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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
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HELENA, MONTANA 59626-0096

# EXPLANATION OF SIGNIFICANT DIFFERENCES

Burlington Northern (Somers Plant) Site
Somers, Flathead County, Montana

United States Environmental Protection Agency
July 1998

## I. INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued by the U.S. Environmental Protection Agency (EPA) to modify certain remediation criteria established in the Record of Decision (ROD) issued by EPA on September 27, 1989 and modified by the previous ESD issued on June 26, 1992 for the Burlington Northern (Somers Plant) Site (hereby referred to as "Somers Plant" or the "Site") and identifies the documents that serve as the basis for the determination.

EPA, in consultation with the Montana Department of Environmental Quality (MDEQ), and after consideration of documents prepared pursuant to the first Five-Year Review of the Somers Plant and other documents in the Administrative Record, has determined that modifications to the remediation levels established in the 1989 ROD are required to incorporate criteria developed since the ROD was issued.

The modifications to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy selected in the ROD. However, the modifications to the remediation goals at the site significantly change the scope and performance of the selected remedy. Therefore this ESD is required by the NCP and EPA guidance.

In accordance with Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund), as amended, 42 U.S.C. Section 9601, et seq. ("CERCLA"), and the regulations at 40 C.F.R. Section 300.435(c)(2)(i), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), this ESD has been prepared for the following reasons:

- to provide the public with an explanation of the nature of the changes to the remedy;
- to summarize the circumstances that led to the changes to the remedy; and
- to affirm that the revised remedy complies with all statutory requirements.

MDEQ (formerly the Montana Department of Health and Environmental Sciences, MDHES) concurred on the ROD issued on September 27, 1989, and has participated in the review of information leading to this ESD, including the Five-Year Review Report which includes the Protectiveness Evaluation and the Five-Year Review Site Visit (Roy F. Weston, Inc., 1995a and 1995b). MDEQ has reviewed and concurred on this final ESD.

This document presents a summary of the changes to the selected remedy and a synopsis of information on the Site. The Administrative Record, which contains this ESD and the complete documentation supporting the revisions selected herein, is available for public review at the locations indicated at the end of this report.

## II. SITE HISTORY AND BACKGROUND

The Burlington Northern (Somers Plant) Site is located in northwestern Montana in the unincorporated town of Somers, Flathead County. The Somers Plant was operated by Burlington Northern Railroad (BNRR) between 1901 and 1986, and covers approximately 80 acres. The plant treated railroad ties and other miscellaneous lumber products to protect the materials from weathering and insects. Treatment fluids used by BNRR included zinc chloride, chromated zinc chloride and creosote/petroleum preservative mixtures. The treatment process generated wastewater primarily consisting of steam condensate containing zinc chloride or creosote. Floor and shop washing, drippage from treated ties pulled from the retort onto the drip track and storage of treated ties on the property were other sources of process-generated wastewater. Prior to 1971, BNRR discharged wastewater into a lagoon (the "CERCLA Lagoon") located immediately south of the retort building. Overflow from this lagoon flowed in an open ditch from the facility into a swamp on the shore of Flathead Lake. Sometime prior to 1946, a pond formed in the swamp area (the "swamp pond") adjacent to Flathead Lake and waste material discharged through the open ditch accumulated there.

BNRR abandoned the CERCLA Lagoon and ditch in 1971 when the company constructed two new wastewater holding impoundments [the Resource Conservation and Recovery Act (RCRA) impoundments]. In 1984 BN implemented a recycling system and stopped all wastewater discharges.

In February 1984, the Montana Department of Health and Environmental Sciences (MDHES) sampled the soils at the Somers Plant. Based on the results of this investigation, the Site was proposed for inclusion on the Superfund National Priorities List (NPL) in 49 CFR 40320, October 15, 1984. The proposed listing cited potential adverse effects on Flathead Lake and the water supply for the town of Somers, which drew water from the lake.

In May 1985, EPA, BNRR and Sliters Corporation (a corporation which owns a portion of the site) signed an Administrative Order on Consent (AOC) (Docket No. CERCLA-VIII-85-02) providing for an Emergency Removal Action in the area of the swamp pond adjacent to Flathead Lake. The area was determined to pose an imminent and substantial hazard to Flathead Lake because of the presence of creosote contamination in water and soil located within two (2) feet of the shoreline. Pursuant to the 1985 AOC, BNRR removed

contaminated soil and surface water from the swamp pond area and the drainage ditch. The soils were temporarily placed in the lined RCRA impoundments and eventually hauled to the BN RCRA-regulated facility in Paradise, Montana for treatment. The water was processed at the plant. The excavated areas were backfilled with clean soil and riprap was placed along the lakeshore.

