Attachment 1

4th Quarter of 2014 Nogales International Wastewater Treatment Plant (NIWTP) Pretreatment Report

The NIWTP discharge to the Santa Cruz River is permitted under the National Pollutant Discharge Elimination System (NPDES) in accordance with the United States Clean Water Act. The plant is also permitted by the State of Arizona Ground Water Quality Aquifer Protection Permit (APP). The NPDES permit requires that the United States Section, International Boundary and Water Commission (USIBWC), provide associate data and plant operation information to Mexico.

The NPDES permit contains border and influent Maximum Allowable Headworks Allocation (MAHA) objectives that are based on recommendations in the Development of Headworks Allocations for the Nogales International Wastewater Treatment Plant, dated April 2009 and was provided to the Mexican Section and presented at the binational technical committee meetings. The NIWTP completes quarterly water quality monitoring of the primary pollutants of concern identified in this report. In accordance with the NPDES permit, the NIWTP conducts 30-day quarterly sampling of the pollutants of concern.

In accordance with the NPDES permit for the NIWTP, wastewater flows at the border, influent, and effluent stations were sampled and analyzed. Entries are bold to indicate pollutants present at levels that exceeded the Maximum Allowable Headworks Allocation (MAHA) (Table 1) objective defined in the NPDES permit for focus pollutants. The data indicate that during the 4th quarter of 2014: **chromium** was present at elevated levels at the border station of the International Outfall Interceptor (IOI) and also present at elevated levels at the NIWTP influent station.

Figure 1 presents the distribution of flow between the United States (U.S.) and Mexico for each day samples were collected. U.S. flows were computed by subtracting border flows from the total influent flows. The mass contributions for the border, cities, and the NIWTP influent were compared with the MAHA objectives. Results of the evaluations of data collected during the 4th quarter of 2014 have been presented in tabular and graphical form as discussed below.

Arsenic, cadmium, chromium, copper, cyanide, lead, mercury, nickel, and zinc are pollutants in the transboundary flow that may threaten the efficiency of the NIWTP and the protection of the environment. Metal levels present in the daily border flows are shown in Table 2 through 4 and the attached figures.

The metals data at the border and influent sites indicate flows originating in Mexico and the U.S. may be contributing to the elevated concentrations of metals in the plant influent. These observations are very general and are based on the limited data points. The simplified analyses, based on a closed perfect system, assign 100 percent of the pollutants arriving at the NIWTP to either the cross-border flows or the cities' flows. A wastewater collection system is not a perfectly closed system. The information as presented helps illustrate the current conditions, but does not represent a strict scientific study. The data review method limitations will be reduced as more data is collected. This review method should be used to evaluate general trends and provide guidance to the binational technical committee. The NIWTP will continue to collect and evaluate data. This information is provided for the purpose of assisting both Sections in implementing resolution No. 6 of IBWC Minute No. 276 which states that our two Governments have the obligation to be, "in conformity with their own national legislation, take appropriate actions to prevent the discharge of untreated industrial wastewater into the international trunkline to preserve the efficiency of the Nogales International Sewage Treatment Plant."

Table 1

AHL Based on Average Influent Flow of 14.74 MGD (645 lps)

Bolded shows limiting

Bolded italicized shows limiting with 25% safety factor

		MAHL KG/DAY				MAHL KG/MOS				
Pollutant	MAHL - Safety (lb/day)	AHL_{eff} (kg/day)	AHL_{inh} (kg/day)	AHL_{solids} (kg/day)	MAHL - Safety (kg/day)	AHL_{eff} (kg/30 days)	AHL_{inh} (kg/30 days)	AHL_{solids} (kg/30 days)	MAHL - Safety (kg/30 day)	Exceedance first impacts:
Arsenic	2.3	5.07	5.57	1.39	**1.04**	152	167	42	**31.3**	solids
Cadmium	0.41	0.82	289.95	0.25	**0.19**	25	8699	7	**5.58**	solids
Chromium	1.69	45.23	60.22	1.02	**0.77**	1357	1807	31	**23.0**	solids
Copper	12.64	7.65	15.05	41.82	**5.73**	229	452	1254	**172**	effluent
Cyanide	5.03	3.04	23.42	-	**2.28**	91	703		**68.4**	effluent
Lead	1.47	0.89	27.88	1.37	**0.67**	27	836	41	**20.0**	effluent
Mercury	0.08	0.050	30.67	0.054	**0.04**	1.5	920	1.6	**1.09**	effluent
Nickel	13.83	9.62	21.19	8.36	**6.27**	288	636	251	**188**	solids
Selenium	0.55	0.37	-	0.34	**0.25**	11	-	10	**7.48**	solids
Silver	1.84	1.47	-	1.12	**0.83**	44	-	33	**25.0**	solids
Zinc	26.74	-	16.17	79.40	**12.1**	-	485	2382	**364**	inhibition
1,4-Dichlorobenzene	8.87	5.36	278.80	5.70	**4.02**	161	8364	171	**121**	effluent

Table 2: 4th quarter of 2014

AHL based on recorded flows

Reflects daily average in which pretreatment monitoring took place

Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Daily Average

Pollutant	Average Arizona Contribution (LPS)	Average Sonora Contribution (LPS)	Average NIWTP INF (LPS)	MAHL Arizona (kg/day)	MAHL Sonora (kg/day)	MAHL TOTAL (kg/day)	Average Loading Arizona (kg/day)	Average Loading Sonora (kg/day)	Average Loading Total (kg/day)	Processes Impacted by Total Loadings*
Arsenic	69.77	604.7	674.5	0.113	0.977	1.090	0.043	0.207	0.256	
Cadmium				0.020	0.174	0.194	0.006	0.020	0.027	
Chromium				0.083	0.718	0.801	0.013	0.892	0.905	Solids
Copper				0.619	5.369	5.988	0.784	3.799	4.677	
Cyanide				0.246	2.136	2.383	0.079	0.000	0.085	
Lead				0.072	0.624	0.696	0.003	0.259	0.262	
Mercury				0.004	0.034	0.038	0.003	0.005	0.009	
Nickel				0.678	5.874	6.552	0.071	1.836	1.912	Solids, Effluent
Selenium				0.027	0.234	0.261	0.009	0.006	0.016	
Silver				0.090	0.781	0.872	-0.041	0.045	0.000	
Zinc				1.310	11.357	12.667	2.161	7.748	10.188	Treatment process
1,4-Dichlorobenzene				0.435	3.767	4.202	0.000	0.000	0.000	

