ALASKA RAILROAD CORPORATION

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March 21, 2005

Jacques Gusmano, Project Coordinator
Alaska Operations Office
U.S. Environmental Protection Agency
222 West 7th Avenue, #19
Anchorage, Alaska 99513-7588

Re: Alaska Railroad Corporation, Anchorage Terminal Reserve RI/FS
Administrative Order on Consent EPA Docket No. CERCLA-10-2004-0065
Site Background Report – Replacement Pages

Dear Mr. Gusmano:

The Alaska Railroad Corporation (ARRC) submitted the Site Background Report (SBR) on October 18, 2005 as specified in Section 2.2 of the Statement of Work (SOW) under the subject consent order. The SBR compiled existing data for those properties, in the Anchorage Terminal Reserve, identified by EPA for further action in the RCRA Facilities Assessment. ARRC has received two sets of comments from EPA on the SBR and met twice with EPA to discuss the SBR. In addition to responses to comments an addendum to the SBR was provided to EPA on February 1, 2005 intending to meet the agencies requirement for completion. Attached to this letter ARRC is providing replacement pages to the SBR, to complete the document and obtain EPA's approval to move on to the remedial investigation phase of the work. Replacement pages are provided to clarify the scope of the SBR and to address a typographical error in Appendix D. Additionally, responses to EPA's February 23, 2005 comments are attached.

We look forward to EPA review and approval of this report. Based on the results of our March 2 meeting, the additions and changes listed above are what EPA requires for approval. I note that the February 1 submission was based on the results of our joint meeting last December, where EPA identified what would be necessary for approval. The February 1 addendum included precisely what was requested. I take no exception to EPA changing its position upon further reflection, however, it is important that the record reflect the ARRC's complete, timely fulfillment of its commitments to EPA.

I also wish to emphasize that the ARRC has at no time attempted to exclude parcels from the site, as defined in the order. Rather, the ARRC has continued to follow the process initiated by EPA in the consent decree negotiations, when EPA and the ARRC added and subtracted leaseholds as potential sources based on available evidence. While EPA has asserted that a "no further action" letter from another agency is not sufficient grounds to rule out investigation of the site, during the negotiations, a "no further action" letter was specifically what EPA requested as a basis for putting individual leases aside. Again, I note this only to ensure that the record reflects the ARRC's clear intent and full commitment to follow the process and carry out our responsibilities under the order fully, and on time.

We have discussed several times the appropriateness of taking an "areawide" approach to the investigation, and our submissions have reflected that consensus. On March 2 we discussed the rationale behind a risk-based investigation beginning first with the main waterbody of concern – Ship Creek – and then work back to the groundwater, and then to surface sites.

I believe our March 2 meeting moved the process forward effectively. I believe we were able to reconcile our respective approaches into a shared understanding rooted in the administrative order on consent. I'm pleased with the tone and the focus of our discussions with EPA and its contractors. I look forward to EPA's approval of the SBR, which will set the stage for a successful field season in 2005. Thanks for your leadership and we look forward to continuing progress with your team.

Very truly yours,

Chris Cosentino /for

Ernest W. Piper
Project Coordinator

cc: H. Orlean/EPA
W. Westervelt/CH2M HILL – 2 copies
B. Duncan/EPA
J. Frechione/ADEC

ALASKA RAILROAD CORPORATION

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February 1, 2005

Jacques Gusmano, Project Coordinator
Alaska Operations Office
U.S. Environmental Protection Agency
222 West 7th Avenue, #19
Anchorage, Alaska 99513-7588

Re: Alaska Railroad Corporation, Anchorage Terminal Reserve RI/FS
Administrative Order on Consent EPA Docket No. CERCLA-10-2004-0065
Site Background Report Addendum

Dear Mr. Gusmano:

The Alaska Railroad Corporation (ARRC) submitted the Site Background Report (SBR) on October 18, 2004 as specified in Section 2.2 of the Statement of Work (SOW) under the subject consent order. The SBR compiled existing data for the Anchorage Terminal Reserve as required in Subtask 2a of the SOW. EPA provided comments to the SBR on December 2, 2004. In the December 15, 2004 meeting between EPA, ADEC and ARRC it was agreed that ARRC would prepare an Addendum to the SBR to include 1) figures showing the hydrogeologic cross sections and concentrations of select constituents, 2) responses to EPA comments, and 3) an electronic copy of the revised database of existing site data. ARRC also agreed in that meeting to update Appendix D and F of the SBR and provide the update as replacement pages.

Please find attached replacement pages for Appendix D and F and the Addendum to the SBR. It is ARRC's understanding that submittal of this information will complete the SBR requirements under the SOW. EPA's approval of the SBR will initiate the 90 day period specified in the consent order for submittal of the Remedial Investigation Work Plan.

We look forward to EPA review and approval of the SBR as supplemented by this Addendum. ARRC looks forward to the opportunity to discuss the scope of the RI during the meeting now scheduled for March 2, 2005. Please do not hesitate to contact me if you have any questions. My telephone number is (907) 265-2410.

Sincerely,

Chris Cosentino /for

Ernest W. Piper
Project Coordinator

cc: H. Orlean/EPA
W. Westerfelt/CH2M HILL – 2 copies
B. Duncan/EPA
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October 15, 2004

Jacques Gusmano, Project Coordinator
Alaska Operations Office
U.S. Environmental Protection Agency
222 West 7th Avenue, #19
Anchorage, Alaska 99513-7588

Re: Alaska Railroad Corporation, Anchorage Terminal Reserve RI/FS
Administrative Order on Consent EPA Docket No. CERCLA-10-2004-0065
Site Background Report

Dear Mr. Gusmano:

The Alaska Railroad Corporation (ARRC) agreed in Section 2.2 of the Statement of Work (SOW) under the subject consent order to develop a Site Background Report for the Anchorage Terminal Reserve that compiles and evaluates existing site data. The Site Background Report is the first significant step in the RI/FS process and provides a foundation for determining the additional information and data that will need to be generated and evaluated in the RI/FS. This report is enclosed. It includes data quality objectives for evaluating the usability of the existing data. The report applies these criteria to determine the extent to which the data can be used for site characterization and for evaluating potential exposure pathways under the human health, ecological and hydrogeological conceptual site models that also are presented in this report. The report concludes with recommendations for areas to be evaluated further in the Remedial Investigation (RI) and summarizes the data gaps identified for focus in the RI Work Plan. As specified in the AOC, ARRC will prepare the RI Work Plan following EPA review and approval of this report.

Following initial discussions with EPA regarding this report, we plan to submit the Remedial Action Objectives Technical Memorandum specified under SOW Subtask 2c. Please do not hesitate to contact me if you have any questions. My telephone number is (907) 265-2410.

Sincerely,

Steve Nelson for Ernie Piper

Ernest W. Piper
Project Coordinator

cc: H. Orlean/EPA
W. Westervelt/CH2M HILL – 2 copies
B. Duncan/EPA
J. Frechione/ADEC

February 1, 2005
ARRC Response to December 2, 2004 EPA Site Background Report Comments

Summary of Report

The Introduction of this report (Section 1.1) states that its purpose was to gather, evaluate, and present existing site information and identify data gaps for further investigation in the RI Work Plan. Additionally, Section 1.2 states that an objective for the report is to determine whether existing site data collected from within the railyard and leased properties will be useable in the upcoming RI/FS and Risk Assessment. The report presents data quality objectives (DQOs); preliminary conceptual site models (CSMs) for hydrogeology, human health, and ecology; preliminary analytical concentration goals; and summaries of historical analytical data. The railyard sites and leased properties are reviewed and screened for further action or no further action based on several criteria, including recommendations from the United States Environmental Protection Agency (EPA) RCRA Facility Assessments, involvement in the State (Alaska Department of Environmental Conservation [ADEC]) regulatory programs, site knowledge of Alaska Railroad Corporation (ARRC) personnel, and current site conditions.

General Comments

1. The format of the report is not useful for determining the nature and extent of contamination at the individual leased properties and, therefore, EPA has no way of determining justification for inclusion or elimination of specific leased properties from the remedial investigation (RI). It is impossible to reconcile the electronic Access files which contain the analytical data with the maps provided, which only show the sampling locations. The maps for each Area must be reformatted to include the analytical data for each sampling location. In addition, isoconcentration maps for each Area must be included which clearly depict the extent of contamination.

Response: As agreed to with EPA on December 15, 2004, ARRC will provide, with this Response To Comments, concentration comparison maps for select soil and groundwater analytes detected at the site above EPA screening levels. The format for these figures has been discussed in the GIS work group, including ARRC (RETEC), EPA (CH2MHill), and ADEC, to ensure that the resulting figures meet the needs of all stakeholders evaluating the site data.

2. The Background Report does not provide additional data to justify elimination of several leased properties from the RI. Based on data which EPA already possesses, some of which is included in the RCRA Facility Assessment (RFA), the following leased properties must not be eliminated: Tesoro (LP-019), Municipal Light & Power (LP-022), Prescott Equipment

(LP-024), Chevron USA (LP-025), Alaska Teamster (LP-026), Whitney Express (LP-112), Post Road Co-Tenancy (LP-127), Keystone Distribution (LP- 031). Rationale for including these leased properties in the RI is provided in the specific comments below.

Response: As requested by EPA, the leased properties listed above (LP-019, LP-022, LP-024, LP-025, LP-026, LP-112, LP-127, and LP-031) will be retained for further discussion in the development of the RI Work Plan. However, certain sites, e.g., oil terminal properties (LP-019, LP-025, and LP-003) and the Municipal Light & Power (ML&P) property (LP-022), have already been identified by ADEC and prioritized for cleanup under the state hazardous sites cleanup program. ARRC will work with EPA and ADEC to determine the best way to incorporate current and future site data and the results of ongoing remedial activities at these sites into the RI/FS process. To avoid duplicative, inefficient, and potentially schedule-impacting investigations at leased properties that have been or will be subject to state-required remedial actions, ARRC intends to provide a more complete assessment of ADEC site activities (as suggested in General Comment #8) and further incorporate relevant information regarding such activities into the RI Work Plan to support a potential ADEC lead role at those properties. ARRC believes the past and prospective active involvement of ADEC at the site makes this proposed approach reasonable and appropriate, though further discussions between EPA, ADEC, and ARRC may be needed to formalize this path forward.

3. Several properties which were identified in the RFA are not included in the Background Report. These areas include; Williams Alaska Petroleum (1076 Ocean Dock Road), 800 E. Ship Creek Avenue, and 1628 Post Road. These properties must be evaluated in the Background Report.

Response: The referenced properties correspond with LP-003/005, LP-055, and LP-006, respectively, and were included throughout the Site Background Report (SBR).

4. Overall, Section 1.4.1 Hydrogeological Conceptual Site Model does not adequately convey to the reader a clear understanding of how the interconnected soils, groundwater, and surface water system works and how it transports contaminants. In addition to text that integrates the data to show how the system works, the conceptual model should include the following graphical components to the best that the existing data and professional judgment can support:

   - At least four schematic cross-sections across the valley and 1 or 2 longitudinal cross sections showing the geology, aquifers/aquitards, groundwater flow lines (vertical component), natural recharge areas and discharge areas.

- Schematic plan view site-wide map(s) showing groundwater flow lines (horizontal components) and groundwater elevation contours. Show areas of groundwater recharge and discharge and surface water gaining and losing reaches.

- Schematic plan view site-wide map(s) showing potential groundwater receptors.

- Schematic plan view site-wide map(s) showing groundwater flow rates (volume and velocity).

- Schematic plan view site-wide map(s) showing surface permeability/ infiltration rates.

- Schematic plan view site-wide map(s) showing small exploded view cross-sections and plan views at sites that have been characterized.

  Note – it is recognized that the results of subsequent work will be incorporated to refine the site model.

Response: As discussed with EPA on December 15, 2004, the majority of the requested information has not yet been collected for the site. The additional information needed to generate these cross-sections and maps will be generated during the RI/FS and presented in the RI Report. However, cross-sections illustrating general site geology and hydrogeology based on existing data have been included with this Addendum and, as such, are being incorporated into the SBR.

Two cross-sections (Figures A-19 and A-20) have been prepared as schematic illustrations of the current understanding of the hydrogeologic conditions (i.e., hydrostratigraphy, groundwater gradients, and tidal influence) beneath the railyard and leased properties. Cross-Section A-A' (Figure A-19) is oriented north-south along the alignment of the Anchorage Port Access Viaduct, which spans the railyard just east of the depot and administration building. The data used for Cross-Section A-A' came from geotechnical borings completed by the Alaska Department of Highways along the alignment of the viaduct (Alaska Department of Highways, 1968). Cross-Section B-B' (Figure A-20) is oriented east-west, roughly parallel to the Ship Creek channel, extending from the railroad bridge on the west side of the railyard to Reeve Blvd. on the east side of the ARRC property. The data used for Cross-Section B-B' were compiled from various geotechnical reports and Municipality of Anchorage water supply well logs. These cross-sections will be revised throughout the RI process as new data become available.

5. The data, as it is presented in the Site Background Report, does not clearly demonstrate the nature and extent of known contamination. Furthermore, it is not in a format that this information can be easily retrieved. Because of the vast amount of analytical and hydrogeologic data (geology, groundwater levels, permeability, recharge, discharge, and monitoring well construction data), a GIS-based database is needed to manipulate and review the site data. Only in this way can all the site data be displayed, compared, and overlaid in many different ways to look for patterns and interconnections. It is understood that RETEC is in the process of developing a GIS database.

