Total Maximum Daily Load for Dissolved Cadmium, Dissolved Lead, and Dissolved Zinc in Surface Waters of the Coeur d'Alene River Basin

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draft

Table of Contents

I. Scope of this TMDL 3

II. Water Quality Standards 5

III. TMDL Elements 5
A. Target Sites 5
B. TMDL Elements at Each Target Site 6
C. Wasteload Allocations for Individual Sources 10
1. Wasteload Allocations for Couer d'Alene River and Tributaries 10
2. Wasteload Allocations for the Spokane River 16

IV. Definitions 17

Tables and Figures

Table 1: Affected Waterbodies on the 1996 Idaho 303(d) List 3
Figure 1: Map of Coeur d'Alene Basin Drainages 4
Table 2: Applicable Water Quality Criteria for Dissolved Cadmium, Lead, and Zinc 5
Table 3: Target Sites 6
Table 4: TMDL Elements for Dissolved Cadmium 7
Table 5: TMDL Elements for Dissolved Lead 8
Table 6: TMDL Elements for Dissolved Zinc 9
Table 7: Wasteload Allocations for Individual Sources - South Fork above Wallace 11
Table 8: Wasteload Allocations for Individual Sources - Canyon Creek 12
Table 9: Wasteload Allocations for Individual Sources - Ninemile Creek 13
Table 10: Wasteload Allocations for Individual Sources - Pine Creek 14
Table 11: Wasteload Allocations for Individual Sources - South Fork above Pinehurst 15
Table 12 : Spokane River Wasteload Allocations 16
Appendix A : Source Location Maps for Coeur d'Alene River and Tributaries 18

I. Scope of this TMDL

This TMDL is established for dissolved lead, dissolved cadmium, and dissolved zinc in the surface waters in the Coeur d'Alene River basin in Idaho, from the headwaters near the Montana border to the Spokane River at the Idaho-Washington border (see Figure 1). These drainages include the South Fork of the Coeur d'Alene River, main stem of the Coeur d'Alene River, Coeur d'Alene Lake, and the Spokane River above the state line. Affected waterbodies on the Idaho 303(d) list are shown in Table 1.

Table 1: Affected Waterbodies on the 1996 Idaho 303(d) List

Sub-basin	**HUC Code**	**303(d) Waterbodies**
South Fork Coeur d'Alene	17010302	South Fork Coeur d'Alene River Canyon Creek Ninemile Creek Moon Creek Pine Creek Terror Gulch Government Gulch
Coeur d'Alene Lake	17010303	Coeur d'Alene River Lake Coeur d'Alene
Upper Spokane	17010305	Spokane River

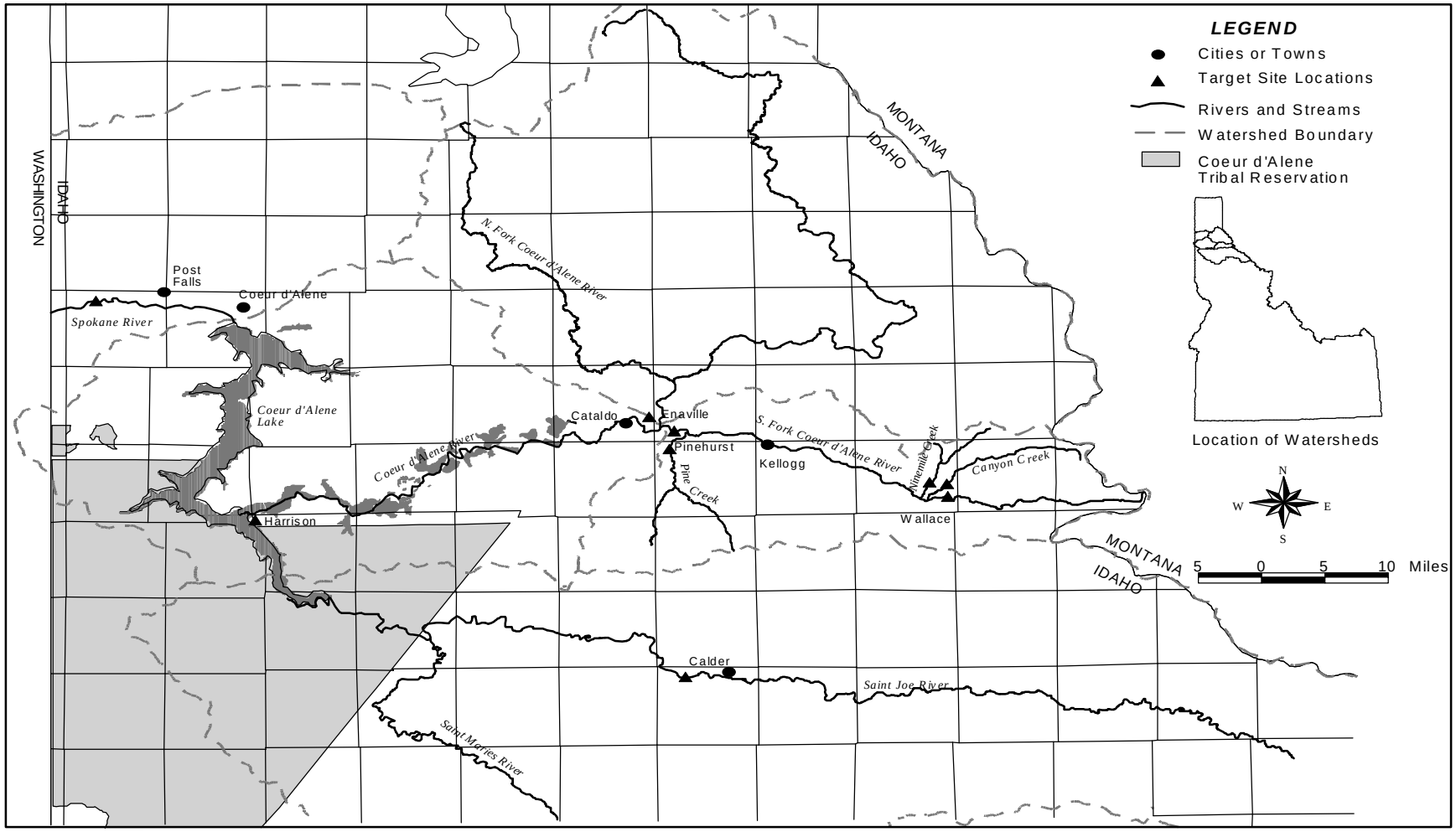


Figure 1: Map of Coeur d'Alene Basin Drainages

II. Water Quality Standards

The TMDL elements are calculated to achieve the following metals concentrations in the surface waters of the basin.