In October 1985, EPA, BNRR, and Sliters Corporation signed another AOC (Docket No. CERCLA-VIII-85-07) for a Remedial Investigation and Feasibility Study (RI/FS). The purpose of the RI/FS was to determine the nature and extent of contamination at the Site, to evaluate the impacts of contamination on public health and the environment, and to formulate alternatives for remedial action. The field work to support the RI was performed from the Fall of 1985 to Fall 1988. An RI/FS Report (Remediation Technologies, Inc., 1989) was submitted to EPA in the spring of 1989.

The RCRA impoundments were closed in 1988 under the MDEQ Hazardous Waste Permitting Program. Subsequent to the closure, a groundwater monitoring well located adjacent to the impoundment indicated that groundwater was contaminated; therefore, groundwater corrective action was required.

After completion of the RI/FS, a ROD was signed on September 27, 1989 (EPA 1989a). The ROD selected a remedy and a contingency remedy for remediation of soil, groundwater and sediments, which were determined to pose a potential threat to human health and the environment. The selected remedy addressed the principal threats by removing the potential for direct contact with soils, by reducing the impact of the soils and sediments on groundwater and surface water and by treating the groundwater. The contingency remedy was to be implemented if the selected remedy was not determined to be effective. On December 20, 1991, the EPA entered into a Consent Decree (Civil Action No. CV-91-32-M-CCL) with BNRR and Burlington Northern, Inc. for Remedial Design/Remedial Action (RD/RA) of the selected remedy at the Site. The Consent Decree required performance of a Pilot Study to demonstrate the "practicability" of the innovative bioremediation component of the selected groundwater remedy. The Consent Decree required that the Pilot Study be conducted prior to any soil application on the Land Treatment Unit (LTU).

EPA issued an ESD in June 1992 (EPA, 1992) that modified the elements of the selected remedy, based on the "practicability" determination required in the ROD. The results of the Pilot Study were presented in the Remedial Design Investigation Report for the Former Somers Tie Plant (Remediation Technologies, Inc., 1991). The study was conducted to more accurately define and quantify the conditions under which the groundwater could be successfully remediated.

Operation of the 14.4 acre LTU commenced in 1994 following removal of soil from the CERCLA Lagoon to a 15 foot depth (22,300 cubic yards), Swamp Pond Area to a 12 foot depth (19,030 cubic yards), and the Drip Track/Retort Building (10,000 cubic yards). After the first year of LTU operation, the ROD remediation levels for soils were achieved. The second year of operation of the LTU produced a 19% reduction in carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) concentrations (RETEC 1995a). The cPAH reduction

allowed BN to apply a second lift of soil to the LTU in the fall of 1995 in accordance with the 1989 ROD requirements.

The groundwater remedy consisting of five (5) extraction and ten (10) injection wells and a granular activated carbon (GAC) water treatment plant was put into operation at the end of April 1994 to capture and treat contaminants at the CERCLA Lagoon and downgradient of the CERCLA Lagoon. The system is designed to hydraulically contain Polycyclic Aromatic Hydrocarbons (PAH) contaminated groundwater within the boundary of the influence of the well fields. Extracted water is chemically and mechanically treated for free product, dissolved organics and iron at the site Water Treatment Plant prior to reinjection. Groundwater contamination at the site consists of Dense Non Aqueous Phase Liquids (DNAPL) within and adjacent to the CERCLA Lagoon and dissolved components downgradient from the lagoon.

Excavation activity in the swamp pond and slough areas resulted in the determination of the need for mitigation of damage to wetland environments. The Fish and Wildlife Service delineated and determined functional values of the wetland area in July 1993 (USFWS, 1994), which are described in the Wetlands Compensation Determination (EPA, 1994c). BNRR reconstructed the swamp pond in accordance with the plan and conducts semi-annual water quality sampling and assessment of vegetation recovery for the area.