Table 3: 4th quarter of 2014

AHL based on recorded flows

Reflects monthlhy average in which pretreatment monitoring took place

Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Monthly Totals

Pollutant	MAHL Arizona (kg/mo)	MAHL Sonora (kg/mo)	MAHL TOTAL (kg/mo)	Actual Loadings Arizona (kg/mo)	Actual Loadings Sonora (kg/mo)	Actual Loadings Sonora Exc (kg)	Actual Loadings Sonora Exc (%)	Actual Loadings Total (kg/mo)	Processes Impacted by Total Loadings*
Arsenic	3.38	29.31	32.69	1.30	6.20			7.67	
Cadmium	0.60	5.22	5.83	0.19	0.60			0.82	
Chromium	2.48	21.53	24.02	0.16	26.76	5.23	24%	27.15	Solids
Copper	18.58	161.06	179.64	0.15	113.98			140.30	
Cyanide	7.39	64.09	71.49	0.13	0.00			2.55	
Lead	2.16	18.73	20.89	0.14	7.76			7.87	
Mercury	0.12	1.02	1.14	0.10	0.16			0.27	
Nickel	20.33	176.22	196.55	0.15	55.09			57.37	
Selenium	0.81	7.01	7.82	0.18	0.19			0.48	
Silver	2.70	23.44	26.15	-1.24	1.36			0.00	
Zinc	39.31	340.71	380.02	0.18	232.45			305.64	
1,4-Dichlorobenzene	13.04	113.02	126.06	0.00	0.00			0.00	

Table 4: 4th quarter of 2014

Shows loading changes over time for Sonora

	Last Quarter		Current Quarter		Change		
Pollutant	Average Loadings Sonora (kg/day)	Total Loadings Sonora (kg/mo)	Average Loadings Sonora (kg/day)	Total Loadings Sonora (kg/mo)	Average Loadings Sonora (kg/day)	Total Loadings Sonora (kg/mo)	% change
Arsenic	0.242	7.250	0.207	6.204	-0.03487	-1.046	-14%
Cadmium	0.094	2.826	0.020	0.603	-0.07411	-2.223	-79%
Chromium	1.207	36.222	0.892	26.764	-0.31527	-9.458	-26%
Copper	3.990	119.698	3.799	113.981	-0.191	-5.7	-5%
Cyanide	0.000	0.000	0.000	0.000	0.00000	0.000	#DIV/0!
Lead	0.415	12.460	0.259	7.760	-0.157	-4.700	-38%
Mercury	0.007	0.209	0.005	0.158	-0.002	-0.052	-25%
Nickel	5.064	151.918	1.836	55.086	-3.22773	-96.832	-64%
Selenium	0.015	0.463	0.006	0.194	-0.00898	-0.269	-58%
Silver	0.082	2.464	0.045	1.361	-0.03676	-1.103	-45%
Zinc	9.838	295.133	7.748	232.448	-2.090	-62.7	-21%
1,4-Dichlorobenzene	0.000	0.000	0.000	0.000	0.00000	0.000	0%

