

APPENDIX A – SUMMARY OF AVAILABLE AND RELEVANT
TOXICITY DATA FOR AMINOPYRALID

APPENDIX A.1 – BIBLIOGRAPHY LIST

COMPLETE LISTING OF TOXICITY REFERENCES EVALUATED FOR
Aminopyralid

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APPENDIX A – SUMMARY OF AVAILABLE AND RELEVANT
TOXICITY DATA FOR AMINOPYRALID

APPENDIX A.2 – SPREADSHEET OF TOXICITY DATA FOR
AMINOPYRALID TRV

Spreadsheet of Toxicity Data for Aminopyralid TRV

Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹		Units	Toxicity Value (a.e.)		Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation	
Aminopyralid	94.5	Aquatic Plant	Duckweed	Lemna gibba	NR	Static	Water	14 d	14 d	Frond density	EC50	>	88	ppm	88	ppm	Springborn Laboratory Inc., MA	46235826			2004 ^{3,4} Hoberg 2003a	B. Kiernan	2005	Yes	
Aminopyralid	94.5%	Insect	Honey bee	Apis mellifera	NR	Acute contact study	Direct contact	48 hr	48 hr	Mortality	LD50	>	100	ug/bee	>	100	ug/bee	Analytical Biochemical Laboratory, Columbia, Missouri	46235831			2004 ^{3,4}	B. Kiernan	2004	Yes
Aminopyralid	94.5	Bird	Bobwhite quail	Colinus virginianus	19 w	Oral	Oral	14 d	14 d	Mortality	LD50	>	2,250	mg/kg bw	2,250	mg/kg bw	Wildlife International Inc., MD	46235808			2001 ^{3,4} Gallagher et al. 2001a	B. Kiernan	2005	Yes	
Aminopyralid	94.5	Bird	Bobwhite quail	Colinus virginianus	19 w	Oral	Oral	14 d	14 d		NOEL	<	63	mg/kg bw	63	mg/kg bw	Wildlife International Inc., MD	46235808			2001 ^{3,4} Gallagher et al. 2001a	B. Kiernan	2005	Yes	
Aminopyralid	94.5%	Bird	Bobwhite quail	Colinus virginianus	10 d	Diet	Diet	5 d	8 d	Mortality	LC50	>	5,556	ppm	5,556 [16,776]	ppm [mg/kg bw]	Wildlife International Inc., MD	46235810			2001 ^{3,4} Gallagher et al. 2001b	B. Kienan	2005	Yes	
Aminopyralid	94.5	Bird	Bobwhite quail	Colinus virginianus	10 d	Diet	Diet	5 d	8 d		NOEL		5,556	ppm	5,556 [3,355]	ppm [mg/kg bw/d]	Wildlife International Inc., MD	46235810			2001 ^{3,4} Gallagher et al. 2001b	B. Kienan	2005	Yes	
Aminopyralid	94.5%	Bird	Mallard duck	Anas platyrhynchos	10 d	Diet	Diet	5 d	8 d	Mortality	LC50	>	5496	ppm	5,496 [2,748]	ppm [mg/kg bw]	T.R. Wilbury Laboratories	46235811			2001 ^{3,4} Gallagher et al. 2001c	B. Kiernan	2005	Yes	
Aminopyralid	94.5	Bird	Mallard duck	Anas platyrhynchos	10 d	Diet	Diet	5 d	8 d		NOEL		5496	ppm	5,496 [549.6]	ppm [mg/kg bw/d]	T.R. Wilbury Laboratories	46235811			2001 ^{3,4} Gallagher et al. 2001c	B. Kiernan	2005	Yes	
Aminopyralid	94.5	Bird	Bobwhite quail	Colinus virginianus	Early life	Reproductive	Dietary	20 w	20 w		LOEC	>	2,500	mg/kg bw/d	>	2,500	mg/kg bw/d	Wildlife International Inc., MD	47109901			2007 ^{3,4}	B. Kiernan	2009	Yes
Aminopyralid	94.5%	Bird	Bobwhite quail	Colinus virginianus	Early life	Reproductive	Dietary	20 w	20 w		NOEL		2,500	mg/kg bw/d	2,500	mg/kg bw/d	Wildlife International Inc., MD	47109901			2007 ^{3,4}	B. Kiernan	2009	Yes	
Aminopyralid	94.5%	Bird	Mallard duck	Anas platyrhynchos	Early life	Reproductive		20 w	20 w		NOEL		2623	ppm	2623 [262.3]	ppm [mg/kg bw/d]	Genesis Laboratory Inc, Wellington , CO.	46235813			2003 ^{3,4} Mach 2003a	B. Kiernan	2005	Yes	
Aminopyralid	NR	Fish	Rainbow trout	Oncorhynchus mykiss	1.14 g	Static	Water	96 hr	96 hr	Mortality	NOAEL		100	ppm	100	ppm	Dow Chemical Corporation Laboratories	46235814			2001 ^{3,4} Marino et al. 2001a	B. Kiernan	2004	Yes	
Aminopyralid	94.5%	Fish	Rainbow trout	Oncorhynchus mykiss	1.14 g	Static	Water	96 hr	96 hr	Mortality	LC50	>	100	ppm	>	100	ppm	Dow Chemical Corporation Laboratories	46235814			2001 ^{3,4} Marino et al. 2001a	B. Kiernan	2004	Yes
Aminopyralid	94.5%	Aquatic invertebrate	Water flea	Daphnia magna	< 24 hr	Static	Water	48 hr	48 hr		LC50	>	98.6	ppm	>	98.6	ppm	Dow Chemical Corporation Laboratories	46235817			2001 ^{3,4} Marino et al. 2001b	B. Kiernan	2004	Yes
Aminopyralid	94.5	Aquatic invertebrate	Mysid	Americamysis bahia	< 24 hr	Static	Water	96 hr	96 hr	Mortality	LC50	>	100	ppm			Springborn Laboratory Inc., MA	46235819			2002 ^{3,4}	B. Kiernan	2004	No	
Aminopyralid	94.5	Aquatic invertebrate	Mysid	Americamysis bahia	< 24 hr	Static	Water	96 hr	96 hr		NOEL		100	ppm			Springborn Laboratory Inc., MA	46235819			2002 ^{3,4}	B. Kiernan	2004	No	
Aminopyralid	94.5	Mollusca	Eastern oyster	Crassostrea virginica	39 mm	Flow through	Water	96 hr	96 hr		EC50	>	89	ppm			Springborn Laboratory Inc., MA	46235818			2002 ^{3,4}	B. Kiernan	2004	No	
Aminopyralid	94.5	Insect	Honey bee	Apis mellifera	NR	Oral	Direct contact	48 hr	48 hr	Mortality	LD50	>	120	ug/bee	>	120	ug/bee	Analytical Biochemical Laboratory, Columbia, Missouri	46235832			2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Insect	Honey bee	Apis mellifera	NR	Oral	Direct contact	48 hr	48 hr		NOEL		120	ug/bee	120	ug/bee	Analytical Biochemical Laboratory, Columbia, Missouri	46235832			2004 ^{3,4}	B. Kiernan	2005	Supplemental	
Aminopyralid	40.6	Terrestrial Plant	Corn	Zea mays	NR	Seedling emergence	Soil treatment	22 d	22 d		EC25		NR		>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824			2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental

Spreadsheet of Toxicity Data for Aminopyralid TRV																						
Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹	Units	Toxicity Value (a.e.)	Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation
Aminopyralid	40.6	Terrestrial Plant	Corn	<i>Zea mays</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Barnyard grass	<i>Echinochloa sp.</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Barnyard grass	<i>Echinochloa sp.</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Cucumber	<i>Cucumis sativus</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		EC25	NR	>	0.03	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Cucumber	<i>Cucumis sativus</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		NOEL	NR		0.03	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Radish	<i>Raphanus sativus</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Radish	<i>Raphanus sativus</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Wheat	<i>Triticum aestivum</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Wheat	<i>Triticum aestivum</i>	NR	Seedling emergence	Soil treatment	22 d	22 d		NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Onion	<i>Allium cepa</i>	NR	Seedling emergence - shoot length	Soil treatment	22 d	22 d		EC25	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Onion	<i>Allium cepa</i>	NR	Seedling emergence - shoot length	Soil treatment	22 d	22 d		NOEL	NR		0.03	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Lettuce	<i>Lactuca sativa</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		EC25	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Lettuce	<i>Lactuca sativa</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		NOEL	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Oilseed rape	<i>Brassica napus</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		EC25	NR		0.02	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6%	Terrestrial Plant	Oilseed rape	<i>Brassica napus</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d	Seedling emergence	NOEL	NR		0.03	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Soybean	<i>Glycine max</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		EC25	NR		0.001	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6%	Terrestrial Plant	Soybean	<i>Glycine max</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d	Seedling emergence	NOEL	NR		0.0004	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Sugarbeet	<i>Beta vulgaris altissima</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		EC25	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Sugarbeet	<i>Beta vulgaris altissima</i>	NR	Seedling emergence - sw	Soil treatment	22 d	22 d		NOEL	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235824		2004 ^{3,4} Aufderheide 2004a	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Barnyard grass	<i>Echinochloa sp.</i>	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental

Spreadsheet of Toxicity Data for Aminopyralid TRV																						
Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹	Units	Toxicity Value (a.e.)	Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation
Aminopyralid	40.6	Terrestrial Plant	Barnyard grass	Echinochloa sp.	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Corn	Zea mays	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Corn	Zea mays	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Oilseed rape	Brassica napus	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Oilseed rape	Brassica napus	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Wheat	Triticum aestivum	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR	>	0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Wheat	Triticum aestivum	NR	Vegetative vigor	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.11	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6%	Terrestrial Plant	Soybean	Glycine max	NR	Vegetative vigor - shoot height	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.0003	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6%	Terrestrial Plant	Soybean	Glycine max	NR	Vegetative vigor - shoot height	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.0002	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Cucumber	Cucumis sativus	NR	Vegetative vigor - shoot height	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Cucumber	Cucumis sativus	NR	Vegetative vigor - shoot height	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.003	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Sugarbeet	Beta vulgaris altissima	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.004	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Lettuce	Lactuca sativa	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.002	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Lettuce	Lactuca sativa	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.01	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Onion	Allium cepa	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.02	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Onion	Allium cepa	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.001	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Radish	Raphanus sativus	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	EC25	NR		0.02	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4} Aufderheide , 2004b	B. Kiernan	2005	Supplemental
Aminopyralid	40.6	Terrestrial Plant	Radish	Raphanus sativus	NR	Vegetative vigor - sw	Direct spray	21 d	21 d	Vegetative vigor	NOEL	NR		0.003	lbs a.e./acre	Analytical Biochemical Laboratory, Columbia, Missouri	46235825		2004 ^{3,4}	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Aquatic Plant	Duckweed	Lemna gibba	NR	Static	Water	14 d	14 d	Frond density	LOEC	88	ppm	88	ppm	Springborn Laboratory Inc., MA	46235826		2004 ^{3,4} Hoberg 2003a	B. Kiernan	2005	Yes
Aminopyralid	94.5	Aquatic Plant	Freshwater diatom	Navicula pelliculosa	NR	Static	Water	120 hr	120 hr	Growth	EC50	18	ppm	18	ppm	Springborn Laboratory Inc., MA	46235827		2004 ^{3,4} Hoberg 2002a	B. Kiernan	2005	Supplemental

Spreadsheet of Toxicity Data for Aminopyralid TRV																								
Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹		Units	Toxicity Value (a.e.)		Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation
Aminopyralid	94.5	Aquatic Plant	Green algae	<i>Pseudokirchneriella subcapitata</i>	NR	Static	Water	96 hr	96 hr	Growth	EC50	30		ppm	30		ppm	Springborn Laboratory Inc., MA	46235830		2004 ^{3,4} Hoberg 2003b	B. Kiernan	2004	Supplemental
Aminopyralid	94.5	Aquatic Plant	Freshwater diatom	<i>Navicula pelliculosa</i>	NR	Static	Water	120 hr	120 hr	Growth	EC50	18		ppm	18		ppm	Springborn Laboratory Inc., MA	46235828		2004 ^{3,4} Hoberg 2002b	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Aquatic Plant	Freshwater diatom	<i>Navicula pelliculosa</i>	NR	Static	Water	120 hr	120 hr	Growth	NOEL	6		ppm	6		ppm	Springborn Laboratory Inc., MA	46235828		2004 ^{3,4} Hoberg 2002b	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Aquatic Plant	Blue-Green algae	<i>Anabaena flos-aquae</i>	NR	Static	Water	120 hr	120 hr	Growth	EC50	27.8		ppm				Dow Chemical Corporation Laboratories	47109902		2007 ^{3,4}	B. Kiernan	2009	No
Aminopyralid	94.5	Aquatic Plant	Blue-Green algae	<i>Anabaena flos-aquae</i>	NR	Static	Water	120 hr	120 hr	Growth	NOEL	11.6		ppm				Dow Chemical Corporation Laboratories	47109902		2007 ^{3,4}	B. Kiernan	2009	No
Aminopyralid	94.5	Bird	Bobwhite quail	<i>Colinus virginianus</i>	24 w	Oral	Oral	14 d	14 d	Mortality	NOEL	14		mg/kg bw	14		mg/kg bw	Wildlife International Inc., MD	46235809		2003 ^{3,4} Gallagher et al. 2003	B. Kiernan	2005	Yes
Aminopyralid	94.5	Bird	Bobwhite quail	<i>Colinus virginianus</i>	24 w	Oral	Oral	14 d	14 d	Mortality	LD50	>	292	mg/kg bw	>	292	mg/kg bw	Wildlife International Inc., MD	46235809		2003 ^{3,4} Gallagher et al. 2003	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Bird	Bobwhite quail	<i>Colinus virginianus</i>	Early life	Reproductive	Dietary	20 w	20 w		LOEL	>	2,610	ppm	2,610 [1,576]	ppm [mg/kg bw/d]		Genesis Laboratory Inc, Wellington , CO.	46235812		2003 ^{3,4} Mach 2003b	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Bird	Bobwhite quail	<i>Colinus virginianus</i>	Early life	Reproductive	Dietary	20 w	20 w		NOEL		2,610	ppm	2,610 [1,576]	ppm [mg/kg bw/d]		Genesis Laboratory Inc, Wellington , CO.	46235812		2003 ^{3,4} Mach 2003b	B. Kiernan	2005	Supplemental
Aminopyralid	94.5	Fish	Bluegill sunfish	<i>Lepomis macrochirus</i>	0.18-0.92 g	Static	Water	96 hr	96 hr	Mortality	LC50	>	100	ppm	>	100	ppm	Springborn Laboratory Inc., MA	46235815		2003 ^{3,4} Machado 2003	B. Kiernan	2004	Supplemental
Aminopyralid	94.5%	Fish	Sheepshead minnow	<i>Cyprinodon variegatus</i>	0.38 g	Static	Water	96 hr	96 hr	Mortality	LC50	>	120	ppm				Springborn Laboratory Inc., MA	46235820		2002 ^{3,4}	B. Kiernan	2004	No
Aminopyralid	94.5%	Fish	Sheepshead minnow	<i>Cyprinodon variegatus</i>	0.38 g	Static	Water	96 hr	96 hr		NOEL		120	ppm				Springborn Laboratory Inc., MA	46235820		2002 ^{3,4}	B. Kiernan	2004	No
Aminopyralid	94.5	Fish	Fathead minnow	<i>Pimephales promelas</i>	Early life	Flow through	Water	36 d	36 d	Weight, length, survival	LOEC		2.44	ppm	2.44		ppm	Dow Chemical Corporation Laboratories	46235821		2002 ^{3,4} Marino et al. 2003	B. Kiernan	2004	Supplemental
Aminopyralid	94.5	Aquatic invertebrate	Water flea	<i>Daphnia magna</i>	< 24 hr	Static	Water	48 hr	48 hr		NOEC		98.6	ppm	98.6		ppm	Dow Chemical Corporation Laboratories	46235817		2001 ^{3,4} Marino et al. 2001b	B. Kiernan	2004	Yes
Aminopyralid	94.5	Aquatic invertebrate	Water flea	<i>Daphnia magna</i>	Lifecycle	Static renewal	Water	21 d	21 d		LOEC	>	102	ppm	>	102	ppm	Dow Chemical Corporation Laboratories	46235822		2003 ^{3,4} Henry et al. 2003	B. Kiernan	2005	Supplemental
Aminopyralid		Amphibian	N. Leopard frog	<i>Rana pipiens</i>	Larvae	Static	Water	96 hr	96 hr	Mortality	NOAEL	95.2		ppm				Dow Chemical Corporation Laboratories	46235816		2003 ^{3,4}	B. Kiernan	2004	Yes
Aminopyralid	94.5	Amphibian	N. Leopard frog	<i>Rana pipiens</i>	Larvae	Static	Water	96 hr	96 hr	Mortality	LC50	>	95.2	ppm				Dow Chemical Corporation Laboratories	46235816		2003 ^{3,4}	B. Kiernan	2004	Yes
Aminopyralid	94.5	Aquatic invertebrate	Midge	<i>Chironomus riparius</i>	Lifecycle	Static	Water	28 d	28 d		LOEC		158	ppm	158		ppm	Springborn Laboratory Inc., MA	46235823		2002 ^{3,4} Putt 2002	B. Kiernan	2005	Supplemental
Aminopyralid	94.5%	Aquatic invertebrate	Midge	<i>Chironomus riparius</i>	Lifecycle	Static	Water	28 d	28 d		NOEL		82	ppm	82		ppm	Springborn Laboratory Inc., MA	46235823		2002 ^{3,4} Putt 2002	B. Kiernan	2005	Supplemental
XDE-750 (aminopyralid acid)	94.5%	quatic invertebra	Eastern oyster	<i>Crassostrea virginica</i>		Acute	Flow-through	96-hr		None observed	NOEC	NR			89		mg/L				Cafarella 2002			No