A Five-Year Review of the Remedial Action at the Somers Plant was performed in April 1996. The objectives of the Five-Year Review were: (1) to verify that the remedy is operating and functioning as designed and, (2) to evaluate whether the remedial action selected for the site remains protective of human health and the environment. The Five-Year Review conducted for the Somers site was performed in accordance with the Office of Solid Waste and Emergency Response (OSWER) Directives 9355.7-02 entitled "Structure and Components of Five-Year Reviews", (EPA 1991) and 9355.7-02A, entitled "Supplemental Five-Year Review Guidance", (EPA 1994a).

The Five-Year Review of the Somers site was triggered by the initiation of a portion of the remedy by the responsible party, Burlington Northern Railroad, in 1991. The Five-Year Review includes recommendations for the evaluation of remediation levels for the site to ensure that the remedy is protective of human health and the environment and that the remediation levels are current and consistent with CERCLA Section 121, and EPA and State policy and guidance.

## III. SUMMARY OF THE 1989 RECORD OF DECISION

The objectives of the remedy selected in the 1989 ROD are to reduce human exposure to soil, sediment and groundwater contaminants of concern. The components of the remedy are excavation and biological treatment of soils within an onsite LTU, and *in situ* biological treatment of contaminated groundwater within the water table aquifer, supplemented by extraction and treatment of contaminated water through a mechanical and chemical treatment process to remove free product, metals and particulates, and dissolved organics

through oil/water separation, equalization, oxidation, particulate settling and granulated activated carbon filtration.

A list of the components of the original remedy selected for the site can be found on pages 40 through 46 of the 1989 ROD (EPA, 1989a). The remedy was modified by the 1992 ESD (EPA, 1992) based on the Pilot Study for ground water contaminants of concern. A brief summary of the original and modified remedy is provided below. The ROD remediation levels for contaminated soil and ground water are presented in Table 1.

- The soil remedy involved excavation of creosote and zinc contaminated soils in the CERCLA lagoon, drip track, drainage ditch, beneath the retort building and in the slough and beach areas. Some soil left below the water table in the CERCLA lagoon and swamp would be treated as part of the groundwater component of the remedy. The ROD included provisions for groundwater monitoring and post-closure care for up to 30 years or deed restrictions placed if hazardous constituents remained. Due to RCRA land disposal restrictions, a demonstration of no-migration of hazardous constituents was conducted to satisfy requirements.

- The original feasibility study alternative was modified for the selected remedy to exclude the excavation of the beach sediments. The sediments were not excavated due to a determination that the ecological risks to Flathead Lake from beach excavation outweighed the benefits of removing the contaminated sediments.

- Excavated areas were required to be backfilled with clean borrow soils and revegetated. The remedy also included replacement or restoration of wetlands lost during the remedial action.

- The ROD identified groundwater remedy involved the evaluation of the applicability of innovative technology, either hot water flushing of contaminated groundwater, ozone/UV or peroxide/UV treatment at the surface and *in situ* biological treatment of residual contamination.

  The 1991 Consent Decree required that a pilot test of the hot water flushing and *in situ* biological treatment technologies be conducted to evaluate their "practicability" in the low permeability hydrogeologic conditions at the Site. Implementation of the soil remedy was restricted until after the pilot test was conducted, as the contingency remedy involved deep excavation and incineration of soils. The remedy involved the installation of injection and recovery wells in the CERCLA Lagoon and the swamp pond area. Recovered groundwater would be treated in a chemical reactor in order to reduce contaminant levels.

- Identification and implementation of institutional controls to restrict use of groundwater downgradient of the contaminated areas was required.

- Monitoring activities required to assess the performance of the components of the remedy would be conducted throughout the life of the remedial activities. Activities

involve monitoring of groundwater wells and semi-annual monitoring of the Somers municipal supply well until cleanup concentrations are achieved.

- The Site conditions will be reviewed no less than every five years after initiation of the remedial action to ensure that the remedy remains protective of human health and the environment.

In 1992, EPA modified the remedy selected for the site through an ESD. The ESD presented the "practicability" determination for the innovative bioremediation technology for the groundwater component. The significant differences between the remedy described in the 1989 ROD and the 1992 ESD are listed below:

1. Excavation of additional soils in the CERCLA Lagoon and the Swamp Pond Areas increasing the total excavated materials from 11,700 cubic yards to 41,000 cubic yards. Additional excavation was conducted to aid the remediation process.

2. Increase the size of the Land Treatment Facility from 10 acres to 14 acres to decrease the time required to meet remedial objectives and cleanup remediation levels. Procedure for completion of land treatment described in the ROD (p. 42) was not modified.