FIGURE 1: NIWTP FLOW DISTRIBUTION

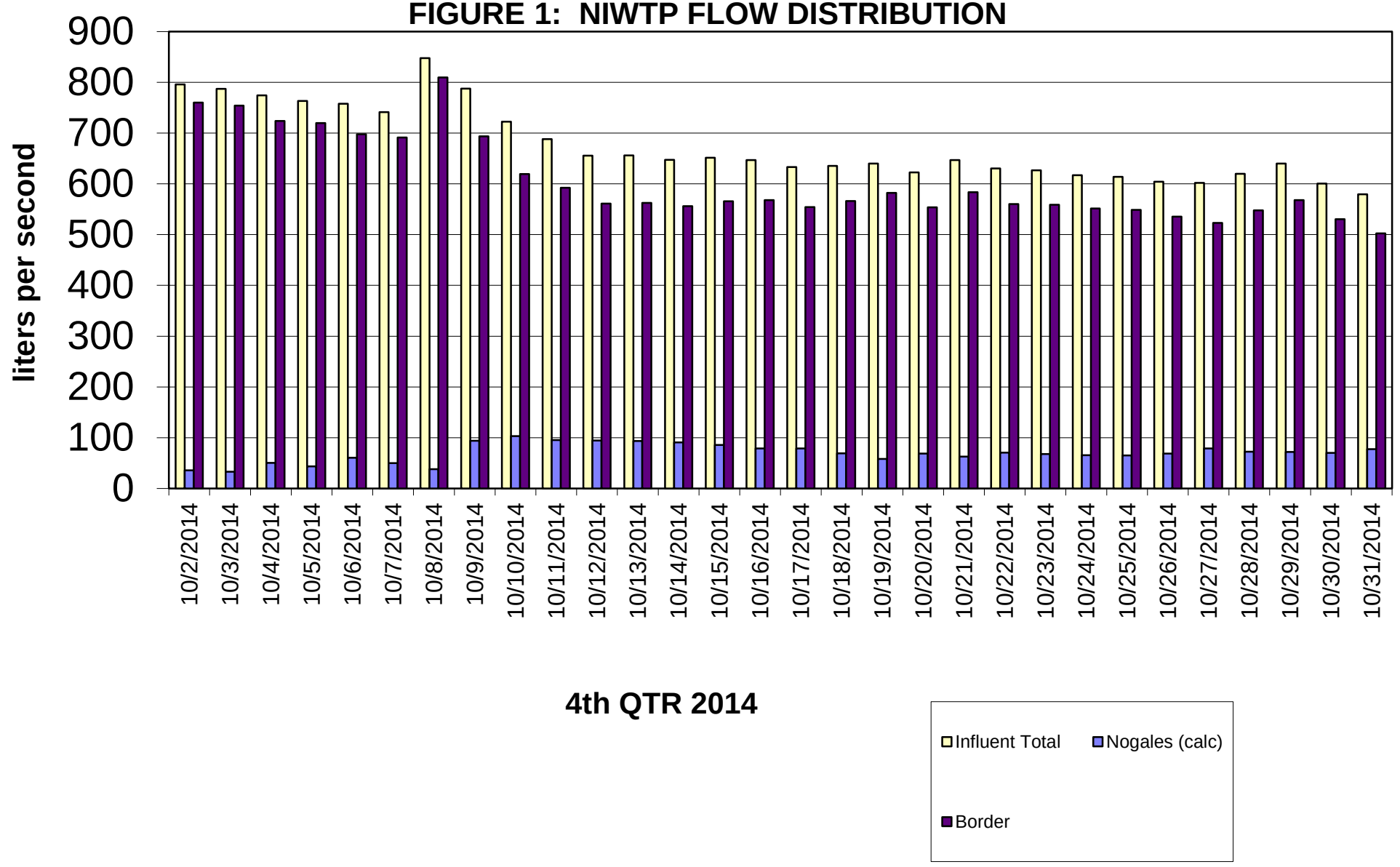

FIGURE 2: Arsenic (As) Daily Loading NIWTP Border Station

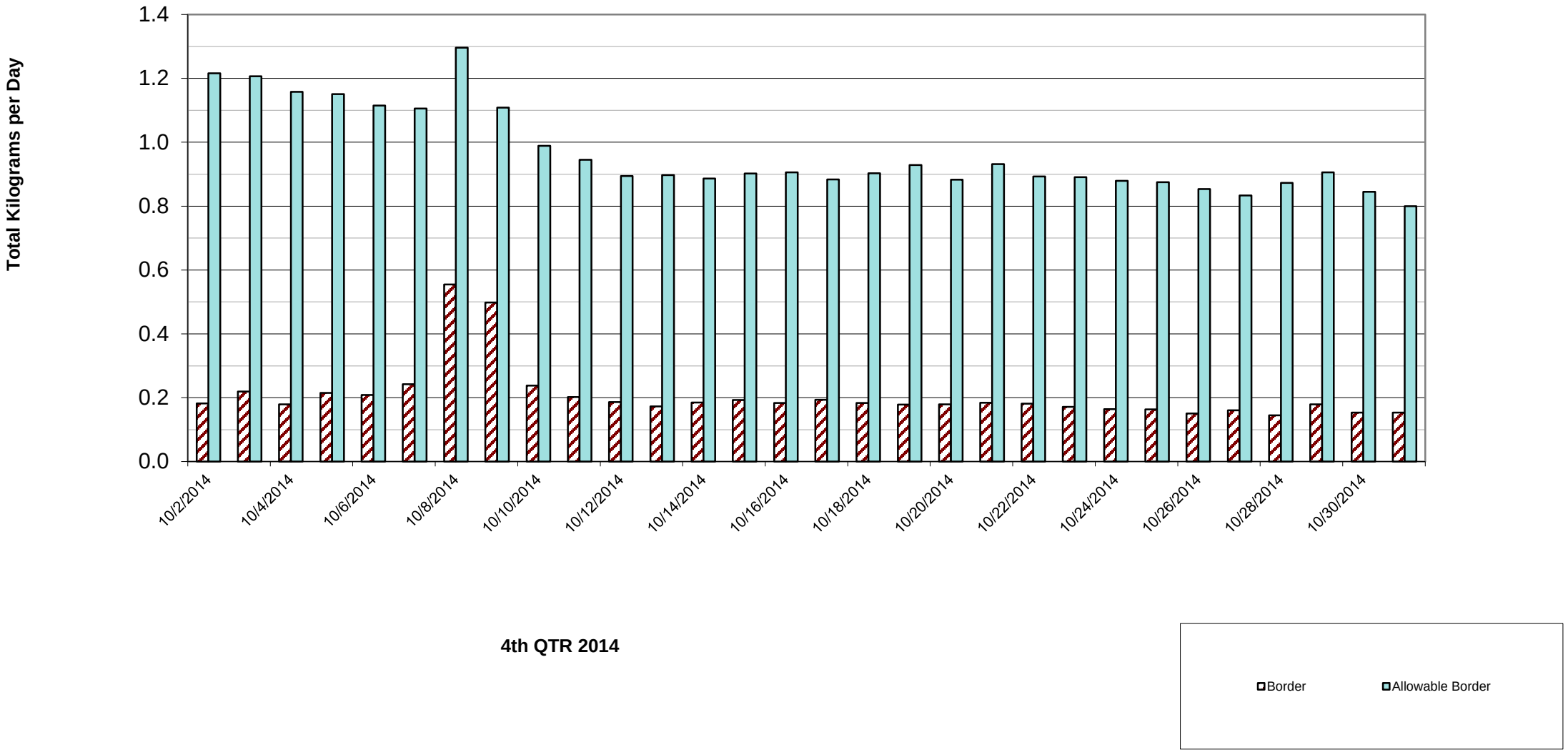

