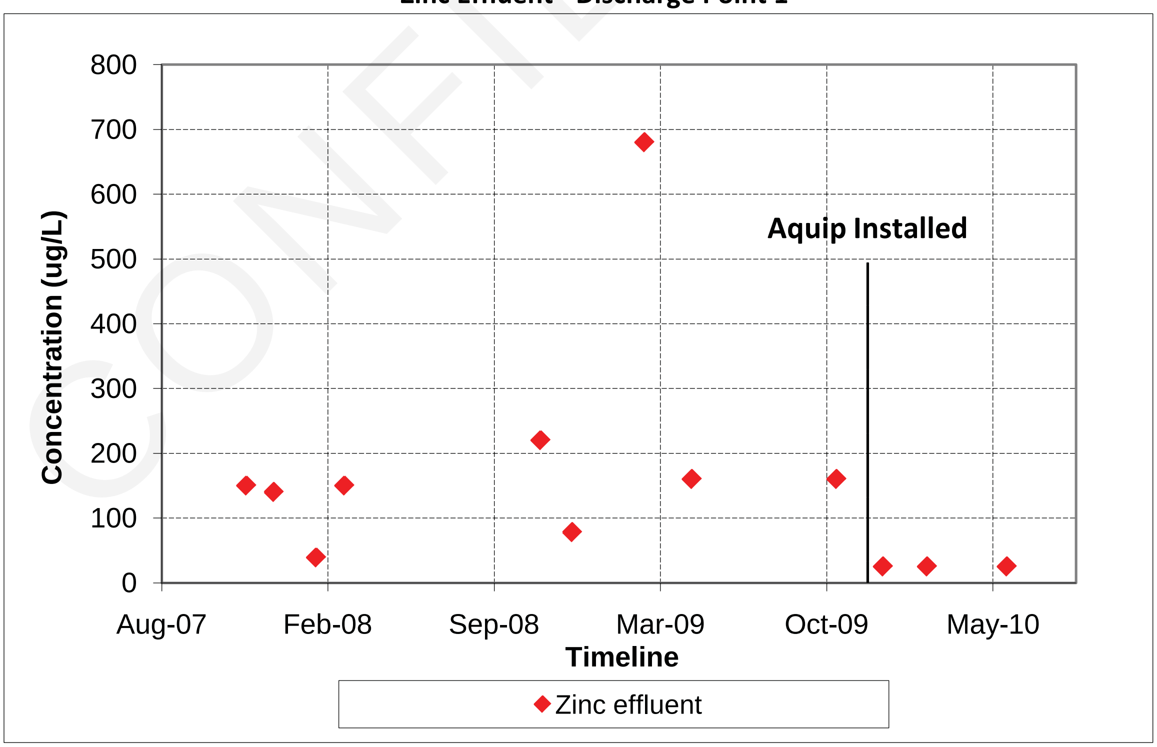
Date	Sampled By	Before/After Aquip Installation
November 16, 2007	Customer	Before
December 19, 2007	Customer	Before
February 8, 2008	Customer	Before
March 13, 2008	Customer	Before
November 4, 2008	Customer	Before
December 12, 2008	Customer	Before
March 9, 2009	Customer	Before
May 5, 2009	Customer	Before
October 26, 2009	Customer	Before
December 21, 2009	Customer	After
February 12, 2010	Customer	After
May 19, 2010	Customer	After

Facility Historical Data
Site ID #0102

Copper Effluent - Discharge Point 1

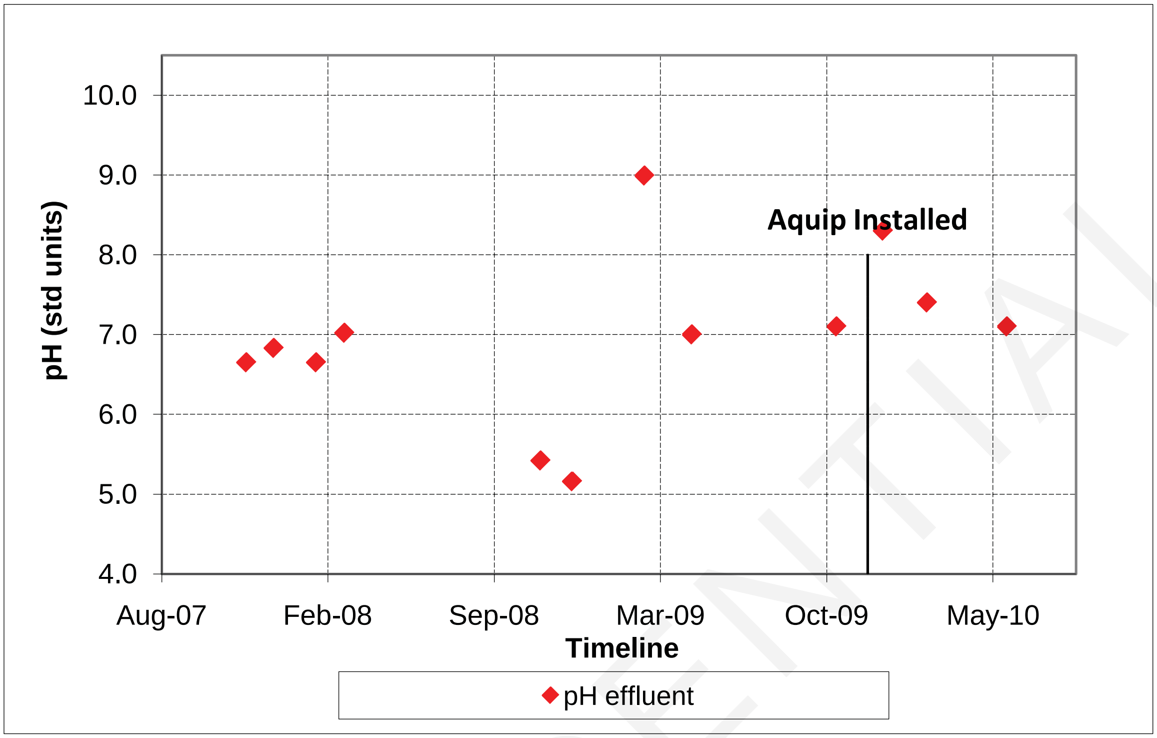


Zinc Effluent - Discharge Point 1



Facility Historical Data
Site ID #0102

pH Effluent - Discharge Point 1



0103
Boatyard

Stormwater Sampling Overview
Site ID #0103

Site Location/Region:	Pacific Northwest
Facility Sector:	Boatyard
StormwateRx Product(s):	Aquip 50SBE (enhanced media filtration system)
Date of Installation:	December 1, 2008
Maintenance Status:	Adequate

Sampling Events:

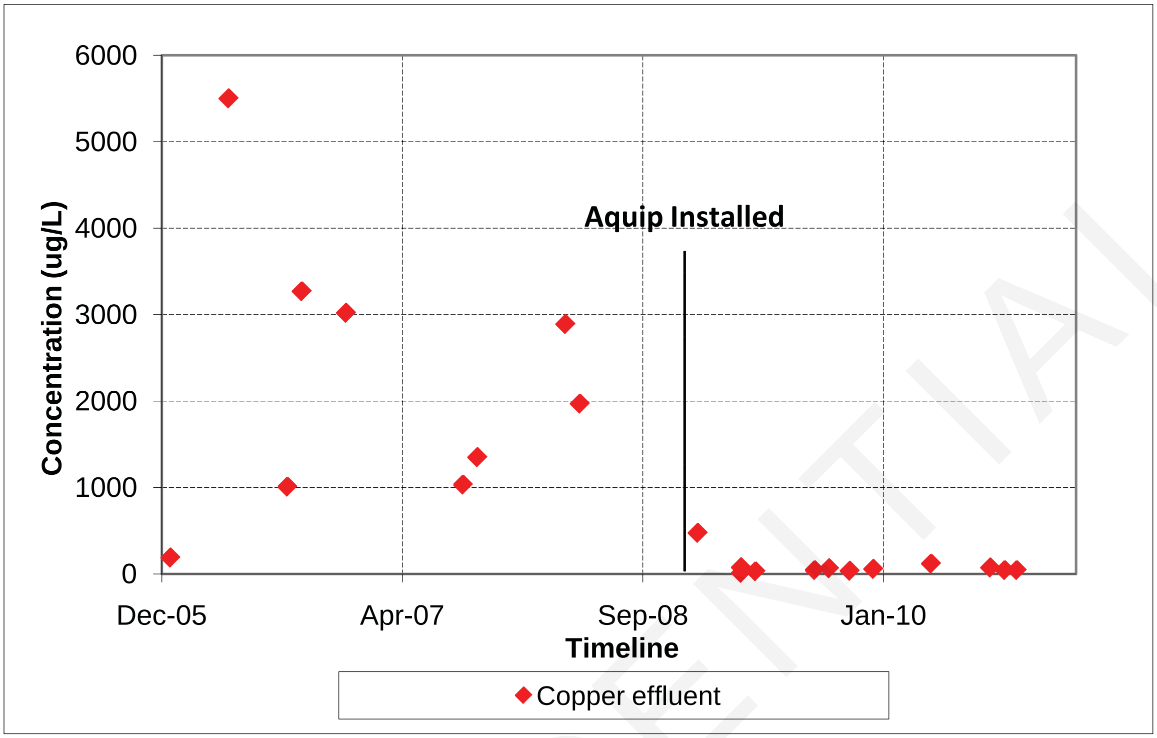
Date	Sampled By	Before/After Aquip Installation
January 1, 2006	Customer	Before
April 1, 2006	Customer	Before
May 2, 2006	Customer	Before
September 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
September 1, 2007	Customer	Before
October 1, 2007	Customer	Before
April 1, 2008	Customer	Before
May 1, 2008	Customer	Before
January 1, 2009	Customer	After
April 1, 2009	Customer	After
April 19, 2009	StormwateRx	After
May 6, 2009	StormwateRx	After
September 1, 2009	Customer	After
October 1, 2009	Customer	After
November 13, 2009	StormwateRx	After
January 1, 2010	Customer	After

Sampling Events (cont.)

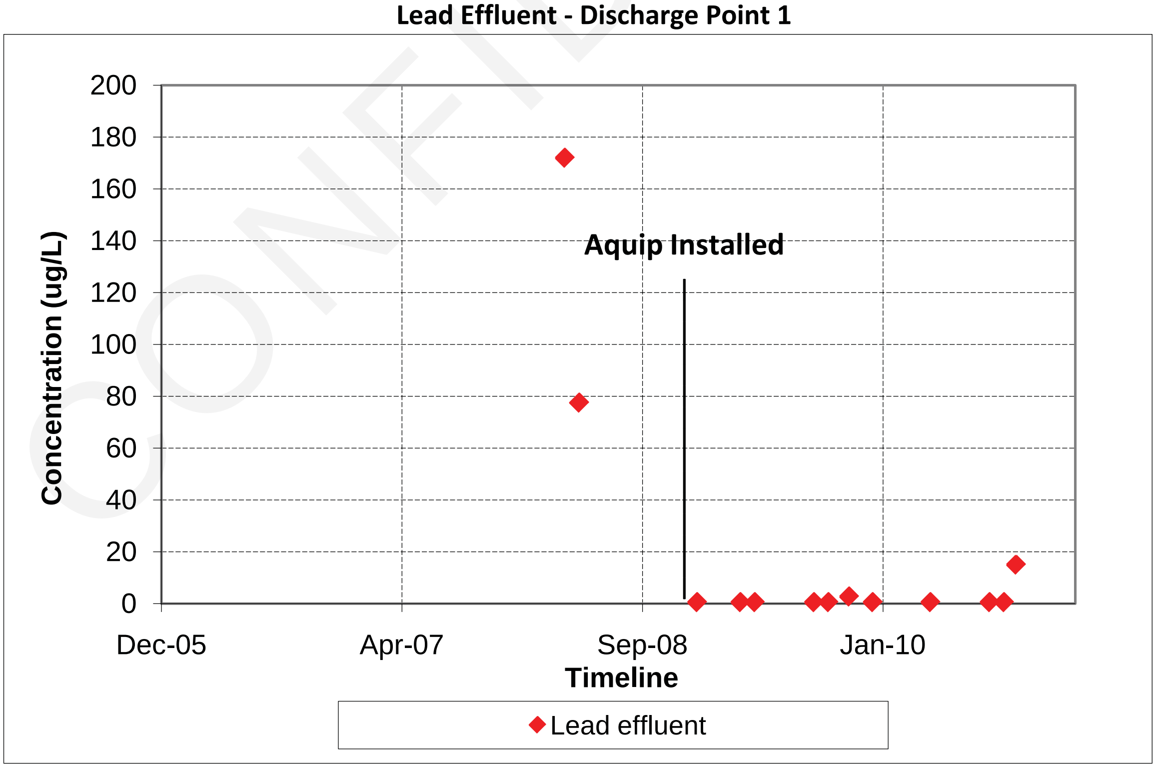
Date	Sampled By	Before/After Aquip Installation
May 1, 2010	Customer	After
September 1, 2010	Customer	After
October 1, 2010	Customer	After
October 26, 2010	Customer	After

Facility Historical Data
Site ID #0103

Copper Effluent - Discharge Point 1

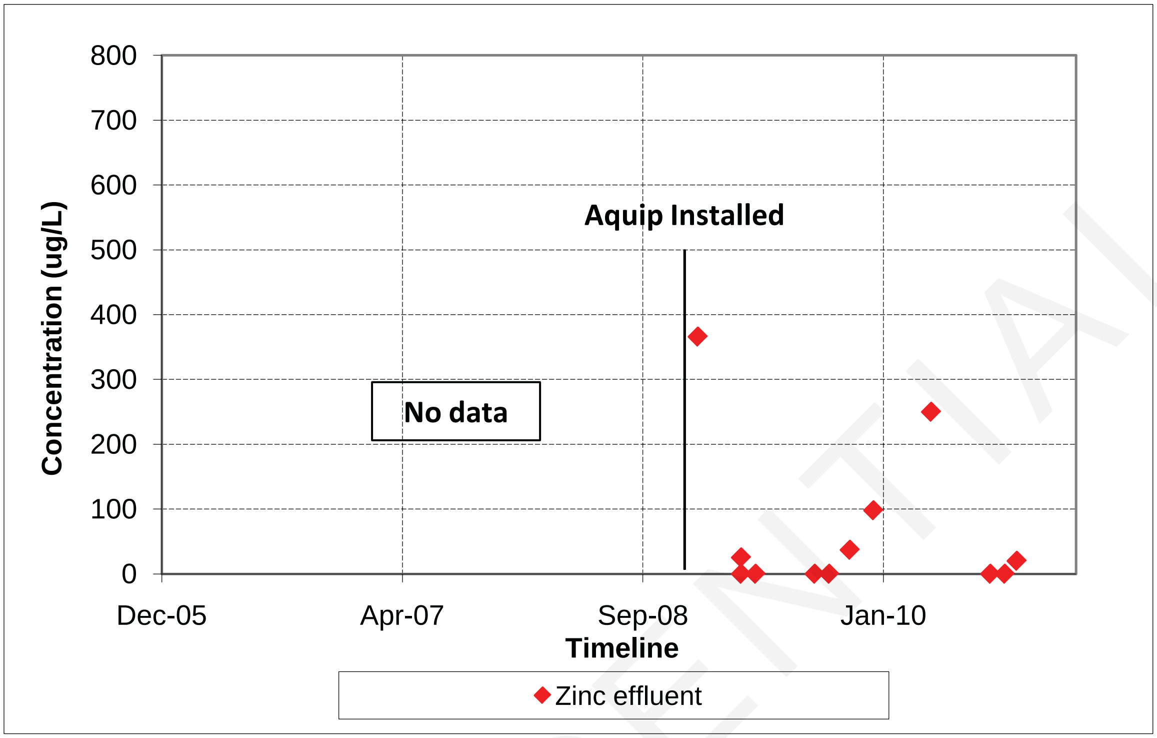


Lead Effluent - Discharge Point 1

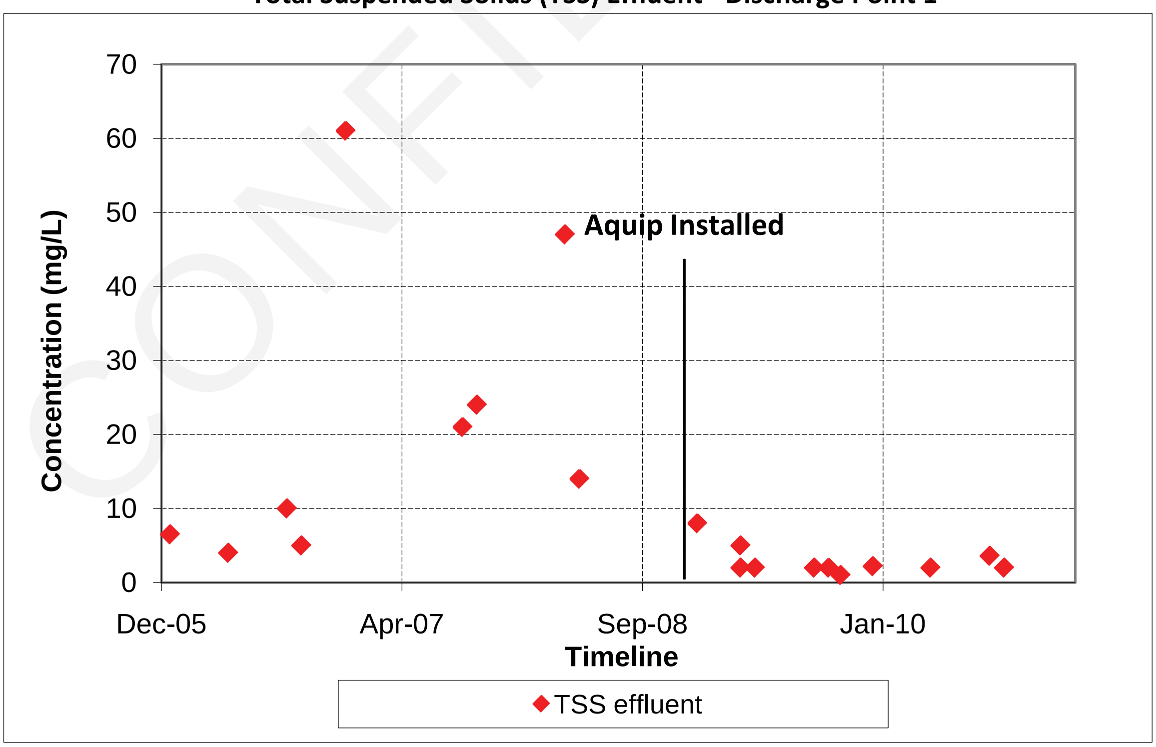


Facility Historical Data
Site ID #0103

Zinc Effluent - Discharge Point 1



Total Suspended Solids (TSS) Effluent - Discharge Point 1



Aquip® Influent and Effluent Data
Site ID #0103

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
04/01/09	Aquip	East-Aq IN	East-Aq OUT	Copper	0.364		0.0766		79%					
11/13/09	Aquip	0065 E A-in	0065 E A-out	Copper	0.430		0.0361		92%					
10/26/10	Aquip	East Oct Inlet	East Oct Out	Copper	0.310		0.0450		85%					
11/13/09	Aquip	0065 E A-in	0065 E A-out	Lead	0.0127		0.00268		79%					
10/26/10	Aquip	East Oct Inlet	East Oct Out	Lead	0.015	ND	0.015	ND	N/A					
04/01/09	Aquip	East-Aq IN	East-Aq OUT	Zinc	0.392		0.0253		94%					
11/13/09	Aquip	0065 E A-in	0065 E A-out	Zinc	0.507		0.0370		93%					
10/26/10	Aquip	East Oct Inlet	East Oct Out	Zinc	0.420		0.0200	ND	95%					
04/01/09	Aquip	East-Aq IN	East-Aq OUT	TSS	20.0		5.0	ND	75%					
10/26/10	Aquip	East Oct Inlet	East Oct Out	TSS	3.6		1.0	ND	72%					
10/26/10	Aquip	East Oct Inlet	East Oct Out	O&G	2.4	ND	2.4	ND	N/A					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0104
Boatyard

Stormwater Sampling Overview
Site ID #0104

Site Location/Region:	Pacific Northwest
Facility Sector:	Boatyard
StormwateRx Product(s):	Aquip 50SBE (enhanced media filtration system)
Date of Installation:	February 27, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

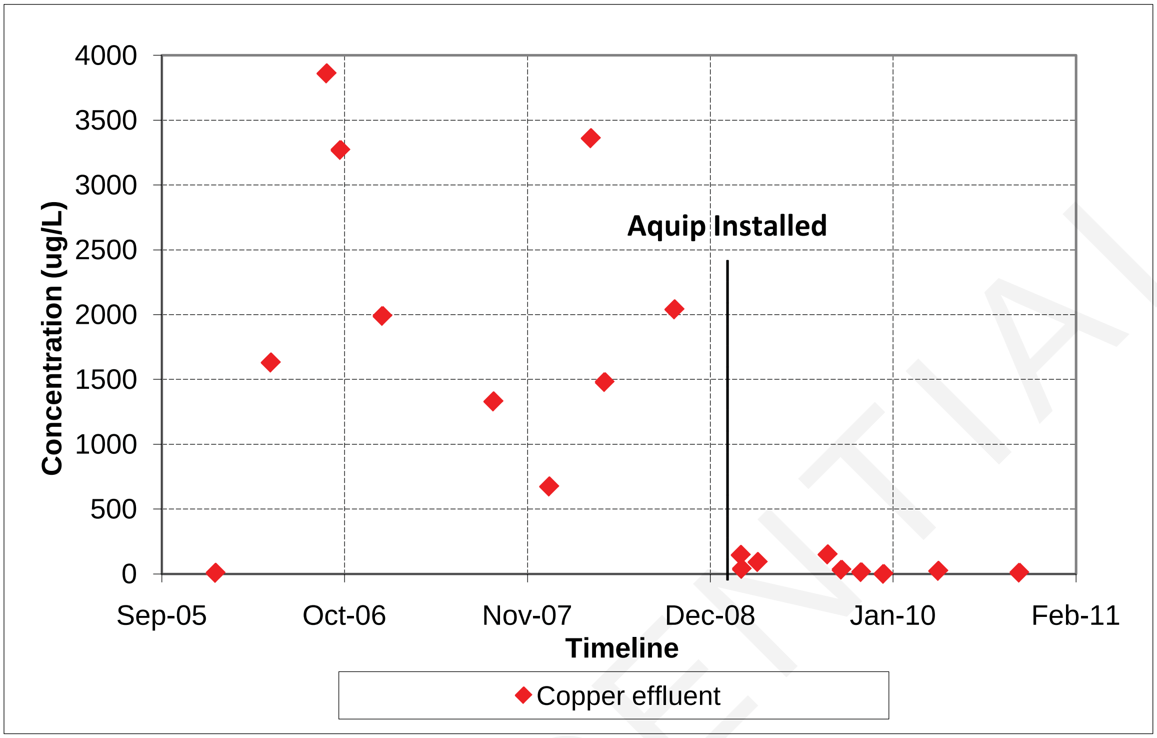
Date	Sampled By	Before/After Aquip Installation
January 1, 2006	Customer	Before
May 2, 2006	Customer	Before
September 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
September 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
May 1, 2008	Customer	Before
October 1, 2008	Customer	Before
February 23, 2009	Customer	After
February 25, 2009	Customer	After
April 1, 2009	Customer	After
September 1, 2009	Customer	After
October 1, 2009	Customer	After
November 13, 2009	StormwateRx	After
January 1, 2010	Customer	After
May 1, 2010	Customer	After

Sampling Events (cont.)

Date	Sampled By	Before/After Aquip Installation
October 25, 2010	Customer	After

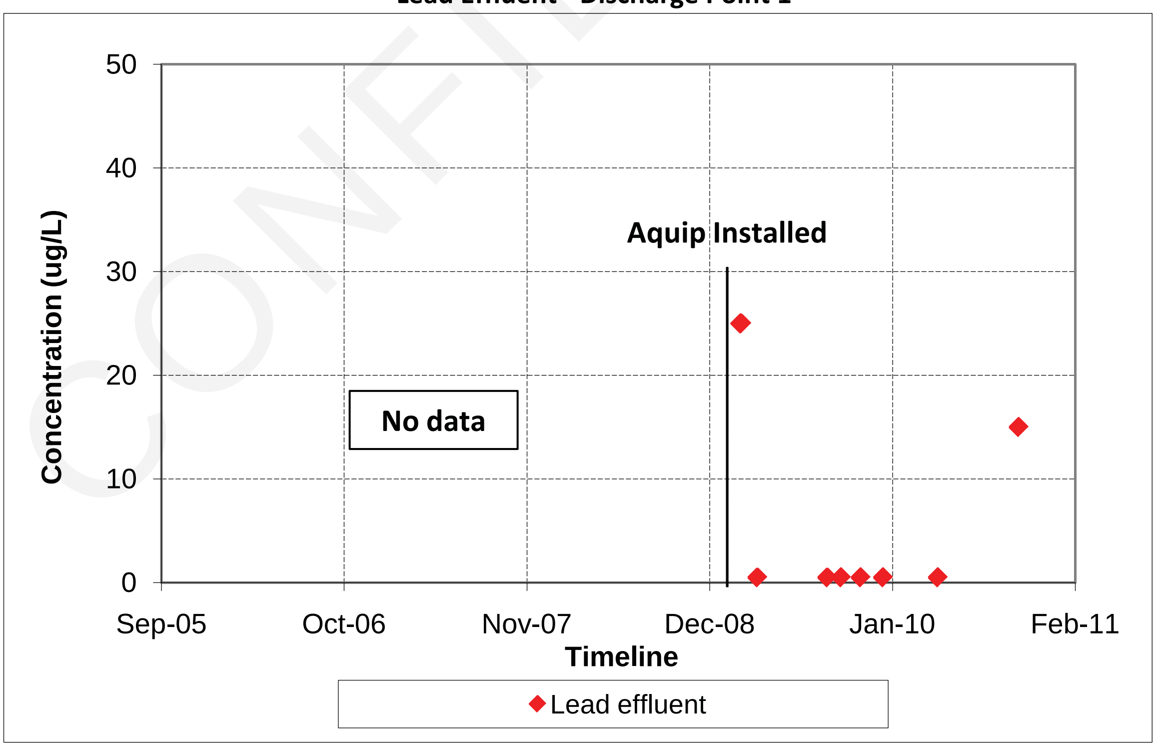
Facility Historical Data
Site ID #0104

Copper Effluent - Discharge Point 1



Aquip partial media replacement in June 2010 (before the last reported sample date)

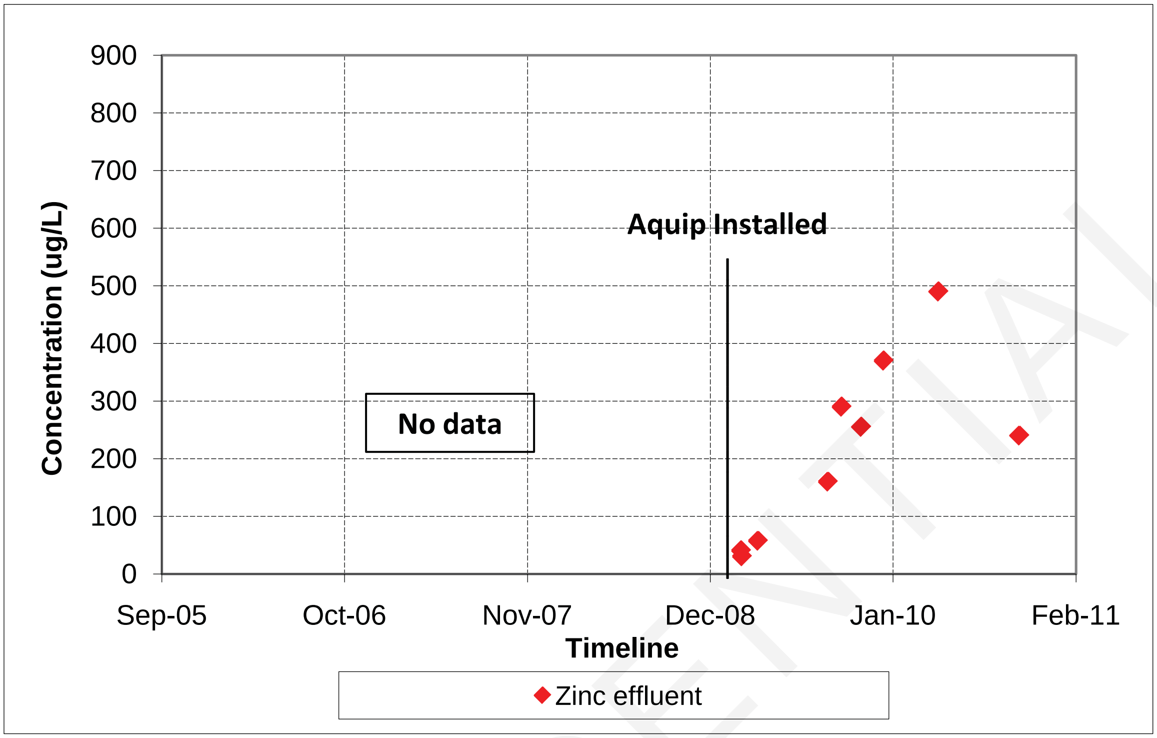
Lead Effluent - Discharge Point 1



Aquip partial media replacement in June 2010 (before the last reported sample date)

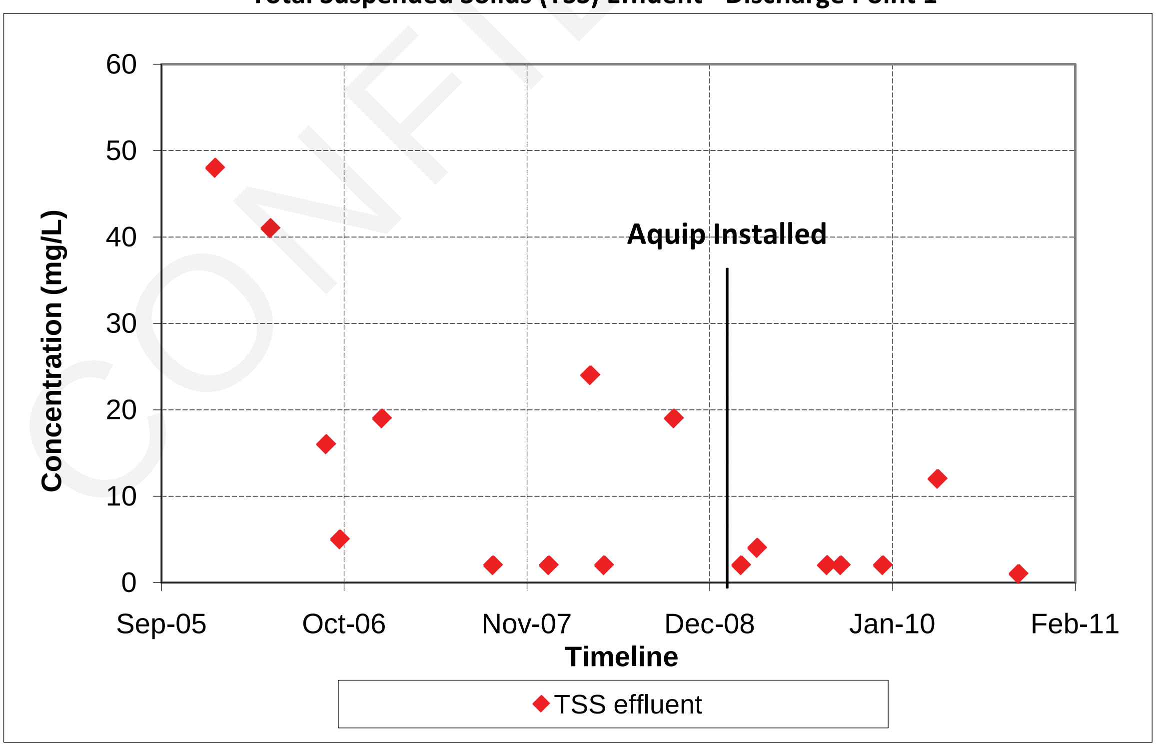
Facility Historical Data
Site ID #0104

Zinc Effluent - Discharge Point 1



Aquip partial media replacement in June 2010 (before the last reported sample date)

Total Suspended Solids (TSS) Effluent - Discharge Point 1



Aquip partial media replacement in June 2010 (before the last reported sample date)

Aquip® Influent and Effluent Data
Site ID #0104

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
02/23/09	Aquip	West Aquip 1 in	West Aquip 2 out	Copper	4.47		0.146		97%					
02/25/09	Aquip	West in	West out	Copper	4.78		0.0386		99%	0.766		0.016		98%
11/13/09	Aquip	0065 W A-in	0065 W A-out	Copper	0.485		0.0140		97%					
10/25/10	Aquip	West Oct Inlet	West Oct Outlet	Copper	0.440		0.010	ND	98%					
02/23/09	Aquip	West Aquip 1 in	West Aquip 2 out	Lead	0.661		0.025	ND	96%					
02/25/09	Aquip	West in	West out	Lead	0.648		0.025	ND	96%	0.0735		0.025	ND	66%
11/13/09	Aquip	0065 W A-in	0065 W A-out	Lead	0.0299		0.00050	ND	98%					
10/25/10	Aquip	West Oct Inlet	West Oct Outlet	Lead	0.095		0.015	ND	84%					
02/23/09	Aquip	West Aquip 1 in	West Aquip 2 out	Zinc	1.73		0.0404		98%					
02/25/09	Aquip	West in	West out	Zinc	1.96		0.0303		98%	1.32		0.0248		98%
11/13/09	Aquip	0065 W A-in	0065 W A-out	Zinc	0.927		0.255		72%					
10/25/10	Aquip	West Oct Inlet	West Oct Outlet	Zinc	0.910		0.240		74%					
02/25/09	Aquip	West in	West out	TSS	66		2.0	ND	97%					
02/25/09	Aquip	West in	West out	Turbidity	118		8.98		92%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0105
Boatyard

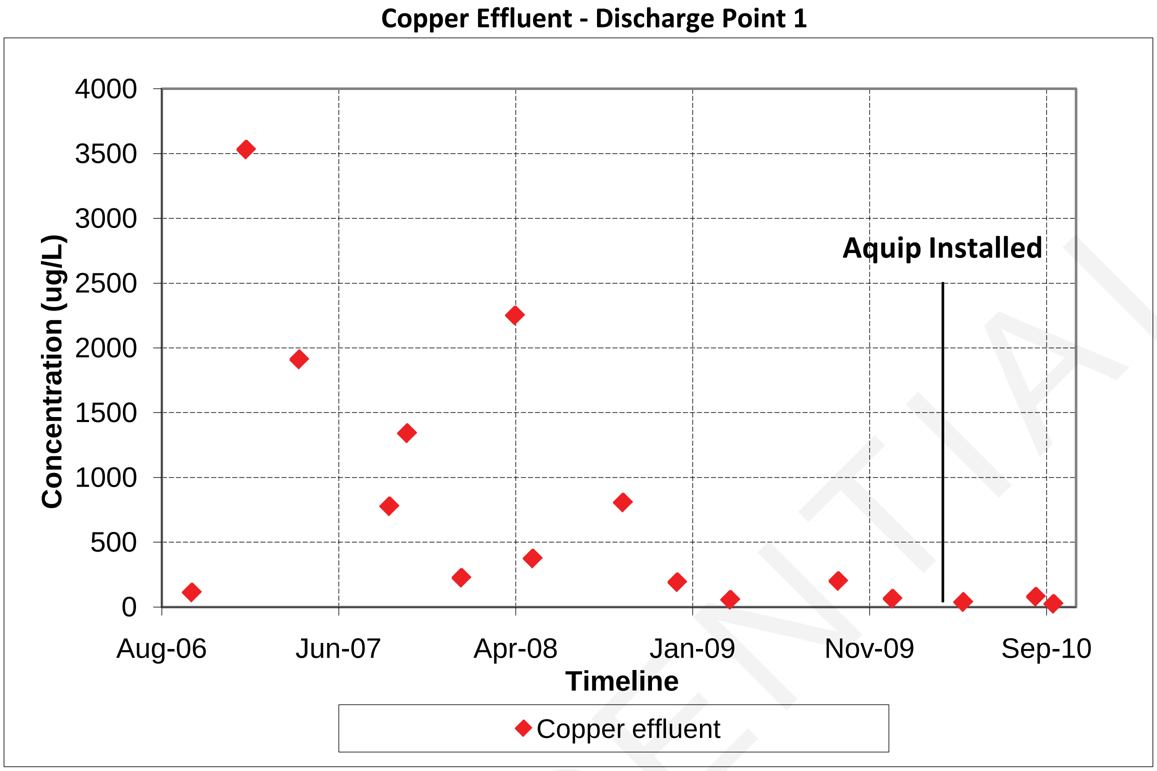
Stormwater Sampling Overview
Site ID #0105

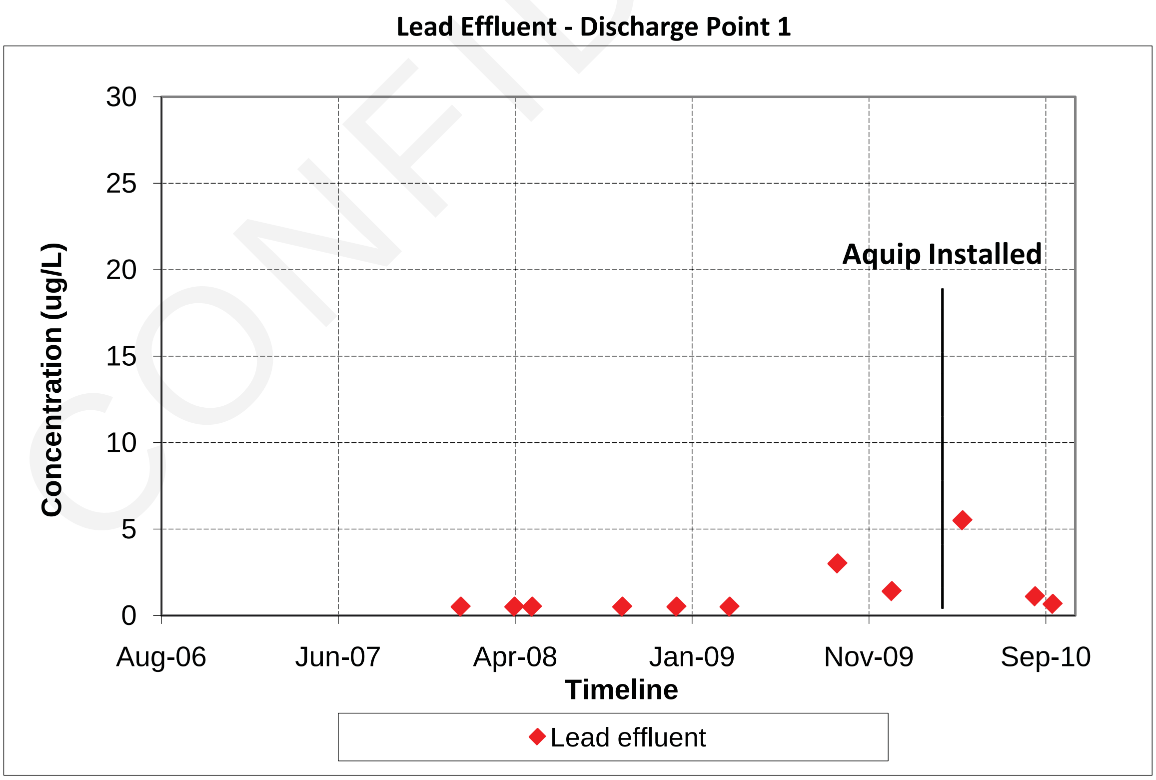
Site Location/Region:	Pacific Northwest
Facility Sector:	Boatyard
StormwateRx Product(s):	Aquip 25SBE (enhanced media filtration system)
Date of Installation:	April 7, 2010
Maintenance Status:	Adequate

Sampling Events:

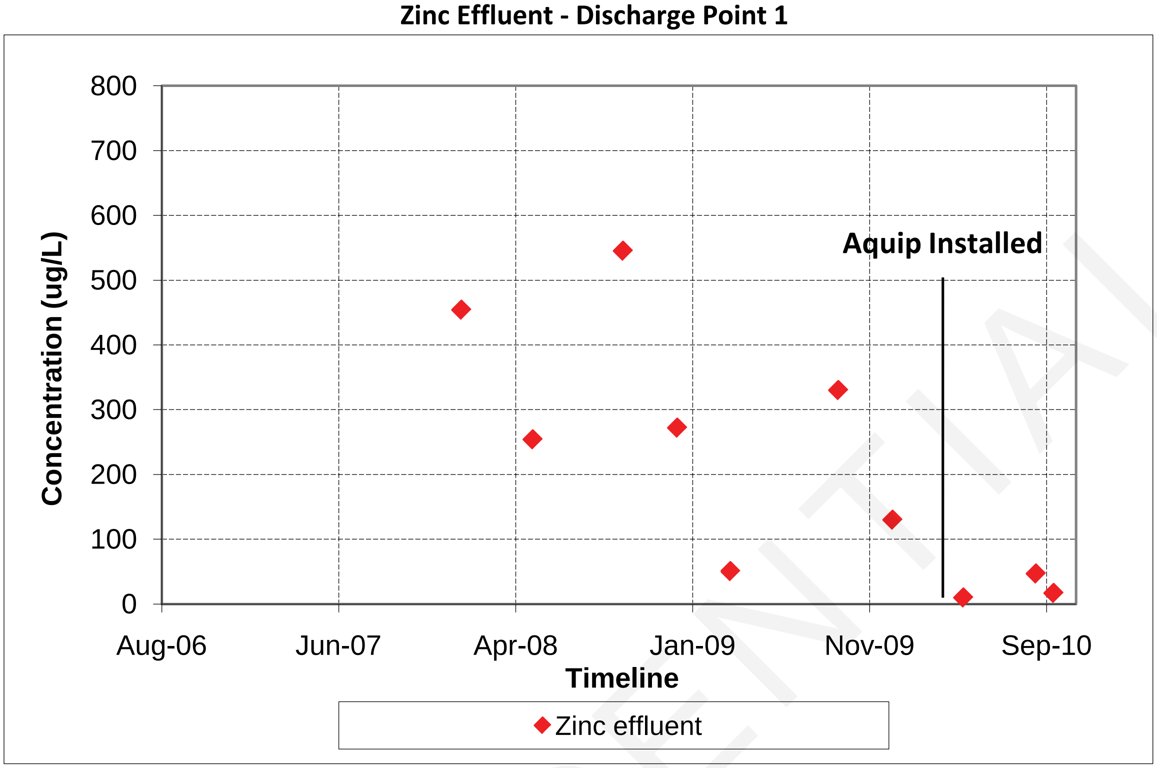
Date	Sampled By	Before/After Aquip Installation
September 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
April 1, 2007	Customer	Before
September 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
May 1, 2008	Customer	Before
October 1, 2008	Customer	Before
January 1, 2009	Customer	Before
April 1, 2009	Customer	Before
October 1, 2009	Customer	Before
January 1, 2010	Customer	Before
May 1, 2010	Customer	After
September 1, 2010	Customer	After
October 1, 2010	Customer	After

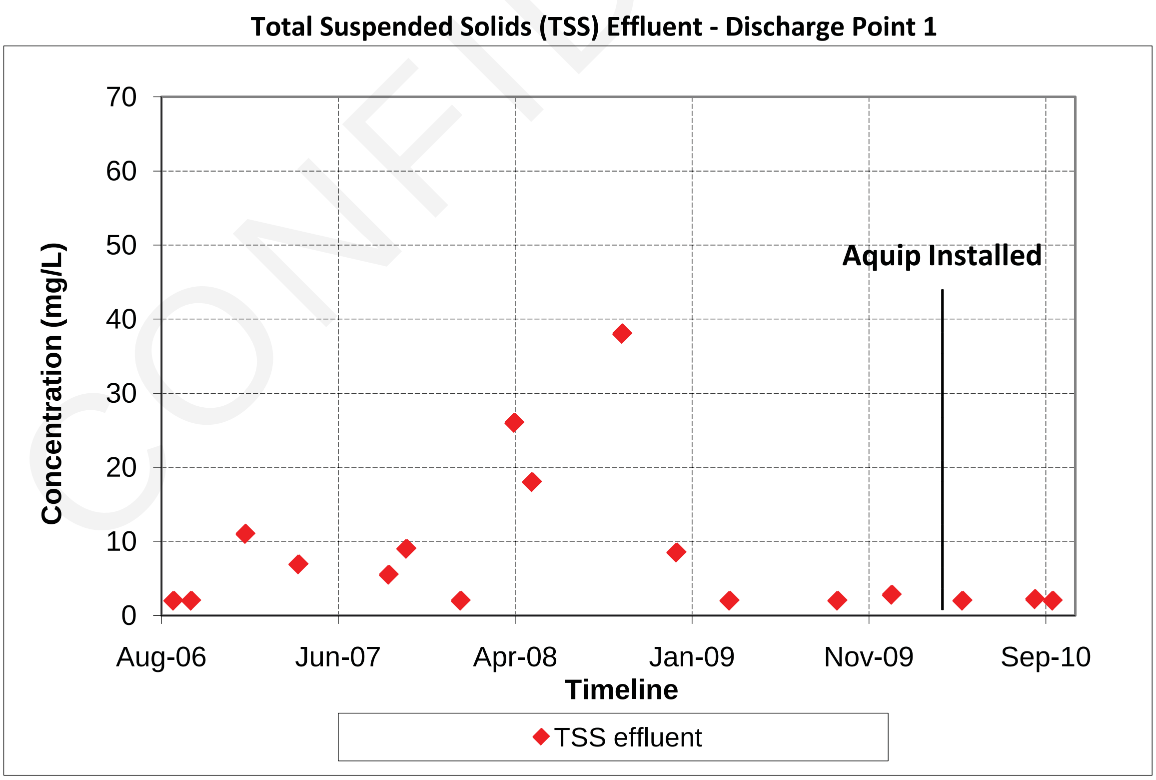
Facility Historical Data
Site ID #0105





Facility Historical Data
Site ID #0105





0201
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0201

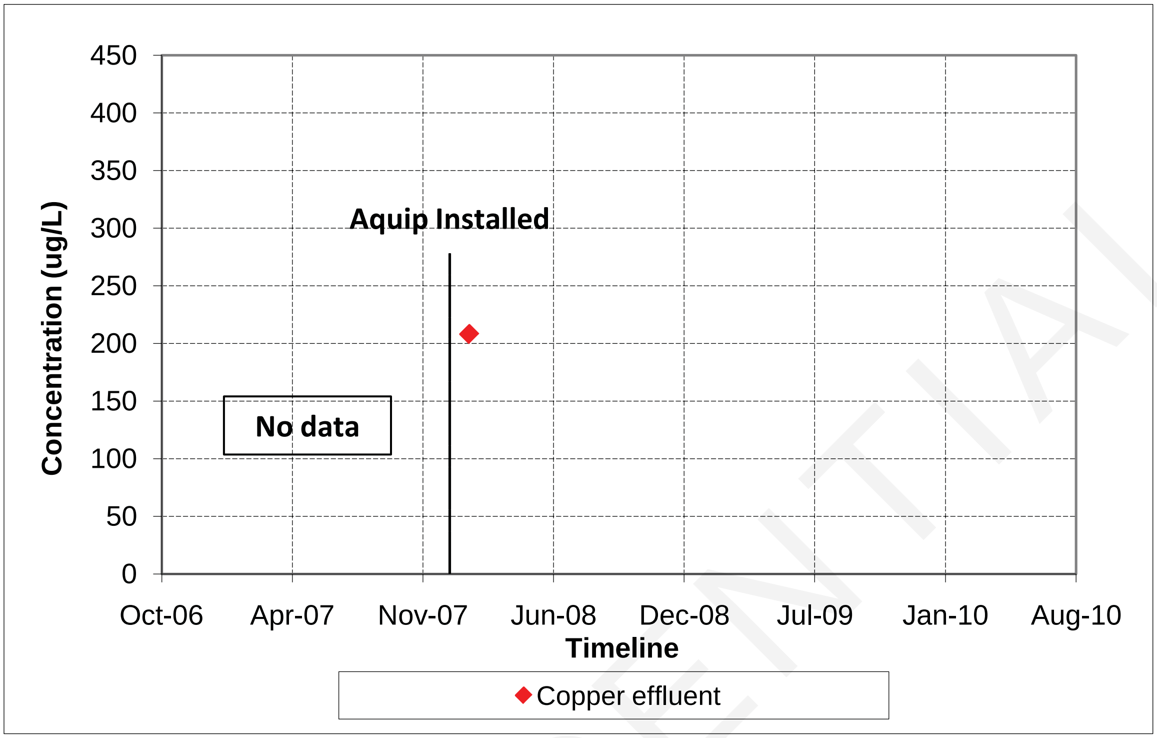
Site Location/Region:	Southern California
Facility Sector:	Ferrous Scrapyard
StormwateRx Product(s):	Aquip 110 UBE (enhanced media filtration system)
Date of Installation:	January 17, 2008
Maintenance Status:	Adequate

Sampling Events:

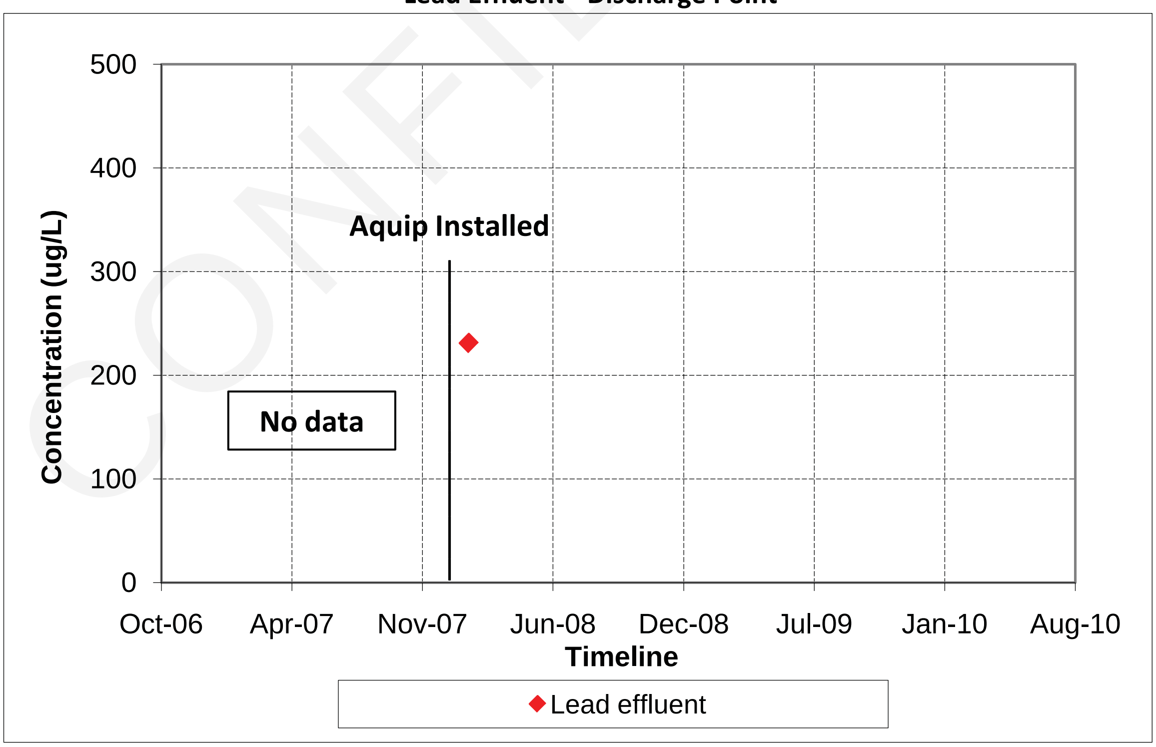
Date	Sampled By	Before/After Aquip Installation
January 24, 2008	StormwateRx	After

Facility Historical Data
Site ID #0201

Copper Effluent - Discharge Point

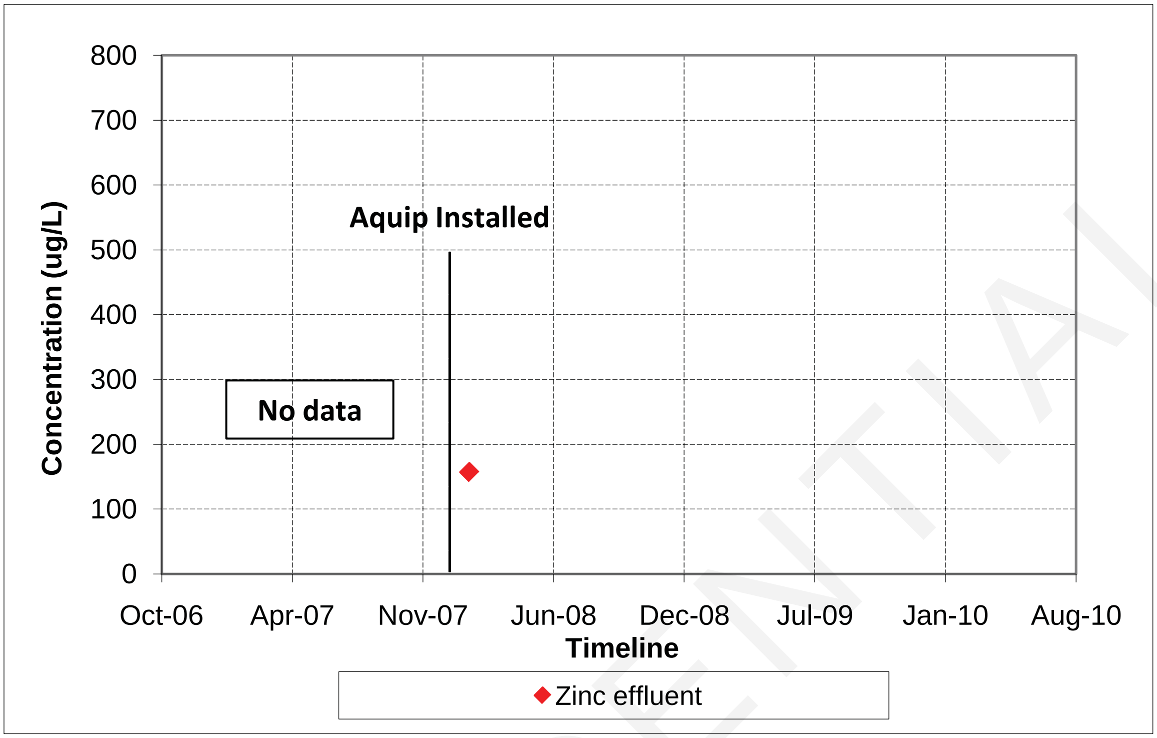


Lead Effluent - Discharge Point

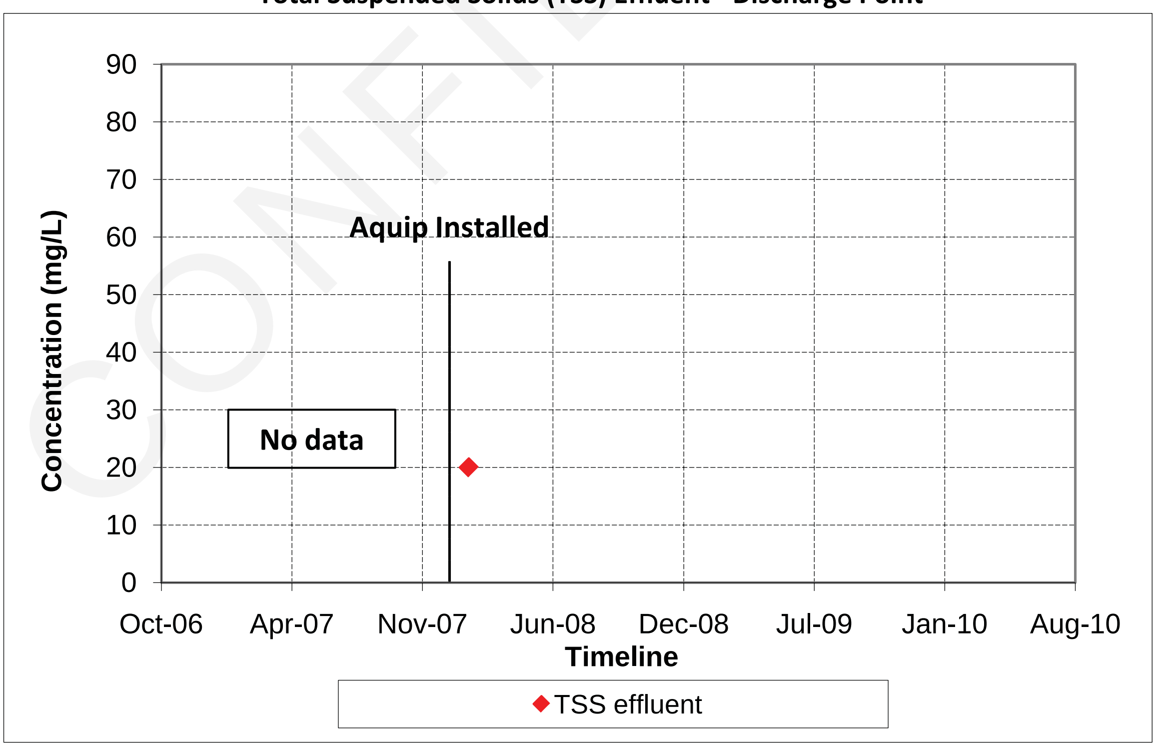


Facility Historical Data
Site ID #0201

Zinc Effluent - Discharge Point

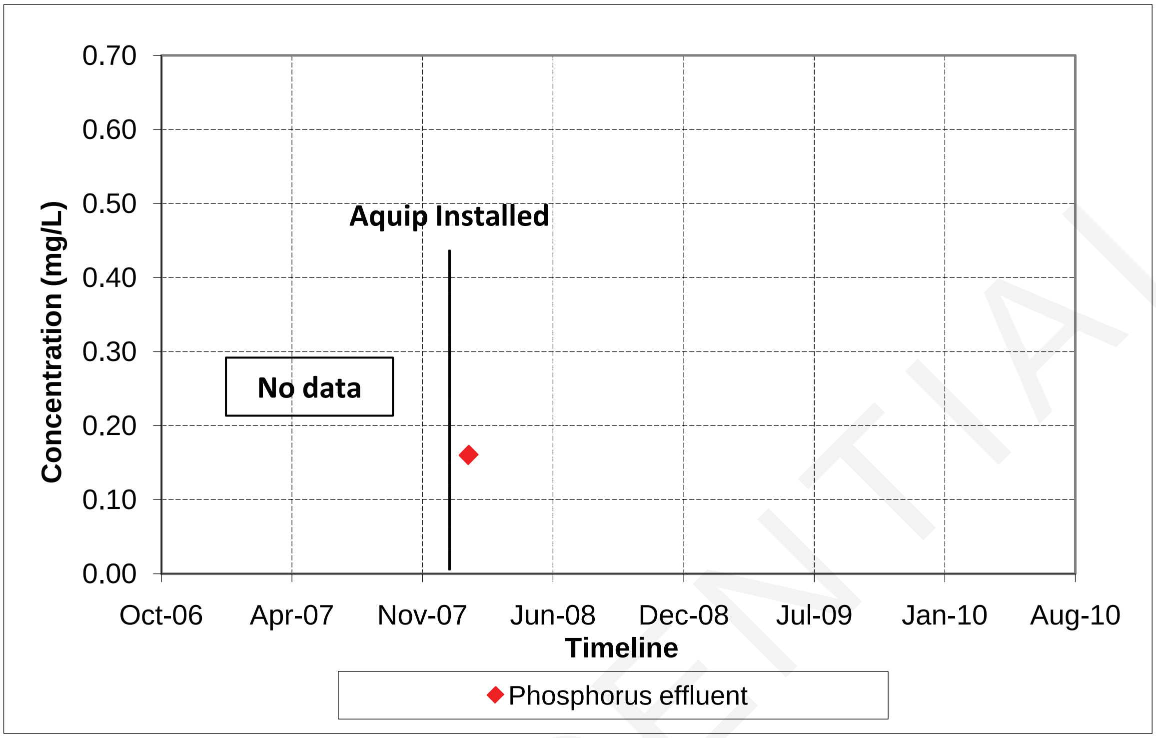


Total Suspended Solids (TSS) Effluent - Discharge Point

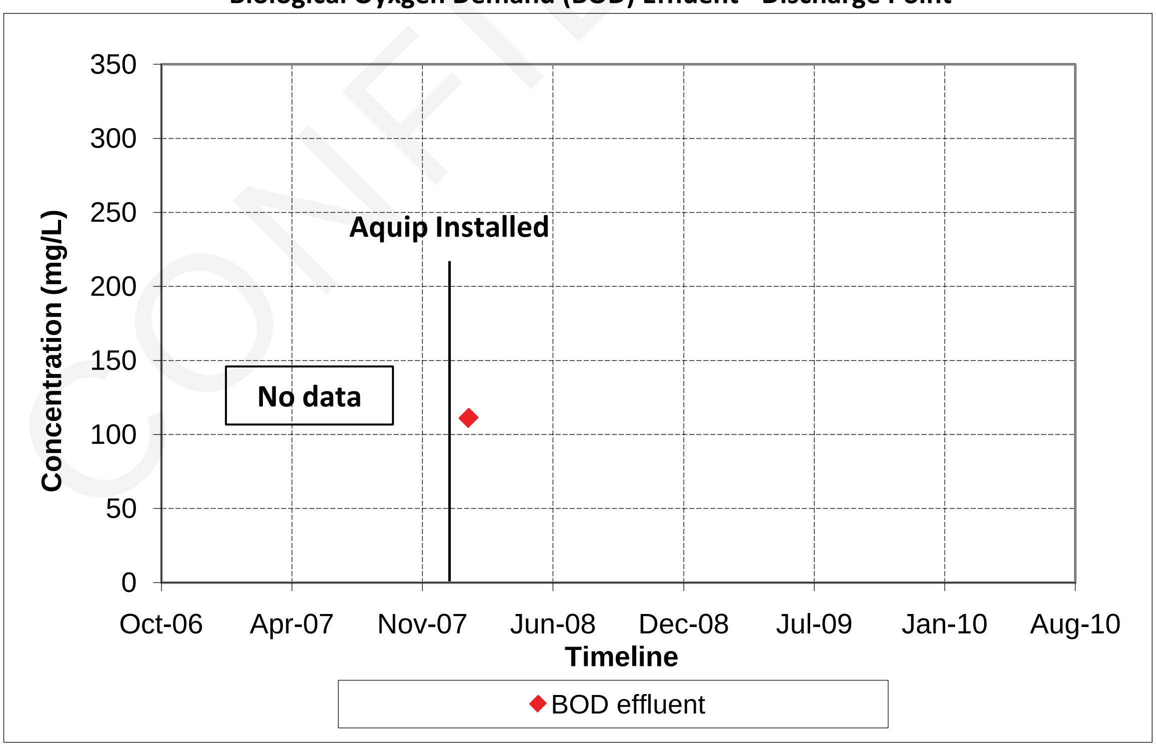


Facility Historical Data
Site ID #0201

Phosphorus Effluent - Discharge Point



Biological Oyxgen Demand (BOD) Effluent - Discharge Point



Aquip® Influent and Effluent Data
Site ID #0201

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	Copper	4.47		0.208		95%					
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	Lead	5.54		0.231		96%					
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	Zinc	3.30		0.157		95%					
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	TSS	360		20		94%					
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	Phosphorus	0.234		0.160		32%					
01/24/08	Aquip	Scrap-012408-A	Scrap-012408-C	BOD5	323		111		66%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0202
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0202

Site Location/Region: Pacific Northwest

Facility Sector: Ferrous Scrapyard

StormwateRx Product(s): Aquip 210SBE (enhanced media filtration system)

Date of Installation: June 22, 2010

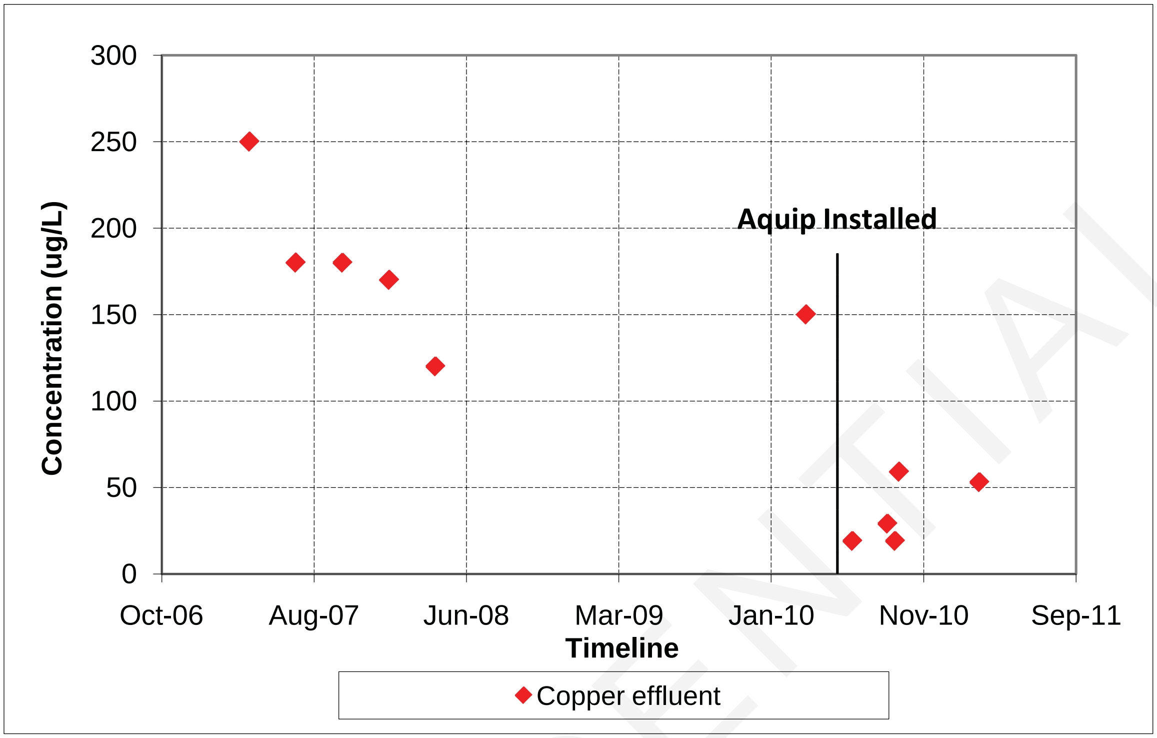
Maintenance Status: Adequate

Sampling Events:

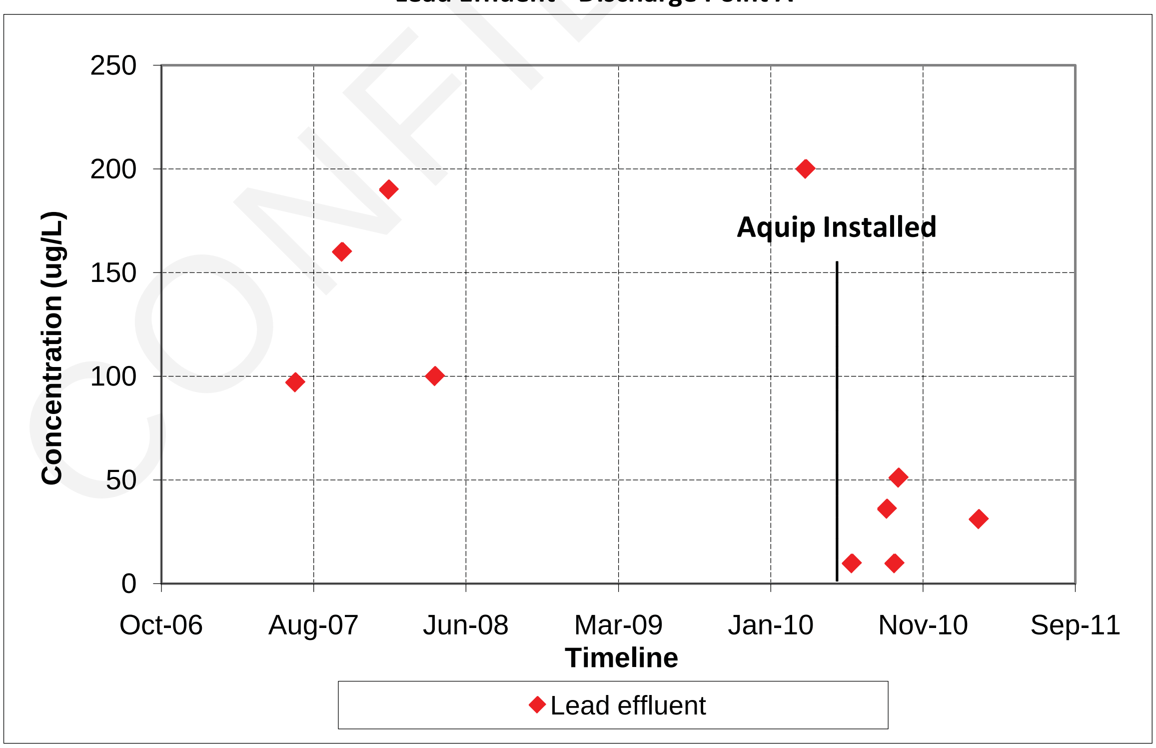
Date	Sampled By	Before/After Aquip Installation
January 1, 2005	Customer	Before
April 1, 2005	Customer	Before
January 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
April 1, 2007	Customer	Before
July 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
July 1, 2008	Customer	Before
April 1, 2010	Customer	Before
July 1, 2010	Customer	After
September 8, 2010	Customer	After
September 23, 2010	Customer	After
October 1, 2010	Customer	After
March 8, 2011	Customer	After

Facility Historical Data
Site ID #0202

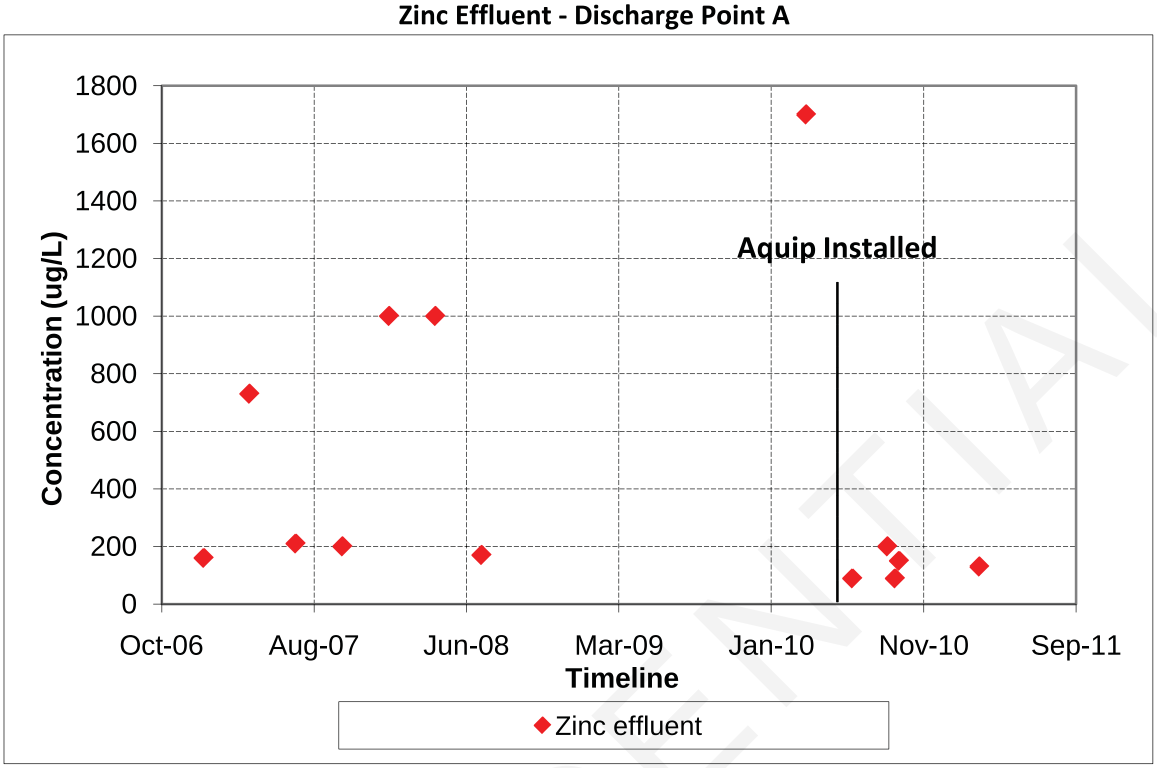
Copper Effluent - Discharge Point A

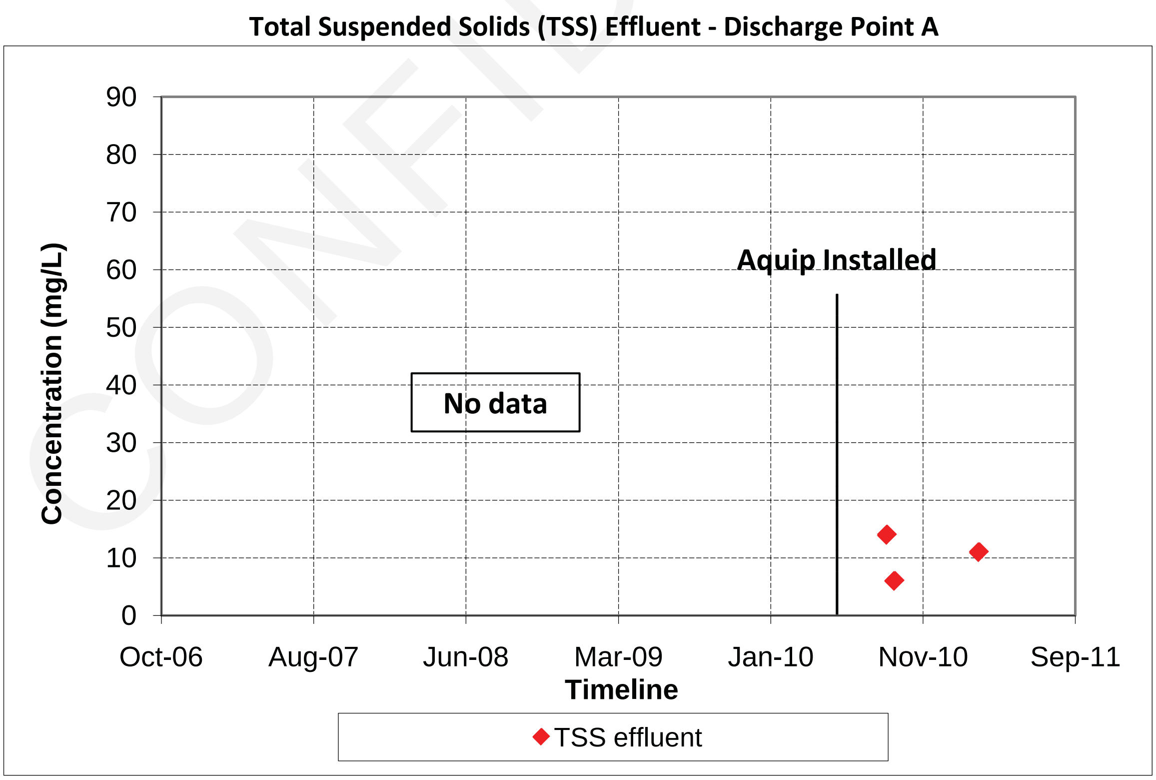


Lead Effluent - Discharge Point A



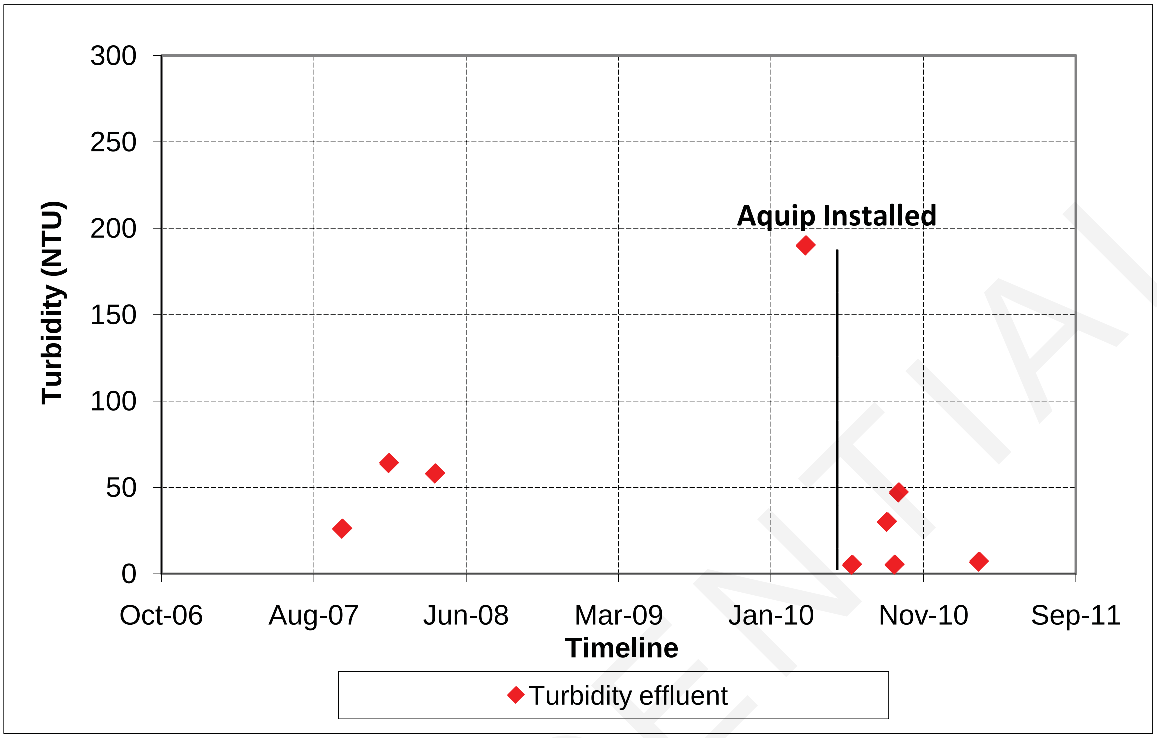
Facility Historical Data
Site ID #0202



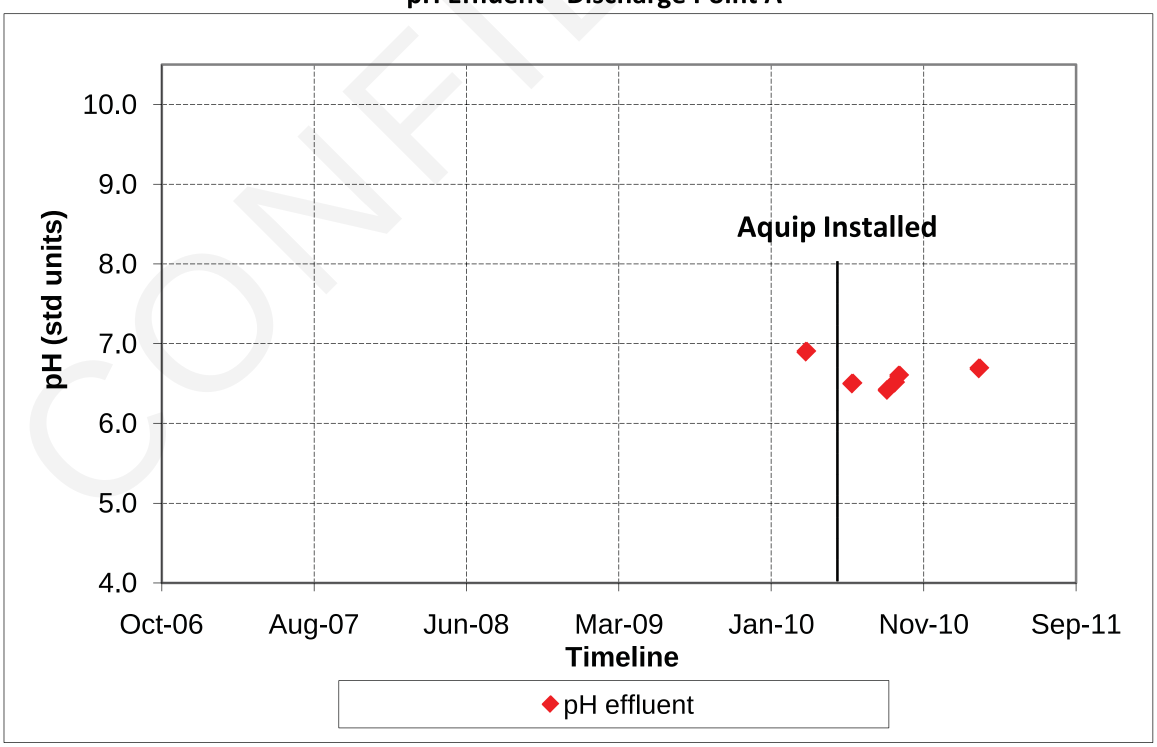


Facility Historical Data
Site ID #0202

Turbidity Effluent - Discharge Point A



pH Effluent - Discharge Point A



Aquip® Influent and Effluent Data
Site ID #0202

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
09/08/10	Aquip	Influent	Effluent	Copper	0.120		0.029		76%	0.030		0.012		60%
03/08/11	Aquip	Influent	Effluent	Copper	0.110		0.053		52%	0.011		0.0059		46%
09/08/10	Aquip	Influent	Effluent	Lead	0.150		0.036		76%	0.0076		0.007		8%
03/08/11	Aquip	Influent	Effluent	Lead	0.100		0.031		69%	0.0014		0.00068		51%
09/08/10	Aquip	Influent	Effluent	Zinc	1.100		0.200		82%	0.660		0.130		80%
03/08/11	Aquip	Influent	Effluent	Zinc	0.660		0.130		80%	0.410		0.072		82%
09/08/10	Aquip	Influent	Effluent	TSS	72		14		81%					
03/08/11	Aquip	Influent	Effluent	TSS	37		11		70%					
09/08/10	Aquip	Influent	Effluent	Turbidity	97		30		69%					
03/08/11	Aquip	Influent	Effluent	Turbidity	17		7.0		59%					
09/08/10	Aquip	Influent	Effluent	pH	6.78		6.42		-0.36					
03/08/11	Aquip	Influent	Effluent	pH	6.77		6.69		-0.08					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0203
Ferrous Scrapyard

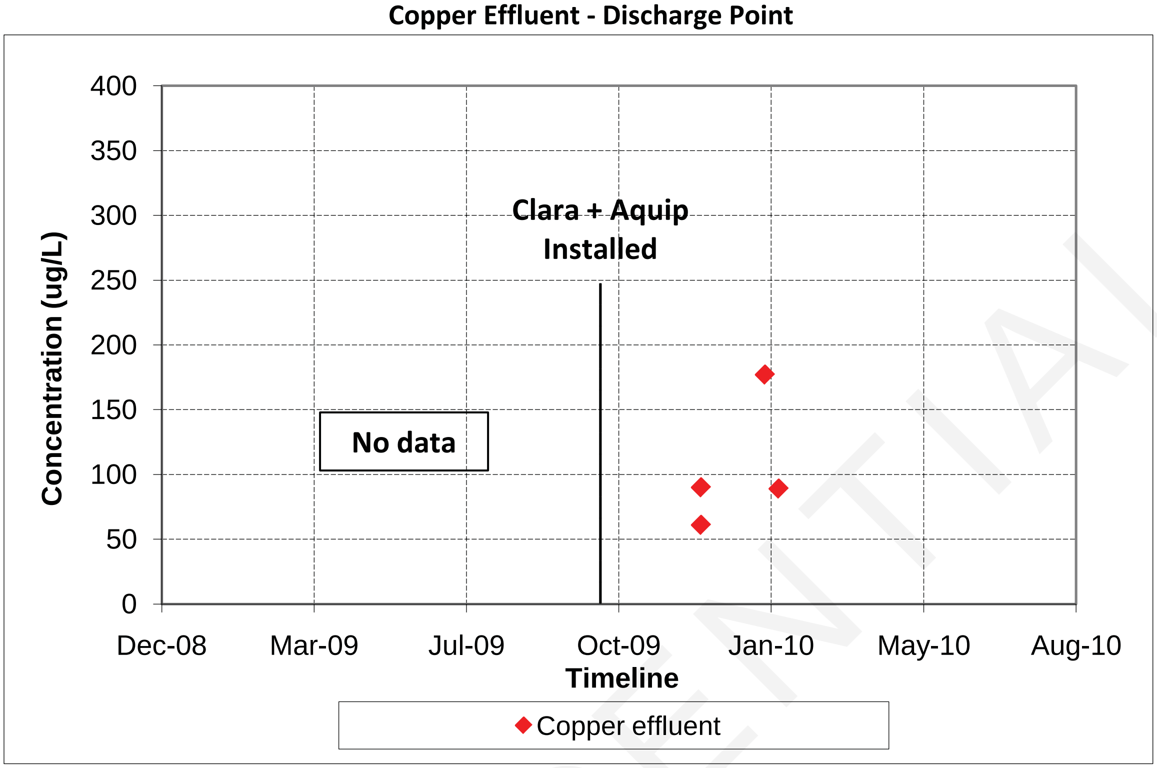
Stormwater Sampling Overview
Site ID #0203

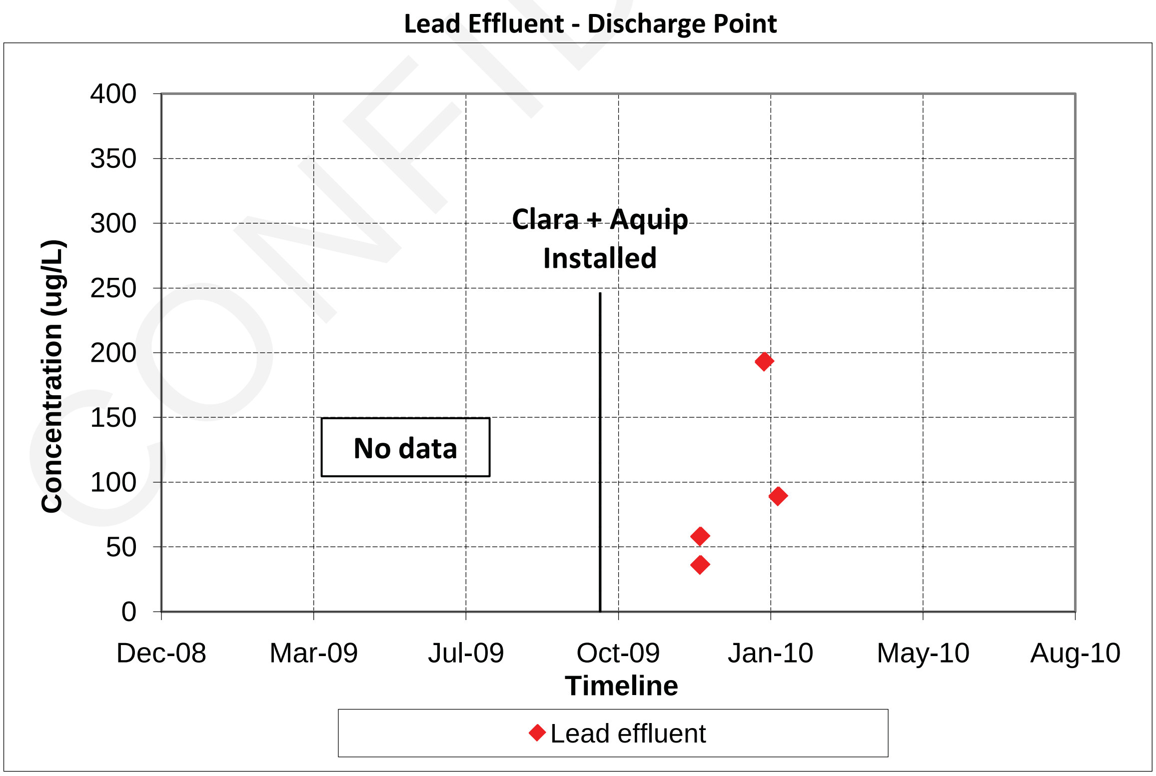
Site Location/Region:	Southern California
Facility Sector:	Ferrous Scrapyard
StormwateRx Product(s):	Clara 40CP (stormwater separator vault) Aquip 160SBE (enhanced media filtration system)
Date of Installation:	September 25, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

Date	Sampled By	Before/After Aquip Installation
December 7, 2009	StormwateRx	After
December 7, 2009	3rd Party	After
January 18, 2010	3rd Party	After
January 27, 2010	3rd Party	After

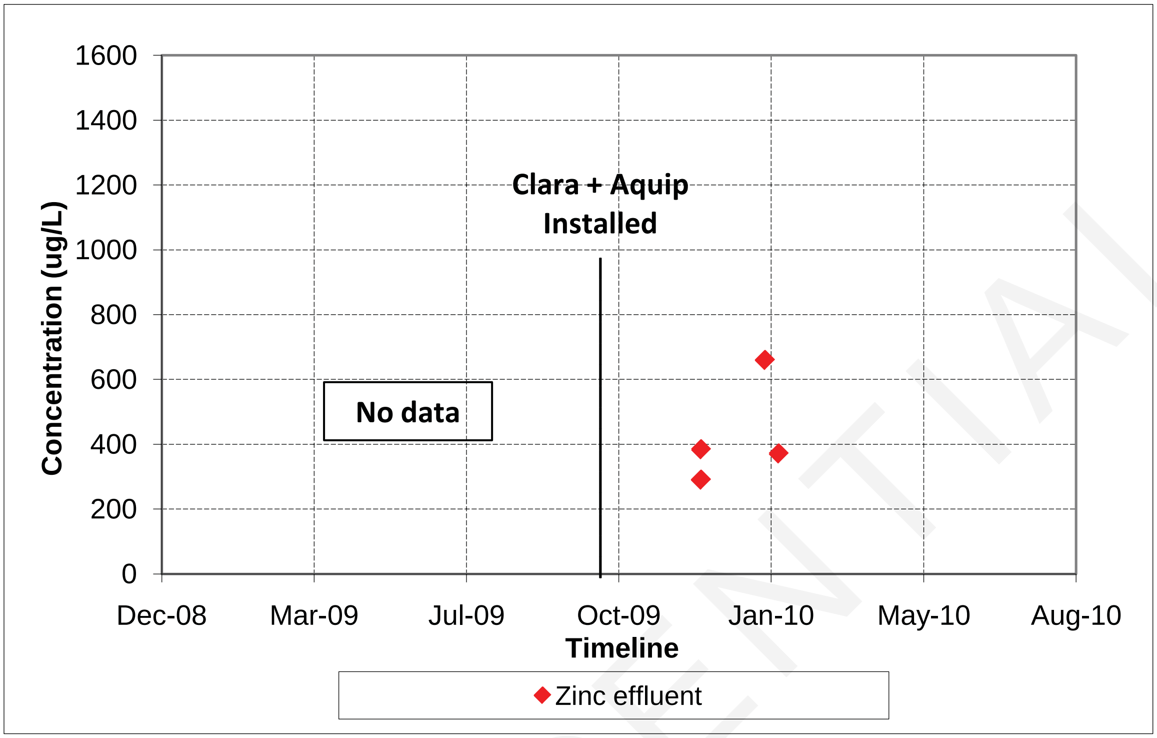
Facility Historical Data
Site ID #0203



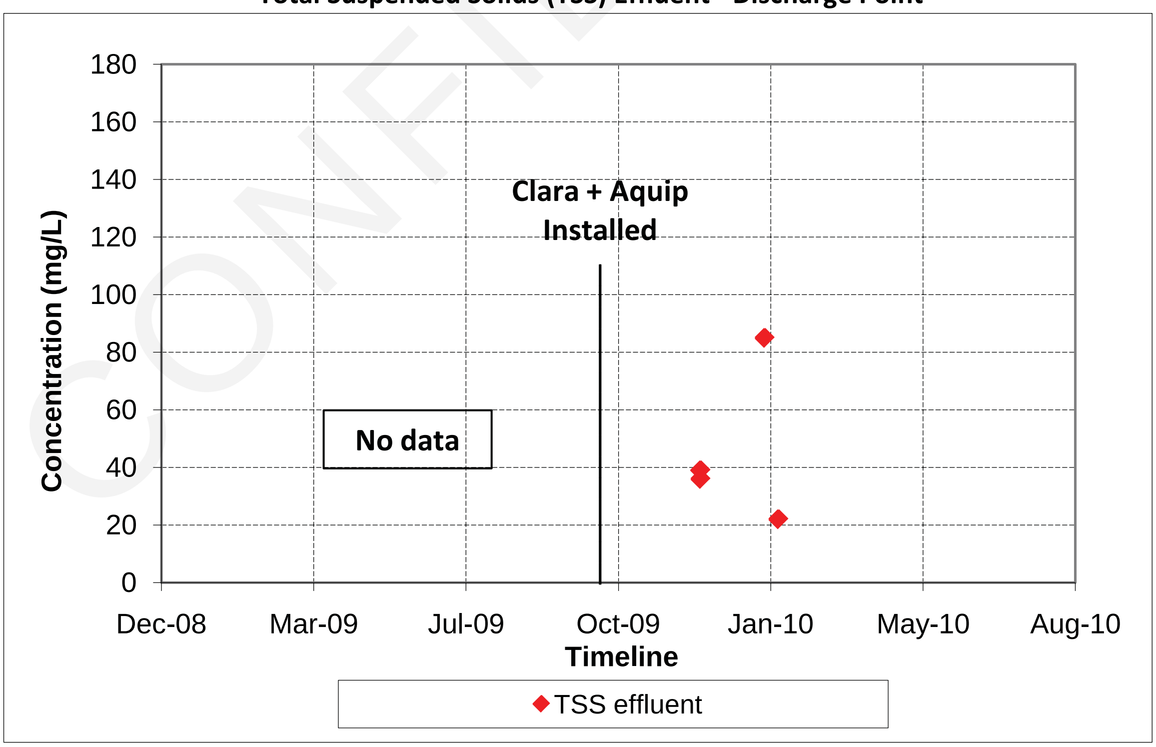


Facility Historical Data
Site ID #0203

Zinc Effluent - Discharge Point

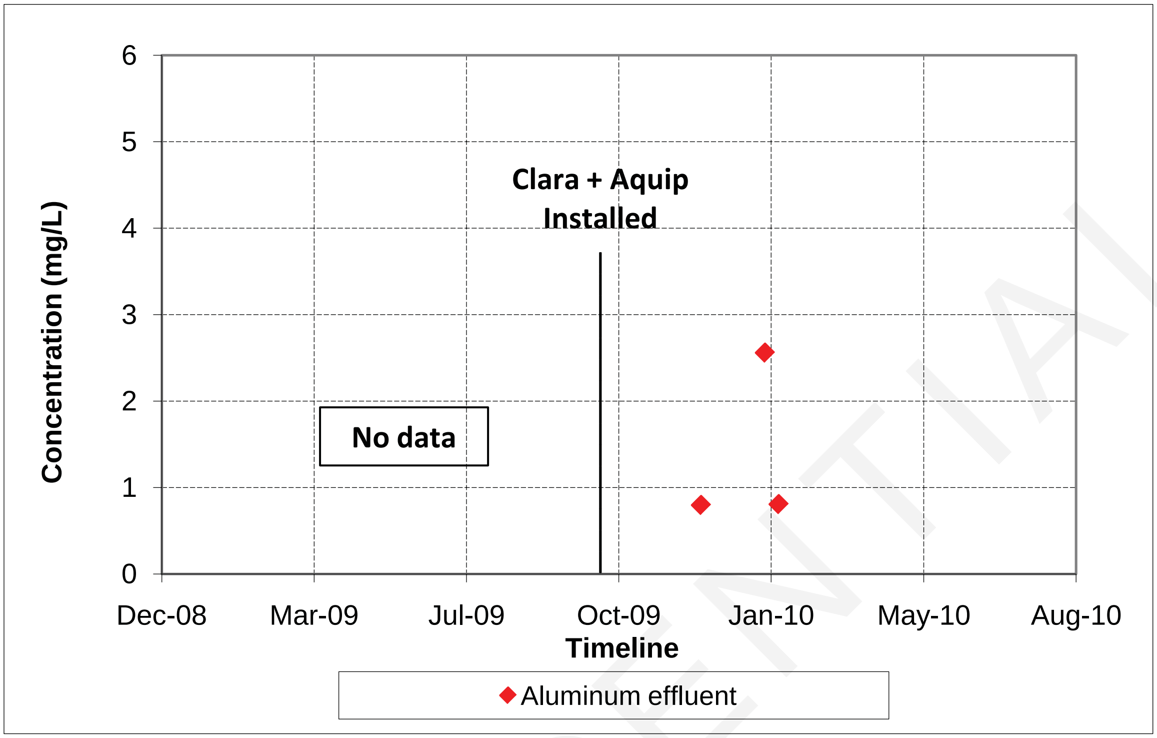


Total Suspended Solids (TSS) Effluent - Discharge Point

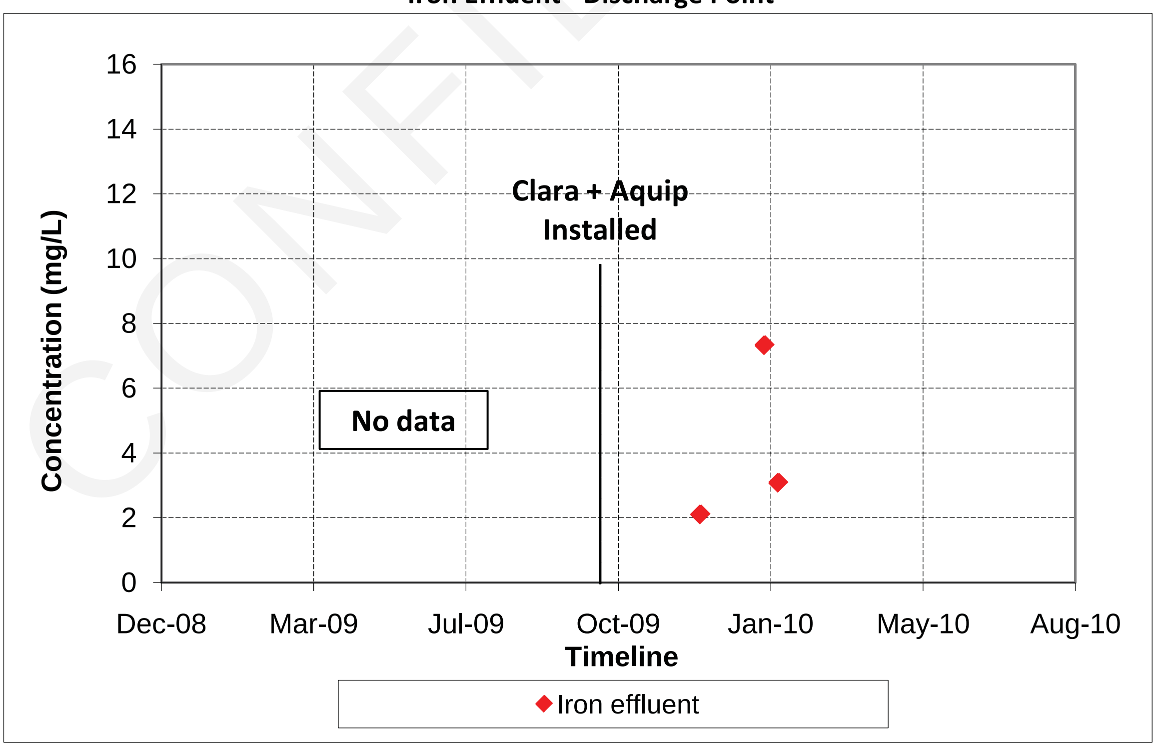


Facility Historical Data
Site ID #0203

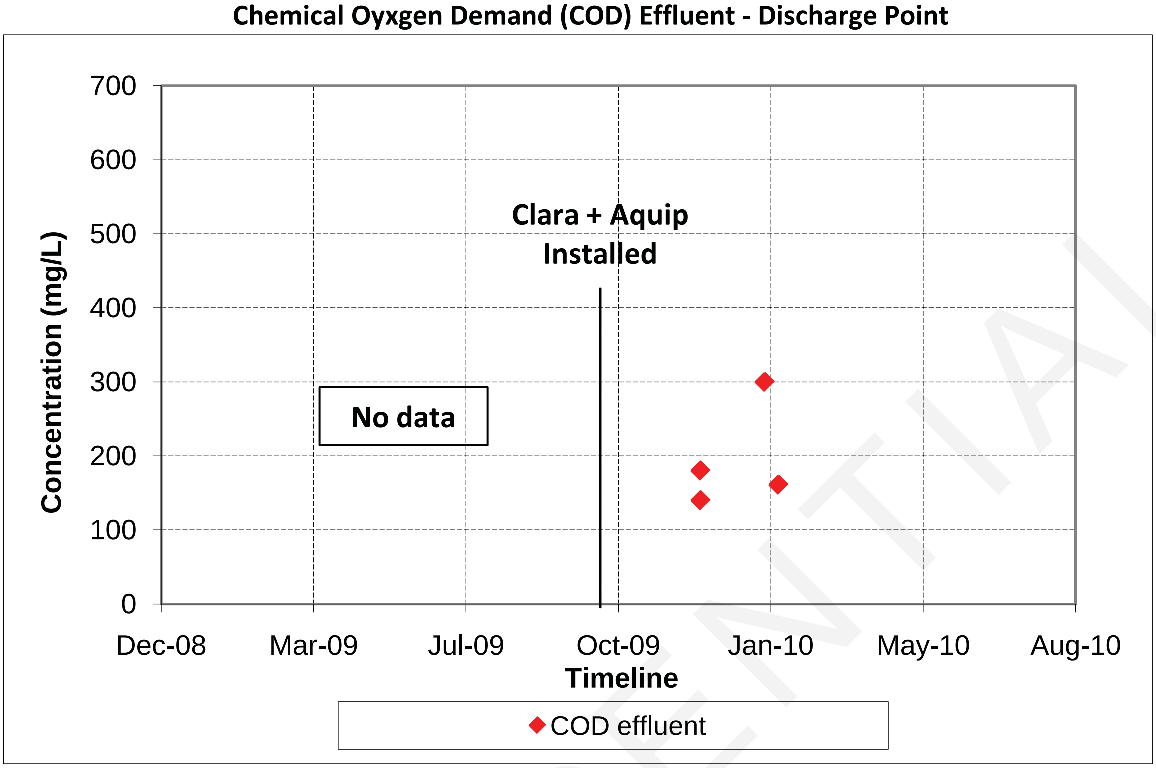
Aluminum Effluent - Discharge Point

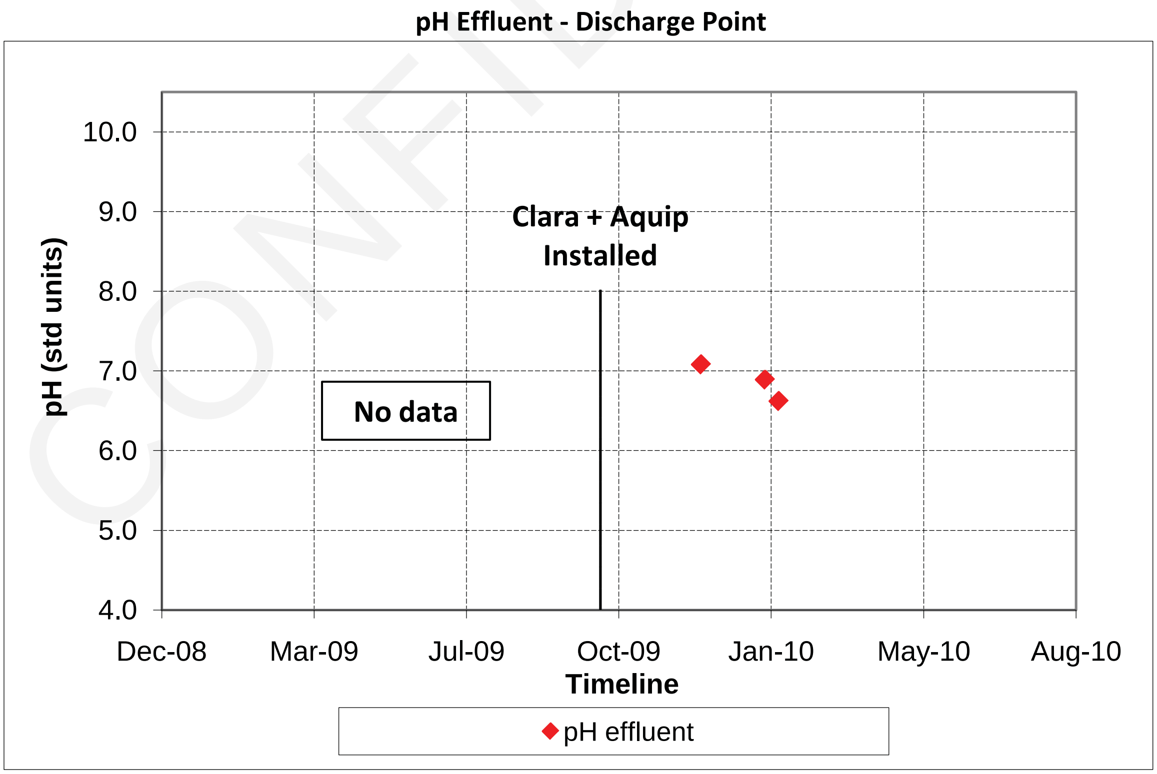


Iron Effluent - Discharge Point



Facility Historical Data
Site ID #0203





Aquip® Influent and Effluent Data
Site ID #0203

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Aluminum	12.9		2.56		80%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Aluminum	5.50		0.805		85%					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Cadmium						0.0025	ND	0.0025	ND	N/A
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Chromium (III)	0.098		0.018		82%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Chromium (III)	0.005	ND	0.005	ND	N/A					
12/07/09	Aquip	C-OUT 0096 Yd. 3	A-OUT 0096 Yd. 3	Copper	0.83		0.061		93%	0.10		0.0038		96%
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Copper	0.894		0.177		80%	0.041		0.034		17%
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Copper	0.369		0.089		76%	0.022		0.02		9%
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Hardness	238		218		8%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Hardness	283		298		increased					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Iron	43.3		7.33		83%	0.558		0.127		77%
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Iron	20.1		3.08		85%	0.23		0.125		46%
12/07/09	Aquip	C-OUT 0096 Yd. 3	A-OUT 0096 Yd. 3	Lead	0.77		0.036		95%	0.010		0.0012		88%
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Lead	1.02		0.193		81%	0.019		0.010		47%
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Lead	0.538		0.089		83%	0.017		0.005		71%
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Mercury	0.033		0.0028		92%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Mercury	0.0056		0.0015		73%	0.0004		0.0007		increased
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Nickel						0.069		0.031		55%
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Nickel						0.005		0.035	ND	increased
12/07/09	Aquip	C-OUT 0096 Yd. 3	A-OUT 0096 Yd. 3	Zinc	3.1		0.29		91%	0.88		0.039		96%
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Zinc	4.61		0.660		86%	1.11		0.327		71%
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Zinc	2.49		0.371		85%	0.050		0.195		increased
12/07/09	Aquip	C-OUT 0096 Yd. 3	A-OUT 0096 Yd. 3	TSS	510		36		93%					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	TSS	518		85		84%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	TSS	236		22		91%					

Aquip® Influent and Effluent Data
Site ID #0203

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Specific Conductivity	710		770		increased					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	Specific Conductivity	917		868		5%					
12/07/09	Aquip	C-OUT 0096 Yd. 3	A-OUT 0096 Yd. 3	COD	180		180		0%					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	COD	710		300		58%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	COD	512		161		69%					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	O&G	60		10		83%					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	O&G	14		2.5	ND	82%					
01/18/10	Aquip	Yard 3 In	Yard 3 Out	pH	7.26		6.89		-0.37					
01/27/10	Aquip	Pretreatment Yd. 3	Discharge Yd. 3	pH	6.98		6.62		-0.36					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0204
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0204

Site Location/Region: Pacific Northwest

Facility Sector: Ferrous Scrapyard

StormwateRx Product(s): Aquip 110SBE (enhanced media filtration system)

Date of Installation: December 12, 2008

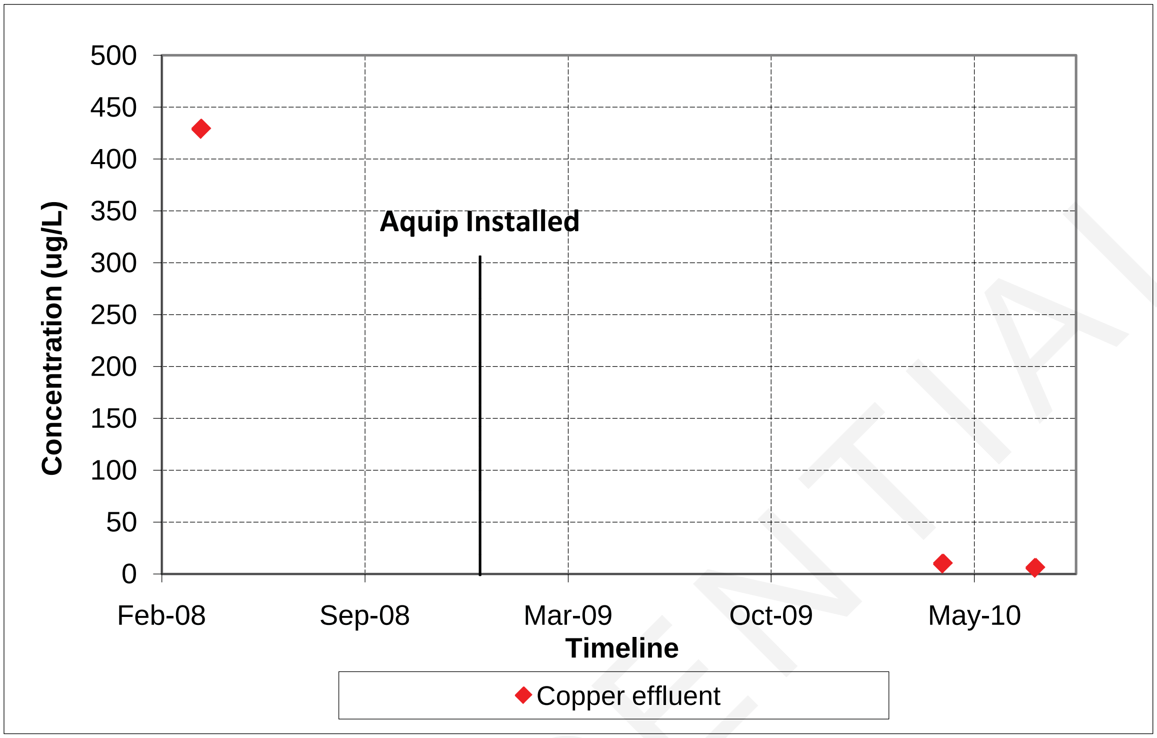
Maintenance Status: Adequate

Sampling Events:

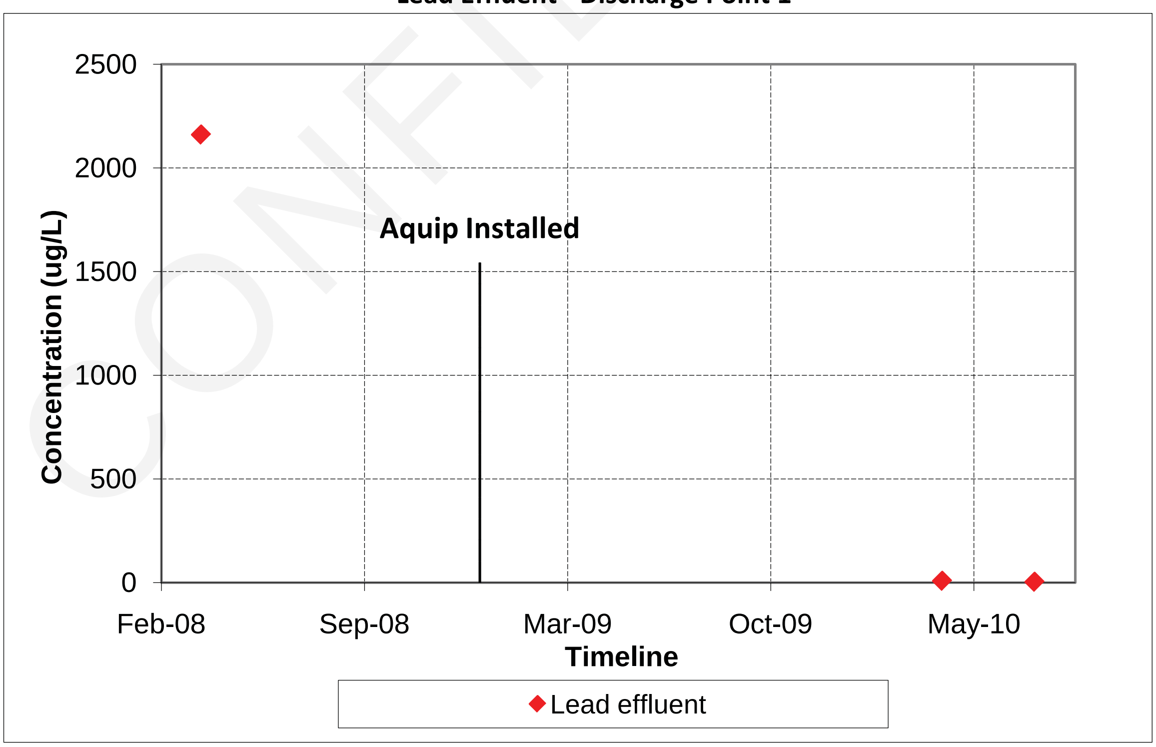
Date	Sampled By	Before/After Aquip Installation
April 1, 2008	Customer	Before
April 1, 2010	Customer	After
July 1, 2010	Customer	After

Facility Historical Data
Site ID #0204

Copper Effluent - Discharge Point 1

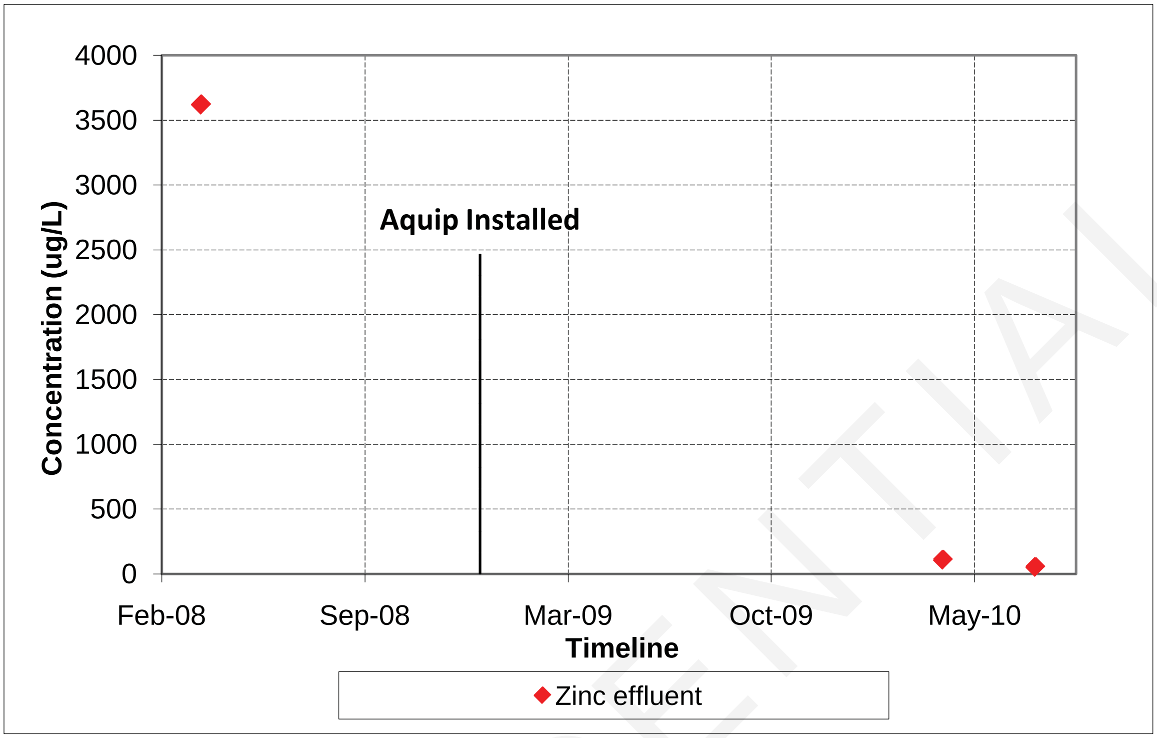


Lead Effluent - Discharge Point 1

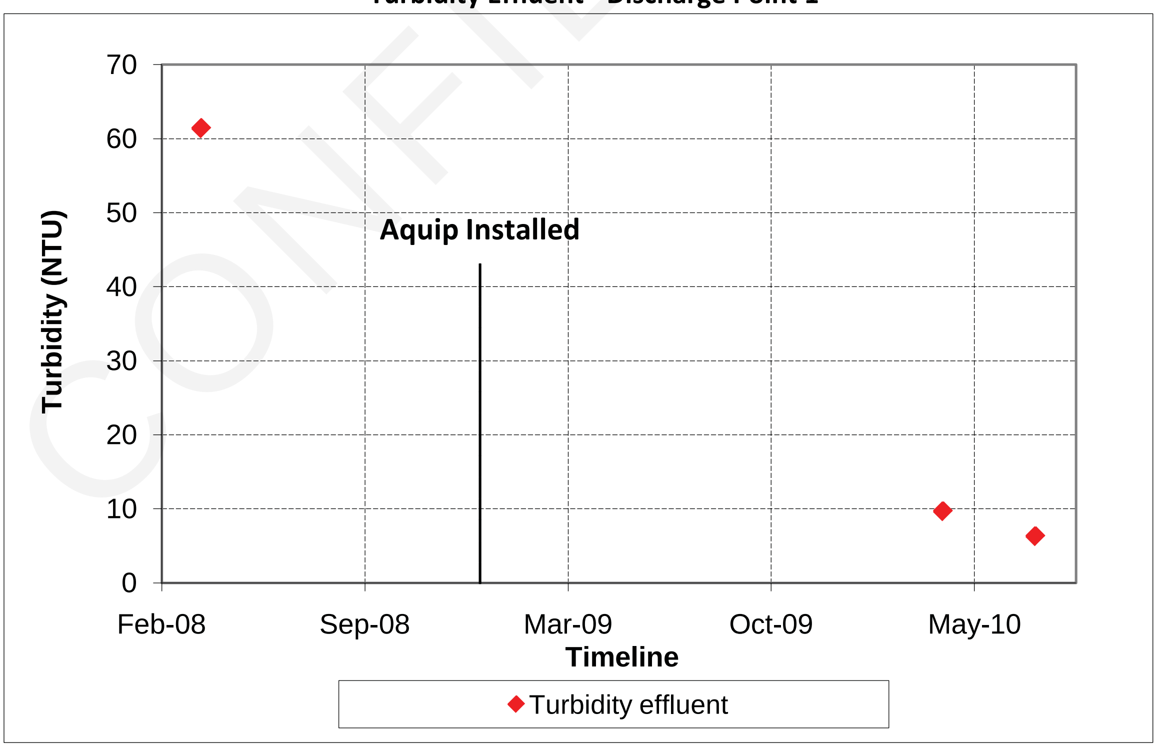


Facility Historical Data
Site ID #0204

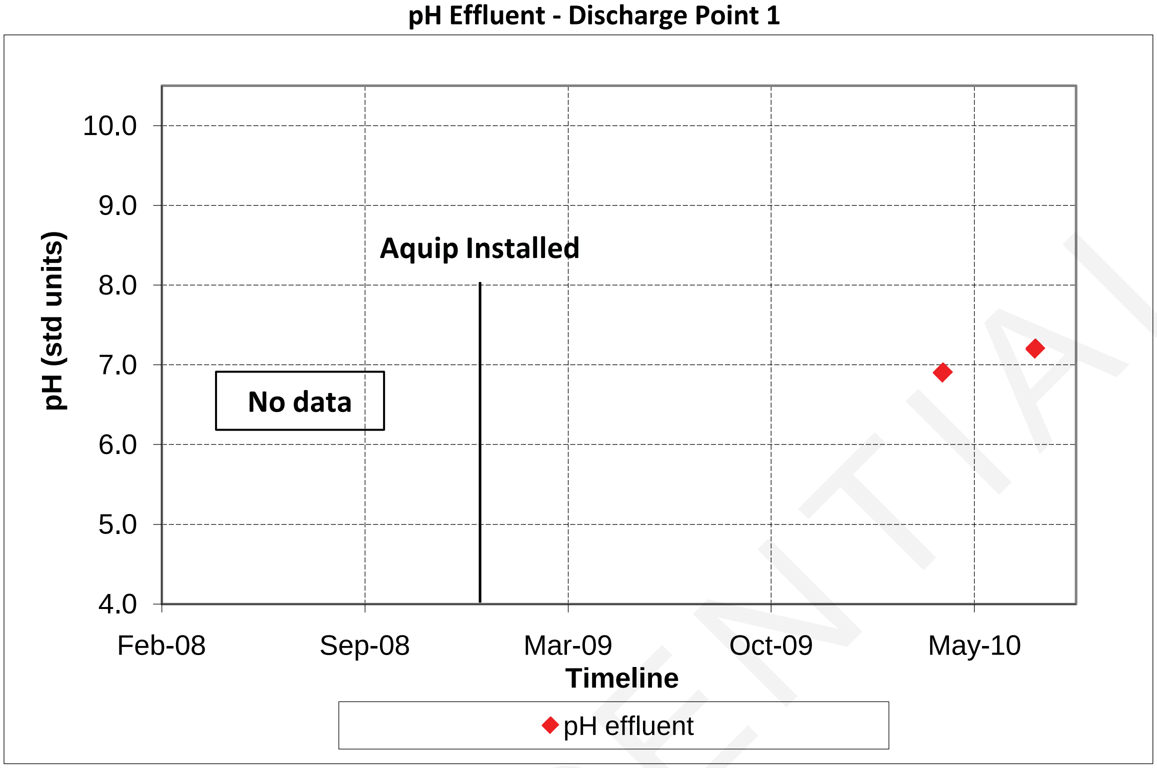
Zinc Effluent - Discharge Point 1



Turbidity Effluent - Discharge Point 1



Facility Historical Data
Site ID #0204



0205
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0205

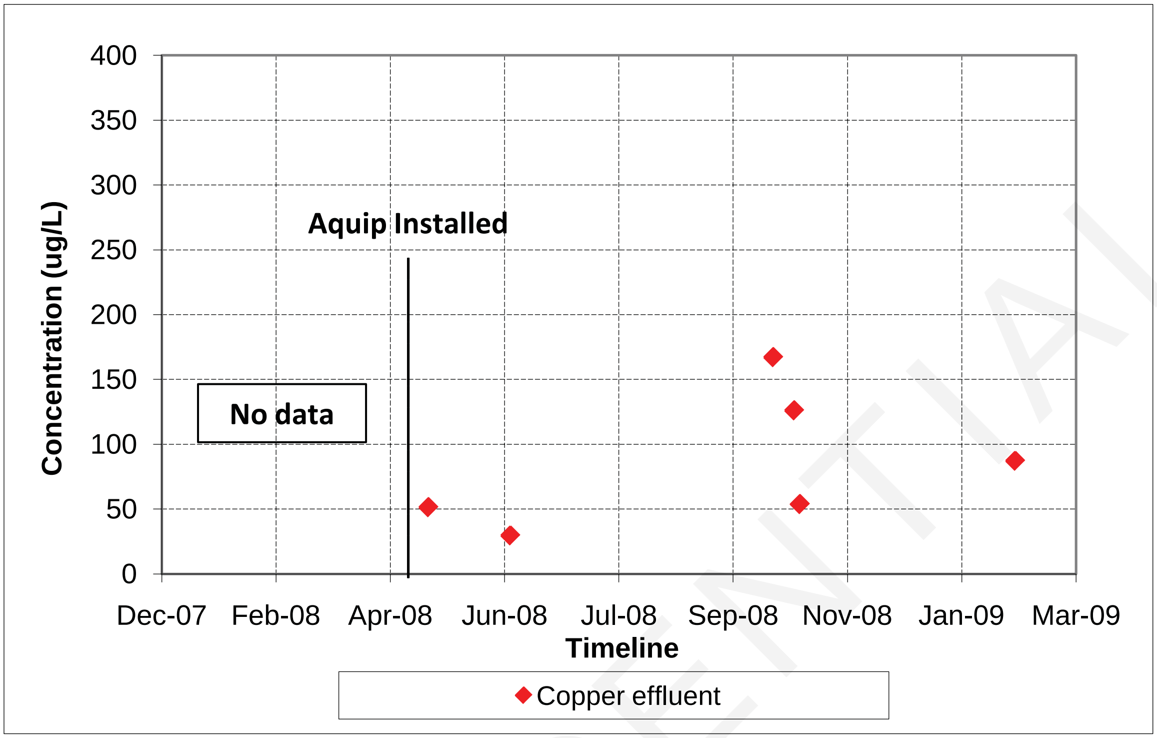
Site Location/Region:	Pacific Northwest
Facility Sector:	Ferrous Scrapyard
StormwateRx Product(s):	Aquip 110SBE (enhanced media filtration system)
Date of Installation:	April 4, 2008
Maintenance Status:	Needs Improvement

Sampling Events:

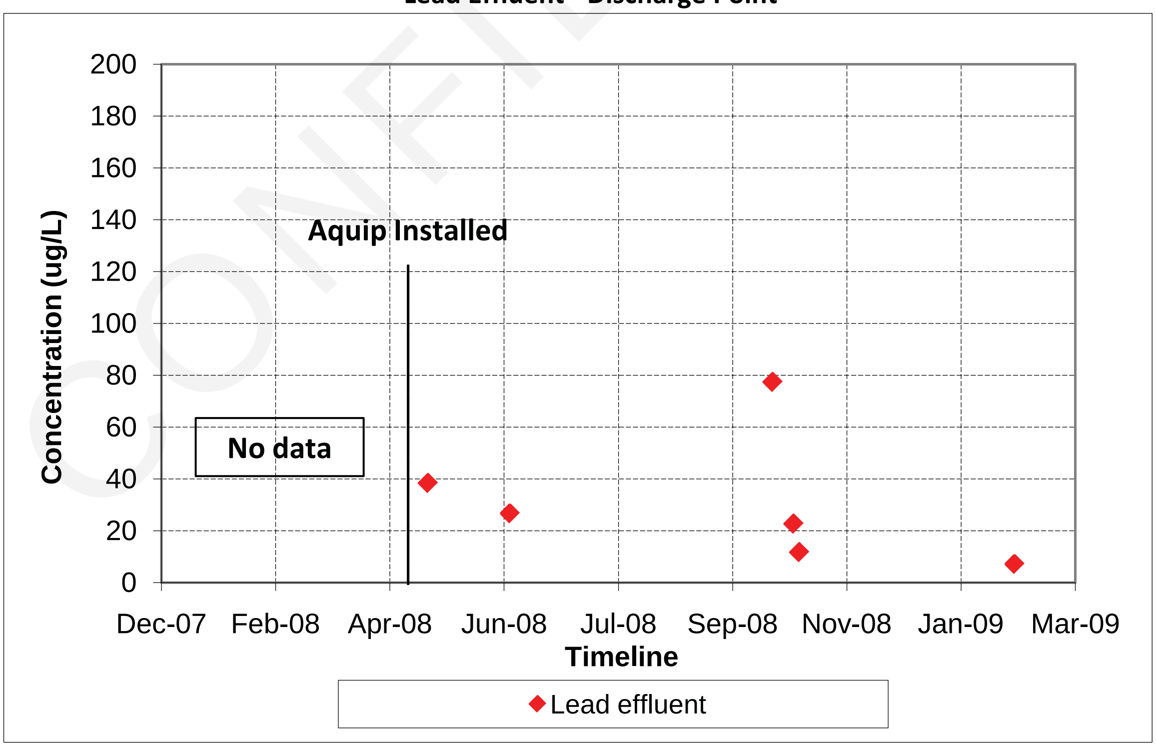
Date	Sampled By	Before/After Aquip Installation
April 22, 2008	StormwateRx	After
June 4, 2008	3rd Party	After
October 20, 2008	3rd Party	After
October 31, 2008	StormwateRx	After
November 3, 2008	3rd Party	After
February 24, 2009	3rd Party	After

Facility Historical Data
Site ID #0205

Copper Effluent - Discharge Point

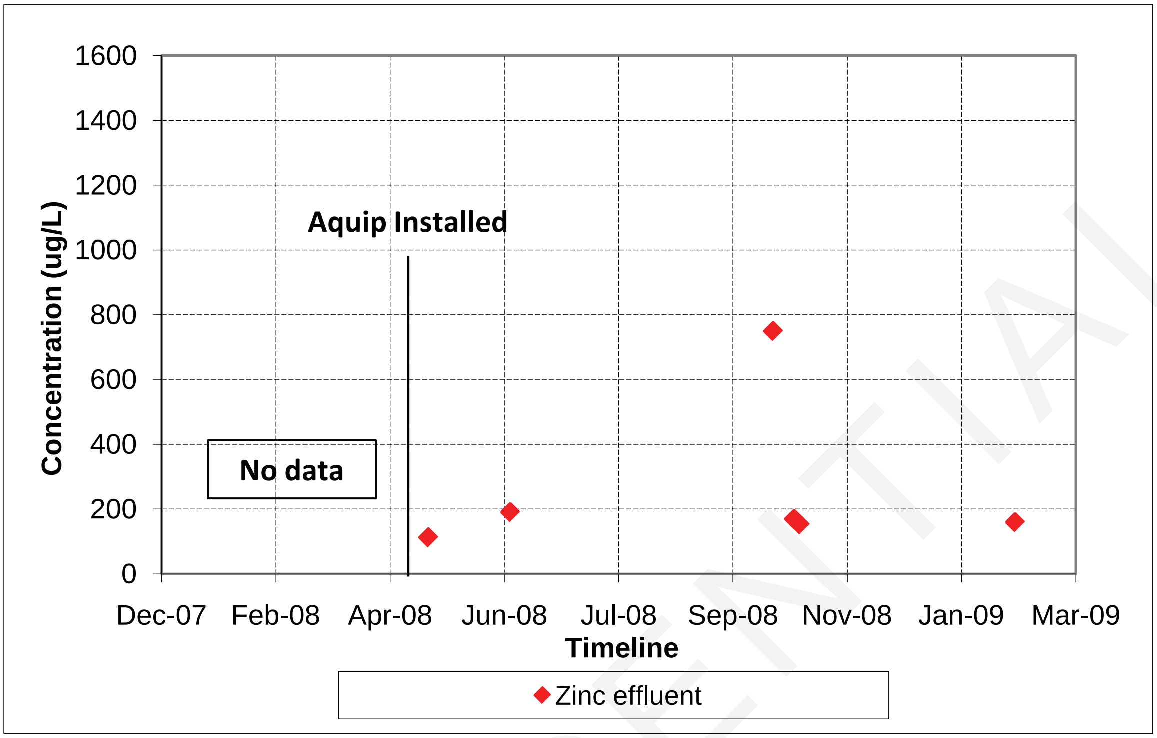


Lead Effluent - Discharge Point

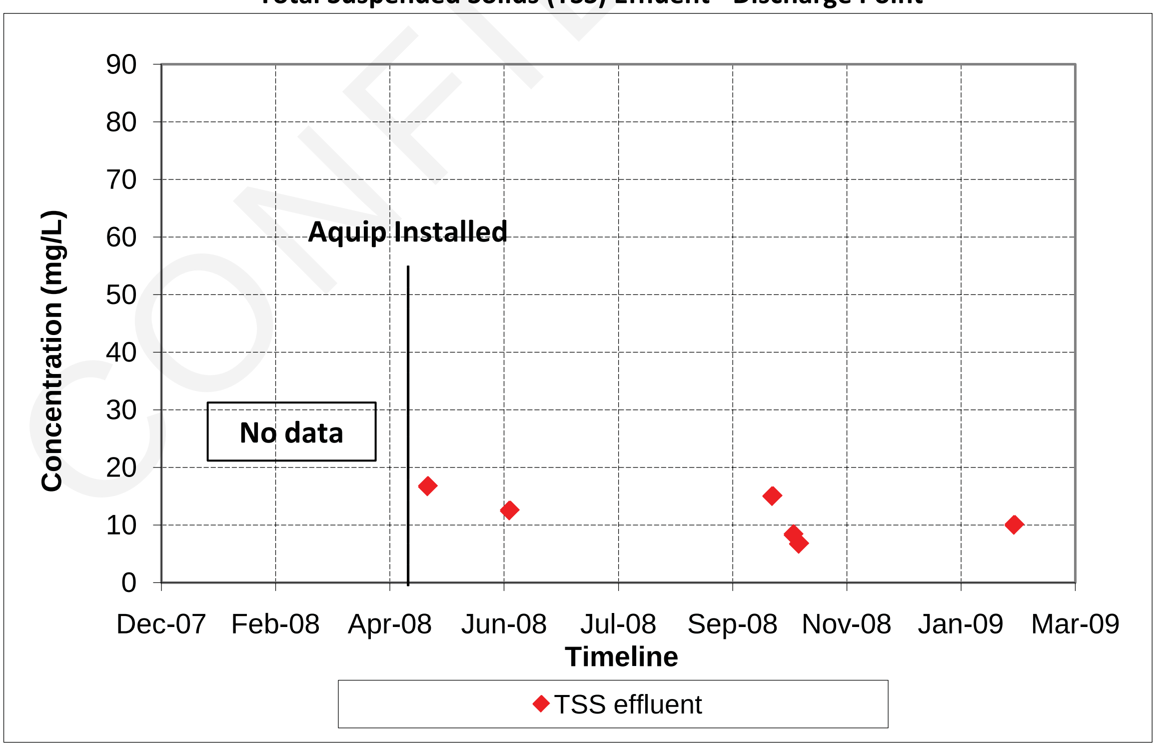


Facility Historical Data
Site ID #0205

Zinc Effluent - Discharge Point

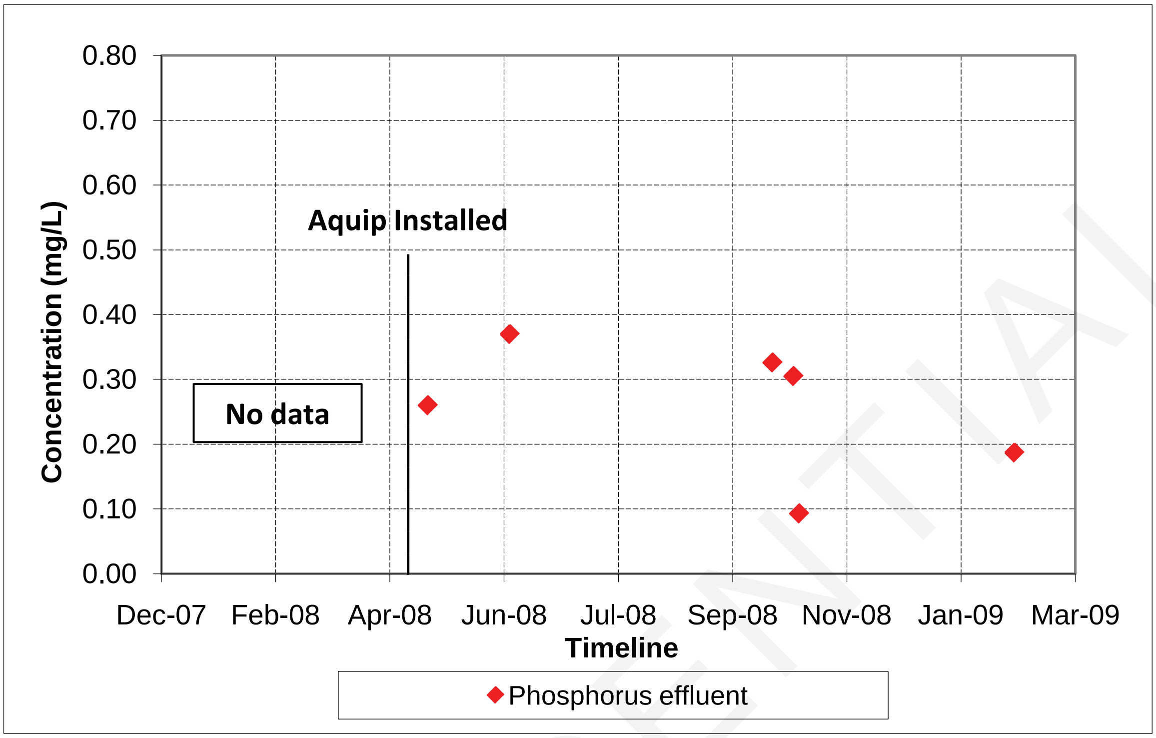


Total Suspended Solids (TSS) Effluent - Discharge Point

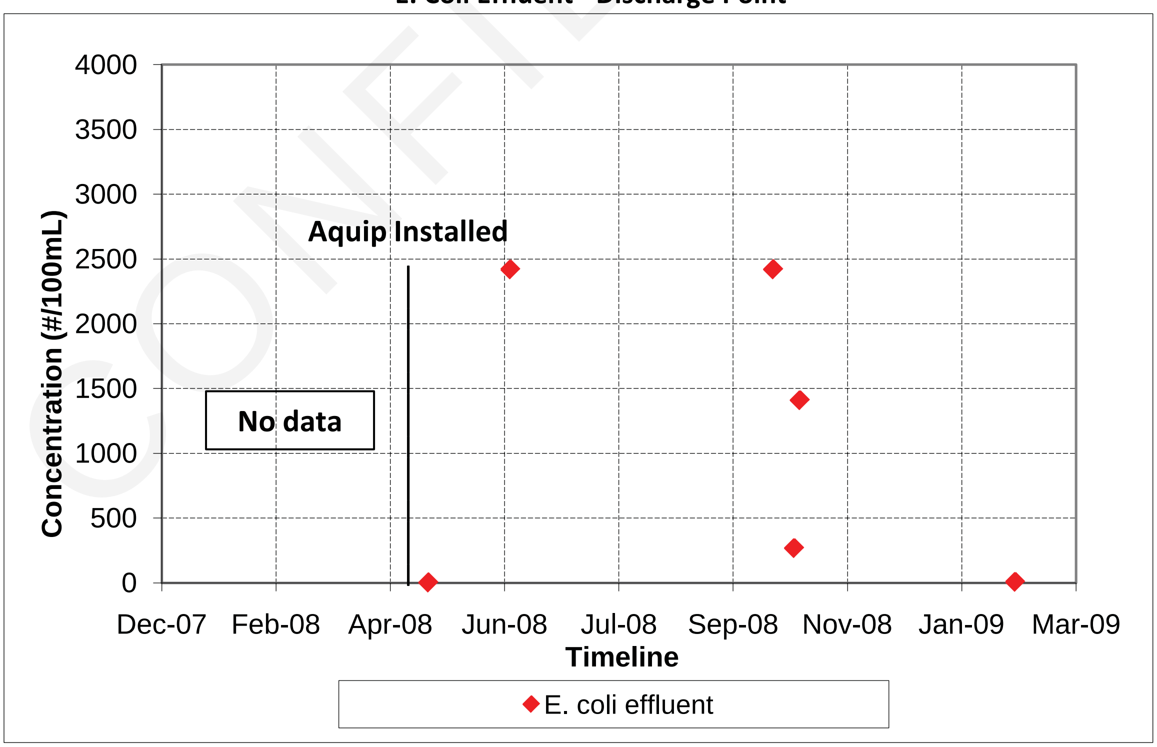


Facility Historical Data
Site ID #0205

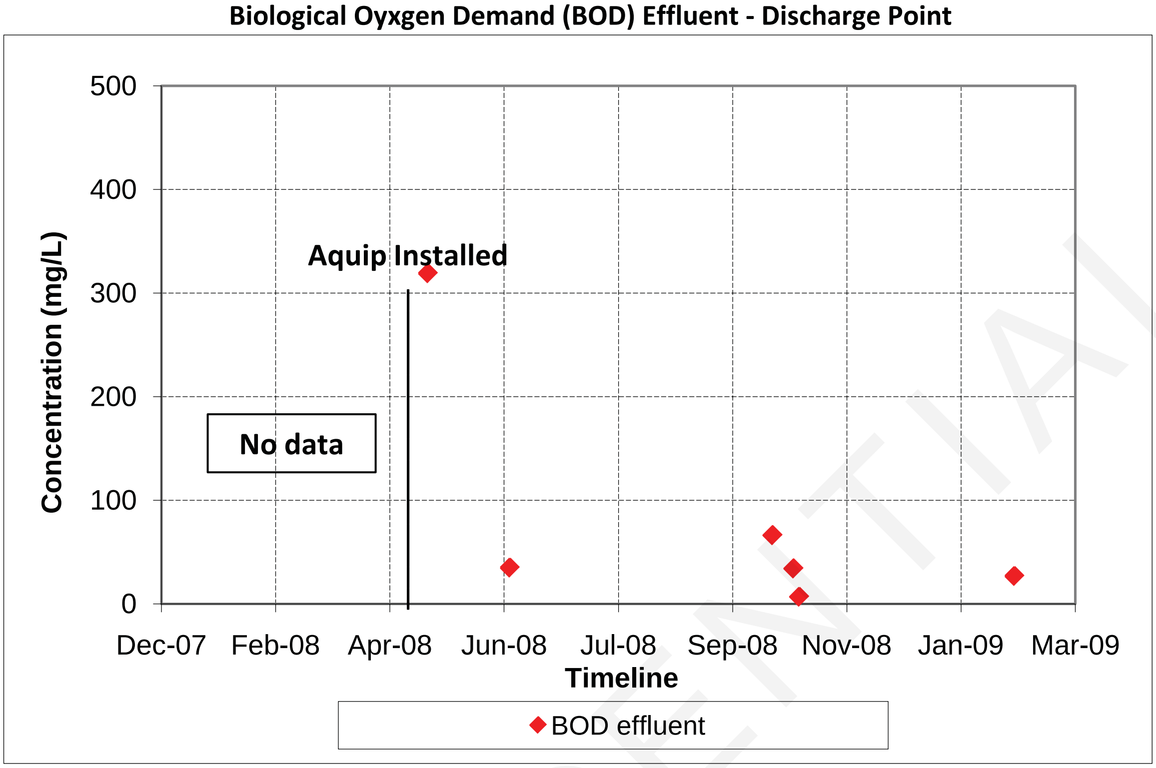
Phosphorus Effluent - Discharge Point

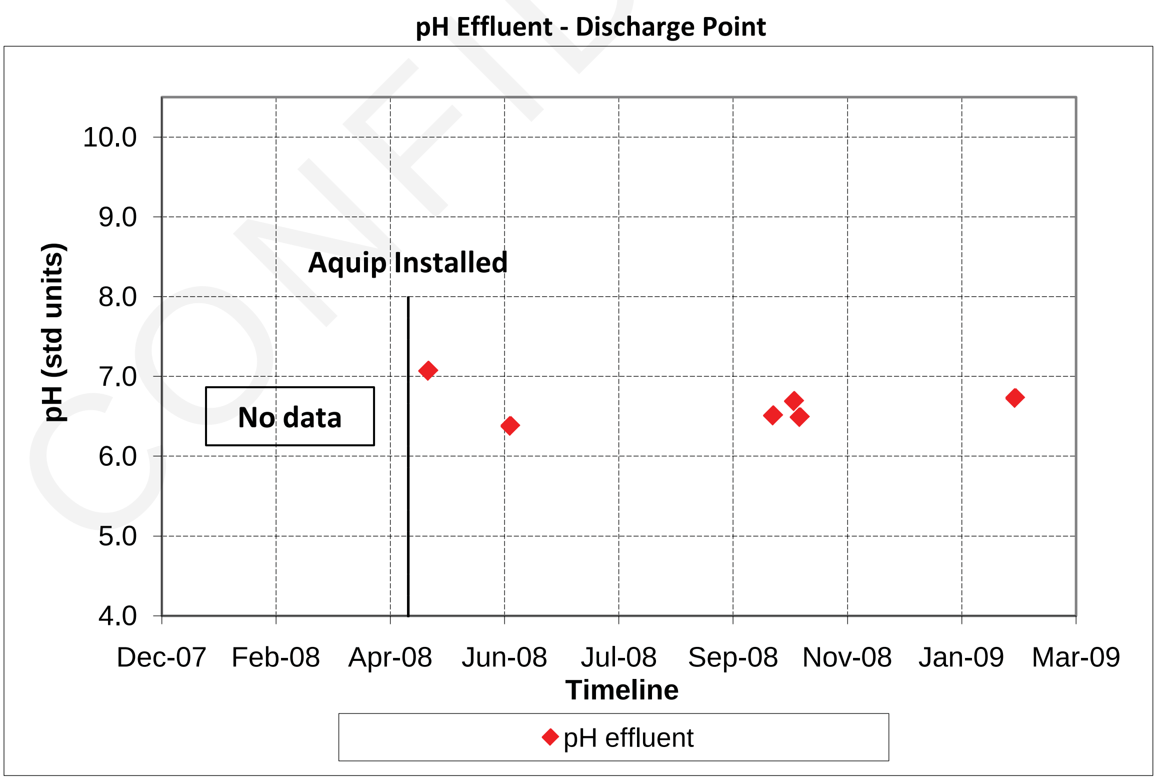


E. Coli Effluent - Discharge Point



Facility Historical Data
Site ID #0205





Aquip® Influent and Effluent Data
Site ID #0205

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
04/22/08	Aquip	IN-42208	EFF-42208	Copper	0.734		0.0514		93%					
10/20/08	Aquip	INF-102008	EFF-102008	Copper	0.662		0.167		75%					
10/31/08	Aquip	103108-IN	103108-EFF	Copper	0.977		0.126		87%	0.0103		0.0588		increased
11/03/08	Aquip	INF-110308	EFF-110308	Copper	0.799		0.0538		93%					
10/20/08	Aquip	INF-102008	EFF-102008	Iron	4.81		2.29		52%					
10/31/08	Aquip	103108-IN	103108-EFF	Iron	32.5		1.46		96%					
11/03/08	Aquip	INF-110308	EFF-110308	Iron	17.4		1.26		93%					
04/22/08	Aquip	IN-42208	EFF-42208	Lead	0.797		0.0384		95%					
10/20/08	Aquip	INF-102008	EFF-102008	Lead	0.647		0.0774		88%					
10/31/08	Aquip	103108-IN	103108-EFF	Lead	1.31		0.0227		98%	0.00268		0.0005	ND	81%
11/03/08	Aquip	INF-110308	EFF-110308	Lead	0.873		0.0117		99%					
10/20/08	Aquip	INF-102008	EFF-102008	Manganese	0.190		0.635		increased					
10/31/08	Aquip	103108-IN	103108-EFF	Manganese	1.26		0.291		77%					
11/03/08	Aquip	INF-110308	EFF-110308	Manganese	0.723		0.942		increased					
04/22/08	Aquip	IN-42208	EFF-42208	Zinc	1.64		0.113		93%					
10/20/08	Aquip	INF-102008	EFF-102008	Zinc	0.853		0.749		12%					
10/31/08	Aquip	103108-IN	103108-EFF	Zinc	2.79		0.170		94%	0.0669		0.164		increased
11/03/08	Aquip	INF-110308	EFF-110308	Zinc	2.54		0.153		94%					
04/22/08	Aquip	IN-42208	EFF-42208	TSS	94.4		16.7		82%					
10/20/08	Aquip	INF-102008	EFF-102008	TSS	1070		15.0		99%					
10/31/08	Aquip	103108-IN	103108-EFF	TSS	667		8.33		99%					
11/03/08	Aquip	INF-110308	EFF-110308	TSS	218		6.70		97%					
04/22/08	Aquip	IN-42208	EFF-42208	Phosphorus	0.268		0.260		3%					
10/20/08	Aquip	INF-102008	EFF-102008	Phosphorus	0.348		0.326		6%					
10/31/08	Aquip	103108-IN	103108-EFF	Phosphorus	1.07		0.305		71%					
11/03/08	Aquip	INF-110308	EFF-110308	Phosphorus	0.165		0.0929		44%					

Aquip® Influent and Effluent Data
Site ID #0205

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
04/22/08	Aquip	IN-42208	EFF-42208	BOD5	166		319		increased					
10/20/08	Aquip	INF-102008	EFF-102008	BOD5	122		66.2		46%					
10/31/08	Aquip	103108-IN	103108-EFF	BOD5	193		34.1		82%					
11/03/08	Aquip	INF-110308	EFF-110308	BOD5	37.8		6.86		82%					
04/22/08	Aquip	IN-42208	EFF-42208	COD	475		575		increased					
04/22/08	Aquip	IN-42208	EFF-42208	E.Coli	53.6		2.0		96%					
10/20/08	Aquip	INF-102008	EFF-102008	E.Coli	>2420		>2420		N/A					
10/31/08	Aquip	103108-IN	103108-EFF	E.Coli	1730		268		85%					
11/03/08	Aquip	INF-110308	EFF-110308	E.Coli	1200		1410		increased					
04/22/08	Aquip	IN-42208	EFF-42208	O&G	19.4		2.5	ND	87%					
10/31/08	Aquip	103108-IN	103108-EFF	O&G	19.7		2.425	ND	88%					
11/03/08	Aquip	INF-110308	EFF-110308	O&G	54		2.425		96%					
04/22/08	Aquip	IN-42208	EFF-42208	pH	6.45		7.07		0.62					
10/20/08	Aquip	INF-102008	EFF-102008	pH	7.02		6.51		-0.51					
10/31/08	Aquip	103108-IN	103108-EFF	pH	8.22		6.69		-1.53					
11/03/08	Aquip	INF-110308	EFF-110308	pH	6.80		6.49		-0.31					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0206
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0206

Site Location/Region:	Pacific Northwest
Facility Sector:	Ferrous Scrapyard
StormwateRx Product(s):	Aquip 50SBE (enhanced media filtration system)
Date of Installation:	August 25, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

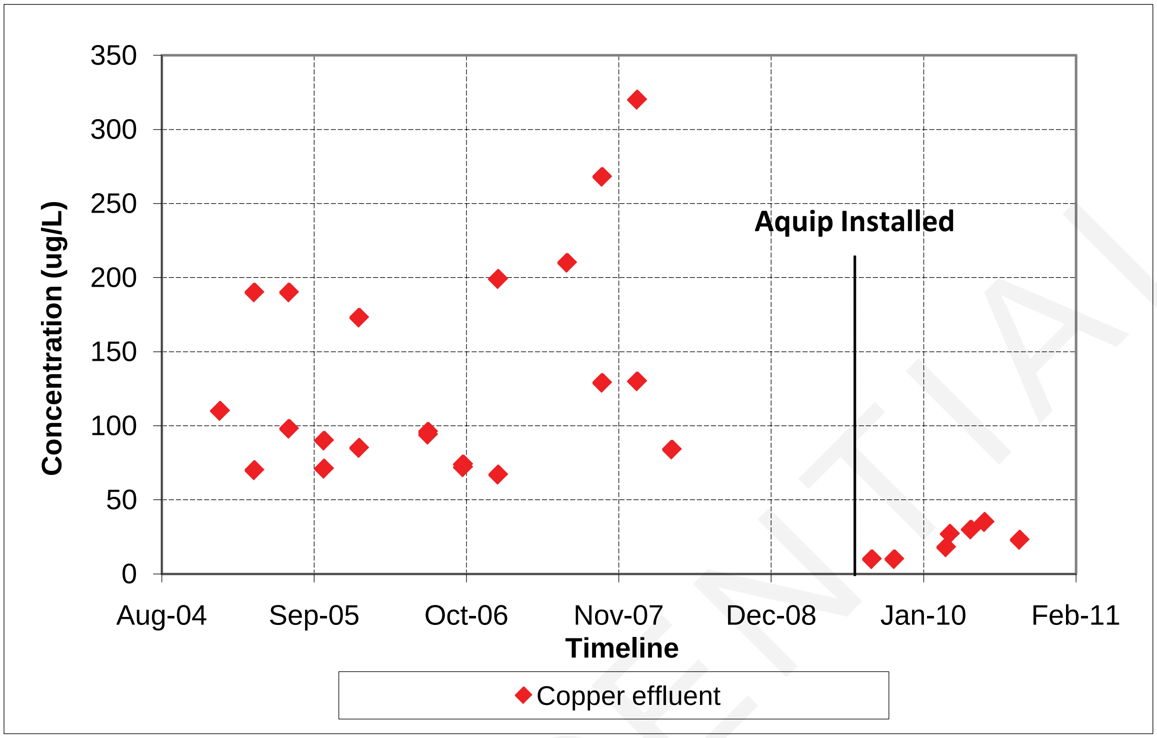
Date	Sampled By	Before/After Aquip Installation
January 1, 2005	Customer	Before
April 1, 2005	Customer	Before
July 1, 2005	Customer	Before
October 1, 2005	Customer	Before
January 1, 2006	Customer	Before
April 1, 2006	Customer	Before
July 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
July 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
September 8, 2009	Customer	After
November 6, 2009	StormwateRx	After
March 22, 2010	Customer	After
April 1, 2010	Customer	After
May 26, 2010	Customer	After

Sampling Events (cont.)