3. Elimination of the hot water flushing option of the groundwater remedy due to the low permeability of the aquifer materials. Excavation of additional soil in the CERCLA Lagoon would remove more source material and aid the remediation process.

4. Change in soil and groundwater cleanup times. Decrease the time to achieve soil remediation levels to 4 to 6 years rather than 10 years. Increase the estimate to achieve groundwater remediation levels from 10 to 15 years to 50 years.

## IV. SUMMARY OF SIGNIFICANT DIFFERENCES TO THE REMEDY

The significant differences between the remedy selected in the 1989 ROD and the 1992 ESD and in this ESD are:

1. The soil remediation level for carcinogenic polycyclic aromatic hydrocarbon (cPAH ) is revised from 36 to 57 milligrams per kilogram (mg/kg) calculated as benzo(a)pyrene (B(a)P) equivalents using the revised B(a)P cancer slope factor.

2. The limitations established in the 1989 ROD for pyrene, naphthalene and phenanthrene in soils are removed. EPA cites in part the rationale provided by field data, toxicological assessment and the language within the No-

Migration Petition as reasons for removing these requirements. Further discussion is provided below.

3. The soil remediation level for total non-carcinogenic PAH is revised from 1875 mg/kg to 1500 mg/kg based on the revisions to the Reference Dose (RfD) for naphthalene equivalents which has been revised from 0.005 to 0.004 mg/kg-day.

4. The groundwater remediation level for total non-carcinogenic PAH is revised from 0.3 $\mu$g/L to 40 $\mu$g/L based on the current procedure of not considering co-carcinogenicity and the change in the Reference Dose (RfD) equivalent to naphthalene noted in item 3. above.

5. The groundwater remediation level for total phenolics is revised from 15,000 $\mu$g/L to 6000 $\mu$g/L calculated, based on revisions in the RfD for Phenol and RfD values for other phenolic compounds.

Only those changes in Section IV paragraphs 1 through 5 above are being made to the remedy selected in the 1989 ROD and 1992 ESD. All other aspects of the selected remedy documented in 1989 ROD and 1992 ESD remain the same. A detailed rationale and background for the changes in this ESD follows.

Risk-Based Remedial Goals

Risk-based cleanup remediation levels established in the ROD for contaminated soils and groundwater were reviewed to determine the impact of changes in the toxicological assessment of contaminants of concern (COCs) including total PAHs, cPAHs and phenolic compounds using current EPA toxicological information and updated relative potency factor (RPF) and Toxicity Equivalency Factor (TEF) guidance (EPA, 1989b, EPA 1994b, EPA 1993). This review effort was performed to assess the degree of protectiveness afforded by the current risk-based remediation levels documented in the 1989 ROD for Somers.

The residential exposure scenarios were used as the basis for 1989 cleanup levels presented in the ROD for groundwater and soil. The site-specific exposure parameters established in the human health evaluation for these scenarios were used in the calculation of chemical concentrations for specific target risk levels. In the absence of site-specific information, standard default exposure parameters were used in the calculations. Risk-based remediation levels were also prepared for contaminants with MCLs for comparison purposes only (EPA, 1994e).

A summary of the results of the risk-based cleanup goal review effort is presented in Table 1.0. Details regarding the methods and input parameters used to develop the 1998 risk-based remediation levels presented in these tables are provided in the Supplemental Remedy Protectiveness Evaluation (Roy F. Weston, 1995b).

Soils Remediation Levels

The 1989 risk-based remediation levels for total carcinogenic and non-carcinogenic PAHs in soils differ from the 1998 risk-based remediation levels. The differences are based on revisions in the slope factor for B(a)P and the establishment of new RfD's for non-carcinogenic PAHs. Table 3 provides a summary of the slope factor and RfD revisions.

Total cPAH

The 1989 risk-based remedial remediation levels for total carcinogenic PAHs for soils, established using residential exposure scenarios differ from the 1998 risk-based remediation levels. The difference is due to revisions in the slope factor for B(a)P from 11.5 to 7.3 $(mg/kg\text{-}d)^{-1}$. Also, the 1989 remediation levels were applied to the sum of all cPAHs with the assumption that each cPAH was equal in carcinogenic potency to B(a)P. However, since promulgation of the ROD, cPAHs have been assigned RPFs which are used to convert individual cPAHs to B(a)P equivalent concentrations, thus resulting in less potent classification and having an effect of decreasing the estimated risk from cPAHs. The determination of compliance to the revised remediation levels for soils can be accomplished using EPA Region VIII Superfund Technical Guidance, Development of Toxicity Values for PAHs (EPA, 1994b).