Response: Demonstrating the nature and extent of contamination is an objective of the RI, not the SBR, as these tasks are defined in the Scope of Work (SOW). The primary purpose of the SBR, as described in SOW Section 2.2, is to compile existing information regarding site characteristics and receptor populations, determine whether this information has sufficient quality to be used in the RI/FS process, and, in so doing, identify data gaps the RI/FS will need to fill. As specified in the SBR, the existing data are not sufficient to fully define the nature and extent of potential contamination at the Site. Despite this constraint, however, and as agreed to with EPA on December 15, 2004, ARRC is providing, with this Addendum, concentration comparison maps for select soil and groundwater analytes detected at the site above EPA screening levels. This Addendum also provides figures illustrating the general site geology and hydrogeology (i.e., cross-sections). The format for these figures has been discussed with the GIS work group, including ARRC (RETEC), EPA (CH2MHill), and ADEC, to ensure that the resulting figures meet the needs of all stakeholders evaluating the site data. In addition, this Addendum provides an Access database file that has been revised from that provided with the SBR to remove duplicate data and multiple site locations, correct discrepancies with media units, and address other information.

6. The RI Work Plan should identify tasks to evaluate the transport and fate of groundwater contaminants or estimate the future exposure point concentrations that would support risk-based evaluations for human health and environment. Soil to groundwater transport evaluation should also be evaluated. Nature and extent delineation is a snapshot and does not predict future conditions.

Response: Comment noted. This will be addressed in the RI and Risk Assessment Work Plans, and the RI/FS scoping meeting being planned for March 2, 2005. The SOW lists this modeling task as an element of the RI/FS. The data collection necessary to evaluate contaminant transport in both groundwater and soils will be addressed in the RI Work Plan.

7. Confusion could be reduced by using the same units for each medium throughout the text, tables, and figures. For example, water concentrations are sometimes µg/L and sometimes mg/L; soil and sediment values are sometimes µg/kg and sometimes mg/kg.

   It would also be much easier to compare the numbers visually if they were not shown in scientific notation (E+).

Response: Standard analytical naming conventions will be utilized. This includes the EPA Contract Lab Program (CLP) nomenclature of parts per billion (ppb) for organics and parts per million (ppm) for metals. Fuels will be reported as ppm.

8. Negotiation of this consent order considered certain properties, such as those in Area 3, that were known to have or had potential for having contamination and included them in this RI/FS, RFI/CMS process. We understand that new information may cause some sites to be removed from consideration because there is no evidence that contamination ever occurred at the site or the site is being sufficiently addressed under another State or Federal Program. Before a site can be removed from consideration, the following information must be presented:

   - A demonstration of no known history of leaks or spills and/or analytical data that demonstrates no contamination above risk levels/and or ARARs currently exists

   - A clear understanding of contaminant nature and extent

   - Contamination does not risk sensitive habitat (Ship Creek, Drinking Water and Cook Inlet)

   - Contaminant plume is stable and contaminants are decreasing over time or at least stable

   - There is a monitoring program in place

   - Active or passive treatment or natural attenuation monitoring is being conducted

   - All the aforementioned conditions are being conducted with ADEC oversight and with a formal plan that has an established schedule and endpoints.

     If all these conditions are not adequately addressed, Area 3 will remain as part of this order.

Response: The RI Work Plan will provide the above information for the leased properties that ARRC proposes to exclude from further evaluation at that time as potential sources or areas of concern. ARRC may propose exclusion of additional properties after submittal of the RI Work Plan, or at any point in the process where information justifying an exclusion becomes available.

Properties proposed for exclusion in the SBR were selected primarily based on a finding of (1) no known history of release, or (2) no known environmental issues. The specific selection criteria for each proposed excluded property are provided in Table 4-1 of the SBR. As indicated in the Response to General Comment #2 above, ARRC will assess all available data for properties that are subject to an ADEC-led action and propose an approach for coordinating EPA and ADEC oversight of RI/FS activities.

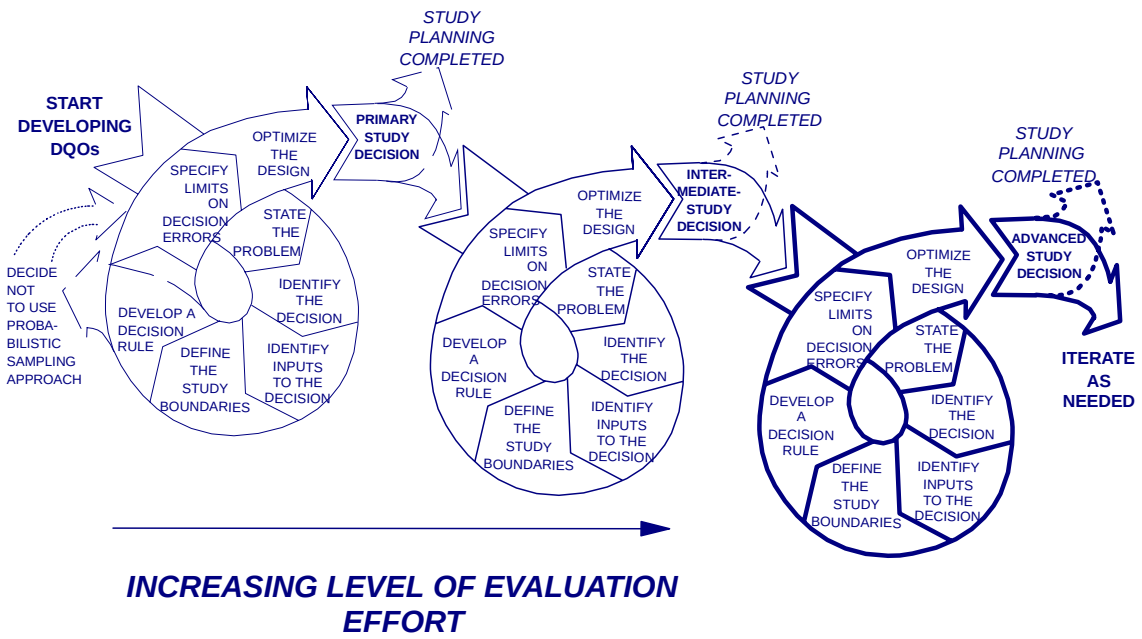
Specific Comments

1. Section 1.2, p. 1-3 – Text here should be consistent with that in Section 1.1 by also mentioning the identification of data gaps.

Response: Agreed. The text should have mentioned that one of the SBR objectives is the identification of data gaps.

2. Section 1.2, p. 1-4, 2nd paragraph – The text says that Table 1-1 presents the DQOs for the SBR review, but most of the DQOs in the table (starting in Step 3) relate more broadly to the RI and FS. It seems that DQOs were not developed specifically for the SBR review, and the text here as well as the title of the table should consider these to be the preliminary DQOs for the RI/FS.

Response: The DQOs should have been referenced as preliminary per EPA guidance (EPA, 1994). As this guidance states: "[F]or projects that require multiple decisions…. It is likely that the resolution of one decision will lead to the evaluation of subsequent decisions. In these cases, the DQO process can be used repeatedly throughout the life cycle of a project. Often the decisions that are made early in the project [in this case, in the SBR] will be preliminary in nature; they might require only a limited planning and evaluation effort. As the study nears conclusion and the consequences of making a decision error become more critical, however, the level of effort needed to resolve a decision generally will become greater." (US EPA, QA/G-4 p. 0-7, 2000) Figure 1 below illustrates this point. Section 3 of the SBR, nevertheless, applied the preliminary DQOs in identifying the existing site data that should be carried forward into the RI/FS.



3. Table 1-1, Step 2 – Decision option number 3 is the first mention that the SBR assessment can conclude that no further action is required. This purpose or possible outcome of the SBR should be stated in the first sections of the report.

Response: The text of the SBR should have stated, on page 1-1, last paragraph of the Introduction, that following review of the available site history, analytical data, and regulatory history, some leased properties and railyard Solid Waste Management Units (SWMUs) may require no further action.

4. Section 1.3, p. 1-5, 1st paragraph – The first sentence says the offices are located north of Ship Creek (which is not correct – the offices are located on the south bank), and refers to Figure 1-1. The figure does not show enough detail to be referenced for the office location.

Response: The text should have read "south of Ship Creek"

5. Figure 1-2 – Some details of this figure are not legible. Some of the zoning callouts are obscured by the ARRC property boundary line.

Response: Future maps will be more clearly labeled.

6. Section 1.4.1, p. 1-7, 3rd bullet – Should read "The steep slopes north of the Ship Creek floodplain and east of the tidal flats…"

Response: The text should have read "…east of the tidal flats"

7. Section 1.4.1, p. 1-8, 1st full paragraph – Should read “and 4) at the Fort Richardson dam site…”

Response: The text should have read “and 4) at the Fort Richardson dam site…”

8. Section 1.4.1, p. 1-14 – Although the report indicates that groundwater generally flows from southwest from the Site towards Ship Creek, groundwater seeps into channelized ditches and storm drains near the North Bluff have been identified. Although these ditches or storm drains eventually flow to Ship Creek, the exposure to groundwater constituents potentially migrating to these ditches should be considered.

Response: The migration of chemicals in groundwater to site ditches will be considered in the RI Work Plan.

9. Section 1.4.1, p.1-15 – It is premature to justify eliminating the confined aquifer from further investigation at this time. The nature and extent of ground-water contamination must be fully characterized. In addition, the stratigraphy throughout the entire ARRC facility must be fully understood in order to justify eliminating the deeper confined aquifer from the remedial investigation.

Response: ARRC will characterize the regional stratigraphy of the facility as necessary to model the possible movement of contaminants in groundwater. To date, there is no evidence of impacts to the confined aquifer. As detailed in Section 1.4 of the SBR, the confined aquifer lies beneath the Bootlegger Cove Formation, which has been mapped as a continuous aquitard approximately 120 feet thick in the vicinity of the ARRC railyard. Further, wells completed in the confined aquifer in the vicinity of the railyard have static head elevations above the Ship Creek floodplain, demonstrating an upward hydraulic gradient. As a result of the thickness and low conductivity of the Bootlegger Cove clay and the upward vertical hydraulic gradient, it is unreasonable to expect that the confined aquifer would be impacted by any potential contamination from the shallow, unconfined aquifer or Ship Creek. This is shown in the requested attached figures. The RI data collection and evaluation will be sufficient to support remedial action decisions at the Site, including decisions relating to the confined aquifer.

10. Section 1.4.2 Human Health CSM and Figure 1-4 – It does not appear that inhalation of dusts and vapors emitted from site soil to ambient air will be evaluated quantitatively for any potential receptor. This pathway does represent a complete pathway which can be easily calculated and should be quantitatively evaluated for each human health scenario.

Response: Comment noted. This pathway will be added as requested by EPA and will be included in the Risk Assessment Work Plan.

11. Section 1.4.2, p. 1-16 – The term "insignificant exposure pathways" must be defined by ARRC and agreed upon by EPA prior to eliminating such pathways from the risk assessment.

Response: ARRC used EPA guidance in determining if an exposure pathway should be considered significant or insignificant. The EPA Risk Assessment guidance for Superfund (US EPA, 1989) states as follows:

> ***"A pathway is complete if there is (1) a source or chemical release from a source, (2) an exposure point where contact can occur, and (3) an exposure route by which contact can occur. Otherwise, the pathway is incomplete, such as the situation where there is a source releasing to air but there are no nearby people.***
>
> ***All pathways should be selected for further evaluation unless there is sound justification (e.g., based on the results of a screening analysis) to eliminate a pathway from detailed analysis. Such a justification could be based on one of the following:***
>
> - ***the exposure resulting from the pathway is much less than that from another pathway involving the same medium at the same exposure point;***
> - ***the potential magnitude of exposure from a pathway is low; or***
> - ***the probability of the exposure occurring is very low and the risks associated with the occurrence are not high (if a pathway has catastrophic consequences, it should be selected for evaluation even if its probability of occurrence is very low).***
>
> ***Use professional judgment and experience to make these decisions."***

Based on this guidance, we will apply the principles to determine significant and insignificant pathways.

12. Section 1.4.2.1 3rd Bullet, p. 1-17 – Please clarify that groundwater is not migrating into indoor air, rather volatilization of groundwater constituents could migrate to indoor air.

Response: ARRC agrees with this editorial comment.

13. Section 1.4.2.1 2nd and 4th Bullets, p. 1-17 – These state that there is no evidence of groundwater volatilization to indoor air is occurring, but there is nothing provided which would indicate that this pathway is currently incomplete and would be incomplete in the future. The extent and magnitude of BTEX contamination at the Site would indicate that this pathway could actually be complete. Suggest deleting the phrase "although there is no evidence that this is occurring."

Response: Comment noted. The phrase "although there is no evidence that this is occurring" should be deleted.

14. Section 1.4.2.1, p. 1-17 – Groundwater seeps to ditches near the North Bluff area should be mentioned here.

Response: The release of groundwater via seeps to ditches in the North Bluff area is a potential release mechanism for the site and will be included in the RI Work Plan.

15. Section 1.4.2.2, p. 1-18 – List of several comments:

    a) Indoor Worker – Again, it's too early in the process to state that there is no evidence that volatilization of groundwater constituents is occurring. The potential for exposure by inhalation of indoor air containing volatile compounds must be evaluated for those areas that have groundwater and/or subsurface soil contaminated with volatile compounds.

    b) Outdoor Worker and Trespasser – Inhalation pathway may not be the most significant contributor to risk, however it should be considered quantitatively as part of the total exposure

    c) Outdoor Worker and Trespasser – These receptors could encounter groundwater that has seeped to ditches near the North Bluff

    d) Construction Worker – Inhalation of dusts or vapors could be more significant when compared with other receptors. The argument that a large air mixing zone is not entirely accurate, as trench workers could in fact be exposed to larger volumes of dust within a more limited air space.