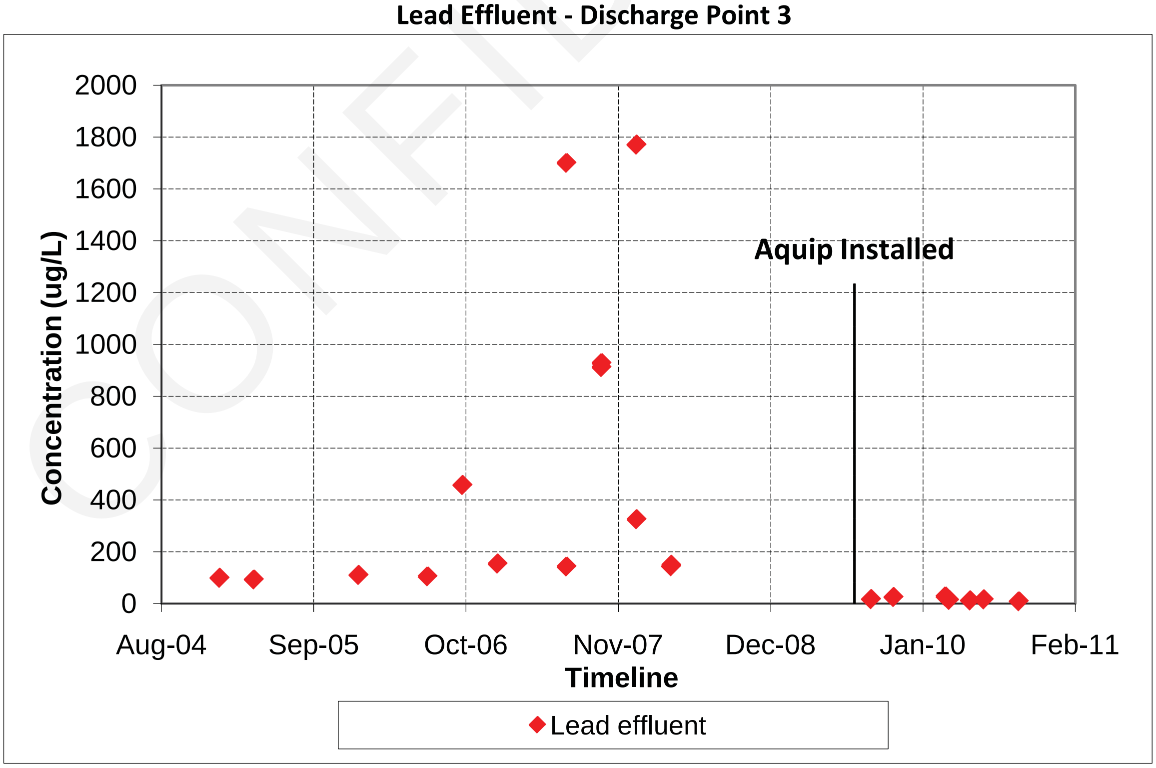
Date	Sampled By	Before/After Aquip Installation
July 1, 2010	Customer	After
October 1, 2010	Customer	After

Facility Historical Data
Site ID #0206

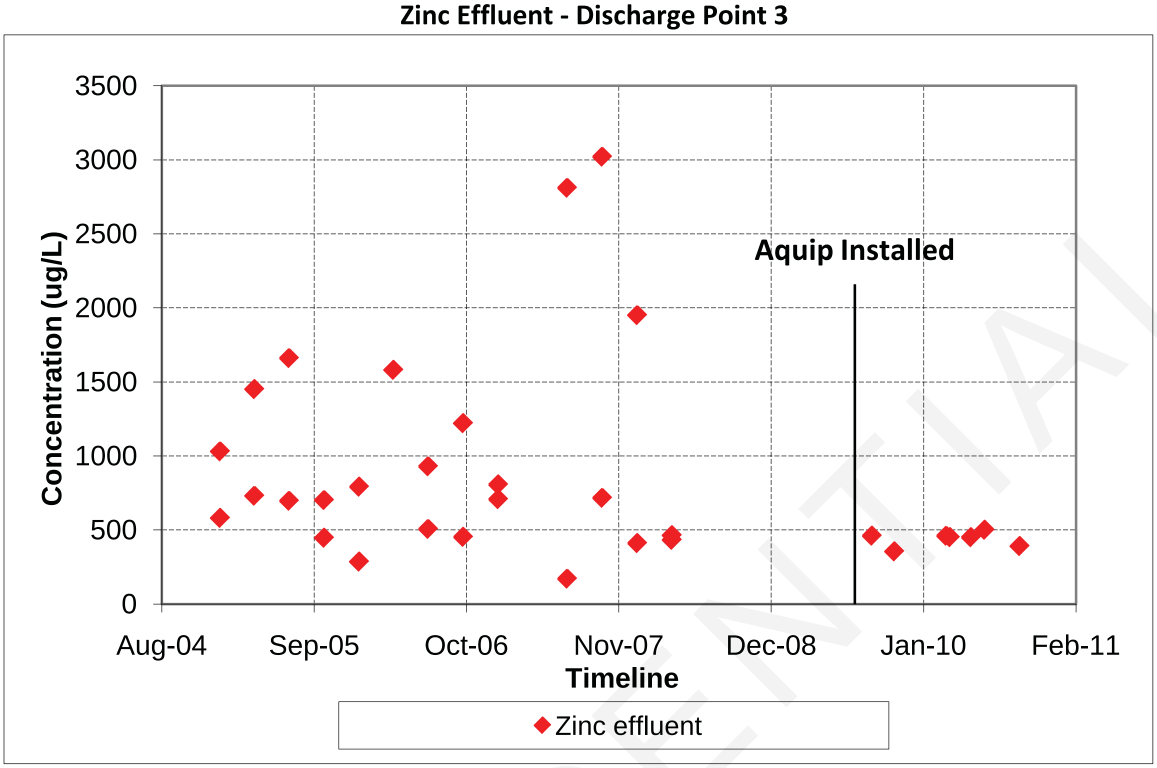
Copper Effluent - Discharge Point 3

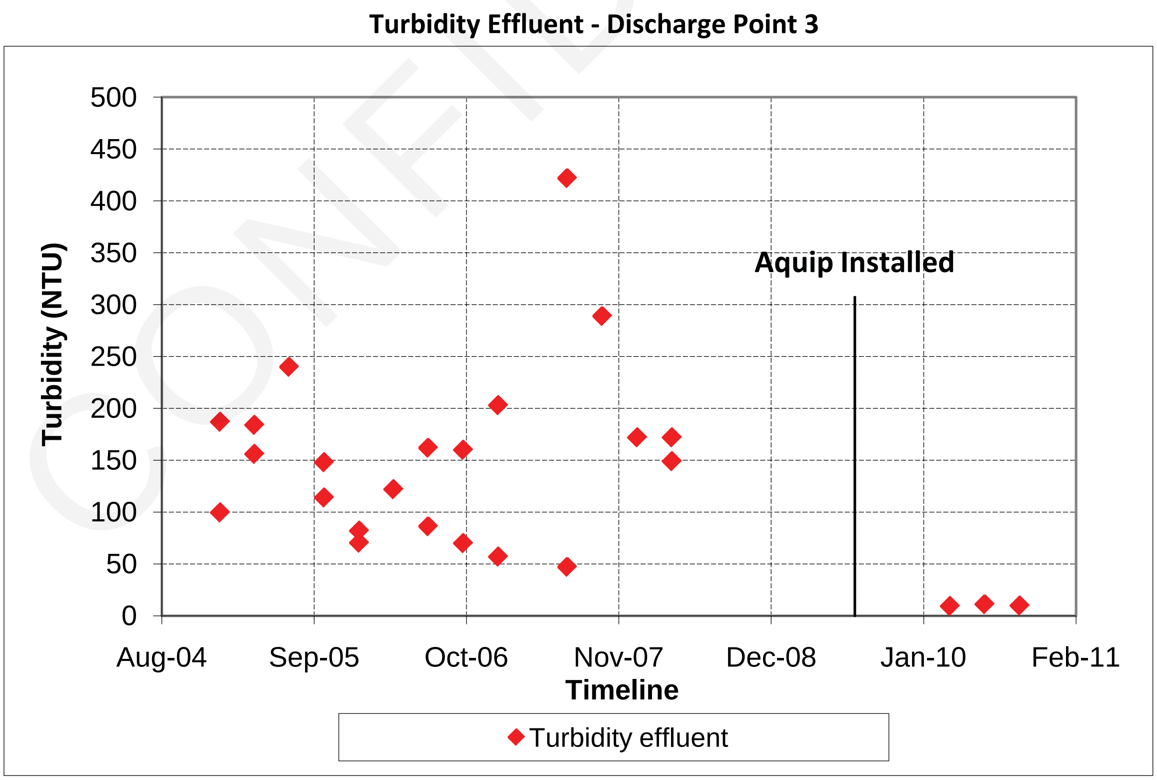


Lead Effluent - Discharge Point 3



Facility Historical Data
Site ID #0206

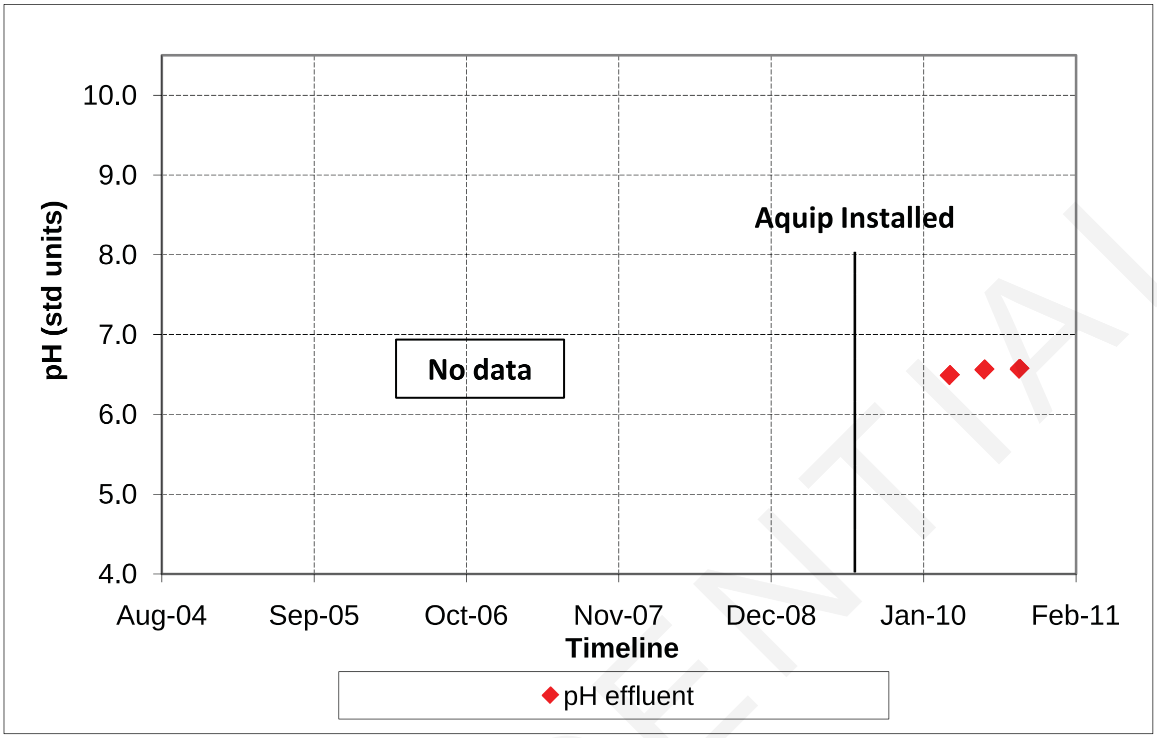




Data not shown: Jan 1, 2008 1320 NTU

Facility Historical Data
Site ID #0206

pH Effluent - Discharge Point 3



Aquip® Influent and Effluent Data
Site ID #0206

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Copper	0.109		0.01	ND	91%					
03/23/10	Aquip	Scrap Yd. Inlet	Scrap Yd. Outlet	Copper	0.028		0.018		36%					
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Copper	0.024		0.030		increased	0.038		0.043[1]		increased
11/06/10	Aquip	0091 A-in	0091 A-out	Copper	0.0501		0.0100	ND	80%	0.0100	ND	0.0100	ND	N/A
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Iron	2.64		1.56		41%	0.34		0.025	ND	93%
11/06/10	Aquip	0091 A-in	0091 A-out	Iron	6.08		1.60		74%	0.135		0.180		increased
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Lead	0.314		0.017		95%					
03/23/10	Aquip	Scrap Yd. Inlet	Scrap Yd. Outlet	Lead	0.041		0.028		32%					
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Lead	0.012		0.012		0%	0.002		0.002		0%
11/06/10	Aquip	0091 A-in	0091 A-out	Lead	0.159		0.0500	ND	69%	0.0250	ND	0.0250	ND	N/A
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Manganese	0.71		0.17		76%	0.72		0.17		76%
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Zinc	1.02		0.46		55%					
03/23/10	Aquip	Scrap Yd. Inlet	Scrap Yd. Outlet	Zinc	0.67		0.46		31%					
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Zinc	0.51		0.45		12%	0.060		0.13		increased
11/06/10	Aquip	0091 A-in	0091 A-out	Zinc	0.962		0.354		63%	0.335		0.246		27%
11/06/10	Aquip	0091 A-in	0091 A-out	Turbidity	58.5		21.4		63%					
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Calcium	127		113		11%	120		116		3%
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	Magnesium	9.25		10.5		increased	9.01		10.2		increased
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	TDS	767		682		11%					
05/26/10	Aquip	Outlet - Scrap Yd.	Inlet - Scrap Yd.	COD	200		80		60%					
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	O&G	5.4		2.6		52%					
03/23/10	Aquip	Scrap Yd. Inlet	Scrap Yd. Outlet	O&G	1.7		0.6		65%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.
1 Dissolved concentration reported to be higher than total concentrations

0207
Ferrous Scrapyard

Stormwater Sampling Overview
Site ID #0207

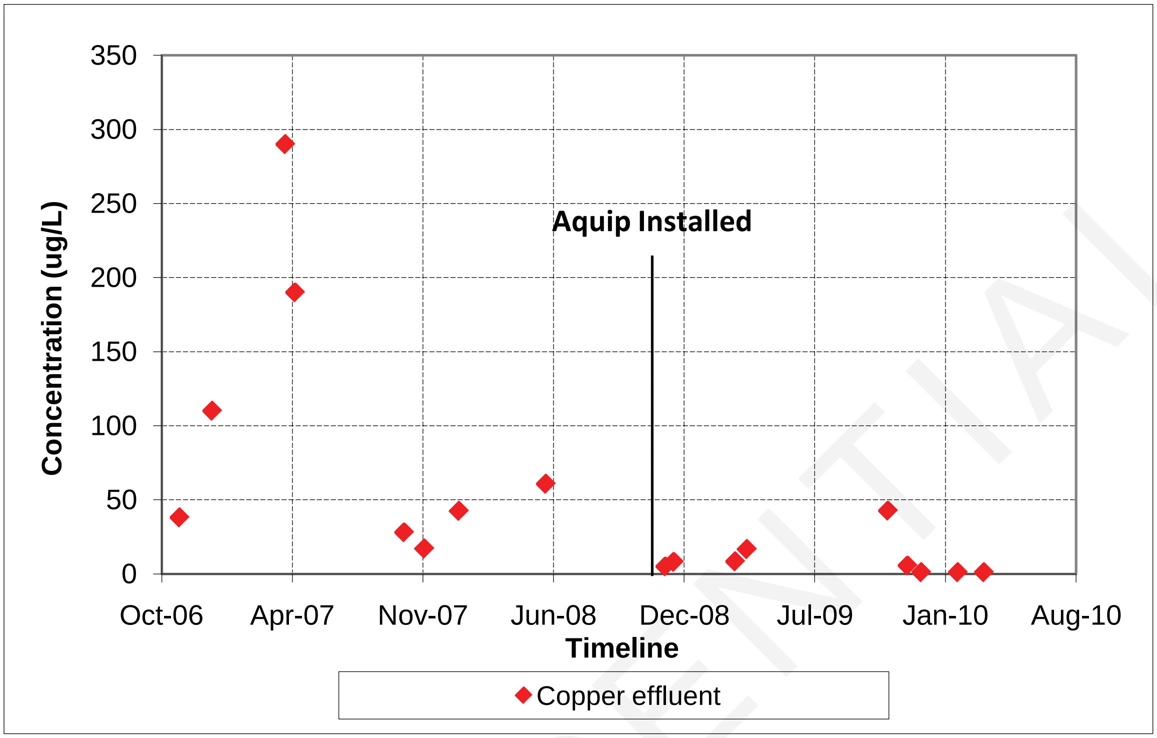
Site Location/Region:	Pacific Northwest
Facility Sector:	Ferrous Scrapyard
StormwateRx Product(s):	Aquip 210SBE (enhanced media filtration system)
Date of Installation:	November 14, 2008
Maintenance Status:	Adequate

Sampling Events:

Date	Sampled By	Before/After Aquip Installation
November 6, 2006	Customer	Before
December 26, 2006	Customer	Before
April 17, 2007	Customer	Before
May 2, 2007	Customer	Before
October 16, 2007	Customer	Before
November 16, 2007	Customer	Before
January 8, 2008	Customer	Before
May 20, 2008	Customer	Before
November 19, 2008	Customer	After
December 2, 2008	Customer	After
March 6, 2009	Customer	After
March 24, 2009	Customer	After
October 26, 2009	Customer	After
November 25, 2009	Customer	After
December 16, 2009	Customer	After
February 10, 2010	Customer	After
March 22, 2010	Customer	After

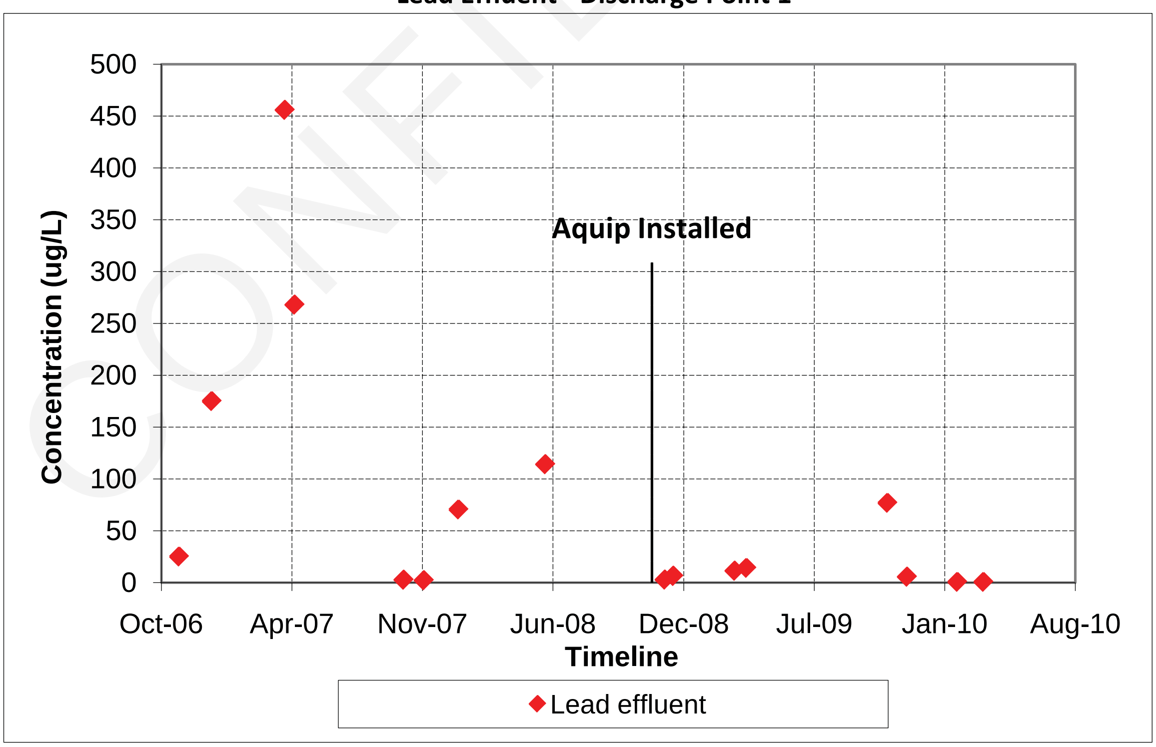
Facility Historical Data
Site ID #0207

Copper Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

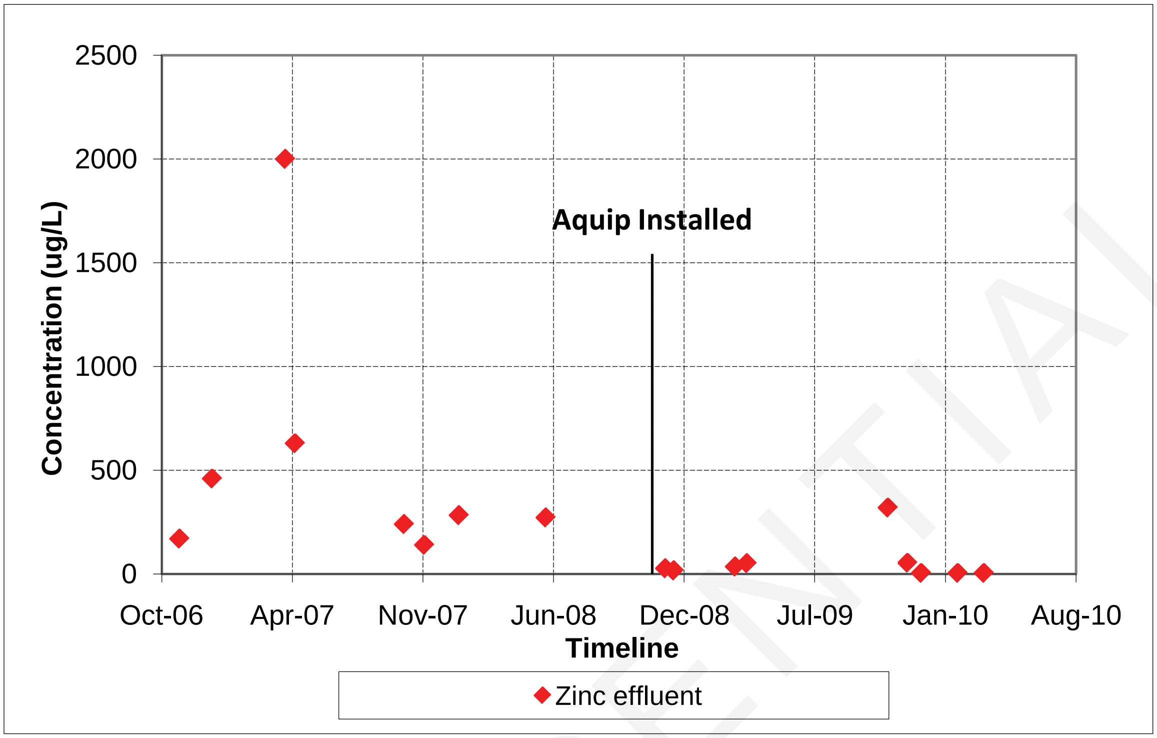
Lead Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

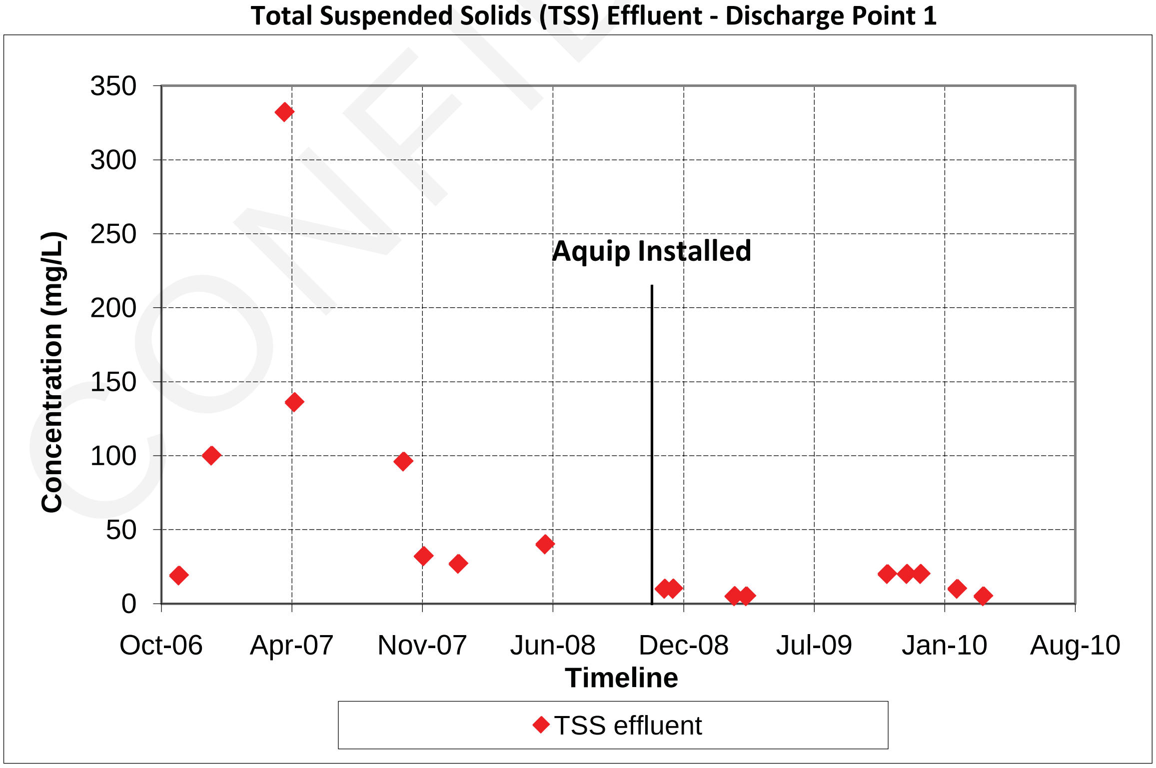
Facility Historical Data
Site ID #0207

Zinc Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

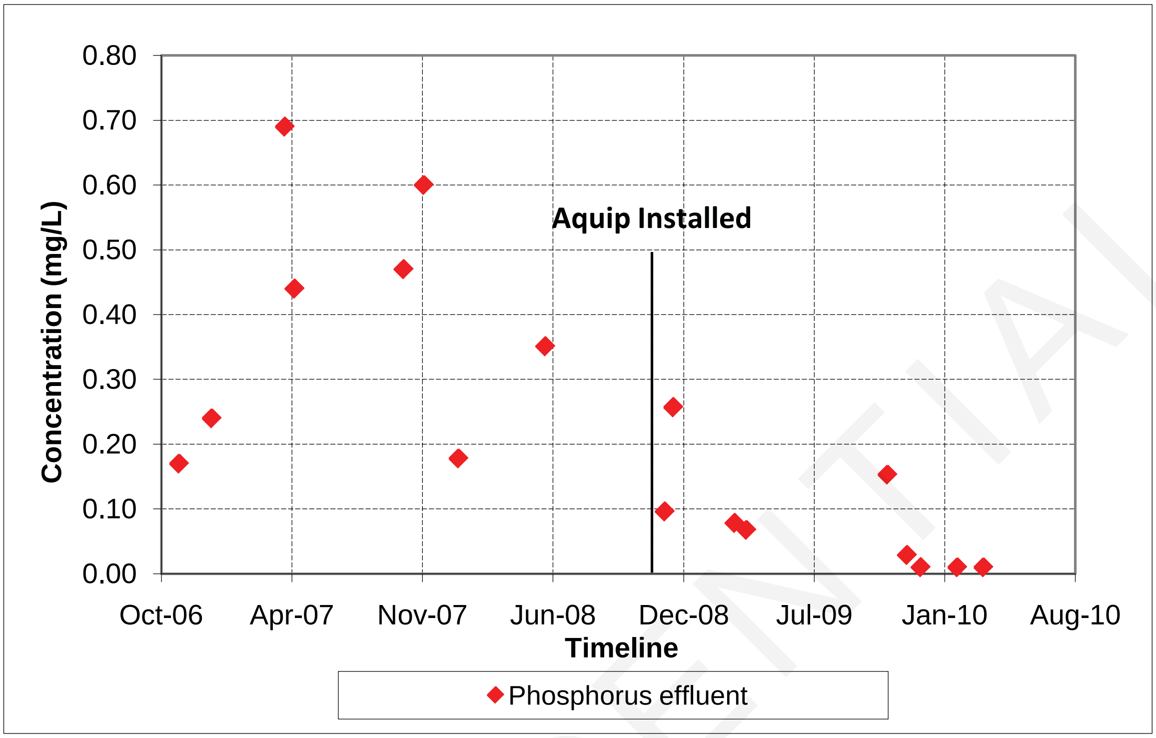
Total Suspended Solids (TSS) Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

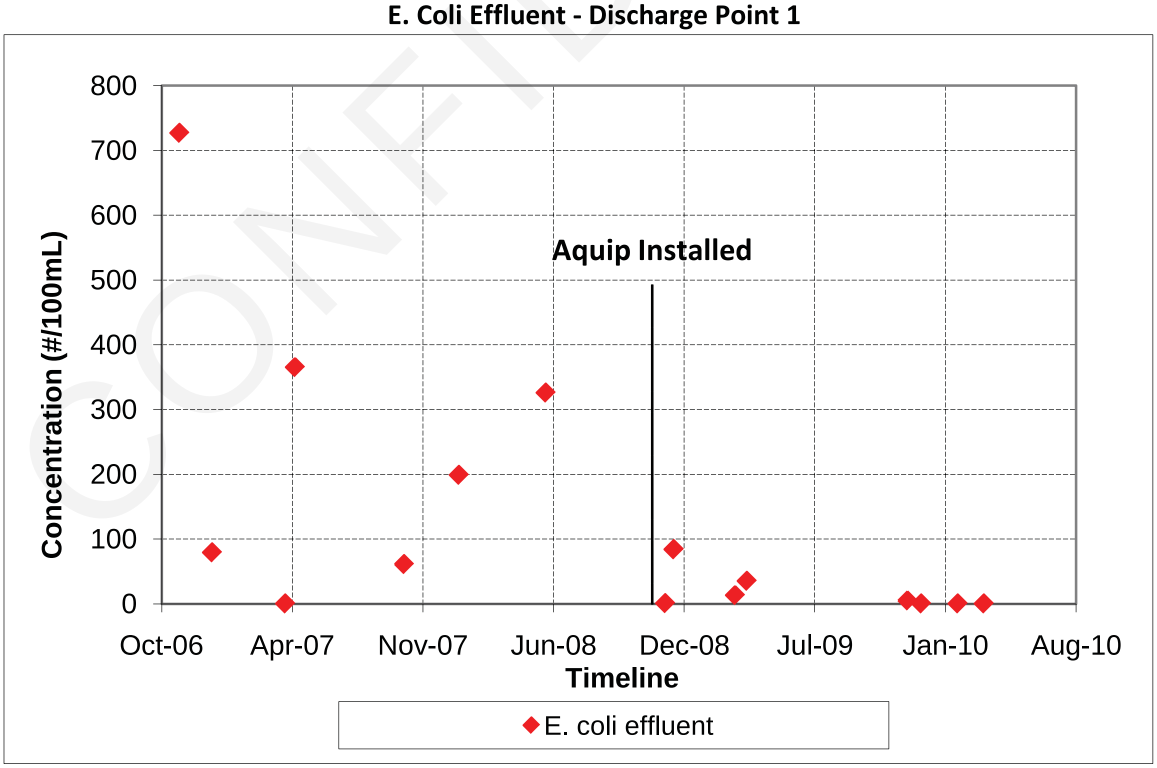
Facility Historical Data
Site ID #0207

Phosphorus Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

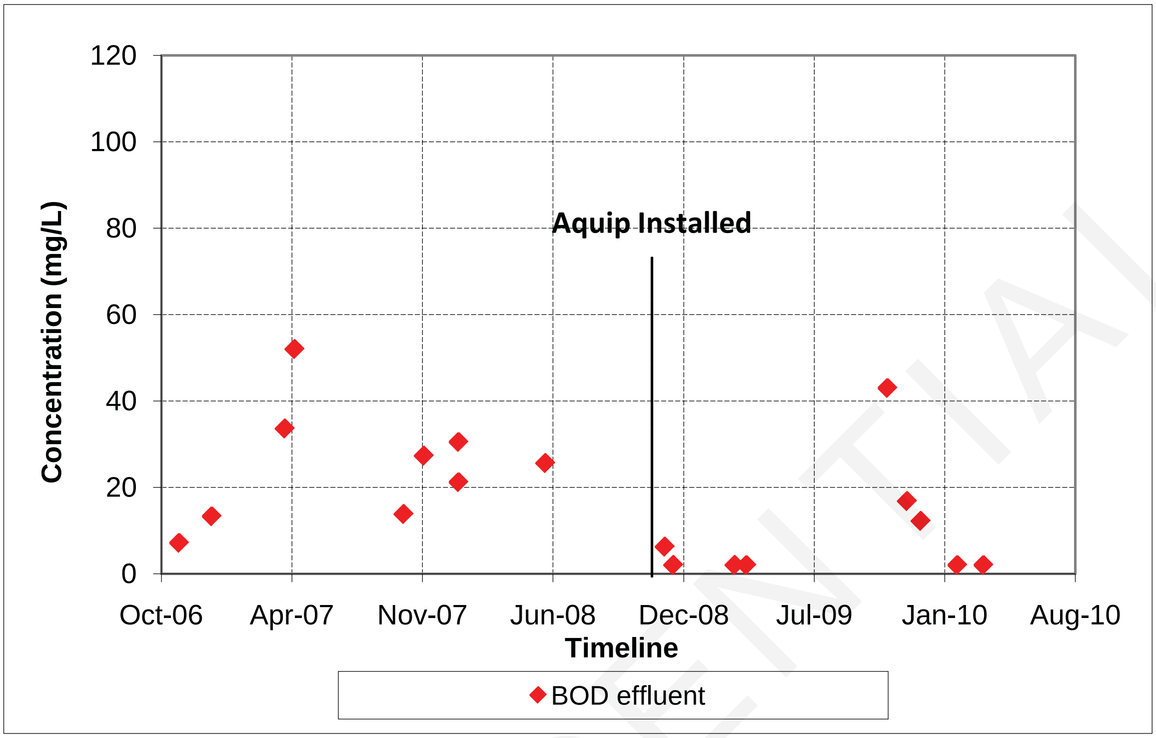
E. Coli Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration. Data not shown: Oct 26, 2009 >2420 CFU/100mL

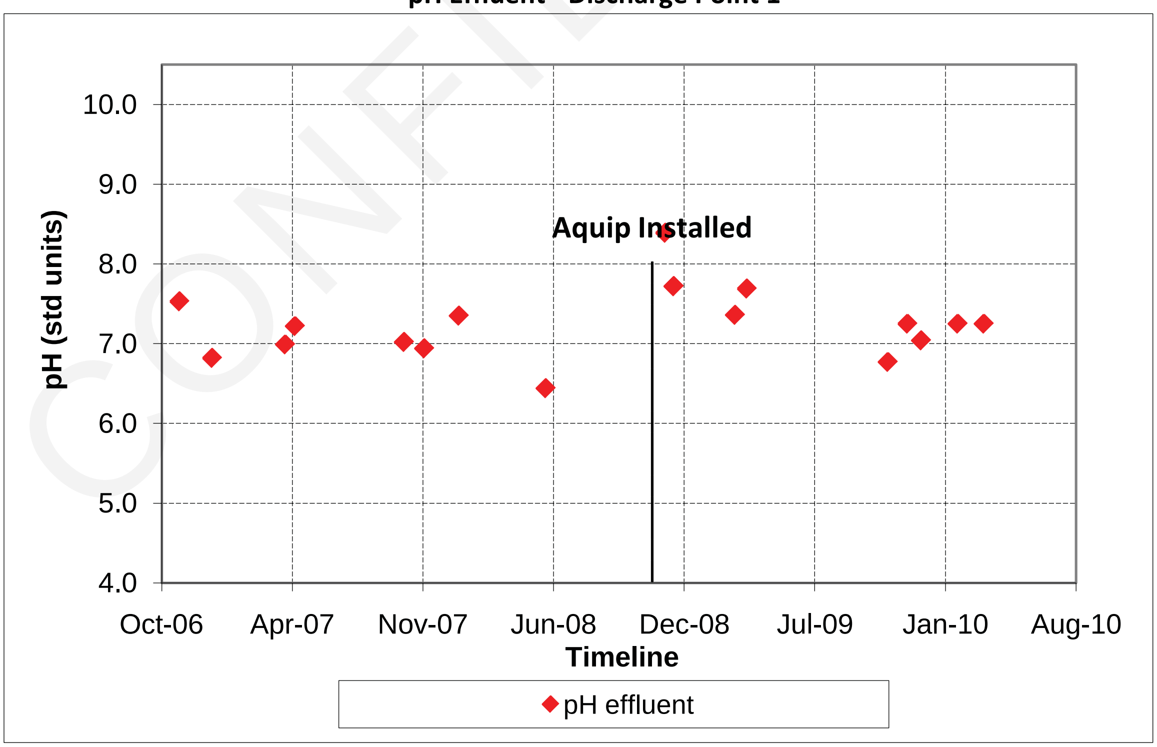
Facility Historical Data
Site ID #0207

Biological Oyxgen Demand (BOD) Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

pH Effluent - Discharge Point 1



Oct 26, 2009 shredder start up induced a spike in influent concentration

Aquip® Influent and Effluent Data
Site ID #0207

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
11/19/08	Aquip	Inlet #1	Outfall #1	Copper	0.0248		0.00496		80%					
03/06/09	Aquip	Influent	Sample Point 1	Copper	0.0319		0.00833		74%					
10/26/09	Aquip	Influent	Sample Point #1	Copper	0.117		0.0426		64%					
11/19/08	Aquip	Inlet #1	Outfall #1	Lead	0.0303		0.0026		91%					
03/06/09	Aquip	Influent	Sample Point 1	Lead	0.0364		0.0112		69%					
10/26/09	Aquip	Influent	Sample Point #1	Lead	0.362		0.0768		79%					
11/19/08	Aquip	Inlet #1	Outfall #1	Zinc	0.2250		0.0272		88%					
03/06/09	Aquip	Influent	Sample Point 1	Zinc	0.175		0.0356		80%					
10/26/09	Aquip	Influent	Sample Point #1	Zinc	2.00		0.320		84%					
11/19/08	Aquip	Inlet #1	Outfall #1	TSS	4.00		10.0		increased					
03/06/09	Aquip	Influent	Sample Point 1	TSS	20.0		5.0	ND	75%					
10/26/09	Aquip	Influent	Sample Point #1	TSS	80		20		75%					
11/19/08	Aquip	Inlet #1	Outfall #1	Phosphorus	0.089		0.096[1]		increased					
03/06/09	Aquip	Influent	Sample Point 1	Phosphorus	0.0883		0.0783		11%					
10/26/09	Aquip	Influent	Sample Point #1	Phosphorus	0.268		0.153		43%					
11/19/08	Aquip	Inlet #1	Outfall #1	BOD5	5.42		6.23		increased					
03/06/09	Aquip	Influent	Sample Point 1	BOD5	6.0		2	ND	N/A					
10/26/09	Aquip	Influent	Sample Point #1	BOD5	86.2		43.0		50%					
11/19/08	Aquip	Inlet #1	Outfall #1	E.Coli	3.10		1		68%					
03/06/09	Aquip	Influent	Sample Point 1	E.Coli	15.6		13.4		14%					
10/26/09	Aquip	Influent	Sample Point #1	E.Coli	>2420		>2420		N/A					
11/19/08	Aquip	Inlet #1	Outfall #1	O&G	2.41	ND	2.50	ND	N/A					
03/06/09	Aquip	Influent	Sample Point 1	O&G	2.43	ND	2.45	ND	N/A					
10/26/09	Aquip	Influent	Sample Point #1	O&G	2.41	ND	2.41	ND	N/A					

Aquip® Influent and Effluent Data
Site ID #0207

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
10/26/09	Aquip	Influent	Sample Point #1	pH	7.31		6.77		-0.54					
11/19/08	Aquip	Inlet #1	Outfall #1	pH	7.54		8.39		0.85					
03/06/09	Aquip	Influent	Sample Point 1	pH	7.01		7.36		0.35					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.
1 Contested value now reported as the correct value after further laboratory analysis.

0301
Nonferrous Scrapyard

Stormwater Sampling Overview
Site ID #0301

Site Location/Region:	Pacific Northwest
Facility Sector:	Nonferrous Scrapyard
StormwateRx Product(s):	Clara 25C (stormwater separator vault) Aquip 160SBE (enhanced media filtration system)
Date of Installation:	December 12, 2008
Maintenance Status:	Adequate

Sampling Events:

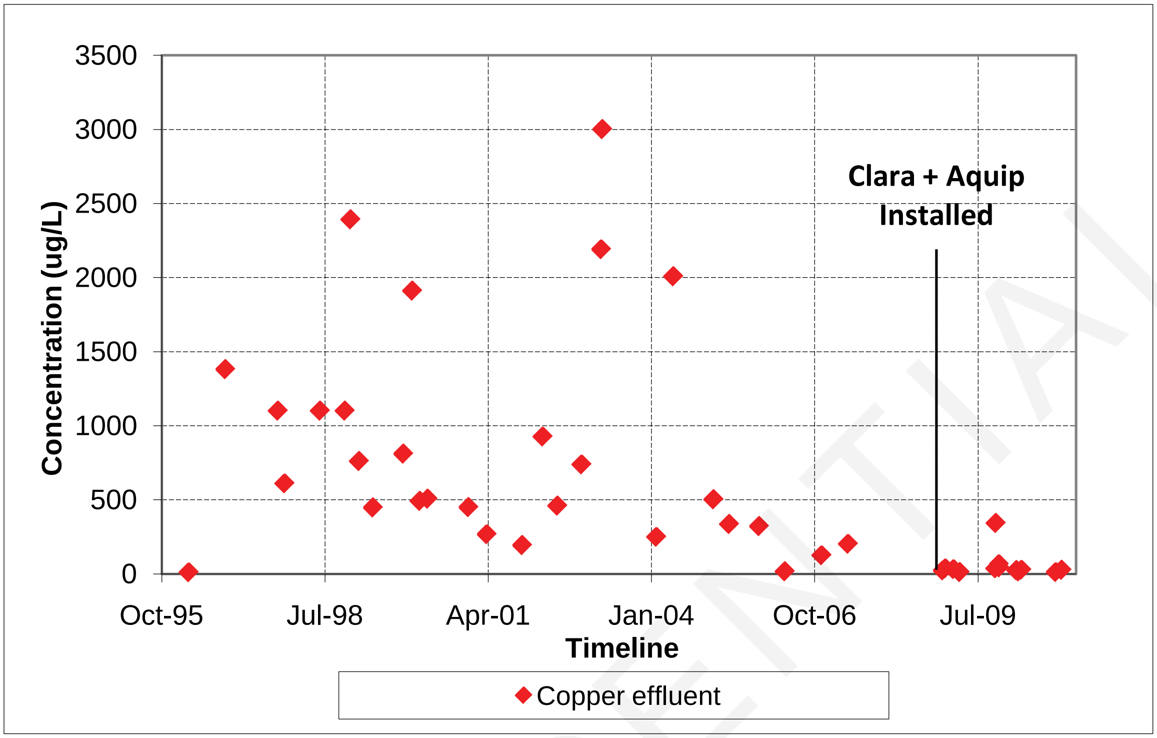
Date	Sampled By	Before/After Aquip Installation
April 11, 1996	Customer	Before
November 21, 1996	Customer	Before
October 9, 1997	Customer	Before
November 19, 1997	Customer	Before
June 24, 1998	Customer	Before
November 23, 1998	Customer	Before
December 28, 1998	Customer	Before
February 18, 1999	Customer	Before
May 14, 1999	Customer	Before
November 16, 1999	Customer	Before
January 10, 2000	Customer	Before
February 25, 2000	Customer	Before
April 13, 2000	Customer	Before
December 19, 2000	Customer	Before
April 10, 2001	Customer	Before
November 13, 2001	Customer	Before
March 19, 2002	Customer	Before
June 17, 2002	Customer	Before

Sampling Events (cont.)

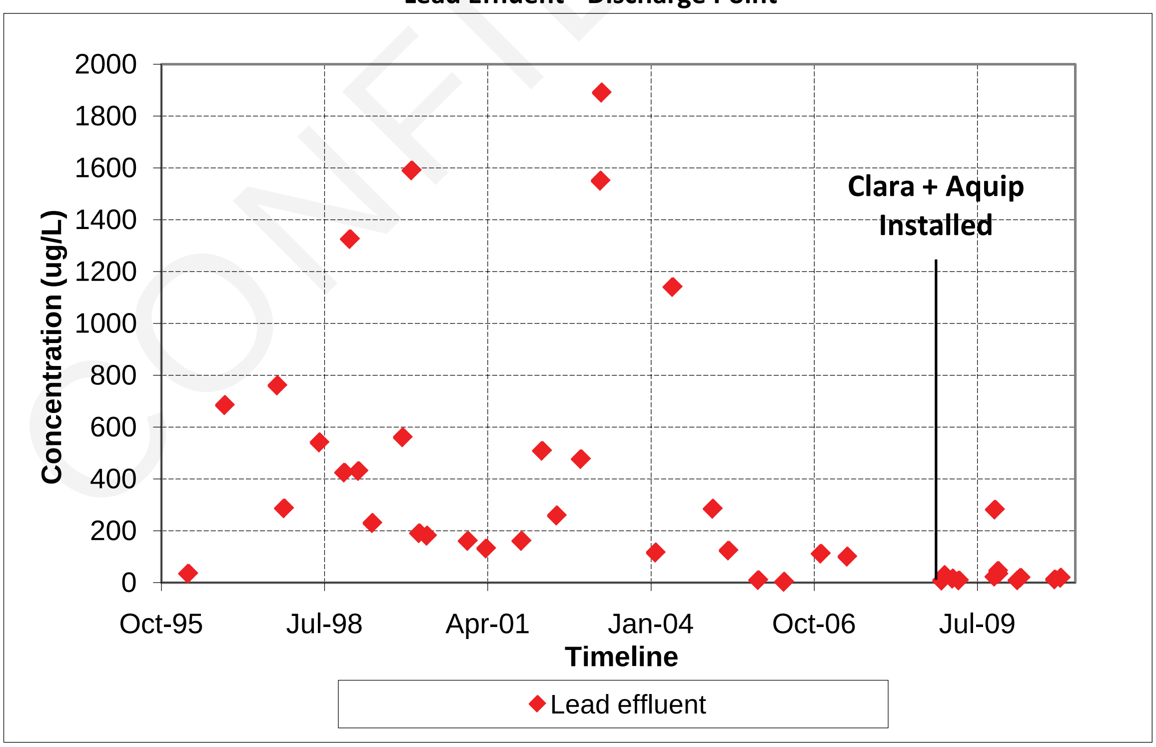
Date	Sampled By	Before/After Aquip Installation
November 12, 2002	Customer	Before
March 12, 2003	Customer	Before
March 19, 2003	Customer	Before
February 13, 2004	Customer	Before
May 27, 2004	Customer	Before
February 28, 2005	Customer	Before
November 3, 2005	Customer	Before
May 4, 2005	Customer	Before
April 10, 2006	Customer	Before
November 21, 2006	Customer	Before
May 2, 2007	Customer	Before
December 2, 2008	Customer	After
December 18, 2008	Customer	After
February 6, 2009	Customer	After
March 16, 2009	Customer	After
October 21, 2009	Customer	After
October 23, 2009	StormwateRx	After
November 11, 2009	StormwateRx	After
November 13, 2009	Customer	After
February 26, 2010	Customer	After
March 11, 2010	Customer	After
March 29, 2010	Customer	After
October 25, 2010	Customer	After
November 30, 2010	Customer	After

Facility Historical Data
Site ID #0301

Copper Effluent - Discharge Point

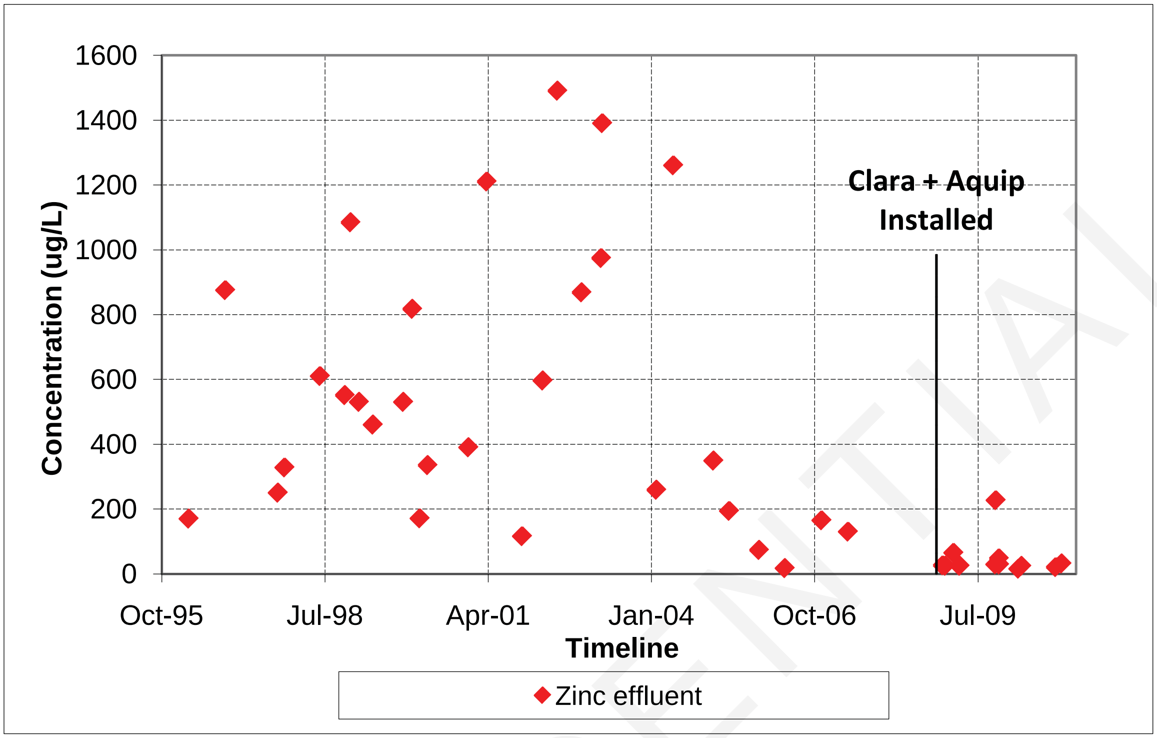


Lead Effluent - Discharge Point

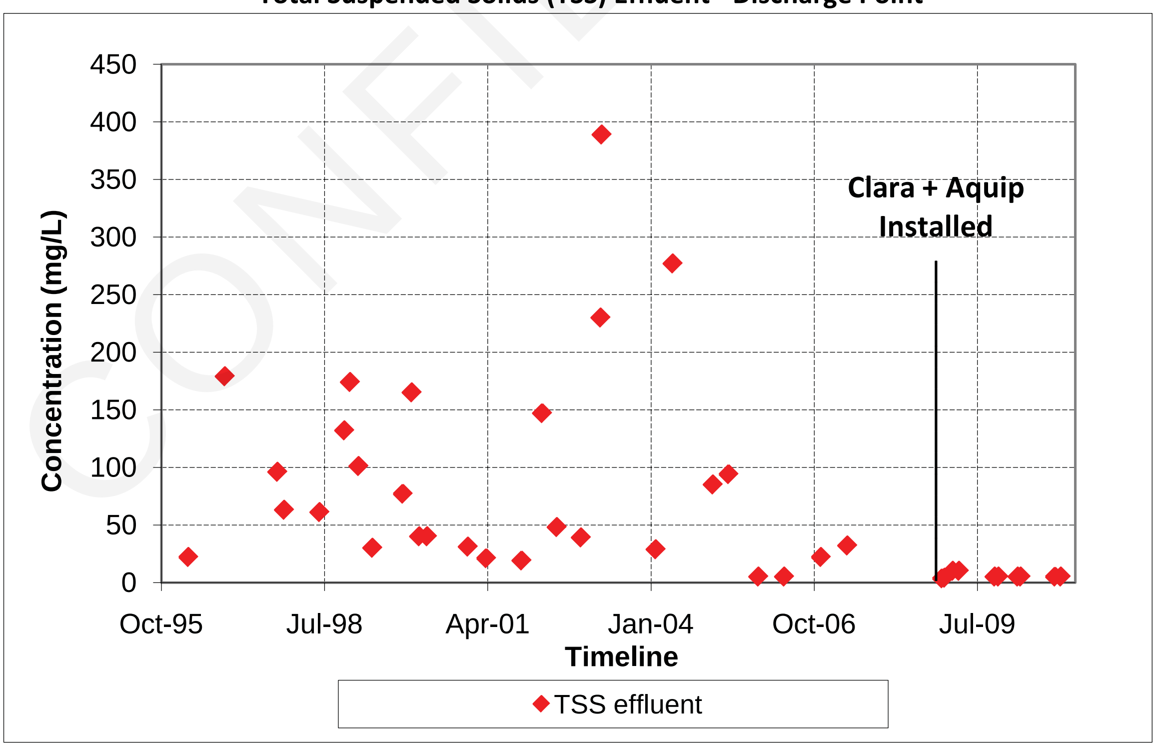


Facility Historical Data
Site ID #0301

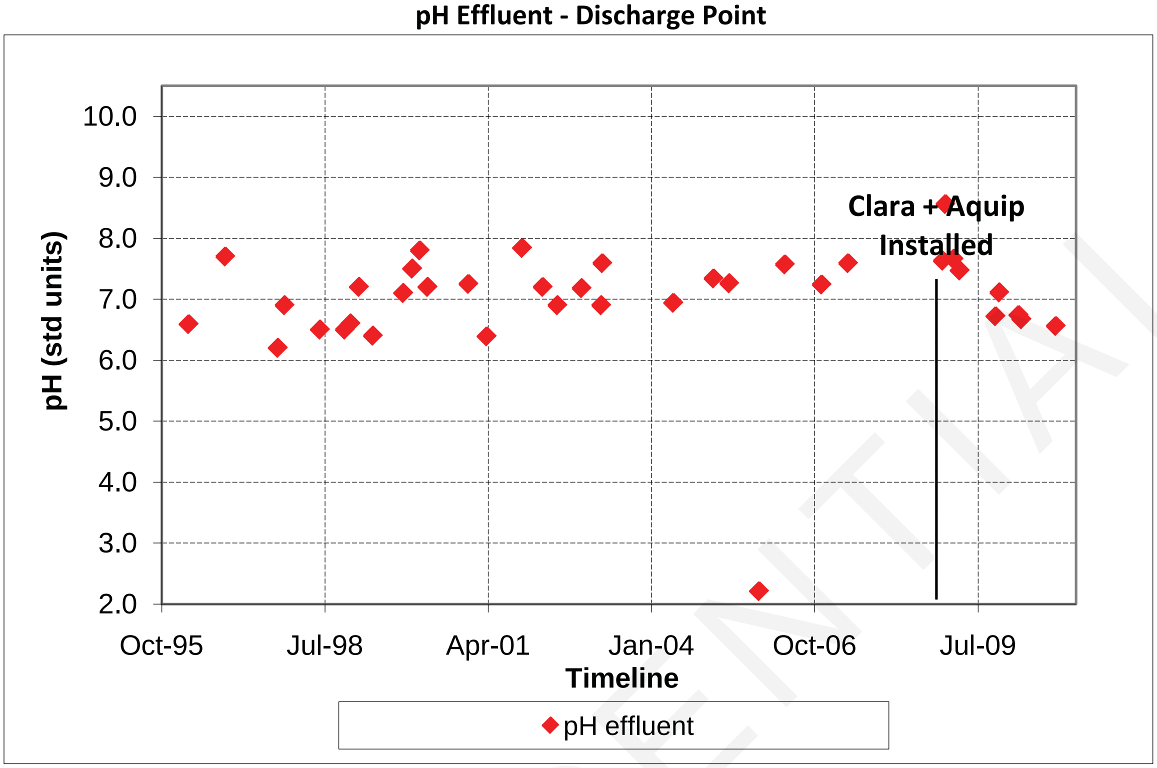
Zinc Effluent - Discharge Point



Total Suspended Solids (TSS) Effluent - Discharge Point



Facility Historical Data
Site ID #0301



Aquip® Influent and Effluent Data
Site ID #0301

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
10/23/09	Clara	0075-C-IN	0075-C-OUT	Copper	2.75		1.94		29%	0.232		0.204		12%
11/11/09	Clara	0075 C-in	0075 C-out	Copper	6.87		2.71		61%					
10/23/09	Clara	0075-C-IN	0075-C-OUT	Lead	1.59		1.18		26%					
11/11/09	Clara	0075 C-in	0075 C-out	Lead	2.66		1.10		59%					
10/23/09	Clara	0075-C-IN	0075-C-OUT	Zinc	1.78		1.21		32%	0.272		0.259		5%
11/11/09	Clara	0075 C-in	0075 C-out	Zinc	2.82		1.42		50%					
10/23/09	Clara	0075-C-IN	0075-C-OUT	TSS	325		325		0%					
10/23/09	Clara	0075-C-IN	0075-C-OUT	O&G	2.45	ND	2.45	ND	N/A					
02/06/09	Aquip	Inlet	Outfall	Copper	0.345		0.0315		91%	0.145		0.0050	ND	97%
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Copper	1.94		0.342		82%	0.204		0.0443		78%
11/11/09	Aquip	0075 C-out	0075 A-in	Copper	2.71		0.0651		98%					
02/26/10	Aquip	Inlet 1-3	Outlet	Copper	0.223		0.0240		89%					
02/06/09	Aquip	Inlet	Outfall	Lead	0.0916		0.0143		84%					
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Lead	1.18		0.281		76%					
11/11/09	Aquip	0075 C-out	0075 A-in	Lead	1.10		0.0446		96%					
02/06/09	Aquip	Inlet	Outfall	Zinc	0.194		0.0649		67%					
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Zinc	1.21		0.227		81%	0.259		0.0687		73%
11/11/09	Aquip	0075 C-out	0075 A-in	Zinc	1.42		0.0478		97%					
02/06/09	Aquip	Inlet	Outfall	TSS	30.0		10.0		67%					
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	TSS	325		30.0		91%					
02/06/09	Aquip	Inlet	Outfall	O&G	14.5		3.53		76%					
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	O&G	2.45	ND	2.45	ND	N/A					
02/06/09	Aquip	Inlet	Outfall	pH	7.50		7.66		0.16					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0302
Nonferrous Scrapyard

Stormwater Sampling Overview
Site ID #0302

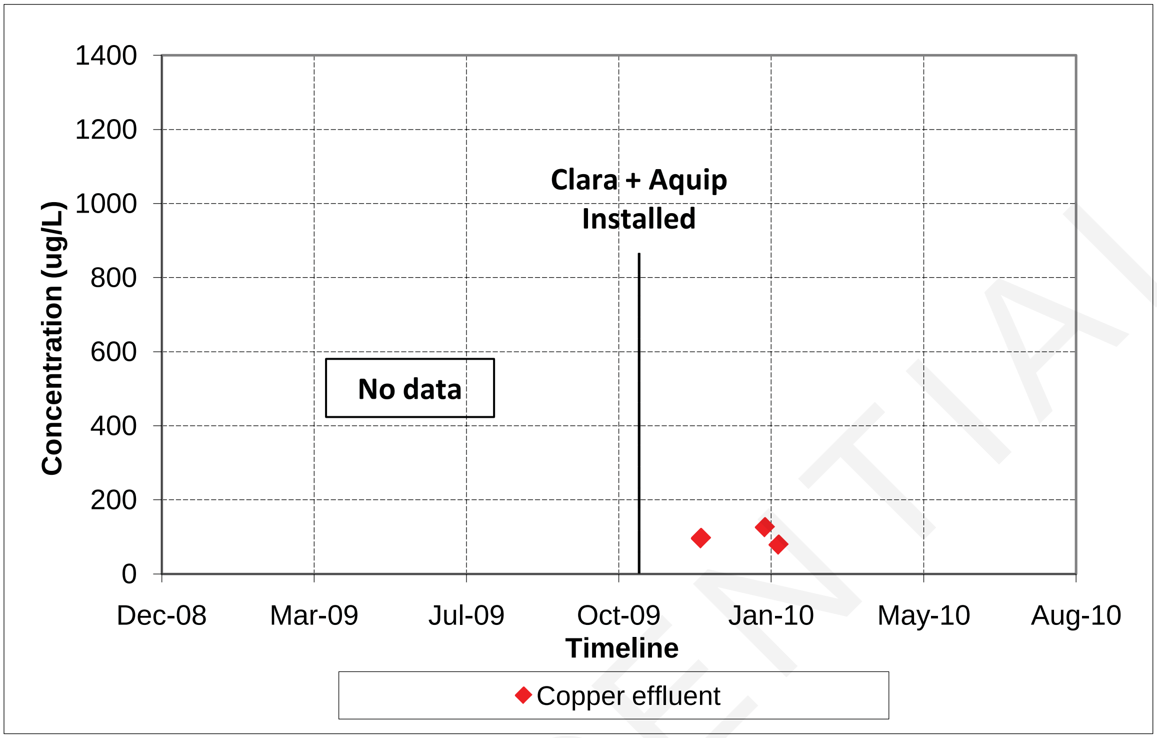
Site Location/Region:	Southern California
Facility Sector:	Nonferrous Scrapyard
StormwateRx Product(s):	Clara 25CP (stormwater separator vault) Aquip 50SBE (enhanced media filtration system)
Date of Installation:	October 28, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

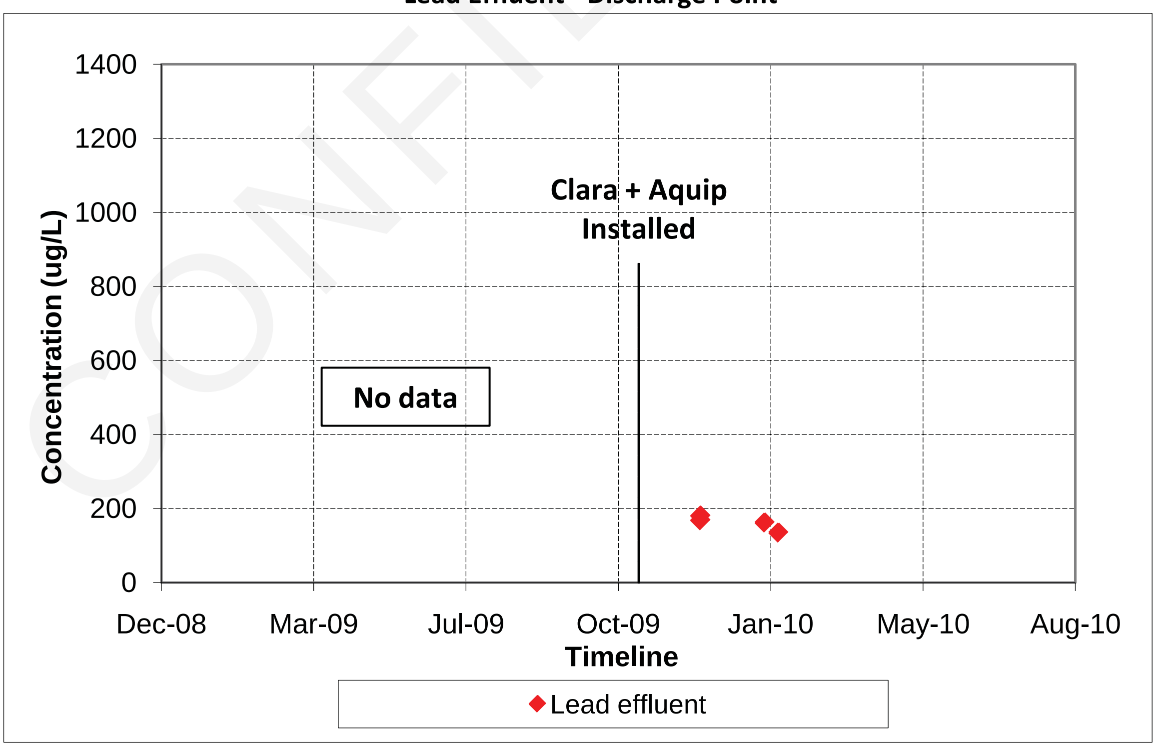
Date	Sampled By	Before/After Aquip Installation
December 7, 2009	StormwateRx	After
December 7, 2009	3rd Party	After
January 18, 2010	3rd Party	After
January 27, 2010	3rd Party	After

Facility Historical Data
Site ID #0302

Copper Effluent - Discharge Point

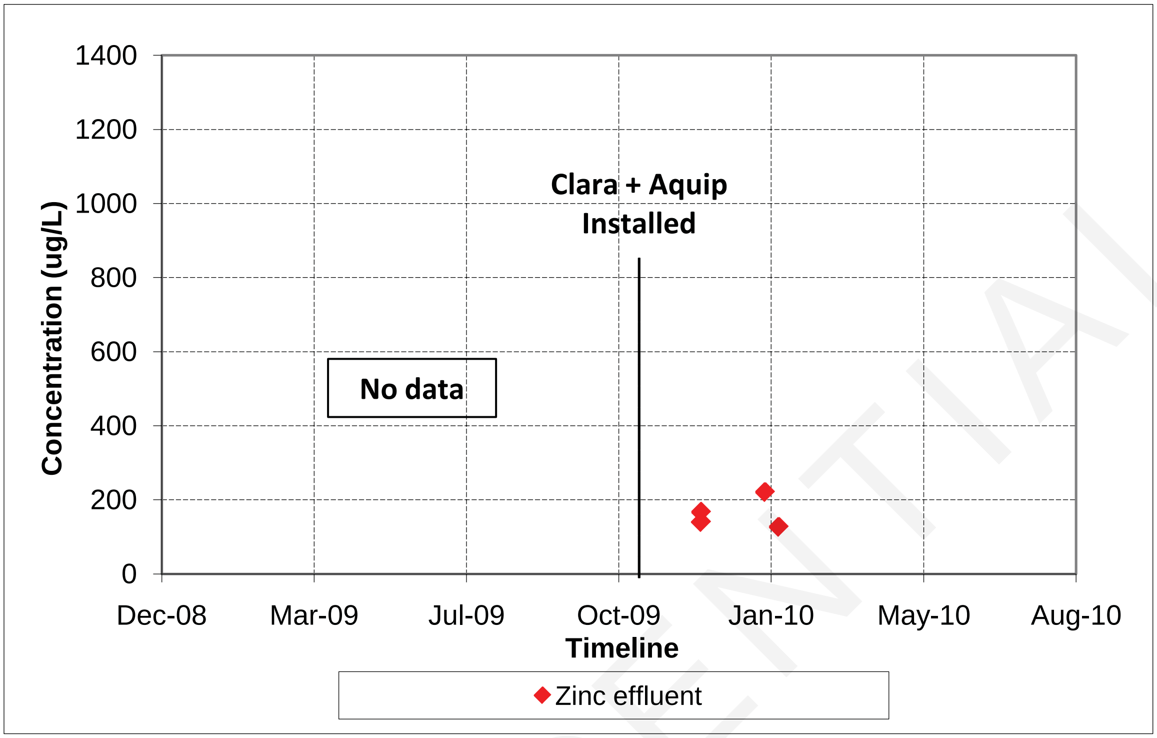


Lead Effluent - Discharge Point

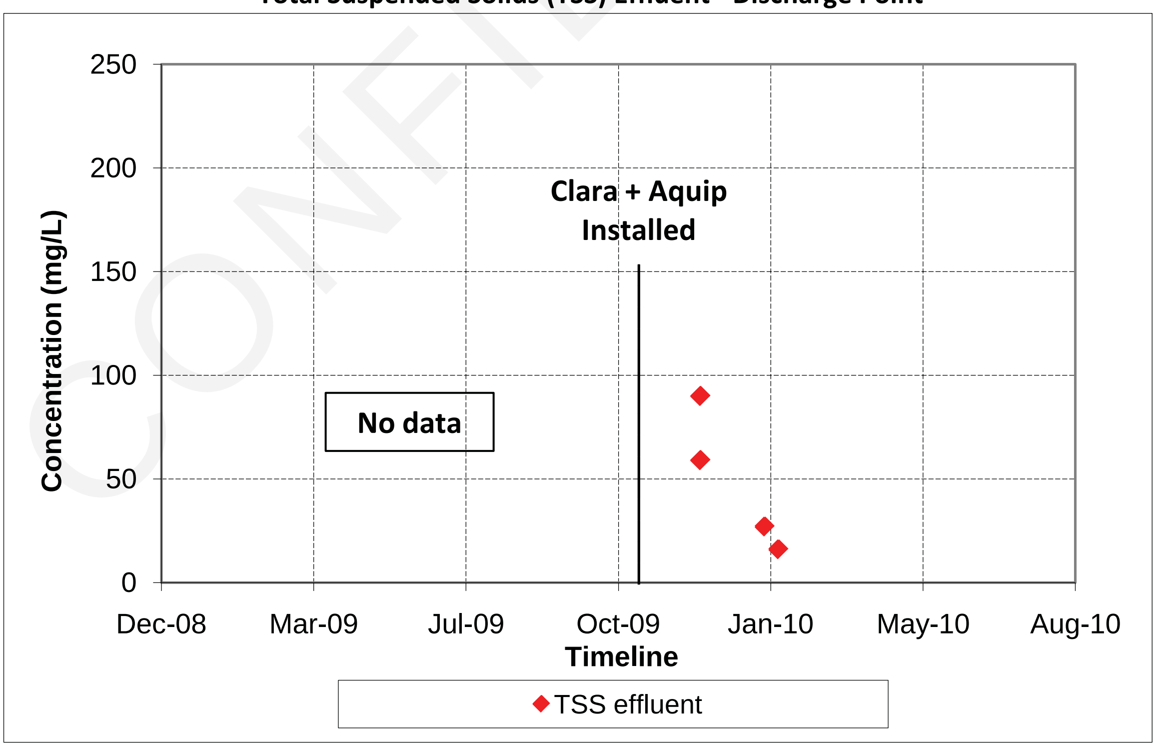


Facility Historical Data
Site ID #0302

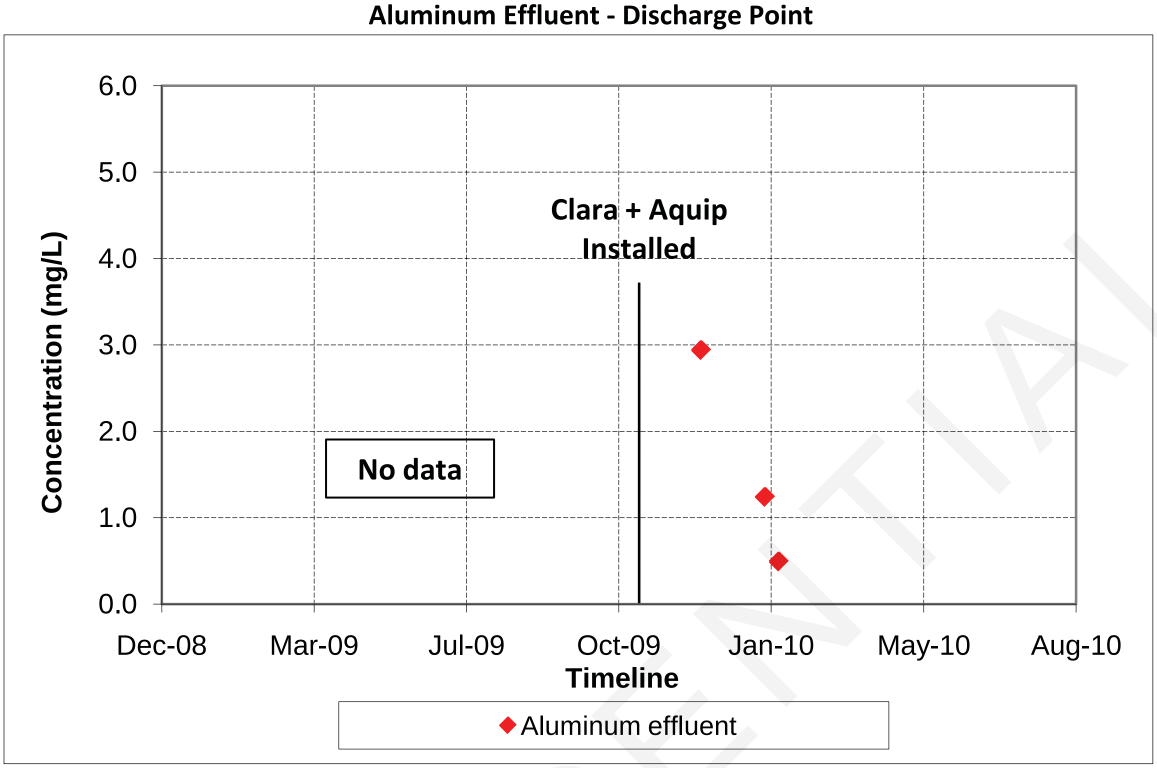
Zinc Effluent - Discharge Point

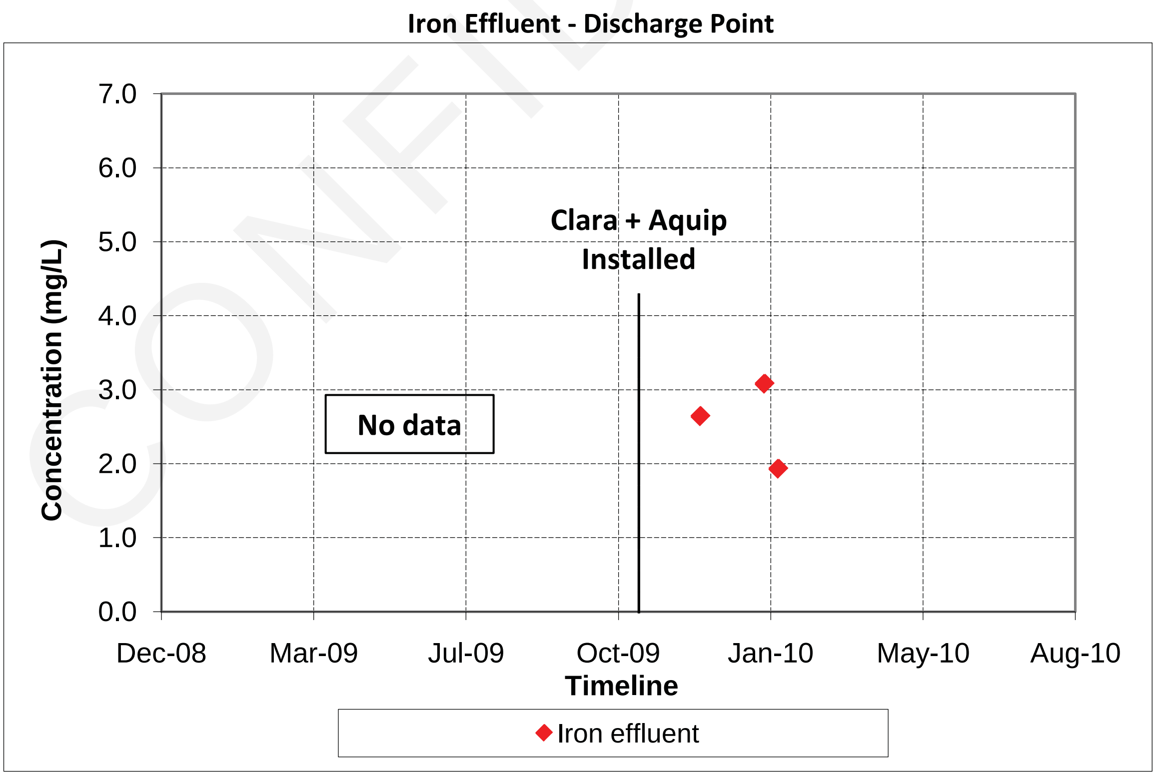


Total Suspended Solids (TSS) Effluent - Discharge Point



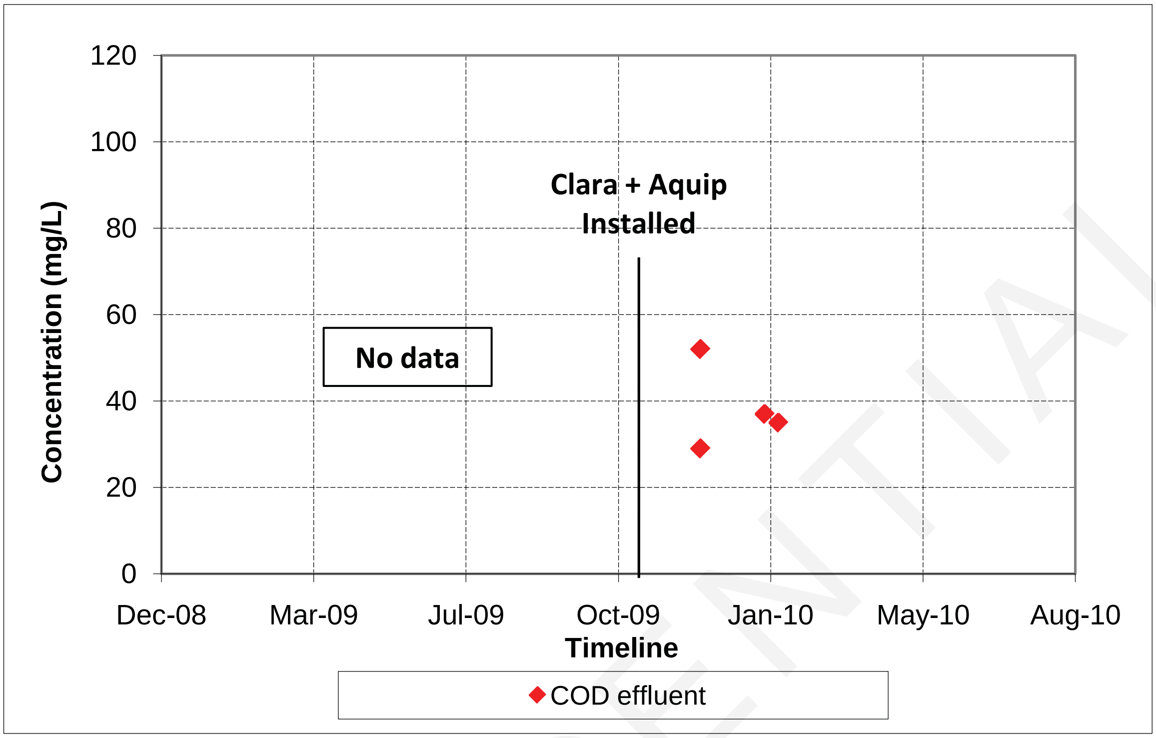
Facility Historical Data
Site ID #0302



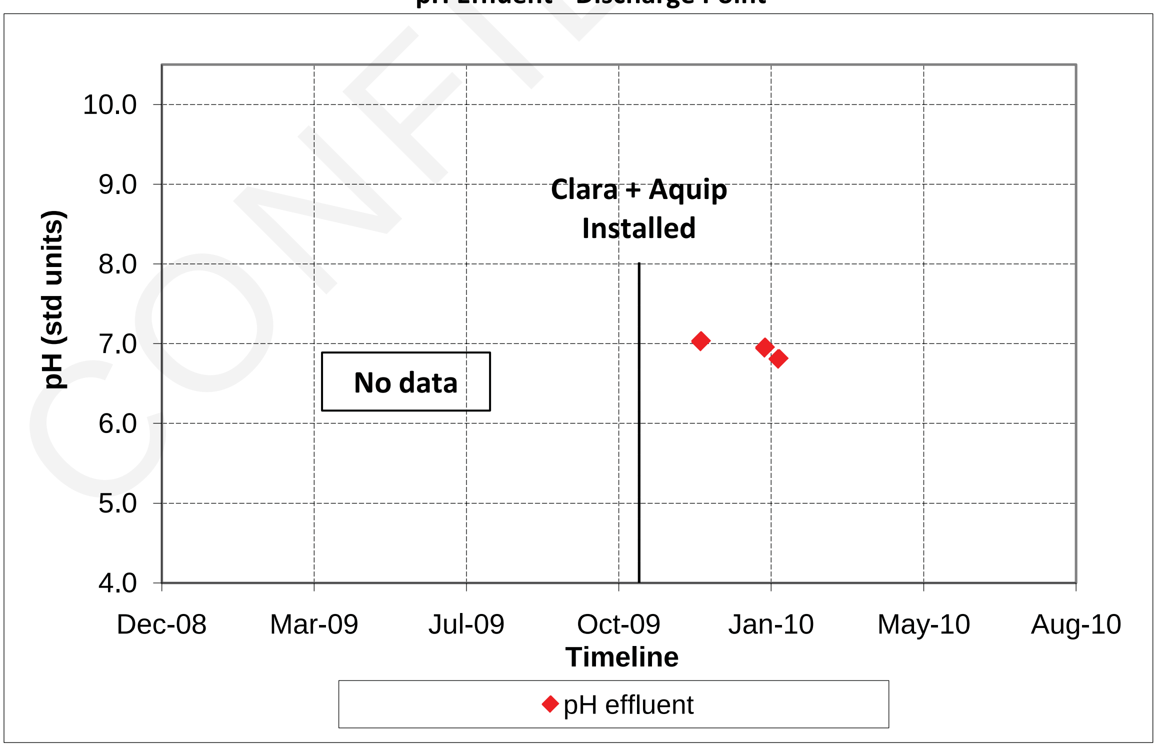


Facility Historical Data
Site ID #0302

Chemical Oyxgen Demand (COD) Effluent - Discharge Point



pH Effluent - Discharge Point



Aquip® Influent and Effluent Data
Site ID #0302

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Aluminum	1.19		0.492		59%	0.05		0.015	ND	70%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Arsenic						0.016		0.005		69%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Chromium (VI)						0.00090		0.00015	ND	83%
12/07/09	Aquip	C-OUT 0096 Yd 1	A-OUT 0096 Yd 1	Copper	1.50		0.096		94%	0.140		0.020		86%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Copper	0.221		0.079		64%	0.089		0.012		87%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Iron	3.61		1.93		47%	0.56		0.298		47%
12/07/09	Aquip	C-OUT 0096 Yd 1	A-OUT 0096 Yd 1	Lead	2.00		0.180		91%	0.016		0.0078		51%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Lead	0.301		0.135		55%	0.055		0.011		80%
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Mercury	0.0006		0.0004		33%					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Nickel						0.034		0.07		increased
12/07/09	Aquip	C-OUT 0096 Yd 1	A-OUT 0096 Yd 1	Zinc	1.90		0.140		93%	0.010	ND	0.058		increased
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Zinc	0.340		0.127		63%	0.147		0.023[1]		84%
12/07/09	Aquip	C-OUT 0096 Yd 1	A-OUT 0096 Yd 1	TSS	420		90		79%					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	TSS	37		16		57%					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Hardness	70		85		increased					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	Specific Conductivity	223		247		increased					
12/07/09	Aquip	C-OUT 0096 Yd 1	A-OUT 0096 Yd 1	COD	48		52		increased					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	COD	78		35		55%					
01/27/10	Aquip	Pretreatment Yd 1	Discharge Yd 1	pH	7.30		6.81		-0.49					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.
1 Contested value now reported as the correct value after further laboratory analysis.

0303
Nonferrous Scrapyard

Stormwater Sampling Overview
Site ID #0303

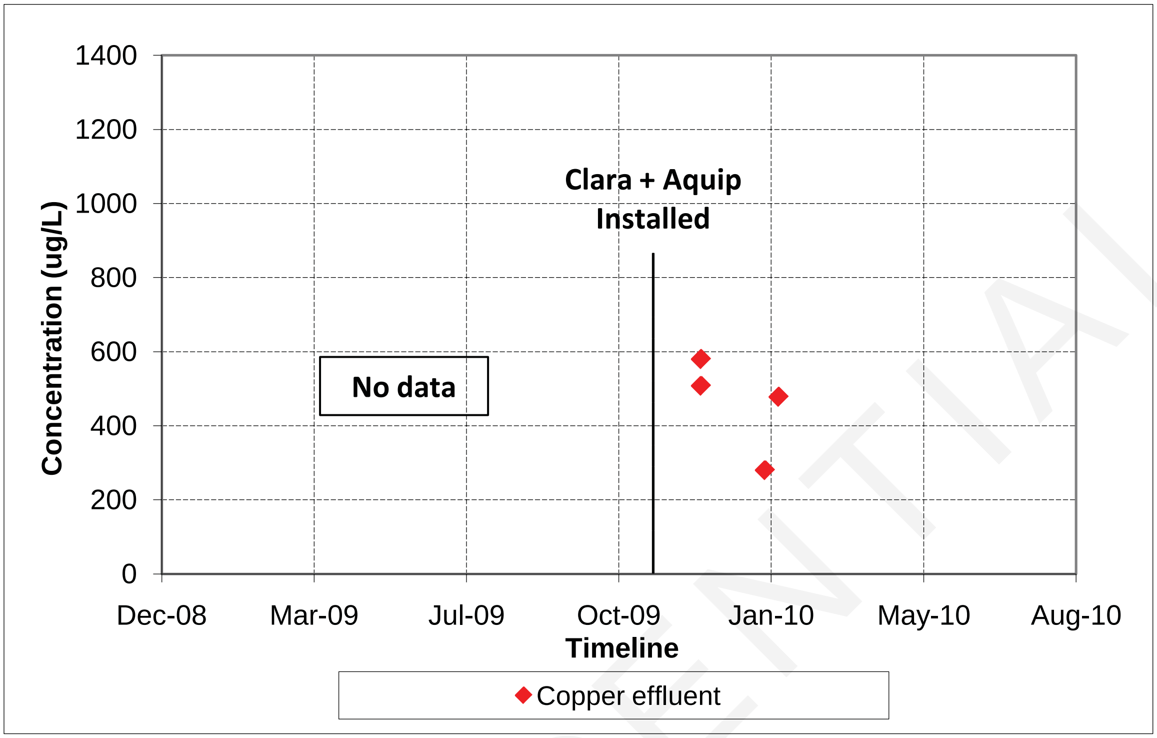
Site Location/Region:	Southern California
Facility Sector:	Nonferrous Scrapyard
StormwateRx Product(s):	Clara 40CP (stormwater separator vault) Aquip 80SBE (enhanced media filtration system)
Date of Installation:	October 27, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

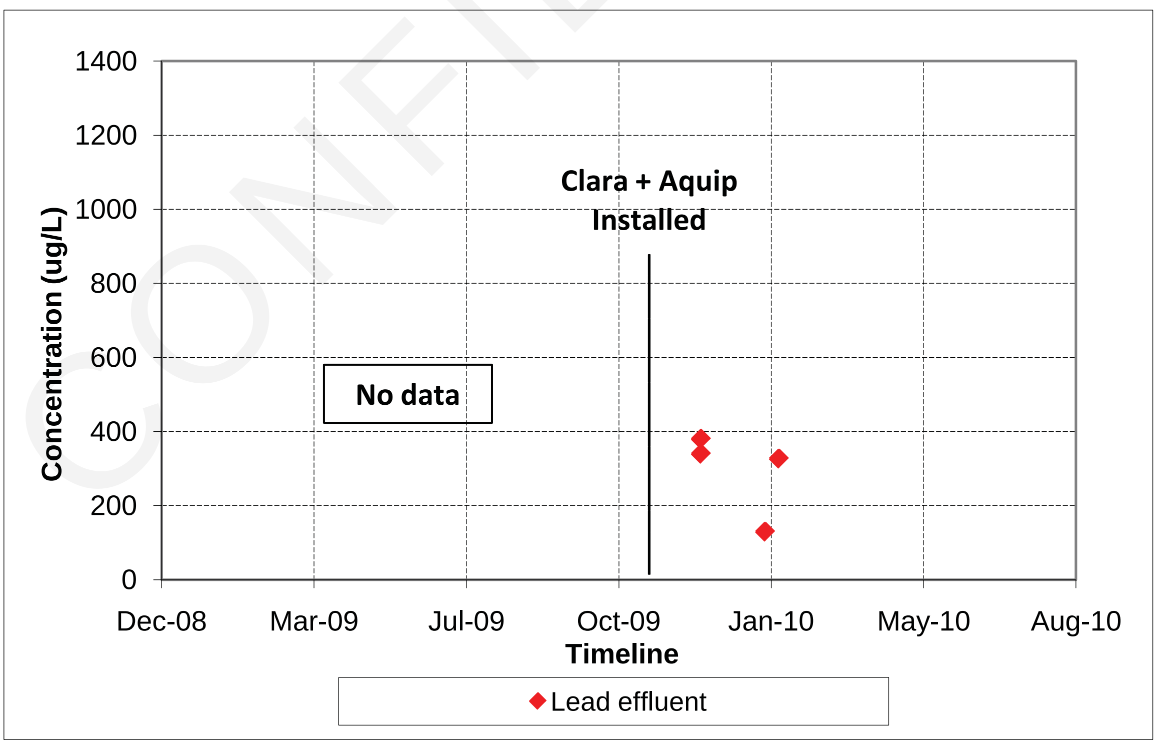
Date	Sampled By	Before/After Aquip Installation
December 7, 2009	StormwateRx	After
December 7, 2009	3rd Party	After
January 18, 2010	3rd Party	After
January 27, 2010	3rd Party	After

Facility Historical Data
Site ID #0303

Copper Effluent - Discharge Point

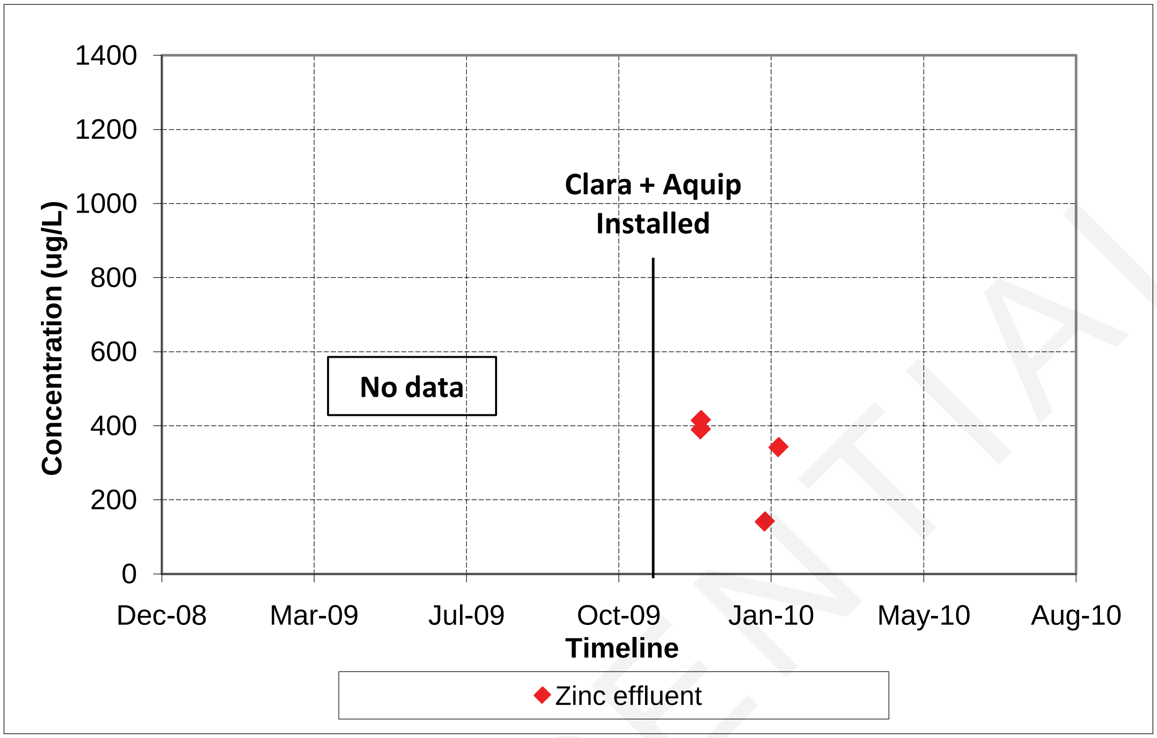


Lead Effluent - Discharge Point

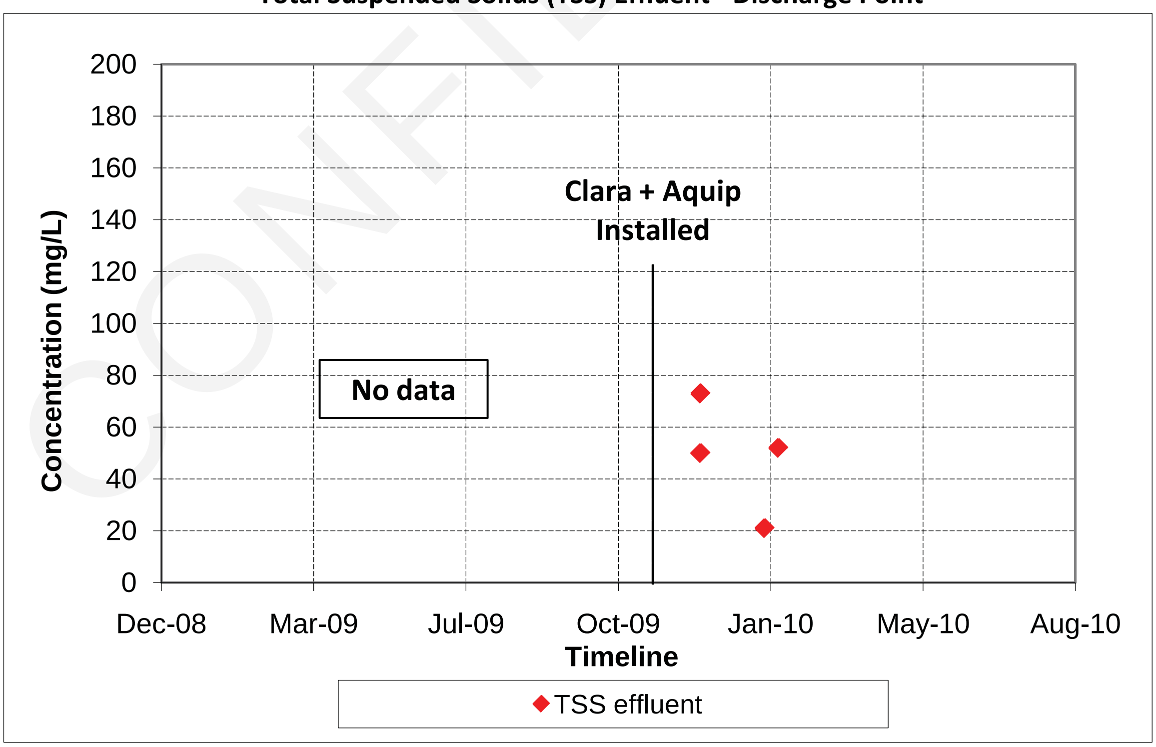


Facility Historical Data
Site ID #0303

Zinc Effluent - Discharge Point

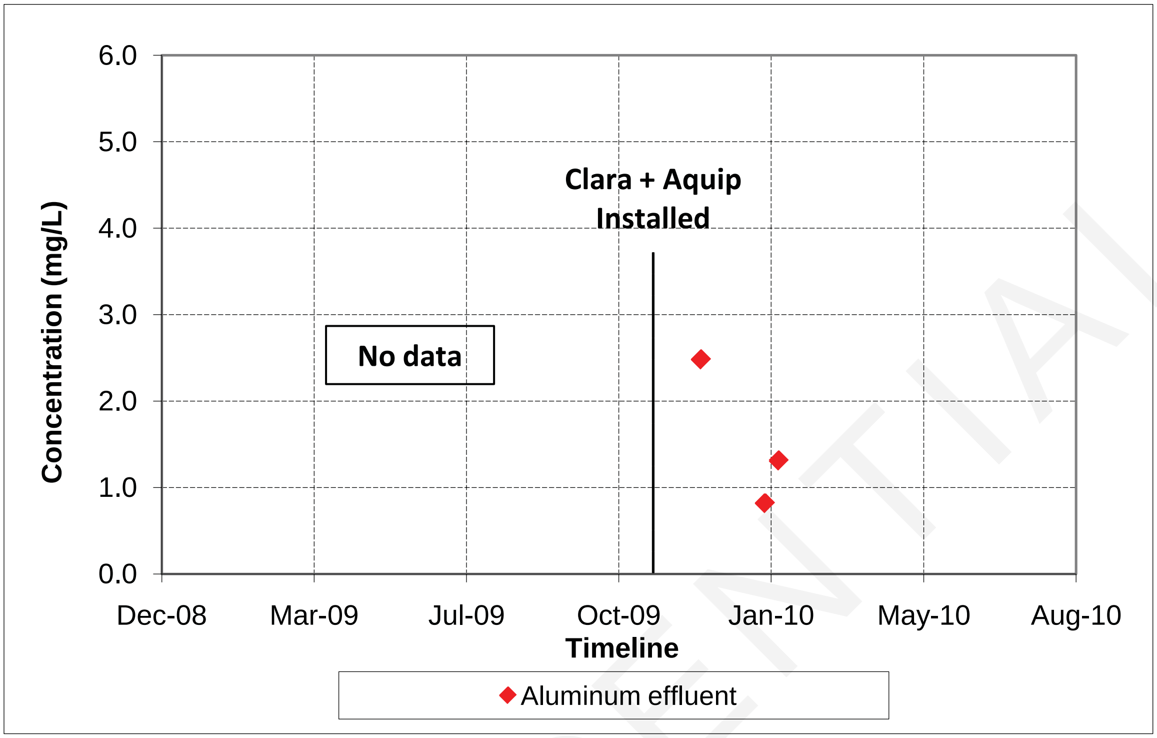


Total Suspended Solids (TSS) Effluent - Discharge Point

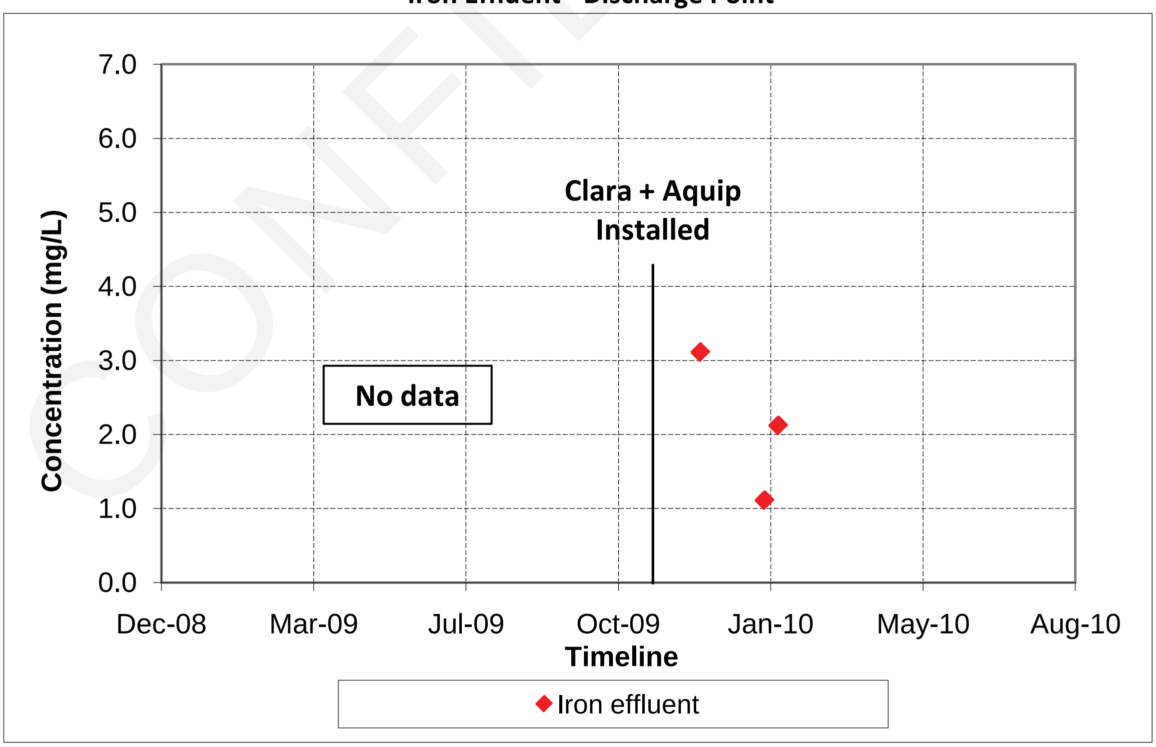


Facility Historical Data
Site ID #0303

Aluminum Effluent - Discharge Point

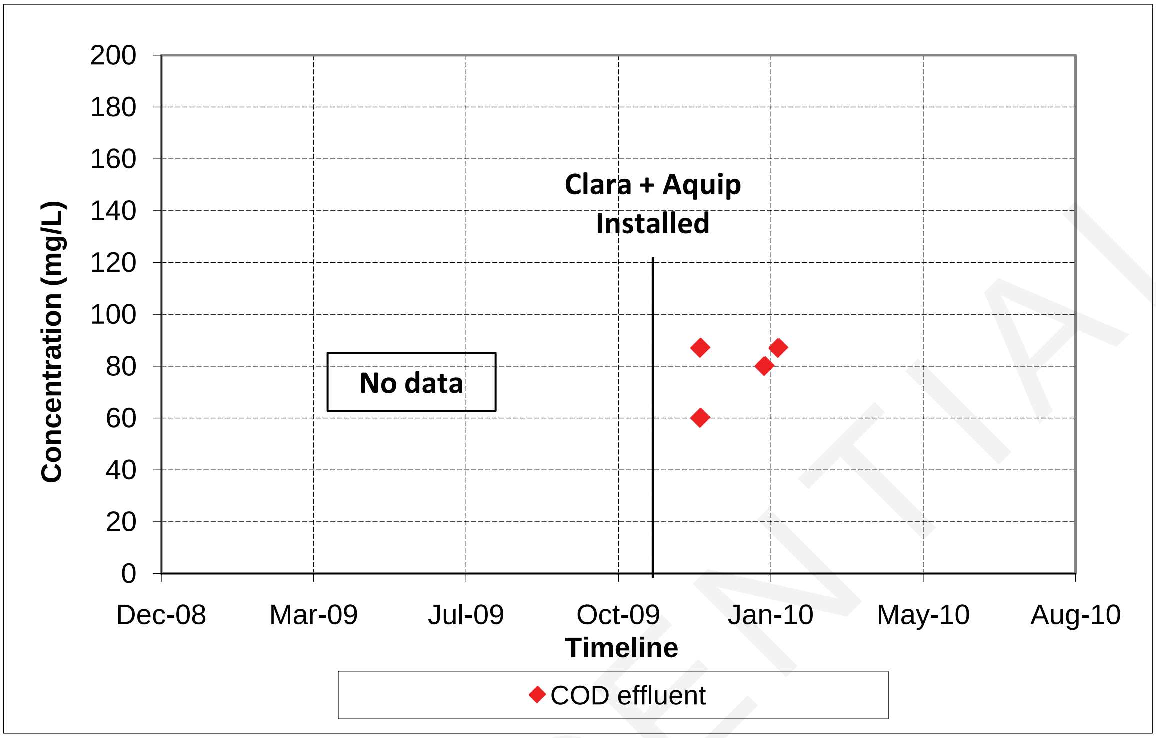


Iron Effluent - Discharge Point

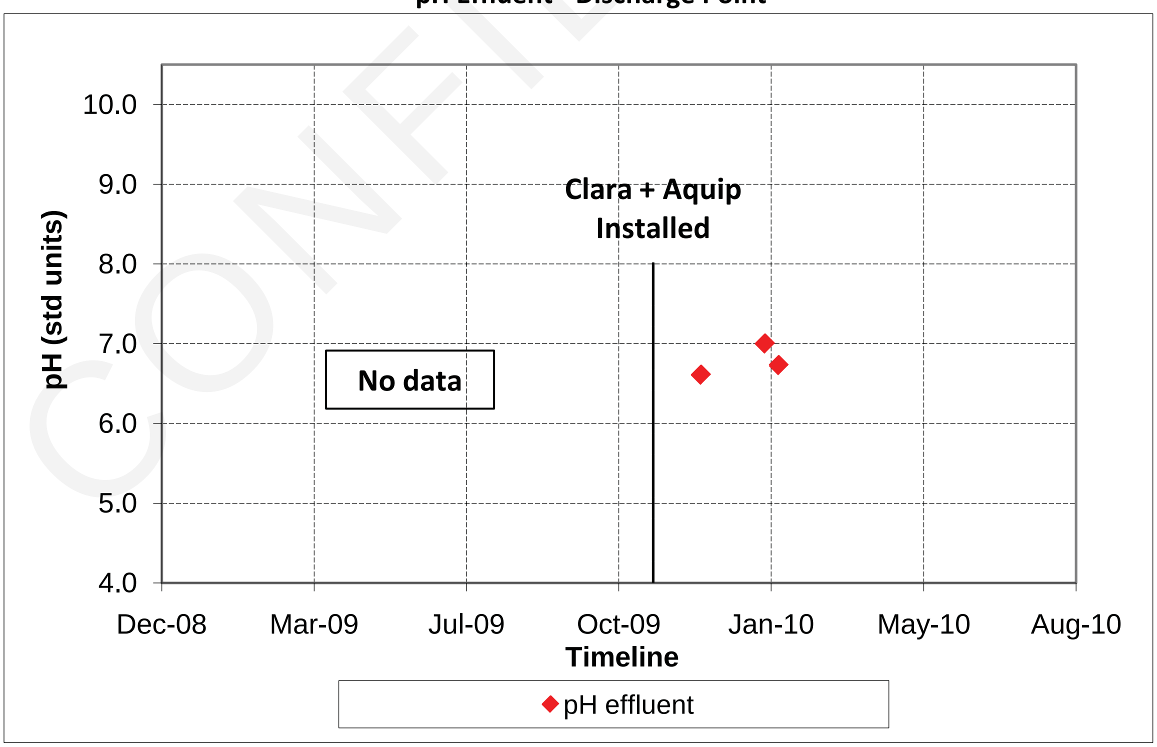


Facility Historical Data
Site ID #0303

Chemical Oyxgen Demand (COD) Effluent - Discharge Point



pH Effluent - Discharge Point



Aquip® Influent and Effluent Data
Site ID #0303

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Aluminum	8.86		0.817		91%	0.076		0.015	ND	80%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Aluminum	3.01		1.31		56%	0.041		0.058		increased
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Chromium (III)	0.086		0.01		88%					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Chromium (III)	0.005	ND	0.005	ND	N/A					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Chromium (VI)						0.00207		0.000357		83%
12/07/09	Aquip	C-OUT 0096 Yd 2	A-OUT 0096 Yd 2	Copper	5.2		0.58		89%	0.70		0.094		87%
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Copper	3.17		0.280		91%	0.467		0.139		70%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Copper	1.17		0.478		59%	0.183		0.347		increased
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Iron	14.1		1.11		92%	0.061		0.047		23%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Iron	5.12		2.12		59%	0.107		0.115		increased
12/07/09	Aquip	C-OUT 0096 Yd 2	A-OUT 0096 Yd 2	Lead	3.3		0.38		88%	0.046		0.0090		80%
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Lead	2.00		0.130		94%	0.056		0.026		54%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Lead	0.756		0.327		57%	0.040		0.047		increased
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Mercury	0.0016		0.0002	ND	88%					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Mercury	0.0008		0.0007		13%	0.0006		0.0006		0%
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Nickel						0.024		0.010		58%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Nickel						0.017		0.034		increased
12/07/09	Aquip	C-OUT 0096 Yd 2	A-OUT 0096 Yd 2	Zinc	3.6		0.39		89%	0.041		0.14		increased
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Zinc	1.72		0.141		92%	0.368		0.074		80%
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Zinc	0.952		0.342		64%	0.166		0.325		increased
12/07/09	Aquip	C-OUT 0096 Yd 2	A-OUT 0096 Yd 2	TSS	220		73		67%					
01/18/10	Aquip	Yard 2 In	Yard 2 Out	TSS	208		21		90%					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	TSS	69		52		25%					
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Hardness	81		91		increased					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Hardness	93		96		increased					

Aquip® Influent and Effluent Data
Site ID #0303

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Specific Conductivity	240		380		increased					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	Specific Conductivity	278		300		increased					
12/07/09	Aquip	C-OUT 0096 Yd 2	A-OUT 0096 Yd 2	COD	85		87		increased					
01/18/10	Aquip	Yard 2 In	Yard 2 Out	COD	250		80		68%					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	COD	150		87		42%					
01/18/10	Aquip	Yard 2 In	Yard 2 Out	O&G	2.5	ND	2.5	ND	N/A					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	O&G	10		2.5	ND	75%					
01/18/10	Aquip	Yard 2 In	Yard 2 Out	pH	7.10		7.00		-0.10					
01/27/10	Aquip	Pretreatment Yd. 2	Discharge Yd. 2	pH	7.27		6.73		-0.54					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0304
Nonferrous Scrapyard

Stormwater Sampling Overview
Site ID #0304

Site Location/Region: Southern California

Facility Sector: Nonferrous Scrapyard

StormwateRx Product(s): Aquip 110SOI (media filtration system)

Date of Installation: October 14, 2009

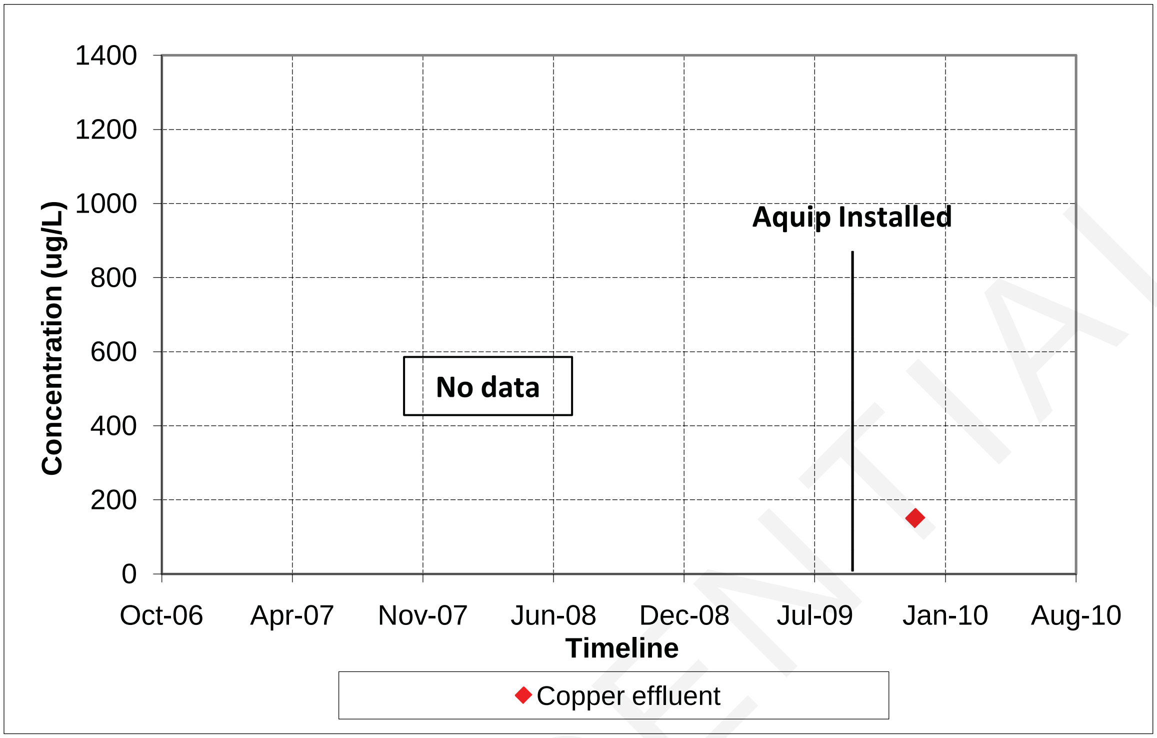
Maintenance Status: Adequate

Sampling Events:

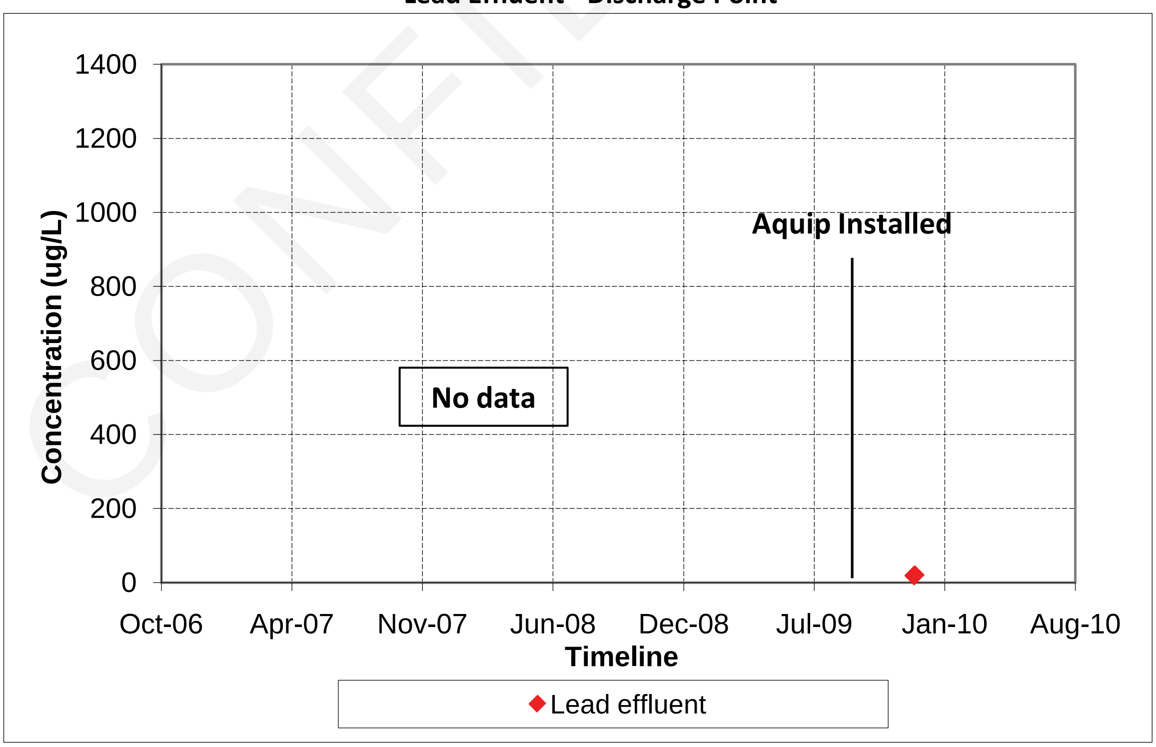
Date	Sampled By	Before/After Aquip Installation
December 7, 2009	StormwateRx	After

Facility Historical Data
Site ID #0304

Copper Effluent - Discharge Point

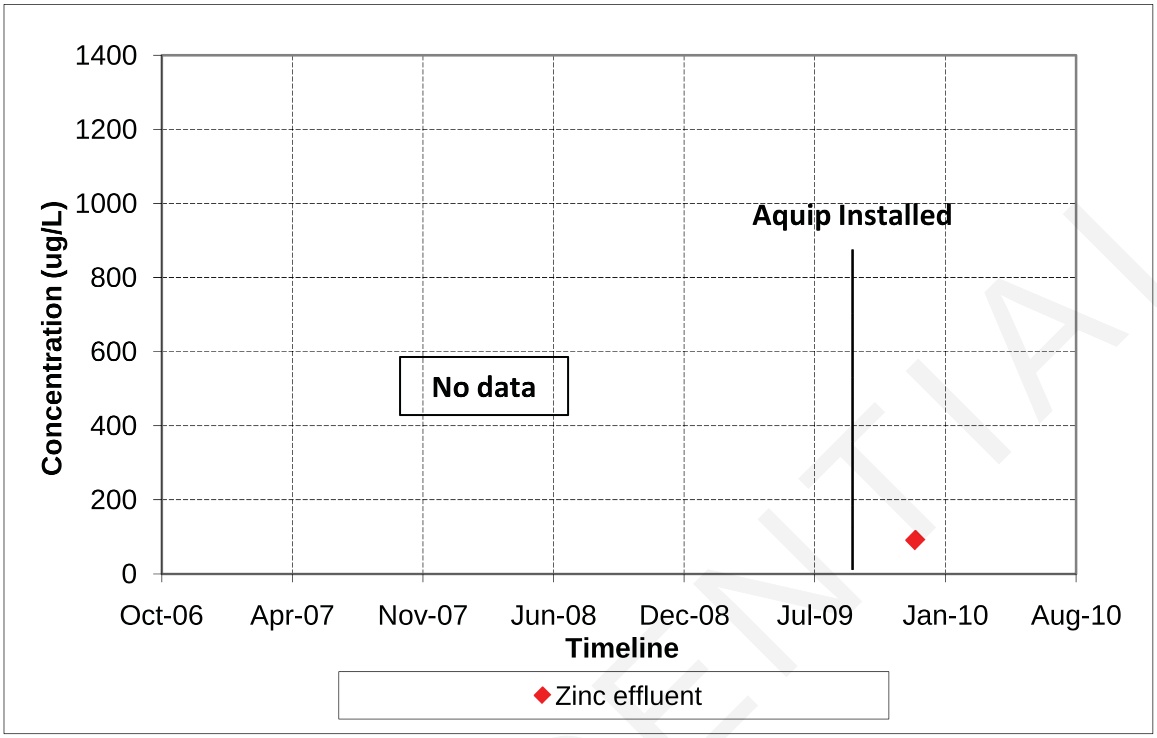


Lead Effluent - Discharge Point

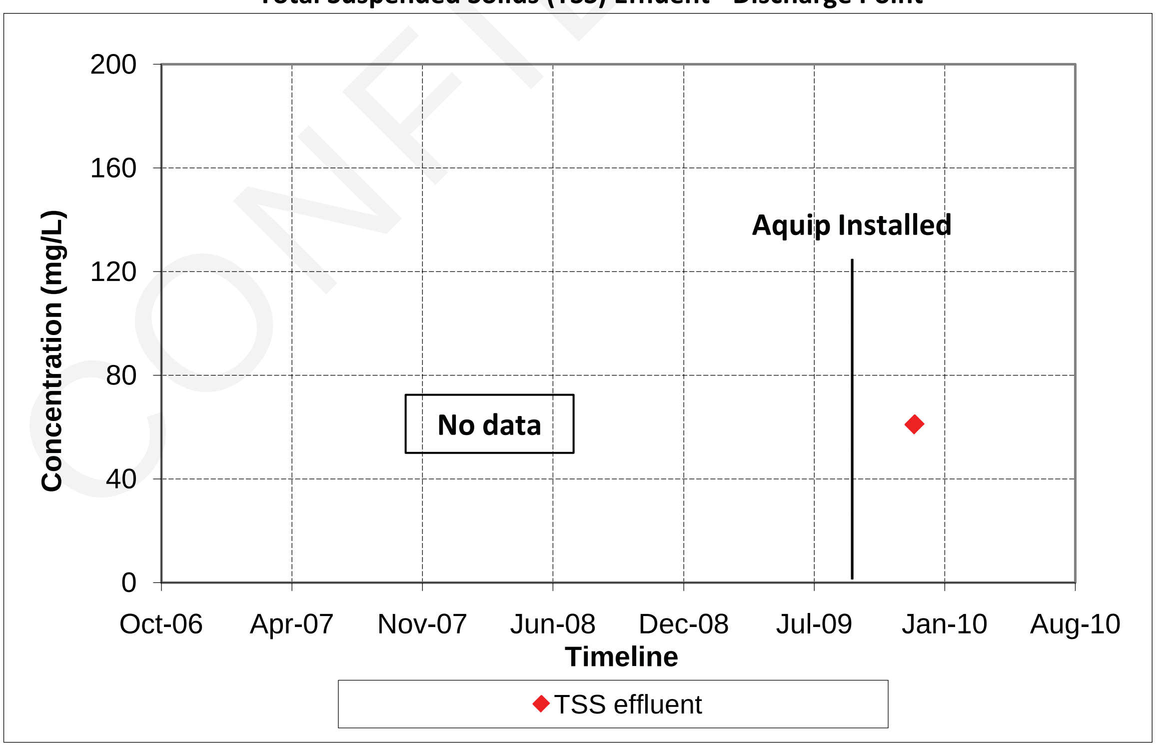


Facility Historical Data
Site ID #0304

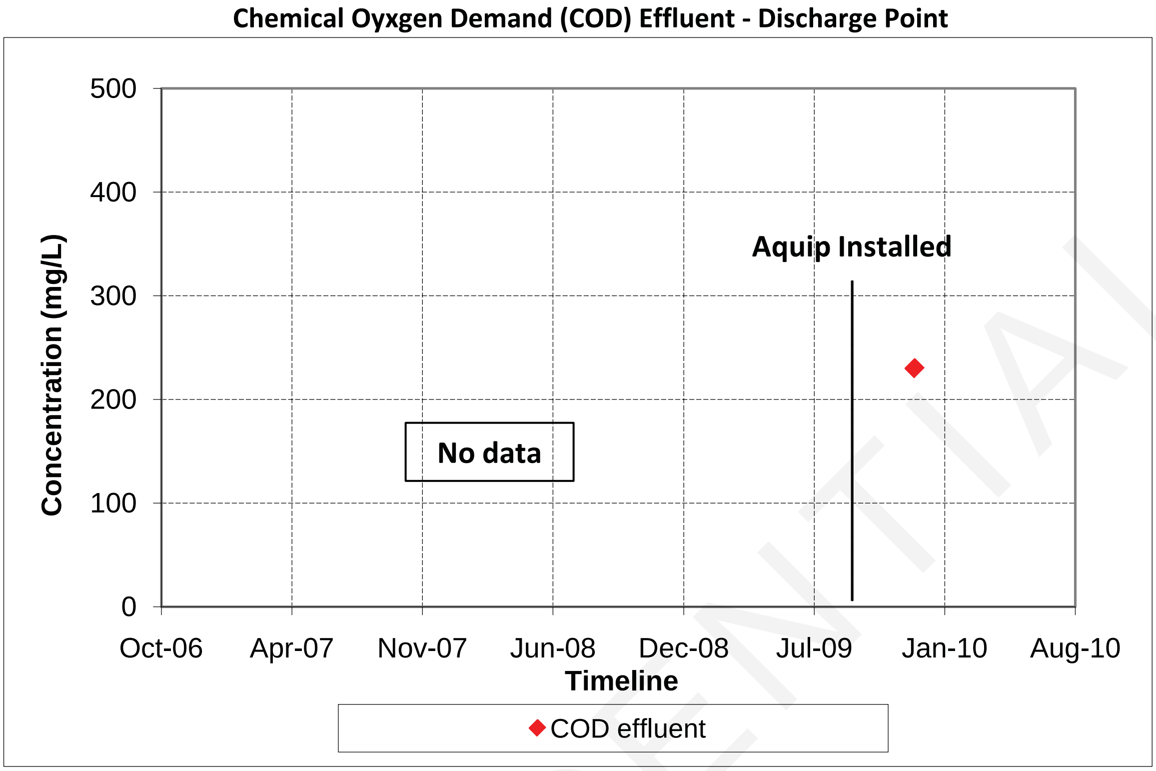
Zinc Effluent - Discharge Point



Total Suspended Solids (TSS) Effluent - Discharge Point



Facility Historical Data
Site ID #0304



Aquip® Influent and Effluent Data
Site ID #0304

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Copper	1.7		0.15		91%	0.39		0.12		69%
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Lead	0.40		0.019		95%	0.0093		0.0044		53%
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Zinc	2.5		0.091		96%	0.042		0.020	ND	52%
12/07/09	Aquip	A-IN 0097	A-OUT 0097	TSS	2900		61		98%					
12/07/09	Aquip	A-IN 0097	A-OUT 0097	COD	240		230		4%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0305
Nonferrous Scrapyard