FIGURE 3: Cadmium (Cd) Daily Loading NIWTP Border Station

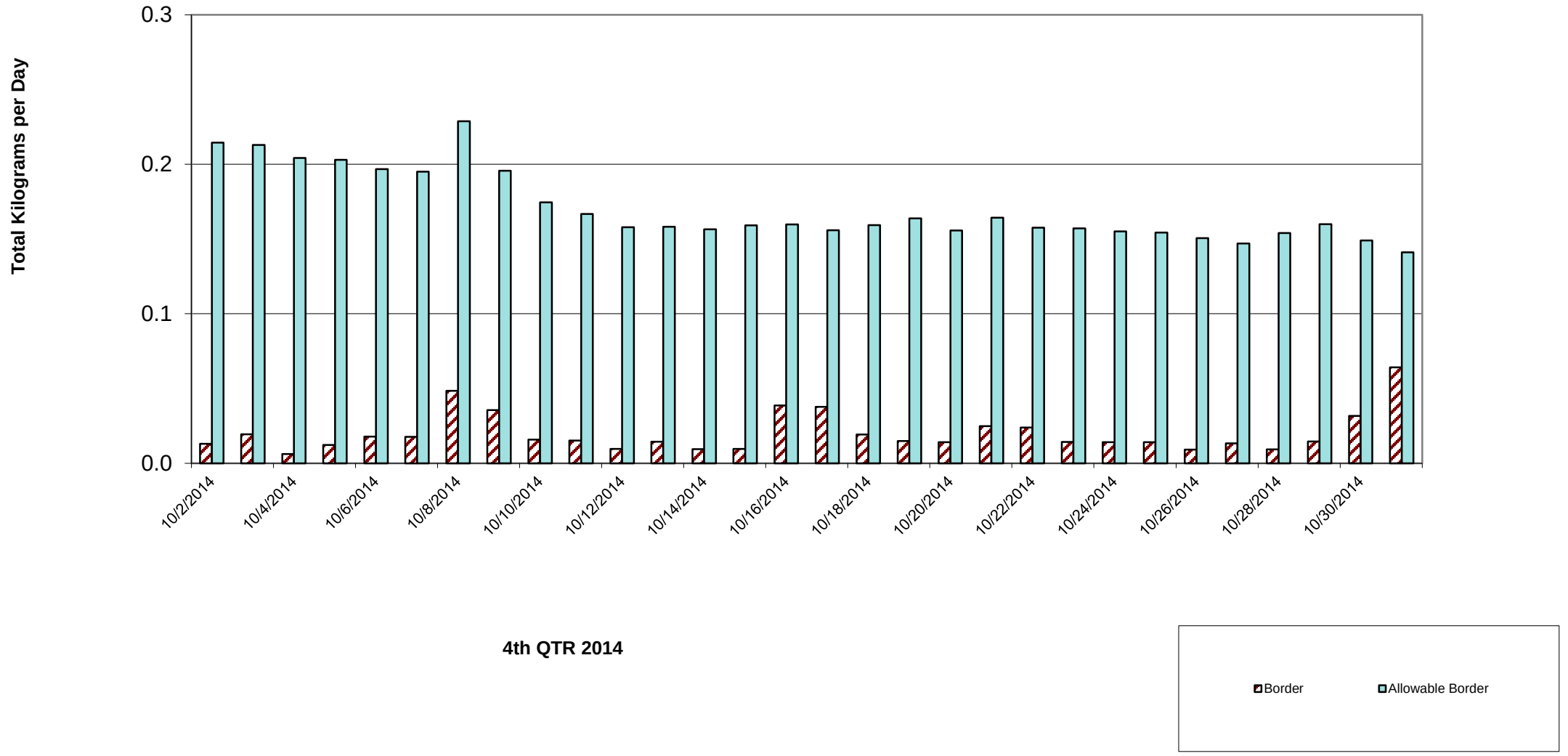

FIGURE 4: Chromium (Cr) Daily Loading NIWTP Border Station

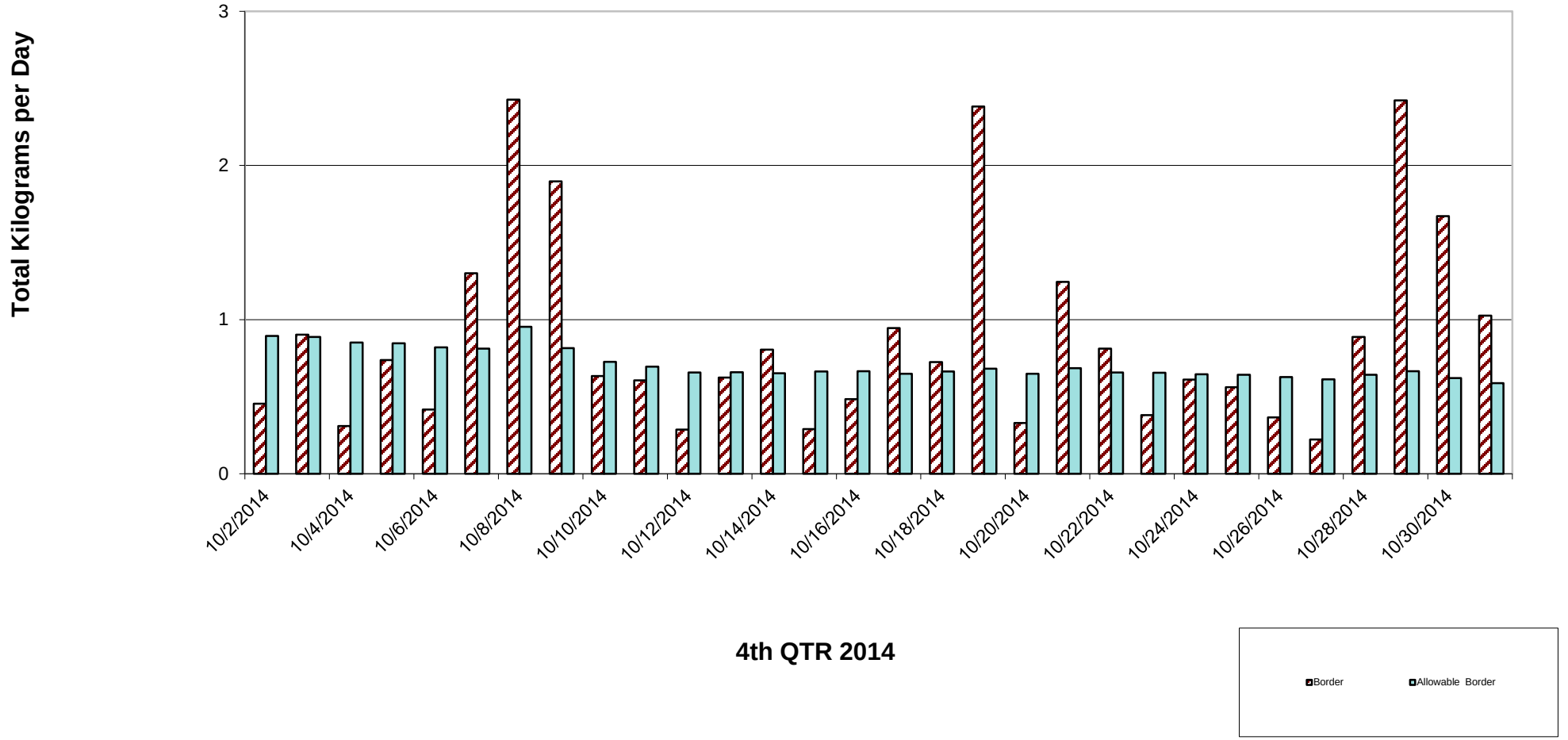