Table 2: Applicable Water Quality Criteria for Dissolved Cadmium, Lead, and Zinc

Pollutant	Coeur d'Alene River, Tributaries & Coeur d'Alene Lake (hardness = 25 mg/l)	Spokane River (hardness = 20 mg/l)
Dissolved Cadmium	0.38 ug/l	0.32 ug/l
Dissolved Lead	0.54 ug/l	0.41 ug/l
Dissolved Zinc	32 ug/l	27 ug/l

III. TMDL Elements

A. Target Sites

The elements of the TMDL are established for each target site listed in Table 3.

Table 3: Target Sites

Target Site Name	Description
Spokane River @ state line	Idaho-Washington border
St. Joe River @ Calder	USGS Station No. 12414500
Coeur d'Alene R. @ Harrison	Mouth of Coeur d'Alene River
North Fork Coeur d'Alene R. @ Enaville	USGS Station No. 12413000 URS Greiner Station NF 400
South Fork Coeur d'Alene R. @ Pinehurst	USGS Station No. 12413470; URS Greiner Station SF 271
South Fork Coeur d'Alene R. above Wallace	South Fork above Canyon Creek confluence (railroad bridge); URS Greiner Station SF 228
Canyon Creek	Mouth of Canyon Creek at Frontage Road Bridge north of I-90; URS Greiner Station CC 288
Ninemile Creek	Mouth of Ninemile Creek south of Depot RV park; URS Greiner Station NM 305
Pine Creek	Mouth of Pine Creek; URS Greiner Station PC 315

B. TMDL Elements at Each Target Site

Tables 4 through 6 below list the total loading capacity, natural background loading, loading available for allocation, margin of safety, gross allocation to waste piles and nonpoint sources, and wasteload allocations at the Coeur d'Alene River target sites (see Definitions).

Table 4: TMDL Elements for Dissolved Cadmium

Target Site	Flow Tier[1] (cfs)	Total Loading Capacity (lbs/day)	Background (lbs/day)	Capacity Used Upstream (lbs/day)	Loading Available for Allocation (lbs/day)	Margin of Safety 10 % (lbs/day)	Gross Allocation for Waste Piles and Non-point Sources (lbs/day)	Wasteload Allocation for Discrete Sources (lbs/day)
228 South Fork Above Wallace	14	2.77E-02	1.50E-03	0	2.62E-02	2.62E-03	1.83E-02	5.29E-03
	22	4.38E-02	2.38E-03	0	4.15E-02	4.15E-03	2.89E-02	8.37E-03
	49	9.76E-02	5.29E-03	0	9.23E-02	9.23E-03	6.45E-02	1.86E-02
	292	5.82E-01	3.15E-02	0	5.50E-01	5.50E-02	3.84E-01	1.11E-01
288 Canyon	9	1.77E-02	9.61E-04	0	1.68E-02	1.68E-03	1.09E-02	4.19E-03
	14	2.79E-02	1.51E-03	0	2.64E-02	2.64E-03	1.72E-02	6.59E-03
	32	6.38E-02	3.46E-03	0	6.03E-02	6.03E-03	3.92E-02	1.51E-02
	188	3.75E-01	2.03E-02	0	3.54E-01	3.54E-02	2.30E-01	8.85E-02
305 Nine Mile	2.2	4.38E-03	2.38E-04	0	4.15E-03	4.15E-04	2.73E-03	1.01E-03
	3.4	6.77E-03	3.67E-04	0	6.41E-03	6.41E-04	4.21E-03	1.56E-03
	7.6	1.51E-02	8.21E-04	0	1.43E-02	1.43E-03	9.41E-03	3.48E-03
	45	9.05E-02	4.90E-03	0	8.56E-02	8.56E-03	5.62E-02	2.08E-02
315 Pine	16	3.15E-02	1.71E-03	0	2.98E-02	2.98E-03	2.42E-02	2.58E-03
	25	4.98E-02	2.70E-03	0	4.71E-02	4.71E-03	3.83E-02	4.08E-03
	56	1.12E-01	6.05E-03	0	1.06E-01	1.06E-02	8.58E-02	9.14E-03
	331	6.60E-01	3.58E-02	0	6.24E-01	6.24E-02	5.07E-01	5.40E-02
271 Pinehurst	68	1.35E-01	7.35E-03	7.69E-02	5.13E-02	5.13E-03	3.33E-02	1.28E-02
	97	1.93E-01	1.05E-02	1.21E-01	6.14E-02	6.14E-03	4.00E-02	1.53E-02
	268	5.34E-01	2.89E-02	2.73E-01	2.33E-01	2.33E-02	1.51E-01	5.81E-02
	1,290	2.57E+00	1.39E-01	1.61E+00	8.17E-01	8.17E-02	5.31E-01	2.04E-01
400 Enaville	165	3.29E-01	1.78E-02	0	0	0	0	0
	253	5.04E-01	2.73E-02	0	0	0	0	0
	845	1.68E+00	9.13E-02	0	0	0	0	0
	1,100	2.19E+00	1.19E-01	0	0	0	0	0
Harrison	239	4.76E-01	2.58E-02	6.91E-02	3.81E-01	3.81E-02	3.43E-01	0
	348	6.93E-01	3.76E-02	8.88E-02	5.67E-01	5.67E-02	5.10E-01	0
	1,100	2.19E+00	1.19E-01	3.24E-01	1.75E+00	1.75E-01	1.57E+00	0
	6,870	1.37E+01	7.42E-01	9.36E-01	1.20E+01	1.20E+00	1.08E+01	0

[1]These flows represent the 7Q10, 10th, 50th, and 90th percentiles for each target site.