Stormwater Sampling Overview
Site ID #0305

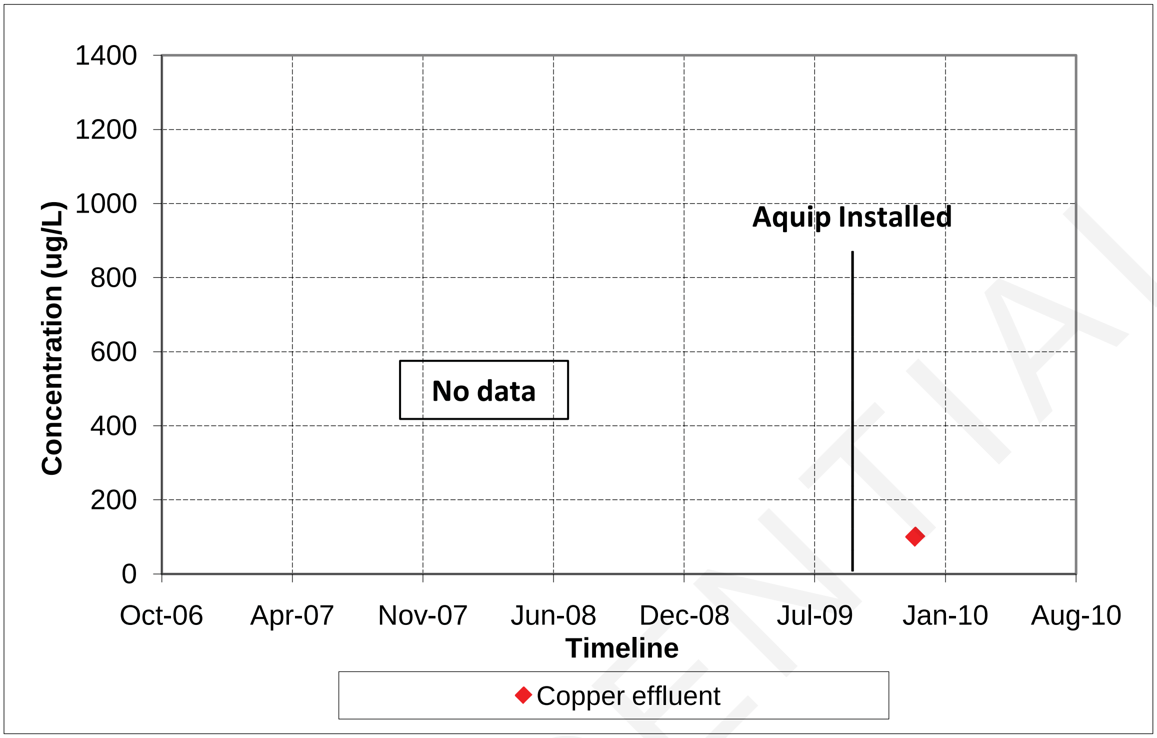
Site Location/Region:	Southern California
Facility Sector:	Nonferrous Scrapyard
StormwateRx Product(s):	Aquip 110SOI (media filtration system)
Date of Installation:	October 23, 2009
Maintenance Status:	Adequate

Sampling Events:

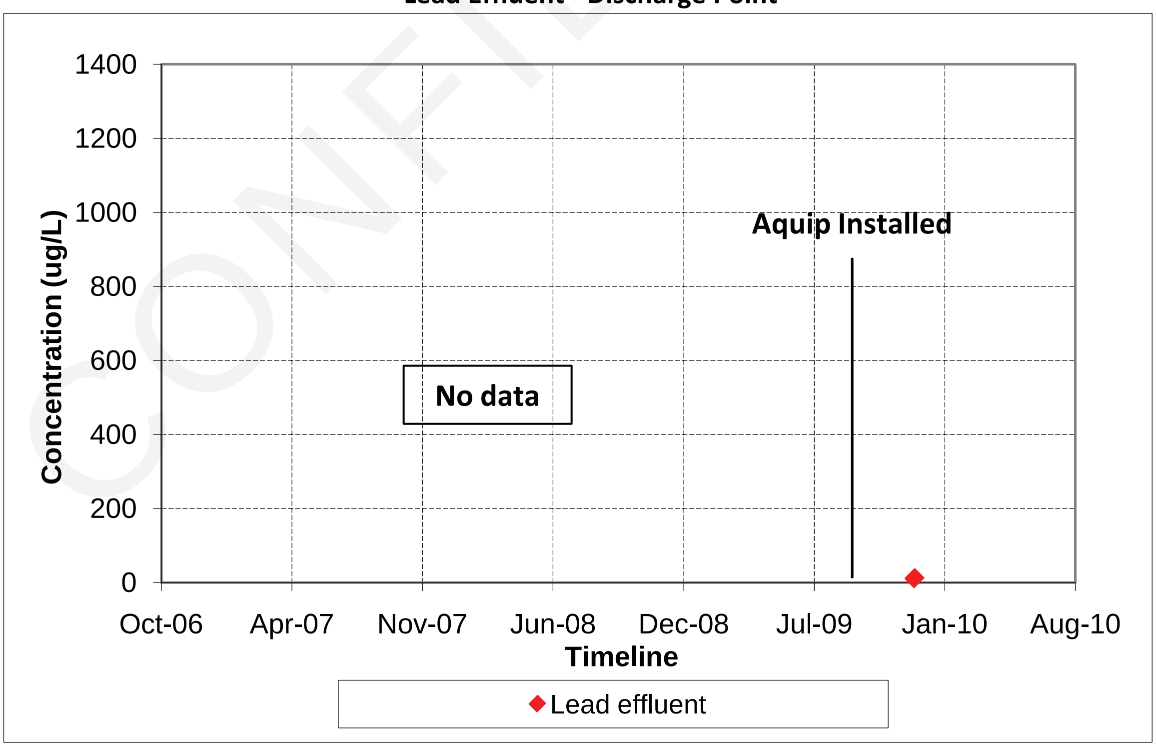
Date	Sampled By	Before/After Aquip Installation
December 7, 2009	StormwateRx	After

Facility Historical Data
Site ID #0305

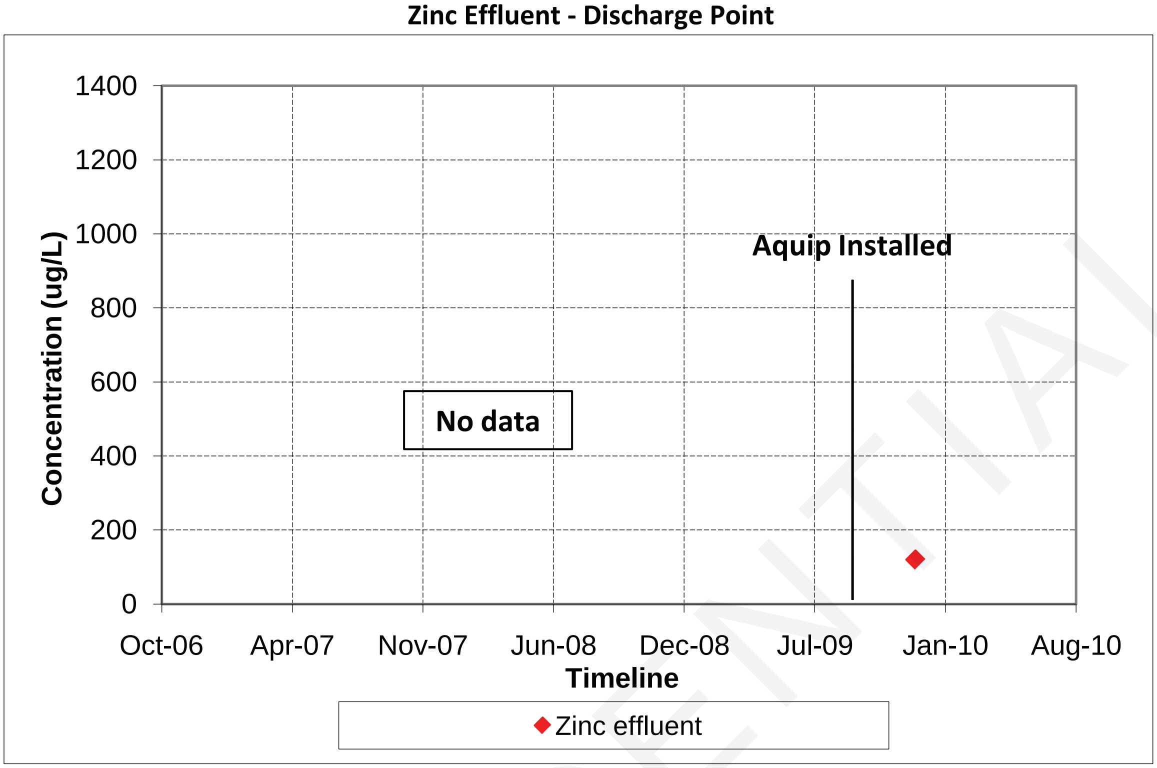
Copper Effluent - Discharge Point

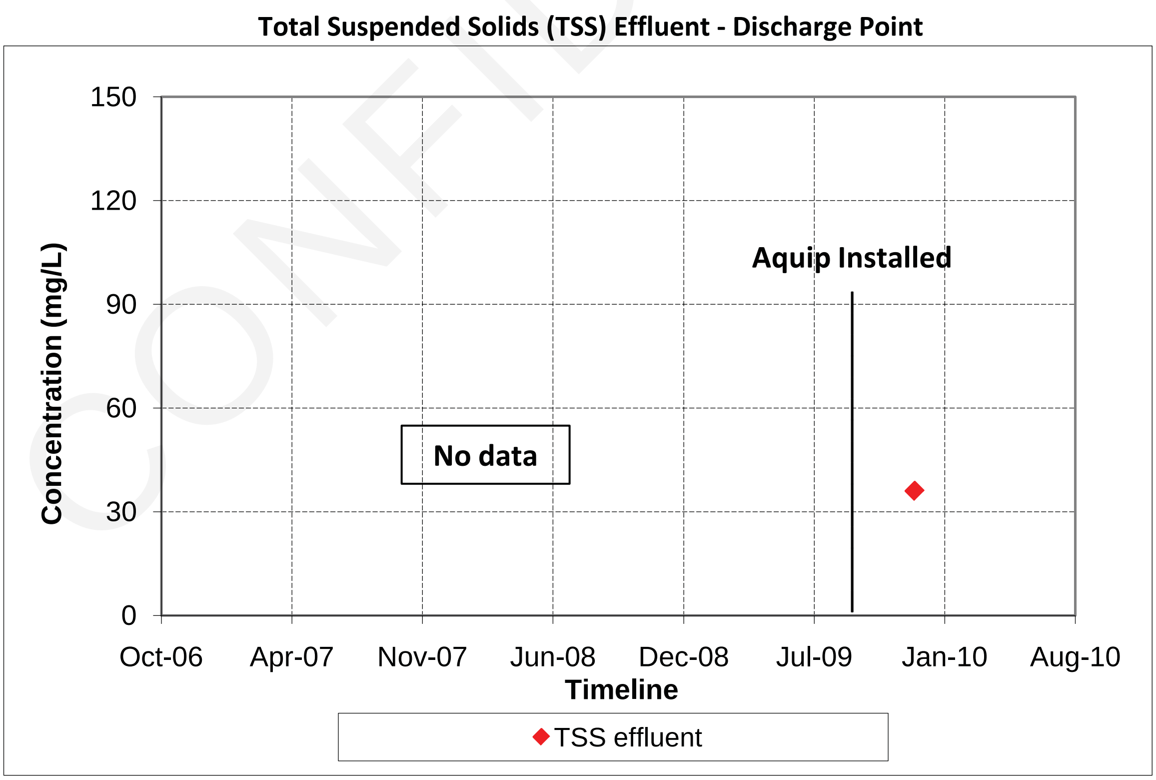


Lead Effluent - Discharge Point

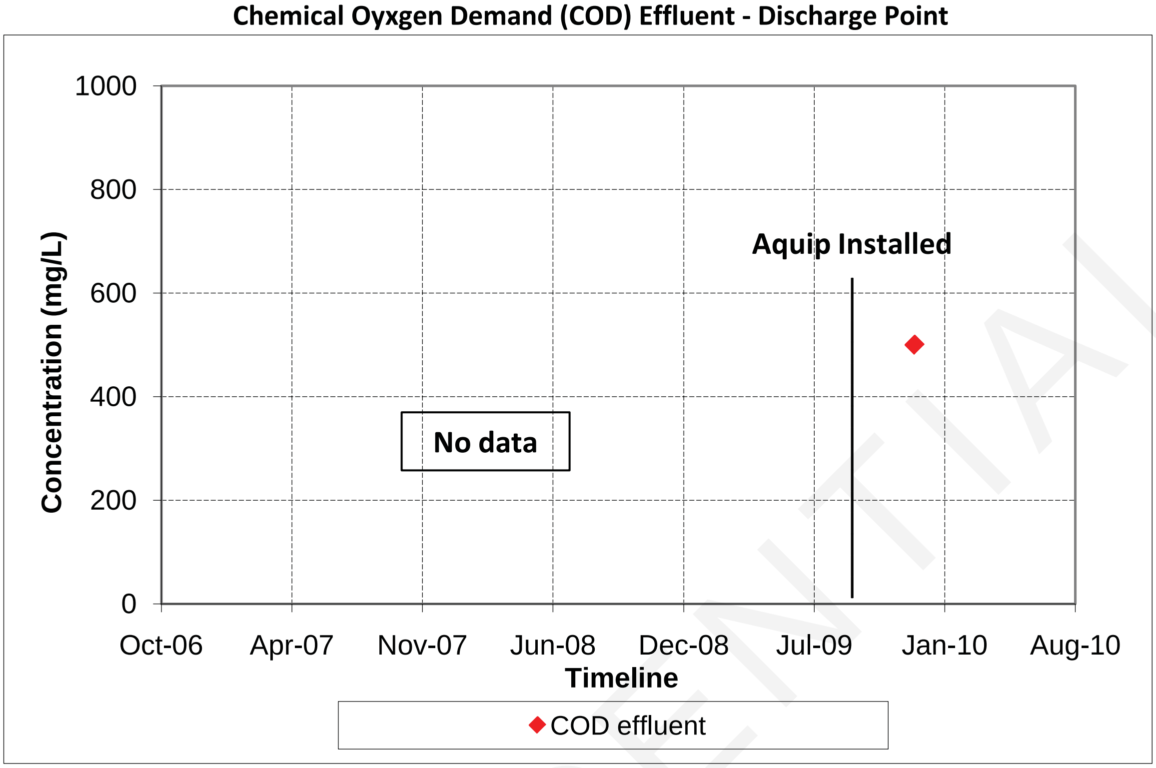


Facility Historical Data
Site ID #0305





Facility Historical Data
Site ID #0305



Aquip® Influent and Effluent Data
Site ID #0305

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Copper	0.150		0.10		33%	0.14		0.086		39%
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Lead	0.022		0.011		50%	0.0092		0.0072		22%
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Zinc	0.400		0.12		70%	0.21		0.096		54%
12/07/09	Aquip	A-IN 0098	A-OUT 0098	TSS	130		36		72%					
12/07/09	Aquip	A-IN 0098	A-OUT 0098	COD	530		500		6%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0401
Galvanizing

Stormwater Sampling Overview
Project #0401

Site Location/Region:	Pacific Northwest
Facility Sector:	Galvanizing
StormwateRx Product(s):	Aquip 110UBE (enhanced media filtration system)
Date of Installation:	September 10, 2007
Maintenance Status:	Adequate

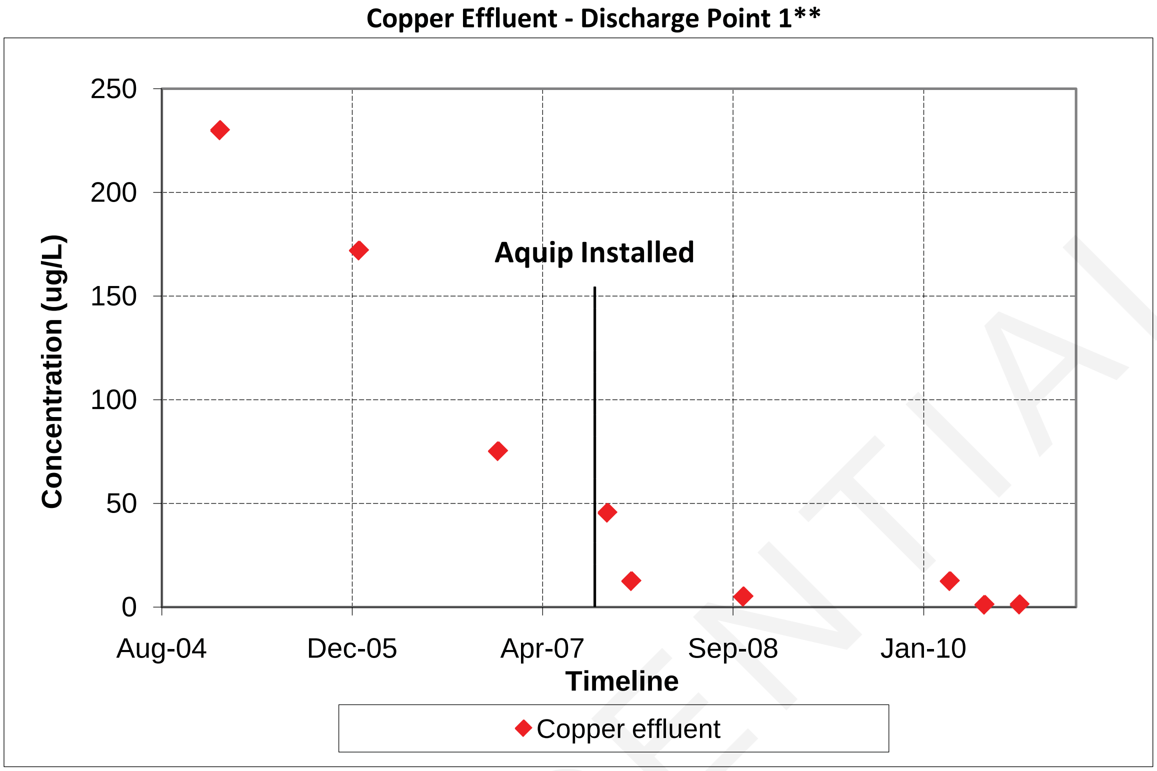
Sampling Events:

Date	Sampled By	Before/After Aquip Installation
January 1, 2005	Customer	Before
April 1, 2005	Customer	Before
July 1, 2005	Customer	Before
October 1, 2005	Customer	Before
January 1, 2006	Customer	Before
July 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
April 1, 2007	Customer	Before
July 1, 2007	Customer	Before
October 1, 2007	Customer	After
October 15, 2007	Customer	After
December 17, 2007	Customer	After
January 1, 2008	Customer	After
April 1, 2008	Customer	After
July 1, 2008	Customer	After
October 6, 2008	StormwateRx	After
April 1, 2010	Customer	After

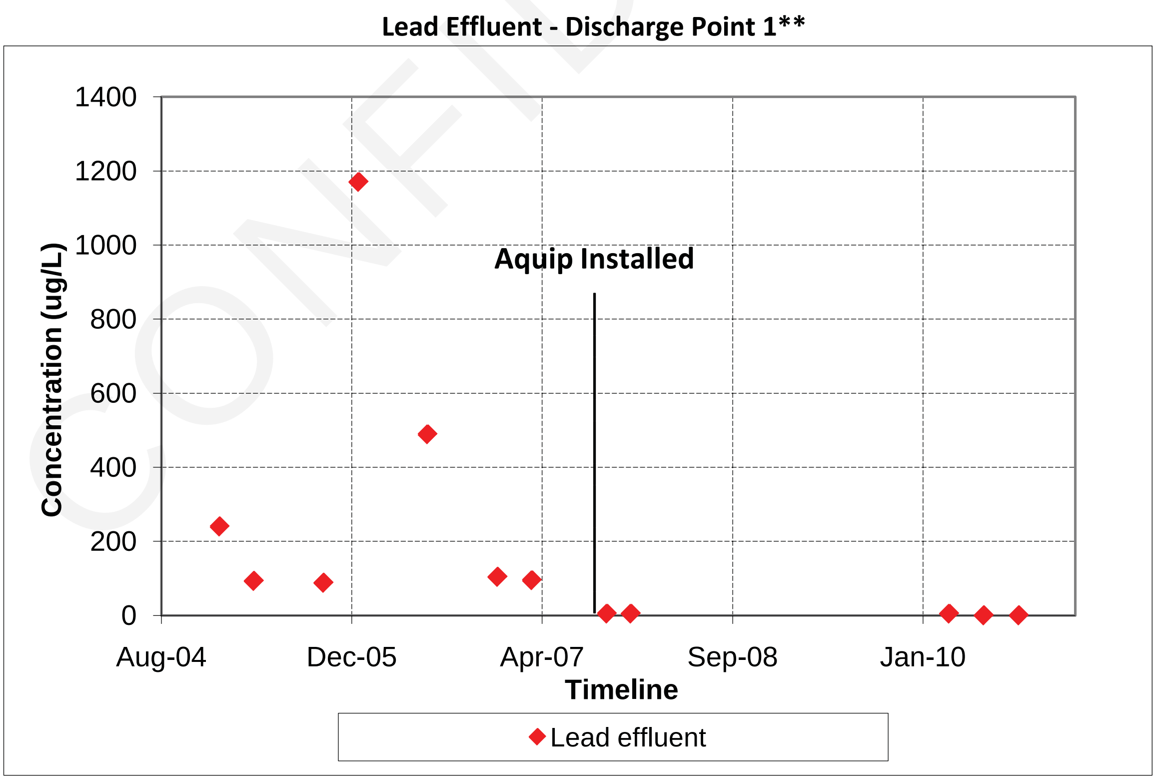
Sampling Events (cont.)

Date	Sampled By	Before/After Aquip Installation
July 1, 2010	Customer	After
October 1, 2010	Customer	After

Facility Historical Data
Site ID #0401

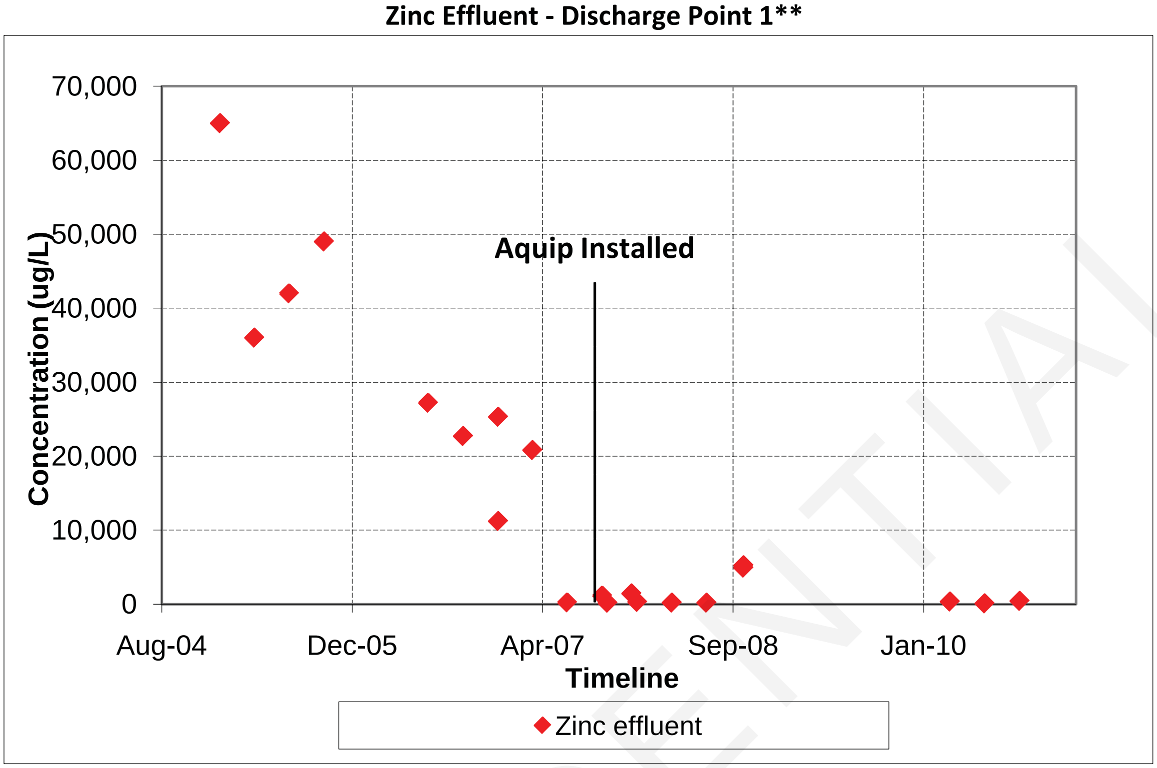


**Discharge point 1 is a combined stormwater flow of the Aquip effluent and untreated water

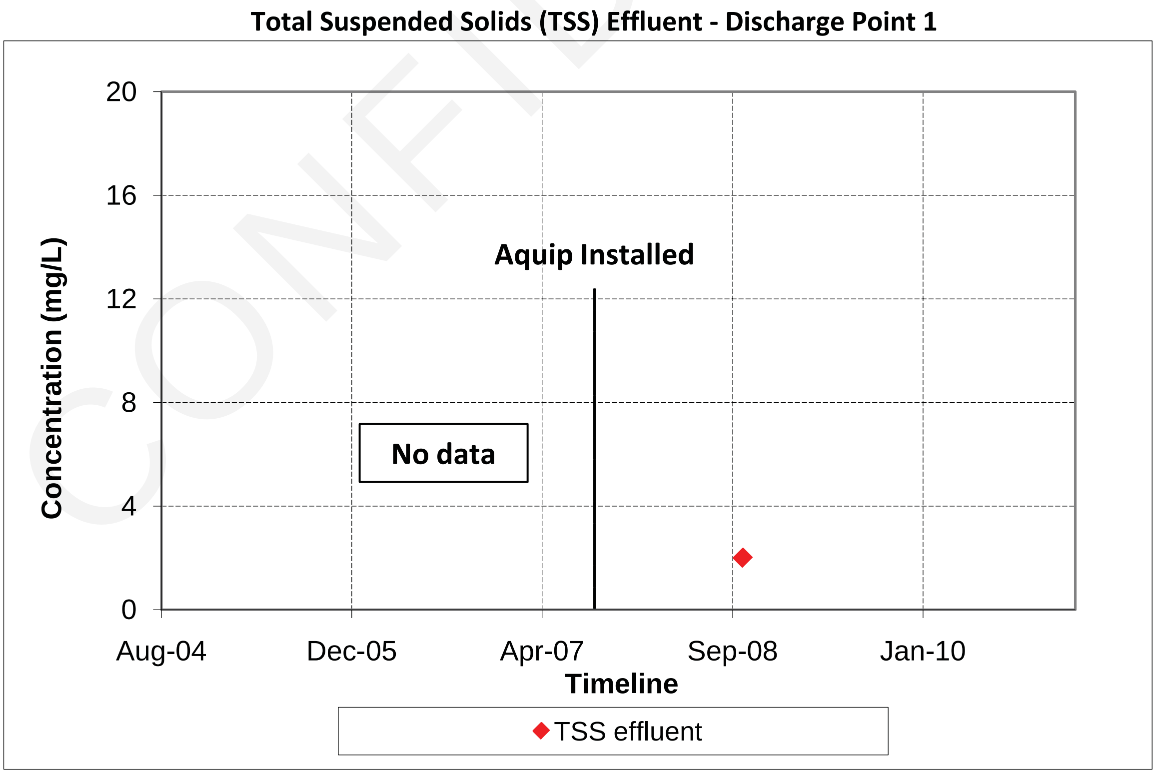


**Discharge point 1 is a combined stormwater flow of the Aquip effluent and untreated water

Facility Historical Data
Site ID #0401

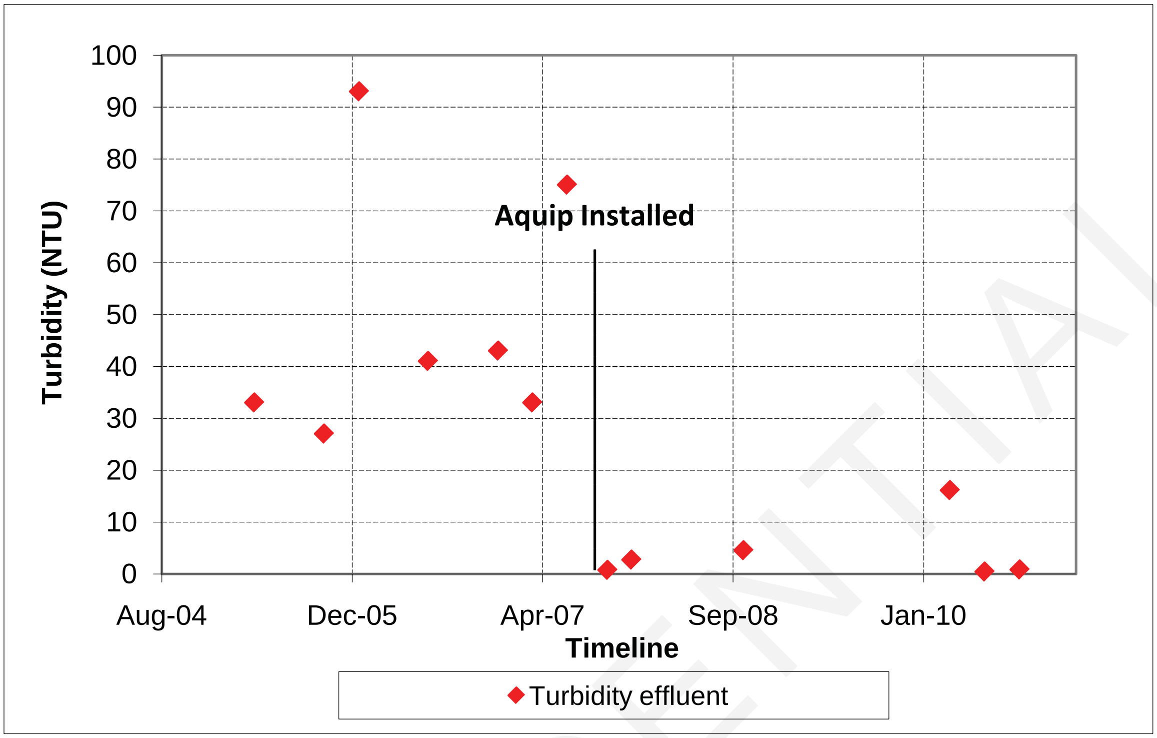


**Discharge point 1 is a combined stormwater flow of the Aquip effluent and untreated water. Data not shown: Jan 1, 2006 106,000 ug/L; Apr 1, 2007 112,000 ug/L; Oct 1, 2007 9,390 ug/L; Jan 1, 2008 10,400 ug/L; Apr 1, 2008 5,130 ug/L



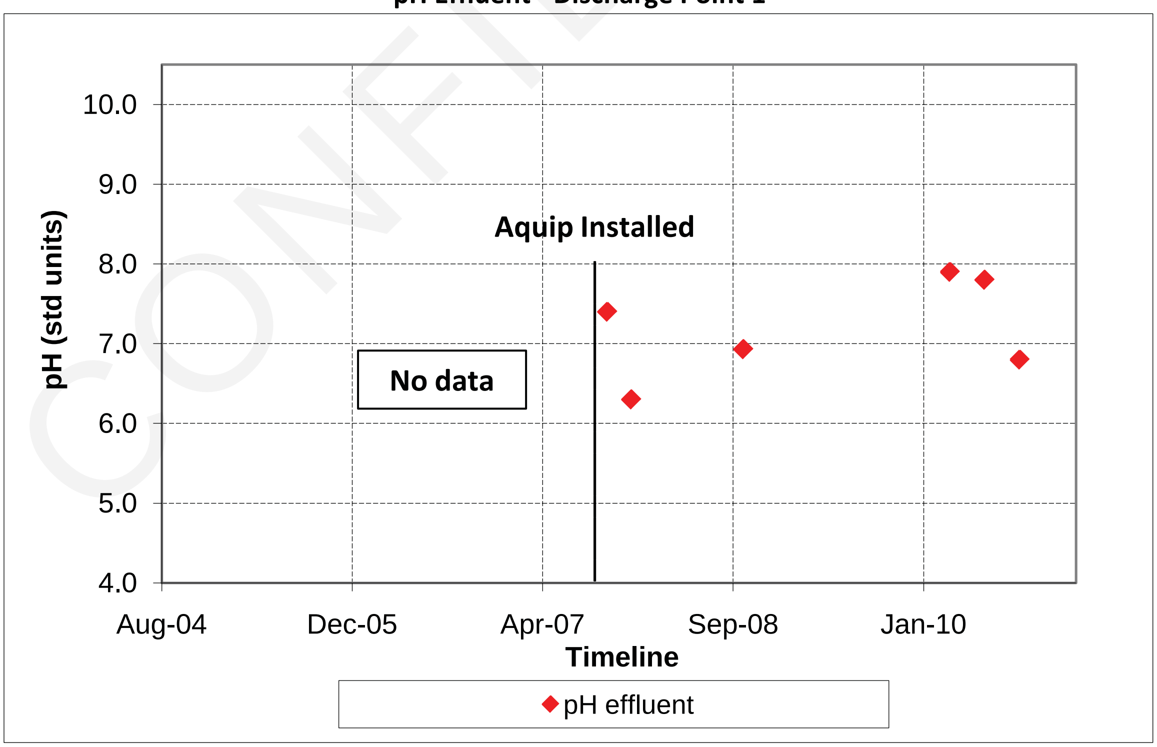
Facility Historical Data
Site ID #0401

Turbidity Effluent - Discharge Point 1**



**Discharge point 1 is a combined stormwater flow of the Aquip effluent and untreated water.
Data not shown: Jan 1, 2008 110 NTU

pH Effluent - Discharge Point 1**



**Discharge point 1 is a combined stormwater flow of the Aquip effluent and untreated water

Aquip® Influent and Effluent Data
Site ID #0401

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
10/06/08	Aquip	Filter Inlet	Filter Outlet	Aluminum	21.4		0.125	ND	99%	0.125	ND	0.125	ND	N/A
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Aluminum	25.1		0.125	ND	99%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	Copper	0.013	ND	0.046		increased					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Copper	0.182		0.005	ND	97%	0.0131		0.0101		23%
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Copper	0.204		0.005	ND	98%					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Iron	48.6		0.238		99%	0.075	ND	0.075	ND	N/A
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Iron	63.6		0.22		99%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	Lead	0.031		0.01	ND	84%					
12/17/07	Aquip	Filter Inlet	Filter Outlet	Lead	0.0148		0.005	ND	66%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	Zinc	24.9		0.158		99%					
12/17/07	Aquip	Filter Inlet	Filter Outlet	Zinc	2.30		1.42		38%					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Zinc	26.9		5.22		81%	9.68		5.43		44%
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Zinc	28.8		4.9		83%					
10/06/08	Aquip	Filter Inlet	Filter Outlet	TSS	480		2	ND	99%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	Turbidity	38.0		0.72		98%					
12/17/07	Aquip	Filter Inlet	Filter Outlet	Turbidity	30.0		2.7		91%					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Turbidity	779		4.51		99%					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Alkalinity	51.6		13.8		73%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	Hardness	98		98		0%					
12/17/07	Aquip	Filter Inlet	Filter Outlet	Hardness	26		31		increased					
10/06/08	Aquip	Filter Inlet	Filter Outlet	Hardness	155		47		70%					
10/15/07	Aquip	Filter Inlet	Filter Outlet	O&G	3.0	ND	2.5	ND	N/A					

Aquip® Influent and Effluent Data
Site ID #0401

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
10/15/07	Aquip	Filter Inlet	Filter Outlet	pH	7.0		7.4		0.4					
12/17/07	Aquip	Filter Inlet	Filter Outlet	pH	7.2		6.3		-0.9					
10/06/08	Aquip	Filter Inlet	Filter Outlet	pH	6.84		6.93		0.09					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0402
Galvanizing

Stormwater Sampling Overview
Site ID #0402

Site Location/Region:	Pacific Northwest
Facility Sector:	Galvanizing
StormwateRx Product(s):	Aquip 50SBE (enhanced media filtration system) Purus Metals 25R (metals polishing system)
Date of Installation:	September 22, 2008
Maintenance Status:	Adequate

Sampling Events:

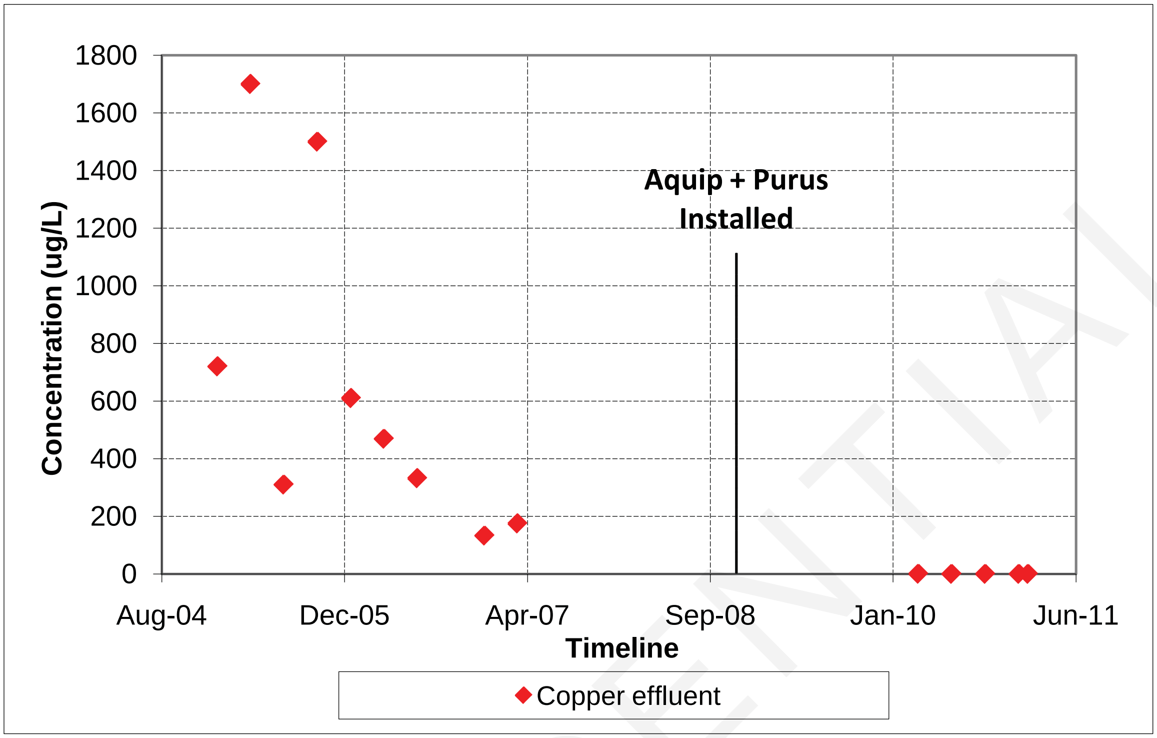
Date	Sampled By	Before/After Aquip Installation
January 1, 2005	Customer	Before
April 1, 2005	Customer	Before
July 1, 2005	Customer	Before
October 1, 2005	Customer	Before
January 1, 2006	Customer	Before
April 1, 2006	Customer	Before
July 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
April 1, 2007	Customer	Before
July 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
July 1, 2008	Customer	Before
May 6, 2009	StormwateRx	After
April 1, 2010	Customer	After
July 1, 2010	Customer	After

Sampling Events (cont.)

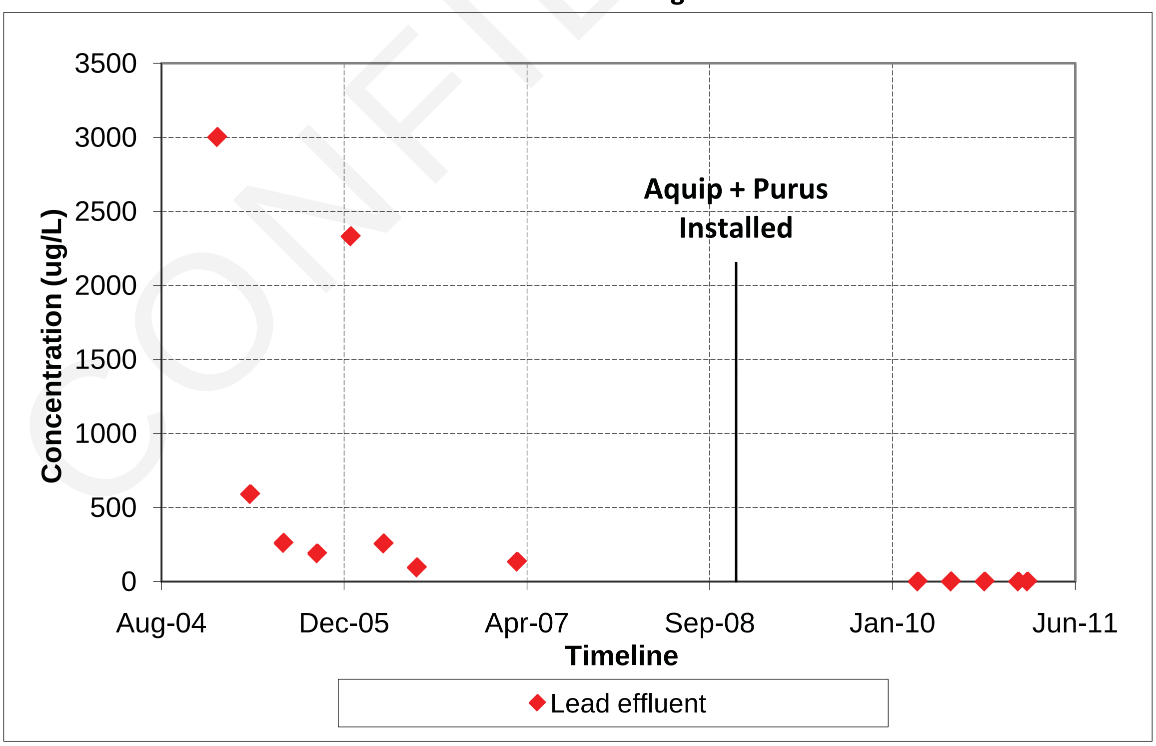
Date	Sampled By	Before/After Aquip Installation
October 1, 2010	Customer	After
January 1, 2011	Customer	After
January 26, 2011	Customer	After

Facility Historical Data
Site ID #0402

Copper Effluent - Discharge Point S

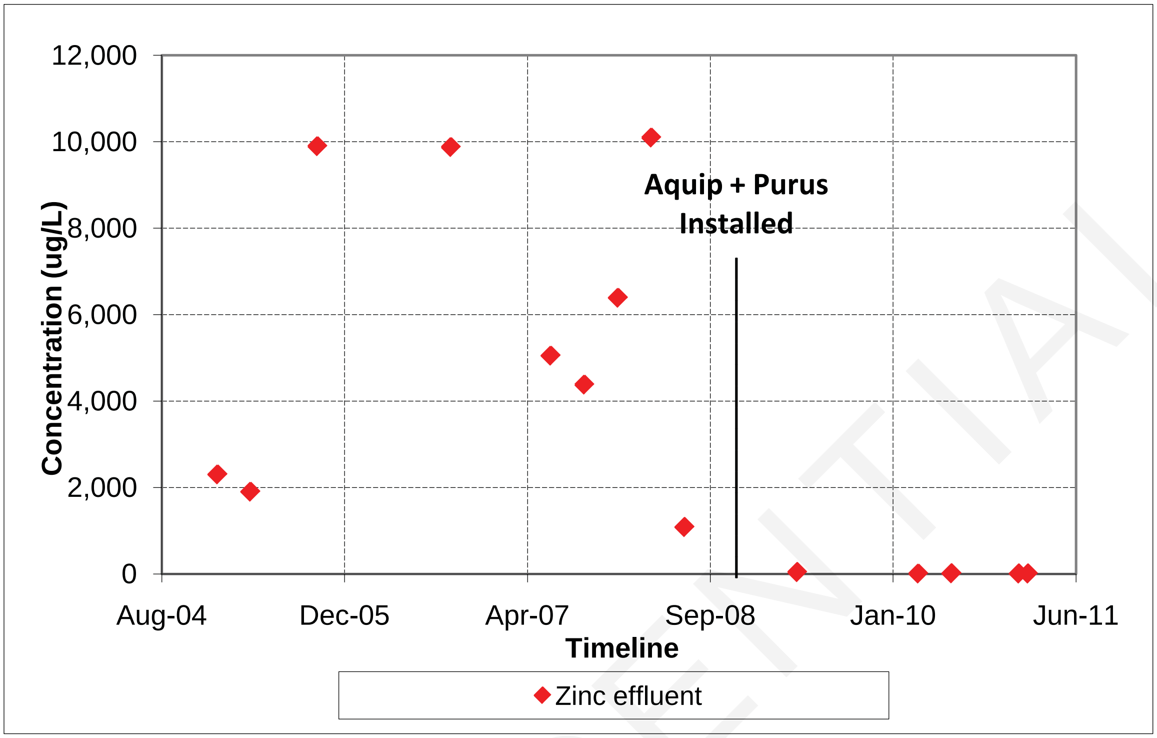


Lead Effluent - Discharge Point S



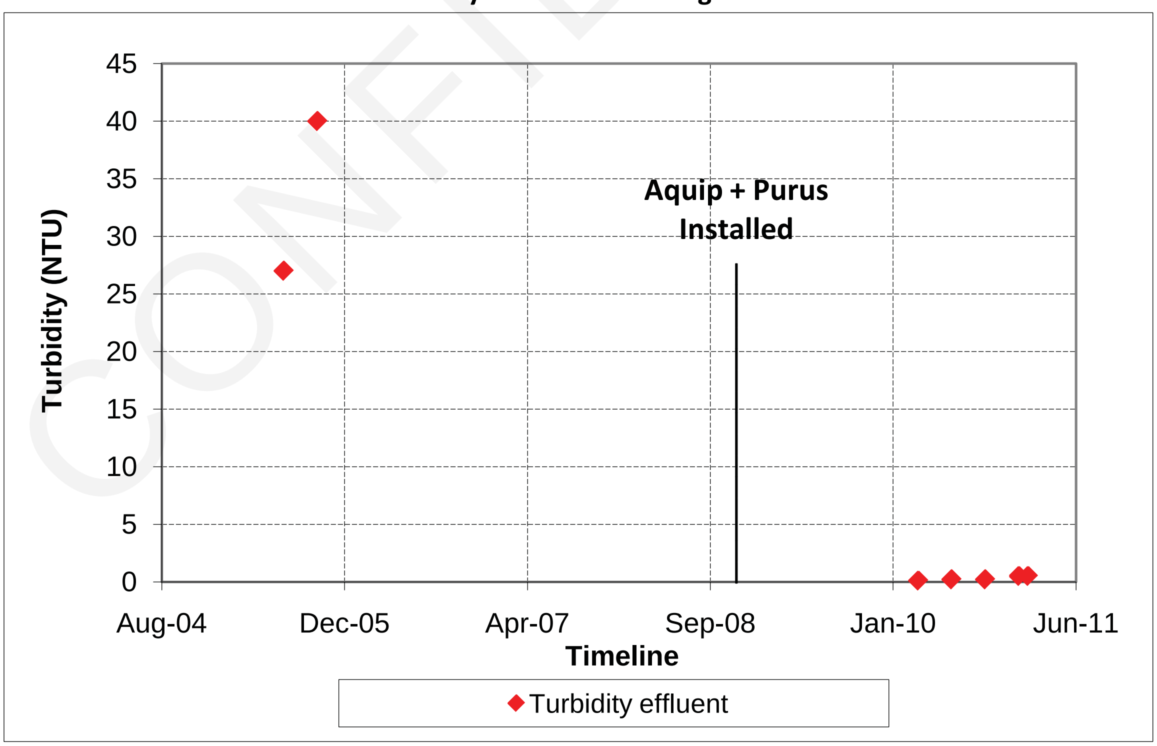
Facility Historical Data
Site ID #0402

Zinc Effluent - Discharge Point S



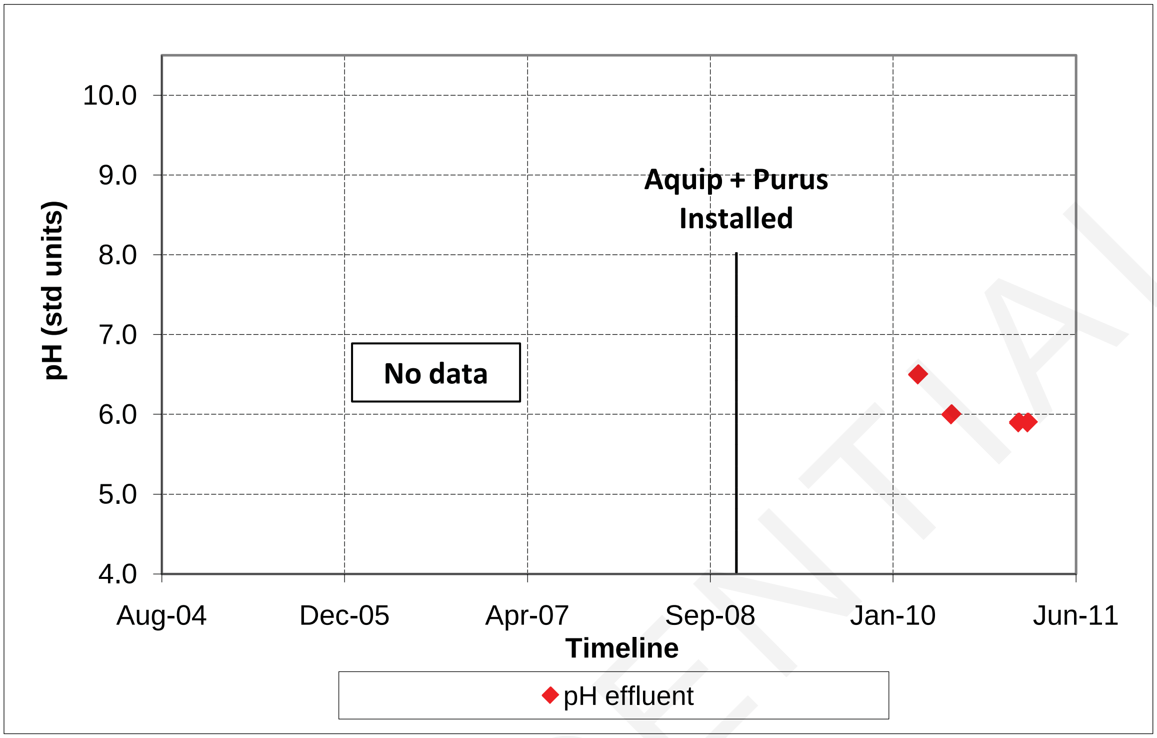
Data not shown: Jul 1, 2005 130,000 ug/L; Jan 1, 2006 138,000 ug/L; Jul 1, 2006 122,000 ug/L, Jan 1, 2007 40,200 ug/L; Apr 1, 2007 19,800 ug/L; Oct 1, 2010 3,610 ug/L customer had Purus Metals offline

Turbidity Effluent - Discharge Point S



Facility Historical Data
Site ID #0402

pH Effluent - Discharge Point S



Aquip® Influent and Effluent Data
Site ID #0402

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
05/06/09	Aquip	INLET AQUIP	OUTLET AQUIP	Zinc	18.6		9.07		51%					
05/06/09	Purus Metals	OUTLET AQUIP	OUTLET IX	Zinc	9.07		0.0369		99%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0403
Galvanizing

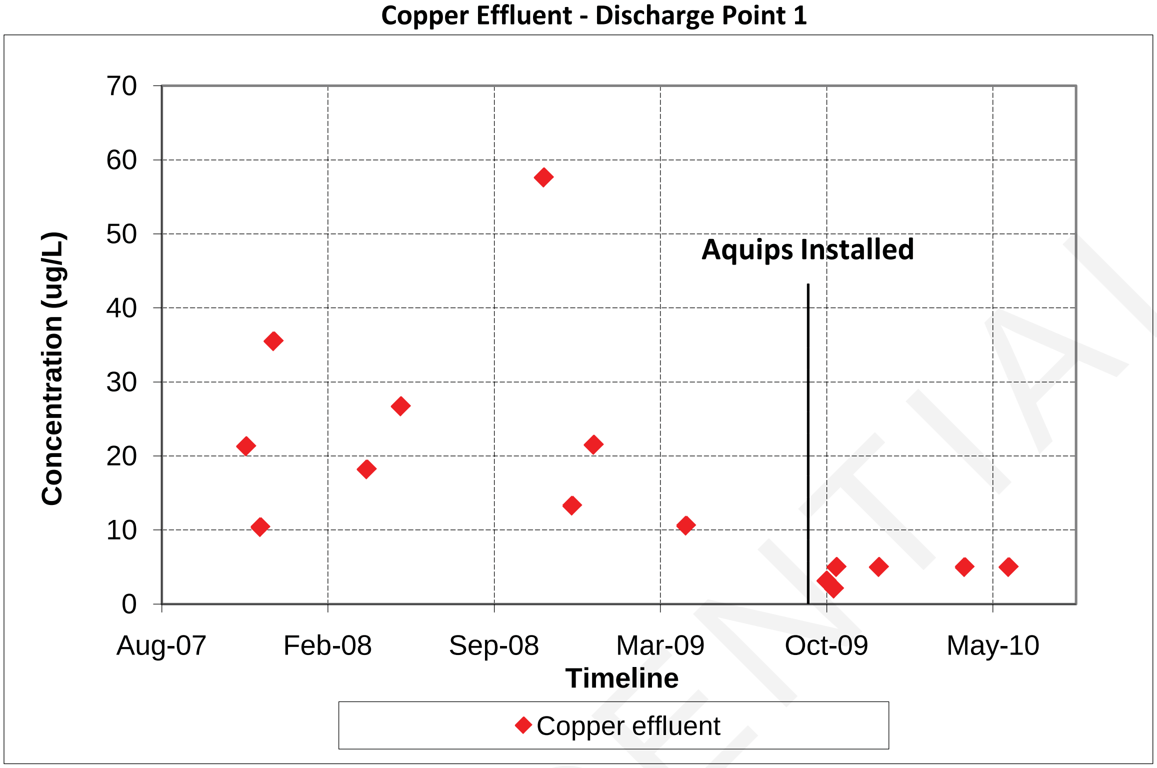
Stormwater Sampling Overview
Site ID #0403

Site Location/Region:	Pacific Northwest
Facility Sector:	Galvanizing
StormwateRx Product(s):	Aquip 110SBE (enhanced media filtration system) Aquip 110SBE (enhanced media filtration system)
Date of Installation:	September 17, 2009
Maintenance Status:	Adequate

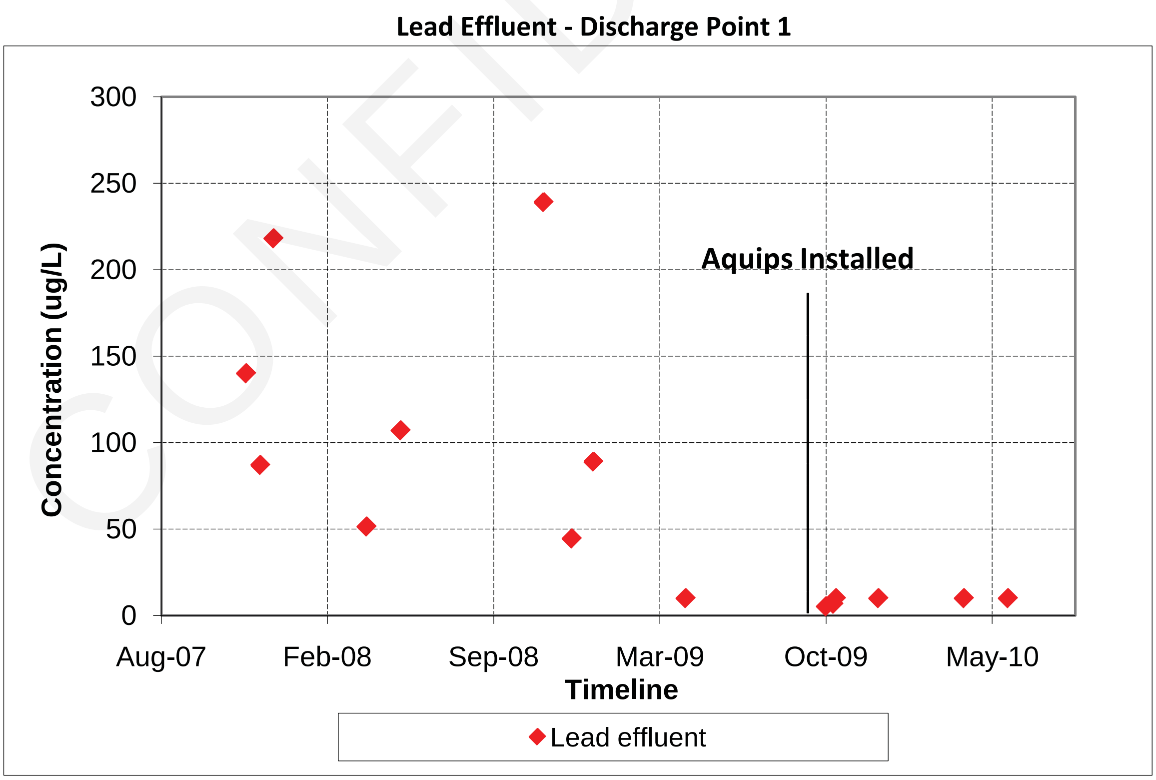
Sampling Events:

Date	Sampled By	Before/After Aquip Installation
November 16, 2007	Customer	Before
December 3, 2007	Customer	Before
December 19, 2007	Customer	Before
April 9, 2008	Customer	Before
May 20, 2008	Customer	Before
November 8, 2008	Customer	Before
December 12, 2008	Customer	Before
January 7, 2009	Customer	Before
April 28, 2009	Customer	Before
October 14, 2009	StormwateRx	After
October 23, 2009	StormwateRx	After
October 26, 2009	Customer	After
December 16, 2009	Customer	After
January 13, 2010	StormwateRx	After
March 29, 2010	Customer	After
May 21, 2010	Customer	After

Facility Historical Data
Site ID #0403



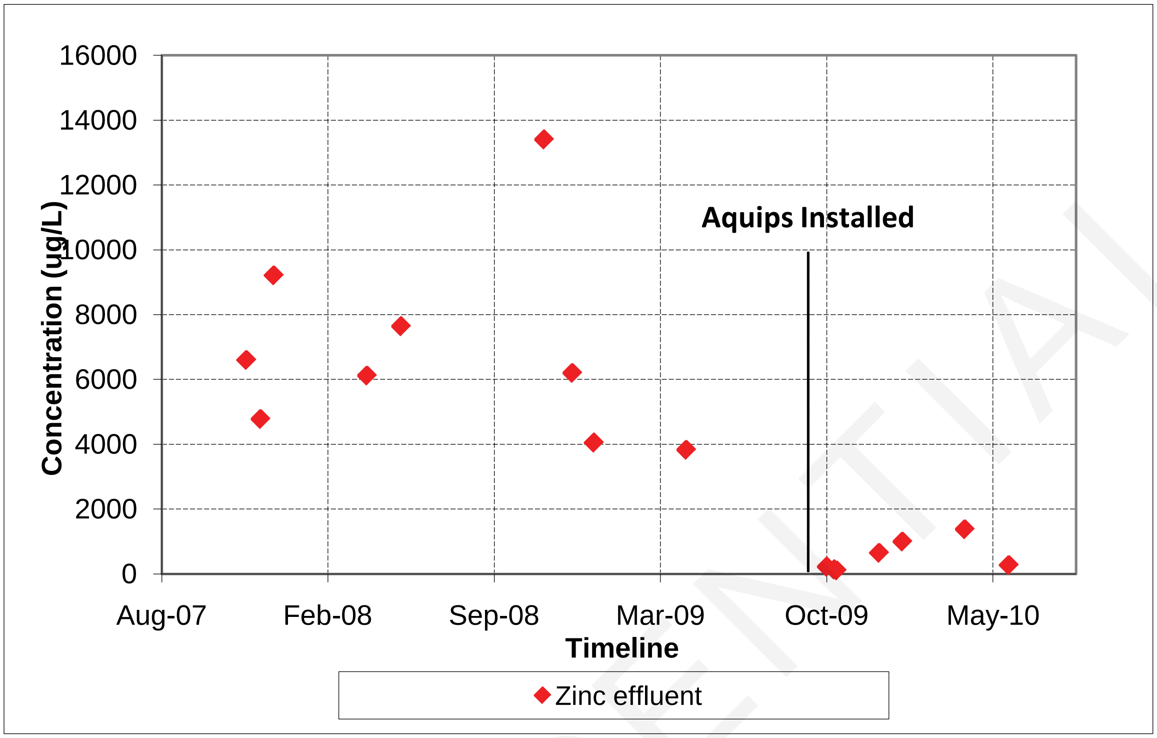
Average effluent values reported for October 14, 2009 samples 0088-A-OUTLT and 0088-A-OUTRT



Average effluent values reported for October 14, 2009 samples 0088-A-OUTLT and 0088-A-OUTRT

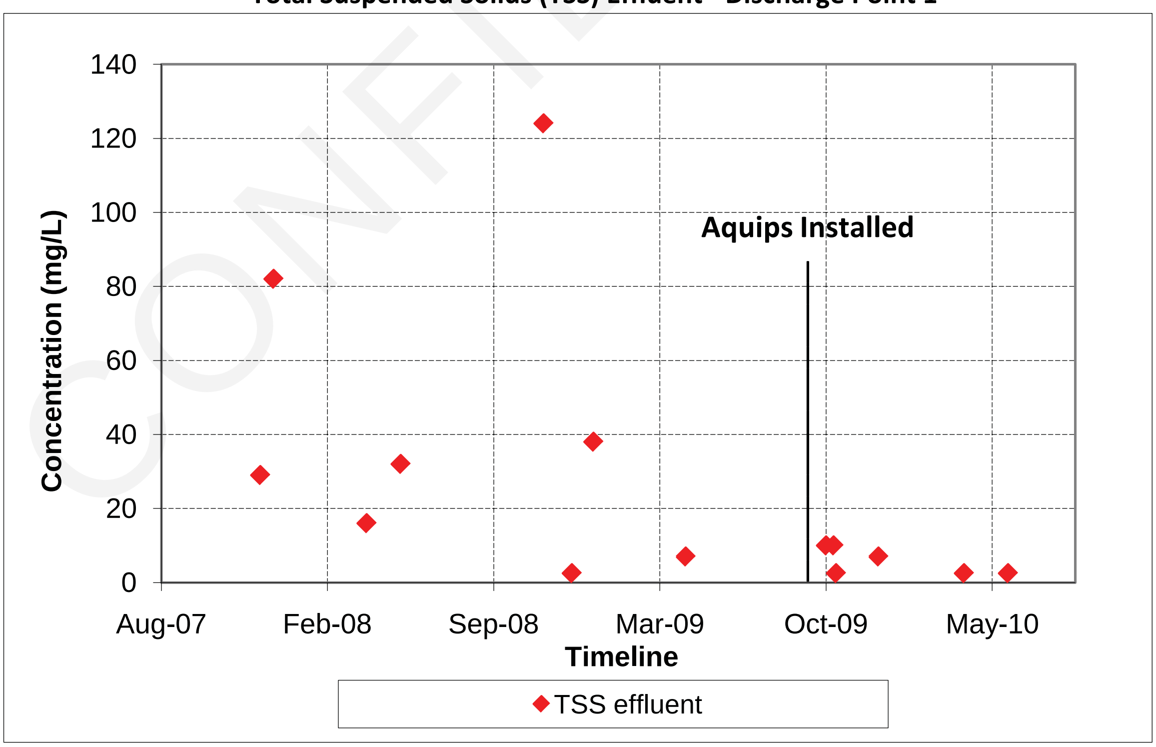
Facility Historical Data
Site ID #0403

Zinc Effluent - Discharge Point 1



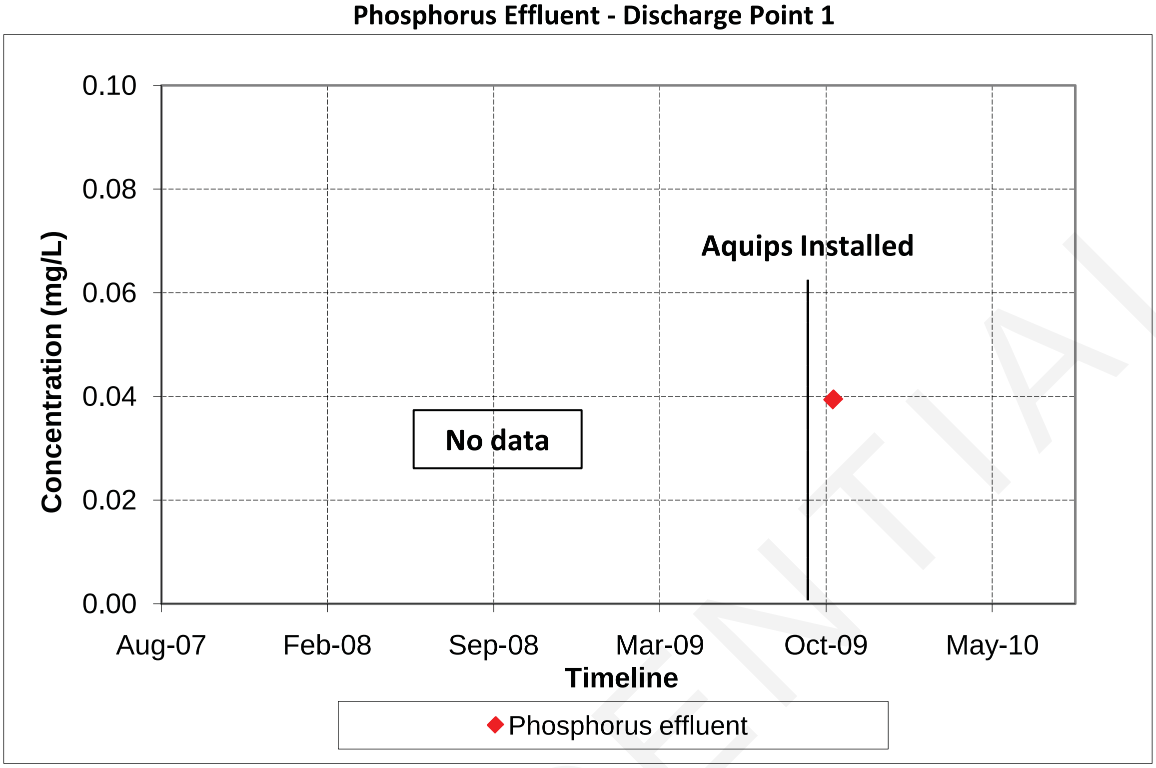
Average effluent values reported for October 14, 2009 samples 0088-A-OUTLT and 0088-A-OUTRT

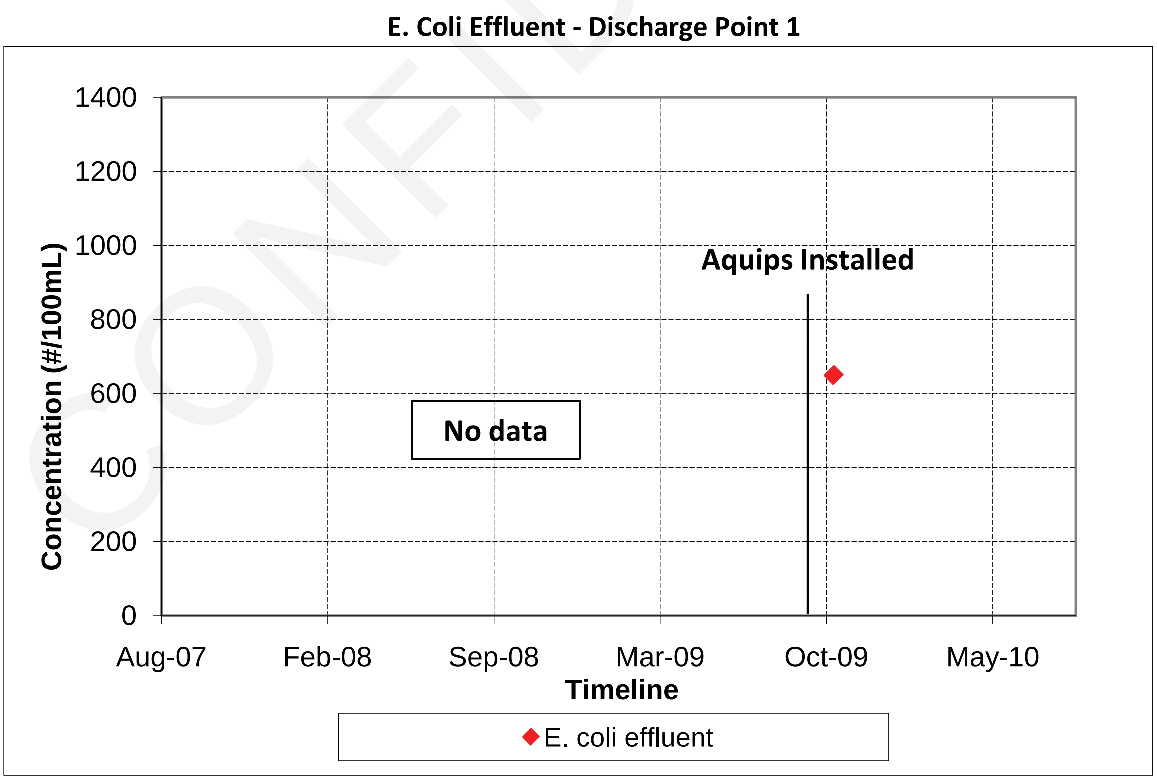
Total Suspended Solids (TSS) Effluent - Discharge Point 1



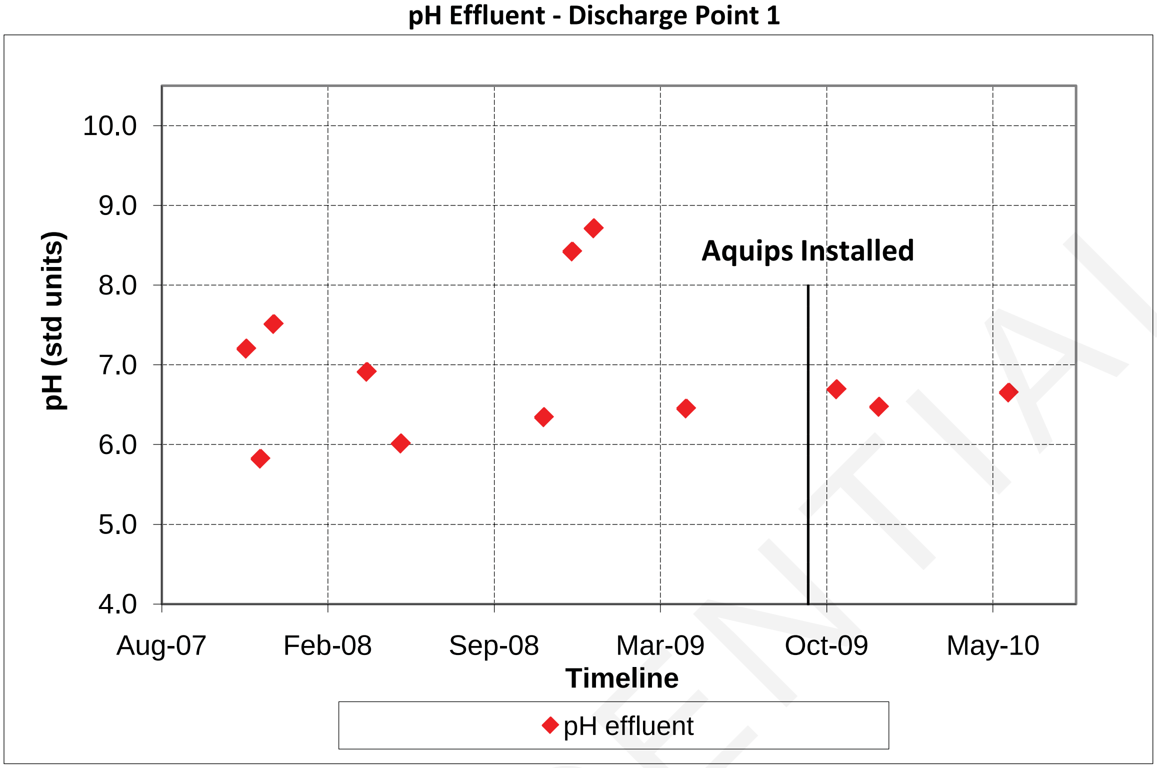
Average effluent values reported for October 14, 2009 samples 0088-A-OUTLT and 0088-A-OUTRT

Facility Historical Data
Site ID #0403





Facility Historical Data
Site ID #0403



Aquip® Influent and Effluent Data
Site ID #0403

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Copper	0.0128		0.00349		73%					
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Copper	0.0146		0.00281		81%	0.00663		0.00100	ND	85%
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Copper	0.0109		0.00209		81%	0.00385		0.00100	ND	74%
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Copper						0.00239		0.00100	ND	58%
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Lead	0.0168		0.00471		72%					
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Lead	0.0186		0.00585		69%					
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Lead	0.0263		0.00675		74%					
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Lead						0.00187		0.00116		38%
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Manganese						0.0635		0.0522		18%
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Nickel						0.00260		0.00285		increased
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Zinc	8.07		0.251		97%					
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Zinc	8.22		0.198		98%	7.30		0.0693	ND	99%
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Zinc	5.43		0.139		97%	4.52		0.0778		98%
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Zinc	4.91		1.00		80%	4.04		0.965		76%
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	TSS	10.0		10.0		0%					
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	TSS	10.0		10.0		0%					
10/23/09	Aquip	0088-A-INLT	0088-A OUT	TSS	20.0		10.0		50%					
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Phosphorus	0.0284		0.0394		increased					
10/23/09	Aquip	0088-A-INLT	0088-A OUT	E.Coli	8.40		649		increased					
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	O&G	6.21		2.50	ND	60%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0404
Galvanizing

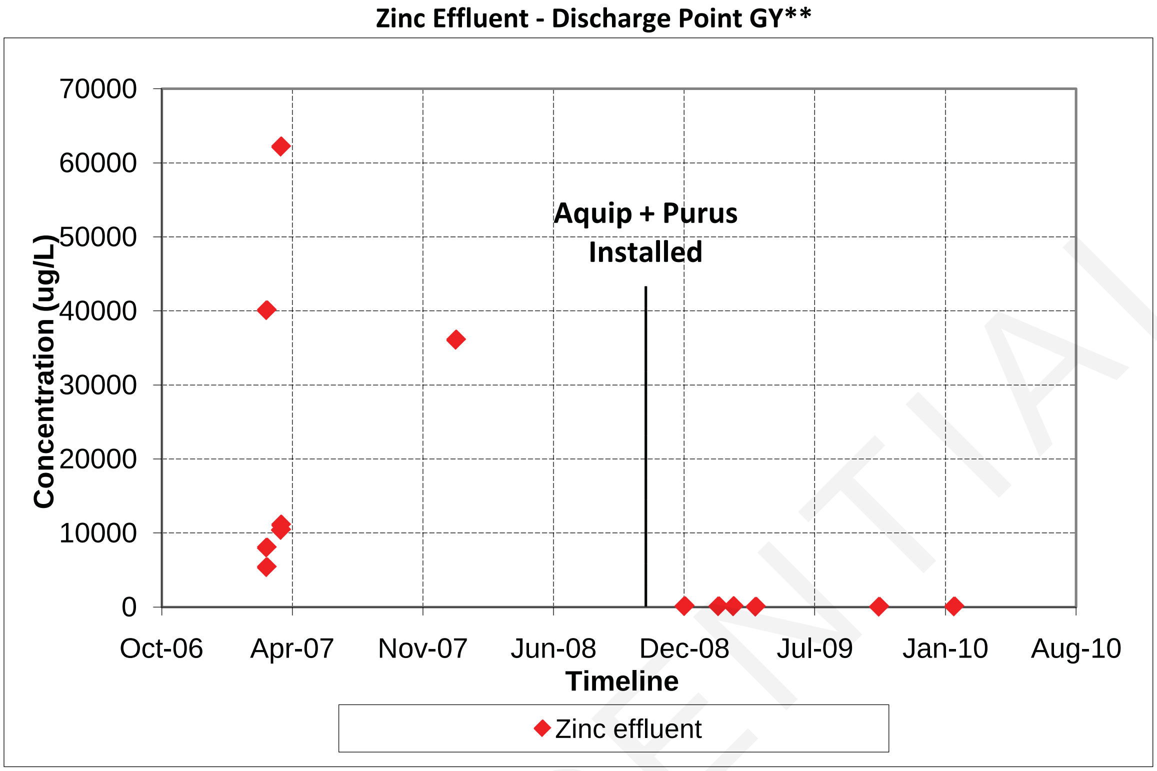
Stormwater Sampling Overview
Site ID #0404

Site Location/Region:	Northern California
Facility Sector:	Galvanizing
StormwateRx Product(s):	Aquip 110SBE (enhanced media filtration system) Purus 110FR (metals polishing system)
Date of Installation:	December 22, 2008
Maintenance Status:	Adequate

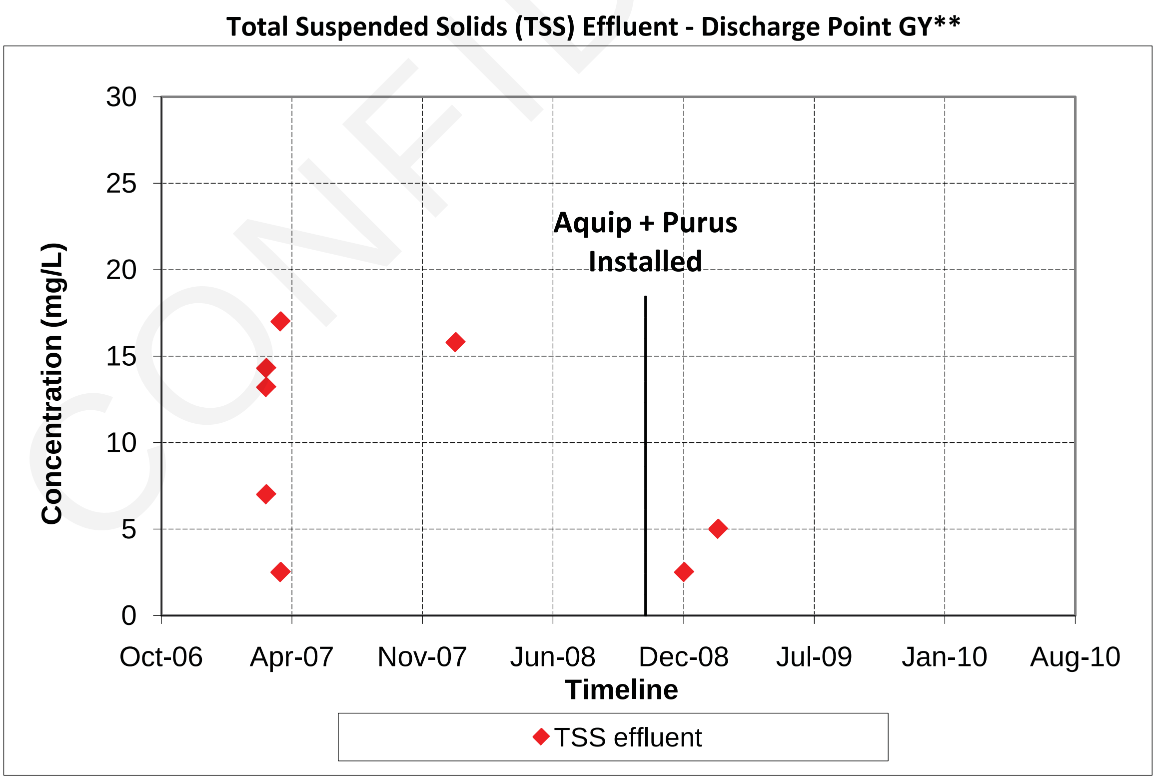
Sampling Events:

Date	Sampled By	Before/After Aquip Installation
March 20, 2007	Customer	Before
April 11, 2007	Customer	Before
January 4, 2008	Customer	Before
December 19, 2008	StormwateRx	After
February 9, 2009	StormwateRx	After
March 4, 2009	StormwateRx	After
April 7, 2009	Customer	After
October 13, 2009	Customer	After
February 5, 2010	Customer	After
November 20, 2010	Customer	After
February 16, 2011	Customer	After

Facility Historical Data
Site ID #0404



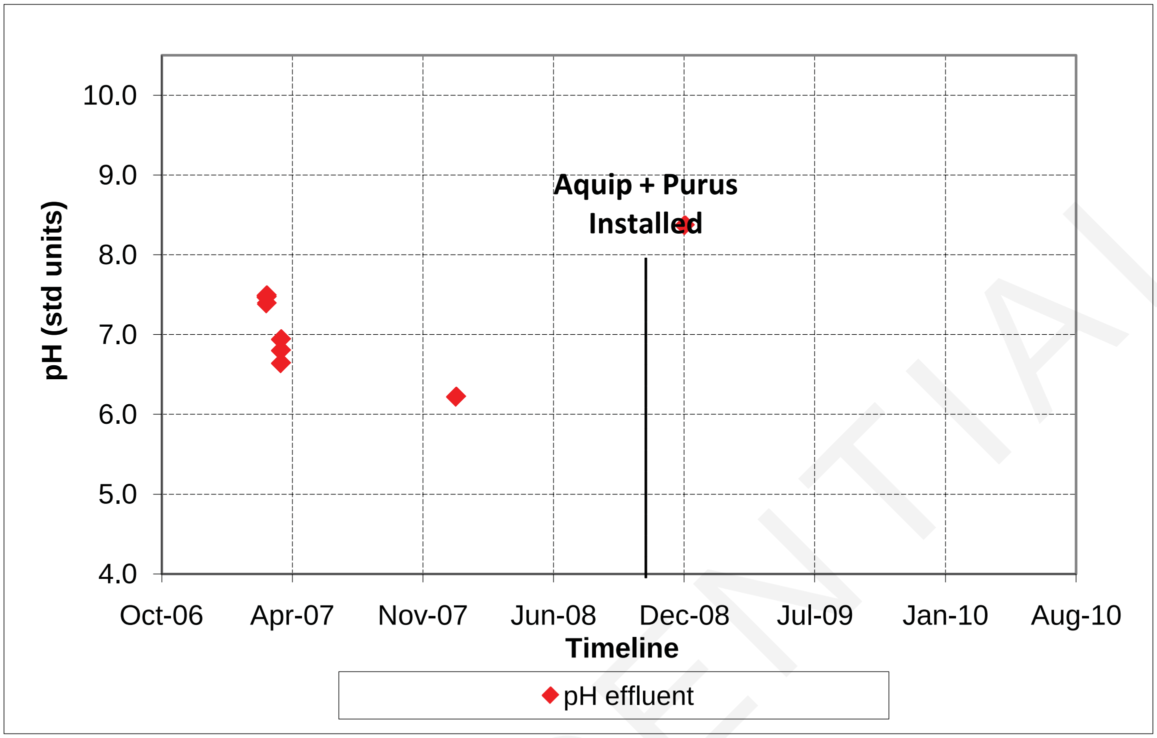
**Discharge point varies for dates Mar 20, 2007 and Apr 11, 2007



**Discharge point varies for dates Mar 20, 2007 and Apr 11, 2007

Facility Historical Data
Site ID #0404

pH Effluent - Discharge Point GY**



**Discharge point varies for dates Mar 20, 2007 and Apr 11, 2007

Aquip® Influent and Effluent Data
Site ID #0404

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Iron	0.649		0.267		59%					
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Zinc	10.8		0.258		98%					
02/09/09	Aquip	AQUIP IN	AQUIP OUT	Zinc	12.3		0.276		98%					
03/04/09	Aquip	Aquip Inlet	Aquip Out	Zinc	12.1		5.08		58%					
12/19/08	Aquip	Aquip IN2	Aquip OUT2	TSS	35.0		2.50		93%					
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Specific Conductivity	1680		1660		1%					
12/19/08	Aquip	Aquip IN2	Aquip OUT2	TDS	1060		1030		3%					
12/19/08	Aquip	Aquip IN2	Aquip OUT2	pH	7.16		8.02		0.86					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	Iron	0.267		0.188		30%					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	Zinc	0.258		0.112		57%					
02/09/09	Purus Metals	AQUIP OUT	IX OUT	Zinc	0.276		0.0966		65%					
03/04/09	Purus Metals	Aquip Out	IX Out	Zinc	5.08		0.0828		98%					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	TSS	2.50		2.50		0%					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	Specific Conductivity	1660		1650		1%					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	TDS	1030		1060		increased					
12/19/08	Purus Metals	Aquip OUT2	Ix OUT2	pH	8.02		8.37		0.35					
10/13/09	Aquip + Purus	GY 1-D	DP-1-D	Zinc	22.2		0.0314		99%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0501
Metal Fabrication

Stormwater Sampling Overview
Site ID #0501

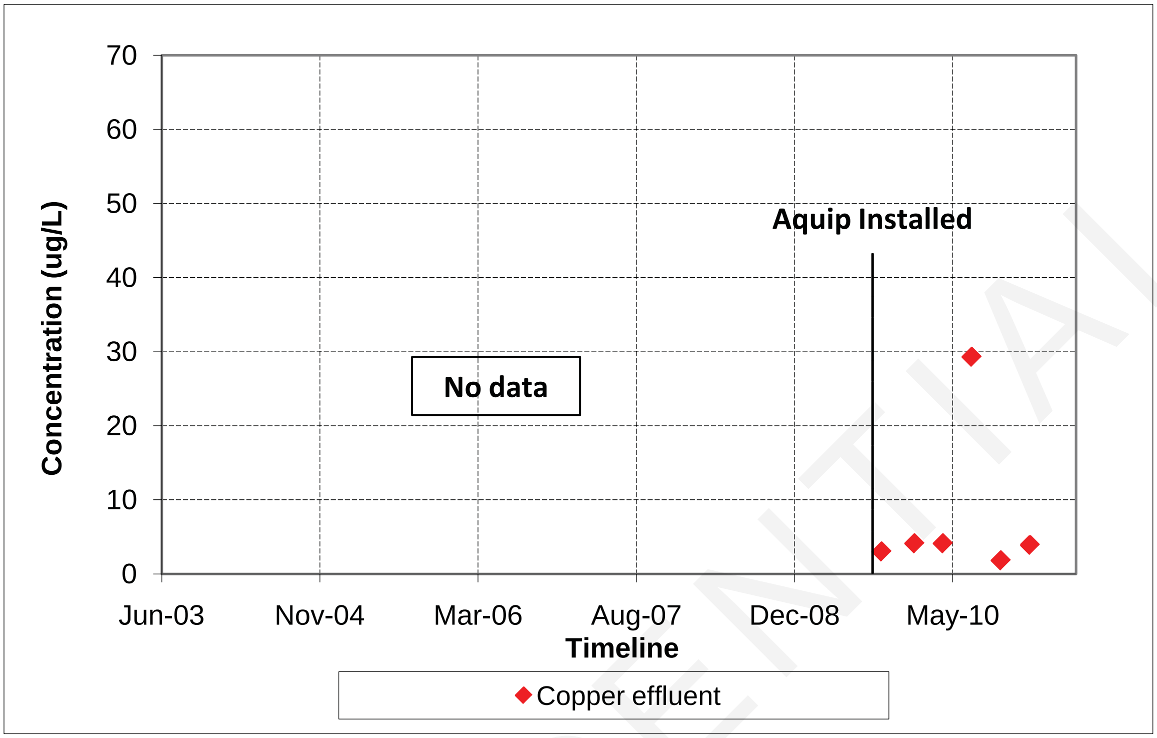
Site Location/Region:	Pacific Northwest
Facility Sector:	Metal Fabrication
StormwateRx Product(s):	Aquip 10SBE (enhanced media filtration system)
Date of Installation:	September 1, 2009
Maintenance Status:	Adequate

Sampling Events:

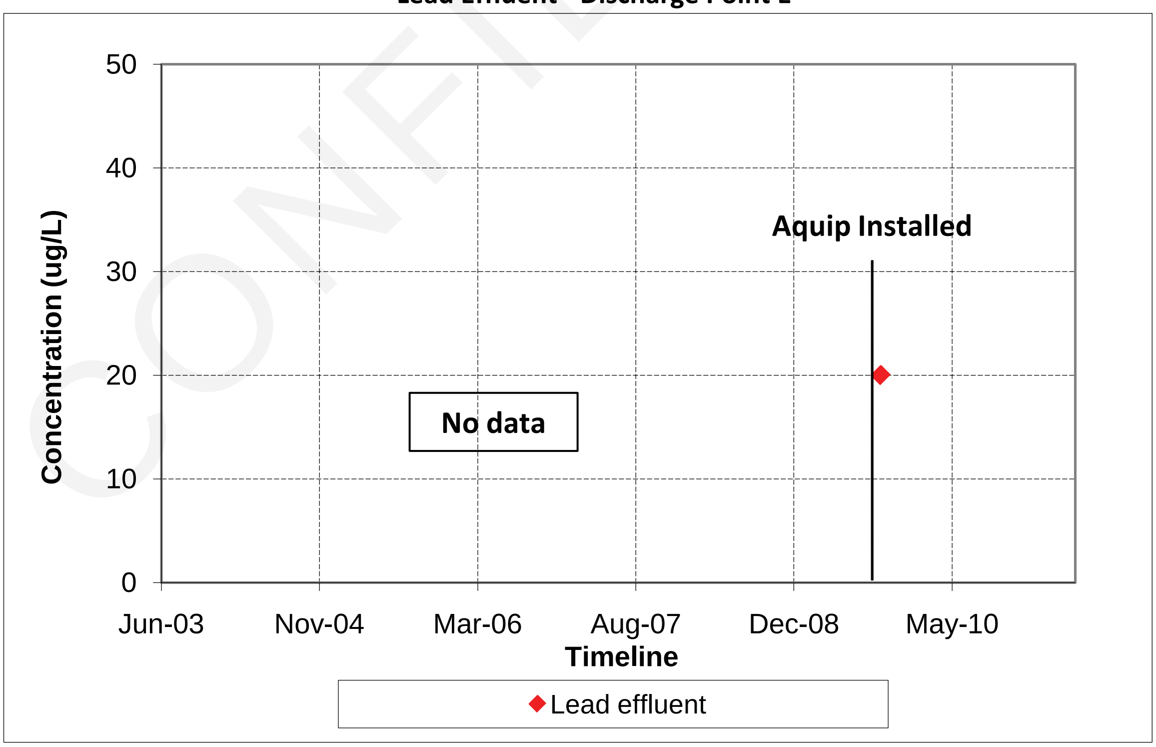
Date	Sampled By	Before/After Aquip Installation
July 1, 2003	Customer	Before
January 1, 2004	Customer	Before
July 1, 2004	Customer	Before
July 1, 2005	Customer	Before
October 1, 2005	Customer	Before
April 1, 2006	Customer	Before
July 1, 2006	Customer	Before
January 1, 2007	Customer	Before
September 19, 2009	Customer	After
January 1, 2010	Customer	After
April 1, 2010	Customer	After
July 1, 2010	Customer	After
October 1, 2010	Customer	After
January 1, 2011	Customer	After

Facility Historical Data
Site ID #0501

Copper Effluent - Discharge Point E

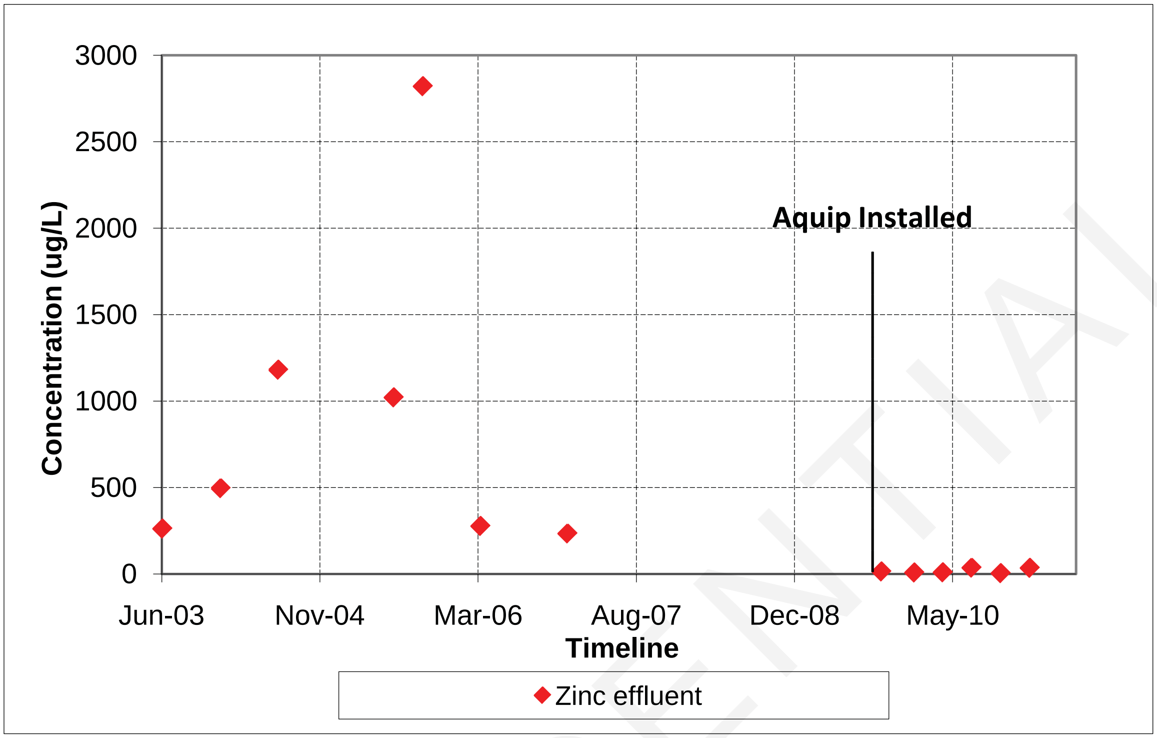


Lead Effluent - Discharge Point E



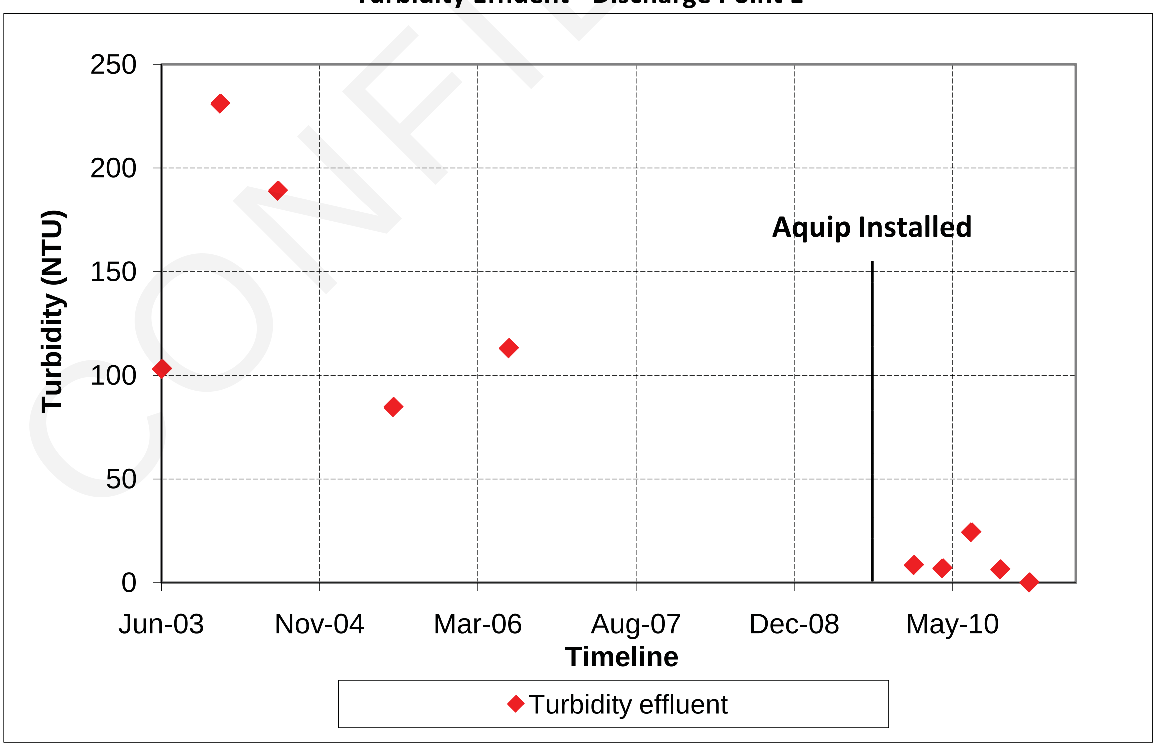
Facility Historical Data
Site ID #0501

Zinc Effluent - Discharge Point E**



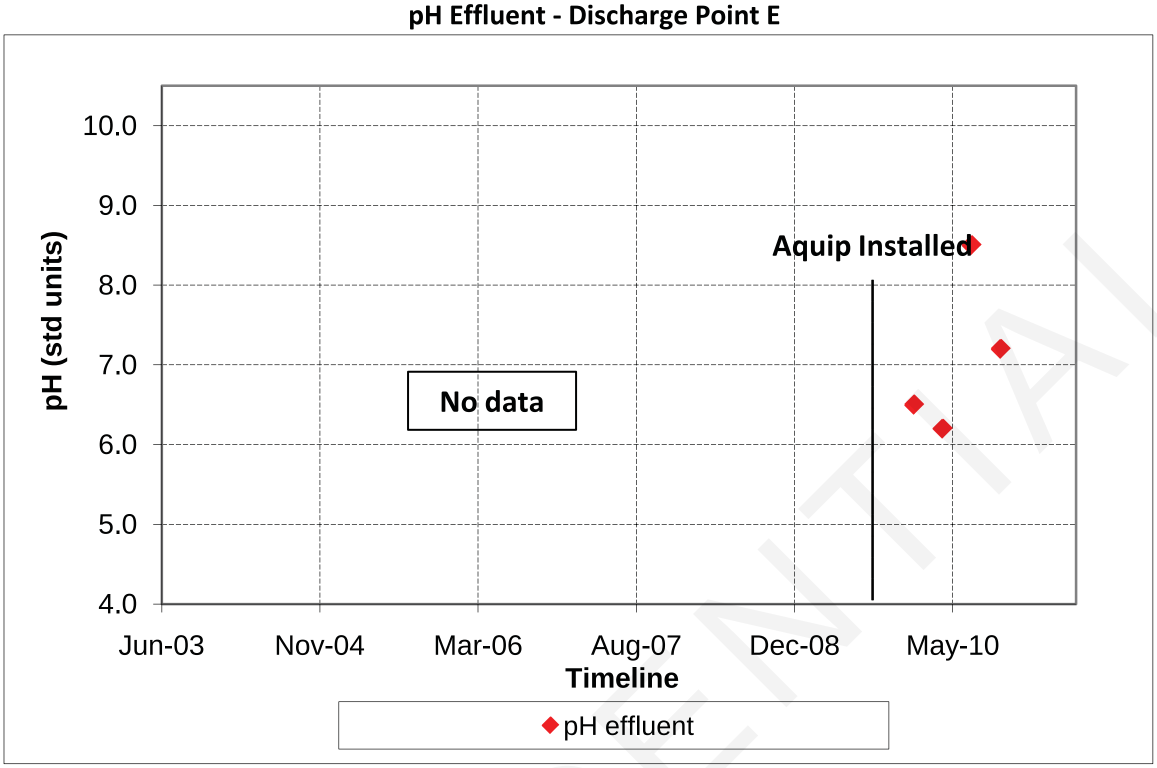
**Pre-Aquip installation discharge monitoring points vary

Turbidity Effluent - Discharge Point E**



**Pre-Aquip installation discharge monitoring points vary

Facility Historical Data
Site ID #0501



0601
Plastic Manufacturer

Stormwater Sampling Overview
Site ID #0601

Site Location/Region: Pacific Northwest

Facility Sector: Plastic Manufacturer

StormwateRx Product(s): Aquip 210SBE (enhanced media filtration system)

Date of Installation: September 30, 2009

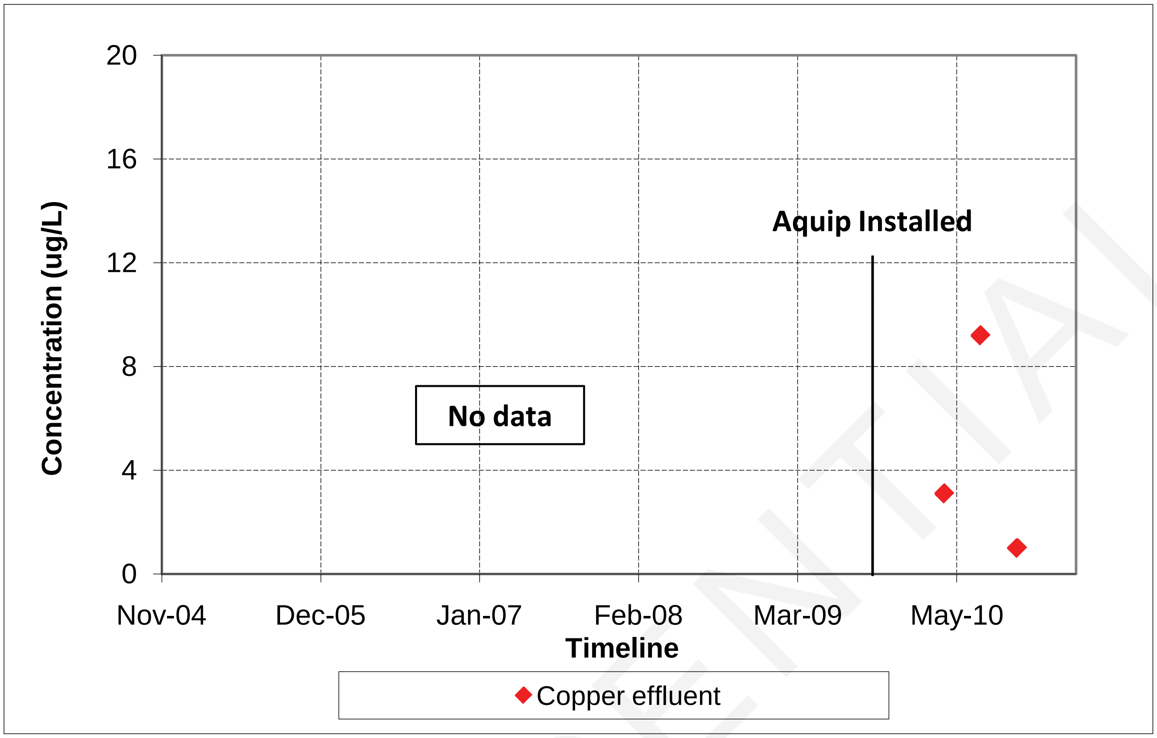
Maintenance Status: Needs Improvement

Sampling Events:

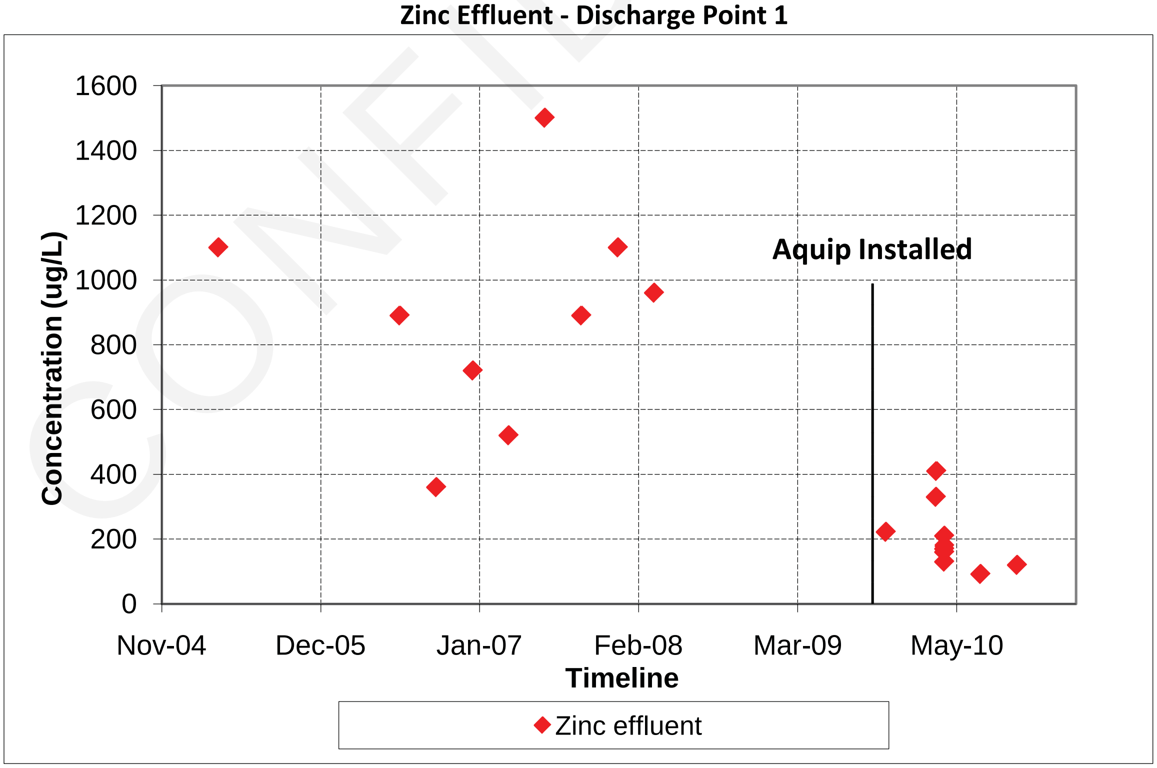
Date	Sampled By	Before/After Aquip Installation
April 1, 2005	Customer	Before
July 1, 2006	Customer	Before
October 1, 2006	Customer	Before
January 1, 2007	Customer	Before
April 1, 2007	Customer	Before
July 1, 2007	Customer	Before
October 1, 2007	Customer	Before
January 1, 2008	Customer	Before
April 1, 2008	Customer	Before
November 5, 2009	StormwateRx	After
April 1, 2010	Customer	After
July 1, 2010	Customer	After
October 1, 2010	Customer	After

Facility Historical Data
Site ID #0601

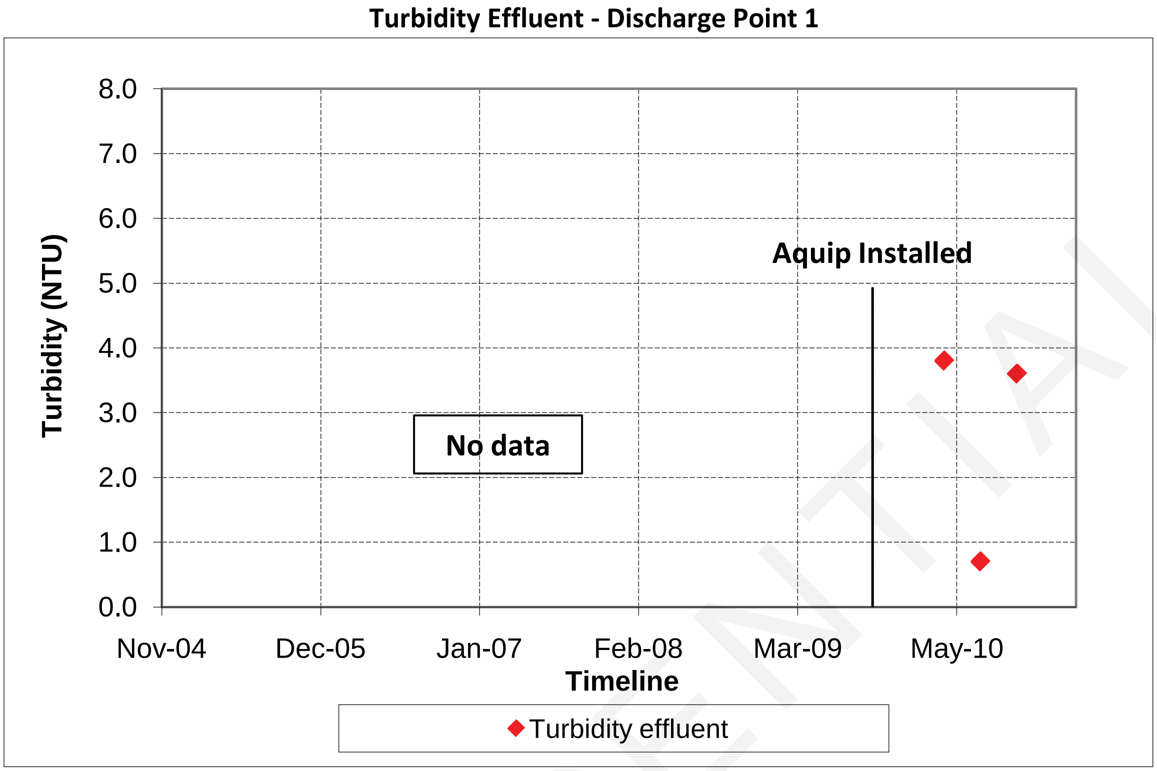
Copper Effluent - Discharge Point 1

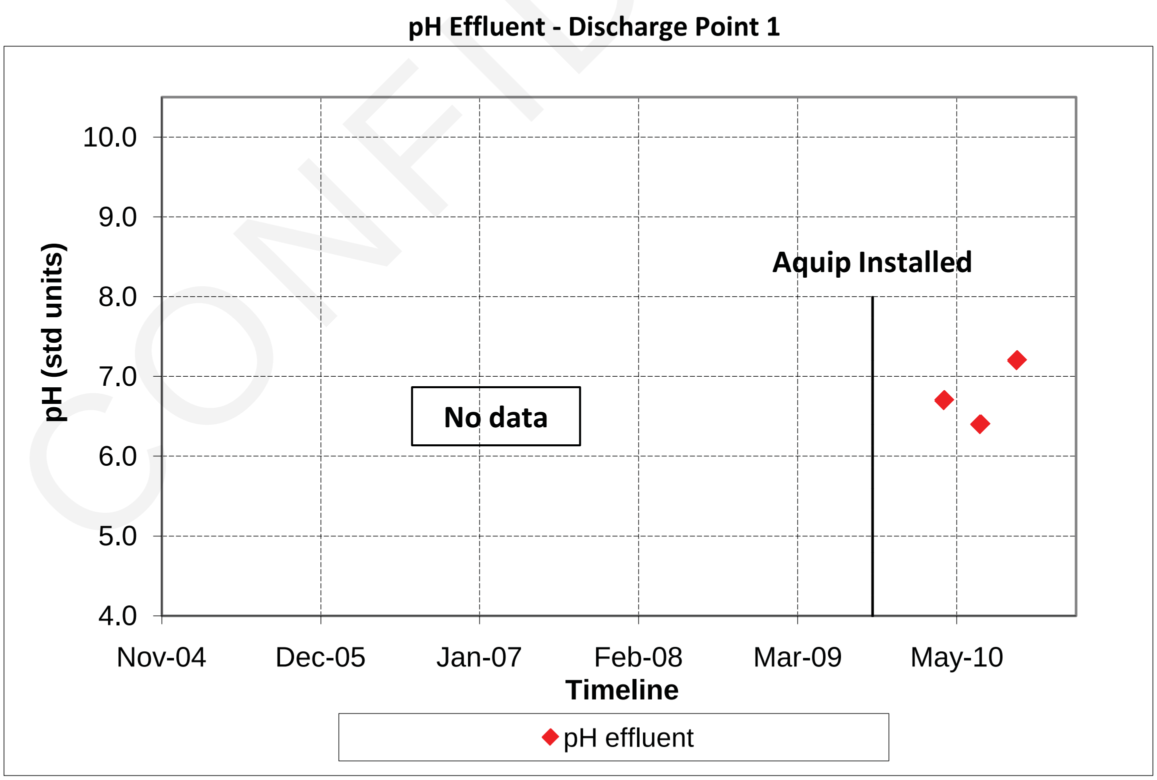


Zinc Effluent - Discharge Point 1



Facility Historical Data
Site ID #0601





Aquip® Influent and Effluent Data
Site ID #0601

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
11/05/09	Aquip	0095 A-in	0095 A-out	Zinc	0.852		0.222		74%	0.851		0.206		76%
03/11/10	Aquip	INLET	OUTLET	Zinc	0.870		0.330		62%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0701
Power Plant

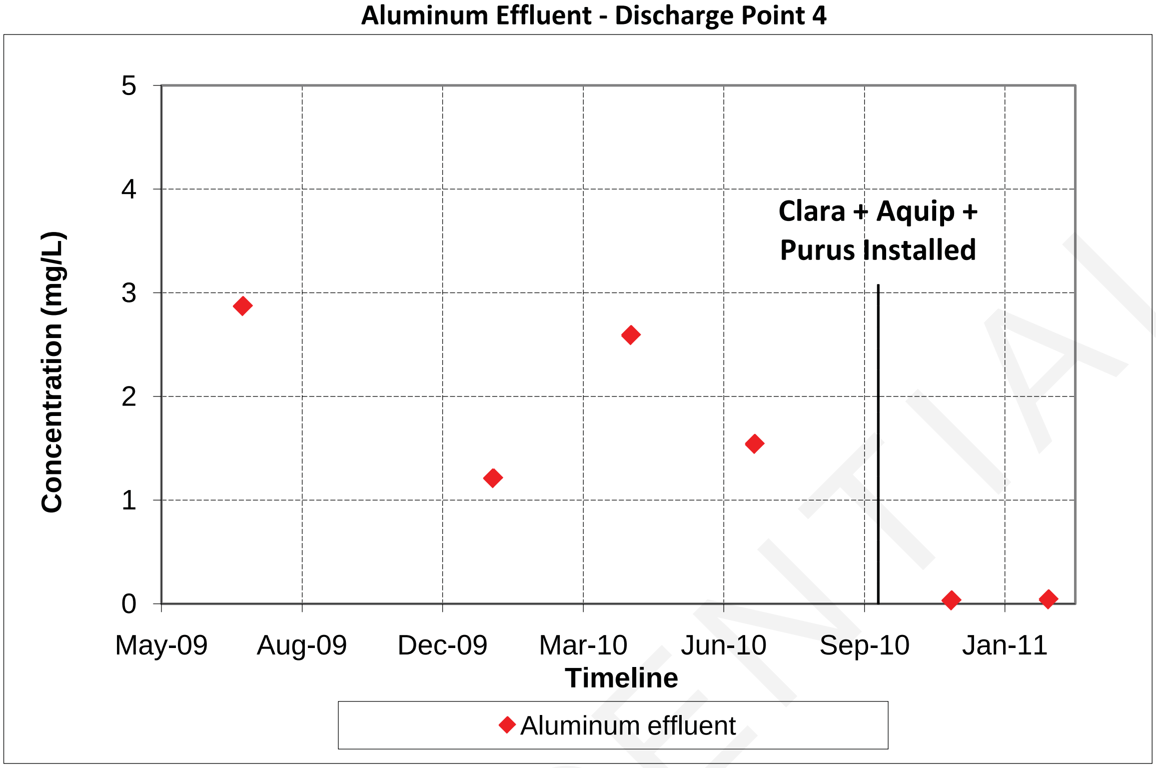
Stormwater Sampling Overview
Site ID #0701

Site Location/Region:	Midwest
Facility Sector:	Power Plant
StormwateRx Product(s):	Clara 40CP (stormwater separator vault) Aquip 110SBE (enhanced media filtration system) Purus 110FR (metals polishing system)
Date of Installation:	September 17, 2010
Maintenance Status:	Adequate

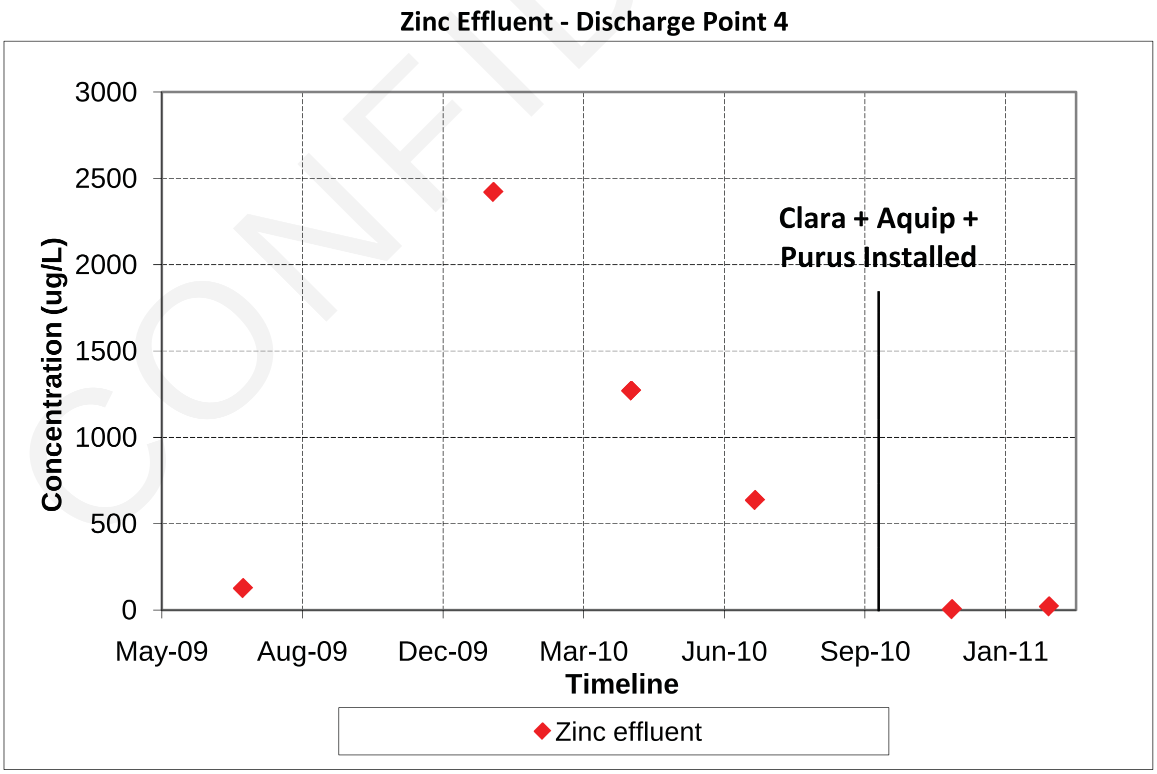
Sampling Events:

Date	Sampled By	Before/After Aquip Installation
July 14, 2009	Customer	Before
January 8, 2010	Customer	Before
April 16, 2010	Customer	Before
July 13, 2010	Customer	Before
November 30, 2010	Customer	After
February 7, 2011	Customer	After

Facility Historical Data
Site ID #0701



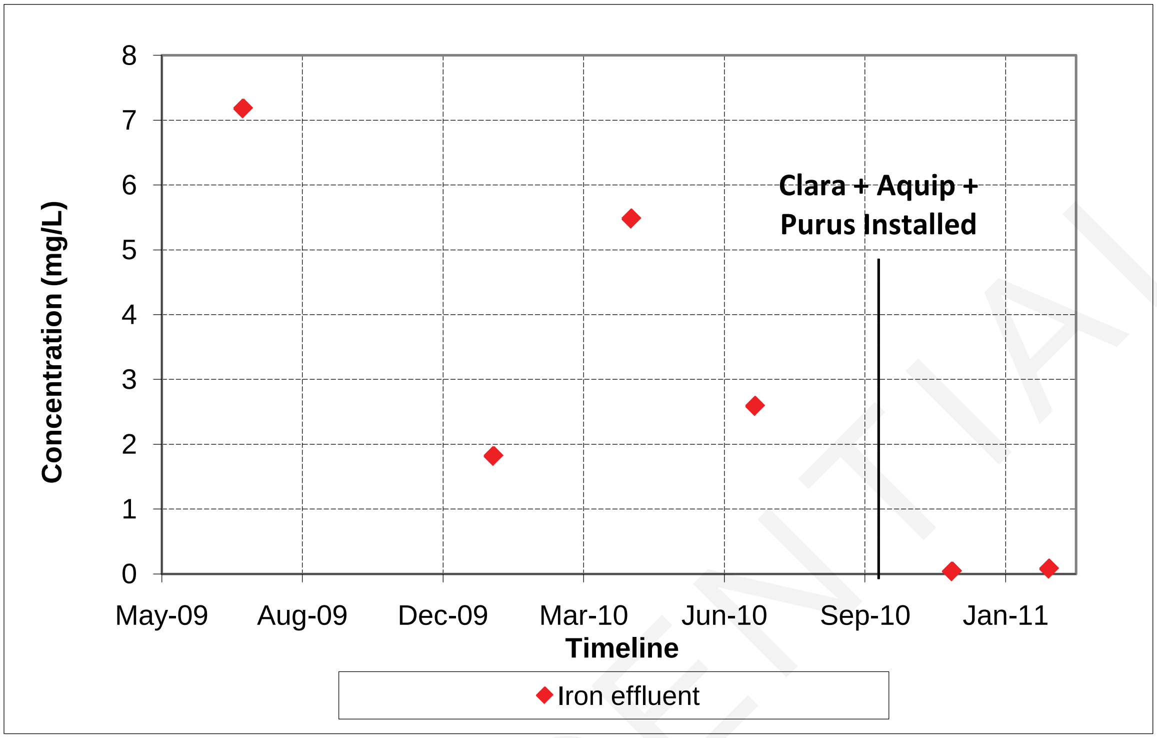
Aquip effluent reported on Feb 07, 2011 (no Purus data available)



Aquip effluent reported on Feb 07, 2011 (no Purus data available)

Facility Historical Data
Site ID #0701

Iron Effluent - Discharge Point 4



Aquip effluent reported on Feb 07, 2011 (no Purus data available)

Aquip® Influent and Effluent Data
Site ID #0701

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
11/30/10	Clara	#1 Clara Inlet	#2 Aquip Inlet	Aluminum	4.68		3.38		28%	0.010	ND	0.010	ND	N/A
02/07/11	Clara	Stormwater #1	Stormwater #2	Aluminum	2.51		2.63		increased	0.010	ND	0.010	ND	N/A
11/30/10	Clara	#1 Clara Inlet	#2 Aquip Inlet	Iron	6.84		4.84		29%	0.005	ND	0.005	ND	N/A
02/07/11	Clara	Stormwater #1	Stormwater #2	Iron	4.28		3.79		11%	0.005	ND	0.005	ND	N/A
11/30/10	Clara	#1 Clara Inlet	#2 Aquip Inlet	Zinc	8.59		4.33		50%	1.09		1.15		increased
02/07/11	Clara	Stormwater #1	Stormwater #2	Zinc	5.64		6.00		increased	3.93		4.22		increased
11/30/10	Aquip	#2 Aquip Inlet	#3 Aquip Outlet	Aluminum	3.38		0.06		98%	0.010	ND	0.010	ND	N/A
02/07/11	Aquip	Stormwater #2	Stormwater #3	Aluminum	2.63		0.04		98%	0.010	ND	0.010	ND	N/A
11/30/10	Aquip	#2 Aquip Inlet	#3 Aquip Outlet	Iron	4.84		0.11		98%	0.005	ND	0.005	ND	N/A
02/07/11	Aquip	Stormwater #2	Stormwater #3	Iron	3.79		0.05		99%	0.005	ND	0.005	ND	N/A
11/30/10	Aquip	#2 Aquip Inlet	#3 Aquip Outlet	Zinc	4.33		0.0285		99%	1.15		0.0600		95%
02/07/11	Aquip	Stormwater #2	Stormwater #3	Zinc	6.00		0.0084		99%	4.22		0.0477		99%
11/30/10	Purus Metals	#3 Aquip Outlet	#5 Purus IX Outlet	Aluminum	0.06		0.03		50%	0.010	ND	0.010	ND	N/A
11/30/10	Purus Metals	#3 Aquip Outlet	#5 Purus IX Outlet	Iron	0.11		0.04		64%	0.005	ND	0.005	ND	N/A
11/30/10	Purus Metals	#3 Aquip Outlet	#5 Purus IX Outlet	Zinc	0.0285		0.0040		86%	0.0600		0.0074		88%

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0801
Shipyard

Stormwater Sampling Overview
Site ID #0801

Site Location/Region:	Pacific Northwest
Facility Sector:	Shipyard
StormwateRx Product(s):	Aquip 210SBE (enhanced media filtration system) Aquip 50SBE (enhanced media filtration system)
Date of Installation:	August 26, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

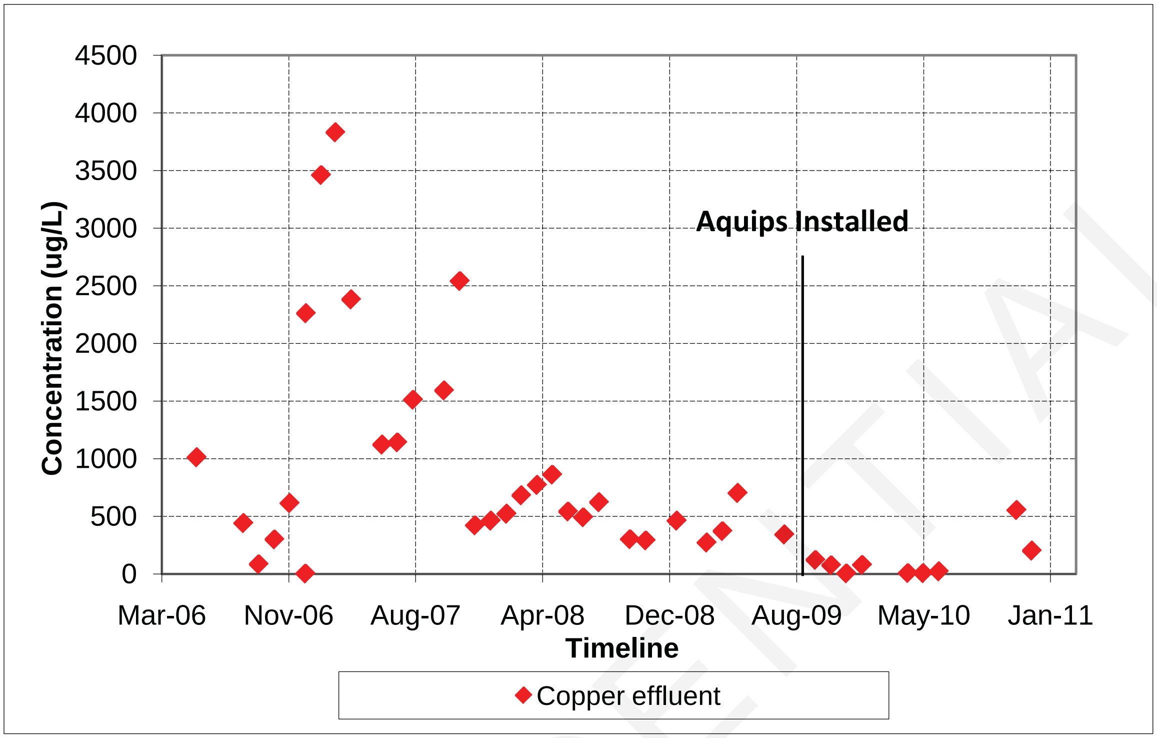
Date	Sampled By	Before/After Aquip Installation
June 1, 2006	Customer	Before
September 1, 2006	Customer	Before
October 1, 2006	Customer	Before
November 1, 2006	Customer	Before
December 1, 2006	Customer	Before
January 1, 2007	Customer	Before
January 2, 2007	Customer	Before
February 1, 2007	Customer	Before
March 1, 2007	Customer	Before
April 1, 2007	Customer	Before
June 1, 2007	Customer	Before
July 1, 2007	Customer	Before
August 1, 2007	Customer	Before
October 1, 2007	Customer	Before
November 1, 2007	Customer	Before
December 1, 2007	Customer	Before
January 1, 2008	Customer	Before
February 1, 2008	Customer	Before

Sampling Events (cont.)

