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

Under authority of the Clean Water Act, 33 U.S.C. § 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the U.S. Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality (DEQ) are establishing a Total Maximum Daily Load (TMDL) for dissolved cadmium, dissolved lead, and dissolved zinc in the surface waters in the following sub-basins of Idaho:

South Fork Coeur d'Alene	(HUC 17010302)
Coeur d'Alene Lake	(HUC 17010303)
Upper Spokane	(HUC 17010305)

The State of Idaho is establishing the TMDL for waters of the State. EPA is establishing the TMDL for waters within the reservation boundaries of the Coeur d'Alene Tribe.

The legal and technical basis for this TMDL is described in the final Technical Support Document: Total Maximum Daily Load for Dissolved Cadmium, Dissolved Lead, and Dissolved Zinc in Surface Waters of the Coeur d'Alene Basin (and Appendices), the Response to Comments document, and the Administrative Record for this TMDL.

This TMDL shall become effective immediately, and is incorporated into the water quality management plans for the State of Idaho under Clean Water Act § 303(e).

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8/18/2000
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I. Scope of this TMDL

A. Pollutant Parameters

The TMDL is established for lead, cadmium, and zinc in the dissolved form in the water column.

B. Idaho 303(d) List

As required under Section 303(d) of the Clean Water Act, the State of Idaho has promulgated a listing of waters not currently meeting applicable water quality standards. Table 1 lists the waters in the Coeur d'Alene basin that are included on the 1998 Idaho 303(d) list as impaired by metals.

Table 1. Coeur d'Alene Basin Waterbodies on the 1998 Idaho 303(d) List for Metals

HUC	SEG #	WATERBODY NAME	SEGMENT BOUNDARIES	LENGTH (Mi.)
17010302	3513	South Fork Coeur d'Alene R.	Big Creek to Pine Creek	8.99
17010302	3514	South Fork Coeur d'Alene R.	Pine Creek to Bear Creek	1.79
17010302	3515	South Fork Coeur d'Alene R.	Bear Creek to Coeur d'Alene River	0.44
17010302	3516	South Fork Coeur d'Alene R.	Canyon Creek to Ninemile Creek	0.55
17010302	3517	South Fork Coeur d'Alene R.	Ninemile Creek to Placer Creek	0.33
17010302	3518	South Fork Coeur d'Alene R.	Placer Creek to Big Creek	7.56
17010302	3519	Pine Creek	E Fk Pine Creek to S Fk CdA River	5.28
17010302	3520	East Fork Pine Creek	Headwaters to Hunter Creek	5.19
17010302	3521	East Fork Pine Creek	Hunter Creek to Pine Creek	1.57
17010302	3524	Ninemile Creek	Headwaters to S Fk Coeur d'Alene R	4.91
17010302	3525	Canyon Creek	Gorge Gulch to South Fk CdA River	6.90
17010302	5084	Government Gulch	Headwaters to S.Fk of CdA River	3.53
17010302	5127	Moon Creek	Headwaters to S Fk CdA River	4.07
17010302	5661	Milo Creek	Headwaters to mouth	2.56
17010303	2001	Coeur d'Alene Lake	NA	NA
17010303	3529	Coeur d'Alene River	Black Lake to Thompson Lake	4.21
17010303	4015	Coeur d'Alene River	Cave Lake to Black Lake	4.00
17010303	4016	Coeur d'Alene River	Fortier Creek to Robinson Creek	0.80
17010303	4017	Coeur d'Alene River	Fourth of July Creek to Fortier Cr	10.50
17010303	4018	Coeur d'Alene River	French Gulch to Skeel Gulch	4.21
17010303	4019	Coeur d'Alene River	Latour Creek to Fourth of July Cr	4.09
17010303	4020	Coeur d'Alene River	Robinson Creek to Cave Lake	1.57
17010303	4021	Coeur d'Alene River	S Fk CdA River to French Gulch	2.13
17010303	4022	Coeur d'Alene River	Skeel Gulch to Latour Creek	1.16
17010303	4023	Coeur d'Alene River	Thompson Lake to CdA Lake	4.19
17010305	3552	Spokane River	CdA Lake to Huetter	3.45
17010305	3553	Spokane River	Huetter to Post Falls Bridge	4.89
17010305	3554	Spokane River	Post Falls Bridge to WA border	6.18

C. Target sites

The following table lists nine target sites in the Coeur d'Alene basin. The required elements of a TMDL under Section 303(d) of the Clean Water Act are established at the seven target sites below that are located on 303(d) listed waterbodies. A map of the basin is included in Appendix A.

Table 2. TMDL Target Sites

Target Site Name	Description
Spokane River @ State Line	Idaho-Washington Border
St. Joe River @ Calder[1]	USGS Station No. 12414500
Coeur d'Alene River @ Harrison	Near Mouth of Coeur d'Alene River
North Fork Coeur d'Alene River @ Enaville[1]	USGS Station No. 12413000
South Fork Coeur d'Alene River @ Pinehurst	USGS Station No. 12413470; URS Greiner Station No. 271
Pine Creek	Mouth of Pine Creek; URS Greiner Station No. 315
South Fork Coeur d'Alene River @ Wallace	South Fork downstream from Ninemile Creek confluence; URS Greiner Station No. 233
Ninemile Creek	Mouth of Ninemile Creek south of Depot RV park; URS Greiner Station No. 305
Canyon Creek	Mouth of Canyon Creek at Frontage Road Bridge north of I-90; URS Greiner Station No. 288

[1] Target sites on the North Fork of the Coeur d'Alene River and St. Joe River are established for tracking purposes and allocation of loading capacity through the river network. These two rivers currently meet water quality standards based on available information.

D. Source Identification

The TMDL allocations apply to all sources contributing dissolved metals to surface waters upgradient of a given target site. The TMDL assigns individual wasteload allocations to discrete sources and gross allocations to non-discrete sources in the basin.

