FORM GEN. 160 (Rev. 8-12)

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: October 3, 2019

TO: Timeyin Dafeta, Plant Manager
Hyperion Water Reclamation Plant

Fernando Gonzalez, Plant Manager
Terminal Island Water Reclamation Plant

FROM: Farhana Mohamed, Division Manager FM
Environmental Monitoring Division

SUBJECT: **ASSESSMENT OF BIOSOLIDS FOR AUGUST 2019**

This report contains data from the analysis of composite biosolids and digested sludge samples collected in August 2019 at the Hyperion and Terminal Island Water Reclamation Plants. The samples were tested in accordance with EPA's Part 503 Sewage Sludge Regulations, Tables 1 and 3, to furnish a beneficial use assessment. Analyses were also performed to determine if pathogen and vector control requirements of Part 503 were met.

Hyperion Water Reclamation Plant

The metals and nutrient analyses data are presented in Tables 1 and 2 of this report. All metals detected in the composite sample were below their respective ceiling and pollutant concentration limits listed in EPA 40 CFR 503.13, Table 1. The results for Nickel and Mercury were slightly higher than their 12-month average (Table 1). Please note that the concentration of Copper was higher than its 12-month average (Table 1). For a sample taken on August 6, both fecal coliform and *Salmonella* results failed the EPA 40 CFR Part 503 limit for Class A biosolids. There was a biosolids resample on August 12. For the August 12 resample, *Salmonella* failed the EPA 40 CFR Part 503 limit for Class A biosolids, but fecal coliform results were below the EPA 40 CFR Part 503 limit for Class A biosolids (Table 6). As stated in the Class A pathogen alternatives in EPA 40 CFR Part 503, either the density of fecal coliform in the biosolids must be <1000 MPN/gram total solids dry-weight basis (gdw) or the density of *Salmonella* bacteria in the biosolids must be <3 MPN/4 gdw. The August 12 fecal coliform results were 7.8 MPN/ gdw, which are below the Class A pathogen alternatives requirements. The August helminth ova and enteric virus results were below the limits for Class A biosolids (Table 6). The enteric virus result for February is not yet available. The August dioxin and polychlorinated biphenyl results were non-detect (Table 5).

Terminal Island Water Reclamation Plant

Beginning in July 2010, TIWRP began injecting digested sludge into TIRE with a goal of 100% injection, but may occasionally produce biosolids due to operational logistics.

No TIWRP biosolids analyses were required in August per the sampling schedule.

Graphs of the concentrations of selected metals in HWRP and TIWRP biosolids and digested sludge over the past 24 months are shown in Figures 1 through 10.

If you have any questions about this report, please contact Darryl Guenther of my staff at (310) 648-5727.

FM/RV:rv

Attachment: Appendix 1 - Arizona ELAP-Certified Monthly Biosolids Monitoring Report with Class A and B Microbiological Requirements.

ec: Mas Dojiri (EXEC)
Traci Minamide (EXEC)
Michael Fan (TIWRP)
Neel Patel (HWRP)
Doug Walters (CSO)
Shahrouzeh Saneie (HWRP)
Dave Gumaer (TIWRP)
Adonis Ogbeni (TIWRP)
Alan Tran (HWRP)
EMD Lab Managers
Emmanuel Alloh (HWRP)
Miguel Medina (HWRP)
Stephen Ortega (HWRP)
Lenise Marrero (WESD)
Lance Thibodeaux (TIWRP)
Constanin Pano (SRPCD)
Christina Becerra-Jones (RAD)
Loudmilla Vertanessian (IWMD)

Table 1. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS AT HYPERION WATER RECLAMATION PLANT

Sampling Date	pH	%TS	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
	mg/kg dry weight											
Aug-19	8.4	26.5	ND	12.3	48.3	762	20.2	24.2	1.25	61.5	2.68	1,450
Jul-19	8.4	27.5	2.25	11.6	44.7	622	17.4	24.7	1.11	58.2	5.78	1,530
Jun-19	8.5	27.0	3.78	11.5	43.3	593	17.7	18.0	1.07	68.1	4.67	1,500
May-19	8.5	26.5	ND	15.7	53.2	581	18.5	17.9	0.860	48.7	ND	1,500
Apr-19	8.4	27.2	3.64	12.2	44.5	559	16.6	17.8	0.960	58.5	ND	1,470
Mar-19	8.5	25.7	ND	12.3	46.7	572	15.3	20.5	1.34	60.7	7.04	1,460
Feb-19	8.6	26.4	1.44	9.70	44.7	530	13.0	17.1	1.40	40.9	3.48	1,270
Jan-19	8.6	26.6	1.54	10.2	45.1	602	21.8	28.5	0.665	42.9	5.49	1,140
Dec-18	8.5	27.3	ND	11.4	41.0	681	17.4	38.8	0.923	46.2	ND	1,440
Nov-18	8.5	25.3	ND	12.3	40.3	680	17.7	17.4	1.08	49.8	6.80	1,490
Oct-18	8.6	25.3	ND	13.2	45.1	676	20.3	17.2	1.15	48.6	ND	1,660
Sep-18	8.4	26.5	ND	11.6	57.4	675	21.2	20.8	1.27	49.1	1.62	1,630
Average	8.5	26.5	1.05	12.0	46.2	628	18.1	21.9	1.09	52.8	3.13	1,460
Maximum	8.6	27.5	3.78	15.7	57.4	762	21.8	38.8	1.40	68.1	7.04	1,660
Minimum	8.4	25.3	ND	9.70	40.3	530	13.0	17.1	0.665	40.9	ND	1,140
Ceiling Conc.*			75	85	***	4300	75	840	57	420	100	7500
Pollutant Conc.**			41	39	***	1500	***	300	17	420	100	2800

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

* Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation.
** Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
*** Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995

Table 2. HWRP BIOSOLIDS - NUTRIENTS AND MISC. METALS - EVALUATION FOR LOADING PURPOSES

Sampling Date	%TS	Aluminum (Al)	Calcium (Ca)	Iron (Fe)	Potassium (K)	Magnesium (Mg)	Nitrate-N (NO3-N)	Phosphorus (Tot-P)	Sodium (Na)	Ammonia-N (NH3-N)	Organic-N (Org-N)
	mg/kg dry weight										
Aug-19	26.5	3,800	36,000	47,500	1,380	8,040	22.6	27,000	1,130	6,680	44,500
Jul-19	27.5	3,500	33,300	44,400	1,630	7,020	25.5	26,600	1,060	6,910	42,500
Jun-19	27.0	3,300	37,800	48,100	1,660	7,070	29.6	29,000	1,150	7,150	45,900
May-19	26.5	3,400	35,300	48,700	1,850	7,470	15.1	29,700	1,370	6,870	46,400
Apr-19	27.2	3,700	36,500	46,300	2,000	7,870	18.4	34,900	1,060	7,650	41,900
Mar-19	25.7	4,200	35,800	49,000	1,740	7,900	23.3	33,400	1,150	6,890	42,800
Feb-19	26.4	4,000	37,500	46,200	1,260	8,070	30.3	27,700	1,290	6,330	42,000
Jan-19	26.6	3,400	33,700	47,000	1,910	7,560	11.3	31,200	1,220	6,020	39,800
Dec-18	27.3	3,800	38,100	53,500	1,430	8,280	14.7	28,200	1,340	6,850	42,500
Nov-18	25.3	3,100	35,800	49,400	1,550	8,180	23.7	31,100	1,050	7,040	44,300
Oct-18	25.3	3,100	35,300	50,200	1,510	8,930	15.8	29,300	1,070	7,310	43,100
Sep-18	26.5	3,200	35,400	48,700	1,400	8,980	15.1	29,600	1,170	6,910	47,200
Average	26.5	3,540	35,900	48,300	1,610	7,950	20.5	29,800	1,170	6,880	43,600
Maximum	27.5	4,200	38,100	53,500	2,000	8,980	30.3	34,900	1,370	7,650	47,200
Minimum	25.3	3,100	33,300	44,400	1,260	7,020	11.3	26,600	1,050	6,020	39,800