Using the updated slope factor for B(a)P results in a change of the soil treatment cPAH limitation from 36 mg/kg to 57 mg/kg.

Total non-carcinogenic PAH

In 1989 non-carcinogenic effects of total PAHs were based upon the assumption that all PAHs were as toxic as naphthalene with an RfD of 0.005 mg/kg-d. Since promulgation of the ROD, the RfD for naphthalene has been revised from 0.005 to 0.004 mg/kg-d. Additionally, RfDs for other PAHs have been derived. As with the groundwater, those PAHs that have no RfD are conservatively evaluated as equal to most potent known RfD (naphthalene).

Application of the revised RfD produces a soil cleanup level for non-carcinogenic PAHs of 1500 mg/kg to replace the 1875 mg/kg level found in the 1989 ROD.

Naphthalene, Pyrene and Phenanthrene

EPA and MDHES established soil cleanup levels in the 1989 ROD that were based on both risk assessment results and proposed (Best Demonstrated Available Treatment) BDAT requirements for land disposal of the wastes found at the Site. These remediation levels include.

| Contaminant(s) | Cleanup Goal | Source |
|---|---|---|
| Total cPAH | 36.0 mg/kg | Risk Assessment |

| | | |
|---|---|---|
| Total PAH | 1,875 mg/kg | Risk Assessment |
| Naphthalene | 8.0 mg/kg | BDAT Requirements |
| Phenanthrene | 8.0 mg/kg | BDAT Requirements |
| Pyrene | 7.3 mg/kg | BDAT Requirements |

The remediation levels listed above that are based on BDAT requirements were incorporated within the 1988 ROD due to the land disposal restrictions (LDRs) that applied to the remedy (a land treatment unit) proposed for the wastes found in soils at the Site. The BDAT limitations were included in the ROD due to the lack of other numerical standards that applied to the contaminated soils. The BDAT limitations were derived from a demonstration using an incineration technology not a bioremediation technology as was selected for implementation at the Somers site.

It was recognized by both Burlington Northern and EPA at the time of the ROD that achievement of the pyrene level by land treatment would likely prove most difficult because the BDAT limitations were based on incineration as the applicable treatment technology. The No-Migration Petition for the Somers site was submitted by ReTec, Inc., as Appendix D of the Remedial Design investigation Report (December 1991). The petition evaluated migration potential for all contaminants of concern at the Site, including pyrene, naphthalene and phenanthrene. The petition was reviewed by EPA and MDEQ and commented on extensively by EPA. EPA approved the final No-Migration Petition with the issuance of the 1992 ESD on June 26, 1992. The study demonstrated that no migration of contaminants and no adverse impact to human health or the environment would occur during operation and closure of the LTU. 40 C.F.R. Section 268.6 allows EPA to approve a waiver of the Land Disposal Restrictions BDAT standard based on a successful No Migration Demonstration and Petition.

Removing the BDAT requirement for pyrene will not compromise the overall protectiveness of the selected remedy. Pyrene is now included in the list of total PAH compounds ( no longer considered by EPA to be carcinogenic) whose sum total concentration must be remediated below the risk-based cleanup goal of 1,875 (modified to 1,500 by this ESD). By remediating the total PAHs below this level, EPA has determined that the residual concentrations of PAHs (including pyrene) will be protective of human health and the environment.

Field data available in BNRR's *LTU Annual Operations Reports* also indicate that BDAT requirements for both naphthalene and phenanthrene are achievable with the selected soils remedy. During operation of the Site LTU, remediation levels for these compounds are achieved prior to achievement of remediation levels for total carcinogenic PAHs. Thus, the standard set for total carcinogenic PAHs would ultimately govern the total time required to fully remediate a soil lift within the LTU.

With a potential for expediting the time required to remediate the contaminated soils at the Site while still maintaining the degree of protectiveness for human health and the environment, and EPA's approval of the No-Migration Petition, EPA is removing the soil treatment levels for pyrene, naphthalene and phenanthrene. As explained above, the degree of protectiveness for human health and the environment will be maintained by remediating the total PAH compounds to 1,875 mg/kg and the carcinogenic PAH compounds to the new risk-based goal of 57 mg/kg. All other requirements for remediating the contaminated soils within the LTU (as listed above) will remain in effect.