Spreadsheet of Toxicity Data for Aminopyralid TRV

Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹	Units	Toxicity Value (a.e.)	Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Dog	Beagle		Subchronic	Dietary	4 w			NOAEL	NR		193 [M] 556 [F]	mg/kg bw/d		46235620		Stebbins and Baker 2000			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Dog	Beagle		Subchronic	Dietary	4 w		Decreased food consumption	LOAEL	NR		543 [M] NR [F]	mg/kg bw/d		46235620		Stebbins and Baker 2000			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Dog	Beagle		Subchronic	Dietary	13 w			NOAEL	NR		282 [M] 232 [F]	mg/kg bw/d		46235623		Stebbins and Baker 2002			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Dog	Beagle		Subchronic	Dietary	13 w		Stomach effects	LOAEL	NR		1,070 [M] 929 [F]	mg/kg bw/d		46235623		Stebbins and Baker 2002			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Rat	Fischer 344 Rat		Acute	Dermal	24 h	2 w	Mortality	LD50	5,000	mg/kg bw	>	5,000	mg/kg bw		46235605		Brooks and Yano 2001			Yes
GF-871		Mammals	Rabbit	New Zealand White	Adult	Acute	Gavage	Day 7 to day 27 of gestation		Reproduction	NOAEL	NR		104	mg/kg bw/d		46235632		Carney and Tormesi 2004			Yes	
XDE-750 (aminopyralid acid)	94.5%	Soil invertebrate	Earthworm	Eisenia foetida		Acute	Soil	14 d		Mortality	NOAEL	NR		5000	mg/kg soil				Ward and Boeri 2001			No	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Rat	Fischer 344 Rat	7 w	Chronic	Dietary	up to 12 mo.		Body weight	NOAEL	NR		50 [M] 500 [F]	mg/kg bw/d		46235615		Johnson and Dryzga 2004			Yes	
Milestone Dow AgroSciences	NR	terrestrial plant	field mustard	Brassica rapa	14 DAE	Foliar exposure	direct spray	~21 d	~21 d	Seed production - silique number exp 1 and 2	EC25	NR	>	0.01	lbs a.e./acre				Olszyk et al 2010			Supplemental	
Milestone Dow AgroSciences	NR	terrestrial plant	field mustard	Brassica rapa	14 DAE	Foliar exposure	direct spray	~21 d	~21 d	Growth - shoot dry weight exp 1 and 2	EC25	NR	>	0.01	lbs a.e./acre				Olszyk et al 2010			Supplemental	
Milestone Dow AgroSciences	NR	terrestrial plant	field mustard	Brassica rapa	14 DAE	Foliar exposure	direct spray	~21 d	~21 d	Growth - flower height exp 1 and 2	EC25	NR	>	0.01	lbs a.e./acre				Olszyk et al 2010			Supplemental	
Milestone Dow AgroSciences	NR	terrestrial plant	field mustard	Brassica rapa	14 DAE	Foliar exposure	direct spray	~21 d	~21 d	Seed production - seed dry weight exp 1	EC25	NR		0.0003	lbs a.e./acre				Olszyk et al 2010			Supplemental	
Milestone Dow AgroSciences	NR	terrestrial plant	field mustard	Brassica rapa	14 DAE	Foliar exposure	direct spray	~21 d	~21 d	Seed production - seed dry weight exp 2	EC25	NR	>	0.01	lbs a.e./acre				Olszyk et al 2010			Supplemental	
Aminopyralid	94.5	Aquatic Plant	Duckweed	Lemna gibba	NR	Static	Water	14 d	14 d	Frond density	NOEC	44	ppm	44	ppm	Springborn Laboratory Inc., MA	46235826		2004 ^{3,4} Hoberg 2003a	B. Kiernan	2005	Yes	
Aminopyralid	94.5	Aquatic Plant	Freshwater diatom	Navicula pelliculosa	NR	Static	Water	120 hr	120 hr	Growth	NOEC	6	ppm	6	mg/L	Springborn Laboratory Inc., MA	46235827		2004 ^{3,4} Hoberg 2002a	B. Kiernan	2005	Supplemental	
Aminopyralid	94.5	Aquatic Plant	Green algae	Pseudokirchneriella subcapitata	NR	Static	Water	96 hr	96 hr	Growth	NOEC	23	ppm	23	mg/L	Springborn Laboratory Inc., MA	46235830		2004 ^{3,4} Hoberg 2003b	B. Kiernan	2004	Supplemental	

Spreadsheet of Toxicity Data for Aminopyralid TRV

Formulation	% purity	General Taxonomic Group	Common Name	Scientific Name	Age	Test Type	Means of Exposure	Exposure duration	Test duration	Biological Endpoint	Statistical Endpoint	Toxicity Value (tested product) ¹		Units	Toxicity Value (a.e.)	Units	Lab	MRID Number	Report Number	Data Source ²	EPA Reviewer	Date Reviewed	Used for TRV derivation		
GF-871		Mammals	Rabbit	New Zealand White	Adult	Acute	Gavage	Day 7 to day 27 of gestation		Reproduction	LOAEL	NR			520	mg/kg bw/d			46235632		Carney and Tornesi 2004			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Rat	CD		Subchronic	Dietary	10 w	10 w	Reproduction	NOAEL	1,000		mg/kg bw/d	1,000	mg/kg bw/d			46235635		Marty et al. 2003			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Rat	Fischer 344 Rat	7 w	Chronic	Dietary	up to 12 mo.		Body weight	LOAEL	NR			500 [M] 1,000 [F]	mg/kg bw/d			46235615		Johnson and Dryzga 2004			Yes	
XDE-750 (aminopyralid acid)	94.5%	Mammals	Rat	Fischer 344 Rat		Acute	Gavage	single dose	14 d	Mortality	LD50	>	5,000	mg/kg bw	5,000	mg/kg bw			46235603		Brooks 2001			Yes	
GD-871	21.8 (a.e.)%	Mammals	Rat	Fischer 344 Rat	51 d	Acute	Gavage	single dose	14 d	Mortality	LD50	>	5,000	mg/kg bw	>	1,090	mg/kg bw			46235604		Wilson et al. 2003.			Yes

Notes
Boldface indicates study selected for derivation of toxicity reference value (TRV) used in risk assessment.
If the USEPA had reviewed the study and classified the study as "acceptable", the study's findings were considered "acceptable" for development of TRVs. "Supplemental" studies were used to fill in gaps where "Core" studies were unavailable.
¹ Toxicity values relate the dose of a compound with a potentially adverse effect. Values are reported as they were presented in the reviewed source.
² See the bibliography of this ERA document, Appendix A of the associated literature review document, and source footnote for complete citations.
³ As cited in USEPA 2010.
⁴ No author listed.

Abbreviations	<i>Endpoints</i>	<i>Durations</i>
a.e. - acid equivalent	EC ₂₅ - 25% effect concentration	hr - hours
a.i. - active ingredient	EC ₅₀ - 50% effect concentration	d - d
bw - body weight	LC ₅₀ - median lethal concentration, 50% mortality	w - weeks
f - female	LD ₅₀ - median lethal dose, 50% mortality	mo - months
m - male	LOAEL - lowest observable adverse effect level	y - years
MRID - Master Record Identification Number	LOEC - lowest observable effect concentration	
NR - Not reported	LOEL - lowest observable effect level	
ppm - parts per million	NOAEL - no observable adverse effect level	
DAE - days after emergence	NOEC - no observable effect concentration	
g - gram	NOEL - no observable effect level	
mm - millimeter		

APPENDIX B – ECOLOGICAL RISK ASSESSMENT WORKSHEETS

Table B-1: Direct spray of terrestrial receptors and exposure from indirect contact with foliage

Parameter	Pollinating Insect	Small Mammal	Units
Duration of Exposure (T)	24	24 hours	
Body weight (W)	0.000093	0.02 kg	
Surface Areas (A): $\text{cm}^2 = 12.3 * \text{BW}(\text{g})^{0.65}$			
	2.63	86.21 cm^2	
Application rates (R)			
Typical	0.078	0.078 mg/cm^2	
Maximum	0.11	0.11	
Amount deposited on 1/2 receptor (Amnt): $0.5 \times A \times R$			
Typical	0.001149655	0.037685081 mg	
Maximum	0.001621308	0.053145628	
Dose Estimate Assuming 100% Dermal Adsorption			
Absorbed Dose: $\text{Amnt} \times \text{Prop} \div W$			
Typical	1.24E+01	1.88E+00 $\text{mg}/\text{kg bw}$	
Maximum	1.74E+01	2.66E+00	
Dose Estimate Assuming First Order Dermal Adsorption			
First-order dermal absorption rates (k)			
Central estimate (ka)	0.036481431	0.036481431 hour^{-1}	
Proportion absorbed over period T (Prop): $1 - \exp(-k T)$			
Typical	0.011928287	0.011928287 unitless	
Maximum	0.011928287	0.011928287	
Absorbed Dose: $\text{Amnt} \times \text{Prop} \div W$			
Typical	1.47E-01	2.25E-02 $\text{mg}/\text{kg bw}$	
Maximum	2.08E-01	3.17E-02	

	Toxicity Reference Value	Typical Application	Maximum Application
RISK QUOTIENTS - Direct Spray			
Small mammal - 100% absorption	2229	1.84E-04	2.60E-04
Pollinating insect - 100% absorption	1075	1.15E-02	1.62E-02
Small mammal - 1st order dermal adsorption	2229	2.20E-06	3.10E-06
Pollinating insect - 1st order dermal adsorption	1075	1.37E-04	1.93E-04

	Toxicity Reference Value	Typical Application	Maximum Application
RISK QUOTIENTS - Indirect Contact *			
Small mammal - 100% absorption	2229	1.84E-05	2.60E-05
Pollinating insect - 100% absorption	1075	1.15E-03	1.62E-03
Small mammal - 1st order dermal adsorption	2229	2.20E-07	3.10E-07
Pollinating insect - 1st order dermal adsorption	1075	1.37E-05	1.93E-05

Surface area calculation for mammals from Stahl, 1967 (presented in USEPA, 1993).

No surface area calculation identified for insects. Mammalian equation used as a surrogate.

Risk Quotient = Estimated Dose/Toxicity Reference Value

* Exposure from indirect contact assumed to be 1/10 of direct spray exposure

Table B-2: Consumption of contaminated berries by a small mammal - acute exposure scenario

Parameters/Assumptions	Value	Units	Notes
Body Weight (W)		0.02 kg	
Food ingestion rate (dry weight)		0.0033641 kg dw/day	[1]
Food ingestion rate (wet weight, A)		0.014626644 kg ww/day	[2]
Application rates (R)			
	Typical	0.078 lb/acre	
	Maximum	0.11	
Residue rate - berries (rr)			
	Typical	1.5 mg/kg per lb/acre	
	Maximum	7	
Concentration on berries (C): $R \times rr$			
	Typical	0.117 mg/kg fruit	
	Maximum	0.77	
Dose estimates (D): $C \times A / W$			
	Typical	8.56E-02 mg/kg bw	
	Maximum	5.63E-01	

	Toxicity Reference Value	Typical Application	Maximum Application
RISK QUOTIENTS - Ingestion			
Small mammal - acute exposure	2229	3.84E-05	2.53E-04

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for rodents; where

Food Ingestion Rate (g dw/day) = $0.621 \times (BW \text{ g})^{0.564}$; converted into kg dw/day

[2] Assumes fruit is 77% water (USEPA, 1993; Table 4-2 - value for fruit pulp and skin)

Table B-3: Consumption of contaminated fruit by a small mammal - chronic exposure scenario

Parameters/Assumptions	Value	Units
Duration of exposure (T)	90 days	
Body Weight (W)	0.02 kg	
Food ingestion rate (dry weight)	0.0033641 kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.014626644 kg ww/day	[2]
Half life on vegetation (t50)		
Herbicide specific	19 days	
Application rates (R)		
Typical	0.078 lb/acre	
Maximum	0.11	
Residue rate - berries (rr)		
Typical	1.5 mg/kg per lb/acre	
Maximum	7	
Drift (Drift)		
Typical	1 unitless	
Maximum	1	
Decay Coefficient (k): $\ln(2)/t50$		
Typical	0.036481431 days ⁻¹	
Maximum	0.036481431	
Initial concentration on berries (C0): $R \times rr \times \text{Drift}$		
Typical	0.117 mg/kg fruit	
Maximum	0.77	
Concentration on berries at time T: $C0 * \exp(-k*T)$		
Typical	0.004387876 mg/kg fruit	
Maximum	0.028877472	
Time-weighted Average Concentration on vegetation (CTWA): $C0 * (1 - \exp(-k*T)) / (k*T)$		
Typical	0.034298157 mg/kg fruit	
Maximum	0.225722913	
Proportion of Diet Contaminated (Prop)		
Typical	1 unitless	
Maximum	1	
Dose estimates (D): $CTWA \times A \times \text{Prop} / W$		
Typical	0.025083346 mg/kg bw	
Maximum	0.165078431	

	Toxicity		
RISK QUOTIENTS - Ingestion	Reference Value	Typical Application	Maximum Application
Small mammal - chronic exposure	102	2.46E-04	1.62E-03

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for rodents; where

Food Ingestion Rate (g dw/day) = $0.621 * (BW \text{ g})^{0.564}$; converted into kg dw/day

[2] Assumes fruit is 77% water (USEPA, 1993; Table 4-2 - value for fruit pulp and skin)

Table B-4: Consumption of contaminated grass by a large mammal - acute exposure scenario

Parameters/Assumptions	Value	Units	Notes
Body Weight (W)	70	kg	
Food ingestion rate (dry weight)	1.9211536	kg dw/day	[1]
Food ingestion rate (wet weight, A)	6.40384532	kg ww/day	[2]
Duration of exposure (D)	1	day	
Application rates (R)			
	Typical	0.078 lb/acre	
	Maximum	0.11	
Residue rate - grass (rr)			
	Typical	92 mg/kg per lb/acre	
	Maximum	110	
Concentration on grass (C): $R \times rr$			
	Typical	7.176 mg/kg grass	
	Maximum	12.1	
Drift (Drift)			
	Typical	1 unitless	
	Maximum	1	
Proportion of Diet Contaminated (Prop)			
	Typical	1 unitless	
	Maximum	1	
Dose estimates: $Drift \times Prop \times C \times A \div W$			
	Typical	6.56E-01 mg/kg bw	
	Maximum	1.11E+00	

	Toxicity Reference Value	Typical Application	Maximum Application
RISK QUOTIENTS - Ingestion			
Large mammal - acute exposure	290	2.26E-03	3.82E-03

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for herbivores; where

Food Ingestion Rate (g dw/day) = $0.577 \times (BW \text{ g})^{0.727}$; converted into kg dw/day

[2] Assumes grass is 70% water (USEPA, 1993; Table 4-2 - lowest value for young grasses)

Table B-5: Consumption of contaminated grass by a large mammal - chronic exposure scenario

Parameters/Assumptions	Value	Units	Notes
Duration of exposure (T)		90 day	
Body Weight (W)		70 kg	
Food ingestion rate (dry weight)	1.921153597	kg dw/day	[1]
Food ingestion rate (wet weight, A)	6.403845323	kg ww/day	[2]
Half life on vegetation (t50)	Herbicide specific	19 days	
Application rates (R)	Typical	0.078 lb/acre	
	Maximum	0.11	
Residue rate - grass (rr)	Typical	92 mg/kg per lb/acre	
	Maximum	110	
Drift (Drift)	Typical	1 unitless	
	Maximum	1	
Decay Coefficient (k): $\ln(2)/t_{50}$	Typical	0.036481431 days ⁻¹	
	Maximum	0.036481431	
Initial concentration on grass (C0): $R \times rr \times \text{Drift}$	Typical	7.176 mg/kg grass	
	Maximum	12.1	
Concentration on grass at time T: $C_0 * \exp(-k*T)$	Typical	0.269123035 mg/kg grass	
	Maximum	0.453788841	
Time-weighted Average Concentration on vegetation (CTWA): $C_0 * (1-\exp(-k*T))/(k*T)$	Typical	2.103620286 mg/kg vegetation	
	Maximum	3.54707434	
Proportion of Diet Contaminated (Prop)	Typical	1 unitless	
	Maximum	1	
Dose estimates: $CTWA \times A \times \text{Prop} / W$	Typical	1.92E-01 mg/kg bw	
	Maximum	3.24E-01	

RISK QUOTIENTS - Ingestion	Toxicity Reference Value	Typical Application	Maximum Application
Large mammal - chronic exposure	126	1.53E-03	2.58E-03

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for herbivores; where

Food Ingestion Rate (g dw/day) = $0.577 * (BW \text{ g})^{0.727}$; converted into kg dw/day

[2] Assumes grass is 70% water (USEPA, 1993; Table 4-2 - lowest value for young grasses)

Table B-6: Consumption of contaminated small mammals by a large mammal - acute exposure scen

Parameters/Assumptions	Value	Units	Notes
Body Weight (W)		12 kg	
Food ingestion rate (dry weight)	0.52971677	kg dw/day	[1]
Food ingestion rate (wet weight, A)	1.6553649	kg ww/day	[2]
Duration of exposure (D)		1 day	
Application rates (R)	Typical	0.078 lb/acre	
	Maximum	0.11	
Amount deposited on small mammal prey (Amnt_mouse): $0.5 \times \text{SurfaceArea} \times R$			
	Typical	0.03768508 mg	
	Maximum	0.05314563	
Drift (Drift)	Typical	1 unitless	
	Maximum	1	
Proportion of Diet Contaminated (Prop)	Typical	1 unitless	
	Maximum	1	
Dose estimates: $\text{Drift} \times \text{Prop} \times \text{Amnt_mouse} / \text{BW_mouse} \times A \div W$			
	Typical	2.60E-01 mg/kg bw	
	Maximum	3.67E-01	

	Toxicity Reference Value	Typical Application	Maximum Application
RISK QUOTIENTS - Ingestion			
Large carnivorous mammal - acute exposure	450	5.78E-04	8.15E-04

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987; where

Food Ingestion Rate (g dw/day) = $0.0687 \times (\text{BW g})^{0.822}$; converted into kg dw/day

[2] Assumes mammals are 68% water (USEPA, 1993)

Table B-7: Consumption of contaminated small mammals by a large mammal - chronic exposure scenario

Parameters/Assumptions	Value	Units	Notes
Duration of exposure (T)		90 day	
Body Weight (W)		12 kg	
Food ingestion rate (dry weight)	0.529716769	kg dw/day	[1]
Food ingestion rate (wet weight, FIR_coyote)	1.655364903	kg ww/day	[2]
Application rates (R)			
	Typical	0.078 lb/acre	
	Maximum	0.11	
Drift (Drift)			
	Typical	1 unitless	
	Maximum	1	
Decay Coefficient (k): $\ln(2)/t_{50}$			
	Typical	0.036481431 days ⁻¹	
	Maximum	0.036481431	
Initial concentration on mammal (C0): $0.5 \times \text{SurfaceArea} \times R/BW_{\text{smallmammal}}$			
	Typical	1.884254072 mg a.e./kg mammal	
	Maximum	2.657281383	
Concentration absorbed in small mammal at time T (C90): $C0 \times \exp(-k \times T)$			
	Typical	0.022475924 mg/kg mammal	
	Maximum	0.031696815	
Proportion of Diet Contaminated (Prop)			
	Typical	1 unitless	
	Maximum	1	
Dose estimates: $C90 \times \text{FIR}_{\text{coyote}} \times \text{Prop} / W$			
	Typical	3.10E-03 mg/kg bw	
	Maximum	4.37E-03	

RISK QUOTIENTS - Ingestion	Toxicity Reference Value	Typical Application	Maximum Application
Large mammal - chronic exposure	196	1.58E-05	2.23E-05

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987; where

Food Ingestion Rate (g dw/day) = $0.0687 \times (BW \text{ g})^{0.822}$; converted into kg dw/day

[2] Assumes mammals are 68% water (USEPA, 1993)

Table B-8: Consumption of contaminated insects by a small bird - acute exposure scenario

Parameters/Assumptions	Value	Units	Notes
Body Weight (W)	0.08	kg	
Food ingestion rate (dry weight)	0.01124177	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.03626376	kg ww/day	[2]
Duration of exposure (D)	1	day	
Application rates (R)			
Typical	0.078	lb/acre	
Maximum	0.11		
Residue rate - insects (rr)			
Typical	33	mg/kg per lb/acre	
Maximum	58		
Concentration on insects (C): $R \times rr$			
Typical	2.574	mg/kg insect	
Maximum	6.38		
Drift (Drift)			
Typical	1	unitless	
Maximum	1		
Proportion of Diet Contaminated (Prop)			
Typical	1	unitless	
Maximum	1		
Dose estimates: $Drift \times Prop \times C \div W$			
Typical	1.17E+00	mg/kg bw	
Maximum	2.89E+00		

	Toxicity		
	Reference	Typical	Maximum
RISK QUOTIENTS - Ingestion	Value	Application	Application
Small bird - acute exposure	16776	6.96E-05	1.72E-04

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for all birds; where

$$\text{Food Ingestion Rate (kg dw/day)} = 0.0582 \times (\text{BW})^{0.651}$$

[2] Assumes insects are 69% water (USEPA, 1993; Table 4-1 - value for grasshoppers and crickets)

Table B-9: Consumption of contaminated insects by a small bird - chronic exposure scenario