Date	Sampled By	Before/After Aquip Installation
March 1, 2008	Customer	Before
April 1, 2008	Customer	Before
May 1, 2008	Customer	Before
June 1, 2008	Customer	Before
July 1, 2008	Customer	Before
August 1, 2008	Customer	Before
October 1, 2008	Customer	Before
November 1, 2008	Customer	Before
January 1, 2009	Customer	Before
March 1, 2009	Customer	Before
April 1, 2009	Customer	Before
May 1, 2009	Customer	Before
August 1, 2009	Customer	Before
October 1, 2009	Customer	After
November 1, 2009	Customer	After
December 1, 2009	Customer	After
January 1, 2010	Customer	After
April 1, 2010	Customer	After
May 1, 2010	Customer	After
June 1, 2010	Customer	After
September 1, 2010	Customer	After
October 1, 2010	Customer	After
November 1, 2010	Customer	After
December 1, 2010	Customer	After

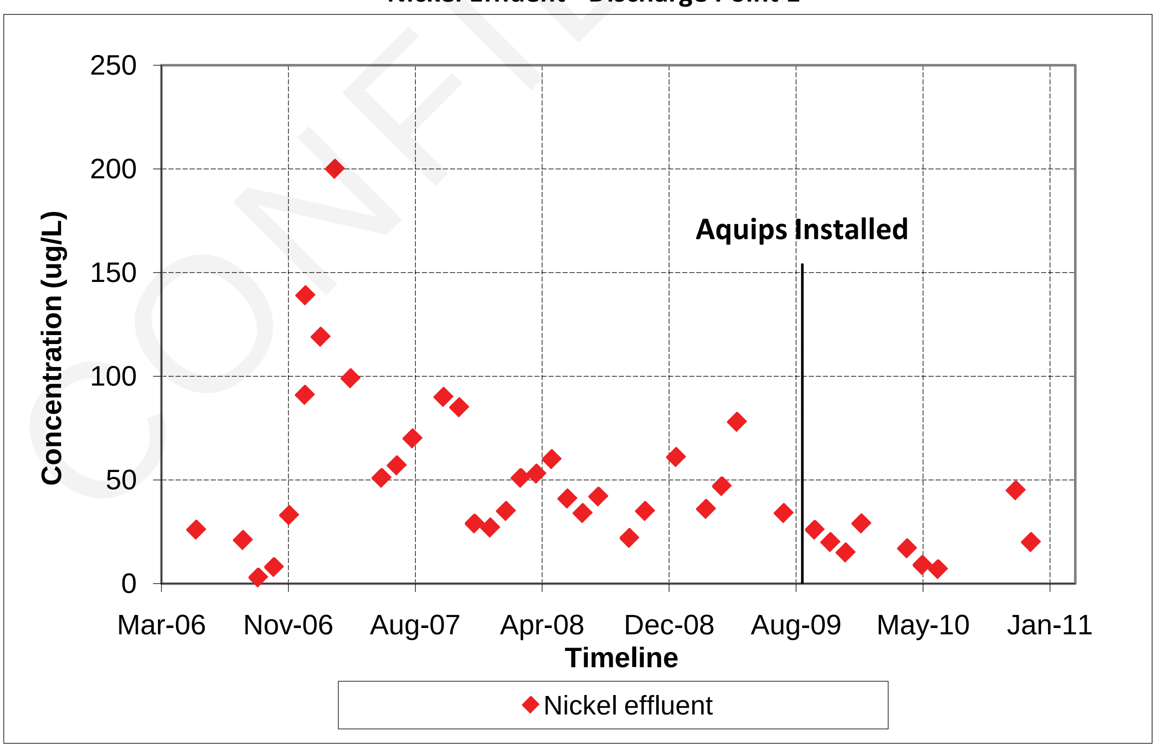
Facility Historical Data
Site ID #0801

Copper Effluent - Discharge Point 1



Both Aquip filters offline Sep 1, 2010 - Oct 1, 2010. Data not shown: Sep 1, 2010 490 ug/L; Oct 1, 2010 640 ug/L

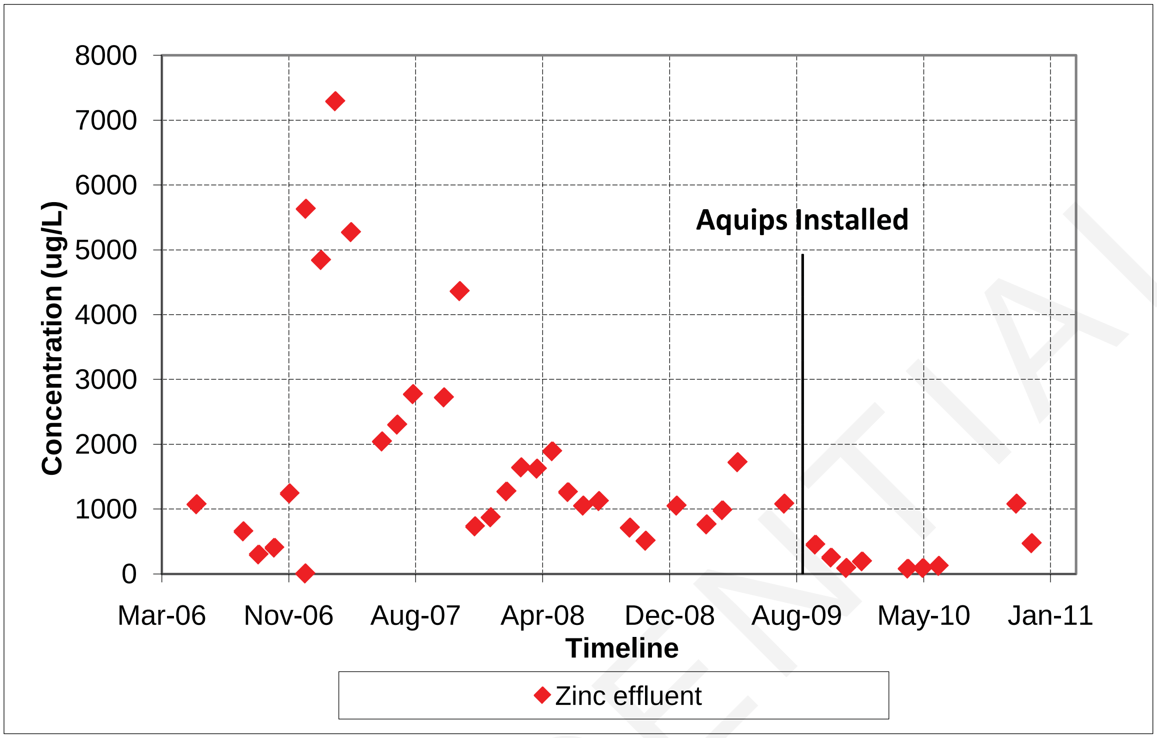
Nickel Effluent - Discharge Point 1



Both Aquip filters offline Sep 1, 2010 - Oct 1, 2010. Data not shown: Sep 1, 2010 25 ug/L; Oct 1, 2010 42 ug/L

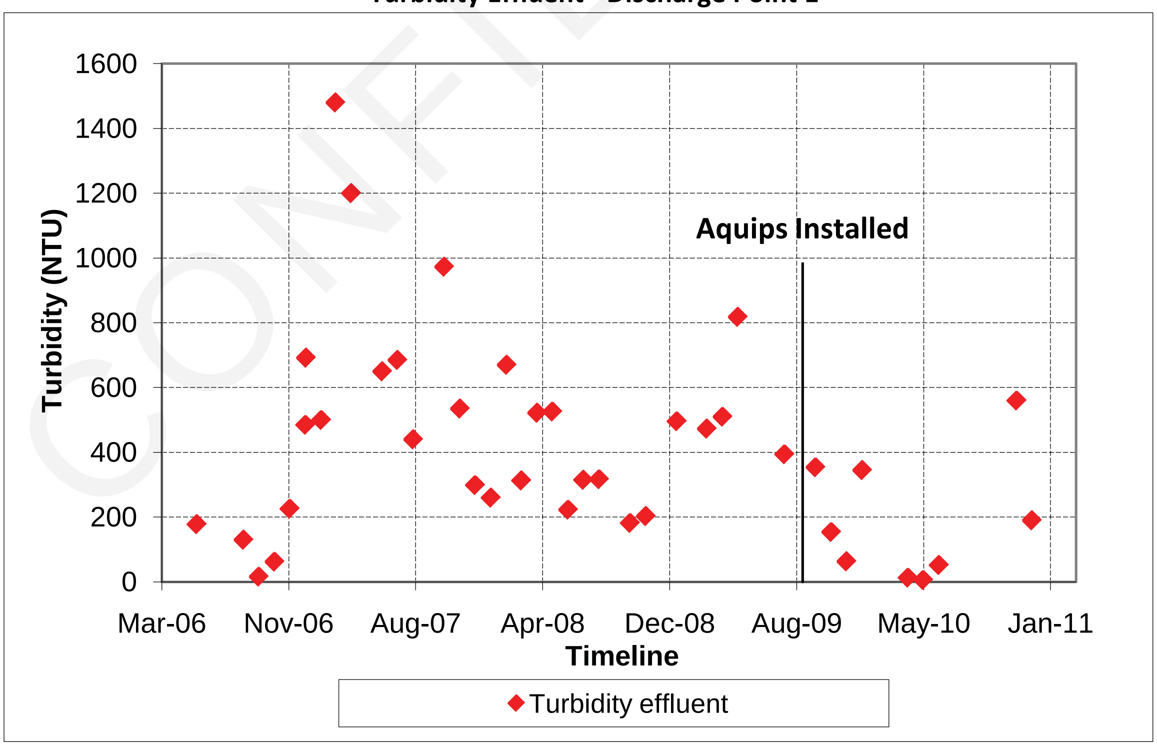
Facility Historical Data
Site ID #0801

Zinc Effluent - Discharge Point 1



Both Aquip filters offline Sep 1, 2010 - Oct 1, 2010. Data not shown: Sep 1, 2010 550 ug/L; Oct 1, 2010 1,010 ug/L

Turbidity Effluent - Discharge Point 1



Both Aquip filters offline Sep 1, 2010 - Oct 1, 2010. Data not shown: Sep 1, 2010 256 NTU; Oct 1, 2010 474 NTU

0802
Shipyard

Stormwater Sampling Overview
Site ID #0802

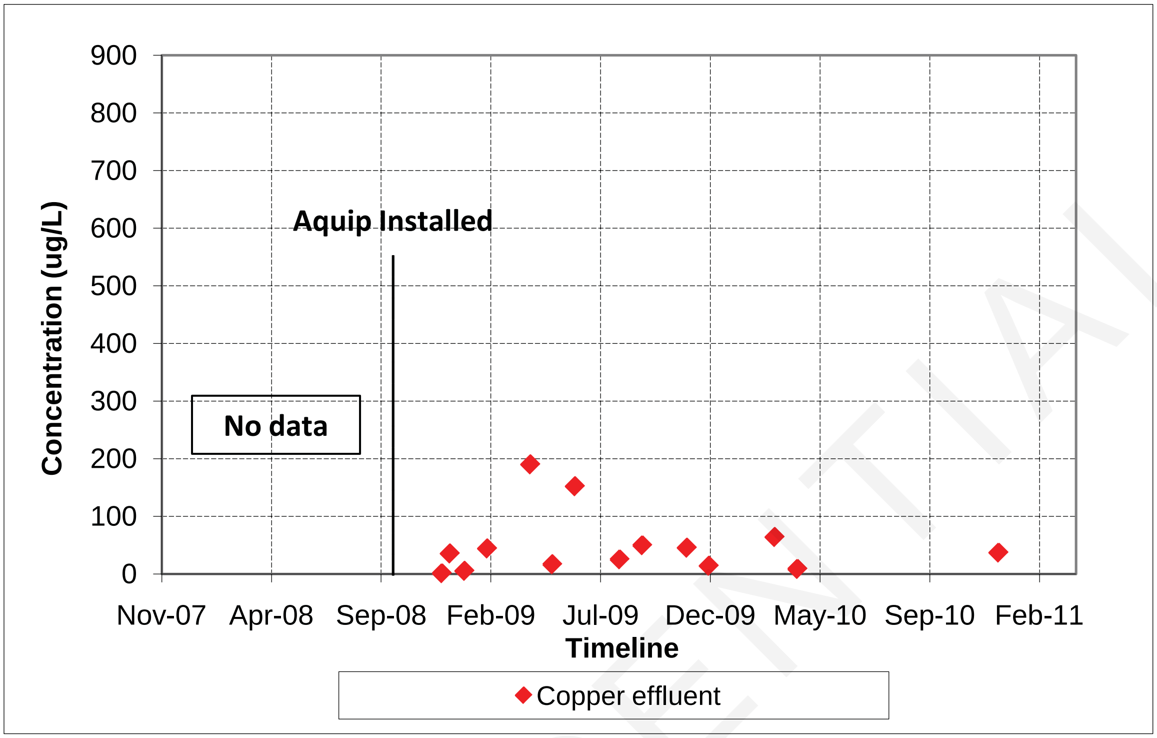
Site Location/Region:	Pacific Northwest
Facility Sector:	Shipyard
StormwateRx Product(s):	Aquip 50SBI (media filtration system)
Date of Installation:	September 2, 2008
Maintenance Status:	Unknown

Sampling Events:

Date	Sampled By	Before/After Aquip Installation
December 1, 2008	Customer	After
December 12, 2008	StormwateRx	After
January 1, 2009	Customer	After
February 1, 2009	Customer	After
April 1, 2009	Customer	After
May 1, 2009	Customer	After
June 1, 2009	Customer	After
August 1, 2009	Customer	After
September 1, 2009	Customer	After
November 1, 2009	Customer	After
December 1, 2009	Customer	After
March 1, 2010	Customer	After
April 1, 2010	Customer	After
August 1, 2010	Customer	After
January 1, 2011	Customer	After

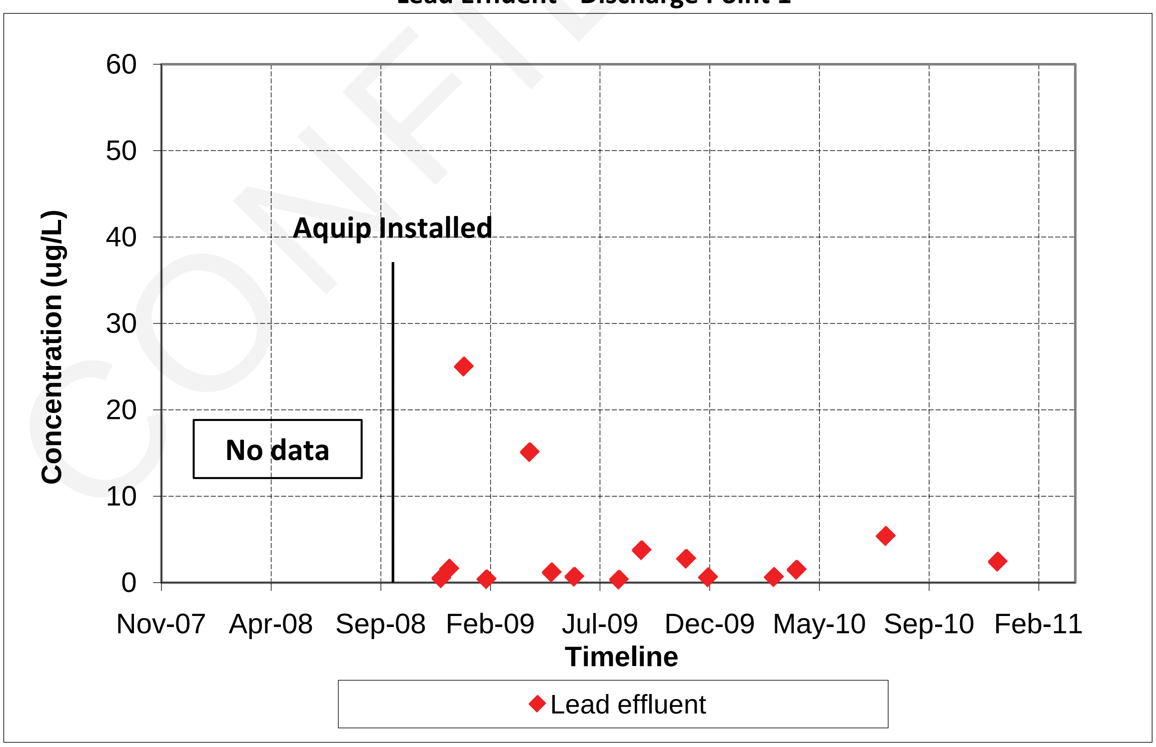
Facility Historical Data
Site ID #0802

Copper Effluent - Discharge Point 1



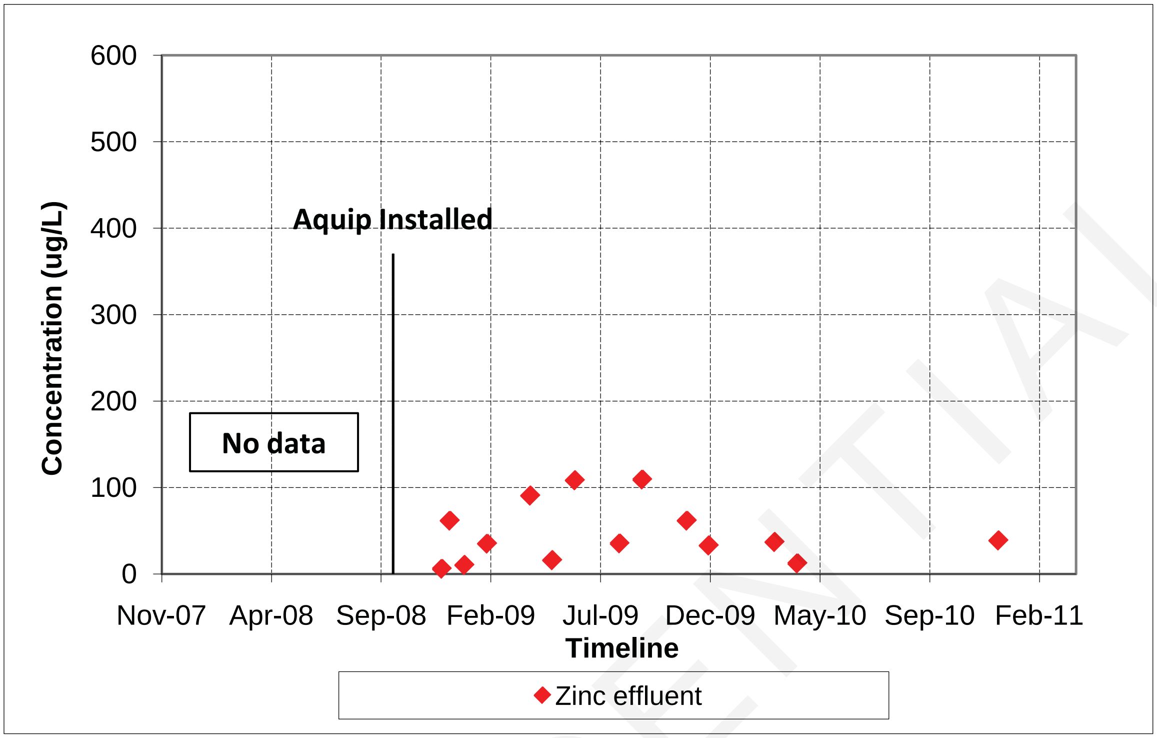
Data not shown: Aug 1, 2010 437 ug/L anomalous data

Lead Effluent - Discharge Point 1



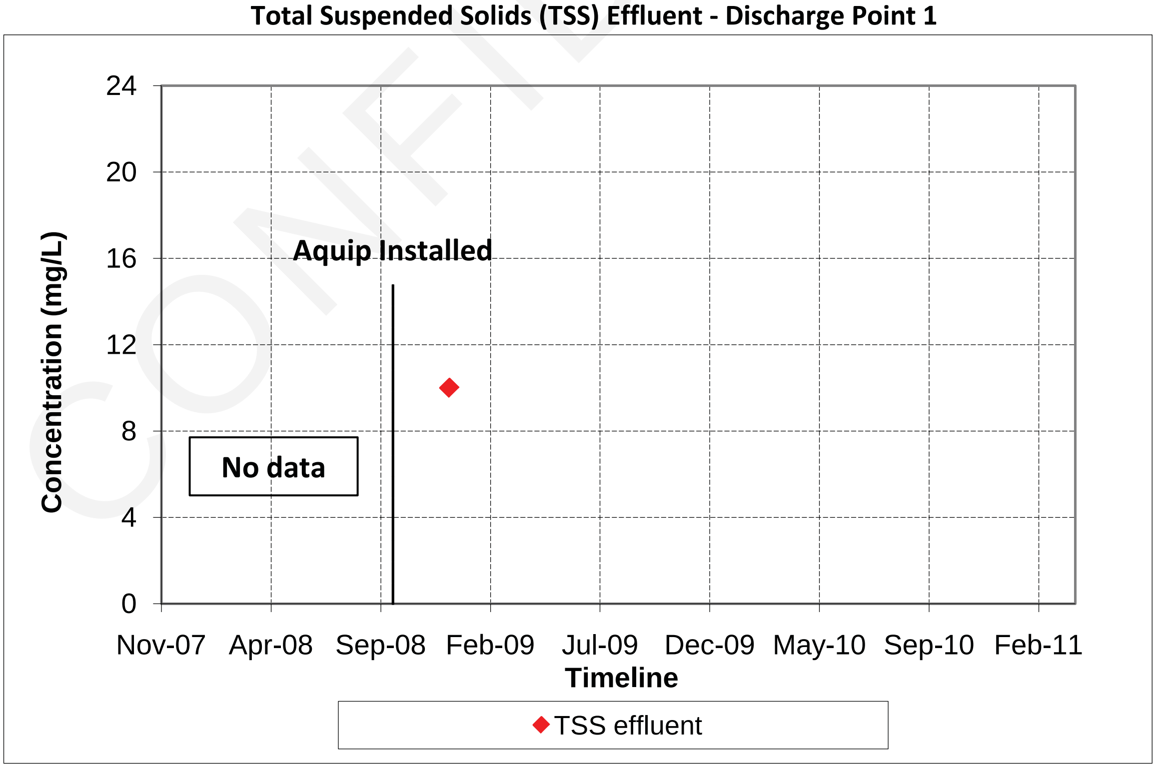
Facility Historical Data
Site ID #0802

Zinc Effluent - Discharge Point 1



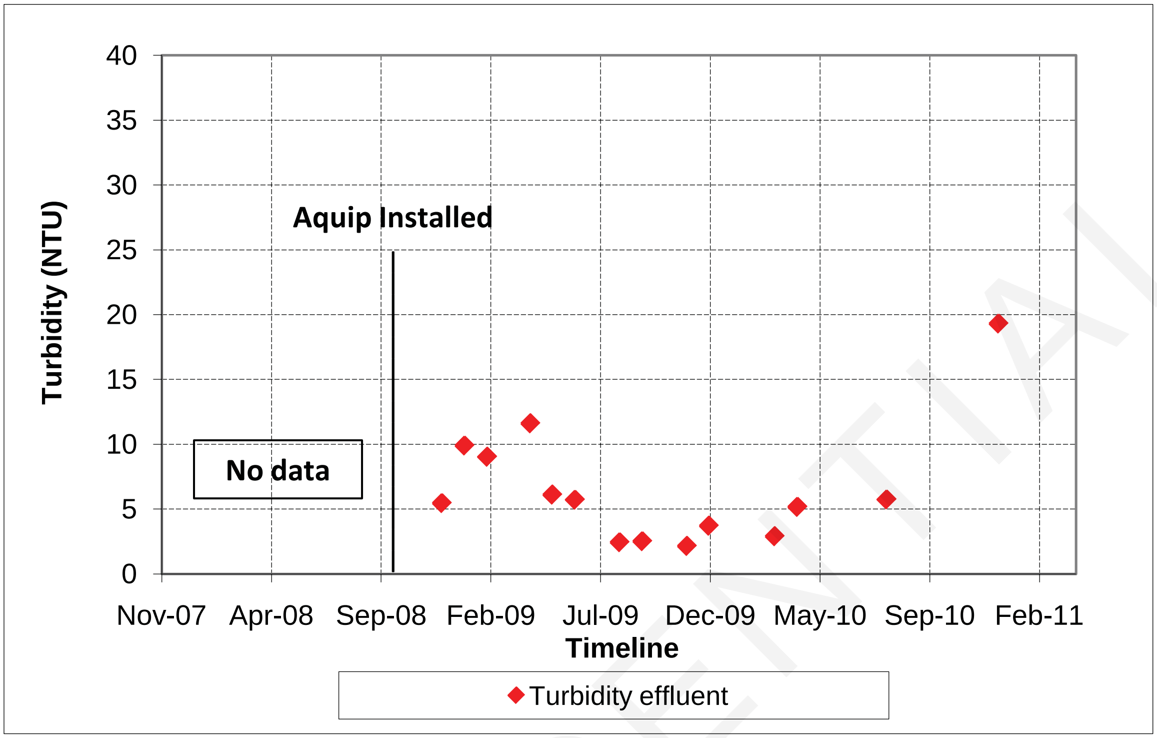
Data not shown: Aug 1, 2010 305 ug/L anomalous data

Total Suspended Solids (TSS) Effluent - Discharge Point 1

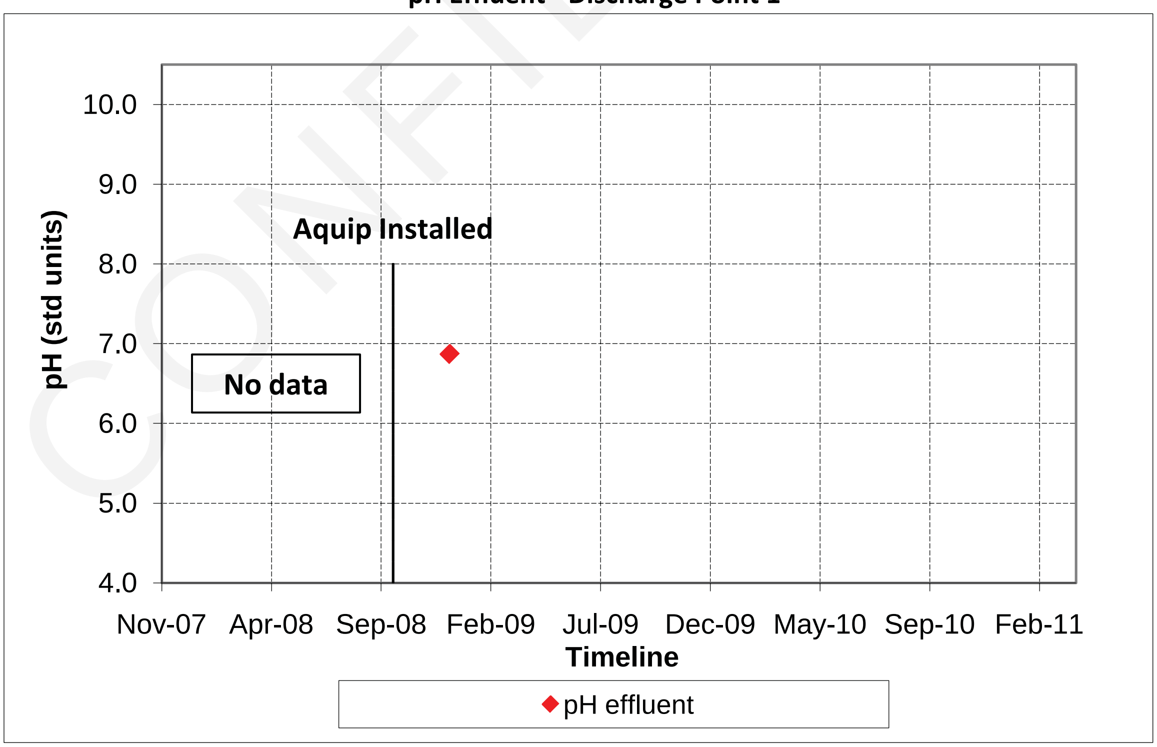


Facility Historical Data
Site ID #0802

Turbidity Effluent - Discharge Point 1



pH Effluent - Discharge Point 1



Aquip® Influent and Effluent Data
Site ID #0802

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/12/08	Aquip	Inlet	Outlet	Aluminum	0.771		0.167		78%					
12/12/08	Aquip	Inlet	Outlet	Copper	0.152		0.0352		77%					
12/12/08	Aquip	Inlet	Outlet	Iron	7.47		1.18		84%					
12/12/08	Aquip	Inlet	Outlet	Lead	0.0157		0.00159		90%					
12/12/08	Aquip	Inlet	Outlet	Zinc	0.784		0.0614		92%					
12/12/08	Aquip	Inlet	Outlet	TSS	63.6		10.0		84%					
12/12/08	Aquip	Inlet	Outlet	pH	6.66		6.87		0.21					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0803
Shipyard

Stormwater Sampling Overview
Site ID #0803

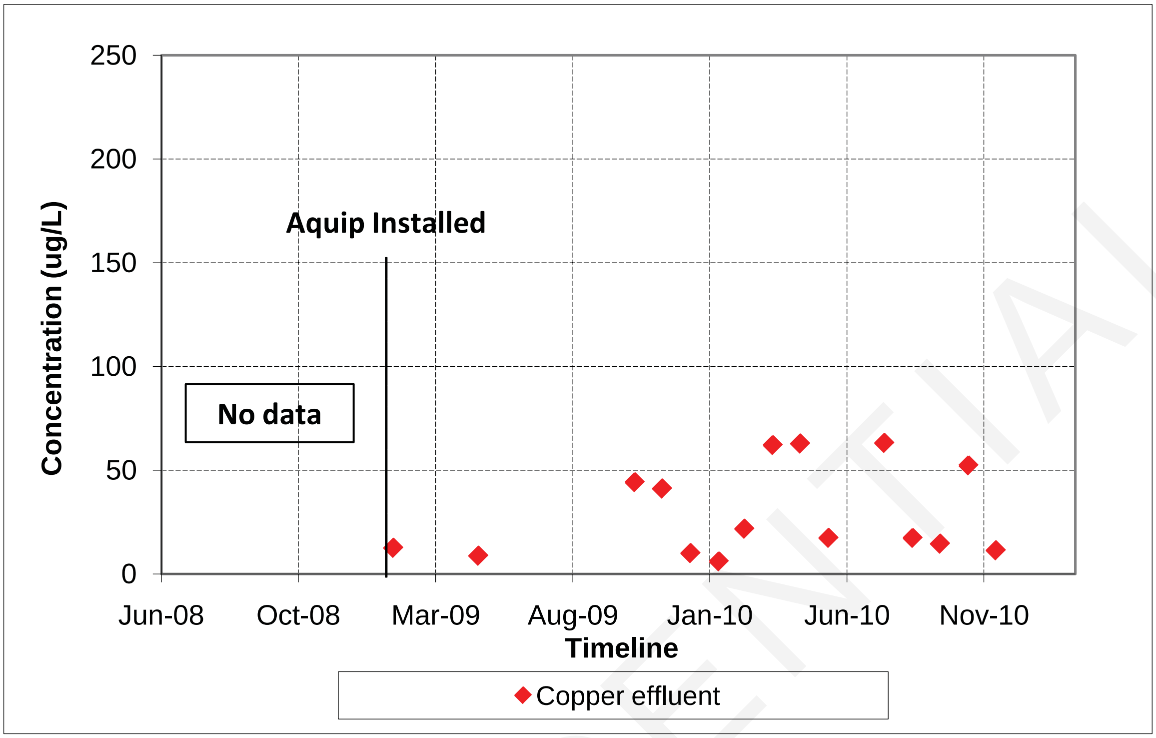
Site Location/Region:	Pacific Northwest
Facility Sector:	Shipyard
StormwateRx Product(s):	Aquip 50UBE (enhanced media filtration system)
Date of Installation:	February 1, 2009
Maintenance Status:	Adequate

Sampling Events:

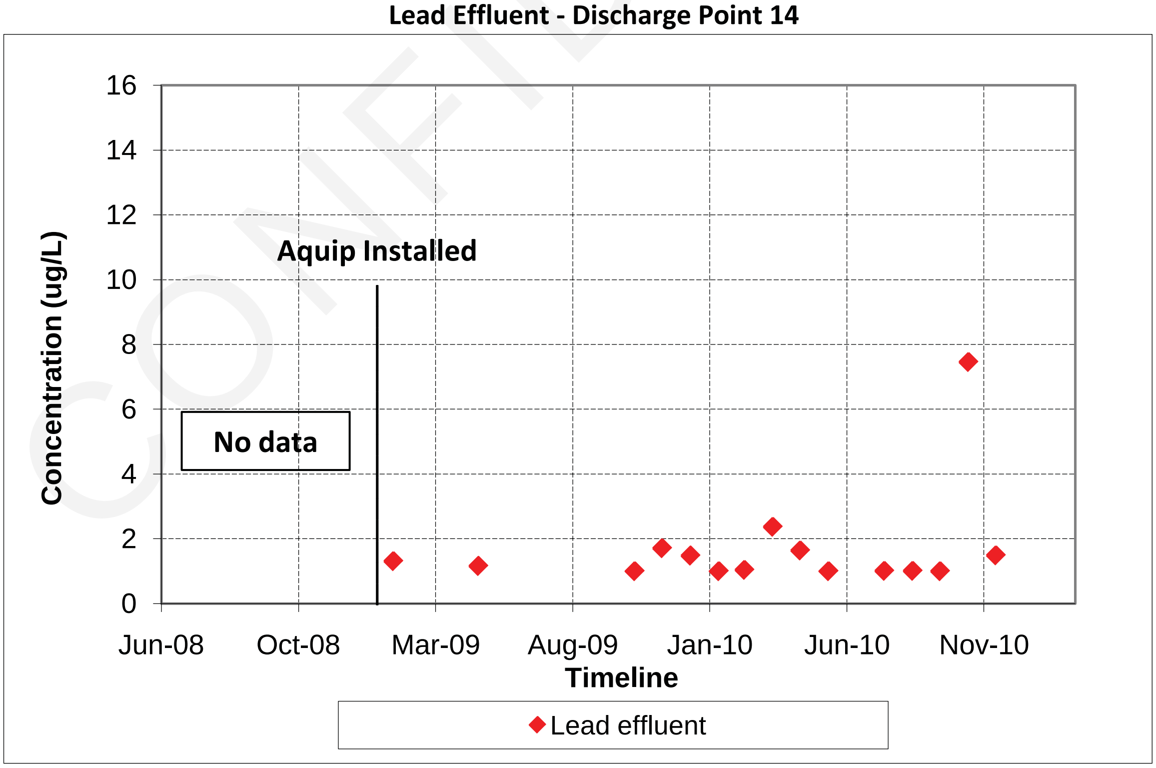
Date	Sampled By	Before/After Aquip Installation
February 10, 2009	Customer	After
May 14, 2009	Customer	After
November 1, 2009	Customer	After
December 1, 2009	Customer	After
January 1, 2010	Customer	After
February 1, 2010	Customer	After
March 1, 2010	Customer	After
April 1, 2010	Customer	After
May 1, 2010	Customer	After
June 1, 2010	Customer	After
August 1, 2010	Customer	After
September 1, 2010	Customer	After
October 1, 2010	Customer	After
November 1, 2010	Customer	After
December 1, 2010	Customer	After

Facility Historical Data
Site ID #0803

Copper Effluent - Discharge Point 14

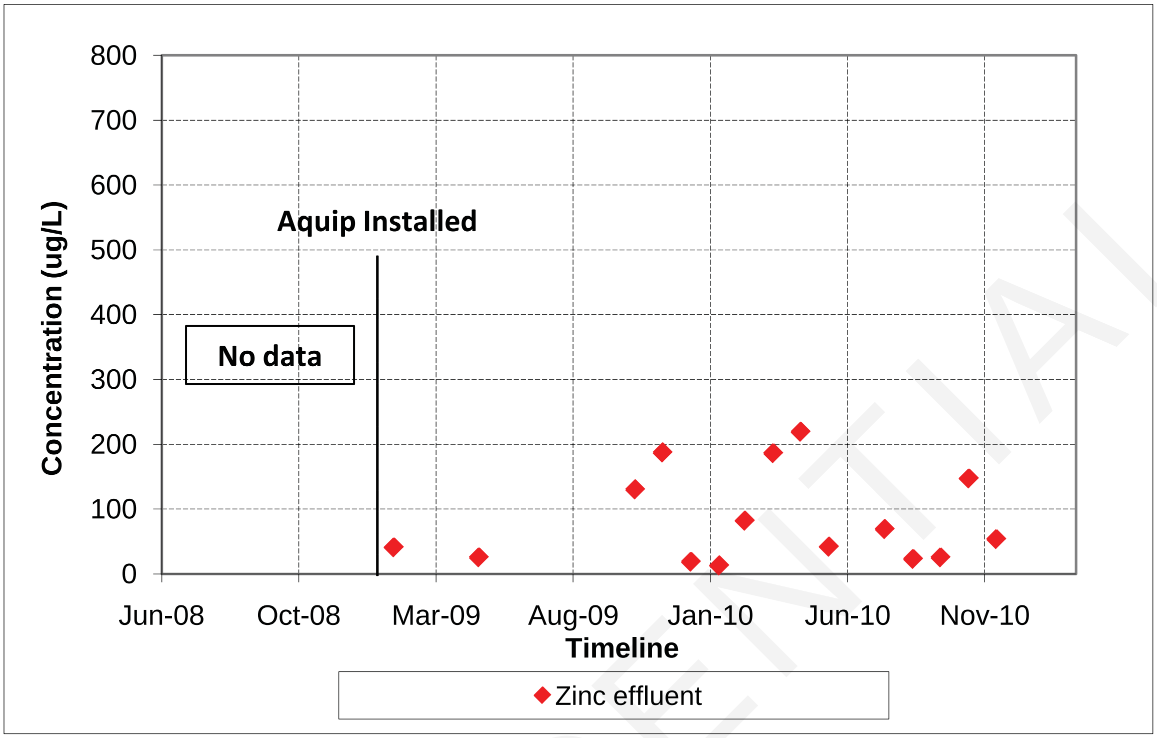


Lead Effluent - Discharge Point 14

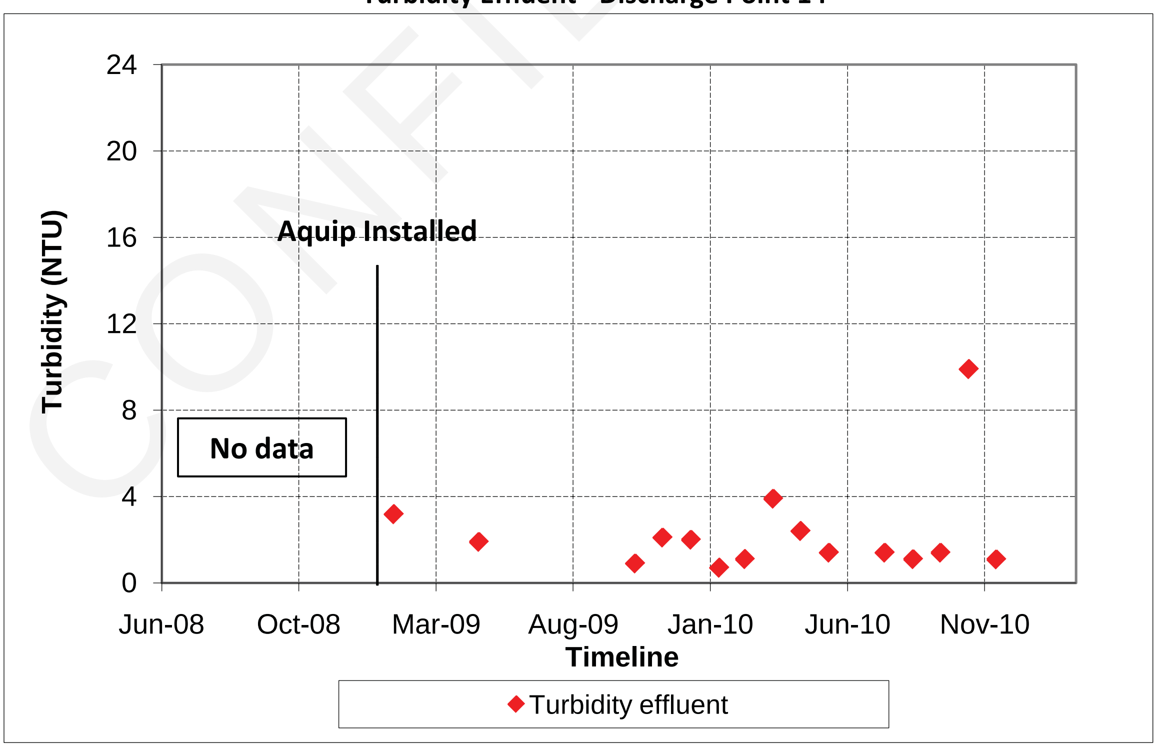


Facility Historical Data
Site ID #0803

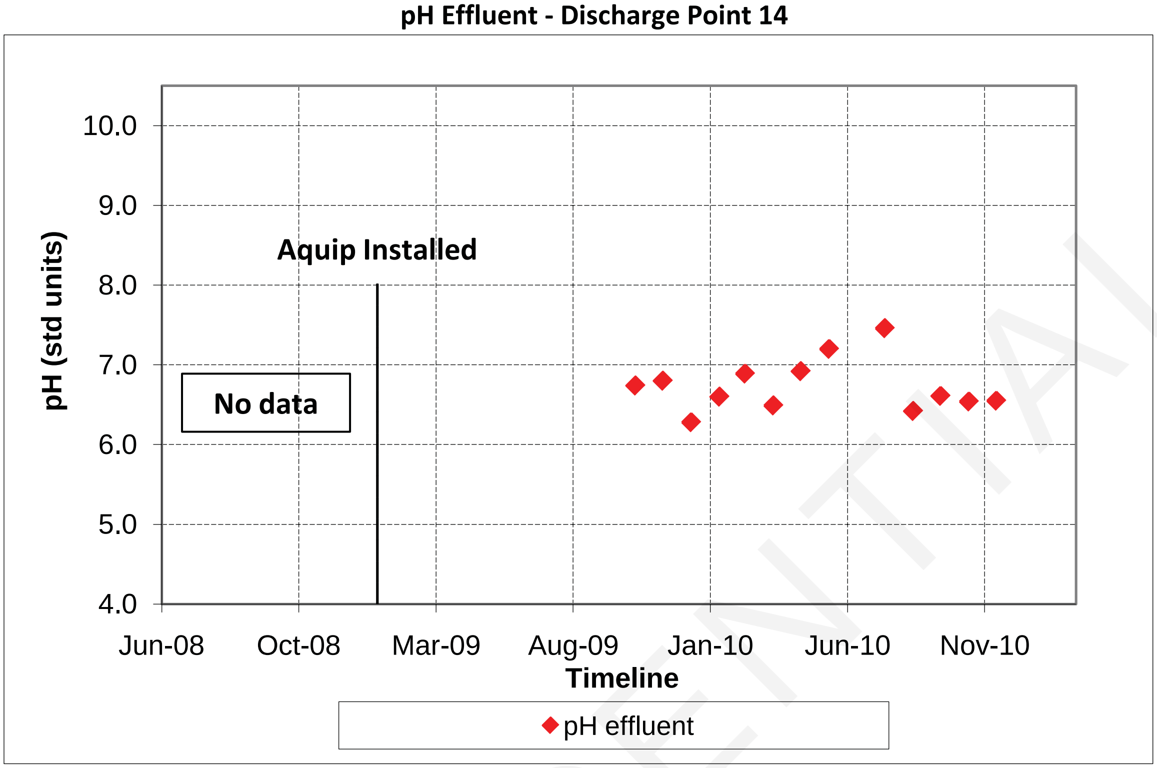
Zinc Effluent - Discharge Point 14



Turbidity Effluent - Discharge Point 14



Facility Historical Data
Site ID #0803



Aquip® Influent and Effluent Data
Site ID #0803

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
02/10/09	Aquip	Rx Influent	Rx Effluent	Arsenic	0.00115		0.0005	ND	57%					
02/10/09	Aquip	Rx Influent	Rx Effluent	Copper	0.184		0.0125		93%					
02/10/09	Aquip	Rx Influent	Rx Effluent	Lead	0.0104		0.00131		87%					
02/10/09	Aquip	Rx Influent	Rx Effluent	Zinc	0.474		0.0407		91%					
02/10/09	Aquip	Rx Influent	Rx Effluent	Turbidity	16		3.81		77%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0804
Shipyard

Stormwater Sampling Overview
Site ID #0804

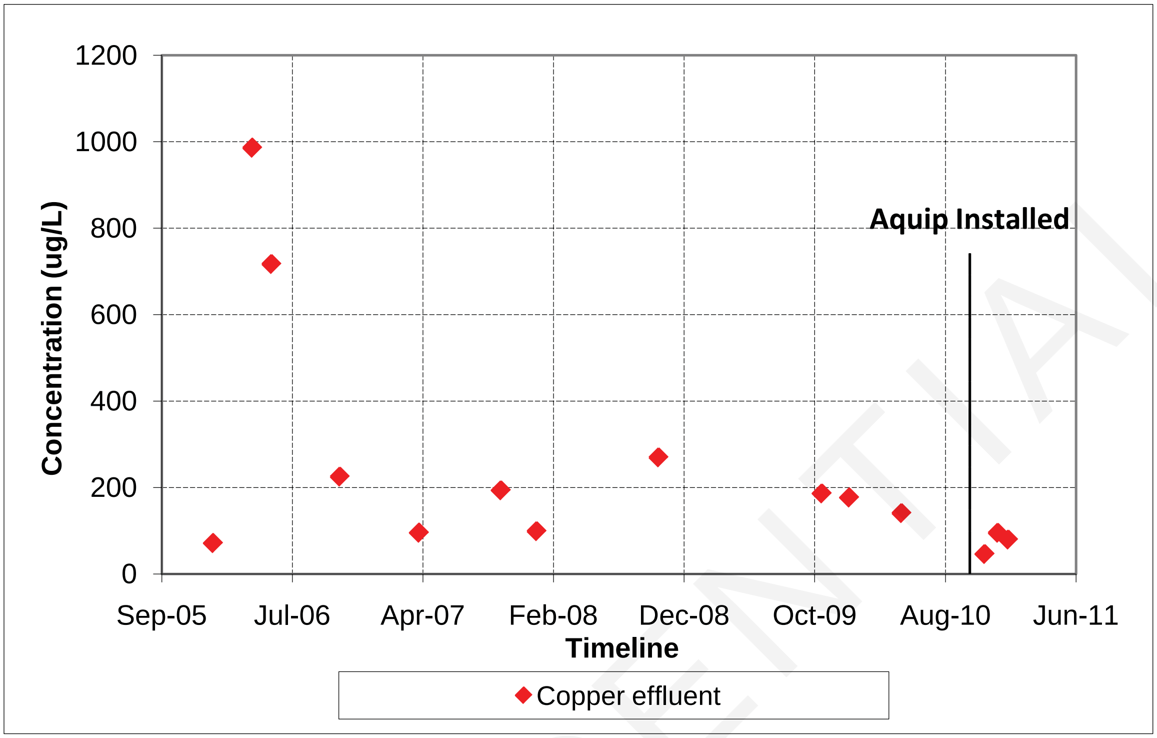
Site Location/Region:	Pacific Northwest
Facility Sector:	Shipyard
StormwateRx Product(s):	Aquip 210SBE (enhanced media filtration system) Aquip 160SBE (enhanced media filtration system)
Date of Installation:	August 4, 2010
Maintenance Status:	N/A - Saltwater Intrusion Site

Sampling Events:

Date	Sampled By	Before/After Aquip Installation
January 1, 2006	Customer	Before
April 1, 2006	Customer	Before
May 15, 2006	Customer	Before
October 19, 2006	Customer	Before
April 19, 2007	Customer	Before
October 24, 2007	Customer	Before
January 14, 2008	Customer	Before
October 20, 2008	Customer	Before
October 30, 2009	Customer	Before
January 1, 2010	Customer	Before
May 1, 2010	Customer	Before
November 8, 2010	Customer	After
November 15, 2010	Customer	After
December 8, 2010	Customer	After
January 1, 2011	Customer	After

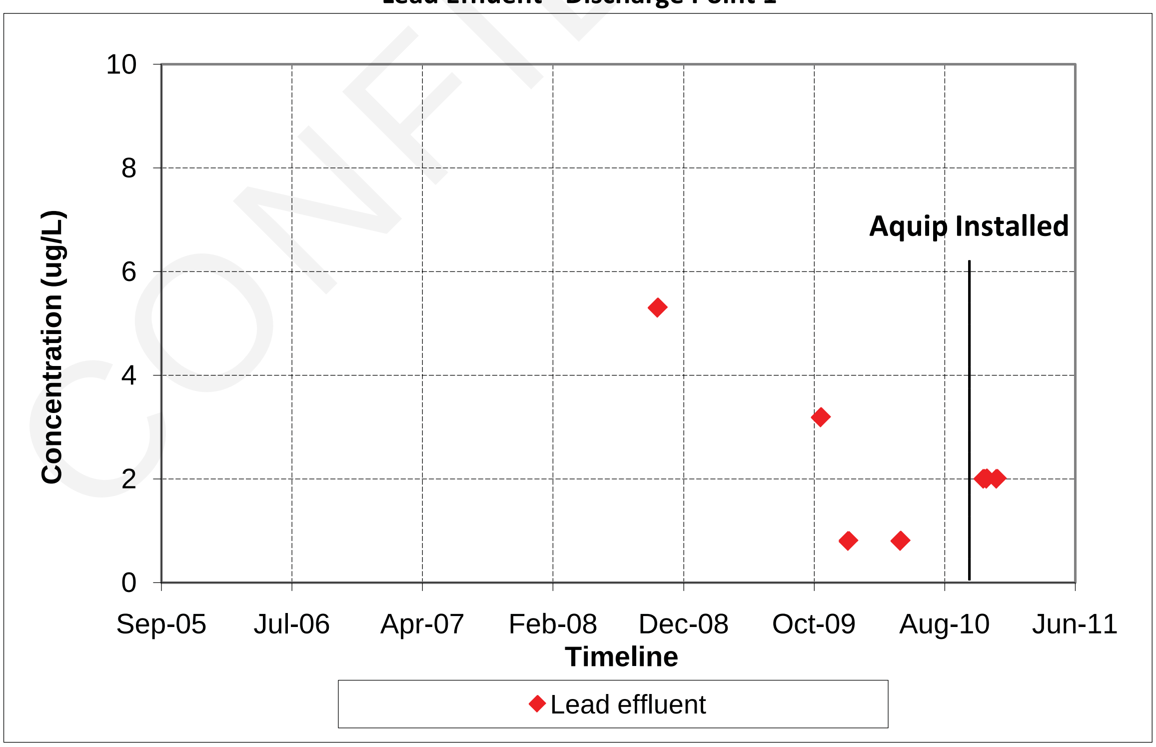
Facility Historical Data
Site ID #0804

Copper Effluent - Discharge Point 1**



**Jan 1, 2011 is a combined stormwater flow of the Aquip effluent and untreated water. Data not shown: Jan 1, 2011 364 ug/L. Average effluent from the two Aquip systems reported for Dec 8, 2010 sampling event.

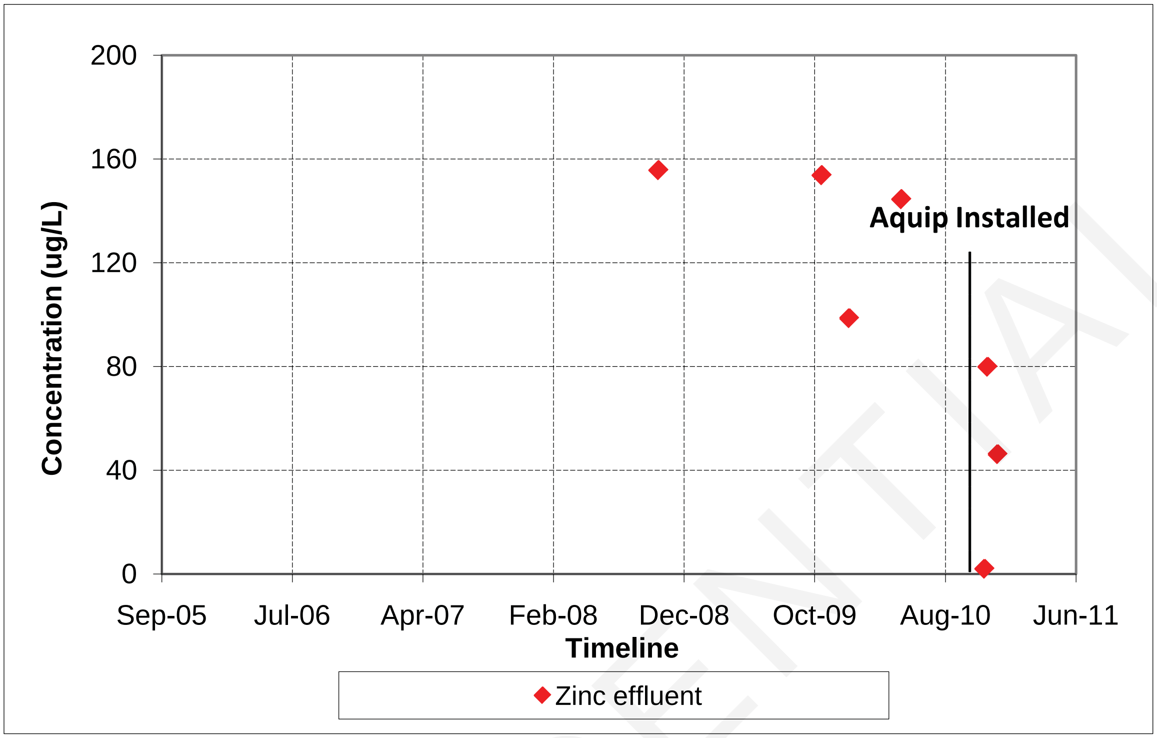
Lead Effluent - Discharge Point 1**



**Jan 1, 2011 is a combined stormwater flow of the Aquip effluent and untreated water. Data not shown: Jan 1, 2011 20 ug/L. Average effluent from the two Aquip systems reported for Dec 8, 2010 sampling event.

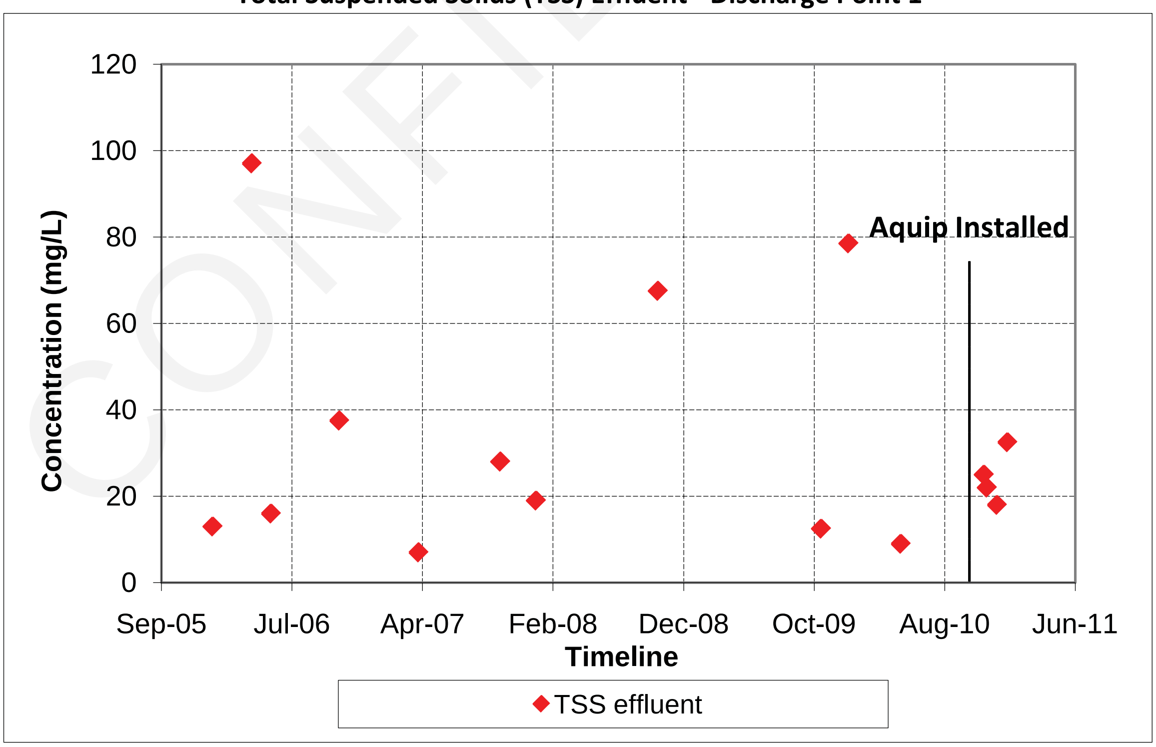
Facility Historical Data
Site ID #0804

Zinc Effluent - Discharge Point 1**



**Jan 1, 2011 is a combined stormwater flow of the Aquip effluent and untreated water. Data not shown: Jan 1, 2011 149.5 ug/L. Average effluent from the two Aquip systems reported for Dec 8, 2010 sampling event.

Total Suspended Solids (TSS) Effluent - Discharge Point 1**



**Jan 1, 2011 is a combined stormwater flow of the Aquip effluent and untreated water. Average effluent from the two Aquip systems reported for Dec 8, 2010 sampling event.

Aquip® Influent and Effluent Data
Site ID #0804

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
11/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Copper	0.127		0.0458		64%					
11/15/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Copper	1.36		0.364		73%					
12/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Copper	1.48		0.0950		94%					
12/08/10	Aquip	RX-WEV4-Inf	RX-WEV4-Eff	Copper	0.0308		0.0232		25%					
11/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Lead	0.0068		0.0020	ND	71%					
11/15/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Lead	0.0420		0.0020	ND	95%					
12/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Lead	0.0277		0.0020	ND	93%					
11/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Zinc	0.0415		0.0020	ND	95%					
11/15/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Zinc	0.445		0.0799		82%					
12/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	Zinc	0.524		0.0462		91%					
12/08/10	Aquip	RX-WEV4-Inf	RX-WEV4-Eff	Zinc	0.0425		0.0491		increased					
11/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	TSS	29		25		14%					
11/15/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	TSS	24		22		8%					
12/08/10	Aquip	RX-BYV1-Inf	RX-BYV1-Eff	TSS	9		18		increased					
12/08/10	Aquip	RX-WEV4-Inf	RX-WEV4-Eff	TSS	17		13		24%					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0901
Trucking

Stormwater Sampling Overview
Site ID #0901

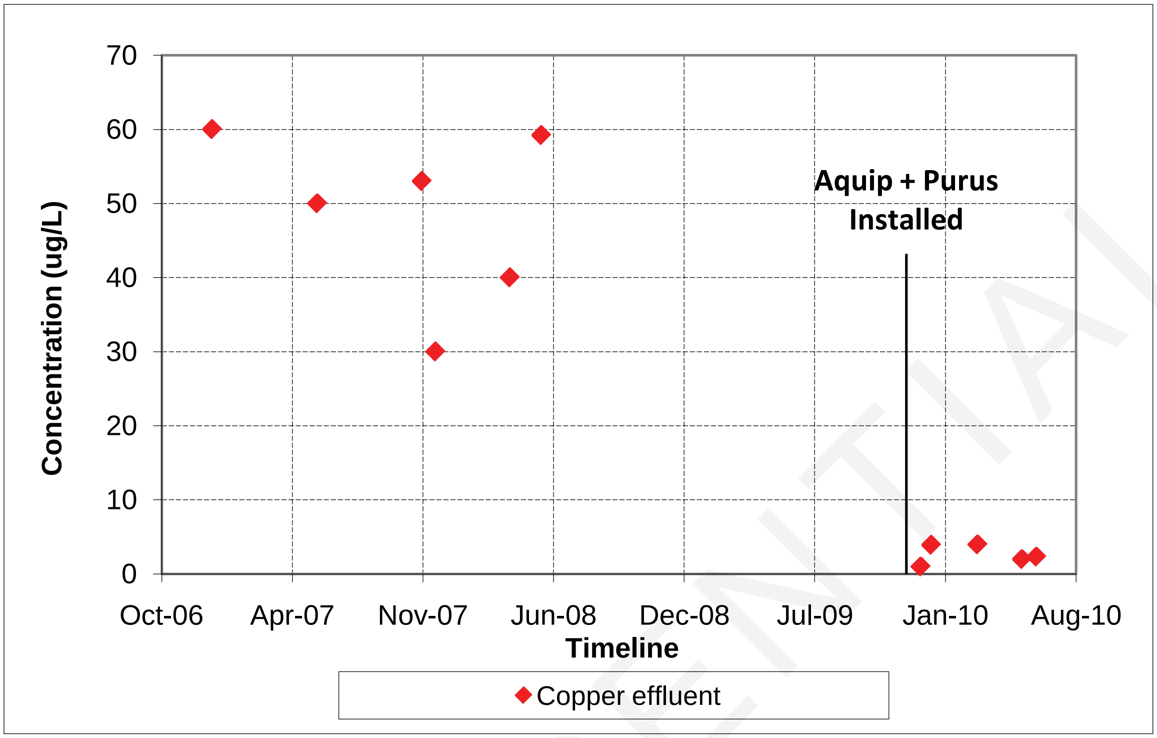
Site Location/Region:	Pacific Northwest
Facility Sector:	Trucking
StormwateRx Product(s):	Aquip 210SBE (enhanced media filtration system) Purus 210UV (bacteria polishing system)
Date of Installation:	November 25, 2009
Maintenance Status:	Adequate

Sampling Events:

Date	Sampled By	Before/After Aquip Installation
November 2, 2006	Customer	Before
December 26, 2006	Customer	Before
June 5, 2007	Customer	Before
November 12, 2007	Customer	Before
December 3, 2007	Customer	Before
March 26, 2008	Customer	Before
May 13, 2008	Customer	After
December 15, 2009	Customer	After
December 30, 2009	Customer	After
December 31, 2009	Customer	After
March 12, 2010	Customer	After
May 19, 2010	Customer	After
June 10, 2010	Customer	After

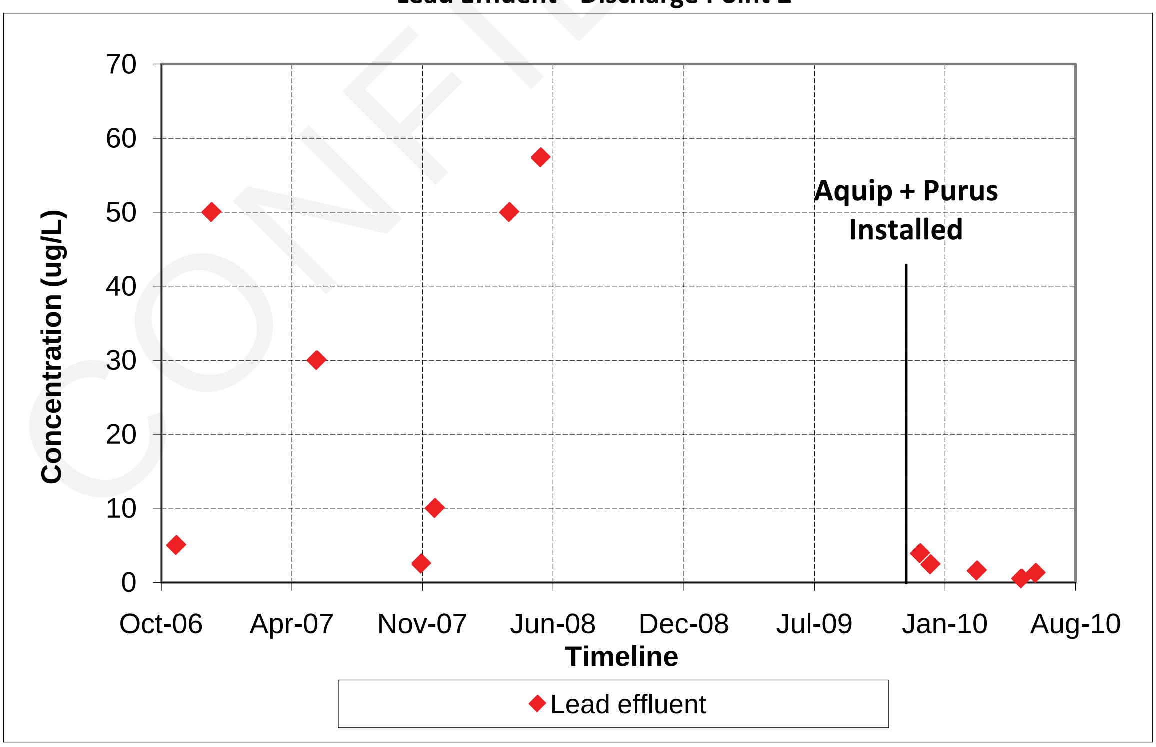
Facility Historical Data
Site ID #0901

Copper Effluent - Discharge Point 2



Data not shown: Dec 30, 2009 28.1 ug/L sampled immediately after freezing weather conditions

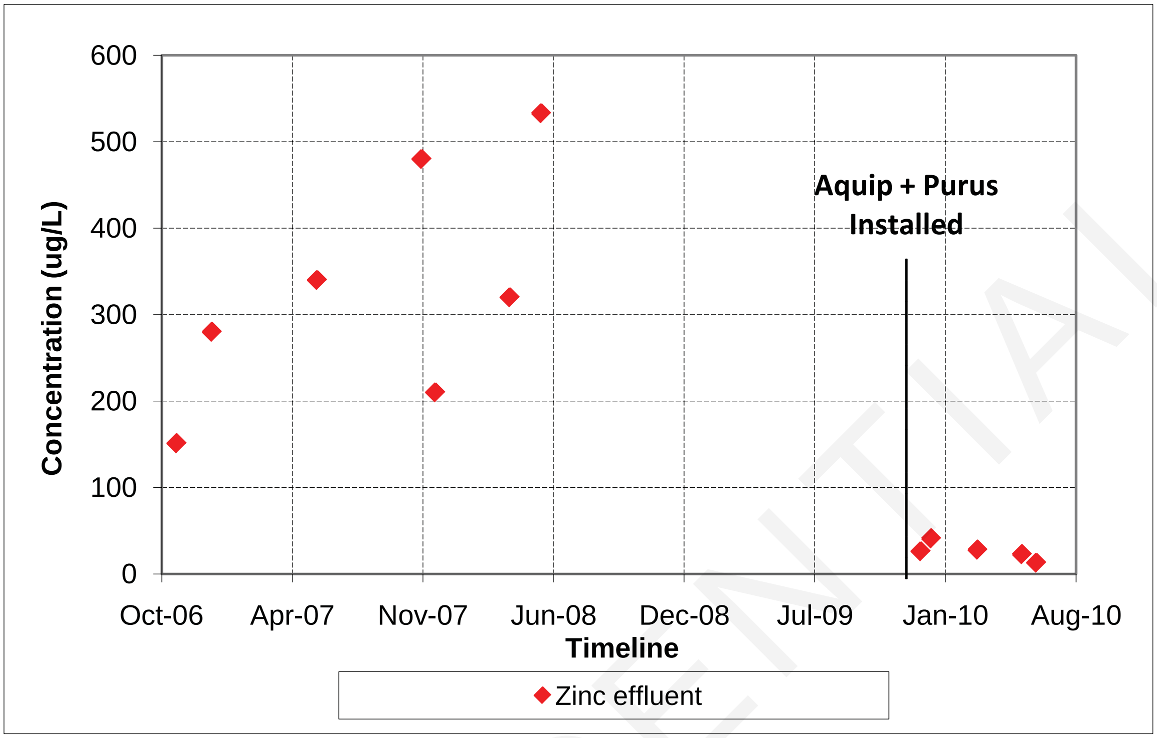
Lead Effluent - Discharge Point 2



Data not shown: Dec 30, 2009 30.6 ug/L sampled immediately after freezing weather conditions

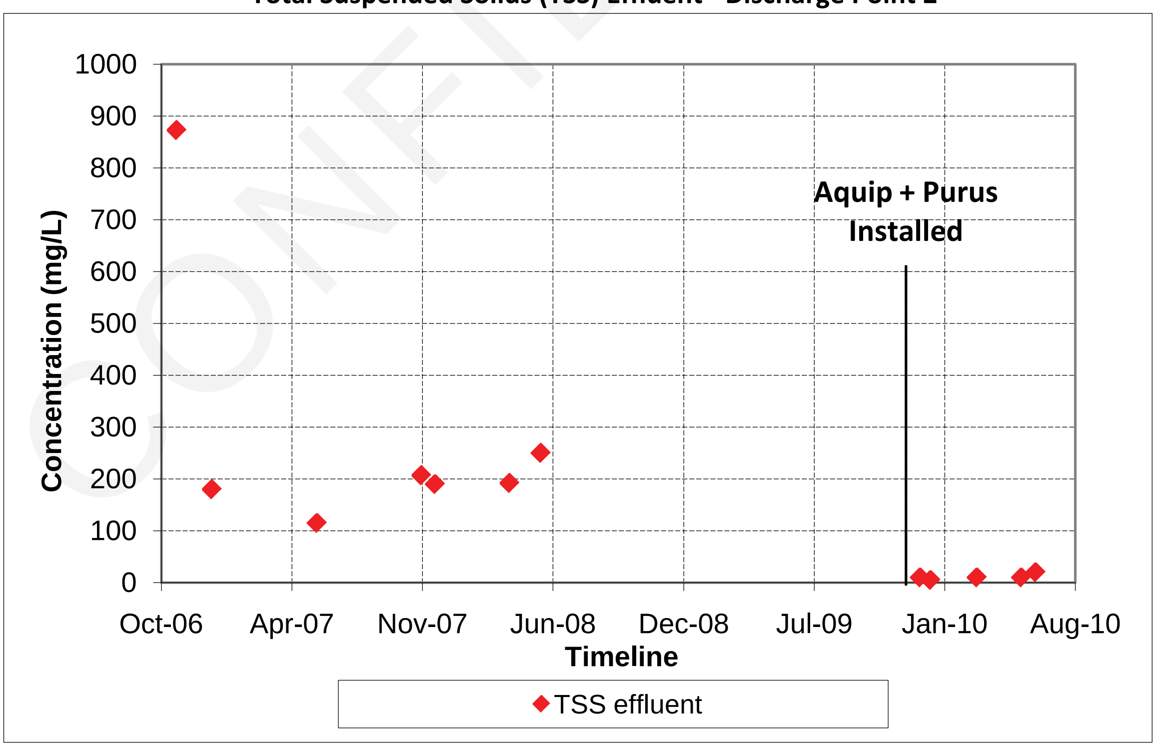
Facility Historical Data
Site ID #0901

Zinc Effluent - Discharge Point 2



Data not shown: Dec 30, 2009 291 ug/L sampled immediately after freezing weather conditions

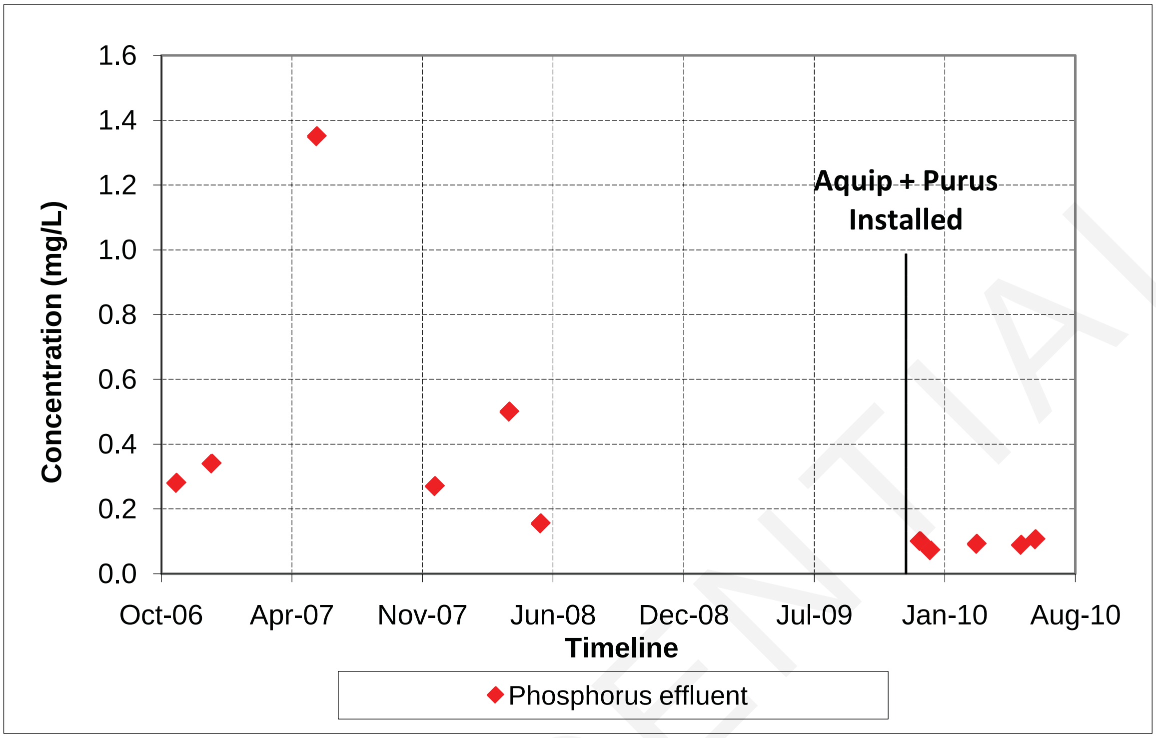
Total Suspended Solids (TSS) Effluent - Discharge Point 2



Data not shown: Dec 30, 2009 160 mg/L sampled immediately after freezing weather conditions

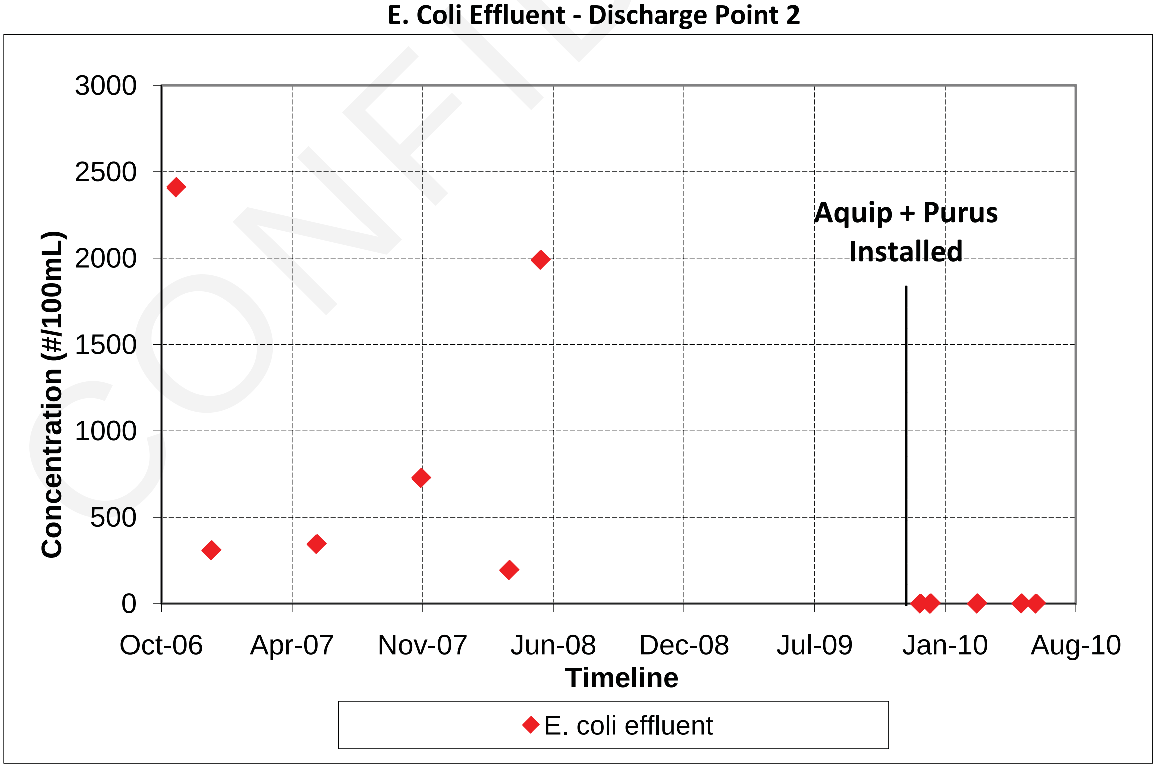
Facility Historical Data
Site ID #0901

Phosphorus Effluent - Discharge Point 2



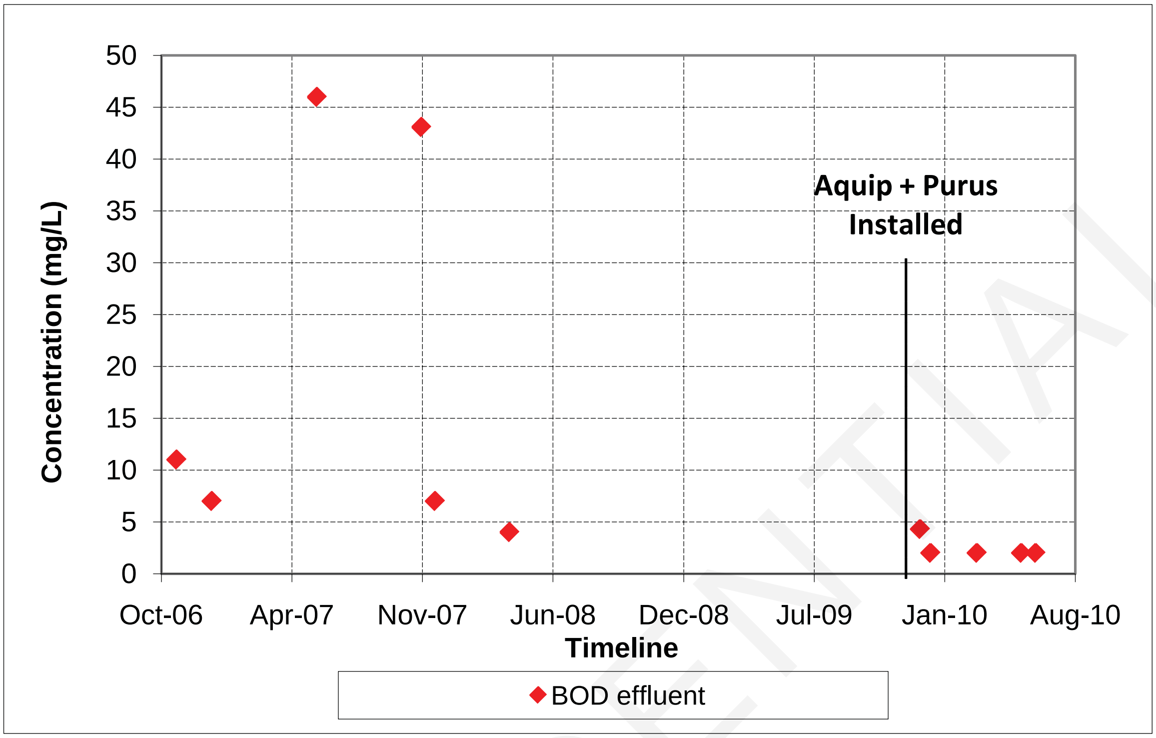
Data not shown: Nov 12, 2007 48 mg/L; Dec 30, 2009 0.217 mg/L sampled immediately after freezing weather conditions

E. Coli Effluent - Discharge Point 2



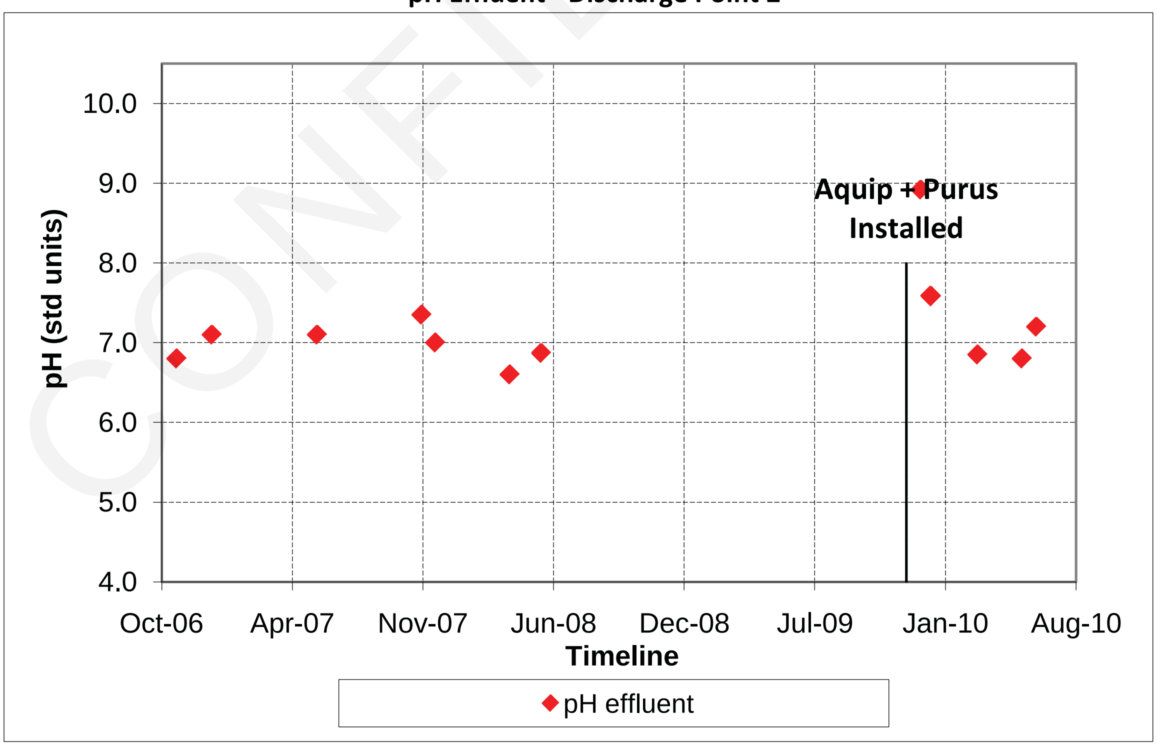
Facility Historical Data
Site ID #0901

Biological Oyxgen Demand (BOD) Effluent - Discharge Point 2



Data not shown: Dec 30, 2009 24.6 mg/L sampled immediately after freezing weather conditions

pH Effluent - Discharge Point 2



Aquip® Influent and Effluent Data
Site ID #0901

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	Copper	0.0105		0.00100	ND	90%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	Copper	0.0105		0.00398		62%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	Lead	0.0135		0.00390		71%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	Lead	0.00497		0.00156		69%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	Zinc	0.121		0.0261		78%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	Zinc	0.125		0.0279		78%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	TSS	70.0		10.0		86%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	TSS	30.0		10.0		67%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	Phosphorus	0.227		0.101		56%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	Phosphorus	0.596		0.0918		85%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	BOD5	5.48		4.30		22%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	BOD5	7.89		2.00	ND	75%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	E.Coli	2420		0.50		99%					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	E.Coli	2420		0.50	ND	99%					
12/15/09	Aquip + Purus UV	2A-Phl Inlet	2B-Phl Outlet	pH	7.33		8.92		1.59					
03/12/10	Aquip + Purus UV	Sample Point 2A	Sample Point 2B	pH	7.02		6.85		-0.17					

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

0902
Trucking

Stormwater Sampling Overview
Site ID #0902

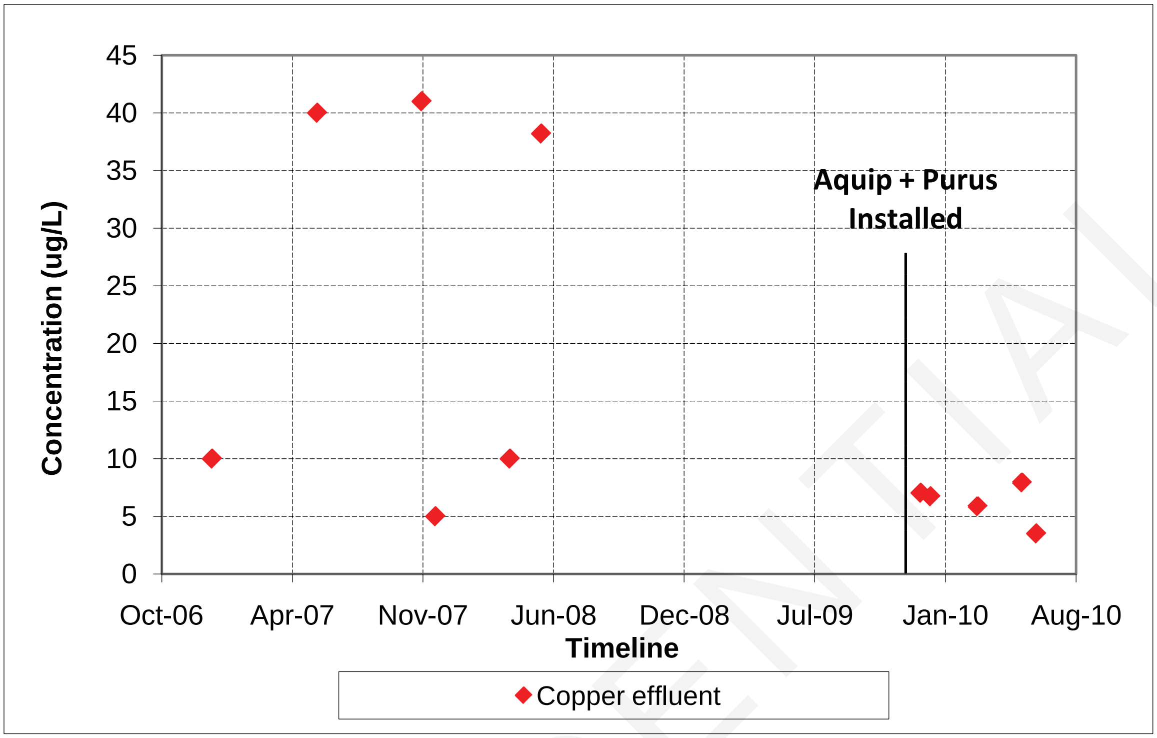
Site Location/Region:	Pacific Northwest
Facility Sector:	Trucking
StormwateRx Product(s):	Aquip 210SBE (enhanced media filtration system) Purus 210UV (bacteria polishing system)
Date of Installation:	November 25, 2009
Maintenance Status:	Needs Improvement

Sampling Events:

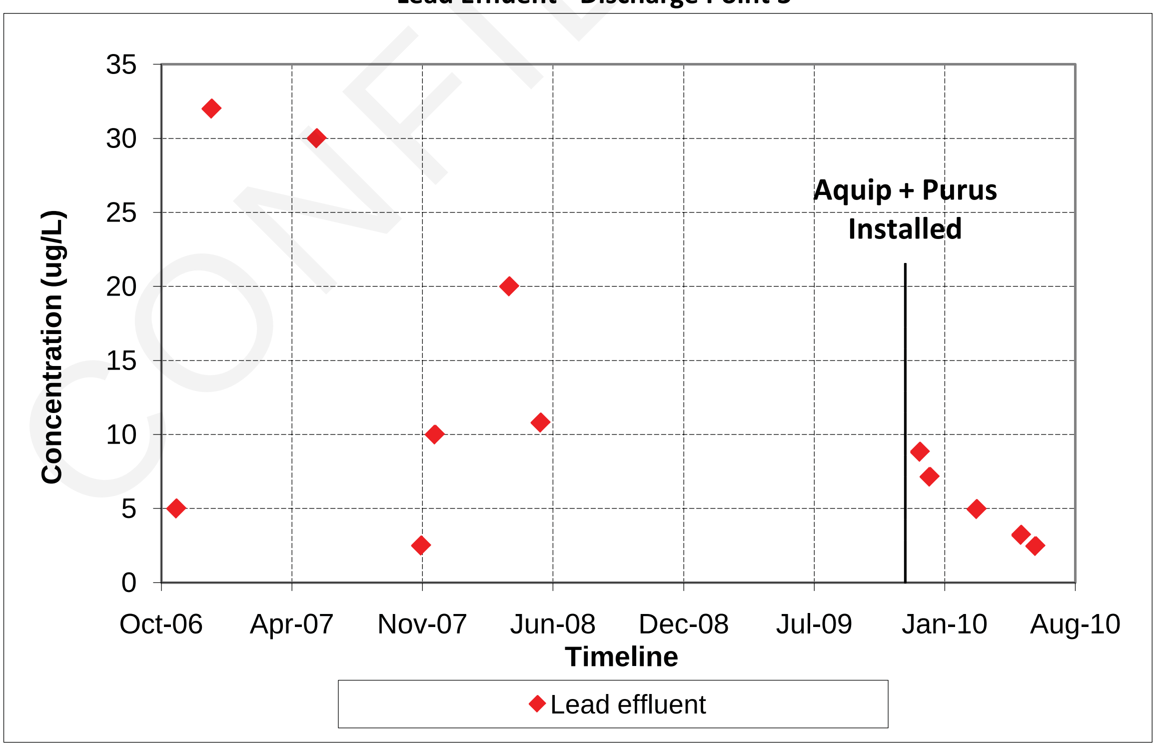
Date	Sampled By	Before/After Aquip Installation
December 26, 2006	Customer	Before
June 5, 2007	Customer	Before
November 12, 2007	Customer	Before
December 3, 2007	Customer	Before
March 26, 2008	Customer	Before
May 13, 2008	Customer	After
November 30, 2009	Customer	After
December 15, 2009	Customer	After
December 30, 2009	Customer	After
March 12, 2010	Customer	After
May 19, 2010	Customer	After
June 10, 2010	Customer	After

Facility Historical Data
Site ID #0902

Copper Effluent - Discharge Point 3

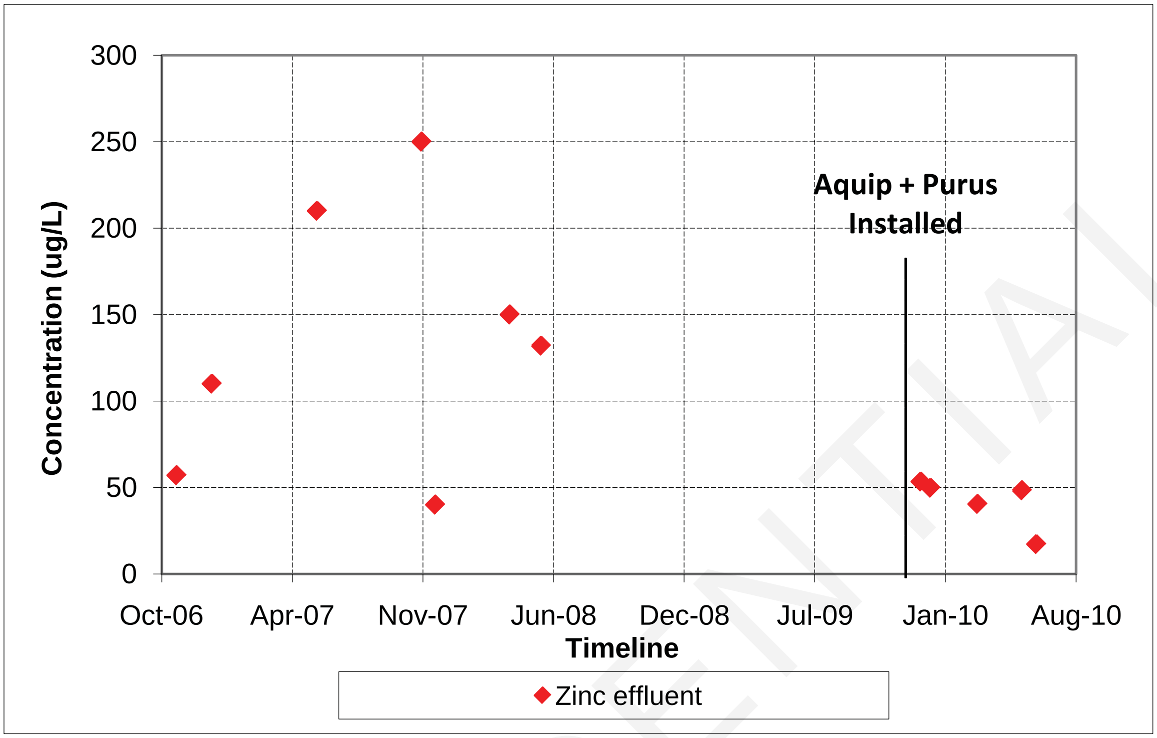


Lead Effluent - Discharge Point 3

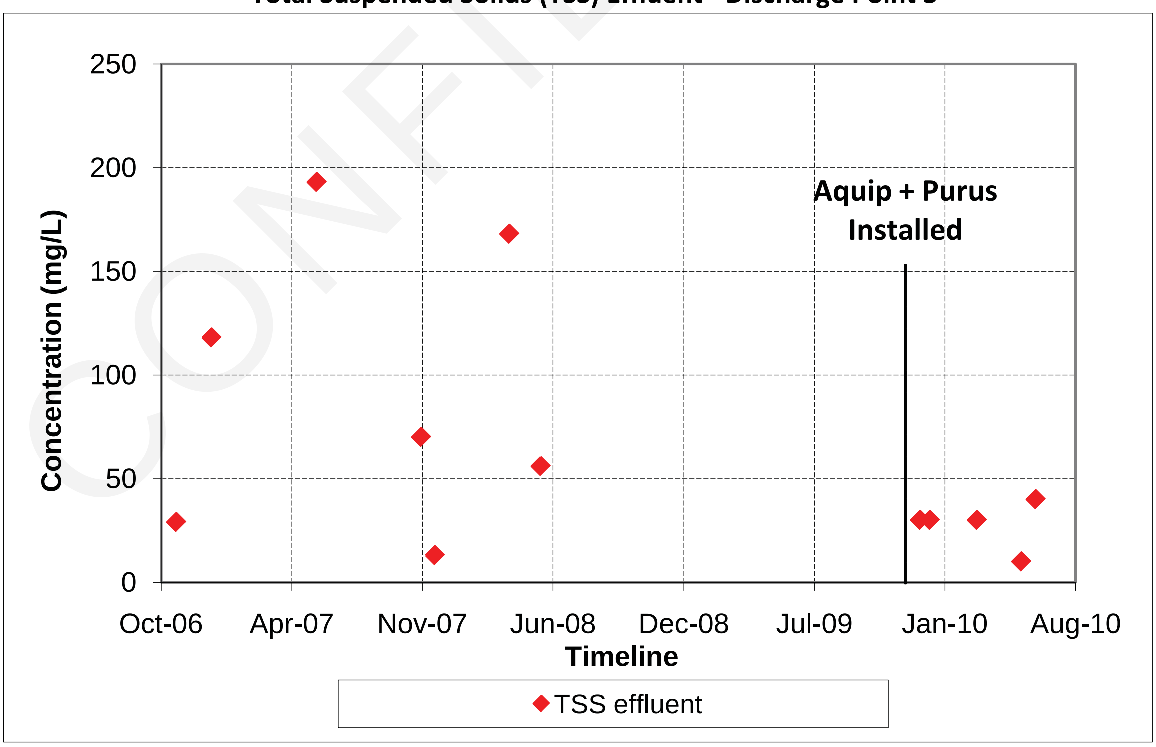


Facility Historical Data
Site ID #0902

Zinc Effluent - Discharge Point 3

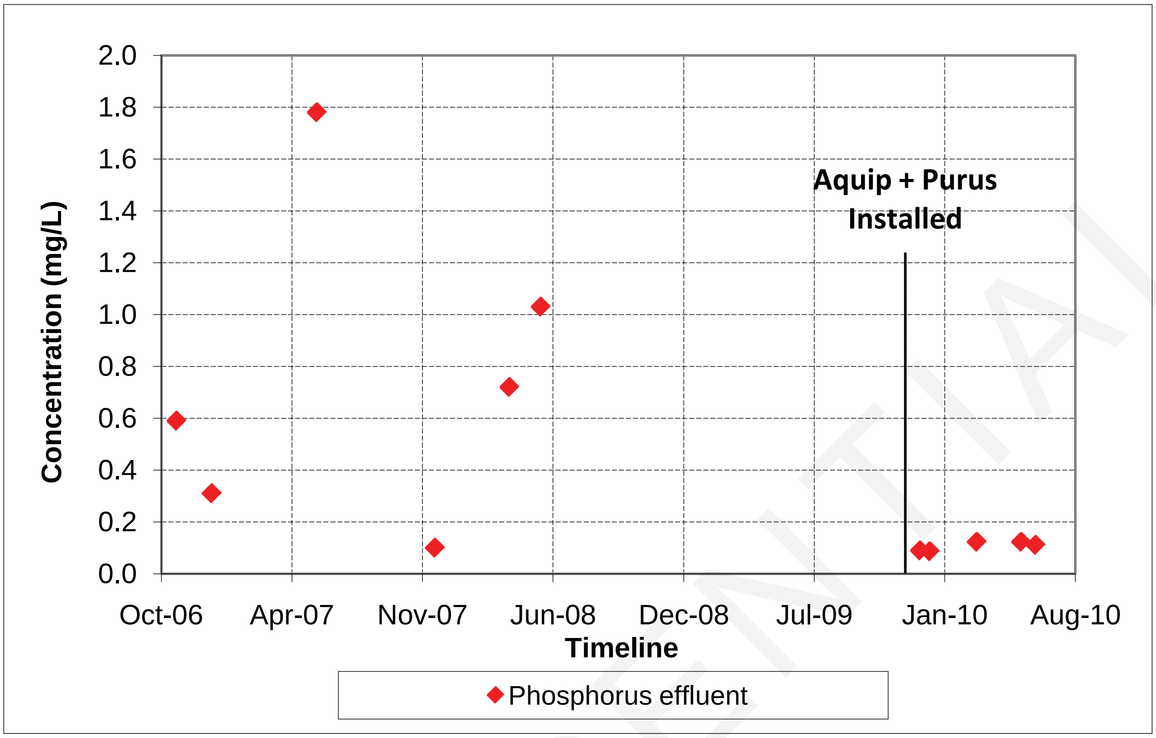


Total Suspended Solids (TSS) Effluent - Discharge Point 3



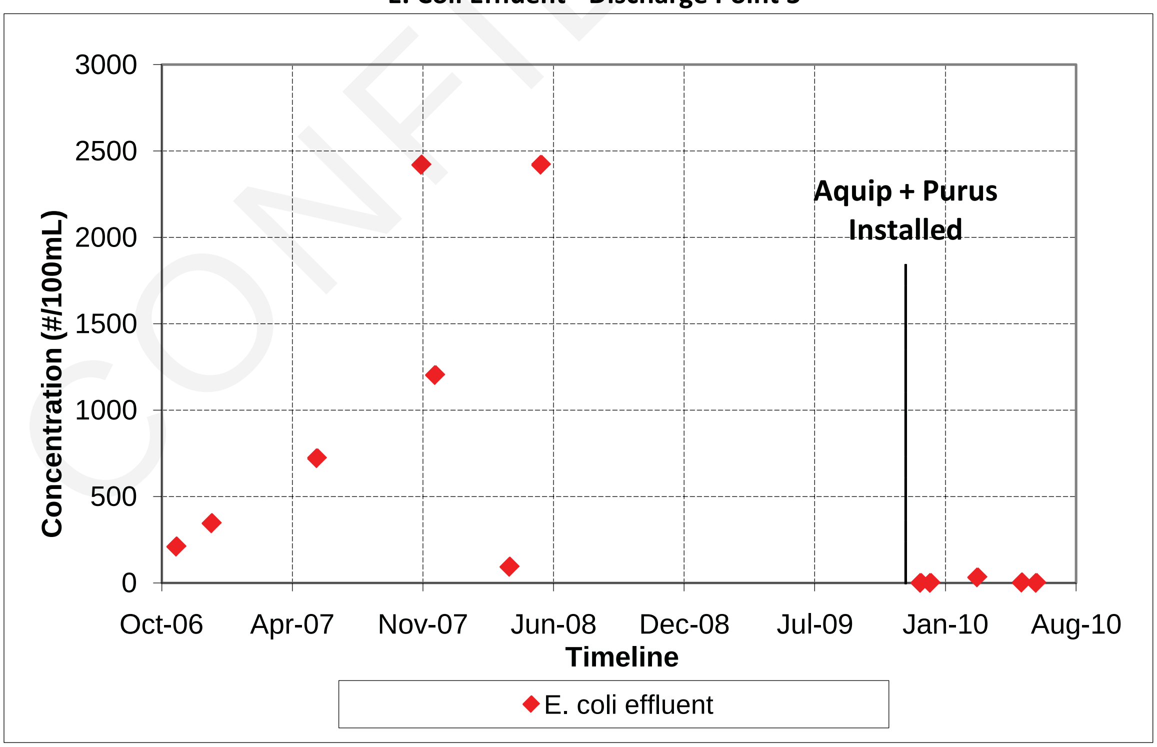
Facility Historical Data
Site ID #0902

Phosphorus Effluent - Discharge Point 3

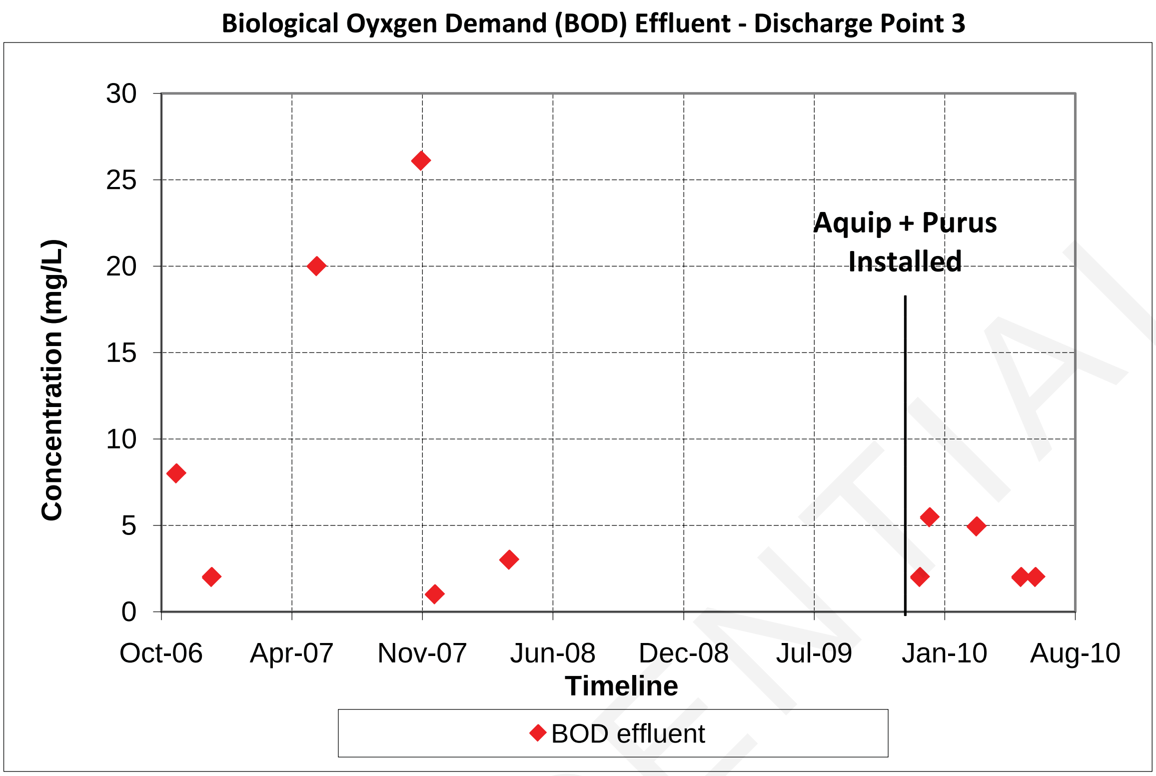


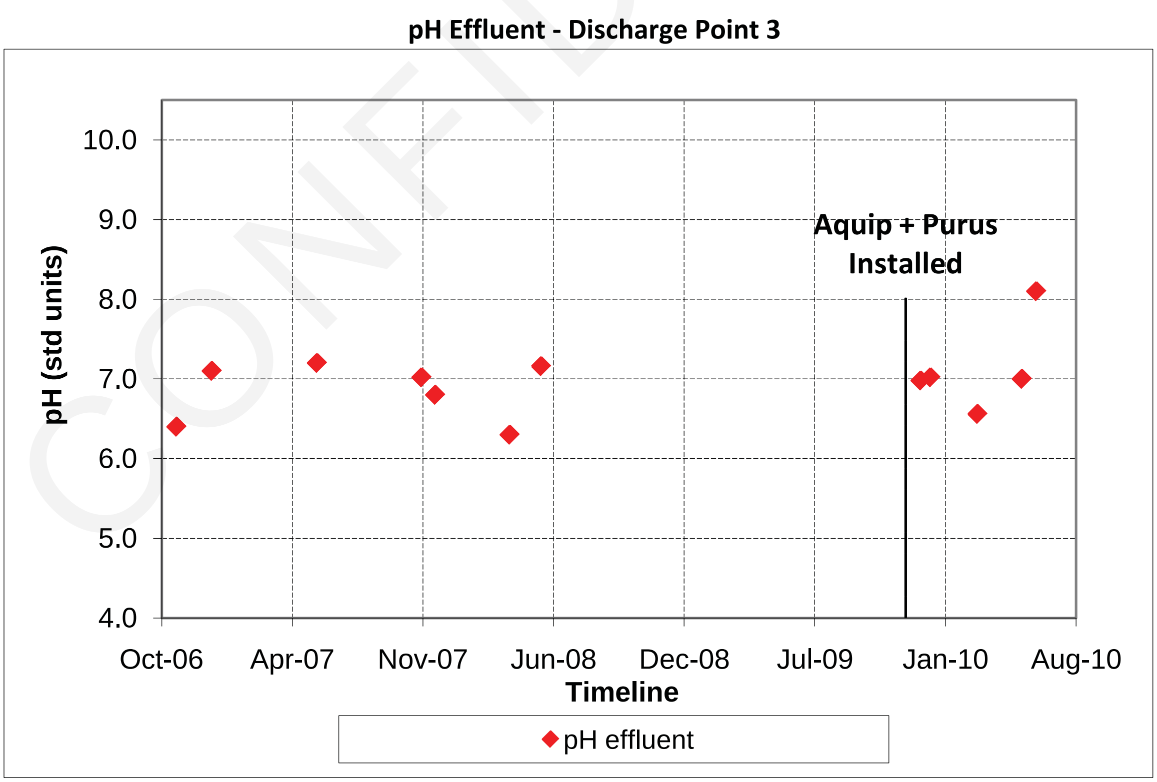
DMR value 48 mg/L Phosphorus from Nov 12, 2007 was removed from the data set

E. Coli Effluent - Discharge Point 3



Facility Historical Data
Site ID #0902





Aquip® Influent and Effluent Data
Site ID #0902

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
11/30/09	Aquip + Purus UV	A-Inlet to Aquip	B-Discharge	Copper	0.00433		0.00100	ND	77%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	Copper	0.0178		0.00704		60%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	Copper	0.0281		0.00673		76%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	Copper	0.0161		0.00588		63%					
11/30/09	Aquip + Purus UV	A-Inlet to Aquip	B-Discharge	Lead	0.00219		0.00050	ND	77%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	Lead	0.0240		0.00883		63%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	Lead	0.0306		0.00715		77%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	Lead	0.0163		0.00496		70%					
11/30/09	Aquip + Purus UV	A-Inlet to Aquip	B-Discharge	Zinc	0.0631		0.00050	ND	99%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	Zinc	0.161		0.0534		67%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	Zinc	0.291		0.0498		83%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	Zinc	0.140		0.0404		71%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	TSS	140		30.0		79%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	TSS	160		30		81%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	TSS	100		30.0		70%					
11/30/09	Aquip + Purus UV	A-Inlet to Aquip	B-Discharge	Phosphorus	0.262		0.0100	ND	96%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	Phosphorus	0.229		0.0896		61%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	Phosphorus	0.217		0.0866		60%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	Phosphorus	0.270		0.123		54%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	BOD5	24.6		5.46		78%					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	BOD5	6.21		4.93		21%					
11/30/09	Aquip + Purus UV	A-Inlet to Aquip	B-Discharge	E.Coli	770		0.50	ND	99%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	E.Coli	2420		0.5	ND	99%					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	E.Coli	0.50	ND	0.50	ND	N/A					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	E.Coli	2420		32.3		99%					
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	O&G	5.29		2.38	ND	55%					

Aquip® Influent and Effluent Data
Site ID #0902

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)
12/15/09	Aquip + Purus UV	3A-PhII Inlet	3B-PhII Outlet	pH	8.02		6.98		-1.04					
12/30/09	Aquip + Purus UV	Sample Point #2	Sample Point #3	pH	7.59		7.02		-0.57					
03/12/10	Aquip + Purus UV	Sample Point 3A	Sample Point 3B	pH	7.58		6.56		-1.02					

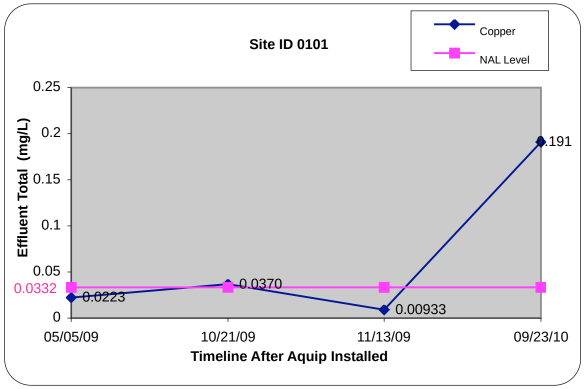
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

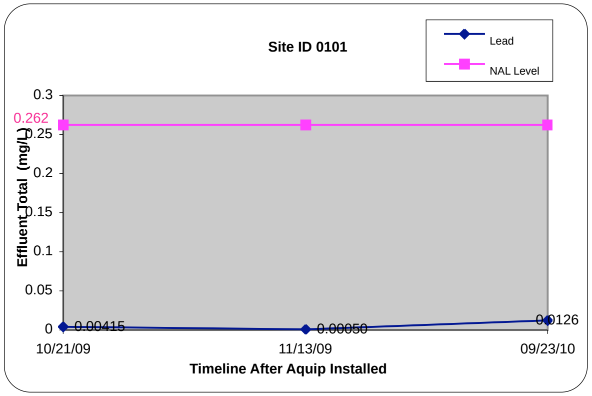
SWAPE Spreadsheets and Charts Derived from StormwateRx Data

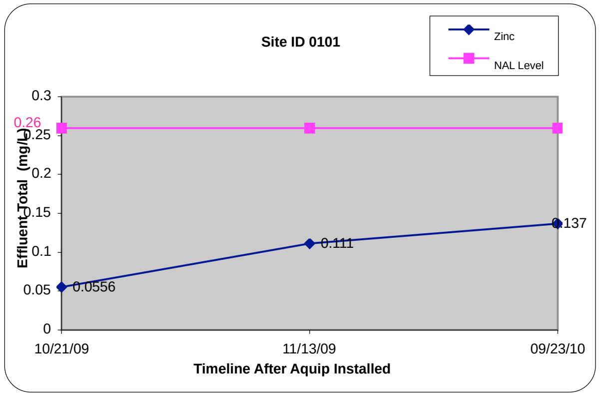
Aquip® Effluent Data
Site ID #0101

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
05/05/09	Aquip	AQUIP IN	AQUIP OUT	Copper	1.58		0.0223	22.3		99%						0.033	
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Copper	1.09		0.0370	37		97%						0.033	exceeds NAL levels
11/13/09	Aquip	0080 A-in	0080 A-out	Copper	0.656		0.00933	9.33		99%						0.033	
09/23/10	Aquip	1 - Inlet	4 - Discharge	Copper	1.67		0.191	191		89%						0.033	exceeds NAL levels
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Lead	0.0253		0.00415	4.15		84%						0.262	
11/13/09	Aquip	0080 A-in	0080 A-out	Lead	0.0089		0.00050	0.5	ND	94%						0.262	
09/23/10	Aquip	1 - Inlet	4 - Discharge	Lead	0.0539		0.0126	12.6		77%						0.262	
10/21/09	Aquip	No. 1 Inlet	No. 2 Discharge	Zinc	0.586		0.0556	55.6		91%						0.26	
11/13/09	Aquip	0080 A-in	0080 A-out	Zinc	0.411		0.111	111		73%						0.26	
09/23/10	Aquip	1 - Inlet	4 - Discharge	Zinc	1.04		0.137	137		87%						0.26	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

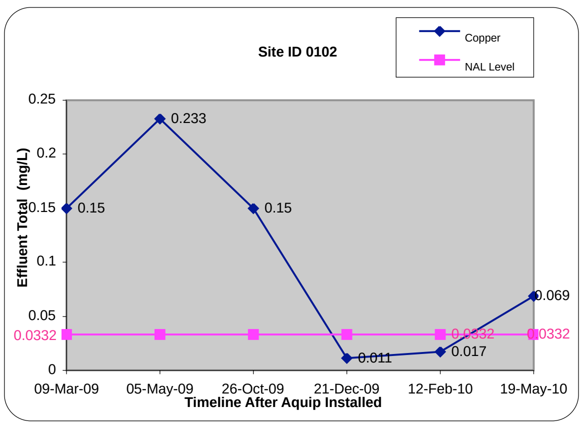


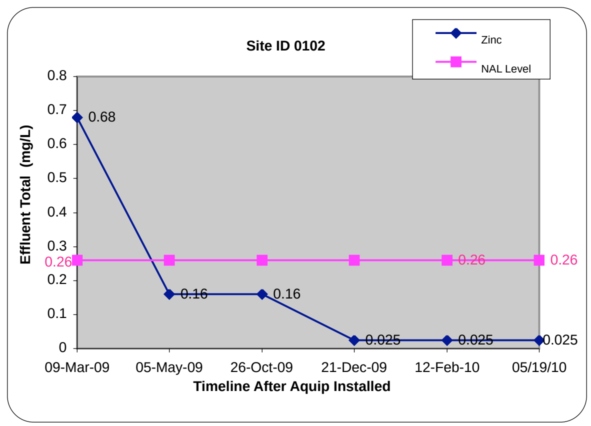




Aquip® Effluent Data
Site ID #0102

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
09-Mar-09				Copper			0.15	150								0.033	exceeds NAL levels
05-May-09				Copper			0.233	233								0.033	exceeds NAL levels
26-Oct-09				Copper			0.15	150								0.033	exceeds NAL levels
21-Dec-09				Copper			0.011	11								0.033	
12-Feb-10				Copper			0.017	17								0.033	
19-May-10				Copper			0.069	69								0.033	exceeds NAL levels
09-Mar-09				Zinc			0.68	680								0.26	exceeds NAL levels
05-May-09				Zinc			0.16	160								0.26	
26-Oct-09				Zinc			0.16	160								0.26	
21-Dec-09				Zinc			0.025	25								0.26	
12-Feb-10				Zinc			0.025	25								0.26	
05/19/10				Zinc			0.025	25								0.26	

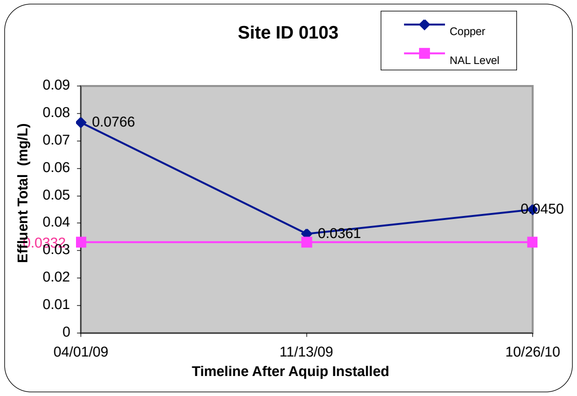


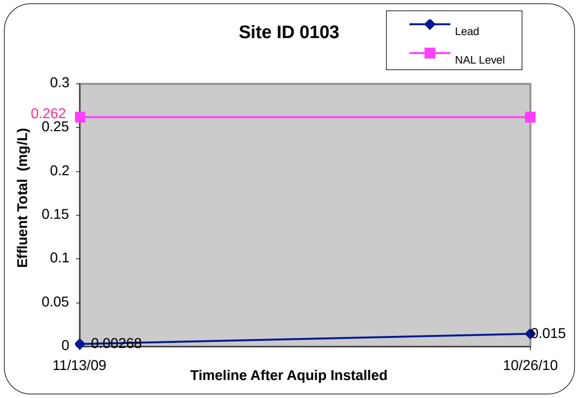


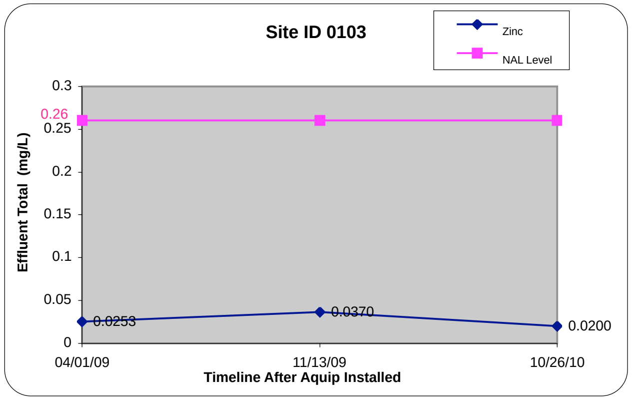
Aquip® Effluent Data
Site ID #0103

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
04/01/09	Aquip	East-Aq IN	East-Aq OUT	Copper	0.364		0.0766	76.6		79%						0.033	exceeds NAL levels
11/13/09	Aquip	0065 E A-in	0065 E A-out	Copper	0.430		0.0361	36.1		92%						0.033	exceeds NAL levels
10/26/10	Aquip	East Oct Inle	East Oct Out	Copper	0.310		0.0450	45		85%						0.033	exceeds NAL levels
11/13/09	Aquip	0065 E A-in	0065 E A-out	Lead	0.0127		0.00268	2.68		79%						0.262	
10/26/10	Aquip	East Oct Inle	East Oct Out	Lead	0.015	ND	0.015	15	ND	N/A						0.262	
04/01/09	Aquip	East-Aq IN	East-Aq OUT	Zinc	0.392		0.0253	25.3		94%						0.26	
11/13/09	Aquip	0065 E A-in	0065 E A-out	Zinc	0.507		0.0370	37		93%						0.26	
10/26/10	Aquip	East Oct Inle	East Oct Out	Zinc	0.420		0.0200	20	ND	95%						0.26	
04/01/09	Aquip	East-Aq IN	East-Aq OUT	TSS	20.0		5.0	5000	ND	75%						100	
10/26/10	Aquip	East Oct Inle	East Oct Out	TSS	3.6		1.0	1000	ND	72%						100	
10/26/10	Aquip	East Oct Inle	East Oct Out	O&G	2.4	ND	2.4	2400	ND	N/A						15	
04/20/11																15	

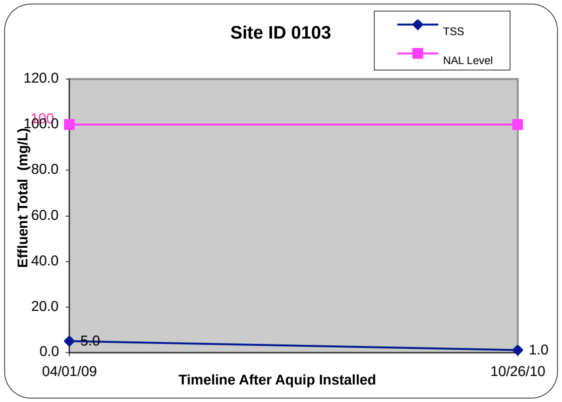
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

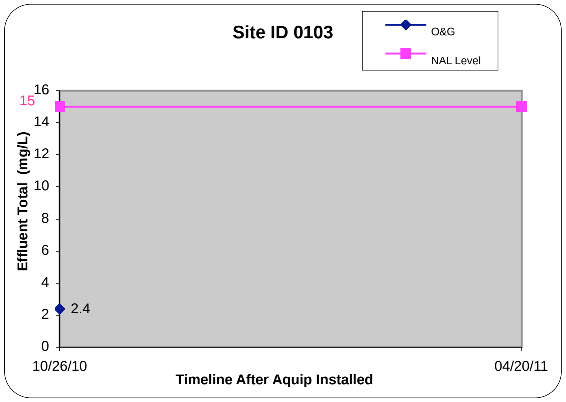






Aquip® Effluent Data
Site ID #0103

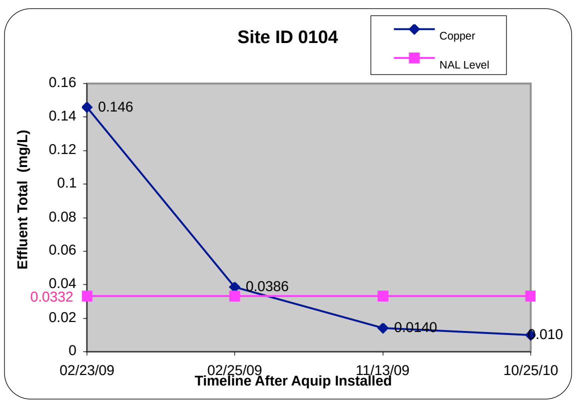


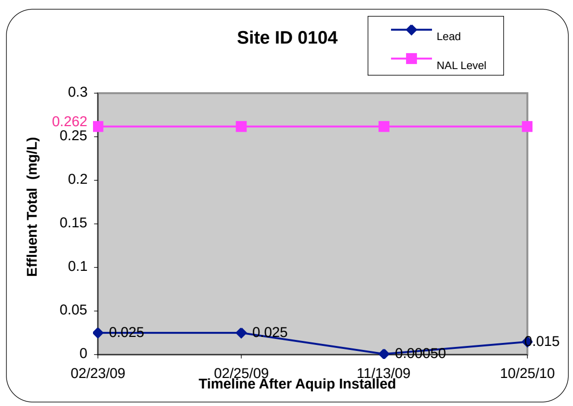


Aquip® Effluent Data
Site ID #0104

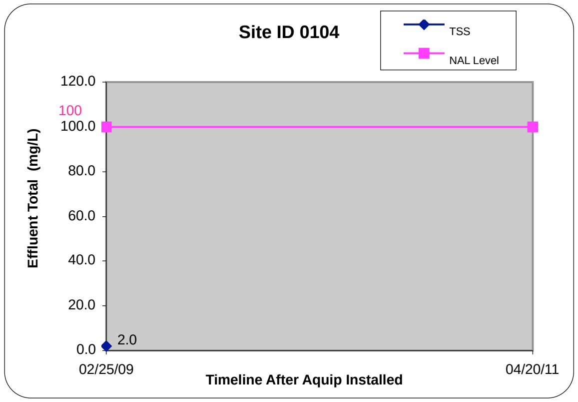
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
02/23/09	Aquip	West Aquip 1	West Aquip 2 ou	Copper	4.47		0.146	146		97%						0.033	exceeds NAL levels
02/25/09	Aquip	West in	West out	Copper	4.78		0.0386	38.6		99%	0.766		0.016		98%	0.033	exceeds NAL levels
11/13/09	Aquip	0065 W A-in	0065 W A-out	Copper	0.485		0.0140	14		97%						0.033	
10/25/10	Aquip	West Oct Inl	West Oct Outlet	Copper	0.440		0.010	10	ND	98%						0.033	
02/23/09	Aquip	West Aquip 1	West Aquip 2 ou	Lead	0.661		0.025	25	ND	96%						0.262	
02/25/09	Aquip	West in	West out	Lead	0.648		0.025	25	ND	96%	0.0735		0.025	ND	66%	0.262	
11/13/09	Aquip	0065 W A-in	0065 W A-out	Lead	0.0299		0.00050	0.5	ND	98%						0.262	
10/25/10	Aquip	West Oct Inl	West Oct Outlet	Lead	0.095		0.015	15	ND	84%						0.262	
02/23/09	Aquip	West Aquip 1	West Aquip 2 ou	Zinc	1.73		0.0404	40.4		98%						0.26	
02/25/09	Aquip	West in	West out	Zinc	1.96		0.0303	30.3		98%	1.32		0.0248		98%	0.26	
11/13/09	Aquip	0065 W A-in	0065 W A-out	Zinc	0.927		0.255	255		72%						0.26	
10/25/10	Aquip	West Oct Inl	West Oct Outlet	Zinc	0.910		0.240	240		74%						0.26	
02/25/09	Aquip	West in	West out	TSS	66		2.0	2000	ND	97%						100	
04/20/11																100	

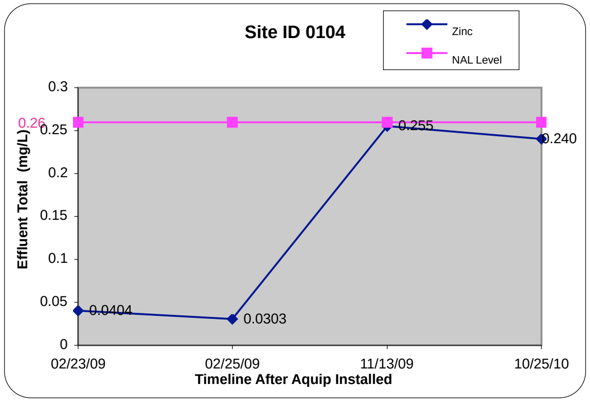
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.





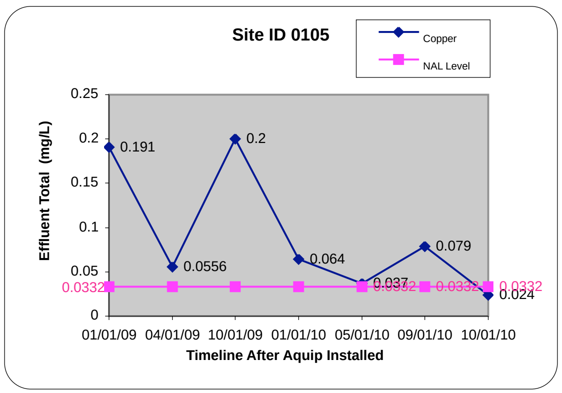
Aquip® Effluent Data
Site ID #0104

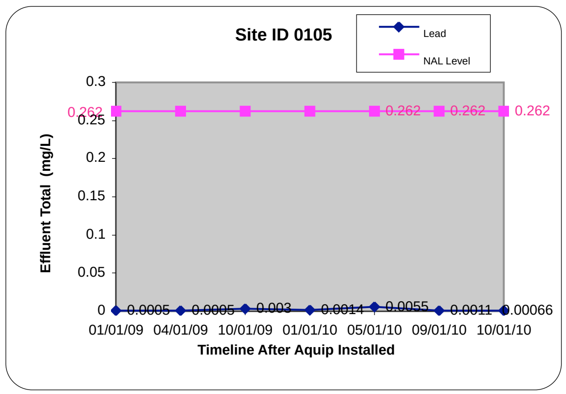


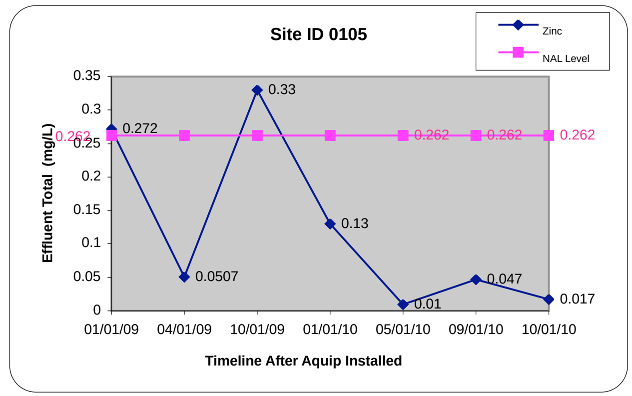


Aquip® Effluent Data
Site ID #0105

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
01/01/09				Copper			0.191	191								0.033	exceeds NAL levels
04/01/09				Copper			0.0556	55.6								0.033	exceeds NAL levels
10/01/09				Copper			0.2	200								0.033	exceeds NAL levels
01/01/10				Copper			0.064	64								0.033	exceeds NAL levels
05/01/10				Copper			0.037	37								0.033	exceeds NAL levels
09/01/10				Copper			0.079	79								0.033	exceeds NAL levels
10/01/10				Copper			0.024	24								0.033	
01/01/09				Lead			0.0005	0.5								0.262	
04/01/09				Lead			0.0005	0.5								0.262	
10/01/09				Lead			0.003	3								0.262	
01/01/10				Lead			0.0014	1.4								0.262	
05/01/10				Lead			0.0055	5.5								0.262	
09/01/10				Lead			0.0011	1.1								0.262	
10/01/10				Lead			0.00066	0.66								0.262	
01/01/09				Zinc			0.272	272								0.26	exceeds NAL levels
04/01/09				Zinc			0.0507	50.7								0.26	
10/01/09				Zinc			0.33	330								0.26	exceeds NAL levels
01/01/10				Zinc			0.13	130								0.26	
05/01/10				Zinc			0.01	10								0.26	
09/01/10				Zinc			0.047	47								0.26	
10/01/10				Zinc			0.017	17								0.26	



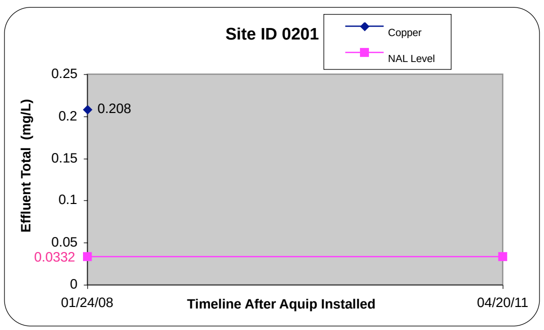


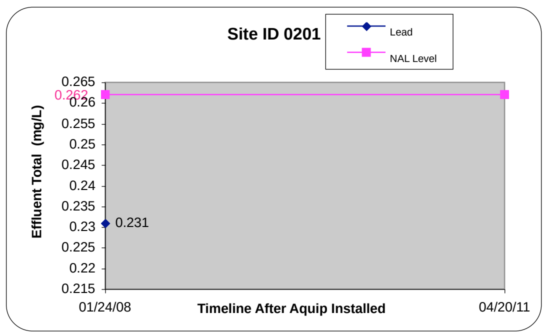


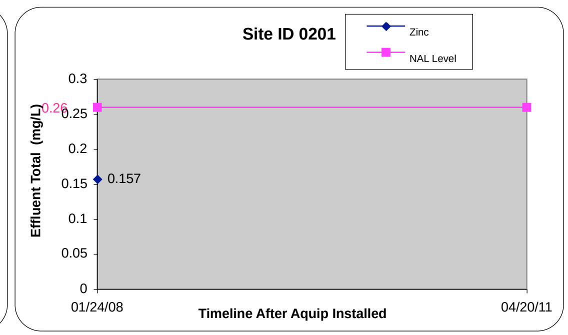
Aquip® Effluent Data
Site ID #0201

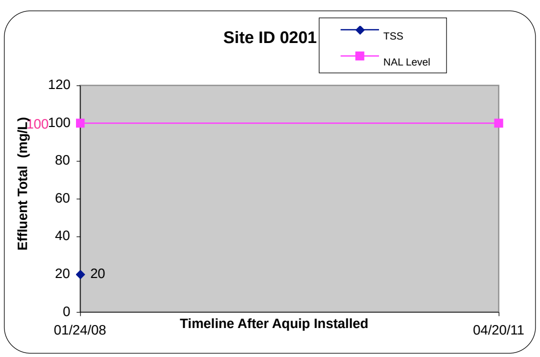
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	Copper	4.47		0.208	208		95%						0.033	exceeds NAL levels
04/20/11																0.033	
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	Lead	5.54		0.231	231		96%						0.262	
04/20/11																0.262	
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	Zinc	3.30		0.157	157		95%						0.26	
04/20/11																0.26	
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	TSS	360		20	20000		94%						100	
04/20/11																100	
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	Phosphoru:	0.234		0.160	160		32%						2	
04/20/11																2	
01/24/08	Aquip	Scrap-0124(	Scrap-012408-C	BOD5	323		111	111000		66%						30	
04/20/11																30	

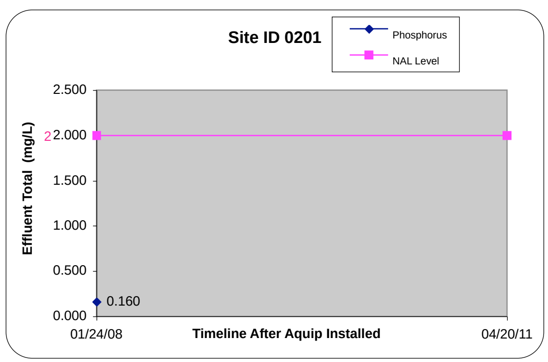
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

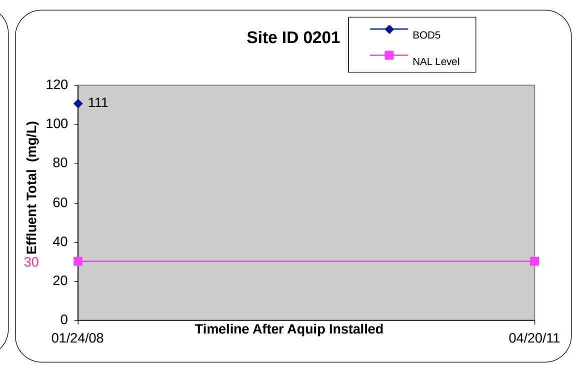












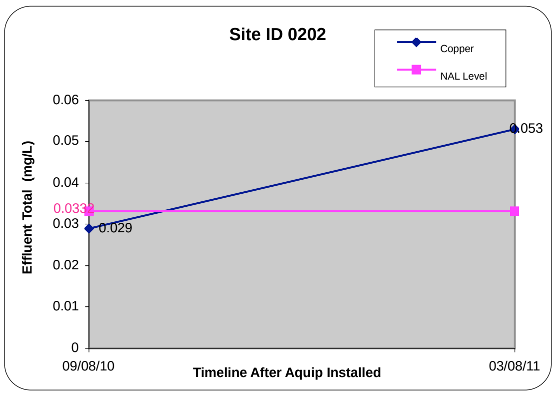
Aquip® Effluent Data
Site ID #0202

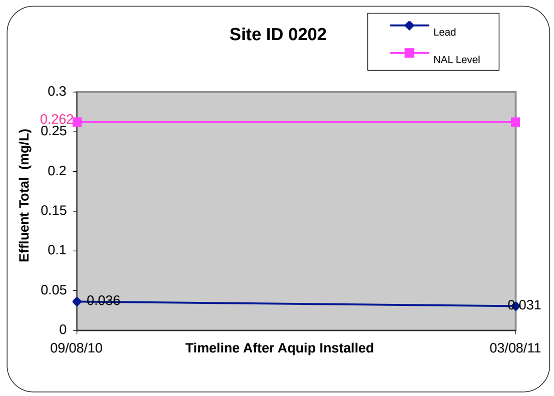
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
09/08/10	Aquip	Influent	Effluent	Copper	0.120		0.029	29		76%	0.030		0.012		60%	0.033	
03/08/11	Aquip	Influent	Effluent	Copper	0.110		0.053	53		52%	0.011		0.0059		46%	0.033	exceeds NAL levels
09/08/10	Aquip	Influent	Effluent	Lead	0.150		0.036	36		76%	0.0076		0.007		8%	0.262	
03/08/11	Aquip	Influent	Effluent	Lead	0.100		0.031	31		69%	0.0014		0.00068		51%	0.262	
09/08/10	Aquip	Influent	Effluent	Zinc	1.100		0.200	200		82%	0.660		0.130		80%	0.26	
03/08/11	Aquip	Influent	Effluent	Zinc	0.660		0.130	130		80%	0.410		0.072		82%	0.26	
09/08/10	Aquip	Influent	Effluent	TSS	72		14	14000		81%						100	
03/08/11	Aquip	Influent	Effluent	TSS	37		11	11000		70%						100	

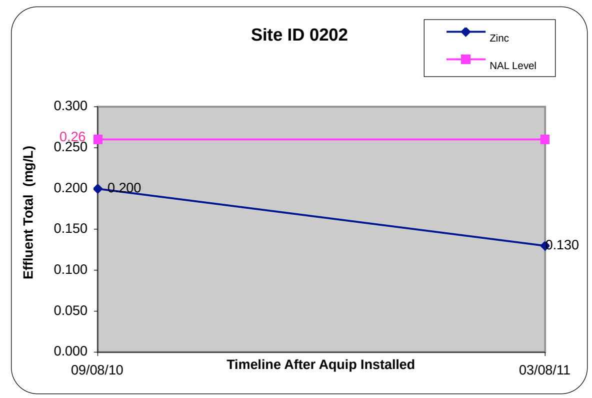
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility

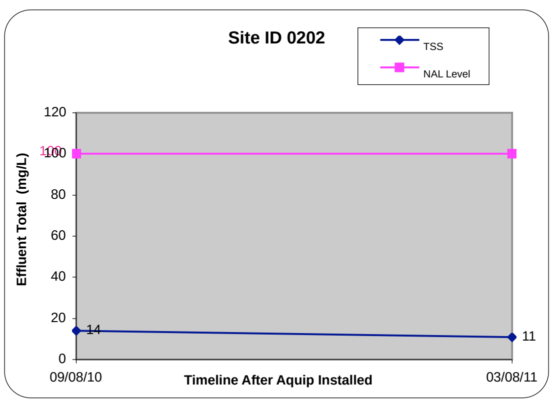
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.

For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.