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

Table 3. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS AT TERMINAL ISLAND WATER RECLAMATION PLANT

Sampling Date	pH	%TS	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
	mg/kg dry weight											
Aug-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-19	7.7	1.7	14.1	2.94	41.2	251	30.0	18.2	1.15	32.9	43.5	1,580
Jun-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-19	7.6	1.7	6.47	4.71	32.9	168	24.7	14.1	0.300	29.4	27.1	1,280
Apr-19	7.6	1.7	8.82	5.29	33.5	169	22.9	16.5	0.788	30.6	26.5	1,190
Mar-19	7.6	1.6	10.0	3.75	30.6	183	23.8	16.3	0.581	27.5	47.5	988
Feb-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-19	7.6	2.1	8.57	4.76	31.0	163	28.1	13.3	0.448	26.7	41.0	952
Dec-18	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-18	7.2	1.5	6.67	3.33	26.0	153	22.7	9.33	0.507	24.7	40.7	820
Oct-18	7.4	1.2	5.00	5.00	33.3	188	25.0	12.5	2.22	28.3	27.5	1,010
Sep-18	7.4	1.2	3.33	4.17	40.8	223	30.0	14.2	0.975	35.0	41.7	1,180
Average	7.5	1.6	7.87	4.24	33.7	187	25.9	14.3	0.870	29.4	36.9	1,130
Maximum	7.7	2.1	14.1	5.29	41.2	251	30.0	18.2	2.22	35.0	47.5	1,580
Minimum	7.2	1.2	3.33	2.94	26.0	153	22.7	9.33	0.300	24.7	26.5	820
Ceiling Conc.*			75	85	***	4300	75	840	57	420	100	7500
Pollutant Conc.**			41	39	***	1500	***	300	17	420	100	2800

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

* Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation.
** Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
*** Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995

Table 4. TIWRP BIOSOLIDS - NUTRIENTS AND MISC. METALS - EVALUATION FOR LOADING PURPOSES

Sampling Date	%TS	Aluminum (Al)	Calcium (Ca)	Iron (Fe)	Potassium (K)	Magnesium (Mg)	Nitrate-N (NO3-N)	Phosphorus (Tot-P)	Sodium (Na)	Ammonia-N (NH3-N)	Organic-N (Org-N)
	mg/kg dry weight										
Aug-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-19	1.7	4,200	19,900	31,300	13,100	9,120	118	34,000	39,400	61,800	43,500
Jun-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-19	1.7	4,700	20,600	36,400	13,200	11,200	ND	35,400	42,200	76,500	35,900
Apr-19	1.7	5,200	20,600	40,300	12,600	11,400	ND	36,100	36,100	80,000	31,000
Mar-19	1.6	5,000	18,100	37,400	12,500	10,100	ND	30,000	41,300	66,300	34,100
Feb-19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-19	2.1	4,600	18,200	33,100	9,710	9,570	143	31,500	30,100	53,300	34,700
Dec-18	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-18	1.5	3,400	17,600	31,700	12,000	10,700	1,070	44,800	47,700	63,700	53,100
Oct-18	1.2	4,300	23,300	45,400	11,100	12,600	ND	31,200	60,800	57,400	30,700
Sep-18	1.2	5,500	26,000	49,300	12,400	14,000	167	32,700	67,300	67,800	26,800
Average	1.6	4,600	20,500	38,100	12,100	11,100	187	34,500	45,600	65,800	36,200
Maximum	2.1	5,500	26,000	49,300	13,200	14,000	1,070	44,800	67,300	80,000	53,100
Minimum	1.2	3,400	17,600	31,300	9,710	9,120	ND	30,000	30,100	53,300	26,800

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

NS No Sampling Required

Table 5. CONCENTRATIONS OF DIOXIN AND PCBs IN HWRP AND TIWRP BIOSOLIDS

Sampling Date	Dioxin 2,3,7,8-TCDD (ppb ng/g wet wt.)	PCBs** AR 1016	AR 1221	AR 1232	AR 1242	AR 1248	AR 1254	AR 1260	Total PCBs*** ppm (mg/kg wet wt.)
		ppm (mg/kg) wet weight							
HWRP BIOSOLIDS									
Aug-19	<9.10000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Jul-19	<0.03300 ^^	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Jun-19	<9.30000 *	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
May-19	<9.20000 *	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Apr-19	<0.03600 ^^	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Mar-19	<9.40000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Feb-19	<9.40000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Jan-19	<0.03600 ^^	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Dec-18	<8.90000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Nov-18	<12.00000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Oct-18	<0.00400 ^^	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Sep-18	<9.60000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
TIWRP BIOSOLIDS / DIGESTED SLUDGE @, #									
Aug-19	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-19	<0.56000 ^^	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Jun-19	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-19	<130.00000 *	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Apr-19	<0.49000 ^^	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Mar-19	<160.00000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Feb-19	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-19	<1.30000 ^^	<0.00200	<0.03000	<0.01900	<0.01300	<0.00760	<0.00280	<0.00180	ND
Dec-18	NS	NS	NS	NS	NS	NS	NS	NS	NS
14-Nov-18	<0.35000 ^^	NS	NS	NS	NS	NS	NS	NS	NS
2-Nov-18	<150.00000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Oct-18	AE ^^	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND
Sep-18	<450.00000 *	<0.00230	<0.00560	<0.00430	<0.01500	<0.00610	<0.00240	<0.00290	ND

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

* Low Resolution 2,3,7,8-TCDD analysis by method EPA 8280A.
^^ High resolution 2,3,7,8-TCDD analysis by method EPA 1613B.
** Polychlorinated biphenyls (Arochlors)
*** Sum of AR 1016, AR 1221, AR 1232, AR 1242, AR 1248, AR 1254, AR 1260

ND Not Detected
NS No Sampling Required
@ Sampling frequency for TIWRP is 6 months/year. The sampling months are: Jan, Mar, May, Jul, Sep and Nov.
\# TIWRP changed from analyzing Biosolids to analyzing Digested Sludge in July 2010

Note: California Title 22 lists 10 ppb for Dioxin and 50 ppm for PCBs as the Total Threshold Limit Concentration (TTLC) for hazardous waste

Table 6. HWRP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Sampling Date	%TS	FECAL COLIFORM MPN/gram TS (dry wt)		SALMONELLA, sp. MPN/4 grams TS (dry wt)		HELMINTH OVA Viable Helminth Ova/4 grams TS (dry wt)			ENTERIC VIRUS PFU/4 grams TS (dry wt)		
		Silo#/Farm		Silo#/Farm		Raw Sludge	Silo#/Farm		Raw Sludge	Silo#/Farm	
August 12, 2019	25.6	Silo	7.8	Silo	>11.6	NS	---	NS	NS	---	NS
August 6, 2012	25.2	Silo	36507.9	Silo	>12.5	3.3	Silo	<0.5	9.8	Silo	<0.5
July 8, 2019	25.1	Farm	<7.2	Farm	<1.8	6.4	Farm	<0.5	17.3	Farm	<0.5
June 11, 2019	24.9	Silo	<7.2	Silo	<1.6	NS	---	NS	NS	---	NS
June 4, 2019	26.2	Silo 1	20610.7	Silo 1	>11.5	8.2	Silo 1	<0.5	18.9	Silo 1	<0.5
June 3, 2019	25.3	---	NS	---	NS	NS	---	NS	NS	Farm	<1
May 7, 2019	23.2	---	NS	---	NS	NS	---	NS	NS	Farm	<1
May 7, 2019	24.4	Silo	<7.4	Silo	<1.7	8.2	Silo	<0.5	NS	---	NS
April 9, 2019	27.5	---	NS	---	NS	NS	---	NS	NS	Farm	<1
April 9, 2019	27.2	Farm	<6.6	Farm	<1.6	5.9	Farm	<0.5	NS	---	NS
March 5, 2019	26.4	---	NS	---	NS	NS	---	NS	NS	Farm	<1
March 5, 2019	26.4	Silo	49.2	Silo	<1.6	4.1	Silo	<0.5	NS	---	NS
February 5, 2019	25.8	Silo	10852.7	Silo	<1.6	7.2	Silo	<0.5	NA	Silo	NA
January 15, 2019	26.0	Farm	<6.9	Farm	<1.6	20.3	Farm	<0.5	13.0	Farm	<0.5
December 4, 2018	26.4	Silo 5	<6.8	Silo 5	<1.6	11.0	Silo 5	<0.5	11.5	Silo 5	<0.5
November 6, 2018	24.0	Silo	<7.5	Silo	<1.8	6.3	Silo	<0.5	13.3	Silo	<0.5
October 2, 2018	24.0	Farm	<7.5	Farm	<1.8	8.3	Farm	<0.5	13.3	Farm	<0.6
September 11, 2018	26.0	Silo	<6.9	Silo	<1.6	4.7	Silo	<0.5	7.0	Silo	<0.5
Requirement**			<1000		<3			<1			<1