Parameters/Assumptions	Value	Units	Notes
Duration of exposure (T)		90 day	
Body Weight (W)		0.08 kg	
Food ingestion rate (dry weight)	0.011241767	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.036263763	kg ww/day	[2]
Half life on insect (t50)			
Herbicide specific		19 days	
Application rates (R)			
Typical		0.078 lb/acre	
Maximum		0.11	
Residue rate - insects (rr)			
Typical		33 mg/kg per lb/acre	
Maximum		58	
Drift (Drift)			
Typical		1 unitless	
Maximum		1	
Decay Coefficient (k): $\ln(2)/t_{50}$			
Typical	0.036481431	days ⁻¹	
Maximum	0.036481431		
Initial concentration on insects (C0): $R \times rr \times \text{Drift}$			
Typical		2.574 mg/kg insect	
Maximum		6.38	
Concentration on insects at time T: $C_0 * \exp(-k*T)$			
Typical		0.096533263 mg/kg insect	
Maximum		0.23927048	
Time-weighted Average Concentration on insects (CTWA): $C_0 * (1 - \exp(-k*T))/(k*T)$			
Typical		0.754559451 mg/kg insect	
Maximum		1.870275561	
Proportion of Diet Contaminated (Prop)			
Typical		1 unitless	
Maximum		1	
Dose estimates (D): $CTWA \times A \times \text{Prop} / W$			
Typical		3.42E-01 mg/kg bw	
Maximum		8.48E-01	

RISK QUOTIENTS - Ingestion	Toxicity		Maximum Application
	Reference Value	Typical Application	
Small bird - chronic exposure	2500	1.37E-04	3.39E-04

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for all birds; where

$$\text{Food Ingestion Rate (kg dw/day)} = 0.0582 * (\text{BW})^{0.651}$$

[2] Assumes insects are 69% water (USEPA, 1993; Table 4-1 - value for grasshoppers and crickets)

Table B-10: Consumption of contaminated vegetation by a large bird - acute exposure scenario

Parameters/Assumptions	Value	Units	Notes
Body Weight (W)	3.72	kg	
Food ingestion rate (dry weight)	0.13688203	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.91254687	kg ww/day	[2]
Duration of exposure (D)	1	day	
Application rates (R)			
Typical	0.078	lb/acre	
Maximum	0.11		
Residue rate - vegetation (rr)			
Typical	35	mg/kg per lb/acre	
Maximum	125		
Concentration on vegetation (C): $R \times rr$			
Typical	2.73	mg/kg veg	
Maximum	13.75		
Drift (Drift)			
Typical	1	unitless	
Maximum	1		
Proportion of Diet Contaminated (Prop)			
Typical	1	unitless	
Maximum	1		
Dose estimates: $Drift \times Prop \times C \times A \div W$			
Typical	6.70E-01		
Maximum	3.37E+00		

	Toxicity		
	Reference		Maximum
RISK QUOTIENTS - Ingestion	Value	Typical Application	Application
Large bird - acute exposure	2748	2.44E-04	1.23E-03

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for all birds; where

Food Ingestion Rate (kg dw/day) = $0.0582 \times (BW)^{0.651}$

[2] Assumes vegetation is 85% water (USEPA, 1993; Table 4-2 - value for dicots)

Table B-11: Consumption of contaminated vegetation by a large bird - chronic exposure scenario

Parameters/Assumptions	Value	Units	Notes
Duration of exposure (T)		90 day	
Body Weight (W)		3.72 kg	
Food ingestion rate (dry weight)	0.13688203	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.912546869	kg ww/day	[2]
Half life on vegetation (t50)	Herbicide specific	19 days	
Application rates (R)	Typical	0.078 lb/acre	
	Maximum	0.11	
Residue rate - vegetation (rr)	Typical	35 mg/kg per lb/acre	
	Maximum	125	
Drift (Drift)	Typical	1 unitless	
	Maximum	1	
Decay Coefficient (k): $\ln(2)/t_{50}$	Typical	0.036481431 days ⁻¹	
	Maximum	0.036481431	
Initial concentration on vegetation (C0): $R \times rr \times \text{Drift}$	Typical	2.73 mg/kg veg	
	Maximum	13.75	
Concentration on vegetation at time T: $C0 * \exp(-k*T)$	Typical	0.102383763 mg/kg veg	
	Maximum	0.515669137	
Time-weighted Average Concentration on vegetation (CTWA): $C0 * (1-\exp(-k*T))/(k*T)$	Typical	0.800290326 mg/kg veg	
	Maximum	4.030766296	
Proportion of Diet Contaminated (Prop)	Typical	1 unitless	
	Maximum	1	
Dose estimates (D): $CTWA \times A \times \text{Prop} / W$	Typical	1.96E-01 mg/kg bw	
	Maximum	9.89E-01	

RISK QUOTIENTS - Ingestion	Toxicity Reference Value	Typical Application	Maximum Application
Large bird - chronic exposure	262	7.49E-04	3.77E-03

Risk Quotient = Estimated Dose/Toxicity Reference Value

[1] Calculated using algorithm developed by Nagy, 1987 for all birds; where

Food Ingestion Rate (kg dw/day) = $0.0582 \times (BW)^{0.651}$

[2] Assumes vegetation is 85% water (USEPA, 1993; Table 4-2 - value for dicots)

Table B-12: Impact to aquatic species from accidental spray drift to pond

OFF-SITE DRIFT - modeled in AgDrift									
TYPICAL APPLICATION RATE				Risk Quotients - Acute			Risk Quotients - Chronic		
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Pond Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
Plane	Forested	100	9.78E-04	9.78E-06	9.92E-06	1.11E-05	2.96E-05	1.19E-05	6.65E-05
Plane	Forested	300	4.26E-04	4.26E-06	4.32E-06	4.84E-06	1.29E-05	5.19E-06	2.89E-05
Plane	Forested	900	1.37E-04	1.37E-06	1.39E-06	1.55E-06	4.15E-06	1.67E-06	9.31E-06
Plane	Non-Forested	100	4.30E-04	4.30E-06	4.36E-06	4.88E-06	1.30E-05	5.24E-06	2.92E-05
Plane	Non-Forested	300	1.91E-04	1.91E-06	1.94E-06	2.17E-06	5.79E-06	2.33E-06	1.30E-05
Plane	Non-Forested	900	9.12E-05	9.12E-07	9.24E-07	1.04E-06	2.76E-06	1.11E-06	6.20E-06
Helicopter	Forested	100	5.76E-05	5.76E-07	5.84E-07	6.54E-07	1.75E-06	7.02E-07	3.92E-06
Helicopter	Forested	300	1.50E-05	1.50E-07	1.52E-07	1.70E-07	4.53E-07	1.82E-07	1.02E-06
Helicopter	Forested	900	2.40E-06	2.40E-08	2.43E-08	2.73E-08	7.27E-08	2.93E-08	1.63E-07
Helicopter	Non-Forested	100	3.60E-04	3.60E-06	3.65E-06	4.09E-06	1.09E-05	4.39E-06	2.45E-05
Helicopter	Non-Forested	300	1.44E-04	1.44E-06	1.46E-06	1.64E-06	4.37E-06	1.76E-06	9.80E-06
Helicopter	Non-Forested	900	6.68E-05	6.68E-07	6.78E-07	7.59E-07	2.02E-06	8.15E-07	4.54E-06
Ground	Low Boom	25	5.32E-05	5.32E-07	5.39E-07	6.04E-07	1.61E-06	6.48E-07	3.62E-06
Ground	Low Boom	100	2.92E-05	2.92E-07	2.96E-07	3.31E-07	8.84E-07	3.56E-07	1.98E-06
Ground	Low Boom	900	5.63E-06	5.63E-08	5.71E-08	6.40E-08	1.71E-07	6.87E-08	3.83E-07
Ground	High Boom	25	8.54E-05	8.54E-07	8.66E-07	9.70E-07	2.59E-06	1.04E-06	5.81E-06
Ground	High Boom	100	4.50E-05	4.50E-07	4.56E-07	5.11E-07	1.36E-06	5.49E-07	3.06E-06
Ground	High Boom	900	7.14E-06	7.14E-08	7.24E-08	8.11E-08	2.16E-07	8.71E-08	4.86E-07

OFF-SITE DRIFT - modeled in AgDrift									
MAXIMUM APPLICATION RATE				Risk Quotients - Acute			Risk Quotients - Chronic		
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Pond Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
Plane	Forested	100	1.39E-03	1.39E-05	1.41E-05	1.58E-05	4.20E-05	1.69E-05	9.44E-05
Plane	Forested	300	5.99E-04	5.99E-06	6.08E-06	6.81E-06	1.82E-05	7.31E-06	4.08E-05
Plane	Forested	900	1.94E-04	1.94E-06	1.97E-06	2.20E-06	5.88E-06	2.37E-06	1.32E-05
Plane	Non-Forested	100	6.36E-04	6.36E-06	6.45E-06	7.23E-06	1.93E-05	7.76E-06	4.33E-05
Plane	Non-Forested	300	2.86E-04	2.86E-06	2.90E-06	3.25E-06	8.67E-06	3.49E-06	1.95E-05
Plane	Non-Forested	900	1.38E-04	1.38E-06	1.40E-06	1.56E-06	4.17E-06	1.68E-06	9.36E-06
Helicopter	Forested	100	8.01E-05	8.01E-07	8.12E-07	9.10E-07	2.43E-06	9.76E-07	5.45E-06
Helicopter	Forested	300	2.09E-05	2.09E-07	2.12E-07	2.37E-07	6.33E-07	2.55E-07	1.42E-06
Helicopter	Forested	900	3.38E-06	3.38E-08	3.43E-08	3.84E-08	1.02E-07	4.12E-08	2.30E-07
Helicopter	Non-Forested	100	5.26E-04	5.26E-06	5.34E-06	5.98E-06	1.59E-05	6.42E-06	3.58E-05
Helicopter	Non-Forested	300	2.12E-04	2.12E-06	2.15E-06	2.41E-06	6.43E-06	2.59E-06	1.44E-05
Helicopter	Non-Forested	900	9.69E-05	9.69E-07	9.82E-07	1.10E-06	2.94E-06	1.18E-06	6.59E-06
Ground	Low Boom	25	7.50E-05	7.50E-07	7.61E-07	8.52E-07	2.27E-06	9.15E-07	5.10E-06
Ground	Low Boom	100	4.11E-05	4.11E-07	4.17E-07	4.67E-07	1.25E-06	5.01E-07	2.80E-06
Ground	Low Boom	900	7.94E-06	7.94E-08	8.05E-08	9.02E-08	2.41E-07	9.68E-08	5.40E-07
Ground	High Boom	25	1.20E-04	1.20E-06	1.22E-06	1.37E-06	3.65E-06	1.47E-06	8.19E-06
Ground	High Boom	100	6.34E-05	6.34E-07	6.43E-07	7.21E-07	1.92E-06	7.74E-07	4.32E-06
Ground	High Boom	900	1.01E-05	1.01E-07	1.02E-07	1.14E-07	3.05E-07	1.23E-07	6.85E-07

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.
Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.
Shading and boldface indicates chronic RQs greater than 0.5 for fish and invertebrates.

Table B-13: Impact to aquatic species from accidental spray drift to stream

OFF-SITE DRIFT - modeled in AgDrift									
TYPICALAPPLICATION RATE				Risk Quotients - Acute			Risk Quotients - Chronic		
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Stream Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
Plane	Forested	100	1.34E-03	1.34E-05	1.36E-05	1.53E-05	4.07E-05	1.64E-05	9.14E-05
Plane	Forested	300	4.88E-04	4.88E-06	4.95E-06	5.55E-06	1.48E-05	5.95E-06	3.32E-05
Plane	Forested	900	1.43E-04	1.43E-06	1.45E-06	1.63E-06	4.33E-06	1.74E-06	9.73E-06
Plane	Non-Forested	100	6.16E-04	6.16E-06	6.25E-06	7.01E-06	1.87E-05	7.52E-06	4.19E-05
Plane	Non-Forested	300	2.06E-04	2.06E-06	2.09E-06	2.34E-06	6.24E-06	2.51E-06	1.40E-05
Plane	Non-Forested	900	9.23E-05	9.23E-07	9.36E-07	1.05E-06	2.80E-06	1.13E-06	6.28E-06
Helicopter	Forested	100	8.95E-05	8.95E-07	9.08E-07	1.02E-06	2.71E-06	1.09E-06	6.09E-06
Helicopter	Forested	300	1.73E-05	1.73E-07	1.76E-07	1.97E-07	5.25E-07	2.11E-07	1.18E-06
Helicopter	Forested	900	2.70E-06	2.70E-08	2.74E-08	3.07E-08	8.19E-08	3.30E-08	1.84E-07
Helicopter	Non-Forested	100	5.37E-04	5.37E-06	5.44E-06	6.10E-06	1.63E-05	6.55E-06	3.65E-05
Helicopter	Non-Forested	300	1.56E-04	1.56E-06	1.59E-06	1.78E-06	4.74E-06	1.91E-06	1.06E-05
Helicopter	Non-Forested	900	6.92E-05	6.92E-07	7.02E-07	7.86E-07	2.10E-06	8.44E-07	4.71E-06
Ground	Low Boom	25	9.57E-05	9.57E-07	9.70E-07	1.09E-06	2.90E-06	1.17E-06	6.51E-06
Ground	Low Boom	100	2.80E-05	2.80E-07	2.84E-07	3.18E-07	8.49E-07	3.42E-07	1.91E-06
Ground	Low Boom	900	2.90E-06	2.90E-08	2.94E-08	3.30E-08	8.79E-08	3.54E-08	1.97E-07
Ground	High Boom	25	1.60E-04	1.60E-06	1.63E-06	1.82E-06	4.86E-06	1.95E-06	1.09E-05
Ground	High Boom	100	4.54E-05	4.54E-07	4.60E-07	5.16E-07	1.38E-06	5.53E-07	3.09E-06
Ground	High Boom	900	3.84E-06	3.84E-08	3.89E-08	4.36E-08	1.16E-07	4.68E-08	2.61E-07

OFF-SITE DRIFT - modeled in AgDrift									
MAXIMUM APPLICATION RATE				Risk Quotients - Acute			Risk Quotients - Chronic		
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Stream Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
Plane	Forested	100	1.91E-03	1.91E-05	1.93E-05	2.17E-05	5.78E-05	2.32E-05	1.30E-04
Plane	Forested	300	6.88E-04	6.88E-06	6.98E-06	7.82E-06	2.09E-05	8.39E-06	4.68E-05
Plane	Forested	900	2.03E-04	2.03E-06	2.05E-06	2.30E-06	6.14E-06	2.47E-06	1.38E-05
Plane	Non-Forested	100	9.12E-04	9.12E-06	9.25E-06	1.04E-05	2.76E-05	1.11E-05	6.20E-05
Plane	Non-Forested	300	3.14E-04	3.14E-06	3.18E-06	3.57E-06	9.51E-06	3.83E-06	2.14E-05
Plane	Non-Forested	900	1.41E-04	1.41E-06	1.43E-06	1.60E-06	4.26E-06	1.71E-06	9.56E-06
Helicopter	Forested	100	1.25E-04	1.25E-06	1.26E-06	1.42E-06	3.78E-06	1.52E-06	8.48E-06
Helicopter	Forested	300	2.43E-05	2.43E-07	2.46E-07	2.76E-07	7.36E-07	2.96E-07	1.65E-06
Helicopter	Forested	900	3.79E-06	3.79E-08	3.84E-08	4.30E-08	1.15E-07	4.62E-08	2.58E-07
Helicopter	Non-Forested	100	7.71E-04	7.71E-06	7.82E-06	8.76E-06	2.34E-05	9.40E-06	5.24E-05
Helicopter	Non-Forested	300	2.31E-04	2.31E-06	2.35E-06	2.63E-06	7.01E-06	2.82E-06	1.57E-05
Helicopter	Non-Forested	900	1.01E-04	1.01E-06	1.03E-06	1.15E-06	3.07E-06	1.24E-06	6.90E-06
Ground	Low Boom	25	1.35E-04	1.35E-06	1.37E-06	1.53E-06	4.09E-06	1.65E-06	9.18E-06
Ground	Low Boom	100	3.95E-05	3.95E-07	4.01E-07	4.49E-07	1.20E-06	4.82E-07	2.69E-06
Ground	Low Boom	900	4.09E-06	4.09E-08	4.15E-08	4.65E-08	1.24E-07	4.99E-08	2.78E-07
Ground	High Boom	25	2.26E-04	2.26E-06	2.29E-06	2.57E-06	6.85E-06	2.76E-06	1.54E-05
Ground	High Boom	100	6.40E-05	6.40E-07	6.49E-07	7.27E-07	1.94E-06	7.80E-07	4.35E-06
Ground	High Boom	900	5.41E-06	5.41E-08	5.49E-08	6.15E-08	1.64E-07	6.60E-08	3.68E-07

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.
Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.
Shading and boldface indicates chronic RQs greater than 0.5 for fish and invertebrates.

Table B-14: Impact to non-target terrestrial plants from direct spray and spray drift

DIRECT SPRAY	Terrestrial Concentration (lb a.e./acre)	Typical Species RQ	Threatened & Endangered Species RQ
Typical application rate	0.078	2.60E+02	3.90E+02
Maximum application rate	0.11	3.67E+02	5.50E+02

OFF-SITE DRIFT - modeled in AgDrift

TYPICAL APPLICATION RATE

Mode of Application	Application Height or Type	Distance From Receptor (ft)	Soil Concentration (mg a.e./kg)	Typical Species RQ	Threatened & Endangered Species RQ
Plane	Forested	100	7.00E-03	2.33E+01	3.50E+01
Plane	Forested	300	3.30E-03	1.10E+01	1.65E+01
Plane	Forested	900	1.10E-03	3.67E+00	5.50E+00
Plane	Non-Forested	100	3.00E-03	1.00E+01	1.50E+01
Plane	Non-Forested	300	1.50E-03	5.00E+00	7.50E+00
Plane	Non-Forested	900	8.00E-04	2.67E+00	4.00E+00
Helicopter	Forested	100	4.00E-04	1.33E+00	2.00E+00
Helicopter	Forested	300	1.00E-04	3.33E-01	5.00E-01
Helicopter	Forested	900	1.89E-05	6.30E-02	9.45E-02
Helicopter	Non-Forested	100	2.50E-03	8.33E+00	1.25E+01
Helicopter	Non-Forested	300	1.20E-03	4.00E+00	6.00E+00
Helicopter	Non-Forested	900	6.00E-04	2.00E+00	3.00E+00
Ground	Low Boom	25	3.00E-04	1.00E+00	1.50E+00
Ground	Low Boom	100	2.00E-04	6.67E-01	1.00E+00
Ground	Low Boom	900	4.76E-05	1.59E-01	2.38E-01
Ground	High Boom	25	6.00E-04	2.00E+00	3.00E+00
Ground	High Boom	100	3.00E-04	1.00E+00	1.50E+00
Ground	High Boom	900	6.00E-05	2.00E-01	3.00E-01

OFF-SITE DRIFT - modeled in AgDrift

MAXIMUM APPLICATION RATE

Mode of Application	Application Height or Type	Distance From Receptor (ft)	Soil Concentration (mg a.e./kg)	Typical Species RQ	Threatened & Endangered Species RQ
Plane	Forested	100	9.90E-03	3.30E+01	4.95E+01
Plane	Forested	300	4.70E-03	1.57E+01	2.35E+01
Plane	Forested	900	1.60E-03	5.33E+00	8.00E+00
Plane	Non-Forested	100	4.50E-03	1.50E+01	2.25E+01
Plane	Non-Forested	300	2.30E-03	7.67E+00	1.15E+01
Plane	Non-Forested	900	1.20E-03	4.00E+00	6.00E+00
Helicopter	Forested	100	5.00E-04	1.67E+00	2.50E+00
Helicopter	Forested	300	2.00E-04	6.67E-01	1.00E+00
Helicopter	Forested	900	2.67E-05	8.90E-02	1.34E-01
Helicopter	Non-Forested	100	3.70E-03	1.23E+01	1.85E+01
Helicopter	Non-Forested	300	1.70E-03	5.67E+00	8.50E+00
Helicopter	Non-Forested	900	8.00E-04	2.67E+00	4.00E+00
Ground	Low Boom	25	5.00E-04	1.67E+00	2.50E+00
Ground	Low Boom	100	3.00E-04	1.00E+00	1.50E+00
Ground	Low Boom	900	6.72E-05	2.24E-01	3.36E-01
Ground	High Boom	25	8.00E-04	2.67E+00	4.00E+00
Ground	High Boom	100	5.00E-04	1.67E+00	2.50E+00
Ground	High Boom	900	8.46E-05	2.82E-01	4.23E-01

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value
Shading and boldface indicates plant RQs greater than 1.