II. Water Quality Standards

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

Table 3: Water Quality Criteria for Dissolved Cadmium, Lead, and Zinc

Target Site	Flow Tier (cfs)	River Hardness (mg/l)	Dissolved Cd (ug/l)	Dissolved Pb (ug/l)	Dissolved Zn (ug/l)
288 Canyon	7.1	56	0.67	1.33	64
	11	56	0.67	1.33	64
	25	45	0.57	1.05	53
	149	25	0.37	0.54	32
305 Nine Mile	2.0	73	0.82	1.78	80
	3.0	73	0.82	1.78	80
	6.9	63	0.73	1.52	71
	41	36	0.48	0.81	44
233 South Fork Wallace	22	57	0.68	1.36	65
	35	56	0.67	1.33	64
	79	47	0.59	1.10	55
	469	25	0.37	0.54	32
315 Pine	20	25	0.37	0.54	32
	29	25	0.37	0.54	32
	80	25	0.37	0.54	32
	387	25	0.37	0.54	32
271 South Fork Pinehurst	68	101	1.00	2.54	105
	97	96	1.00	2.40	101
	268	71	0.80	1.73	78
	1,290	28	0.40	0.62	36
CDA River Harrison	239	47	0.59	1.10	55
	348	45	0.57	1.05	53
	1,100	36	0.48	0.81	44
	6,870	25	0.37	0.54	32
Spokane River	NA	20	0.31	0.42	27

III. TMDL Elements

A. TMDL Elements for Coeur d'Alene River and Tributaries

Tables 4 through 6 list the following TMDL elements for the target sites in the Coeur d'Alene River and tributaries: total loading capacity, natural background loading, loading allocated upstream, loading available for allocation, margin of safety, gross allocation to waste piles and nonpoint sources, and gross wasteload allocations for discrete sources.

The gross wasteload allocation for each target site is allocated to individual discrete sources in Part III. B.1 below.

Table 4 : TMDL Elements for Dissolved Cadmium								
Target Site	**Flow Tier** (cfs)	**Loading Capacity** (lbs/day)	**Background** (lbs/day)	**Capacity Used Upstream** (lbs/day)	**Loading Avail. for Allocation** (lbs/day)	**Margin of Safety (10%)** (lbs/day)	**Gross Allocation (65%)** (lbs/day)	**Wasteload Allocation (25%)** (lbs/day)
Canyon Creek CC288	7	2.57E-02	2.30E-03	NA	2.34E-02	2.34E-03	1.52E-02	5.85E-03
	11	3.98E-02	3.56E-03	NA	3.63E-02	3.63E-03	2.36E-02	9.07E-03
	25	7.70E-02	8.09E-03	NA	6.89E-02	6.89E-03	4.48E-02	1.72E-02
	149	2.97E-01	4.82E-02	NA	2.49E-01	2.49E-02	1.62E-01	6.21E-02
Ninemile Creek NM305	2	8.81E-03	6.47E-04	NA	8.17E-03	8.17E-04	5.31E-03	2.04E-03
	3	1.32E-02	9.71E-04	NA	1.22E-02	1.22E-03	7.96E-03	3.06E-03
	6.9	2.73E-02	2.23E-03	NA	2.50E-02	2.50E-03	1.63E-02	6.26E-03
	41	1.07E-01	1.33E-02	NA	9.38E-02	9.38E-03	6.09E-02	2.34E-02
South Fork at Wallace SF233	22	8.11E-02	7.15E-03	3.16E-02	4.24E-02	4.24E-03	2.75E-02	1.06E-02
	35	1.27E-01	1.13E-02	4.85E-02	6.69E-02	6.69E-03	4.35E-02	1.67E-02
	79	2.51E-01	2.55E-02	9.39E-02	1.31E-01	1.31E-02	8.55E-02	3.29E-02
	469	9.34E-01	1.52E-01	3.42E-01	4.40E-01	4.40E-02	2.86E-01	1.10E-01
Pine Creek PC315	20	3.98E-02	1.08E-02	NA	2.91E-02	2.91E-03	1.89E-02	7.26E-03
	29	5.78E-02	1.56E-02	NA	4.21E-02	4.21E-03	2.74E-02	1.05E-02
	80	1.59E-01	4.31E-02	NA	1.16E-01	1.16E-02	7.55E-02	2.91E-02
	387	7.71E-01	2.09E-01	NA	5.62E-01	5.62E-02	3.65E-01	1.41E-01
South Fork at Pinehurst SF271	68	3.81E-01	2.93E-02	7.14E-02	2.80E-01	2.80E-02	1.82E-01	7.00E-02
	97	5.23E-01	4.19E-02	1.09E-01	3.73E-01	3.73E-02	2.42E-01	9.31E-02
	268	1.16E+00	1.16E-01	2.48E-01	7.94E-01	7.94E-02	5.16E-01	1.98E-01
	1290	2.80E+00	5.57E-01	1.00E+00	1.24E+00	1.24E-01	8.03E-01	3.09E-01
North Fork at Enaville NF400	165	3.28E-01	7.12E-02	NA	NA	NA	NA	NA
	253	5.04E-01	1.09E-01	NA	NA	NA	NA	NA
	845	1.68E+00	3.65E-01	NA	NA	NA	NA	NA
	1100	1.01E+01	2.20E+00	NA	NA	NA	NA	NA
CdA River at Harrison	239	7.60E-01	1.03E-01	3.51E-01	3.05E-01	3.05E-02	2.75E-01	NA
	348	1.07E+00	1.50E-01	4.82E-01	4.40E-01	4.40E-02	3.96E-01	NA
	1100	2.87E+00	4.75E-01	1.16E+00	1.24E+00	1.24E-01	1.11E+00	NA
	6870	1.37E+01	2.96E+00	3.43E+00	7.29E+00	7.29E-01	6.56E+00	NA