* - EPA 40 CFR Part 503 Class A requirements
NA - Data not yet available
NS - No Sampling Required

Table 7. TIWRP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Sampling Date	TOTAL SOLIDS		FECAL COLIFORM		SALMONELLA, sp.	
	%		MPN/gram TS (dry wt)		MPN/4 grams TS (dry wt)	
	Silo#/Farm		Silo#/Farm		Silo#/Farm	
	6 Times/Year@		6 Times/Year@		Quarterly	
Aug-19	NS	NS	NS	NS	NS	NS
Jul-19	TIWRP Digester Sludge	1.90	TIWRP Digester Sludge	<9.5	TIWRP Digester Sludge	<1.5
Jun-19	NS	NS	NS	NS	NS	NS
May-19	TIWRP Digester Sludge	1.70	TIWRP Digester Sludge	<10.6	TIWRP Digester Sludge	<1.6
Apr-19	NS	NS	NS	NS	NS	NS
Mar-19	TIWRP Digester Sludge	1.60	TIWRP Digester Sludge	<11.3	TIWRP Digester Sludge	<1.6
Feb-19	NS	NS	NS	NS	NS	NS
Jan-19	TIWRP Digester Sludge	1.90	TIWRP Digester Sludge	<9.5	TIWRP Digester Sludge	<1.4
Dec-18	NS	NS	NS	NS	NS	NS
Nov-18	TIWRP Digester Sludge	1.60	TIWRP Digester Sludge	12.5	TIWRP Digester Sludge	<1.4
Oct-18	NS	NS	NS	NS	NS	NS
Sep-18	TIWRP Digester Sludge	1.30	TIWRP Digester Sludge	<13.8	TIWRP Digester Sludge	<2.5
Requirement*				<1000		<3

* - EPA 40 CFR Part 503 Class A requirements
NS - No Sampling Required
@ - Sampling frequency for TIWRP is 6 months/year. The sampling months are: Jan, Mar, May, Jul, Sep and Nov.

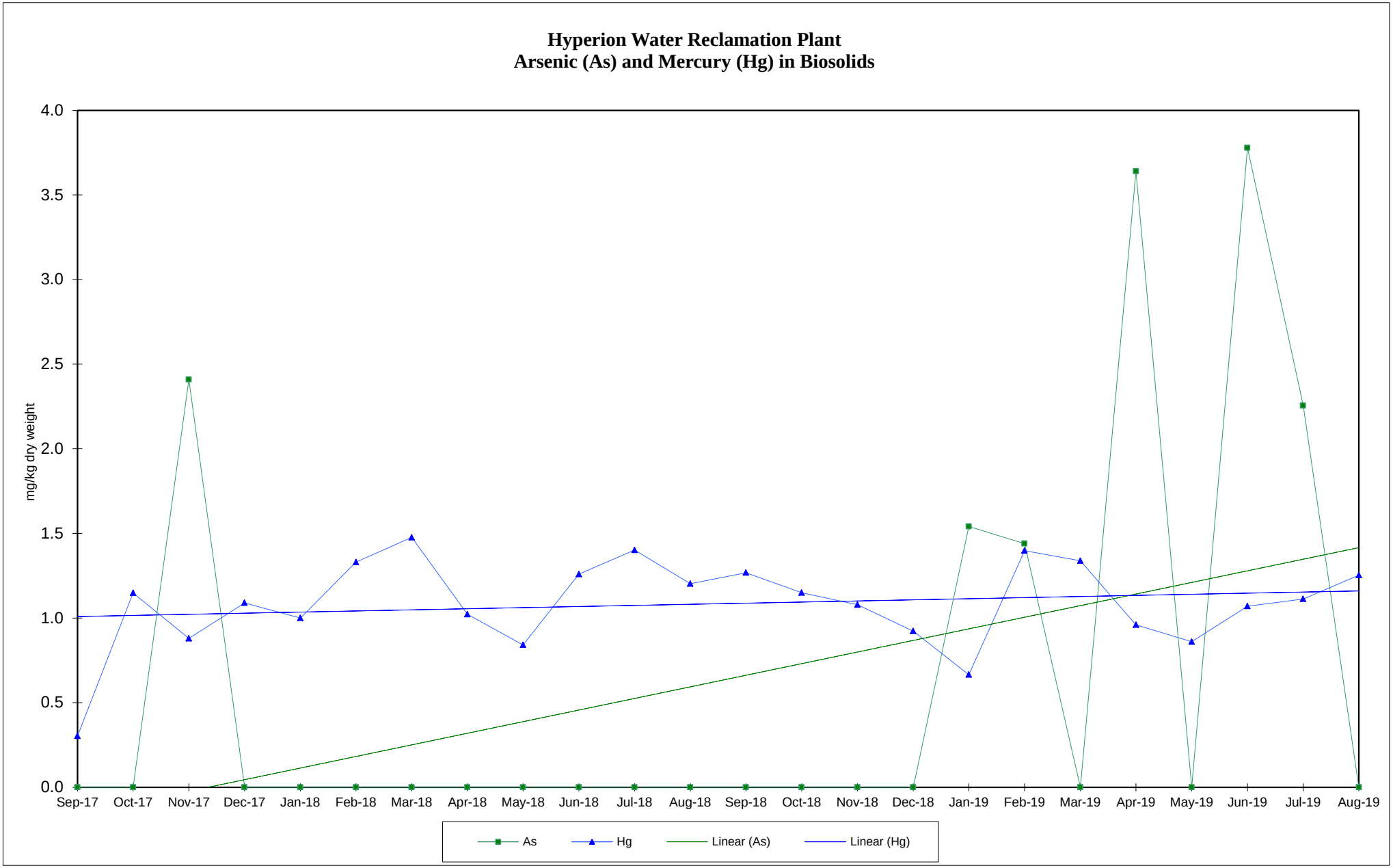

Figure 1. Concentrations of arsenic and mercury in HWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