Aquip® Effluent Data
Site ID #0203

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Aluminum	12.9		2.56	2560		80%						0.75	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Aluminum	5.50		0.805	805		85%						0.75	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Cadmium				0			0.0025	ND	0.0025	ND	N/A	0.005	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd.	Copper	0.83		0.061	61		93%	0.10		0.0038		96%	0.033	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Copper	0.894		0.177	177		80%	0.041		0.034		17%	0.033	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Copper	0.369		0.089	89		76%	0.022		0.02		9%	0.033	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Iron	43.3		7.33	7330		83%	0.558		0.127		77%	1	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Iron	20.1		3.08	3080		85%	0.23		0.125		46%	1	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd.	Lead	0.77		0.036	36		95%	0.010		0.0012		88%	0.262	
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Lead	1.02		0.193	193		81%	0.019		0.010		47%	0.26	
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Lead	0.538		0.089	89		83%	0.017		0.005		71%	0.26	
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Mercury	0.033		0.0028	2.8		92%						0.002	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Mercury	0.0056		0.0015	1.5		73%	0.0004		0.0007		increased	0.002	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd.	Zinc	3.1		0.29	290		91%	0.88		0.039		96%	0.26	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Zinc	4.61		0.660	660		86%	1.11		0.327		71%	0.26	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Zinc	2.49		0.371	371		85%	0.050		0.195		increased	0.26	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd.	TSS	510		36	36000		93%						100	
01/18/10	Aquip	Yard 3 In	Yard 3 Out	TSS	518		85	85000		84%						100	
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	TSS	236		22	22000		91%						100	
01/18/10	Aquip	Yard 3 In	Yard 3 Out	Specific Co	710		770	770000		increased						200	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	Specific Co	917		868	868000		5%						200	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd.	COD	180		180	180000		0%						120	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	COD	710		300	300000		58%						120	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	COD	512		161	161000		69%						120	exceeds NAL levels
01/18/10	Aquip	Yard 3 In	Yard 3 Out	O&G	60		10	10000		83%						15	
01/27/10	Aquip	Pretreatment	Discharge Yd. 3	O&G	14		2.5	2500	ND	82%						15	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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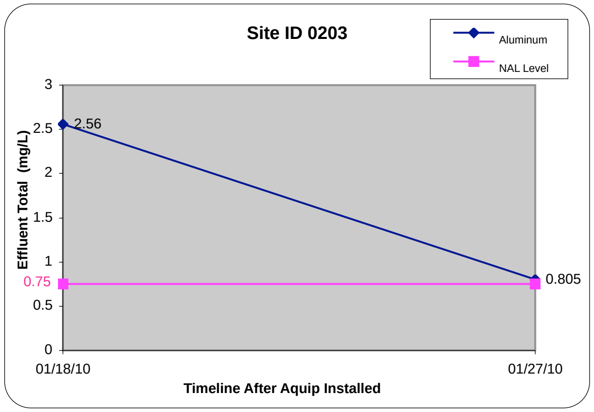
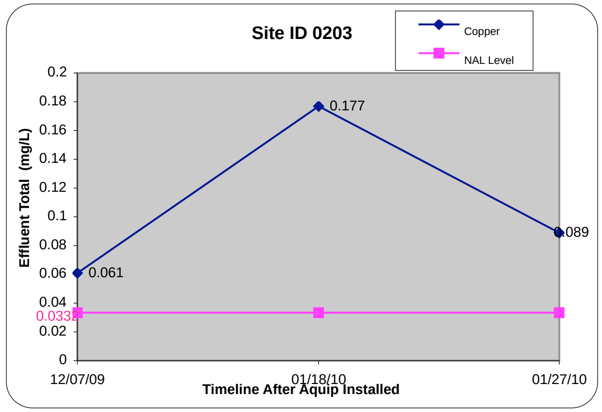
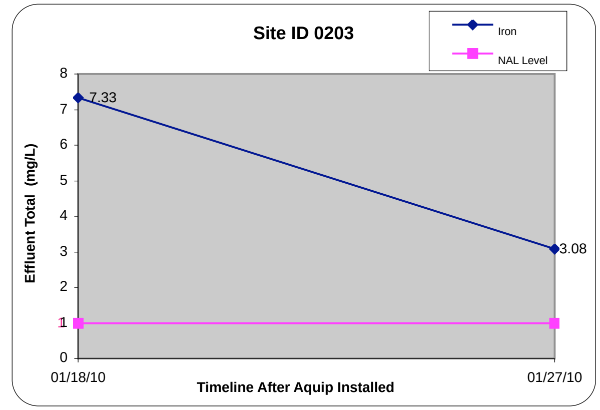
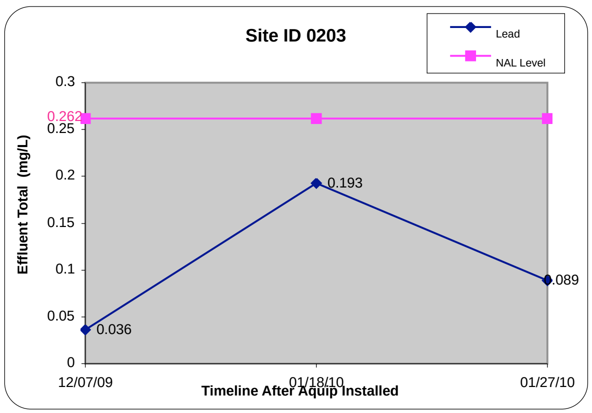
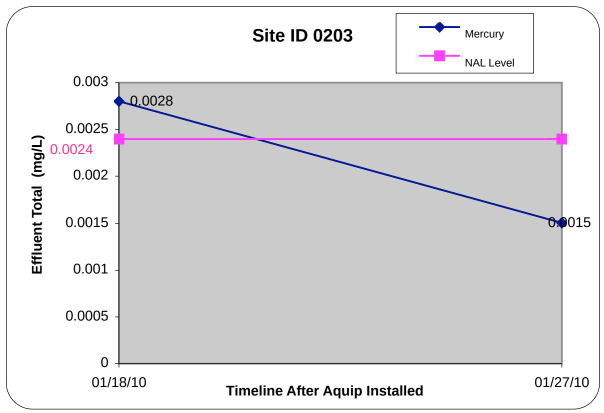
Aquip® Effluent Data
Site ID #0203

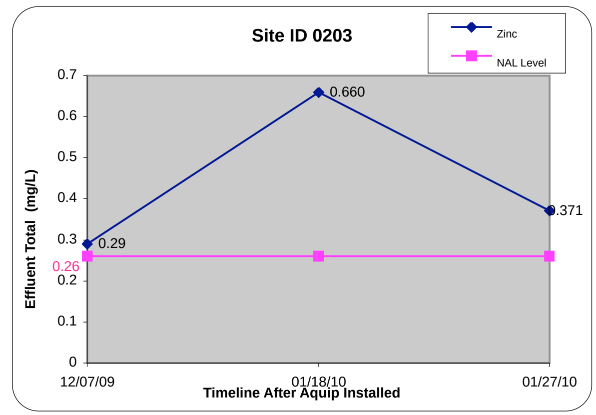




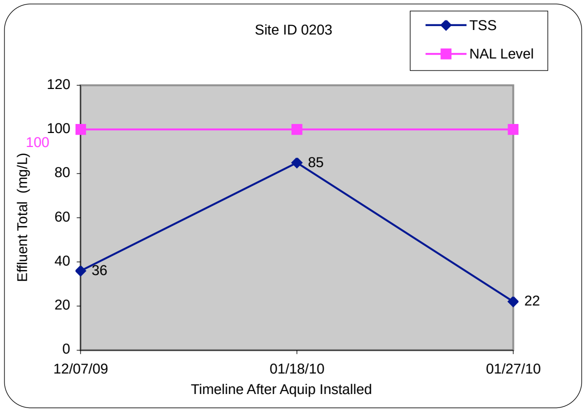


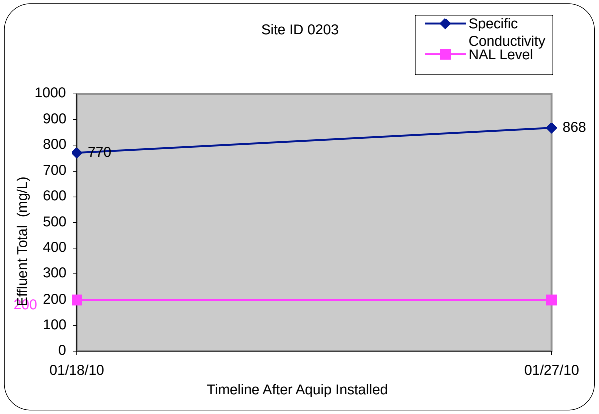


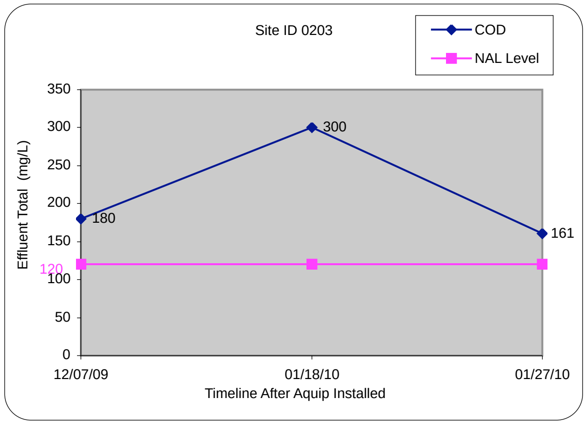


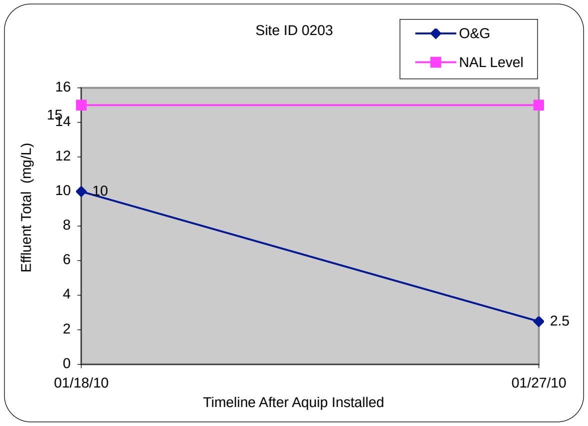


Aquip® Effluent Data
Site ID #0203





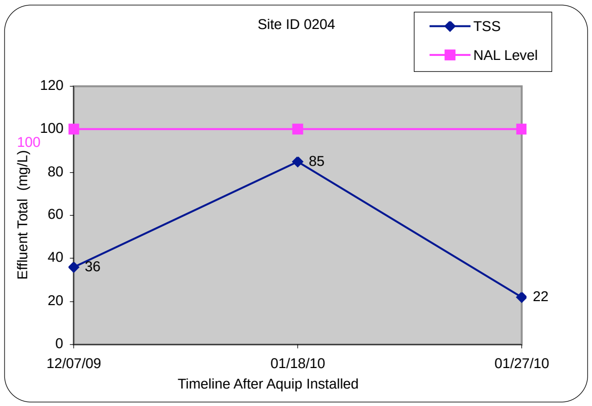


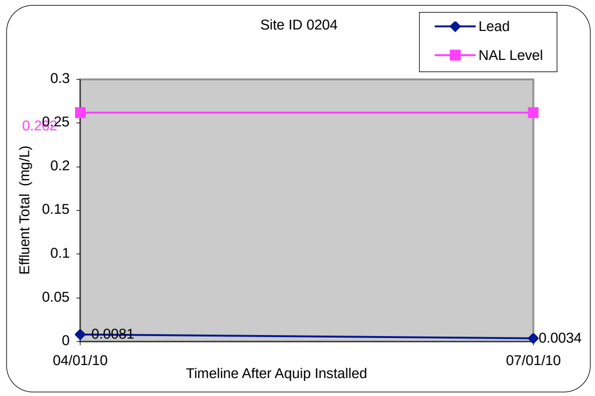


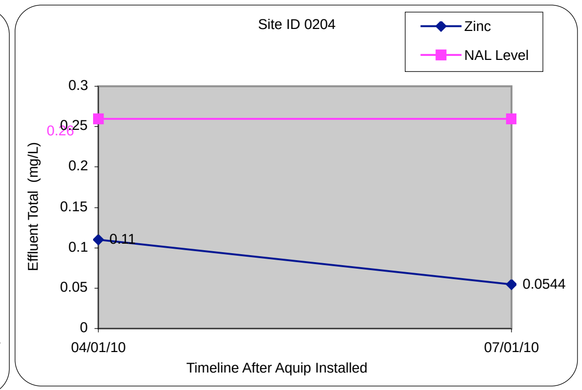
Aquip® Effluent Data

Site ID #0204

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
04/01/10				Copper			0.0101	10.1								0.033	
07/01/10				Copper			0.006	6								0.033	Aquip® Effluent Data
04/01/10				Lead			0.0081	8.1								0.262	
07/01/10				Lead			0.0034	3.4								0.262	
04/01/10				Zinc			0.11	110								0.26	
07/01/10				Zinc			0.0544	54.4								0.26	





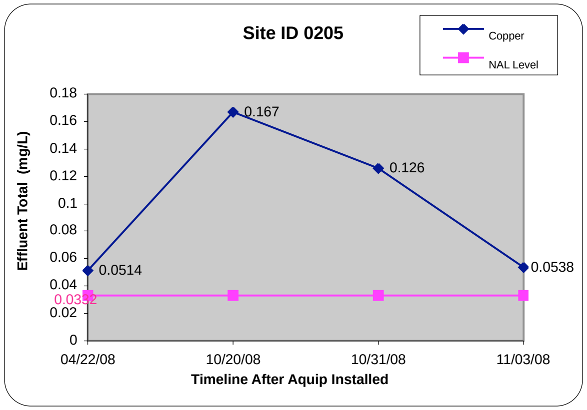


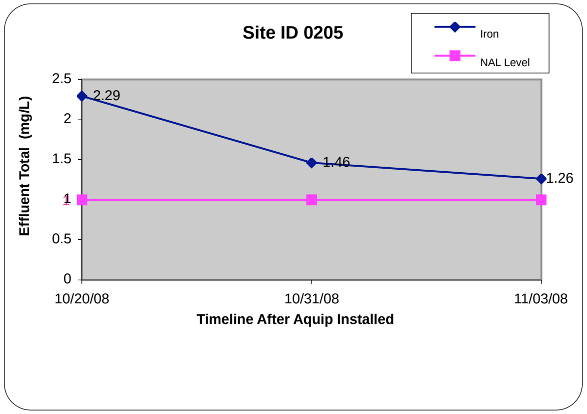
Aquip® Effluent Data
Site ID #0205

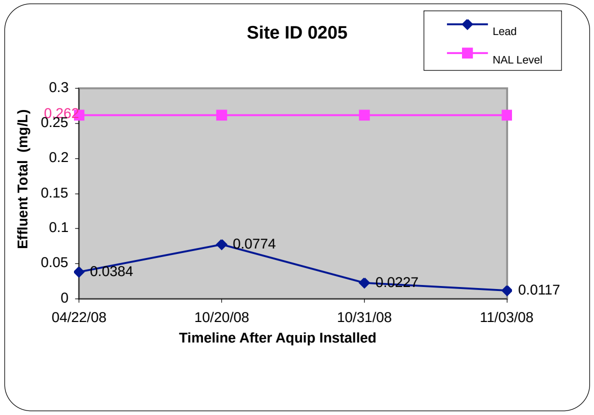
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
04/22/08	Aquip	IN-42208	EFF-42208	Copper	0.734		0.0514	51.4		93%						0.033	exceeds NAL levels
10/20/08	Aquip	INF-102008	EFF-102008	Copper	0.662		0.167	167		75%						0.033	exceeds NAL levels
10/31/08	Aquip	103108-IN	103108-EFF	Copper	0.977		0.126	126		87%	0.0103		0.0588		increased	0.033	exceeds NAL levels
11/03/08	Aquip	INF-110308	EFF-110308	Copper	0.799		0.0538	53.8		93%						0.033	exceeds NAL levels
10/20/08	Aquip	INF-102008	EFF-102008	Iron	4.81		2.29	2290		52%						1	exceeds NAL levels
10/31/08	Aquip	103108-IN	103108-EFF	Iron	32.5		1.46	1460		96%						1	exceeds NAL levels
11/03/08	Aquip	INF-110308	EFF-110308	Iron	17.4		1.26	1260		93%						1	exceeds NAL levels
04/22/08	Aquip	IN-42208	EFF-42208	Lead	0.797		0.0384	38.4		95%						0.262	
10/20/08	Aquip	INF-102008	EFF-102008	Lead	0.647		0.0774	77.4		88%						0.262	
10/31/08	Aquip	103108-IN	103108-EFF	Lead	1.31		0.0227	22.7		98%	0.00268		0.0005	ND	81%	0.262	
11/03/08	Aquip	INF-110308	EFF-110308	Lead	0.873		0.0117	11.7		99%						0.262	
04/22/08	Aquip	IN-42208	EFF-42208	Zinc	1.64		0.113	113		93%						0.26	
10/20/08	Aquip	INF-102008	EFF-102008	Zinc	0.853		0.749	749		12%						0.26	exceeds NAL levels
10/31/08	Aquip	103108-IN	103108-EFF	Zinc	2.79		0.170	170		94%	0.0669		0.164		increased	0.26	
11/03/08	Aquip	INF-110308	EFF-110308	Zinc	2.54		0.153	153		94%						0.26	
04/22/08	Aquip	IN-42208	EFF-42208	TSS	94.4		16.7	16700		82%						100	
10/20/08	Aquip	INF-102008	EFF-102008	TSS	1070		15.0	15000		99%						100	
10/31/08	Aquip	103108-IN	103108-EFF	TSS	667		8.33	8330		99%						100	
11/03/08	Aquip	INF-110308	EFF-110308	TSS	218		6.70	6700		97%						100	
04/22/08	Aquip	IN-42208	EFF-42208	Phosphorus	0.268		0.260	260		3%						2	
10/20/08	Aquip	INF-102008	EFF-102008	Phosphorus	0.348		0.326	326		6%						2	
10/31/08	Aquip	103108-IN	103108-EFF	Phosphorus	1.07		0.305	305		71%						2	
11/03/08	Aquip	INF-110308	EFF-110308	Phosphorus	0.165		0.0929	92.9		44%						2	
04/22/08	Aquip	IN-42208	EFF-42208	BOD5	166		319	319000		increased						30	exceeds NAL levels
10/20/08	Aquip	INF-102008	EFF-102008	BOD5	122		66.2	66200		46%						30	exceeds NAL levels
10/31/08	Aquip	103108-IN	103108-EFF	BOD5	193		34.1	34100		82%						30	exceeds NAL levels
11/03/08	Aquip	INF-110308	EFF-110308	BOD5	37.8		6.86	6860		82%						30	
04/22/08	Aquip	IN-42208	EFF-42208	COD	475		575	575000		increased						120	exceeds NAL levels
04/20/11																120	
04/22/08	Aquip	IN-42208	EFF-42208	O&G	19.4		2.5	2500	ND	87%						15	
10/31/08	Aquip	103108-IN	103108-EFF	O&G	19.7		2.425	2425	ND	88%						15	
11/03/08	Aquip	INF-110308	EFF-110308	O&G	54		2.425	2425		96%						15	

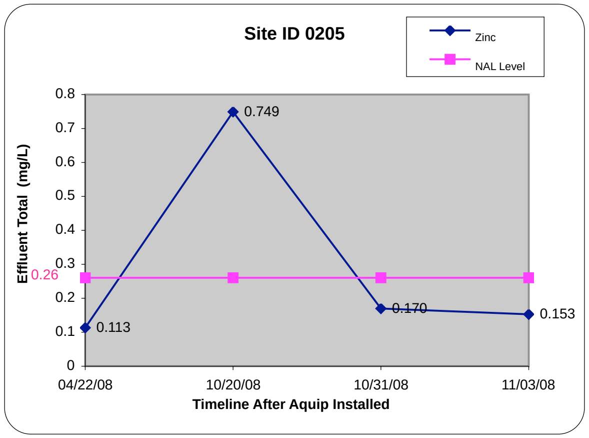
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

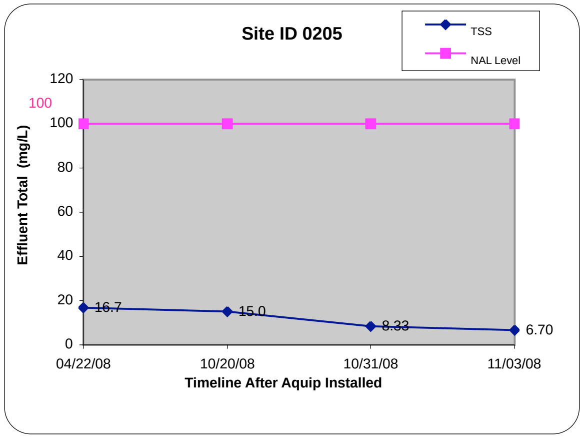
Aquip® Effluent Data
Site ID #0205

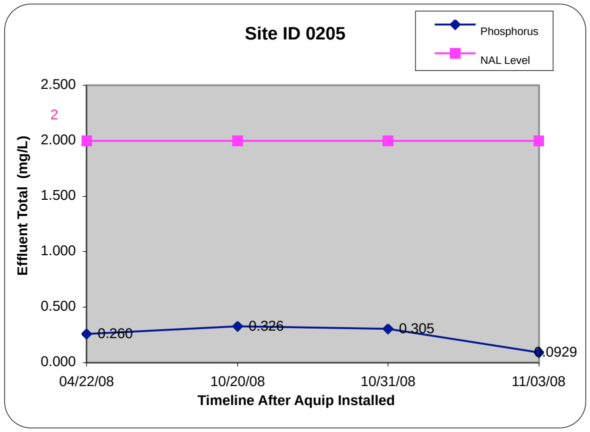




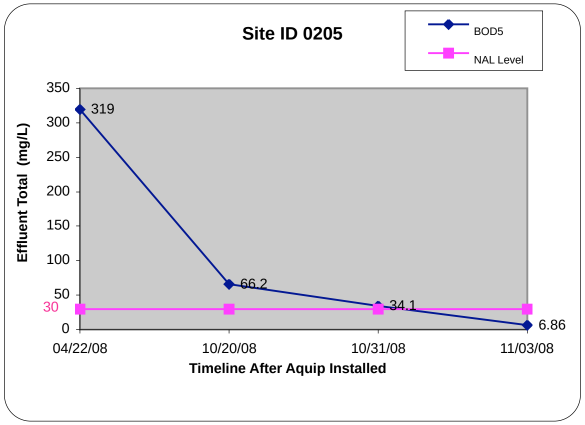


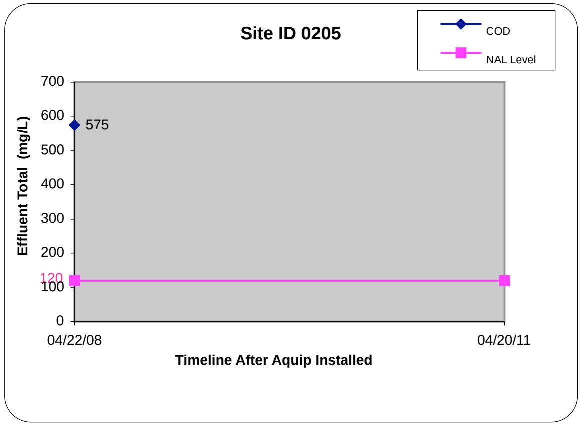


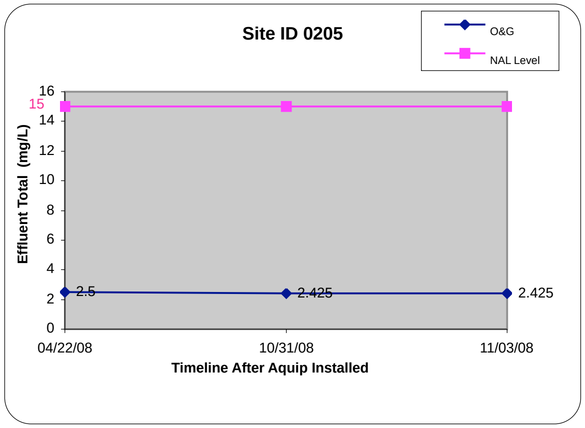




Aquip® Effluent Data
Site ID #0205



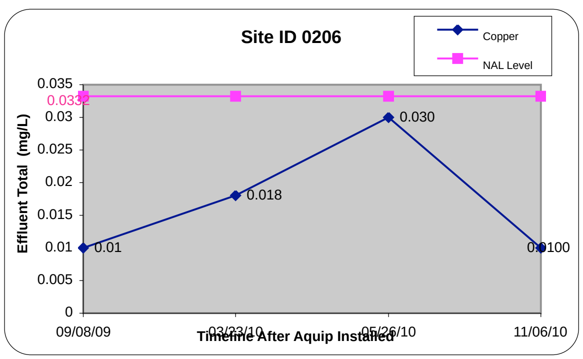


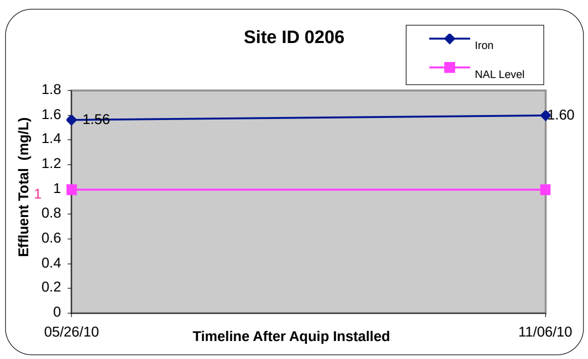


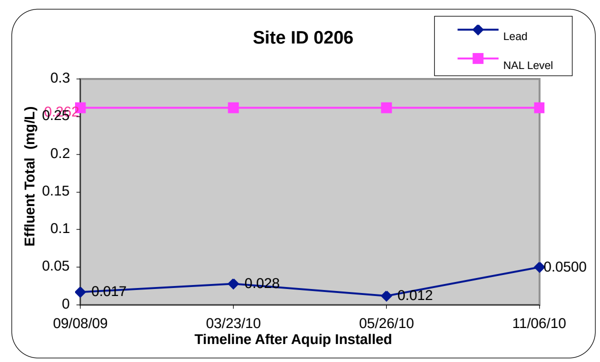
Aquip® Effluent Data
Site ID #0206

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Copper	0.109		0.01	10	ND	91%						0.033	
03/23/10	Aquip	Scrap Yd. Inl	Scrap Yd. Outlet	Copper	0.028		0.018	18		36%						0.033	
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	Copper	0.024		0.030	30		increased	0.038		0.0431		increased	0.033	
11/06/10	Aquip	0091 A-in	0091 A-out	Copper	0.0501		0.0100	10	ND	80%	0.0100	ND	0.0100	ND	N/A	0.033	
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	Iron	2.64		1.56	1560		41%	0.34		0.025	ND	93%	1	exceeds NAL levels
11/06/10	Aquip	0091 A-in	0091 A-out	Iron	6.08		1.60	1600		74%	0.135		0.180		increased	1	exceeds NAL levels
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Lead	0.314		0.017	17		95%						0.262	
03/23/10	Aquip	Scrap Yd. Inl	Scrap Yd. Outlet	Lead	0.041		0.028	28		32%						0.262	
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	Lead	0.012		0.012	12		0%	0.002		0.002		0%	0.262	
11/06/10	Aquip	0091 A-in	0091 A-out	Lead	0.159		0.0500	50	ND	69%	0.0250	ND	0.0250	ND	N/A	0.262	
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	Zinc	1.02		0.46	460		55%						0.26	exceeds NAL levels
03/23/10	Aquip	Scrap Yd. Inl	Scrap Yd. Outlet	Zinc	0.67		0.46	460		31%						0.26	exceeds NAL levels
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	Zinc	0.51		0.45	450		12%	0.060		0.13		increased	0.26	exceeds NAL levels
11/06/10	Aquip	0091 A-in	0091 A-out	Zinc	0.962		0.354	354		63%	0.335		0.246		27%	0.26	exceeds NAL levels
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	Magnesium	9.25		10.5	10500		increased	9.01		10.2		increased	0.064	exceeds NAL levels
04/20/11																0.064	
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	TDS	767		682	682000		11%						100	exceeds NAL levels
04/20/11																100	
05/26/10	Aquip	Outlet - Scra	Inlet - Scrap Yd.	COD	200		80	80000		60%						120	
04/20/11																120	
09/08/09	Aquip	Scrap Yd #1	Scrap Yd #2	O&G	5.4		2.6	2600		52%						15	
03/23/10	Aquip	Scrap Yd. Inl	Scrap Yd. Outlet	O&G	1.7		0.6	600		65%						15	

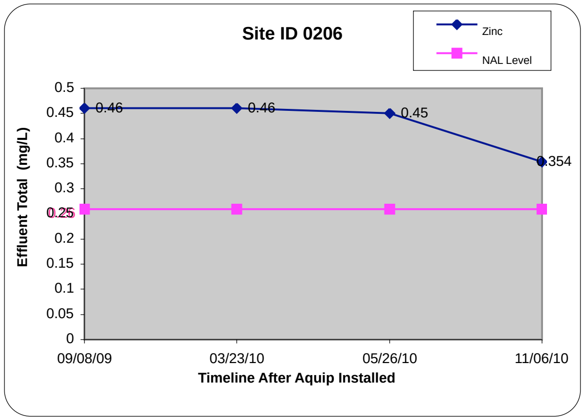
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.
1 Dissolved concentration reported to be higher than total concentrations

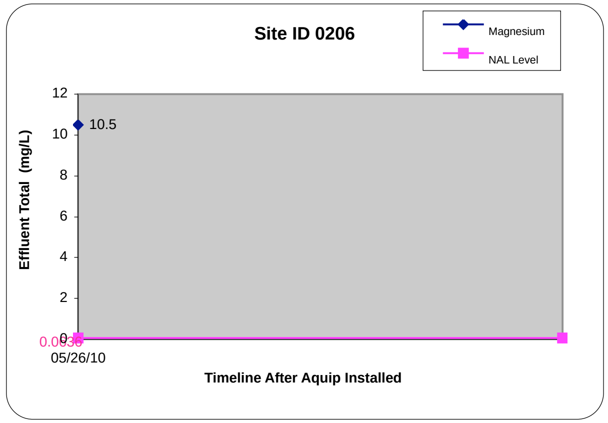


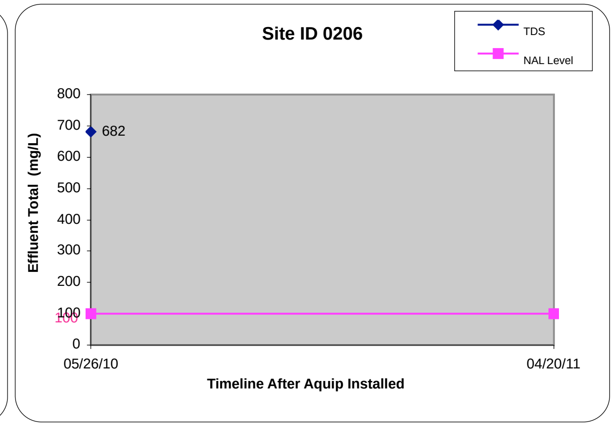


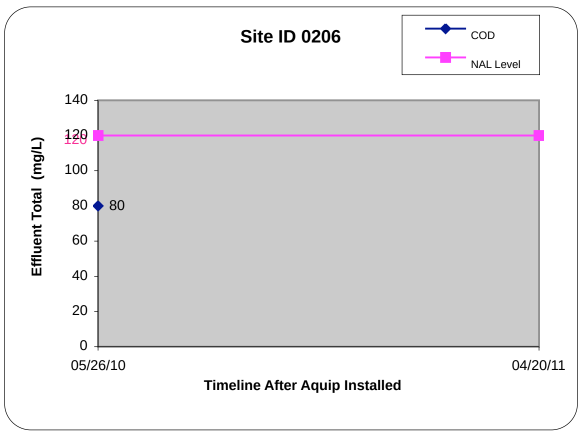


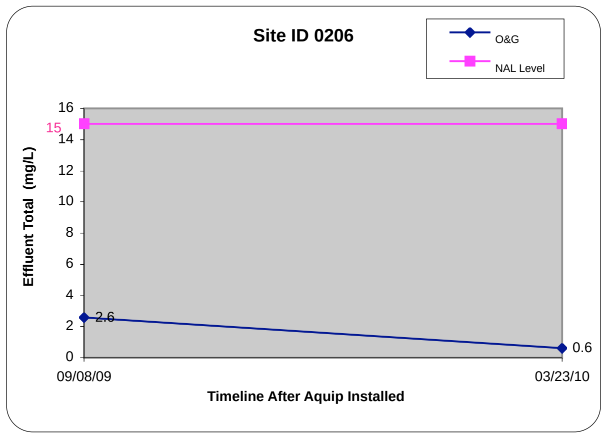
Aquip® Effluent Data
Site ID #0206







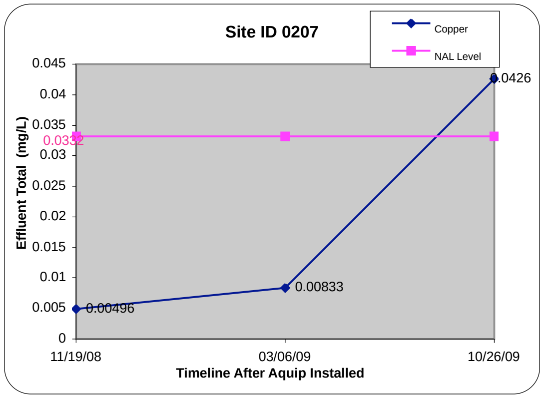


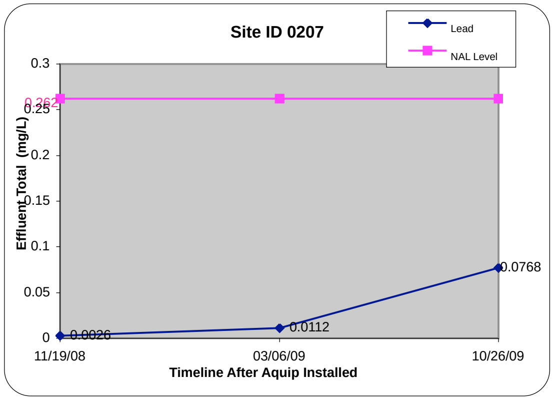


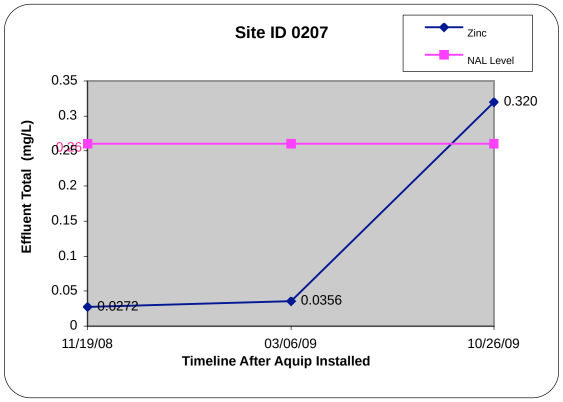
Aquip® Effluent Data
Site ID #0207

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
11/19/08	Aquip	Inlet #1	Outfall #1	Copper	0.0248		0.00496	4.96		80%						0.033	
03/06/09	Aquip	Influent	Sample Point 1	Copper	0.0319		0.00833	8.33		74%						0.033	
10/26/09	Aquip	Influent	Sample Point #1	Copper	0.117		0.0426	42.6		64%						0.033	exceeds NAL levels
11/19/08	Aquip	Inlet #1	Outfall #1	Lead	0.0303		0.0026	2.6		91%						0.262	
03/06/09	Aquip	Influent	Sample Point 1	Lead	0.0364		0.0112	11.2		69%						0.262	
10/26/09	Aquip	Influent	Sample Point #1	Lead	0.362		0.0768	76.8		79%						0.262	
11/19/08	Aquip	Inlet #1	Outfall #1	Zinc	0.2250		0.0272	27.2		88%						0.26	
03/06/09	Aquip	Influent	Sample Point 1	Zinc	0.175		0.0356	35.6		80%						0.26	
10/26/09	Aquip	Influent	Sample Point #1	Zinc	2.00		0.320	320		84%						0.26	exceeds NAL levels
11/19/08	Aquip	Inlet #1	Outfall #1	TSS	4.00		10.0	10000		increased						100	
03/06/09	Aquip	Influent	Sample Point 1	TSS	20.0		5.0	5000	ND	75%						100	
10/26/09	Aquip	Influent	Sample Point #1	TSS	80		20	20000		75%						100	
11/19/08	Aquip	Inlet #1	Outfall #1	Phosphorus	0.089		0.0961	96.1		increased						2	
03/06/09	Aquip	Influent	Sample Point 1	Phosphorus	0.0883		0.0783	78.3		11%						2	
10/26/09	Aquip	Influent	Sample Point #1	Phosphorus	0.268		0.153	153		43%						2	
11/19/08	Aquip	Inlet #1	Outfall #1	BOD5	5.42		6.23	6230		increased						30	
03/06/09	Aquip	Influent	Sample Point 1	BOD5	6.0		2	2000	ND	N/A						30	
10/26/09	Aquip	Influent	Sample Point #1	BOD5	86.2		43.0	43000		50%						30	exceeds NAL levels
11/19/08	Aquip	Inlet #1	Outfall #1	O&G	2.41	ND	2.50	2500	ND	N/A						15	
03/06/09	Aquip	Influent	Sample Point 1	O&G	2.43	ND	2.45	2450	ND	N/A						15	
10/26/09	Aquip	Influent	Sample Point #1	O&G	2.41	ND	2.41	2410	ND	N/A						15	

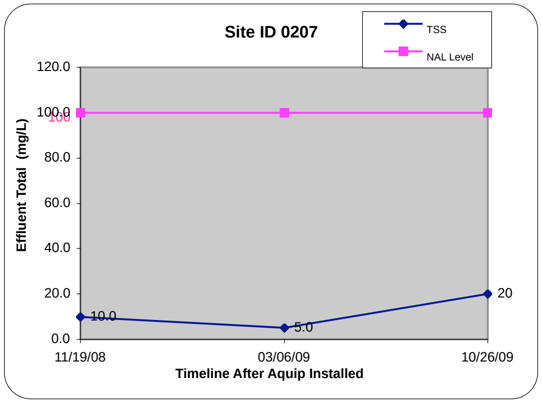
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.
1 Contested value now reported as the correct value after further laboratory analysis.

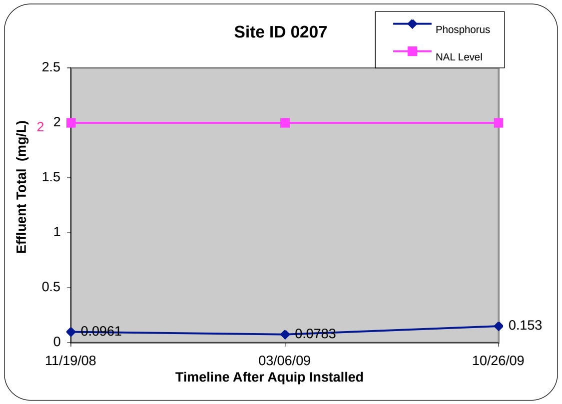


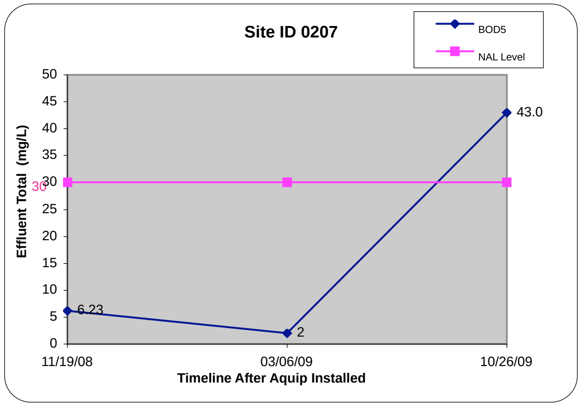


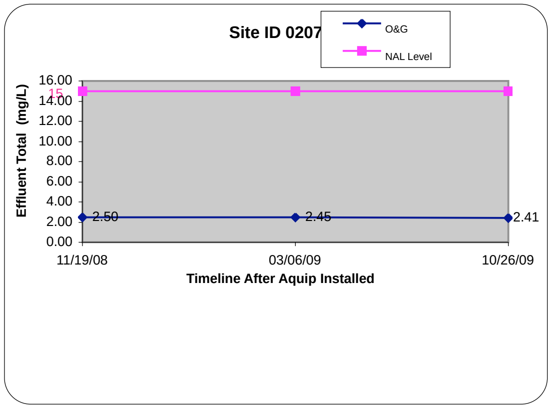


Aquip® Effluent Data
Site ID #0207





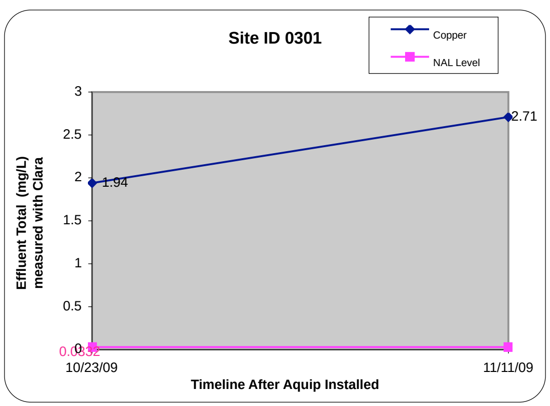


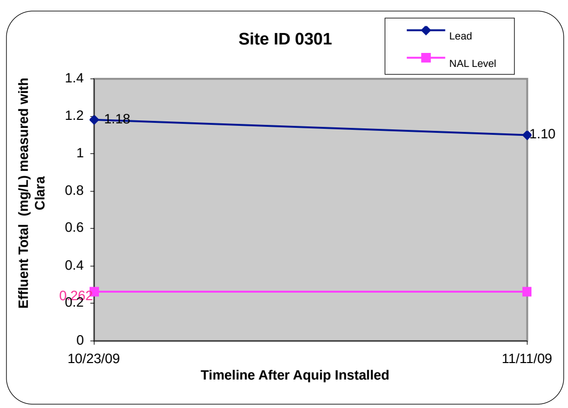


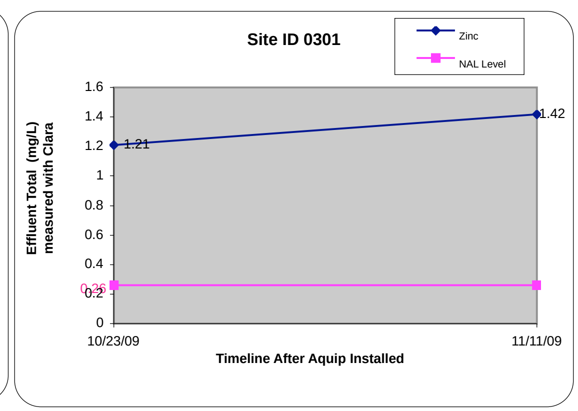
Aquip® Effluent Data
Site ID #0301

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
10/23/09	Clara	0075-C-IN	0075-C-OUT	Copper	2.75		1.94	1940		29%	0.232		0.204		12%	0.033	exceeds NAL levels
11/11/09	Clara	0075 C-in	0075 C-out	Copper	6.87		2.71	2710		61%						0.033	exceeds NAL levels
10/23/09	Clara	0075-C-IN	0075-C-OUT	Lead	1.59		1.18	1180		26%						0.262	exceeds NAL levels
11/11/09	Clara	0075 C-in	0075 C-out	Lead	2.66		1.10	1100		59%						0.262	exceeds NAL levels
10/23/09	Clara	0075-C-IN	0075-C-OUT	Zinc	1.78		1.21	1210		32%	0.272		0.259		5%	0.26	exceeds NAL levels
11/11/09	Clara	0075 C-in	0075 C-out	Zinc	2.82		1.42	1420		50%						0.26	exceeds NAL levels
10/23/09	Clara	0075-C-IN	0075-C-OUT	TSS	325		325	325000		0%						100	exceeds NAL levels
04/20/11																100	
10/23/09	Clara	0075-C-IN	0075-C-OUT	O&G	2.45	ND	2.45	2450	ND	N/A						15	
10/23/09																15	
02/06/09	Aquip	Inlet	Outfall	Copper	0.345		0.0315	31.5		91%	0.145		0.0050	ND	97%	0.033	
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Copper	1.94		0.342	342		82%	0.204		0.0443		78%	0.033	exceeds NAL levels
11/11/09	Aquip	0075 C-out	0075 A-in	Copper	2.71		0.0651	65.1		98%						0.033	exceeds NAL levels
02/26/10	Aquip	Inlet 1-3	Outlet	Copper	0.223		0.0240	24		89%						0.033	
02/06/09	Aquip	Inlet	Outfall	Lead	0.0916		0.0143	14.3		84%						0.262	
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Lead	1.18		0.281	281		76%						0.262	exceeds NAL levels
11/11/09	Aquip	0075 C-out	0075 A-in	Lead	1.10		0.0446	44.6		96%						0.262	
02/06/09	Aquip	Inlet	Outfall	Zinc	0.194		0.0649	64.9		67%						0.26	
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	Zinc	1.21		0.227	227		81%	0.259		0.0687		73%	0.26	
11/11/09	Aquip	0075 C-out	0075 A-in	Zinc	1.42		0.0478	47.8		97%						0.26	
02/06/09	Aquip	Inlet	Outfall	TSS	30.0		10.0	10000		67%						100	
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	TSS	325		30.0	30000		91%						100	
02/06/09	Aquip	Inlet	Outfall	O&G	14.5		3.53	3530		76%						15	
10/23/09	Aquip	0075-C-OUT	0075-A-OUT	O&G	2.45	ND	2.45	2450	ND	N/A						15	

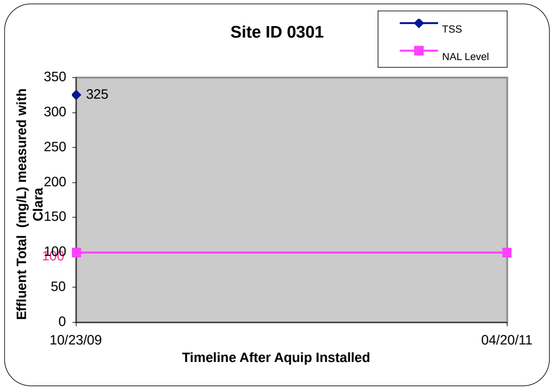
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

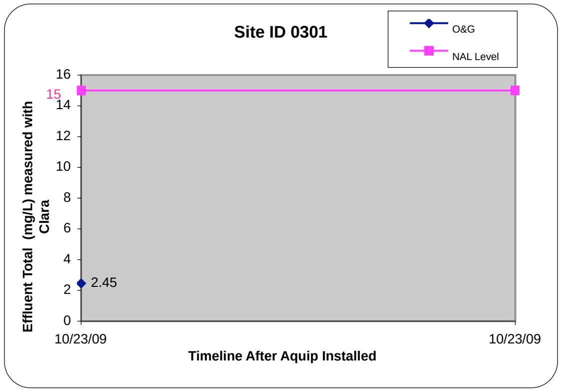


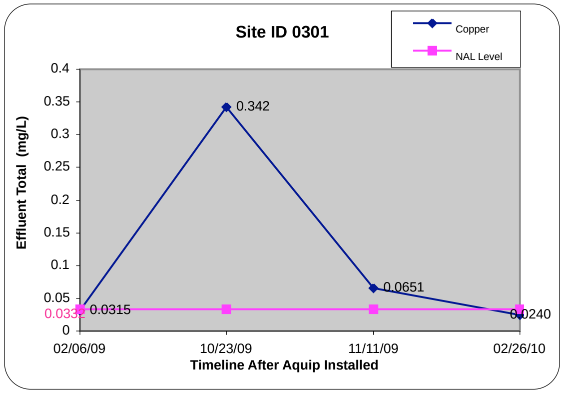


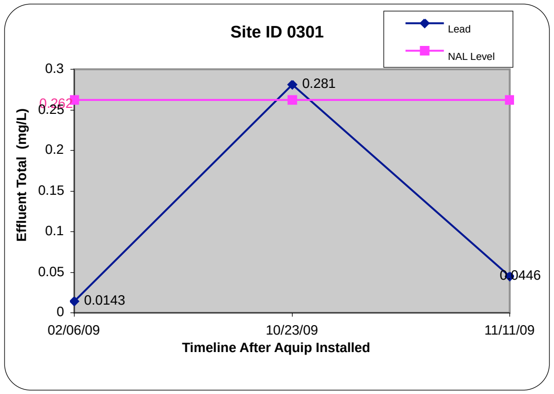


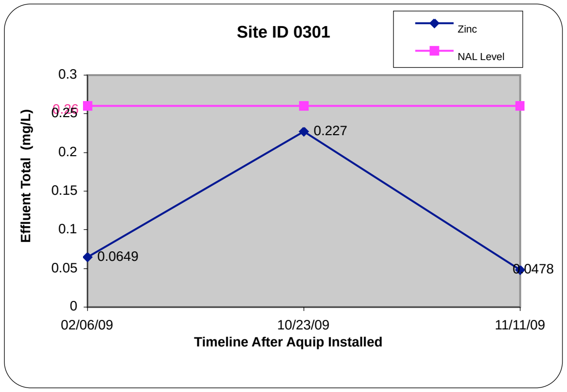
Aquip® Effluent Data
Site ID #0301

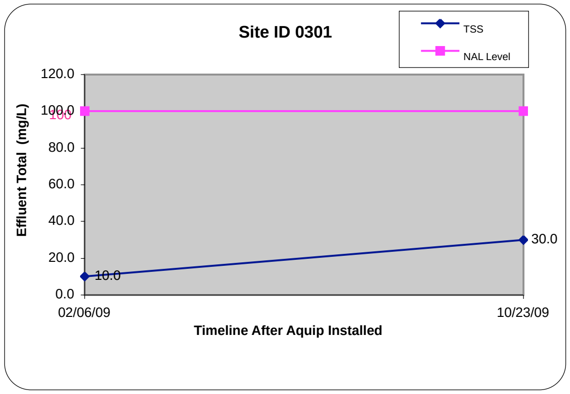




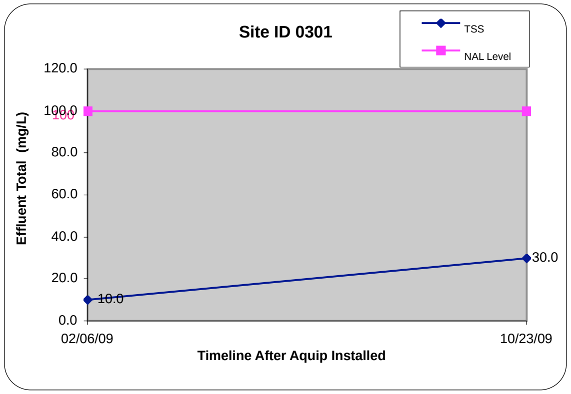








Aquip® Effluent Data
Site ID #0301



Aquip® Effluent Data
Site ID #0302

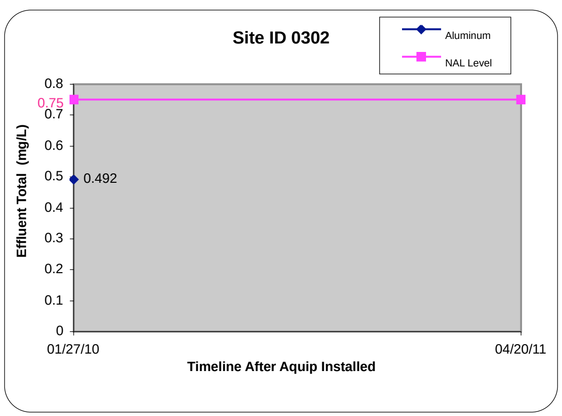
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Aluminum	1.19		0.492	492		59%	0.05		0.015	ND	70%	0.75	
04/20/11																0.75	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Arsenic				0			0.016		0.005		69%	0.169	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Copper	1.50		0.096	96		94%	0.140		0.020		86%	0.033	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Copper	0.221		0.079	79		64%	0.089		0.012		87%	0.033	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Iron	3.61		1.93	1930		47%	0.56		0.298		47%	1	exceeds NAL levels
04/20/11																1	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Lead	2.00		0.180	180		91%	0.016		0.0078		51%	0.262	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Lead	0.301		0.135	135		55%	0.055		0.011		80%	0.262	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Mercury	0.0006		0.0004	0.4		33%						0.262	
04/20/11																0.262	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Nickel				0			0.034		0.07		increased	1.02	
04/20/11																1.02	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Zinc	1.90		0.140	140		93%	0.010	ND	0.058		increased	0.26	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Zinc	0.340		0.127	127		63%	0.147		0.0231		84%	0.26	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	TSS	420		90	90000		79%						100	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	TSS	37		16	16000		57%						100	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	Specific Co	223		247	247000		increased						200	exceeds NAL levels
04/20/11																200	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	COD	48		52	52000		increased						120	
01/27/10	Aquip	Pretreatment	Discharge Yd 1	COD	78		35	35000		55%						120	

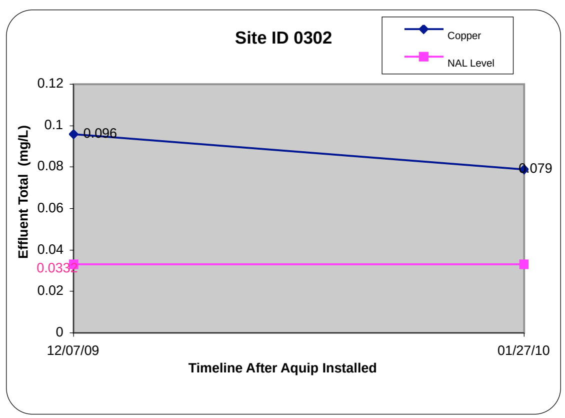
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility

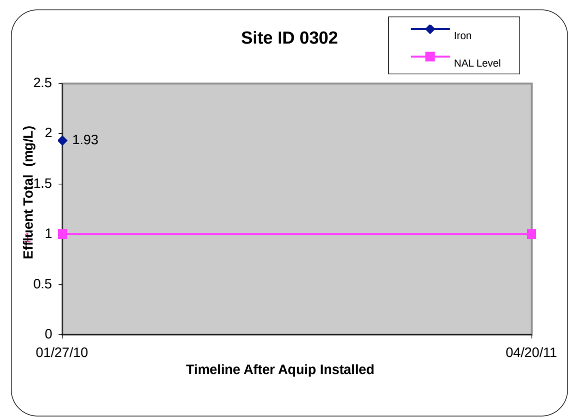
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.

For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

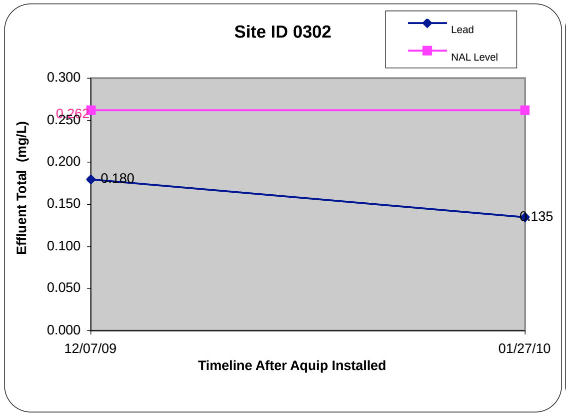
1 Contested value now reported as the correct value after further laboratory analysis.

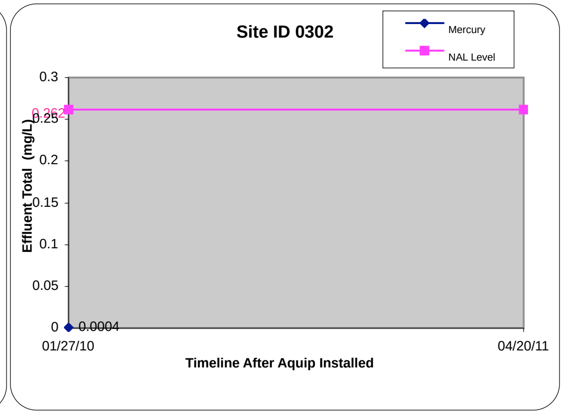


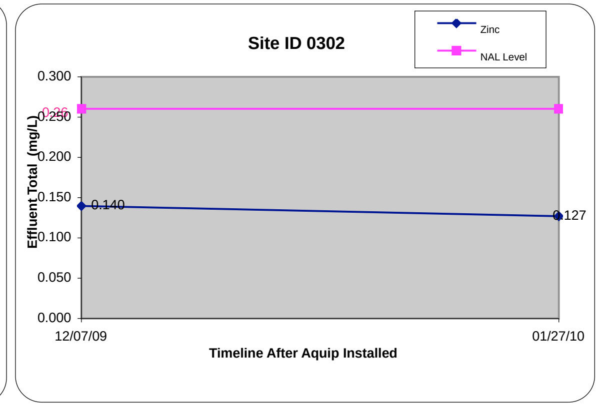


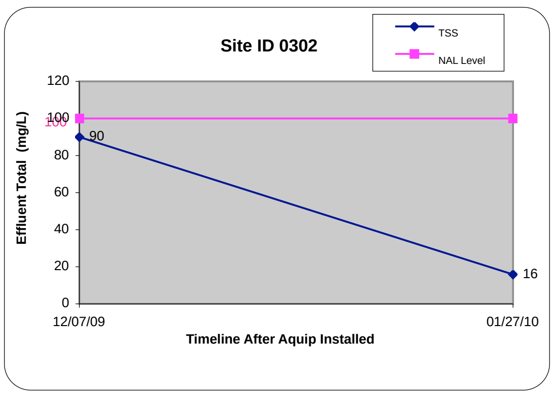


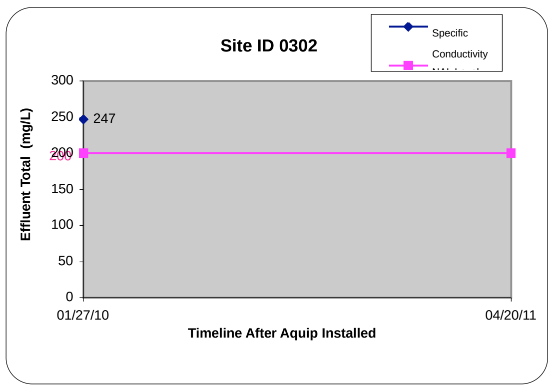
Aquip® Effluent Data
Site ID #0302

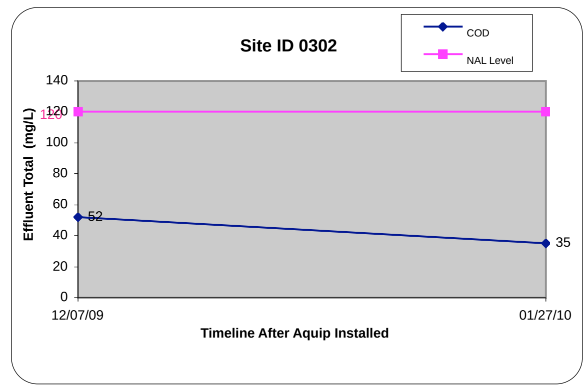












Aquip® Effluent Data
Site ID #0303

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Aluminum	8.86		0.817	817		91%	0.076		0.015	ND	80%	0.75	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Aluminum	3.01		1.31	1310		56%	0.041		0.058		increased	0.75	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Copper	5.2		0.58	580		89%	0.70		0.094		87%	0.033	exceeds NAL levels
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Copper	3.17		0.280	280		91%	0.467		0.139		70%	0.033	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Copper	1.17		0.478	478		59%	0.183		0.347		increased	0.033	exceeds NAL levels
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Iron	14.1		1.11	1110		92%	0.061		0.047		23%	1	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Iron	5.12		2.12	2120		59%	0.107		0.115		increased	1	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Lead	3.3		0.38	380		88%	0.046		0.0090		80%	0.262	exceeds NAL levels
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Lead	2.00		0.130	130		94%	0.056		0.026		54%	0.262	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Lead	0.756		0.327	327		57%	0.040		0.047		increased	0.262	exceeds NAL levels
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Mercury	0.0016		0.0002	0.2	ND	88%						0.002	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Mercury	0.0008		0.0007	0.7		13%	0.0006		0.0006		0%	0.002	
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Nickel				0			0.024		0.010		58%	1.02	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Nickel				0			0.017		0.034		increased	1.02	
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	Zinc	3.6		0.39	390		89%	0.041		0.14		increased	0.26	exceeds NAL levels
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Zinc	1.72		0.141	141		92%	0.368		0.074		80%	0.26	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Zinc	0.952		0.342	342		64%	0.166		0.325		increased	0.26	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	TSS	220		73	73000		67%						100	
01/18/10	Aquip	Yard 2 In	Yard 2 Out	TSS	208		21	21000		90%						100	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	TSS	69		52	52000		25%						100	
01/18/10	Aquip	Yard 2 In	Yard 2 Out	Specific Co	240		380	380000		increased						200	exceeds NAL levels
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	Specific Co	278		300	300000		increased						200	exceeds NAL levels
12/07/09	Aquip	C-OUT 0096	A-OUT 0096 Yd	COD	85		87	87000		increased						120	
01/18/10	Aquip	Yard 2 In	Yard 2 Out	COD	250		80	80000		68%						120	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	COD	150		87	87000		42%						120	
01/18/10	Aquip	Yard 2 In	Yard 2 Out	O&G	2.5	ND	2.5	2500	ND	N/A						15	
01/27/10	Aquip	Pretreatment	Discharge Yd. 2	O&G	10		2.5	2500	ND	75%						15	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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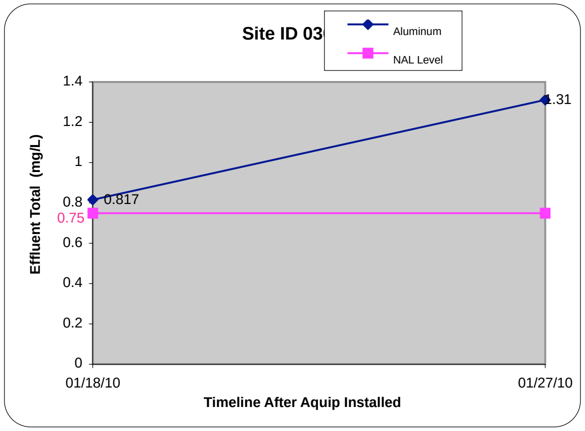
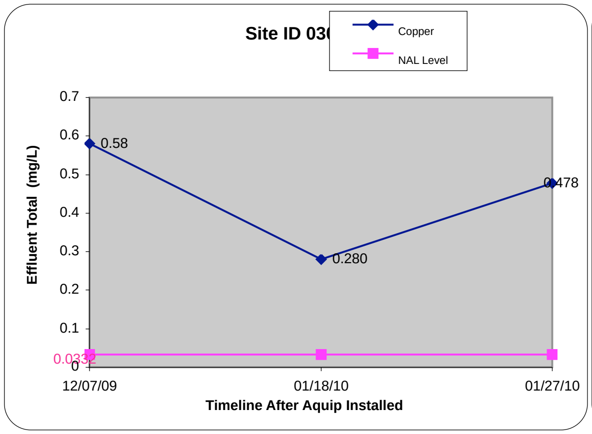
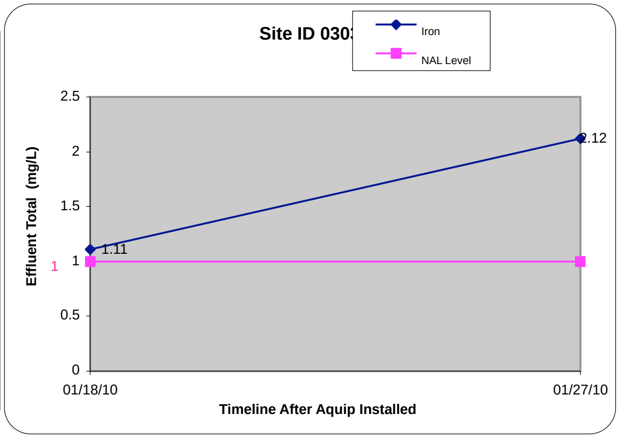
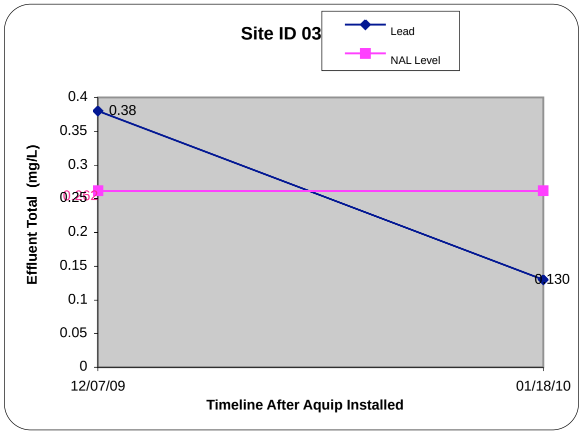
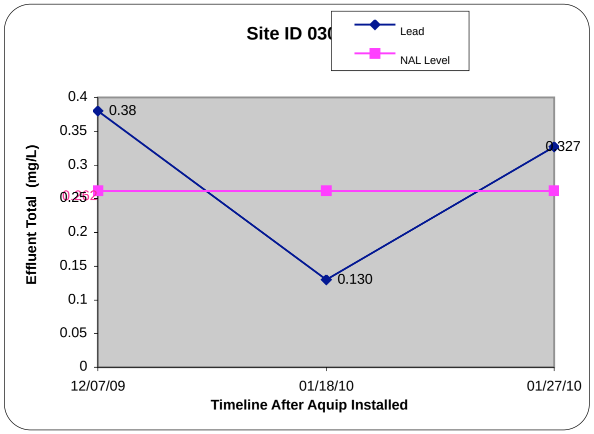
Aquip® Effluent Data
Site ID #0303

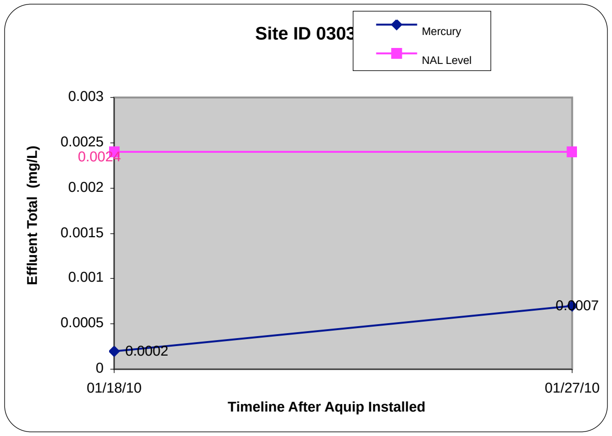




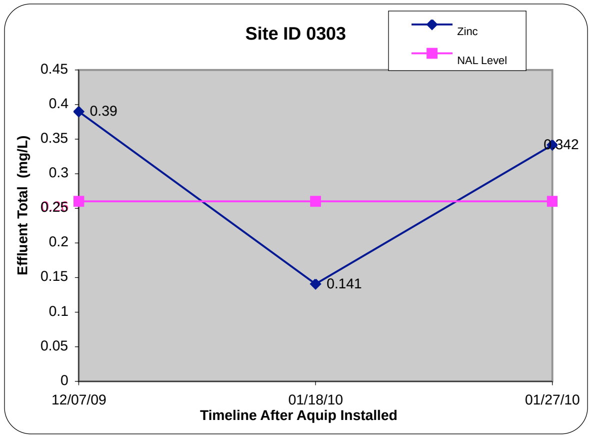


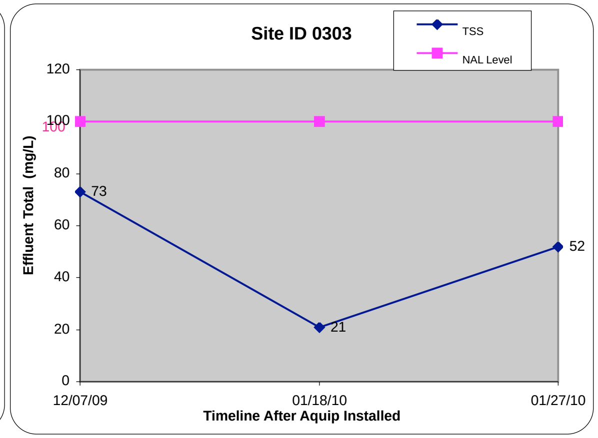


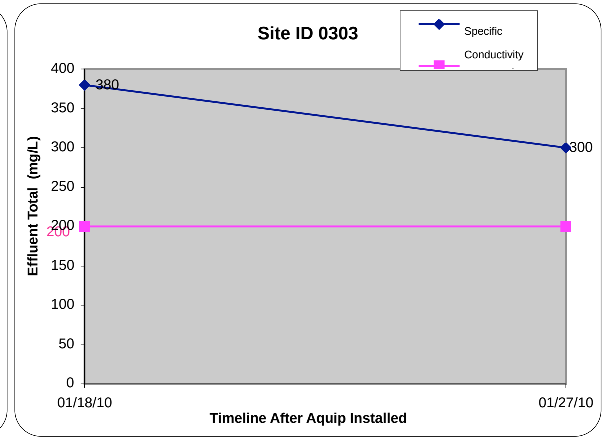


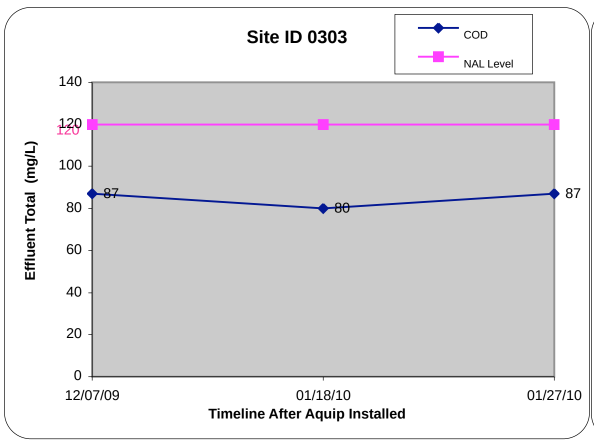


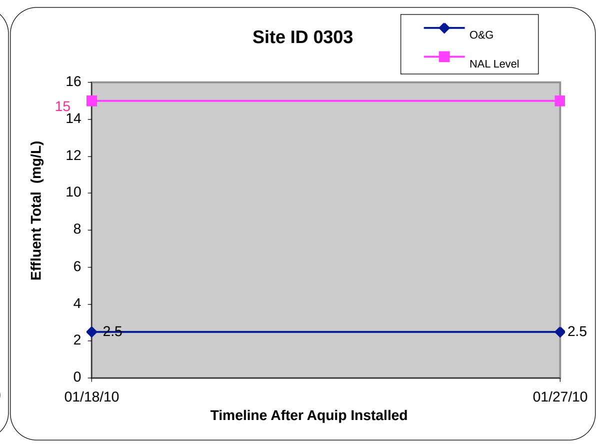
Aquip® Effluent Data
Site ID #0303







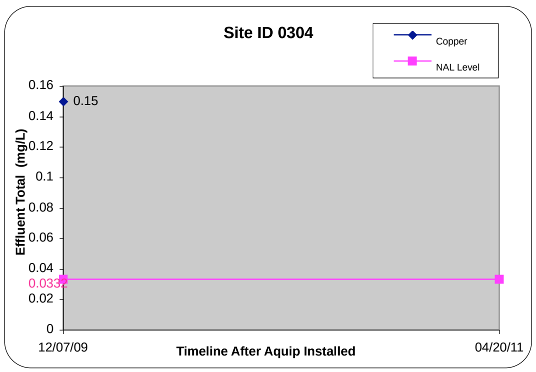


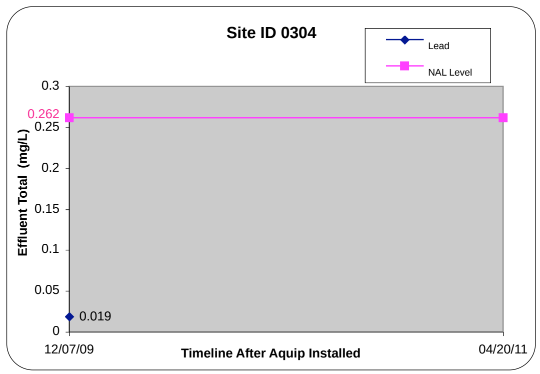


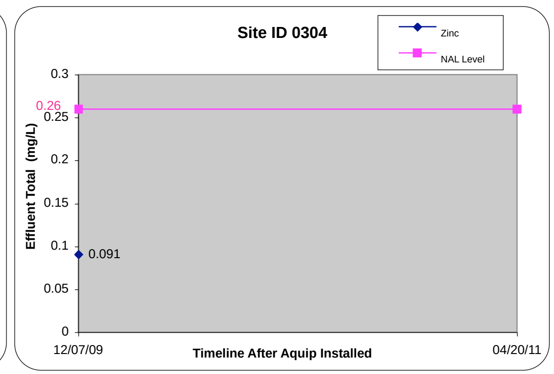
Aquip® Effluent Data
Site ID #0304

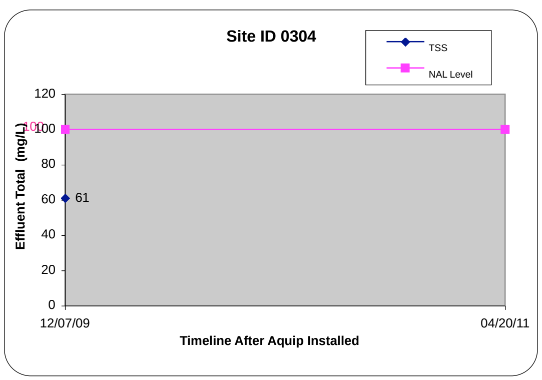
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Copper	1.7		0.15	150		91%	0.39		0.12		69%	0.033	exceeds NAL levels
04/20/11																0.033	
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Lead	0.40		0.019	19		95%	0.0093		0.0044		53%	0.262	
04/20/11																0.262	
12/07/09	Aquip	A-IN 0097	A-OUT 0097	Zinc	2.5		0.091	91		96%	0.042		0.020	ND	52%	0.26	
04/20/11																0.26	
12/07/09	Aquip	A-IN 0097	A-OUT 0097	TSS	2900		61	61000		98%						100	
04/20/11																100	
12/07/09	Aquip	A-IN 0097	A-OUT 0097	COD	240		230	230000		4%						120	exceeds NAL levels
04/20/11																120	

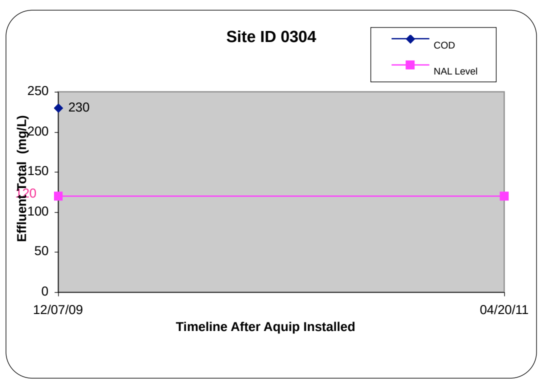
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.











Aquip® Effluent Data
Site ID #0305

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Copper	0.150		0.10	100		33%	0.14		0.086		39%	0.033	exceeds NAL levels
04/10/11																0.033	
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Lead	0.022		0.011	11		50%	0.0092		0.0072		22%	0.262	
04/10/11																0.262	
12/07/09	Aquip	A-IN 0098	A-OUT 0098	Zinc	0.400		0.12	120		70%	0.21		0.096		54%	0.26	
04/10/11																0.26	
12/07/09	Aquip	A-IN 0098	A-OUT 0098	TSS	130		36	36000		72%						100	
04/10/11																100	
12/07/09	Aquip	A-IN 0098	A-OUT 0098	COD	530		500	500000		6%						120	exceeds NAL levels
04/10/11																120	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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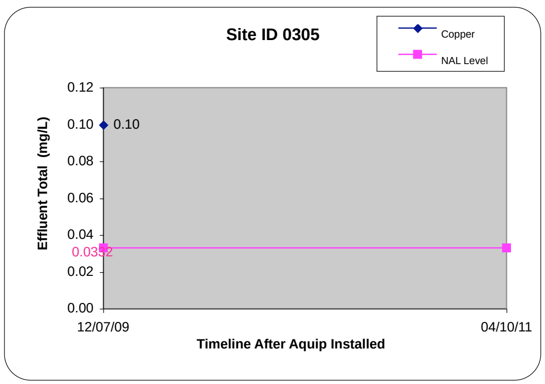

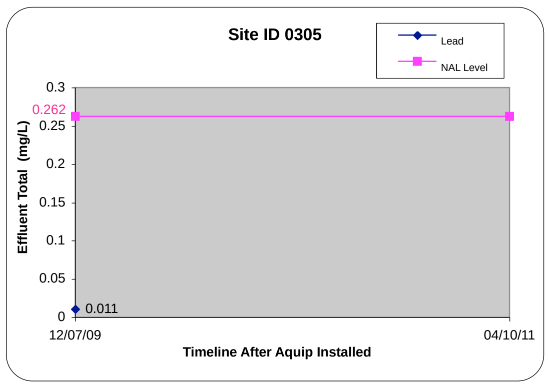

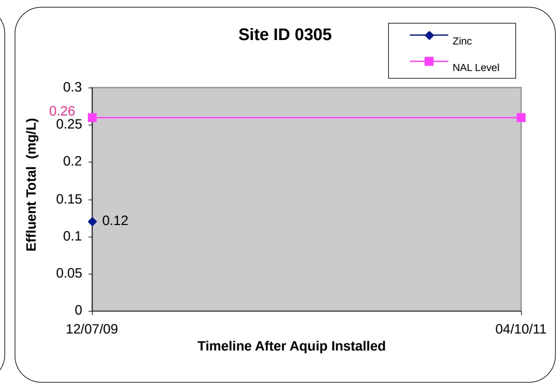

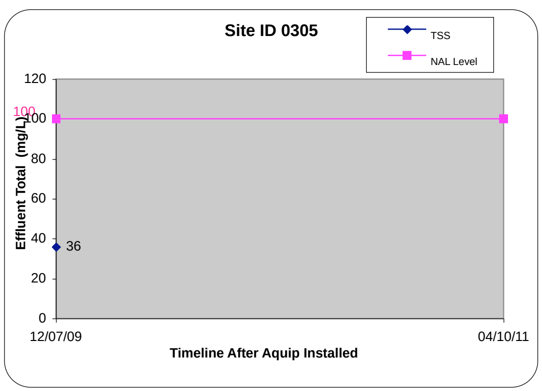

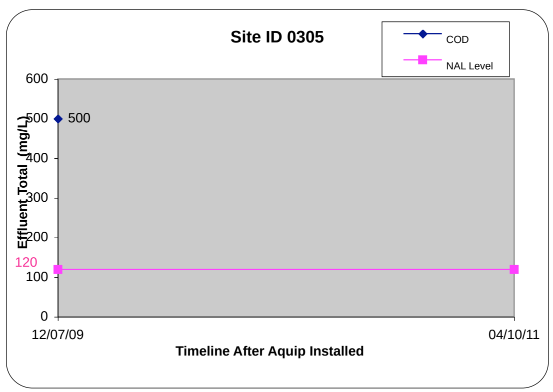

Aquip® Effluent Data
Site ID #0401

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
10/06/08	Aquip	Filter Inlet	Filter Outlet	Aluminum	21.4		0.125	125	ND	99%	0.125	ND	0.125	ND	N/A	0.75	
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Aluminum	25.1		0.125	125	ND	99%						0.75	
10/15/07	Aquip	Filter Inlet	Filter Outlet	Copper	0.013	ND	0.046	46		increased						0.033	exceeds NAL levels
10/06/08	Aquip	Filter Inlet	Filter Outlet	Copper	0.182		0.005	5	ND	97%	0.0131		0.0101		23%	0.033	
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Copper	0.204		0.005	5	ND	98%						0.033	
10/06/08	Aquip	Filter Inlet	Filter Outlet	Iron	48.6		0.238	238		99%	0.075	ND	0.075	ND	N/A	1	
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Iron	63.6		0.22	220		99%						1	
10/15/07	Aquip	Filter Inlet	Filter Outlet	Lead	0.031		0.01	10	ND	84%						0.262	
12/17/07	Aquip	Filter Inlet	Filter Outlet	Lead	0.0148		0.005	5	ND	66%						0.262	
10/15/07	Aquip	Filter Inlet	Filter Outlet	Zinc	24.9		0.158	158		99%						0.26	
12/17/07	Aquip	Filter Inlet	Filter Outlet	Zinc	2.30		1.42	1420		38%						0.26	exceeds NAL levels
10/06/08	Aquip	Filter Inlet	Filter Outlet	Zinc	26.9		5.22	5220		81%	9.68		5.43		44%	0.26	exceeds NAL levels
10/06/08	Aquip	Filter Inlet #3	Filter Outlet #3	Zinc	28.8		4.9	4900		83%						0.26	exceeds NAL levels
10/06/08	Aquip	Filter Inlet	Filter Outlet	TSS	480		2	2000	ND	99%						100	
04/10/11																100	
10/15/07	Aquip	Filter Inlet	Filter Outlet	O&G	3.0	ND	2.5	2500	ND	N/A						15	
04/10/11																15	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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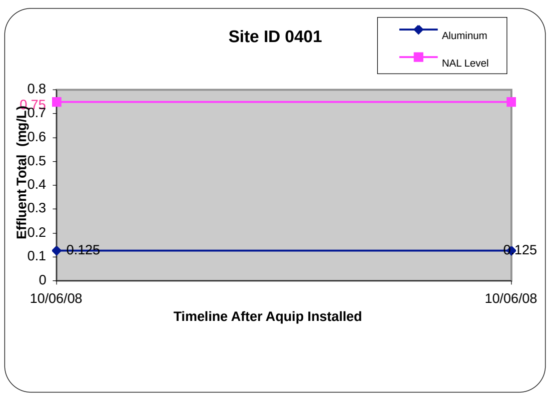
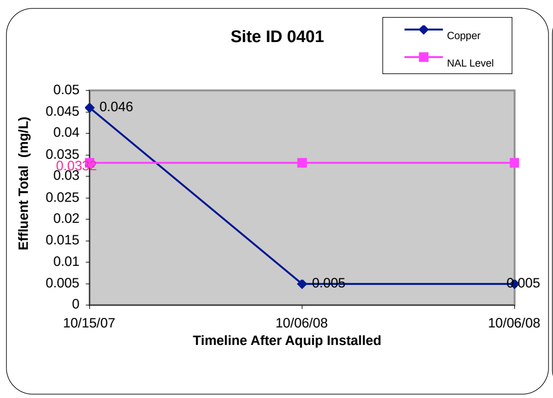
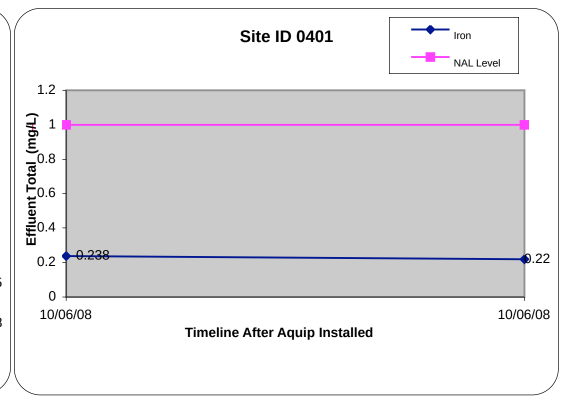
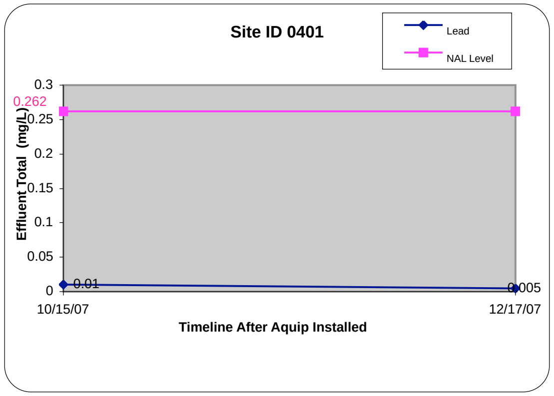
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

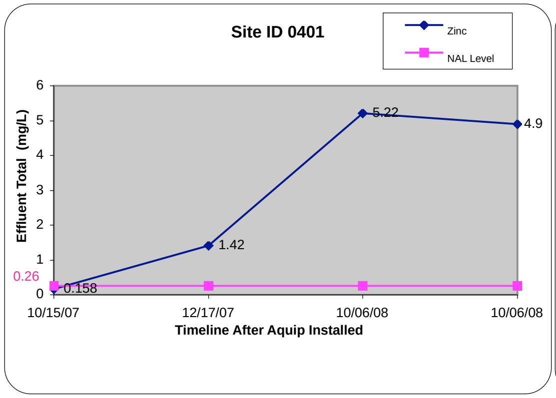


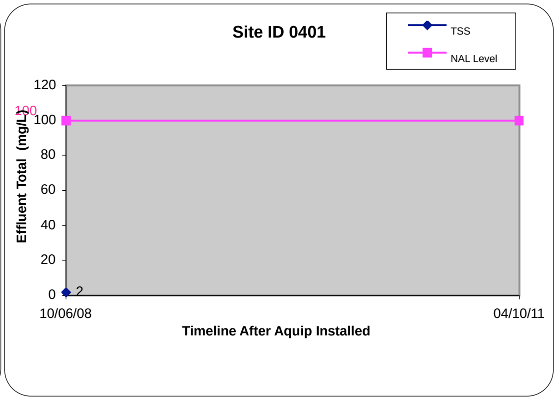


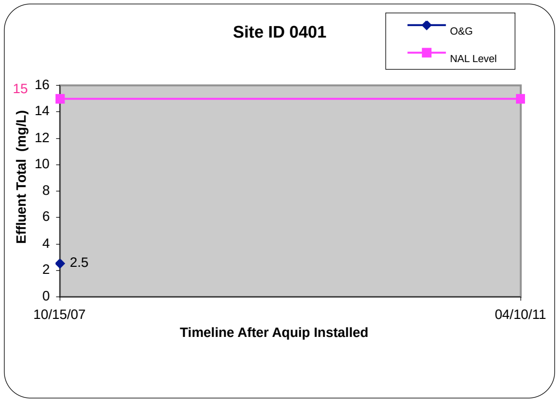


Aquip® Effluent Data
Site ID #0401









Aquip® Influent and Effluent Data
Site ID #0402

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
05/06/09	Aquip	INLET AQUI	OUTLET AQUIP	Zinc	18.6		9.07	9070		51%						0.26	exceeds NAL levels
05/06/09	Purus Metals	OUTLE	OUTLET IX	Zinc	9.07		0.0369	36.9		99%						0.26	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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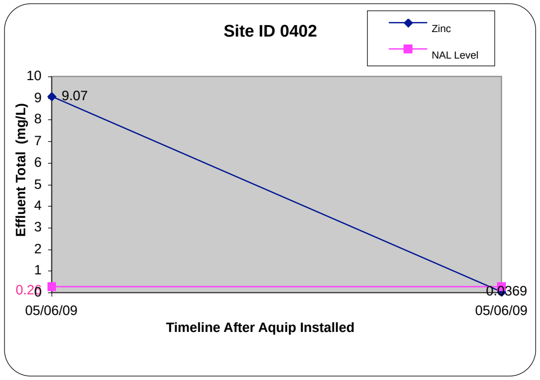

Aquip® Effluent Data
Site ID #0403

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Copper	0.0128		0.00349	3.49		73%						0.033	
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Copper	0.0146		0.00281	2.81		81%	0.00663		0.00100	ND	85%	0.033	
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Copper	0.0109		0.00209	2.09		81%	0.00385		0.00100	ND	74%	0.033	
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Copper				0			0.00239		0.00100	ND	58%	0.033	
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Lead	0.0168		0.00471	4.71		72%						0.262	
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Lead	0.0186		0.00585	5.85		69%						0.262	
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Lead	0.0263		0.00675	6.75		74%						0.262	
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Lead				0			0.00187		0.00116		38%	0.262	
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Nickel				0			0.00260		0.00285		increased	1.02	
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	Zinc	8.07		0.251	251		97%						0.26	
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	Zinc	8.22		0.198	198		98%	7.30		0.0693	ND	99%	0.26	
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Zinc	5.43		0.139	139		97%	4.52		0.0778		98%	0.26	
01/13/10	Aquip	0088 A-IN	0088 A-OUT1	Zinc	4.91		1.00	1000		80%	4.04		0.965		76%	0.26	exceeds NAL levels
10/14/09	Aquip	0088-A-INLT	0088-A-OUTLT	TSS	10.0		10.0	10000		0%						100	
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	TSS	10.0		10.0	10000		0%						100	
10/23/09	Aquip	0088-A-INLT	0088-A OUT	TSS	20.0		10.0	10000		50%						100	
10/23/09	Aquip	0088-A-INLT	0088-A OUT	Phosphorus	0.0284		0.0394	39.4		increased						2	
04/20/11																2	
10/14/09	Aquip	0088-A-INRT	0088-A-OUTRT	O&G	6.21		2.50	2500	ND	60%						15	
04/20/11																15	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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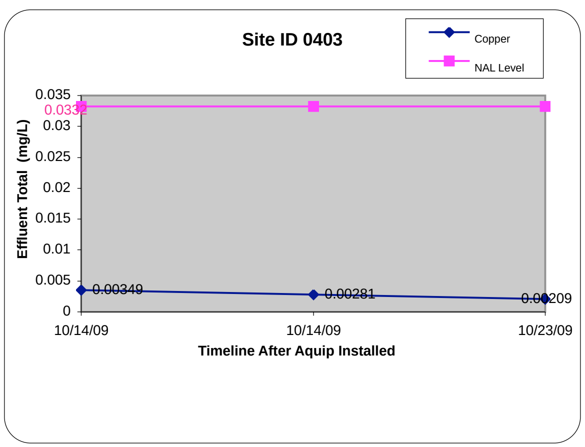
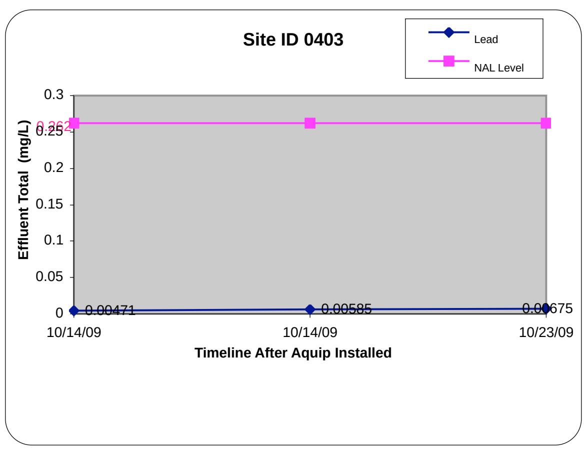
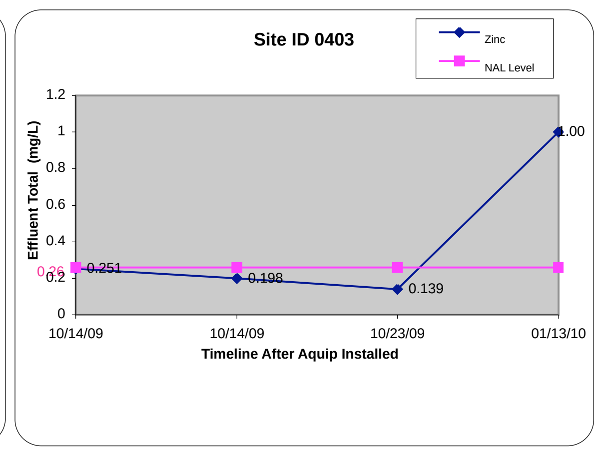
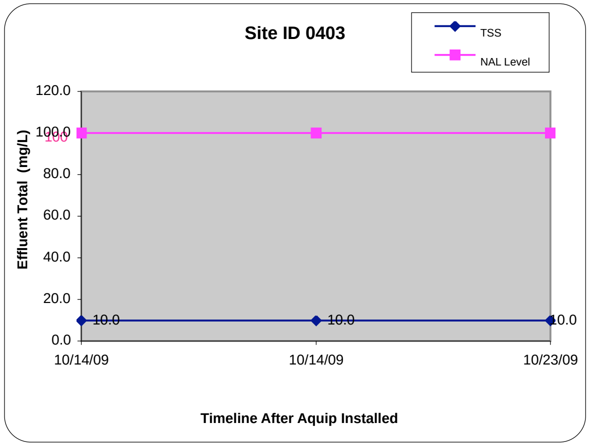


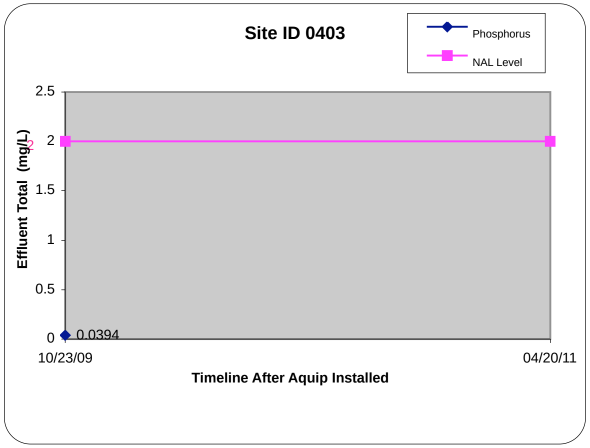


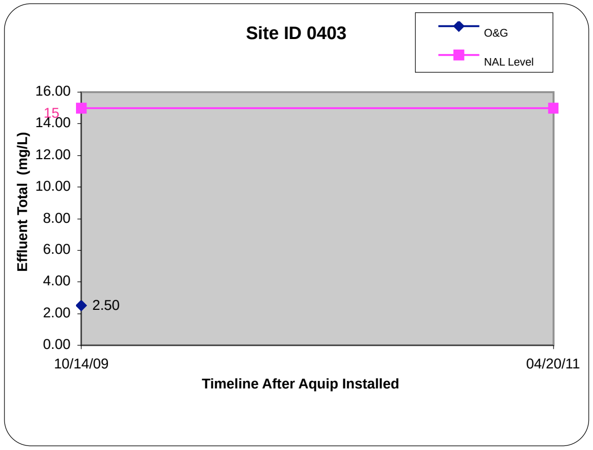


Aquip® Effluent Data

Site ID #0403







Aquip® Effluent Data
Site ID #0404

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Iron	0.649		0.267	267		59%						1	
04/20/11																1	
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Zinc	10.8		0.258	258		98%						0.26	
02/09/09	Aquip	AQUIP IN	AQUIP OUT	Zinc	12.3		0.276	276		98%						0.26	exceeds NAL levels
03/04/09	Aquip	Aquip Inlet	Aquip Out	Zinc	12.1		5.08	5080		58%						0.26	exceeds NAL levels
12/19/08	Aquip	Aquip IN2	Aquip OUT2	TSS	35.0		2.50	2500		93%						100	
04/20/11																100	
12/19/08	Aquip	Aquip IN2	Aquip OUT2	Specific Co	1680		1660	2E+06		1%						200	exceeds NAL levels
04/20/11																200	
12/19/08	Purus Met	Aquip OUT2	Ix OUT2	Iron	0.267		0.188	188		30%						1	
04/20/11																1	
12/19/08	Purus Met	Aquip OUT2	Ix OUT2	Zinc	0.258		0.112	112		57%						0.26	
02/09/09	Purus Met	AQUIP OUT	IX OUT	Zinc	0.276		0.0966	96.6		65%						0.26	
03/04/09	Purus Met	Aquip Out	IX Out	Zinc	5.08		0.0828	82.8		98%						0.26	
12/19/08	Purus Met	Aquip OUT2	Ix OUT2	TSS	2.50		2.50	2500		0%						100	
04/20/11																100	
12/19/08	Purus Met	Aquip OUT2	Ix OUT2	Specific Co	1660		1650	2E+06		1%						200	exceeds NAL levels
04/20/11																200	
10/13/09	Aquip + Pu	GY 1-D	DP-1-D	Zinc	22.2		0.0314	31.4		99%						0.26	
04/20/11																0.26	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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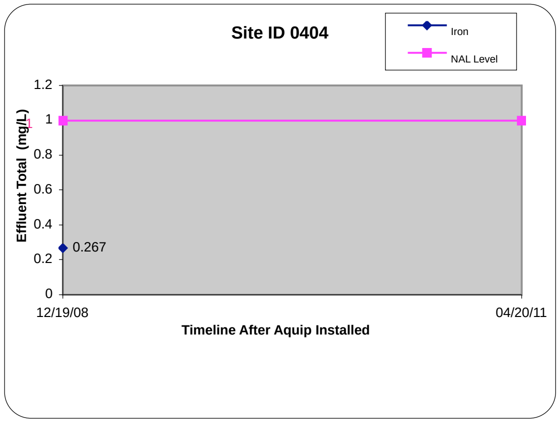
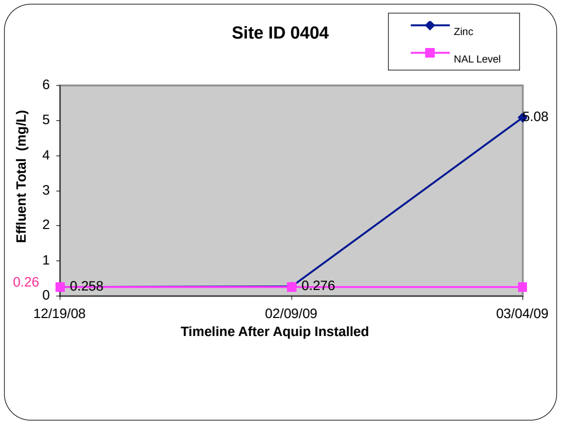
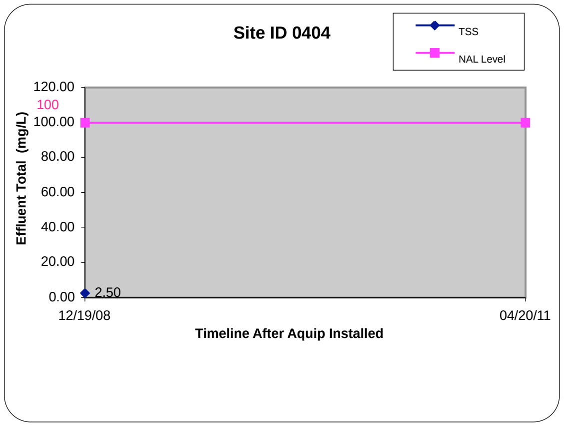
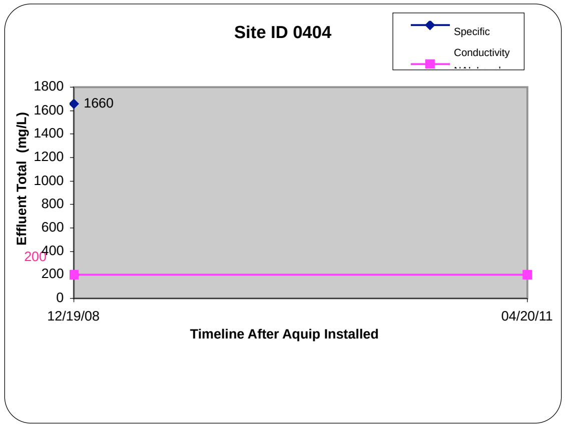
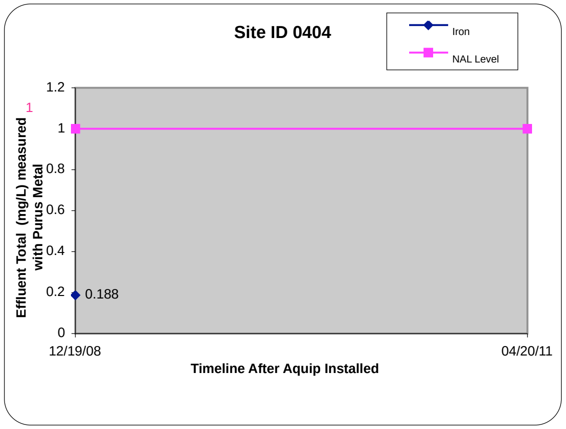


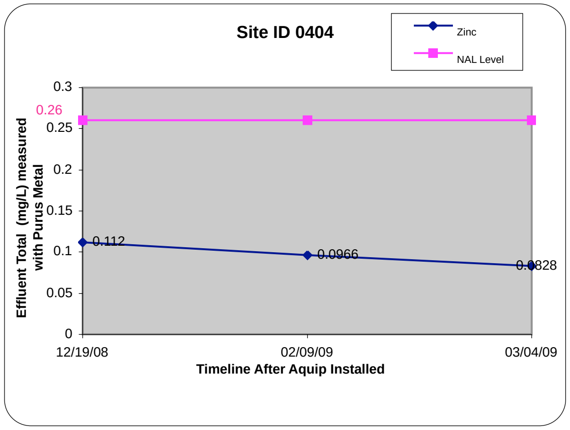


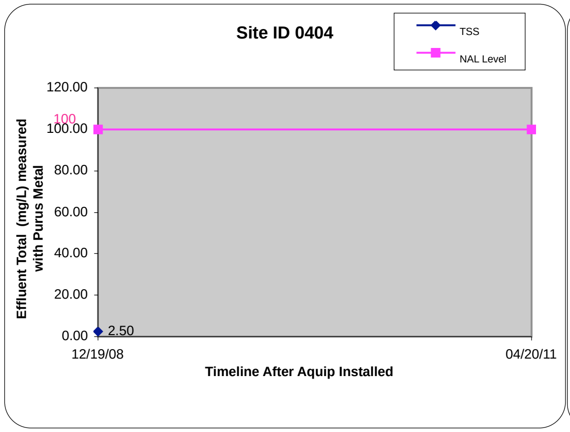


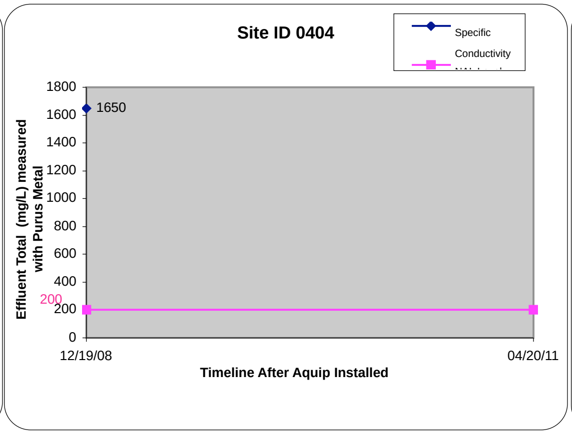
Aquip® Effluent Data
Site ID #0404

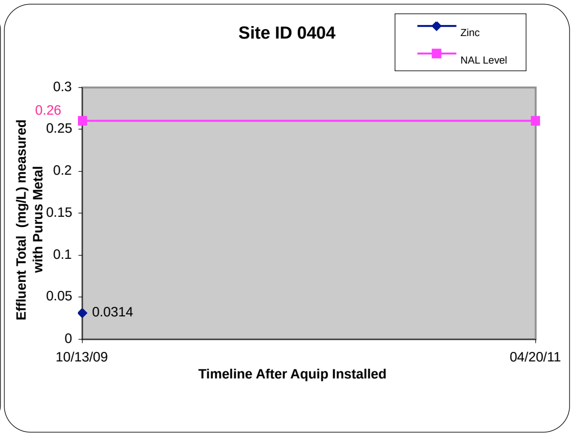






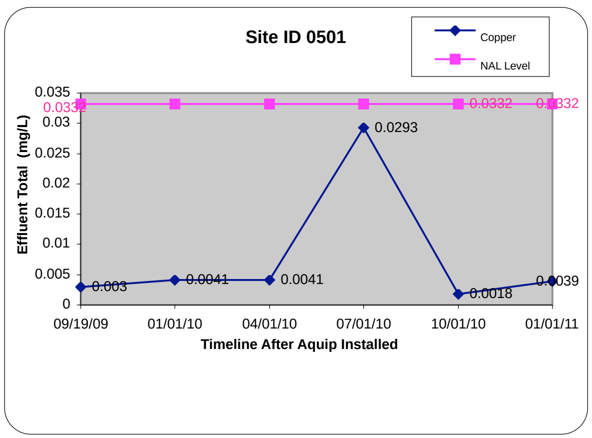


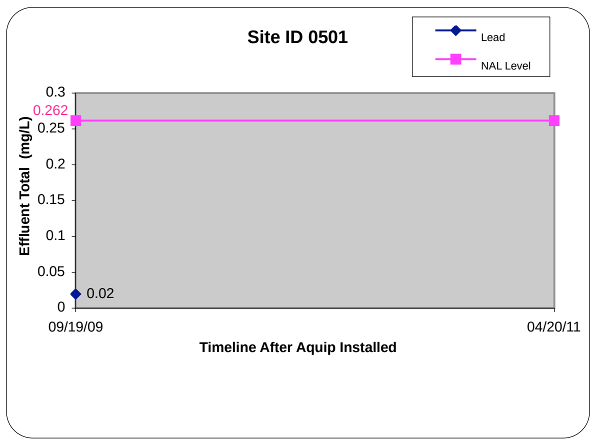


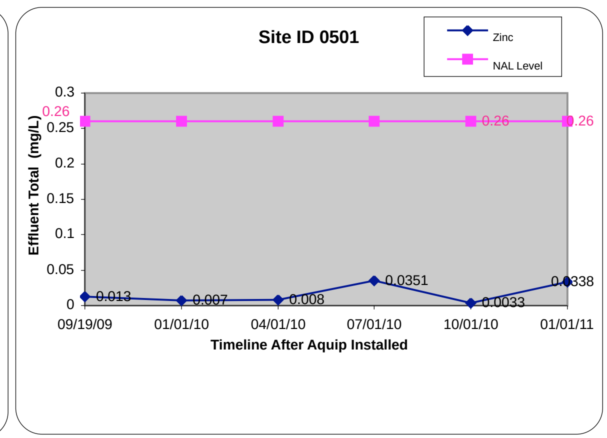


Aquip® Effluent Data
Site ID #0501

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
09/19/09				Copper			0.003	3								0.033	
01/01/10				Copper			0.0041	4.1								0.033	
04/01/10				Copper			0.0041	4.1								0.033	
07/01/10				Copper			0.0293	29.3								0.033	
10/01/10				Copper			0.0018	1.8								0.033	
01/01/11				Copper			0.0039	3.9								0.033	
09/19/09				Lead			0.02	20								0.262	
04/20/11																0.262	
09/19/09				Zinc			0.013	13								0.26	
01/01/10				Zinc			0.007	7								0.26	
04/01/10				Zinc			0.008	8								0.26	
07/01/10				Zinc			0.0351	35.1								0.26	
10/01/10				Zinc			0.0033	3.3								0.26	
01/01/11				Zinc			0.0338	33.8								0.26	







Aquip® Effluent Data
Site ID #0601

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
11/05/09	Aquip	0095 A-in	0095 A-out	Zinc	0.852		0.222	222		74%	0.851		0.206		76%	0.26	
03/11/10	Aquip	INLET	OUTLET	Zinc	0.870		0.330	330		62%						0.26	exceeds NAL levels

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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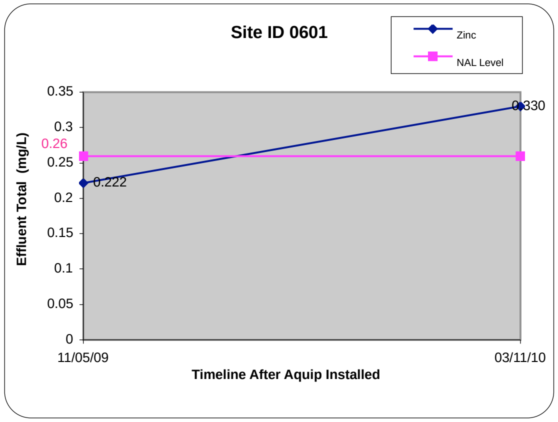

Aquip® Effluent Data
Site ID #0701

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
11/30/10	Clara	#1 Clara Inle	#2 Aquip Inlet	Aluminum	4.68		3.38	3380		28%	0.010	ND	0.010	ND	N/A	0.75	exceeds NAL levels
02/07/11	Clara	Stormwater #	Stormwater #2	Aluminum	2.51		2.63	2630		increased	0.010	ND	0.010	ND	N/A	0.75	exceeds NAL levels
11/30/10	Clara	#1 Clara Inle	#2 Aquip Inlet	Iron	6.84		4.84	4840		29%	0.005	ND	0.005	ND	N/A	1	exceeds NAL levels
02/07/11	Clara	Stormwater #	Stormwater #2	Iron	4.28		3.79	3790		11%	0.005	ND	0.005	ND	N/A	1	exceeds NAL levels
11/30/10	Clara	#1 Clara Inle	#2 Aquip Inlet	Zinc	8.59		4.33	4330		50%	1.09		1.15		increased	0.26	exceeds NAL levels
02/07/11	Clara	Stormwater #	Stormwater #2	Zinc	5.64		6.00	6000		increased	3.93		4.22		increased	0.26	exceeds NAL levels
11/30/10	Aquip	#2 Aquip Inle	#3 Aquip Outlet	Aluminum	3.38		0.06	60		98%	0.010	ND	0.010	ND	N/A	0.75	
02/07/11	Aquip	Stormwater #	Stormwater #3	Aluminum	2.63		0.04	40		98%	0.010	ND	0.010	ND	N/A	0.75	
11/30/10	Aquip	#2 Aquip Inle	#3 Aquip Outlet	Iron	4.84		0.11	110		98%	0.005	ND	0.005	ND	N/A	1	
02/07/11	Aquip	Stormwater #	Stormwater #3	Iron	3.79		0.05	50		99%	0.005	ND	0.005	ND	N/A	1	
11/30/10	Aquip	#2 Aquip Inle	#3 Aquip Outlet	Zinc	4.33		0.0285	28.5		99%	1.15		0.0600		95%	0.26	
02/07/11	Aquip	Stormwater #	Stormwater #3	Zinc	6.00		0.0084	8.4		99%	4.22		0.0477		99%	0.26	
11/30/10	Purus Met	#3 Aquip Out	#5 Purus IX Outl	Aluminum	0.06		0.03	30		50%	0.010	ND	0.010	ND	N/A	0.75	
04/20/11																0.75	
11/30/10	Purus Met	#3 Aquip Out	#5 Purus IX Outl	Iron	0.11		0.04	40		64%	0.005	ND	0.005	ND	N/A	1	
04/20/11																1	
11/30/10	Purus Met	#3 Aquip Out	#5 Purus IX Outl	Zinc	0.0285		0.0040	4		86%	0.0600		0.0074		88%	0.26	
04/20/11																0.26	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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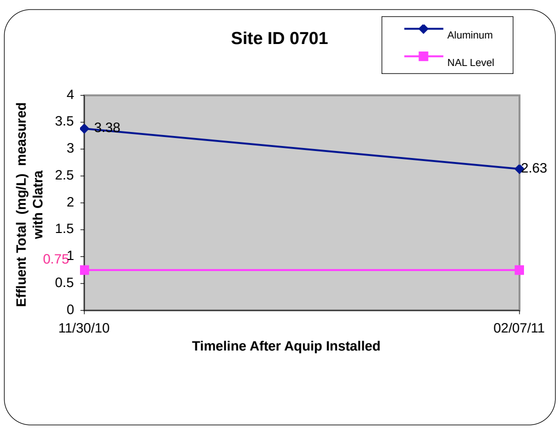
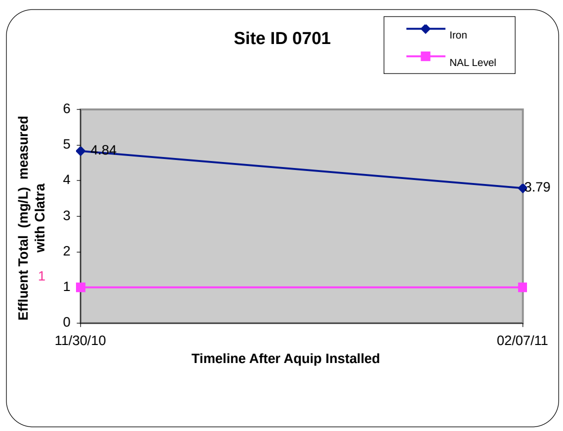
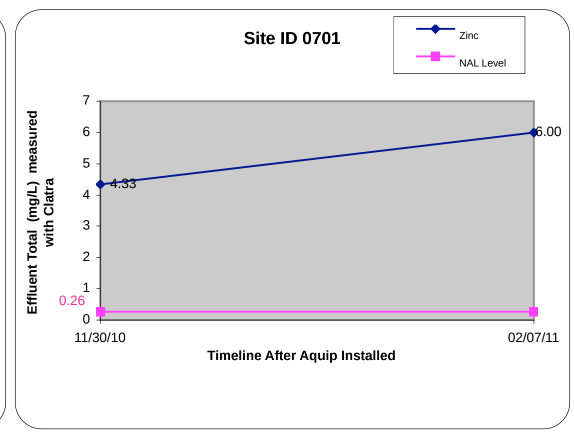
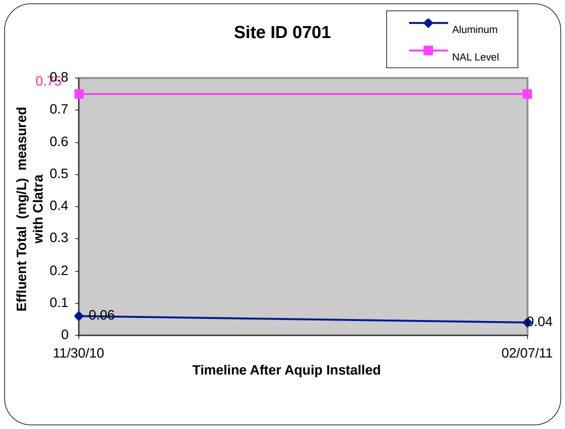
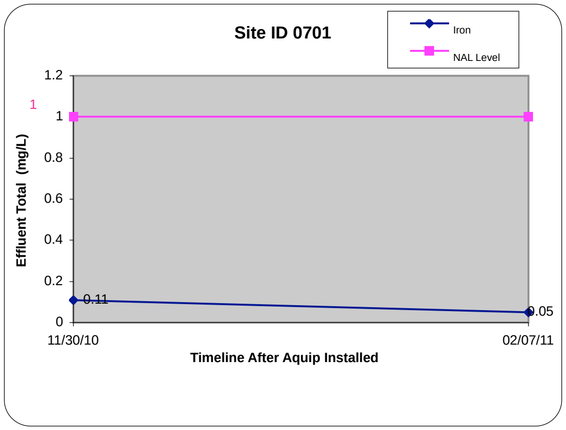


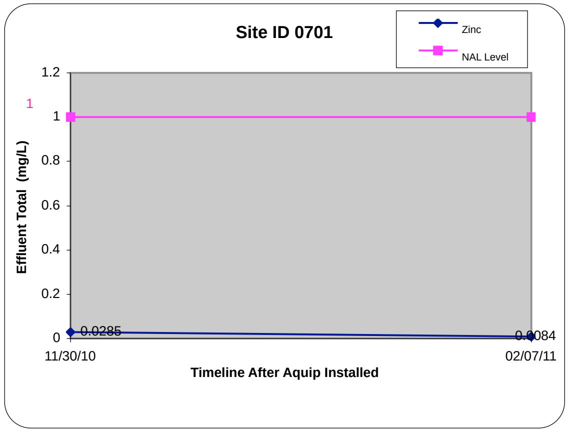


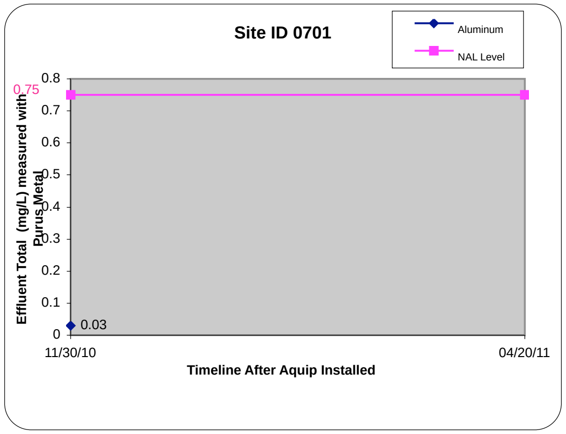


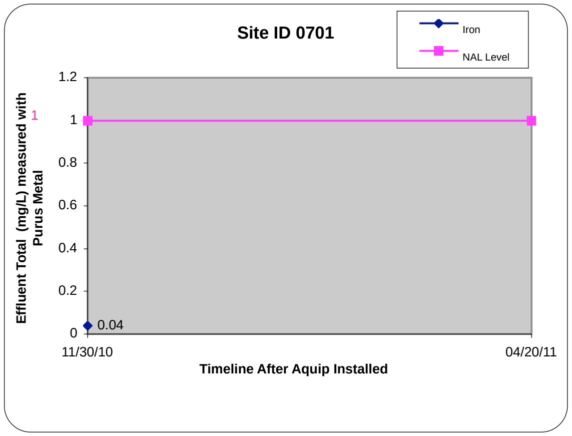
Aquip® Effluent Data
Site ID #0701

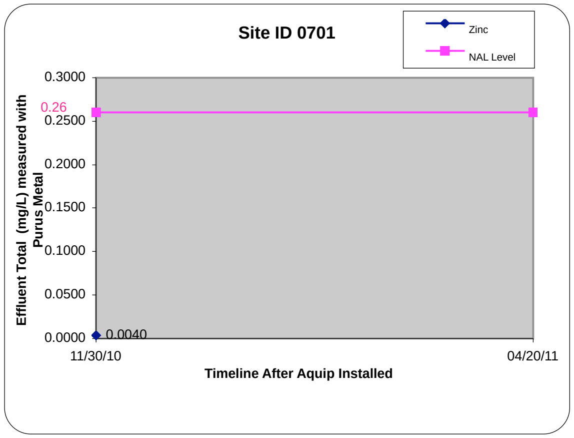










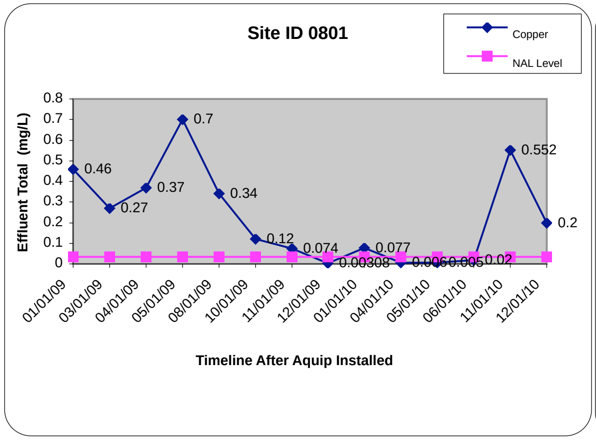


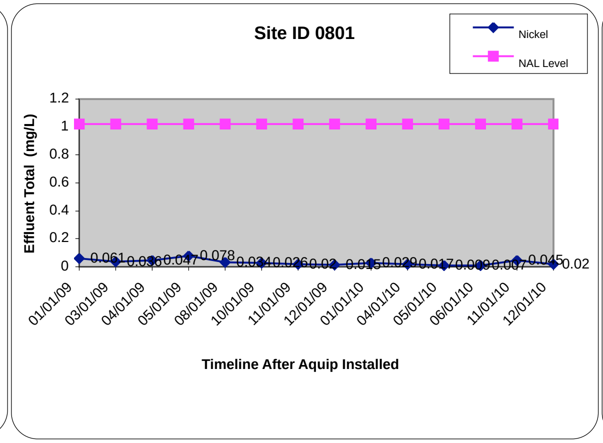
Aquip® Effluent Data
Site ID #0801

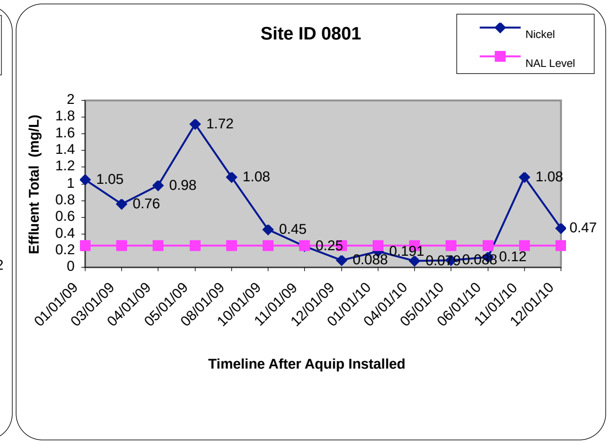
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
01/01/09				Copper			0.46	460								0.033	exceeds NAL levels
03/01/09				Copper			0.27	270								0.033	exceeds NAL levels
04/01/09				Copper			0.37	370								0.033	exceeds NAL levels
05/01/09				Copper			0.7	700								0.033	exceeds NAL levels
08/01/09				Copper			0.34	340								0.033	exceeds NAL levels
10/01/09				Copper			0.12	120								0.033	exceeds NAL levels
11/01/09				Copper			0.074	74								0.033	exceeds NAL levels
12/01/09				Copper			0.00308	3.08								0.033	
01/01/10				Copper			0.077	77								0.033	exceeds NAL levels
04/01/10				Copper			0.006	6								0.033	
05/01/10				Copper			0.005	5								0.033	
06/01/10				Copper			0.02	20								0.033	
11/01/10				Copper			0.552	552								0.033	exceeds NAL levels
12/01/10				Copper			0.2	200								0.033	exceeds NAL levels
01/01/09				Nickel			0.061	61								1.02	
03/01/09				Nickel			0.036	36								1.02	
04/01/09				Nickel			0.047	47								1.02	
05/01/09				Nickel			0.078	78								1.02	
08/01/09				Nickel			0.034	34								1.02	
10/01/09				Nickel			0.026	26								1.02	
11/01/09				Nickel			0.02	20								1.02	
12/01/09				Nickel			0.015	15								1.02	
01/01/10				Nickel			0.029	29								1.02	
04/01/10				Nickel			0.017	17								1.02	
05/01/10				Nickel			0.009	9								1.02	
06/01/10				Nickel			0.007	7								1.02	
11/01/10				Nickel			0.045	45								1.02	
12/01/10				Nickel			0.02	20								1.02	
01/01/09				Zinc			1.05	1050								0.26	exceeds NAL levels
03/01/09				Zinc			0.76	760								0.26	exceeds NAL levels
04/01/09				Zinc			0.98	980								0.26	exceeds NAL levels
05/01/09				Zinc			1.72	1720								0.26	exceeds NAL levels
08/01/09				Zinc			1.08	1080								0.26	exceeds NAL levels
10/01/09				Zinc			0.45	450								0.26	exceeds NAL levels
11/01/09				Zinc			0.25	250								0.26	
12/01/09				Zinc			0.088	88								0.26	
01/01/10				Zinc			0.191	191								0.26	
04/01/10				Zinc			0.079	79								0.26	
05/01/10				Zinc			0.088	88								0.26	
06/01/10				Zinc			0.12	120								0.26	
11/01/10				Zinc			1.08	1080								0.26	exceeds NAL levels
12/01/10				Zinc			0.47	470								0.26	exceeds NAL levels

Aquip® Influent and Effluent Data

Site ID #0801



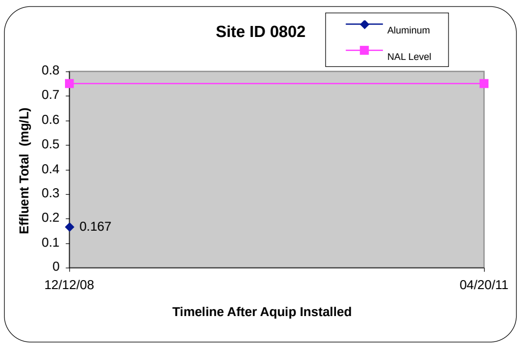


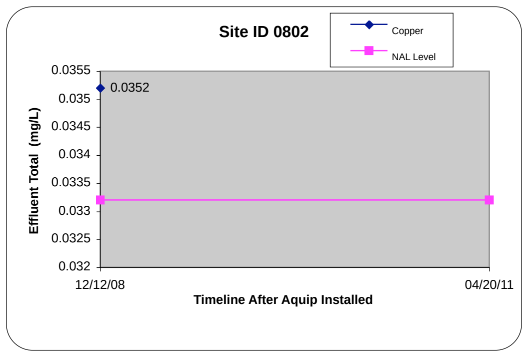


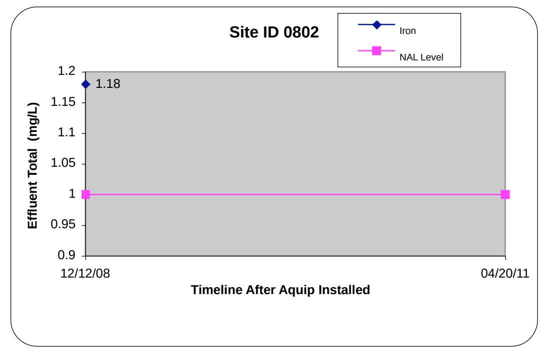
Aquip® Influent and Effluent Data
Site ID #0802

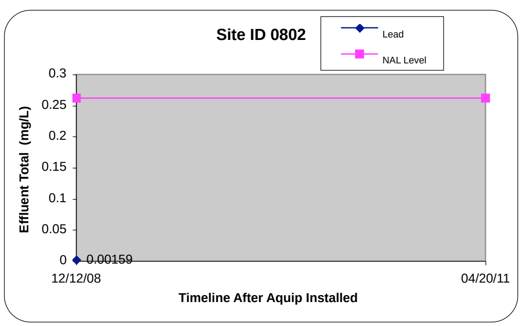
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
12/12/08	Aquip	Inlet	Outlet	Aluminum	0.771		0.167	167		78%						0.75	
04/20/11																0.75	
12/12/08	Aquip	Inlet	Outlet	Copper	0.152		0.0352	35.2		77%						0.033	exceeds NAL levels
04/20/11																0.033	
12/12/08	Aquip	Inlet	Outlet	Iron	7.47		1.18	1180		84%						1	exceeds NAL levels
04/20/11																1	
12/12/08	Aquip	Inlet	Outlet	Lead	0.0157		0.00159	1.59		90%						0.262	
04/20/11																0.262	
12/12/08	Aquip	Inlet	Outlet	Zinc	0.784		0.0614	61.4		92%						0.26	
04/20/11																0.26	
12/12/08	Aquip	Inlet	Outlet	TSS	63.6		10.0	10000		84%						100	
04/20/11																100	

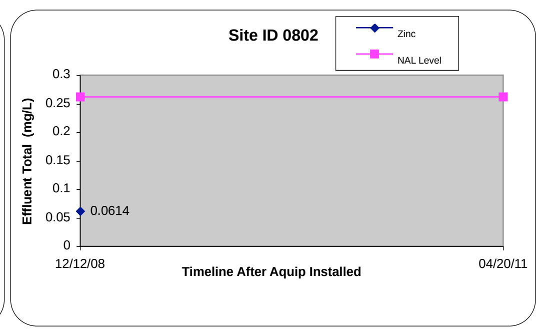
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

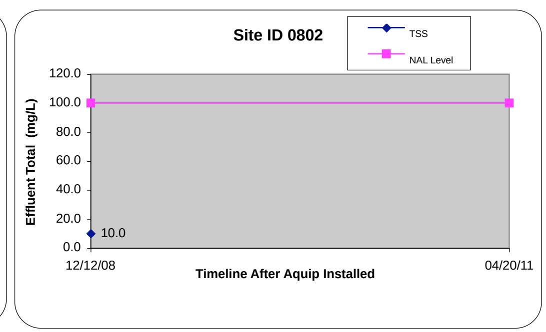












Aquip® Effluent Data
Site ID #0803

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
02/10/09	Aquip	Rx Influent	Rx Effluent	Arsenic	0.00115		0.0005	0.5	ND	57%						0.169	
04/20/11																0.169	
02/10/09	Aquip	Rx Influent	Rx Effluent	Copper	0.184		0.0125	12.5		93%						0.033	
04/20/11																0.033	
02/10/09	Aquip	Rx Influent	Rx Effluent	Lead	0.0104		0.00131	1.31		87%						0.262	
04/20/11																0.262	
02/10/09	Aquip	Rx Influent	Rx Effluent	Zinc	0.474		0.0407	40.7		91%						0.26	
04/20/11																0.26	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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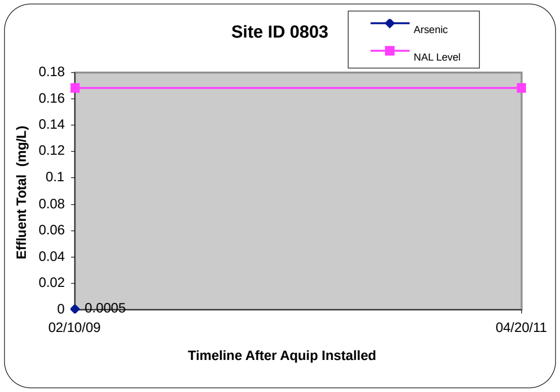

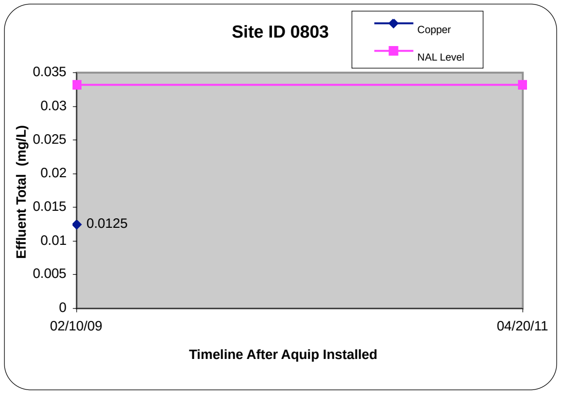

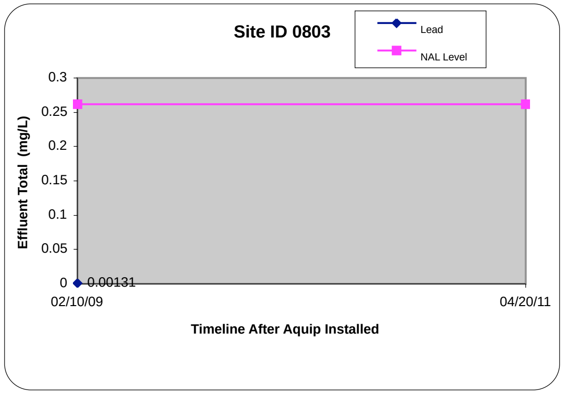

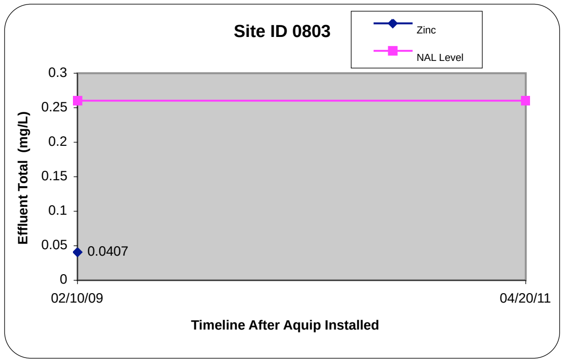

Aquip® Effluent Data
Site ID #0804

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolvec Removal (%)	NAL Levels (mg/L)	Notes
11/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Copper	0.127		0.0458	45.8		64%						0.033	exceeds NAL levels
11/15/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Copper	1.36		0.364	364		73%						0.033	exceeds NAL levels
12/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Copper	1.48		0.0950	95		94%						0.033	exceeds NAL levels
12/08/10	Aquip	RX-WEV4-Ir	RX-WEV4-Eff	Copper	0.0308		0.0232	23.2		25%						0.033	
11/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Lead	0.0068		0.0020	2	ND	71%						0.262	
11/15/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Lead	0.0420		0.0020	2	ND	95%						0.262	
12/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Lead	0.0277		0.0020	2	ND	93%						0.262	
11/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Zinc	0.0415		0.0020	2	ND	95%						0.26	
11/15/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Zinc	0.445		0.0799	79.9		82%						0.26	
12/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	Zinc	0.524		0.0462	46.2		91%						0.26	
12/08/10	Aquip	RX-WEV4-Ir	RX-WEV4-Eff	Zinc	0.0425		0.0491	49.1		increased						0.26	
11/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	TSS	29		25	25000		14%						100	
11/15/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	TSS	24		22	22000		8%						100	
12/08/10	Aquip	RX-BYV1-In	RX-BYV1-Eff	TSS	9		18	18000		increased						100	
12/08/10	Aquip	RX-WEV4-Ir	RX-WEV4-Eff	TSS	17		13	13000		24%						100	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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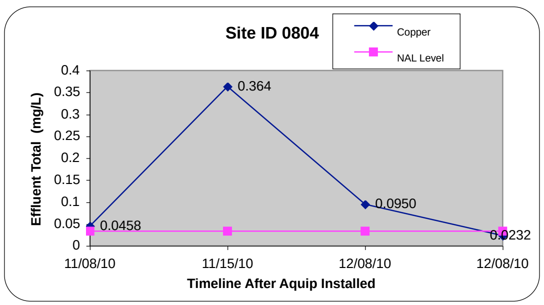
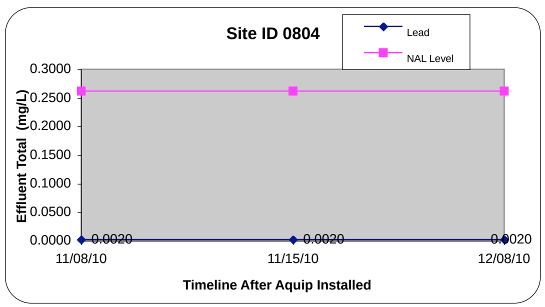
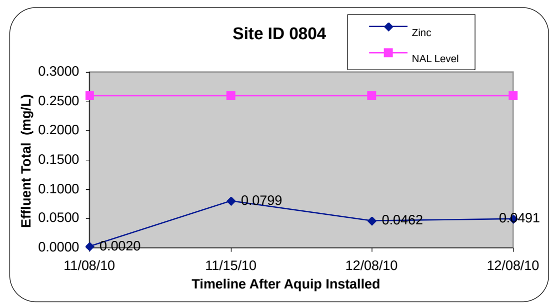
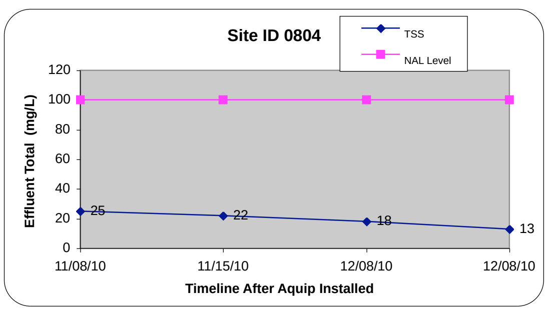




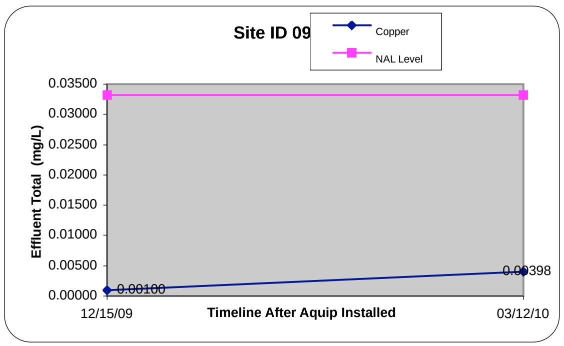


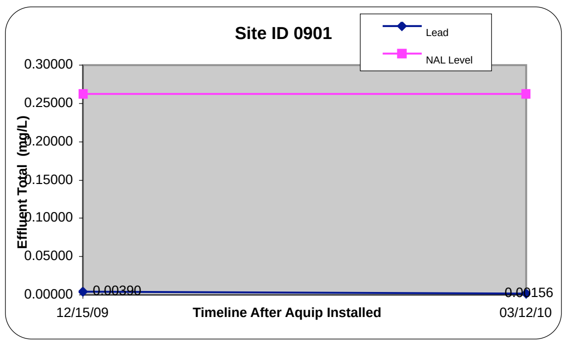


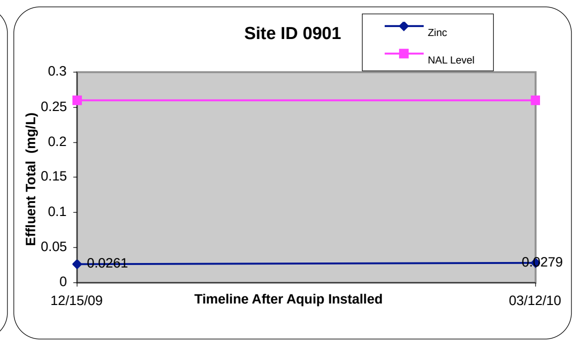
Aquip® Effluent Data
Site ID #0901

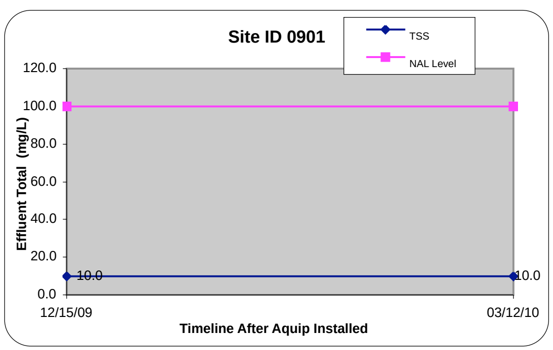
Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	Copper	0.0105		0.00100	1	ND	90%						0.033	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	Copper	0.0105		0.00398	3.98		62%						0.033	
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	Lead	0.0135		0.00390	3.9		71%						0.262	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	Lead	0.00497		0.00156	1.56		69%						0.262	
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	Zinc	0.121		0.0261	26.1		78%						0.26	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	Zinc	0.125		0.0279	27.9		78%						0.26	
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	TSS	70.0		10.0	10000		86%						100	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	TSS	30.0		10.0	10000		67%						100	
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	Phosphorus	0.227		0.101	101		56%						2	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	Phosphorus	0.596		0.0918	91.8		85%						2	
12/15/09	Aquip + Pι	2A-PhI Inlet	2B-PhI Outlet	BOD5	5.48		4.30	4300		22%						30	
03/12/10	Aquip + Pι	Sample Poin	Sample Point 2B	BOD5	7.89		2.00	2000	ND	75%						30	

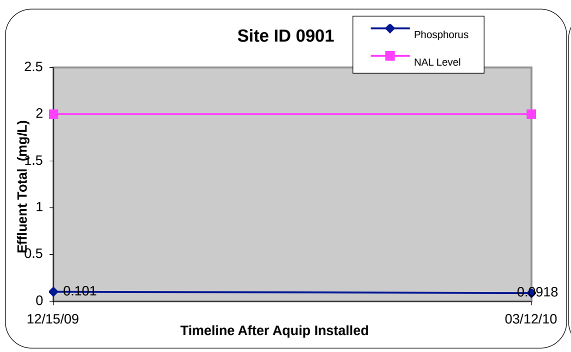
Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
All chemical analyses by third party certified analytical laboratories. Analytical results for all data are provided.
For purposes of calculating removal efficiencies, non-detection values were assumed to be one half of the detection limit.