Table B-15: Consumption of contaminated fish from pond by predatory bird - one time exposure. Pond impacted by spray drift modeled in AgDrift.

Parameters/ Assumptions	Value	Units	Notes
Body Weight (W)	5.15	kg	
Food ingestion rate (dry weight)	0.101786153	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.40714461	kg ww/day	[2]
Bioconcentration factor (BCF)	1	L/kg fish	
Proportion of Diet Contaminated (Prop)	1	unitless	
Toxicity reference value (TRV)	262	mg/kg-bw/day	

TYPICAL APPLICATION RATE						
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Pond Concentration (mg/L)	Concentration in fish (C _{Fish}): WC × BCF	Dose estimate (D): C _{Fish} × A × Prop / W	Risk Quotient
Plane	Forested	100	9.78E-04	9.78E-04	7.73E-05	2.95E-07
Plane	Forested	300	4.26E-04	4.26E-04	3.36E-05	1.28E-07
Plane	Forested	900	1.37E-04	1.37E-04	1.08E-05	4.13E-08
Plane	Non-Forested	100	4.30E-04	4.30E-04	3.40E-05	1.30E-07
Plane	Non-Forested	300	1.91E-04	1.91E-04	1.51E-05	5.76E-08
Plane	Non-Forested	900	9.12E-05	9.12E-05	7.21E-06	2.75E-08
Helicopter	Forested	100	5.76E-05	5.76E-05	4.55E-06	1.74E-08
Helicopter	Forested	300	1.50E-05	1.50E-05	1.18E-06	4.51E-09
Helicopter	Forested	900	2.40E-06	2.40E-06	1.90E-07	7.24E-10
Helicopter	Non-Forested	100	3.60E-04	3.60E-04	2.84E-05	1.09E-07
Helicopter	Non-Forested	300	1.44E-04	1.44E-04	1.14E-05	4.35E-08
Helicopter	Non-Forested	900	6.68E-05	6.68E-05	5.28E-06	2.02E-08
Ground	Low Boom	25	5.32E-05	5.32E-05	4.20E-06	1.60E-08
Ground	Low Boom	100	2.92E-05	2.92E-05	2.31E-06	8.80E-09
Ground	Low Boom	900	5.63E-06	5.63E-06	4.45E-07	1.70E-09
Ground	High Boom	25	8.54E-05	8.54E-05	6.75E-06	2.58E-08
Ground	High Boom	100	4.50E-05	4.50E-05	3.56E-06	1.36E-08
Ground	High Boom	900	7.14E-06	7.14E-06	5.64E-07	2.15E-09

MAXIMUM APPLICATION RATE						
Mode of Application	Application Height or Type	Distance From Receptor (ft)	Pond Concentration (mg/L)	Concentration in fish (C _{Fish}): WC × BCF	Dose estimate (D): C _{Fish} × A × Prop / W	Risk Quotient
Plane	Forested	100	1.39E-03	1.39E-03	1.10E-04	4.19E-07
Plane	Forested	300	5.99E-04	5.99E-04	4.74E-05	1.81E-07
Plane	Forested	900	1.94E-04	1.94E-04	1.53E-05	5.85E-08
Plane	Non-Forested	100	6.36E-04	6.36E-04	5.03E-05	1.92E-07
Plane	Non-Forested	300	2.86E-04	2.86E-04	2.26E-05	8.64E-08
Plane	Non-Forested	900	1.38E-04	1.38E-04	1.09E-05	4.15E-08
Helicopter	Forested	100	8.01E-05	8.01E-05	6.33E-06	2.42E-08
Helicopter	Forested	300	2.09E-05	2.09E-05	1.65E-06	6.30E-09
Helicopter	Forested	900	3.38E-06	3.38E-06	2.67E-07	1.02E-09
Helicopter	Non-Forested	100	5.26E-04	5.26E-04	4.16E-05	1.59E-07
Helicopter	Non-Forested	300	2.12E-04	2.12E-04	1.68E-05	6.41E-08
Helicopter	Non-Forested	900	9.69E-05	9.69E-05	7.66E-06	2.92E-08
Ground	Low Boom	25	7.50E-05	7.50E-05	5.93E-06	2.26E-08
Ground	Low Boom	100	4.11E-05	4.11E-05	3.25E-06	1.24E-08
Ground	Low Boom	900	7.94E-06	7.94E-06	6.28E-07	2.40E-09
Ground	High Boom	25	1.20E-04	1.20E-04	9.52E-06	3.63E-08
Ground	High Boom	100	6.34E-05	6.34E-05	5.02E-06	1.91E-08
Ground	High Boom	900	1.01E-05	1.01E-05	7.96E-07	3.04E-09

Risk Quotient = Estimated Dose/Toxicity Reference Value
Shading and boldface indicates piscivorous bird RQs greater than 0.1.

- [1] Calculated using alorithm developed by Nagy, 1987 for all birds; where
Food Ingestion Rate (kg dw/day) = 0.0582*(BW)^0.651
[2] Assumes fish are 75% water (USEPA, 1993; Table 4-1 - value for bony fishes)

Table B-16: Impact to aquatic species from surface runoff to pond

SURFACE RUNOFF - modeled in GLEAMS							
TYPICAL APPLICATION RATE		<u>Risk Quotients - Acute</u>			<u>Risk Quotients - Chronic</u>		
GLEAMS ID	Pond Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
G_BASE_SAND_005_POND_TYP	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_POND_TYP	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_POND_TYP	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_POND_TYP	4.50E-02	4.50E-04	4.56E-04	5.11E-04	1.36E-03	5.49E-04	3.06E-03
G_BASE_CLAY_010_POND_TYP	1.14E-02	1.14E-04	1.15E-04	1.29E-04	3.44E-04	1.39E-04	7.73E-04
G_BASE_LOAM_010_POND_TYP	8.18E-03	8.18E-05	8.30E-05	9.30E-05	2.48E-04	9.98E-05	5.57E-04
G_BASE_SAND_025_POND_TYP	1.08E-02	1.08E-04	1.09E-04	1.23E-04	3.27E-04	1.32E-04	7.34E-04
G_BASE_CLAY_025_POND_TYP	1.51E-02	1.51E-04	1.53E-04	1.72E-04	4.58E-04	1.84E-04	1.03E-03
G_BASE_LOAM_025_POND_TYP	1.62E-02	1.62E-04	1.64E-04	1.84E-04	4.90E-04	1.97E-04	1.10E-03
G_BASE_SAND_050_POND_TYP	4.58E-03	4.58E-05	4.65E-05	5.21E-05	1.39E-04	5.59E-05	7.34E-04
G_BASE_CLAY_050_POND_TYP	7.12E-03	7.12E-05	7.22E-05	8.09E-05	2.16E-04	8.68E-05	4.84E-04
G_BASE_LOAM_050_POND_TYP	5.12E-03	5.12E-05	5.19E-05	5.82E-05	1.55E-04	6.24E-05	3.48E-04
G_BASE_SAND_100_POND_TYP	6.18E-03	6.18E-05	6.27E-05	7.02E-05	1.87E-04	7.53E-05	4.20E-04
G_BASE_CLAY_100_POND_TYP	3.30E-03	3.30E-05	3.35E-05	3.75E-05	1.00E-04	4.03E-05	2.25E-04
G_BASE_LOAM_100_POND_TYP	2.51E-03	2.51E-05	2.54E-05	2.85E-05	7.60E-05	3.06E-05	1.71E-04
G_BASE_SAND_150_POND_TYP	4.67E-03	4.67E-05	4.73E-05	5.30E-05	1.41E-04	5.69E-05	3.17E-04
G_BASE_CLAY_150_POND_TYP	2.69E-03	2.69E-05	2.73E-05	3.05E-05	8.15E-05	3.28E-05	1.83E-04
G_BASE_LOAM_150_POND_TYP	2.58E-03	2.58E-05	2.62E-05	2.93E-05	7.81E-05	3.14E-05	1.75E-04
G_BASE_SAND_200_POND_TYP	2.48E-03	2.48E-05	2.52E-05	2.82E-05	7.52E-05	3.03E-05	1.69E-04
G_BASE_CLAY_200_POND_TYP	2.36E-03	2.36E-05	2.39E-05	2.68E-05	7.14E-05	2.87E-05	1.60E-04
G_BASE_LOAM_200_POND_TYP	2.72E-03	2.72E-05	2.76E-05	3.09E-05	8.24E-05	3.32E-05	1.85E-04
G_BASE_SAND_250_POND_TYP	1.69E-03	1.69E-05	1.71E-05	1.92E-05	5.11E-05	2.06E-05	1.15E-04
G_BASE_CLAY_250_POND_TYP	2.13E-03	2.13E-05	2.16E-05	2.42E-05	6.44E-05	2.59E-05	1.45E-04
G_BASE_LOAM_250_POND_TYP	2.64E-03	2.64E-05	2.68E-05	3.00E-05	8.01E-05	3.22E-05	1.80E-04
G_ARV1_050_POND_TYP	6.08E-03	6.08E-05	6.17E-05	6.91E-05	1.84E-04	7.42E-05	4.14E-04
G_ARV2_050_POND_TYP	5.49E-03	5.49E-05	5.57E-05	6.24E-05	1.66E-04	6.70E-05	3.74E-04
G_ARV3_050_POND_TYP	5.52E-03	5.52E-05	5.60E-05	6.28E-05	1.67E-04	6.74E-05	3.76E-04
G_ERV1_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_ERV2_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_ERV3_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_RGV1_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_RGV2_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_RGV3_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_SLV1_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_SLV2_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_SLV3_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_STV1_050_POND_TYP	6.06E-03	6.06E-05	6.14E-05	6.88E-05	1.84E-04	7.39E-05	4.12E-04
G_STV2_050_POND_TYP	6.14E-03	6.14E-05	6.23E-05	6.98E-05	1.86E-04	7.49E-05	4.18E-04
G_STV3_050_POND_TYP	7.73E-03	7.73E-05	7.84E-05	8.78E-05	2.34E-04	9.43E-05	5.26E-04
G_VGV1_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_VGV2_050_POND_TYP	5.29E-03	5.29E-05	5.37E-05	6.02E-05	1.60E-04	6.46E-05	3.60E-04
G_VGV3_050_POND_TYP	4.31E-03	4.31E-05	4.37E-05	4.89E-05	1.30E-04	5.25E-05	2.93E-04

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Table B-16: Impact to aquatic species from surface runoff to pond

SURFACE RUNOFF - modeled in GLEAMS							
MAXIMUM APPLICATION RATE		<u>Risk Quotients - Acute</u>			<u>Risk Quotients - Chronic</u>		
GLEAMS ID	Pond Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
G_BASE_SAND_005_POND_MAX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_POND_MAX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_POND_MAX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_POND_MAX	6.34E-02	6.34E-04	6.43E-04	7.21E-04	1.92E-03	7.74E-04	4.32E-03
G_BASE_CLAY_010_POND_MAX	1.60E-02	1.60E-04	1.63E-04	1.82E-04	4.86E-04	1.95E-04	1.09E-03
G_BASE_LOAM_010_POND_MAX	1.15E-02	1.15E-04	1.17E-04	1.31E-04	3.50E-04	1.41E-04	7.85E-04
G_BASE_SAND_025_POND_MAX	1.52E-02	1.52E-04	1.54E-04	1.73E-04	4.61E-04	1.86E-04	1.04E-03
G_BASE_CLAY_025_POND_MAX	2.13E-02	2.13E-04	2.16E-04	2.42E-04	6.45E-04	2.60E-04	1.45E-03
G_BASE_LOAM_025_POND_MAX	2.28E-02	2.28E-04	2.31E-04	2.59E-04	6.91E-04	2.78E-04	1.55E-03
G_BASE_SAND_050_POND_MAX	6.46E-03	6.46E-05	6.55E-05	7.34E-05	1.96E-04	7.88E-05	4.40E-04
G_BASE_CLAY_050_POND_MAX	1.00E-02	1.00E-04	1.02E-04	1.14E-04	3.04E-04	1.22E-04	6.83E-04
G_BASE_LOAM_050_POND_MAX	7.22E-03	7.22E-05	7.32E-05	8.20E-05	2.19E-04	8.80E-05	4.91E-04
G_BASE_SAND_100_POND_MAX	8.71E-03	8.71E-05	8.84E-05	9.90E-05	2.64E-04	1.06E-04	5.93E-04
G_BASE_CLAY_100_POND_MAX	4.66E-03	4.66E-05	4.72E-05	5.29E-05	1.41E-04	5.68E-05	3.17E-04
G_BASE_LOAM_100_POND_MAX	3.54E-03	3.54E-05	3.59E-05	4.02E-05	1.07E-04	4.31E-05	2.41E-04
G_BASE_SAND_150_POND_MAX	6.58E-03	6.58E-05	6.67E-05	7.48E-05	1.99E-04	8.03E-05	4.48E-04
G_BASE_CLAY_150_POND_MAX	3.79E-03	3.79E-05	3.84E-05	4.31E-05	1.15E-04	4.62E-05	2.58E-04
G_BASE_LOAM_150_POND_MAX	3.64E-03	3.64E-05	3.69E-05	4.13E-05	1.10E-04	4.43E-05	2.47E-04
G_BASE_SAND_200_POND_MAX	3.50E-03	3.50E-05	3.55E-05	3.98E-05	1.06E-04	4.27E-05	2.38E-04
G_BASE_CLAY_200_POND_MAX	3.32E-03	3.32E-05	3.37E-05	3.78E-05	1.01E-04	4.05E-05	2.26E-04
G_BASE_LOAM_200_POND_MAX	3.84E-03	3.84E-05	3.89E-05	4.36E-05	1.16E-04	4.68E-05	2.61E-04
G_BASE_SAND_250_POND_MAX	2.38E-03	2.38E-05	2.41E-05	2.70E-05	7.21E-05	2.90E-05	1.62E-04
G_BASE_CLAY_250_POND_MAX	3.00E-03	3.00E-05	3.04E-05	3.41E-05	9.09E-05	3.66E-05	2.04E-04
G_BASE_LOAM_250_POND_MAX	3.73E-03	3.73E-05	3.78E-05	4.24E-05	1.13E-04	4.55E-05	2.54E-04
G_ARV1_050_POND_MAX	8.58E-03	8.58E-05	8.70E-05	9.75E-05	2.60E-04	1.05E-04	5.83E-04
G_ARV2_050_POND_MAX	7.74E-03	7.74E-05	7.85E-05	8.80E-05	2.35E-04	9.44E-05	5.27E-04
G_ARV3_050_POND_MAX	7.79E-03	7.79E-05	7.90E-05	8.85E-05	2.36E-04	9.50E-05	5.30E-04
G_ERV1_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_ERV2_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_ERV3_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_RGV1_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_RGV2_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_RGV3_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_SLV1_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_SLV2_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_SLV3_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_STV1_050_POND_MAX	8.54E-03	8.54E-05	8.66E-05	9.71E-05	2.59E-04	1.04E-04	5.81E-04
G_STV2_050_POND_MAX	8.67E-03	8.67E-05	8.79E-05	9.85E-05	2.63E-04	1.06E-04	5.90E-04
G_STV3_050_POND_MAX	1.09E-02	1.09E-04	1.11E-04	1.24E-04	3.30E-04	1.33E-04	7.42E-04
G_VGV1_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_VGV2_050_POND_MAX	7.47E-03	7.47E-05	7.57E-05	8.48E-05	2.26E-04	9.10E-05	5.08E-04
G_VGV3_050_POND_MAX	6.07E-03	6.07E-05	6.16E-05	6.90E-05	1.84E-04	7.41E-05	4.13E-04

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.

Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.

Shading and boldface indicates chronic RQs greater than 0.5 for fish and invertebrates.

Table B-17: Impact to aquatic species from surface runoff to pond

SURFACE RUNOFF - modeled in GLEAMS														
TYPICAL APPLICATION RATE														
								Risk Quotients - Acute				Risk Quotients - Chronic		
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/ac per EI)	Vegetation Type	Soil Type	Stream Concentration (mg/L)	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
G_BASE_SAND_005_STREAM_TYP	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_STREAM_TYP	5	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_STREAM_TYP	5	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_STREAM_TYP	10	10	0.05	0.015	0.401	weeds (79)	Sand	3.71E-05	3.71E-07	3.76E-07	4.21E-07	1.12E-06	4.52E-07	2.52E-06
G_BASE_CLAY_010_STREAM_TYP	10	10	0.05	0.015	0.401	weeds (79)	Clay	9.70E-06	9.70E-08	9.84E-08	1.10E-07	2.94E-07	1.18E-07	6.60E-07
G_BASE_LOAM_010_STREAM_TYP	10	10	0.05	0.015	0.401	weeds (79)	Loam	5.54E-06	5.54E-08	5.62E-08	6.30E-08	1.68E-07	6.76E-08	3.77E-07
G_BASE_SAND_025_STREAM_TYP	25	10	0.05	0.015	0.401	weeds (79)	Sand	6.33E-05	6.33E-07	6.42E-07	7.20E-07	1.92E-06	7.72E-07	4.31E-06
G_BASE_CLAY_025_STREAM_TYP	25	10	0.05	0.015	0.401	weeds (79)	Clay	5.13E-05	5.13E-07	5.20E-07	5.83E-07	1.55E-06	6.25E-07	3.49E-06
G_BASE_LOAM_025_STREAM_TYP	25	10	0.05	0.015	0.401	weeds (79)	Loam	5.30E-05	5.30E-07	5.38E-07	6.02E-07	1.61E-06	6.47E-07	3.61E-06
G_BASE_SAND_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Sand	6.55E-05	6.55E-07	6.64E-07	7.44E-07	1.98E-06	7.99E-07	4.45E-06
G_BASE_CLAY_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Clay	6.24E-05	6.24E-07	6.33E-07	7.09E-07	1.89E-06	7.61E-07	4.24E-06
G_BASE_LOAM_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_BASE_SAND_100_STREAM_TYP	100	10	0.05	0.015	0.401	weeds (79)	Sand	6.85E-05	6.85E-07	6.95E-07	7.79E-07	2.08E-06	8.36E-07	4.66E-06
G_BASE_CLAY_100_STREAM_TYP	100	10	0.05	0.015	0.401	weeds (79)	Clay	6.55E-05	6.55E-07	6.64E-07	7.44E-07	1.99E-06	7.99E-07	4.46E-06
G_BASE_LOAM_100_STREAM_TYP	100	10	0.05	0.015	0.401	weeds (79)	Loam	6.07E-05	6.07E-07	6.16E-07	6.90E-07	1.84E-06	7.40E-07	4.13E-06
G_BASE_SAND_150_STREAM_TYP	150	10	0.05	0.015	0.401	weeds (79)	Sand	6.89E-05	6.89E-07	6.99E-07	7.83E-07	2.09E-06	8.40E-07	4.69E-06
G_BASE_CLAY_150_STREAM_TYP	150	10	0.05	0.015	0.401	weeds (79)	Clay	6.59E-05	6.59E-07	6.68E-07	7.49E-07	2.00E-06	8.03E-07	4.48E-06
G_BASE_LOAM_150_STREAM_TYP	150	10	0.05	0.015	0.401	weeds (79)	Loam	6.08E-05	6.08E-07	6.16E-07	6.90E-07	1.84E-06	7.41E-07	4.13E-06
G_BASE_SAND_200_STREAM_TYP	200	10	0.05	0.015	0.401	weeds (79)	Sand	6.67E-05	6.67E-07	6.77E-07	7.58E-07	2.02E-06	8.14E-07	4.54E-06
G_BASE_CLAY_200_STREAM_TYP	200	10	0.05	0.015	0.401	weeds (79)	Clay	6.59E-05	6.59E-07	6.69E-07	7.49E-07	2.00E-06	8.04E-07	4.48E-06
G_BASE_LOAM_200_STREAM_TYP	200	10	0.05	0.015	0.401	weeds (79)	Loam	6.02E-05	6.02E-07	6.10E-07	6.84E-07	1.82E-06	7.34E-07	4.09E-06
G_BASE_SAND_250_STREAM_TYP	250	10	0.05	0.015	0.401	weeds (79)	Sand	6.37E-05	6.37E-07	6.46E-07	7.24E-07	1.93E-06	7.77E-07	4.33E-06
G_BASE_CLAY_250_STREAM_TYP	250	10	0.05	0.015	0.401	weeds (79)	Clay	6.56E-05	6.56E-07	6.65E-07	7.45E-07	1.99E-06	8.00E-07	4.46E-06
G_BASE_LOAM_250_STREAM_TYP	250	10	0.05	0.015	0.401	weeds (79)	Loam	5.94E-05	5.94E-07	6.02E-07	6.75E-07	1.80E-06	7.24E-07	4.04E-06
G_ARV1_050_STREAM_TYP	50	1	0.05	0.015	0.401	weeds (79)	Loam	7.08E-06	7.08E-08	7.18E-08	8.04E-08	2.14E-07	8.63E-08	4.81E-07
G_ARV2_050_STREAM_TYP	50	100	0.05	0.015	0.401	weeds (79)	Loam	3.46E-04	3.46E-06	3.51E-06	3.93E-06	1.05E-05	4.22E-06	2.35E-05
G_ARV3_050_STREAM_TYP	50	1000	0.05	0.015	0.401	weeds (79)	Loam	9.50E-04	9.50E-06	9.64E-06	1.08E-05	2.88E-05	1.16E-05	6.46E-05
G_ERV1_050_STREAM_TYP	50	10	0.05	0.015	0.05	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_ERV2_050_STREAM_TYP	50	10	0.05	0.015	0.2	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_ERV3_050_STREAM_TYP	50	10	0.05	0.015	0.5	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_RGV1_050_STREAM_TYP	50	10	0.05	0.023	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_RGV2_050_STREAM_TYP	50	10	0.05	0.046	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_RGV3_050_STREAM_TYP	50	10	0.05	0.15	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_SLV1_050_STREAM_TYP	50	10	0.005	0.015	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_SLV2_050_STREAM_TYP	50	10	0.01	0.015	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_SLV3_050_STREAM_TYP	50	10	0.1	0.015	0.401	weeds (79)	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_STV1_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	6.72E-04	6.72E-06	6.81E-06	7.63E-06	2.04E-05	8.19E-06	4.57E-05
G_STV2_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	5.42E-05	5.42E-07	5.50E-07	6.16E-07	1.64E-06	6.61E-07	3.69E-06
G_STV3_050_STREAM_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	5.75E-05	5.75E-07	5.83E-07	6.53E-07	1.74E-06	7.01E-07	3.91E-06
G_VGV1_050_STREAM_TYP	50	10	0.05	0.015	0.401	Shrub	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_VGV2_050_STREAM_TYP	50	10	0.05	0.015	0.401	Rye Grass	Loam	6.13E-05	6.13E-07	6.21E-07	6.96E-07	1.86E-06	7.47E-07	4.17E-06
G_VGV3_050_STREAM_TYP	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	6.20E-05	6.20E-07	6.29E-07	7.04E-07	1.88E-06	7.56E-07	4.22E-06