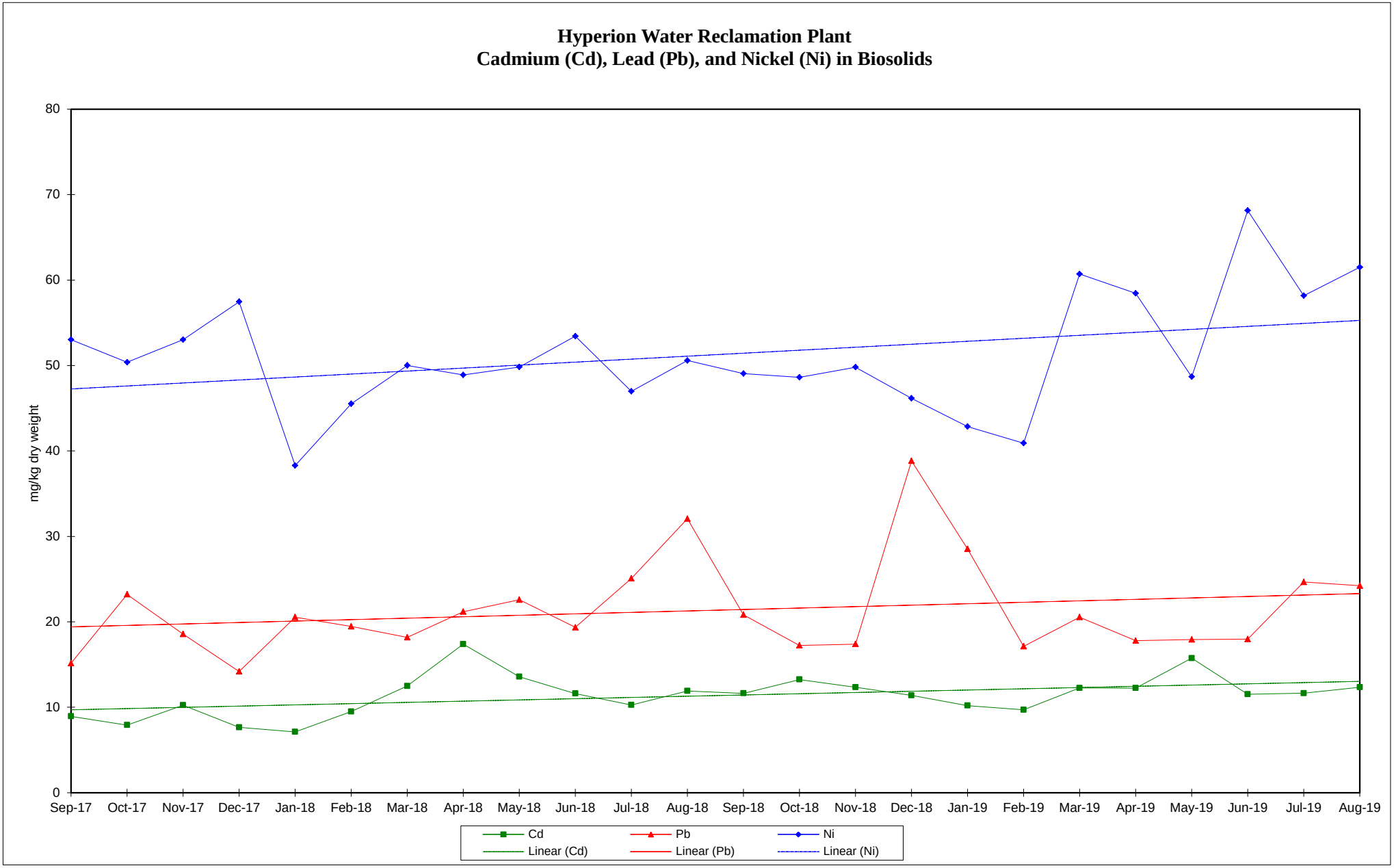

Figure 2. Concentrations of cadmium, lead, and nickel in HWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

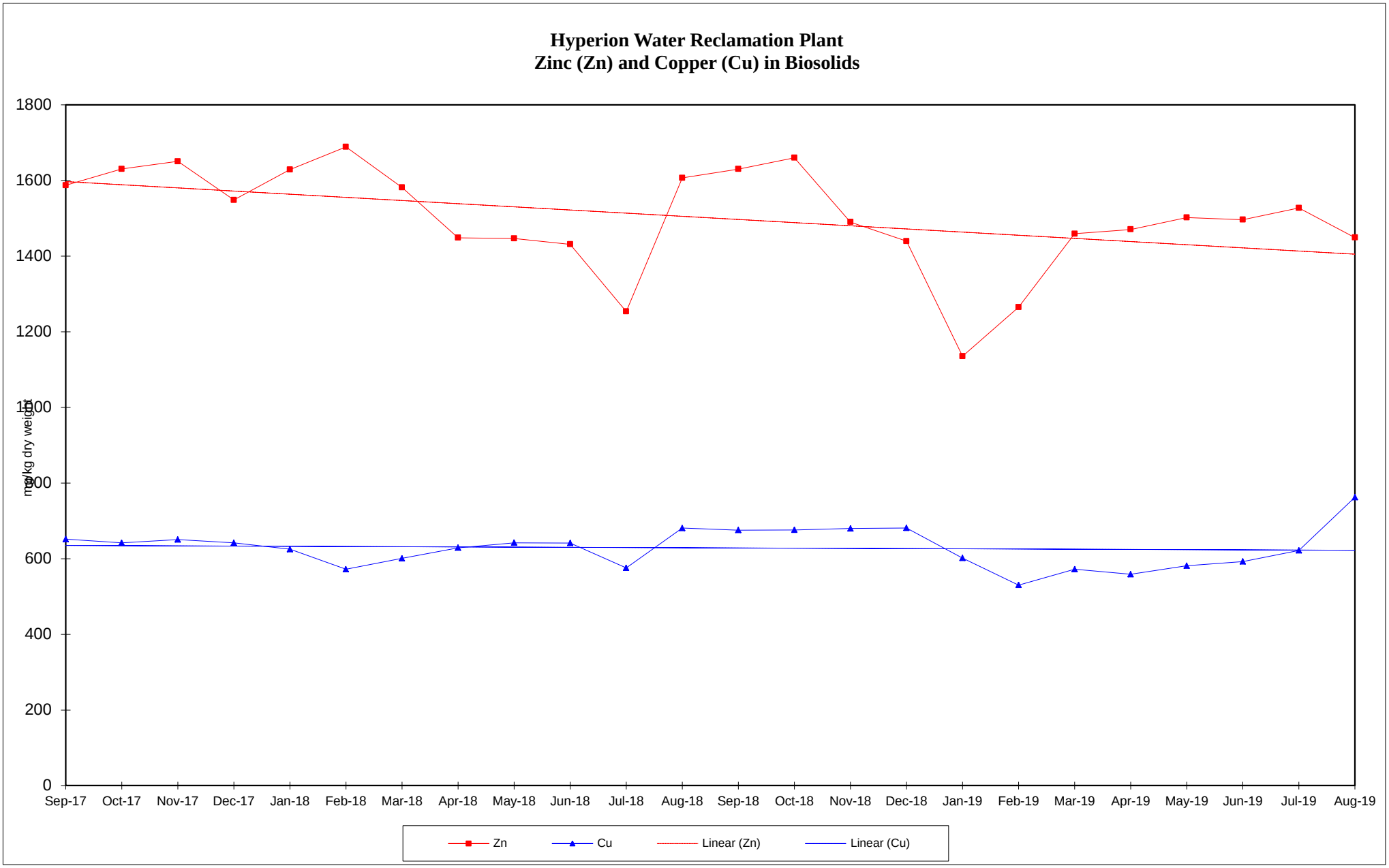

Figure 3. Concentrations of zinc and copper in HWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