Table 5 : TMDL Elements for Dissolved Lead

Target Site	Flow Tier (cfs)	Loading Capacity (lbs/day)	Background (lbs/day)	Capacity Used Upstream (lbs/day)	Loading Avail. for Allocation (lbs/day)	Margin of Safety (10%) (lbs/day)	Gross Allocation (65%) (lbs/day)	Wasteload Allocation (25%) (lbs/day)
Canyon Creek CC288	7	5.10E-02	6.51E-03	NA	4.45E-02	4.45E-03	2.89E-02	1.11E-02
	11	7.90E-02	1.01E-02	NA	6.89E-02	6.89E-03	4.48E-02	1.72E-02
	25	1.41E-01	2.29E-02	NA	1.18E-01	1.18E-02	7.67E-02	2.95E-02
	149	4.35E-01	1.37E-01	NA	2.98E-01	2.98E-02	1.94E-01	7.45E-02
Ninemile Creek NM305	2	1.92E-02	1.83E-03	NA	1.74E-02	1.74E-03	1.13E-02	4.35E-03
	3	2.89E-02	2.75E-03	NA	2.61E-02	2.61E-03	1.70E-02	6.53E-03
	6.9	5.64E-02	6.33E-03	NA	5.01E-02	5.01E-03	3.26E-02	1.25E-02
	41	1.80E-01	3.76E-02	NA	1.43E-01	1.43E-02	9.26E-02	3.56E-02
South Fork at Wallace SF233	22	1.62E-01	2.03E-02	6.19E-02	7.97E-02	7.97E-03	5.18E-02	1.99E-02
	35	2.51E-01	3.21E-02	9.50E-02	1.24E-01	1.24E-02	8.08E-02	3.11E-02
	79	4.67E-01	7.23E-02	1.68E-01	2.26E-01	2.26E-02	1.47E-01	5.65E-02
	469	1.37E+00	4.30E-01	4.41E-01	4.98E-01	4.98E-02	3.24E-01	1.24E-01
Pine Creek PC315	20	5.84E-02	2.27E-02	NA	3.57E-02	3.57E-03	2.32E-02	8.93E-03
	29	8.46E-02	3.28E-02	NA	5.18E-02	5.18E-03	3.36E-02	1.29E-02
	80	2.33E-01	9.06E-02	NA	1.43E-01	1.43E-02	9.28E-02	3.57E-02
	387	1.13E+00	4.38E-01	NA	6.91E-01	6.91E-02	4.49E-01	1.73E-01
South Fork at Pinehurst SF271	68	9.33E-01	7.70E-02	1.15E-01	7.41E-01	7.41E-02	4.81E-01	1.85E-01
	97	1.26E+00	1.10E-01	1.76E-01	9.74E-01	9.74E-02	6.33E-01	2.43E-01
	268	2.50E+00	3.04E-01	3.69E-01	1.83E+00	1.83E-01	1.19E+00	4.57E-01
	1290	4.28E+00	1.46E+00	1.19E+00	1.63E+00	1.63E-01	1.06E+00	4.07E-01
North Fork at Enaville NF400	165	4.81E-01	1.87E-01	NA	NA	NA	NA	NA
	253	7.38E-01	2.87E-01	NA	NA	NA	NA	NA
	845	2.47E+00	9.57E-01	NA	NA	NA	NA	NA
	1100	1.49E+01	5.77E+00	NA	NA	NA	NA	NA
CdA River at Harrison	239	1.41E+00	2.70E-01	9.27E-01	2.14E-01	2.14E-02	1.93E-01	NA
	348	1.96E+00	3.94E-01	1.26E+00	3.07E-01	3.07E-02	2.76E-01	NA
	1100	4.83E+00	1.25E+00	2.79E+00	8.01E-01	8.01E-02	7.21E-01	NA
	6870	2.00E+01	7.78E+00	7.39E+00	4.87E+00	4.87E-01	4.39E+00	NA

Table 6 : TMDL Elements for Dissolved Zinc								
Target Site	**Flow Tier** (cfs)	**Loading Capacity** (lbs/day)	**Background** (lbs/day)	**Capacity Used Upstream** (lbs/day)	**Loading Avail. for Allocation** (lbs/day)	**Margin of Safety (10%)** (lbs/day)	**Gross Allocation (65%)** (lbs/day)	**Wasteload Allocation (25%)** (lbs/day)
Canyon Creek CC288	7	2.45E+00	2.34E-01	NA	2.22E+00	2.22E-01	1.44E+00	5.54E-01
	11	3.79E+00	3.62E-01	NA	3.43E+00	3.43E-01	2.23E+00	8.58E-01
	25	7.16E+00	8.23E-01	NA	6.34E+00	6.34E-01	4.12E+00	1.59E+00
	149	2.59E+01	4.90E+00	NA	2.10E+01	2.10E+00	1.37E+01	5.26E+00
Ninemile Creek NM305	2	8.63E-01	6.58E-02	NA	7.98E-01	7.98E-02	5.18E-01	1.99E-01
	3	1.30E+00	9.87E-02	NA	1.20E+00	1.20E-01	7.78E-01	2.99E-01
	6.9	2.63E+00	2.27E-01	NA	2.40E+00	2.40E-01	1.56E+00	6.01E-01
	41	9.72E+00	1.35E+00	NA	8.38E+00	8.38E-01	5.44E+00	2.09E+00
South Fork at Wallace SF233	22	9.04E-03	9.03E-03	3.01E+00	9.03E-03	0.00E+00	1.42E-02	1.00E+00
	35	3.39E-03	3.39E-03	4.63E+00	3.39E-03	0.00E+00	5.33E-03	1.00E+00
	79	4.67E-02	4.66E-02	8.74E+00	4.66E-02	0.00E+00	7.34E-02	1.00E+00
	469	2.26E-01	2.26E-01	2.94E+01	2.26E-01	0.00E+00	3.55E-01	1.00E+00
Pine Creek PC315	20	3.48E+00	3.34E-01	NA	3.15E+00	3.15E-01	2.05E+00	7.87E-01
	29	5.05E+00	4.85E-01	NA	4.57E+00	4.57E-01	2.97E+00	1.14E+00
	80	1.39E+01	1.34E+00	NA	1.26E+01	1.26E+00	8.19E+00	3.15E+00
	387	6.74E+01	6.47E+00	NA	6.09E+01	6.09E+00	3.96E+01	1.52E+01
South Fork at Pinehurst SF271	68	3.87E+01	2.24E+00	7.15E+00	2.93E+01	2.93E+00	1.90E+01	7.32E+00
	97	5.28E+01	3.19E+00	1.09E+01	3.88E+01	3.88E+00	2.52E+01	9.69E+00
	268	1.13E+02	8.82E+00	2.47E+01	7.95E+01	7.95E+00	5.17E+01	1.99E+01
	1290	2.47E+02	4.24E+01	9.77E+01	1.07E+02	1.07E+01	6.96E+01	2.68E+01
North Fork at Enaville NF400	165	2.87E+01	4.45E+00	NA	NA	NA	NA	NA
	253	4.41E+01	6.82E+00	NA	NA	NA	NA	NA
	845	1.47E+02	**2.28E+01**	NA	NA	NA	NA	NA
	1100	8.86E+02	1.37E+02	NA	NA	NA	NA	NA
CdA River at Harrison	239	7.10E+01	6.85E+00	3.37E+01	3.04E+01	3.04E+00	2.74E+01	NA
	348	9.97E+01	9.99E+00	4.56E+01	4.41E+01	4.41E+00	3.97E+01	NA
	1100	2.61E+02	3.16E+01	1.02E+02	1.27E+02	1.27E+01	1.14E+02	NA
	6870	1.20E+03	1.97E+02	2.44E+02	7.55E+02	7.55E+01	6.79E+02	NA

B. Allocations for Individual Sources

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

   a. For a given metal and target site flow, the wasteload allocation for an individual source in the Coeur d'Alene River and tributaries is:

      (1) The calculated value listed in Tables 7 through 11; or,

      (2) A reasonable estimate of the current monthly average performance at the facility (established in the NPDES permit),

      whichever is more stringent.

   b. After issuance of a permit with cadmium, lead, and/or zinc limits based on current performance (see Part a(2) above), the loading equal to the difference between the calculated value (in Tables 7 through 11) and the performance-based limit will be reserved for future growth. Reserve allocations created by a permitting action may be allocated to new or expanding facilities within the same target site or at a target site downstream of permitted source. Allocation of the future growth reserve will require formal modification of this TMDL.

   c. In its discretion, the NPDES permitting authority may develop additional flow tiers (and associated permit limits) to those listed below.

   d. The listed wasteload allocation applies to the monthly average discharge to the receiving water.