FIGURE 5: Copper (Cu) Daily Loading NIWTP Border Station

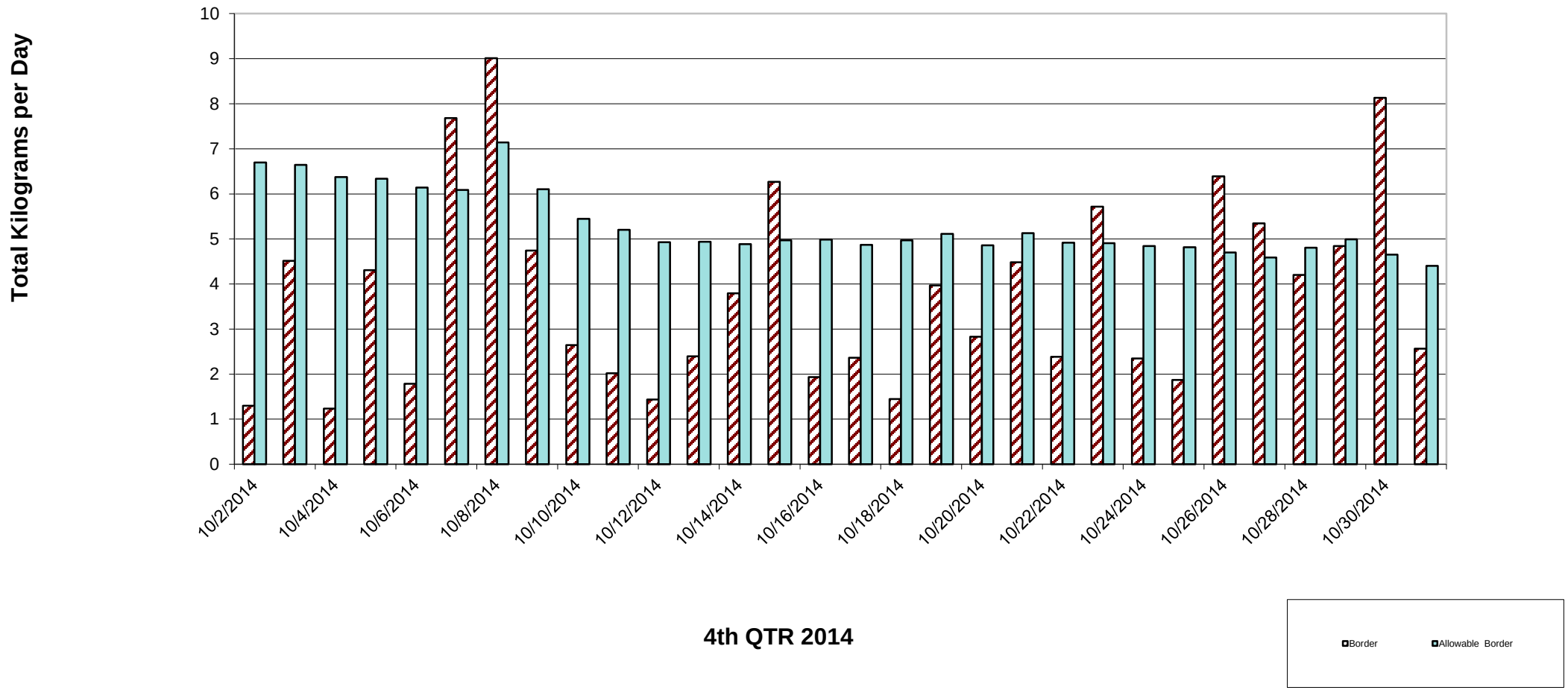

FIGURE 6: Cyanide (CN) Daily Loading NIWTP Border Station

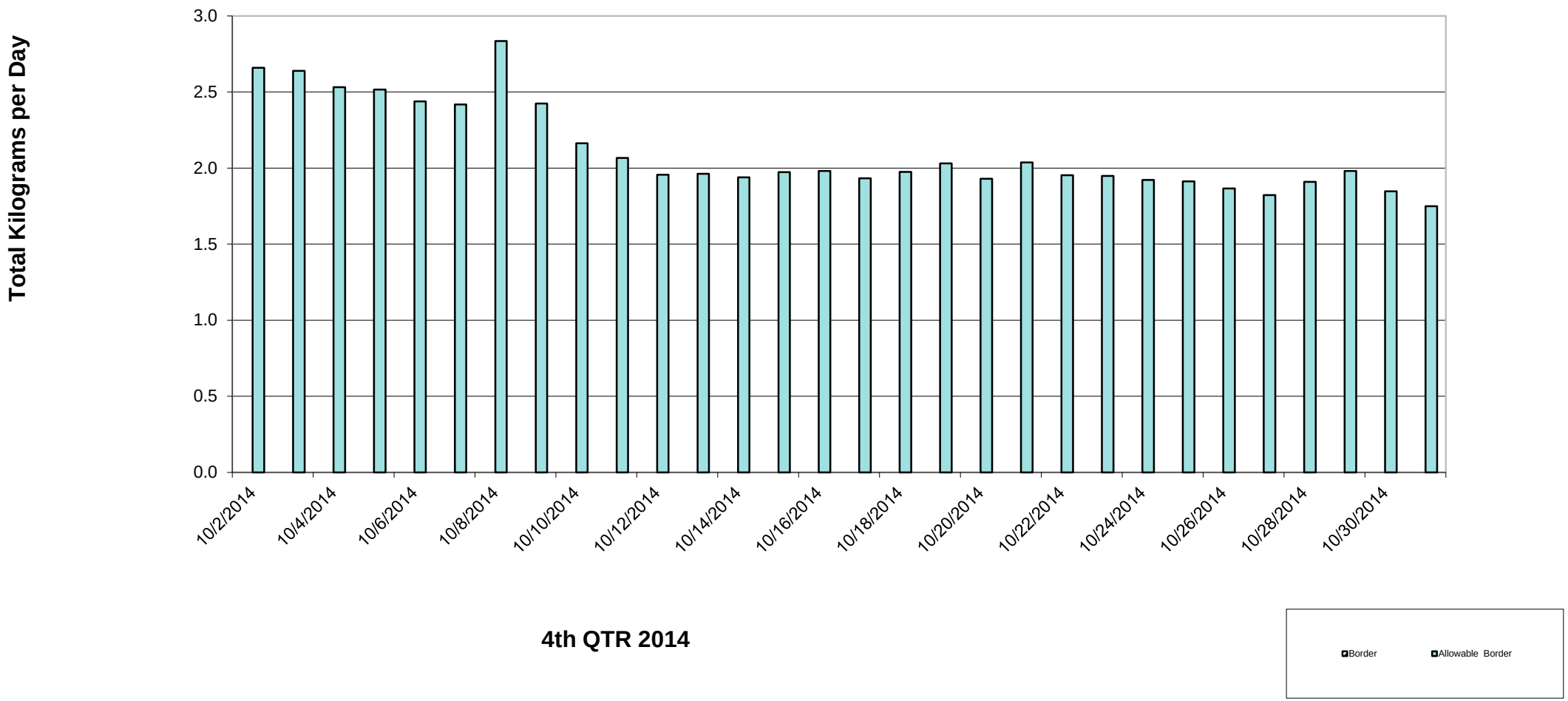