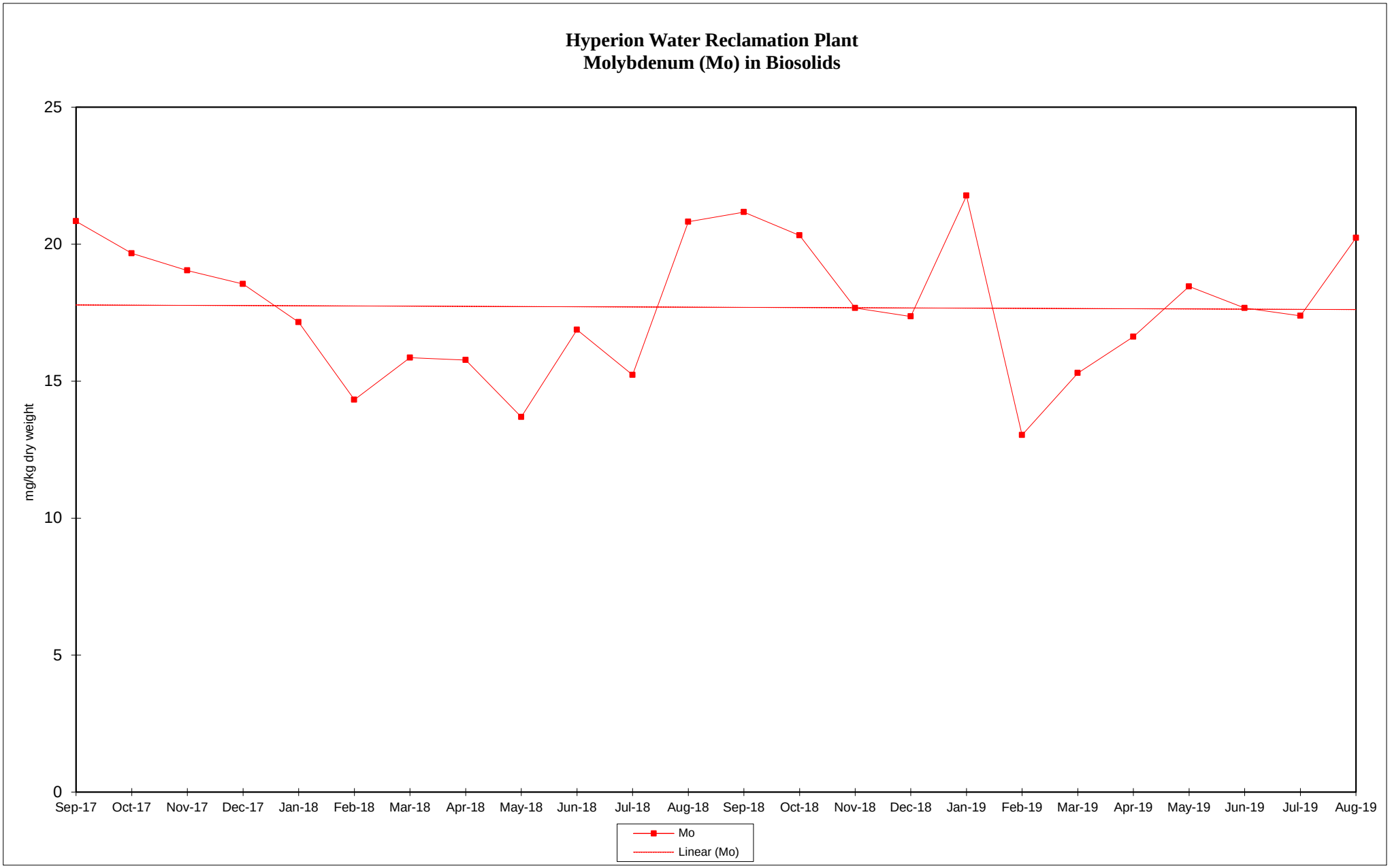

Figure 4. Concentrations of molybdenum in HWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

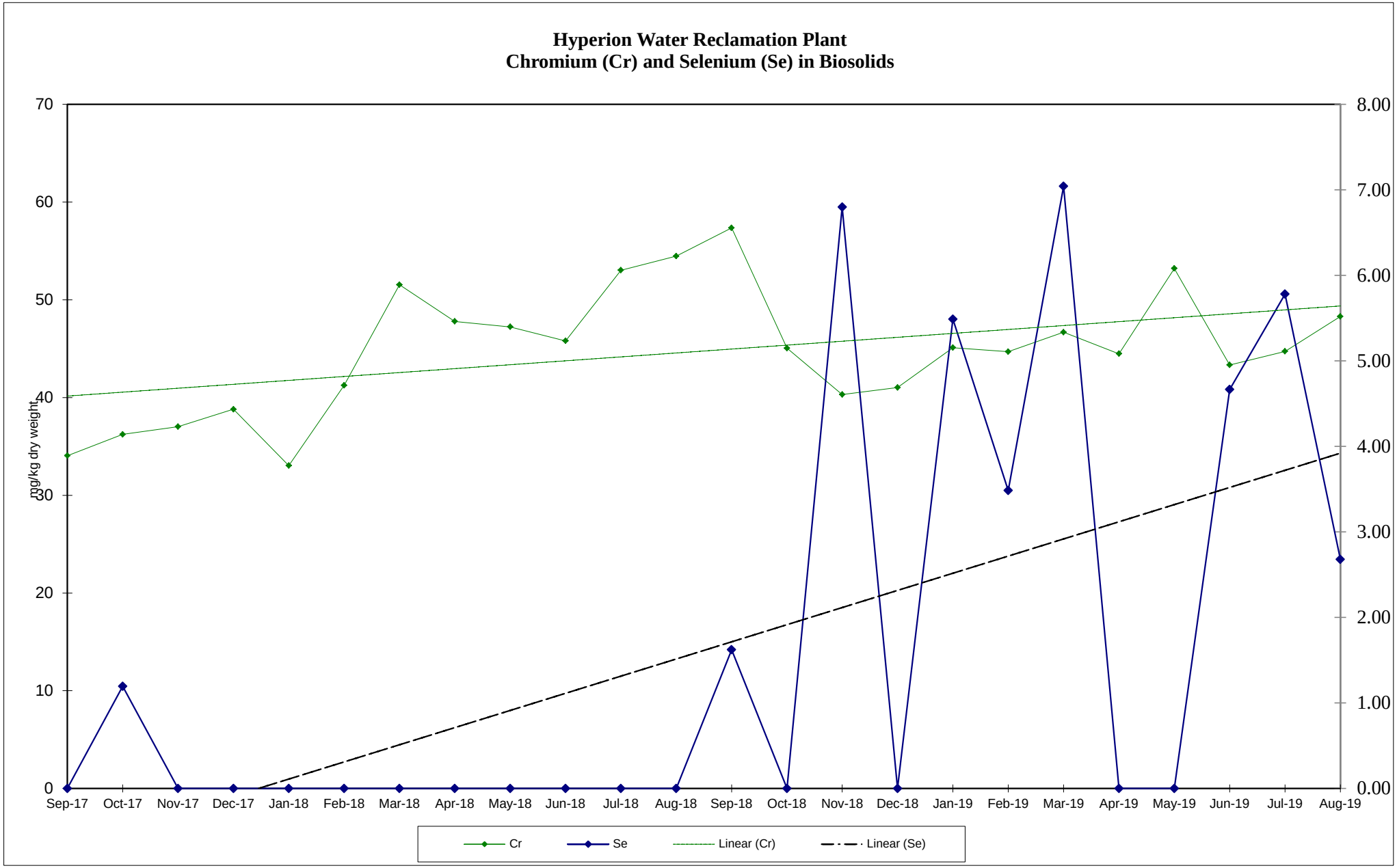

Figure 5. Concentrations of chromium and selenium in HWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