Only the initial treatment levels are being changed by this ESD. The ROD requirement for additional treatment of soils, after attaining the new initial treatment levels, until the annual reduction in cPAH is less than 20 percent, remains unchanged. The additional ROD requirement that health risks posed by direct contact with site soils be reduced to at least 1x10-5 also remains unchanged.

Groundwater Remediation Levels

Total non-carcinogenic PAHs

In 1989, the Risk Assessment for the BN Somers site identified a concentration for total PAHs of 50 $\mu$g/L as being protective against noncancer health effects. This level was calculated based on the assumption that all PAHs had an RfD equivalent to naphthalene (0.005 mg/kg-d). However, this risk-based value was not selected for incorporation in the ROD due to concerns at the time over carcinogenic promotion or co-carcinogenicity of noncarcinogenic PAHs. Therefore, a cleanup level for total PAHs of 0.300 $\mu$g/L was set, using a value one order of magnitude greater than the risk-based cleanup level for carcinogenic PAHs (0.03$\mu$g/L).

Currently, carcinogenic promotion by noncarcinogenic PAHs is not considered in estimating potential carcinogenic effects from exposure to PAHs (EPA, 1994c) and a health-based level using RfDs for noncarcinogenic effects is appropriate. As noted above, since issuance of the ROD in 1989, the RfD for naphthalene has been revised from 0.005 to 0.004 mg/kg-d, and many of the PAHs have been assigned individual RfDs. Those PAHs for which no RfD has been assigned have been assumed to be equal to the most potent known RfD (naphthalene = 0.004 mg/kg-d).

The recalculation of the health based clean-up goal is 40 $\mu$g/L. To determine compliance levels, exposure point concentrations (EPCs) for individual PAHs are recalculated based on the revised RfDs and converted to naphthalene equivalent concentrations using RfD ratios. These naphthalene equivalent concentrations are then summed to represent total PAHs present in groundwater for comparison to the revised clean-up level.

There is no change in the exposure risk to the public due to this revision in the remediation level for non-carcinogenic PAHs.

Total phenolics

For total phenolic compounds, the RfD for phenol has been revised to 0.6 mg/kg-d, resulting in a revised clean-up goal of 6000 $\mu$g/L which replaces the 1989 ROD level of 15,000. As with the cPAHs and PAHs, RfD values for other phenolic chemicals of concern have been derived (phenol, 2,4-dimethylphenol, 2-methylphenol, 4-methyphenol). Again, EPCs for individual phenolic compounds are converted to phenol equivalent concentrations using ratios of RfDs, which are summed to represent total phenolics present at the site for comparison to the revised clean-up level.

There is no change in the exposure risk to the public due to this change in the remediation level for total phenolics.

Carcinogenic PAHs

Although federal MCLs for cPAHs have been promulgated since the ROD was issued, no change is made to the ROD at this time because: (1) MDEQ is currently revising the Montana WQB-7 standards for these compounds and (2) BNSF will prepare a Technical Impracticability (TI) waiver application relative to groundwater cleanup at the Site. Updated groundwater standards will be addressed as part of the TI waiver analysis and application.

## V. SUMMARY OF STATE COMMENTS AND AVAILABILITY OF ADMINISTRATIVE RECORD

As stated above, MDEQ has reviewed the documents that serve as the basis for this determination and has provided comments to EPA on the documents and on this ESD. All of the MDEQ comments were incorporated into the final reports. MDEQ has been provided with the opportunity to review and comment on this ESD and all of their comments have been incorporated.

Documents referenced within this ESD are part of the Administrative Record for the Somers Site. The administrative record will also contain any written public comments that may be received regarding this ESD. The complete administrative record for the Site is available for public review at the following location:

U.S. EPA Montana Office
Federal Building, Room 192
301 South Park, Box 10096
Helena, Montana 59626-0096
(406) 441-1150
Mon-Fri, 8:00 a.m. to 5:00 p.m.

Flathead County Public Library
247 1st Avenue East
Kalispell, Montana 59901

(406) 756-5690
Mon-Fri, 8:00 a.m. to 4:00 p.m.

## VI. AFFIRMATION OF STATUTORY REQUIREMENTS

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA, in consultation with MDEQ, believes that the remedy remains protective of human health and the environment, complies with Federal and State requirements that both applicable or relevant and appropriate to this remedial action or involves appropriate waivers of these requirements, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for the Site.