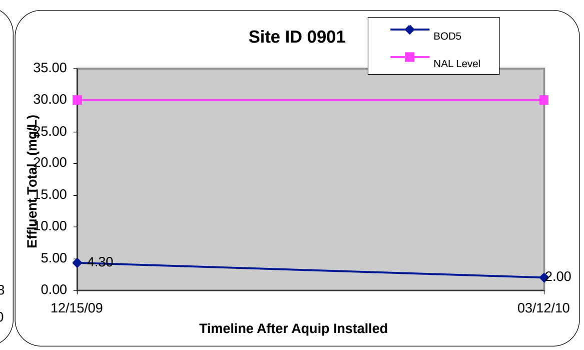












Aquip® Effluent Data
Site ID #0902

Date	Product	Influent ID	Effluent ID	Parameter	Influent Total (mg/L)	ND	Effluent Total (mg/L)	Effluent Total (ug/L)	ND	Total Removal (%)	Influent Dissolved (mg/L)	ND	Effluent Dissolved (mg/L)	ND	Dissolved Removal (%)	NAL Levels (mg/L)	Notes
11/30/09	Aquip + Pu	A-Inlet to Aqu	B-Discharge	Copper	0.00433		0.00100	1	ND	77%						0.033	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	Copper	0.0178		0.00704	7.04		60%						0.033	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	Copper	0.0281		0.00673	6.73		76%						0.033	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	Copper	0.0161		0.00588	5.88		63%						0.033	
11/30/09	Aquip + Pu	A-Inlet to Aqu	B-Discharge	Lead	0.00219		0.00050	0.5	ND	77%						0.262	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	Lead	0.0240		0.00883	8.83		63%						0.262	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	Lead	0.0306		0.00715	7.15		77%						0.262	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	Lead	0.0163		0.00496	4.96		70%						0.262	
11/30/09	Aquip + Pu	A-Inlet to Aqu	B-Discharge	Zinc	0.0631		0.00050	0.5	ND	99%						0.26	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	Zinc	0.161		0.0534	53.4		67%						0.26	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	Zinc	0.291		0.0498	49.8		83%						0.26	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	Zinc	0.140		0.0404	40.4		71%						0.26	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	TSS	140		30.0	30000		79%						100	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	TSS	160		30	30000		81%						100	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	TSS	100		30.0	30000		70%						100	
11/30/09	Aquip + Pu	A-Inlet to Aqu	B-Discharge	Phosphorus	0.262		0.0100	10	ND	96%						2	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	Phosphorus	0.229		0.0896	89.6		61%						2	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	Phosphorus	0.217		0.0866	86.6		60%						2	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	Phosphorus	0.270		0.123	123		54%						2	
12/30/09	Aquip + Pu	Sample Poin	Sample Point #3	BOD5	24.6		5.46	5460		78%						30	
03/12/10	Aquip + Pu	Sample Poin	Sample Point 3B	BOD5	6.21		4.93	4930		21%						30	
12/15/09	Aquip + Pu	3A-PhII Inlet	3B-PhII Outlet	O&G	5.29		2.38	2380	ND	55%						15	
04/20/11																15	

Sampling from inlet and outlet of full-scale StormwateRx systems treating stormwater runoff generated from industrial facility
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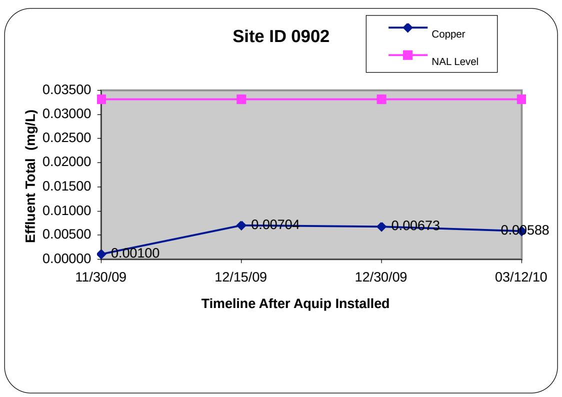
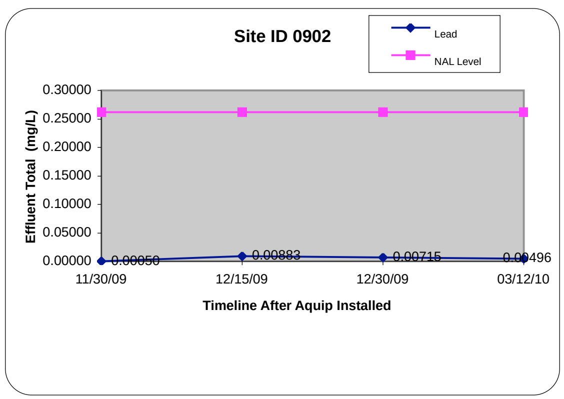
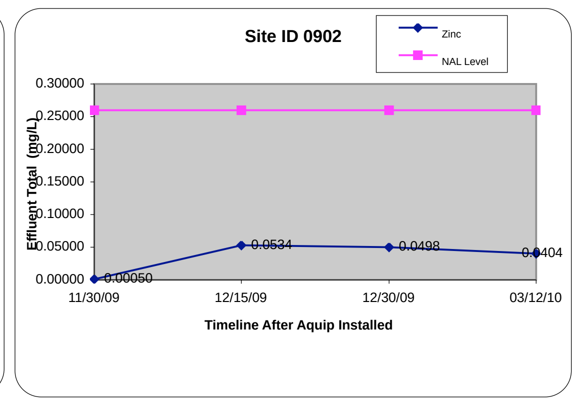
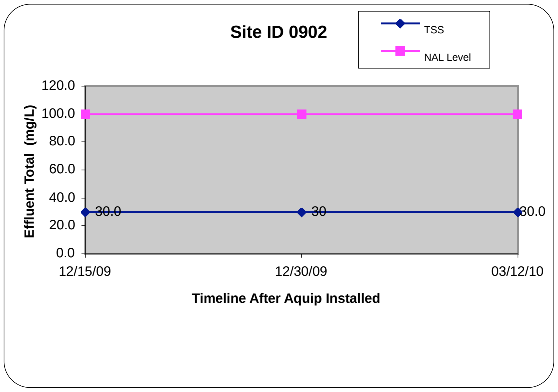
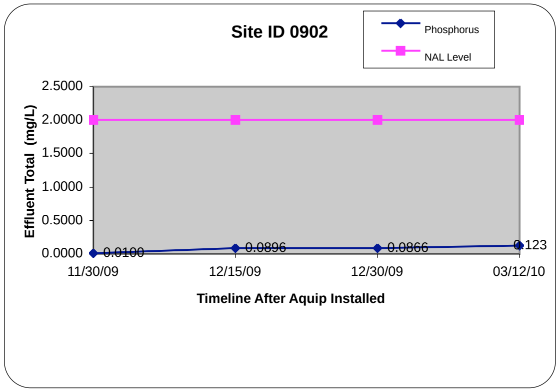


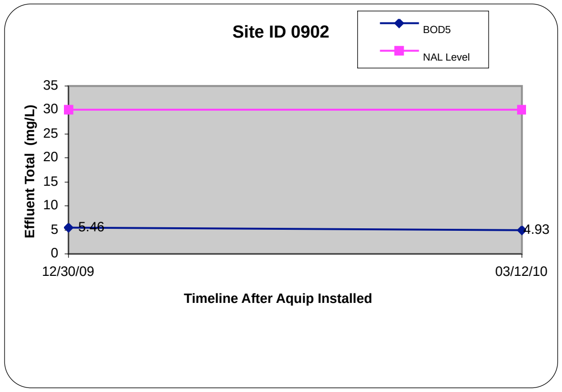


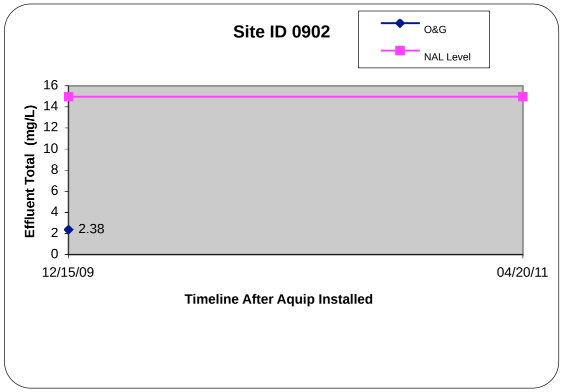


Aquip® Effluent Data









Attachment 2

DATA ANALYSIS REPORT

Evaluation of Monitoring Data from General NPDES Permits for Industrial and Construction Stormwater

Prepared for

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Introduction

The Washington State Department of Ecology (Ecology) is currently implementing a study to evaluate monitoring and reporting requirements identified in the state's existing general National Point Discharge Elimination System (NPDES) permits for industrial and construction stormwater. This study is required pursuant to Engrossed Substitute Senate Bill (ESSB) 6415 that was passed by the state legislature on March 9, 2004. The ultimate goal of this study is to develop improved monitoring requirements for these permits to determine the effectiveness of stormwater best management practices and to ascertain compliance with state water quality standards.

One of the initial tasks related to this study was a compilation, review, and analysis of existing data that have been collected through the general NPDES permits for industrial and construction stormwater. The primary goal of this analysis is to evaluate the utility of these data for gauging permit compliance and understanding the level of water quality protection that is occurring. This report was prepared by Herrera Environmental Consultants (Herrera) to summarize the results from this analysis. In keeping with the overall goal of this study, the specific objectives of this report are as follows:

- Describe the general distribution of industrial and construction stormwater data including central tendency, variation, and presence or absence of outliers.
- Compare existing industrial stormwater data across industrial categories to determine if there are significant differences in pollutant concentrations.
- Compare industrial and construction stormwater data to applicable benchmarks and action levels established by the general permits.
- Compare industrial and construction stormwater data to hypothetical state water quality criterion that are derived based on representative receiving water conditions and dilution factors. (Note that compliance with actual state water quality standards cannot be assessed using data compiled through the general NPDES permits for industrial and construction stormwater. To predict compliance with standards would require additional site-specific data, receiving water data, and assessment of narrative standards and other policies.)

This report begins with a description of the data sources that were used in this analysis. The specific data analysis methods that were used to meet the study objectives identified above are then described in detail. The results from these analyses are then presented with supporting tabular and graphical data summaries provided as necessary. Finally, these results are discussed in relation to the primary goal of the study with major conclusions from this analysis summarized in the final section of the report.

Data Sources

The specific sources for data that were analyzed within this report are summarized under separate subsections below for industrial and construction stormwater, respectively. Included are descriptions of how the data were compiled and the associated temporal and geographic coverage. The total quantity of data that was compiled from each source is also described along with any known quality assurance issues.

Industrial Stormwater

Data Source

Industrial stormwater data were compiled by Ecology from Discharged Monitoring Reports (DMRs) that were submitted by permittees pursuant to the monitoring and reporting requirements of the general NPDES industrial stormwater permit. These data were initially entered into a database system that is maintained at Ecology's headquarter office in Olympia and then exported to a Microsoft Excel® spreadsheet for subsequent analysis by Herrera. This spreadsheet included data from NPDES sampling that was conducted the second, third, and fourth quarters of 2003 and all four quarters of 2004 and 2005. These data were obtained from a total of 808 permitted facilities with 758 located in Western Washington, 45 in Eastern Washington, and 8 unclassified because no address information was provided in the database.

For subsequent analyses of the industrial stormwater data, these 808 facilities were subdivided into one of 11 general industrial categories that are defined in the NPDES permit and Code of Federal Regulations [40 CFR 122.26(b)(14)]. The associated category names were simplified to the descriptions used by the U.S. EPA to define categories of stormwater discharges (U.S. EPA, 2006). A twelfth category identified as "Significant Contributor (12)" was present in the dataset from Ecology, but not defined in the NPDES permit or Code of Federal Regulations. Finally, a thirteenth category, "No Category Specified", was added because several facilities within the dataset could not be classified within any of the other 12 categories. The names of all 13 categories and number of facilities that fall into each of these categories are provided in Table 1. These data indicate that the number of facilities in each category ranges from 0 to 238. However, 83 percent of the facilities were concentrated in just three categories: Manufacturing (02), Transportation Facilities (08), and Light Industrial Activity (11). Out of the remaining facilities, 15 percent were concentrated in the following four categories: Landfills (05), Recycling Facilities (06), Treatment Works (09), and No Category Specified. In general, the analyses performed in this report generally focused on the data from these seven categories.

The facilities were further subdivided into industrial sectors based on the first two digits of their Standard Industrial Classification (SIC) codes. SIC Codes are assigned in the permitting process based on the primary activities performed at a facility. Categorization at this level allows for a more detailed evaluation of the types of facilities that are represented in the database. For this analysis, 35 industrial sectors were identified based on SIC codes that were present in the database. These 35 industrial sectors were generally derived from the 30 sectors of industrial activity that are defined in the Federal Register (Vol. 65, No. 210). However, some variation from the categories in the Federal Register exist due to the exclusion of some SIC codes entirely (e.g., Agricultural Services [07], Forestry [08]) and the combination of multiple SIC codes in a single sector (e.g., Sector Y includes Rubber and Miscellaneous Plastic Products [30] and Miscellaneous Manufacturing Industries [39]). The names of all 35 industrial sectors and number of facilities that fall into each of these sectors are provided in Table 2. These data show the number of facilities in each industrial sector ranges from 1 to 127, with an average of 22 facilities present in each industrial sector across all 35 categories. In general, the analyses performed in this report were not conducted at this level due to the low data volume within each industrial sector.

Table 1. Total number of facilities by industrial category.

Category	Number of Facilities
01 - Facilities with effluent limitations	1
02 - Manufacturing	233
03 - Mineral, metal, oil, and gas	4
04 - Hazardous waste treatment, or disposal facilities	0
05 - Landfills	20
06 - Recycling facilities	64
07 - Steam electric plants	2
08 - Transportation facilities	205
09 - Treatment works	12
10 - Construction sites > 5 acres	1
11 - Light industrial activity	238
12 - Significant contributor	1
NC - No category specified	27

Data Quantity

Overall, the data set obtained for industrial stormwater contained 21,486 values for a total of 22 different parameters. The number of values available for specific monitoring parameters can be divided into high, intermediate, and low categories depending on their associated monitoring requirements as identified in the NPDES permit. For example, turbidity, pH, total zinc, and oil & grease have the highest number of values because all facilities are required by the NPDES permit to conduct sampling for these parameters. As shown in Table 3, the total number of values for these parameters ranges from 2,651 to 4,479.

Table 2. Total number of facilities by industrial sector.

SIC Code	Sector	Number of Facilities
07--	Agricultural Services	1
08--	Forestry	1
10--	Metal Mining	1
12--	Coal Mining	1
17--	Construction Special Trade Contractors	3
20--	Food and Kindred Products	40
22--	Textile Mill Products	3
24--	Lumber and Wood Products	127
25--	Furniture and Fixtures	3
26--	Paper and Allied Products	14
27--	Printing, Publishing and Allied Industries	2
28--	Chemicals and Allied Products	40
29--	Petroleum and Coal Products	6
30--	Rubber and Miscellaneous Plastic Products	37
31--	Leather and Leather Products	1
32--	Stone, Clay and Glass Products	23
33--	Primary Metals Industries	13
34--	Fabricated Metal Products	62
35--	Industrial & Commercial Machinery and Computer Equipment	28
36--	Electronic and Other Electrical Equipment	7
37--	Transportation Equipment	33
38--	Measuring, Analyzing, and Controlling Instruments; Photographic; Optical Goods	1
39--	Miscellaneous Manufacturing Industries	6
40--	Railroad Transportation	11
41--	Local and Interurban Passenger Transportation	23
42--	Motor Freight Transportation and Warehousing	108
44--	Water Transportation	30
45--	Transportation by Air	21
47--	Transportation Services	2
49--	Electric, Gas, and Sanitary Services	42
50--	Wholesale Trade-Durable Goods	63
51--	Wholesale Trade Non-Durable Goods	23
52--	Building Materials, Hardware, Garden Supply, & Mobile Home Dealers	2
82--	Educational Services	1
95--	Environmental Quality Programs	2
	Total	**781**

Table 3. Total number of available data values by monitoring parameter identified in the general NPDES industrial stormwater permit.

Parameter	Total Number of Values
Turbidity	4479
pH	4442
Zinc, Total	4264
Oil & Grease	2651
Copper, Total	1177
Lead, Total	1034
BOD, 5 day, 20 deg. C	1105
Phosphorus, Total	410
Nitrogen, Nitrite + Nitrate, Total	397
Solids, Total Suspended	146
Nitrogen, Ammonia, Total	70
Oxygen, Dissolved	51
Benzoic Acid	46
Phenol	46
P-Cresol (4-Methylphenol)	44
Alpha-Terpineol	40
Coliform, Fecal	18
Mercury, Total	7
Nitrogen, Nitrate, Total	7
Chromium, Total	4
Cadmium, Total	2
Total Dissolved Gas	1

Unlike the four parameters noted above, the NPDES permit only requires routine sampling for total copper, total lead, biochemical oxygen demand (BOD), ammonia nitrogen, nitrate + nitrite nitrogen, and total phosphorus for specific industrial sectors. For example, monitoring for total copper and total lead is only required at facilities that fall into one of the following five industry sectors: Primary Metals, Metal Mining, Automobile Salvage, Scrap Recycling, or Metals Fabricating. Additionally, sampling for these parameters is required if data from a particular facility indicates the benchmark for total zinc has been exceeded for two consecutive quarters. Because of these less stringent sampling requirements, these six parameters are classified as intermediate with regard to the number of data values that are available. As shown in Table 3, the total number of values in this category ranges from 70 to 1,177.

The remaining 12 parameters in Table 3 are classified as low with regard to the number of data values that are available. The total number of values in this category ranges from 1 to 146. Furthermore, there are no specific benchmark or action levels identified in the NPDES permit for these parameters. Due to these considerations, subsequent analyses presented in this report focused on parameters in the high to intermediate data quantity categories. These ten parameters (i.e., turbidity, pH, total zinc, oil & grease, total copper, total lead, BOD, ammonia nitrogen, nitrate + nitrite nitrogen, and total phosphorus) are hereafter referred to as the "primary analysis parameters" within this report.

As noted above, data analyses presented within this report will examine trends in the industrial stormwater data across 13 industrial categories (see Table 1). The number of values that are available within each of these categories is shown in Table 4 for each of the primary analysis parameters. Similarly, the number of values that are available within each of the 35 industrial sectors is shown in Table 5 for these same parameters.

Table 4. Total number of data values for primary analysis parameters by industrial category.

	Number of Values per Parameter						
Industrial Category	Turbidity	pH	Zinc	Oil & Grease	Copper	Lead	BOD
01 - Facilities with effluent limitations	8	8	8	0	4	2	0
02 - Manufacturing	1327	1323	1233	722	280	230	743
03 - Mineral, metal, oil, and gas	24	24	23	23	1	1	0
04 - Hazardous waste treatment, or disposal facilities	0	0	0	0	0	0	0
05 - Landfills	135	135	120	75	22	21	64
06 - Recycling facilities	295	294	288	196	196	178	0
07 - Steam electric plants	3	3	3	1	0	0	0
08 - Transportation facilities	1010	988	959	557	196	169	8
09 - Treatment works	77	77	76	55	18	18	0
10 - Construction sites > 5 acres	6	6	6	6	0	0	0
11 - Light industrial activity	1450	1445	1412	950	440	396	275
12 - Significant contributor	7	7	4	0	0	0	0
NC - No category specified	137	132	132	66	20	19	15
Total	4479	4442	4264	2651	1177	1034	1105

Data Quality

The data quality for industrial stormwater was assessed based on a review of outliers, missing data, and data qualifiers that were present in the database that was obtained from Ecology. In total, there were 22,794 entries in the database with no value reported for various reasons. Three parameters (e.g., arsenic, chlorine, and guthion) had no results reported. There were also 181 facilities in the database that did not report any values. The primary reasons cited for not reporting values are summarized in Figure 1 based on the qualifiers present in the database. These data show that "No Qualifying Storm Event" was cited most frequently (72 percent of the time) for unreported values. Approximately 13 percent of the unreported values were listed as below detection limit; however, no detection limit was provided. Three additional qualifiers within the database (i.e., Not Reported, Value Not Submitted, and DMR Not Submitted) were cited 12 percent of the time for unreported values (these categories are collectively grouped under the "Not Reported" heading in Figure 1). The other frequently cited qualifiers for unreported data include: consistent attainment, equipment failure, incorrect analysis, laboratory error, lost sample, no discharge, and other.

Table 5. Total number of data values for primary analysis parameters by industrial category.

SIC Code	Category	Number of Values per Parameter						
		Turbidity	pH	Zinc, Total	Oil & Grease	Copper, Total	Lead, Total	BOD
07--	Agricultural Services	5	5	5	5			
08--	Forestry	7	7	4				
10--	Metal Mining	1	1	1	1	1	1	
12--	Coal Mining	9	9	9	9			
17--	Construction Special Trade Contractors	19	19	19	5	12	11	
20--	Food and Kindred Products	268	265	269	213	58	55	221
22--	Textile Mill Products	18	18	18	11	10	9	
24--	Lumber and Wood Products	799	784	734	382	83	67	615
25--	Furniture and Fixtures	14	14	12	9			
26--	Paper and Allied Products	77	80	79	69	8	8	20
27--	Printing, Publishing and Allied Industries	10	10	10				
28--	Chemicals and Allied Products	226	226	221	156	49	43	159
29--	Petroleum and Coal Products	27	27	23	18			
30--	Rubber and Miscellaneous Plastic Products	207	206	202	129	43	33	
31--	Leather and Leather Products	4	4	4	4			
32--	Stone, Clay and Glass Products	109	111	100	51	12	4	
33--	Primary Metals Industries	75	76	76	54	65	48	
34--	Fabricated Metal Products	307	302	291	192	215	192	
35--	Industrial & Commercial Machinery & Computer Equip.	86	91	79	36		1	
36--	Electronic and Other Electrical Equipment	63	65	65	53	10	8	
37--	Transportation Equipment	343	344	329	197	132	122	
38--	Measuring, Analyzing, and Controlling Instruments; Photographic; Optical Goods	8	8	8	8			
39--	Miscellaneous Manufacturing Industries	24	24	24	11	3	4	
40--	Railroad Transportation	54	54	50	26	10	8	
41--	Local and Interurban Passenger Transportation	101	100	101	54	13	9	
42--	Motor Freight Transportation & Warehousing	529	526	502	302	127	111	6
44--	Water Transportation	151	151	145	92	30	27	
45--	Transportation by Air	154	137	146	74	15	15	
47--	Transportation Services	4	4	4	3			2
49--	Electric, Gas, and Sanitary Services	250	250	224	153	37	36	64
50--	Wholesale Trade-Durable Goods	289	289	276	191	204	186	
51--	Wholesale Trade Non-Durable Goods	89	88	88	67	16	13	3
52--	Building Materials, Hardware, Garden Supply, & Mobile Home Dealers	2	2	1	1			
82--	Educational Services	1	1	1				
95--	Environmental Quality Programs	12	12	12	9	4	4	
	Total	4342	4310	4132	2585	1157	1015	1090

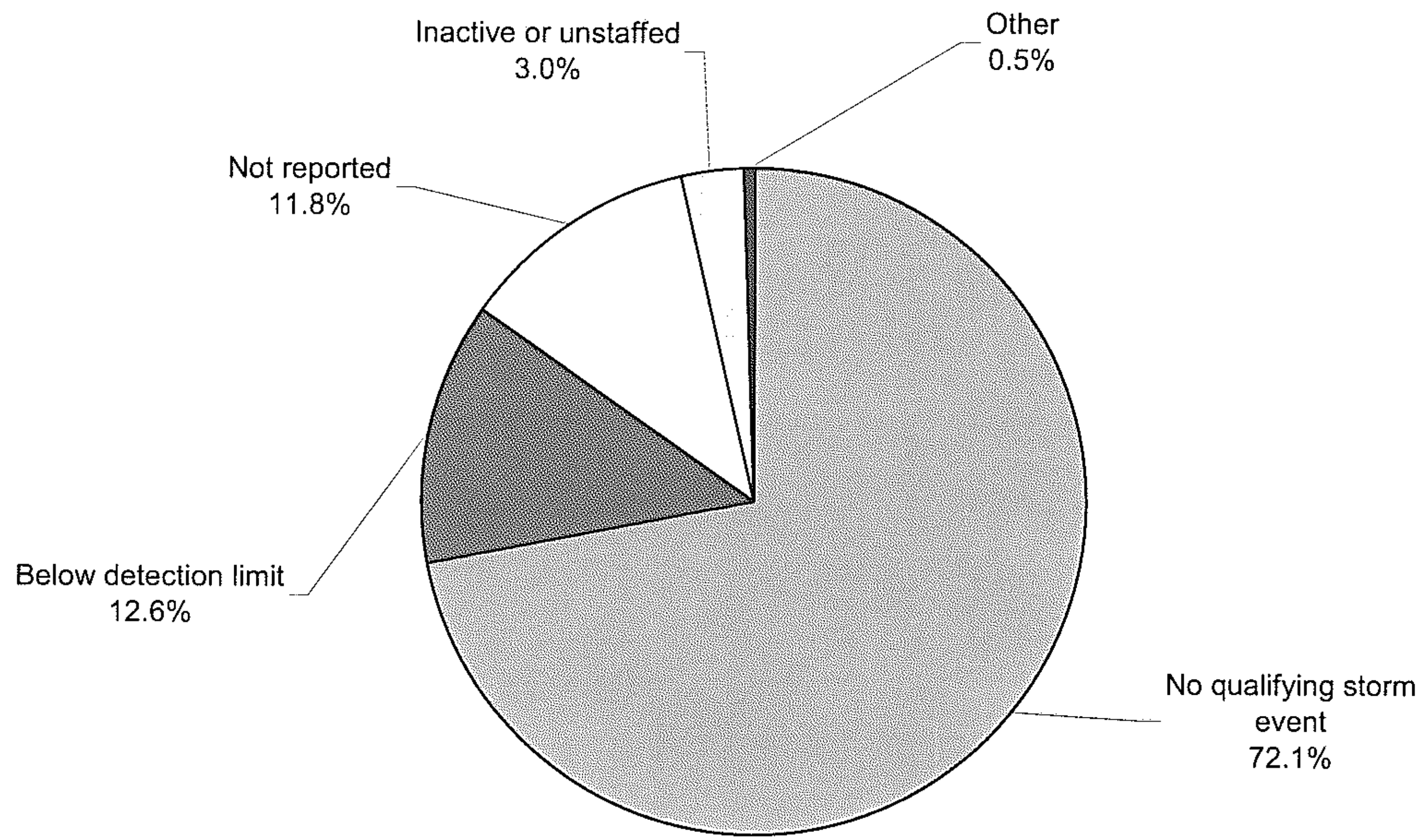

Figure 1. Distribution of unreported values for industrial stormwater by database qualifier.

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The reported and unreported values were also summarized for each quarter to determine if the time of year made a difference in the reporting frequency (Table 6). The number entries in the database with the "No Qualifying Storm Event" qualifier was also tallied on a quarterly basis to determine if a lack of rainfall during dry seasons was a primary influence on reporting frequency. These data show there are not substantial differences between the total number of values reported for each quarter; however, the first quarter of 2003 was not included in this dataset, thus the number of values in this quarter only represent two years of sampling instead of three years for the 2nd, 3rd, and 4th quarters. Although the number of values reported on a quarterly basis did not vary greatly, the values not reported and the no qualifying storm event categories do appear to be substantially higher in the 2nd and 3rd quarters. This suggests that reporting frequency was lower during the summer period (April – Sept.) primarily due to a lack of qualifying storm events.

Table 6. Breakdown of reported values, unreported values, and no qualifying storm event values by quarter of the year.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Values reported	5533	5880	4634	5439
Values not reported	4362	8343	7885	4424
No qualifying storm event	*2159*	*5831*	*6200*	*2238*

Construction Stormwater

Data Source

In general, sources for construction stormwater data are extremely limited due to a lack of monitoring and reporting requirements prior to the issuance of the revised general NPDES construction stormwater permit in November 2005. Construction stormwater data that are analyzed within this report were obtained from an Ecology (2005) study that was implemented over two winter wet seasons in 2003/04 and 2004/05. The primary objective of this study was to obtain representative data to characterize the quality of stormwater discharged from construction sites. To meet this objective, a "snap-shot" survey of construction sites was conducted to measure turbidity, transparency, and total suspended solids (TSS) in their associated runoff. In addition to the collection of these data, monitoring personnel also documented site conditions during the surveys including site size, stage of construction, and the types of best management practices (BMPs) that were in use.

In order to conduct this survey, a list of 183 eligible construction sites in four counties within Western Washington (i.e., King, Snohomish, Pierce, and Thurston) was developed using Ecology's Water Quality Permit Life Cycle System (WPLCS) database. Site visits were then conducted at these construction sites and samples were collected if stormwater was observed discharging off-site. In summary, a total of 44 unique sites were sampled in connection with this effort. Out of the remaining 139 sites from the WPLCS database, eight could not be located, 13 had already completed construction, 15 had not yet started construction, and 103 had no discharge at the time of the site visit.

As noted above, Ecology monitoring personnel documented the conditions at each of 44 sampling sites. Based on this information, 36 percent of the sites were described as large (i.e., > 20 acres), 48 percent as medium (i.e., between 5 and 20 acres), 14 percent as small (i.e., < 5 acres), and 2 percent unclassified due to a lack of data. All 44 sites also had at least one of the following BMPs: storm drain protection, stormwater pond or basin, and disturbed soil protection (e.g., mulch, plastic, vegetation, or erosion control blankets). Finally, the Ecology monitoring personnel indicated that six of the sites discharged directly to receiving waters, all of which were small streams with widths of 2 to 5 feet. The remainder of the sites either allowed the stormwater water to infiltrate into the ground or discharged it to a municipal stormwater collection system.

Data Quantity

A total of 47, 49, and 50 values were obtained for transparency, turbidity, and TSS, respectively from sampling conducted at the 44 sites identified above. (Note that multiple samples were collected from several of the 44 sites.) These numbers are consistent with Ecology's goal of collecting at least 45 samples that was established at the study's onset.

Data Quality

The primary data quality issues for construction stormwater are the limited geographic and temporal coverage of the sampling. For example, sampling for this study was limited to a relatively small number of sites spread throughout four counties in Western Washington. Furthermore, the monitoring only spanned two winter seasons, both of which were drier than normal (Ecology 2005). Finally, the total number of values obtained from this study is relatively small. Therefore, definitive conclusions regarding construction stormwater quality cannot be inferred based on these data.

Data Analysis Methods

Analysis methods for the industrial and construction stormwater data are described in the following sections. The presentation of this information is organized under separate subsections for each of the data analysis goals identified in the introduction to this report.

Data Distribution

Tabular and graphical summaries were generated to show the distribution of the compiled industrial and construction stormwater data including: central tendency, variation or spread, skewness, and presence or absence of outliers. The tabular summaries specifically present the following summary statistics for each monitoring parameter:

- Sample size (total number of values)
- Mean
- Median
- Minimum
- 10th Percentile
- 90th Percentile
- Maximum
- Standard deviation
- Coefficient of variance (CV).

Graphical data summaries consisting of "box and whisker" plots were generated to present the following information: the 10th and 90th percentiles of the data as the lower and upper whiskers, respectively; the 25th and 75th percentiles of the data as the lower and upper boundaries of the box, respectively; and the median as the point in the box.

For the industrial stormwater data, the tabular and graphical summaries were generated for the ten primary analysis parameters identified previously. These summaries were organized to facilitate comparisons of the data across the 13 industrial categories (see Table 1). Additional tabular summaries with a subset of the summary statistics identified above were also generated to facilitate comparisons of the data across the 35 industrial sectors (see Table 2). However, these latter summaries are not presented or discussed within the main body of this report; rather, they are presented in Appendix A for reference only.

Only tabular data summaries were prepared for the construction stormwater data. These summaries present the statistics identified above for the transparency, turbidity, and TSS data that were compiled from Ecology (2005).

Comparison among Industrial Categories

Statistical analyses were performed on the data from the ten primary analysis parameters to determine whether there were significant differences in median concentrations across the industrial categories. To ensure that sufficient data were available to accurately describe the data distribution for each parameter, only those industrial categories with at least 25 samples were included in these analyses. In cases where more than two industrial categories had adequate numbers of samples, these statistical comparisons were made using a Kruskal Wallis test (Helsel and Hirch 1992). If the KruskalWallis test indicated that significant differences in median concentrations existed between one or more of the industrial categories, a follow-up nonparametric multiple range test (Zar 1984) was performed on the data to determine which specific categories were different from the others. In cases where only two industrial categories had adequate numbers of samples, the statistical comparisons were made using a Mann Whitney U test. For all tests, statistical significance was evaluated at an alpha level (α) of 0.05.

Comparison to NPDES Permit Benchmarks and Action Levels

In order to assess compliance with the general NPDES industrial stormwater permit, the compiled industrial stormwater data for turbidity, pH, total zinc, oil & grease, total copper, total lead, BOD, ammonia nitrogen, nitrite + nitrate nitrogen, and total phosphorus were compared to applicable benchmarks and action levels identified in Table 7. Similarly, the compiled construction stormwater data for turbidity were compared to the applicable benchmark (i.e., 50 nephelometric turbidity units [NTU]) and action level (i.e., 250 NTU) from the general NPDES construction stormwater permit. Based on these comparisons, the percentage of samples exceeding the benchmark and action levels was calculated. For the industrial stormwater data, these percentages were calculated for each individual industrial category in Table 1, Western Washington, Eastern Washington, and the entire state of Washington.

Table 7. Benchmark values and action levels identified in the general NPDES industrial stormwater permit.

Parameter	Benchmark	Action Level
BOD, 5 day, 20° C (mg/L)	30, 140[a]	60
Copper (µg/L)	63.6	149
Lead (µg/L)	81.6	159
Nitrogen, Ammonia, Total (mg/L)	10[a], 21.8	38
Nitrogen, Nitrite + Nitrate, Total (mg/L)	0.68	1.36
Oil & Grease (mg/L)	15	30
pH	range 6-9	range 5-10
Phosphorus, Total (mg/L)	2	4
Turbidity (NTU)	25	50
Zinc, Total (µg/L)	117	372

mg/L: milligrams/liter.
µg/L: microgram/liter.
NTU: nephelometric turbidity unit.
[a] The 140 mg/L benchmark for BOD and 10 mg/L benchmark for ammonia nitrogen are associated with non-hazardous waste landfills listed in the industrial category 05-Landfills.

Comparison to Hypothetical Water Quality Criteria

The task to determine whether dischargers covered under a general permit are in compliance with the surface water quality standards presents significant challenges. Compliance with Washington's water quality standards requires assessment of the discharger's compliance with the numeric criteria and narrative standards and policies. These physical and chemical criteria have been determined by the U.S. Environmental Protection Agency to be protective of aquatic life, human health, and sediment quality. They are periodically revised to incorporate the best available science. In the case of an individual discharger, Ecology conducts a reasonable potential analysis that compares pollutant concentrations in the discharge with the physical and chemical properties of the receiving water to determine compliance with the numeric criteria.

Water quality standards take into account potential dilution, ratio of dissolved to total metals, water effects ratios, and background concentration. These are site specific parameters. The calculations used for this study take into account only dilution and dissolved to total metals ratio.

The narrative standards and policies portion of the water quality standards are more difficult to quantify. They include such prohibitions as: no toxic substances in toxic amounts, no resulting increase of pollutant concentrations above background (the antidegradation policy), or the loss of a beneficial use. Compliance with narrative standards and policies require conducting site-specific studies of the discharge and its physical, chemical, and biological impacts to receiving water. Assessing compliance with the narrative standards and policies portion of the water quality standards is beyond the scope of the programmatic approach used in this report.

In order to determine if the designated uses of a water body, as defined in WAC 173-201A, are adequately maintained through the general NPDES industrial stormwater permit, the compiled industrial stormwater data for turbidity, total zinc, total copper, and total lead were compared to hypothetical water quality criteria based on a set of representative receiving water conditions and dilution factors. A similar approach was applied to the compiled construction stormwater data for turbidity to determine if the designated uses of a water body are adequately maintained through the general NPDES construction stormwater permit. Based on these comparisons, the percentage of samples that would potentially exceed the water quality criteria was calculated using all the compiled data for each parameter and only those data that did not exceed the benchmark. For the industrial stormwater data, these percentages were also calculated for each individual industrial category identified in Table 1.

To assess the sensitivity of these analyses, these percentages were calculated using three separate sets of representative receiving water conditions to represent typical, worst case, and best case scenarios for the potential to exceed water quality standards. For example, all the conditions (e.g., receiving water background pollutant concentration and hardness) selected under the worst case scenario would make it more likely that the water quality criteria would be exceeded for any given parameter.

The specific steps that were used to compare sample concentrations to the water quality criteria are as follows:

1. Typical, worst case, and best case background concentrations for each parameter were generated for western and eastern Washington, respectively, based on queries of Ecology's Environmental Information Management System (EIM) database (Ecology, 2006). More specifically, the EIM database was queried to obtain data from river systems in each region of the state for the targeted parameters (i.e., turbidity, total zinc, total copper, and total lead). The typical scenario for total zinc, total copper, and total lead was developed using the mean value from the dataset for each parameter. The worst case scenario used the 75th percentile, and the best case the 25th percentile. The typical scenario for turbidity was developed using the mean value from the dataset, the worst case scenario used the 25th percentile, and the best case the 75th percentile. These concentrations are presented in Table 8.

Table 8. Representative theoretical background concentrations of pollutants for receiving water conditions in western and eastern Washington.

	Dissolved Copper µg/L	Dissolved Lead µg/L	Dissolved Zinc µg/L	Turbidity NTU
		Western Washington		
Worst-Case	1.5	0.24	5.0	1.7
Typical	0.77	0.047	1.8	3.8
Best-Case	0.46	0.021	1.0	10
		Eastern Washington		
Worst-Case	1.18	0.3	33	1.4
Typical	0.71	0.088	3.3	3.8
Best-Case	0.49	0.023	1.0	10

Data source: Queries of Environmental Information Management system; Ecology (2006).
µg/L: microgram/liter.
NTU: nephelometric turbidity unit.

2. Using the sample concentrations from the compiled industrial and construction stormwater, a theoretical receiving water concentration at the facility's point of discharge was calculated using the typical, worst case, and best case background concentrations from Step 1, and assumed dilution factors within the receiving water of 0, 10, 25, and 50 for the facility's stormwater discharge. The following equation was used to make these calculations for the 2.5, 5, and 10 dilution factors:

$$C_r = (1/F_d \times C_f) + ([1 - 1/F_d] \times C_b)$$

where:

C_r = receiving water concentration at facility point of discharge
F_d = dilution factor

C_f = stormwater sample concentration from facility
C_b = receiving water background concentration.

3. Theoretical receiving water concentrations computed for total zinc, total copper, and total lead from Step 2 were converted to dissolved concentrations to facilitate comparisons to the water quality criteria which are based on the dissolved forms of these metals. These conversions were made using "translator values" that were derived from guidance presented by Pelletier (1996). Because these translator values vary depending on the TSS concentration in the receiving water, the EIM database was again queried to obtain typical, worst case, and best case concentrations for this parameter in eastern and western Washington, respectively. The typical scenario was developed using the mean value from each dataset, the worst case scenario used the 25th percentile, and the best case the 75th percentile. These TSS concentrations and the associated translator values are presented in Table 9.

Table 9. Assumed total suspended solids concentrations and associated translator values for converting total metal concentrations to dissolved concentrations for receiving waters in western and eastern Washington.

	Assumed TSS Concentrations [a] (mg/L)	Copper Translator	Lead Translator	Zinc Translator
		Western Washington		
Worst-Case	2	1	0.466	1
Typical	5	1	0.466	1
Best-Case	14	0.931	0.466	0.973
		Eastern Washington		
Worst-Case	3	1	0.466	1
Typical	7	1	0.466	1
Best-Case	23	0.786	0.466	0.868

[a] Data source: Queries of Environmental Information Management system; Ecology (2006).

4. Theoretical receiving water concentrations from Step 2 (turbidity only) and Step 3 (dissolved zinc, dissolved copper, and dissolved lead) were compared to hypothetical water quality criteria. Because state water quality standards for zinc, copper, and lead vary with the hardness of the receiving water, the EIM database was again queried to obtain typical, worst case, and best case concentrations for this parameter in eastern and western Washington, respectively. The typical scenario was developed using the mean value from each dataset, the worst case scenario used the 25th percentile, and the best case the 75th percentile. These hardness concentrations were used to determine the water quality criteria which are

presented in Table 10. The state water quality standard for turbidity requires that stormwater related increases in the receiving water not exceed background turbidity by 5 NTU. To assess compliance with the hypothetical water quality criterion in this analysis, the theoretical receiving water turbidity levels from Step 2 were compared to the background turbidity levels presented in Table 8. If more than a 5 NTU increase was observed, it was assumed that the water quality criterion for turbidity was exceeded.

Table 10. Hypothetical acute and chronic water quality criteria for metals in receiving waters of western and eastern Washington.

	Assumed Hardness [a] (mg/L as $CaCO_3$)	Dissolved Copper		Dissolved Lead		Dissolved Zinc	
		Acute µg/L	Chronic µg/L	Acute µg/L	Chronic µg/L	Acute µg/L	Chronic µg/L
Western Washington							
Worst-Case	18	3.4	2.6	9.6	0.37	27	24
Typical	25	4.6	3.5	14	0.54	35	32
Best-Case	36	6.5	4.7	21	0.81	48	44
Eastern Washington							
Worst-Case	35	6.3	4.6	20	0.79	47	43
Typical	68	12	8.2	42	1.6	83	75
Best-Case	100	17	11	65	2.5	114	105

[a] Hardness used to compute water quality criteria for copper, lead, and zinc. Data source: Queries of Environmental Information Management system; Ecology (2006).
mg/L: milligrams/liter.
µg/L: microgram/liter.

5. For each parameter, the percentage of samples exceeding the water quality criteria was calculated based on all the compiled data and only those data that did not exceed the benchmark. For the industrial stormwater data, these percentages were calculated for each individual industrial category identified in Table 1. These results were then compiled in summary tables.

Data Analysis Results

Data analysis results from the compiled monitoring data are presented herein. These results are organized under separate subsections for industrial and construction stormwater data.

Industrial Stormwater

Data analysis results for industrial stormwater are summarized below under separate sections for each of the primary analysis parameters. For each parameter, the results are presented in relation to the study objectives that were identified in the introduction to this report. Specifically, separate subsections present results for the each of the following analyses as described in the previous section: data distribution, comparison among industrial categories, comparison to NPDES permit benchmarks and action levels, and comparison to state water quality standards (if applicable).

Turbidity

Data Distribution

Tabular and graphical data summaries for turbidity levels are provided in Table 11 and Figure 2, respectively, by individual industrial category and for all categories combined. Tabular data summaries for turbidity are also provided in Appendix A by industrial sector; however, these data are presented for reference only and are not discussed herein. Turbidity had the largest quantity of data of all the parameters with 4,479 values across all the industrial categories. The mean and median values from these data were 66 and 15 NTU, respectively; and the coefficient of variation was 4.1. The asymmetrical shape of the box plots presented in Figure 2 indicate that the turbidity data have a right-skewed distribution due to the presence of numerous outliers in the upper end of the data range. Across all industrial categories, the 90th percentile and maximum values for the data were 120 and 9,700 NTU, respectively.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of turbidity levels were only available in the following seven industrial categories (Table 11). Results from these analyses (i.e., Kruskal Wallis test and follow-up multiple range test) indicate the data can generally be differentiated into two groups with low and high median turbidity levels, respectively (Table 12). Specifically, median levels for the Treatment Works (09), Landfills (05), No Category Specified, and Light Industrial Activity (11) categories were significantly lower than those for the remaining three categories: Transportation Facilities (08), Recycling Facilities (06), and Manufacturing (02).

Table 11. Summary statistics for turbidity levels measured in industrial stormwater by industry category.

Industry Category	n	Mean (NTU)	Median (NTU)	Minimum (NTU)	10th Percentile (NTU)	90th Percentile (NTU)	Maximum (NTU)	Std. Dev. (NTU)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
01 - Facilities with effluent limitations	8	6.7	5.0	1.9	1.9	14	14	4.9	0.73	0%	0%
02 - Manufacturing	1,327	93	20	0.16	3.1	180	9,700	356	3.84	45%	27%
03 - Mineral, metal, oil, and gas	24	8.3	3.2	0.43	1.1	22	52	12	1.51	8%	4%
05 - Landfills	135	15	7.9	0.48	1.4	37	165	21	1.44	16%	4%
06 - Recycling facilities	295	58	19	0.0	3.3	156	710	104	1.80	42%	27%
07 - Steam electric plants	3	9	10	3.7	3.7	12	12	4.4	0.50	0%	0%
08 - Transportation facilities	1,010	81	17	0	2.7	142	5,380	319	3.94	40%	24%
09 - Treatment works	77	13	5.7	0.4	1.0	28	100	18	1.39	10%	8%
10 - Construction sites > 5 acres	6	42	19	4.5	4.5	173	173	65	1.55	50%	17%
11 - Light industrial activity	1,450	45	12	0.05	2.1	77	5,490	189	4.17	31%	16%
12 - Significant contributor	7	31	2.5	1.5	1.5	149	149	56	1.80	29%	29%
No category specified	137	38	8.4	0.7	2.7	72	1,190	118	3.13	24%	15%
All categories	4,479	66	15	0	2.4	120	9,700	272	4.10	37%	21%

[a] Benchmark for turbidity is 25 NTU.
[b] Action level for turbidity is 50 NTU.
Std. Dev.: Standard Deviation.

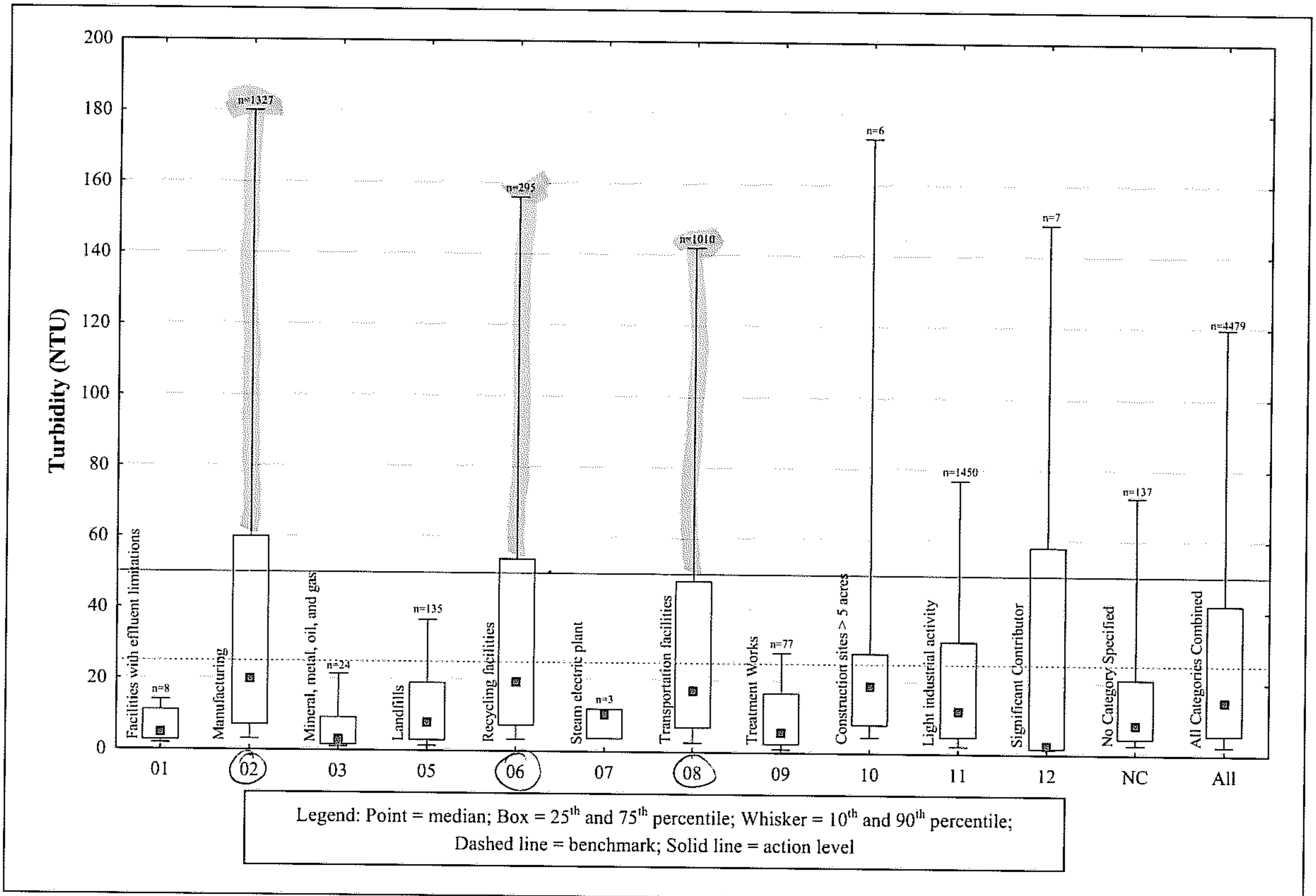

Figure 2. Turbidity levels measured in industrial stormwater by industrial category.

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Table 12. Comparison of median concentrations for industrial stormwater pollutants across industrial sectors.

Parameter	p-value [a]	Industrial Category						
		Low Mean Rank						High Mean Rank
Turbidity	**< 0.0001**	09	05	NC	11	08	06	02
pH	**< 0.0001**	11	NC	02	09	08	06	05
Total Zinc	**< 0.0001**	05	09	06	02	08	NC	11
Oil and Grease	**< 0.0001**	09	11	02	NC	05	08	06
Total Copper	0.4909	02		06		08		11
Total Lead	**< 0.0001**	11		02		08		06
BOD	**< 0.0001**	05			02			11

[a] Values in bold indicate significant differences exist between industrial categories based on a Kruskal Wallis test ($\alpha = 0.05$).
[b] Industrial categories connected by a single unbroken line are not significantly different based on a nonparametric multiple range test.

Comparison to NPDES Permit Benchmarks and Action Levels

Analyses performed across all 13 industrial categories showed that 37 and 21 percent of the samples had turbidity values that exceeded the applicable benchmark (25 NTU) and action level (50 NTU), respectively (Table 11). Considering only the seven industrial categories in Table 11 with a relatively large number of samples (i.e., n > 25), the benchmark and action level for turbidity were exceeded in at least 40 and 24 percent of the samples, respectively, in the following three industrial categories: Manufacturing (02), Recycling Facilities (06), and Transportation Facilities (08). The benchmark and action level for turbidity were exceeded in fewer than 31 and 16 percent of the samples, respectively, for the remaining four industrial categories: Landfills (05), Treatment Works (09), Light Industrial Activity (11), and No Category Specified.

Comparison to Hypothetical Water Quality Criteria

Results from the comparisons of sample concentrations to the hypothetical water quality criterion for turbidity are summarized in Table 13 for western Washington, eastern Washington, and the entire state. The results are subdivided within this table to show the percentage of samples exceeding the applicable criterion based on all collected samples versus only those samples with concentrations below the benchmark. The presentation of these results is also organized under separate subsections below based on these divisions of the data. Finally, Appendix B (Tables B-1 and B-2) provides a more detailed data summary with comparisons by industrial category for samples collected in eastern and western Washington.

All Collected Samples

Analyses of the compiled data showed high percentages of samples exceeding the hypothetical water quality criterion for turbidity with dilution factors of 0 and 10; however, these percentages declined considerably with dilution factors of 25 and higher (Table 13). For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the criterion were 64 and 20 percent given the "typical" receiving water conditions described previously and dilution factors of 0 and 10, respectively. Given the same receiving water conditions and dilution factors of 25 and 50, these percentages dropped to 9 and 5 percent, respectively.

Table 13. Percentage of turbidity samples exceeding the state water quality criterion given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

	n	Exceedance of Criterion (%)[a]			
		0 DF	10 DF	25 DF	50 DF
All Samples					
Western Washington	4280	64 (49-70)	20 (18-21)	9 (9)	5 (5)
Eastern Washington	184	80 (65-87)	27 (25-30)	17 (15-17)	8 (8)
All Washington	4464	65 (50-71)	21 (18-21)	10 (9-10)	5 (5)
Samples with Values ≤ Benchmark					
Western Washington	2740	44 (21-54)	0 (0)	0 (0)	0 (0)
Eastern Washington	85	56 (25-72)	0 (0)	0 (0)	0 (0)
All Washington	2825	44 (21-54)	0 (0)	0 (0)	0 (0)

[a] Values represent the percentage of sample exceeding the water quality criterion based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Analyses of spatial patterns in the data indicated the percentage of samples exceeding the water quality standard for turbidity was somewhat higher in eastern Washington relative to western Washington (Table 13). For example, 80 to 27 percent of the samples in eastern Washington exceeded the criterion with the typical receiving water conditions and dilution factors of 0 and 10, respectively. With the same receiving water conditions and dilution factors, only 64 to 20 percent of the samples, respectively, exceeded the criterion in western Washington.

The analyses also showed there were substantial differences in the percentages of samples exceeding the water quality criterion for turbidity between industrial categories when lower dilution factors (e.g., 0 and 10) were assumed. For example, when comparing only those industrial categories in Table B-1 with a relatively large sample size (i.e., n > 25), the percentage of samples in western Washington that exceeded the criterion ranged from 39 percent for Treatment Works (09) to 72 percent for Manufacturing (02), assuming the typical receiving water conditions and a dilution factor of 0. Similarly, the percentage of samples in eastern Washington that exceeded the criterion (Table B-1) ranged from 76 percent for Manufacturing (02) to 84 percent for Transportation Facilities (08) assuming the same receiving water conditions and dilution factor. When higher dilution factors (e.g., > 10) were assumed for both eastern and western Washington, the percentages of samples exceeding the water quality criterion were similarly low (<25 percent) across all categories.

Samples with Concentrations Below the Benchmark

In contrast to the results above, analyses performed on the subset of samples with concentrations below the benchmark showed that the hypothetical water quality criterion for turbidity was only exceeded when a dilution factor of 0 was assumed. More specifically, across the entire state of Washington and all 13 industrial categories, the percentage of samples that exceeded the criterion was 44 percent given the "typical" receiving water conditions and a dilution factor of 0 (Table 13). This percentage dropped to 0 assuming the same receiving water conditions and a dilution factor of 10 or higher.

pH — No outlier groups.

Data Distribution

Tabular and graphical data summaries for pH for individual industrial categories and for all categories combined are provided in Table 14 and Figure 3, respectively. Tabular data summaries by industrial sector for pH are also provided in Appendix A. Based on all 4,442 pH values present in the database, the mean and median levels for this parameter were 7.1 and 6.7, respectively, across all of the industrial categories; and the coefficient of variation was 0.12. The mean pH value from this study was generally similar to those reported from other studies. For example, Stenstrom and Lee (2005) reported mean pH values of 7.01 and 7.16 from monitoring data compiled from general NPDES industrial stormwater permits in Los Angeles County, CA and Sacramento County, CA, respectively. The same authors reported a slightly lower mean pH value (6.32) for the state of Connecticut. Coefficients of variation for pH in these same studies ranged from 0.17 to 0.95.

The box plots presented in Figure 3 indicate that the distribution of the data complied for this analysis is relatively symmetrical around the median. The 90^{th} percentile and maximum values for the pH data were 7.6 and 11.6, respectively. (Note that five outliers were eliminated from the dataset prior to this analysis because they exceeded the acceptable range for pH [i.e., 0-14]).

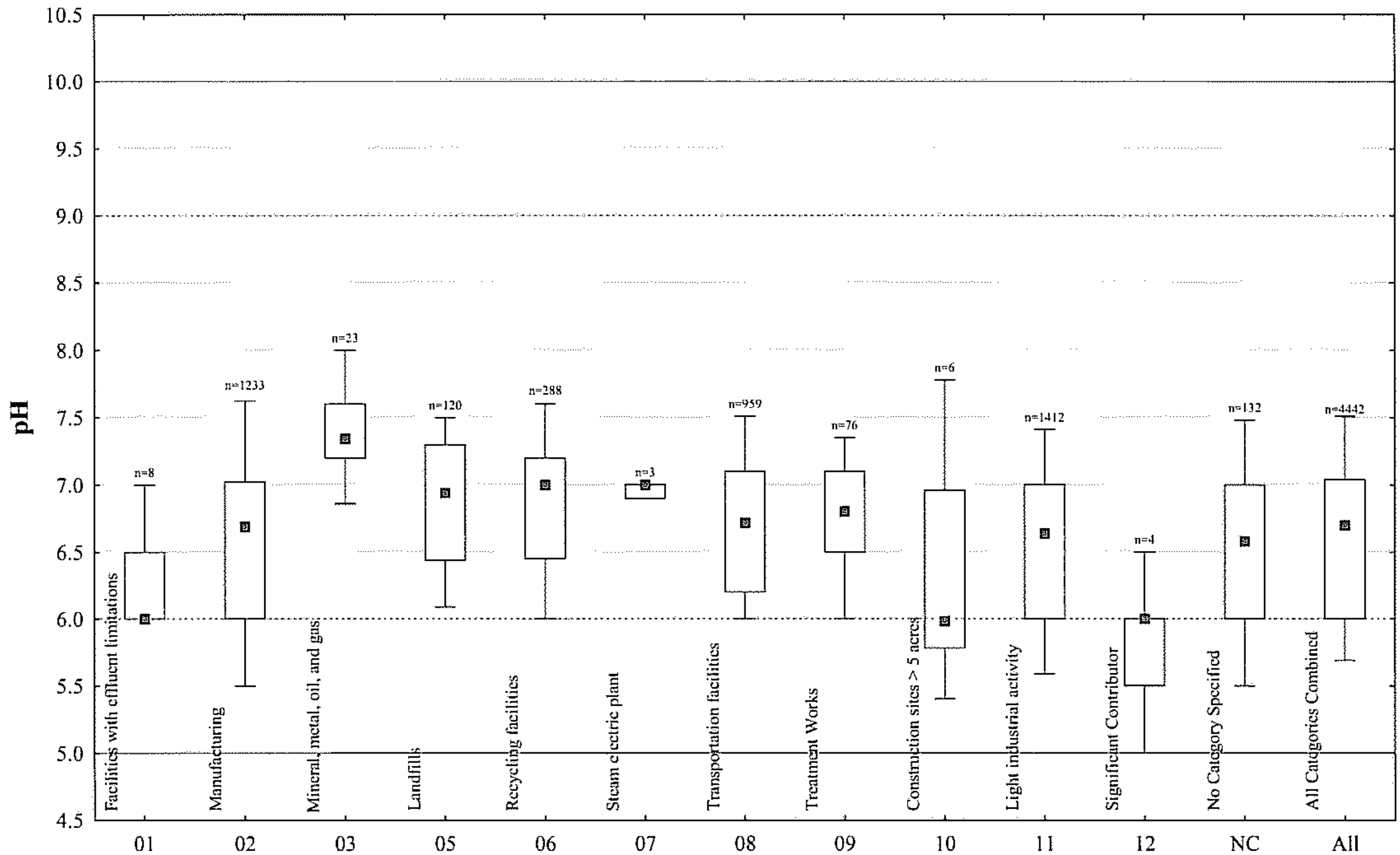
Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of pH levels were only available in seven industrial categories (Table 14). Results from these analyses (Table 12) indicate that Light Industrial Activity (11) had a lower median concentration relative to Transportation Facilities (08), Landfills (05), and Recycling Facilities (06). Median turbidity levels in all other remaining industrial categories (Manufacturing (02), Treatment Works (09),

Table 14. Summary statistics for pH levels measured in industrial stormwater by industry category.

Industrial Category	n	Mean	Median	Minimum	10th Percentile	90th Percentile	Maximum	Std. Dev.	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
01 - Facilities with effluent limitations	8	6.3	6.0	6.0	6.0	7.0	7.0	0.46	0.07	0%	0%
02 - Manufacturing	1,323	6.6	6.7	2.0	5.5	7.7	11.6	0.97	0.15	18%	3%
03 - Mineral, metal, oil, and gas	24	7.4	7.3	6.4	6.9	8.0	8.0	0.44	0.06	0%	0%
05 - Landfills	135	6.9	6.9	5.0	6.1	7.5	8.3	0.58	0.08	6%	1%
06 - Recycling facilities	294	6.8	7.0	2.2	6.0	7.6	10.0	0.77	0.11	8%	1%
07 - Steam electric plants	3	7.0	7.0	6.9	6.9	7.0	7.0	0.06	0.01	0%	0%
08 - Transportation facilities	988	6.7	6.7	2.2	6.0	7.5	10.6	0.75	0.11	12%	1%
09 - Treatment works	77	6.8	6.8	5.4	6.0	7.4	7.9	0.53	0.08	8%	0%
10 - Construction sites > 5 acres	6	6.3	6.0	5.4	5.4	7.8	7.8	0.88	0.14	50%	0%
11 - Light industrial activity	1,445	6.6	6.6	1.0	5.6	7.4	10.0	0.78	0.12	16%	2%
12 - Significant contributor	7	5.8	6.0	5.0	5.0	6.5	6.5	0.49	0.08	43%	0%
No category specified	132	6.5	6.6	4.4	5.5	7.5	8.2	0.73	0.11	14%	1%
All categories	4,442	7.1	6.7	1.0	5.5	7.6	11.6	0.83	0.12	14%	2%

[a] Benchmark for pH is <6 or >9.
[b] Action level for pH is <5 or >10.
Std. Dev.: Standard Deviation.



Legend: Point = median; Box = 25th and 75th percentile; Whisker = 10th and 90th percentile;
Dashed line = benchmark; Solid line = action level

Figure 3. Levels of pH measured in industrial stormwater by industrial category.

and No Category Specified) were intermediate between these two groups and were generally not differentiated in the statistical analysis.

Comparison to NPDES Permit Benchmarks and Action Levels

As shown in Table 14, analyses performed across all 13 industrial categories showed that only 14 and 2 percent of the samples exceeded the applicable benchmark (pH <6 or pH >9) and action level (pH <5 or pH >10), respectively. Considering only the seven industrial categories in Table 14 with a relatively large number of samples (i.e., n > 25), Manufacturing (02) had the highest percentage of samples exceeding the benchmark and action level at 18 and 3 percent, respectively.

Total Zinc

Data Distribution

Tabular and graphical data summaries for total zinc concentrations are provided in Table 15 and Figure 4, respectively, by individual industrial category and for all categories combined. Tabular data summaries for total zinc are also provided in Appendix A by industrial sector. Based on all 4,264 total zinc values that were present in the database, the mean and median concentrations for this parameter were 469 and 139 micrograms per liter (μg/L), respectively, across all the industrial categories; and the coefficient of variation was 7.1. The mean value from this study was generally low relative to the mean value from other studies. For example, Stenstrom and Lee (2005) reported mean values ranging from 510 to 4,960 μg/L for total zinc based on data that were compiled through general NPDES industrial stormwater permits in the following jurisdictions: Los Angeles County, CA; Sacramento County, CA; and the State of Connecticut. The coefficients of variation for total zinc from this same dataset ranged from 7.59 to 13.85.

The asymmetrical shape of the box plots presented in Figure 4 indicate that the total zinc concentrations compiled for this analysis have a right-skewed distribution due to the presence of numerous outliers in the upper end of the data range. Across all industrial categories, the 90^{th} percentile value for the data was 692 μg/L. The maximum (130,000 μg/L) represents an extreme outlier that may indicate the associated value was incorrectly entered in the DMR or database.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of total zinc concentrations were only available in seven industrial categories (Table 15). Results from these analyses (Table 12) indicate the data can be differentiated into two groups with low and high median total zinc concentrations, respectively. Specifically, median concentrations for the Landfills (05) and Treatment Works (09) categories were significantly lower than those for the remaining five categories: Manufacturing (02), Recycling Facilities (06), Transportation Facilities (08), Light Industrial Activity (11), and No Category Specified.

Table 15. Summary statistics for total zinc concentrations measured in industrial stormwater by industry category.

Industrial Category	n	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	10th Percentile (µg/L)	90th Percentile (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
01 - Facilities with effluent limitations	8	1639	1600	520	520	3110	3,110	779	0.48	100%	100%
02 - Manufacturing	1,233	321	140	0.02	19.0	722	8,110	653	2.03	55%	22%
03 - Mineral, metal, oil, and gas	23	80.2	30.0	2.00	9.00	220	650	147	1.83	17%	4%
05 - Landfills	120	158	35.0	0.002	6.00	347	4,400	457	2.89	18%	8%
06 - Recycling facilities	288	308	119	2.00	24.0	730	6,410	580	1.88	50%	23%
07 - Steam electric plants	3	41.6	34.0	17.8	17.8	73.0	73	28.4	0.68	0%	0%
08 - Transportation facilities	959	318	146	0.136	25.1	604	16,200	810	2.54	57%	20%
09 - Treatment works	76	122	43.6	1.00	12.0	300	1,140	199	1.63	29%	7%
10 - Construction sites > 5 acres	6	796	368	180	180	2600	2,600	931	1.17	100%	50%
11 - Light industrial activity	1,412	774	150	0.00	32.6	750	130,000	5645	7.29	58%	23%
12 - Significant contributor	4	16.3	9.00	0.021	0.021	47.0	47.0	21.2	1.30	0%	0%
No category specified	132	533	149.5	0.255	20.0	881	18,200	1790	3.36	58%	28%
All categories	4,264	469	139	0	20.4	692	130,000	3317	7.06	55%	21%

[a] Benchmark for zinc is 117 µg/L.
[b] Action level for copper is 372 µg/L.
Std. Dev.: Standard Deviation.
µg/L: microgram/liter.

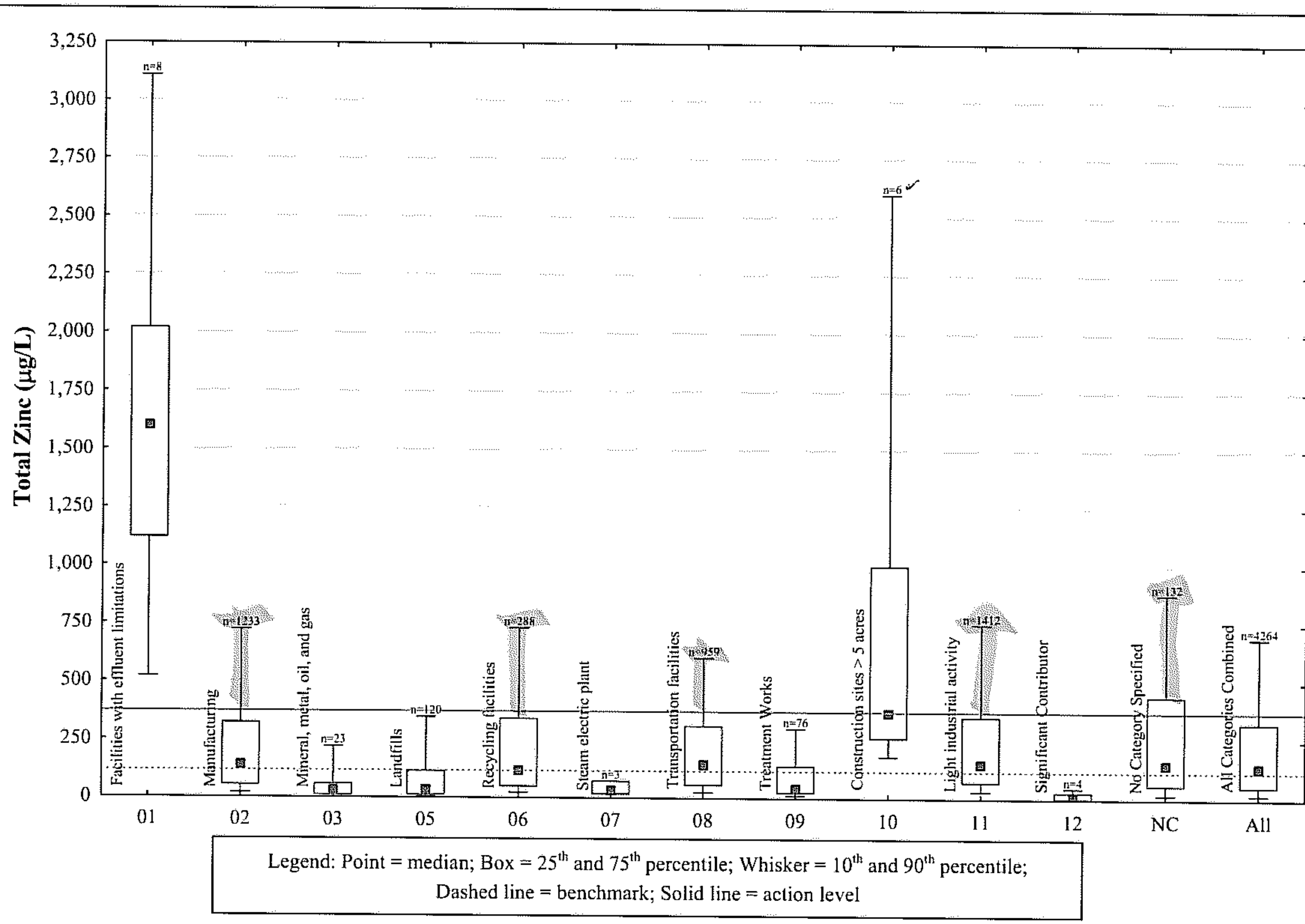


Figure 4. Total zinc concentrations measured in industrial stormwater by industrial category.

Comparison to NPDES Permit Benchmarks and Action Levels

As shown in Table 15, analyses performed across all 13 industrial categories showed that 55 and 21 percent of the samples had total zinc concentrations that exceeded the applicable benchmark (117 μg/L) and action level (372 μg/L), respectively. Considering only the seven industrial categories in Table 15 with a relatively large number of samples (i.e., $n > 25$), the benchmark and action level for total zinc were exceeded in at least 50 and 20 percent of the samples, respectively, in the following five industrial categories: Manufacturing (02), Recycling Facilities (06), Transportation Facilities (08), Light Industrial Activity (11), and No Category Specified. The benchmark and action level for total zinc were exceeded in fewer than 30 and 8 percent of the samples, respectively, for the remaining two industrial categories: Landfills (05) and Treatment Works (09).

Comparison to Hypothetical Water Quality Criteria

Results from the comparisons of sample concentrations to the hypothetical water quality criterion for dissolved zinc are summarized in Table 16 for western Washington, eastern Washington, and the entire state. The results are subdivided within this table to show the percentage of samples exceeding the applicable criterion based on all collected samples versus only those samples with concentrations below the benchmark. The presentation of these results is also organized under separate subsections below based on these divisions of the data. Finally, Appendix B (Tables B-3 and B-4) provides a more detailed data summary with comparisons by industrial category for samples collected in eastern and western Washington.

All Collected Samples

Similar to the results presented above for turbidity, analyses of the compiled data showed high percentages of samples exceeding the hypothetical water quality criterion for dissolved zinc with dilution factors of 0 and 10; however, these percentages declined considerably with dilution factors of 25 and higher (Table 16). For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the criterion were 83 and 24 percent given the typical receiving water conditions and dilution factors of 0 and 10, respectively. Given the same receiving water conditions and dilution factors of 25 and 50, these percentages dropped to 7 and 3 percent, respectively. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved zinc (see Table 16).

Analyses of spatial patterns in the data indicated the percentage of samples exceeding the water quality criterion for dissolved zinc was only slightly higher in western Washington relative to eastern Washington (Table 16). For example, 84 to 24 percent of the samples in western Washington exceeded the criterion with the typical receiving water conditions and dilution factors of 0 and 10, respectively. With the same receiving water conditions and dilution factors, 70 to 10 percent of the samples, respectively, exceeded the criterion in eastern Washington. A similar pattern was observed in the data when comparisons were made to the chronic criterion for dissolved zinc (see Table 16).

Table 16. Percentage of total zinc samples exceeding state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Criterion (%) [a]				Exceedance of Chronic Criterion (%) [a]			
	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
All Samples									
Western Washington	4066	84 (79-88)	24 (16-35)	7 (5-14)	3 (2-6)	85 (80-88)	26 (17-39)	9 (6-16)	4 (2-6)
Eastern Washington	183	70 (58-83)	10 (4-50)	3 (1-25)	1 (1-12)	75 (60-85)	13 (5-58)	3 (1-33)	1 (1-16)
All Washington	4249	83 (78-88)	24 (15-36)	7 (5-14)	3 (2-6)	85 (79-88)	26 (17-40)	8 (5-16)	4 (2-7)
Samples with Values ≤ Benchmark									
Western Washington	1847	65 (54-73)	0 (0)	0 (0)	0 (0)	67 (57-75)	0 (0)	0 (0)	0 (0)
Eastern Washington	70	23 (0-54)	0 (0)	0 (0)	0 (0)	34 (0-60)	0 (0)	0 (0)	0 (0)
All Washington	1917	63 (52-72)	0 (0)	0 (0)	0 (0)	66 (55-74)	0 (0)	0 (0)	0 (0)

[a] Values represent the percentage of sample exceeding the water quality criteria based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

In comparisons made between the seven industrial categories in western Washington with a relatively large sample size (i.e., n > 25), the percentage of samples that exceeded the acute criterion for dissolved zinc ranged from 56 percent for Treatment Works (09) to 89 percent for Light Industrial Activity (11), assuming the typical receiving water conditions and a dilution factor of 0 (see Table B-3). Similarly, for the three industrial categories in eastern Washington with a large sample size, the percentage of samples that exceeded the criterion ranged from 47 percent for Transportation Facilities (08) to 87 percent for Manufacturing (02), assuming the same receiving water conditions and dilution factor. When higher dilution factors (e.g., > 10) were assumed for both eastern and western Washington, the percentages of samples exceeding the criterion were similarly low (< 25 percent) across all categories. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved zinc (see Table B-3).

Samples with Concentrations Below the Benchmark

Analyses performed on the subset of samples with concentrations below the benchmark showed that the acute and chronic water quality criteria for dissolved zinc were only exceeded when a dilution factor of 0 was assumed. For example, across the entire state of Washington and all 13 industrial categories, the percentage of samples that exceeded the acute criterion was 63 percent given the typical receiving water conditions and a dilution factor of 0 (Table 16). This percentage dropped to 0 assuming the same receiving water conditions and a dilution factor of 10 or higher. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved zinc.

Oil and Grease

Data Distribution

Tabular and graphical data summaries for oil and grease concentrations are provided in Table 17 and Figure 5, respectively, for each industrial category and for all of the categories combined. Tabular data summaries for oil and grease are also provided in Appendix A by industrial sector. Based on all 2,651 oil and grease values that were present in the database, the mean and median concentrations for this parameter were 7.6 and 5.0 milligram per liter (mg/L), respectively, across all the industrial categories; and the coefficient of variation was 3.3. For comparison, Stenstrom and Lee (2005) reported mean values ranging from 5.66 to 11.26 mg/L for oil and grease based on data that were compiled through general NPDES industrial stormwater permits in the following jurisdictions: Los Angeles County, CA; Sacramento County, CA; and the State of Connecticut. The coefficients of variation for total zinc from this dataset ranged from 1.61 to 14.57. The box plots presented in Figure 5 indicate that the oil and grease data frequently have a left-skewed distribution that is most likely related to large numbers of non detect values that are present in the database. Across all industrial categories, the 90th percentile and maximum values for oil and grease were 12 and 914 mg/L, respectively.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of oil and grease concentrations were only available in seven industrial categories (Table 17). Results from these analyses (Table 12) indicate the data can be differentiated into two groups with low and high median oil and grease concentrations, respectively. Specifically, median concentrations for the Treatment Works (09), Light Industrial Activity (11), and Manufacturing (02) categories were significantly lower than those for Recycling Facilities (06) and Transportation Facilities (08). The remaining two categories (No Category Specified and Landfills [05]) had median concentrations that were intermediate between these two groups and were generally not differentiated from the others in the statistical analysis.

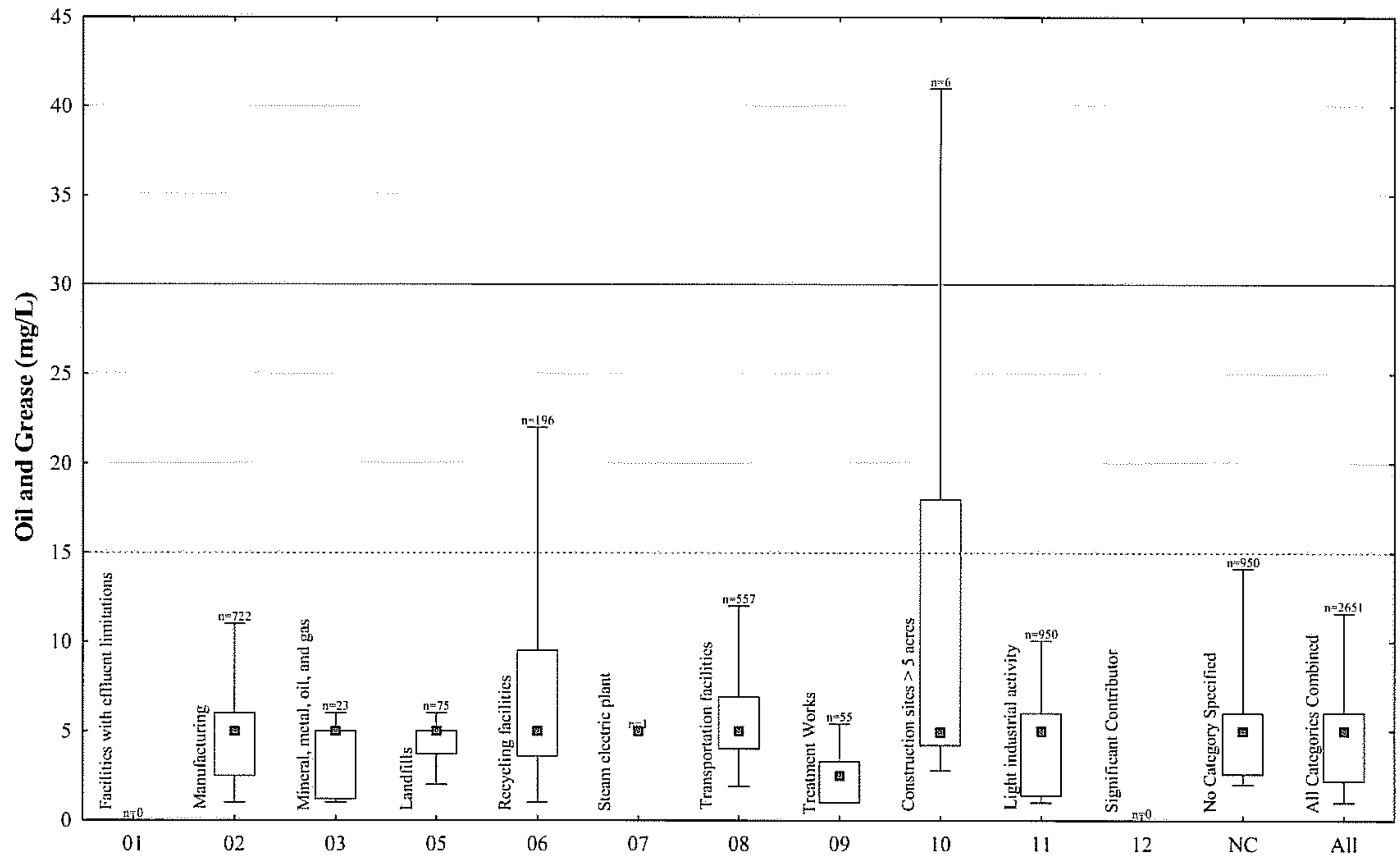
Comparison to NPDES Permit Benchmarks and Action Levels

Analyses performed across all of the industrial categories showed that only 7 and 3 percent of the samples exceeded the applicable benchmark (15 mg/L) and action level (30 mg/L), respectively for oil and grease (Table 17). Considering only the seven industrial categories in Table 17 with a relatively large number of samples (i.e., n > 25), Recycling Facilities (06) had the highest percentage of samples exceeding the benchmark and action level at 16 and 7 percent, respectively.

Table 17. Summary statistics for oil & grease concentrations measured in industrial stormwater by industry category.

Industrial Category	n	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	10th Percentile (µg/L)	90th Percentile (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
02 - Manufacturing	722	6.3	5.0	0.0	1.0	11	120	8.9	1.4	6%	2%
03 - Mineral, metal, oil, and gas	23	3.7	5.0	1.0	1.0	6.0	8.0	2.2	0.6	0%	0%
05 - Landfills	75	19.6	5.0	1.0	2.0	6.0	914	107	5.5	4%	3%
06 - Recycling facilities	196	12.2	5.0	0.8	1.0	22	232	27	2.2	16%	7%
07 - Steam electric plants	1	5.0	5.0	5.0	--	--	5.0	--	--	0%	0%
08 - Transportation facilities	557	9.4	5.0	0	1.9	12	561	31	3.3	9%	4%
09 - Treatment works	55	5.1	2.5	1.0	1.0	5.4	82	12	2.4	5%	4%
10 - Construction sites > 5 acres	6	12.7	5.0	2.8	2.8	41	41	15	1.2	33%	17%
11 - Light industrial activity	950	5.9	5.0	0.0	1.0	10	151	9.7	1.6	5%	2%
No category specified	66	7.1	5.0	1.3	2.0	14	47	9.7	1.4	8%	6%
All categories	2,651	7.6	5.0	0	1.0	12	914	25	3.3	7%	3%

[a] Benchmark for oil & grease is 15 mg/L.
[b] Action level for oil & grease is 30 mg/L.
Std. Dev.: Standard Deviation.



Legend: Point = median; Box = 25th and 75th percentile; Whisker = 10th and 90th percentile; Dashed line = benchmark; Solid line = action level

Figure 5. Oil and grease concentrations measured in industrial stormwater by industrial category.

Total Copper

Data Distribution

Tabular and graphical data summaries for total copper concentrations are presented in Table 18 and Figure 6, respectively, by individual industrial category and for all categories combined. Tabular data summaries for total copper are also provided in Appendix A for each industrial sector. Based on the 1,177 total copper values that were present in the database, the mean and median concentrations for this parameter were 73.1 and 22.2 μg/L, respectively, across all the industrial categories; and the coefficient of variation was 5.6. For comparison, Stenstrom and Lee (2005) reported mean values ranging from 130 to 1,010 μg/L for total copper based on data that were compiled through general NPDES industrial stormwater permits in the following jurisdictions: Los Angeles County, CA; Sacramento County, CA; and the State of Connecticut. The coefficients of variation for total copper from this same dataset ranged from 2.31 to 16.50.

The box plots presented in Figure 6 indicate the total copper concentrations compiled for this analysis have a right-skewed distribution due to the presence of numerous outliers in the upper end of the data range. Across all industrial categories, the 90th percentile value for the data was 104 μg/L. The maximum (11,000 μg/L) represents an extreme outlier that may indicate that the associated value was incorrectly entered in the DMR or database.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of total copper concentrations were only available in four industrial categories (Table 18). Results from these analyses (Table 12) indicate there were no significant differences in median total copper concentrations between these categories: Manufacturing (02), Recycling Facilities (06), Transportation Facilities (08), and Light Industrial Activity (11).

Comparison to NPDES Permit Benchmarks and Action Levels

As shown in Table 18, analyses performed across all 13 industrial categories showed that 21 and 6 percent of the samples had total copper concentrations that exceeded the applicable benchmark (63.6 μg/L) and action level (149 μg/L), respectively. Considering only the four industrial categories in Table 18 with a relatively large number of samples (i.e., n > 25), the benchmark was exceeded in 15 to 20 percent of the samples while the action level was exceeded in 5 to 10 percent.

Comparison to Hypothetical Water Quality Criteria

Results from the comparisons of sample concentrations to hypothetical water quality criteria for dissolved copper are summarized in Table 19 for western Washington, eastern Washington, and the entire state. The results are subdivided within this table to show the percentage of samples exceeding the criteria based on all collected samples versus only those samples with concentrations below the benchmark. The presentation of these results is also organized under

Table 18. Summary statistics for total copper concentrations measured in industrial stormwater by industry category.

Industrial Category	n	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	10th Percentile (µg/L)	90th Percentile (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
01 - Facilities with effluent limitations	4	36	38	6.0	6	63.6	63.6	31.5	0.9	0%	0%
02 - Manufacturing	280	86	22	0.03	5	100	11000	659	7.6	21%	6%
03 - Mineral, metal, oil, and gas	1	158	158	158	--	--	158	--	--	100%	100%
05 - Landfills	22	78	14	2.1	5.9	83	1230	259	3.3	14%	5%
06 - Recycling facilities	196	117	26	2.0	6.7	160	5940	476	4.1	29%	10%
08 - Transportation facilities	196	47	28	0.04	5.9	115	496	72	1.5	28%	6%
09 - Treatment works	18	37	26	5.2	5.7	64	224	49.5	1.4	11%	6%
11 - Light industrial activity	440	48	22	0.01	7	89	1700	111	2.3	16%	5%
No category specified	20	292	10	0.01	2.2	333	4930	1098	3.8	20%	10%
All categories	1177	73.1	22.2	0.01	6	104	11000	410	5.6	21%	6%

[a] Benchmark for copper is 63.6 µg/L.
[b] Action level for copper is 149 µg/L.
Std. Dev.: Standard Deviation.

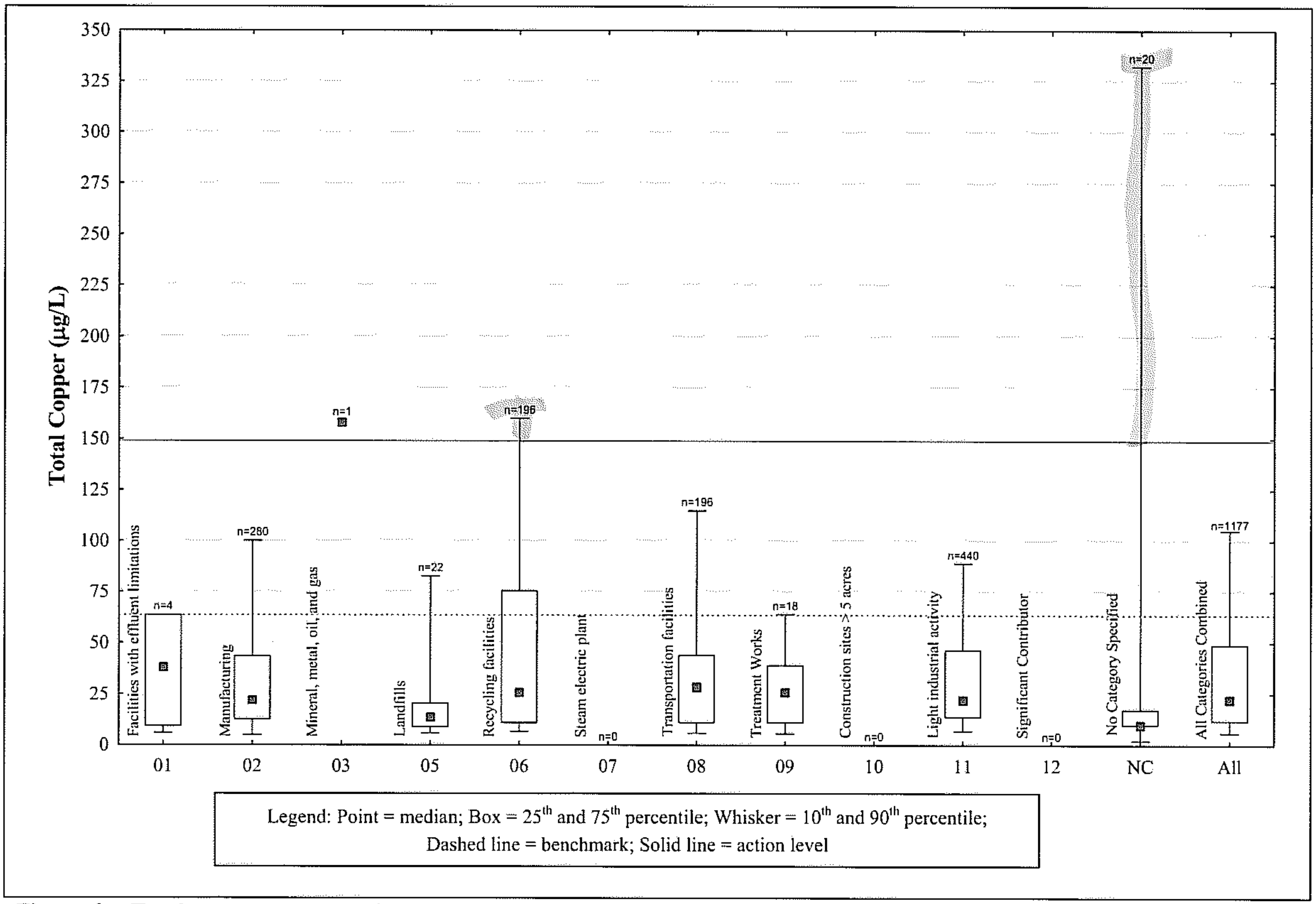


Figure 6. Total copper concentrations measured in industrial stormwater by industrial category.

separate subsections below based on these divisions of the data. Finally, Appendix B (Tables B 5 and B-6) provides a more detailed data summary with comparisons by industrial category for samples collected in eastern and western Washington.

Table 19. Percentage of total copper samples exceeding state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Criterion (%)[a]				Exceedance of Chronic Criterion (%)[a]			
	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
All Samples									
Western Washington	1141	95 (88-96)	31 (18-54)	12 (6-25)	5 (3-12)	96 (92-97)	44 (26-74)	17 (9-42)	7 (4-20)
Eastern Washington	36	64 (47-86)	14 (3-25)	3 (0-8)	0 (0-3)	81 (58-92)	22 (8-31)	3 (3-14)	0 (0-3)
All Washington	1177	94 (87-96)	31 (17-53)	11 (6-24)	5 (3-11)	96 (91-97)	43 (25-73)	17 (9-41)	7 (4-20)
Samples with Values ≤ Benchmark									
Western Washington	926	94 (86-96)	15 (0-43)	0 (0-8)	0 (0)	95 (90-96)	31 (9-68)	0 (0-28)	0 (0-2)
Eastern Washington	27	52 (30-81)	0 (0)	0 (0)	0 (0)	74 (44-89)	0 (0-7)	0 (0)	0 (0)
All Washington	953	93 (84-95)	15 (0-42)	0 (0-7)	0 (0)	95 (89-96)	30 (9-66)	0 (0-27)	0 (0-2)

[a] Values represent the percentage of sample exceeding the water quality criteria based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

All Collected Samples

As with the parameters discussed previously, the analysis performed hereshowed high percentages of the collected samples exceeding the hypothetical water quality criterion for dissolved copper when dilution factors of 0 and 10 were applied; however, these percentages declined considerably with dilution factors of 25 and higher (see Table 19). For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the acute criterion were 94 and 31 percent given the typical receiving water conditions and dilution factors of 0 and 10, respectively. Given the same receiving water conditions and dilution factors of 25 and 50, these percentages dropped to 11 and 5 percent, respectively. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved copper (Table 19).

Analyses of spatial patterns in the data indicated the percentage of samples exceeding the water quality criterion for dissolved copper was only slightly higher in western Washington relative to eastern Washington (Table 19). For example, 95 to 31 percent of the samples in western Washington exceeded the criterion with typical receiving water conditions and dilution factors of

0 and 10, respectively. With the same receiving water conditions and dilution factors, 64 to 14 percent of the samples exceeded the criterion in eastern Washington. A similar, though less pronounced pattern was observed in the data when comparisons were made to the chronic criterion for dissolved copper (see Table 19).

In comparisons that were made between the four industrial categories in western Washington with a relatively large sample size (i.e., n > 25), the percentage of samples that exceeded the acute criterion for dissolved copper (see Table B-5) ranged from 91 percent for Manufacturing (02) to 98 percent for both Recycling Facilities (06) and Light Industrial Activity (11), assuming typical receiving water conditions and a dilution factor of 0. When higher dilution factors (e.g., > 10) were assumed, the percentages of samples exceeding the criterion were similarly low (< 20 percent) across all the categories. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved copper (see Table B-5). However, there were insufficient data to make comparisons between the various industrial categories in eastern Washington.

Samples with Concentrations Below the Benchmark

The analysis performed here on the subset of samples with concentrations below the benchmark showed that the acute and chronic water quality criteria for dissolved copper were only exceeded when dilution factors of 0 and 10 were assumed. For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the acute criterion were 93 and 15 percent given the typical receiving water conditions and dilution factors of 0 and 10, respectively. Given the same receiving water conditions and dilution factors of 25 and 50, these percentages dropped to 0. Nearly identical results were obtained from comparisons of the data to the chronic criterion for dissolved copper (Table 19).

Total Lead

Data Distribution

Tabular and graphical data summaries for total lead concentrations are provided in Table 20 and Figure 7, respectively, by individual industrial category and for all categories combined. Tabular data summaries for total lead are also provided in Appendix A by industrial sector. Based on the 1,034 total lead values present in the database, the mean and median concentrations for this parameter were 48 and 12 μg/L, respectively, across all the industrial categories; and the coefficient of variation was 4.0. For comparison, Stenstrom and Lee (2005) reported mean values ranging from 60 to 4,480 μg/L for total lead concentrations based on data that were compiled through general NPDES industrial stormwater permits in the following jurisdictions: Los Angeles County, CA; Sacramento County, CA; and the state of Connecticut. The coefficients of variation for total lead from this same dataset ranged from 3.82 to 14.12.

The box plots presented in Figure 7 indicate the total lead concentrations compiled for this analysis generally have a right-skewed distribution due to the presence of numerous outliers in the upper end of the data range. Across all industrial categories, the 90th percentile and maximum values for the data were 79 and 3,730 μg/L, respectively.

Table 20. Summary statistics for total lead concentrations measured in industrial stormwater by industry category

Industrial Category	n	Mean (μg/L)	Median (μg/L)	Minimum (μg/L)	10th Percentile (μg/L)	90th Percentile (μg/L)	Maximum (μg/L)	Std. Dev. (μg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
01 - Facilities with effluent limitations	2	82	81.6	81.6	81.6	81.6	81.6	0	0	0%	0%
02 - Manufacturing	230	47	10	0.006	1.0	94.5	1,240	145	3.1	12%	4%
03 - Mineral, metal, oil, and gas	1	14	14	14	--	--	13.9	--	--	0%	0%
05 - Landfills	21	14	6	1.0	2.0	20.9	110	25	1.8	5%	0%
06 - Recycling facilities	178	107	25	0.1	2.6	170	3,730	347	3.2	21%	11%
08 - Transportation facilities	169	32	20	0.05	3.5	60.6	289	43	1.4	18%	2%
09 - Treatment works	18	9.4	7.0	0.9	1.2	24.6	30	8.4	0.9	0%	0%
11 - Light industrial activity	396	31	10	0.01	1.7	50	3,000	157	5.0	6%	3%
No category specified	19	53	10	0.007	2.0	235	576	137	2.6	11%	11%
All categories	1,034	48	12	0.006	1.7	79	3,730	190	4.0	12%	4%

[a] Benchmark for lead is 81.6 μg/L.
[b] Action level for lead is 159 μg/L.
Std. Dev.: Standard Deviation.

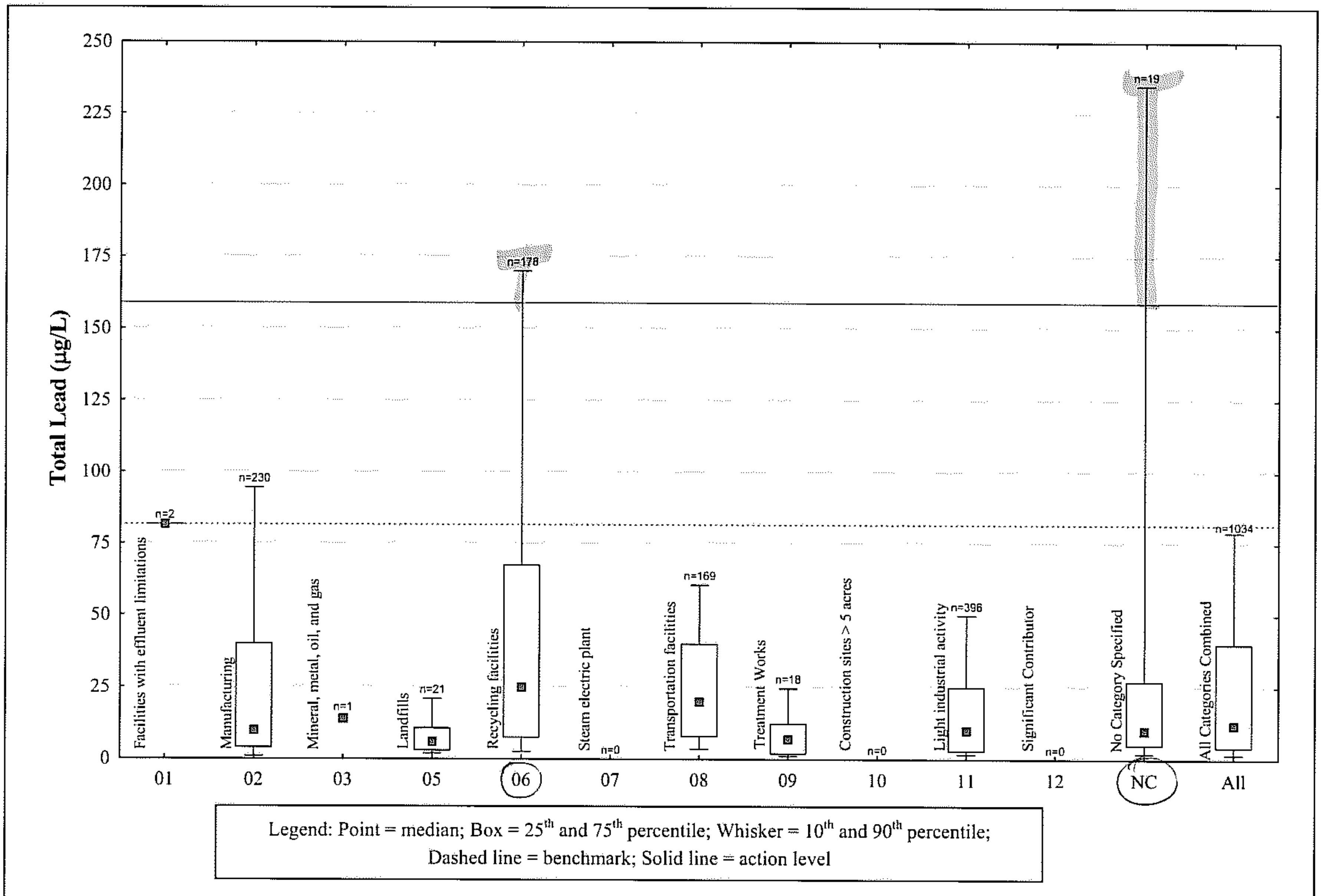


Figure 7. Total lead concentrations measured in industrial stormwater by industrial category.

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Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of total lead concentrations were only available in four industrial categories (Table 20). Results from these analyses (Table 12) indicate the data can be differentiated into two groups with low and high median total lead concentrations, respectively. Specifically, median concentrations for the Light Industrial Activity (11), and Manufacturing (02) categories were significantly lower than those for Transportation Facilities (08) and Recycling Facilities (06).

Comparison to NPDES Permit Benchmarks and Action Levels

Analyses performed across all nine industrial categories reporting total lead concentrations showed that 12 and 4 percent of the samples had total lead concentrations that exceeded the applicable benchmark (81.6 µg/L) and action level (159 µg/L), respectively (Table 20). Considering only the four industrial categories in Table 20 with a relatively large number of samples (i.e., n > 25), the benchmark was exceeded in 6 to 21 percent of the samples while the action level was exceeded in 3 to 11 percent.

Comparison to Hypothetical Water Quality Criteria

Results from the comparisons of sample concentrations to hypothetical water quality criteria for dissolved lead are summarized in Table 21 for western Washington, eastern Washington, and the entire state. The results are subdivided within this table to show the percentage of samples exceeding the applicable criterion based on all collected samples versus only those samples with concentrations below the benchmark. The presentation of these results is also organized under separate subsections below based on these divisions of the data. Finally, Appendix B (Tables B-7 and B-8) provides a more detailed data summary with comparisons by industrial category for samples collected in eastern and western Washington.

All Collected Samples

Across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the acute criterion for dissolved lead were 31, 2, 1 and 0 percent given the typical receiving water conditions and dilution factors of 0, 10, 25, and 50, respectively. In comparison to these results, the percentages of samples exceeding the chronic criterion for dissolved lead were substantially higher. For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the chronic criterion were 93, 51, 33, and 13 percent given the typical receiving water conditions and dilution factors of 0, 10, 25, and 50, respectively.

Analyses of spatial patterns in the data indicate that the percentage of samples exceeding the water quality criterion for dissolved lead was higher in western Washington relative to eastern Washington (Table 21). For example, 32 percent of the samples in western Washington exceeded the criterion with the typical receiving water conditions and a dilution factor of 0, whereas only 17 percent of the samples exceeded the criterion in eastern Washington given the same receiving water conditions and dilution factor. A similar pattern was observed in the data when comparisons were made to the chronic criterion for dissolved lead (see Table 21).

Table 21. Percentage of total lead samples exceeding state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
All Samples									
Western Washington	999	32 (17-40)	2 (2-3)	1 (1-2)	0 (0-1)	93 (89-97)	52 (45-79)	33 (18-62)	13 (9-47)
Eastern Washington	35	17 (11-23)	0 (0)	0 (0)	0 (0)	86 (69-91)	26 (23-51)	17 (11-26)	11 (6-23)
All Washington	1034	31 (17-39)	2 (2-3)	1 (1-2)	0 (0-1)	93 (89-97)	51 (44-78)	33 (18-61)	13 (9-46)
Samples with Values ≤ Benchmark									
Western Washington	909	25 (9-34)	0 (0)	0 (0)	0 (0)	93 (88-97)	47 (40-77)	27 (10-59)	5 (0-42)
Eastern Washington	29	0 (0-7)	0 (0)	0 (0)	0 (0)	83 (62-90)	10 (7-41)	0 (0-10)	0 (0-7)
All Washington	938	24 (9-33)	0 (0)	0 (0)	0 (0)	92 (87-96)	46 (39-76)	26 (9-57)	4 (0-41)

[a] Values represent the percentage of sample exceeding the water quality criteria based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

In comparisons that were made between the four industrial categories in western Washington with a relatively large sample size (i.e., n > 25), the percentage of samples that exceeded the acute criterion for dissolved lead (see Table B-7) ranged from 24 percent for Light Industrial Activity (11) to 47 percent for Recycling Facilities (06), assuming the typical receiving water conditions and a dilution factor of 0. For the same four industrial categories in Western Washington, the percentage of samples that exceeded the chronic criterion ranged from 87 percent for Manufacturing (02) to 96 percent for both Recycling Facilities (06) and Transportation Facilities (08), assuming the same receiving water conditions and dilution factor. There were insufficient data to make comparisons between industrial categories in eastern Washington.

Samples with Concentrations Below the Benchmark

Analyses performed on the subset of samples with concentrations below the benchmark showed that the acute water quality criterion for dissolved lead was only exceeded when a dilution factor of 0 was assumed. More specifically, across the entire state of Washington and all 13 industrial categories, the percentage of samples that exceeded the acute criterion was 24 percent given the typical receiving water conditions and a dilution factor of 0 (see Table 21). This percentage dropped to 0 given the same receiving water conditions and a dilution factor of 10 or higher. In comparison to these results, the percentages of samples exceeding the chronic criterion for dissolved lead were substantially higher. For example, across the entire state of Washington and all 13 industrial categories, the percentages of samples that exceeded the chronic criterion were 92, 46, 26, and 4 percent given the typical receiving water conditions and dilution factors of 0, 10, 25, and 50, respectively.

Biological Oxygen Demand

Data Distribution

Tabular and graphical data summaries for BOD are provided in Table 22 and Figure 8, respectively, by individual industrial category and for all categories combined. Tabular industrial sector summaries for BOD are also provided in Appendix A. Overall, there were 1,105 BOD values present in the database with mean and median concentrations of 37 and 10 mg/L, respectively. The coefficient of variation for these data was 1.9. The box plots presented in Figure 8 indicate the BOD concentrations generally have a right-skewed distribution due to the presence of outliers in the upper end of the data range. Across all industrial categories, the 90th percentile and maximum values for the data were 101 and 639 mg/L, respectively.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., n > 25) for statistical comparisons of BOD concentrations were available for three of the five industrial categories reporting data (Table 22). Results from these analyses (Table 12) indicate the data can be differentiated into two groups with low and high median BOD concentrations, respectively. Specifically, the median concentration for the Landfills (05) category was significantly lower than those for Manufacturing (02) and Light Industrial Activity (11).

Comparison to NPDES Permit Benchmarks and Action Levels

Analyses performed across the five industrial categories reporting BOD values showed that 25 and 16 percent of the samples exceeded the applicable benchmark (30 mg/L, 140 mg/L for non-hazardous waste landfills) and action level (60 mg/L), respectively (Table 22). Considering only the three industrial categories in Table 22 with a relatively large number of samples (i.e., n > 25), the benchmark was exceeded in 13 to 27 percent of the samples while the action level was exceeded in 0 to 17 percent.

Ammonia Nitrogen

Data Distribution

Tabular and graphical data summaries for ammonia nitrogen are provided in Table 23 and Figure 9, respectively, by individual industrial category and for all categories combined. Tabular

Table 22. Summary statistics for BOD measured in industrial stormwater by industry category.

Industrial Category	n	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	10th Percentile (mg/L)	90th Percentile (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
02 - Manufacturing	743	40	11	0.5	3	111	639	77	1.9	27%	17%
05 - Landfills	64	7.0	4.5	0.2	1.0	12	39	7.8	1.1	0%	--
08 - Transportation facilities	8	13	9.5	2.0	2	33	33	11	0.9	13%	0%
11 - Light industrial activity	275	35	12	2.0	3.3	100	340	58	1.7	27%	16%
No category specified	15	17	15	3.0	3.0	26	90	21	1.2	7%	7%
All categories	1,105	37	10	0.2	3.0	101	639	70	1.9	25%	16%

[a] Benchmark for BOD is 30 mg/L with the exception of category 05 which has a benchmark of 140 mg/L.
[b] Action level for BOD is 60 mg/L.

Table 23. Summary statistics for ammonia nitrogen measured in industrial stormwater by industry category.

Industrial Category	n	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	10th Percentile (mg/L)	90th Percentile (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
05 - Landfills	66	0.27	0.08	0.005	0.01	0.64	4.8	0.64	2.4	0%	0%
11 - Light industrial activity	4	6.9	8.7	0.10	0.1	10.21	10.2	4.8	0.7	0%	0%
All categories	70	0.65	0.10	0.005	0.01	0.96	10.2	1.9	3.0	0%	0%

[a] Benchmark for ammonia nitrogen is 21.8 mg/L, except for Landfills (05) which is 10 mg/L.
[b] Action level for ammonia nitrogen is 38 mg/L.

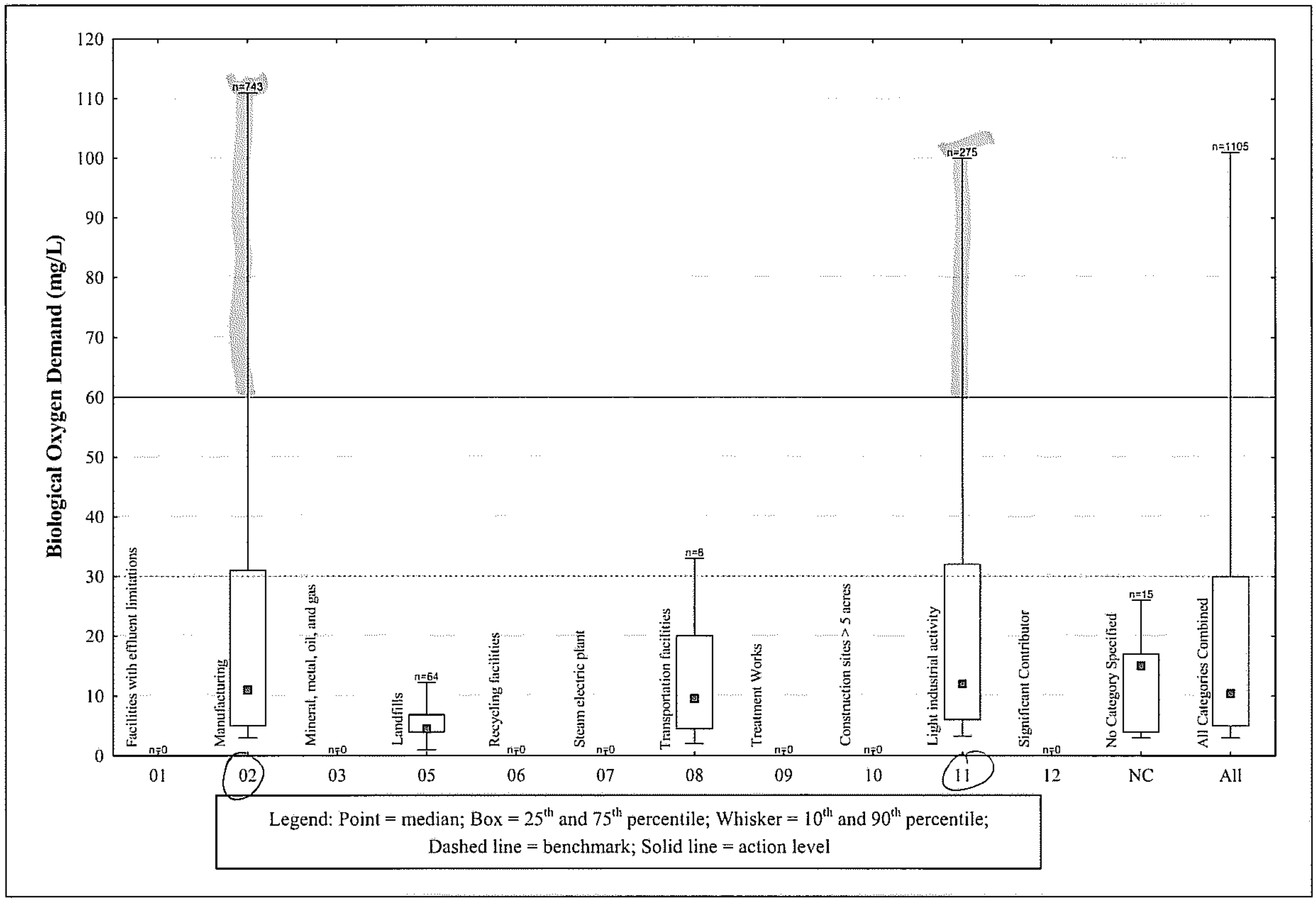
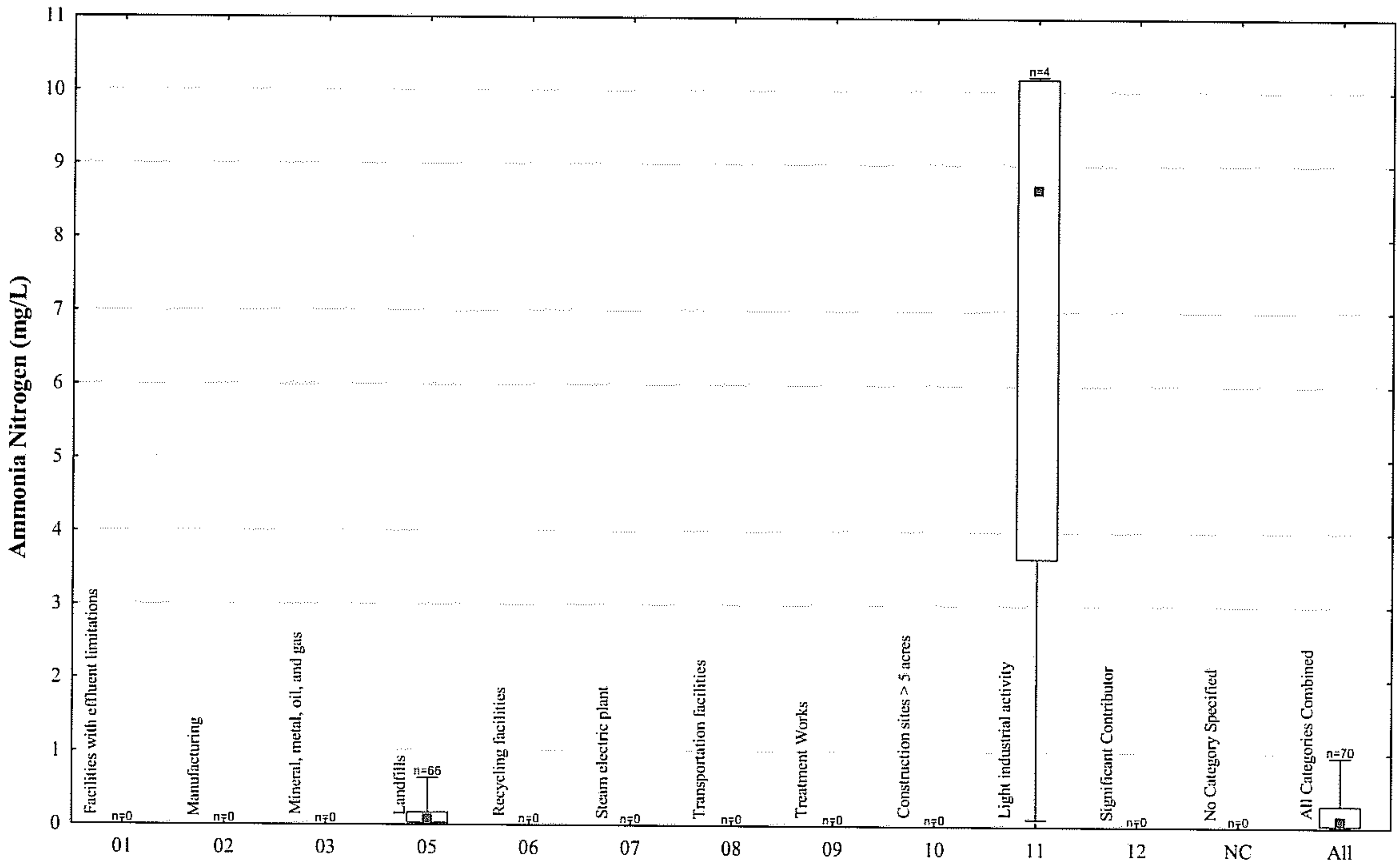


Figure 8. Biological oxygen demand concentrations measured in industrial stormwater by industrial category.



Legend: Point = median; Box = 25th and 75th percentile; Whisker = 10th and 90th percentile;
Note: The benchmark (21.8 mg/L) and action level (38 mg/L) are off scale

Figure 9. Ammonia nitrogen concentrations measured in industrial stormwater by industrial category.

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summaries are also provided in Appendix A by industrial sector. Based on the 70 total ammonia nitrogen values present in the database, the mean and median concentrations for this parameter were 0.65 and 0.10 mg/L, respectively, across all the industrial categories; and the coefficient of variation was 3.0. Similarly, the 90th percentile and maximum values were 0.96 and 10.2 mg/L, respectively.

Comparison Among Industrial Categories

Statistical comparisons of the median concentrations for ammonia nitrogen were not performed because there were insufficient numbers of samples.

Comparison to NPDES Permit Benchmarks and Action Levels

The applicable benchmarks (21.8 mg/L, 10 mg/L for non-hazardous waste landfills) and action level (38 mg/L) for ammonia nitrogen were not exceeded in any sample (Table 23).

Nitrate + Nitrite Nitrogen

Data Distribution

Tabular and graphical data summaries for nitrate + nitrite nitrogen are provided in Table 24 and Figure 10, respectively, by individual industrial category and for all categories combined. Tabular summaries for each industrial sector are also presented in Appendix A. Overall, there were 397 values for nitrate + nitrite nitrogen present in the database. The mean and median concentrations from these values were 2.2 and 0.5 mg/L, respectively: and the coefficient of variation was 4.0. The 90th percentile value for the data was 3.1 mg/L. The maximum value (100 mg/L) represents an extreme outlier that may indicate that the associated value was incorrectly entered in the DMR or database.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., $n > 25$) for statistical comparisons of nitrate + nitrite nitrogen concentrations were only available for two of the industrial categories reporting nitrate + nitrite data: Manufacturing (02) and Light Industrial Activity (11). Results from these analyses (i.e., Mann Whitney U test) indicated that the median concentration for Manufacturing (02) was significantly higher than that for Light Industrial Activity (11).

Comparison to NPDES Permit Benchmarks and Action Levels

Exceedances of the applicable benchmark (0.68 mg/L) and action level (1.36 mg/L) for nitrate + nitrite occurred in 38 and 21 percent of the samples, respectively (Table 24). Considering only the two industrial categories in Table 24 with a relatively large number of samples (i.e., $n > 25$), the benchmark and action level were exceeded in 45 and 25 percent of the samples, respectively, for Manufacturing (02) and 34 and 20 percent of the samples, respectively, for Light Industrial Activity (11).

Table 24. Summary statistics for nitrate + nitrite nitrogen measured in industrial stormwater by industry category.

Industrial Category	n	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	10th Percentile (mg/L)	90th Percentile (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
02 - Manufacturing	142	2.5	0.6	0.01	0.18	4	83.7	9.5	3.8	45%	25%
08 - Transportation facilities	2	50	50	0.5	0.5	100	100	70	1.4	50%	50%
11 - Light industrial activity	249	1.6	0.4	0.01	0.061	2.68	61	5.3	3.3	34%	20%
No category specified	4	0.8	0.3	0.2	0.202	2.38	2.4	1.0	1.3	25%	25%
All categories	397	2.2	0.5	0.01	0.089	3.1	100	8.6	4.0	38%	21%

[a] Benchmark for nitrate + nitrite nitrogen is 0.68 mg/L.
[b] Action level for nitrate + nitrite nitrogen is 1.36 mg/L.

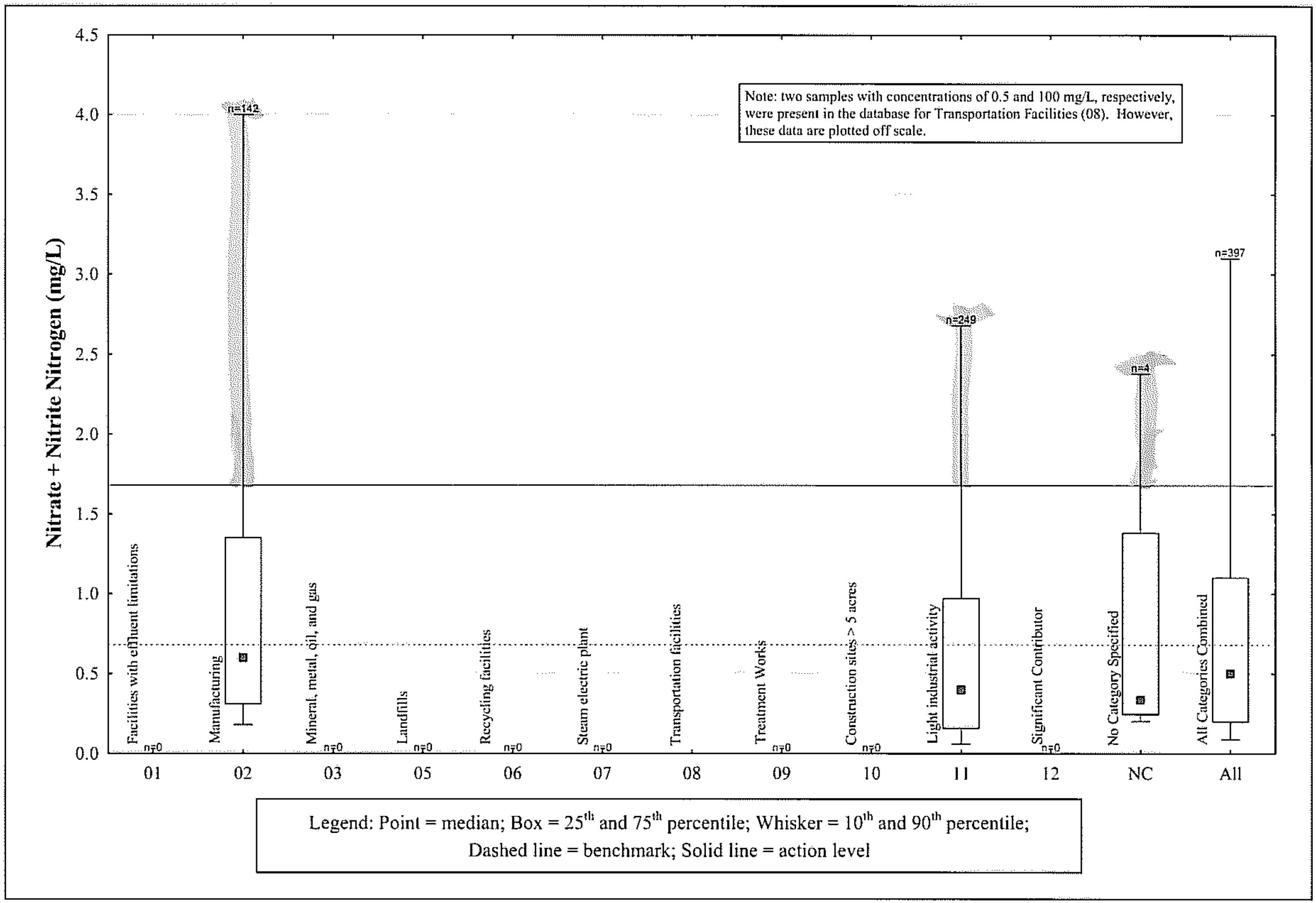


Figure 10. Nitrate + nitrite nitrogen concentrations measured in industrial stormwater by industrial category.

Total Phosphorus

Data Distribution

Tabular and graphical data summaries for total phosphorus are provided in Table 25 and Figure 11, respectively, by individual industrial category and for all categories combined. Tabular data summaries by industrial sector are also provided in Appendix A. Based on the 410 total phosphorus values in the database, the mean and median concentrations were 1.4 and 0.2 mg/L, respectively, across all five of the industrial categories reporting data; and the coefficient of variation was 5.2. For comparison, Stenstrom and Lee (2005) reported a mean value of 0.45 mg/L for total phosphorus concentrations based on data that were compiled through general NPDES industrial stormwater permits in the state of Connecticut. The coefficient of variation from the Connecticut, dataset was 4.3. The 90th percentile value for data compiled through this study was 2.5 mg/L. The maximum value (175 mg/L) represents an extreme outlier that may indicate that the associated value was incorrectly entered in the DMR or database.

Comparison Among Industrial Categories

Sufficient amounts of data (i.e., $n > 25$) for statistical comparisons of TP values were only available for the following two industrial categories: Manufacturing (02) and Light Industrial Activity (11). Results from these analyses indicated that the median concentration for Manufacturing (02) was significantly higher than that for Light Industrial Activity (11).

Comparison to NPDES Permit Benchmarks and Action Levels

As shown in Table 25, analyses performed for all five industrial categories reporting total phosphorus values showed that only 11 and 7 percent of the samples exceeded the applicable benchmark (2 mg/L) and action level (4 mg/L), respectively. Considering only the two industrial categories in Table 25 with a relatively large number of samples (i.e., $n > 25$), the benchmark and action level for TP was exceeded in 9 and 8 percent of the samples for Manufacturing (02) and 12 and 6 percent of the samples for Light Industrial Activity (11).

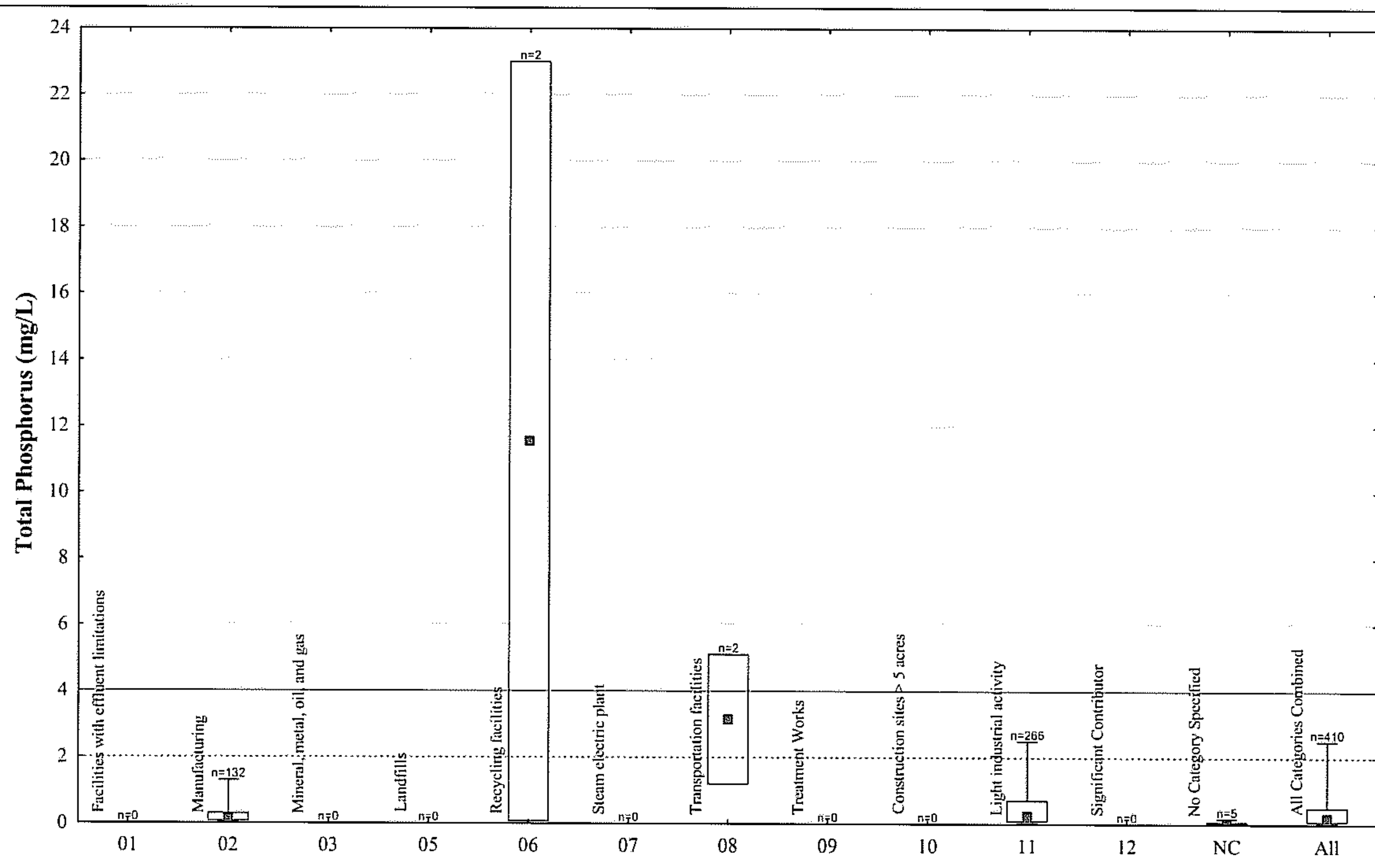
Construction Stormwater

Data analysis results for construction stormwater are summarized below. Specifically, separate subsections present results for each of the following analyses that are described in the Data Analysis Methods section: data distribution, comparison to NPDES permit benchmarks and action levels, and comparison to hypothetical water quality criteria (if applicable). As noted in the Data Sources section, the construction stormwater data presented herein were analyzed previously in Ecology (2005). Due to this consideration, this section only highlights the major trends from these data. For a more detailed analyses of these data, the reader should refer to the earlier Ecology report.

Table 25. Summary statistics for total phosphorus measured in industrial stormwater by industry category.

Industrial Category	n	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	10th Percentile (mg/L)	90th Percentile (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
02 - Manufacturing	135	1.8	0.13	0.004	0.05	1.3	137	12	6.7	9%	8%
06 - Recycling facilities	2	12	12	0.08	0.081	23	23	16	1.4	50%	50%
08 - Transportation facilities	2	3.2	3.2	1.2	1.2	5.1	5.1	2.8	0.9	50%	50%
11 - Light industrial activity	266	1.1	0.26	0.005	0.042	2.5	23	2.9	2.5	12%	6%
No category specified	5	0.08	0.05	0.04	0.044	0.18	0.2	0.06	0.7	0%	0%
All categories	410	1.4	0.2	0.004	0.05	2.5	137	7.3	5.2	11%	7%

[a] Benchmark for total phosphorus is 2 mg/L.
[b] Action level for total phosphorus is 4 mg/L.



Legend: Point = median; Box = 25th and 75th percentile; Whisker = 10th and 90th percentile;
Dashed line = benchmark; Solid line = action level

Figure 11. Total phosphorus concentrations measured in industrial stormwater by industrial category.

Data Distribution

A tabular summary for transparency, turbidity, and TSS data collected from Western Washington construction sites is provided in Table 26. In total, there were 47, 49, and 50 values for transparency, turbidity, and TSS, respectively, in the dataset. The mean and median values for transparency were 31 and 27 cm, respectively; and the coefficient of variation was 0.7. Similarly, the mean and median values for turbidity were 69 and 29 NTU, respectively; and the coefficient of variation was 1.3. Finally, the mean and median concentrations for TSS were 256 and 14 mg/L, respectively; and the coefficient of variation was 4.4.

Comparison to NPDES Permit Benchmarks and Action Levels

Turbidity was the only parameter monitored with associated benchmark values and action levels. Exceedances of the applicable benchmark (50 NTU) and action level (250 NTU) occurred in 29 and 6 percent of the samples, respectively.

Comparison to Hypothetical Water Quality Criteria

Results from the comparisons of sample concentrations to state water quality criteria for turbidity are summarized in Table 27. When all collected samples were considered in the analyses, the percentage of samples that exceeded the state water quality criterion for turbidity ranged from 86 to 6 percent given typical receiving water conditions and dilution factors of 0 and 50, respectively. Analyses performed on the subset of samples with concentrations below the benchmark showed that the water quality standard was only exceeded when a dilution factor of 0 was assumed.

Table 26. Summary statistics for transparency, turbidity, and TSS measured in stormwater from Western Washington construction sites.

Parameter	n	Mean	Median	Minimum	10th Percentile	90th Percentile	Maximum	Std. Dev.	Coefficient of Variation	Exceedance of Benchmark [a]	Exceedance of Action Level [b]
Transparency (cm)	47	31	27	0.7	4.6	60	60	22	0.7	--	--
Turbidity (NTU)	49	69	29	2.3	6.2	194	430	94	1.3	29%	6%
TSS (mg/L)	50	256	14	1.0	3.0	123	7470	1115	4.4	--	--

[a] Benchmark for turbidity is 50 NTU.
[b] Action level for turbidity is 250 NTU.

Table 27. Percentage of turbidity samples exceeding state water quality criterion at construction sites given hypothetical receiving water conditions for western Washington and dilution factors of 0, 2.5, 5, and 10.

	n	Exceedance of Criterion (%)			
		0 DF	10 DF	25 DF	50 DF
All Samples					
Western Washington	49	86 (73-90)	27 (27-29)	18 (18)	6 (6)
Samples with Values ≤ Benchmark					
Western Washington	35	80 (63-86)	0 (0)	0 (0)	0 (0)

DF: Dilution factor.
[a] Values represent the percentage of sample exceeding the water quality criterion based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).

Discussion and Conclusion

This section provides a discussion of the data presented herein and summarizes major conclusions from these data relative to the study objectives that were identified in the introduction to this report. To maintain consistency with the previous section, this information is presented under separate subsections for each of the following analyses: data distribution, comparison among industrial categories, comparison to NPDES permit benchmarks and action levels, and comparison to state water quality standards.

Data Distribution

In general, the analyses presented in this report indicate that most of the industrial stormwater parameters exhibited a distinctly right-skewed distribution due to the presence of numerous outliers in the upper end of the data range. This distribution is commonly observed in water quality data that are collected during storm sampling due to the influence of sporadic, high flow events that are associated with high pollutant concentrations. Furthermore, the maximum concentrations for several of the parameters (e.g., total zinc, total copper, nitrate + nitrite nitrogen, total phosphorus) appeared to be extreme outliers that may indicate that the associated values were incorrectly entered in the DMR or database.

The results also indicate that the data for many of the industrial and construction stormwater parameters exhibit a very high degree of variability. For example, the coefficients of variation calculated from these data ranged from 0.12 for pH to 7.06 for total zinc. Similarly, the coefficients of variation calculated from the compiled construction stormwater data ranged from 0.7 for transparency to 4.4 for total suspended solids. The high degree of variability in these data is generally consistent with the findings from other studies of compiled data from general NPDES industrial stormwater permits. For example, Strenstrom and Lee (2005) reported coefficients of variation ranging from 0.2 to 17 for data from a suite of sixteen monitoring parameters that were compiled through general NPDES industrial stormwater permits in the following jurisdictions: Los Angeles County, CA; Sacramento County, CA; and the state of Connecticut.

As noted previously, the available data for the construction stormwater parameters are extremely limited in terms of the total number of samples and geographic coverage. Therefore, additional data are required for these parameters in order to draw more definitive conclusions regarding their associated distributions.

Comparisons Among Industrial Categories

Statistical analyses indicated there were significant differences in median concentrations among industrial categories for all the parameters that were evaluated, with the exception of total copper. (As noted previously, these analyses could not be performed for ammonia nitrogen because there were insufficient data.) However, even where there were significance differences between industrial categories, the overall utility of this information was limited because few meaningful patterns could be discerned in the results from the multiple range tests (see Table 12). More specifically, these tests generally showed little consistency with regard to the industrial categories that were identified as having high or low concentrations across all the parameters or within particular categories parameters (e.g., metals). The only possible exceptions to this broad generalization were observed for the following three industrial categories: Recycling Facilities (06), Treatment Works (09), and Transportation Facilities (11). Recycling Facilities (06) and Transportation Facilities (11) appeared to be differentiated from the majority of other categories due to high turbidity levels and high oil and grease concentrations, whereas Treatment Works (09) could be differentiated based on low total zinc and oil and grease concentrations.

It should be noted that the industrial categories are groupings of different types of facilities at a very broad level. For example, the following industrial sectors from Table 2 are all grouped under the Manufacturing (02) industrial category: Lumber and Wood Products (24--), Chemical and Allied Products (26--), and Primary Metals Industries (33--). Therefore, it is possible that more meaningful results could be obtained if additional comparisons were made at the industrial sector level. However, due to the large number of industrial sectors that are represented in the database and the associated inconsistencies in the amount of available data (see Tables 2 and 5), it was not practical to collectively analyze the industrial sectors using the conventional statistics that were applied in the comparisons of the industrial categories.

Comparison to NPDES Permit Benchmarks and Action Levels

With the exception of ammonia nitrogen, all of the primary monitoring parameters identified in the general NPDES permit for industrial stormwater were measured at levels that exceeded the benchmarks and action thresholds. However, there was a large range in terms of the frequency and magnitude of the exceedances exhibited for each of the parameters. Each parameter was classified as being of high, moderate, and low concern based on the frequency of these exceedances. Specifically, total zinc is identified as the only parameter of high concern because over 50 percent of the associated samples exceeded the applicable benchmark and 21 percent exceeded the action level. Turbidity, total copper, BOD, and nitrate + nitrite nitrogen are identified as being of moderate concern because between 20 and 50 percent of the samples exceeded the benchmark. Finally, pH, oil and grease, total lead, total phosphorus, and ammonia nitrogen are classified as being of low concern because less than 20 percent of the collected samples exceeded the applicable benchmark.

The results for construction stormwater also showed that the applicable benchmark for turbidity was routinely exceeded. However, due to the limited number of samples in this data set, it is difficult to make definitive conclusions regarding the level of concern that should be applied to this parameter.

Comparison to Hypothetical Water Quality Criteria

The existing data compiled through the general NPDES permit for industrial and construction stormwater cannot be used to assess compliance with state water quality standards. The following is a list of the information that would be required in order to make these determinations. Only one of these (i.e., effluent pollutant concentration) is available through the current NPDES permit database.

- Effluent pollutant concentration
- Effluent discharge rate
- Receiving water background pollutant concentration
- Receiving water discharge rate
- Receiving water hardness concentration (for metals only)
- Appropriate translator values (for metals only).

In an effort to further evaluate this question, a set of representative receiving water conditions was generated for each monitoring parameter based on queries of Ecology's EIM database and values from the literature. These representative receiving water conditions were then used to evaluate whether hypothetical water quality criteria would be exceeded given the actual effluent pollutant concentration from the permits and by assuming different dilution factors within the receiving water. However, it should be recognized that this approach seeks to make broad generalizations for processes that are driven almost entirely by site-specific conditions and interactions.

Furthermore, there are several assumptions used in this simplified approach that warrant further discussion, the first being potential correlations between input parameters. Specifically, in highly developed watersheds, background pollutant concentrations frequently show a positive correlation with discharge in the receiving water (Herrera 2001, 2004, 2005). This would tend to make it more difficult to meet water quality criteria for some parameters (e.g., metals) and more easy for other parameters (e.g., turbidity). In addition, hardness frequently shows a negative correlation with discharge due to dilution of ground water inputs to the receiving water that have naturally high mineral concentrations. This would tend to make it more difficult to meet water quality criteria for metals. These relationships were not fully captured in this approach to assessing water quality criteria, although the associated sensitivity analyses do provide some measure of the potential impact. For example, the worst case scenario used higher pollutant concentrations and lower hardness values relative to the typical scenario which, as noted above, are the conditions that would likely prevail if the correlations described above are present in the data.

Another assumption in this approach that warrants further discussion relates to the translator values that were used to estimate dissolved metal concentrations in the receiving water from total metal concentrations in the effluent. The translator values used in this analysis were taken from Pelletier (1996) and represent the 95th percentile value for the predicted dissolved metal concentration in the receiving water. Thus, they provide a conservative estimate relative to what might be expected if the translator values were predicting an average or median concentration.

To evaluate the effect of this assumption on the overall results of this analysis, the EIM database was queried to obtain data on the dissolved and total fractions of zinc from samples collected in western and eastern Washington, respectively. The average ratio of these fractions was then computed for each region (i.e., 0.362 and 0.660 for eastern and western Washington, respectively) and used in place of the values from Pelletier (1996) to predict the percentage of samples exceeding the state water quality standard based on the typical receiving water scenario and a dilution factor of 0. This analysis showed the translator values have a modest impact on the overall results for zinc. For example, the percentages of samples in western Washington that exceeded the water quality criterion for zinc were 84 and 60 percent using the Pelletier (1996) and alternative translator values, respectively. Similarly, the percentages of samples in eastern Washington that exceeded the criterion were 70 and 60 percent using the Pelletier (1996) and alternative translator values, respectively.