   Maps showing the locations of discrete sources are included in Appendix B to the TMDL.

Table 7 : Calculated Wasteload Allocations for Individual Sources - Canyon Creek (URSG Site CC288)

All values in lbs/day

		Total Recoverable Cadmium				Total Recoverable Lead				Total Recoverable Zinc			
Station ID	Flow (cfs)	7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile
CC817 Hecla #3	0.0684	4.85E-05	7.51E-05	1.43E-04	5.14E-04	1.01E-04	1.57E-04	2.68E-04	6.79E-04	4.58E-03	7.10E-03	1.31E-02	4.36E-02
CC355 Gem	0.26	1.84E-04	2.85E-04	5.42E-04	1.96E-03	3.85E-04	5.96E-04	1.02E-03	2.58E-03	1.74E-02	2.70E-02	4.99E-02	1.66E-01
CC816 Star/Phoenix Tailings (001)	2.34	1.66E-03	2.57E-03	4.88E-03	1.76E-02	3.46E-03	5.37E-03	9.19E-03	2.32E-02	1.57E-01	2.43E-01	4.49E-01	1.49E+00
CC357 Woodland Park Seep	0.0038	2.69E-06	4.17E-06	7.92E-06	2.86E-05	5.63E-06	8.72E-06	1.49E-05	3.77E-05	2.55E-04	3.95E-04	7.29E-04	2.42E-03
CC372 Tamarack #7	1.59	1.13E-03	1.75E-03	3.32E-03	1.20E-02	2.35E-03	3.65E-03	6.24E-03	1.58E-02	1.07E-01	1.65E-01	3.05E-01	1.01E+00
CC353 Hercules #5	1.707	1.21E-03	1.87E-03	3.56E-03	1.28E-02	2.53E-03	3.92E-03	6.70E-03	1.69E-02	1.14E-01	1.77E-01	3.28E-01	1.09E+00
CC371 Blackbear Fraction	1.165	8.25E-04	1.28E-03	2.43E-03	8.76E-03	1.72E-03	2.67E-03	4.57E-03	1.16E-02	7.81E-02	1.21E-01	2.24E-01	7.42E-01
CC373 Anchor	0.008	5.67E-06	8.78E-06	1.67E-05	6.02E-05	1.18E-05	1.83E-05	3.14E-05	7.94E-05	5.36E-04	8.31E-04	1.53E-03	5.09E-03
CC354 Hidden Treasure	0.72	5.10E-04	7.90E-04	1.50E-03	5.42E-03	1.07E-03	1.65E-03	2.83E-03	7.14E-03	4.83E-02	7.48E-02	1.38E-01	4.58E-01
Tiger/Poorman	0.4	2.83E-04	4.39E-04	8.34E-04	3.01E-03	5.92E-04	9.17E-04	1.57E-03	3.97E-03	2.68E-02	4.15E-02	7.67E-02	2.55E-01

Table 8 : Calculated Wasteload Allocations for Individual Sources - Ninemile Creek (URSG Site NM305)

All values in lbs/day

		Total Recoverable Cadmium				Total Recoverable Lead				Total Recoverable Zinc			
Station ID	Flow (cfs)	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	0.040	4.11E-05	6.17E-05	1.26E-04	4.72E-04	9.65E-05	1.45E-04	2.78E-04	7.90E-04	4.02E-03	6.03E-03	1.21E-02	4.22E-02
NM362 IC Waste Rock	1.790	1.84E-03	2.76E-03	5.64E-03	2.11E-02	4.32E-03	6.48E-03	1.24E-02	3.53E-02	1.80E-01	2.70E-01	5.42E-01	1.89E+00
NM363 IC Tailings Seep	0.004	4.11E-06	6.17E-06	1.26E-05	4.72E-05	9.65E-06	1.45E-05	2.78E-05	7.90E-05	4.02E-04	6.03E-04	1.21E-03	4.22E-03
NM361 Rex #2	0.020	2.06E-05	3.09E-05	6.31E-05	2.36E-04	4.82E-05	7.24E-05	1.39E-04	3.95E-04	2.01E-03	3.01E-03	6.05E-03	2.11E-02
NM364 Tamarack 400 Level	0.040	4.11E-05	6.17E-05	1.26E-04	4.72E-04	9.65E-05	1.45E-04	2.78E-04	7.90E-04	4.02E-03	6.03E-03	1.21E-02	4.22E-02
NM366 Tamarack #5	0.030	3.09E-05	4.63E-05	9.46E-05	3.54E-04	7.24E-05	1.09E-04	2.08E-04	5.92E-04	3.01E-03	4.52E-03	9.08E-03	3.16E-02
NM368 Rex Tailings Seep	0.020	2.06E-05	3.09E-05	6.31E-05	2.36E-04	4.82E-05	7.24E-05	1.39E-04	3.95E-04	2.01E-03	3.01E-03	6.05E-03	2.11E-02
NM359 Success #3	0.010	1.03E-05	1.54E-05	3.15E-05	1.18E-04	2.41E-05	3.62E-05	6.94E-05	1.97E-04	1.00E-03	1.51E-03	3.03E-03	1.05E-02
NM367 Dayrock 100	0.007	6.99E-06	1.05E-05	2.14E-05	8.03E-05	1.64E-05	2.46E-05	4.72E-05	1.34E-04	6.83E-04	1.02E-03	2.06E-03	7.17E-03
NM369 Silver Star	0.0096	9.87E-06	1.48E-05	3.03E-05	1.13E-04	2.32E-05	3.47E-05	6.67E-05	1.90E-04	9.65E-04	1.45E-03	2.90E-03	1.01E-02
NM370 Duluth	0.011	1.13E-05	1.70E-05	3.47E-05	1.30E-04	2.65E-05	3.98E-05	7.64E-05	2.17E-04	1.11E-03	1.66E-03	3.33E-03	1.16E-02
NM374 Success Tailings	0.003	3.50E-06	5.25E-06	1.07E-05	4.02E-05	8.20E-06	1.23E-05	2.36E-05	6.71E-05	3.42E-04	5.12E-04	1.03E-03	3.59E-03

Table 9 : Calculated Wasteload Allocations for Individual Sources - South Fork at Wallace (URSG Site SF223)