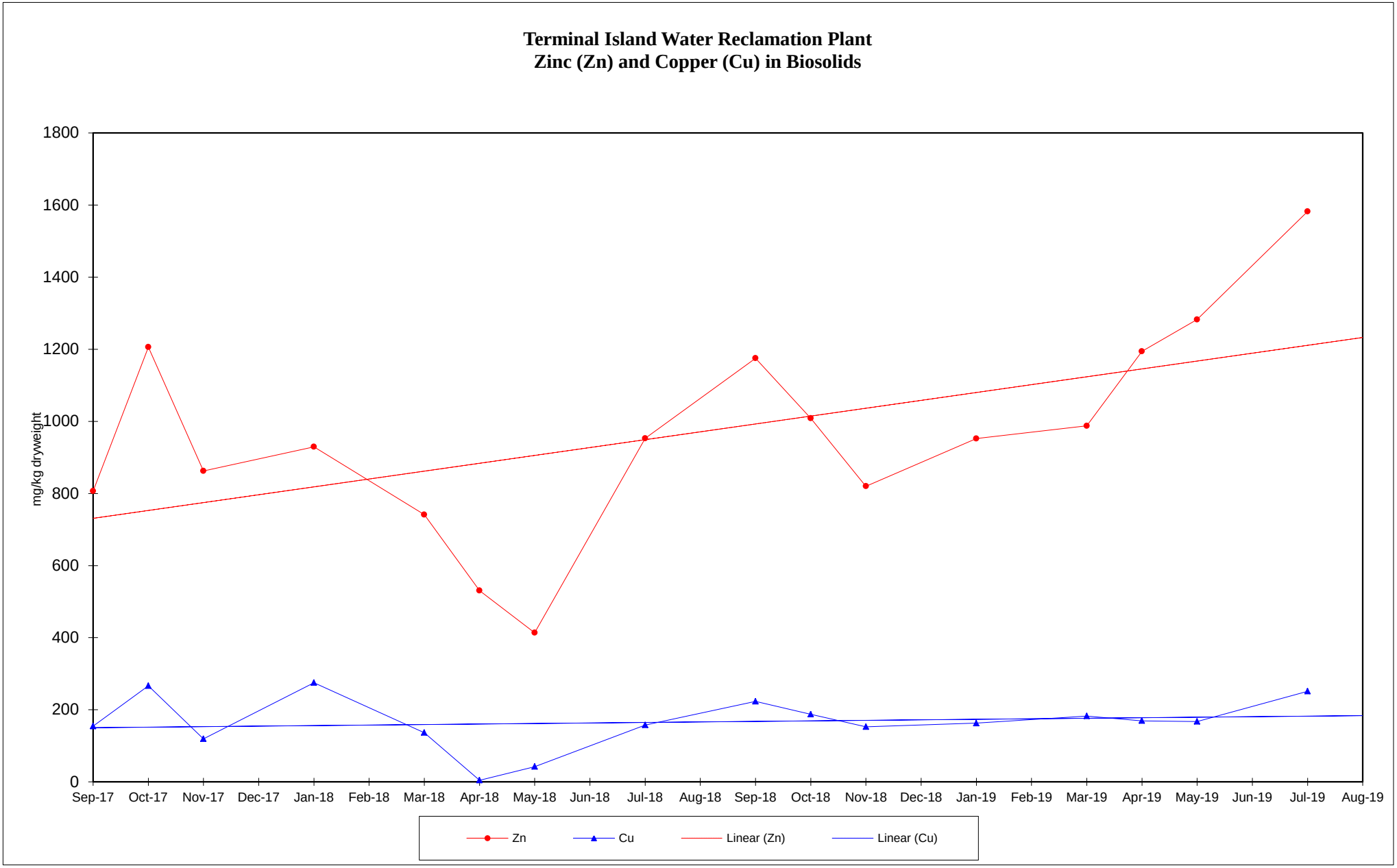

Figure 6. Concentrations of zinc and copper in TIWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

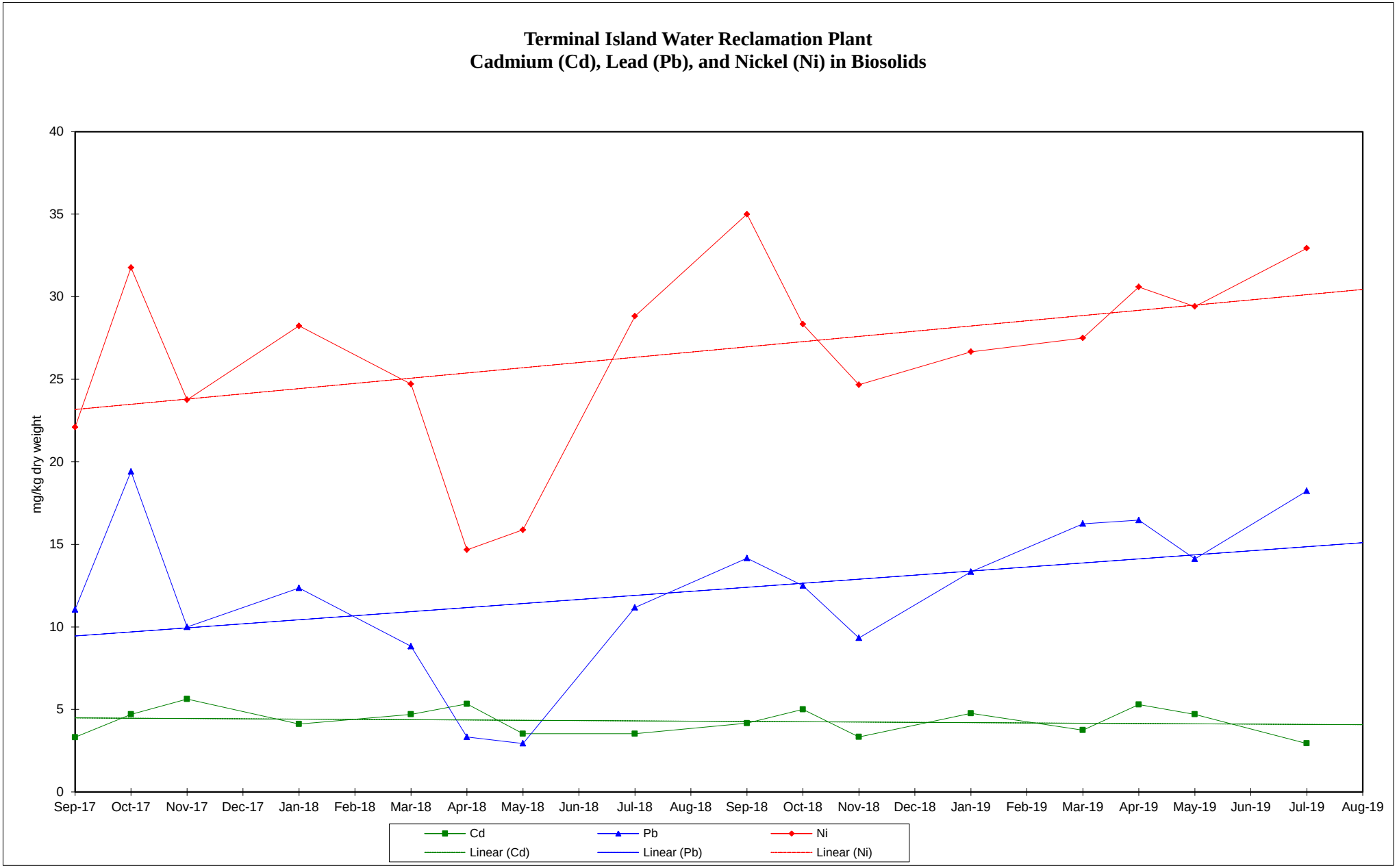

Figure 7. Concentrations of cadmium, lead, and nickel in TIWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