A relatively wide range of dilution factors was used in this analysis (i.e., 0, 10, 25, and 50) in order to determine the minimum required dilution necessary to meet water quality criteria. However, the actual dilution factor required to meet water quality criteria can also be calculated for each parameter given its associated benchmark and assumed receiving water conditions. For reference, these required dilution factors are presented in Table 28.

Table 28. Dilution factors required to meet water quality criteria assuming effluent concentrations equal the benchmarks specified in the general NPDES permit for construction and industrial stormwater.

	Turbidity [a]	Zinc [b]		Copper [c]		Lead [d]		Turbidity [e]
		Acute	Chronic	Acute	Chronic	Acute	Chronic	
Western Washington								
Worst-Case	4.7	5.1	5.8	33	56	4.0	190	9.7
Typical	4.2	3.4	3.8	17	23	2.7	76	9.2
Best-Case	3.0	2.4	2.6	10	14	1.8	48	8.0
Eastern Washington								
Worst-Case	4.7	6.0	8.5	12	18	1.9	75	--
Typical	4.2	1.4	1.6	5.7	8.4	0.9	25	--
Best-Case	3.0	0.9	1.0	3.0	4.5	0.6	15	--

[a] Required dilution factors assuming benchmark for turbidity from the general NPDES permit for industrial stormwater (25 NTU).
[b] Required dilution factors assuming benchmark for zinc from the general NPDES permit for industrial stormwater (117 μg/L).
[c] Required dilution factors assuming benchmark for copper from the general NPDES permit for industrial stormwater (63.8 μg/L).
[d] Required dilution factors assuming benchmark for lead from the general NPDES permit for industrial stormwater (81.6 μg/L).
[e] Required dilution factors assuming benchmark for turbidity from the general NPDES permit for construction stormwater (50 NTU).

The results from the analyses of the industrial stormwater data indicate that a high percentage of samples exceed the water quality criteria when dilution factors of 0 and 10 are assumed. Total copper is of particular concern given that over 90 percent of the samples in both eastern and western Washington exceeded the acute and chronic criteria with a dilution factor of 0. Total zinc and turbidity are identified as being of moderate concern with between 40 and 90 percent of the samples in both eastern and western Washington exceeding the associated criteria with a dilution factor of 0. Finally, lead is identified as being of lower concern with less than 40 percent of the samples exceeding the acute criterion in both eastern and western Washington with a dilution factor of 0. However, it should be noted that a high percentage of samples (> 90 percent) still exceeded the chronic criterion for lead with a dilution factor of 0. The percentage of exceedance for all parameters dropped to less than 35 percent with a dilution factor of 25, and less than 15 percent with a dilution factor of 50. Based on these results, it can be concluded that, when little or no dilution is available in the receiving water, discharges of industrial stormwater may be contributing to exceedances of the water quality criteria; however, the number of exceedances drops rapidly when relatively moderate levels of dilution are available.

Analyses performed on the subset of samples from industrial stormwater with concentrations below the benchmark showed that the water quality criteria were typically only exceeded when a dilution factor of 0 was assumed. The only notable exception was the chronic criterion for dissolved lead which exhibited a fairly high percentage of sample exceedances with a dilution factor of 10 in addition to a dilution factor of 0. These results suggest that water quality criteria are generally met if the benchmark values are achieved by the permittees, and a relatively small amount of dilution is assumed in the receiving water.

Analyses performed on the construction stormwater data showed similar trends to those observed for the industrial stormwater data. Specifically, a high percentage of samples exceed the water quality criterion for turbidity when dilution factors of 0 and 10 are assumed; however, the percentage of exceedance dropped off rapidly with higher dilution factors. Analyses performed on the subset of samples with concentrations below the benchmark showed that the water quality criterion was only exceeded when a dilution factor of 0 was assumed.

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APPENDIX A

Summary Statistics for Monitoring Parameters Measured In Industrial Stormwater by Industry Sector

Table A-1. Summary statistics for turbidity levels measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (NTU)	Median (NTU)	Minimum (NTU)	Maximum (NTU)	Std. Dev. (NTU)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
07	Agricultural services	1	5	24	16	9.8	60	21	0.9	0%	0%
08	Forestry	1	7	31	2.5	1.5	149	56	1.8	29%	29%
10	Metal mining	1	1	52	52	52	52	--	--	100%	100%
12	Coal mining	1	9	3	2.7	1.3	10	3	0.8	0%	0%
17	Construction special trade contractors	3	19	171	27	3.9	778	240	1.4	58%	37%
20	Food and kindred products	40	268	103	22	0.1	5490	402	3.9	46%	28%
22	Textile mill products	3	12	20	12	1.7	52	18	0.9	33%	8%
23	Apparel and other finished products made from fabrics and similar material	1	6	51	44	18	85	26	0.5	83%	33%
24	Lumber and wood products	127	799	129	27	0.2	9700	452	3.5	51%	33%
25	Furniture and fixtures	3	14	25	22	4.8	91	25	1.0	29%	14%
26	Paper and allied products	14	77	21	10	0.5	190	33	1.5	21%	13%
27	Printing, publishing and allied industries	2	10	11	6.8	1.2	33	11	1.0	20%	0%
28	Chemicals and allied products	40	226	28	14	0.4	193	36	1.3	31%	16%
29	Petroleum and coal products	6	27	55	28	2.3	220	64	1.2	56%	37%
30	Rubber and miscellaneous plastic products	37	207	32	15	0.5	460	51	1.6	34%	20%
31	Leather and leather products	1	4	10	10	4.1	16	5	0.5	0%	0%
32	Stone, clay and glass products	23	109	51	16	0.3	980	116	2.3	41%	23%
33	Primary metals industries	13	75	28	12	0.5	580	72	2.6	23%	11%
34	Fabricated metal products	62	307	48	18	0.2	1150	114	2.4	39%	19%
35	Industrial & commercial machinery & computer equip.	28	86	32	14	0.05	235	52	1.6	33%	16%
36	Electronic and other electrical equipment	7	63	13	6.5	0.5	78	17	1.2	16%	5%
37	Transportation equipment	33	343	23	8.4	0.5	560	61	2.6	18%	8%
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks	1	8	6	5.2	1.5	11	3	0.6	0%	0%
39	Miscellaneous manufacturing industries	6	24	23	11	1.2	80	24	1.1	33%	17%
40	Railroad transportation	11	54	115	34	0.6	1990	292	2.5	57%	39%
41	Local and interurban passenger transportation	23	101	35	12	1.5	490	76	2.2	29%	15%
42	Motor freight transportation & warehousing	108	529	116	23	0.3	5380	423	3.7	48%	30%
44	Water transportation	30	151	39	18	0.3	343	56	1.4	39%	21%
45	Transportation by air	21	154	19	5.3	0	690	64	3.3	13%	7%
47	Transportation services	2	4	133	115	50	250	87	0.7	100%	75%
49	Electric, gas, and sanitary services	42	250	23	8.0	0.4	640	56	2.5	17%	9%
50	Wholesale trade-durable goods	63	289	57	19	0	710	103	1.8	42%	27%
51	Wholesale trade non-durable goods	23	89	29	14	0.1	676	74	2.5	28%	9%
52	Building materials, hardware, garden supply, and mobile home dealers	2	2	101	101	2.1	200	140	1.4	50%	50%
82	Educational services	1	1	4	3.8	3.8	3.8	--	--	0%	0%
95	Environmental quality programs	2	12	11	11	2.5	28	8	0.7	8%	0%
	No sector specified	26	137	38	8.4	0.7	1190	118	3.1	24%	15%

[a] Benchmark for turbidity is 25 NTU

[b] Action level for tubidity is 50 NTU

Table A-2. Summary statistics for pH levels measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean	Median	Minimum	Maximum	Std. Dev.	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
07	Agricultural services	1	5	7.7	7.8	6.5	8.4	0.71	0.09	0%	0%
08	Forestry	1	7	5.8	6.0	5.0	6.5	0.49	0.08	43%	0%
10	Metal mining	1	1	7.2	7.2	7.2	7.2	--	--	0%	0%
12	Coal mining	1	9	7.8	8.0	7.5	8.0	0.23	0.03	0%	0%
17	Construction special trade contractors	3	19	6.9	6.9	6.0	8.7	0.76	0.11	0%	0%
20	Food and kindred products	40	265	6.6	6.7	3.8	9.7	0.77	0.12	15%	3%
22	Textile mill products	3	12	6.5	6.7	5.3	7.3	0.60	0.09	17%	0%
23	Apparel and other finished products made from fabrics and similar material	1	6	6.0	6.0	6.0	6.0	0.00		0%	0%
24	Lumber and wood products	127	784	6.5	6.5	2.0	9.8	0.91	0.14	19%	3%
25	Furniture and fixtures	3	14	6.5	6.5	5.6	7.2	0.51	0.08	14%	0%
26	Paper and allied products	14	80	6.7	6.9	4.0	9.1	0.80	0.12	19%	4%
27	Printing, publishing and allied industries	2	10	6.2	6.4	5.0	7.0	0.76	0.12	20%	0%
28	Chemicals and allied products	40	226	6.7	6.8	4.3	10.7	0.92	0.14	14%	4%
29	Petroleum and coal products	6	27	6.8	7.0	5.4	7.9	0.73	0.11	19%	0%
30	Rubber and miscellaneous plastic products	37	206	6.2	6.1	4.0	8.4	0.72	0.12	23%	1%
31	Leather and leather products	1	4	7.1	7.2	6.9	7.2	0.14	0.02	0%	0%
32	Stone, clay and glass products	23	111	7.0	7.0	3.9	11.6	1.04	0.15	9%	4%
33	Primary metals industries	13	76	6.8	7.0	3.2	8.6	1.03	0.15	7%	4%
34	Fabricated metal products	62	300	6.7	6.8	2.3	9.9	0.95	0.14	15%	3%
35	Industrial & commercial machinery & computer equip.	28	91	6.7	6.7	2.6	8.5	0.86	0.13	13%	1%
36	Electronic and other electrical equipment	7	65	6.8	7.0	2.7	8.0	0.83	0.12	8%	3%
37	Transportation equipment	33	344	6.7	6.8	3.8	10.0	0.65	0.10	10%	0.3%
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks	1	8	6.6	6.5	6.0	7.0	0.42	0.06	0%	0%
39	Miscellaneous manufacturing industries	6	24	6.3	6.3	5.0	8.4	0.99	0.16	33%	0%
40	Railroad transportation	11	54	6.6	6.6	5.5	10.2	0.79	0.12	9%	2%
41	Local and interurban passenger transportation	23	100	6.6	6.6	4.8	8.5	0.69	0.10	10%	1%
42	Motor freight transportation & warehousing	108	526	6.6	6.5	1.0	9.0	0.77	0.12	12%	1%
44	Water transportation	30	151	6.9	6.9	5.0	9.8	0.74	0.11	7%	0%
45	Transportation by air	21	137	6.9	6.9	4.5	10.6	0.88	0.13	10%	2%
47	Transportation services	2	4	7.0	7.0	6.0	8.1	0.95	0.14	0%	0%
49	Electric, gas, and sanitary services	42	250	6.9	7.0	5.0	9.3	0.59	0.09	6%	0.4%
50	Wholesale trade-durable goods	63	289	6.8	6.9	2.2	10.0	0.79	0.12	8%	1%
51	Wholesale trade non-durable goods	23	88	6.5	6.5	5.0	7.6	0.61	0.09	16%	0%
52	Building materials, hardware, garden supply, and mobile home dealers	2	2	5.8	5.8	5.0	6.5	1.06	0.18	0%	0%
82	Educational services	1	1	6.6	6.6	6.6	6.6	--	--	0%	0%
95	Environmental quality programs	2	12	7.0	6.9	6.5	7.7	0.36	0.05	0%	0%
	No sector specified	26	132	6.5	6.6	4.4	8.2	0.73	0.11	14%	1%

[a] Benchmark for pH is <6 or >9

[b] ·n level for pH is <5 or >10

Table A-3. Summary statistics for total zinc concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
07	Agricultural services	1	5	12	10	0.01	40	16	1.4	0%	0%
08	Forestry	1	4	16	9.0	0.021	47	21	1.3	0%	0%
10	Metal mining	1	1	297	297	297	297	--	--	100%	0%
12	Coal mining	1	9	42	11	2.0	220	69	1.6	11%	0%
17	Construction special trade contractors	3	19	379	392	0.98	1040	278	0.7	79%	53%
20	Food and kindred products	40	269	362	204	0.12	2882	449	1.2	69%	29%
22	Textile mill products	3	12	585	288	87	3400	912	1.6	92%	42%
23	Apparel and other finished products made from fabrics and similar material	1	6	288	225	94	561	191	0.7	83%	33%
24	Lumber and wood products	127	734	224	119	0.362	2600	312	1.4	50%	17%
25	Furniture and fixtures	3	12	144	49	10	800	230	1.6	25%	8%
26	Paper and allied products	14	79	300	90	8	7950	922	3.1	41%	16%
27	Printing, publishing and allied industries	2	10	84	77	0.149	250	69	0.8	20%	0%
28	Chemicals and allied products	40	221	328	179	0.02	8110	643	2.0	61%	27%
29	Petroleum and coal products	6	23	344	140	20.8	2600	558	1.6	57%	22%
30	Rubber and miscellaneous plastic products	37	202	318	160	5.0	2960	435	1.4	62%	22%
31	Leather and leather products	1	4	40	32	12.4	82	31	0.8	0%	0%
32	Stone, clay and glass products	23	100	920	135	0.03	39400	4497	4.9	56%	16%
33	Primary metals industries	13	76	346	100	1.0	5160	881	2.5	41%	14%
34	Fabricated metal products	62	291	2593	310	1.58	130000	11964	4.6	75%	45%
35	Industrial & commercial machinery & computer equip.	28	79	409	96	0.0	9410	1245	3.0	43%	16%
36	Electronic and other electrical equipment	7	65	289	88	5.0	3500	642	2.2	37%	14%
37	Transportation equipment	33	329	249	120	0.05	5300	496	2.0	52%	16%
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks	1	8	24	20	2.0	56	18	0.8	0%	0%
39	Miscellaneous manufacturing industries	6	24	244	169	19	1200	276	1.1	67%	17%
40	Railroad transportation	11	50	290	183	0.34	1800	339	1.2	70%	22%
41	Local and interurban passenger transportation	23	101	173	103	4.7	1210	193	1.1	46%	10%
42	Motor freight transportation & warehousing	108	502	377	162	0.14	16200	1023	2.7	62%	21%
44	Water transportation	30	145	380	244	0.7	4000	515	1.4	74%	34%
45	Transportation by air	21	146	230	50	1.56	6300	694	3.0	32%	12%
47	Transportation services	2	4	1134	283	71	3900	1848	1.6	75%	50%
49	Electric, gas, and sanitary services	42	224	138	37	0.002	4400	361	2.6	21%	7%
50	Wholesale trade-durable goods	63	276	317	120	2.0	6410	587	1.9	53%	23%
51	Wholesale trade non-durable goods	23	88	323	168	0.37	3110	500	1.5	63%	23%
52	Building materials, hardware, garden supply, and mobile home dealers	2	1	7840	7840	7840	7840	--	--	100%	100%
82	Educational services	1	1	19	19	19	19	--	--	0%	0%
95	Environmental quality programs	2	12	99	72	20	300	91	0.9	25%	0%
	No sector specified	26	132	533	150	0.255	18200	1790	3.4	58%	28%

[a] Benchmark for zinc is 117 µg/L

[b] Action level for zinc is 372 µg/L

Table A-4. Summary statistics for oil and grease concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
07	Agricultural services	1	5	3.6	5.0	1.0	5.0	1.9	0.5	0%	0%
10	Metal mining	1	1	1.8	1.8	1.8	1.8	--	--	0%	0%
12	Coal mining	1	9	1.3	1.0	1.0	2.0	0.4	0.3	0%	0%
17	Construction special trade contractors	3	5	5.5	6.6	2.0	7.2	2.1	0.4	0%	0%
20	Food and kindred products	40	213	8.7	5.0	1.0	151.0	14.4	1.7	12%	5%
22	Textile mill products	3	9	4.6	5.0	3.0	5.0	0.9	0.2	0%	0%
23	Apparel and other finished products made from fabrics	1	2	3.6	3.6	3.6	3.6	--	--	0%	0%
24	Lumber and wood products	127	382	7.2	5.0	0.0	120.0	10.3	1.4	8%	2%
25	Furniture and fixtures	3	9	5.5	5.3	5.0	5.9	0.3	0.1	0%	0%
26	Paper and allied products	14	69	5.1	3.7	1.0	70.0	8.4	1.7	3%	1%
28	Chemicals and allied products	40	156	4.8	4.3	0.3	26.0	4.1	0.9	3%	0%
29	Petroleum and coal products	6	18	7.8	5.0	1.0	41.0	9.1	1.2	11%	6%
30	Rubber and miscellaneous plastic products	37	129	5.0	4.0	0.0	39.1	5.5	1.1	4%	2%
31	Leather and leather products	1	4	5.6	5.4	5.4	6.0	0.3	0.1	0%	0%
32	Stone, clay and glass products	23	51	6.3	5.0	1.0	34.0	6.3	1.0	6%	4%
33	Primary metals industries	13	54	2.8	2.0	0.0	9.6	2.1	0.8	0%	0%
34	Fabricated metal products	62	192	7.1	5.0	0.0	83.3	8.3	1.2	8%	3%
35	Industrial & commercial machinery & computer equip.	28	36	12.9	5.1	0.0	106.0	20.9	1.6	19%	8%
36	Electronic and other electrical equipment	7	53	4.5	5.0	0.0	5.4	1.3	0.3	0%	0%
37	Transportation equipment	33	197	2.5	1.0	0.0	38.0	3.6	1.4	1%	1%
38	Measuring, analyzing, and controlling instruments;	1	8	1.3	1.0	1.0	2.7	0.7	0.5	0%	0%
39	Miscellaneous manufacturing industries	6	11	7.8	7.1	1.0	16.0	4.2	0.5	9%	0%
40	Railroad transportation	11	26	7.3	6.5	2.0	18.8	4.3	0.6	12%	0%
41	Local and interurban passenger transportation	23	54	14.6	5.0	1.0	223.0	37.6	2.6	13%	9%
42	Motor freight transportation & warehousing	108	302	8.6	5.0	1.0	359.0	22.0	2.6	10%	4%
44	Water transportation	30	92	12.1	5.0	0.0	561.0	57.9	4.8	4%	1%
45	Transportation by air	21	74	6.3	5.0	1.0	96.3	11.2	1.8	4%	1%
47	Transportation services	2	3	20.9	7.9	6.9	48.0	23.4	1.1	33%	0%
49	Electric, gas, and sanitary services	42	153	12.5	5.0	1.0	914.0	75.5	6.0	5%	3%
50	Wholesale trade-durable goods	63	191	12.5	5.0	0.8	232.0	27.4	2.2	17%	8%
51	Wholesale trade non-durable goods	23	67	6.8	5.0	1.0	82.0	10.3	1.5	3%	3%
52	Building materials, hardware, garden supply, and mobile	2	1	7.1	7.1	7.1	7.1	--	--	0%	0%
95	Environmental quality programs	2	9	2.6	2.5	2.5	3.0	0.2	0.1	0%	0%
	No sector specified	26	66	7.1	5.0	1.3	46.8	9.7	1.4	8%	6%

[a] Benchmark for oil & grease is 15 mg/L
[b] Action level for oil & grease is 30 mg/L

Table A-5. Summary statistics for total copper concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
10	Metal mining	1	1	158.0	158.0	158.0	158.0	–	--	100%	100%
17	Construction special trade contractors	3	12	106.3	99.0	7.1	222.0	82.9	0.8	67%	33%
20	Food and kindred products	40	58	47.7	20.5	0.8	734.0	98.4	2.1	17%	3%
22	Textile mill products	3	6	46.0	23.5	6.7	140.0	50.6	1.1	33%	0%
23	Apparel and other finished products made from	1	4	21.0	24.0	5.0	31.0	11.6	0.6	0%	0%
24	Lumber and wood products	127	83	35.7	21.4	0.1	600.0	68.0	1.9	17%	2%
26	Paper and allied products	14	8	50.5	25.0	20.0	140.0	45.7	0.9	25%	0%
28	Chemicals and allied products	40	49	42.3	25.9	5.0	300.0	51.7	1.2	18%	4%
30	Rubber and miscellaneous plastic products	37	43	65.3	20.0	3.6	530.0	116.0	1.8	26%	12%
32	Stone, clay and glass products	23	12	938.1	19.2	10.0	11,000.0	3,168.7	3.4	8%	8%
33	Primary metals industries	13	65	61.4	18.0	0.4	473.0	101.0	1.6	28%	12%
34	Fabricated metal products	62	215	59.9	24.0	0.0	1,700.0	144.4	2.4	21%	7%
36	Electronic and other electrical equipment	7	10	21.5	20.6	3.2	54.3	15.9	0.7	0%	0%
37	Transportation equipment	33	132	29.4	22.8	0.0	177.0	24.5	0.8	8%	1%
39	Miscellaneous manufacturing industries	6	3	7.0	7.1	4.0	10.0	3.0	0.4	0%	0%
40	Railroad transportation	11	10	67.2	22.3	5.0	490.0	149.1	2.2	10%	10%
41	Local and interurban passenger transportation	23	13	18.5	15.5	7.0	41.0	11.4	0.6	0%	0%
42	Motor freight transportation & warehousing	108	127	50.3	29.4	3.8	496.0	72.9	1.5	19%	6%
44	Water transportation	30	30	49.3	36.3	0.0	194.0	46.7	0.9	20%	7%
45	Transportation by air	21	15	39.5	7.0	5.0	150.0	52.9	1.3	27%	7%
49	Electric, gas, and sanitary services	42	37	61.9	16.7	1.0	1,230.0	201.4	3.3	14%	5%
50	Wholesale trade-durable goods	63	204	113.5	22.7	2.0	5,940.0	467.2	4.1	27%	10%
51	Wholesale trade non-durable goods	23	16	18.2	16.5	2.0	63.6	19.3	1.1	0%	0%
95	Environmental quality programs	2	4	22.8	25.0	11.0	30.0	9.1	0.4	0%	0%
	No sector specified	26	20	292.3	10.0	0.0	4,930.0	1,098.1	3.8	20%	10%

[a] Benchmark for copper is 63.6 µg/L
[b] Action level for copper is 149 µg/L

Table A-6. Summary statistics for total lead concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (µg/L)	Median (µg/L)	Minimum (µg/L)	Maximum (µg/L)	Std. Dev. (µg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
10	Metal mining	1	1	13.9	13.9	13.9	13.9	--	--	0%	0%
17	Construction special trade contractors	3	11	29	33	1.7	70	24	0.8	0%	0%
20	Food and kindred products	40	55	20	10	0.05	200	33	1.6	4%	2%
22	Textile mill products	3	5	6.3	6	6	7.56	0.7	0.1	0%	0%
23	Apparel and other finished products made from fabrics	1	4	14	6.5	4	37	16	1.2	0%	0%
24	Lumber and wood products	127	67	20	8	0.006	332	47	2.4	3%	3%
26	Paper and allied products	14	8	34	40	1	110	36	1.1	13%	0%
28	Chemicals and allied products	40	43	65	40	2	597	130	2.0	12%	9%
30	Rubber and miscellaneous plastic products	37	33	15	7	0.08	40	15	1.0	0%	0%
32	Stone, clay and glass products	23	4	29	25	25	40	7.5	0.3	0%	0%
33	Primary metals industries	13	48	98	10	0.01	1240	278	2.9	21%	8%
34	Fabricated metal products	62	192	55	25	0.02	3000	223	4.1	11%	5%
35	Industrial & commercial machinery & computer equip.	28	1	1.7	1.7	1.7	1.7	--	--	0%	0%
36	Electronic and other electrical equipment	7	8	15	6.5	1.44	78	26	1.7	0%	0%
37	Transportation equipment	33	122	7	3.3	0.01	89.7	11	1.6	1%	0%
39	Miscellaneous manufacturing industries	6	4	3.9	4	1.8	5.7	1.8	0.5	0%	0%
40	Railroad transportation	11	8	43	40	1.5	81	22	0.5	0%	0%
41	Local and interurban passenger transportation	23	9	15	4.5	1	40	17	1.2	0%	0%
42	Motor freight transportation & warehousing	108	111	31	15	2	289	49	1.6	6%	4%
44	Water transportation	30	27	33	13	0.05	144	38	1.2	11%	0%
45	Transportation by air	21	15	37	40	25	50	7.3	0.2	0%	0%
49	Electric, gas, and sanitary services	42	36	13	7	0.9	110	19	1.5	3%	0%
50	Wholesale trade-durable goods	63	186	104	25	0.1	3730	339	3.2	22%	10%
51	Wholesale trade non-durable goods	23	13	29	20	2	81.6	28	1.0	0%	0%
95	Environmental quality programs	2	4	3.3	2	1.6	7.6	2.9	0.9	0%	0%
	No sector specified	26	19	53	10	0.007	576	137	2.6	11%	11%

[a] Benchmark for lead is 81.6 µg/L

[b] Action level for lead is 159 µg/L

Table A-7. Summary statistics for biological oxygen demand concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
20	Food and kindred products	40	221	35.9	13.0	2.0	340.0	58.6	1.6	29%	16%
24	Lumber and wood products	127	615	46.7	14.0	0.5	639.0	82.6	1.8	30%	21%
26	Paper and allied products	14	20	10.2	9.0	4.0	27.0	6.1	0.6	0%	0%
28	Chemicals and allied products	40	159	17.2	6.0	1.5	320.0	40.9	2.4	9%	4%
42	Motor freight transportation & warehousing	108	6	7.3	5.5	2.0	14.0	5.0	0.7	0%	0%
47	Transportation services	2	2	29.5	29.5	26.0	33.0	4.9	0.2	50%	0%
49	Electric, gas, and sanitary services	42	64	7.0	4.5	0.2	39.0	7.8	1.1	0%	–
51	Wholesale trade non-durable goods	23	3	6.8	7.0	4.0	9.3	2.7	0.4	0%	0%
	No sector specified	26	15	17.4	15.0	3.0	90.0	21.3	1.2	7%	7%

[a] Benchmark for BOD is 30 mg/L with the exception of sector 49 which has a benchmark of 140 mg/L
[b] Action level for BOD is 60 mg/L

Table A-8. Summary statistics for ammonia nitrogen concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
32	Stone, clay and glass products	23	3	9.2	10.1	7.2	10.2	2	0.2	0%	0%
39	Miscellaneous manufacturing industries	6	1	0.1	0.1	0.1	0.1	--	--	0%	0%
49	Electric, gas, and sanitary services	42	66	0.3	0.1	0.0	4.8	0.6	2.4	0%	0%

[a] Benchmark for ammonia nitrogen is 21.8 mg/L for all sectors except for 49 which has a benchmark of 10 mg/L
[b] Action level for ammonia nitrogen is 38 mg/L

Table A-9. Summary statistics for nitrate + nitrite nitrogen concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
20	Food and kindred products	40	217	1.5	0.4	0.01	61.0	4.9	3.3	34%	21%
28	Chemicals and allied products	40	174	2.5	0.6	0.01	83.7	9.2	3.7	43%	22%
47	Transportation services	2	2	50.3	50.3	0.5	100.0	70.4	1.4	50%	50%
	No sector specified	26	4	0.8	0.3	0.2	2.4	1.0	1.3	25%	25%

[a] Benchmark for nitrate + nitrite nitrogen is 0.68 mg/L

[b] Action level for nitrate + nitrite nitrogen is 1.36 mg/L

Table A-10. Summary statistics for total phosphorus concentrations measured in industrial stormwater by industry sector.

SIC	Sector	# of facilities	# of values	Mean (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)	Std. Dev. (mg/L)	Coefficient of variation	Exceedance of benchmark[a]	Exceedance of action level[b]
20	Food and kindred products	40	230	1	0.3	0.005	23	3.1	2.4	14%	7%
28	Chemicals and allied products	40	170	1.4	0.1	0.004	137	10.7	7.4	7%	6%
47	Transportation services	2	2	3.2	3.2	1.2	5.1	2.8	0.9	50%	50%
50	Wholesale trade-durable goods	63	2	11.5	11.5	0.081	23	16.2	1.4	50%	50%
51	Wholesale trade non-durable goods	23	1	0.1	0.1	0.12	0.12	--	--	0%	0%
	No sector specified	26	5	0.08	0.1	0.044	0.18	0.1	0.7	0%	0%

[a] Benchmark for total phosphorus is 2 mg/L

[b] Action level for total phosphorus is 4 mg/L

APPENDIX B

Percentages of Samples Exceeding State Water Quality Standards by Industrial Category Given Hypothetical Receiving Water Conditions and Varying Dilution Factors

Table B-1. Percentage of turbidity samples that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

Category	n	Exceedance of Std. (%)[a]			
		0 DF	10 DF	25 DF	50 DF
Western Washington					
01 - Facilities with effluent limitations	8	25 (0-38)	0 (0)	0 (0)	0 (0)
02 - Manufacturing	1286	72 (58-76)	27 (24-27)	14 (14-15)	8 (7-8)
03 - Mineral, metal, oil, and gas	23	22 (13-26)	0 (0)	0 (0)	0 (0)
05 - Landfills	135	48 (30-54)	4 (3-4)	1 (1)	0 (0)
06 - Recycling facilities	295	71 (57-76)	25 (22-27)	12 (11-12)	4 (4)
07 - Steam electric plants	3	67 (0-67)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	960	68 (53-75)	23 (21-23)	10 (10)	5 (5)
09 - Treatment works	74	39 (27-45)	8 (3-8)	0 (0)	0 (0)
10 - Construction sites > 5 acres	6	67 (50-83)	17 (17)	17 (17)	0 (0)
11 - Light industrial activity	1370	58 (42-65)	15 (13-15)	5 (4-5)	3 (2-3)
12 - Significant contributor	7	29 (29)	29 (14-29)	14 (14)	0 (0)
No category specified	113	50 (35-61)	14 (14)	5 (5)	4 (4)
All Western Washington	**4280**	**64 (49-70)**	**20 (18-21)**	**9 (9)**	**5 (5)**
Eastern Washington					
02 - Manufacturing	41	76 (68-90)	22 (22-24)	22 (20-22)	7 (7)
03 - Mineral, metal, oil, and gas	1	100 (100)	0 (0-100)	0 (0)	0 (0)
08 - Transportation facilities	50	84 (66-88)	30 (26-36)	24 (18-24)	14 (14)
09 - Treatment works	3	67 (33-67)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	80	79 (66-84)	30 (28-30)	14 (13-14)	6 (6)
No category specified	9	89 (44-100)	22 (22)	0 (0)	0 (0)
All Eastern Washington	**184**	**80 (65-87)**	**27 (25-30)**	**17 (15-17)**	**8 (8)**
All Washington	**4464**	**65 (50-71)**	**21 (18-21)**	**10 (9-10)**	**5 (5)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Table B-2. Percentage of turbidity samples with levels less than the benchmark that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Std. (%)[a]			
Category	n	0 DF	10 DF	25 DF	50 DF
Western Washington					
01 - Facilities with effluent limitations	8	25 (0-38)	0 (0)	0 (0)	0 (0)
02 - Manufacturing	713	49 (24-57)	0 (0)	0 (0)	0 (0)
03 - Mineral, metal, oil, and gas	22	18 (9-23)	0 (0)	0 (0)	0 (0)
05 - Landfills	113	38 (17-45)	0 (0)	0 (0)	0 (0)
06 - Recycling facilities	170	49 (25-59)	0 (0)	0 (0)	0 (0)
07 - Steam electric plants	3	67 (0-67)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	584	48 (23-59)	0 (0)	0 (0)	0 (0)
09 - Treatment works	66	32 (18-38)	0 (0)	0 (0)	0 (0)
10 - Construction sites > 5 acres	3	33 (0-67)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	968	40 (19-51)	0 (0)	0 (0)	0 (0)
12 - Significant contributor	5	0 (0)	0 (0)	0 (0)	0 (0)
No category specified	85	33 (13-48)	0 (0)	0 (0)	0 (0)
All Western Washington	**2740**	**44 (21-54)**	**0 (0)**	**0 (0)**	**0 (0)**
Eastern Washington					
02 - Manufacturing	19	47 (32-79)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	20	60 (15-70)	0 (0)	0 (0)	0 (0)
09 - Treatment works	3	67 (33-67)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	38	55 (29-66)	0 (0)	0 (0)	0 (0)
No category specified	5	80 (0-100)	0 (0)	0 (0)	0 (0)
All Eastern Washington	**85**	**56 (25-72)**	**0 (0)**	**0 (0)**	**0 (0)**
All Washington	**2825**	**44 (21-54)**	**0 (0)**	**0 (0)**	**0 (0)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Table B-3. Percentage of total zinc samples that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

Category	n	Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
		0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
01 - Facilities with effluent limitations	8	100 (100)	100 (100)	88 (63-88)	38 (13-88)	100 (100)	100 (100)	88 (88-100)	63 (13-88)
02 - Manufacturing	1194	83 (78-86)	25 (16-36)	7 (5-14)	3 (2-6)	84 (79-87)	26 (17-40)	9 (6-16)	3 (2-6)
03 - Mineral, metal, oil, and gas	22	36 (27-50)	5 (5)	0 (0-5)	0 (0)	41 (32-50)	5 (5-14)	0 (0-5)	0 (0)
05 - Landfills	120	82 (76-91)	31 (25-38)	21 (21-24)	20 (19-21)	85 (79-94)	34 (26-41)	22 (21-25)	20 (19-21)
06 - Recycling facilities	288	84 (78-88)	26 (19-33)	8 (4-18)	2 (1-5)	85 (80-89)	27 (20-37)	9 (5-19)	3 (1-7)
07 - Steam electric plants	3	33 (33-67)	0 (0)	0 (0)	0 (0)	67 (33-67)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	909	85 (80-90)	24 (13-37)	6 (4-12)	3 (1-5)	87 (81-90)	26 (16-40)	7 (5-13)	3 (1-5)
09 - Treatment works	73	56 (45-74)	7 (5-15)	1 (0-5)	0 (0-1)	59 (48-75)	8 (5-15)	4 (1-5)	0 (0-1)
10 - Construction sites > 5 acres	6	100 (100)	50 (33-83)	33 (17-33)	17 (17)	100 (100)	67 (33-83)	33 (17-33)	17 (17-33)
11 - Light industrial activity	1331	89 (85-92)	26 (17-37)	8 (6-15)	4 (3-7)	90 (86-93)	27 (19-40)	9 (6-16)	5 (3-7)
12 - Significant contributor	4	25 (0-25)	0 (0)	0 (0)	0 (0)	25 (25)	0 (0)	0 (0)	0 (0)
No category specified	108	84 (83-87)	33 (25-44)	12 (9-22)	6 (4-9)	85 (83-87)	37 (27-47)	15 (9-24)	6 (5-10)
All Western Washington	**4066**	**84 (79-88)**	**24 (16-35)**	**7 (5-14)**	**3 (2-6)**	**85 (80-88)**	**26 (17-39)**	**9 (6-16)**	**4 (2-6)**
Eastern Washington									
02 - Manufacturing	39	87 (74-92)	8 (0-64)	0 (0-15)	0 (0-10)	90 (74-92)	10 (3-74)	0 (0-38)	0 (0-10)
03 - Mineral, metal, oil, and gas	1	100 (100)	0 (0-100)	0 (0)	0 (0)	100 (100)	0 (0-100)	0 (0-100)	0 (0)
08 - Transportation facilities	50	47 (39-71)	6 (4-29)	4 (2-14)	2 (2-8)	57 (39-73)	8 (6-39)	4 (2-14)	2 (2-12)
09 - Treatment works	3	0 (0-67)	0 (0)	0 (0)	0 (0)	33 (0-67)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	81	79 (63-86)	14 (6-57)	4 (1-35)	1 (1-16)	80 (67-90)	17 (7-62)	5 (1-41)	1 (1-22)
No category specified	9	67 (67)	11 (0-56)	0 (0-44)	0 (0-11)	67 (67)	11 (0-67)	0 (0-44)	0 (0-22)
All Eastern Washington	**183**	**70 (58-83)**	**10 (4-50)**	**3 (1-25)**	**1 (1-12)**	**75 (60-85)**	**13 (5-58)**	**3 (1-33)**	**1 (1-16)**
All Washington	**4249**	**83 (78-88)**	**24 (15-36)**	**7 (5-14)**	**3 (2-6)**	**85 (79-88)**	**26 (17-40)**	**8 (5-16)**	**4 (2-7)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).

DF: Dilution factor.

Table B-4. Percentage of total zinc samples with concentrations less than the benchmark that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
Category	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
02 - Manufacturing	547	63 (51-70)	0 (0)	0 (0)	0 (0)	65 (55-71)	0 (0)	0 (0)	0 (0)
03 - Mineral, metal, oil, and gas	19	26 (16-42)	0 (0)	0 (0)	0 (0)	32 (21-42)	0 (0)	0 (0)	0 (0)
05 - Landfills	90	33 (30-39)	0 (0)	0 (0)	0 (0)	36 (32-42)	0 (0)	0 (0)	0 (0)
06 - Recycling facilities	143	69 (57-76)	0 (0)	0 (0)	0 (0)	70 (59-78)	0 (0)	0 (0)	0 (0)
07 - Steam electric plants	3	33 (33-67)	0 (0)	0 (0)	0 (0)	67 (33-67)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	381	65 (52-75)	0 (0)	0 (0)	0 (0)	68 (55-77)	0 (0)	0 (0)	0 (0)
09 - Treatment works	51	37 (22-63)	0 (0)	0 (0)	0 (0)	41 (25-65)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	570	74 (64-82)	0 (0)	0 (0)	0 (0)	76 (67-84)	0 (0)	0 (0)	0 (0)
12 - Significant contributor	4	25 (0-25)	0 (0)	0 (0)	0 (0)	25 (25)	0 (0)	0 (0)	0 (0)
No category specified	39	56 (54-64)	0 (0)	0 (0)	0 (0)	59 (54-64)	0 (0)	0 (0)	0 (0)
All Western Washington	**1847**	**65 (54-73)**	**0 (0)**	**0 (0)**	**0 (0)**	**67 (57-75)**	**0 (0)**	**0 (0)**	**0 (0)**
Eastern Washington									
02 - Manufacturing	9	44 (0-67)	0 (0)	0 (0)	0 (0)	56 (0-67)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	30	13 (0-53)	0 (0)	0 (0)	0 (0)	30 (0-57)	0 (0)	0 (0)	0 (0)
09 - Treatment works	3	0 (0-67)	0 (0)	0 (0)	0 (0)	33 (0-67)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	25	32 (0-56)	0 (0)	0 (0)	0 (0)	36 (0-68)	0 (0)	0 (0)	0 (0)
No category specified	3	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
All Eastern Washington	**70**	**23 (0-54)**	**0 (0)**	**0 (0)**	**0 (0)**	**34 (0-60)**	**0 (0)**	**0 (0)**	**0 (0)**
All Washington	**1917**	**63 (52-72)**	**0 (0)**	**0 (0)**	**0 (0)**	**66 (55-74)**	**0 (0)**	**0 (0)**	**0 (0)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Table B-5. Percentage of total copper samples that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

Category	n	Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
		0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
01 - Facilities with effluent limitations	4	100 (75-100)	50 (0-50)	0 (0-50)	0 (0)	100 (100)	50 (50)	0 (0-50)	0 (0-50)
02 - Manufacturing	276	91 (84-92)	29 (18-54)	12 (6-24)	5 (3-12)	92 (88-92)	44 (24-75)	17 (8-41)	7 (4-21)
05 - Landfills	22	91 (82-95)	23 (14-23)	5 (5-23)	5 (5-9)	91 (91-95)	23 (23-59)	14 (5-23)	5 (5-18)
06 - Recycling facilities	196	98 (89-99)	41 (28-53)	18 (10-37)	7 (5-18)	99 (93-99)	49 (38-70)	28 (13-48)	12 (7-31)
08 - Transportation facilities	184	95 (88-96)	30 (15-58)	11 (5-19)	4 (2-11)	96 (91-98)	51 (21-73)	15 (9-48)	5 (3-16)
09 - Treatment works	18	100 (89-100)	22 (6-56)	6 (6-17)	6 (0-6)	100 (100)	50 (17-67)	6 (6-44)	6 (0-11)
11 - Light industrial activity	421	98 (91-99)	29 (15-55)	9 (5-24)	3 (2-9)	99 (95-99)	40 (25-78)	15 (8-38)	6 (2-17)
No category specified	20	85 (85)	20 (20)	15 (10-20)	10 (10-15)	85 (85-90)	20 (20-45)	20 (15-20)	10 (10-20)
All Western Washington	**1141**	**95 (88-96)**	**31 (18-54)**	**12 (6-25)**	**5 (3-12)**	**96 (92-97)**	**44 (26-74)**	**17 (9-42)**	**7 (4-20)**
Eastern Washington									
02 - Manufacturing	4	75 (25-100)	0 (0)	0 (0)	0 (0)	100 (50-100)	0 (0)	0 (0)	0 (0)
03 - Mineral, metal, oil, and gas	1	100 (100)	100 (0-100)	0 (0-100)	0 (0)	100 (100)	100 (100)	0 (0-100)	0 (0)
08 - Transportation facilities	12	58 (50-92)	25 (8-42)	8 (0-17)	0 (0-8)	75 (58-100)	42 (17-42)	8 (8-25)	0 (0-8)
11 - Light industrial activity	19	63 (47-79)	5 (0-16)	0 (0)	0 (0)	79 (58-84)	11 (0-26)	0 (0-5)	0 (0)
All Eastern Washington	36	**64 (47-86)**	**14 (3-25)**	**3 (0-8)**	**0 (0-3)**	**81 (58-92)**	**22 (8-31)**	**3 (3-14)**	**0 (0-3)**
All Washington	1177	**94 (87-96)**	**31 (17-53)**	**11 (6-24)**	**5 (3-11)**	**96 (91-97)**	**43 (25-73)**	**17 (9-41)**	**7 (4-20)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Table B-6. Percentage of total zinc samples with concentrations less than the benchmark that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
Category	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
01 - Facilities with effluent limitations	4	100 (75-100)	50 (0-50)	0 (0-50)	0 (0)	100 (100)	50 (50)	0 (0-50)	0 (0-50)
02 - Manufacturing	222	89 (81-90)	12 (0-42)	0 (0-5)	0 (0)	90 (85-91)	31 (5-69)	0 (0-27)	0 (0-1)
05 - Landfills	19	89 (79-95)	11 (0-11)	0 (0-11)	0 (0)	89 (89-95)	11 (11-53)	0 (0-11)	0 (0-5)
06 - Recycling facilities	140	97 (85-99)	18 (0-34)	0 (0-11)	0 (0)	99 (90-99)	29 (13-59)	0 (0-28)	0 (0-4)
08 - Transportation facilities	155	94 (85-95)	17 (0-50)	0 (0-4)	0 (0)	95 (89-97)	41 (6-68)	0 (0-38)	0 (0)
09 - Treatment works	16	100 (88-100)	13 (0-50)	0 (0-6)	0 (0)	100 (100)	44 (6-63)	0 (0-38)	0 (0)
11 - Light industrial activity	354	97 (90-98)	16 (0-46)	0 (0-9)	0 (0)	98 (94-99)	29 (11-74)	0 (0-26)	0 (0-2)
No category specified	16	81 (81)	0 (0)	0 (0)	0 (0)	81 (81-88)	0 (0-31)	0 (0)	0 (0)
All Western Washington	**926**	**94 (86-96)**	**15 (0-43)**	**0 (0-8)**	**0 (0)**	**95 (90-96)**	**31 (9-68)**	**0 (0-28)**	**0 (0-2)**
Eastern Washington									
02 - Manufacturing	4	75 (25-100)	0 (0)	0 (0)	0 (0)	100 (50-100)	0 (0)	0 (0)	0 (0)
08 - Transportation facilities	7	29 (14-86)	0 (0)	0 (0)	0 (0)	57 (29-100)	0 (0)	0 (0)	0 (0)
11 - Light industrial activity	16	56 (38-75)	0 (0)	0 (0)	0 (0)	75 (50-81)	0 (0-13)	0 (0)	0 (0)
All Eastern Washington	**27**	**52 (30-81)**	**0 (0)**	**0 (0)**	**0 (0)**	**74 (44-89)**	**0 (0-7)**	**0 (0)**	**0 (0)**
All Washington	**953**	**93 (84-95)**	**15 (0-42)**	**0 (0-7)**	**0 (0)**	**95 (89-96)**	**30 (9-66)**	**0 (0-27)**	**0 (0-2)**

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).
DF: Dilution factor.

Table B-7. Percentage of total lead samples that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
Category	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
01 - Facilities with effluent limitations	2	100 (100)	0 (0)	0 (0)	0 (0)	100 (100)	100 (100)	100 (100)	100 (0-100)
02 - Manufacturing	226	32 (14-38)	3 (2-3)	1 (1-2)	0 (0-1)	87 (87-92)	48 (41-77)	33 (14-60)	12 (10-42)
05 - Landfills	21	10 (10-14)	0 (0)	0 (0)	0 (0)	95 (95-100)	24 (19-71)	10 (10-38)	5 (5-24)
06 - Recycling facilities	178	47 (39-53)	6 (5-8)	4 (2-4)	1 (1-2)	96 (94-99)	64 (60-87)	49 (39-75)	29 (21-63)
08 - Transportation facilities	157	39 (17-49)	0 (0-1)	0 (0)	0 (0)	96 (94-99)	66 (55-90)	43 (17-77)	11 (4-57)
09 - Treatment works	18	6 (0-11)	0 (0)	0 (0)	0 (0)	94 (83-100)	28 (17-72)	6 (0-44)	0 (0-22)
11 - Light industrial activity	378	24 (11-34)	1 (1)	0 (0-1)	0 (0)	94 (86-98)	46 (39-72)	24 (12-54)	8 (5-41)
No category specified	19	21 (11-26)	5 (5-11)	0 (0-5)	0 (0)	95 (95)	37 (32-79)	26 (11-58)	11 (11-32)
All Western Washington	**999**	**32** **(17-40)**	**2** **(2-3)**	**1** **(1-2)**	**0** **(0-1)**	**93** **(89-97)**	**52** **(45-79)**	**33** **(18-62)**	**13** **(9-47)**
Eastern Washington									
02 - Manufacturing	4	50 (50)	0 (0)	0 (0)	0 (0)	100 (75-100)	50 (50-75)	50 (50)	50 (25-50)
03 - Mineral, metal, oil, and gas	1	0 (0)	0 (0)	0 (0)	0 (0)	100 (100)	0 (0-100)	0 (0)	0 (0)
08 - Transportation facilities	12	25 (17-33)	0 (0)	0 (0)	0 (0)	92 (75-100)	33 (33-42)	25 (17-33)	17 (8-33)
11 - Light industrial activity	18	6 (0-11)	0 (0)	0 (0)	0 (0)	78 (61-83)	17 (11-50)	6 (0-17)	0 (0-11)
All Eastern Washington	**35**	**17** **(11-23)**	**0** **(0)**	**0** **(0)**	**0** **(0)**	**86** **(69-91)**	**26** **(23-51)**	**17** **(11-26)**	**11** **(6-23)**
All Washington	**1034**	**31** **(17-39)**	**2** **(2-3)**	**1** **(1-2)**	**0** **(0-1)**	**93** **(89-97)**	**51** **(44-78)**	**33** **(18-61)**	**13** **(9-46)**

DF: Dilution factor.

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).

Table B-8. Percentage of total lead samples with concentrations less than the benchmark that potentially exceed state water quality criteria given hypothetical receiving water conditions for eastern and western Washington and dilution factors of 0, 10, 25, and 50.

		Exceedance of Acute Std. (%)[a]				Exceedance of Chronic Std. (%)[a]			
Category	n	0 DF	10 DF	25 DF	50 DF	0 DF	10 DF	25 DF	50 DF
Western Washington									
01 - Facilities with effluent limitations	2	100 (100)	0 (0)	0 (0)	0 (0)	100 (100)	100 (100)	100 (100)	100 (0-100)
02 - Manufacturing	204	25 (5-31)	0 (0)	0 (0)	0 (0)	85 (85-91)	42 (35-75)	25 (5-56)	2 (5-36)
05 - Landfills	20	5 (5-10)	0 (0)	0 (0)	0 (0)	95 (95-100)	20 (15-70)	5 (5-35)	0 (0-20)
06 - Recycling facilities	140	32 (22-40)	0 (0)	0 (0)	0 (0)	95 (93-99)	54 (49-83)	35 (22-68)	9 (0-53)
08 - Transportation facilities	150	37 (13-47)	0 (0)	0 (0)	0 (0)	96 (94-99)	64 (53-90)	41 (13-76)	7 (0-55)
09 - Treatment works	18	6 (0-11)	0 (0)	0 (0)	0 (0)	94 (83-100)	28 (17-72)	6 (0-44)	0 (0-22)
11 - Light industrial activity	358	20 (6-30)	0 (0)	0 (0)	0 (0)	94 (85-98)	43 (36-70)	20 (7-52)	3 (0-38)
No category specified	17	12 (0-18)	0 (0)	0 (0)	0 (0)	94 (94)	29 (27-76)	18 (0-53)	0 (0-24)
All Western Washington	**909**	**25 (9-34)**	**0 (0)**	**0 (0)**	**0 (0)**	**93 (88-97)**	**47 (40-77)**	**27 (10-59)**	**5 (0-42)**
Eastern Washington									
02 - Manufacturing	2	0 (0)	0 (0)	0 (0)	0 (0)	100 (50-100)	0 (0-50)	0 (0)	0 (0)
03 - Mineral, metal, oil, and gas	1	0 (0)	0 (0)	0 (0)	0 (0)	100 (100)	0 (0-100)	0 (0)	0 (0)
08 - Transportation facilities	9	0 (0-11)	0 (0)	0 (0)	0 (0)	89 (67-100)	11 (11-22)	0 (0-11)	0 (0-11)
11 - Light industrial activity	17	0 (0-6)	0 (0)	0 (0)	0 (0)	76 (59-82)	12 (6-47)	0 (0-12)	0 (0-6)
All Eastern Washington	**29**	**0 (0-7)**	**0 (0)**	**0 (0)**	**0 (0)**	**83 (62-90)**	**10 (7-41)**	**0 (0-10)**	**0 (0-7)**
All Washington	**938**	**24 (9-33)**	**0 (0)**	**0 (0)**	**0 (0)**	**92 (87-96)**	**46 (39-76)**	**26 (9-57)**	**4 (0-41)**

DF: Dilution factor.

[a] Values represent the percentage of sample exceeding the water quality standard based on representative receiving water conditions for the typical scenario (value not in parentheses) and the best and worst case scenarios (values in parentheses).

Appendix II

EVALUATION OF MONITORING METHODS FOR INDUSTRIAL AND CONSTRUCTION NPDES PERMITS

Visual Inspection of Stormwater BMPs

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October 11, 2006

Contents

Introduction

The Washington State Department of Ecology (Ecology) is evaluating monitoring methods for National Pollutant Discharge Elimination System (NPDES) construction and industrial stormwater general permits. As part of this effort, Ecology is interested in determining if visual inspections are adequately identifying the pollution issues present on site, and if the issues being identified during inspections are reflective of water quality monitoring data.

This report has been prepared to assist Ecology in determining if modifications to visual inspection requirements and protocols for onsite best management practices (BMPs) are warranted for NPDES permittees, and to offer recommendations for improved inspections as appropriate. Ecology recently revised its construction site inspection form and has set forth requirements for a training program for construction site inspectors that will be a key component of NPDES construction permit compliance beginning in October 2006. This inspector training program will include visual examples of effective and ineffective BMP applications. It is expected that this required training will provide a strong basis for guiding inspectors to perform productive visual inspections at construction sites. Therefore, this report focuses primarily on suggestions to improve industrial site visual inspections with only a few observations and suggestions related to construction sites.

Background

All NPDES general permit holders have to prepare a Stormwater Pollution Prevention Plan (SWPPP). The purpose of a SWPPP is to outline actions that will be followed to reduce or eliminate pollutants that come in contact with precipitation and stormwater runoff on a site and therefore better protect receiving water quality. Within a SWPPP, stormwater BMPs are identified to reduce or eliminate stormwater pollutants onsite. These BMPs can be structural or nonstructural. Examples of structural BMPs include catch basin filter inserts, vegetated swales, and oil/water separators that capture stormwater pollutants before they leave the site. Examples of nonstructural BMPs include good housekeeping techniques and practices designed to prevent potential pollutants from coming in contact with precipitation and stormwater runoff, such as sweeping of loading docks and installing covers over waste material storage areas. A monitoring plan which includes water quality sampling and visual inspections is also required to be included in a SWPPP.

Periodic visual inspections are required to identify potential stormwater pollutants and determine areas where improvements are needed. A visual inspection should determine if the SWPPP has been implemented, if BMPs are working properly and are being maintained, and if there are other issues of concern for water quality protection. After completing a visual inspection, results must be summarized in an inspection report or recorded on a checklist/inspection form and filed onsite with the SWPPP to comply with the conditions of the general construction permit and general industrial stormwater permit. If the inspection indicates any problems, the report must include a summary of actions that will be taken to address the problem. Reporting any non-compliance with the permit is required.

Existing Guidance and Requirements for Visual Inspections

Construction Sites

Ecology recently produced a guidance document for monitoring at construction sites that describes how to conduct stormwater monitoring and provides limited guidance on visual inspections (Ecology 2006). This document is called "How to do Stormwater Monitoring: A Guide for Construction Sites" (Ecology publication number 06-10-020). In this document, an example site inspection checklist is provided for use by inspectors. This checklist relies upon assignment of a good, fair, or poor rating for the condition and functionality of each BMP in use on the site. There is, however, no explanation given in the guidance document on how to make these assignments; the visual inspection section of this document is vague and provides only a few examples.

Although Ecology's written guidance for visual inspections at construction sites is limited, starting in October 2006, the person conducting the visual inspections must be a Certified Erosion and Sediment Control Lead (CESCL). To become a CESCL an individual must take a certification course. It is anticipated that this course will train inspectors to conduct inspections and properly rate the condition and functionality of the onsite BMPs. Although the training required for the CESCLs will provide this background, the large numbers of courses and trainers that will be involved are an indication that more written detail in the guidance document will still be helpful in standardizing the visual inspection ratings.

Consistency in visual inspections is important not only for fairness in enforcement actions, but it also allows for analysis of the overall effectiveness of stormwater programs at the municipal, county, or state level. If the inspection reports provide enough detail, Ecology may be able to determine, for instance, that the biggest problem affecting runoff interception swales is the lack of maintenance. The lack of maintenance may allow sediment buildup and decrease swale capacity. This level of detail will become increasingly important as communities and permittees deal with waste load allocations under total maximum daily load (TMDL) regulations and begin estimating whether their actions are yielding the required reductions in pollutant loads.

Industrial Sites

The Industrial Stormwater General Permit requires visual monitoring to be conducted at all applicable industrial sites at least quarterly during storm events and at least once during the dry season (Ecology 2005). As part of visual inspections, the general permit also requires each Permittee to identify BMPs that are inadequate or pollutant sources that are not identified or poorly described in the SWPPP. When visual monitoring identifies inadequacies in the SWPPP, due to the actual discharge of or potential to discharge a significant amount of any pollutant, the SWPPP must be modified and BMPs adjusted to correct the deficiency (Ecology 2005).

Although Ecology has published a guidance document that describes how to sample stormwater at an industrial site, it provides limited guidance on how to conduct a visual site inspection at an industrial site (Ecology 2002). Ecology's Guidance Manual for Preparing/Updating a SWPPP for Industrial Facilities (Ecology 2004) describes the process of creating a SWPPP for industrial facilities, but there is little guidance on how to conduct visual site inspections. The appendix for the guidance manual contains a form (worksheet #11) that is the basis for documenting visual BMP inspections. The worksheet contains a table that consists of five columns. In the table the user is to record the date of the inspection, identify the surface or ground water body that receives stormwater discharged from the site, pollutants observed in the stormwater, and recommended action steps. No specific questions are asked, there are no examples given, and very little guidance is provided to promote effective visual inspections and associated record-keeping. The only instructions are found in the form header:

> "List of observed pollutants and descriptions of intensities of each. Include floatables, oil sheen, discoloration, turbidity, odor, etc. in the SW."

Worksheet #11 does not list structural BMPs or nonstructural BMPs, or give guidance on how to inspect them. Using this form, an inspector would have a difficult time knowing what issues to look for onsite, especially if he/she were not trained to understand runoff pollutant sources and corresponding BMP options. Currently, Ecology does not require industrial site inspectors to be certified and there are no training courses readily available for these inspectors. Industrial site inspectors are often foremen, onsite engineers, or site safety officers. They are not required to have a background in stormwater pollution prevention and may not have a clear understanding of what is contributing to stormwater pollution. The worksheet requires that the person making the observations sign a certificate that states, under the penalty of law, that the form is true, accurate, and complete. Without adequate guidance, many of the industrial site employees who conduct the inspections may be reluctant to sign this.

It would be beneficial if Ecology distributed a guidance document describing how to inspect the structural BMPs and what good housekeeping items to look for on the site while conducting a visual inspection. Examples include: how to inspect catch basins and oil/water separators to know when maintenance is required, and what general maintenance is needed on site to keep pollutants out of stormwater.

Survey of BMP Inspection Procedures

As part of the effort to create a new industrial site inspection checklist for Ecology, an extensive web search was conducted to determine how other jurisdictions conduct visual BMP inspections at industrial sites. As noted above, since Ecology has already established a relatively rigorous program for training of construction site BMP inspectors, the review was limited to industrial site inspections. Many industrial site inspection forms were found that are used by cities and state agencies across the country. The majority of these forms were intended to be used by the industrial stormwater permit holders to show compliance with their permit requirements. Forms from nine jurisdictions were selected for closer examination. These jurisdictions included:

- City of Portland, Oregon – Industrial Facility Stormwater Inspection Report (City of Portland undated).
- Sacramento County, California – Checklist Summary of Violations for Stormwater Program (Sacramento County 2004).
- EPA – NPDES Industrial Stormwater Worksheet (Industrial) (EPA 2005).
- Minnesota Pollution Control Agency – Site Inspection Form for Industrial Activities (MPCA 1999).
- City of Austin, Texas – Annual SWP3 Comprehensive Site Compliance Evaluation Inspection (City of Austin 2002).
- Wisconsin Department of Natural Resources – Annual Facility Site Compliance Inspection Report (WDNR 2005).
- City of Bellevue, Washington – Public Inspection and Maintenance Checklists (City of Bellevue 2002).
- Seattle Public Utilities Business Inspection Program Checklist (City of Bellevue 2002).
- Caltrans – Storm Water Quality Handbooks, Maintenance Staff Guide (Caltrans 2003).

A summary of the positive and negative aspects of the inspection forms reviewed were documented and compared to the existing form used in Washington State (worksheet #11 from Ecology's industrial SWPPP guidance manual). The information from these forms was used to create an expanded visual inspection checklist for industrial NPDES permit holders in the State of Washington.

Several questions were considered when reviewing each form. These questions helped to determine what should be included in the Ecology checklist. The following questions were considered:

- Is the length of the form appropriate? Is it too long or too short?
- Is it easy to use? (Is it obvious what is being asked? Are examples provided so the inspector knows what potential sources of stormwater pollutants are possible on the site?)
- If the inspector does not have a background in stormwater management will they be able complete the inspection based on the information

provided in the form? In other words, is the form simple enough for the lay person to complete?

- Are the appropriate questions being asked on the form?
- Is the form complete for most situations (i.e., are all common structural and nonstructural industrial BMPs included and described)?
- Are there items included that are not relevant in the State of Washington that should not appear in Ecology's inspection form?
- Can the information in the form be compiled and analyzed to identify trends on a regional or statewide basis?

The inspection forms from the nine jurisdictions reviewed vary greatly in length, format, and content. The length of the forms range between one and six pages and the format varies between fill-in-the-blank questions, *yes, no*, or *N/A* questions, and check boxes. The majority of the forms address nonstructural, good housekeeping techniques and many of them are very thorough in describing what the inspector should be looking for onsite concerning nonstructural BMPs. Most of the forms do not address structural BMPs, and if they are addressed there is very little information about how to inspect the structural BMPs and only a limited number of them are addressed.

In general, the forms that are longer appear to be easier to use. The long forms generally provide more guidance and ask more questions that would help an inspector identify potential stormwater issues onsite. The questions that could be answered with a *yes, no, N/A*, or check box are the easiest to understand. The fill-in-the-blank questions are often too open-ended and could be difficult for a person without a background in stormwater pollution control to answer. The best fill-in-the-blank questions are specific and include example answers so that the inspector knows what is being asked. For example, the Minnesota Pollution Control Agency's site inspection form asks if there are raw, intermediate, or final products exposed to stormwater. It then lists the following examples: log, coal, salt, sand, gravel, lumber, scrap, metal products, vehicle parts, etc. Having these examples is important because an inspector may have noticed these products onsite but may have not thought to list them. In addition, because of the wide range of products listed the question is applicable to several different types of industries.

Overall, two forms were deemed the easiest to use. These forms are also the most comprehensive of the forms reviewed in this research effort. These inspection forms were prepared by the City of Portland and Seattle Public Utilities. These forms were used as templates in creating a new checklist for Ecology's consideration.

Summary of Findings

Construction Site Visual Inspections

Ecology's guidance and training for construction site BMP inspectors should promote effective BMP inspections and maintenance. However, the value of construction site BMP inspection documentation could be improved through formalizing a joint BMP review process with Ecology inspectors and permittee inspectors. Ecology could use the joint review results to evaluate whether visual BMP inspections are being done consistently and thoroughly and to then refine the CESCL training program to further improve BMP inspections.

Industrial Site Visual Inspections

The web search described above provided background information on how various jurisdictions conduct visual inspections at industrial sites and ideas for improving Ecology's industrial BMP inspection worksheet and guidance materials. After comparing inspection materials from other jurisdictions with the identified needs for NPDES permittees in the State of Washington, five key findings were identified. Each of these findings is presented in this section.

1. For ease of use the visual inspection form should consist mainly of check boxes and yes/no questions. This format allows an inspector to quickly and easily answer the questions. Fill-in-the-blank questions are too open-ended for someone without a background in stormwater management unless there are many examples listed. Examples of potential sources of stormwater pollutants are necessary to give the inspector an idea of what to look for and what could potentially be a stormwater pollutant. The more focused and directed the questions are that are presented in the form of check boxes, the easier it will be for Ecology to discern larger trends.

2. Any questions on the visual inspection form should be specific. Many of the inspection forms that were reviewed are general and do not include specific questions. An example of a general question, from the Minnesota Pollution Control Agency's form, is:

   > *Determine if the nonstructural and structural BMPs as indicated on your plan are installed and functioning properly. Please describe corrective actions needed to repair nonfunctioning BMPs.*

   Even if the inspector had the pollution prevention plan with them, and knew what structural and nonstructural BMPs were being referred to, would they know how to determine if the BMPs are installed and functioning properly? It is better to ask detailed questions or a series of specific questions to address the potential issues associated with the individual BMPs. For example, to determine if catch basins are functioning properly or in need of repair or maintenance, Seattle Public Utilities asks the following series of questions on its inspection form:

Are catch basins present on site? Y/N
If yes how many?
Are catch basins equipped with outlet traps?
Select outlet trap type <u>*PVC elbow*</u> <u>*Metal Elbow*</u>
Has material accumulated to fill over 60% of the capacity of the CB? Y/N
Select material(s) in catch basin <u>*sediment*</u> <u>*plants*</u> <u>*trash*</u>
Is there evidence of contamination in catch basins? Y/N
Select contaminant <u>*Oil/grease*</u> <u>*Paint*</u> <u>*Solvent*</u> <u>*Sewage*</u> <u>*Unknown*</u>

This series of questions tells the inspector exactly what to look for rather than just asking if the catch basin is functioning properly.

Detailed questions make the inspection form longer but allow for a more complete inspection and easier comparisons between visual inspections, regardless of the inspector. Also, for an inspector without knowledge of stormwater management, a more detailed inspection form would be useful to help identify all potential issues on a site; when using a general form it is much easier to overlook or ignore a stormwater pollution problem.

3. The inspection form should include both structural and nonstructural BMPs. None of the inspection forms that were reviewed from other jurisdictions effectively address both types of BMPs. The majority of the inspection forms that were reviewed focus on nonstructural, good housekeeping techniques. Common structural BMPs should also be listed along with a description of the BMP and common maintenance and performance issues.

4. The majority of the forms assume more understanding of stormwater pollution than is most likely appropriate, given most industrial site inspectors have no training or background in stormwater management. For this reason it is important that the forms be easy to use and ask simple questions. The more broad or difficult the questions are to answer, the more likely the inspector will overlook a stormwater pollution issue onsite.

5. Ecology currently does not provide enough guidance, nor is training readily available, for the typical inspector to effectively inspect BMPs at an industrial site. If a training program similar to that for construction site inspectors is not implemented for industrial site inspectors in the State of Washington, then more detailed guidance needs to be provided. The industrial SWPPP guidance manual should be expanded to provide more

information on visual inspections and their importance for overall water quality protection, and to explain how to use a more detailed inspection checklist and why the issues listed in the checklist are important. Having training available for industrial site inspectors would further improve the ability of the inspectors to conduct a thorough visual inspection.

The conclusions reached as part of the industrial site BMP inspection form review were used to create a new visual inspection checklist that Ecology could provide to industrial NPDES permittees. All five of the issues noted above were considered when creating this expanded visual inspection checklist. The expanded checklist asks specific questions that are easy to understand. These questions are aimed at inspectors without formal stormwater management knowledge. The expanded checklist is comprehensive, including the most common structural and nonstructural BMPs used on industrial sites. In addition to the checklist, an accompanying guidance document was prepared to be used with the checklist as a reference. This guidance document is included as Appendix A to this report. It is recommended that this guidance document and the expanded visual inspection checklist be incorporated into Ecology's industrial SWPPP guidance manual.

The information included in the expanded visual inspection checklist was divided into two sections. The inspection of permanent, or relatively consistent, site features was separated from the onsite conditions that could change relatively frequently as a result of activities occurring on the site. The conditions that remain relatively consistent over time are included in Form B - Industrial Site Stormwater Facility Inventory (see Appendix B to this report). The conditions that could change frequently are included in Form C - Industrial Site Stormwater Inspection Checklist (see Appendix C to this report).

Prior to filling out Form C, the inspector should complete Form B. Once Form B has been completed one time it does not need to be completed again unless site operations change, the site is expanded or otherwise reconfigured in a way that alters potential sources of stormwater pollution, or there are changes in the stormwater facilities onsite. Form C should be used each time that routine site inspections are conducted to satisfy the industrial general permit requirements.

Separating the expanded checklist into two forms allows the site specific stormwater issues to be identified (using Form B, or a comparable form) prior to documenting routine inspections (using Form C, or a comparable form tailored to the site). Form B can be used to direct the contents of the routine inspection checklist (Form C). This allows the routine inspections to focus on specific site activities that may generate pollutants in runoff and the BMPs that are used to control pollutants at those locations. A shorter routine inspection checklist will likely increase the likelihood of an inspector using it.

Additional Recommendations

Some other potential changes to Ecology's visual inspection programs for both industrial and construction sites might include:

- Adjusting which visual parameters are emphasized, depending on industry type. For example, oil sheens should be emphasized for sites with many vehicles, turbidity should be emphasized for sites with exposed soils, and identification of galvanized surfaces should be emphasized for sites with a prevalence of exposed structural metal.

- Collecting visual inspection data from construction sites simultaneous to collecting water quality data. Comparison of the visual inspection data with the water quality sampling results would allow assessment of the effectiveness of the visual inspections.

- Implementing independent inspections by Ecology staff to independently rate industrial and/or construction BMP performance using the checklists provided to permittees and then compare them with the onsite inspector's ratings as a means of evaluating effectiveness and consistency of the checklists.

The expanded visual inspection checklist (Form C included in Appendix C to this report) is intended to be an example that should be tailored for a particular site. The industrial general permit covers so many different types of industries and site characteristics that it is impossible to generate a series of forms that would effectively represent all permittees' sites, such that a specific permittee could choose from a collection of inspection forms created by Ecology to pick the one that is best suited to their site. Furthermore, the types of BMPs implemented at different facilities under the same industry category might also vary. Thus, the contents of Form C focus on the different types of BMPs that may be used on a site, and this format requires less than a dozen categories on the visual inspection checklist. Individual permittees should be encouraged to tailor Forms B and C to their site, with site-specific guidance and assistance provided by Ecology personnel as needed to ensure that the resultant visual inspection documentation is as useful as possible to reduce stormwater pollution.

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M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certification:

California Professional Geologist
California Certified Hydrogeologist

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – present;
- Senior Environmental Analyst, Komex H2O Science, Inc (2000 -- 2003);
- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);

- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of numerous environmental impact reports under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions and geologic hazards.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a comunity adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the dischrge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

In Fall 2010, Matt taught Physical Geology (lecture and lab) to students at Golden West College in Huntington Beach, California.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells.

Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Geologist licensing examination, 2009-2010.

Cert id: 141816 CoI

State of California
STATE WATER RESOURCES CONTROL BOARD

2009-2010
ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

CALIFORNIA REGIONAL WATER
JUN 29 2010
QUALITY CONTROL BOARD

Reporting Period July 1, 2009 through June 30, 2010

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.waterboards.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. *Facility Information:*

Facility WDID No: 238I013911

Facility Business Name: BAE Systems San Francisco Ship Repair
Physical Address: Foot of 20th Street
City: San Francisco
Standard Industrial Classification (SIC) Code(s): 3731

Contact Person: Shaun Halvax
e-mail: sandor.halvax@baesystems.com
CA Zip: 94107 Phone: 619-572-6477

B. *Facility Operator Information:*

Operator Name: Same as above
Mailing Address:
City:

Contact Person: Same as above
e-mail:
State: Zip: Phone:

C. *Facility Billing Information:*

Operator Name: BAE Systems San Francisco Ship Repair
Mailing Address: PO Box 7644
City: San Francisco

Contact Person: Same as above
e-mail:
State: CA Zip: 94120 Phone:

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ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ **YES** Go to Item D.2 ☒ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

   i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** ______________________

   ____

   ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: ____/____/____

   Re-evaluation Date: ____/____/____

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: ____/____/____

   Re-evaluation Date: ____/____/____

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: ____/____/____

   v. ☐ Received Local Agency Certification Certification Date: ____/____/____

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

   ☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 2 If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☒ **YES** ☐ **NO** **attach explanation** **(Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)**

3. How many storm water discharge locations are at your facility? 132

4. For each storm event sampled, did you collect and analyze a sample from each of the facility's' storm water discharge locations? ☐ YES, go to Item E.6 ☒ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☒ YES ☐ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated 6/21/2010

6. Were all samples collected during the first hour of discharge? ☒ YES ☐ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☒ YES ☐ NO, **attach explanation**

8. Were there any discharges of storm water that had been temporarily stored or contained? (such as from a pond) ☐ YES ☒ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☐ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☐ YES ☒ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☐ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

    _______ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

    _______ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

    _______ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

- Date and time of sample collection
- Name and title of sampler
- Parameters tested
- Name of analytical testing laboratory
- Discharge location identification
- Testing results
- Test methods used
- Test detection limits
- Date of testing
- Copies of the laboratory analytical results

F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**

   Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

   a. Do authorized non-storm water discharges occur at your facility?

      ☐ **YES** ☒ **NO** Go to Item F.2

   b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers**. Indicate "N/A" for quarters without any authorized non-storm water discharges.

      July-September ☐ **YES** ☐ **NO** ☐ **N/A** October-December ☐ **YES** ☐ **NO** ☐ **N/A**

      January-March ☐ **YES** ☐ **NO** ☐ **N/A** April-June ☐ **YES** ☐ **NO** ☐ **N/A**

   c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information:

      i. name of each authorized non-storm water discharge
      ii. date and time of observation
      iii. source and location of each authorized non-storm water discharge
      iv. characteristics of the discharge at its source and impacted drainage area/discharge location
      v. name, title, and signature of observer
      vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**

   Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

   a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non- storm water discharges and their sources. **Attach an explanation for any "NO" answers.**

      July-September ☒ **YES** ☐ **NO** October-December ☒ **YES** ☐ **NO**

      January-March ☒ **YES** ☐ **NO** April-June ☒ **YES** ☐ **NO**

   b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

      ☐ **YES** ☒ **NO** Go to Item F.2.d

   c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

      ☐ **YES** ☐ **NO** **Attach explanation**

   d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information:

      i. name of each unauthorized non-storm water discharge
      ii. date and time of observation
      iii. source and location of each unauthorized non-storm water discharge
      iv. characteristics of the discharge at its source and impacted drainage area/discharge location
      v. name, title, and signature of observer
      vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers**. Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☒	☐	February	☒	☐
November	☒	☐	March	☒	☐
December	☒	☐	April	☒	☐
January	☒	☐	May	☒	☐

2. Report monthly wet season visual observations using **Form 4** or provide the following information:

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☒ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occurred during the last year
   - outdoor wash and rinse areas
   - process/manufacturing areas
   - loading, unloading, and transfer areas
   - waste storage/disposal areas
   - dust/particulate generating areas
   - erosion areas
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☒ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map is up-to-date? The following site map items should be verified: ☒ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☒ YES ☐ NO

   The following records should be reviewed:

   - quarterly authorized non-storm water discharge visual observations
   - monthly storm water discharge visual observation
   - records of spills/leaks and associated clean-up/response activities
   - quarterly unauthorized non-storm water discharge visual observations
   - Sampling and Analysis records
   - preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☒ YES ☐ NO

   The following SWPPP items should be reviewed:

   - pollution prevention team
   - list of significant materials
   - description of potential pollutant sources
   - assessment of potential pollutant sources
   - identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☒ YES ☐ NO

   The following BMP categories should be reviewed:

   - good housekeeping practices
   - spill response
   - employee training
   - erosion control
   - quality assurance
   - preventative maintenance
   - material handling and storage practices
   - waste handling/storage
   - structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☒ YES ☐ NO

I. ACSCE EVALUATION REPORT

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. ACSCE CERTIFICATION

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☒ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

2009-2010

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ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	☒ YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	☒ YES	☐ NO	☐ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	☐ YES	☐ NO	☒ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	☐ YES	☐ NO	☒ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: HUGH VANDERSPEK

Signature: [signature] Date: 6/28/10

Title: GENERAL MANAGER

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ANNUAL REPORT

SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE   TITLE: ENV. COORDINATOR   SIGNATURE: [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event: BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
SD1/SD-1A	10/13/09 10:30 ☒AM ☐PM	__:__ ☐AM ☐PM	5	6.00	40.4	<5.0		<0.25	1.6	190	1.2	6.8/150
SD2	10/13/09 10:40 ☒AM ☐PM	__:__ ☐AM ☐PM	5	7.50	49.2	<5.0		0.55	2.5	250	2.6	14/260
SD3/SD-3A	10/13/09 10:50 ☒AM ☐PM	__:__ ☐AM ☐PM	5	15.1	44.1	<5.0		<0.25	2.1	150	1.2	23/220
SWMW 1	10/13/09 11:00 ☒AM ☐PM	__:__ ☐AM ☐PM	5	6.00	79.8	<5.0		<0.25	2.5	190	1.2	6.9/190
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510 B	1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

TSS - Total Suspended Solids   SC - Specific Conductance   O&G - Oil & Grease   TOC - Total Organic Carbon

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SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE **TITLE:** ENV. COORDINATOR **SIGNATURE:** [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
SWMW 2	10/13/09 11:10 ☐AM ☐PM	__:__ ☐AM ☐PM	5	15.2	119	<5.0		<0.25	0.79	360	0.97	1.6/210
SWMW 3	10/13/09 11:20 ☐AM ☐PM	__:__ ☐AM ☐PM	5	10.0	43.4	<5.0		<0.25	4.7	300	1.9	8.8/240
SPO 3	10/13/09 11:30 ☐AM ☐PM	__:__ ☐AM ☐PM	5	48.8	56.3	<5.0		1.2	18	1800	21	84/1600
SPO 4	10/13/09 11:40 ☐AM ☐PM	__:__ ☐AM ☐PM	5	112	64.9	<5.0		<0.25	5.1	220	2.5	34/320
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510B	E 1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE TITLE: ENV. COORDINATOR SIGNATURE: [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
Block Stowage	10/13/09 11:50 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	6	42.0	1770	<5.0		0.43	19	2600	15	22/2100
Bldg 19	10/14/09 7:30 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	5.5	137	149	<5.0		1.0	15	720	20	97/1100
	__/__/__ __:__ ☐ AM ☐ PM	__:__ ☐ AM ☐ PM										
	__/__/__ __:__ ☐ AM ☐ PM	__:__ ☐ AM ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510B	E 1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE TITLE: ENV. COORDINATOR SIGNATURE: [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For Second Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
SD1/SO-1A	4/5/10 10:30 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	6	25.6	76.0	<5.0		0.29	9.2	840	6.8	39/660
SD2	4/5/10 10:40 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	6	46.0	52.9	<5.0		0.44	5.0	570	4.1	28/580
SD3/SO-3A	4/5/10 10:50 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	5	14.0	44.6	<5.0		<0.25	2.7	210	2.0	31/340
SWMW1	4/5/10 11:00 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	6	10.0	78.3	<5.0		0.46	8.7	1800	5.3	52/980
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510B	E 1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE TITLE: ENV. COORDINATOR SIGNATURE:

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For Second Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
SWMW2	4/5/10 11:10 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	6	132	150	<5.0		1.9	39.	5300	36	70/5400
SWMW3	4/5/10 11:20 ☒ AM ☐ PM	__:__ ☐ AM ☐ PM	5	6.40	77.3	<5.0		<0.25	26	350	1.7	10/340
SPO3	4/5/10 11:30 ☐ AM ☐ PM	__:__ ☐ AM ☐ PM	5	61.2	65.1	<5.0		0.59	13	2000	14	64/920
SPO4	4/5/10 11:40 ☐ AM ☐ PM	__:__ ☐ AM ☐ PM	5	24.0	208	<5.0		0.26	5.3	480	3.7	35/560
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510B	E 1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.

NAME OF PERSON COLLECTING SAMPLE(S): D. SEYMORE TITLE: ENV. COORDINATOR SIGNATURE: [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For Second Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC	Cd	Cr	Cu	Ni	Pb/Zn
Block Stowage	4/5/10 11:50 ☒AM ☐PM	__:__ ☐AM ☐PM	6	15.6	1150	<5.0		<0.25	6.4	430	4.2	6.4/260
Bldg 19	4/15/10 12:00 ☐AM ☒PM	__:__ ☐AM ☐PM	6	8.00	132	<5.0		<0.25	1.6	270	2.2	5.7/780
	__/__/__ __:__ ☐AM ☐PM	__:__ ☐AM ☐PM										
	__/__/__ __:__ ☐AM ☐PM	__:__ ☐AM ☐PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
TEST METHOD DETECTION LIMIT:			1.00	1.0	10	5.0		0.25	0.5	0.5	0.5	0.5/5.0
TEST METHOD USED:			PA	SM 2540D	SM 2510B	E 1664		E 200.8	E 200.8	E 200.8	E 200.8	E 200.8
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB		LAB	LAB	LAB	LAB	LAB

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SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

* Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** DATE: 8/6/09	**Observers Name:** Dunyette Seymore **Title:** Env. Coordinator **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO**	If **YES**, complete reverse side of this form.
QUARTER: **OCT.-DEC.** DATE: 12/14/09	**Observers Name:** Dunyette Seymore **Title:** Env. Coordinator **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO**	If **YES**, complete reverse side of this form.
QUARTER: **JAN.-MARCH** DATE: 3/6/10	**Observers Name:** Dunyette Seymore **Title:** Env. Coordinator **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO**	If **YES**, complete reverse side of this form.
QUARTER: **APRIL-JUNE** DATE: 6/3/10	**Observers Name:** Dunyette Seymore **Title:** Env. Coordinator **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO**	If **YES**, complete reverse side of this form.

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SIDE B

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

DATE /TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD EXAMPLE: Air conditioner Units on Building C	NAME OF AUTHORIZED NSWD EXAMPLE: Air conditioner condensate	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate whether authorized NSWD is clear, cloudy, or discolored, causing staining, contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMPs AND PROVIDE THEIR IMPLEMENTATION DATE
			At the NSWD Source	At the NSWD Drainage Area and Discharge Location	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

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FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** **DATE/TIME OF OBSERVATIONS** 8/6/09 11:30 ☒ AM ☐ PM	Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **OCT.-DEC.** **DATE/TIME OF OBSERVATIONS** 12/14/09 9:00 ☒ AM ☐ PM	Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **JAN.-MARCH** **DATE/TIME OF OBSERVATIONS** 3/6/10 9:00 ☒ AM ☐ PM	Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **APRIL-JUNE** **DATE/TIME OF OBSERVATIONS** 6/3/10 7:00 ☒ AM ☐ PM	Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.

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FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

OBSERVATION DATE (FROM REVERSE SIDE)	NAME OF UNAUTHORIZED NSWD	SOURCE AND LOCATION OF UNAUTHORIZED NSWD	DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		DESCRIBE CORRECTIVE ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE.
	EXAMPLE: Vehicle Wash Water	EXAMPLE: NW Corner of Parking Lot	AT THE UNAUTHORIZED NSWD SOURCE	AT THE UNAUTHORIZED NSWD AREA AND DISCHARGE LOCATION	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

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SIDE B

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	**DRAINAGE AREA DESCRIPTION** EXAMPLE: Discharge from material storage Area #2	**DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS** Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	**IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS** EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	**DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION**
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October 13 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]		#1	#2	#3	#4
	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD 2
	Observation Time	10:00 ☐ P.M. ☒ A.M.	10:05 ☐ P.M. ☒ A.M.	10:10 ☐ P.M. ☒ A.M.	10:15 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

Observation Date: November 6 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]		#1	#2	#3	#4
	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD 2
	Observation Time	08:00 ☐ P.M. ☒ A.M.	08:05 ☐ P.M. ☒ A.M.	08:10 ☐ P.M. ☒ A.M.	08:15 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

Observation Date: December 10 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]		#1	#2	#3	#4
	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD 2
	Observation Time	07:30 ☐ P.M. ☒ A.M.	07:35 ☐ P.M. ☒ A.M.	07:40 ☐ P.M. ☒ A.M.	07:45 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

Observation Date: January 18 2010 Observers Name: Dunyette Seymore Title: Env. Co-ordinator Signature: [signature]		#1	#2	#3	#4
	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD 2
	Observation Time	07:00 ☐ P.M. ☒ A.M.	07:05 ☐ P.M. ☒ A.M.	07:10 ☐ P.M. ☒ A.M.	07:15 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October 13 **2009**
Observers Name: Dunyette Seymore
Title: Env. Coordinator
Signature:

	#1	#2	#3	#4
Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP-3	SDP-4
Observation Time	10:20 ☐ P.M. ☒ A.M.	10:25 ☐ P.M. ☒ A.M.	10:30 ☐ P.M. ☒ A.M.	10:40 ☐ P.M. ☒ A.M.
Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

Observation Date: November 6 **2009**
Observers Name: Dunyette Seymore
Title: Env. Coordinator
Signature:

	#1	#2	#3	#4
Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP-3	SDP-4
Observation Time	08:20 ☐ P.M. ☒ A.M.	08:25 ☐ P.M. ☒ A.M.	08:30 ☐ P.M. ☒ A.M.	08:35 ☐ P.M. ☒ A.M.
Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

Observation Date: December 10 **2009**
Observers Name: Dunyette Seymore
Title: Env. Coordinator
Signature:

	#1	#2	#3	#4
Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP-3	SDP-4
Observation Time	07:50 ☐ P.M. ☒ A.M.	08:00 ☐ P.M. ☒ A.M.	08:05 ☐ P.M. ☒ A.M.	08:10 ☐ P.M. ☒ A.M.
Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

Observation Date: January 18 **2010**
Observers Name: Dunyette Seymore
Title: Env. Coordinator
Signature:

	#1	#2	#3	#4
Drainage Location Description	SD/SD-1A	SD3/SD-3A	SDP-3	SDP-4
Observation Time	07:20 ☐ P.M. ☐ A.M.	07:25 ☐ P.M. ☐ A.M.	07:30 ☐ P.M. ☐ A.M.	07:35 ☐ P.M. ☐ A.M.
Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

		#1	#2	#3	#4
Observation Date: October 13 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	Block stowage	Bldg 19		
	Observation Time	10 : 50 ☐ P.M. ☒ A.M.	11 : 00 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November 6 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	Block stowage	Bldg 19		
	Observation Time	08 : 40 ☐ P.M. ☒ A.M.	08 : 45 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December 10 2009 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	Block stowage	Bldg 19		
	Observation Time	08 : 15 ☐ P.M. ☒ A.M.	08 : 20 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: January 18 2010 Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	Block stowage	Bldg 19		
	Observation Time	07 : 40 ☐ P.M. ☒ A.M.	07 : 45 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation		#1	#2	#3	#4
Observation Date: February 26 **2010** Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD-2
	Observation Time	7:00 ☐ P.M. ☒ A.M.	7:05 ☐ P.M. ☒ A.M.	7:10 ☐ P.M. ☒ A.M.	7:15 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: March 3 **2010** Observers Name: Dunyette Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	SWMW 1	SWMW 2	SWMW 3	SD-2
	Observation Time	9:00 ☐ P.M. ☒ A.M.	9:05 ☐ P.M. ☒ A.M.	9:10 ☐ P.M. ☒ A.M.	9:15 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: April 30 **2010** Observers Name: D. Seymore Title: Env. Coordinator Signature: [signature]	Drainage Location Description	SWMW-1	SWMW-2	SWMW-3	SD-2
	Observation Time	9:00 ☐ P.M. ☐ A.M.	9:05 ☐ P.M. ☐ A.M.	9:10 ☐ P.M. ☐ A.M.	9:15 ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: May 17 **2010** Observers Name: Christopher Erickson Title: Environmental Coordinator Signature: [signature]	Drainage Location Description	SD-1	SD-1A	SD-3A	SD-2
	Observation Time	11:55 ☐ P.M. ☒ A.M.	11:55 ☐ P.M. ☒ A.M.	11:57 ☐ P.M. ☒ A.M.	11:57 ☐ P.M. ☒ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☒	YES ☐ NO ☒

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

		#1	#2	#3	#4
Observation Date: February 26 **2010**	Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP3	SDP4
Observers Name: Dunyette Seymore	Observation Time	7:20 ☐ P.M. ☒ A.M.	7:30 ☐ P.M. ☒ A.M.	7:40 ☐ P.M. ☒ A.M.	7:45 ☐ P.M. ☒ A.M.
Title: Env. Coordinator	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: March 3 **2010**	Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP3	SDP4
Observers Name: Dunyette Seymore	Observation Time	9:20 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.	9:40 ☐ P.M. ☒ A.M.	9:45 ☐ P.M. ☒ A.M.
Title: Env. Coordinator	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: April 30 **2010**	Drainage Location Description	SD1/SD-1A	SD3/SD-3A	SDP3	SDP4
Observers Name: D. Seymore	Observation Time	9:20 ☐ P.M. ☐ A.M.	9:25 ☐ P.M. ☐ A.M.	9:30 ☐ P.M. ☐ A.M.	9:35 ☐ P.M. ☐ A.M.
Title: Env. Coordinator	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: May 17 **2010**	Drainage Location Description	SD-3	SWMW-3	SDP-3	SWMW-1
Observers Name: Christopher Erickson	Observation Time	11:57 ☐ P.M. ☒ A.M.	12:00 ☒ P.M. ☐ A.M.	12:02 ☒ P.M. ☐ A.M.	12:09 ☒ P.M. ☐ A.M.
Title: Environmental Coordinator	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

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ANNUAL REPORT
FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February 26 2010		#1	#2	#3	#4
Observers Name: Dunyette Seymore	Drainage Location Description	Block stowage	Bldg 19		
Title: Env. Coordinator	Observation Time	7:50 ☒ P.M. ☐ A.M.	8:00 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐

Observation Date: March 3 2010		#1	#2	#3	#4
Observers Name: Dunyette Seymore	Drainage Location Description	Block stowage	Bldg 19		
Title: Env. Coordinator	Observation Time	9:50 ☐ P.M. ☒ A.M.	10:00 ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: [signature]	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐

Observation Date: April 30 2010		#1	#2	#3	#4
Observers Name: D. Seymore	Drainage Location Description	Block stowage	Bldg 19		
Title: Env. Coordinator	Observation Time	9:40 ☐ P.M. ☐ A.M.	9:50 ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: D. S[signature]	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐

Observation Date: May 17 2010		#1	#2	#3	#4
Observers Name: Christopher Erickson	Drainage Location Description	SDP-4	SWMW-2	Bldg 19	Block Stowage
Title: Environmental Coordinator	Observation Time	12:07 ☒ P.M. ☐ A.M.	12:10 ☒ P.M. ☐ A.M.	12:22 ☒ P.M. ☐ A.M.	13:10 ☒ P.M. ☐ A.M.
Signature: [signature]	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

SIDE B

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
__/__/__ __:__ ☐ AM ☐ PM				
__/__/__ __:__ ☐ AM ☐ PM				
__/__/__ __:__ ☐ AM ☐ PM				
__/__/__ __:__ ☐ AM ☐ PM				
__/__/__ __:__ ☐ AM ☐ PM				

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ANNUAL REPORT

SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: 6/15/2010 INSPECTOR NAME: Christopher Erickson TITLE: Environmental Coordinator SIGNATURE: [signature]

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	Question	Answer	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
DD #1	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO			
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
DD #2	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
High Water Platform (Wharf)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
Pier 3	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			

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ANNUAL REPORT

SIDE B

FORM 5 (Continued)-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: 6 / 15 2010 INSPECTOR NAME: Christopher Erickson TITLE: Environmental Coordinator SIGNATURE: [signature]

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)				Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Pier 4	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☐ NO			

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ANNUAL REPORT

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)				Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐YES ☐NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐YES ☐NO			

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)				Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐YES ☐NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐YES ☐NO			

Evaluation for Reduction of Sampling by Consolidation of Sampling Points

Evaluation of Sampling Point SD-1/SD-1A:

16 drains in location. Location includes wharf areas between block stowage and Pier 3. Pollutant-generating activities in this location include general refuse storage, hazardous materials storage, general maintenance, vehicular traffic and material movement. Most drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Sampling Point SD-2:

1 drain in location. Location includes the north side of Building 38. Pollutant-generating activities in this location include general refuse storage, general maintenance, vehicular traffic and material movement.

Evaluation of Sampling Point SD-3/SD-3A:

4 drains in location. Location includes the northeast side of Building 38 and Building 111 (Brick Building). Pollutant-generating activities in this location include general refuse storage, general maintenance, general storage, vehicular parking, equipment and material staging, abrasive grit blasting, hazardous material storage and staging, vehicular traffic and material movement.

Evaluation of Sampling Point SDP3

21 drains in location. Location includes Pier #3. Pollutant-generating activities in this location include painting operations, abrasive grit blasting, general maintenance, docking operations, ship repair, over-water material transfer, ship refueling, hydroblasting, general refuse storage, hazardous materials staging, equipment staging, vehicular traffic and material movement. All drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Sampling Point SDP4

24 drains in location. Location includes Pier #4. Pollutant-generating activities in this location include painting operations, abrasive grit blasting, general maintenance, docking operations, ship repair, over-water material transfer, ship refueling, hydroblasting, general refuse storage, hazardous materials staging, equipment staging, vehicular traffic and material movement. All drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Sampling Point SWMW-1:

28 drains in location. Location includes wharf area between Drydock #1 and bridge to High Water Platform, Pier #4 and the fenced off area near the bridge. Pollutant-generating activities in this location include general maintenance, general refuse storage, hazardous materials staging, equipment staging, vehicular traffic and material movement. All drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Sampling Point SWMW-2

13 drains in location. Location includes High Water Platform area near Drydock #2. Pollutant-generating activities in this location include general maintenance, general refuse storage, hazardous materials staging, equipment staging, waste water storage, vehicular traffic and material movement. All drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Sampling Point SWMW-3

24 drains in location. Location includes wharf area between Pier #3 and Drydock #1. Pollutant-generating activities in this location include general maintenance, general refuse storage, hazardous materials staging, equipment staging, oil/water separation activities, boiler functions, sewer water storage, vehicular traffic and material movement. All drains/scuppers are closed to allow water and material to collect at the designated sampling point.

Evaluation of Block Stowage Area

No drains in location. The area is partially paved over with concrete and is only used for storage and repairs of wooden dry dock blocks.

Evaluation of Sampling Point Building 19

One drain in location. Pollutant-generating activities in this location include the storage and movement of abrasive grit blasting material.

State of California
STATE WATER RESOURCES CONTROL BOARD

2008 2009

ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2008 through June 30, 2009

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.swrcb.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. *Facility Information:*

Facility WDID No: 2 48I005112

Facility Business Name: Syar Industries Inc Lake Herman Quarry
Physical Address: 885 Lake Herman Road
City: Vallejo
Standard Industrial Classification (SIC) Code(s): 1429-Crushed ar

Contact Person: Burneson Mike
e-mail: mburneson@syar.com
CA Zip: 94591 Phone:

B. *Facility Operator Information:*

Operator Name: Syar Industries Inc
Mailing Address: 885 Lake Herman Road
City: Vallejo

Contact Person: Mike Burneson
e-mail: mburneson@syar.com
State: CA Zip: 94591 Phone: 707-558-1510

C. *Facility Billing Information:*

Operator Name: Syar Industries Inc
Mailing Address: PO Box 2540
City: Napa

Contact Person: Tobe Goyette
e-mail: tgoyette@syar.com
State: CA Zip: 94558 Phone: 707-252-8711

2008 2009

ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

☐ **YES** Go to Item D.2 ☒ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** ____________________

ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: ____________

Re-evaluation Date: ____________

Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: ____________

Re-evaluation Date: ____________

Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

iv. ☐ Received Regional Board Certification Certification Date: ____________

v. ☐ Received Local Agency Certification Cetification Date: ____________

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 4 If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

☒ **YES** ☐ **NO, attach explanation** **(Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)**

3. How many storm water discharge locations are at your facility? 5

4. For each storm event sampled, did you collect and analyze a sample from each of the facilitys' storm water discharge locations? ☐ YES, go to Item E.6 ☒ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☐ YES ☒ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated ___________

6. Were all samples collected during the first hour of discharge? ☐ YES ☒ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☒ YES ☐ NO, **attach explanation**

8. Were there any discharges of stormwater that had been temporarily stored or contained? (such as from a pond) ☒ YES ☐ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☒ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☒ YES ☐ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☒ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

       ______ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

       ______ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

       ______ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

    - Date and time of sample collection
    - Name and title of sampler.
    - Parameters tested.
    - Name of analytical testing laboratory.
    - Discharge location identification.
    - Testing results.
    - Test methods used.
    - Test detection limits.
    - Date of testing.
    - Copies of the laboratory analytical results.

F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**
Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ **YES** ☒ **NO** Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers**. Indicate "N/A" for quarters without any authorized non-storm water discharges.

July -September ☐ **YES** ☐ **NO** ☐ **N/A** October-December ☐ **YES** ☐ **NO** ☐ **N/A**

January-March ☐ **YES** ☐ **NO** ☐ **N/A** April-June ☐ **YES** ☐ **NO** ☐ **N/A**

c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information.

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**
Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources. **Attach an explanation for any "NO" answers**.

July -September ☒ **YES** ☐ **NO** ☐ **N/A** October-December ☒ **YES** ☐ **NO** ☐ **N/A**

January-March ☒ **YES** ☐ **NO** ☐ **N/A** April-June ☒ **YES** ☐ **NO** ☐ **N/A**

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ **YES** ☒ **NO** Go to item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ **YES** ☐ **NO Attach explanation**

d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information.

i. name of each unauthorized non-storm water discharge.
ii. date and time of observation.
iii. source and location of each unauthorized non-storm water discharge.
iv. characteristics of the discharge at its source and impacted drainage area/discharge location.
v. name, title, and signature of observer.
vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers**. Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☐	☒	February	☒	☐
November	☐	☒	March	☐	☒
December	☐	☒	April	☐	☒
January	☐	☒	May	☐	☒

2. Report monthly wet season visual observations using **Form 4** or provide the following information.

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed.
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☒ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occured during the last year.
   - outdoor wash and rinse areas.
   - process/manufacturing areas.
   - loading, unloading, and transfer areas.
   - waste storage/disposal areas.
   - dust/particulate generating areas.
   - erosion areas.
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☒ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map, is up-to-date? The following site map items should be verified: ☒ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? [x] YES [ ] NO

   The following records should be reviewed:

   - quarterly authorized non-storm water discharge visual observations
   - monthly storm water discharge visual observation
   - records of spills/leaks and associated clean-up/response activities
   - quarterly unauthorized non-storm water discharge visual observations
   - Sampling and Analysis records
   - preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? [x] YES [ ] NO

   The following SWPPP items should be reviewed:

   - pollution prevention team
   - list of significant materials
   - description of potential pollutant sources
   - assessment of potential pollutant sources
   - identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? [x] YES [ ] NO

   The following BMP categories should be reviewed:

   - good housekeeping practices
   - spill response
   - employee training
   - erosion control
   - quality assurance
   - preventative maintenance
   - material handling and storage practices
   - waste handling/storage
   - structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? [x] YES [ ] NO

I. <u>ACSCE EVALUATION REPORT</u>

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken.

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. <u>ACSCE CERTIFICATION</u>

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? [x] YES [ ] NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	☐ YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	☐ YES	☐ NO	☐ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	☐ YES	☐ NO	☐ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	☐ YES	☐ NO	☐ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: Toby Goyette

Signature: ____________________ Date: 06/30/2009

Title: Env. Manager

ANNUAL REPORT

DESCRIPTION OF BASIC ANALYTICAL PARAMETERS

The Industrial Activities Storm Water General Permit (General Permit) requires you to analyze storm water samples for at least four parameters. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC),and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of industrial activity and analytical parameters listed in Table D of the General Permit. There are no numeric limitations for the parameters you test for.

The four parameters which the General Permit requires to be tested are considered *indicator* parameters. In other words, regardless of what type of facility you operate, these parameters are nonspecific and general enough to usually provide some indication whether pollutants are present in your storm water discharge. The following briefly explains what each of these parameters mean:

pH is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable, range is within 6.5 to 8.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar, and a alkaline or basic substance is liquid antacid. Pure rainfall tends to have a pH of a little less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all potential pollutant sources at your site.

Total Suspended Solids (TSS) is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt from impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

Specific Conductance (SC) is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, salinity, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC a little above zero. A high SC could affect the usability of waters for drinking, irrigation, and other commercial or industrial use.

Total Organic Carbon (TOC) is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organics). Synthetic organics include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at your site.

Oil and Grease (O&G) is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating "rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office. The United States Environmental Protection Agency (USEPA) has published stormwater discharge benchmarks for a number of parameters. These benchmarks may be helpful when evaluating whether additional BMPs are appropriate. These benchmarks can be accessed at our website at http://www.swrcb.ca.gov. It is contained in the Sampling and Analysis Reduction Certification.

See Storm Water Contacts at

http://www.waterboards.ca.gov/stormwtr/contact.html

ANNUAL REPORT

FORM 1 - SAMPLING & ANALYSIS RESULTS

Monitoring Location	Sample Date / Time	Discharge Time	Sample Collector Name, Title	Parameter	Result	Units	Analytical Method	Method Detection Limit	Analyzed By
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 182	mg/L	E160.2	1	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= 21	mg/L	E200.8	.02	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 5.9	mg/L	A5310C	.3	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	= .13	mg/L		.1	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= .58	mg/L		.45	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 40	mg/L	A5220D	10	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 18000	ug/L	E200.8	50	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	= 25	ug/L		.5	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	= 430	ug/L	E200.8	5	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	= 6.3	ug/L	E200.8	.5	LAB

Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 30	ug/L	E200.8	.5	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.85	SU	SW9041A	.05	LAB
Outfall F	02/17/2009 10:00:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 373	umhos/cm	E120.1	10	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Total Suspended Solids (TSS)	= 2.3	mg/L	E160.2	1	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Iron, Total	= .89	mg/L	E200.8	.02	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrate, Total (as NO3)	< .45	mg/L		.45	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Total Organic Carbon (TOC)	= 5.7	mg/L	A5310C	.3	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrate, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Aluminum, Total	= .41	ug/L	E200.8	.05	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Copper, Total	= 3.1	ug/L	E200.8	.5	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chromium (Total)	= .51	ug/L		.5	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Lead, Total	< .5	ug/L	E200.8	.5	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Zinc, Total	= 12	ug/L	E200.8	5	LAB
Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	pH	= 7.77	SU	SW9041A	.05	LAB

Outfall C	02/24/2009 07:49:00	00:00:00	Dave Nunes, Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 823	umhos/cm	E120.1	10	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	= 2.8	mg/L		.1	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 3.4	mg/L	A5310C	.3	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 27.6	mg/L	E160.2	1	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= 5.8	mg/L	E200.8	.02	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 12	mg/L		.45	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	= 1.6	ug/L		.2	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 2600	ug/L	E200.8	50	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	< .5	ug/L	E200.8	.5	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	= 4.3	ug/L		.5	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 5.3	ug/L	E200.8	.5	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	= 22	ug/L	E200.8	5	LAB

Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.74	SU	SW9041A	.05	LAB
Outfall B	02/23/2009 07:45:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 549	umhos/cm	E120.1	10	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 4.9	mg/L	A5310C	.3	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 3.1	mg/L	E160.2	1	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= .44	mg/L	E200.8	.02	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	= .32	mg/L		.1	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 28	mg/L	A5220D	10	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 1.4	mg/L		.45	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	< .5	ug/L	E200.8	.5	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	< 5	ug/L	E200.8	5	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	< .5	ug/L		.5	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 1.9	ug/L	E200.8	.5	LAB

Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 180	ug/L	E200.8	50	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.72	SU	SW9041A	.05	LAB
Outfall C	02/17/2009 07:38:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 553	umhos/cm	E120.1	10	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 9.8	mg/L	A5310C	.3	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 5.5	mg/L		.45	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 33	mg/L	A5220D	10	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 40	mg/L	E160.2	1	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Iron, Total	= 7	mg/L	E200.8	.02	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as N)	= 1.3	mg/L		.1	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (Total)	= 10	ug/L		.5	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Copper, Total	= 8.6	ug/L	E200.8	.5	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Zinc, Total	= 14	ug/L	E200.8	5	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (VI)	= 6.8	ug/L		.2	LAB

Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Lead, Total	= 1.8	ug/L	E200.8	.5	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Aluminum, Total	= 3300	ug/L	E200.8	50	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	pH	= 7.7	SU	SW9041A	.05	LAB
Outfall A	02/17/2009 07:58:00	00:00:00	Christy Baril, Dave Nunes, EHS Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 616	umhos/cm	E120.1	10	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Nitrate, Total (as NO3)	= 2.5	mg/L		.45	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Total Organic Carbon (TOC)	= 6.3	mg/L	A5310C	.3	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Total Suspended Solids (TSS)	= 11.2	mg/L	E160.2	1	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Iron, Total	= 1.7	mg/L	E200.8	.02	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Nitrate, Total (as N)	= .57	mg/L		.1	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 150	mg/L	A5220D	10	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB

Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Zinc, Total	= 6.2	ug/L	E200.8	5	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Copper, Total	= 5.9	ug/L	E200.8	.5	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Aluminum, Total	= 1200	ug/L	E200.8	50	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Lead, Total	= .62	ug/L	E200.8	.5	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Chromium (Total)	= 1.8	ug/L		.5	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	pH	= 7.59	SU	SW9041A	.05	LAB
Outfall E	02/23/2009 09:08:00	00:00:00	Christy Baril, Dave Nunes, EHS Technician, Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 769	umhos/cm	E120.1	10	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrate, Total (as N)	< .1	mg/L		.1	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrate, Total (as NO3)	< .45	mg/L		.45	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Total Suspended Solids (TSS)	= 52.6	mg/L	E160.2	1	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Iron, Total	= 3.7	mg/L	E200.8	.02	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Total Organic Carbon (TOC)	= 4.1	mg/L	A5310C	.3	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB

Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Aluminum, Total	= 3300	ug/L	E200.8	50	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Chromium (Total)	= 4.9	ug/L		.5	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Copper, Total	= 6.7	ug/L	E200.8	.5	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Lead, Total	= 1.5	ug/L	E200.8	.5	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Zinc, Total	= 11	ug/L	E200.8	5	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	pH	= 8.04	SU	SW9041A	.05	LAB
Outfall F	02/24/2009 08:50:00	00:00:00	Dave Nunes, Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 717	umhos/cm	E120.1	10	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	< .1	mg/L		.1	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 6	mg/L	A5310C	.3	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 69.5	mg/L	E160.2	1	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= 7	mg/L	E200.8	.02	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	< .45	mg/L		.45	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 88	mg/L	A5220D	10	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB

Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 11	ug/L	E200.8	.5	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 3400	ug/L	E200.8	50	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	= 5.1	ug/L		.5	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	= 17	ug/L	E200.8	5	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	= 2.6	ug/L	E200.8	.5	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.53	SU	SW9041A	.05	LAB
Outfall E	02/17/2009 09:42:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 855	umhos/cm	E120.1	10	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 3.1	mg/L		.45	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 18	mg/L	A5220D	10	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	= .72	mg/L		.1	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 8.8	mg/L	A5310C	.3	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 2.6	mg/L	E160.2	1	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= .93	mg/L	E200.8	.02	LAB

Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	= 2.5	ug/L		.5	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	= 5	ug/L	E200.8	5	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	= 1.1	ug/L		.2	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 660	ug/L	E200.8	.05	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 6	ug/L	E200.8	.5	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	< .5	ug/L	E200.8	.5	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.55	SU	SW9041A	.05	LAB
Outfall A	02/23/2009 08:01:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 629	umhos/cm	E120.1	10	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 15	mg/L		.45	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	= 18	mg/L	A5220D	10	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 4.7	mg/L	A5310C	.3	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 60.5	mg/L	E160.2	1	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Iron, Total	= 13	mg/L	E200.8	.02	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrate, Total (as N)	= 3.5	mg/L		.1	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB

Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (VI)	= 4	ug/L		.2	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Aluminum, Total	= 5400	ug/L	E200.8	50	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Zinc, Total	= 25	ug/L	E200.8	5	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Copper, Total	= 8.6	ug/L	E200.8	.5	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Lead, Total	= .95	ug/L	E200.8	.5	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Chromium (Total)	= 8	ug/L		.5	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	pH	= 7.86	SU	SW9041A	.05	LAB
Outfall B	02/13/2009 08:30:00	00:00:00	Christy Baril, Dave Nunes, EHS. Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 711	umhos/cm	E120.1	10	LAB

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ANNUAL REPORT

FORM 2 - QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

Quarter	Date/Time(HH:MM)	Observer Name	Observer Title	Any Authorized NSWDs This Quarter?
July - Sept				
Oct - Dec				
Jan - Mar				
Apr - Jun				

Date/Time of Observation	Source and Location of Authorized NSWD	Name of Authorized NSWD	Authorized NSWD Characteristics at Source	Authorized NSWD Characteristics at Drainage Area and Discharge Location	Revised or New BMPs Description and Implementation Date

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ANNUAL REPORT

FORM 3 - QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

Quarter	Date/Time(HH:MM)	Observer Name	Observer Title	Unauthorized NSWDs Observed?	Indications of Prior Unauthorized NSWDs?
July - Sept	07/28/2008 12:30	Mike Burneson	Plant Manager	No	No
Oct - Dec	10/06/2008 15:20	Mike Burneson	Plant Manager	No	No
Jan - Mar	01/13/2009 00:00	Dave Nunes	Asst. Plant Manager	No	No
Apr - Jun	04/06/2009 00:00	Mike Burneson	Plant Manager	No	No

Date/Time of Observation	Name of Unauthorized NSWD	Source and Location of Unauthorized NSWD	Unauthorized NSWD Characteristics at Source	Unauthorized NSWD Characteristics at Drainage Area and Discharge Location	Corrective Actions to Eliminate Unauthorized NSWD and Elimination Date

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ANNUAL REPORT

FORM 4 - MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

Observation Date: 10/31/2008	**Observer Name:**	Dave Nunes	**Observer Title:**	Assistant Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	07:00	00:00	No
Drainage Location2	Outfall B	07:00	00:00	No
Drainage Location3	Outfall C	07:00	00:00	No
Drainage Location4	Outfall E	07:00	00:00	No
Drainage Location5	Outfall F	07:00	00:00	No

Observation Date: 11/03/2008	**Observer Name:**	Dave Nunes	**Observer Title:**	Assistant Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	08:00	00:00	No
Drainage Location2	Outfall B	08:00	00:00	No
Drainage Location3	Outfall C	08:00	00:00	No
Drainage Location4	Outfall E	08:00	00:00	No
Drainage Location5	Outfall F	08:00	00:00	No

Observation Date: 12/24/2008	**Observer Name:**	Dave Nunes	**Observer Title:**	Assistant Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	08:00	00:00	No
Drainage Location2	Outfall B	08:00	00:00	No
Drainage Location3	Outfall C	08:00	00:00	No
Drainage Location4	Outfall E	08:00	00:00	No
Drainage Location5	Outfall F	08:00	00:00	No

Observation Date: 01/22/2009	**Observer Name:**	Mike Burneson	**Observer Title:**	Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall F	07:23	00:00	No
Drainage Location2	Outfall A	07:23	00:00	No
Drainage Location3	Outfall B	07:23	00:00	No
Drainage Location4	Outfall C	07:23	00:00	No
Drainage Location5	Outfall E	07:23	00:00	No

Observation Date: 02/17/2009	**Observer Name:**	Dave Nunes, Christy Baril	**Observer Title:**	Asst. Plant Manager, Env. Tech.
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	07:58	00:00	Yes
Drainage Location2	Outfall B	08:00	00:00	Yes
Drainage Location3	Outfall C	07:38	00:00	Yes
Drainage Location4	Outfall E	09:42	00:00	Yes
Drainage Location5	Outfall F	10:00	00:00	Yes

Observation Date: 03/03/2009	**Observer Name:**	Mike Burneson	**Observer Title:**	Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall F	11:00	00:00	No
Drainage Location2	Outfall A	11:00	00:00	No
Drainage Location3	Outfall B	11:00	00:00	No
Drainage Location4	Outfall C	11:00	00:00	No
Drainage Location5	Outfall E	11:00	00:00	No

Observation Date: 04/07/2009	**Observer Name:**	Mike Burneson	**Observer Title:**	Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall F	00:00	00:00	No
Drainage Location2	Outfall B	11:00	00:00	No
Drainage Location3	Outfall C	11:00	00:00	No
Drainage Location4	Outfall E	11:00	00:00	No

Drainage Location5	Outfall A	11:00	00:00	No

Observation Date: 05/31/2009 **Observer Name:** Mike Burneson **Observer Title:** Plant Manager

	Location Description	Observation Time	Time Discharge Began	Were Pollutants Observed?
Drainage Location1	Outfall A	07:30	00:00	No
Drainage Location2	Outfall B	07:30	00:00	No
Drainage Location3	Outfall C	07:30	00:00	No
Drainage Location4	Outfall E	07:30	00:00	No
Drainage Location5	Outfall F	07:30	00:00	No

Date/Time of Observation	Drainage Area Description	Storm Water Discharge Characteristics	Source(s) of Pollutants	Revised or New BMPs and Their Date of Implementation
02/17/2009 07:38	Outfall C	Storm water discharge appeared clean and was not turbid or colored, did not have any odor, sheen, or floating debris.	Storm water discharge appeared clean and was not turbid or colored, did not have any odor, sheen, or floating debris.	None
02/17/2009 07:58	Outfall A	Discharge was light brown and contained grassy debris	Discharge coloration and debris was the result of sediment passing through BMPs.	None
02/17/2009 08:00	Outfall B	Discharge was light brown in color	Discharge coloration was the result of sediment passing through BMPs.	None
02/17/2009 09:42	Outfall E	Discharge contained sediment debris and was cloudy.	Source of sediment was the result of slopes outside Syar property eroding into path of storm water discharge on Syar property.	None
02/17/2009 10:00	Outfall F	Discharge contained sediment debris and was cloudy.	Source of sediment was the result of slopes outside Syar property eroding into path of storm water discharge on Syar property.	None

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FORM 5 - ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

Evaluation Date: 06/22/2009 **Inspector Name:** Toby Goyette **Title:** Env. Manager

Potential Pollutant Source/Industrial Activity Area	Are any BMPs Not Fully Implemented?	Are Additional/Revised BMPs Necessary?	Deficiencies in BMPs or BMP implementation	Additional/Revised BMPs or Corrective Actions and their date(s) of Implementation
Areas where spills & leaks have occurred during the last year	No	No		
Outdoor wash and rinse areas	No	No		
Process/Manufacturing areas	No	No		
Loading, unloading, and transfer areas	No	No		
Waste storage/disposal areas	No	No		
Dust/particulate generating areas	No	No		
Erosion areas	No	No		
Building repair, remodeling, and construction	No	No		
Material storage areas	No	No		
Vehicle/equipment storage areas	No	No		
Truck parking and access areas	No	No		
Rooftop equipment areas	No	No		
Vehicle fueling/maintenance areas	No	No		
Non-storm water discharge generating areas	No	No		
Outfall A Drainage Area, Recycle Plant, Hillside & Surplus Equipment Storage	No	Yes		Reduce Run-off Velocities: Improve unpaved road flow diversions Increase Natural Filtration: New Hydro-Seed on slopes Increase living filter capability near Outfall A Background Metals Study: test for background dissolved and total metals (e.g., Al and Fe) and compile/compare as appropriate to determine correlations with TSS data; this study is also applicable to Outfall E and Outfall F Drainage Areas.
Outfall B Run-On: Hillside Run-off from Western Side of Lake Herman Road	No	Yes		Divert existing flow from entering the Storm Water Retention Pond serving Maintenance Shop/Yard Area and drainage Swale (Outfall B Drainage Area)
Outfall C Drainage Area: Northern Access Road and Drainage Slopes	No	Yes		Drop inlet: Revise perimeter protection berms/filters Add additional storm water flow energy reduction BMPs towards further reducing run -off velocities (e.g., additional hillside seeding, and additional road energy dissipaters)

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EXPLANATIONS SPECIFIED FOR VARIOUS YES/NO QUESTIONS IN THE REPORT

Explanation Question	Explanation Text
Explanation on sample collection or analysis reduced in accordance with Section B.7.d of the General Permit	Outfalls may not all discharge simultaneously during the same storm event, as a result of varying outfall design. However, all outfalls were sampled at least 2x during the 2008-2009 storm water season.
Explanation on all samples collected during the first hour of discharge	Many storm events occurred over weekends and outside facility operating hours. Some Outfalls may have produced a discharge outside facility operating hours. Samples were taken upon facility opening if discharge was still occuring to meet sampling requirements. These occurences are indicated in Form 1 by a discharge time of 00:00:00.
October:Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 10/31/2008, 07:30 - Dave Nunes, Asst. Plant Manager Outfall B: 10/31/2008, 07:30 - Dave Nunes, Asst. Plant Manager Outfall C: 10/31/2008, 07:30- Dave Nunes, Asst. Plant Manager Outfall E: 10/31/08, 07:30 - Dave Nunes, Asst. Plant Manager Outfall F: 10/31/08, 07:30 - Dave Nunes, Asst. Plant Manager
November: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 11/03/2008, 08:00 - Dave Nunes, Asst. Plant Manager Outfall B: 11/03/2008, 08:00 - Dave Nunes, Asst. Plant Manager Outfall C: 11/03/2008, 08:00- Dave Nunes, Asst. Plant Manager Outfall E: 11/03/08, 08:00 - Dave Nunes, Asst. Plant Manager Outfall F: 11/03/08, 08:00 - Dave Nunes, Asst. Plant Manager
December: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 12/24/2008, 08:00 - Dave Nunes, Asst. Plant Manager Outfall B: 12/24/2008, 08:00 - Dave Nunes, Asst. Plant Manager Outfall C: 12/24/2008, 08:00- Dave Nunes, Asst. Plant Manager Outfall E: 12/24/08, 08:00 - Dave Nunes, Asst. Plant Manager Outfall F: 12/24/08, 08:00 - Dave Nunes, Asst. Plant Manager
January: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 01/22/2009, 07:23- Mike Burneson, Plant Manager Outfall B: 01/22/2009, 07:23 - Mike Burneson,Plant Manager Outfall C: 01/22/2009, 07:23 - Mike Burneson, Plant Manager Outfall E: 01/22/2009, 07:23- Mike Burneson, Plant Manager Outfall F: 01/22/2009, 07:23 - Mike Burneson, Plant Manager
March: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 03/03/2009, 11:00 - Mike Burneson, Plant Manager Outfall B: 03/03/2009, 11:00- Mike Burneson,Plant Manager Outfall C: 03/03/2009, 11:00 - Mike Burneson, Plant Manager Outfall E: 03/03/2009, 11:00 - Mike Burneson, Plant Manager Outfall F: 03/03/2009, 11:00 - Mike Burneson, Plant Manager
April: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 04/07/2009, 11:00 - Mike Burneson, Plant Manager Outfall B: 04/07/2009, 11:00- Mike Burneson,Plant Manager Outfall C: 04/07/2009, 11:00 - Mike Burneson, Plant Manager Outfall E: 04/07/2009, 11:00 - Mike Burneson, Plant Manager Outfall F: 04/07/2009, 11:00 - Mike Burneson, Plant Manager
May: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F during scheduled facility operating hours. Outfall, observation times, and observers present are listed as follows: Oufall A: 05/04/2009, 07:30 - Mike Burneson, Plant Manager Outfall B: 05/04/2009, 07:30 - Mike Burneson,Plant Manager Outfall C: 05/04/2009, 07:30 - Mike Burneson, Plant Manager Outfall E: 05/04/2009, 07:30 - Mike Burneson, Plant Manager Outfall F: 05/04/2009, 07:30 - Mike Burneson, Plant Manager

State of California
STATE WATER RESOURCES CONTROL BOARD

2009-2010
ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

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Reporting Period July 1, 2009 through June 30, 2010

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.swrcb.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. *Facility Information:*

Facility WDID No: 5S391000261

Facility Business Name: Valimet, Inc.
Physical Address: 431 Sperry Rd.
City: Stockton
Standard Industrial Classification (SIC) Code(s): 3399

Contact Person: David L. Oberholtzer
e-mail: doberholtzer@valimet.com
CA Zip: 95206 Phone: 209-444-1600

B. *Facility Operator Information:*

Operator Name: Valimet, Inc.
Mailing Address: 431 Sperry Rd.
City: Stockton

Contact Person: David L. Oberholtzer
e-mail: doberholtzer@valimet.com
State: CA Zip: 95206 Phone: 209-444-1600

C. *Facility Billing Information:*

Operator Name: Valimet, Inc.
Mailing Address: 431 Sperry Rd.
City: Stockton

Contact Person: David L. Oberholtzer
e-mail: doberholtzer@valimet.com
State: CA Zip: 95206 Phone: 209-444-1600

2009-2010
ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ **YES** Go to Item D.2 ☒ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

   i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** ____________________

   ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: ____________

   Re-evaluation Date: __________

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: ____________

   Re-evaluation Date: __________

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: ____________

   v. ☐ Received Local Agency Certification Cetification Date: ____________

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

   ☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 3

   If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☒ **YES** ☐ **NO, attach explanation** **(Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)**

3. How many storm water discharge locations are at your facility? 9

4. For each storm event sampled, did you collect and analyze a sample from each of the facilitys' storm water discharge locations? ☐ YES, go to Item E.6 ☒ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☒ YES ☐ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated 04/10

6. Were all samples collected during the first hour of discharge? ☒ YES ☐ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☒ YES ☐ NO, **attach explanation**

8. Were there any discharges of stormwater that had been temporarily stored or contained? (such as from a pond) ☐ YES ☒ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☐ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☐ YES ☒ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☐ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

    ______ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

    ______ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

    ______ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

- Date and time of sample collection
- Name and title of sampler.
- Parameters tested.
- Name of analytical testing laboratory.
- Discharge location identification.
- Testing results.
- Test methods used.
- Test detection limits.
- Date of testing.
- Copies of the laboratory analytical results.

F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**
Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ **YES** ☒ **NO** Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers**. Indicate "N/A" for quarters without any authorized non-storm water discharges.

July -September ☐ **YES** ☐ **NO** ☐ **N/A** October-December ☐ **YES** ☐ **NO** ☐ **N/A**

January-March ☐ **YES** ☐ **NO** ☐ **N/A** April-June ☐ **YES** ☐ **NO** ☐ **N/A**

c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information.

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**
Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources. **Attach an explanation for any "NO" answers**.

July -September ☒ **YES** ☐ **NO** October-December ☒ **YES** ☐ **NO**

January-March ☒ **YES** ☐ **NO** April-June ☒ **YES** ☐ **NO**

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ **YES** ☒ **NO** Go to item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ **YES** ☐ **NO** **Attach explanation**

d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information.

i. name of each unauthorized non-storm water discharge.
ii. date and time of observation.
iii. source and location of each unauthorized non-storm water discharge.
iv. characteristics of the discharge at its source and impacted drainage area/discharge location.
v. name, title, and signature of observer.
vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers**. Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☒	☐	February	☒	☐
November	☐	☒	March	☒	☐
December	☒	☐	April	☒	☐
January	☒	☐	May	☒	☐

2. Report monthly wet season visual observations using **Form 4** or provide the following information.

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed.
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☒ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occured during the last year.
   - outdoor wash and rinse areas.
   - process/manufacturing areas.
   - loading, unloading, and transfer areas.
   - waste storage/disposal areas.
   - dust/particulate generating areas.
   - erosion areas.
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☒ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map, is up-to-date? The following site map items should be verified: ☒ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☒ YES ☐ NO

The following records should be reviewed:

- quarterly authorized non-storm water discharge visual observations
- monthly storm water discharge visual observation
- records of spills/leaks and associated clean-up/response activities
- quarterly unauthorized non-storm water discharge visual observations
- Sampling and Analysis records
- preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☒ YES ☐ NO

The following SWPPP items should be reviewed:

- pollution prevention team
- list of significant materials
- description of potential pollutant sources
- assessment of potential pollutant sources
- identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☒ YES ☐ NO

The following BMP categories should be reviewed:

- good housekeeping practices
- spill response
- employee training
- erosion control
- quality assurance
- preventative maintenance
- material handling and storage practices
- waste handling/storage
- structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☒ YES ☐ NO

I. <u>ACSCE EVALUATION REPORT</u>

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken.

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. <u>ACSCE CERTIFICATION</u>

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☒ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	[X] YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	[X] YES	[ ] NO	[ ] NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	[ ] YES	[ ] NO	[X] NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	[X] YES	[ ] NO	[ ] NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: David L. Oberholtzer

Signature: [signature] Date: 6/28/2010

Title: Director, Corporate Services

2009-2010

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DESCRIPTION OF BASIC ANALYTICAL PARAMETERS

The Industrial Activities Storm Water General Permit (General Permit) requires you to analyze storm water samples for at least four parameters. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC),and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of industrial activity and analytical parameters listed in Table D of the General Permit. There are no numeric limitations for the parameters you test for.

The four parameters which the General Permit requires to be tested are considered *indicator* parameters. In other words, regardless of what type of facility you operate, these parameters are nonspecific and general enough to usually provide some indication whether pollutants are present in your storm water discharge. The following briefly explains what each of these parameters mean:

pH is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable, range is within 6.5 to 8.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar, and a alkaline or basic substance is liquid antacid. Pure rainfall tends to have a pH of a little less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all potential pollutant sources at your site.

Total Suspended Solids (TSS) is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt from impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

Specific Conductance (SC) is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, salinity, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC a little above zero. A high SC could affect the usability of waters for drinking, irrigation, and other commercial or industrial use.

Total Organic Carbon (TOC) is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organics). Synthetic organics include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at your site.

Oil and Grease (O&G) is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating "rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office. The United States Environmental Protection Agency (USEPA) has published stormwater discharge benchmarks for a number of parameters. These benchmarks may be helpful when evaluating whether additional BMPs are appropriate. These benchmarks can be accessed at our website at http://www.swrcb.ca.gov. It is contained in the Sampling and Analysis Reduction Certification.

See Storm Water Contacts at

http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

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ANNUAL REPORT

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): Larry Elam TITLE: Q.C. Manager SIGNATURE: [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC	Al	Cu	Fe	Mn	Zn
Site #1	10/13/09 8:35 ☒ AM ☐ PM	8:30 ☒ AM ☐ PM	8.0	189	108	6	-	5.9	0.2	2.67	0.08	0.48
Site #2	10/13/09 9:05 ☒ AM ☐ PM	8:30 ☒ AM ☐ PM	8.0	40	81	ND	-	8.1	0.06	1.91	0.06	0.17
Site # 3	10/13/09 8:30 ☒ AM ☐ PM	8:30 ☒ AM ☐ PM	7.5	22	95	4	-	2.7	0/06	0.91	0.12	0.19
Site #4	10/13/09 9:20 ☒ AM ☐ PM	8:30 ☒ AM ☐ PM	7.6	ND	92	ND	-	1.8	0.03	0.33	0.04	0.43
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
TEST METHOD DETECTION LIMIT:			-	1	1	3	-	0.1	0.01	0.05	0.01	0.02
TEST METHOD USED:			4500-H B	2540D	2510B	1664	-	200.7	200.7	200.7	200.7	200.7
ANALYZED BY (SELF/LAB):			Lab	Lab	Lab	Lab	-	Lab	Lab	Lab	Lab	Lab

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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ANNUAL REPORT

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): Larry Elam **TITLE:** Q.C. Manager **SIGNATURE:** [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC	Al	Cu	Fe	Mn	Zn
Site #5 (No Discharge))	☐ AM ☐ PM	☐ AM ☐ PM	-	-	-	-	-	-	-	-	-	-
Site #6	10/13/09 10:15 ☒ AM ☐ PM	9:30 ☒ AM ☐ PM	8.0	30	129	ND	-	2.0	0.02	1.60	0.07	0.05
Site # 7 (No Discharge)	☐ AM ☐ PM	☐ AM ☐ PM	-	-	-	-	-	-	-	-	-	-
Site #8 (Ditch East Side) (Water In)	10/13/09 9:47 ☒ AM ☐ PM	8:50 ☒ AM ☐ PM	7.8	25	647	ND		1.5	0.01	1.40	0.11	0.04
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
TEST METHOD DETECTION LIMIT:			-	1	1	3	-	0.1	0.01	0.05	0.01	0.02
TEST METHOD USED:			4500-H B	2540D	2510B	1664	-	200.7	200.7	200.7	200.7	200.7
ANALYZED BY (SELF/LAB):			Lab	Lab	Lab	Lab	-	Lab	Lab	Lab	Lab	Lab

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

2009-2010

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SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): Larry Elam **TITLE:** Q.C. Manager **SIGNATURE:** [signature]

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC	Al	Cu	Fe	Mn	Zn
Site #9 (Ditch West Side (Water Out))	10/13/09 8:55 ☒ AM ☐ PM	8:30 ☒ AM ☐ PM	7.8	53	403	ND	-	4.7	0.03	2.86	0.11	0.14
	☐ AM ☐ PM	☐ AM ☐ PM										
	☐ AM ☐ PM	☐ AM ☐ PM										
	☐ AM ☐ PM	☐ AM ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
TEST METHOD DETECTION LIMIT:			-	1	1	3	-	0.1	0.01	0.05	0.01	0.02
TEST METHOD USED:			4500-H B	2540D	2510B	1664	-	200.7	200.7	200.7	200.7	200.7
ANALYZED BY (SELF/LAB):			Lab	Lab	Lab	Lab	-	Lab	Lab	Lab	Lab	Lab

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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FORM 1-SAMPLING & ANALYSIS RESULTS

THIRD STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): Larry Elam **TITLE:** Q.C. Manager **SIGNATURE:** Larry B Elam Jr

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC	Al	Cu	Fe	Mn	Zn
Site #8 (Ditch East Side) (Water In)	4/20/10 3:45 ☐ AM ☒ PM	3:35 ☐ AM ☒ PM	7.8	63	453	ND	-	3.3	0.01	3.17	0.11	0.04
Site # 9 (Ditch West Side) (Water Out)	4/20/10 3:55 ☐ AM ☒ PM	3:35 ☐ AM ☒ PM	7.7	21	156	ND	-	3.8	0.09	0.98	0.05	0.12
	☐ AM ☐ PM	☐ AM ☐ PM										
	☐ AM ☐ PM	☐ AM ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
TEST METHOD DETECTION LIMIT:			-	1	1	3	-	0.1	0.01	0.05	0.01	0.02
TEST METHOD USED:			4500-H B	2540D	2510B	1664	-	200.7	200.7	200.7	200.7	200.7
ANALYZED BY (SELF/LAB):			Lab	Lab	Lab	Lab	-	Lab	Lab	Lab	Lab	Lab

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

FGL. ENVIRONMENTAL

Analytical Chemists

November 6, 2009

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK0939588
Customer : 3-2635

Laboratory Report

Introduction: This report package contains total of 14 pages divided into 3 sections:

Case Narrative	(3 pages)	: An overview of the work performed at FGL.
Sample Results	(7 pages)	: Results for each sample submitted.
Quality Control	(4 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
Discharge #1	10/13/2009	10/13/2009	STK0939588-001	SW
Discharge #2	10/13/2009	10/13/2009	STK0939588-002	SW
Discharge #3	10/13/2009	10/13/2009	STK0939588-003	SW
Discharge #4	10/13/2009	10/13/2009	STK0939588-004	SW
Discharge #6	10/13/2009	10/13/2009	STK0939588-006	SW
Discharge #8	10/13/2009	10/13/2009	STK0939588-008	SW
Discharge #9	10/13/2009	10/13/2009	STK0939588-009	SW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding except those as listed in the table below. The holding time for pH is listed as immediate. Logistically this is very difficult to obtain. FGL policy is to analyze all samples requiring pH on the same day of receipt at the laboratory. If this presents any problem please call.

Lab ID	Analyte/Method	Required Holding Time	Actual Holding Time
STK0939588-001	pH	15	295.2 Minutes
STK0939588-002	pH	15	268.8 Minutes
STK0939588-003	pH	15	304.8 Minutes
STK0939588-004	pH	15	258 Minutes
STK0939588-006	pH	15	204 Minutes
STK0939588-008	pH	15	234 Minutes
STK0939588-009	pH	15	286.8 Minutes

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FAX: 559/734-8435

November 6, 2009
Valimet, Inc.

Lab ID . : STK0939588
Customer : 3-2635

All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

200.7	10/16/2009:213515 All analysis quality controls are within established criteria.
	10/20/2009:213645 All analysis quality controls are within established criteria, except: The following note applies to Iron: 220 The CCB was greater than the DQO. However, all results were either five times greater than the CCB concentration or ND relative to the PQL.
	10/27/2009:213960 All analysis quality controls are within established criteria.
	10/16/2009:210879 All preparation quality controls are within established criteria.
200.8	10/17/2009:213521 All analysis quality controls are within established criteria.
	10/16/2009:210882 All preparation quality controls are within established criteria.
3010	10/19/2009:210941 All preparation quality controls are within established criteria.

Inorganic - Wet Chemistry QC

1664	10/26/2009:211251 All preparation quality controls are within established criteria.
	10/29/2009:211383 All preparation quality controls are within established criteria.
	11/02/2009:211484 All preparation quality controls are within established criteria.
2510B	10/16/2009:213438 All analysis quality controls are within established criteria.
	10/16/2009:210886 All preparation quality controls are within established criteria.
2540 G	10/16/2009:210885 All preparation quality controls are within established criteria.
2540D	10/15/2009:300789 All preparation quality controls are within established criteria.
4500-H B	10/13/2009:311426 All preparation quality controls are within established criteria.
4500HB	10/13/2009:312057 All analysis quality controls are within established criteria.

November 6, 2009		Lab ID	: STK0939588
Valimet, Inc.		Customer	: 3-2635

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S. Title: Laboratory Director Date: 2009-11-06

November 6, 2009

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK0939588-001
Customer ID : 3-2635

Sampled On : October 13, 2009-08:35
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #1
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss[P:1]								
Aluminum	0.22	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.115	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.11	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.17	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total[P:1'5]								
Aluminum	5.9	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.22	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	2.67	0.05	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Manganese	0.08	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.48	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry[P:1]								
Conductivity	108	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	6	3	mg/L		1664	11/02/09:211484	1664	11/04/09:214344
pH	8.0	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	120	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	189	71	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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CA ELAP Certification No. 2670

Field Office
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Mobile: 559/737-2399
FAX: 559/734-8435

November 6, 2009

Lab ID : STK0939588-002
Customer ID : 3-2635

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Sampled On : October 13, 2009-09:05
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #2
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.23	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.027	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.05	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.04	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total P:1'5								
Aluminum	8.1	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.06	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	1.91	0.05	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Manganese	0.06	0.01	mg/L		3010	10/19/09:210941	200.7	10/27/09:213960
Zinc	0.17	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry P:1								
Conductivity	81	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	ND	3	mg/L		1664	10/26/09:211251	1664	10/28/09:213994
pH	8.0	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	80	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	40	40	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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November 6, 2009

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Description : Discharge #3
Project : Stormwater 1

Lab ID : STK0939588-003
Customer ID : 3-2635

Sampled On : October 13, 2009-08:30
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.18	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.044	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.07	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.14	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total P:1 5								
Aluminum	2.7	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.06	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	0.91	0.05	mg/L		3010	10/19/09:210941	200.7	10/27/09:213960
Manganese	0.12	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.19	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry P:1								
Conductivity	95	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	4	3	mg/L		1664	11/02/09:211484	1664	11/04/09:214344
pH	7.5	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	110	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	22	13	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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FGL ENVIRONMENTAL
Analytical Chemists

November 6, 2009

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK0939588-004
Customer ID : 3-2635

Sampled On : October 13, 2009-09:20
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #4
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss[P:1]								
Aluminum	0.26	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.027	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.06	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.34	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total[P:1'5]								
Aluminum	1.8	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.03	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	0.33	0.05	mg/L		3010	10/19/09:210941	200.7	10/27/09:213960
Manganese	0.04	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.43	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry[P:1]								
Conductivity	92	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	ND	3	mg/L		1664	10/26/09:211251	1664	10/28/09:213994
pH	7.6	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	110	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	ND	20	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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ENVIRONMENTAL

Analytical Chemists

November 6, 2009

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK0939588-006
Customer ID : 3-2635

Sampled On : October 13, 2009-10:15
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #6
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.06	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.015	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.06	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.01	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total P:15								
Aluminum	2.0	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.02	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	1.60	0.05	mg/L		3010	10/19/09:210941	200.7	10/27/09:213960
Manganese	0.07	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.05	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry P:1								
Conductivity	129	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	ND	3	mg/L		1664	10/29/09:211383	1664	10/30/09:214124
pH	8.0	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	110	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	30	20	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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November 6, 2009

Lab ID : STK0939588-008
Customer ID : 3-2635

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Sampled On : October 13, 2009-09:47
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #8
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.01	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.005	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.09	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.03	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, Total P:1 5								
Aluminum	1.5	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.01	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	1.40	0.05	mg/L		3010	10/19/09:210941	200.7	10/27/09:213960
Manganese	0.11	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.04	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet Chemistry P:1								
Conductivity	647	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	ND	3	mg/L		1664	11/02/09:211484	1664	11/04/09:214344
pH	7.8	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	440	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	25	13	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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November 6, 2009

Lab ID : STK0939588-009
Customer ID : 3-2635

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Sampled On : October 13, 2009-08:55
Sampled By : Larry Elam
Received On : October 13, 2009-13:10
Matrix : Surface Water

Description : Discharge #9
Project : Stormwater 1

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, DissP:1								
Aluminum	0.14	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Copper	0.015	0.001	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Iron	0.08	0.05	mg/L		200.7	10/16/09:210879	200.7	10/16/09:213515
Zinc	0.05	0.01	mg/L		200.8	10/16/09:210882	200.8	10/17/09:213521
Metals, TotalP:15								
Aluminum	4.7	0.1	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Copper	0.03	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Iron	2.86	0.05	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Manganese	0.11	0.01	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Zinc	0.14	0.02	mg/L		3010	10/19/09:210941	200.7	10/20/09:213645
Wet ChemistryP:1								
Conductivity	403	1	umhos/cm		2510B	10/16/09:210886	2510B	10/16/09:213438
Oil and Grease	ND	3	mg/L		1664	11/02/09:211484	1664	11/04/09:214344
pH	7.8	--	units		4500-H B	10/13/09:311426	4500HB	10/13/09:312057
Solids, Total Dissolved (TDS)	270	20	mg/L		2540 G	10/16/09:210885	2540C	10/19/09:213517
Solids, Total Suspended (TSS)	53	13	mg/L		2540D	10/15/09:300789	2540D	10/15/09:300831

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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November 6, 2009
Valimet, Inc.