Table 5: TMDL Elements for Dissolved Lead

Target Site	Flow Tie[r1]	Total Loading Capacity	Background	Capacity Used Upstream	Loading available for Allocation	Margin of Safety 10 %	Gross Allocation for Waste Piles and Non-point Sources	Wasteload Allocation for Discrete Sources
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)
228 South Fork Above Wallace	14	4.03E-02	3.75E-03	0	3.66E-02	3.66E-03	2.22E-02	1.07E-02
	22	6.38E-02	5.94E-03	0	5.79E-02	5.79E-03	3.51E-02	1.70E-02
	49	1.42E-01	1.32E-02	0	1.29E-01	1.29E-02	7.82E02	3.78E-02
	292	8.47E-01	7.89E-02	0	7.68E-01	7.68E-02	4.66E-01	2.26E-01
288 Canyon	9	2.58E-02	2.40E-03	0	2.34E-02	2.34E-03	1.55E-02	5.53E-03
	14	4.06E-02	3.78E-03	0	3.68E-02	3.68E-03	2.44E-02	8.71E-03
	32	9.28E-02	8.64E-03	0	8.42E-02	8.42E-03	5.59E-02	1.99E-02
	188	5.45E-01	5.08E-02	0	4.95E-01	4.95E-01	3.28E-01	1.17E-01
305 Nine Mile	2.2	6.38E-03	5.94E-04	0	5.79E-03	5.79E-04	3.80E-03	1.41E-03
	3.4	9.86E-03	9.18E-04	0	8.95E-03	8.95E-04	5.87E-03	2.18E-03
	7.6	2.20E-02	2.05E-03	0	2.00E-02	2.00E-03	1.31E-02	4.88E-03
	45	1.32E-01	1.23E-02	0	1.19E-01	1.19E-02	7.83E-02	2.92E-02
315 Pine	16	4.58E-02	4.27E-03	0	4.16E-02	4.16E-03	3.15E-02	5.88E-03
	25	7.25E-02	6.75E-03	0	6.58E-02	6.58E-03	4.99E-02	9.30E-03
	56	1.62E-01	1.51E-02	0	1.47E-01	1.47E-02	1.12E-01	2.08E-02
	331	9.60E-01	8.94E-02	0	8.71E-01	8.71E-02	6.61E-01	1.23E-01
271 Pinehurst	68	1.97E-01	1.84E-02	1.07E-01	7.16E-02	7.16E-03	4.65E-02	1.79E-02
	97	2.81E-01	2.62E-02	1.69E-01	8.58E-02	8.58 E-03	5.58E-02	2.14E-02
	268	7.78E-01	7.24E-02	3.80E-01	3.25E-01	3.25E-02	2.11E-01	8.11E-02
	1,290	3.74E+00	3.48E-01	2.25E+00	1.14E+00	1.14E-01	7.42E-01	2.85E-01
400 Enaville	165	4.78E-01	4.45E-02	0	0	0	0	0
	253	7.34E-01	6.83E-02	0	0	0	0	0
	845	2.54E+00	2.28E-01	0	0	0	0	0
	1,100	3.19E+00	2.97E-01	0	0	0	0	0
Harrison	239	6.93E-01	6.45E-02	1.16E-01	5.12E-01	5.12E-02	4.61E-01	0
	348	1.01E+00	9.40E-02	1.54E-01	7.62E-01	7.62E-02	6.85E-01	0
	1,100	3.19E+00	2.97E-01	5,.53E-01	2.34E+00	2.34E-01	2.11E+00	0
	6,870	1.99E+01	1.86E+00	1.44E+00	1.66E+01	1.66E+00	1.50E+01	0

[1]These flows represent the 7Q10, 10th, 50th, and 90th percentiles for each target site.

Table 6: TMDL Elements for Dissolved Zinc

Target Site	Flow Tier[1]	Total Loading Capacity	Background	Capacity Used Upstream	Loading available for Allocation	Margin of Safety 10 %	Gross Allocation for Waste Piles and Non-point Sources	Wasteload Allocation for Discrete Sources
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)
228 South Fork Above Wallace	14	2.42E+00	5.09E-01	0	1.91E+00	1.91E-01	1.33E+00	3.93E-01
	22	3.84E+00	8.06E-01	0	3.03E+00	3.03E-01	2.11E+00	6.22E-01
	49	8.54E+00	1.79E+00	0	6.75E+00	6.75E-01	4.69E+00	1.38E+00
	292	5.09E+01	1.07E+01	0	4.02E+01	4.02E+00	2.80E+01	8.25E+00
288 Canyon	9	1.55E+00	3.26E-01	0	1.23E+00	1.23E-01	7.97E-01	3.06E-01
	14	2.44E+00	5.13E-01	0	1.93E+00	1.93E-01	1.25E+00	4.82E-01
	32	5.58E+00	1.17E+00	0	4.41E+00	4.41E-01	2.87E+00	1.10E+00
	188	3.28E+01	6.88E+00	0	2.59E+01	2.59E+00	1.68E+01	6.47E+00
305 Nine Mile	2.2	3.84E-01	8.06E-02	0	3.03E-01	3.03E-02	1.98E-01	7.48E-02
	3.4	5.93E-01	1.25E-01	0	4.68E-01	4.68E-02	3.06E-01	1.16E-01
	7.6	1.33E+00	2.78E-01	0	1.05E+00	1.05E-01	6.84E-01	2.59E-01
	45	7.92E+00	1.66E+00	0	6.25E+00	6.25E-01	4.08E+00	1.54E+00
315 Pine	16	2.76E+00	5.79E-01	0	2.18E+00	2.18E-01	1.49E+00	4.69E-01
	25	4.36E+00	9.16E-01	0	3.44E+00	3.44E-01	2.36E+00	7.42E-01
	56	9.77E+00	2.05E+00	0	7.71E+00	7.71E-01	5.28E+00	1.66E+00
	331	5.77E+01	1.21E+01	0	4.56E+01	4.56E+00	3.12E+01	9.81E+00
271 Pinehurst	68	1.19E+01	2.49E+00	5.62E+00	3.75E+00	3.75E-01	2.49E+00	8.84E-01
	97	1.69E+01	3.55E+00	8.87E+00	4.49E+00	4.49E-01	2.95E+00	1.09E+00
	268	4.67E+01	9.81E+00	1.99E+01	1.70E+01	1.70E+00	1.12E+01	4.12E+00
	1,290	2.25E+02	4.72E+01	1.18E+02	5.97E+01	5.97E+00	3.93E+01	1.448E+01
400 Enaville	165	2.88E+01	1.78E+01	0	0	0	0	0
	253	4.41E+01	2.73E+01	0	0	0	0	0
	845	1.47E+02	9.13E+01	0	0	0	0	0
	1,100	1.92E+02	1.19E+-2	0	0	0	0	0
Harrison	239	4.16E+01	8.75E+00	2.16E+01	1.13E+01	1.13E+00	1.02E+01	0
	348	6.07E+01	1.27E+01	3.18E+01	1.61E+01	1.61E+00	1.45E+01	0
	1,100	1.92E+02	4.03E+01	1.08E+02	4.33E+01	4.33E+00	3.89E+01	0
	6,870	1.20E+03	2.52E+02	1.79E+02	7.68E+02	7.68E+01	6.91E+02	0