All values in lbs/day

		Total Recoverable Cadmium				Total Recoverable Lead				Total Recoverable Zinc			
Station ID	Flow (cfs)	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	1.27	1.52E-03	2.40E-03	4.72E-03	1.58E-02	3.43E-03	5.35E-03	9.73E-03	2.14E-02	1.43E-01	2.26E-01	4.35E-01	1.32E+00
SF609 Lucky Friday Outfall 003	0.85	1.02E-03	1.61E-03	3.16E-03	1.06E-02	2.30E-03	3.58E-03	6.51E-03	1.43E-02	9.59E-02	1.51E-01	2.91E-01	8.84E-01
SF328 Star/Morning Waste Rock	1.59	1.90E-03	3.00E-03	5.90E-03	1.98E-02	4.29E-03	6.69E-03	1.22E-02	2.68E-02	1.79E-01	2.82E-01	5.44E-01	1.65E+00
SF 396 Square Deal	0.08	9.57E-05	1.51E-04	2.97E-04	9.94E-04	2.16E-04	3.37E-04	6.13E-04	1.35E-03	9.03E-03	1.42E-02	2.74E-02	8.32E-02
SF395 Golconda	0.03	3.59E-05	5.67E-05	1.11E-04	3.73E-04	8.10E-05	1.26E-04	2.30E-04	5.06E-04	3.39E-03	5.33E-03	1.03E-02	3.12E-02
SF627 Mullan STP	0.413	4.94E-04	7.80E-04	1.53E-03	5.13E-03	1.12E-03	1.74E-03	3.17E-03	6.97E-03	4.66E-02	7.34E-02	1.41E-01	4.29E-01
SF338 Snowstorm #3	2	2.39E-03	3.78E-03	7.43E-03	2.49E-02	5.40E-03	8.42E-03	1.53E-02	3.37E-02	2.26E-01	3.55E-01	6.84E-01	2.08E+00
SF339 Copper King	0.0564	6.75E-05	1.07E-04	2.09E-04	7.01E-04	1.52E-04	2.37E-04	4.32E-04	9.51E-04	6.37E-03	1.00E-02	1.93E-02	5.86E-02
SF345 Morning #4	0.0152	1.82E-05	2.87E-05	5.64E-05	1.89E-04	4.11E-05	6.40E-05	1.16E-04	2.56E-04	1.72E-03	2.70E-03	5.20E-03	1.58E-02
SF346 Morning #5	0.0111	1.33E-05	2.10E-05	4.12E-05	1.38E-04	3.00E-05	4.67E-05	8.51E-05	1.87E-04	1.25E-03	1.97E-03	3.80E-03	1.15E-02
SF347 Star 1200 Level	0.695	8.31E-04	1.31E-03	2.58E-03	8.64E-03	1.88E-03	2.93E-03	5.33E-03	1.17E-02	7.84E-02	1.23E-01	2.38E-01	7.23E-01
SF349 Grouse	1.82	2.18E-03	3.44E-03	6.76E-03	2.26E-02	4.92E-03	7.66E-03	1.39E-02	3.07E-02	2.05E-01	3.23E-01	6.23E-01	1.89E+00
SF386 Adit in Beacon Light Area	0.0003	3.59E-07	5.67E-07	1.11E-06	3.73E-06	8.10E-07	1.26E-06	2.30E-06	5.06E-06	3.39E-05	5.33E-05	1.03E-04	3.12E-04
SF389 Unnamed Adit Deadman Gulch	0.011	1.32E-05	2.08E-05	4.08E-05	1.37E-04	2.97E-05	4.63E-05	8.43E-05	1.86E-04	1.24E-03	1.95E-03	3.76E-03	1.14E-02
SF390 Reindeer Queen	0.011	1.32E-05	2.08E-05	4.08E-05	1.37E-04	2.97E-05	4.63E-05	8.43E-05	1.86E-04	1.24E-03	1.95E-03	3.76E-03	1.14E-02

Table 10 : Calculated Wasteload Allocations for Individual Sources - Pine Creek (URSG Site PC315)

All values in lbs/day

		Total Recoverable Cadmium				Total Recoverable Lead				Total Recoverable Zinc			
Station ID	Flow (cfs)	7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile
PC329 North Amy	0.322	3.48E-03	5.04E-03	1.39E-02	6.73E-02	4.27E-03	6.20E-03	1.71E-02	8.27E-02	3.77E-01	5.47E-01	1.51E+00	7.29E+00
PC330 Amy	0.005	5.40E-05	7.83E-05	2.16E-04	1.05E-03	6.64E-05	9.62E-05	2.65E-04	1.28E-03	5.85E-03	8.49E-03	2.34E-02	1.13E-01
PC331 Liberal King	0.005	5.40E-05	7.83E-05	2.16E-04	1.05E-03	6.64E-05	9.62E-05	2.65E-04	1.28E-03	5.85E-03	8.49E-03	2.34E-02	1.13E-01
PC332 Lookout	0.027	2.92E-04	4.23E-04	1.17E-03	5.64E-03	3.58E-04	5.20E-04	1.43E-03	6.94E-03	3.16E-02	4.58E-02	1.26E-01	6.12E-01
PC333 Upper Lynch	0.001	1.08E-05	1.57E-05	4.32E-05	2.09E-04	1.33E-05	1.92E-05	5.31E-05	2.57E-04	1.17E-03	1.70E-03	4.68E-03	2.27E-02
PC334 Lynch/Nabob	0.0006	6.48E-06	9.40E-06	2.59E-05	1.25E-04	7.96E-06	1.15E-05	3.19E-05	1.54E-04	7.02E-04	1.02E-03	2.81E-03	1.36E-02
PC335 Nevada-Stewart	0.091	9.83E-04	1.43E-03	3.93E-03	1.90E-02	1.21E-03	1.75E-03	4.83E-03	2.34E-02	1.07E-01	1.54E-01	4.26E-01	2.06E+00
PC336 Highland Surprise	0.038	4.10E-04	5.95E-04	1.64E-03	7.94E-03	5.04E-04	7.31E-04	2.02E-03	9.76E-03	4.45E-02	6.45E-02	1.78E-01	8.61E-01
PC375 Highland Surprise Waste Rock	0.0106	1.15E-04	1.66E-04	4.58E-04	2.22E-03	1.41E-04	2.04E-04	5.63E-04	2.72E-03	1.24E-02	1.80E-02	4.96E-02	2.40E-01
PC337 Sidney (Red Cloud Creek Adit)	0.006	6.48E-05	9.40E-05	2.59E-04	1.25E-03	7.96E-05	1.15E-04	3.19E-04	1.54E-03	7.02E-03	1.02E-02	2.81E-02	1.36E-01
PC340 Upper Little Pittsburg	0.002	2.16E-05	3.13E-05	8.64E-05	4.18E-04	2.65E-05	3.85E-05	1.06E-04	5.14E-04	2.34E-03	3.39E-03	9.37E-03	4.53E-02
PC341 Lower Little Pittsburg	0.006	6.48E-05	9.40E-05	2.59E-04	1.25E-03	7.96E-05	1.15E-04	3.19E-04	1.54E-03	7.02E-03	1.02E-02	2.81E-02	1.36E-01
PC343 Nabob 1300 Level	0.066	7.13E-04	1.03E-03	2.85E-03	1.38E-02	8.76E-04	1.27E-03	3.50E-03	1.70E-02	7.73E-02	1.12E-01	3.09E-01	1.50E+00
PC344 Big It	0.00106	1.15E-05	1.66E-05	4.58E-05	2.22E-04	1.41E-05	2.04E-05	5.63E-05	2.72E-04	1.24E-03	1.80E-03	4.96E-03	2.40E-02
PC348 Upper Constitution	0.079	8.53E-04	1.24E-03	3.41E-03	1.65E-02	1.05E-03	1.52E-03	4.19E-03	2.03E-02	9.25E-02	1.34E-01	3.70E-01	1.79E+00
PC351 Marmion Tunnel	0.0089	9.61E-05	1.39E-04	3.85E-04	1.86E-03	1.18E-04	1.71E-04	4.73E-04	2.29E-03	1.04E-02	1.51E-02	4.17E-02	2.02E-01
PC352 Seep Below Nevada Stewart	0.0028	3.02E-05	4.39E-05	1.21E-04	5.85E-04	3.72E-05	5.39E-05	1.49E-04	7.19E-04	3.28E-03	4.75E-03	1.31E-02	6.34E-02
PC 400 Adit Upstream of Little Pittsburg	0.000422	4.56E-06	6.61E-06	1.82E-05	8.82E-05	5.60E-06	8.12E-06	2.24E-05	1.08E-04	4.94E-04	7.16E-04	1.98E-03	9.56E-03