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Table B-17: Impact to aquatic species from surface runoff to pond

SURFACE RUNOFF - modeled in GLEAMS														
MAXIMUM APPLICATION RATE														
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/ac per EI)	Vegetation Type	Soil Type	Stream Concentration (mg/L)	Risk Quotients - Acute			Risk Quotients - Chronic		
									Fish	Aquatic Invertebrates	Non-Target Aquatic Plants	Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
G_BASE_SAND_005_STREAM_MAX	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_STREAM_MAX	5	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_STREAM_MAX	5	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_STREAM_MAX	10	10	0.05	0.015	0.401	weeds (79)	Sand	5.23E-05	5.23E-07	5.30E-07	5.94E-07	1.58E-06	6.37E-07	3.56E-06
G_BASE_CLAY_010_STREAM_MAX	10	10	0.05	0.015	0.401	weeds (79)	Clay	1.37E-05	1.37E-07	1.39E-07	1.56E-07	4.15E-07	1.67E-07	9.31E-07
G_BASE_LOAM_010_STREAM_MAX	10	10	0.05	0.015	0.401	weeds (79)	Loam	7.81E-06	7.81E-08	7.92E-08	8.88E-08	2.37E-07	9.53E-08	5.32E-07
G_BASE_SAND_025_STREAM_MAX	25	10	0.05	0.015	0.401	weeds (79)	Sand	8.93E-05	8.93E-07	9.06E-07	1.01E-06	2.71E-06	1.09E-06	6.07E-06
G_BASE_CLAY_025_STREAM_MAX	25	10	0.05	0.015	0.401	weeds (79)	Clay	7.23E-05	7.23E-07	7.34E-07	8.22E-07	2.19E-06	8.82E-07	4.92E-06
G_BASE_LOAM_025_STREAM_MAX	25	10	0.05	0.015	0.401	weeds (79)	Loam	7.48E-05	7.48E-07	7.58E-07	8.50E-07	2.27E-06	9.12E-07	5.09E-06
G_BASE_SAND_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Sand	9.23E-05	9.23E-07	9.37E-07	1.05E-06	2.80E-06	1.13E-06	6.28E-06
G_BASE_CLAY_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Clay	8.80E-05	8.80E-07	8.92E-07	1.00E-06	2.67E-06	1.07E-06	5.98E-06
G_BASE_LOAM_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_BASE_SAND_100_STREAM_MAX	100	10	0.05	0.015	0.401	weeds (79)	Sand	9.67E-05	9.67E-07	9.80E-07	1.10E-06	2.93E-06	1.18E-06	6.58E-06
G_BASE_CLAY_100_STREAM_MAX	100	10	0.05	0.015	0.401	weeds (79)	Clay	9.24E-05	9.24E-07	9.37E-07	1.05E-06	2.80E-06	1.13E-06	6.28E-06
G_BASE_LOAM_100_STREAM_MAX	100	10	0.05	0.015	0.401	weeds (79)	Loam	8.56E-05	8.56E-07	8.68E-07	9.73E-07	2.59E-06	1.04E-06	5.82E-06
G_BASE_SAND_150_STREAM_MAX	150	10	0.05	0.015	0.401	weeds (79)	Sand	9.71E-05	9.71E-07	9.85E-07	1.10E-06	2.94E-06	1.18E-06	6.61E-06
G_BASE_CLAY_150_STREAM_MAX	150	10	0.05	0.015	0.401	weeds (79)	Clay	9.29E-05	9.29E-07	9.42E-07	1.06E-06	2.82E-06	1.13E-06	6.32E-06
G_BASE_LOAM_150_STREAM_MAX	150	10	0.05	0.015	0.401	weeds (79)	Loam	8.57E-05	8.57E-07	8.69E-07	9.74E-07	2.60E-06	1.05E-06	5.83E-06
G_BASE_SAND_200_STREAM_MAX	200	10	0.05	0.015	0.401	weeds (79)	Sand	9.41E-05	9.41E-07	9.54E-07	1.07E-06	2.85E-06	1.15E-06	6.40E-06
G_BASE_CLAY_200_STREAM_MAX	200	10	0.05	0.015	0.401	weeds (79)	Clay	9.30E-05	9.30E-07	9.43E-07	1.06E-06	2.82E-06	1.13E-06	6.32E-06
G_BASE_LOAM_200_STREAM_MAX	200	10	0.05	0.015	0.401	weeds (79)	Loam	8.48E-05	8.48E-07	8.60E-07	9.64E-07	2.57E-06	1.03E-06	5.77E-06
G_BASE_SAND_250_STREAM_MAX	250	10	0.05	0.015	0.401	weeds (79)	Sand	8.98E-05	8.98E-07	9.11E-07	1.02E-06	2.72E-06	1.10E-06	6.11E-06
G_BASE_CLAY_250_STREAM_MAX	250	10	0.05	0.015	0.401	weeds (79)	Clay	9.25E-05	9.25E-07	9.38E-07	1.05E-06	2.80E-06	1.13E-06	6.29E-06
G_BASE_LOAM_250_STREAM_MAX	250	10	0.05	0.015	0.401	weeds (79)	Loam	8.37E-05	8.37E-07	8.49E-07	9.51E-07	2.54E-06	1.02E-06	5.69E-06
G_ARV1_050_STREAM_MAX	50	1	0.05	0.015	0.401	weeds (79)	Loam	9.98E-06	9.98E-08	1.01E-07	1.13E-07	3.02E-07	1.22E-07	6.79E-07
G_ARV2_050_STREAM_MAX	50	100	0.05	0.015	0.401	weeds (79)	Loam	4.88E-04	4.88E-06	4.94E-06	5.54E-06	1.48E-05	5.95E-06	3.32E-05
G_ARV3_050_STREAM_MAX	50	1000	0.05	0.015	0.401	weeds (79)	Loam	1.34E-03	1.34E-05	1.36E-05	1.52E-05	4.06E-05	1.63E-05	9.11E-05
G_ERV1_050_STREAM_MAX	50	10	0.05	0.015	0.05	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_ERV2_050_STREAM_MAX	50	10	0.05	0.015	0.2	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_ERV3_050_STREAM_MAX	50	10	0.05	0.015	0.5	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_RGV1_050_STREAM_MAX	50	10	0.05	0.023	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_RGV2_050_STREAM_MAX	50	10	0.05	0.046	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_RGV3_050_STREAM_MAX	50	10	0.05	0.15	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_SLV1_050_STREAM_MAX	50	10	0.005	0.015	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_SLV2_050_STREAM_MAX	50	10	0.01	0.015	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_SLV3_050_STREAM_MAX	50	10	0.1	0.015	0.401	weeds (79)	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_STV1_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	9.47E-04	9.47E-06	9.61E-06	1.08E-05	2.87E-05	1.16E-05	6.44E-05
G_STV2_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	7.65E-05	7.65E-07	7.76E-07	8.69E-07	2.32E-06	9.33E-07	5.20E-06
G_STV3_050_STREAM_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	8.10E-05	8.10E-07	8.22E-07	9.21E-07	2.46E-06	9.88E-07	5.51E-06
G_VGV1_050_STREAM_MAX	50	10	0.05	0.015	0.401	Shrub	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_VGV2_050_STREAM_MAX	50	10	0.05	0.015	0.401	Rye Grass	Loam	8.64E-05	8.64E-07	8.76E-07	9.82E-07	2.62E-06	1.05E-06	5.88E-06
G_VGV3_050_STREAM_MAX	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	8.74E-05	8.74E-07	8.87E-07	9.94E-07	2.65E-06	1.07E-06	5.95E-06

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.
Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.
Shading and boldface indicates chronic RQs greater than 0.5 for fish and invertebrates.

Table B-18: Impact to non-target terrestrial plants from surface runoff

SURFACE RUNOFF - modeled in GLEAMS										
TYPICAL APPLICATION RATE										
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/lac per EI)	Vegetation Type	Soil Type	Terrestrial Concentration (lb a.e./acre)	Typical Species RQ	Threatened & Endangered Species RQ
G_BASE_SAND_005_TERR_TYP	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_TERR_TYP	5	10	0.05	0.015	0.401	weeds (79)	Clay	3.44E-07	1.15E-05	8.60E-04
G_BASE_LOAM_005_TERR_TYP	5	10	0.05	0.015	0.401	weeds (79)	Loam	2.05E-07	6.84E-06	5.13E-04
G_BASE_SAND_010_TERR_TYP	10	10	0.05	0.015	0.401	weeds (79)	Sand	1.30E-06	4.34E-05	3.26E-03
G_BASE_CLAY_010_TERR_TYP	10	10	0.05	0.015	0.401	weeds (79)	Clay	3.55E-06	1.18E-04	8.88E-03
G_BASE_LOAM_010_TERR_TYP	10	10	0.05	0.015	0.401	weeds (79)	Loam	6.53E-06	2.18E-04	1.63E-02
G_BASE_SAND_025_TERR_TYP	25	10	0.05	0.015	0.401	weeds (79)	Sand	1.30E-05	4.35E-04	3.26E-02
G_BASE_CLAY_025_TERR_TYP	25	10	0.05	0.015	0.401	weeds (79)	Clay	1.72E-05	5.72E-04	4.29E-02
G_BASE_LOAM_025_TERR_TYP	25	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Sand	3.44E-09	1.15E-07	8.60E-06
G_BASE_CLAY_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Clay	2.33E-09	7.75E-08	5.82E-06
G_BASE_LOAM_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_BASE_SAND_100_TERR_TYP	100	10	0.05	0.015	0.401	weeds (79)	Sand	2.02E-08	6.73E-07	5.05E-05
G_BASE_CLAY_100_TERR_TYP	100	10	0.05	0.015	0.401	weeds (79)	Clay	3.58E-09	1.19E-07	8.95E-06
G_BASE_LOAM_100_TERR_TYP	100	10	0.05	0.015	0.401	weeds (79)	Loam	8.61E-09	2.87E-07	2.15E-05
G_BASE_SAND_150_TERR_TYP	150	10	0.05	0.015	0.401	weeds (79)	Sand	2.92E-08	9.73E-07	7.30E-05
G_BASE_CLAY_150_TERR_TYP	150	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_150_TERR_TYP	150	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_200_TERR_TYP	200	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_200_TERR_TYP	200	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_200_TERR_TYP	200	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_250_TERR_TYP	250	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_250_TERR_TYP	250	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_250_TERR_TYP	250	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_ARV1_050_TERR_TYP	50	1	0.05	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_ARV2_050_TERR_TYP	50	100	0.05	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_ARV3_050_TERR_TYP	50	1000	0.05	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_ERV1_050_TERR_TYP	50	10	0.05	0.015	0.05	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_ERV2_050_TERR_TYP	50	10	0.05	0.015	0.2	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_ERV3_050_TERR_TYP	50	10	0.05	0.015	0.5	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_RGV1_050_TERR_TYP	50	10	0.05	0.023	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_RGV2_050_TERR_TYP	50	10	0.05	0.046	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_RGV3_050_TERR_TYP	50	10	0.05	0.15	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_SLV1_050_TERR_TYP	50	10	0.005	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_SLV2_050_TERR_TYP	50	10	0.01	0.015	0.401	weeds (79)	Loam	1.04E-09	3.48E-08	2.61E-06
G_SLV3_050_TERR_TYP	50	10	0.1	0.015	0.401	weeds (79)	Loam	1.05E-09	3.51E-08	2.63E-06
G_STV1_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	5.16E-08	1.72E-06	1.29E-04
G_STV2_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	8.48E-07	2.83E-05	2.12E-03
G_STV3_050_TERR_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	5.63E-06	1.88E-04	1.41E-02
G_VGV1_050_TERR_TYP	50	10	0.05	0.015	0.401	Shrub	Loam	1.04E-09	3.48E-08	2.61E-06
G_VGV2_050_TERR_TYP	50	10	0.05	0.015	0.401	Rye Grass	Loam	1.04E-09	3.48E-08	2.61E-06
G_VGV3_050_TERR_TYP	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	2.29E-10	7.62E-09	5.72E-07

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Table B-18: Impact to non-target terrestrial plants from surface runoff

SURFACE RUNOFF - modeled in GLEAMS										
MAXIMUM APPLICATION RATE										
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/ac per EI)	Vegetation Type	Soil Type	Terrestrial Concentration (lb a.e./acre)	Typical Species RQ	Threatened & Endangered Species RQ
G_BASE_SAND_005_TERR_MAX	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_TERR_MAX	5	10	0.05	0.015	0.401	weeds (79)	Clay	4.85E-07	1.62E-05	1.21E-03
G_BASE_LOAM_005_TERR_MAX	5	10	0.05	0.015	0.401	weeds (79)	Loam	2.89E-07	9.64E-06	7.23E-04
G_BASE_SAND_010_TERR_MAX	10	10	0.05	0.015	0.401	weeds (79)	Sand	1.84E-06	6.13E-05	4.60E-03
G_BASE_CLAY_010_TERR_MAX	10	10	0.05	0.015	0.401	weeds (79)	Clay	5.01E-06	1.67E-04	1.25E-02
G_BASE_LOAM_010_TERR_MAX	10	10	0.05	0.015	0.401	weeds (79)	Loam	9.21E-06	3.07E-04	2.30E-02
G_BASE_SAND_025_TERR_MAX	25	10	0.05	0.015	0.401	weeds (79)	Sand	1.84E-05	6.13E-04	4.60E-02
G_BASE_CLAY_025_TERR_MAX	25	10	0.05	0.015	0.401	weeds (79)	Clay	2.42E-05	8.07E-04	6.06E-02
G_BASE_LOAM_025_TERR_MAX	25	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Sand	4.85E-09	1.62E-07	1.21E-05
G_BASE_CLAY_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Clay	3.28E-09	1.09E-07	8.20E-06
G_BASE_LOAM_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_BASE_SAND_100_TERR_MAX	100	10	0.05	0.015	0.401	weeds (79)	Sand	2.85E-08	9.49E-07	7.12E-05
G_BASE_CLAY_100_TERR_MAX	100	10	0.05	0.015	0.401	weeds (79)	Clay	5.05E-09	1.68E-07	1.26E-05
G_BASE_LOAM_100_TERR_MAX	100	10	0.05	0.015	0.401	weeds (79)	Loam	1.21E-08	4.05E-07	3.03E-05
G_BASE_SAND_150_TERR_MAX	150	10	0.05	0.015	0.401	weeds (79)	Sand	4.12E-08	1.37E-06	1.03E-04
G_BASE_CLAY_150_TERR_MAX	150	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_150_TERR_MAX	150	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_200_TERR_MAX	200	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_200_TERR_MAX	200	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_200_TERR_MAX	200	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_250_TERR_MAX	250	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_250_TERR_MAX	250	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_250_TERR_MAX	250	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00
G_ARV1_050_TERR_MAX	50	1	0.05	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_ARV2_050_TERR_MAX	50	100	0.05	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_ARV3_050_TERR_MAX	50	1000	0.05	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_ERV1_050_TERR_MAX	50	10	0.05	0.015	0.05	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_ERV2_050_TERR_MAX	50	10	0.05	0.015	0.2	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_ERV3_050_TERR_MAX	50	10	0.05	0.015	0.5	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_RGV1_050_TERR_MAX	50	10	0.05	0.023	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_RGV2_050_TERR_MAX	50	10	0.05	0.046	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_RGV3_050_TERR_MAX	50	10	0.05	0.15	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_SLV1_050_TERR_MAX	50	10	0.005	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_SLV2_050_TERR_MAX	50	10	0.01	0.015	0.401	weeds (79)	Loam	1.47E-09	4.91E-08	3.68E-06
G_SLV3_050_TERR_MAX	50	10	0.1	0.015	0.401	weeds (79)	Loam	1.49E-09	4.95E-08	3.71E-06
G_STV1_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	7.28E-08	2.43E-06	1.82E-04
G_STV2_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	1.20E-06	3.99E-05	2.99E-03
G_STV3_050_TERR_MAX	50	10	0.05	0.015	0.401	weeds (79)	Loam	7.94E-06	2.65E-04	1.98E-02
G_VGV1_050_TERR_MAX	50	10	0.05	0.015	0.401	Shrub	Loam	1.47E-09	4.91E-08	3.68E-06
G_VGV2_050_TERR_MAX	50	10	0.05	0.015	0.401	Rye Grass	Loam	1.47E-09	4.91E-08	3.68E-06
G_VGV3_050_TERR_MAX	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	3.22E-10	1.07E-08	8.06E-07

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.

Table B-19: Consumption of contaminated fish from pond by predatory bird - long term exposure. Pond impacted by surface runoff modeled in GLEAMS.