    It is good to see that the HHRA will consider hypothetical future residents in areas designated PC. Is it possible that other not designated as PC could be redefined in the future? If so, then the HHRA may want to consider other areas under the hypothetical future residents scenario or at least include discussion as such in the uncertainty of the future HHRA.

Response: Comment noted. The potential pathways referenced in the EPA comment will be added as appropriate following discussions with EPA regarding scoping of the risk assessment. The resulting pathways will be included in the Risk Assessment Work Plan.

It is conceivable that, in the future, the Municipality of Anchorage zoning process could designate other areas at the site as PC. However, this is unlikely since the land use in these areas is largely industrial, with an active railyard, oil terminals, and railroad tracks. Even if such redesignation occurred, a second step would be needed before any actual residential use took place in those areas—ARRC as the property owner would need to affirmatively allow such use. ARRC has ultimate control regarding land use at its owned properties.

16. Section 1.4.2.2. Last bullet, p. 1-18 – The exclusion of the groundwater consumption pathway at some areas of the site needs more support. The fact that drinking water is supplied by municipal sources only applies to current conditions, but may not address future conditions. It is unclear whether groundwater is not potable due to its natural quality; if so, this should be explained.

Response: The groundwater consumption pathway will be considered as appropriate in the RI Work Plan and the Risk Assessment Work Plan.

17. Section 1.4.2.2, p. 1-19, 2nd bullet – If workers are in contaminated areas where dust is stirred up, this exposure pathway would not be "insignificant."

Response: Comment noted. This will be addressed in the Risk Assessment Work Plan.

18. Section 1.4.2.2, p. 1-20, 5th bullet – The statement, "Additionally, direct contact with surface water is expected to result in very low exposures, because the fishing season is a matter of weeks, resulting in a low exposure frequency and duration" suggests a shorter than actual length of the fishing season. According to the Alaska Department of Fish and Game, the king salmon run is late May through mid-July, and the silver salmon run is mid-July through September. Open season for king salmon (20 inches or longer) is January 1 through July 13, and open season for all other salmon is year-round.

    Between the power plant dam and Reeve Boulevard Bridge, catch-and-release for rainbow trout is allowed year-round. If there are any tribal fishers or more exposed populations which utilize Ship Creek, this pathway must be evaluated in the risk assessment.

Response: Comment noted. Exposure of relevant populations via fish ingestion will be considered as appropriate in the risk assessment and also addressed in the RI Work Plan.

19. Section 1.4.3, p. 1-21 – The Ecological CSM (ECSM) is generally well done, well illustrated in Figure 1-5, and easy to understand.

Response: Comment noted.

20. Section 1.4.3.1, p. 1-21, 2nd paragraph – The title of the U.S.EPA document should be corrected here (Guidance, not Guidelines) and in the References (p. 5-3), and the complete citation should be included in the References.

Response: The text should have said Guidance.

The Reference should have been as follows: US EPA, 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final. Office of Solid Waste and Emergency Response. EPA540-R-97-006. June 1997.

21. Section 1.4.3.1, p. 1-21, 3rd paragraph – It would be preferable to have the text describe in a little more detail the first two steps of the process (Step 1: Screening-level Problem Formulation and Ecological Effects Evaluation; Step 2: Screening-level Exposure Estimate and Risk Calculation).

Response: Comment noted. The Risk Assessment Work Plan will provide specific details of the EPA Ecological Risk Assessment process.

22. Section 1.4.3.2, p. 1-22, 1st paragraph – It states here that the Hart Crowser (2004b) report (analysis of sediment sampling data collected in 2004) "concluded that there is no evidence for extensive contamination or imminent risk to human health or the environment in Ship Creek". As indicated in our review of that document, we believe this conclusion to be premature for reasons as follows (directly from our previous review):

    "The conclusion of no significant risk in lower Ship Creek appears to be premature. Given the very small sample size (only 5 sample locations) over such a large area, the rationale provided in this and previous sections for discounting risk in the samples with exceedances is suspect and may be under-protective. It is recommended that any instance of an exceedance should be grounds for retaining an analyte for further evaluation, including the potential for more sampling. Additionally, detected analytes (even if only in one sample, even if it is not detected in the duplicate sample) without screening benchmarks should be retained for further evaluation."

Response: Agreed. However, as proposed in the Hart Crowser (2004b) document, a Habitat Survey would provide further insight into additional data needs. The recently submitted "Preliminary Ship Creek Habitat Survey" (RETEC, 2004) outlines the proposed approach for evaluating impacts to Ship Creek. The RI Work Plan will propose additional sediment and surface water sampling to determine if chemicals are present at concentrations that may cause risk.

23. Section 1.4.3.3, p. 1-22 – It is EPA's understanding that the Municipality of Anchorage (MOA) intends to designate the Ship Creek Area as a mixed use, industrial, commercial, and perhaps residential area. Therefore it is not correct to assume that the current land use pattern is expected to continue.

Response: The text stated: "The remainder of the site is under active industrial or commercial use and essentially lacks ecological habitat. This land use pattern is expected to continue." ARRC controls how its property is used. Zoning merely establishes the range of property uses the Municipality allows—the land use that actually occurs within this allowed range is determined by ARRC as the property owner. See the ARRC response above to Specific Comment #15.

24. Section 1.4.3.4, p. 1-23, 3rd bullet – The term "wildlife" should be considered to include amphibians, reptiles, birds, and mammals. Thus, the wording here should be "Aquatic birds and mammals . . ." This is a generally minor point, but it would be better not to use "wildlife" unless it is used and defined as including both birds and mammals as described for the work at this site. However, the Ship Creek floodplain (including ponds and backwaters) presumably also provides habitat for wood frogs, and potential risks associated with exposures (especially direct exposures of larvae to water) should be considered in the risk assessment and ECSM.

Response: The editorial change from wildlife to explicitly include aquatic birds and mammals will be incorporated in the Risk Assessment Work Plan.

25. Figure 1-5 – The "Piscivorous Wildlife" box could be modified to say "Aquatic Omnivores (e.g., ducks) and Piscivores (e.g., kingfisher, mink)" to make it consistent with those for the terrestrial receptors (and the explanatory box in the upper right corner could be deleted).

Response: The editorial change of Piscivorous Wildlife to explicitly include Aquatic Omnivores and Piscivores will be incorporated in the Risk Assessment Work Plan.

26. Figure 1-5 – The text in the middle of the figure indicates that plants and soil invertebrates are not "key receptors, except as biotransfer agents";

however, plants and soil invertebrates are also important as a prey base. If populations of plants and soil invertebrates are reduced (due to contaminant exposure), this could have a negative impact on higher tropic level organisms.

Response: This is a good point and an editorial change will be made in the Risk Assessment Work Plan.

27. Section 1.4.3.4, p. 1-23, 3rd paragraph – See comment above that explains why conclusions of the Hart Crowser (2004b) report may be premature.

Response: Comment noted.

28. Section 1.4.3.5, p. 1-25, 1st bullet – The potential receptors could include plants, soil biota, amphibians, bird, and mammals.

Response: This addition will be made in the Risk Assessment Work Plan.

29. Section 1.5, p. 1-25, 3rd bullet – There are sources of fish tissue concentrations for protection of resident fish and wildlife. For example, Jarvinen and Ankley (1999) is a compilation of tissue residues and associated effects for aquatic organisms (invertebrates and fish) from which screening values could be developed. This data is available electronically, making it particularly easy to use. The Oak Ridge National Laboratory report titled *Toxicological Benchmarks for Wildlife: 1996 Revision* (Sample et al., 1996) presents a method for calculating the dietary level or concentration of a contaminant in food and water that would result in a dose equivalent to the NOAEL or LOAEL (Section 3.3 and 3.4 of the report, respectively). This could be used to determine what concentration in fish would be protective of wildlife species of interest (e.g., mink or kingfisher).

Response: As agreed with EPA on December 15, 2004, ARRC will discuss the risk assessment approach with EPA and ADEC. Relevant information will be evaluated and included as appropriate in the Risk Assessment Work Plan.

30. Table 1-2 – List of several comments for this table:

    a. As stated in the General Comments, confusion could be reduced by using the same units for each medium throughout this table as well as all other data- reporting in text, tables, and figures.

Response: Standard analytical naming conventions will be utilized. This includes the EPA CLP nomenclature of ppb for organics and ppm for metals. Fuels will be reported as ppm.

b. According to the subheading in this table “Total Petroleum Hydrocarbons (mg/L and mg/kg),” all TPH values are in parts per million. This conflicts with the units identified in the column headings, which appear to be the correct units. For example, the ADEC Screening Level for GRO is 1,300 ug/L.

Response: The subheading should read “Total Petroleum Hydrocarbons” and (mg/L and mg/kg) should be deleted.

c. Some of the PQLs are very high, compared to the ecological screening levels (ESLs). For example, the PQL for antimony in soil (11 mg/kg) is more than twice the ESL (5 mg/kg); the PQL for arsenic in water (100 µg/L) is about 3 times the ESL (36 µg/L); the PQL for cadmium in water (6 µg/L) is well above the ESL (0.25 µg/L); and the PQL for selenium in water (100 µg/L) is 20 times the ESL (5 µg/L). These and other such cases should be reviewed carefully, and methods providing lower PQLs should be used for future analyses.

Response: Detection limits will be closely evaluated in the RI Work Plan to maximize the use of analytical methods having Practicable Quantitation Limits (PQLs) at or below applicable Ecological Screening Levels (ESLs).

d. Footnoted references should be corrected/updated as follows: 11) spelling is MacDonald; 16) authors are Suter and Tsao; 18) the Eco SSLs from 2003 should be used.

Response: Comment noted. Footnotes 11 and 16 have typographical errors. Footnote 18 should have referenced the 2003 document. These footnotes will be corrected in future submittals.

e. Practical quantitation limits for sediment are missing. If the PQL for sediment is the same as for soil, it should be indicated. Could use "solids" rather than referring to specific matrix, as appropriate.

Response: Comment noted.

f. Reference 18 should be separated out to distinguish Eco-SSL values from Efroymson et al (1997a).

Response: Comment noted; to be incorporated in future submittals.

g. Citation for the Washington Dept of Ecology is incorrect. The values actually appears to come from WAC 173-340-900, Table 749-3, and not from the Terrestrial Ecological Evaluation Process.

Response: Comment noted; to be incorporated in future submittals.

h. Although most of the changes in 2002 EPA National Water Quality Criteria were on human health, it should be cited rather than the older 1999 version.

Response: Comment noted; to be incorporated in future submittals.

i. Citation 13 indicates it is for sediment, but this citation was also used for freshwater. Please correct.

Response: Comment noted; to be incorporated in future submittals.

j. The ecological screening level presented for surface water for cobalt is no longer endorsed by EPA Region 4 (see http://www.epa.gov/region4/waste/ots/ecolbul.htm#tbl1), the old value came from Suter and Mabrey (1994). Cobalt toxicity data were updated since this 1994 report, for a more recent value, see Suter and Tsao (1996).

Response: Comment noted; to be incorporated in future submittals.

k. The Marine TEL for trichloroethene has a value of zero, as does the freshwater screening level for styrene. Should these be NAs or a value other than zero.

Please verify and correct these numbers.

Response: The Marine TEL for trichloroethene and freshwater screening level for styrene should read NA.

l. The Ambient Water Quality Criteria value of 0.014 ug/L is for total PCBs, (i.e., "the sum of all congener or isomer or homolog or Aroclor analyses", USEPA [2002]), and as such, it does not apply toward screening against PCB Aroclors. Screening individual Aroclors against NAWQC criteria for total PCBs may result in screening out individual Aroclors when, in fact, the sum of all Aroclors exceeds the total PCB criteria (this also applies for PCB congeners if measured).

Response: ARRC disagrees with the statement that the existing Ambient Water Quality Criteria (AWQC) for total PCBs is not applicable to the "PCB Aroclors." The existing AWQC for aquatic life and human health were developed for the Aroclor-based analytical suite listed below. As noted in USEPA (1999) [National Recommended Water Quality Criteria–Correction EPA 822-Z-99-001, April 1999]: "In this compilation EPA is publishing aquatic life and human health criteria based on total PCBs rather than individual arochlors. These criteria replace the previous criteria for the

seven individual arochlors." This guidance also states that "PCBs are a class of chemicals which include aroclors, 1242, 1254, 1221, 1232, 1248, 1260, and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825, and 12674112, respectively. The aquatic life criteria apply to this set of PCBs." The guidance further states as follows: "EPA has consistently upheld the use of the current section 304(a) criteria for these chemicals and considers them to be scientifically sound until new, peer reviewed, scientific assessments indicate changes are needed." While recent methods expanding the PCB analysis to isomers beyond the traditional Aroclors are now available, the existing Aroclor-based data should be fully adequate for evaluating PCBs.

m. The freshwater and marine water sediment TEL of 0.0341 and 0.02155 ug/L is for total PCBs as well (WDOE, publication #95-308). Recommend adding a separate row for total PCBs and a footnote detailing how total PCBs will be evaluated (i.e., summing Aroclors for comparison to the benchmark).

Response: Comment noted; to be reflected in future submittals.

n. Why is there no PQL for dioxins/furans?

Response: PQLs for these constituents will be incorporated in the Risk Assessment Work Plan.

o. Human health screening values for total PCBs were applied to individual Aroclors. Screening individual Aroclors against NAWQC criteria for total PCBs may result in screening out individual Aroclors when, in fact, the sum of all Aroclors exceeds the total PCB criteria (this also applies for PCB congeners if measured).

Response: ARRC agrees that the National Ambient Water Quality Criteria (NAWQC) should be applied to the sum of the Aroclors for screening.

p. EPA has recognized that the analyses of individual PCB congeners can be used to better measure toxicity for PCBs and provides a better "signature" of the potential sources. It may be useful to add PQL and screening levels for PCB congeners to this table.