Table 11 : Calculated Wasteload Allocations for Individual Sources - South Fork above Pinehurst (URSG Site SF271)

All values in lbs/day

Station ID	Flow (cfs)	Total Recoverable Cadmium				Total Recoverable Lead				Total Recoverable Zinc			
		7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile	7Q10L	10th Percentile	50th Percentile	90th Percentile
SF382 Silver Dollar	0.015	7.00E-05	9.30E-05	1.98E-04	3.09E-04	4.07E-04	5.35E-04	1.00E-03	8.93E-04	7.31E-03	9.68E-03	1.99E-02	2.67E-02
SF393 Western Union (Lower Adit)	0.001	4.67E-06	6.20E-06	1.32E-05	2.06E-05	2.71E-05	3.57E-05	6.70E-05	5.96E-05	4.87E-04	6.46E-04	1.32E-03	1.78E-03
SF3 Central Tmt Plant	4.990	2.33E-02	3.10E-02	6.59E-02	1.03E-01	1.35E-01	1.78E-01	3.34E-01	2.97E-01	2.43E+00	3.22E+00	6.60E+00	8.90E+00
SF620 Page STP	3.870	1.81E-02	2.40E-02	5.11E-02	7.97E-02	1.05E-01	1.38E-01	2.59E-01	2.31E-01	1.89E+00	2.50E+00	5.12E+00	6.90E+00
SF383 St. Joe	0.007	3.27E-05	4.34E-05	9.25E-05	1.44E-04	1.90E-04	2.50E-04	4.69E-04	4.17E-04	3.41E-03	4.52E-03	9.26E-03	1.25E-02
SF384 Coeur d'Alene (Mineral Point)	0.005	2.33E-05	3.10E-05	6.61E-05	1.03E-04	1.36E-04	1.78E-04	3.35E-04	2.98E-04	2.44E-03	3.23E-03	6.62E-03	8.92E-03
SF385 Unnamed Adit	0.001	3.27E-06	4.34E-06	9.25E-06	1.44E-05	1.90E-05	2.50E-05	4.69E-05	4.17E-05	3.41E-04	4.52E-04	9.26E-04	1.25E-03
SF600 Caladay	0.210	9.80E-04	1.30E-03	2.77E-03	4.32E-03	5.70E-03	7.49E-03	1.41E-02	1.25E-02	1.02E-01	1.36E-01	2.78E-01	3.74E-01
SF602 Galena	1.300	6.06E-03	8.06E-03	1.72E-02	2.68E-02	3.53E-02	4.64E-02	8.71E-02	7.74E-02	6.34E-01	8.39E-01	1.72E+00	2.32E+00
SF623 Smelterville STP	0.421	1.96E-03	2.61E-03	5.56E-03	8.66E-03	1.14E-02	1.50E-02	2.82E-02	2.51E-02	2.05E-01	2.72E-01	5.57E-01	7.51E-01
SF624 Sunshine 001	3.120	1.46E-02	1.94E-02	4.12E-02	6.42E-02	8.46E-02	1.11E-01	2.09E-01	1.86E-01	1.52E+00	2.01E+00	4.13E+00	5.56E+00
Coeur/Galena 002	0.775	3.62E-03	4.81E-03	1.02E-02	1.60E-02	2.10E-02	2.76E-02	5.19E-02	4.62E-02	3.78E-01	5.00E-01	1.03E+00	1.38E+00
Consolidated Silver	0.300	1.40E-03	1.86E-03	3.97E-03	6.18E-03	8.14E-03	1.07E-02	2.01E-02	1.79E-02	1.46E-01	1.94E-01	3.97E-01	5.35E-01

2. Load Allocations for Coeur d'Alene Lake Sediments

The following allocations apply to net loadings of dissolved metals occurring within Coeur d'Alene Lake. Net loadings in this case are defined as the loadings in the Spokane River at the lake outlet minus the loadings at the mouth of the Coeur d'Alene River.

Table 12 : Load Allocations for Coeur d'Alene Lake Sediments

Flow in St. Joe River at Calder (cfs)	Load Allocation for Net Loading from Lake Sediments (lbs/day)		
	Dissolved Cadmium (lbs/day)	Dissolved Lead (lbs/day)	Dissolved Zinc (lbs/day)
241	0.46	0.38	36
374	0.71	0.59	56
1,000	1.9	1.6	150
6,470	12	10	970

3. Wasteload Allocations for the Spokane River

a. For a given metal, the wasteload allocation for an individual source in the Spokane River is:

(1) The value listed in Table 13; or,

(2) A reasonable estimate of the current monthly average performance at the facility (established in the NPDES permit fact sheet),

whichever is more stringent.