Parameters/ Assumptions	Value	Units	Notes
Body Weight (W)	5.15	kg	
Food ingestion rate (dry weight)	0.101786153	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.40714461	kg ww/day	[2]
Bioconcentration factor (BCF)	1	L/kg fish	
Proportion of Diet Contaminated (Prop)	1	unitless	
Toxicity reference value (TRV)	262	mg/kg-bw/day	

TYPICAL APPLICATION RATE											
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/ac per EI)	Vegetation Type	Soil Type	Pond Concentration (mg/L)	Concentrations in fish (C _{Fish}): WC × BCF	Dose estimates (D): C _{Fish} × A × Prop / W	Risk Quotient
G_BASE_SAND_005_POND_TYP	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_POND_TYP	5	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_POND_TYP	5	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_POND_TYP	10	10	0.05	0.015	0.401	weeds (79)	Sand	4.50E-02	4.50E-02	3.56E-03	1.36E-05
G_BASE_CLAY_010_POND_TYP	10	10	0.05	0.015	0.401	weeds (79)	Clay	1.14E-02	1.14E-02	8.98E-04	3.43E-06
G_BASE_LOAM_010_POND_TYP	10	10	0.05	0.015	0.401	weeds (79)	Loam	8.18E-03	8.18E-03	6.47E-04	2.47E-06
G_BASE_SAND_025_POND_TYP	25	10	0.05	0.015	0.401	weeds (79)	Sand	1.08E-02	1.08E-02	8.53E-04	3.26E-06
G_BASE_CLAY_025_POND_TYP	25	10	0.05	0.015	0.401	weeds (79)	Clay	1.51E-02	1.51E-02	1.19E-03	4.56E-06
G_BASE_LOAM_025_POND_TYP	25	10	0.05	0.015	0.401	weeds (79)	Loam	1.62E-02	1.62E-02	1.28E-03	4.88E-06
G_BASE_SAND_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Sand	4.58E-03	4.58E-03	3.62E-04	1.38E-06
G_BASE_CLAY_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Clay	7.12E-03	7.12E-03	5.63E-04	2.15E-06
G_BASE_LOAM_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	5.12E-03	5.12E-03	4.05E-04	1.54E-06
G_BASE_SAND_100_POND_TYP	100	10	0.05	0.015	0.401	weeds (79)	Sand	6.18E-03	6.18E-03	4.88E-04	1.86E-06
G_BASE_CLAY_100_POND_TYP	100	10	0.05	0.015	0.401	weeds (79)	Clay	3.30E-03	3.30E-03	2.61E-04	9.96E-07
G_BASE_LOAM_100_POND_TYP	100	10	0.05	0.015	0.401	weeds (79)	Loam	2.51E-03	2.51E-03	1.98E-04	7.57E-07
G_BASE_SAND_150_POND_TYP	150	10	0.05	0.015	0.401	weeds (79)	Sand	4.67E-03	4.67E-03	3.69E-04	1.41E-06
G_BASE_CLAY_150_POND_TYP	150	10	0.05	0.015	0.401	weeds (79)	Clay	2.69E-03	2.69E-03	2.12E-04	8.11E-07
G_BASE_LOAM_150_POND_TYP	150	10	0.05	0.015	0.401	weeds (79)	Loam	2.58E-03	2.58E-03	2.04E-04	7.78E-07
G_BASE_SAND_200_POND_TYP	200	10	0.05	0.015	0.401	weeds (79)	Sand	2.48E-03	2.48E-03	1.96E-04	7.49E-07
G_BASE_CLAY_200_POND_TYP	200	10	0.05	0.015	0.401	weeds (79)	Clay	2.36E-03	2.36E-03	1.86E-04	7.11E-07
G_BASE_LOAM_200_POND_TYP	200	10	0.05	0.015	0.401	weeds (79)	Loam	2.72E-03	2.72E-03	2.15E-04	8.21E-07
G_BASE_SAND_250_POND_TYP	250	10	0.05	0.015	0.401	weeds (79)	Sand	1.69E-03	1.69E-03	1.33E-04	5.09E-07
G_BASE_CLAY_250_POND_TYP	250	10	0.05	0.015	0.401	weeds (79)	Clay	2.13E-03	2.13E-03	1.68E-04	6.42E-07
G_BASE_LOAM_250_POND_TYP	250	10	0.05	0.015	0.401	weeds (79)	Loam	2.64E-03	2.64E-03	2.09E-04	7.98E-07
G_ARV1_050_POND_TYP	50	1	0.05	0.015	0.401	weeds (79)	Loam	6.08E-03	6.08E-03	4.81E-04	1.83E-06
G_ARV2_050_POND_TYP	50	100	0.05	0.015	0.401	weeds (79)	Loam	5.49E-03	5.49E-03	4.34E-04	1.66E-06
G_ARV3_050_POND_TYP	50	1000	0.05	0.015	0.401	weeds (79)	Loam	5.52E-03	5.52E-03	4.37E-04	1.67E-06
G_ERV1_050_POND_TYP	50	10	0.05	0.015	0.05	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_ERV2_050_POND_TYP	50	10	0.05	0.015	0.2	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_ERV3_050_POND_TYP	50	10	0.05	0.015	0.5	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_RGV1_050_POND_TYP	50	10	0.05	0.023	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_RGV2_050_POND_TYP	50	10	0.05	0.046	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_RGV3_050_POND_TYP	50	10	0.05	0.15	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_SLV1_050_POND_TYP	50	10	0.005	0.015	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_SLV2_050_POND_TYP	50	10	0.01	0.015	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_SLV3_050_POND_TYP	50	10	0.1	0.015	0.401	weeds (79)	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_STV1_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	6.06E-03	6.06E-03	4.79E-04	1.83E-06
G_STV2_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	6.14E-03	6.14E-03	4.86E-04	1.85E-06
G_STV3_050_POND_TYP	50	10	0.05	0.015	0.401	weeds (79)	Loam	7.73E-03	7.73E-03	6.11E-04	2.33E-06
G_VGV1_050_POND_TYP	50	10	0.05	0.015	0.401	Shrub	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_VGV2_050_POND_TYP	50	10	0.05	0.015	0.401	Rye Grass	Loam	5.29E-03	5.29E-03	4.19E-04	1.60E-06
G_VGV3_050_POND_TYP	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	4.31E-03	4.31E-03	3.40E-04	1.30E-06

Risk Quotient = Estimated Dose/Toxicity Reference Value
Shading and boldface indicates piscivorous bird RQs greater than 0.1.

[1] Calculated using alorithm developed by Nagy, 1987 for all birds; where
Food Ingestion Rate (kg dw/day) = 0.0582*(BW)^0.651
[2] Assumes fish are 75% water (USEPA, 1993; Table 4-1 - value for bony fishes)
GLEAMS footnotes

Table B-19: Consumption of contaminated fish from pond by predatory bird - long term exposure. Pond impacted by surface runoff modeled in GLEAMS.

Parameters/ Assumptions	Value	Units	Notes
Body Weight (W)	5.15	kg	
Food ingestion rate (dry weight)	0.101786153	kg dw/day	[1]
Food ingestion rate (wet weight, A)	0.40714461	kg ww/day	[2]
Bioconcentration factor (BCF)	1	L/kg fish	
Proportion of Diet Contaminated (Prop)	1	unitless	
Toxicity reference value (TRV)	262	mg/kg-bw/day	

MAXIMUM APPLICATION RATE											
GLEAMS ID	Annual Precipitation (inches)	Application Area (acres)	Hydraulic Slope (ft/ft)	Surface Roughness	USLE Soil Erodibility Factor (ton/fac per EI)	Vegetation Type	Soil Type	Pond Concentration (mg/L)	Concentrations in fish (C _{Fish}): WC × BCF	Dose estimates (D): C _{Fish} × A × Prop / W	Risk Quotient
G_BASE_SAND_005_POND_max	5	10	0.05	0.015	0.401	weeds (79)	Sand	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_CLAY_005_POND_max	5	10	0.05	0.015	0.401	weeds (79)	Clay	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_LOAM_005_POND_max	5	10	0.05	0.015	0.401	weeds (79)	Loam	0.00E+00	0.00E+00	0.00E+00	0.00E+00
G_BASE_SAND_010_POND_max	10	10	0.05	0.015	0.401	weeds (79)	Sand	6.34E-02	6.34E-02	5.02E-03	1.91E-05
G_BASE_CLAY_010_POND_max	10	10	0.05	0.015	0.401	weeds (79)	Clay	1.60E-02	1.60E-02	1.27E-03	4.84E-06
G_BASE_LOAM_010_POND_max	10	10	0.05	0.015	0.401	weeds (79)	Loam	1.15E-02	1.15E-02	9.12E-04	3.48E-06
G_BASE_SAND_025_POND_max	25	10	0.05	0.015	0.401	weeds (79)	Sand	1.52E-02	1.52E-02	1.20E-03	4.59E-06
G_BASE_CLAY_025_POND_max	25	10	0.05	0.015	0.401	weeds (79)	Clay	2.13E-02	2.13E-02	1.68E-03	6.43E-06
G_BASE_LOAM_025_POND_max	25	10	0.05	0.015	0.401	weeds (79)	Loam	2.28E-02	2.28E-02	1.80E-03	6.88E-06
G_BASE_SAND_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Sand	6.46E-03	6.46E-03	5.11E-04	1.95E-06
G_BASE_CLAY_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Clay	1.00E-02	1.00E-02	7.93E-04	3.03E-06
G_BASE_LOAM_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Loam	7.22E-03	7.22E-03	5.71E-04	2.18E-06
G_BASE_SAND_100_POND_max	100	10	0.05	0.015	0.401	weeds (79)	Sand	8.71E-03	8.71E-03	6.89E-04	2.63E-06
G_BASE_CLAY_100_POND_max	100	10	0.05	0.015	0.401	weeds (79)	Clay	4.66E-03	4.66E-03	3.68E-04	1.40E-06
G_BASE_LOAM_100_POND_max	100	10	0.05	0.015	0.401	weeds (79)	Loam	3.54E-03	3.54E-03	2.80E-04	1.07E-06
G_BASE_SAND_150_POND_max	150	10	0.05	0.015	0.401	weeds (79)	Sand	6.58E-03	6.58E-03	5.20E-04	1.99E-06
G_BASE_CLAY_150_POND_max	150	10	0.05	0.015	0.401	weeds (79)	Clay	3.79E-03	3.79E-03	3.00E-04	1.14E-06
G_BASE_LOAM_150_POND_max	150	10	0.05	0.015	0.401	weeds (79)	Loam	3.64E-03	3.64E-03	2.87E-04	1.10E-06
G_BASE_SAND_200_POND_max	200	10	0.05	0.015	0.401	weeds (79)	Sand	3.50E-03	3.50E-03	2.77E-04	1.06E-06
G_BASE_CLAY_200_POND_max	200	10	0.05	0.015	0.401	weeds (79)	Clay	3.32E-03	3.32E-03	2.63E-04	1.00E-06
G_BASE_LOAM_200_POND_max	200	10	0.05	0.015	0.401	weeds (79)	Loam	3.84E-03	3.84E-03	3.03E-04	1.16E-06
G_BASE_SAND_250_POND_max	250	10	0.05	0.015	0.401	weeds (79)	Sand	2.38E-03	2.38E-03	1.88E-04	7.18E-07
G_BASE_CLAY_250_POND_max	250	10	0.05	0.015	0.401	weeds (79)	Clay	3.00E-03	3.00E-03	2.37E-04	9.05E-07
G_BASE_LOAM_250_POND_max	250	10	0.05	0.015	0.401	weeds (79)	Loam	3.73E-03	3.73E-03	2.95E-04	1.12E-06
G_ARV1_050_POND_max	50	1	0.05	0.015	0.401	weeds (79)	Loam	8.58E-03	8.58E-03	6.78E-04	2.59E-06
G_ARV2_050_POND_max	50	100	0.05	0.015	0.401	weeds (79)	Loam	7.74E-03	7.74E-03	6.12E-04	2.34E-06
G_ARV3_050_POND_max	50	1000	0.05	0.015	0.401	weeds (79)	Loam	7.79E-03	7.79E-03	6.16E-04	2.35E-06
G_ERV1_050_POND_max	50	10	0.05	0.015	0.05	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_ERV2_050_POND_max	50	10	0.05	0.015	0.2	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_ERV3_050_POND_max	50	10	0.05	0.015	0.5	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_RGV1_050_POND_max	50	10	0.05	0.023	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_RGV2_050_POND_max	50	10	0.05	0.046	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_RGV3_050_POND_max	50	10	0.05	0.15	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_SLV1_050_POND_max	50	10	0.005	0.015	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_SLV2_050_POND_max	50	10	0.01	0.015	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_SLV3_050_POND_max	50	10	0.1	0.015	0.401	weeds (79)	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_STV1_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Loam	8.54E-03	8.54E-03	6.75E-04	2.58E-06
G_STV2_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Loam	8.67E-03	8.67E-03	6.85E-04	2.61E-06
G_STV3_050_POND_max	50	10	0.05	0.015	0.401	weeds (79)	Loam	1.09E-02	1.09E-02	8.62E-04	3.29E-06
G_VGV1_050_POND_max	50	10	0.05	0.015	0.401	Shrub	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_VGV2_050_POND_max	50	10	0.05	0.015	0.401	Rye Grass	Loam	7.47E-03	7.47E-03	5.90E-04	2.25E-06
G_VGV3_050_POND_max	50	10	0.05	0.015	0.401	Conifer-Hardwood	Loam	6.07E-03	6.07E-03	4.80E-04	1.83E-06

Risk Quotient = Estimated Dose/Toxicity Reference Value
Shading and boldface indicates piscivorous bird RQs greater than 0.1.

[1] Calculated using alorithm developed by Nagy, 1987 for all birds; where
Food Ingestion Rate (kg dw/day) = 0.0582*(BW)^0.651
[2] Assumes fish are 75% water (USEPA, 1993; Table 4-1 - value for bony fishes)

Table B-20: Impact to non-target terrestrial plants from wind erosion

WIND EROSION - modeled in AERMOD and CalPuff							
TYPICAL APPLICATION RATE							
Cal Puff Scenario ID	Watershed Location	Distance From Receptor (km)	Terrestrial Concentration (lb a.e./acre)	Typical Species TRV	Typical Species RQ	Threatened & Endangered Species TRV	Threatened & Endangered Species RQ
dust_MT_0.5_typ	MT	0.5	1.95E-05	3.00E-04	6.50E-02	2.00E-04	9.74E-02
dust_MT_5_typ	MT	5	5.71E-07	3.00E-04	1.90E-03	2.00E-04	2.86E-03
dust_MT_50_typ	MT	50	2.00E-08	3.00E-04	6.66E-05	2.00E-04	9.99E-05
dust_OR_0.5_typ	OR	0.5	2.24E-04	3.00E-04	7.47E-01	2.00E-04	1.12E+00
dust_OR_5_typ	OR	5	5.98E-06	3.00E-04	1.99E-02	2.00E-04	2.99E-02
dust_OR_50_typ	OR	50	1.46E-07	3.00E-04	4.87E-04	2.00E-04	7.31E-04
dust_WY_0.5_typ	WY	0.5	1.15E-04	3.00E-04	3.84E-01	2.00E-04	5.76E-01
dust_WY_5_typ	WY	5	4.12E-06	3.00E-04	1.37E-02	2.00E-04	2.06E-02
dust_WY_50_typ	WY	50	1.31E-07	3.00E-04	4.38E-04	2.00E-04	6.57E-04

WIND EROSION - modeled in AERMOD and CalPuff							
MAXIMUM APPLICATION RATE							
Cal Puff Scenario ID	Watershed Location	Distance From Receptor (km)	Terrestrial Concentration (lb a.e./acre)	Typical Species TRV	Typical Species RQ	Threatened & Endangered Species TRV	Threatened & Endangered Species RQ
dust_MT_0.5_max	MT	0.5	2.75E-05	3.00E-04	9.16E-02	2.00E-04	1.37E-01
dust_MT_5_max	MT	5	8.06E-07	3.00E-04	2.69E-03	2.00E-04	4.03E-03
dust_MT_50_max	MT	50	2.82E-08	3.00E-04	9.39E-05	2.00E-04	1.41E-04
dust_OR_0.5_max	OR	0.5	3.16E-04	3.00E-04	1.05E+00	2.00E-04	1.58E+00
dust_OR_5_max	OR	5	8.44E-06	3.00E-04	2.81E-02	2.00E-04	4.22E-02
dust_OR_50_max	OR	50	2.06E-07	3.00E-04	6.87E-04	2.00E-04	1.03E-03
dust_WY_0.5_max	WY	0.5	1.62E-04	3.00E-04	5.41E-01	2.00E-04	8.12E-01
dust_WY_5_max	WY	5	5.81E-06	3.00E-04	1.94E-02	2.00E-04	2.91E-02
dust_WY_50_max	WY	50	1.85E-07	3.00E-04	6.18E-04	2.00E-04	9.27E-04

RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value

Shading and boldface indicates plant RQs greater than 1.

Table B-21: Impact to aquatic species from accidental spill to pond

Parameters/Assumptions	Value	Units
Volume of pond (Vp)	1011715	L
Volume of spill		
Truck (Vspill _t)	757	L
Helicopter(Vspill _h)	529.9	L
Herbicide concentration		
Truck mixture (Cm _t)	527.29	mg a.e./L
Helicopter mixture (Cm _h)	2636.47	mg a.e./L

			<u>Risk Quotients</u>		
Scenario	Concentrations in water (Cw): Cm × Vspill / Vp		Fish	Aquatic Invertebrates	Non-Target Aquatic Plants
		Units			
Truck spill into pond	0.39	mg a.e./L	3.95E-03	4.00E-03	4.48E-03
Helicopter spill into pond	1.38	mg a.e./L	1.38E-02	1.40E-02	1.57E-02

Shading and boldface indicates plant RQs greater than 1.

Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.

Table B-22: Impact to aquatic species from accidental direct spray of pond and stream

Parameters/Assumptions	Value	Units
Application rates (R)	Typical Maximum	0.078 lb/acre 0.11 lb/acre
Area of pond (Area)		0.25 acre
Volume of pond (Vol)		1011715 L
Mass sprayed on pond (R x Area)	Typical Maximum	8845.044 mg 12473.78 mg
Concentration in pond water (Mass/Volume)	Typical Maximum	0.008742624 mg/L 0.012329342 mg/L
Width of stream		2 m
Length of stream impacted by direct spray		636.15 m
Area of stream impacted by spray (Area)		1272.3 m ²
Depth of stream		0.2 m
Instantaneous volume of stream impacted by direct spray (Vol)		254460 L
Mass sprayed on stream (R x Area)	Typical Maximum	99.239 lb 139.953 lb
Mass sprayed on stream - converted to mg	Typical Maximum	11123.351 mg 15686.777 mg
Concentration in stream water (Mass/Vol)	Typical Maximum	0.043713553 mg/L 0.061647318 mg/L

Scenario		Concentration in water (mg/L)	Fish	<u>Risk Quotients</u> Aquatic Invertebrates	Non-Target Aquatic Plants
Acute					
Direct spray to pond	Typical application	8.74E-03	8.74E-05	8.87E-05	9.93E-05
	Maximum application	1.23E-02	1.23E-04	1.25E-04	1.40E-04
Direct spray to stream	Typical application	4.37E-02	4.37E-04	4.43E-04	4.97E-04
	Maximum application	6.16E-02	6.16E-04	6.25E-04	7.01E-04
Chronic					
Direct spray to pond	Typical application	8.74E-03	2.65E-04	1.07E-04	5.95E-04
	Maximum application	1.23E-02	3.74E-04	1.50E-04	8.39E-04
Direct spray to stream	Typical application	4.37E-02	1.32E-03	5.33E-04	2.97E-03
	Maximum application	6.16E-02	1.87E-03	7.52E-04	4.19E-03

Shading and boldface indicates plant RQs greater than 1.