FIGURE 7: Lead (Pb) Daily Loading NIWTP Border Station

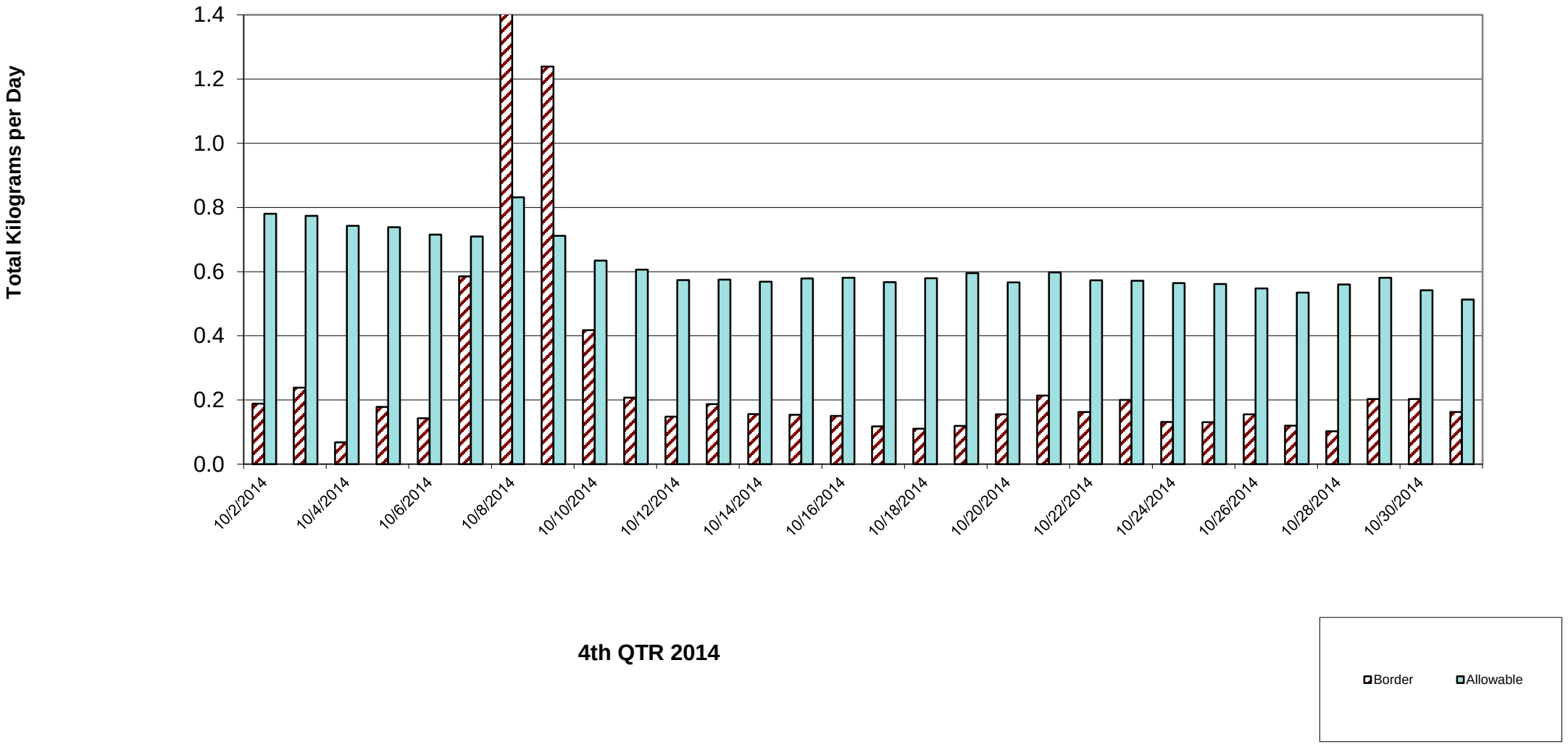

Figure 8: Mercury (Hg) Daily Loading NIWTP Border Station