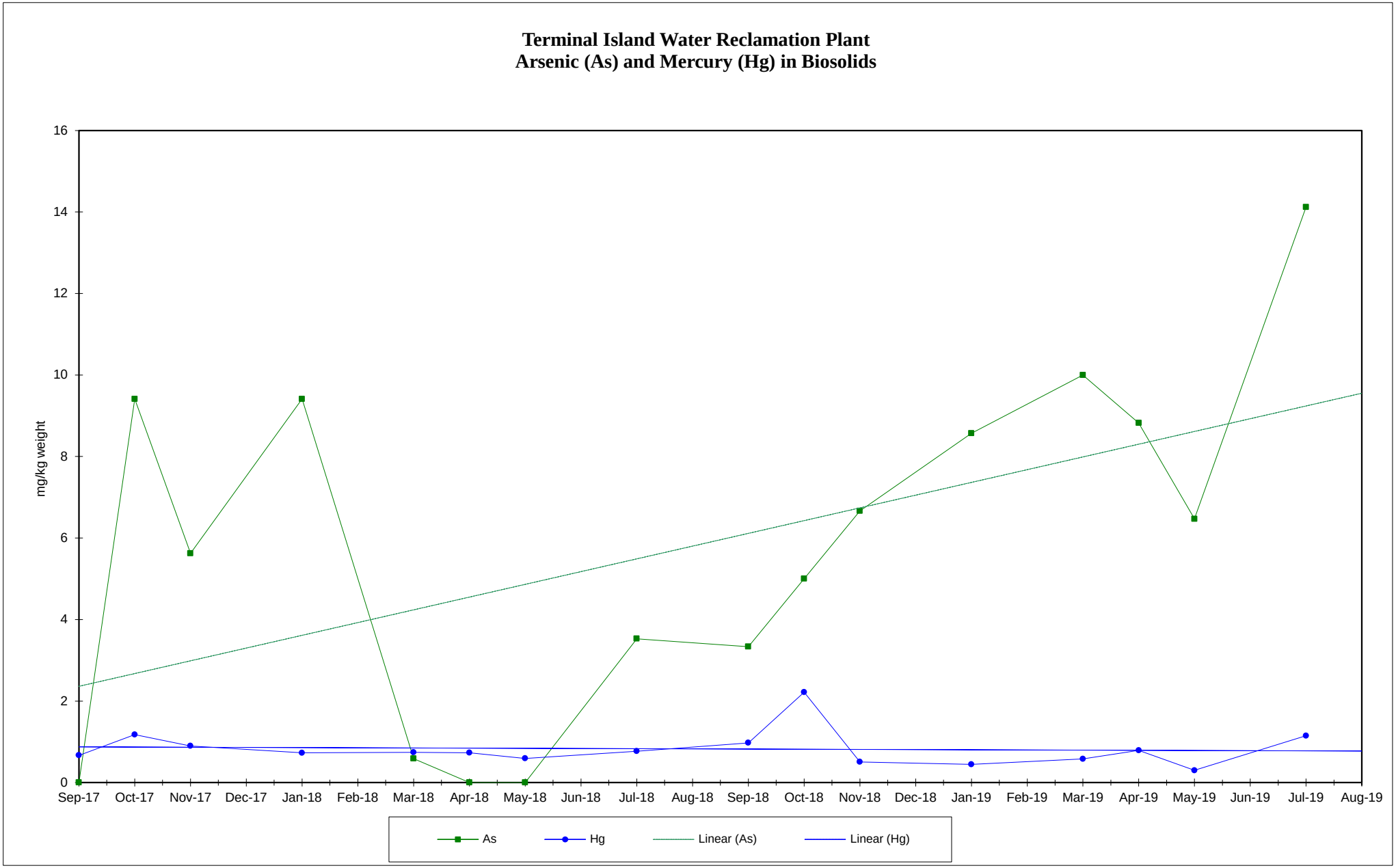

Figure 8. Concentrations of arsenic and mercury in TIWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

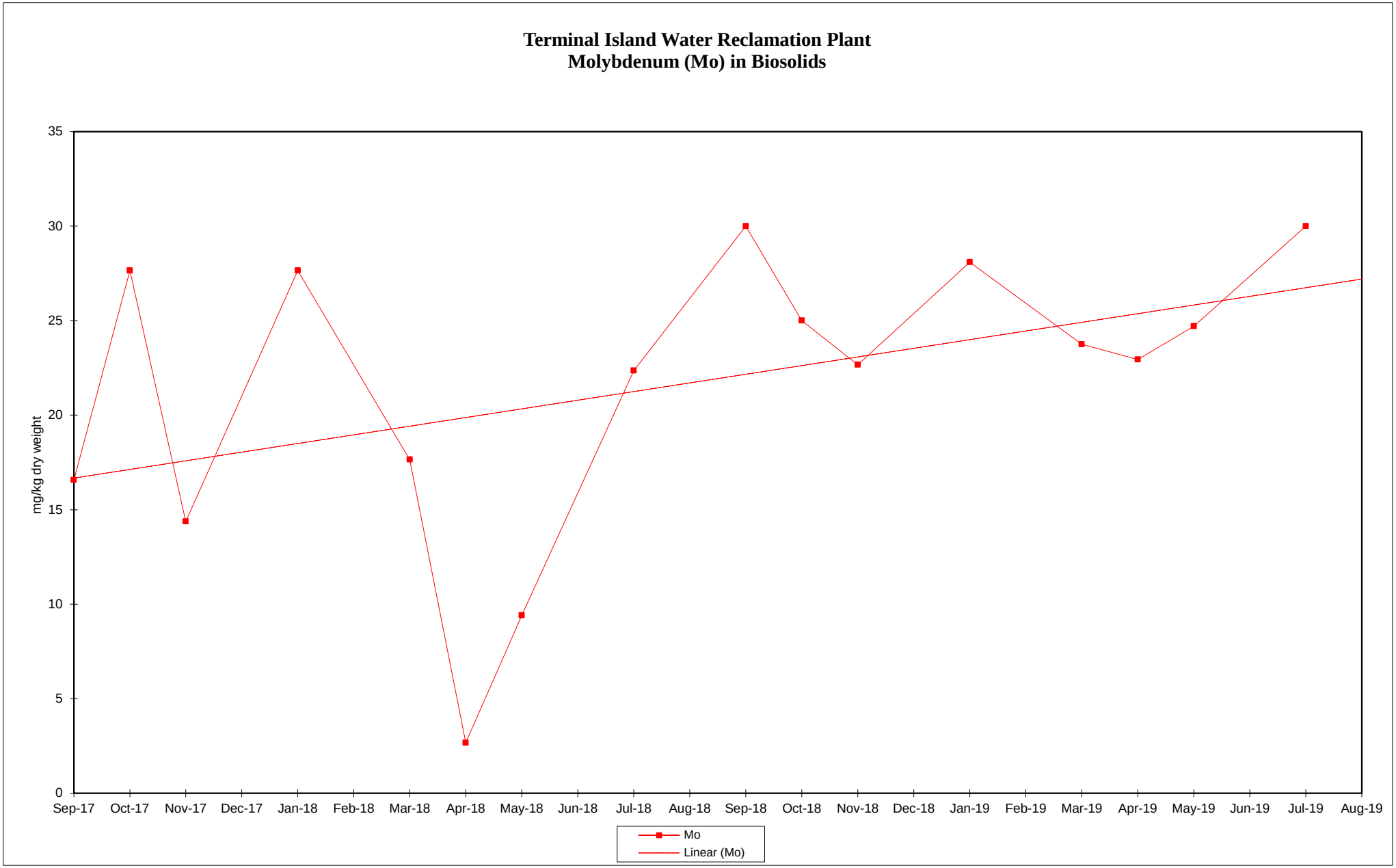

Figure 9. Concentrations of molybdenum in TIWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