Response: Comment noted. See Comment Response #30 above. PQLs and screening levels will be incorporated in future submittals as appropriate.

q. The Reg IX PRGs appear to be outdated and some of the values are also rounded. Some of values (benzene, ethylbenzene, and lead) are off

more significantly. Here's a summary of the PRGs used for screening in the SBR and the most recent EPA values:

Analyte US EPA Region IX Industrial
Soil PRG mg/kg –

	FROM DATABASE	FROM REG IX PRG TABLE, October 2004
Benzene	1.3146	1.4094
Ethylbenzene	19.528	395
Lead	750	800
TOTAL TCDD	0.0001	0.000016

Response: The most current EPA Region IX PRG table will be utilized in future submittals.

31. Section 1.5, p. 1-26 – Will the RAO technical memorandum be submitted and reviewed prior to the RI Work Plan?

Response: The Remedial Action and Corrective Measures Objectives (RAO) Technical Memorandum is a separate document that ARRC plans to provide to EPA in the first quarter of 2005, prior to submittal of the RI Work Plan.

32. Figure 2-3 – Text on p. 2-6 says there is a “thicker yellow dashed line” in the figure, but there is no yellow line in the figure.

Response: Figure 2-3 should have included a thicker yellow line to designate the boundary of the railyard. Figures included in future submittals will have appropriate markings to indicate boundaries and other relevant features.

33. Section 2.1, p. 2-1 – It is not stated in the objectives of the SBR that sites will be screened out, though later in Section 2.2 sites are excluded from further evaluation.

Response: The potential for screening out sites based on the existing information compiled in the SBR should have been included on page 2-1 as an objective of the document.

34. Section 2.3, page 2-7 – It is stated that the historic groundwater and soil data are screened “in order to give some initial perspective on the levels of detected constituents at the Site”. Screening of data implies that some constituents are eliminated from further concern. Please clarify what the exact purpose of screening is.

Response: The existing site data were compared to conservative screening levels simply to show whether the existing data were above or below these levels. No site constituents were eliminated in this evaluation. Appendix F summarized all site constituents that exceeded the screening levels. It does not suggest there is a risk associated with these samples. EPA has requested that some figures be resubmitted to show the exceedances with more detail. These figures are included in the SBR Addendum.

35. Section 2.3, p. 2-7 – It would be appropriate to screen soil and groundwater data from locations within the Ship Creek Habitat Assessment Area (shown in Figure 3-2) against the ecological screening levels (ESLs) for soil and water. Soil that is within that area but not part of an industrialized parcel could represent a potential exposure for terrestrial ecological receptors. (Also, it would be appropriate to consider the matrix to be "soil" if it is in the floodplain [i.e., not under water at normal flow/stream level], instead of "sediment" as indicated in the SBR.) Groundwater at locations within the floodplain could discharge to adjacent wetlands or waterbodies and represent a potential exposure for aquatic receptors. Although text on p. 3-9 recognizes the potential for groundwater discharge to Ship Creek, the screening levels used for screening groundwater data in Table 3-5 did not include ESLs.

Response: ARRC recognizes that soil within the Ship Creek habitat assessment area is a potential exposure pathway, and that groundwater within this same area has a potential for discharge to Ship Creek. The Risk Assessment Work Plan will further address these pathways. In general, it may be stated that the riparian zone (and the creek) is not in itself a source area, unless new evidence for such sources were to be found, but functions rather as a receptacle for contaminants migrating from the source areas. While this does not eliminate the need for considering this area, it suggests that further evaluation is predicated on evidence of migration from source areas.

36. Figure 3-1 – Does not incorporate comments made during the 9/15/04 meeting, such as adding a decision point to Step 4 to determine if the data are temporally adequate, and revising Note 1 to include depth intervals for groundwater aquifers and sediment.

Response: The RI Work Plan will reflect these important considerations.

37. Section 3.1, p.3-2, 3rd paragraph – As stated in the General Comments, it would be appropriate to screen soil data for locations that are not industrialized and within the Ship Creek Ecological Habitat Assessment Area against the ESLs for soil. Also, samples that are from within that area (i.e., the floodplain) and are not below water at normal stream flow/level should be evaluated as soils, rather than sediments, because they more

realistically represent an exposure medium for terrestrial receptors (not benthic organisms).

Response: See Response to Comment #35. In general, we agree that a soil should be referred to as "sediment" when it is hydric, and as "soil" otherwise. At this time, there are virtually no soil data available for the Ship Creek area.

38. Section 3.1, p. 3-2, 4th paragraph – Similarly, it would be appropriate to have a fourth area for evaluating groundwater contamination. The data for wells within the Ship Creek Ecological Habitat Assessment Area should be compared to ESLs for surface water, because the groundwater could discharge to surface water (as stated on p. 3-9).

Response: The inclusion of a fourth groundwater area will be incorporated into the RI Work Plan. ARRC agrees to evaluate groundwater in this manner to ensure protection of Ship Creek. See, however, Response to Comment #35.

39. Section 3.1, p. 3-3, 1st paragraph – Please see previous comments (above) about riparian/floodplain substrate above the waterline as soil, rather than sediment.

Response: See response to above comments.

40. Section 3.2, first par., page 3-5 – It appears that historic PCB data include analyses of Aroclors only. PCB congeners are most appropriate for assessment of the risks from PCBs due to the quantification of dioxin-like congeners. The historic data will not allow this assessment for PCBs.

Response: ARRC disagrees with this comment. Aroclor-based analysis (i.e., EPA method 8080/8082) has been the long-established basis for analysis of and definition of cleanup criteria for PCBs. USEPA method 8082 continues to be listed as the most recent, promulgated method for PCB analysis (per SW-846 Third Edition, Revision 5, including Updates 1, 11, 11A, 11B, 111, and 111A, April 1998). Method 8082 has since been updated (method 8082A) in SW-846 Draft Update IVA, issued May 1998, but this revision is not yet finalized. We acknowledge the existence of more recent methods that provide more detailed quantification of other isomers, and acknowledge that use of these methods may be appropriate going forward. However, data collected for PCBs using the 8080 and 8082 methods describe the bulk of historically used PCBs and should be considered usable. There is no technical reason, and to our knowledge no EPA precedent, for discounting data generated from these methods. See also Response to Comment #30L for the position of the EPA Office of Water as it applies to evaluation of PCBs in water.

41. Section 3.2, p. 3-5, 2nd paragraph – The conclusion here is that future sampling of PCBs would be limited to locations where PCBs have been historically detected. However, it is not discussed here the potential (or lack there of) for PCBs to migrate from these locations. A concern is that in the Hart Crowser (2004b) report, the detection limit for PCBs was greater than the water quality criteria (this also appears to be the case for historical samples as evidenced in Table 3-8; therefore, the conclusion that PCBs are limited to certain properties may be premature. Concentrations may be greatest at these source locations, but it is uncertain whether PCBs exist at concentrations of concern at distal locations due to an insufficient detection limit.

Response: Potential PCB migration, including within Ship Creek, will be discussed further in the RI Work Plan and RI Report. It is important to recognize that it can be difficult to attain surface water detection limits that are sufficiently low to compare to PCB criteria (0.014 micrograms per liter [ug/L]).

42. Section 3.2, p. 3-5 – Dioxins/furans can be present due to incomplete combustion of polychlorinated biphenyls (PCBs) or polyaromatic hydrocarbons (PAHs) and therefore should be analyzed at properties where PCBs and PAHs are found and combustion may have occurred. Furthermore, dioxins and furans were detected in all four sediment samples from Ship Creek as shown in Appendix F, and therefore this analyte must not be eliminated as a contaminant of concern.

Response: As noted by EPA, dioxins and furans are primarily byproducts of incomplete combustion, and are commonly found as ubiquitous widespread aerial deposition. The extremely low detection limits possible for these analytes result in dioxins invariably being detected in urban area soil and sediment. This does not necessarily mean that the sources are site related or that the concentrations are of environmental concern. Evaluation of the congeners involved often may shed light on the likely source(s) and the risks the dioxins and furans may present. Further evaluation of dioxin/furan compounds and the need for any future analysis of dioxins will be presented in the RI Work Plan.

43. Section 3.2, p. 3-5 – There is no way to tell from the Background Report whether or not pesticide samples were taken in soil. Furthermore, according to Appendix E pesticides were detected in three samples taken from Ship Creek. Therefore, pesticides must not be eliminated at this early stage of the RI process.

Response: As stated on page 3-5, pesticides have been detected only at LP-991 – Arctic Cooperage, LP-120 – KAPP, and within the railyard. Further

evaluation of pesticides will be considered as appropriate in the RI Work Plan. It will be important to differentiate between historical application of pesticides versus pesticide waste management. The latter is not known to have occurred at the site.

44. Section 3.3, first bullet, page 3-6 – Please add "and soil gas" after "vapors from groundwater."

Response: The text should have read "…. Vapors from groundwater and soil gas;"

45. Section 3.3, p. 3-6, 2nd paragraph – the figure numbers should be 1-4 and 1-5.

Response: The text should have read "……Figures 1-4 and 1-5."

46. Section 3.3.1, p. 3-8, second bullet – The wording should be "Data from a known matrix" to be considered usable.

Response: Comment noted.

47. Section 3.3.1.1, page 3-8 – Please indicate whether soil gas concentration data exist that could be used for evaluation of the vapor intrusion pathway.

Response: The existing data set included in the SBR does not contain soil gas data.

48. Section 3.3.1.1, p. 3-8 – Soils from locations within the Ship Creek Habitat Assessment Area (shown in Figure 3-2) should be evaluated against the ESLs for soil if samples were collected within that area but not part of an industrialized parcel. Those soils could represent a potential exposure for terrestrial ecological receptors. (The matrix should be considered to be "soil" if it is in the floodplain [i.e., not under water at normal flow/stream level], instead of "sediment" as indicated in the SBR.)

Response: See Response to Comment #35.

49. Section 3.3.1.2, p. 3-9 both full paragraphs – The text says (correctly) that groundwater may discharge to surface water, and implies that the groundwater data were evaluated for this pathway. However, the screening in Table 3-5 did not use the ESLs for water, which are often lower than those for human exposures.

Response: The use of ESLs for groundwater will be a topic for discussion with EPA at the risk assessment scoping meeting. Utilizing ESLs without

applying appropriate dilution factors and attenuation factors would be incorrect. See also Response to Comment #35.

50. Section 3.3.1.4, p.3-10 – Soil/sediment in the riparian zone should be evaluated for exposure of terrestrial, rather than aquatic receptors if the sample locations are above the normal water level.

Response: This will be considered in the Risk Assessment Work Plan.

51. Section 3.3.1.4, p. 3-10, 2nd paragraph – Not clear why sediment data from the North Bluff seep areas were excluded from the data evaluation. Additionally, the surface drainage channel at the base of the bluff that discharges into Ship Creek should be evaluated.

Response: Existing material collected from North Bluff seep locations are best characterized as soil, not sediment, under the nomenclature discussed in Response to Comment #37 above. Further discussion of the stormwater drainage feature and aquatic dwelling biota (or lack thereof) will be discussed with EPA during the RI scoping meeting.

52. Table 3-2 – Please see previous comments for Table 1-2, as they also apply to this table.

Response: Comment noted. This information will be updated in the Risk Assessment Work Plan.

53. Section 3.3.1.5, p. 3-11 – It is unclear whether the available fish concentration data are for whole fish or fish fillets. The type needed for the human health evaluation will depend on the regional cultural practices. Therefore, the need for additional tissue data is not limited to the needs of the ecological risk assessment.

Response: Comment noted. These considerations will be reflected as appropriate in the Risk Assessment Work Plan and RI Work Plan.

54. Section 3.4.1, p. 3-12 – Please clearly define the purpose of the screening. It appears that it is for more than screening detection limits, as it states the evaluation provides "information regarding where, and to what extent potential impacts exist."

Response: The purpose of the screening was to compare existing site data to conservative health-based levels. It is our understanding that EPA is interested in seeing the site data compared to screening levels to get an order of magnitude understanding regarding the frequency and magnitude of detected concentrations. See EPA Comment #34.

55. Section 3.4.1.1, p. 3-12 – Rather than screening detection limits versus EPA Region IX residential values only if ADEC values are not available, the lower of these sources should be used, especially since Region IX values incorporate all exposure routes collectively (i.e., ingestion, inhalation, and dermal).

Response: Comment noted; to be incorporated in future submittals.

56. Section 3.4.1.1, p. 3-12 – It is not appropriate to use Region IX PRGs for noncarcinogens to eliminate chemicals from further evaluation. Since the PRGs for noncarcinogens equate to a hazard quotient (HQ) of 1, it is possible for multiple cooccurring noncarcinogenic constituents with the same toxic endpoint to collectively pose a hazard index exceeding 1, but with none of the individual constituents exceeding an HQ of 1. Because of this, screening should be at levels equating to HQ of 0.1.

Response: No constituents were eliminated using a HI=1 screening level. Screening levels were provided in accordance with the ARRC SOW and were utilized for a preliminary evaluation of undetected analytes (chemicals that were analyzed at the site and not detected). For the risk assessment screening of chemicals of concerns (COCs), an HI=0.1 can be utilized as requested by EPA and will be included in the Risk Assessment Work Plan.

57. Section 3.4.1.2, p. 3-13, last paragraph – Please refer to references in comment above for fish tissue concentrations that are protective of fish and wildlife.

Response: Comment noted.

58. Section 3.4.2, page 3-14 – recommend changing the second sentence of the first paragraph to read, “does not mean that unacceptable human health or ecological risk is necessarily present”

Response: Comment noted.

59. Section 3.4.2, p. 3-14, 2nd paragraph – Clarify why groundwater affected by free product would be eliminated from consideration.