Shading and boldface indicates acute RQs greater than 0.05 for fish and invertebrates.

APPENDIX C – SPECIES LISTED UNDER THE ENDANGERED
SPECIES ACT FOR 17 BLM STATES

TABLE C-1
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Plants						
<i>Acanthomintha ilicifolia</i>	San Diego thornmint	T ²	CA	Yes	None	No
<i>Allium munzii</i>	Munz's onion	E	CA	Yes	63 acres	No
<i>Ambrosia pumila</i>	San Diego ambrosia	E	CA	Yes	None	No
<i>Amsonia kearneyana</i>	Kearney's blue-star	E	AZ	No	--	Yes
<i>Arabis mcdonaldiana</i>	McDonald's rock-cress	E	CA, OR	No	--	Yes
<i>Arctomecon humilis</i>	Dwarf bear-poppy	E	UT	No	--	Yes
<i>Arctostaphylos morroensis</i>	Morro manzanita	T	CA	No	--	Yes
<i>Arctostaphylos myrtifolia</i>	Ione manzanita	T	CA	No	--	No
<i>Arenaria paludicola</i>	Marsh sandwort	E	OR	No	--	Yes
<i>Argemone pleiacantha</i> ssp. <i>pinnatisecta</i>	Sacramento prickly poppy	E	NM	No	--	Yes
<i>Asclepias welshii</i>	Welsh's milkweed	T	AZ, UT	Yes	1,760 acres (UT)	Yes
<i>Astragalus albens</i>	Cushenbury milk-vetch	E	CA	Yes	839 acres	Yes
<i>Astragalus ampullarioides</i>	Shivwitz milk-vetch	E	UT	Yes	819 acres	Yes
<i>Astragalus applegatei</i>	Applegate's milk-vetch	E	OR	No	--	Yes
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	E	CA	Yes	None	Yes
<i>Astragalus desereticus</i>	Deseret milk-vetch	T	UT	No	--	No
<i>Astragalus holmgreniorum</i>	Holmgren milk-vetch	E	AZ, UT	Yes	362 acres (AZ); 2,447 acres (UT)	Yes
<i>Astragalus humillimus</i>	Mancos milk-vetch	E	CO, NM	No	--	Yes
<i>Astragalus jaegerianus</i>	Lane Mountain milk-vetch	E	CA	Yes	9,897 acres	No
<i>Astragalus lentiginosus</i> var. <i>coachellae</i>	Coachella Valley milk-vetch	E	CA	Yes	3,494 acres	No
<i>Astragalus magdalenae</i> var. <i>peirsonii</i>	Peirson's milk-vetch	T	CA	Yes	20,779 acres	No
<i>Astragalus lentiginosus</i> var. <i>piscinensis</i>	Fish Slough milk-vetch	T	CA	Yes	5,430 acres	Yes
<i>Astragalus montii</i>	Heliotrope milk-vetch	T	UT	Yes	None	Draft
<i>Astragalus osterhoutii</i>	Osterhout milk-vetch	E	CO	No	--	Yes
<i>Astragalus phoenix</i>	Ash Meadows milk-vetch	T	NV	Yes	458 acres	Yes
<i>Astragalus tricarlinatus</i>	Triple-ribbed milk-vetch	E	CA	No	--	No
<i>Atriplex coronata</i> var. <i>notatior</i>	San Jacinto Valley crownscale	E	CA	Yes	None	No
<i>Baccharis vanessae</i>	Encinitis baccharis	T	CA	No	--	No
<i>Berberis nevini</i>	Nevin's barberry	E	CA	Yes	5 acres	No
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	T	CA	Yes	53 acres	No
<i>Calyptridium pulchellum</i>	Mariposa pussypaws	T	CA	No	No	No
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	E	CA	No	--	Yes
<i>Camissonia benitensis</i>	San Benito evening-primrose	T	CA	No	--	Yes
<i>Carex specuicola</i>	Navajo sedge	T	UT	Yes	None	Yes
<i>Castilleja campestris</i> ssp. <i>succulenta</i>	Fleshy owl's-clover	T	CA	Yes	289 acres	Yes
<i>Caulanthus californicus</i>	California jewelflower	E	CA	No	--	Yes

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Plants (Cont.)						
<i>Ceanothus ferrisiae</i>	Coyote ceanothus	E	CA	No	No	Yes
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	E	CA	No	--	Yes
<i>Centaurium namophilum</i>	Spring-loving centaury	T	CA, NV	Yes	806 acres (NV)	Yes
<i>Chamaesyce hooveri</i>	Hoover's spurge	T	CA	Yes	38 acres	Yes
<i>Chlorogalum purpureum</i> var. <i>purpureum</i>	Purple amole	T	CA	Yes	None	No
<i>Chorizanthe howellii</i>	Howell's spineflower	E	CA	No	--	Yes
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	E	CA	No	--	No
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower	T	CA	Yes	1,204 acres	Yes
<i>Chorizanthe rogusta</i> var. <i>robusta</i>	Robust spineflower	E	CA	No	--	No
<i>Cirsium fontinale</i> var. <i>obispoense</i>	Chorro Creek bog thistle	E	CA	No	--	Yes
<i>Cirsium scariosum</i> var. <i>loncholepis</i>	La Graciosa thistle	E	CA	Yes	None	No
<i>Clarkia springvillensis</i>	Springville clarkia	T	CA	No	--	No
<i>Coryphantha robbinsorum</i>	Cochise pincushion cactus	T	AZ	No	--	Yes
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Pima pineapple cactus	E	AZ	No	--	No
<i>Coryphantha sneedii</i> var. <i>leei</i>	Lee pincushion cactus	T	NM	No	--	Yes
<i>Coryphantha sneedii</i> var. <i>sneedii</i>	Sneed pincushion cactus	E	NM	No	--	Yes
<i>Cycladenia humilis</i> var. <i>jonesii</i>	Jones cycladenia	T	CA, AZ, UT	No	--	Outline
<i>Deinandra</i> (= <i>hemizonia</i>) <i>conjugens</i>	Otay tarplant	T	CA	Yes	None	Yes
<i>Deinandra increscens</i> ssp. <i>villosa</i>	Gaviota tarplant	E	CA	Yes	None	No
<i>Delphinium luteum</i>	Yellow larkspur	E	CA	Yes	None	No
<i>Dodecahema leptoceras</i>	Slender-horned spineflower	E	CA	No	--	No
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	Marcescent dudleya	T	CA	No	--	Yes
<i>Echinocactus horizionthalonius</i> var. <i>nicholli</i>	Nichol's Turk's head cactus	E	AZ	No	--	Yes
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	Kuenzler hedgehog cactus	E	NM	No	--	Yes
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	Arizona hedgehog cactus	E	AZ	No	--	No (Draft)
<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	Acuna cactus	E	AZ	Proposed	--	No
<i>Enceliopsis nudicaulis</i> var. <i>corrugata</i>	Ash Meadows sunray	T	NV	Yes	773 acres	Yes
<i>Eremalche kernensis</i>	Kern mallow	E	CA	No	--	Yes
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woolly-star	E	CA	No	--	No
<i>Erigeron decumbens</i> var. <i>decumbens</i>	Willamette daisy	E	OR	Yes	208 acres	Yes
<i>Erigeron parishii</i>	Parish's daisy	T	CA	Yes	945 acres	Yes
<i>Erigeron rhizomatus</i>	Zuni fleabane	T	AZ, NM	No	--	Yes
<i>Eriodictyon altissimum</i>	Indian Knob mountain balm	E	CA	No	--	Yes
<i>Eriodictyon capitatum</i>	Lompoc yerba santa	E	CA	Yes	None	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
INTRODUCTION Plants (Cont.)						
<i>Eriogonum apricum</i>	Ione buckwheat	E	CA	No	--	No
<i>Eriogonum gypsophilum</i>	Gypsum wild-buckwheat	T	NM	Yes	537 acres	Yes
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat	E	CA	Yes	423 acres	Yes
<i>Eriogonum ovalifolium</i> var. <i>williamsiae</i>	Steamboat buckwheat	E	NV	No	--	Yes
<i>Eriogonum pelinophilum</i>	Clay-loving wild-buckwheat	E	CO	Yes	None	Yes
<i>Erysimum menziesii</i>	Menzies' wallflower	E	CA	No	--	Yes
<i>Eutrema penlandii</i>	Penland alpine fen mustard	T	CO	No	--	No
<i>Fremontodendron californicum</i> ssp. <i>decumbens</i>	Pine Hill flannelbush	E	CA	No	--	Yes
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	E	CA	Yes	224 acres	No
<i>Fritillaria gentneri</i>	Gentner's fritillary	E	OR	No	--	Yes
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	E	CA	No	--	Yes
<i>Gaura neomexicana</i> var. <i>coloradensis</i>	Colorado butterfly plant	T	CO, WY	Yes	None	Outline
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	Monterey gilia	E	CA	No	--	Yes
<i>Grindelia fraxino-pratensis</i>	Ash Meadows gumplant	T	CA, NV	Yes	292 acres (CA)	Yes
<i>Hackelia venusta</i>	Showy stickseed	E	OR	No	--	Yes
<i>Hedeoma todsenii</i>	Todsens' pennyroyal	E	NM	Yes	None	Yes
<i>Helianthus paradoxus</i>	Pecos sunflower	T	NM	Yes	None	Yes
<i>Howellia aquatilis</i>	Water howellia	T	CA, ID, MT, OR	No	--	Draft
<i>Ipomopsis polyantha</i>	Pagosa skyrocket	E	CO	Yes	42 acres	Outline
<i>Ivesia kingii</i> var. <i>eremica</i>	Ash Meadows ivesia	T	NV	Yes	335 acres	Yes
<i>Ivesia webberi</i>	Webber ivesia	PT	CA, NV	Proposed	Proposed	No
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E	CA	Yes	None	Yes
<i>Layia carnosa</i>	Beach layia	E	CA	No	--	Yes
<i>Lepidium barnebyanum</i>	Barneby ridge-cress	E	UT	No	--	Yes
<i>Lepidium papilliferum</i>	Slickspot peppergrass	T	ID	Proposed	57,756 acres (proposed)	No
<i>Lesquerella congesta</i>	Dudley Bluffs bladderpod	T	CO	No	--	Yes
<i>Lesquerella tumulosa</i>	Kodachrome bladderpod	E	UT	No	--	Outline
<i>Lilaeopsis schaffneriana</i> var. <i>recurva</i>	Huachuca water-umbel	E	AZ	Yes	484 acres	No
<i>Lilium occidentale</i>	Western lily	E	CA, OR	No	--	Yes
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam	E	CA	Yes	None	Yes
<i>Limnanthes floccosa</i> ssp. <i>grandiflora</i>	Large-flowered woolly meadowfoam	E	OR	Yes	None	Draft
<i>Lomatium bradshawii</i>	Bradshaw's desert-parsley	E	OR	No	--	Yes
<i>Lomatium cookii</i>	Cook's lomatium	E	OR	Yes	1,621 acres	Draft
<i>Lupinus sulphureus</i> ssp. <i>kincaidii</i>	Kincaid's lupine	T	OR, WA	Yes	34 acres (OR)	Yes

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Plants (Cont.)						
<i>Mentzelia leucophylla</i>	Ash Meadows blazingstar	T	NV	Yes	509 acres	Yes
<i>Mirabilis macfarlanei</i>	MacFarlane's four-o'clock	T	ID, OR	No	--	Yes
<i>Monardella viminea</i>	Willow monardella	E	CA	Yes	No	No
<i>Monolopia congdonii</i> (formerly <i>Lembertia congdonii</i>)	San Joaquin woolly-threads	E	CA	No	--	Yes
<i>Neostapfia colusana</i>	Colusa grass	T	CA	Yes	7 acres	Yes
<i>Nitrophila mohavensis</i>	Amargosa niterwort	E	CA, NV	Yes	1,200 acres (CA)	Yes
<i>Opuntia treleasei</i>	Bakersfield cactus	E	CA	No	--	Yes
<i>Orcuttia californica</i>	California orcutt grass	E	CA	No	--	Yes
<i>Orcuttia inaequalis</i>	San Joaquin Valley orcutt grass	T	CA	Yes	289 acres	Yes
<i>Orcuttia pilosa</i>	Hairy orcutt grass	E	CA	Yes	18 acres	Yes
<i>Orcuttia tenuis</i>	Slender orcutt grass	T	CA	Yes	17,077 acres	Yes
<i>Oxytheca parishii</i> var. <i>goodmaniana</i>	Cushenbury oxytheca	E	CA	Yes	84 acres	Draft
<i>Pediocactus bradyi</i>	Brady pincushion cactus	E	AZ	No	--	Yes
<i>Pediocactus despainii</i>	San Rafael cactus	E	NM, UT	No	--	Draft
<i>Pediocactus knowltonii</i>	Knowlton's cactus	E	CO, NM	No	--	Yes
<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	Fickeisen plains cactus	E	AZ	Proposed	--	No
<i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i>	Peebles Navajo cactus	E	AZ	No	--	Yes
<i>Pediocactus sileri</i>	Siler pincushion cactus	T	AZ, UT	No	--	Yes
<i>Pediocactus winkleri</i>	Winkler cactus	T	UT	No	--	Draft
<i>Penstemon debilis</i>	Parachute beardtongue	T	CO	Yes	13,912 acres	Outline
<i>Penstemon grahamii</i>	Graham's beardtongue	PT	CO, UT	Proposed	Proposed	No
<i>Penstemon haydenii</i>	Blowout penstemon	E	WY	No	--	Yes
<i>Penstemon penlandii</i>	Penland beardtongue	E	CO	No	--	Yes
<i>Penstemon scariosus</i> var. <i>albifluvis</i>	White River beardtongue	PT	CO, UT	Proposed	Proposed	No
<i>Phacelia argillacea</i>	Clay phacelia	E	UT	No	--	No
<i>Phacelia formosula</i>	North Park phacelia	E	CO	No	--	Yes
<i>Phacelia submutica</i>	DeBeque phacelia	T	CO	Yes	22,013 acres	Outline
<i>Phlox hirsuta</i>	Yreka phlox	E	CA	No	--	Yes
<i>Physaria obcordata</i>	Dudley Bluffs (Piceance) twinpod	T	CO, UT	No	--	Yes
<i>Piperia yadonii</i>	Yadon's piperia	E	CA	Yes	No	Yes
<i>Plagiobothrys hirtus</i>	Rough popcornflower	E	OR	No	--	Yes
<i>Plantanthera praeclara</i>	Western prairie fringed orchid	T	MT, WY	No	--	Yes
<i>Pogogyne nudiuscula</i>	Otay mesa-mint	E	CA	No	--	Yes
<i>Primula maguirei</i>	Maguire primrose	T	UT	No	--	Yes
<i>Pseudobahia bahiifolia</i>	Hartweg's golden sunburst	E	CA	No	--	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Plants (Cont.)						
<i>Pseudobahia peirsonii</i>	San Joaquin adobe sunburst	T	CA	No	--	No
<i>Purshia subintegra</i>	Arizona cliff-rose	E	AZ	No	--	Yes
<i>Ranunculus aestivalis</i>	Autumn buttercup	E	UT	No	--	Yes
<i>Schoenocrambe argillacea</i>	Clay reed-mustard	T	NM, UT	No	--	Yes
<i>Schoenocrambe barnebyi</i>	Barneby reed-mustard	E	ID, UT	No	--	Yes
<i>Schoenocrambe suffrutescens</i>	Shrubby reed-mustard	E	UT	No	--	Yes
<i>Sclerocactus brevispinus</i>	Pariette cactus	T	UT	No	--	Outline
<i>Sclerocactus glaucus</i>	Colorado hookless cactus	T	CO	No	--	Outline
<i>Sclerocactus mesae-verdae</i>	Mesa Verde cactus	T	CO, NM, UT	No	--	Yes
<i>Sclerocactus wrightiae</i>	Wright fishhook cactus	E	UT	No	--	Yes
<i>Senecio layneae</i>	Layne's butterweed	T	CA	No	--	Yes
<i>Sidalcea keckii</i>	Keck's checker-mallow	E	CA	Yes	0.2 acres	No
<i>Sidalcea nelsoniana</i>	Nelson's checker-mallow	T	OR	No	--	Yes
<i>Sidalcea oregana</i> var. <i>calva</i>	Wenatchee Mountains checker-mallow	E	OR	Yes	None	Yes
<i>Silene spaldingii</i>	Spalding's catchfly	T	ID, MT, OR, WA	No	--	Yes
<i>Sphaeralcea gierischii</i>	Gierisch mallow	E	AZ, UT	Yes	9,406 acres (AZ) 1,982 acres (UT)	No
<i>Spiranthes delitescens</i>	Canelo Hills ladies'-tresses	E	AZ	No	--	No
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses	T	CO, ID, MT, NV, OR, UT, WY, NE, WA	No	--	Draft
<i>Stephanomeria malheurensis</i>	Malheur wire-lettuce	E	OR	Yes	103 acres	Yes
<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Metcalf Canyon jewelflower	E	CA	No	--	Yes
<i>Thelypodium howellii</i> ssp. <i>spectabilis</i>	Howell's spectacular thelypody	T	OR	No	--	Yes
<i>Townsendia aprica</i>	Last Chance townsendia	T	UT	No	--	Yes
<i>Tuctoria greenei</i>	Greene's tuctoria	E	CA	Yes	7.2 acres	Yes
<i>Verbena californica</i>	Red Hills vervain	T	CA	No	--	No
<i>Yermo xanthocephalus</i>	Desert yellowhead	T	WY	Yes	357 acres	Outline
Mollusks						
<i>Assiminea pecos</i>	Pecos assiminea snail	E	NM	Yes	No	No (state plan)
<i>Helminthoglypta walkeriana</i>	Morro shoulderband snail	E	CA	Yes	5 acres	Yes
<i>Juturnia kosteri</i>	Koster's springsnail	E	NM	Yes	No	No (state plan)
<i>Lanx</i> sp.	Banbury Springs limpet	E	ID	No	--	Yes
<i>Oxyloma haydeni kanabensis</i>	Kanab ambersnail	E	AZ, UT	Proposed	--	Yes
<i>Physa natricina</i>	Snake River physa snail	E	ID	No	--	Yes
<i>Pyrgulopsis bruneauensis</i>	Bruneau Hot springsnail	E	ID	No	--	Yes

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Mollusks (Cont.)						
<i>Pyrgulopsis neomexicana</i>	Socorro springsnail	E	NM	No	--	Yes
<i>Pyrgulopsis roswellensis</i>	Roswell springsnail	E	NM	Yes	No	No
<i>Taylorconcha serpenticola</i>	Bliss Rapids snail	T	ID	No	--	Yes
<i>Tryonia alamosae</i>	Alamosa springsnail	E	NM	No	--	Yes
Arthropods						
<i>Ambrysus amargosus</i>	Ash Meadows naucorid	T	NV	Yes	None	Yes
<i>Boloria acrocneuma</i>	Uncompahgre fritillary butterfly	E	CO	No	--	Yes
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	E	CA	Yes	7 acres	Yes
<i>Branchinecta longiantenna</i>	Longhorn fairy shrimp	E	CA	Yes	31 acres	Yes
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	T	CA, OR	Yes	4,122 acres (CA); 423 acres (OR)	Yes
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	T	CA	Yes	None	Yes
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	E	CA	Yes	11,444 acres	Yes
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	E	OR	Yes	None	No
<i>Euproserpinus euterpe</i>	Kern primrose sphinx moth	T	CA	No	--	Yes
<i>Gammarus desperatus</i>	Noel's amphipod	E	NM	Yes	None	No
<i>Hesperia leonardus montana</i>	Pawnee montane skipper	T	CO	No	--	Yes
<i>Icaricia icarioides fenderi</i>	Fender's blue butterfly	E	OR	Yes	249 acres	Yes
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	E	CA	Yes	15,749 acres	Yes
<i>Nicrophorus americanus</i>	American burying beetle	E	MT, WY	No	--	Yes
<i>Pseudocopaeodes eunus obscurus</i>	Carson wandering skipper	E	CA, NV	No	--	Yes
<i>Speyeria zerene hippolyta</i>	Oregon silverspot butterfly	T	OR	Yes	None	Yes
<i>Thermosphaeroma thermophilus</i>	Socorro isopod	E	NM	No	--	No
Fishes						
<i>Acipenser transmontanus</i>	White sturgeon (Kootenia River population)	E	ID, MT	Yes	42 acres (ID)	Yes
<i>Catostomus microps</i>	Modoc sucker	E	CA	Yes	None	No
<i>Catostomus santaanae</i>	Santa Ana sucker	T	CA	Yes	26 acres	No
<i>Catostomus warnerensis</i>	Warner sucker	T	CA, NV, WA	Yes	None	Yes
<i>Chasmistes brevirostris</i>	Shortnose sucker	E	CA, OR	Yes	9 miles stream, 1,390 acres lake (OR)	Yes
<i>Chasmistes cujus</i>	Cui-ui	E	NV	No	--	Yes
<i>Chasmistes liorus</i>	June sucker	E	UT	Yes	None	Yes
<i>Crenichthys baileyi baileyi</i>	White River springfish	E	NV	Yes	1 acre	Yes
<i>Crenichthys baileyi grandis</i>	Hiko White River springfish	E	NV	Yes	None	Yes