[1]These flows represent the 7Q10, 10th, 50th, and 90th percentiles for each target site.

C. Wasteload Allocations for Individual Sources

1. Wasteload Allocations for Couer d'Alene River and Tributaries

The wasteload allocations for individual sources in the Couer d'Alene River and tributaries are listed in tables 7 through 11 below (one table per target site). The listed wasteload allocation is the monthly average permit limitation for total recoverable metal.

Maps showing the locations of sources are provided in the Appendix to the TMDL.

Table 7: Wasteload Allocations for Individual Sources - SFCDR above Wallace (URSG Target Site SF228)
{all values in lbs/day}

	Total Recoverable Cadmium [1]				Total Recoverable Lead [2]				Total Recoverable Zinc [1]			
Station ID	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**
SF607 Lucky Friday Outfall 001	9.39E-04	1.49E-03	3.31E-03	1.97E-02	1.71E-03	2.70E-03	6.01E-03	3.58E-02	6.87E-02	1.09E-01	2.42E-01	1.44E+00
SF609 Lucky Friday Outfall 003	6.29E-04	9.95E-04	2.22E-03	1.32E-02	1.14E-03	1.81E-03	4.02E-03	2.40E-02	4.60E-02	7.27E-02	1.62E-01	9.66E-01
SF328 Star/Morning Waste Rock	1.18E-03	1.86E-03	4.15E-03	2.47E-02	2.13E-03	3.38E-03	7.53E-03	4.48E-02	8.60E-02	1.36E-01	3.03E-01	1.81E+00
SF 396 Square Deal	3.74E-06	5.92E-06	1.32E-05	7.85E-05	3.03E-05	4.79E-05	1.07E-04	6.36E-04	7.19E-04	1.14E-03	2.54E-03	1.51E-02
SF395 Golconda	2.76E-06	4.36E-06	9.72E-06	5.79E-05	4.03E-05	6.38E-05	1.42E-04	8.46E-04	2.69E-04	4.26E-04	9.49E-04	5.66E-03
SF627 Mullan STP	3.06E-04	4.84E-04	1.08E-03	6.42E-03	5.54E-04	8.78E-04	1.95E-03	1.16E-02	2.23E-02	3.53E-02	7.87E-02	4.69E-01
SF338 Snowstorm #3	3.06E-04	4.85E-04	1.08E-03	6.44E-03	1.99E-03	3.15E-03	7.02E-03	4.18E-02	3.03E-02	4.80E-02	1.07E-01	6.37E-01
SF339 Copper King	4.17E-05	6.60E-05	1.47E-04	8.76E-04	7.57E-05	1.20E-04	2.67E-04	1.59E-03	8.64E-04	1.37E-03	3.05E-03	1.81E-02
SF345 Morning #4	1.12E-05	1.78E-05	3.96E-05	2.36E-04	2.04E-05	3.23E-05	7.19E-05	4.29E-04	8.22E-04	1.30E-03	2.90E-03	1.73E-02
SF346 Morning #5	8.21E-06	1.30E-05	2.89E-05	1.72E-04	4.42E-06	7.00E-06	1.56E-05	9.29E-05	6.00E-04	9.50E-04	2.12E-03	1.26E-02
SF347 Star 1200 Level	5.14E-04	8.14E-04	1.81E-03	1.08E-02	9.33E-04	1.48E-03	3.29E-03	1.96E-02	3.76E-02	5.95E-02	1.32E-01	7.89E-01
SF349 Grouse	1.35E-03	2.13E-03	4.75E-03	2.83E-02	2.44E-03	3.87E-03	8.61E-03	5.13E-02	9.84E-02	1.56E-01	3.47E-01	2.07E+00
SF386 Adit in Beacon Light Area	5.97E-08	9.46E-08	2.11E-07	1.26E-06	1.25E-07	1.99E-07	4.42E-07	2.64E-06	7.72E-06	1.22E-05	2.72E-05	1.62E-04
SF389 Unnamed Adit Deadman Gulch	6.40E-07	1.01E-06	2.26E-06	1.35E-05	4.16E-06	6.59E-06	1.47E-05	8.74E-05	1.21E-04	1.92E-04	4.28E-04	2.55E-03
SF390 Reindeer Queen	3.37E-07	5.33E-07	1.19E-06	7.08E-06	1.36E-06	2.15E-06	4.79E-06	2.85E-05	2.02E-05	3.20E-05	7.13E-05	4.25E-04

[1] Total recoverable allocations are equal to dissolved allocations because calculated translators are equal to 1.0

[2] Total recoverable allocations are based on calculated translators

Table 8: Wasteload Allocations for Individual Sources - Canyon Creek (URSG Target Site CC288)
{all values in lbs/day}