Lab ID : STK0939588
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Aluminum	200.7	10/20/2009:213645	CCV	ppm	4.990	106 %	90-110	
			CCB	ppm		0.009	0.100	
			CCV	ppm	4.990	107 %	90-110	
			CCB	ppm		0.018	0.100	
			CCV	ppm	4.990	110 %	90-110	
			CCB	ppm		0.01	0.100	
Copper	200.7	10/20/2009:213645	CCV	ppm	0.9990	105 %	90-110	
			CCB	ppm		-0.0007	0.01	
			CCV	ppm	0.9990	102 %	90-110	
			CCB	ppm		-0.0017	0.01	
			CCV	ppm	0.9990	103 %	90-110	
			CCB	ppm		0.0008	0.01	
Iron	200.7	10/16/2009:210879	MS	ug/L	3992	98.5 %	75-125	
		(CH 0977833-001)	MSD	ug/L	3992	97.9 %	75-125	
			MSRPD	ug/L	799.2	0.5%	≤20.0	
	200.7	10/16/2009:213515	CCV	ppm	4.990	99.1 %	90-110	
			CCB	ppm		0.0014	0.05	
			CCV	ppm	4.990	98.4 %	90-110	
			CCB	ppm		0.0022	0.05	
			CCV	ppm	4.990	97.6 %	90-110	
			CCB	ppm		0.0051	0.05	
	200.7	10/20/2009:213645	CCV	ppm	4.990	103 %	90-110	
			CCB	ppm		0.0211	0.05	
			CCV	ppm	4.990	101 %	90-110	
			CCB	ppm		0.1999	0.05	220
			CCV	ppm	4.990	101 %	90-110	
			CCB	ppm		-0.1290	0.05	220
	200.7	10/27/2009:213960	CCV	ppm	4.990	96.4 %	90-110	
			CCB	ppm		-0.0209	0.05	
			CCV	ppm	4.990	95.9 %	90-110	
			CCB	ppm		-0.0216	0.05	
Manganese	200.7	10/20/2009:213645	CCV	ppm	0.9990	103 %	90-110	
			CCB	ppm		-0.0006	0.01	
			CCV	ppm	0.9990	102 %	90-110	
			CCB	ppm		0.0001	0.01	
			CCV	ppm	0.9990	103 %	90-110	
			CCB	ppm		0.0002	0.01	
Zinc	200.7	10/20/2009:213645	CCV	ppm	0.9990	101 %	90-110	
			CCB	ppm		-0.0001	0.02	
			CCV	ppm	0.9990	96.9 %	90-110	
			CCB	ppm		0.0007	0.02	
			CCV	ppm	0.9990	94.4 %	90-110	
			CCB	ppm		0.0013	0.02	
Aluminum	200.8	10/16/2009:210882	MS	ug/L	5.000	94.3 %	75-125	
		(CH 0977833-001)	MSD	ug/L	5.000	90.7 %	75-125	
			MSRPD	ug/L	5.000	0.18	≤10	
	200.8	10/17/2009:213521	CCV	ppb	120.0	104 %	90-110	
			CCB	ppb		0.8	10	
			CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		20.9	10	
Copper	200.8	10/16/2009:210882	MS	ug/L	5.000	94.6 %	75-125	
		(CH 0977833-001)	MSD	ug/L	5.000	96.3 %	75-125	
			MSRPD	ug/L	5.000	0.083	≤1	
	200.8	10/17/2009:213521	CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		-0.13	1	

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November 6, 2009
Valimet, Inc.

Lab ID : STK0939588
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Copper	200.8	10/17/2009:213521	CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		0.12	1	
Zinc	200.8	10/16/2009:210882	MS	ug/L	5.000	97.8 %	75-125	
		(CH 0977833-001)	MSD	ug/L	5.000	91.2 %	75-125	
			MSRPD	ug/L	5.000	0.5%	≤20	
	200.8	10/17/2009:213521	CCV	ppb	120.0	104 %	90-110	
			CCB	ppb		-3.4	10	
			CCV	ppb	120.0	107 %	90-110	
			CCB	ppb		8.1	10	
Aluminum	3010	10/19/2009:210941	Blank	mg/L		ND	<0.1	
			LCS	mg/L	3.992	104 %	85-115	
			MS	mg/L	3.992	108 %	75-125	
		(SP 0910448-001)	MSD	mg/L	3.992	109 %	75-125	
			MSRPD	mg/L	0.7992	0.2%	≤20.0	
			PDS	mg/L	3.992	105 %	75-125	
Copper	3010	10/19/2009:210941	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.7992	106 %	85-115	
			MS	mg/L	0.7992	108 %	75-125	
		(SP 0910448-001)	MSD	mg/L	0.7992	109 %	75-125	
			MSRPD	mg/L	0.7992	0.9%	≤20.0	
			PDS	mg/L	0.7992	103 %	75-125	
Iron	3010	10/19/2009:210941	Blank	mg/L		ND	<0.05	
			LCS	mg/L	3.992	101 %	85-115	
			MS	mg/L	3.992	103 %	75-125	
		(SP 0910448-001)	MSD	mg/L	3.992	101 %	75-125	
			MSRPD	mg/L	0.7992	0.5%	≤20.0	
			PDS	mg/L	3.992	101 %	75-125	
Manganese	3010	10/19/2009:210941	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.7992	102 %	85-115	
			MS	mg/L	0.7992	105 %	75-125	
		(SP 0910448-001)	MSD	mg/L	0.7992	106 %	75-125	
			MSRPD	mg/L	0.7992	0.4%	≤20	
			PDS	mg/L	0.7992	100 %	75-125	
Zinc	3010	10/19/2009:210941	Blank	mg/L		ND	<0.02	
			LCS	mg/L	1.999	98.8 %	85-115	
			MS	mg/L	1.999	103 %	75-125	
		(SP 0910448-001)	MSD	mg/L	1.999	104 %	75-125	
			MSRPD	mg/L	0.7992	0.9%	≤20.0	
			PDS	mg/L	1.999	98.1 %	75-125	
Wet Chem								
Oil and Grease	1664	10/26/2009:211251	Blank	mg/L		ND	<3	
			LCS	mg/L	40.40	64.9 %	63-121	
			LCS	mg/L	40.40	84.8 %	63-121	
			BS	mg/L	40.40	84.9 %	63-121	
			BSD	mg/L	40.40	84.4 %	63-121	
			BSRPD	mg/L	40.40	0.6%	≤48.9	
	1664	10/29/2009:211383	Blank	mg/L		ND	<3	
			LCS	mg/L	40.40	87.0 %	63-121	
			LCS	mg/L	40.40	85.9 %	63-121	
			BS	mg/L	40.40	88.7 %	63-121	
			BSD	mg/L	40.40	89.9 %	63-121	
			BSRPD	mg/L	40.40	1.2%	≤48.9	
	1664	11/02/2009:211484	Blank	mg/L		ND	<3	
			LCS	mg/L	40.40	90.0 %	63-121	

November 6, 2009
Valimet, Inc.

Lab ID : STK0939588
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Oil and Grease	1664	11/02/2009:211484	LCS	mg/L	40.40	90.7 %	63-121	
			BS	mg/L	40.40	89.1 %	63-121	
			BSD	mg/L	40.40	87.0 %	63-121	
			BSRPD	mg/L	40.40	2.4%	≤48.9	
Conductivity	2510B	10/16/2009:213438	ICB	umhos/cm		0.1	1	
			CCV	umhos/cm	999.0	98.6 %	95-105	
			CCV	umhos/cm	999.0	98.7 %	95-105	
E. C.	2510B	10/16/2009:210886	Blank	umhos/cm		ND	<1	
			Dup	umhos/cm		0.2%	0.372	
			Blank	umhos/cm		ND	<1	
			Dup	umhos/cm		0.1%	0.372	
Solids, Total Dissolved	2540 G	10/16/2009:210885	Blank	mg/L		ND	<20	
			LCS	mg/L	995.0	107 %	90-110	
			LCS	mg/L	995.0	107 %	90-110	
			Dup	mg/L		3.3%	10.0	
			Blank	mg/L		9.0	20	
			LCS	mg/L	995.0	109 %	90-110	
			LCS	mg/L	995.0	105 %	90-110	
			Dup	mg/L		2.8%	10.0	
Solids, Suspended	2540D	10/15/2009:300789	Blank	mg/L		ND	<1	
			LCS	mg/L	500.0	96.2 %	38-138	
			LCS	mg/L	500.0	101 %	38-138	
			Dup	mg/L		13.9%	28.7	
pH	4500-H B	10/13/2009:311426	Dup	units		0.0%	4.80	
			Dup	units		0.1%	4.80	
			Dup	units		0.3%	4.80	
			Dup	units		1.6%	4.80	
			Dup	units		0.4%	4.80	
			Dup	units		0.1%	4.80	
	4500HB	10/13/2009:312057	CCV	units	8.000	99.9 %	95-105	
			CCV	units	8.000	99.9 %	95-105	

Definition

ICB	: Initial Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

November 6, 2009
Valimet, Inc.

Lab ID : STK0939588
Customer : 3-2635

Quality Control - Inorganic

Explanation	
220	: The CCB was greater than the DQO. However, all results were either five times greater than the CCB concentration or ND relative to the PQL.

ENVIRONMENTAL

Annual
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CHAIN OF CUSTODY

Laboratory Copy (1 of 3)

30009:10/05/2009 | TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information | C310

Client: **Valimet, Inc.**
Address: P.O. Box 31690
Stockton, CA 95213

Phone: (209)444-1600 Fax: (209)444-1636
Contact Person: Dave Oberholtzer
Project Name: **Stormwater 1**
Purchase Order Number: 48233
Quote Number:

Sampler(s) Larry Elam

Sampling Fee: ______ Pickup Fee: ______
Compositor Setup Date: __/__/__ Time: __/__

Lab Number: **STK** 939588 3-2635

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	Metals, Total-Al,Cu,Fe,Mn,Zn 250ml(P)-HNO3	Wet Chemistry-Conductivity,Oil&Grease-1664,TDS,TSS TSS - Analyzed in STK 16oz(P), 32oz(AGJ)-H2SO4 , 32oz(P)	Metals, Diss-Al,Cu,Fe,Zn 250ml(P)	~~Field Test-Field pH~~ STK LAB ~~!!pH = 15 MINUTE HOLD TIME!!~~	~~Field - pH Date~~	~~Field - pH Time~~
1	Discharge #1	10/13/09	0835	G	SW				1	1,1,1	1			
2	Discharge #2	10/13/09	0905	G	SW				1	1,1,1	1			
3	Discharge #3	10/13/09	0830	G	SW				1	1,1,1	1			
4	Discharge #4	10/13/09	0920	G	SW				1	1,1,1	1			
~~5~~	~~Discharge #5~~			~~G~~	~~SW~~				~~1~~	~~1,1,1~~	~~1~~			
6	Discharge #6	10/13/09	1015	G	SW				1	1,1,1	1			
~~7~~	~~Discharge #7~~			~~G~~	~~SW~~				~~1~~	~~1,1,1~~	~~1~~			
8	Discharge #8	10/13/09	0947	G	SW				1	1,1,1	1			
9	Discharge #9	10/13/09	0855	G	SW				1	1,1,1	1			
~~10~~	~~Discharge #10~~			~~G~~	~~SW~~				~~1~~	~~1,1,1~~	~~1~~			

Remarks:

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
[signature]	10/13/09	1:10pm	[signature]	10/14/09	1200	[signature]		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
[signature]	10/13/09	1310	[signature]			[signature]	10/15/09	0830

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Stockton - Condition Upon Receipt (Attach to COC)

Sample Receipt at STK:

1. Number of ice chests/packages received: ROT
2. Were samples received in a chilled condition? Temps: ____ / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6° C. Also acceptable is received on ice (ROI) for the same day of sampling or received at room temperature (RRT) if sampled within one hour of receipt. Client contact for temperature failures must be documented below. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received..
3. Do the number of bottles received agree with the COC? Yes No N/A
4. Were samples received intact? (i.e. no broken bottles, leaks etc.) Yes No
5. VOAs checked for Headspace? Yes No N/A
6. Were sample custody seals intact? Yes No N/A

Sign and date the COC. place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): ____

Sample Receipt at SP:

1. Were samples received in a chilled condition? Temps: ROT ____ / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6° C. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received.
2. Do the number of bottles received agree with the COC? Yes No N/A
3. Were samples received intact? (i.e. no broken bottles, leaks etc.) Yes No
4. Were sample custody seals intact? Yes No N/A

Sign and date the COC. obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? Yes No
2. Did bottle labels correspond with the client's ID's? Yes No
3. Were all bottles requiring sample preservation properly preserved? Yes No N/A FGL
4. VOAs checked for Headspace? Yes No N/A
5. Were all analyses within holding times at time of receipt? Yes No
6. Have rush or project due dates been checked and accepted? Yes No N//A

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): ____

Discrepancy Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted:____________________ Phone Number:______________
   Initiated By:____________________ Date:____________
   Problem:

   Resolution:

Valmet, Inc.
STK0939588

FGL ENVIRONMENTAL

Analytical Chemists

April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138
Customer : 3-2635

Laboratory Report

Introduction: This report package contains total of 12 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(7 pages)	: Results for each sample submitted.
Quality Control	(3 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
Discharge #1	04/11/2010	04/12/2010	STK1033138-001	SW
Discharge #2	04/11/2010	04/12/2010	STK1033138-002	SW
Discharge #3	04/11/2010	04/12/2010	STK1033138-003	SW
Discharge #6	04/11/2010	04/12/2010	STK1033138-006	SW
Discharge #7	04/11/2010	04/12/2010	STK1033138-007	SW
Discharge #8	04/11/2010	04/12/2010	STK1033138-008	SW
Discharge #9	04/11/2010	04/12/2010	STK1033138-009	SW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding except those as listed in the table below. The holding time for pH is listed as immediate. Logistically this is very difficult to obtain. FGL policy is to analyze all samples requiring pH on the same day of receipt at the laboratory. If this presents any problem please call.

Lab ID	Analyte/Method	Required Holding Time	Actual Holding Time
STK1033138-001	pH	15	1276.2 Minutes
STK1033138-002	pH	15	1270.8 Minutes
STK1033138-003	pH	15	1276.2 Minutes
STK1033138-006	pH	15	1261.8 Minutes
STK1033138-007	pH	15	1269 Minutes
STK1033138-008	pH	15	1266 Minutes
STK1033138-009	pH	15	1290 Minutes

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April 30, 2010
Valimet, Inc.

Lab ID : STK1033138
Customer : 3-2635

All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

200.7	04/14/2010:204307 All analysis quality controls are within established criteria
	04/16/2010:204444 All analysis quality controls are within established criteria
	04/14/2010:203685 All preparation quality controls are within established criteria
3010	04/15/2010:203719 All preparation quality controls are within established criteria

Inorganic - Wet Chemistry QC

1664	04/27/2010:204155 All preparation quality controls are within established criteria
2510B	04/13/2010:204228 All analysis quality controls are within established criteria
	04/13/2010:203607 All preparation quality controls are within established criteria
2540 G	04/13/2010:203660 All preparation quality controls are within established criteria
	04/14/2010:203700 All preparation quality controls are within established criteria
	04/15/2010:203729 All preparation quality controls are within established criteria
2540D	04/14/2010:310532 All preparation quality controls are within established criteria
4500-H B	04/12/2010:310522 All preparation quality controls are within established criteria
4500HB	04/12/2010:310741 All analysis quality controls are within established criteria

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.**

Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2010-05-03

April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138-001
Customer ID : 3-2635

Sampled On : April 11, 2010-16:02
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #1
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss[P:1]								
Aluminum	0.22	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	0.02	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	ND	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	ND	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total[P:1'5]								
Aluminum	3.1	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.02	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	0.41	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.02	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.06	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry[P:1]								
Conductivity	60	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	7.7	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	30	20	mg/L		2540 G	04/14/10:203700	2540C	04/15/10:204300
Solids, Total Suspended (TSS)	11	2	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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ENVIRONMENTAL
Analytical Chemists

April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138-002
Customer ID : 3-2635

Sampled On : April 11, 2010-16:10
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #2
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.15	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	0.04	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	0.06	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	0.07	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total P:1'5								
Aluminum	2.2	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.06	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	0.78	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.02	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.21	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry P:1								
Conductivity	74	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	7.7	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	30	20	mg/L		2540 G	04/14/10:203700	2540C	04/15/10:204300
Solids, Total Suspended (TSS)	16	2	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138-003
Customer ID : 3-2635

Sampled On : April 11, 2010-16:06
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #3
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.13	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	0.03	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	ND	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	0.05	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total P:1'5								
Aluminum	8.2	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.05	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	1.76	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.05	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.13	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry P:1								
Conductivity	56	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	7.4	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	60	20	mg/L		2540 G	04/13/10:203660	2540C	04/14/10:204185
Solids, Total Suspended (TSS)	45	3	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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April 30, 2010

Lab ID : STK1033138-006
Customer ID : 3-2635

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Sampled On : April 11, 2010-16:22
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #6
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	ND	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	0.01	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	0.05	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	ND	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total P:1'5								
Aluminum	0.6	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.02	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	0.54	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.02	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.03	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry P:1								
Conductivity	270	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	8.0	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	160	20	mg/L		2540 G	04/14/10:203700	2540C	04/15/10:204300
Solids, Total Suspended (TSS)	10	1	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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ENVIRONMENTAL
Analytical Chemists

April 30, 2010

Lab ID : STK1033138-007
Customer ID : 3-2635

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Sampled On : April 11, 2010-16:16
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #7
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss P:1								
Aluminum	0.12	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	0.03	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	ND	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	ND	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total P:1'5								
Aluminum	6.7	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.08	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	2.41	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.07	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.12	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry P:1								
Conductivity	75	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	7.8	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	60	20	mg/L		2540 G	04/13/10:203660	2540C	04/14/10:204185
Solids, Total Suspended (TSS)	44	3	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138-008
Customer ID : 3-2635

Sampled On : April 11, 2010-16:20
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #8
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Metals, Diss P:1								
Aluminum	ND	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	ND	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	0.06	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	ND	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total P:1'5								
Aluminum	1.3	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	ND	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	1.20	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.04	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	ND	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry P:1								
Conductivity	455	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	8.4	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	270	20	mg/L		2540 G	04/14/10:203700	2540C	04/15/10:204300
Solids, Total Suspended (TSS)	22	2	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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April 30, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033138-009
Customer ID : 3-2635

Sampled On : April 11, 2010-15:58
Sampled By : L. Elam
Received On : April 12, 2010-12:37
Matrix : Surface Water

Description : Discharge #9
Project : Stormwater 2

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss [P:1]								
Aluminum	0.16	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Copper	ND	0.01	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Iron	0.1	0.05	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Zinc	0.02	0.02	mg/L		200.7	04/14/10:203685	200.7	04/14/10:204307
Metals, Total [P:T5]								
Aluminum	2.3	0.1	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Copper	0.01	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Iron	1.15	0.05	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Manganese	0.04	0.01	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Zinc	0.05	0.02	mg/L		3010	04/15/10:203719	200.7	04/16/10:204444
Wet Chemistry [P:1]								
Conductivity	366	1	umhos/cm		2510B	04/13/10:203607	2510B	04/13/10:204228
Oil and Grease	ND	3	mg/L		1664	04/27/10:204155	1664	04/29/10:204931
pH	7.8	--	units		4500-H B	04/12/10:310522	4500HB	04/12/10:310741
Solids, Total Dissolved (TDS)	200	20	mg/L		2540 G	04/15/10:203729	2540C	04/16/10:204348
Solids, Total Suspended (TSS)	24	2	mg/L		2540D	04/14/10:310532	2540D	04/15/10:310753

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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EGL ENVIRONMENTAL

Analytical Chemists

April 30, 2010
Valimet, Inc.

Lab ID : STK1033138
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Aluminum	200.7	(CH 1071253-001)	MS	ug/L	3996	101 %	75-125	
			MSD	ug/L	3996	96.3 %	75-125	
			MSRPD	ug/L	798.8	5.1%	≤20.0	
	200.7	04/14/2010:204307	CCV	ppm	4.995	99.6 %	90-110	
			CCB	ppm		0.0008	0.100	
			CCV	ppm	4.995	99.6 %	90-110	
			CCB	ppm		0.001	0.100	
			CCV	ppm	4.995	97.5 %	90-110	
			CCB	ppm		0.0003	0.100	
	200.7	04/16/2010:204444	CCV	ppm	4.995	99.3 %	90-110	
			CCB	ppm		-0.0006	0.100	
			CCV	ppm	4.995	99.3 %	90-110	
			CCB	ppm		-0.00001	0.100	
			CCV	ppm	4.995	97.2 %	90-110	
			CCB	ppm		-0.0008	0.100	
Copper	200.7	(CH 1071253-001)	MS	ug/L	800.0	103 %	75-125	
			MSD	ug/L	800.0	97.9 %	75-125	
			MSRPD	ug/L	798.8	4.7%	≤20.0	
	200.7	04/14/2010:204307	CCV	ppm	1.000	102 %	90-110	
			CCB	ppm		-0.0001	0.01	
			CCV	ppm	1.000	102 %	90-110	
			CCB	ppm		-0.00006	0.01	
			CCV	ppm	1.000	101 %	90-110	
			CCB	ppm		-0.00007	0.01	
	200.7	04/16/2010:204444	CCV	ppm	1.000	102 %	90-110	
			CCB	ppm		-0.00008	0.01	
			CCV	ppm	1.000	101 %	90-110	
			CCB	ppm		-0.0002	0.01	
			CCV	ppm	1.000	99.6 %	90-110	
			CCB	ppm		0.0001	0.01	
Iron	200.7	(CH 1071253-001)	MS	ug/L	3992	101 %	75-125	
			MSD	ug/L	3992	95.9 %	75-125	
			MSRPD	ug/L	798.8	4.4%	≤20.0	
	200.7	04/14/2010:204307	CCV	ppm	4.990	102 %	90-110	
			CCB	ppm		0.0129	0.05	
			CCV	ppm	4.990	102 %	90-110	
			CCB	ppm		0.0168	0.05	
			CCV	ppm	4.990	100 %	90-110	
			CCB	ppm		0.0216	0.05	
	200.7	04/16/2010:204444	CCV	ppm	4.990	102 %	90-110	
			CCB	ppm		-0.0010	0.05	
			CCV	ppm	4.990	101 %	90-110	
			CCB	ppm		-0.0037	0.05	
			CCV	ppm	4.990	99.4 %	90-110	
			CCB	ppm		-0.0013	0.05	
Manganese	200.7	04/16/2010:204444	CCV	ppm	1.000	99.6 %	90-110	
			CCB	ppm		0.00008	0.01	
			CCV	ppm	1.000	99.2 %	90-110	
			CCB	ppm		0.00007	0.01	
			CCV	ppm	1.000	97.8 %	90-110	
			CCB	ppm		0.00009	0.01	
Zinc	200.7	(CH 1071253-001)	MS	ug/L	2000	103 %	75-125	
			MSD	ug/L	2000	99.0 %	75-125	
			MSRPD	ug/L	798.8	4.0%	≤20.0	
	200.7	04/14/2010:204307	CCV	ppm	1.000	101 %	90-110	

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April 30, 2010
Valimet, Inc.

Lab ID : STK1033138
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Zinc	200.7	04/14/2010:204307	CCB	ppm		-0.0005	0.02	
			CCV	ppm	1.000	101 %	90-110	
			CCB	ppm		0.0003	0.02	
			CCV	ppm	1.000	101 %	90-110	
			CCB	ppm		0.0005	0.02	
	200.7	04/16/2010:204444	CCV	ppm	1.000	102 %	90-110	
			CCB	ppm		0.0004	0.02	
			CCV	ppm	1.000	101 %	90-110	
			CCB	ppm		0.0007	0.02	
			CCV	ppm	1.000	99.6 %	90-110	
			CCB	ppm		0.0007	0.02	
Aluminum	3010	04/15/2010:203719	Blank	mg/L		ND	<0.1	
			LCS	mg/L	3.996	95.7 %	85-115	
			MS	mg/L	3.996	101 %	75-125	
		(STK1032800-002)	MSD	mg/L	3.996	99.6 %	75-125	
			MSRPD	mg/L	0.7988	1.0%	≤20.0	
			PDS	mg/L	3.996	100 %	75-125	
Copper	3010	04/15/2010:203719	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.8000	99.1 %	85-115	
			MS	mg/L	0.8000	104 %	75-125	
		(STK1032800-002)	MSD	mg/L	0.8000	102 %	75-125	
			MSRPD	mg/L	0.7988	1.2%	≤20.0	
			PDS	mg/L	0.8000	102 %	75-125	
Iron	3010	04/15/2010:203719	Blank	mg/L		ND	<0.05	
			LCS	mg/L	3.992	99.4 %	85-115	
			MS	mg/L	3.992	102 %	75-125	
		(STK1032800-002)	MSD	mg/L	3.992	101 %	75-125	
			MSRPD	mg/L	0.7988	1.4%	≤20.0	
			PDS	mg/L	3.992	101 %	75-125	
Manganese	3010	04/15/2010:203719	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.8000	97.1 %	85-115	
			MS	mg/L	0.8000	99.9 %	75-125	
		(STK1032800-002)	MSD	mg/L	0.8000	99.6 %	75-125	
			MSRPD	mg/L	0.7988	0.2%	≤20	
			PDS	mg/L	0.8000	99.2 %	75-125	
Zinc	3010	04/15/2010:203719	Blank	mg/L		ND	<0.02	
			LCS	mg/L	2.000	99.0 %	85-115	
			MS	mg/L	2.000	100 %	75-125	
		(STK1032800-002)	MSD	mg/L	2.000	100 %	75-125	
			MSRPD	mg/L	0.7988	0.06%	≤20.0	
			PDS	mg/L	2.000	101 %	75-125	
Wet Chem								
Oil and Grease	1664	04/27/2010:204155	Blank	mg/L		ND	<3	
			LCS	mg/L	40.40	79.3 %	63-121	
			BS	mg/L	40.40	82.3 %	63-121	
			BSD	mg/L	40.40	72.4 %	63-121	
			BSRPD	mg/L	40.40	12.8%	≤48.9	
Conductivity	2510B	04/13/2010:204228	ICB	umhos/cm		0.1	1	
			CCV	umhos/cm	995.0	99.7 %	95-105	
			CCV	umhos/cm	995.0	99.8 %	95-105	
E. C.	2510B	04/13/2010:203607	Blank	umhos/cm		ND	<1	
		(STK1033083-001)	Dup	umhos/cm		0.0%	0.372	
Solids, Total Dissolved	2540 G	04/13/2010:203660	Blank	mg/L		ND	<20	
			LCS	mg/L	995.0	99.7 %	90-110	

April 30, 2010
Valimet, Inc.

Lab ID : STK1033138
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Solids, Total Dissolved	2540 G	04/13/2010:203660	LCS	mg/L	995.0	97.0 %	90-110	
		(STK1032987-001)	Dup	mg/L		3.2%	10.0	
	2540 G	04/14/2010:203700	Blank	mg/L		ND	<20	
			LCS	mg/L	995.0	99.3 %	90-110	
			LCS	mg/L	995.0	101 %	90-110	
		(STK1033163-004)	Dup	mg/L		0.5%	10.0	
	2540 G	04/15/2010:203729	Blank	mg/L		ND	<20	
			LCS	mg/L	995.0	98.0 %	90-110	
			LCS	mg/L	995.0	97.9 %	90-110	
		(SP 1003453-001)	Dup	mg/L		0.2%	10.0	
Solids, Suspended	2540D	04/14/2010:310532	Blank	mg/L		ND	<1	
			LCS	mg/L	500.0	99.6 %	38-138	
			LCS	mg/L	500.0	98.0 %	38-138	
		(STK1033044-003)	Dup	mg/L		1.9%	28.7	
pH	4500-H B	(STK1033138-001)	Dup	units		0.1%	4.80	
	4500HB	04/12/2010:310741	CCV	units	8.000	99.6 %	95-105	
			CCV	units	8.000	99.4 %	95-105	

Definition

ICB	: Initial Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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CHAIN OF CUSTODY

Laboratory Copy (1 of 3)

30937:10/05/2009

TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information

C310

Client: **Valimet, Inc.**
Address: P.O. Box 31690
Stockton, CA 95213

Phone: (209)444-1600 Fax: (209)444-1636
Contact Person: Dave Oberholtzer
Project Name: **Stormwater 2**
Purchase Order Number:
Quote Number:

Sampler(s) L Elam

Sampling Fee: ______ Pickup Fee: ______
Compositor Setup Date: __/__/__ Time: __/__

Lab Number: **STK** 1033138 **3-2635**

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	Metals, Total-Al,Cu,Fe,Mn,Zn 250ml(P)-HNO3	Wet Chemistry-Conductivity,Oil&Grease-1664,TDS,TSS; TSS - Analyzed in STK; 16oz(P), 32oz(AGJ)-H2SO4, 32oz(P)	Metals, Diss-Al,Cu,Fe,Zn 250ml(P)	~~Field Test-Field pH !!pH = 15 MINUTE HOLD TIME!!~~	~~Field - pH Date~~	~~Field - pH Time~~	pH - STK LAB
1	Discharge #1	4/11	402p	G	SW				1	1,1,1	1				X
2	Discharge #2	4/11	416p	G	SW				1	1,1,1	1				X
3	Discharge #3	4/11	406p	G	SW				1	1,1,1	1				X
~~4~~	~~Discharge #4~~			~~G~~	~~SW~~				~~1~~	~~1,1,1~~	~~1~~				
~~5~~	~~Discharge #5~~			~~G~~	~~SW~~				~~1~~	~~1,1,1~~	~~1~~				
6	Discharge #6	4/11	422p	G	SW				1	1,1,1	1				
7	Discharge #7	4/11	416p	G	SW				1	1,1,1	1				X
8	Discharge #8	4/11	420p	G	SW				1	1,1,1	1				X
9	Discharge ~~#10~~ 9 LE	4/11	358p	G	SW				1	1,1,1	1				X
															X

Remarks:

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
[signature]	4/12/10	12:37	[signature]	4/12/10	1700	[signature]		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
[signature]	4/12/10	1237	OnTrac	4/12/10	1700	[signature]	4/13/10	1115

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Stockton - Condition Upon Receipt (Attach to COC)

Sample Receipt at STK:

1. Number of ice chests/packages received: ROT
2. Were samples received in a chilled condition? Temps: ____ / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6° C. Also acceptable is received on ice (ROI) for the same day of sampling or received at room temperature (RRT) if sampled within one hour of receipt. Client contact for temperature failures must be documented below. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received..
3. Do the number of bottles received agree with the COC? (Yes) No N/A
4. Were samples received intact? (i.e. no broken bottles. leaks etc.) (Yes) No
5. VOAs checked for Headspace? Yes No (N/A)
6. Were sample custody seals intact? Yes No (N/A)

Sign and date the COC. place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): ____

Sample Receipt at SP:

1. Were samples received in a chilled condition? Temps: 3 / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6° C. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received.
2. Do the number of bottles received agree with the COC? (Yes) No N/A
3. Were samples received intact? (i.e. no broken bottles, leaks etc.) (Yes) No
4. Were sample custody seals intact? Yes No (N/A)

Sign and date the COC. obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? (Yes) No
2. Did bottle labels correspond with the client's ID's? (Yes) No
3. Were all bottles requiring sample preservation properly preserved? (Yes) No N/A FGL
4. VOAs checked for Headspace? Yes No (N/A)
5. Were all analyses within holding times at time of receipt? (Yes) No
6. Have rush or project due dates been checked and accepted? Yes No (N/A)

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): ____

Discrepancy Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted: ____ Phone Number: ____
   Initiated By: ____
   Problem:

   Resolution:

(3-2635)
Valimet, Inc.
STK1033138
SRP-04/13/2010-12:01:59

Observed

4/11/10 : start : 3:30 pm

1	~~3~~	4:02	0.16 during hour of samples
2	~~3~~	4:10	
3		4:02	0.29 ~~total~~
6	~~4:25~~	4:22	
7	~~[illegible]~~ ~~4:15~~	4:16	
8	~~4:20~~	4:20	
9	~~4:20~~	3:58	

FGL ENVIRONMENTAL

CHAIN OF CUSTODY
AND ANALYSIS REQUEST DOCUMENT

CONTRACT # 30937

Lab Number:

Client: Valimet, Inc.
Customer Number: 3002635
Address: P.O. Box 31690
Stockton, CA 95213

Phone: (209)444-1600 Fax: (209)444-1636
Contact Person: Dave Oberholtzer
Project Name: STORMWATER MONITORING
Purchase Order Number: — 48692
Quote Number:

Sampler(s): LARRY

Sampling Fee: ______ Pickup Fee: ______
Compositor Setup Date: ______ Time: ______

TEST DESCRIPTION AND ANALYSES REQUESTED

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite (C) Grab (G)	Number of Containers	Type of Containers: (G)Glass (P)Plastic (V)VOA (MT)Metal Tube	Potable (P) Non-Potable (NP) Ag Water (AgW)	(SW) Surface Water (MW) Monitoring Well (GW) Ground Water (TB) Travel Blank (WW) Waste Water (DW) Drinking Water	(S) Soil (SLG) Sludge (SLD) Solid (O) Oil	BacT: (Sys) System (SRC) Source (W) Waste	Bact (ROUT)Routine (RPT)Repeat (OTH)Other (RPL)Replace (SPL)Special	(LT) Leaf Tissue (PET) Petiole Tissue (PRD) Produce	Preservative: (1) NaOH + ZnAc, (2) NaOH, (3) HCl (4) H2SO4, (5) HNO3, (6) Na2S2O3, (7) Other	IZC	Oil & Grease	TDS	TSS	METALS, TOTAL - Al, Cu, Fe, Mn, Zn	METALS, DISS - Al, Cu, Fe, Zn	PH - STK LAB						
1	DISCHARGE #8	4/20/10	3:45pm	G	5	P,G	NP	SW					4,5	X	X	X	X	X	X	X						
2	DISCHARGE #9	⌊	1555	⌊	5	⌊	⌊	⌊					4,5	X	X	X	X	X	X	X						

Remarks

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
[signature]	4/21/10	1440						
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
[signature]	4/21/10	1440						

FGL ENVIRONMENTAL

Analytical Chemists

May 27, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033488
Customer : 3-2635

Laboratory Report

Introduction: This report package contains total of 7 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(2 pages)	: Results for each sample submitted.
Quality Control	(3 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
Discharge #8	04/20/2010	04/21/2010	STK1033488-001	SW
Discharge #9	04/20/2010	04/21/2010	STK1033488-002	SW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding except those as listed in the table below. The holding time for pH is listed as immediate. Logistically this is very difficult to obtain. FGL policy is to analyze all samples requiring pH on the same day of receipt at the laboratory. If this presents any problem please call.

Lab ID	Analyte/Method	Required Holding Time	Actual Holding Time
STK1033488-001	pH	15	1414.8 Minutes
STK1033488-002	pH	15	1408.2 Minutes

All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

200.7	05/19/2010:205886 All analysis quality controls are within established criteria
	05/03/2010:205101 All analysis quality controls are within established criteria
	05/19/2010:205025 All preparation quality controls are within established criteria

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May 27, 2010
Valimet, Inc.

Lab ID : STK1033488
Customer : 3-2635

Inorganic - Metals QC

200.8	04/26/2010:204800 All analysis quality controls are within established criteria
	04/26/2010:204123 All preparation quality controls are within established criteria
3010	04/30/2010:204327 All preparation quality controls are within established criteria

Inorganic - Wet Chemistry QC

1664	05/06/2010:204498 All preparation quality controls are within established criteria
2510B	04/23/2010:204707 All analysis quality controls are within established criteria
	04/23/2010:204071 All preparation quality controls are within established criteria
2540 G	04/22/2010:204000 All preparation quality controls are within established criteria
2540D	04/23/2010:310598 All preparation quality controls are within established criteria
4500-H B	04/21/2010:310577 All preparation quality controls are within established criteria
4500HB	04/21/2010:310809 All analysis quality controls are within established criteria

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S. Title: Laboratory Director Date: 2010-06-01

May 27, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033488-001
Customer ID : 3-2635

Sampled On : April 20, 2010-15:45
Sampled By : Larry
Received On : April 21, 2010-14:40
Matrix : Surface Water

Description : Discharge #8
Project : Stormwater 3-PO#48682

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Diss[P:1]								
Aluminum	0.09	0.01	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Copper	0.004	0.001	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Iron	0.23	0.05	mg/L		200.7	05/19/10:205025	200.7	05/19/10:205886
Zinc	0.07	0.01	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Metals, Total[P:1'5]								
Aluminum	3.3	0.1	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Copper	0.01	0.01	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Iron	3.17	0.05	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Manganese	0.11	0.01	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Zinc	0.04	0.02	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Wet Chemistry[P:1]								
Conductivity	453	1	umhos/cm		2510B	04/23/10:204071	2510B	04/23/10:204707
Oil and Grease	ND	3	mg/L		1664	05/06/10:204498	1664	05/06/10:205265
pH	7.8	--	units		4500-H B	04/21/10:310577	4500HB	04/21/10:310809
Solids, Total Dissolved (TDS)	280	20	mg/L		2540 G	04/22/10:204000	2540C	04/23/10:204611
Solids, Total Suspended (TSS)	63	5	mg/L		2540D	04/23/10:310598	2540D	04/24/10:310832

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H_2SO_4 pH < 2, HNO_3 pH < 2
‡Surrogate.

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ENVIRONMENTAL

Analytical Chemists

May 27, 2010

Valimet, Inc.
P.O. Box 31690
Stockton, CA 95213

Lab ID : STK1033488-002
Customer ID : 3-2635

Sampled On : April 20, 2010-15:55
Sampled By : Larry
Received On : April 21, 2010-14:40
Matrix : Surface Water

Description : Discharge #9
Project : Stormwater 3-PO#48682

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Metals, Diss[P:1]								
Aluminum	0.35	0.01	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Copper	0.021	0.001	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Iron	ND	0.05	mg/L		200.7	05/19/10:205025	200.7	05/19/10:205886
Zinc	0.05	0.01	mg/L		200.8	04/26/10:204123	200.8	04/26/10:204800
Metals, Total[P:15]								
Aluminum	3.8	0.1	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Copper	0.09	0.01	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Iron	0.98	0.05	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Manganese	0.05	0.01	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Zinc	0.12	0.02	mg/L		3010	04/30/10:204327	200.7	05/03/10:205101
Wet Chemistry[P:1]								
Conductivity	156	1	umhos/cm		2510B	04/23/10:204071	2510B	04/23/10:204707
Oil and Grease	ND	3	mg/L		1664	05/06/10:204498	1664	05/06/10:205265
pH	7.7	--	units		4500-H B	04/21/10:310577	4500HB	04/21/10:310809
Solids, Total Dissolved (TDS)	100	20	mg/L		2540 G	04/22/10:204000	2540C	04/23/10:204611
Solids, Total Suspended (TSS)	21	2	mg/L		2540D	04/23/10:310598	2540D	04/24/10:310832

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (AGJ) Amber Glass Jar, (P) Plastic Preservatives: H2SO4 pH < 2, HNO3 pH < 2
‡Surrogate.

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May 27, 2010
Valimet, Inc.

Lab ID : STK1033488
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Aluminum	200.7	05/03/2010:205101	CCV	ppm	4.995	95.8 %	90-110	
			CCB	ppm		0.002	0.100	
			CCV	ppm	4.995	96.8 %	90-110	
			CCB	ppm		0.005	0.100	
Copper	200.7	05/03/2010:205101	CCV	ppm	1.000	96.0 %	90-110	
			CCB	ppm		0.0003	0.01	
			CCV	ppm	1.000	96.6 %	90-110	
			CCB	ppm		0.0004	0.01	
Iron	200.7	05/03/2010:205101	CCV	ppm	4.990	98.3 %	90-110	
			CCB	ppm		0.0073	0.05	
			CCV	ppm	4.990	98.5 %	90-110	
			CCB	ppm		0.0118	0.05	
	200.7		MS	ug/L	3992	113 %	75-125	
		(CH 1072819-001)	MSD	ug/L	3992	97.9 %	75-125	
			MSRPD	ug/L	4.000	12.5%	≤20.0	
	200.7	05/19/2010:205886	CCV	ppm	4.990	98.9 %	90-110	
			CCB	ppm		0.0076	0.05	
			CCV	ppm	4.990	103 %	90-110	
			CCB	ppm		-0.0054	0.05	
Manganese	200.7	05/03/2010:205101	CCV	ppm	1.000	96.2 %	90-110	
			CCB	ppm		0.00009	0.01	
			CCV	ppm	1.000	96.7 %	90-110	
			CCB	ppm		0.0001	0.01	
Zinc	200.7	05/03/2010:205101	CCV	ppm	1.000	98.2 %	90-110	
			CCB	ppm		0.0009	0.02	
			CCV	ppm	1.000	98.9 %	90-110	
			CCB	ppm		0.0006	0.02	
Aluminum	200.8		MS	ug/L	5.000	94.0 %	75-125	
		(CH 1072365-001)	MSD	ug/L	5.000	102 %	75-125	
			MSRPD	ug/L	5.000	0.3%	≤20	
	200.8	04/26/2010:204800	CCV	ppb	120.0	95.8 %	90-110	
			CCB	ppb		-0.08	10	
			CCV	ppb	120.0	95.6 %	90-110	
			CCB	ppb		0.06	10	
			CCB	ppb		-0.05	10	
			CCV	ppb	120.0	95.8 %	90-110	
			CCB	ppb		-0.004	10	
Copper	200.8		MS	ug/L	5.000	98.3 %	75-125	
		(CH 1072365-001)	MSD	ug/L	5.000	100 %	75-125	
			MSRPD	ug/L	5.000	1.4%	≤20	
	200.8	04/26/2010:204800	CCV	ppb	120.0	102 %	90-110	
			CCB	ppb		0.006	1	
			CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.05	1	
			CCB	ppb		-0.001	1	
			CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		0.04	1	
Zinc	200.8		MS	ug/L	5.000	96.3 %	75-125	
		(CH 1072365-001)	MSD	ug/L	5.000	103 %	75-125	
			MSRPD	ug/L	5.000	0.33	≤10	
	200.8	04/26/2010:204800	CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		0.3	10	
			CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.3	10	
			CCB	ppb		0.2	10	

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May 27, 2010
Valimet, Inc.

Lab ID : STK1033488
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Zinc	200.8	04/26/2010:204800	CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.4	10	
Aluminum	3010	04/30/2010:204327	Blank	mg/L		ND	<0.1	
			LCS	mg/L	3.996	97.4 %	85-115	
			MS	mg/L	3.996	99.0 %	75-125	
		(CH 1071823-001)	MSD	mg/L	3.996	98.7 %	75-125	
			MSRPD	mg/L	0.7988	0.4%	≤20.0	
			PDS	mg/L	3.996	100 %	75-125	
Copper	3010	04/30/2010:204327	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.8000	99.9 %	85-115	
			MS	mg/L	0.8000	97.2 %	75-125	
		(CH 1071823-001)	MSD	mg/L	0.8000	96.8 %	75-125	
			MSRPD	mg/L	0.7988	0.3%	≤20.0	
			PDS	mg/L	0.8000	98.5 %	75-125	
Iron	3010	04/30/2010:204327	Blank	mg/L		ND	<0.05	
			LCS	mg/L	3.992	102 %	85-115	
			MS	mg/L	3.992	102 %	75-125	
		(CH 1071823-001)	MSD	mg/L	3.992	99.9 %	75-125	
			MSRPD	mg/L	0.7988	1.4%	≤20.0	
			PDS	mg/L	3.992	103 %	75-125	
Manganese	3010	04/30/2010:204327	Blank	mg/L		ND	<0.01	
			LCS	mg/L	0.8000	99.8 %	85-115	
			MS	mg/L	0.8000	96.8 %	75-125	
		(CH 1071823-001)	MSD	mg/L	0.8000	91.0 %	75-125	
			MSRPD	mg/L	0.7988	1.6%	≤20	
			PDS	mg/L	0.8000	101 %	75-125	
Zinc	3010	04/30/2010:204327	Blank	mg/L		ND	<0.02	
			LCS	mg/L	2.000	101 %	85-115	
			MS	mg/L	2.000	101 %	75-125	
		(CH 1071823-001)	MSD	mg/L	2.000	99.8 %	75-125	
			MSRPD	mg/L	0.7988	1.4%	≤20.0	
			PDS	mg/L	2.000	101 %	75-125	
Wet Chem								
Oil and Grease	1664	05/06/2010:204498	Blank	mg/L		ND	<3	
			LCS	mg/L	40.40	66.0 %	63-121	
			BS	mg/L	40.40	66.5 %	63-121	
			BSD	mg/L	40.40	68.8 %	63-121	
			BSRPD	mg/L	40.40	3.5%	≤48.9	
Conductivity	2510B	04/23/2010:204707	ICB	umhos/cm		0.1	1	
			CCV	umhos/cm	995.0	99.2 %	95-105	
			CCV	umhos/cm	995.0	99.0 %	95-105	
E. C.	2510B	04/23/2010:204071	Blank	umhos/cm		ND	<1	
		(STK1033482-006)	Dup	umhos/cm		0.0%	0.372	
Solids, Total Dissolved	2540 G	04/22/2010:204000	Blank	mg/L		ND	<20	
			LCS	mg/L	995.0	103 %	90-110	
			LCS	mg/L	995.0	103 %	90-110	
		(STK1033445-001)	Dup	mg/L		2.8%	10.0	
Solids, Suspended	2540D	04/23/2010:310598	Blank	mg/L		ND	<1	
			LCS	mg/L	500.0	96.0 %	38-138	
			LCS	mg/L	500.0	97.6 %	38-138	
		(STK1033409-001)	Dup	mg/L		9.3%	28.7	
pH	4500-H B	(STK1033461-001)	Dup	units		0.4%	4.80	
		(STK1033488-001)	Dup	units		0.1%	4.80	
		(STK1033482-002)	Dup	units		0.0%	4.80	

May 27, 2010
Valimet, Inc.

Lab ID : STK1033488
Customer : 3-2635

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
pH	4500HB	04/21/2010:310809	CCV	units	8.000	100 %	95-105	
			CCV	units	8.000	99.8 %	95-105	

Definition	
ICB	: Initial Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

FGL ENVIRONMENTAL

CHAIN OF CUSTODY

AND ANALYSIS REQUEST DOCUMENT

CONTRACT # 30937

Lab Number: STK 1033488

TEST DESCRIPTION AND ANALYSES REQUESTED

Client: Valimet, Inc.
Customer Number: 3002635
Address: P.O. Box 31690, Stockton, CA 95213

Phone: (209)444-1600 Fax: (209)444-1636

Contact Person: Dave Oberholtzer

Project Name: STORMWATER MONITORING

Purchase Order Number: - 48692

Quote Number:

Sampler(s): LARRY

Sampling Fee: ______ Pickup Fee: ______

Compositor Setup Date: ______ Time: ______

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite (C) Grab (G)	Number of Containers	Type of Containers: (G)Glass (P)Plastic (V)VOA (MT)Metal Tube	Potable (P) Non-Potable (NP) Ag Water (AgW)	(SW) Surface Water (MW) Monitoring Well (GW) Ground Water (TB) Travel Blank (WW) Waste Water (DW) Drinking Water	(S) Soil (SLG) Sludge (SLD) Solid (O) Oil	BacT: (Sys) System (SRC) Source (W) Waste	Bact (ROUT)Routine (RPT)Repeat (OTH)Other (RPL)Replace (SPL)Special	(LT) Leaf Tissue (PET) Petiole Tissue (PRD) Produce	Preservative: (1) NaOH + ZnAc, (2) NaOH, (3) HCl (4) H2SO4, (5) HNO3, (6) Na2S2O3, (7) Other	IZC	OIL & GREASE	TDS	TSS - STK	METALS, TOTAL - Al, Cu, Fe, Mn, Zn	METALS, DISS - Al, Cu, Fe, Zn	PH - STK LAB
1	DISCHARGE #8	4/20/10	3:45pm	G	5	P,G	NP	SW					4,5	X	X	X	X	X	X	X
2	DISCHARGE #9	⅃	1555	⅃	5	⅃	⅃	⅃					4,5	X	X	X	X	X	X	X

Remarks

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
[signature]	4/21/10	1440	[signature]	4/21/10	1700	[signature]		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
[signature]	4/21/10	1440	OnTrac	4/21/10	1700	[signature]	4/22/10	1100

Stockton - Condition Upon Receipt (Attach to COC)

Sample Receipt at STK:

1. Number of ice chests/packages received: ROI
2. Were samples received in a chilled condition? Temps: _____ / _____ / _____ / _____ / _____
   Acceptable is above freezing to 6° C. Also acceptable is received on ice (ROI) for the same day of sampling or received at room temperature (RRT) if sampled within one hour of receipt. Client contact for temperature failures must be documented below. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received..
3. Do the number of bottles received agree with the COC? (Yes) No N/A
4. Were samples received intact? (i.e. no broken bottles, leaks etc.) (Yes) No
5. VOAs checked for Headspace? Yes No (N/A)
6. Were sample custody seals intact? Yes No (N/A)

Sign and date the COC, place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): ______

Sample Receipt at SP:

1. Were samples received in a chilled condition? Temps: 6 / _____ / _____ / _____ / _____
   Acceptable is above freezing to 6° C. If many packages are received at one time check for tests/H.T.'s/rushes/Bacti's to prioritize further review. Please notify Microbiology personnel immediately of bacti samples received.
2. Do the number of bottles received agree with the COC? (Yes) No N/A
3. Were samples received intact? (i.e. no broken bottles, leaks etc.) (Yes) No
4. Were sample custody seals intact? Yes No (N/A)

Sign and date the COC, obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? (Yes) No
2. Did bottle labels correspond with the client's ID's? (Yes) No
3. Were all bottles requiring sample preservation properly preserved? (Yes) No N/A FGL
4. VOAs checked for Headspace? Yes No (N/A)
5. Were all analyses within holding times at time of receipt? (Yes) No
6. Have rush or project due dates been checked and accepted? Yes No (N//A)

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): ______

Discrepancy Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted:______________ Phone Number:______________
   Initiated By:______________ Date:______________
   Problem:

   Resolution:

Valinet, Inc.

here

STK1033488

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ANNUAL REPORT

SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** DATE: 8/26/09	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO** If **YES**, complete reverse side of this form.
QUARTER: **OCT.-DEC.** DATE: 10/13/09	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO** If **YES**, complete reverse side of this form.
QUARTER: **JAN.-MARCH** DATE: 2/16/10	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO** If **YES**, complete reverse side of this form.
QUARTER: **APRIL-JUNE** DATE: 5/26/10	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☒ **NO** If **YES**, complete reverse side of this form.

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ANNUAL REPORT

SIDE A

FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** **DATE/TIME OF OBSERVATIONS** 8/26/09 10:00 ☒ AM ☐ PM	**Observers Name:** David L. Oberholtzer **Title:** Director, Coropoate Services **Signature:** [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **OCT.-DEC.** **DATE/TIME OF OBSERVATIONS** 10/13/09 2:30 ☐ AM ☒ PM	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **JAN.-MARCH** **DATE/TIME OF OBSERVATIONS** 2/16/10 11:30 ☒ AM ☐ PM	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.
QUARTER: **APRIL-JUNE** **DATE/TIME OF OBSERVATIONS** 5/26/10 1:30 ☐ AM ☒ PM	**Observers Name:** David L. Oberholtzer **Title:** Director, Corporate Services **Signature:** [signature]	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☒ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☒ NO	If **YES** to either question, complete reverse side.

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ANNUAL REPORT

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

		#1	#2	#3	#4
Observation Date: October 13 **2009**	Drainage Location Description	Screening, Packing, Blending	Oil Storage, Maintenance	Screening, Classification, Atomizing	Screening
Observers Name: D. Oberholtzer	Observation Time	12:00 ☒ P.M. ☐ A.M.	12:05 ☒ P.M. ☐ A.M.	12:00 ☒ P.M. ☐ A.M.	12:00 ☒ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: November____ **2009**	Drainage Location Description	Same	Same	Same	Same
Observers Name: D. Oberholtzer	Observation Time	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December 11 **2009**	Drainage Location Description	Same	Same	Same	Same
Observers Name: D. Oberholtzer	Observation Time	4:20 ☒ P.M. ☐ A.M.	4:30 ☒ P.M. ☐ A.M.	4:20 ☒ P.M. ☐ A.M.	4:20 ☒ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: January 18 **2010**	Drainage Location Description	Same	Same	Same	Same
Observers Name: D. Oberholtzer	Observation Time	10:30 ☐ P.M. ☒ A.M.	10:35 ☐ P.M. ☒ A.M.	10:30 ☐ P.M. ☒ A.M.	10:30 ☐ P.M. ☒ A.M.
Title: Director, Corporate Services	Time Discharge Began	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

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ANNUAL REPORT

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October 13 2009	Drainage Location Description	#5 Oil Storage	#6 Office Building	#7 Atomizing	#8 Drainage Ditch Entrance(East)
Observers Name: D. Oberholtzer	Observation Time	12:05 ☒ P.M. ☐ A.M.	12:05 ☒ P.M. ☐ A.M.	12:10 ☒ P.M. ☐ A.M.	12:15 ☒ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.	8:30 ☐ P.M. ☒ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: November ____ 2009	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: December 11 2009	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	4:25 ☒ P.M. ☐ A.M.	4:30 ☒ P.M. ☐ A.M.	4:30 ☒ P.M. ☐ A.M.	4:35 ☒ P.M. ☐ A.M.
Title: Director, Corporate Services	Time Discharge Began	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: January 18 2010	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	10:35 ☐ P.M. ☒ A.M.	10:40 ☐ P.M. ☒ A.M.	10:45 ☐ P.M. ☒ A.M.	10:50 ☐ P.M. ☒ A.M.
Title: Director, Corporate Services	Time Discharge Began	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☒ A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October 13 **2009** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	#9 Drainage Ditch Exit (West)			
	Observation Time	12:00 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	8:30 ☐ P.M. ☒ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November____ **2009** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same			
	Observation Time	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
	Time Discharge Began	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.	None ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December 11 **2009** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same			
	Observation Time	4:20 ☒ P.M. ☐ A.M.	4:30 ☐ P.M. ☐ A.M.	4:30 ☐ P.M. ☐ A.M.	4:35 ☐ P.M. ☐ A.M.
	Time Discharge Began	3:30 ☒ P.M. ☐ A.M.	3:30 ☐ P.M. ☐ A.M.	3:30 ☐ P.M. ☐ A.M.	3:30 ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: January 18 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same			
	Observation Time	10:30 ☐ P.M. ☒ A.M.	10:40 ☐ P.M. ☐ A.M.	10:45 ☐ P.M. ☐ A.M.	10:50 ☐ P.M. ☐ A.M.
	Time Discharge Began	9:30 ☐ P.M. ☒ A.M.	9:30 ☐ P.M. ☐ A.M.	9:30 ☐ P.M. ☐ A.M.	9:30 ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

		#1	#2	#3	#4
Observation Date: February 23 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Screening, Packing Blending	Oil Storage, Maintenance	Screening, Classification Atomizing	Screening
	Observation Time	4:00 ☒ P.M. ☐ A.M.	4:10 ☒ P.M. ☐ A.M.	4:00 ☒ P.M. ☐ A.M.	4:00 ☒ P.M. ☐ A.M.
	Time Discharge Began	3:00 ☒ P.M. ☐ A.M.	3:00 ☒ P.M. ☐ A.M.	3:00 ☒ P.M. ☐ A.M.	3:00 ☒ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: March 2 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same	Same	Same	Same
	Observation Time	12:00 ☒ P.M. ☐ A.M.	12:05 ☒ P.M. ☐ A.M.	12:00 ☒ P.M. ☐ A.M.	12:00 ☒ P.M. ☐ A.M.
	Time Discharge Began	11:00 ☐ P.M. ☒ A.M.	11:00 ☐ P.M. ☒ A.M.	11:00 ☐ P.M. ☒ A.M.	11:00 ☐ P.M. ☒ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: April 12 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same	Same	Same	Same
	Observation Time	4:00 ☒ P.M. ☐ A.M.	4:10 ☒ P.M. ☐ A.M.	4:00 ☒ P.M. ☐ A.M.	4:00 ☒ P.M. ☐ A.M.
	Time Discharge Began	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.	3:30 ☒ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒
Observation Date: May 10 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	Same	Same	Same	Same
	Observation Time	1:45 ☒ P.M. ☐ A.M.	1:50 ☒ P.M. ☐ A.M.	1:45 ☒ P.M. ☐ A.M.	1:45 ☒ P.M. ☐ A.M.
	Time Discharge Began	12:15 ☒ P.M. ☐ A.M.	12:15 ☒ P.M. ☐ A.M.	12:15 ☒ P.M. ☐ A.M.	12:15 ☒ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒

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FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February 23 **2010**	Drainage Location Description	#5 Oil Storage	#6 Office Building	#7 Atomizing	#8 Drainage Ditch Entrance(East)
Observers Name: D. Oberholtzer	Observation Time	4:00 [x] P.M. [ ] A.M.	4:10 [x] P.M. [ ] A.M.	4:05 [x] P.M. [ ] A.M.	4:15 [x] P.M. [ ] A.M.
Title: Director, Corporate Services	Time Discharge Began	3:00 [x] P.M. [ ] A.M.	3:00 [x] P.M. [ ] A.M.	3:00 [x] P.M. [ ] A.M.	3:00 [x] P.M. [ ] A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]
Observation Date: March 2 **2010**	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	12:00 [x] P.M. [ ] A.M.	12:05 [x] P.M. [ ] A.M.	12:10 [x] P.M. [ ] A.M.	12:15 [x] P.M. [ ] A.M.
Title: Director, Corporate Services	Time Discharge Began	11:00 [ ] P.M. [x] A.M.	11:00 [ ] P.M. [x] A.M.	11:00 [ ] P.M. [x] A.M.	11:00 [ ] P.M. [x] A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]
Observation Date: April 12 **2010**	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	4:00 [x] P.M. [ ] A.M.	4:10 [x] P.M. [ ] A.M.	4:15 [x] P.M. [ ] A.M.	4:20 [x] P.M. [ ] A.M.
Title: Director, Corporate Services	Time Discharge Began	3:30 [x] P.M. [ ] A.M.	3:30 [x] P.M. [ ] A.M.	3:30 [x] P.M. [ ] A.M.	3:30 [x] P.M. [ ] A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]
Observation Date: May 10 **2010**	Drainage Location Description	#5 Same	#6 Same	#7 Same	#8 Same
Observers Name: D. Oberholtzer	Observation Time	1:45 [x] P.M. [ ] A.M.	1:50 [x] P.M. [ ] A.M.	1:55 [x] P.M. [ ] A.M.	2:00 [x] P.M. [ ] A.M.
Title: Director, Corporate Services	Time Discharge Began	12:15 [x] P.M. [ ] A.M.	12:15 [x] P.M. [ ] A.M.	12:15 [x] P.M. [ ] A.M.	12:15 [x] P.M. [ ] A.M.
Signature: [signature]	Were Pollutants Observed (If yes, complete reverse side)	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]	YES [ ] NO [x]

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February 23 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	#9 Drainage Exit (West)			
	Observation Time	4:00 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	3:00 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	3:00 ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: March 2 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	#9 Same			
	Observation Time	12:00 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	11:00 ☐ P.M. ☒ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: April 12 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	#9 Same			
	Observation Time	4:00 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	3:30 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: May 10 **2010** Observers Name: D. Oberholtzer Title: Director, Corporate Services Signature: [signature]	Drainage Location Description	#9 Same			
	Observation Time	1:45 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	12:15 ☒ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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ANNUAL REPORT

SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: 6/16/10 **INSPECTOR NAME:** D. Oberholtzer **TITLE:** Director, Corporate Services **SIGNATURE:** [signature]

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	Question	Answer		Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Powder Packing Areas	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
Powder Storage Areas	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
Powder Atomization Areas	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			
Maintenance Shop	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED?	☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY?	☐ YES ☒ NO			

Valimet, Inc. (WDID No.: *5S39I000261)*
Comments on Annual Report for Stormwater Discharge:
2009 – 2010

Sec. E.5: Reduced Sample Collection:
A determination has been made in accordance with Sec. B.7.d. of the general permit that sample collection from 2 of the 9 identified discharge points is sufficiently representative of industrial activity at the Valimet site. Sample site #1 was selected as being representative of powder processing areas, similar to 4 other discharge points. This determination is supported by the sample results from December 1, 2005, through April 20 2010, where several outfalls were sampled. Results for those outfalls show that sample site number 1 is substantially similar to other outfalls from areas of industrial production (see discussion in 02/06/06 evaluation memo). Sample site #1 drains an area that comprises multiple activities associated with powder production, including powder classification, powder blending, powder storage and powder packaging. Sample site #2 was chosen since it is the only discharge point receiving drainage from the maintenance shop area and the oil storage area. In addition, based on several years of sampling results, and on discussions with representatives from the Regional Water Quality Board (Oct., 2005) we propose to reduce sampling to the inlet of the drainage ditch (East side) which runs through the Valimet property and collects all stormwater discharges from the area of industrial activity, and the outlet of the drainage ditch on the west side of the property. These samples will be evaluated for all relevant parameters per the general permit and the difference between the two samples will be reported as discharge values.

Sec. G.1.: Monthly Wet Season Visual Observations.
There were no storm events during the month of November, 2009 that produced sufficient runoff to be eligible for observation. The following lists those storm events which occurred during November. In each case insufficient runoff for observation was observed by D.L. Oberholtzer, Director of Corporate Services:

Date	Time	Total Amount	Observation
11/12/09	5:00 a.m.	0.01"	No Runoff
11/16/09	2:00 a.m.	Trace	No Runoff
11/17/09	12:00 a.m.	Trace	No Runoff
11/20/09	3:00 p.m.	0.02"	No Runoff
11/27/09	7:00 p.m.	0.08"	No Runoff

D.L. Oberholtzer
Director of Corporate Services
06/17/10

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To: George Campbell

From: D. Oberholtzer

Subject: Stormwater Monitoring Results: 2009-2010 Wet Season

Date: 06/16/10

Total rainfall for the 2009-2010 season was slightly above historical averages, with a total rainfall of approximately 14.1 inches (approximately 103% of historical "normal" rainfall). In light of this, we were able to obtain samples from three storm events that produced sufficient runoff for sampling, as is required by the general permit. The first samples were taken on October 13, 2009. This was the first storm of the season that met all of the sampling criteria contained in the general permit (e.g. substantial runoff, no rainfall for the previous 36 hours, sampling in the first hour of discharge and runoff occurring during regular business hours). The discharge from sample sites 1, 2, 3, 4, 6, 8 and 9 was sufficient for representative sampling. It is important to obtain samples from sites 1 & 2, as they are considered to be representative of all discharge sites at the plant under our reduced sampling program and we have the most historical data from these two sites. Sites 8 (water coming onto the property in the drainage ditch) and 9 (water leaving the property in the drainage ditch) are also important as they will be the future reduced sampling sites, per discussions with the Regional Water Quality Control Board, in 2005. All stormwater drains in the area of industrial activity discharge into the ditch and leave the property to the west, via the ditch. A second storm event was sampled on April 11, 2010. This storm was limited in its runoff (0.29 inches, total), however a short window of substantial runoff occurred during the first hour of discharge and all other constraints for sampling were met. Samples were obtained from sampling sites 1, 2, 3, 6, 7, 8, and 9 during this event. In addition, samples were taken from a third storm event, on April 20, 2010. During this very short, but intense event, samples from sample point 8 (water entering the drainage ditch from the east side of Valimet property) and sample point 9 (water leaving the area of industrial activity on the west side of the drainage ditch)
The results of these three sampling events are discussed below.

First Storm Event

The permit requires sampling of the first storm event that produces "significant" runoff, that is preceded by at least 36 hours of "dry" conditions, that occurs during regular business hours and the samples must be taken during the first hour of discharge. This event met all of those conditions for some of the discharge points, however there was no discharge at sites 5 and 7. We were able to get samples from sites 1, 2, 3, 4, 6, 8 and 9. This is important since these are the representative sites for which we have the most historical data. Total rainfall for this event was 1.46 inches. Even though no viable discharge was observed at discharge points 5 and seven during the first hour of discharge, it was decided that sufficient runoff for viable samples at the indicated sites was present. Results on the samples were encouraging.

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For this event, the average value for aluminum for sites 1, 2, 3, 4 and 6 was 4.1 mg/L, with sites 1 and 2 coming in at the highest levels (5.9 mg/L and 8.1 mg/L respectively). Site 3 came in at 2.7 mg/L, site 4 at 1.8 mg/L and site 6 at 2.0 mg/L. While sites 1 and 2 were somewhat higher than last year, the overall results are still substantially lower than historical averages for aluminum. The value for copper for sites 2 , 3, 4, and 6 was below the benchmark value of 0.0636 mg/L. Site #1 had a copper value of 0.22 mg/L. This is above t benchmark, but still near historical lows. Average values for iron (1.48 mg/L, and manganese (0.07 mg/L) were near or below benchmark levels. The average value for zinc at sites 1, 2, 3, 4 and 6 was 0.27 mg/L which is above the benchmark value of 0.117 mg/L. All other parameters measured at sites 1, 2, 3, 4, and 6 (ph, TSS, Conductance and Oil and Grease) were at or below benchmark values.

Sample site 8 (water coming on site in the drainage ditch) showed comparatively high levels of conductance (647umho/cm), iron (1.40 mg/L) and TSS (25 mg/L). In addition, water coming onto the Valimet site showed an aluminum value of 1.5 mg/L, which is twice the benchmark value of 0.75 mg/L. and an iron value of 1.5 mg/L, also above the benchmark value of 1.0 mg/L. When compared to the values measured at sample site 9 (water leaving the site in the drainage ditch), it can be seen that at least for this event, industrial activity at Valimet did not significantly contribute to the presence of pollutants in stormwater leaving the site. Aluminum measured at site 9 was 4.7 mg/L. When the value for aluminum obtained at site #8, the east entrance of the ditch, is subtracted from the aluminum value for site #9, the result is 3.2 mg/L aluminum. This is consistent with the average for aluminum obtained from the individual discharge points. Similar calculations for the other metals sampled give results which show discharge levels from the Valimet site at below the benchmark levels for copper, manganese and zinc. The value for iron calculates to 1.46 mg/L, slightly higher than the benchmark value, but again, consistent with measured values for the individual discharges.

In general, since this was the first storm event sampled for the season and is considered to represent the worst case scenario, the results are encouraging as to the effectiveness of the established BMP's in maintaining pollutant levels substantially below historical levels.

Second Storm Event

Samples were taken during a second storm event, on April 11, 2010. Samples were taken at sites #1, #2, #3, #6, #7, #8 and #9. There was no discharge at sites #4 and #5. The total rainfall recorded for the event was 0.29 inches, just slightly above the nominal requirement of 0.25 inches, however, there was a short time of substantial rainfall during the first hour of the event and it was decided to sample at that time, since it was unknown whether or not an additional storm with sufficient runoff would occur during the remainder of the "wet" season.

For this event, the average value for aluminum at sites #1, #2, #3, #6 and #7 was 4.2 mg/L. The average value for copper at these sites was 0.05 mg/L., which is below the benchmark value. The average value for iron was 1.18 mg/L., which is very close to the benchmark value of 1.0 mg/L. The average values for manganese and zinc, respectively, were 0.036 mg/L and 0.110, both below the benchmark values. For site #8 (drainage ditch inlet) the values were: aluminum: 1.3 mg/L; copper: ND; iron: 1.2 mg/L; manganese: 0.04

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mg/L and zinc: ND mg/L. The values for site #9 (drainage ditch outlet) were: aluminum: 2.3 mg/L; copper: 0.01 mg/L; iron: 1.15 mg/L; manganese: 0.04 mg/L and zinc: 0.5 mg/L. Taking the difference between site #8 and site #9, the values are: aluminum: 1.0 mg/L; copper: 0.01 mg/L; iron: 0.05 mg/L; manganese: 0.0 mg/L and zinc: 0.05 mg/L. All of these values, with the exception of aluminum are below benchmark values. The aluminum value of 1.0 compares favorably with the benchmark value of 0.075 mg/L and is an historic low. The values for Conductivity, Oil and Grease, pH and Total Suspended Solids were below benchmark values and were in line with historical measurements.

Third Storm Event

Samples were taken from sites #8 (east entrance to the drainage ditch) and #9 (west exit of the drainage ditch) during a third storm event on April 20, 2010. For this event, the values for the metals at site #8 were: aluminum: 3.3 mg/L; copper: 0.01 mg/L.; iron: 3.17 mg/L; manganese: 0.11 mg/L and zinc: 0.04 mg/L. For site #9 the values for the metals were: aluminum: 3.8 mg/L; copper: 0.09 mg/L; iron: 0.98 mg/L; manganese: 0.05 mg/L; zinc: 0.12 mg/L. Taking the difference between the two samples yields the following: aluminum: 0.5 mg/L; copper: 0.08 mg/L; iron: -2.19 mg/L; manganese: -0.06 mg/L and zinc: 0.08 mg/L. All of these values are very near or below benchmark values.

Discussion

Overall, the levels of pollutants in stormwater runoff from the Valimet site continue to be below historical averages. The encouraging results obtained from the first and second storm events sampled demonstrate the effectiveness of the current BMP's. We believe that the noticeable variation in results from one storm event to another can be, in large measure, attributed to the high variability in runoff conditions (e.g. volume of discharge) and not to the overall effectiveness of the BMP's in place. We are confident that the BMP's currently employed have been effective in reducing the levels of pollutants in stormwater runoff from the Valimet site.

We do intend to add large splash blocks underneath each point where there is a storm drain discharge in an attempt to reduce the bank erosion which occurs during storm events. This should help in further reducing values for suspended solids. This measure will be in place, prior to the start of the 2010-2011 "wet" season, on October 1, 2010. In addition, based on the results from this reporting year, as well as previous years, since 2005, we expect to follow the guidance of the Regional Water Board and report the difference between the two sample sites (#9 - #8) as a single value for runoff from the Valimet site, under the reduced sampling provisions, for future reports.

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Environmental Protection

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Governor

Sampling and Analysis Study of Treated Wood (Draft)

Prepared by

Department of Toxic Substances Control
Toxics in Products Branch
Environmental Chemistry Laboratory

July 2008

Acknowledgements

The Department of Toxic Substances Control (DTSC) appreciates the time and cooperation provided by Mr. Stephen L. Quarles, Wood Durability Advisor, University of California Cooperative Extension, Division of Agriculture and Natural Resources.

Table of Contents

Executive Summary

The Department of Toxic Substances Control (DTSC) sampled and analyzed three types of treated wood pursuant to California Code of Regulations (Cal. Code Regs.), Title 22, Section 66262.24. Samples were collected of creosote-treated wood waste (out-of-service railroad ties), Alkaline Copper Quaternary (ACQ-C) treated wood, and Copper Azole (CA-B) treated wood. All railroad tie samples were collected from a railroad maintenance yard in Flanigan, Nevada. This site acts as a collection point for California out-of-service railroad ties. Composite samples were analyzed by DTSC's Environmental Chemistry Laboratory. The sample preparation and analysis protocols were consistent with the requirements of Cal. Code Regs., Title 22, Section 66262.24, and Appendix II of Chapter 11.

The analytical results were compared with California regulatory toxic criteria for hazardous waste. DTSC presents the following conclusions:

1. Wood products treated by ACQ-C and CA-B contain high level of copper, which exceeds California Total Threshold Level of Concentration and Soluble Threshold Level of Concentration regulatory criteria. Therefore, wood products treated by ACQ-C and CA-B have the potential to be a California hazardous waste when disposed.

2. Untreated wood samples were not toxic to fish. The fish survival rate in 500 mg/l dose 96-hour bioassay was 100 percent for all untreated wood samples.

3. Creosote-treated railroad ties contain materials toxic to fish. Sampled out-of-service creosote-treated railroad ties have the potential to fail the California regulated acute aquatic 96-hr LC_{50} bioassay. The survival rates in all three Douglas fir out-of-service railroad tie composite samples were less than 50 percent in 500 mg/l bioassay. Therefore, out-of-service creosote-treated railroad ties have the potential to be a non-RCRA hazardous waste when disposed.

4. Treated wood samples can be prepared by cutting lumber into sections, sub-sections, cubes, and further by grinding to obtain a proportional representative treated and non-treated mixture.

5. Visually distinguishing the treated and non-treated areas at the cross sections of both treated copper-base lumber products and out-of-service railroad ties is feasible.

6. It is the generator's responsibility to determine waste classification.

1. Introduction

Wood is typically treated with chemical preservatives to improve its durability. Arsenic, chromium, copper, pentachlorophenol, and creosote are all used as preservatives in wood. Unfortunately, these chemicals are also known to be toxic or carcinogenic, and certain levels of exposure to these chemicals can pose serious risks to human health and the environment. The Department of Toxic Substances Control (DTSC) has completed a study of chemicals found in treated wood in order to properly manage wood waste. The results of this study show the toxic characteristics of selected copper-based treated wood products and out-of-service creosote-treated railroad ties.

The objectives of DTSC's sampling and analysis study were:

1. To develop a sampling collection plan to obtain representative treated wood material in California;
2. To apply appropriate methods for treated wood sample preparation and analyses; and
3. To determine whether the copper-based and creosote-treated wood exhibit toxicity characteristics that meet regulatory criteria for hazardous waste.

Copper-based preservative treated lumber was sampled from wood products that were treated with Alkaline Copper Quaternary (ACQ-C) and Copper Azole (CA-B) preservatives. The creosote-treated wood was sampled from out-of-service railroad ties. Representative samples were collected from different locations in California by a staff member of University of California Cooperative Extension working as a DTSC contractor. All sample analyses, except aquatic bioassay, were conducted by the DTSC Environmental Chemistry Laboratory (ECL). The aquatic bioassays were performed at a DTSC-contracted laboratory.

The determination of whether treated wood waste is hazardous waste should be conducted in accordance with the California Code of Regulations (Cal. Code Regs.), Title 22, Division 4.5, Chapter 11. It is the generator's responsibility to determine if a waste is a hazardous waste. The generator must determine if the waste exhibits hazardous waste characteristics by testing the waste according to the approved methods or applying knowledge of the hazards characteristic of the waste in light of the processes that the materials have undergone. This study did not try to classify any individual waste stream. Although waste classified as hazardous is generally subject to uniform regulatory management requirements (Cal. Code Regs., Title 22, Chapter 12 through Chapter 20), DTSC developed alternative management standards for treated wood waste (Cal. Code Regs., Title 22, Division 4.5, Chapter 34) that adjusted for the unique circumstances associated with treated wood waste. Treated wood waste that is removed from utility services, or classified as Resource Conservation and Recovery Act (RCRA) hazardous waste, is not eligible for the alternative management standards.

Because treated wood is widely available in California, sampling locations need to be diversified to obtain representative samples. Additionally, because the preservative chemicals are not distributed uniformly inside the treated wood, and the wood is a bulk but grindable (or millable) solid material, it is not easy to obtain a proportional and representative sample from a waste wood stream for laboratory analysis. Field and laboratory preparation of the wood samples becomes important and needs to be specified and standardized. This study demonstrated the sample preparation and analytical methods for millable hazardous solid materials, which are required in Cal. Code Regs., Title 22, §66261.24, and Appendix II of Chapter 11.

2. Background

Many biological organisms, such as insects and decaying fungi, can destroy wood products. The purpose of incorporating preservative chemicals into wood products is to make the wood toxic to organisms that would ordinarily consume it and, thus, to increase its useful service life. The chemical treatment is a surface penetration process, such as pressure treatment. The chemicals are not distributed evenly inside the wood: a higher concentration occurs at the surface, and low or zero levels occur at the center.

There are five categories of preservatives for pressure treatment processes: organo-organometallic; waterborne (acid-based); waterborne (alkali-based); other waterborne; and fire-retardants. In this study, wood treated by Alkaline Copper Quaternary (ACQ-C) and Copper Azole (CA-B) (both alkali-based waterborne), and creosote (an organic preservative) were sampled and analyzed.

At processing facilities, the quality of the treated wood is evaluated by monitoring the penetration and retention of the preservative chemicals in wood and comparing the actual values with those specified in the American Wood Preservers' Association (AWPA) standards [AWPA, 2007]. Retention level refers to the amount of preservative that remains in the wood after the treatment process is complete. It is measured on a weight basis and is typically measured as pounds of preservative per cubic foot of wood (lbs/ft^3) in the assay zone. Standard retention levels required by AWPA vary with the conditions to which the wood is intended to be exposed. Levels are higher when the intended in-service exposure is more severe. For example, wood that is intended to be in contact with soil contains more preservatives than wood to be used above the ground. Required retention levels are also a function of preservative type and the species of wood for a certain product category. For example, for wood used in ground contact in Use Category 4A (UC4A) (see a table in Appendix I), the retention level with ACQ-C treatment is 0.40 lbs/ft^3, but with CA-B treatment, it is 0.21 lbs/ft^3. The minimum retention for creosote-treated coastal Douglas fir in UC4A is 10.0 lbs/ft^3, but for Red Oak, it is 7.0 lbs/ft^3 for commodities less than 5 inches thick, or 6.0 lbs/ft^3 for commodities 5 inches or thicker.

Once treated wood is out-of-service it is considered waste. Wood preserving chemicals, such as arsenic, chromium, copper, pentachlorophenol, and creosote (creosote contains cresol and polycyclic aromatic hydrocarbons) are toxic substances. The waste toxicity characteristics for hazardous waste classification are determined by analyzing the total or leachable/soluble concentrations of the chemicals in the waste and by testing acute LD_{50} and LC_{50}[1] of the waste.

This study did not sample and analyze any wood treated by arsenic/arsenate preservatives because there were numerous data available from early research. Previous research concluded that arsenic in treated wood was hazardous to humans and the environment [Gradient Corporation, 2001 and 2002; US Consumer Product, Safety Commission, 1990]. US EPA excluded arsenic-treated wood waste from RCRA hazardous waste definition, but launched a voluntary consumer awareness program due to the toxicity of arsenic. Since December 31, 2003, the wood treatment industries have been banned from using Chromated Copper Arsenate (CCA) to treat wood for residential uses[2] [US EPA, 2002]. California did not exempt the arsenate-treated wood from the hazardous waste definition.

Besides arsenate preservatives, non-arsenic wood preservatives were developed recently and are available. Among these non-arsenic preservatives, copper is primarily applied with additional co-biocide(s) added to provide additional anti-fungal activity [Laks, 1997]. ACQ-C and CA-B are two commonly used non-arsenic copper-based wood preservatives. Copper is not a US EPA regulated toxic substance, but it is regulated by California as a persistent and bioaccumulative toxic substance. Wastes containing copper exceeding a certain level are regulated as non-RCRA hazardous wastes in California. Thus, it is necessary to measure the total and soluble copper level in the copper-based treated wood waste in order to determine if it needs to be handled as a hazardous waste.

Leaching tests on copper-based preservative treated wood have been conducted by the University of Florida [Townsend, 2003]. Research focused on the comparison of different leaching solutions. Samples were collected from Southern Yellow Pine that was freshly treated by five different preservatives: Alkaline Copper Quaternary (ACQ-D); Copper Boron Azole (CBA-A); Copper Citrate (CC); Chromated Copper Arsenate (CCA-C#1); and Chromated Copper Arsenate (CCA-C#2). Copper was detected in all samples. Because the leaching methods used in this research were different from California's regulatory required leaching method, the leachable copper concentrations could not be compared with California hazardous waste criteria.

[1] LD_{50} and LC_{50} are toxicological terms. LD_{50} means Lethal Dose, 50% survival; LC_{50} means Lethal Concentration, 50% survival.
[2] CCA had been used for home construction and landscaping.

Creosote and pentachlorophenol (PCP) are the most commonly used organic wood preservatives for treating railroad ties. As a wood preservative, creosote is used alone, or in combination with coal tar or petroleum.

Creosote is a complex mixture of compounds derived from the coking of coal. The composition of creosote varies, depending on the kind of coal, type of coke oven, coking temperature, and time [Leach, 1976]. Creosote is a RCRA listed hazardous waste (U051). Wastewaters, process residuals, preservative drippage, spent formulations (F034), and wastewater bottom sediment sludge (K001) from wood creosote preserving processes are RCRA listed hazardous waste as well. The majority of compounds in creosote are aromatic hydrocarbons (including polycyclic aromatic hydrocarbons (PAHs) such as phenanthrene, acenaphthene, fluorene, and anthracene), alkylated PAHs, benzene, toluene, xylene, and pyridine (65% to 90% of creosote). The PAHs in creosote are toxic to aquatic life [Rotard and Mailahn, 1987; Neff, 1979]. Creosote may also contain cresols (methyl phenols) and other phenols [Wolfgang, 1987] which are regulated by both federal and state law (Code of Federal Regulations [40 CFR], Chapter 1, § 261.24 and Cal. Code Regs., Title 22, Division 4.5, Chapter 11, § 66261.24). US EPA's risk assessment evaluation led to the identification of creosote as a possible human carcinogen [US EPA, 2003 and 2007]. Therefore, US EPA also terminated use of certain creosote products based on public health, and environmental considerations [US EPA, 2004].

In 1987, the Association of American Railroads (AAR) began a test program to determine if railroad ties would be considered RCRA hazardous waste. A report [Hockensmith, 1994] described six different toxicity leaching testing programs. Among the 39 chemicals in the Toxicity Characteristic (TC) regulatory list, only six were detected at low (near detection limit) concentrations in the extracts: cresol(s); arsenic; barium; lead mercury; and selenium. The analytical results consistently showed that, in general, a railroad tie waste would not be classified as RCRA hazardous waste.

In 2001, a study of hazardous waste classification for railroad ties was conducted at Wheelabrator Shasta Energy Company [DTSC, 2002]. This company uses out-of-service railroad ties to produce bio-fuel. Railroad ties and fly ash samples were collected on site and were analyzed at the DTSC Environmental Chemistry Laboratory (ECL) at Berkeley, California. The analytical results revealed very low metal content in the creosote-treated ties. All tested organic compounds were either non-detectable or at low levels in both leachable and total concentration analyses. This sampling report concluded that railroad tie waste was not hazardous. DTSC's review of the report identified two points of concern:

1) The sample particle size was not recorded and might not meet the requirements prescribed in Cal. Code Regs., Title 22, Chapter 11, Appendix II subsections (c)(1) and (d)(1). For hazardous waste classification, the millable

solid sample must be milled to pass through a 2 mm (for metals) or 1 mm (for organics) standard sieve before it is analyzed.

2) The detection levels or quantitation limits were set too high for most organic compounds, compared to the regulated threshold levels. For example the regulated Total Threshold Level Concentration (TTLC) of Pentachlorophenol is 17 mg/kg. The analytical result was non-detectable (ND) with a 620 mg/kg quantitation limit, which did not prove that the concentration of pentachlorophenol in the sample was lower than the regulated level.

These two factors make it necessary to reanalyze railroad ties to determine if they have any toxic characteristics of hazardous waste.

The scope of the current study was limited to determine the toxicity of lumber products treated with copper-based preservatives and out-of-service creosote-treated railroad ties. A sampling plan was prepared prior to the sampling activity in order to ensure that representative samples were collected and prepared. In accordance with the test methods given in Cal. Code Regs., Title 22, the total and soluble metals in treated lumbers and semi-volatile organic compounds in creosote ties were analyzed. All samples were tested for their acute aquatic 96-hour LC_{50} (see page 3, footnote 1). The toxicity characteristic determination was based on California regulatory toxicity criteria (Cal. Code Regs., Title 22, §66261.24).

3. Field Sample Preparation

The total samples used for each composite sample are listed in Table 1.

Table 1 Number of Samples and Sources of Each Composite Sample

Preservatives	Wood Species	Number of Samples	Number of Collecting Location Points	Number of Replicates (Composite Samples)	Name of Composite Samples (Collector's No.)
CA-B	Douglas fir	80	5	4	CADF-COMP
	Hem-fir Species Group (white fir)	80	4	4	CAHF-COMP
ACQ-C	Douglas fir	80	11	4	ACQDF
Creosote	Douglas fir	62	1	3	DF creosote Comp
	White Oak	18	1	1	HW (oak) creosote
Untreated	Douglas fir	80	10	4	DFCONTROL-COMP
	Hem-fir Species Group (white fir)	20	1	1	HFCONTROL-COMP
	White Oak	20	1	1	Oak control

Representative treated wood samples were collected. In order to obtain general characteristics, at least 18 individual lumber/railroad tie samples with the same preservative and same wood species were collected and combined to form one composite sample for analysis[3]. Replicated samples were collected simultaneously. Untreated wood samples were collected in the same manner for quality control purpose.

3.1 Sampling Locations

Copper-based preservative treated lumber samples were collected from Home Depot stores and lumber yards statewide. Two species of woods were selected: white fir (Hem-fir species group) and Douglas fir, which are both softwoods (gymnosperms). As per DTSC's sampling plan, the copper-based preservative treated lumber samples included two CA-B treated wood species and one ACQ-C treated wood species. The UC4A standard retention level for ACQ-C is 0.4 lb/ft^3, and for CA-B is 0.21 lb/ft^3 (see Appendix I).

Sampling locations are listed in Tables 1 – 4 in Appendix II. Tables 1 and 2 list the source locations for CA-B and ACQ-C treated Douglas fir samples, respectively. Table 3 shows the source locations for CA-B treated Hem-fir. ACQ-C treated Hem-fir samples were not collected. Table 4 shows the source location of creosote treated railroad ties.

Even though the wood might have been treated by different companies, the copper-based preservative chemicals were obtained from the same manufacturers and were applied using the same standards provided by the AWPA. The CA-B preservative was produced by Arch Wood Protection, Inc., and the ACQ-C preservative was produced by Osmose, Inc.

With the collaboration of the industry, all creosote-treated railroad tie samples were obtained from the Union Pacific Railroad Company at a collection yard operated by RTI Railroad Services, Flanigan, Nevada. Union Pacific Railroad is the largest railroad company in North America. The railroad ties at this yard are considered to be representative of railroad ties that are out-of-service. Treated railroad tie samples were collected from two species of wood as well: white oak (hardwood species group) and Douglas fir.

Three untreated wood control samples were selected and obtained from different locations. Untreated Douglas fir lumber was purchased at various lumber yards. Untreated white fir (Hem-fir species group) lumber was obtained at a Mendocino Forest Products lumber mill in Ukiah. Untreated oak was obtained from one-inch boards

[3] The use of composite samples in this study was to obtain statewide general data on treated wood toxic characteristics, not to classify any single waste stream. Composite sampling is not appropriate for individual generator's waste classification purposes.

purchased from a lumber yard in Berkeley. This yard carries oak from many locations, primarily from the Midwestern United States.

3.2 Field Preparations

The lumber or railroad ties were first sawn into sections, then cut into quarters or cubes in the field prior to delivery to the ECL laboratory. Different cutting processes were used to break down the lumber treated with the copper-based preservatives and the creosote-treated railroad ties. The intent in each case was to provide a proportional mixture of treated and untreated material for analysis. The control samples were sawn following the same process as the treated wood samples. The field sample preparations for wood lumber and railroad ties are described in detail in the following sections.

3.2.1 Field Preparation of Copper-based Treated Lumber

Three sample allocations were identified in each 8-ft CA-B and ACQ-C treated lumber product (nominal 2"x 8"x 8'). These samples were designated 'left', 'center', and 'right', respectively, and were allocated at 2, 4, or 6 feet from one end of the lumber. A 0.25-inch section was cut from one randomly selected location. This section was used in the laboratory analysis. The remaining portion of each 8-ft lumber was retained so that additional sections can be processed if necessary. Figure 1 in Appendix III shows photographs of the breakdown process. Tables 5-8 in Appendix II list the selected sample allocations. The sample sections were further divided into quarters and were stored in glass jars, which were sealed to ship to ECL. Quarter-sections were prepared to facilitate further processing at ECL. Figure 2 in Appendix III shows the quarter cutting and storing process. From the cross section pictures, the treated and untreated portions of the lumber can be identified.

For each selected treatment-species combination, four replicate samples were collected and processed simultaneously. The replicated sections were separately stored in four boxes prior to further quartering. Each replicate would be composed as one final sample in the laboratory (Figure 3 in Appendix III).

A chop (cross cut) saw was used to process the lumber into sections. A new blade was used to process samples from woods treated with different preservatives. Alcohol in a spray bottle was used to clean the blade in between processing samples.

A band saw was used to process the 0.25-inch sections into quarter sections. A new band-saw blade was used for each replication.

As copper is not a toxic contaminant under federal hazardous waste regulations, there was no need to prepare the cubes for the leaching test.

3.2.2 Field Preparation of Railroad Ties

The sampled out-of-service railroad ties, randomly selected from out-of-service tie bundles, were shipped to the yard in open-top train containers. Douglas fir and white oak ties were sampled separately. To protect the chain saw, metal spikes and other contaminants were removed before cutting. Two cross-cut sections, two to three inches thick, were cut from individual ties using a chain saw. One of the sections was randomly selected as the sample for laboratory analyses. The railroad tie sample selection is shown in Table 4 of Appendix II. A total of 80 railroad ties were cut: 62 treated Douglas fir railroad ties formed three composite samples, and 18 treated oak railroad ties formed one composite sample.

Collecting a cross-cut section from railroad ties was difficult. The original sampling plan specified four replicate samples for analysis. A total of 80 samples would be required to form four composites with 20 samples each. However, the removal of metal spikes and other miscellaneous metal contaminants in the railroad ties damaged the railroad ties, and it was difficult to obtain more than two complete cross-cut sections from an out-of-service railroad tie.

The cross-cut sections were laid flat and wrapped with aluminum film prior to further processing. Two sub-sections (0.9 cm x 0.9 cm x random length) were cut from the cross-cut section at visually determined representative areas. The size and locations of sub-sections varied depending on the various shapes of the cross-cut sections. Some cross-cut sections got split into pieces after cutting due to weathering damage or metal spike removal. Figures 4 and 5 in Appendix III are examples of the cutting. The treated and untreated areas could be visually distinguished. For two types of laboratory analysis, one sub-section was further cut into 0.9 cm cubes at field, and another sub-section was prepared for further processing (grinding) at ECL. All cubes and sub-sections were stored in glass jars.

A chain saw was used to cut the cross-cut sections. A chop saw was used to expose a fresh surface and to prepare sections for band sawing. A band saw was used to cut the grinding sub-sections and 0.9 cm cubes. Alcohol from a spray bottle was used for decontaminating the chop saw and band saw blades in between processing samples.

Note that the three railroad tie Douglas fir composite samples were not replicate samples. The creosote-treated samples were collected from different railroad ties at random allocations along the length. Samples were individually collected, then composited in the laboratory.

3.2.3 Field Preparation of Control Samples

All untreated Douglas fir samples were cut at two feet from the end piece of lumber. For each wood species, twenty sections were cut, except Douglas fir. Eighty samples were collected for the Douglas fir. The extra amount of untreated wood was used for cleaning the laboratory mill. For metal analysis and bioassays, four composite samples were used, but combined as one composite sample for organic analysis. Some quarters were cut into 0.9 cm cubes and stored in a jar for a leaching test. The remaining quarters were put in jars for grinding.

4. Analytical Procedures

4.1 Particle Size Reduction

All sampled quarters/sub-sections of lumber and ties were ground to pass through a No. 10 (2 mm) standard sieve before they were analyzed, except the 0.9 cm railroad tie cubes that would be extracted by the Toxicity Characteristic Leaching Procedure (TCLP). Figure 6 in Appendix III shows a Thomas-Wiley Laboratory Mill, Model 4 that was used for this project. The mill has a 2 mm sieve at the outlet. The composite samples were milled in this order: DFCONTROL-COMP; CADF-COMP; ACQDF; CAHF-COMP; HFCONTROL-COMP; DF Creosote Comp; HW (oak) Creosote; and Oak Control (see Table 1 in Section 3 for sample names). Before and after grinding each composite replicate, the mill was cleaned using brushes, laboratory spatulas, and compressed air. Once clean of particulate matter, the mill was wiped with acetone. To avoid any analyte carry-over between replicates, approximately 50g of untreated Douglas fir was milled, and then discarded.

4.2 Composite Samples

The milled wood was mixed in an aluminum pan using a plastic scoop until homogeneous (evidenced by a uniform color distribution). About one-half of each composite sample was transferred to pre-cleaned sample jars that were distributed for the analyses. The remaining samples were retained in sealed polyethylene bags.

Portions of the four untreated Douglas fir samples were further composited as one sample (DFCONTROL-COMP) for organic analyses.

Cube samples that did not need to be ground were simply mixed as per analytical requirements.

4.3 Sample Analyses

4.3.1 Metal Analyses

Metal contents were analyzed by the ECL Berkeley Inorganic Section. Only the copper-based preservative treated wood and untreated control wood needed to be tested for metal content. All metals listed in Cal. Code Regs., Title 22, § 66261.24 (a)(2)(A) were analyzed for both total and extractable concentrations, which were compared to their Total Threshold Limit Concentrations (TTLC) and Soluble Threshold Limit Concentrations (STLC), respectively.

The wood samples were acid-digested using US EPA Method 3050B and analyzed using Method 6010B, Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES) for total metal concentration. The extractable metal concentration was determined using California Waste Extraction Test (WET) and Method 6010B.

4.3.2 Organic Compound Analyses

Railroad tie samples were tested for organic compounds. Cal. Code Regs., Title 22 § 66261.24 (a)(1) and (a)(2)(B) list Toxicity Characteristic (TC), TTLC and STLC, respectively. This study did not analyze the organic soluble concentration using WET because the total concentrations were very low.

The TCLP is a procedure to determine a leachable concentration. Approximately 100 grams of cubed creosote-treated or untreated Douglas fir or white oak samples were extracted with two liters TCLP extraction fluid #1 (20:1 ratio), which is an acetate buffer at pH 4.93 ±0.05. The cube sample and extraction fluid were put into PTFE bottles, which were then put into a TCLP rotary agitation device (Associated Design and Manufacturing, Alexandria, VA). After 18 hours, the samples were filtered using a pressure filtration device (Millipore, Inc., Bedford, MA) and GF/F filters. Figure 7 in Appendix III shows the devices. The filtrates (light brown for the controls, and dark amber for the creosote samples) were transferred to labeled bottles, and then sent, packed in ice, by overnight courier to ECL at Los Angeles for analysis.

The aqueous TCLP extracts were solvent-extracted within the seven-day holding time specified by the TCLP (SW-846, Method 1311).

The total semi-organic (SVOC) concentration was obtained from the milled railroad tie samples. The milled wood samples were extracted by Method 3540, Soxhlet extraction. The wood extracts were then subjected to a gel permeation column cleanup, Method 3640, to remove interferences.

Both cubed and milled wood extracts were analyzed by gas chromatography with a mass selective detector (GC/MS), with US EPA Method 8270C. The cube sample results were compared with TC, and the milled sample results compared with TTLC. The analyses in this project did not limit the regulated organic compounds, but also quantified, if possible, all compounds on the Method 8270 target list.[4]

4.3.3 Aquatic Bioassay

Aquatic bioassays were conducted at Associated Laboratories in Orange County, California using *Pimephales promelas* (fathead minnows) as the test organism. In accordance with California Department of Fish and Game procedure, the milled wood sample was shaken for 6 hours with water (50 g: 50 ml) to disperse the sample before an aliquot was taken and added to the aquarium water. Aliquots of this mixture were then added to the aquarium. The bioassays conducted in this project were screening procedures. The wood concentrations were added at three doses: 250 mg/l; 750 mg/l; and 500 mg/l. The 500 mg/l dose was run in duplicate. The results were compared with the California acute aquatic 96-hr LC_{50} toxicity characteristic level.

5. Quality Control and Quality Assurance

As mentioned above, untreated wood samples were collected and analyzed simultaneously as background control samples. The purpose was to assure that the wood matrix itself was not contaminated by chemicals or harmful to aquatic life.

In order to assure that the mill process does not cause any cross contamination, after each composite sample was ground, and 50g untreated Douglas fir was ground and discarded, another 50g Douglas fir was ground and retained as a mill blank (MB). One MB was prepared before the first sample and after each treatment replicate.

Standard methods established in U.S. EPA publication SW-846 and ECL quality control procedures were followed for the metals and organic analyses. Method blanks, solid laboratory control samples (LCS), method standards, matrix spikes (MS), and matrix spike duplicates (MSD) were analyzed.

Triplicate extractions and analyses were conducted on the copper-based treated wood composites. Matrix spikes for the soluble metal concentrations were done after extraction and dilution, and before instrumental analyses. Daily multi-point ICP-AES calibration standards and a reagent blank were run to establish response linearity, and calibration verification standards were analyzed after every ten samples.

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[4] It would be valuable to determine if any other kinds of organic compounds, such as PAHs, were present in creosote-treated wood or their TCLP leachates. Some organic compounds may be interesting as environmental contaminants, but may not have regulatory TC and TTLC levels.

For the solvent extraction and GC/MS analysis, standard ECL and SW-846 quality control practices were followed. Method blanks, method standards, surrogates, matrix spikes, and matrix spike duplicates were analyzed to assess bias (accuracy) and precision. For quantitation, multi-point calibrations were conducted using commercially available reference mixtures. Response factors were verified by analyzing continuing calibration check standards. Analyte identification was performed by comparison of the unknown and reference compound spectra, using characteristic ions.

For the aquatic bioassay, the contract laboratory used three sample dilutions; each dilution was run in duplicate. A control was run for each batch using un-spiked waste.

6. Results and Discussion

All analytical results were summarized in Table 2. The concentrations shown in this table are average values of replicate sample results if there was more than one replicate. The total cresol concentrations in this table were the sum of concentration of 2-methylphenol and 4- and/or 3-methylphenol.

Discussions about the analytical results on metal, semi-volatile organic compounds, and acute aquatic LC_{50} are presented below. Tables 3-6 show these analytical results in more detail than Table 2, respectively.

All laboratory analytical data are reported in Appendix IV. Since samples CADF-COMP, CAHF-COMP, ACQDF, DF creosote Comp have replicate composite samples, the names of the samples are CADF-COMP1, CADF-COMP2. MB indicates mill blank or equipment blank (see Section 5 above).

Most metals were non-detectable (ND) in the copper-based preservative treated lumber samples, except barium, copper, and zinc. Trace levels of barium and zinc were found in both treated and untreated control samples.

Copper concentrations exceeded regulatory threshold levels (TTLC and STLC) in all samples, except three CADF composites. However, the average copper concentration in four CADF composite samples was higher than its TTLC (2,500 mg/kg) (see Table 3). Therefore, the copper-based treated lumber products, when disposed, should be handled as a non-RCRA hazardous waste.

Table 2

Comparison of Analytical Results with California Waste Classification Criteria

Name of Composite Sample	Number of Replicates Averaged	Metal Total Concentration vs. TTLC	Metal Soluble Concentration vs. STLC	Organic Total Concentration vs. TTLC	Organic Leachable Concentration vs. TC	96-hr Aquatic Bioassay LC_{50} Results *	Hazardous Waste when disposed **?**
CADF-COMP	4	**Only Cu exceeded 2518 vs. 2500 mg/kg**	**Only Cu exceeded 218 vs. 25 mg/l**	N/A	N/A	Not less	**Yes**
CAHF-COMP	4	**Only Cu exceeded 4843 vs. 2500 mg/kg**	**Only Cu exceeded 468 vs. 25 mg/l**	N/A	N/A	**<250 mg/l**	**Yes**
ACQDF COMP	4	**Only Cu exceeded 3900 vs. 2500 mg/kg**	**Only Cu exceeded 365 vs. 25 mg/l**	N/A	N/A	Not less	**Yes**
DF Creosote Comp	3	N/A	N/A	ND **	ND***, except trace Total Cresol 1.4 vs. 200 mg/l	**<250 mg/l**	**Yes**
HW (oak) Creosote	1	N/A	N/A	ND **	ND***, except trace Total Cresol 0.42 vs. 200 mg/l	Not less	No
DFCONTROL-COMP	4	ND	ND	ND	ND	Not less	No
HFCONTROL-COMP	1	ND	ND	ND	ND	Not less	No
Oak Control	1	N/A	N/A	ND	ND	Not less	No

ND -- non-detectable N/A -- not analyzed

* The regulated 96-hr acute aquatic LC_{50} is less than 500 mg/l.
** Some organic compounds that have no regulatory TTLC were detected: naphthalene, acenapthalene, acenapthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, ideno(1,2,3-cd)pyrene, benzo(ghi)perylene, phenol, 2,4-dimethyl phenol, carbazole, 2-methyl naphthalene, dibenzofuran, and 4-nitroanaline.
*** Some organic compounds that have no regulatory TC were detected: naphthalene, acenapthalene, acenapthene, fluorene, phenanthrene, phenol, 2,4-dimethyl phenol, carbazole, and dibenzofuran.

Table 3 Copper Concentrations in Samples

Sample	Total Copper Concentration (mg/kg)					Soluble Copper Concentration (mg/l)				
	COMP 1	COMP 2	COMP 3	COMP 4	*AVERAGE*	COMP 1	COMP 2	COMP 3	COMP 4	*AVERAGE*
CADF-COMP	2480	2420	2730	2440	**2518**	213	198	245	216	**218**
CAHF-COMP	4890	4680	4630	5170	**4843**	447	457	452	515	**468**
ACQDF COMP	3980	3790	3860	3970	**3900**	364	356	360	378	**365**
DFCONTROL -COMP	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HFCONTROL -COMP	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Because this study was not done on out-of-service lumber samples, it is hard to predict how much copper was left in the treated lumber after service. The copper levels in out-of-service treated lumber may vary in a range, depending on their service condition (above ground, under ground, soil or water contact, and weather conditions) and service age. However, as the level of copper in the lumber products was at such a high level, compared with the regulatory threshold level, the out-of-service copper-based preservative treated lumber may exhibit a toxicity characteristic as well.

The CADF samples contained much lower copper concentration than ACQDF samples, and the CA-B treated Hem-fir special group (white fir) sample contained the highest copper concentration, which may be due to originally different retention levels for different combinations of wood species and preservatives.

Many semi-volatile organic compounds (SVOCs) can be analyzed by GC/MS (US EPA SW-846, method 8270C). However, only a few of them have their regulatory TTLC and TC. Most regulated SVOCs in the out-of-service creosote railroad tie samples are non-detectable (ND), except very low levels of cresol (methyl phenol). The leachable cresol concentrations ranged from ND to 0.94 mg/l, much less than its TC 200 mg/l. The total cresol concentrations ranged from 10 to 100 mg/kg, but there is no TTLC level for cresol. Please see Table 4 for the cresol concentrations in samples.

Both leachable (using TCLP) and total concentrations of pentachlorophenol (PCP), which are regulated, in all railroad tie samples were reported ND. The total concentrations of PCP were reanalyzed since the first analysis reported the PCP quantitation limit at 25 mg/kg or 50 mg/kg. In order to compare with the PCP regulatory TTLC (17 mg/kg), the second analysis reported ND again with a PCP quantitation limit of 10 mg/kg.

Table 4 Total and Leachable Semi-Volatile Organic Compounds (SVOC) in Creosote-Treated Railroad Ties

Sample	Total SVOC (mg/kg)					Leachable SVOC (using TCLP) (mg/l)				
	Cresol	PCP	Total PAHs*	Phenolics**	Hetero-cycles***	Cresol	PCP	Total PAHs*	Phenolics**	Hetero-cycles***
DF Creosote Comp1	69	<10	11,830	103	750	1.40	<0.5	3.3	2.54	0.30
DF Creosote Comp2	120	<10	19,328	246	1,700	<0.04	<0.5	4.5 & 3.5	<0.04	<0.04
DF Creosote Comp3	130	<10	16,838	275	1,500	<0.04	<0.5	4.7 & 3.9	<0.04	<0.04
HW (Oak) Creosote	43	<10	8,148	43	680	<0.04	<0.5	3.1	0.71	0.34
DFCONTROL-COMP	<2	<10	<2****	<2****	<2	<0.04	<0.5	<0.04	<0.04	<0.04
Oak Control	<2	<10	<2****	<2****	<2	<0.04	<0.5	<0.04	<0.04	<0.04

* The PAHs include napthalene, acenapthene, acenapthalene, fluorene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, ideno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and 2-methyl naphthalene.
** The phenolics include phenol, 2,4 dimethyl phenol, 2-methylphenol, and 4-&/or3-methylphenol.
*** The hetero-cycles include carbazole and dibenzofuran.
**** The Quantitation Limit of total concentration for naphthalene, acenapthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbazole, 2-methyl naphthalene, and dibenzofuran for some samples is 200 mg/kg, for 2,4 dinitrophenol, 2-methyl-4,6-dinitrophenol, and 4-nitro phenol is 25 mg/kg.

Some organic compounds that are not listed in TTLC and TC regulated tables were detected, including polycyclic aromatic hydrocarbons (PAHs) that are toxic. Table 4 also shows the other regulated and non-regulated SVOCs in the creosote-treated railroad tie samples. DTSC summarized the total PAHs, phenolics, and hetero-cycles that were found in the creosote-treated railroad tie samples in Table 4.

Table 5 Total vs. Leachable (using TCLP) Concentrations of PAHs

PAH	naphthalene	acenapthene	fluorene	phenanthrene
Total (mg/kg mean, n=4)	2400	1600	675	3100
Leachable (mg/l mean, n=6)	3.2	0.27	0.13	0.18

Compared with their total concentrations, the leachable concentrations were much lower than expected. Table 5 lists a few PAHs average total and leachable concentrations. These results reveal that the PAHs in creosote-treated wood were not highly leachable.

Only two kinds of composite samples could not pass the 96-hour aquatic bioassay LC_{50} regulatory level (500 mg/l) (see Table 6). One was CA-B treated Hem-fir (white fir). It also contained more copper than the other two copper treated lumbers – ACQ-C treated Douglas fir and CA-B treated Hem-fir (white fir). The other was out-of-service creosote-treated Douglas fir. Three replicate samples all had an LC_{50} less than 250 mg/l. The results indicate that the sampled creosote-treated Douglas fir waste could be a potential non-RCRA hazardous waste. Different from the Douglas fir railroad tie samples, the creosote-treated Oak ties did not fail the aquatic bioassay analysis, although the survival rates were 60 and 70 percent for the duplicate bioassays at 500 mg/l. The fish survival rate in all 500 mg/l untreated wood bioassay tests was 100 percent, which indicated that the untreated wood is not toxic to fish.

Table 6 Results of Acute Aquatic 96-hr LC_{50} Tests

Sample	LC_{50} (mg/l)	Survival Percentage (500 mg/l)
CADF-COMP (n = 4)	>750	100%
CAHF-COMP (n = 4)	<250	0%
ACQDF COMP (n = 4)	>750	100%
DF Creosote Comp1	<250	20% & 10%
DF Creosote Comp2	<250	20% & 10%
DF Creosote Comp3	<250	10% & 0%
HW (oak) Creosote	>500	60% & 70%
DFCONTROL-COMP (n = 4)	>750	100%
HFCONTROL-COMP	>750	100%
Oak Control	>750	100%

The aquatic bioassay results on railroad ties are different from those previously obtained by Wheelabrator Shasta Energy Company. The difference could be caused by the wood species, the particle size, or the age of the railroad ties. The bioassay results obtained in this study reflect that certain railroad ties are hazardous to fish. Although the aquatic bioassay in this study was a screening test, the results indicate that it is necessary to take into account bioassay results prior to discharging the railroad tie waste.

Although staff of DTSC and University of California Cooperative Extension carefully planned this sampling study, many uncertainties still exist. For example, the wood moisture was unknown, which may affect the results. The service years of creosote-treated ties were undetermined, and could be a significant range.

Additionally, uncertainties arise from the practical realities of sample collection. Selected sampling locations must be representative of California. DTSC initially planned to collect samples from approximately 20 locations statewide. However, DTSC found that most lumber yards carry only one kind of treated lumber, so it is rare to find all three treated wood species at one lumber yard. Thus, the samples were collected from fewer locations than planned.

Notwithstanding these uncertainties, DTSC believes that the composite samples are representative of California's treated wood. The high levels of copper in the treated wood with copper-based preservatives are significant.

There are different sizes of lumber and timber available in the California market. Because the wood treatment is a surface process, it is reasonable to assume that the higher the ratio of surface to volume, the higher the concentration of preservative is absorbed. The 8”x 8” lumber, which DTSC did not sample, may have less copper concentration than the 2”x 8” lumber. The surface to volume ratio for a large timber is smaller. The surface to volume ratio for an 8” x 8” is 0.52, and for a 4” x 4” is 1.02. The 2” x 8” lumber was selected because it is fairly common, and its surface area to volume ratio is approximately 1.27. This study did not plan to collect other sizes of lumber.

This project studied the commonly commercially available wood treated by copper-based wood preservative. It was not DTSC’s intent to compare the different chemical manufacturers. Therefore, DTSC did not research different chemical companies’ products during the sampling.

In accordance with Cal. Code Regs., Title 22, Chapter 11, Appendix II, two millimeter (2 mm) or less of particle size is required for: (1) total and extractable metal content listed in Section 66261.24(a)(2)(A); and (2) extractable organic content listed in Section 66261.24(a)(2)(B) if the waste is a millable solid. One millimeter (1 mm) or less of particle size is required for total content of organic listed in 66261.24(a)(2)(B) if the waste is a millable solid. The US EPA sample extraction Method 3540 for semi-volatile organic compounds in solid sample (by Soxhlet extraction) also calls for 1 mm particle size.

The composite samples prepared in ECL were all milled to pass through the 2 mm sieve. Further grinding would have caused excess heat in the mill that may have degraded the sample. For fibrous samples, Method 3540 states that particle size reduction should be sufficient to ensure contact with solvent. Appendix III in Cal. Code Regs., Title 22, Chapter 11, states that SW-846 should be consulted for appropriate methods for each “specific sample analysis situation.” It was therefore determined that the 2 mm sieve size used for the CA and ACQ, and creosote wood analyses was acceptable.

7. Conclusions

Based on the analytical results of copper-based and creosote-treated wood samples, DTSC summarized the following conclusions:

1. Wood products treated by ACQ-C and CA-B contain high level of copper, which exceeds California TTLC and STLC regulatory criteria. Therefore, wood products treated by ACQ-C and CA-B have the potential to be a non-RCRA hazardous waste when disposed.

2. All untreated wood samples were not toxic to fish. The fish survival rate in 500 mg/l bioassay was 100 percent.

3. Creosote-treated railroad ties contain materials toxic to fish. Sampled out-of-service creosote-treated railroad ties have the potential to fail the California regulated acute aquatic 96-hr LC_{50} bioassay. The survival rates in all three Douglas fir out-of-service railroad tie composite samples were less than 50 percent in 500 mg/l bioassay. Therefore, out-of-service creosote-treated railroad ties have the potential to be a non-RCRA hazardous waste when disposed.

4. Treated wood samples can be prepared by cutting lumber into sections, sub-sections, cubes, and further by grinding to obtain a proportional representative treated and non-treated mixture.

5. Visually distinguishing the treated and non-treated areas at the cross sections of both treated copper-base lumber products and out-of-service railroad ties is feasible.

6. It is the generator’s responsibility to determine waste classification.

References

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State of California
STATE WATER RESOURCES CONTROL BOARD

2007 | 2008

ANNUAL REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2007 through June 30, 2008

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.swrcb.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. *Facility Information:*

Facility WDID No: 2 48I005112

Facility Business Name: Syar Industries Inc Lake Herman Quarry
Physical Address: 885 Lake Herman Road
City: Vallejo
Standard Industrial Classification (SIC) Code(s): 1429-Crushed ar

Contact Person: Burneson Mike
e-mail: mburneson@syar.com
CA Zip: 94591 Phone:

B. *Facility Operator Information:*

Operator Name: Syar Industries Inc
Mailing Address: 885 Lake Herman Road
City: Vallejo

Contact Person: Mike Burneson
e-mail: mburneson@syar.com
State: CA Zip: 94591 Phone: 707-558-1510

C. *Facility Billing Information:*

Operator Name: Syar Industries Inc
Mailing Address: PO Box 2540
City: Napa

Contact Person: Tobe Goyette
e-mail: tgoyette@syar.com
State: CA Zip: 94558 Phone: 707-252-8711

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ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ **YES** Go to Item D.2 ☒ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

   i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** ____________

   ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: ____________

   Re-evaluation Date: ____________

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: ____________

   Re-evaluation Date: ____________

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: ____________

   v. ☐ Received Local Agency Certification Cetification Date: ____________

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

   ☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 6 If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☒ **YES** ☐ **NO, attach explanation (Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)**

3. How many storm water discharge locations are at your facility? 6

4. For each storm event sampled, did you collect and analyze a sample from each of the facilitys' storm water discharge locations? ☐ YES, go to Item E.6 ☒ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☐ YES ☒ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated ________

6. Were all samples collected during the first hour of discharge? ☒ YES ☐ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☒ YES ☐ NO, **attach explanation**

8. Were there any discharges of stormwater that had been temporarily stored or contained? (such as from a pond) ☒ YES ☐ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☒ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☒ YES ☐ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☒ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

       ______ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

       ______ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

       ______ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

    - Date and time of sample collection
    - Name and title of sampler.
    - Parameters tested.
    - Name of analytical testing laboratory.
    - Discharge location identification.
    - Testing results.
    - Test methods used.
    - Test detection limits.
    - Date of testing.
    - Copies of the laboratory analytical results.

F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**
Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ **YES** ☒ **NO** Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers**. Indicate "N/A" for quarters without any authorized non-storm water discharges.

July -September ☐ **YES** ☐ **NO** ☐ **N/A** October-December ☐ **YES** ☐ **NO** ☐ **N/A**

January-March ☐ **YES** ☐ **NO** ☐ **N/A** April-June ☐ **YES** ☐ **NO** ☐ **N/A**

c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information.

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**
Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources. **Attach an explanation for any "NO" answers.**

July -September ☒ **YES** ☐ **NO** ☐ **N/A** October-December ☒ **YES** ☐ **NO** ☐ **N/A**

January-March ☒ **YES** ☐ **NO** ☐ **N/A** April-June ☒ **YES** ☐ **NO** ☐ **N/A**

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ **YES** ☒ **NO** Go to item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ **YES** ☐ **NO** **Attach explanation**

d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information.

i. name of each unauthorized non-storm water discharge.
ii. date and time of observation.
iii. source and location of each unauthorized non-storm water discharge.
iv. characteristics of the discharge at its source and impacted drainage area/discharge location.
v. name, title, and signature of observer.
vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers**. Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☐	☒	February	☐	☒
November	☐	☒	March	☐	☒
December	☐	☒	April	☐	☒
January	☒	☐	May	☐	☒

2. Report monthly wet season visual observations using **Form 4** or provide the following information.

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed.
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☒ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occured during the last year.
   - outdoor wash and rinse areas.
   - process/manufacturing areas.
   - loading, unloading, and transfer areas.
   - waste storage/disposal areas.
   - dust/particulate generating areas.
   - erosion areas.
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☒ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map, is up-to-date? The following site map items should be verified: ☒ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☒ YES ☐ NO

   The following records should be reviewed:

   - quarterly authorized non-storm water discharge visual observations
   - monthly storm water discharge visual observation
   - records of spills/leaks and associated clean-up/response activities
   - quarterly unauthorized non-storm water discharge visual observations
   - Sampling and Analysis records
   - preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☒ YES ☐ NO

   The following SWPPP items should be reviewed:

   - pollution prevention team
   - list of significant materials
   - description of potential pollutant sources
   - assessment of potential pollutant sources
   - identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☒ YES ☐ NO

   The following BMP categories should be reviewed:

   - good housekeeping practices
   - spill response
   - employee training
   - erosion control
   - quality assurance
   - preventative maintenance
   - material handling and storage practices
   - waste handling/storage
   - structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☒ YES ☐ NO

I. ACSCE EVALUATION REPORT

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken.

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. ACSCE CERTIFICATION

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☒ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent? ☐ YES (Mandatory)
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports? ☐ YES ☐ NO ☐ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications? ☐ YES ☐ NO ☐ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J? ☐ YES ☐ NO ☐ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: Toby Goyette

Signature: ______________________ Date: 06/26/2008

Title: Environmental Manager

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ANNUAL REPORT

FORM 1 - SAMPLING & ANALYSIS RESULTS

Monitoring Location	Sample Date / Time	Discharge Time	Sample Collector Name, Title	Parameter	Result	Units	Analytical Method	Method Detection Limit	Analyzed By
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 1.2	mg/L		.45	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 6.9	mg/L	A5310C	.3	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Iron, Total	= 1.2	mg/L	E200.8	.02	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	< 4	mg/L	E160.2	4	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as N)	= .27	mg/L		.1	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Aluminum, Total	= 1000	ug/L	E200.8	50	LAB

Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (Total)	= 1.8	ug/L		.5	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Copper, Total	= 5.2	ug/L	E200.8	.5	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Lead, Total	= .53	ug/L	E200.8	.5	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Zinc, Total	< 5	ug/L	E200.8	5	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	pH	= 7.61	SU	SW9041A	.05	LAB
Outfall E	02/01/2008 07:35:00	23:59:59	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 164	umhos/cm	E120.1	10	LAB
Outfall D	06/01/2008 00:00:00	00:00:00	No Sample, No Sample	Total Suspended Solids (TSS)	= 0	mg/L	E160.2	0	LAB
Outfall D	06/01/2008 00:00:00	00:00:00	No Sample, No Sample	Oil and Grease	= 0	mg/L	E413.2	0	LAB
Outfall D	06/01/2008 00:00:00	00:00:00	No Sample, No Sample	Iron, Total	= 0	mg/L	E200.8	0	LAB
Outfall D	06/01/2008 00:00:00	00:00:00	No Sample, No Sample	pH	= 0	SU	SW9041A	0	LAB
Outfall D	06/01/2008 00:00:00	00:00:00	No Sample, No Sample	Electrical Conductivity @ 25 Deg. C	= 0	umhos/cm	E120.1	0	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Iron, Total	= 47	mg/L	E200.8	.02	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Total Suspended Solids (TSS)	= 552	mg/L	E160.2	4	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Nitrate, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Nitrate, Total (as NO3)	< .45	mg/L		.45	LAB

Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Chemical Oxygen Demand (COD)	= 58	mg/L	A5220D	10	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Total Organic Carbon (TOC)	= 7.4	mg/L	A5310C	.3	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Aluminum, Total	= 18000	ug/L	E200.8	50	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Chromium (Total)	= 17	ug/L		.5	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Copper, Total	= 41	ug/L	E200.8	.5	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Zinc, Total	= 79	ug/L	E200.8	5	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	pH	= 7.78	SU	SW9041A	.05	LAB
Outfall C	12/18/2007 11:49:00	11:00:00	Christy Baril and Dave Nunes, EHS Tech, and Plant Assistant Manager	Electrical Conductivity @ 25 Deg. C	= 473	umhos/cm	E120.1	10	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Iron, Total	= 6.4	mg/L	E200.8	.02	LAB

Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Total Suspended Solids (TSS)	= 150	mg/L	E160.2	4	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Nitrate, Total (as N)	= .89	mg/L		.1	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Nitrate, Total (as NO3)	= 3.9	mg/L		.45	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Chemical Oxygen Demand (COD)	= 120	mg/L	A5220D	10	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Total Organic Carbon (TOC)	= 8.6	mg/L	A5310C	.3	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Diesel Oil	= .087	mg/L		.05	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Chromium (VI)	= 5.5	ug/L		.2	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Aluminum, Total	= 3000	ug/L	E200.8	50	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Chromium (Total)	= 9.5	ug/L		.5	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Copper, Total	= 8.7	ug/L	E200.8	.5	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Lead, Total	= 4.1	ug/L	E200.8	.5	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Zinc, Total	= 22	ug/L	E200.8	5	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	pH	= 8.05	SU	SW9041A	.05	LAB
Outfall A	12/20/2007 07:50:00	01:00:00	David Nunes, Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 682	umhos/cm	E120.1	10	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Iron, Total	= 56	mg/L	E200.8	.02	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB

Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Suspended Solids (TSS)	= 506	mg/L	E160.2	4	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as N)	= .41	mg/L		.1	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as NO3)	= 1.8	mg/L		.45	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chemical Oxygen Demand (COD)	= 21	mg/L	A5220D	10	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Organic Carbon (TOC)	= 4.9	mg/L	A5310C	.3	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Aluminum, Total	= 22000	ug/L	E200.8	50	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (Total)	= 19	ug/L		.5	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Copper, Total	= 44	ug/L	E200.8	.5	LAB

Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Zinc, Total	= 84	ug/L	E200.8	5	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Lead, Total	= 2.5	ug/L	E200.8	.5	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	pH	= 7.99	SU	SW9041A	.05	LAB
Outfall C	01/04/2008 09:10:00	08:10:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 119	umhos/cm	E120.1	10	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Iron, Total	= 1.2	mg/L	E200.8	1.2	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Total Suspended Solids (TSS)	< 4	mg/L	E160.2	4	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Nitrate, Total (as N)	= .63	mg/L		.1	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Nitrate, Total (as NO3)	= 2.8	mg/L		.45	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Total Organic Carbon (TOC)	= 7.8	mg/L	A5310C	.3	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB

Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Aluminum, Total	= 990	ug/L	E200.8	50	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Chromium (Total)	= 1.8	ug/L		.5	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Copper, Total	= 4.8	ug/L	E200.8	.5	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Lead, Total	= .51	ug/L	E200.8	.5	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Zinc, Total	< 5	ug/L	E200.8	5	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	pH	= 7.54	SU	SW9041A	.05	LAB
Outfall F	02/01/2008 08:15:00	00:00:00	Christy Baril and Dave Nunes, EHS Tech. and Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 230	umhos/cm	E120.1	10	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Iron, Total	= 180	mg/L	E200.8	.02	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Oil and Grease	= .55	mg/L	E413.2	.25	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Suspended Solids (TSS)	= 1910	mg/L	E160.2	4	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as N)	= .85	mg/L		.1	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as NO3)	= 3.7	mg/L		.45	LAB

Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chemical Oxygen Demand (COD)	= 36	mg/L	A5220D	10	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Organic Carbon (TOC)	= 6.1	mg/L	A5310C	.3	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Diesel Oil	= .18	mg/L		.05	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (VI)	= 8.3	ug/L		.2	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Aluminum, Total	= 74000	ug/L	E200.8	50	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (Total)	= 73	ug/L		.5	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Copper, Total	= 130	ug/L	E200.8	.5	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Lead, Total	= 49	ug/L	E200.8	.5	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Zinc, Total	= 250	ug/L	E200.8	5	LAB
Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	pH	= 8.55	SU	SW9041A	.05	LAB

Outfall A	01/04/2008 10:00:00	09:30:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 247	umhos/cm	E120.1	10	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Iron, Total	= 1.7	mg/L	E200.8	.02	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	< 4	mg/L	E160.2	4	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as N)	= .84	mg/L		.1	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 3.7	mg/L		.45	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 7.3	mg/L	A5310C	.3	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Diesel Oil	= .05	mg/L		.05	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Aluminum, Total	= 1400	ug/L	E200.8	50	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (Total)	= 2.5	ug/L		.5	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Copper, Total	= 7.4	ug/L	E200.8	.5	LAB

Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Lead, Total	= .65	ug/L	E200.8	.5	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Zinc, Total	= 6.7	ug/L	E200.8	5	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	pH	= 7.68	SU	SW9041A	.05	LAB
Outfall E	01/28/2008 07:55:00	03:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 281	umhos/cm	E120.1	10	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Iron, Total	= 15	mg/L	E200.8	.05	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Total Suspended Solids (TSS)	= 95.3	mg/L	E160.2	4	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Nitrate, Total (as N)	= 4.5	mg/L		.1	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Nitrate, Total (as NO3)	= 20	mg/L		.45	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Chemical Oxygen Demand (COD)	= 270	mg/L	A5220D	10	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Total Organic Carbon (TOC)	= 5	mg/L	A5310C	.3	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Diesel Oil	= .052	mg/L		.05	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Chromium (VI)	= 1	ug/L		.2	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Aluminum, Total	= 6300	ug/L	E200.8	50	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Chromium (Total)	= 7.7	ug/L		.5	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Copper, Total	= 9.4	ug/L	E200.8	.5	LAB

Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Lead, Total	= .94	ug/L	E200.8	.5	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Zinc, Total	= 26	ug/L	E200.8	5	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	pH	= 8.1	SU	SW9041A	.05	LAB
Outfall B	12/07/2007 07:45:00	01:00:00	David Nunes , Plant Assistant Manager	Electrical Conductivity @ 25 Deg. C	= 728	umhos/cm	E120.1	10	LAB
Outfall D	10/01/2007 00:00:00	00:00:00	No Sample, No Sample	Total Suspended Solids (TSS)	= 0	mg/L	E160.2	0	LAB
Outfall D	10/01/2007 00:00:00	00:00:00	No Sample, No Sample	Oil and Grease	= 0	mg/L	E413.2	0	LAB
Outfall D	10/01/2007 00:00:00	00:00:00	No Sample, No Sample	Iron, Total	= 0	mg/L	E200.8	0	LAB
Outfall D	10/01/2007 00:00:00	00:00:00	No Sample, No Sample	pH	= 0	SU	SW9041A	0	LAB
Outfall D	10/01/2007 00:00:00	00:00:00	No Sample, No Sample	Electrical Conductivity @ 25 Deg. C	= 0	umhos/cm	E120.1	0	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Iron, Total	= 51	mg/L	E200.8	.02	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Oil and Grease	< .25	mg/L	E413.2	.25	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Suspended Solids (TSS)	= 374	mg/L	E160.2	4	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as N)	= 3.1	mg/L		.1	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrate, Total (as NO3)	= 14	mg/L		.45	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chemical Oxygen Demand (COD)	= 140	mg/L	A5220D	10	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Gasoline	< .05	mg/L		.05	LAB

Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Total Organic Carbon (TOC)	= 5.2	mg/L	A5310C	.3	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Diesel Oil	= .078	mg/L		.05	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (VI)	= 2.6	ug/L		.2	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Aluminum, Total	= 22000	ug/L	E200.8	50	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Chromium (Total)	= 21	ug/L		.5	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Copper, Total	= 36	ug/L	E200.8	.5	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Lead, Total	= 4.4	ug/L	E200.8	.5	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Zinc, Total	= 94	ug/L	E200.8	5	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	pH	= 8.21	SU	SW9041A	.05	LAB
Outfall B	01/04/2008 09:47:00	09:15:00	Christy Baril and David Nunes, EHS Tech. and Assistant Plant Manager	Electrical Conductivity @ 25 Deg. C	= 513	umhos/cm	E120.1	10	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Iron, Total	= 3	mg/L	E200.8	.02	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Oil and Grease	= .25	mg/L	E413.2	.25	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Suspended Solids (TSS)	= 69.7	mg/L	E160.2	4	LAB

Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as N)	= 1.1	mg/L		.1	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrate, Total (as NO3)	= 4.9	mg/L		.45	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Nitrite, Total (as N)	< .1	mg/L		.1	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chemical Oxygen Demand (COD)	< 10	mg/L	A5220D	10	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Gasoline	< .05	mg/L		.05	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Total Organic Carbon (TOC)	= 8.4	mg/L	A5310C	.3	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Diesel Oil	< .05	mg/L		.05	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (VI)	< .2	ug/L		.2	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Aluminum, Total	= 2400	ug/L	E200.8	50	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Chromium (Total)	= 4	ug/L		.5	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Copper, Total	= 8.5	ug/L	E200.8	.5	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Lead, Total	= 1.2	ug/L	E200.8	.5	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Zinc, Total	= 11	ug/L	E200.8	5	LAB
Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	pH	= 7.89	SU	SW9041A	.05	LAB

Outfall F	01/28/2008 08:12:00	04:00:00	Christy Baril and Dave Nunes, EHS Tech., Asst. Plant Manager	Electrical Conductivity @ 25 Deg. C	= 331	umhos/cm	E120.1	10	LAB

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FORM 2 - QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

Quarter	Date/Time(HH:MM)	Observer Name	Observer Title	Any Authorized NSWDs This Quarter?
July - Sept				
Oct - Dec				
Jan - Mar				
Apr - Jun				

Date/Time of Observation	Source and Location of Authorized NSWD	Name of Authorized NSWD	Authorized NSWD Characteristics at Source	Authorized NSWD Characteristics at Drainage Area and Discharge Location	Revised or New BMPs Description and Implementation Date

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FORM 3 - QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

Quarter	Date/Time(HH:MM)	Observer Name	Observer Title	Unauthorized NSWDs Observed?	Indications of Prior Unauthorized NSWDs?
July - Sept	07/11/2007 00:00	Mike Burneson	Plant Manager	No	No
Oct - Dec	11/21/2007 11:00	Mike Burneson	Plant Manager	No	No
Jan - Mar	01/07/2008 09:45	David Nunes	Asst. Plant Manager	No	No
Apr - Jun	04/16/2008 10:00	Mike Burneson	Plant Manager	No	No

Date/Time of Observation	Name of Unauthorized NSWD	Source and Location of Unauthorized NSWD	Unauthorized NSWD Characteristics at Source	Unauthorized NSWD Characteristics at Drainage Area and Discharge Location	Corrective Actions to Eliminate Unauthorized NSWD and Elimination Date

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FORM 4 - MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

Observation Date: 10/12/2007	Observer Name:	Christy Baril, Dave Nunes	Observer Title:	EHS Tech, Asst. Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	10:00	00:00	No
Drainage Location2	Outfall B	10:05	00:00	No
Drainage Location3	Outfall C	10:15	00:00	No
Drainage Location4	Outfall D	10:25	00:00	No
Drainage Location5	Outfall E	10:35	00:00	No
Drainage Location6	Outfall F	10:50	00:00	No
Observation Date: 11/30/2007	**Observer Name:**	Ian Anderson	**Observer Title:**	Plant Electrician
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	07:00	00:00	No
Drainage Location2	Outfall B	07:00	00:00	No
Drainage Location3	Outfall C	07:00	00:00	No
Drainage Location4	Outfall D	07:00	00:00	No
Drainage Location5	Outfall E	07:00	00:00	No
Drainage Location6	Outfall F	07:00	00:00	No
Observation Date: 12/07/2007	**Observer Name:**	Dave Nunes	**Observer Title:**	Asst. Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	08:00	00:00	No
Drainage Location2	Outfall B	07:45	03:00	No
Drainage Location3	Outfall C	08:00	00:00	No
Drainage Location4	Outfall D	08:00	00:00	No
Drainage Location5	Outfall E	08:15	00:00	No
Drainage Location6	Outfall F	08:30	00:00	No
Observation Date: 01/28/2008	**Observer Name:**	Dave Nunes, Christy Baril	**Observer Title:**	Asst. Plant Manager, EHS. Technician
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	07:30	00:00	No
Drainage Location2	Outfall B	07:30	00:00	No
Drainage Location3	Outfall C	07:30	00:00	No
Drainage Location4	Outfall D	07:30	03:00	No
Drainage Location5	Outfall E	07:55	03:00	No
Observation Date: 02/01/2008	**Observer Name:**	Dave Nunes, Christy Baril	**Observer Title:**	Asst. Manager, EHS. Technician
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	07:00	00:00	No
Drainage Location2	Outfall B	07:00	00:00	No
Drainage Location3	Outfall C	07:00	00:00	No
Drainage Location4	Outfall D	07:00	00:00	No
Drainage Location5	Outfall E	07:35	02:00	No
Drainage Location6	Outfall F	07:55	02:00	No
Observation Date: 03/31/2008	**Observer Name:**	Mike Burneson	**Observer Title:**	Plant Manager
	Location Description	**Observation Time**	**Time Discharge Began**	**Were Pollutants Observed?**
Drainage Location1	Outfall A	15:00	00:00	No
Drainage Location2	Outfall B	15:00	00:00	No
Drainage Location3	Outfall C	15:00	00:00	No
Drainage Location4	Outfall D	15:00	00:00	No
Drainage Location5	Outfall E	15:00	00:00	No
Drainage Location6	Outfall F	15:00	00:00	No
Observation Date: 04/16/2008	**Observer Name:**	Mike Burneson	**Observer Title:**	Plant Manager

	Location Description	Observation Time	Time Discharge Began	Were Pollutants Observed?
Drainage Location1	Outfall A	15:00	00:00	No
Drainage Location2	Outfall B	15:00	00:00	No
Drainage Location3	Outfall C	15:00	00:00	No
Drainage Location4	Outfall D	15:00	00:00	No
Drainage Location5	Outfall E	15:00	00:00	No
Drainage Location6	Outfall F	15:00	00:00	No

Observation Date: 05/12/2008 **Observer Name:** Mike Burneson **Observer Title:** Plant Manager

	Location Description	Observation Time	Time Discharge Began	Were Pollutants Observed?
Drainage Location1	Outfall E	09:00	00:00	No
Drainage Location2	Outfall F	09:00	00:00	No
Drainage Location3	Outfall B	09:00	00:00	No
Drainage Location4	Outfall A	09:00	00:00	No
Drainage Location5	Outfall C	09:00	00:00	No
Drainage Location6	Outfall D	09:00	00:00	No

Date/Time of Observation	Drainage Area Description	Storm Water Discharge Characteristics	Source(s) of Pollutants	Revised or New BMPs and Their Date of Implementation

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FORM 5 - ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

Evaluation Date: 06/09/2008	**Inspector Name:** Toby Goyette		**Title:**	Environmental Manager
Potential Pollutant Source/Industrial Activity Area	**Are any BMPs Not Fully Implemented?**	**Are Additional/Revised BMPs Necessary?**	**Deficiencies in BMPs or BMP Implementation**	**Additional/Revised BMPs or Corrective Actions and their date(s) of Implementation**
Process/manufacturing areas.	No	No		
Vehicle/equipment storage areas.	No	No		
Waste storage/disposal areas.	No	No		
Erosion areas.	No	No		
Outdoor wash and rinse areas.	No	No		
Material storage areas.	No	No		
Truck parking and access areas.	No	No		
Loading, unloading, and transfer areas.	No	No		
Building repair, remodeling, and construction.	No	No		
Areas where spills and leaks have occurred during the last year.	No	No		
Dust/particulate generating areas.	No	No		

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EXPLANATIONS SPECIFIED FOR VARIOUS YES/NO QUESTIONS IN THE REPORT

Explanation Question	Explanation Text
Explanation on sample collection or analysis reduced in accordance with Section B.7.d of the General Permit	The location for Outfall D was no longer applicable for the 2007-2008 stormwater reporting year, due to a mudslide which eliminated the outfall in entirety. This outfall will be appropriately removed from the SWPPP plan and monitoring for the 2008-2009 storm water season. In addition, outfalls may not all discharge simultaneously during the same storm event, as a result of varying outfall design. However, all outfalls with the exception of D, were sampled at least 2x during the 2007-2008 storm water season.
October:Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F. Outfall, observation times, and observers present are listed as follows: Oufall A: 10/12/2007, 10:00 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS Tech. Outfall B: 10/12/2007, 10:05 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS Tech. Outfall C: 10/12/2007, 10:15 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS Tech. Outfall E: 10/12/07, 10:35 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS Tech. Outfall F: 10/12/07, 10:50 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS Tech.
November: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-F. Outfall, observation times, and observers present are listed as follows: Outfall A: 11/30/2007, 7:00 - Ian Anderson, Electrician Outfall B: 11/30/2007, 7:00 - Ian Anderson, Electrician Outfall C: 11/30/2007, 7:00 - Ian Anderson, Electrician Outfall D: 11/30/2007, 7:00 - Ian Anderson, Electrician Outfall E: 11/30/2007, 7:00 - Ian Anderson, Electrician Outfall F: 11/30/2007, 7:00 - Ian Anderson, Electrician
December: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Outfalls E & F did not produce any eligible stormwater discharge during the month of December. Outfall, dates, observation times, and observers present are listed as follows: Outfall E: 12/07/2007, 08:15 - Dave Nunes, Asst. Plant Manager Outfall F: 12/07/2007, 08:30 - Dave Nunes, Asst. Plant Manager Outfall E: 12/18/2007, 12:15 - Christy Baril, EHS. Tech. Outfall F: 12/18/2007, 12:20 - Christy Baril, EHS. Tech. Outfall E: 12/20/2007, 08:30 - Dave Nunes, Asst. Plant Manager Outfall F: 12/20/2007, 08:30 - Dave Nunes, Asst. Plant Manager
Febraury: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	Eligible storm event did not produce a storm water discharge at Outfalls A-C. Outfall, date, observation times, and observers present are listed as follows: Outfall A: 02/01/2008, 07:00, - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS. Technician Outfall B: 02/01/2008, 07:00 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS. Technician Outfall C: 02/01/2008, 7:00 - Dave Nunes, Asst. Plant Manager, Christy Baril, EHS. Technician.
March: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	No eligible storm event occurred during the month of March which produced a storm water run off at Outfalls A-F during facility operating hours. Outfall A-F: 03/31/08, Mike Burneson, Plant Manager
April: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	No eligible storm event occurred during the month of April which produced a storm water run off at Outfalls A-F during facility operating hours. Outfall A-F: 04/16/08, Mike Burneson, Plant Manager
May: Explanation if not conducted monthly visual observations of storm water discharges occurred at all discharge locations	No eligible storm event occurred during the month of May which produced a storm water run off at Outfalls A-F during facility operating hours. Outfall A-F: 05/27/2008, 09:00 Mike Burneson, Plant Manager