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Fishes (Cont.)						
<i>Crenichthys nevadae</i>	Railroad Valley springfish	T	NV	Yes	129 acres	Yes
<i>Cyprinella formosa</i>	Beautiful shiner	T	AZ, NM	Yes	None	Yes
<i>Cyprinodon diabolis</i>	Devil's Hole pupfish	E	NV	No	--	Yes
<i>Cyprinodon macularius</i>	Desert pupfish	E	AZ, CA	Yes	485 acres (CA)	Yes
<i>Cyprinodon nevadensis mionectes</i>	Ash Meadows Amargosa pupfish	E	NV	Yes	62 acres	Yes
<i>Cyprinodon nevadensis pectoralis</i>	Warm Springs pupfish	E	NV	No	--	Yes
<i>Cyprinodon radiosus</i>	Owens pupfish	E	CA	No	--	Yes
<i>Deltistes luxatus</i>	Lost River sucker	E	CA, OR	Yes	351 acres (OR)	Yes
<i>Empetrichthys latos</i>	Pahrump poolfish	E	NV	No	--	Yes
<i>Eremichthys acros</i>	Desert dace	T	NV	Yes	1,955 acres	Yes
<i>Eucyclogobius newberryi</i>	Tidewater goby	E	CA	Yes	None	Yes
<i>Gambusia nobilis</i>	Pecos gambusia	E	NM	No	--	Yes
<i>Gasterosteus aculeatus williamsoni</i>	Unarmored threespine stickleback	E	CA	No	--	Yes
<i>Gila bicolor mohavensis</i>	Mohave tui chub	E	CA	No	--	Yes
<i>Gila bicolor snyderi</i>	Owens tui chub	E	CA	Yes	None	Yes
<i>Gila bicolor ssp.</i>	Hutton tui chub	T	OR	No	--	Yes
<i>Gila boraxobius</i>	Borax Lake chub	E	OR	Yes	320 acres	Yes
<i>Gila cypha</i>	Humpback chub	E	AZ, CO, UT, WY	Yes	1,953 acres (UT); 323 acres (CO)	Yes
<i>Gila elegans</i>	Bonytail chub	E	AZ, CA, CO, NV, UT, WY	Yes	6,214 acres (AZ); 1,480 acres (CA); 323 acres (CO); 1,953 acres (UT)	Yes
<i>Gila intermedia</i>	Gila chub	E	AZ, NM	Yes	1,911 acres (AZ)	No
<i>Gila robusta jordani</i>	Pahranaagat roundtail chub	E	NV	No	--	Yes
<i>Gila seminuda</i>	Virgin River chub	E	AZ, NV, UT	Yes	879 acres (AZ); 818 acres (NV); 420 acres (UT)	Yes
<i>Hybognathus amarus</i>	Rio Grande silvery minnow	E	NM	Yes	96 acres	Yes
<i>Hypomesus transpacificus</i>	Delta smelt	T	CA	Yes	1,752 acres	Yes
<i>Lepidomeda albivallis</i>	White River spinedace	E	NV	Yes	None	Yes
<i>Lepidomeda mollispinis pratensis</i>	Big Spring spinedace	T	NV	Yes	32 acres	Yes
<i>Lepidomeda vittata</i>	Little Colorado spinedace	T	AZ	Yes	None	Yes
<i>Meda fulgida</i>	Spikedace	E	AZ, NM	Yes	41 miles (AZ); 12 miles (NM)	Yes
<i>Moapa coriacea</i>	Moapa dace	E	NV	No	--	Yes
<i>Notropis girardi</i>	Arkansas River shiner	T	NM	Yes	None	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Fishes (Cont.)						
<i>Notropis simus pecosensis</i>	Pecos bluntnose shiner	T	NM	Yes	293 acres	Yes
<i>Oncorhynchus clarki ssp. henshawi</i>	Lahontan cutthroat trout	T	CA, CO, NV, OR, UT	No	--	Yes
<i>Oncorhynchus clarki ssp. stomias</i>	Greenback cutthroat trout	T	CO	No	--	Yes
<i>Oncorhynchus gilae</i>	Gila trout	T	AZ, NM	No	--	Yes
<i>Oncorhynchus keta</i>	Chum salmon					
	Columbia River ESU ³	T	OR	Yes	<1 mile (WA)	No
	Hood Canal Summer-run ESU	T	OR	Yes	None	Yes
<i>Oncorhynchus kisutch</i>	Coho salmon					
	Central California Coast ESU	E	CA, OR	Yes	NA	Yes
	Oregon Coast ESU	T	OR	Yes	688 miles	No
	Southern Oregon/Northern California Coasts ESU	T	CA, OR	Yes	NA	No
	Lower Columbia River ESU	T	OR	Proposed	--	Yes
<i>Oncorhynchus mykiss</i>	Steelhead					
	Southern California DPS ⁴	E	CA	Yes	1 mile	Yes
	South Central California Coast DPS	T	CA	Yes	9 miles	Yes (Draft)
	California Central Valley DPS	T	CA	Yes	56 miles	No
	Northern California DPS	T	CA	Yes	125 miles	No
	Central California Coast DPS	T	CA	Yes	4 miles	No
	Snake River Basin DPS	T	ID, OR	Yes	147 miles (ID); 24 miles (OR); 7 miles (WA)	No
	Upper Willamette River DPS	T	OR	Yes	42 miles (OR)	Yes
	Upper Columbia River DPS	T	OR	Yes	4 miles (WA)	Yes
	Lower Columbia River DPS	T	OR	Yes	16 miles (OR); 2 miles (WA)	Yes
	Middle Columbia River DPS	T	OR	Yes	324 miles (OR); 21 miles (WA)	Yes
<i>Oncorhynchus nerka</i>	Sockeye salmon					
	Snake River, Idaho ESU	E	ID, OR	Yes	None	No
<i>Oncorhynchus tshawytscha</i>	Chinook salmon					
	California Coastal ESU	T	CA	Yes	63 miles	No
	Central Valley Spring-run ESU	T	CA	Yes	32 miles	No
	Sacramento River Winter-run ESU	E	CA, OR	Yes	NA	No
	Snake River Fall-run ESU	T	ID, OR	Yes	NA	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Fishes (Cont.)						
<i>Oncorhynchus tshawytscha</i> (cont.)	Chinook salmon (Cont.)					
	Snake River Spring/Summer-run ESU	T	ID, OR	Yes	NA	No
	Lower Columbia River ESU	T	OR	Yes	8 miles (OR/WA)	Yes
	Upper Willamette River ESU	T	OR	Yes	37 miles (OR)	Yes
	Upper Columbia River Spring-run ESU	E	OR	Yes	1 mile (WA)	Yes
<i>Oregonichthys crameri</i>	Oregon chub	T	OR	Yes	None	Yes
<i>Plagopterus argentissimus</i>	Woundfin	E	AZ, NV, NM, UT	Yes	879 acres (AZ); 420 acres (UT)	Yes
<i>Poeciliopsis occidentalis</i>	Gila topminnow	E	AZ, NM	No	--	Yes (Draft)
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	E, XN	AZ, CA, CO, NM, UT, WY	Yes	2,644 acres (CO); 67 acres NM; 5,119 acres (UT)	Yes
<i>Rhinichthys osculus lethoporus</i>	Independence Valley speckled dace	E	NV	No	--	Yes
<i>Rhinichthys osculus nevadensis</i>	Ash Meadows speckled dace	E	NV	Yes	60 acres	Yes
<i>Rhinichthys osculus oligoporus</i>	Clover Valley speckled dace	E	NV	No	--	Yes
<i>Rhinichthys osculus</i> ssp.	Foskett speckled dace	T	OR	No	--	Yes
<i>Rhinichthys osculus thermalis</i>	Kendall Warm Springs dace	E	WY	No	--	Yes
<i>Salvelinus confluentus</i>	Bull trout	T, XN	ID, MT, NV, OR	Yes	7,669 acres, 907 miles (ID); 2,048 acres, 210 miles (OR); 25 miles (MT); 12 miles (NV)	Yes
<i>Scaphirhynchus albus</i>	Pallid sturgeon	E	CO, MT, WY	No	--	Yes
<i>Tiaroga cobitis</i>	Loach minnow	E	AZ, NM	Yes	41 miles (AZ); 13 miles (NM)	Yes
<i>Xyrauchen texanus</i>	Razorback sucker	E	AZ, CA, CO, NM, NV, UT, WY	Yes	822 acres (AZ); 1,076 acres (CA); 1,996 acres (CO); 4,734 acres (UT)	Yes
Amphibians						
<i>Ambystoma californiense</i>	California tiger salamander	T, E	CA	Yes	38 acres	No
<i>Ambystoma tigrinum stebbinsi</i>	Sonora tiger salamander	E	AZ	No	--	Yes
<i>Anaxyrus canorus</i>	Yosemite toad	PT	CA	Proposed	Proposed	No
<i>Batrachoseps aridus</i>	Desert slender salamander	E	CA	No	--	Yes

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Amphibians (Cont.)						
<i>Bufo baxteri</i>	Wyoming toad	E	WY	No	--	Yes
<i>Bufo californicus</i> (= <i>microscaphus</i>)	Arroyo toad	E	CA	Yes	453 acres	Yes
<i>Rana chiricahuensis</i>	Chiricahua leopard frog	T	AZ, NM	Yes	1,364 acres (AZ) 27 acres (NM)	Yes
<i>Rana draytonii</i>	California red-legged frog	T	CA	Yes	5,207 acres	Yes
<i>Rana muscosa</i>	Mountain yellow-legged frog (Northern DPS)	PE	CA	Proposed	None	No
<i>Rana pretiosa</i>	Oregon spotted frog	PT	OR	Proposed	Proposed	No
<i>Rana sierrae</i>	Sierra Nevada yellow-legged frog	PE	CA	Proposed	None	No
Reptiles						
<i>Crotalus willardi obscurus</i>	New Mexican ridge-nosed rattlesnake	T	AZ, NM	Yes	None	Yes
<i>Gambelia silus</i>	Blunt-nosed leopard lizard	E	CA	No	--	Yes
<i>Gopherus agassizii</i>	Desert tortoise (Mojave population)	T	AZ, CA, NV, UT	Yes	288,069 acres (AZ); 2,720,438 acres (CA); 1,024,579 acres (NV); 96,002 acres (UT)	Yes
<i>Thamnophis eques megalops</i>	Northern Mexican garter snake	PT	AZ	Proposed	Proposed	No
<i>Thamnophis gigas</i>	Giant garter snake	T	CA	No	--	Yes (Draft)
<i>Thamnophis rufipunctatus</i>	Narrow-headed garter snake	PT	AZ, NM	Proposed	Proposed	No
<i>Uma inornata</i>	Coachella Valley fringe-toed lizard	T	CA	Yes	2,358 acres	Yes
Birds						
<i>Brachyramphus marmoratus</i>	Marbled murrelet	T	CA, OR	Yes	85,495 acres (CA); 483,018 acres (OR)	Yes
<i>Centrocercus minimus</i>	Gunnison sage-grouse	PE	CO, UT	Proposed	Proposed	No
<i>Centrocercus urophasianus</i>	Greater sage-grouse (Bi-State DPS)	PT	CA	Proposed	Proposed	No
<i>Charadrius melodus</i>	Piping plover	T	CO, MT, NM, WY	Yes	1,758 acres (MT)	Yes
<i>Charadrius nivosus nivosus</i>	Western snowy plover (Pacific population)	T	CA, OR	Yes	67 acres (CA); 273 acres (OR)	Yes
<i>Coccyzus americanus</i>	Yellow-billed cuckoo (Western DPS)	PT	AZ, CA, CO, ID, MT, NM, NV, OR, WY, UT	No	--	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Birds (Cont.)						
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	E	AZ, CA, CO, NV, NM, UT	Yes	96 miles (AZ); 9.4 miles (CA); 20.6 miles (CO); 22 miles (NM); 19 miles (NV); 25 miles (UT)	Yes
<i>Eremophila alpestris strigata</i>	Streaked horned lark	T	OR	Yes	None	No
<i>Falco femoralis</i> ssp. <i>septentrionalis</i>	Northern aplomado falcon	E, XN	AZ, NM	No	--	Yes
<i>Grus americana</i>	Whooping crane	E, XN	CO, ID, MT, WY	Yes	35 acres (CO); 379 acres (ID)	Yes
<i>Gymnogyps californianus</i>	California condor	E, XN	E = CA XN = UT, AZ	Yes	3,964 acres (CA)	Yes
<i>Pipilo crissalis eremophilus</i>	Inyo California towhee	T	CA	Yes	695 acres	Yes
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	T	CA	Yes	8,862 acres	No
<i>Polysticta stelleri</i>	Steller's eider	T	AK	Yes	597 acres	Yes
<i>Rallus longirostris yumanensis</i>	Yuma clapper rail	E	AZ, CA, NV	No	--	Yes (Draft)
<i>Somateria fischeri</i>	Spectacled eider	T	AK	Yes	1 acre	Yes
<i>Sterna antillarum</i>	Least (interior) tern	E	CO, MT, NM, WY	No	--	Yes
<i>Strix occidentalis caurina</i>	Northern spotted owl	T	CA, OR	Yes	1,328,612 acres	Yes
<i>Strix occidentalis lucida</i>	Mexican spotted owl	T	AZ, CA, CO, NM, UT	Yes	795 acres (AZ); 61,994 acres (CO); 2,341 acres (NM); 1,456,144 acres (UT)	Yes (Draft)
<i>Tympanachus pallidicinctus</i>	Lesser prairie-chicken	PT	CO, NM, OK	No	--	No
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E	CA	Yes	None	Yes (Draft)
Mammals						
<i>Antilocapra americana sonoriensis</i>	Sonoran pronghorn	E, XN	AZ	No	--	Yes
<i>Brachylagus idahoensis</i>	Pygmy rabbit	E	OR	No	--	Yes (Draft)
<i>Canis lupus</i>	Gray wolf	E, XN	AZ, CO, ID, NM, NV, MT, OR, UT, WY	Yes	None	Yes
<i>Cynomys parvidens</i>	Utah prairie dog	T	UT	No	--	Yes
<i>Dipodomys heermanni morroensis</i>	Morro Bay kangaroo rat	E	CA	Yes	None	Yes (Draft)
<i>Dipodomys ingens</i>	Giant kangaroo rat	E	CA	No	--	Yes
<i>Dipodomys merriami parvus</i>	San Bernardino Merriam's kangaroo rat	E	CA	Yes	1,030 acres	No

TABLE C-1 (Cont.)
Species Addressed in This Ecological Risk Assessment

Scientific Name	Common Name	Status	State ¹	Critical Habitat	Critical Habitat on BLM Lands	USFWS/NMFS Recovery Plan
Mammals (Cont.)						
<i>Dipodomys nitratoideis exilis</i>	Fresno kangaroo rat	E	CA	Yes	None	Yes
<i>Dipodomys nitratoideis nitratoideis</i>	Tipton kangaroo rat	E	CA	No	--	Yes
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	E	CA	No	--	Yes (Draft)
<i>Gulo gulo luscus</i>	North American wolverine	PT	ID, MT, WY	No	--	No
<i>Leopardus pardalis</i>	Ocelot	E	AZ	No	--	Yes
<i>Leptonycteris curosoae yerbabuenae</i>	Lesser long-nosed bat	E	AZ, NM	No	--	Yes
<i>Leptonycteris nivalis</i>	Mexican long-nosed bat	E	NM	No	--	Yes
<i>Lynx canadensis</i>	Canada lynx	T, PT	AK, CO, ID, MT, NM, OR, UT, WY	Yes	3 acres (ID); 103,475 acres (MT); 2,531 acres (OR); 1,426 acres (WY)	(Recovery Outline)
<i>Microtus californicus scirpensis</i>	Amargosa vole	E	CA	Yes	3,847 acres	Yes
<i>Microtus mexicanus hualpaiensis</i>	Hualapai Mexican vole	E	AZ	No	--	Yes
<i>Mustela nigripes</i>	Black-footed ferret	E, XN	E = AZ, CO, MT, UT, WY XN = AZ, CO, MT, UT, WY	No	--	Yes
<i>Neotoma fuscipes riparia</i>	Riparian woodrat	E	CA	No	--	Yes
<i>Odocoileus virginianus leucurus</i>	Columbian white-tailed deer	E	OR	No	--	Yes
<i>Ovis canadensis ssp. nelsoni</i>	Peninsular bighorn sheep	E	CA	Yes	102,686 acres	Yes
<i>Ovis canadensis ssp. sierrae</i>	Sierra Nevada bighorn sheep	E	CA	Yes	990 acres	Yes
<i>Panthera onca</i>	Jaguar	E	AZ, NM	Proposed	Proposed	Yes
<i>Rangifer tarandus caribou</i>	Woodland caribou	E	OR	Proposed	None	Yes
<i>Sorex ornatus relictus</i>	Buena Vista Lake ornate shrew	E	CA	Yes	None	Yes
<i>Spermophilus brunneus brunneus</i>	Northern Idaho ground squirrel	T	ID	No	--	Yes
<i>Ursus arctos horribilis</i>	Grizzly bear	T	ID, MT, OR, WY	No	--	Yes
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E	CA	No	--	Yes
<i>Zapus hudsonius luteus</i>	New Mexico meadow jumping mouse	PE	AZ, CO, NM	Proposed	None	No
<i>Zapus hudsonius preblei</i>	Preble's meadow jumping mouse	T	CO, WY	Yes	6 acres (CO)	No

¹State refers to the administrative jurisdiction of the BLM state office for the state listed. Therefore, MT indicates that the species may occur in Montana, North Dakota, and/or South Dakota; NM indicates that the species may occur in New Mexico, Texas, and/or Kansas; OR indicates that the species may occur in Oregon and/or Washington; and WY indicates that the species may occur in Wyoming and/or Nebraska. Some aquatic species do not occur in all the states listed, but could still be affected by activities in those states if aquatic systems were altered.

²E = Federally listed as endangered; T = federally listed as threatened; PE = proposed for listing as endangered; PT = proposed for listing as threatened; and XN = experimental, non-essential population.

³ESU = Evolutionarily Significant Unit.

⁴DPS = Distinct Population Segment.

NA = Due to incomplete information, recent listing, or recent change in the status of critical habitat, number of acres of critical habitat on BLM-administered lands is unknown at this time.

Note: Some estimates of critical habitat are based on digital information downloaded from the USFWS critical habitat data portal (<http://ecos.fws.gov/crithab/>). Therefore, they may not reflect additional critical habitat that was not digitized at the time the data were downloaded.