	Total Recoverable Cadmium [1]				Total Recoverable Lead [2]				Total Recoverable Zinc [1]			
Station ID	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**
CC817 Star (Hecla) Adit at Burke	3.65E-05	5.74E-05	1.31E-04	7.71E-04	5.60E-05	8.81E-05	2.01E-04	1.18E-03	2.67E-03	4.19E-03	9.59E-03	5.63E-02
CC355 Gem #3	1.39E-04	2.18E-04	4.99E-04	2.93E-03	2.13E-04	3.35E-04	7.66E-04	4.50E-03	1.01E-02	1.59E-02	3.64E-02	2.14E-01
CC816 Star/Phoenix Tailings Outfall 001	1.25E-03	1.96E-03	4.49E-03	2.64E-02	1.92E-03	3.01E-03	6.89E-03	4.05E-02	9.12E-02	1.44E-01	3.28E-01	1.93E+00
CC357 Woodland Park Seep	2.02E-06	3.17E-06	7.25E-06	4.26E-05	3.11E-06	4.90E-06	1.12E-05	6.57E-05	1.48E-04	2.33E-04	5.33E-04	3.13E-03
CC372 Tamarack #7	8.48E-04	1.33E-03	3.05E-03	1.79E-02	1.30E-03	2.05E-03	4.68E-03	2.75E-02	6.20E-02	9.75E-02	2.23E-01	1.31E+00
CC353 Hercules #5	9.10E-04	1.43E-03	3.27E-03	1.92E-02	1.40E-03	2.20E-03	5.03E-03	2.95E-02	6.66E-02	1.05E-01	2.39E-01	1.41E+00
CC371 Blackbear Fraction	6.21E-04	9.77E-04	2.23E-03	1.31E-02	9.54E-04	1.50E-03	3.43E-03	2.02E-02	4.54E-02	7.14E-02	1.63E-01	9.59E-01
CC373 Anchor	4.81E-07	7.56E-07	1.73E-06	1.02E-05	6.55E-06	1.03E-05	2.36E-05	1.38E-04	8.51E-05	1.34E-04	3.06E-04	1.80E-03
CC354 Hidden Treasure	3.84E-04	6.04E-04	1.38E-03	8.11E-03	2.38E-04	3.74E-04	8.55E-04	5.03E-03	2.81E-02	4.42E-02	1.01E-01	5.93E-01

[1] Total recoverable allocations are equal to dissolved allocations because calculated translators are equal to 1.0

[2] Total recoverable allocations are based on calculated translators

Table 9: Wasteload Allocations for Individual Sources - Ninemile Creek (URSG Target Site NM305)
{all values in lbs/day}

	Total Recoverable Cadmium [1]				Total Recoverable Lead [2]				Total Recoverable Zinc [1]			
Station ID	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**
NM360 Interstate-Callahan (IC) #4	3.03E-06	4.69E-06	1.05E-05	6.26E-05	8.60E-06	1.33E-05	2.97E-05	1.77E-04	1.03E-03	1.58E-03	3.54E-03	2.12E-02
NM362 IC Waste Rock	9.16E-04	1.42E-03	3.17E-03	1.89E-02	1.41E-03	2.17E-03	4.86E-03	2.90E-02	6.70E-02	1.04E-01	2.31E-01	1.38E+00
NM363 IC Tailings Seep	2.05E-06	3.16E-06	7.07E-06	4.23E-05	3.14E-06	4.86E-06	1.09E-05	6.49E-05	1.50E-04	2.31E-04	5.17E-04	3.09E-03
NM361 Rex #2	1.02E-05	1.58E-05	3.54E-05	2.11E-04	1.57E-05	2.43E-05	5.43E-05	3.24E-04	7.48E-04	1.16E-03	2.59E-03	1.54E-02
NM364 Tamarack 400 Level	4.10E-05	6.33E-05	1.41E-04	8.45E-04	6.29E-05	9.72E-05	2.17E-04	1.30E-03	2.99E-03	4.63E-03	1.03E-02	6.18E-02
NM366 Tamarack #5	1.54E-05	2.37E-05	5.31E-05	3.17E-04	2.36E-05	3.64E-05	8.15E-05	4.87E-04	1.12E-03	1.73E-03	3.88E-03	2.32E-02
NM368 Rex Tailings Seep	1.02E-05	1.58E-05	3.54E-05	2.11E-04	1.57E-05	2.43E-05	5.43E-05	3.24E-04	7.48E-04	1.16E-03	2.59E-03	1.54E-02
NM359 Success #3	5.12E-06	7.91E-06	1.77E-05	1.06E-04	7.86E-06	1.21E-05	2.72E-05	1.62E-04	3.74E-04	5.78E-04	1.29E-03	7.72E-03
NM367 Dayrock 100	4.57E-07	7.06E-07	1.58E-06	9.43E-06	5.35E-06	8.26E-06	1.85E-05	1.10E-04	9.73E-05	1.50E-04	3.36E-04	2.01E-03
NM369 Silver Star	3.30E-07	5.10E-07	1.14E-06	6.81E-06	8.25E-07	1.28E-06	2.85E-06	1.70E-05	3.59E-04	5.55E-04	1.24E-03	7.41E-03
NM370 Duluth	6.88E-07	1.06E-06	2.38E-06	1.42E-05	1.89E-06	2.92E-06	6.53E-06	3.90E-05	6.71E-05	1.04E-04	2.32E-04	1.38E-03
NM374 Success Tailings	1.74E-06	2.69E-06	6.01E-06	3.59E-05	2.67E-06	4.13E-06	9.23E-06	5.52E-05	1.27E-04	1.97E-04	4.40E-04	2.63E-03

[1] Total recoverable allocations are equal to dissolved allocations because calculated translators are equal to 1.0

[2] Total recoverable allocations are based on calculated translators

Table 10: Wasteload Allocations for Individual Sources - Pine Creek (URSG Target Site PC315)
{all values in lbs/day}