Response: Typically, groundwater samples are not collected from wells containing light non-aqueous phase liquid (LNAPL) due to the potential for sample contamination (since LNAPL gets mixed into the groundwater sample). Because of this potential for mixing during sampling, results from a LNAPL-contaminated groundwater sample are not considered representative of the dissolved phase condition at that location. As a result, interpretation of dissolved phase impacts from groundwater

samples collected from wells with LNAPL are unreliable and should not be used for site characterization, risk determination, or remediation decisions.

60. Section 3.4.2, p. 3-14, last paragraph – The discussion in this paragraph concerning what contaminants "are not likely to be associated with improper discharges" is inappropriate and must be deleted from this section.

Response: The purpose of the statement was to indicate that pesticides have likely been used at the site in the past in accordance with proper application procedures. There are no known pesticide formulation facilities, warehouses, or disposal areas at the site. This will be further evaluated as needed for the RI Work Plan.

61. Section 3.4.2.1, p. 3-15, 1st paragraph –As stated previously, surface soil from locations within the Ship Creek Habitat Assessment Area (shown in Figure 3-2) should be evaluated against the ESLs for soil if samples were collected within that area but not part of an industrialized parcel. Those soils could represent a potential exposure for terrestrial ecological receptors. (The matrix should be considered to be "soil" if it is in the floodplain [i.e., not under water at normal flow/stream level], instead of "sediment" as indicated in the SBR.)

Response: See Comment Response #35.

62. Section 3.4.2.2, p. 3-15, 1st paragraph – Subsurface soils within the rooting depth of plants from locations within the Ship Creek Habitat Assessment Area (shown in Figure 3-2) should be evaluated against the ESLs for soil if samples were collected within that area but not part of an industrialized parcel. Those soils could represent a potential exposure for plants. (The matrix should be considered to be "soil" if it is in the floodplain [i.e., not under water at normal flow/stream level], instead of "sediment" as indicated in the SBR.

Response: In general, subsurface soil is an ecological concern to the rooting depth of plants and the burrowing depth of animals. See Comment Response #35 for discussion of the soil vs. sediment issue.

63. Section 3.4.2.3, p. 3-16 1st paragraph – Earlier sections of the SBR indicate that it is, as yet, unconfirmed whether the North Bluff area is a site-related exposure pathway. This should be noted here and add that ecological evaluations will be conducted if the pathway is found to be complete.

Response: Comment noted; to be addressed in the RI Work Plan.

64. Section 3.4.2.3, page 3-16 – last sentence of the first paragraph – please clarify whether this refers to incidental ingestion or ingestion as a drinking

water source. Although this statement is likely true, highly bioaccumulative constituents may present a greater risk to ecological receptors.

Response: The statement is intended to refer to levels protective of human drinking water ingestion. Selected highly bioaccumulative substances (e.g., some organochlorine pesticides, PCBs, organically bound mercury) may be of greater risk to ecological receptors, and for such compounds the statement is not strictly accurate. The RI Work Plan will discuss further whether highly bioaccumulative site-related substances are associated with the North Bluff.

65. Section 3.4.2.3, p. 3-16 – The evaluation of groundwater should include potential discharges to surface water in Ship Creek Habitat Assessment Area, as indicated in comments on previous sections.

Response: Comment acknowledged. See Comment #35.

66. Section 3.4.2.3, p. 3-16, 3rd paragraph – 1,2-Dibromoethane (EDB) may also be present from historical use as an additive in leaded gasoline (lead scavenger).

Response: The incorporation of EDB will be evaluated for inclusion in the RI Work Plan.

67. Section 3.4.2.3, p. 3-16, 4th paragraph – Detection limits which are greater than screening levels would "skew" a risk assessment to be less conservative **not** more conservative as is stated in this paragraph. If an analyte was not detected because the sample was diluted, it is conceivable that the analyte would still pose a risk. This paragraph must therefore be modified accordingly

Response: The sentence should read, "The frequency of these exceedances, particularly for the detected analytes, will need to be discussed in the RI and Risk Assessment."

68. Section 3.4.2.3, p. 3-17 – Suggest further discussion regarding the detection limits for the most recent groundwater data be added, as the historical groundwater data are unlikely to be used for estimating risk. Please discuss whether most of the DL exceedances occur in historical data.

Response: Agreed. Further evaluation of the detection limits for historical groundwater data will be conducted in the RI Work Plan to evaluate what data are recent enough for inclusion in the risk assessment and locations that should be the focus of future sampling.

69. Section 3.4.3, p. 3-18, - How was it determined that “lowest practicable detection limits for analytical methods” were used? Some chemicals (e.g., mercury) require special methods to achieve detection limits sufficiently low to compare to ecological screening benchmarks. If it this was not a goal of the study that collected the data, then it is unlikely that detection limits would be sufficient. Therefore, it is not that the screening value level could not be reached, but that the level was not needed to meet the goals of the study. This often happens when the ecological screening goals are less than human health benchmarks. Cases in which the detection limit exceeds benchmarks should be evaluated on a chemical-by-chemical basis to determine if the ecological screening value is truly not achievable. Otherwise, the data cannot be excluded.

Response: ARRC and leased property operators utilized EPA-approved methods for analysis as would be expected for environmental investigations. EPA methods are designed to achieve the lowest practicable detection limit for that method. For the RI Work Plan, ARRC will consider special analyses to achieve lower detection levels if the detection limits using standard methods are above applicable screening levels and the chemical is believed to be present at the site.

70. Section 3.4.3, p. 3-18 – EPA typically uses one-half the detection limit as the screening level for risk assessment. Unless there is a valid justification for using the detection limit as the screening level, and EPA agree with that justification, one-half of the detection limit must be used.

Response: Agreed. One-half the detection limit will be used for the risk assessment per EPA guidance (EPA, 1989).

71. Table 3-14 – For natural attenuation parameters, the Need to Collect column indicates “No” for most of the parameters. It is recommended that MNA data be collected for baseline and confirmational sampling rounds so data can be compared using the same sampling techniques, analytical methods, and points in time.

Response: **We acknowledge that Table 3-14** ***is*** **confusing.** ***The NO in the*** **“Need to Collect”** ***column was meant to indicate that data for those monitored natural attenuation (MNA) parameters (e.g., dissolved oxygen) are available. MNA data will be collected as appropriate for the site and this data collection will be described in the RI Work Plan. ARRC agrees with the need to collect groundwater natural attenuation data to support remedy selection in the event groundwater contaminant levels exceed cleanup standards.***

72. Section 3.4.3, p. 3-18 – What procedure would be used to produce site-specific leaching criteria?

Response: This will be discussed with EPA in the risk assessment scoping meeting and incorporated into the Risk Assessment Work Plan.

73. Section 3.5, pps. 3-19 through 3-30 – It is impossible for EPA to determine if the spatial and temporal distribution of the data is adequate without maps and cross sections which clearly depict the extent of contamination for each Area. The Background Report must be revised to include isoconcentation maps along with cross sections which clearly depict the past and current concentration levels for each sampling location.

Response: As agreed to with EPA on December 15, 2004, a subset of the requested soil and groundwater figures has been generated to show the distribution of selected chemicals (i.e., those detected above conservative screening levels). These figures are attached to this Addendum. In addition, a GIS Work Group of ARRC (RETEC), EPA (CH2MHill), and ADEC has been formed to ensure that the GIS figures generated meet the needs of all stakeholders evaluating the site data.

74. Section 3.5, p. 3-19 – Although this section heading indicates an evaluation of spatial and temporal representativeness of historic data, it appears to focus on spatial coverage only. In order to effectively determine whether existing data represent the most current conditions for the risk assessment, trend analyses are needed to see if steady-state conditions exist, or if more or less toxic conditions exist. If concentrations are changing, and if no current data exist for specific areas, then new data collection is recommended. Alternatively, if concentrations are trending downward, and historic data pose unacceptable risk, use of historic data may be acceptable.

Response: The RI Work Plan and proposed RI scoping meeting will focus on both spatial and temporal distribution of historical data to guide investigations within the RI study area. Trend analysis, if appropriate, will be included in the RI Report.

75. Section 3.5.3, p. 3-21, 2nd bullet under Groundwater Data – Not clear what the meaning is of the range (149 – 353 samples). Comment also applies to ranges in Tables 3-10, 3-11, and 3-12.

Response: The meaning was unclear as presented in the SBR text. The range was meant to indicate that not all samples were analyzed for all analytes. For example, in the above referenced range, there are between 149 and 353 samples for some or all of the fuel hydrocarbon analytes.

Future submittals will not summarize the data in this manner.

76. Figure 3-7 – Missing callouts for several lease lots (e.g., LP-015, LP-017, LP-024, etc.)

Response: Future maps will clearly mark the properties.

77. LP-120 KAPP, p. 3-29 – The Background Report does not include metals as a constituent that was analyzed at this site. According to data available to EPA, including the RFA, many metals on site exceeded an onsite background sample. Therefore this paragraph must be revised to include the metals data.

Response: As stated on page 3-29 "metals (up to 87 samples depending on the analyte)" were included. No revision appears to be needed.

78. Section 3.5.7, p. 3-30, 3rd paragraph – During the meeting on 10/6/04, it was stated that the terminal operators had not yet submitted historical reports for inclusion in the SBR. How complete is the information for Area 3 in the SBR and the database?

Response: The information in the SBR includes all publicly available information from EPA and ADEC, as well as information contained in ARRC files. Future information, if received from the terminal operators, will be evaluated for inclusion in the database.

79. Section 3.6, p. 3-31 – Due to the influence of offsite industrial sources, this section indicates that both inorganic and organic data will be collected for background analyses. The section also indicates that these data will be used for COPC selection. It is agreed that information regarding offsite anthropogenic sources of organic compounds is important at this site, however this information should be used in interpreting the risk results and not for selection of COPCs.

Response: According to EPA Risk Assessment for Superfund Part A (EPA, 1989), a comparison of site samples with background is conducted in the data evaluation phase (Section 5, specifically Section 5.7) in the determination of chemicals of potential concern. EPA Regional risk assessment guidance (EPA, 1994) also includes this process. The chemicals that are determined to be constituents of potential concern (COPCs) will be further evaluated in the risk assessment.

80. Section 4.1.1, pps. 4-2 and 4-3 – The leased properties listed below, which were identified by EPA in the RFA, must not be eliminated from the RI Workplan for the following reasons:

Response: At EPA's request, ARRC is retaining all these sites. See Response to General Comment #2.

.

a. Tesoro, LP-019 - The 2002 Annual Water Quality Report by Oasis Environmental, which was submitted by ARRC to EPA on August 13, 2003 as part of the Sixth Transmittal of Alaska Department of Environmental Conservation (ADEC) and ARRC Site Records, indicates the presence of benzene above ADEC ground-water cleanup levels (0.005 ppm) in 13 wells. The ground-water concentrations range from 0.039 to 12.6 ppm. The cleanup level of 1.5 ppm for gasoline range organics (GRO) was exceeded in 8 wells with concentrations ranging from 1.53 to 25.2 ppm. In addition, four surface water samples exceeded the cleanup level for benzene (0.005 ppm) ranging from 0.00759 to 0.141 ppm.

Response in addition to general response above: Site is actively managed by ADEC. As stated in Response to General Comment #2, ARRC will work with EPA and ADEC to determine the best way to incorporate current and future site data and the results of ongoing remedial activities conducted under ADEC oversight into the RI/FS process.

b. Municipal Light & Power, LP-022 (MLP) - Several reports concerning sampling taken at the MLP property were submitted by ARRC to EPA on July 24, 2003 as part of the Fourth Transmittal of ADEC and ARRC Site Records. One of these reports, the October 1996 Off-Site Characterization prepared by Meta Environmental, Inc for MLP shows total petroleum hydrocarbons-diesel (TPH-D) in soil and groundwater underneath the entire property. High concentrations of TPH-D were detected in soil. The December 10, 1999 Shannon and Wilson report shows diesel range organics (DRO) detected in wells MW-22 and MW-28 at 3.52 ppm. In addition, 0.65 inches of free product was detected in well B-3 and wells MW-22 and MW-28 have displayed increasing trends of contamination over time.

Response in addition to general response above: The source of the diesel release is not on ARRC property and potential investigative and remedial requirements at the ML&P property where the release originated – and where much of it remains – have been under active ADEC oversight since 1991. In 2004, ADEC required ML&P to conduct additional site characterization at ARRC property to assess potential impacts to Ship Creek, and ML&P carried out such sampling. ARRC will continue to work with ML&P to provide access to ARRC property for investigation and remediation as necessary.

c. Prescott Equipment, LP-024 - Although ADEC issued a No Further Action Planned/Institutional Control Status letter for this property on June 9, 2003, alternative cleanup levels were approved for up to ten times the ADEC cleanup levels for the migration to groundwater pathway for

benzene and DRO. Because this property is located adjacent to Ship Creek, and a site-specific risk assessment was not done, EPA is concerned that the residual contamination left at this property could still pose a risk to the creek.

Response in addition to general response above: Numerous investigations were completed under ADEC oversight. Based upon the results of those investigations, ADEC issued a no further action letter.

d. Chevron USA, LP-025 - Although this property has partially been remediated via encapsulation of contaminated soil, the November 11, 2002, Groundwater Monitoring Report from Gettler-Ryan, Inc, submitted by ARRC to EPA on July 24,2003 as part of the Fourth Transmittal of ADEC and ARRC Site Records, showed six groundwater monitoring wells with elevated concentrations of DRO, GRO and benzene. With only one exception (MW-13A) all wells displayed increasing levels of at least one contaminant from the previous year.