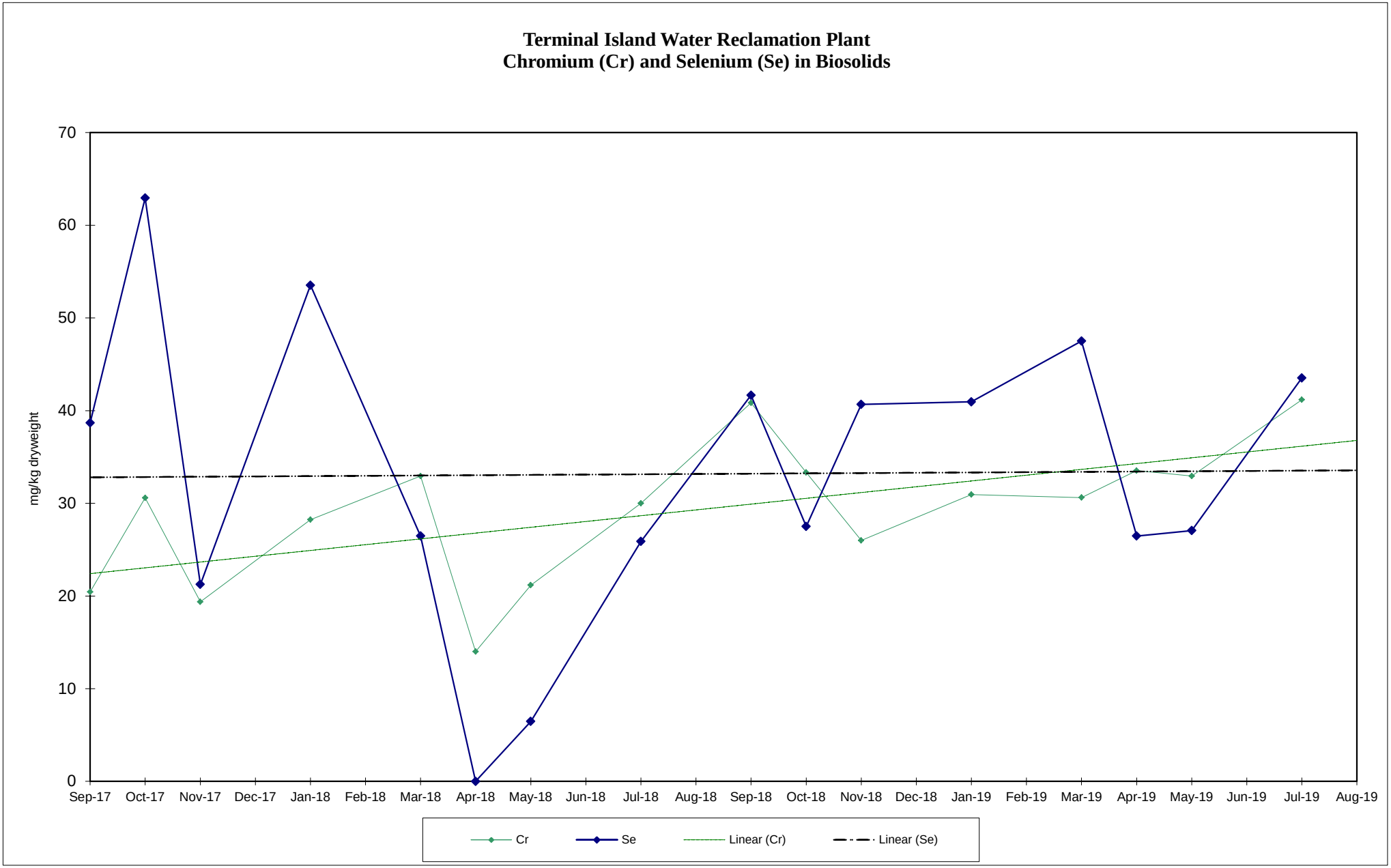

Figure 10. Concentrations of chromium and selenium in TIWRP biosolids from September 2017 to August 2019

Generated by RVALENZUELA at 10/02/2019 03:50:06 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

Appendix 1

Monthly Biosolids Monitoring Report

HYPERION WATER RECLAMATION PLANT
MONTHLY BIOSOLIDS MONITORING REPORT FOR ARIZONA STATE
August 2019

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690
Dept. of Public Works/ Bureau of Sanitation
City of Los Angeles, CA

Table 1. TOTAL SOLIDS AND TOTAL VOLATILE SOLIDS

Sample date: 08/05/2019
Method No. SM 2540 G

Sample*	Total Solids %	Total Volatile Solids %
Raw Sludge	3.9	85
TWAS	3.7	84.5
Digested Sludge	1.8	67.4

Table 2. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS* : METALS DATA

Sample date: 08/05/2019

Parameters	Total Solids	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
Method No.	SM 2540 G	EPA 3050/ EPA 6010B									EPA 7471A
Unit	%	mg/kg dry weight									
Results	26.5	ND	12.3	48.3	762	20.2	24.2	61.5	2.68	1,450	1.25
Ceiling Conc.**	----	75	85	****	4300	75	840	420	100	7500	57
Pollutant Conc.***	----	41	39	****	1500	****	300	420	100	2800	17

TABLE 3. BIOSOLIDS^ - CLASS B COMPLIANCE MICROBIOLOGICAL MONITORING DATA

Sample Date				6-Aug	7-Aug	8-Aug	9-Aug	12-Aug	13-Aug	14-Aug	15-Aug	Geomean
PARAMETERS	Method #	Unit	Req #									
Total Solids	SM 2540G	%	-----	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	
Fecal Coliform	SM 9221E	MPN/gram TS(dry wt.)	<2,000,000	8.0E+06	>8.0E+06	2.8E+05	1.5E+05	8.9E+05	1.3E+05	9.4E+05	1.9E+05	5.0E+05

Table 4. HWRP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690

Sample date	Parameters	FECAL COLIFORM		SALMONELLA, sp.		HELMINTH OVA*			ENTERIC VIRUS*		
		MPN/gram TS (dry wt)		MPN/4 grams TS (dry wt)		Viable Helminth Ova/4 grams TS (dry wt)			MPN IU/4 grams TS (dry wt)^^		
	%TS	Silo#/Farm		Silo#/Farm		Sludge	Silo#/Farm		Sludge	Silo#/Farm	
8/12/2019	25.6	Silo	7.8	Silo	>11.6	NS	---	NS	NS	---	NS

Sample date	Parameters	FECAL COLIFORM		SALMONELLA, sp.		HELMINTH OVA*			ENTERIC VIRUS*		
		MPN/gram TS (dry wt)		MPN/4 grams TS (dry wt)		Viable Helminth Ova/4 grams TS (dry wt)			MPN IU/4 grams TS (dry wt)^^		
	%TS	Silo#/Farm		Silo#/Farm		Sludge	Silo#/Farm		Sludge	Silo#/Farm	
8/6/2019	25.2	Silo	36507.9	Silo	>12.5	3.3	Silo	<0.5	9.8	Silo	<0.5

* - 24- Hour composite sample
** - Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation
*** - Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
**** - Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995
***** - No lab with Arizona certification available
^ - Grab sample of digested sludge
# - EPA 40 CFR Part 503 Class B requirement
SM - Standard Methods, 20th Ed. 1998
NS - No sample

TERMINAL ISLAND WATER RECLAMATION PLANT
MONTHLY BIOSOLIDS MONITORING REPORT FOR ARIZONA STATE
August 2019

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690
Dept. of Public Works/ Bureau of Sanitation
City of Los Angeles, CA

Table 1. TOTAL SOLIDS AND VOLATILE SOLIDS

Sample date: 08/12/2019

Method No. SM 2540 G

Sample*	Total Solids %	Total Volatile Solids %
Raw Sludge	1.7	69.8
TWAS	4.1	81.8
Digested Sludge	1.8	63.8

Table 2. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS*: METALS DATA

Sample date:

Parameters	Total Solids	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
Method No.	SM 2540 G	EPA 3050/ EPA 6010B									EPA 7471A
Unit	%	mg/kg dry weight									
Results	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ceiling Conc.**	----	75	85	****	4300	75	840	420	100	7500	57
Pollutant Conc.***	----	41	39	****	1500	****	300	420	100	2800	17

TABLE 3. BIOSOLIDS^ - CLASS A COMPLIANCE MICROBIOLOGICAL MONITORING DATA

Sample Date:

Parameters	TOTAL SOLIDS	FECAL COLIFORM	SALMONELLA, sp.
Method No.	SM2540G	SM 9221E	SM 9260D
Unit	%	MPN/gram TS (dry wt)	MPN/4 grams TS (dry wt)
Frequency	6 Times/Year@	6 Times/Year@	Quarterly
Results	NS	NS	NS
Requirement#		<1000	<3

* - 24-Hour composite sample
** - Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation
*** - Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
**** - Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995
@ - Sampling frequency for TIWRP is 6 months/year. The months are: Jan, Mar, May, Jul, Sep and Nov.
# - EPA 40 CFR Part 503 Class A requirements
^ - Grab sample from Farm
NS - Sampling not required
SM - Standard Methods, 20th Ed. 1998