	Total Recoverable Cadmium [1]				Total Recoverable Lead [2]				Total Recoverable Zinc [1]			
Station ID	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**
PC329 North Amy	1.33E-03	2.11E-03	4.73E-03	2.80E-02	4.98E-03	7.88E-03	1.76E-02	1.04E-01	2.61E-01	4.12E-01	9.24E-01	5.46E+00
PC330 Amy	2.78E-06	4.40E-06	9.86E-06	5.83E-05	2.36E-06	3.74E-06	8.37E-06	4.95E-05	2.06E-03	3.27E-03	7.32E-03	4.32E-02
PC331 Liberal King	8.61E-07	1.36E-06	3.05E-06	1.80E-05	5.33E-06	8.44E-06	1.89E-05	1.12E-04	2.91E-04	4.60E-04	1.03E-03	6.10E-03
PC332 Lookout	4.48E-05	7.09E-05	1.59E-04	9.39E-04	2.49E-05	3.94E-05	8.82E-05	5.21E-04	1.98E-03	3.14E-03	7.03E-03	4.15E-02
PC333 Upper Lynch	6.09E-08	9.64E-08	2.16E-07	1.28E-06	1.20E-06	1.90E-06	4.27E-06	2.52E-05	7.39E-06	1.17E-05	2.62E-05	1.55E-04
PC334 Lynch/Nabob	6.64E-06	1.05E-05	2.35E-05	1.39E-04	9.27E-06	1.47E-05	3.29E-05	1.94E-04	4.86E-04	7.68E-04	1.72E-03	1.02E-02
PC335 Nevada-Stewart	6.52E-05	1.03E-04	2.31E-04	1.37E-03	9.77E-05	1.55E-04	3.46E-04	2.05E-03	7.36E-02	1.17E-01	2.61E-01	1.54E+00
PC336 Highland Surprise	4.14E-05	6.55E-05	1.47E-04	8.67E-04	7.82E-06	1.24E-05	2.77E-05	1.64E-04	3.08E-02	4.87E-02	1.09E-01	6.44E-01
PC375 Highland Surprise Waste Rock	1.17E-04	1.86E-04	4.16E-04	2.46E-03	1.64E-04	2.59E-04	5.81E-04	3.43E-03	8.58E-03	1.36E-02	3.04E-02	1.80E-01
PC337 Sidney (Red Cloud Creek Adit)	6.64E-05	1.05E-04	2.35E-04	1.39E-03	9.27E-05	1.47E-04	3.29E-04	1.94E-03	4.86E-03	7.68E-03	1.72E-02	1.02E-01
PC340 Upper Little Pittsburg	1.98E-06	3.13E-06	7.02E-06	4.15E-05	1.22E-05	1.94E-05	4.34E-05	2.57E-04	6.95E-04	1.10E-03	2.46E-03	1.46E-02
PC341 Lower Little Pittsburg	6.64E-05	1.05E-04	2.35E-04	1.39E-03	6.31E-06	9.98E-06	2.24E-05	1.32E-04	4.86E-03	7.68E-03	1.72E-02	1.02E-01
PC343 Nabob 1300 Level	7.31E-04	1.16E-03	2.59E-03	1.53E-02	1.66E-05	2.63E-05	5.88E-05	3.48E-04	5.34E-02	8.45E-02	1.89E-01	1.12E+00
PC344 Big It	3.23E-08	5.11E-08	1.14E-07	6.77E-07	1.50E-06	2.38E-06	5.32E-06	3.15E-05	2.45E-05	3.88E-05	8.70E-05	5.14E-04
PC348 Upper Constitution	7.70E-05	1.22E-04	2.73E-04	1.61E-03	4.09E-04	6.48E-04	1.45E-03	8.57E-03	1.99E-02	3.14E-02	7.04E-02	4.16E-01
PC351 Marmion Tunnel	8.14E-06	1.29E-05	2.88E-05	1.70E-04	5.41E-05	8.56E-05	1.92E-04	1.13E-03	4.22E-03	6.67E-03	1.49E-02	8.83E-02
PC352 Seep Below Nevada Stewart	1.04E-05	1.64E-05	3.67E-05	2.17E-04	4.31E-06	6.82E-06	1.53E-05	9.03E-05	2.27E-03	3.59E-03	8.03E-03	4.75E-02
PC 400 Adit Upstream of Little Pittsburg	4.67E-06	7.39E-06	1.66E-05	9.79E-05	6.52E-06	1.03E-05	2.31E-05	1.37E-04	3.42E-04	5.40E-04	1.21E-03	7.15E-03

[1] Total recoverable allocations are equal to dissolved allocations because calculated translators are equal to 1.0

[2] Total recoverable allocations are based on calculated translators; the translator for Pine Creek equals 1.0

Table 11: Wasteload Allocations for Individual Sources - South Fork above Pinehurst (URSG Target Site SF271)
{all values in lbs/day}

	Total Recoverable Cadmium [1]				Total Recoverable Lead [2]				Total Recoverable Zinc [1]			
Station ID	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**	**7Q10L**	**10th Percentile**	**50th Percentile**	**90th Percentile**
SF382 Silver Dollar	7.92E-05	1.25E-04	4.86E-06	1.66E-03	1.00E-03	1.59E-03	6.15E-05	2.11E-02	9.64E-03	1.53E-02	5.91E-04	2.02E-01
SF393 Western Union (Lower Adit)	1.57E-07	1.88E-07	7.13E-07	2.50E-06	2.60E-06	3.12E-06	1.18E-05	4.15E-05	2.93E-05	3.51E-05	1.33E-04	4.67E-04
SF3 Central Tmt Plant	4.23E-03	5.06E-03	1.92E-02	6.74E-02	1.30E-02	1.56E-02	5.89E-02	2.07E-01	3.09E-01	3.70E-01	1.40E+00	4.92E+00
SF620 Page STP	3.28E-03	3.93E-03	1.49E-02	5.22E-02	1.01E-02	1.21E-02	4.57E-02	1.60E-01	2.40E-01	2.87E-01	1.09E+00	3.82E+00
SF383 St. Joe	2.00E-06	2.40E-06	9.07E-06	3.19E-05	1.26E-06	1.52E-06	5.74E-06	2.02E-05	4.33E-04	5.19E-04	1.97E-03	6.91E-03
SF384 Coeur d'Alene (Mineral Point)	1.19E-07	1.43E-07	5.40E-07	1.90E-06	1.20E-06	1.44E-06	5.46E-06	1.92E-05	3.18E-05	3.82E-05	1.44E-04	5.08E-04
SF385 Unnamed Adit	1.67E-08	2.00E-08	7.56E-08	2.66E-07	3.48E-07	4.17E-07	1.58E-06	5.55E-06	9.67E-06	1.16E-05	4.38E-05	1.54E-04
SF392 Rainbow	2.62E-07	3.14E-07	1.19E-06	4.17E-06	5.76E-06	6.90E-06	2.61E-05	9.18E-05	1.27E-04	1.52E-04	5.76E-04	2.02E-03
SF600 Caladay 001	1.78E-04	2.13E-04	8.07E-04	2.84E-03	5.46E-04	6.55E-04	2.48E-03	8.71E-03	1.17E-02	1.41E-02	5.33E-02	1.87E-01
SF602 Coeur/Galena 001	1.10E-03	1.32E-03	4.99E-03	1.76E-02	3.38E-03	4.05E-03	1.53E-02	5.39E-02	5.59E-02	6.69E-02	2.53E-01	8.90E-01
SF623 Smelterville STP	3.57E-04	4.27E-04	1.62E-03	5.68E-03	1.10E-03	1.31E-03	4.97E-03	1.75E-02	2.61E-02	3.12E-02	1.18E-01	4.15E-01
SF624 Sunshine 001	2.64E-03	3.17E-03	1.20E-02	4.21E-02	8.12E-03	9.73E-03	3.68E-02	1.29E-01	1.93E-01	2.31E-01	8.76E-01	3.08E+00
Coeur/Galena 002	1.00E-03	1.20E-03	4.54E-03	1.60E-02	3.07E-03	3.68E-03	1.39E-02	4.90E-02	7.32E-02	8.77E-02	3.32E-01	1.17E+00