Response in addition to general response above: This property is under active ADEC oversight. ARRC will work with EPA and ADEC to determine the best way to incorporate current and future site data and the results of ongoing remedial activities conducted under ADEC oversight into the RI/FS process.

e. Whitney Enterprises, LP-112 - Floating product was found in groundwater. This property may have elevated concentrations of TPH, volatile organics, semivolatile organics and metals. According to the March 31, 1998 letter from Shannon and Wilson to Development Managers, Inc, concerning groundwater monitoring results at this property which was submitted to EPA on August 26, 2003, as part of the Seventh Transmittal of ADEC and ARRC Site Records, four monitoring wells that had been previously installed were either inaccessible, damaged or destroyed. Thus, only two wells were sampled by Shannon and Wilson during their March 1998 sampling event.

Response in addition to general response above: It appears that the RFA is in error in the interpretation of the document it references regarding the presence of constituents on this property (no. 200 in the list of references). Specifically, the document does not implicate this site at all in the contamination on Whitney Road. ARRC has no reason to believe that this site is contaminated. Additionally, starting with "According to…" in the above comment to the end of the comment, the information pertains to 1301 Whitney Road (Site 132), not 1101 Whitney Road. It seems that information from two different sites has been mixed up. These factual errors should be corrected so they do not propagate through the RI/FS.

f. Post Road Co-Tenancy, LP-127 - Shannon and Wilson performed a Baseline Environmental Site Assessment (ESA) on this property in August 1999. A copy of the ESA was submitted to EPA as part of the Sixth Transmittal of ADEC and ARRC Site Records. According to the ESA, an injection/seepage well that was operated by Westinghouse on site from the early 1950's was a source of PCB contamination. Westinghouse remediated the facility in 1991, but left PCBs in place with concentrations as high as 180 ppm. Trichloroethene (TCE) has been detected in soil at concentrations as high as 6.5 ppm. The ADEC cleanup level for the migration of soil to groundwater pathway is 0.027 ppm. TCE has also been detected in two groundwater monitoring wells. Elevated concentrations of GRO, DRO and benzene have also been detected at this property.

Response in addition to general response above: This property is under active ADEC oversight. ARRC will work with EPA and ADEC to determine the best way to incorporate current and future site data and the results of ongoing remedial activities conducted under ADEC oversight into the RI/FS process.

81. Section 4.2.3, pps. 4-6 through 4-12 – Without adequate maps and cross sections which clearly depict the nature and extent of contamination in Areas 1 through 6, EPA has no way of evaluating if the existing dataset is adequate for site characterization and risk-based evaluation. The Background Report must be revised to include an adequate up-to-date characterization of each Area.

Response: See Comment Response #73.

82. Section 4.2.3, pps. 4-8 and 4-9 – Temporal distribution is not discussed for Areas 1, 2, and 3.

Response: See Comment Response #74.

83. Section 4.2.2, p. 4-6 – The evaluation of data gaps to be conducted once the Ship Creek Habitat Survey is completed should consider the riparian soils in nonindustrialized locations within the Ship Creek Habitat Assessment Area as a potential exposure medium for terrestrial ecological receptors and the possibility that groundwater from locations within the Ship Creek Habitat Assessment Area may discharge to surface water within the floodplain and Ship Creek by screening against ESLs. (This comment applies also throughout Section 4.)

Response: Comment noted. This area will be considered in the RI Work Plan and Risk Assessment Work Plan.

84. Several comments listed for the Access database in Appendix B:

a. In several cases, lease properties (LP) listed on the figures don't correspond to LPs in the database. For example, Area 3 on figures shows LP003, LP019, LP025, LP027 and LP060; Area 3 in database has LP003, LP016, LP019, LP025 and LP060.

b. The units listed in the database appears in several instances to be incorrect. For example, for the soil matrix, the following units are in the database:

sample_matrix_code	result_unit
SO	mg/kg
SO	mg/L
SO	ng/g
SO	pg/g
SO	ug/kg
SO	ug/L

c. There are multiple entries for the same samples that have slightly different sample names. This causes duplicate records in queries to appear to be unique samples. For example:

sys_sample _code	**sample _name**	**sample _date**	**chemical _name**	**sys_loc _code**	**result _value**	**result _unit**
MW-7-062088	MW-7	06/20/1988	Benzene	LP-003-003-MW-7	0.03	mg/L
MW7-062088	MW7	06/20/1988	Benzene	LP-003-027-MW-7	0.03	mg/L

d. There are multiple entries for records with slightly different sample dates. For example:

sys_loc_code	**ORIG-sample _name**	**sample _date**	**chemical _name**	**result _value**	**result _unit**
LP-991-004-SB-10	SB-10 2.5'	5/28/1996	Iron	32600	mg/kg
LP-991-027-SB-10	SB-10	5/30/1996	Iron	32600	mg/kg

e. There are records with incorrect sys_loc_codes. For example:

sys_loc_code	**sample_date**	**sys_sample_code**	**sample_name**
LP-016-037-MW-18	5/23/2000	MW17-052300	MW17

f. There are records with no results.

Response: The database has undergone a significant QA effort since the submittal of the SBR. The QA has included the following:

<u>Locations-</u>
confirmed primary_site_code (EL001, LP120, RY065. etc)

attempted to identify primary_site_code for unknown locations
identified locations that had no primary_site_codes as "unusable"

standardized sys_loc_code based on corrected primary_site_code
attempted to identify missing x,y coordinates for standardized sys_loc_codes
identified sys_loc_codes where no coordinates could be obtained as "unusable"

identified same sys_loc_codes that had multiple x,y coordinates
confirmed correct x,y coordinates for same sys_loc_codes

identified different sys_loc_codes that had same x,y coordinates
confirmed correct x,y coordinates for different sys_loc_codes

archived all "unusable"" locations in EQuIS database for reference only

Samples-
linked samples (sys_sample_code) to approved new sys_loc_codes
identified all samples with unusable locations as "unusable" data

Results (chemical data)-
created flat table of all useable samples with their associated test and result data
identified all results that had no reporting_detection_limit and no result_value as "unusable"

standardized result_units and detection_limit_units according to matrix/method/analyte
ran duplicate queries on positive hits for same sys_loc_code; matrix; analyte; result
checked potential duplicate data for consistency in results reported
identified confirmed duplicate data as "unusable"

identified sample data with unknown collection date (1/1/1950) as "unusable"
identified sample data with unknown units as "unusable"

archived all "unusable"" data in EQuIS database for reference only
re-created and re-imported EQuIS import files for all useable data

References

Jarvinen, A. W. and G. T. Ankley. 1999. *Linkage of Effects to Tissue Residues: Development of a Comprehensive Database for Aquatic Organisms Exposed to Inorganic and Organic Chemicals.* Society of Environmental Toxicology and Chemistry (SETAC), Pensacola, Florida, 364 pp.

Sample, B.E., D.M. Opresko, and G.W Suter, II. 1996. *Toxicological Benchmarks for Wildlife: 1996 Revision*. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 227 pp, ES/ER/ TM-86/R3.

Suter, G. W., II, and C. L. Tsao. 1996. *Toxicological Benchmarks for Screening of Potential Contaminants of Concern for Effects on Aquatic Biota on Oak Ridge Reservation*: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 104 pp, ES/ER/ TM-96/R2.

USEPA. 2002. *National Recommended Water Quality Criteria: 2002.* EPA-822-R-02- 047. Office of Water and Office of Science and Technology, U.S. Environmental Protection Agency, Washington, D.C.

REFERENCES – Comment Responses

Alaska Department of Highways, 1968, *Foundation Report Anchorage Port Access Viaduct*, Bridge No. 455, Project No. F-042-1 (23) Phase I. January 1968.

RETEC, 2004. Ship Creek Preliminary Habitat Survey. Anchorage Terminal Reserve. Dec. 3 2004.

USEPA, 1989. Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final. EPA 540/1-89/002. December 1989.

US EPA, 1998. SW-846 Third Edition, Revision 5, Updates 1, 11, 11A, 11B, 111, and 111A. April 1998.

US EPA, 1998. SW-846 Draft Update IVA. May 1998.

US EPA, 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final. Office of Solid Waste and Emergency Response. EPA540-R-97-006. June 1997.

US EPA (1999) National Recommended Water Quality Criteria–Correction EPA 822-Z-99-001. April 1999.

US EPA 2000. Guidance for the Data Quality Objectives Process (QA/G-4). EPA/600/R-96/055. August 2000

ARRC Responses to February 23, 2005 EPA Site Background Report Comments

General Comment # 8

The response to this comment states that "The specific criteria for each proposed excluded property are provided in Table 4-1 of the SBR." However, Table 4-1 only includes 29 sites that were recommended for further action by the 2002 RCRA Facility Assessment Report and provides no information on approximately 90 other lease properties that have not been recommended for further action in the SBR. As discussed in the meeting on December 15, 2004, EPA does not view the RCRA inspection report as an environmental site assessment report. Sites need to be considered for further action based on CERCLA concerns as well. The SBR needs to address all lease properties in the Order on Consent, including information for current and historical site uses. Specific lease properties cannot be excluded from the RI/FS until the information requested in the original comment has been addressed.

Response: As agreed to with EPA on March 2, 2005 meeting, ARRC will consider the entire 600-acre Site in the RI Work Plan and RI. The primary focus of the SBR was on those sites identified for further action by U.S. EPA during the RCRA Facility Assessments. Table 4-1 included only those sites that ARRC proposed for exclusion, all other sites were meant for inclusion. The information requested in Comment #8 will be provided as requested in the RI Work Plan or in the RI.

Specific Comment # 2

EPA agrees with the content of the response; however, it does not address the intent of the comment. For clarification purposes, the comment relates to the naming of the table and it's reference in the text. The table title and the text indicate that DQOs for the SBR Review are presented. Please change this to DQOs for the SBR and preliminary (or initial) DQOs for the RI/FS. The DQOs themselves are fine, except for the one discussed in Specific Comment #3 (response for this comment is fine).

Response: The table should have been named "DQOs for the SBR and Preliminary DQOs for the RI/FS".

Specific Comment # 24

The response does not address the second part of the comment regarding evaluation of the amphibians (e.g., wood frogs) in the risk assessment and ECSM. Because the response to Specific Comment # 28 indicates that the listed potential receptors in the comment (i.e., plants, soil biota, amphibians, birds, and mammals) will be included in the Risk Assessment Work Plan, it is presumed that ARRC agrees with the inclusion of amphibians in the ESCM. Please indicate this in the response to comment # 24.

Response: ARRC will include amphibians in the ESCM in the Risk Assessment Work Plan as requested by EPA.

Specific Comment # 30a

The use of standard analytical naming conventions (i.e., ppb for organics and ppm for metal) is acceptable; however, care should be taken that there is consistency between tables and between same media within a table. For example, in Table 1-2, most of the water benchmarks are given in µg/L, but the ESLs for surface water are shown in mg/L. It is appropriate to convert the ESLs to µg/L to make these easily comparable to other water benchmarks and to measured concentrations. Also in the same table, the sediment and soil benchmarks are presented in mg/kg, but the PQL is presented in µg/kg. Also in the same table, the metals are presented in µg/L and µg/kg, not in mg/L and mg/kg as indicated in the response. Please select units for each analyte-medium combination and be consistent within and between tables.

Values in the tables would be easier to compare visually if scientific notation (E+) was not used. No response was given for this comment. Presumably this will be considered in the RI Work Plan.

Response: Comment noted. As stated, standard analytical naming conventions will be utilized in the RI. Table 1-2 was not resubmitted and therefore, the original comment still applies. Scientific notation was used for consistency as some of the screening levels are extremely low. ARRC will not use scientific notation for numerical values going forward as requested.

Specific Comment # 30e

Please indicate in the response whether PQLs for sediment will be added (as a separate column) or whether they will be the same as PQLs for soil (with heading of either "soil/sediment PQLs" or "solids PQLs) in the RI Work Plan.

Response: Table 1-2 was not reissued. In future submittals, the PQLs for sediment will be added.

Specific Comment # 30l

EPA agrees with the content of the response and with the use of the NAWQC for PCBs. It is the application of this criterion that was the subject of the comment. As indicated in the Specific Comment # 30l and reiterated in Specific Comment # 30o (for human health), the NAWQC should be applied to the sum of the Aroclors because "screening of individual Aroclors may result in screening out individual Aroclors when, in fact, the sum of all Aroclors exceeds the total PCB criteria." This is also true for the freshwater and marine sediment benchmarks for total PCBs (as indicated in Specific Comment # 30m). ARRC indicated in responses to Specific Comments #s 30m and 30o that the criteria for PCBs would be applied to the sum of the Aroclors for screening. It is presumed that this is equally acceptable for the surface water screening of ecological receptors discussed in Specific Comment #30l.

Response: NAWQC will be applied to the sum of Aroclors. However as discussed with U.S. EPA on March 2, 2005 achievement of the NAWQC in surface water is unattainable using available analytical methods. Therefore the standard applied to PCBs in surface water will be based on the achievable detection limits.

Specific Comment # 40

EPA's comment should not be misconstrued to mean that none of the historic Aroclor data will be useful for risk assessment, but only that it will not provide an assessment of the risk from dioxin-like PCB congeners. Current risk assessment guidance (Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds - NAS Review Draft, EPA 2003) indicates that PCB congener analysis will provide this assessment. It may be possible to determine the relative concentration of PCB TEQs from a subset of the samples where Aroclor concentrations are also known. This information would allow inferences to be made regarding those locations where only Aroclor data exist. This approach would be limited to those locations with similar Aroclor types and aging.

Response: As discussed with U.S. EPA and CH2M Hill on March 2, 2005, the use of PCB congener analysis may be appropriate for confirmation purposes if the Aroclor data indicate there is a risk that must be addressed. ARRC will plan to use generally accepted U.S. EPA accepted methods for PCBs focusing on the specific Aroclor congeners (e.g. SW-846 Method 8081) as the first line of PCB evidence. It was noted by CH2M Hill on March 2 that this is a conservative approach.