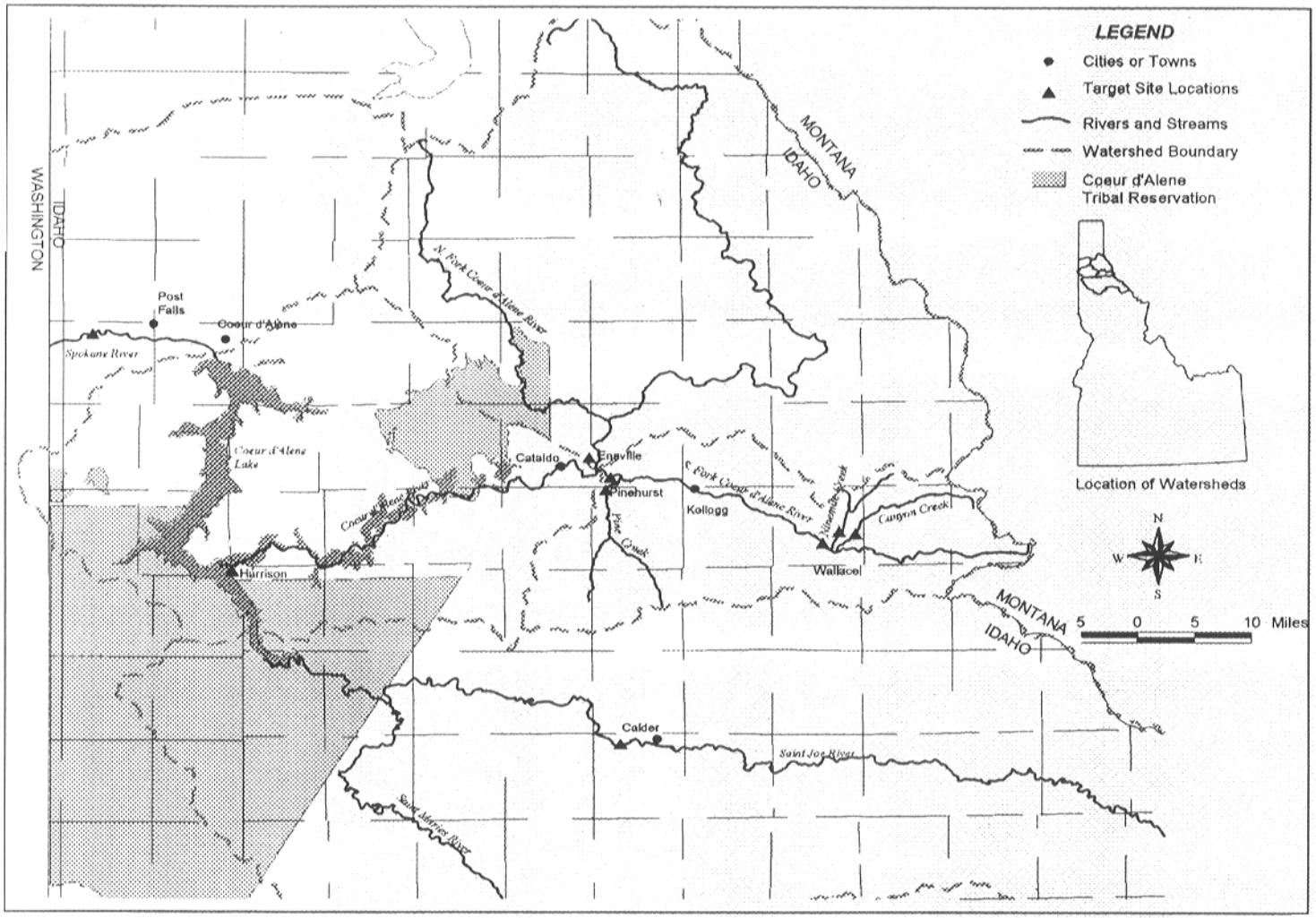
b. After a permit is issued with any cadmium, lead, and/or zinc limits based on current performance, the loading equal to the difference between the value in Table 13 and the performance-based limit will be reserved for municipal stormwater sources. Allocation of the future stormwater reserve will require formal modification of this TMDL.

c. The listed wasteload allocation applies to the monthly average discharge to the receiving water.

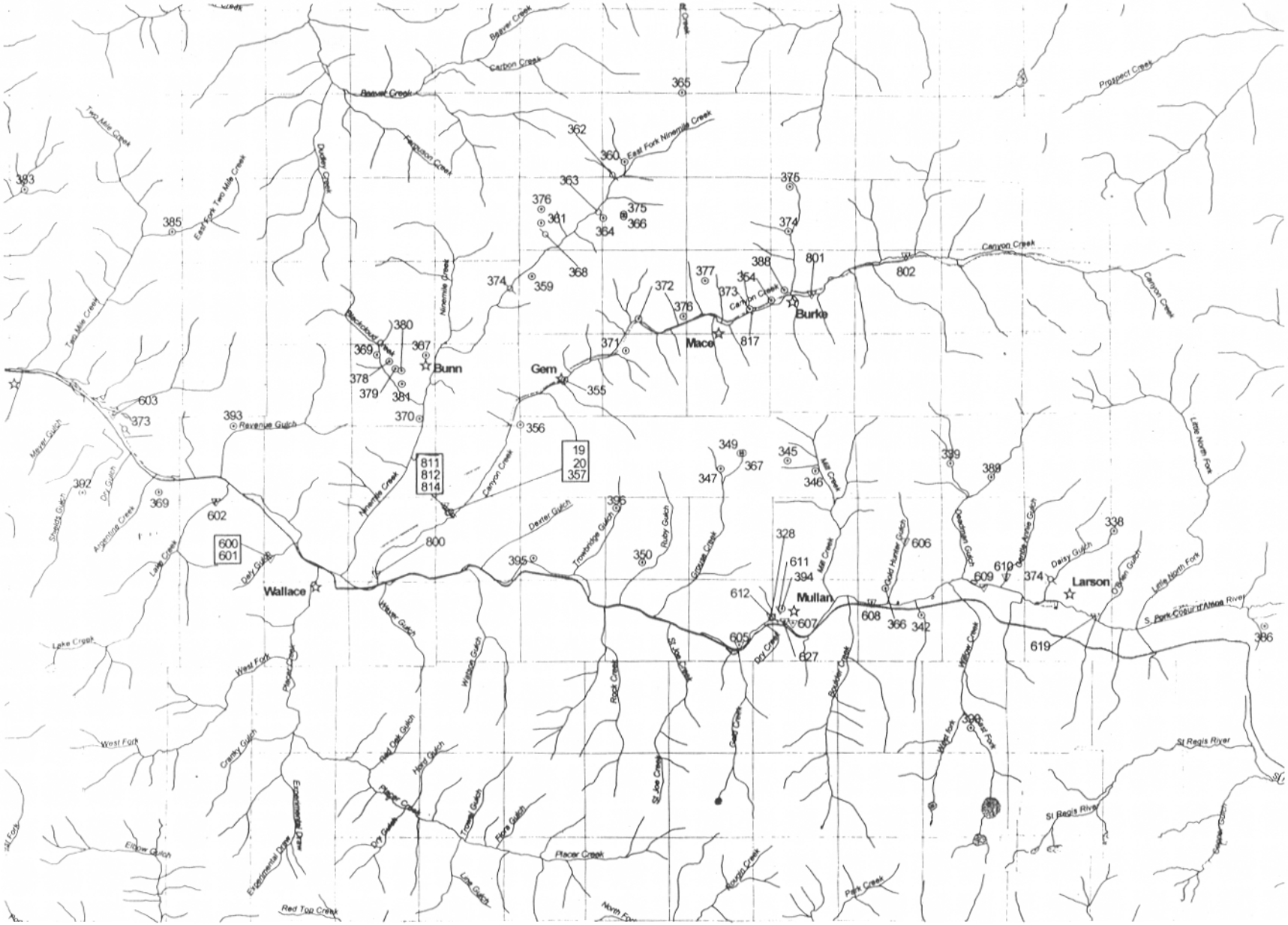
Table 13 : Spokane River Wasteload Allocations