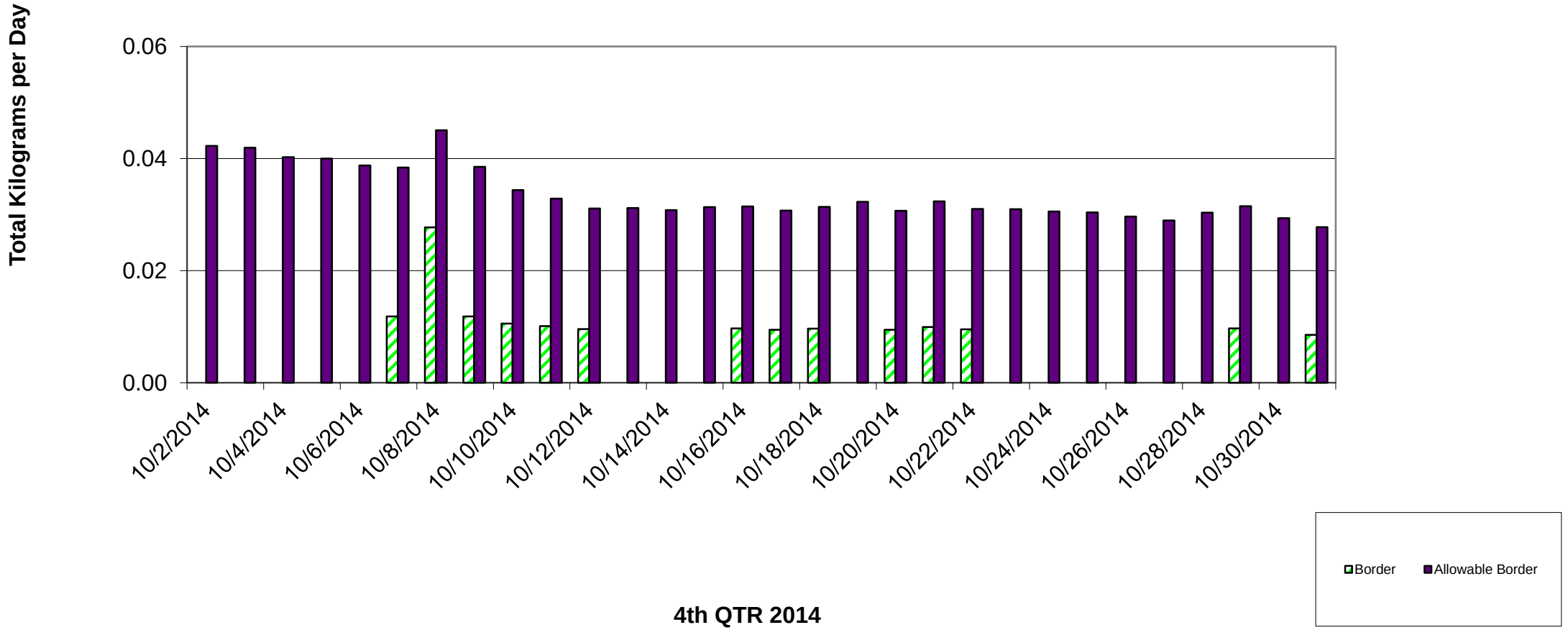

Figure 9: Nickel (Ni) Daily Loading NIWTP Border Station

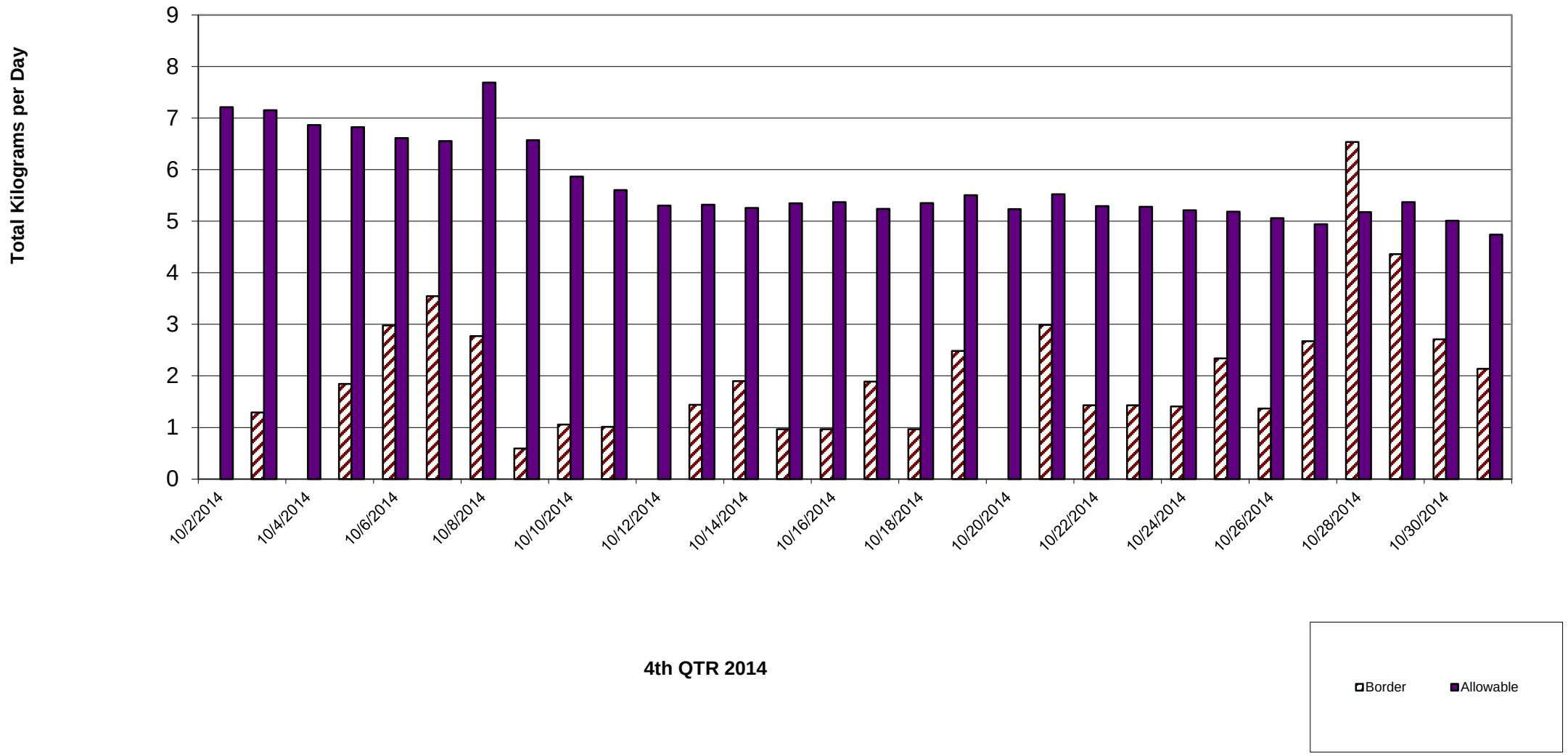

FIGURE 10: Selenium (Se) Daily Loading NIWTP Border Station