Specific Comment # 41

An attempt should be made to achieve sufficiently low detection limits; however, it is understood that certain levels may not be obtainable or may be costly to obtain. One option is to evaluate a subset of samples from areas with isolated water bodies where PCBs may be expected using more specialized methods. This would help achieve sufficient detection limits in areas of particular concern.

Response: ARRC will ensure that any PCB analysis in surface water meets the best practicable detection limits using standard methods, although the NAWQC will still not be achievable. We anticipate that co-located sediment samples collected in isolated water bodies will provide needed data to determine if PCBs may be present at levels of concern in these water bodies. In general, it should be noted that the very low NAWQC for PCBs is predicated on extensive bioaccumulation via aquatic biota to raptors and other higher trophic level predators, which is less of a concern in isolated water bodies.

Specific Comment # 49

It is agreed that application of dilution and/or attenuation factors may be appropriate for evaluation of groundwater discharge to surface water. However, these factors should be added only after an initial screening of the measured groundwater concentrations. Using this is a conservative approach, analytes that pass the screen can be excluded from further evaluations. Those that fail the screen can be re-evaluated after applying the dilution/attenuation factor(s). Additionally, Alaska guidance should be consulted regarding application of dilution/natural attenuation factors.

Response: ARRC agrees and will consider this the approach in the upcoming RI and Risk Assessment.

Specific Comment # 57

Please indicate that fish tissue concentrations will be considered as potential measures of effects in development of the Risk Assessment Work Plan (as indicated in the response to Specific Comment #29).

Response: Fish tissue will be considered as a potential measure of effects in the Risk Assessment Work Plan.

Specific Comment # 59

EPA agrees that groundwater from wells with LNAPL may not be useful in determining risk; however, these data should be considered for site characterization and remediation decisions. It is important to know the amount and extent of contamination with free product (i.e., site characterization) in developing remedial strategies. It is not clear in the SBR or in the response to this comment how ARRC plans to address this type of contamination.

Response: ARRC will establish a groundwater-monitoring program as part of the RI Work Plan. All wells in the monitoring program will be gauged to determine groundwater elevations and NAPL observed thickness. NAPL samples may be collected and analyzed as required, however, groundwater from wells containing NAPL will not typically be sampled due to contamination issues previously discussed. Groundwater downgradient of potential NAPL source areas will be sampled as necessary to evaluate impacts to Ship Creek or other potential receptors.

Specific Comment # 62.

Although the response to this comment states "In general, subsurface soil is an ecological concern to the rooting depth of plants and the burrowing depth of animals," the response does not indicate whether subsurface soils within these depths is available. If available, these data should be evaluated against ESLs for soil as stated in the comment. If this evaluation is planned as part of the RI Work Plan, please state this in the response.

Response: Existing shallow subsurface soil data (or any soil data for that matter) from the Ship Creek and North Bluff habitat zones is limited to a few scattered samples showing little or no presence of contaminants (primarily a few borings in the river flats below the KAPP dam). There are no useful inferences to be made from the existing data. Existing data within the ecologically relevant areas together with RI-collected data will be evaluated in the risk assessment.

Site Background Report

Volume I – Text, Tables, Figures

Alaska Railroad Corporation
Anchorage Terminal Reserve
U.S. EPA Docket No. CERCLA 10-2004-0065

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October 15, 2004

Site Background Report

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October 15, 2004

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List of Acronyms

ADEC	Alaska Department of Environmental Conservation
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
ARRC	Alaska Railroad Corporation
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylene
CCC	Criteria Continuous Concentrations
CDD	chlorinated dibenzo-p-dioxin
CDF	chlorinated dibenzofuran
CERCLA	Comprehensive Environmental Responsibility, Compensation, and Liability Act of 1981
cfs	cubic feet per second
COPC	constituent of potential concern
CSM	conceptual site model
DQO	data quality objectives
DRO	diesel range organics
DWEL	drinking water equivalent levels
ECSM	ecological conceptual site model
EI	environmental indicator
ET	Ecotox Threshold
ERA	Ecological Risk Assessment
FS	Feasibility Study
GIS	Geographic Information System
GRO	gasoline range organics
HHRA	Human Health Risk Assessment
KAPP	Knik Arm Power Plant
LNAPL	light non-aqueous phase liquid
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MCL	maximum contaminant level
ML&P	Municipal Light & Power
MOA	Municipality of Anchorage
NAPL	non-aqueous phase liquid
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PC	planned community
PRG	preliminary remediation goal
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation

List of Acronyms

ROW	right-of-way
RRO	residual range organics
SBR	Site Background Report
SCV	Secondary Chronic Values
SLERA	Screening Level Ecological Risk Assessment
SMDP	Scientific Management Decision Points
SOW	Statement of Work
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TCL	target compound list
TEL	Threshold Effect Level
TPH	total petroleum hydrocarbons
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	volatile organic compound
WQC	Water Quality Criteria
µg/L	micrograms per liter

1 Introduction

This document was developed under the Comprehensive Environmental Responsibility, Compensation, and Liability Act of 1981 (CERCLA) Administrative Order on Consent No. 10-2004-0065 dated June 29, 2004 between the U.S. Environmental Protection Agency (U.S. EPA) Region 10 and the Alaska Railroad Corporation (ARRC), under which ARRC has agreed to conduct a CERCLA/Resource Conservation and Recovery Act (RCRA) Remedial Investigation and Feasibility Study (RI/FS) at its Anchorage Terminal Reserve in Anchorage, Alaska (hereinafter, the Site). The objectives of the work required under this Administrative Order on Consent (AOC) include the following (U.S. EPA, 2004):

1) Human health protection with respect to exposure to site contaminants at or from the Site in soils, groundwater, surface water, and sediments, including exposures occurring from expected use of Ship Creek and its banks for recreation, occupational activities, and consumption of resident fish

2) Protection of benthic invertebrates, resident fish, and wildlife receptors of such aquatic life that may be affected by potential water or sediment contamination in Ship Creek

The AOC incorporates a Statement of Work (SOW) (U.S. EPA, 2004) that includes a requirement for ARRC to submit a Site Background Report (SBR) that reviews the existing environmental data related to the Site, evaluates the quality of this existing data, and assists in the planning of further data collection for the Site.

The entire 600-acre Site, defined as the Anchorage Terminal Reserve, will be considered in the RI Work Plan and RI and evaluated appropriately going forward. However, the primary focus of the review of analytical data in the SBR has been on sites identified for further action by U.S. EPA during the RCRA Facility Assessments. Note, the existing data has been compiled in an analytical database for the leased properties and railyard areas identified by U.S. EPA as requiring further action. Properties identified by U.S. EPA as requiring no further action or properties not visited by U.S. EPA are not included in the analytical database. General information regarding the no further action sites is included in the SBR.

Details and requirements of the SBR are presented in the following sections.

1.1 Document Purpose

The purpose of the SBR is to gather, evaluate, and present existing site information and identify data gaps for further investigation in the RI Work Plan. The SOW includes five subtasks within the scoping tasks in the RI/FS.

This SBR includes two of the five subtasks as outlined below, specifically Subtasks 2a and 2b. ARRC will submit the draft RI Work Plan required under Subtask 2e after U.S. EPA reviews and approves the SBR elements of this document.

Subtasks 2a and 2b as defined in the SOW, Sections 2.2 and 2.3 (U.S. EPA, 2004) include:

Subtask 2a – Data Compilation/Site Background Report

"The objectives of this subtask are as follows:

1) *Identify and compile applicable historical information and data that are of acceptable quality for use during the RI/FS process.*

2) *Identify relevant existing studies regarding the characteristics of environmental media and the condition of receptor populations.*

3) *Identify useable information and data from current and historical studies for use in developing a conceptual site model (CSM).*

4) *Collect and analyze existing information and data and document the need for additional information and data to the extent practicable. Before planning RI/FS activities, existing site information and data described above will be compiled and reviewed and used to develop a preliminary CSM. Specifically, this will include presently available information and data relating to the types and quantities/concentrations of hazardous substances and/or solid wastes (including petroleum products) released to the environment at the Site, and past disposal practices and/or releases (including spills and point discharges) that may have impacted the Site. This will include results from any previous sampling events that may have been conducted. Information regarding potential upgradient sources of contamination also will be collected and evaluated.*

Respondent [ARRC] *will develop DQOs for evaluating the collected information. The DQOs will be focused on determining which collected information is appropriate for incorporation into a site database. After EPA review of the collected information and approval of the DQOs, Respondent will incorporate acceptable data and information into a single relational database.*

By no later than the date for submittal of the Site Background Report, Respondent will submit a proposal for design of the relational database for EPA's approval. At a minimum, the database will support geographic information system (GIS) presentation of information and data, and

Respondent will present information and data relevant to the decision-making process in this format during the course of the RI/FS.

Existing information and data will be utilized to help determine data gaps in site characterization (including determination of background), identify chemicals of potential concern, develop a preliminary CSM, identify potential risks to human health and the environment, better define potential ARARs, and develop a range of potential remedial alternatives to address any releases identified at that point that may exceed applicable risk levels. Respondent will also provide electronic and database files directly to EPA to allow independent review and analysis of information and data."

Subtask 2b – Data Review and Planning

Data needed to complete the RI/FS will be identified through the data review and planning process. As stated in Section 2.3 of the SOW (U.S. EPA, 2004), *"The analysis will identify additional information and data that will be required to determine the nature and extent of contamination, complete the baseline human health and ecological risk assessments, and identify and screen remedial action and corrective measure alternatives. The analysis also includes the preparation of a preliminary CSM.*

The preliminary CSM will portray the relationship among chemicals of potential concern, the location of their sources, transport mechanisms (including potential mechanisms and conduits for soil, sediments, surface water, and groundwater transport), receptors, and other parameters that are determined to be relevant during implementation of the Administrative Order on Consent.

The preliminary CSM for the ecological risk assessment (ERA) will include species and their habitats that could be impacted by site-related contamination based on information generated during the historical review and will show the relationships among species and potential exposure pathways. The preliminary CSM for the human health risk assessment (HHRA) will include potential exposure pathways."

In accordance with the SOW, Section 2.3.2 (U.S. EPA, 2004), "*Preliminary analytical concentration goals will be developed as part of the planning process to assist in selecting appropriate analytical methods and setting analytical DQOs for human health and ecological exposure pathways identified in the CSM."* The preliminary analytical concentration goals will include Applicable or Relevant and Appropriate Requirements (ARARs), human health and ecological screening levels, and reporting limits.

1.2 Site Background Report Data Quality Objectives

This SBR is intended to summarize the existing site data collected from within the railyard and leased properties and determine whether these data are useable in the upcoming RI/FS and Risk Assessment.

Preliminary data quality objectives (DQOs) have been developed for use in the SBR and will be further refined in later stages of the RI/FS process. In accordance with guidance provided by U.S. EPA in the *Advance Notice of Proposed Rulemaking* (U.S. EPA, 1996a), data gathering strategies should be tailored to reflect DQOs established for the Site. DQOs reflect the overall degree of data quality or uncertainty that the decision-maker is willing to accept during the decision-making process.

DQOs apply to the entire measurement system (e.g., sample location, methods of collection and handling, field analysis, and laboratory analysis) and, thus, are updated over the course of a project to reflect goals and objectives of the various project stages. DQOs are used to ensure that environmental data are scientifically valid, defensible, and of an appropriate level of quality given the intended use of the data (U.S. EPA, 1996b).

The U.S. EPA's *Guidance for the Data Quality Objectives Process* (U.S. EPA, 2000) was used to develop DQOs that are appropriate for this preliminary evaluation of site data. The DQOs for the SBR review are presented in Table 1-1. In the subsequent RI/FS Work Plan, revisions to the DQOs will be incorporated, as appropriate, to reflect the further evaluation of existing site data and define DQOs for sample collection during the RI.

The seven-step process that DQO guidance prescribes for planning data collection efforts was used to define the purpose of the data to be collected, determine how the data will be used, and determine the tolerable limit of analytical uncertainty. The DQOs for the SBR are detailed in Table 1-1; the seven steps are summarized below:

Step 1: State the Problem. This step clearly defines the problem to focus the study, lists the team members, appoints a decision-maker, concisely describes the problem, and summarizes the available resources and relevant deadlines for the study.

Step 2: Identify the Decision. This step identifies the principal question, defines the alternative actions that could result from the resolution of the principal question, combines the principal question and the alternative actions into a decision statement, and organizes multiple decisions.

Step 3: Identify Inputs to the Decision. This step identifies the inputs that will be required to resolve the decision statement and determine which inputs require environmental measurements. The results of this step include: identification of the information required to resolve the decision statement, an understanding of the sources for each item of information identified, identification of the information that is needed to establish the action level, and confirmation that appropriate analytical methods exist to provide the necessary data.

Step 4: Define the Boundaries of the Study. This step defines the spatial and temporal boundaries of the problem. It specifies the characteristics that define the population of interest, defines the geographic area within which all decisions must apply, divides the population into strata, determines the applicable timeframe for the decision, determines when to collect the data, defines the scale of the decision-making, and identifies any practical constraints on data collection.

Step 5: Develop a Decision Rule. This step defines the parameter of interest, specifies the action level, and integrates the results of previous DQO steps into a single statement that describes a logical basis for choosing among alternative actions.

Step 6: Specify Tolerable Limits on Decision Errors. In this step, the possible range of the parameter of interest is determined, the decision errors are identified, and the null hypothesis is chosen. A range of possible parameter values are specified where the consequences are relatively minor, and the probability values are assigned to points above and below the action level that reflects the tolerable probability for the occurrence of the decision errors.