## VII. APPROVAL

Mark A. Simonich

7/13/98

**Mark A. Simonich, Director**
**Montana Department of Environmental Quality**

**Date**

Max H. Dodson

2/2/98

**Max H. Dodson, ARA**
**Office of Ecosystems Protection and Remediation**
**U.S. Environmental Protection Agency**

**Date**

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## TABLE 1.0
## COMPARISON OF 1989 AND 1995 RISK-BASED REMEDIATION LEVELS FOR BN-SOMERS [a,e]

| Contaminants of Concern | Groundwater | | Soil | |
|---|---|---|---|---|
| | 1989 Risk Based Goal[d] (μg/L) | Risk-Based 1995 Target Clean-up Concentration (μg/L) | 1989 Risk Based Goal (mg/kg) | Risk-Based 1995 Target Clean-up Concentration (mg/kg) |
| Total Carcinogenic PAHS [b] | 0.030 μg/L | 0.047 μg/L | 36 mg/kg | 57 mg/kg |
| Total PAHs - NonCancer Effects | 0.300 μg/L Based on concern over possible co-carcinogenicity | 40 μg/L Based on noncancer health effects calculated using naphthalene equivalent concentrations | 1,875[c] | 1,500 |
| Phenol | — | 6000 | — | 45,000 |
| Total Phenolics | 15,000 | 6000 | 3,000[c] | 45,000 |

(a) Calculated using toxicity values shown in Table 2.0.
(b) Benzo(g,h,i)perylene assessed as a potential carcinogen in 1989; not classifiable as to human carcinogenicity and assessed as a noncarcinogen in 1995.
(c) Value cited as an excavation concentration.
(d) Values obtained from 1989 ROD for BN-Somers.
(e) Methods for comparing site concentrations to risk-based remediation levels have been revised since 1989. See text for further detail.
— Risk-based value not used as goal in 1989 ROD.

## TABLE 2.0
## COMPARISON OF TOXICITY VALUES USED FOR RISK CHARACTERIZATION AT BN-SOMERS 1989 AND 1998 VALUES

| Contaminant of Concern | 1989 Values[a] RfD (mg/kg-d) | 1989 Values[a] oSF (mg/kg-d)$^{-1}$ | 1998 Values[c] RfD (mg/kg-d) | 1998 Values[c] oSF (mg/kg-d)$^{-1}$ [b] |
|---|---|---|---|---|
| PAHs: | | | | |
| Naphthalene | 0.05 to 0.005[d] | | 0.004 | |
| Acenaphthylene | 0.03 | | NA | |
| Acenaphthene | 0.20 | | 0.06 | |
| Fluorene | 0.07* | | 0.04 | |
| Phenanthrene | 0.07* | | NA | |
| Fluoranthene | 0.07* | | 0.04 | |
| Pyrene | 0.06 | | 0.03 | |
| Benzo(a)anthracene | 0.07* | 11.5 | NA | 0.73 |
| Chrysene | 0.07* | 11.5 | NA | 0.0073 |
| Benzo(b)fluoranthene | 0.07* | 11.5 | NA | 0.73 |
| Benzo(k)fluoranthene | 0.07* | 11.5 | NA | 0.073 |
| Benzo(a)pyrene | 0.07* | 11.5 | NA | 7.3 |
| Indeno(1,2,3-c,d)pyrene | 0.07* | 11.5 | NA | 0.73 |
| Dibenzo(a,h)anthracene | 0.07* | 11.5 | NA | 7.3 |
| Benzo(g,h,i)perylene[e] | 0.07* | 11.5 | NA | -- |
| 2,4-dimethylphenol | NA | | 0.02 | |
| 2-methylphenol | NA | | 0.05 | |
| 4-methylphenol | NA | | NA | |
| Phenol | 0.04 | | 0.6 | |
| Zinc | 0.21 | | 0.3 | |

(a) Values from Table 2 of the 1989 ROD
(b) PAH specific Slope Factors calculated from B(a)P by multiplying by RPF (see text)
(c) Values obtained through reviews of IRIS, HEAST and Safe Drinking Water Guidance (EPA, 1995, 1994d, 1994e)
(d) Provided range of RfDs for Naphthalene, however used most stringent (0.005) in calculations
(e) Assessed as a potential carcinogen in 1989; not classifiable as to human carcinogenicity and assessed as a non carcinogen in 1998
* Value assumed equal to average RfD for other noncarcinogenic PAHs
NA Not Available