[1] Total recoverable allocations are equal to dissolved allocations because calculated translators are equal to 1.0

[2] Total recoverable allocations are based on calculated translators

2. Wasteload Allocations for the Spokane River

The wasteload allocations for individual sources on the Spokane River are listed in Table 12 below. The listed wasteload allocation is the monthly average permit limitation for total recoverable metal.

Table 12 : Spokane River Wasteload Allocations

Facility	Total Recoverable Cadmium (ug/l)	Total Recoverable Lead (ug/l)	Total Recoverable Zinc (ug/l)
City of Coeur d'Alene	0.2	2.3	72
City of Post Falls	0.2	2.0	80
City of Hayden Lake	0.2	1.9	80

IV. Definitions

1. Gross Allocation is a portion of the loading capacity allocated to an entire category of sources, rather than to a specific source.

2. Load Allocation is a portion of the loading capacity that is allocated to nonpoint sources.

3. Loading Available for Allocation is the loading capacity minus the natural background load, any upstream allocations, and the margin of safety.

4. Loading Capacity is the maximum amount of a pollutant that a waterbody can receive without exceeding water quality standards.

5. Margin of Safety addresses uncertainty in a TMDL through conservative assumptions and/or unallocated loading capacity.

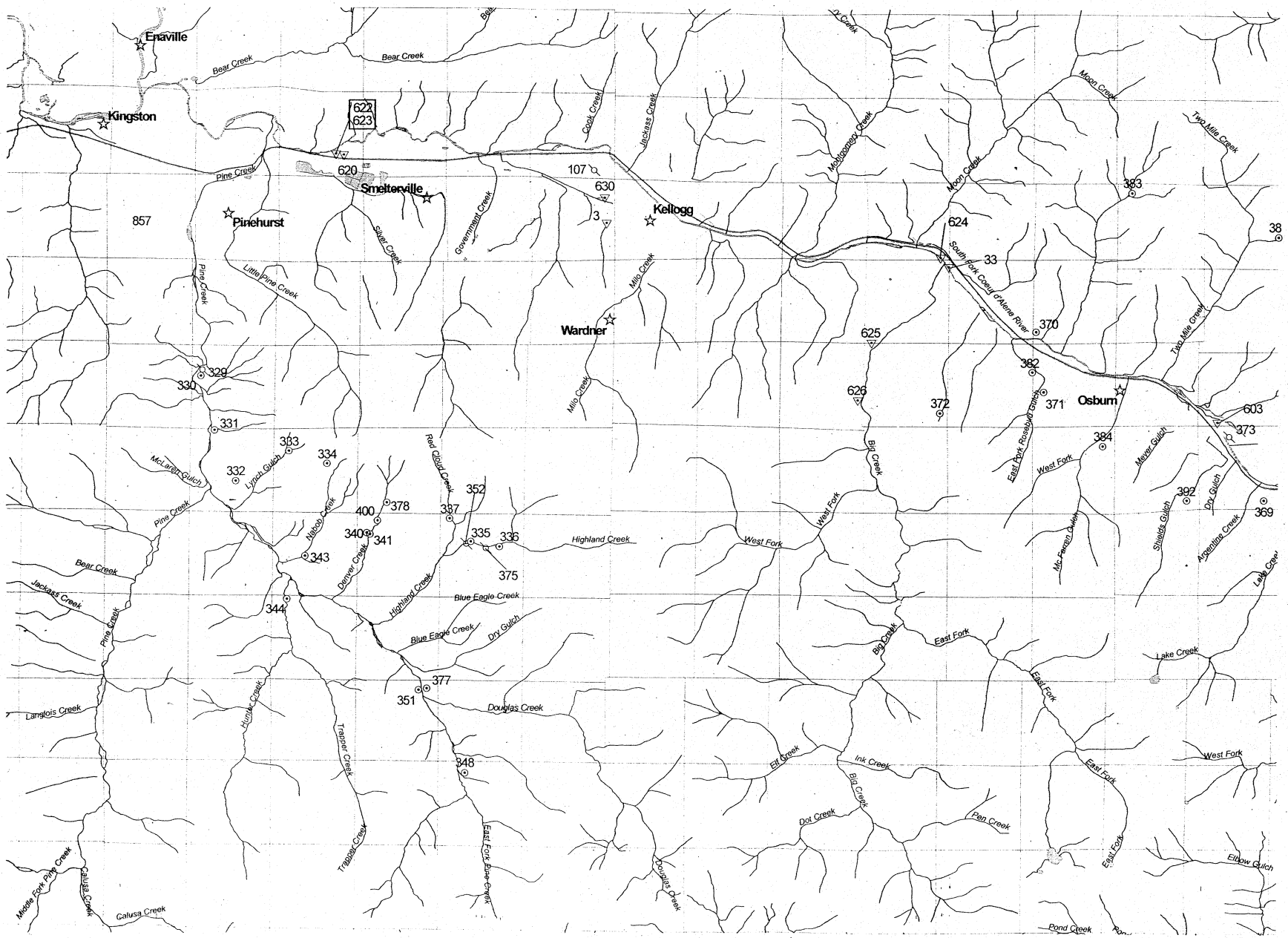
6. Natural Background is the estimated pollutant level in the waterbody in the absence of human activity.

