

Lead Levels in Drinking Water at Mary Hogan Elementary School, Middlebury, VT

Technical Summary

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This summary is not intended as a stand-alone document, but rather as a ready reference for the primary findings and recommendations. Outlets prioritized for remediation are listed in **Table 1** and their locations shown in **Figure 1**. A full report, including description of the study methods, complete data, and additional information, is available at sites.middlebury.edu/mcostanz/research/lead.

Table 1. Mary Hogan Elementary School outlets that exceeded the EPA action level (**red**) or the American Academy of Pediatrics safety level (**blue**) by outlet type, lead level, and remediation priority level.

Outlet Type	Exceedance Level ¹	Outlet ID	Outlet Location (see also Figure 1)	First Draw (ppb)	Flush (ppb)	Remediation Priority ²
Water fountain or bottle filler	First Draw exceeds AAP safety level	RD18	C-4 classroom water fountain	6	2	Highest
		RD16	C-3 classroom water fountain	3	<1	Highest
		RD09	Hall C-17 water fountain	3	<1	Highest
		RD03	Hall C-19 water fountain (near music room)	3	1	Highest
		GN01	Hall A-26 water fountain (near gym)	2	2	Highest
		PK01	Hall E-35 water fountain (near library)	2	2	Highest
Kitchen sink or sprayer	First Draw exceeds AAP safety level	YW14	B-14 kitchen sink	7	<1	Highest
		YW16	B-14 kitchen sink	3	<1	Highest
		YW17	B-14 kitchen sink	3	<1	Highest
		YW13	B-14 kitchen sink	2	n.d.	Highest
Classroom or office sink	First Draw exceeds AAP safety level	BL07	E-20 classroom sink	10	4	High
		PK16	E-13 classroom sink	10	4	High
		GN21	A-2 classroom sink	8	1	High
		YW01	B-5 office sink	4	<1	High
		BL04	E-17 classroom sink	3	<1	High
		GN15	A-8 classroom sink	3	<1	High
		GN16	A-7 classroom sink	3	n.d.	High
		GN18	A-5 classroom sink	3	n.d.	High
		GN19	A-4 classroom sink	3	<1	High
		GN20	A-3 classroom sink	3	n.d.	High
		PK22	E-6 classroom sink	3	n.d.	High
		RD01	B-7 office sink	3	2	High

¹ No outlets/samples at SES met or exceeded the U.S. Environmental Protection Agency (EPA) action level (≥ 15 ppb); Outlets/samples exceeded the American Academy of Pediatrics (AAP) safety level if water lead levels were >1 ppb.

² Priority level is based on evaluation against the EPA and AAP levels and likelihood and frequency of use for consumption. See full report for more information.

		RD11	C-5A classroom sink	3	7	High		
		BL01	E-18 classroom sink	2	1	High		
		BL05	E-17 classroom sink	2	<1	High		
		GN07	A-9 office sink	2	n.d.	High		
		GN17	A-6 classroom sink	2	<1	High		
		GN22	A-1 classroom sink	2	<1	High		
		PK17	E-9 classroom sink	2	n.d.	High		
		PK26	E-4 classroom sink	2	<1	High		
Classroom or office sink (continued)	First Draw exceeds AAP safety level (continued)	PK29	E-1 classroom sink	2	n.d.	High		
		RD04	C-9 classroom sink	2	<1	High		
		RD05	C-10 classroom sink	2	<1	High		
		RD06	C-7 classroom sink	2	n.d.	High		
		RD13	C-6A classroom sink	2	<1	High		
		RD17	C-4 classroom sink	2	n.d.	High		
		RD21	C-1 classroom sink	2	n.d.	High		
		YW11	B-2 classroom sink	2	<1	High		
				GN13	A-17 bathroom sink	6	1	High
				PK14	Bathroom sink	6	2	High
		GN12	A-17 bathroom sink	5	1	High		
		GN14	A-17 bathroom sink	5	1	High		
Bathroom sink	First Draw exceeds AAP safety level	GN05	A-18 bathroom sink	3	<1	High		
		PK11	Bathroom sink	3	2	High		
		GN02	A-24 bathroom sink	2	2	High		
		GN04	A-18 bathroom sink	2	n.d.	High		
		GN06	A-18 bathroom sink	2	<1	High		
		PK12	Bathroom sink	2	3	High		
		RD12	Bathroom sink	2	n.d.	High		
				YW20	Kitchen utility sink	25	2	High
Utility sink	First Draw exceeds EPA action level	YW09	Custodial closet utility sink	18	3	Moderate		
				GN10	Custodial closet utility sink	10	<1	Low
				RD10	Custodial closet utility sink	4	1	Low
				PK04	Custodial closet utility sink	2	1	Low
Other	First Draw exceeds EPA action level	YW03	Shower in health office	71	5	High		

Low FL sample lead concentrations for outlets that delivered elevated FD samples suggest that the predominant source of lead is the fixtures or their immediate connections rather than more distal pipes or the incoming water supply, which may simplify potential remediation approaches. Nevertheless, 14 outlets delivered water that exceeded the AAP recommendation *even after flushing*, suggesting that some more distal pipes or connections may contain lead and contribute to lead levels in water. For this reason, flushing prior to use is not a generally effective measure at MHES for reducing lead to acceptable levels.