Facility	Total Recoverable Cadmium (ug/l)	Total Recoverable Lead (ug/l)	Total Recoverable Zinc (ug/l)
City of Coeur d'Alene	1.3	3.3	132
City of Post Falls	1.0	2.4	101
City of Hayden Lake	1.0	2.3	97

Appendix A : Map of Coeur d'Alene Basin


LEGEND
Cities or Towns
Target Site Locations
Rivers and Streams
Watershed Boundary
Coeur d'Alene Tribal Reservation
Location of Watersheds
WASHINGTON
IDAHO
MONTANA
IDAHO
MONTANA
IDAHO
Post Falls
Coeur d'Alene
Spokane River
Coeur d'Alene Lake
N. Fork Coeur d'Alene River
Cataldo
Enaville
Pinehurst
Kellogg
S. Fork Coeur d'Alene River
Canyon Creek
Wallace
Harrison
Calder
Saint Joe River
Saint Maries River
N
W
E
S
5 0 5 10 Miles

Appendix B : Source Location Maps for Coeur d'Alene River and Tributaries



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)

1:70000

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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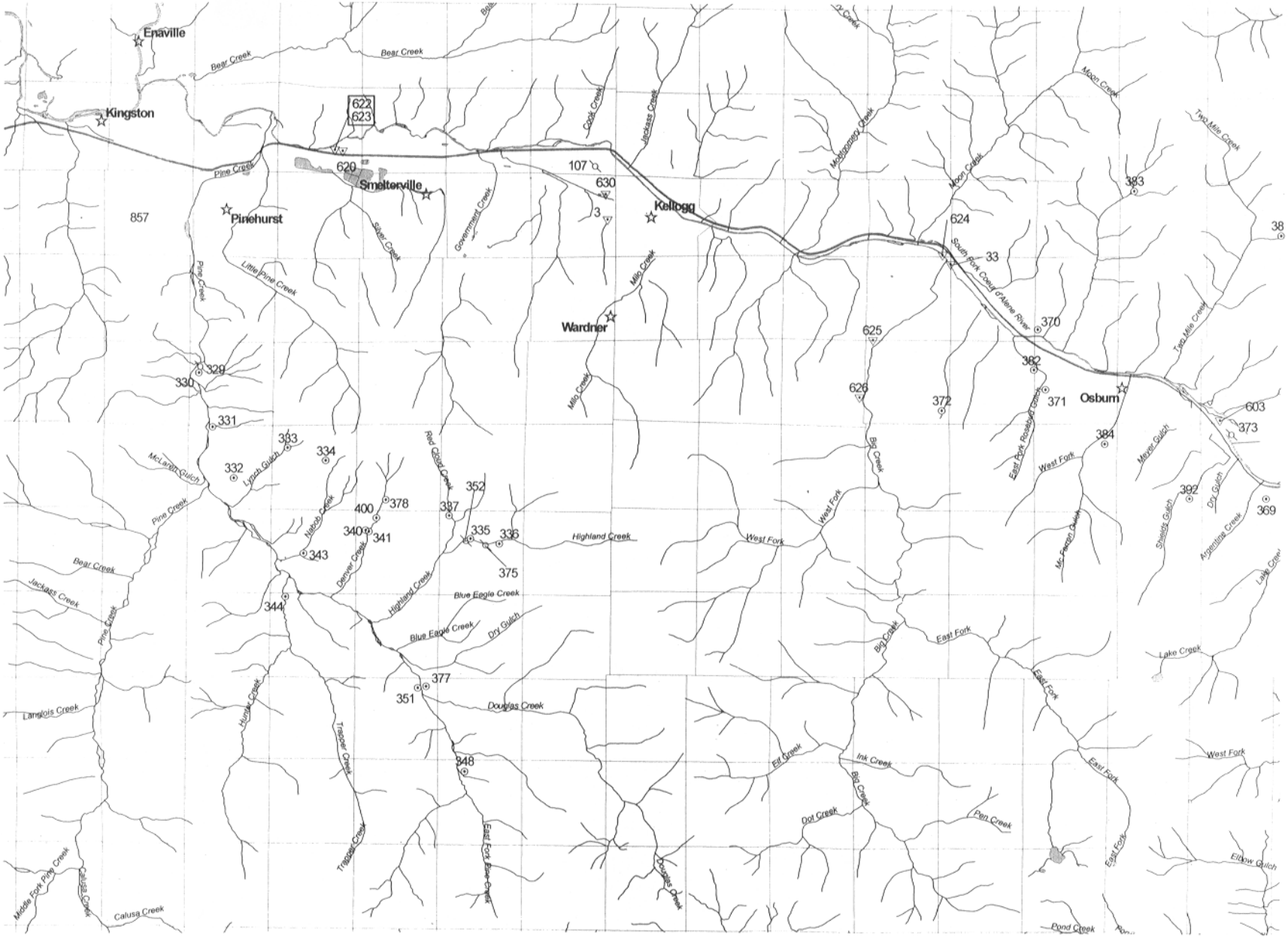
Generation : 1



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)

1:70000

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

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VIEW: view 1
LAY: L2 Plate 2 (11x17)
01/06/99