7. Target Sites are locations in the river network where the loading capacities for dissolved metals are calculated and allocated. Allocations are calculated for identified sources upstream of a given target site.

8. TMDL Elements are the water quality standards, loading capacity, natural background loads, gross allocations, wasteload allocations, load allocations, and margin of safety.

9. Total Maximum Daily Load (TMDL) is a technical plan designed to attain water quality standards. A TMDL consists of a number of "TMDL Elements" (see above).

10. Wasteload Allocation is a portion of the loading capacity that is allocated to a point source.



Bunker Hill/ Coeur d'Alene River Basin Sampling Locations

-DRAFT-

LEGEND

- Adit Sampling Location
- Facility Discharge Sampling Location
- Seep Sampling Location
- Cities
- Interstate 90
- State Roads
- Streams
- Rivers
- Lakes
- Section Lines

This map was created for planning purposes for the Coeur d'Alene River Basin Study. It was intended to show the general location of potential contamination sources within the displayed watersheds of the Coeur d'Alene River.

Basins and Potential Source locations were obtained from the Bureau of Land Management (BLM)

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0 1 2 Miles

This map is based on Idaho State Plane Coordinates West Zone. North American Datum 1983

Date of Plot : January 05, 1999

URS Greiner

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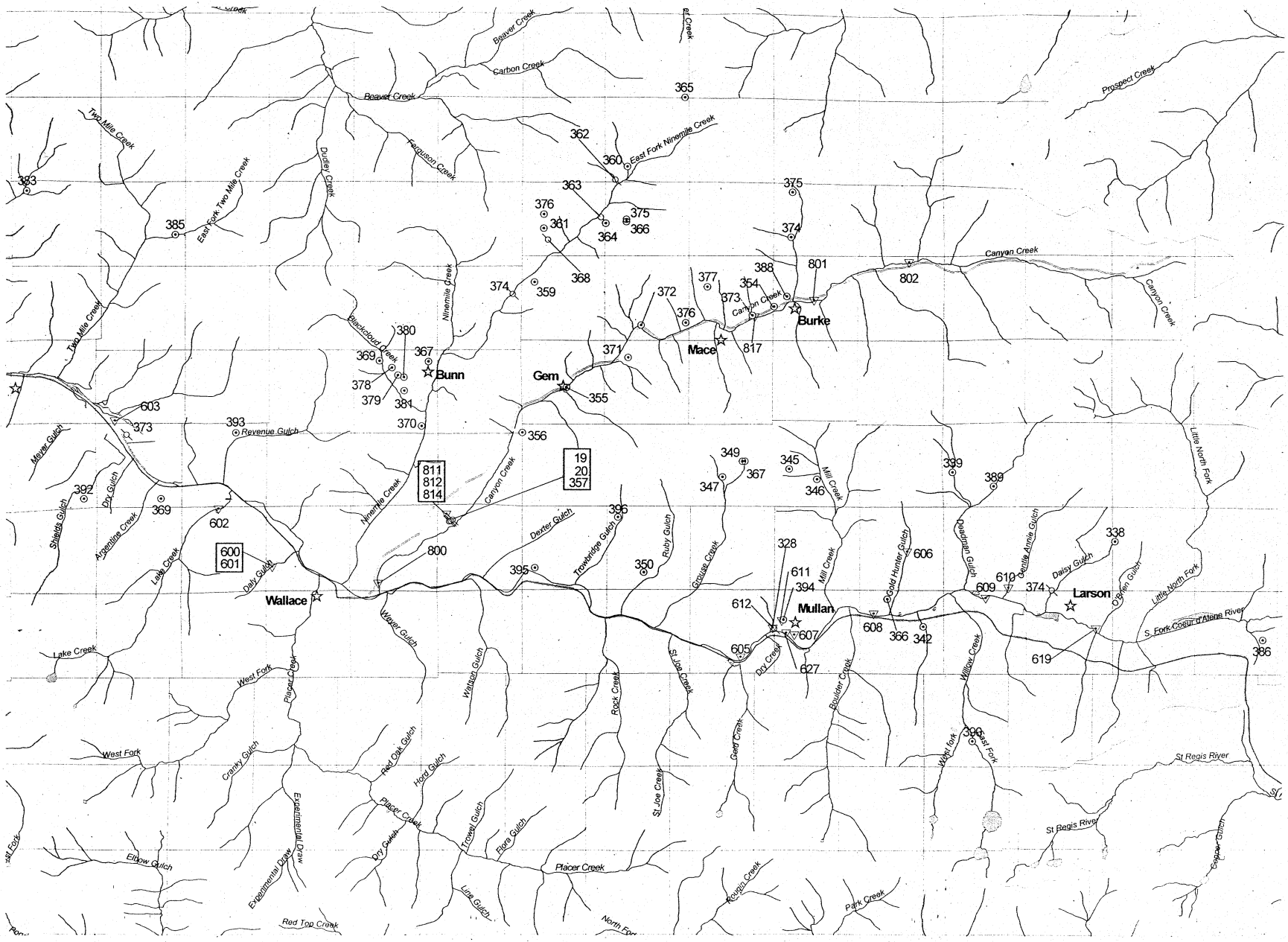

Bunker Hill/ Coeur d'Alene River Basin Sampling Locations

-DRAFT-

LEGEND

- Adit Sampling Location
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VIEW: view 1
LAY: L2-Plate 1 (11x17)
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