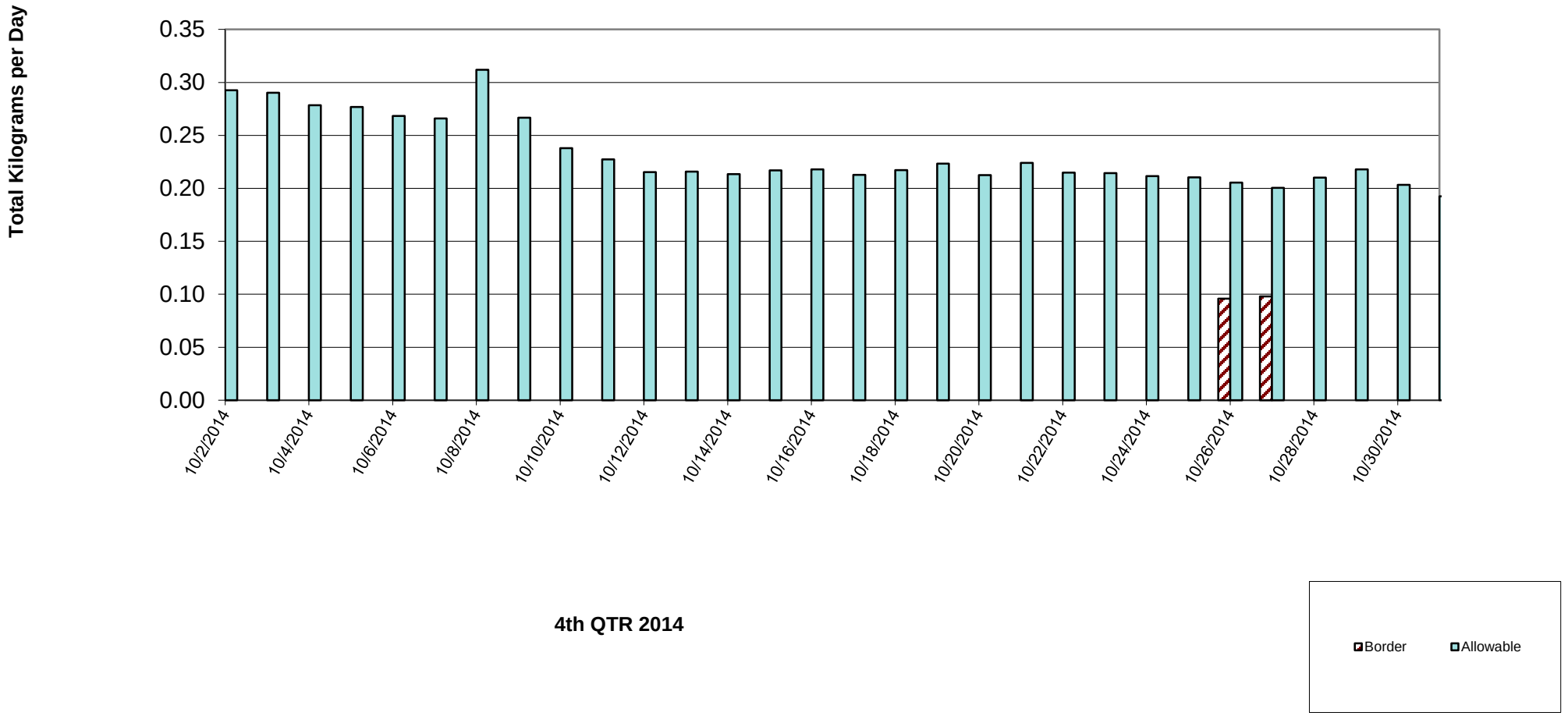

FIGURE 11: Silver (Ag) Daily Loading NIWTP Border Station

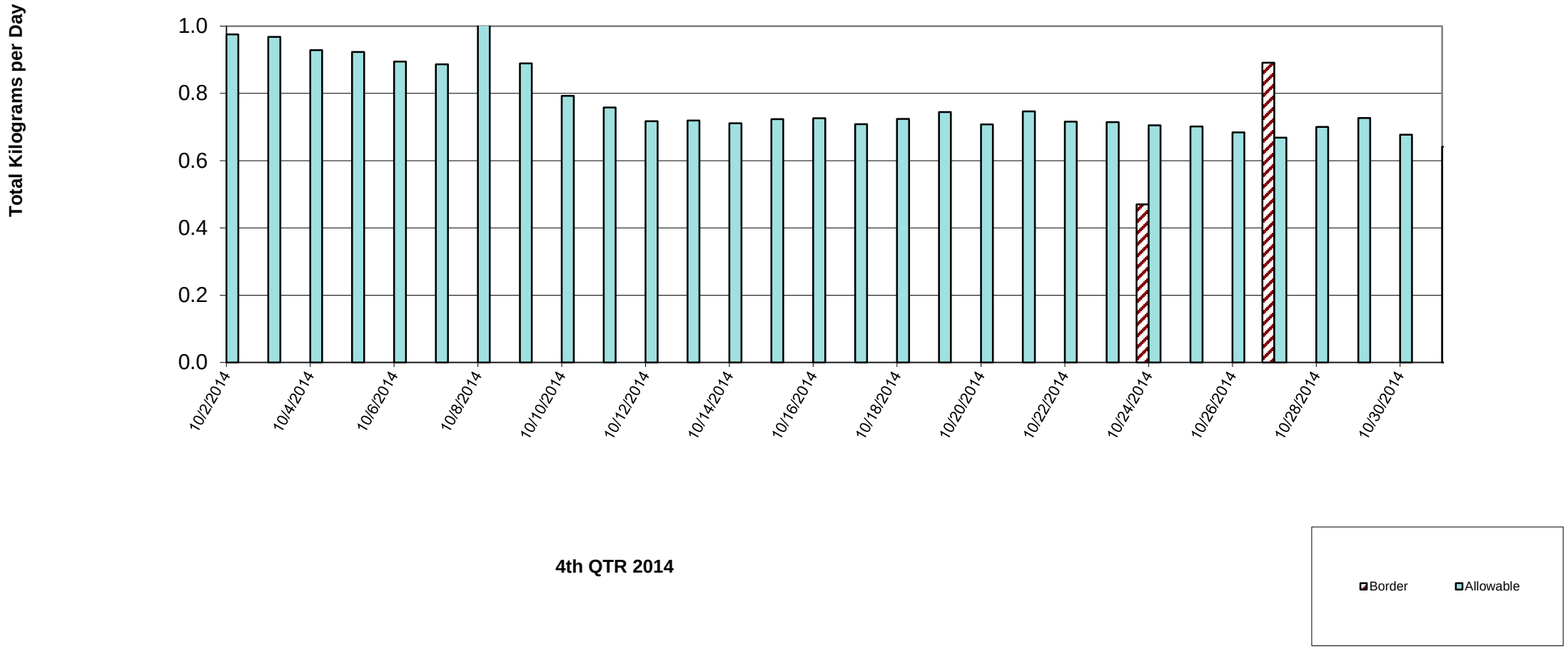

FIGURE 12: Zinc (Zn) Daily Loading NIWTP Border Station