We recommend that MHES pursue the following permanent remediation approaches for priority outlets:

- 1) replace existing outlet fixtures with “lead-free” fixtures/solder or remove the outlets entirely
- 2) if replaced, verify remediation efficacy via follow-up lead testing

Until priority outlets are permanently remediated, we suggest the following temporary approaches:

- 1) disconnect water supply to priority water fountains
- 2) disconnect water supply to priority sinks/showers/sprayers in locations where water is not needed for non-consumption uses
- 3) for priority sinks/showers/sprayers in locations where water *is* needed for non-consumption uses,
 - a. establish school-wide policies for water consumption from outlets by outlet type (e.g., “only drink from water fountains and bottle fillers”), rather than location-specific policies
 - b. complement school-wide water consumption policy with age-appropriate signage at each priority outlet instructing against consumption and with educational outreach regarding the policy and its rationale

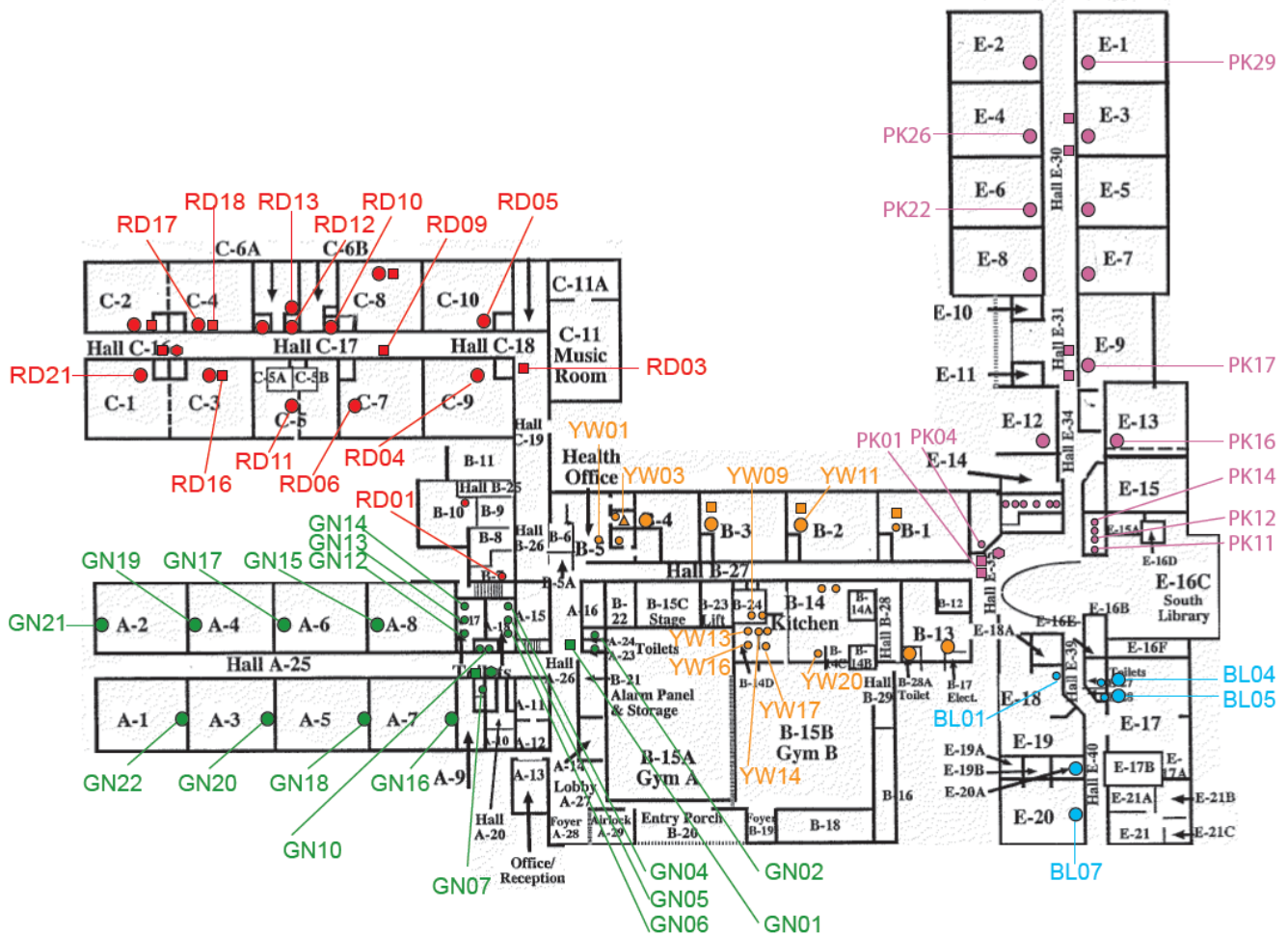


Figure 1. Floor plan showing locations of Mary Hogan Elementary School outlets that exceeded the EPA action level or the American Academy of Pediatrics safety level (see also **Table 1**).