Step 7: Optimize the Design for Obtaining Data. In this step, a resource-effective data collection design for generating data that are expected to satisfy the DQOs is identified. The results of this step include a review of the existing DQO outputs and existing environmental data, development of general data collection design alternatives, formulation of the mathematical expressions needed to solve the design problems for each design alternative, selection of the optimal sample size that satisfies the DQOs for each design alternative, selection of the most resource-effective design that satisfies all of the DQOs, and documentation of the operational details and theoretical assumptions of the selected design in the sampling and analysis plan.

1.3 Current and Reasonable Future Land Use

The ARRC executive and general offices are located at 327 West Ship Creek Avenue in Anchorage, Alaska on the north bank of Ship Creek (Figure 1-1). The area immediately surrounding the Site is primarily industrial/commercial. The marine waters of Knik Arm (extension of Cook Inlet) are located

approximately 0.4 miles to the west. The Alaska Railroad, which began operations in 1914, was owned by various departments of the federal government, including the former War Department, Department of Interior, and, most recently, the Department of Transportation, until its transfer to the State of Alaska in 1985 (SAIC, 1996). The site consists of approximately 600 acres of property in the lower Ship Creek valley. The railyard facility itself occupies approximately 313 of the 600 acres and includes a railroad track system, maintenance and repair buildings, shops, a refueling area, a tank car cleaning area, warehouses, and administrative offices (SAIC, 1996). Approximately 287 of the 600 acres consist of parcels that are leased to a variety of Anchorage commercial and industrial businesses, which includes public streets and rights of way. Leasing of most of the 287 acres began during the federal ownership (Booz, et al., 2002).

Currently, ARRC maintains a rail system for freight and passengers from Seward, Alaska to Fairbanks, Alaska, with spur lines to North Pole and Whittier. The railroad system is operated year-round. The central business district of Anchorage is located on the bluff above Ship Creek to the south of the Site; and the Government Hill residential, commercial, and light industrial district is located on the bluff due north of the Site. Elmendorf Air Force Base lies on the bluff north and northeast of the Site and east of the Site along Ocean Dock Road. Small commercial operations, some of which have known or suspected releases of hazardous substances, are situated up-valley (east) of the Site, along the Ship Creek floodplain (SAIC, 1996).

The current and historical use of the Site for commercial/industrial purposes is unlikely to change in the foreseeable future. ARRC will control land uses at the Site since ARRC owns all the Site property. The assumption of industrial land use was validated in the public interviews that U.S. EPA recently conducted (August 23 and 24, 2004) where U.S. EPA reported that several members from the public stated, “the most common concern expressed is that U.S. EPA’s investigation could slow or stop development of the Ship Creek area.”

Figure 1-2 presents the current zoning configuration for the Site vicinity, which coupled with ARRC property management policies provides the framework for the current industrial and commercial use of essentially the entire Site. The majority of the Site is zoned for heavy or light industrial uses as shown in this Figure. Neither ARRC, nor the State, nor the Municipality of Anchorage (MOA) has any short- or long-range plans for different land uses at the Site or in the immediately surrounding area. The only potential exception to this relates to the area in the southwestern portion of the Site, which is currently zoned as a “planned community” (PC) district and which includes residential within its permitted uses. ARRC and the MOA are discussing possible changes to the zoning designation in this area. Regardless of those potential changes, this area is and will remain the only area of the Site

where a limited amount of future residential housing could possibly be located. Ultimately, as the owner of the property, ARRC will determine the land use in this area, including whether to lease any land for residential purposes. This area is in the southwestern portion of the Site as shown in Figure 1-2.

1.4 Development of Preliminary Conceptual Site Models

Preliminary CSMs have been developed for the Site. The CSMs portray the relationship between the constituents of potential concern (COPCs) and their sources, transport mechanisms, and, ultimately, human and ecological receptors. In addition to the discussion of CSMs, the RCRA Environmental Indicator (EI) Determination is discussed. The EI Determination was completed by U.S. EPA for the *Current Human Exposures Under Control* (U.S. EPA, 2003a) and the *Migration of Contaminated Groundwater Under Contro*l (U.S. EPA, 2003b) in July 2003. U.S. EPA uses these indicators to measure progress in environmental terms rather than the status of any administrative proceeding. The U.S. EPA completed forms are shown in Appendix A and are summarized below in Sections 1.4.1 and 1.4.2.

Three related CSMs are provided: 1) a hydrogeological CSM which describes the Site hydrology, geology, hydrogeology, and potential source areas and migration pathways; 2) a human health CSM which characterizes exposure pathways and identifies human receptors; and 3) an ecological CSM which characterizes ecological receptors and exposure pathways. The human health and ecological CSMs build on the hydrogeological CSM. The preliminary CSMs are described in detail in the following sections.

1.4.1 Hydrogeological Conceptual Site Model

This section presents a hydrogeological CSM developed to describe surface water hydrology, geology, and hydrogeology conditions at the Site. The following text, a surficial materials geologic map, and three cross sections (Figure 1-3) are used to describe the stratigraphy and relationships between soils within the study area. Data that constitutes the hydrogeological CSM have been developed from review of several existing documents describing the Anchorage Terminal Reserve area (Schmoll & Dobrovolny, 1972; Schmoll, et al., 1996; Cederstrom, Trainer & Waller, 1964; ADEC, 1996; Ulery & Updike, 1983; Hansen, 1965).

Topography. The Site lies on four primary topographic surfaces as follows:

- The relatively flat floodplain of Ship Creek that contains the majority of the railyard and many of the light industrial lease lots.

- The flat tidal flats area, which has been covered with fill and is the location of the Port of Anchorage and several of the fuel tank farm facilities.

- The steep slopes north of the Ship Creek floodplain and west of the tidal flats that rise about 60 to 70 feet above the floodplain and tidal flats and are largely undeveloped and forested.

- The relatively flat outwash plain at the top of the north bluff that is the location of the Government Hill community and Elmendorf Air Force Base. The ARRC property on the outwash plain contains several apartment buildings and some commercial properties.

Surface Hydrology. Most of the Site lies within the Ship Creek drainage, one of several streams running from the Chugach Mountains westward through Anchorage. The portion of the Site that is not in the Ship Creek drainage drains directly into Knik Arm and includes the Port of Anchorage, the tank farm areas, and the westward facing slopes above the tank farms.

Ship Creek is about 25 miles long and has a drainage basin of about 117 square miles (ADEC, 1996). The upper 15 miles of the stream length and 90 square miles of drainage basin lie in the Chugach Mountains above the Fort Richardson dam and may be characterized as pristine. Below the Fort Richardson dam, the stream debouches onto and flows across its alluvial fan for a distance of about 3 miles. Below its alluvial fan, Ship Creek begins to incise the outwash plain extending south of the Elmendorf moraine. At the stream's mouth at Knik Arm, the stream is incised about 60 feet into the outwash plain. The lower two miles of Ship Creek flow across the industrial and commercial area comprising the Alaska Railroad Anchorage Terminal Reserve. Between the ARRC property and the Chugach Mountains, Ship Creek flows through Elmendorf Air Force Base and Fort Richardson.

Ship Creek is dammed at four places: 1) at the Knik Arm Power Plant, at about the high tide line and within the ARRC Anchorage Terminal Reserve; 2) at the Elmendorf Power Plant, about ¼ mile upstream of the ARRC property boundary and 2¼ miles upstream of the mouth; 3) at the Elmendorf fish hatchery about 1¼ miles upstream of the ARRC property boundary and 3¼ miles upstream of the mouth; and 4) at the Fort Richard dam site about 10 miles upstream of the mouth, where the stream flows out of the mountains and onto its alluvial fan. The United States Geological Survey (USGS) has maintained a gauging station at the Fort Richardson dam location (station #15276000) from 1946 to the present, and had gauging stations at the Elmendorf Power Plant location (station #15276570) from 1971 to 1980, and near the Elmendorf fish hatchery (station #15276500) from 1963 to 1971. In addition, stream discharge measurements have been made at several other locations along the stream. The USGS gauging station at the Fort Richardson

dam, which measures flow from the majority of the Ship Creek drainage basin (about 90 out of 117 square miles), has the best long-term discharge record (57 years) and shows the following:

- June has the highest average monthly discharge at about 452 cubic feet per second (cfs).
- March has the lowest average monthly discharge at about 17.4 cfs.
- Average annual flow rates have ranged from 62.5 cfs in 1996 to 226 cfs in 1980.
- The "period of record" maximum flow is 2,100 cfs and occurred in 1989.
- Although monthly average flows are highest in June, annual peak flows may occur in any month between May and October.

Several USGS studies (Cederstrom, et al., 1964; Waller, 1964; Weeks, 1970) have indicated that Ship Creek water flows from the stream channel into the underlying aquifer (i.e., it is a losing stream) in the section of channel between the Fort Richardson dam and about Davis Road (Boniface Road). In this area, the stream flows across its alluvial fan and the upper portions of its incised floodplain. Downstream of Davis Road (Boniface Road), groundwater flows into Ship Creek (a gaining stream). Comparing discharge measurements made at several locations along Ship Creek, Weeks (1970) calculated that about 25 cfs is lost to the groundwater system in the losing section of Ship Creek during periods of steady base flow, and that at least half of this water volume appears to flow through the shallow aquifer and re-enter Ship Creek downstream of the Elmendorf gauging station. (The other half of the lost stream flow likely enters what becomes the confined aquifer.) As part of his study, Weeks calculated that about 10 square miles of drainage basin lies below the Elmendorf gauging station and that given about 15 inches of total annual precipitation, recharge to Ship Creek from the portion of drainage basin below the Elmendorf gauge must be less than about 11 cfs. Because net infiltration to the aquifer is likely only a fraction of the total precipitation (maybe 20 percent), recharge to Ship Creek from precipitation falling over the lower portion of the drainage is likely much less than 11 cfs.

Ship Creek was used as Anchorage's primary source of water until municipal wells were developed in the late 1950s. Since the Eklutna Water Project came online circa 1990, the fraction of Anchorage's water derived from the municipal wells and Ship Creek has decreased. Current water use along lower Ship Creek includes cooling water for the Elmendorf Power Plant and water to operate the Elmendorf fish hatchery. The lower reach of the Creek serves as a popular sport fishery with king and silver salmon runs in the summer. The

ADEC reported in 1996 that there were 24 known stormwater outfalls within the MOA's stormwater network in lower Ship Creek.

Geology. The ARRC Anchorage Terminal Reserve lies in the Cook Inlet-Susitna lowland physiographic province within a subsection referred to as the Anchorage Lowland (Warhaftag, 1970). The lowland is covered by Quaternary-age unconsolidated deposits. The geology of the Anchorage railyard area has been described in several reports, including early mapping efforts by Cederstrom, Trainer and Waller (1964), and Schmoll and Dobrovolny (1972), and later mapping efforts by Updike and Carpenter (1986) and Schmoll, Yehle, and Dobrovolny (1996). In addition, engineering studies following the 1964 earthquake, such as that by Hansen (1965), have helped document the Site geology. All of these authors describe similar site geology, which is portrayed on a geologic map and cross-sections (Figure 1-3). A description of the map unit and their stratigraphic relationships is as follows:

- **Outwash.** The relatively flat plain north and south of the Ship Creek valley (and upon which Elmendorf Air Force Base and the downtown portion of Anchorage are constructed) is composed of glacio-fluvial outwash laid down south of the Naptowne age (late Wisconsin) Elmendorf moraine. The outwash consists of sands and gravels displaying cross bedding and graded beds. The outwash appears to be about 50 to 60 feet thick immediately north of the railyard and has a relatively high hydraulic conductivity. The outwash overlies the silts and clays of the Bootlegger Cove formation.

- **Ship Creek Alluvium.** Ship Creek alluvium occupies the bottom of the Ship Creek valley and within the study overlies and is incised into the silts and clays of the Bootlegger Cove formation. The Ship Creek alluvium varies in texture but includes sands and gravels transported and deposited in the fast flowing waters of the Ship Creek channel; medium to coarse sands deposited on point bars in the stream; fine sands and silts deposited as overbank floodplain sediments and abandoned channel fill; and may include peat which accumulated in abandoned channels and on low lying areas of the floodplain. The Ship Creek alluvium varies in thickness from less than 1 foot to about 25 feet.

- **Fill Material overlying Ship Creek Alluvium.** Within the developed portions of the Ship Creek floodplain fill has been placed over the Ship Creek alluvium (to level and raise the ground surface elevation and to provide a high bearing capacity surface). The fill material likely varies in texture but is thought to consist primarily of compacted sands and gravels; however, some fill may contain

silts, peat, and construction debris. Depending on the specific site within the railyard, the fill material may have been placed on top of peat and silt soils (which may help identify the contact between the fill and the *in situ* alluvium), while at other locations, the fill may overlie Ship Creek sands and gravels and the transition from fill material to Ship Creek alluvium may be difficult to discern. At most locations, the fill soils are expected to be less than about 10 feet thick. Because most of the fill material was placed on the floodplain alluvium above the high groundwater level, the fill material is likely above the water table at most locations and is not expected to control groundwater flow.

- **Tidal/Estuarine Sediments.** Along the Knik Arm shoreline are marine/tidal/estuarine sediments which are dominated by silt and clay sized particles, but also may include some sands and gravel near the high tide line and peat soils above the high tide line. The tidal/estuarine sediments overlie the Bootlegger Cove formation. The tidal/estuarine sediments have a low permeability.

- **Fill Material overlying Tidal/Estuarine Sediments.** Within the Port of Anchorage and the adjacent tank farm areas, development has been facilitated by placing fill materials on tidal/estuarine sediments. The fill materials are thought to consist primarily of sands and gravels, which range in thickness from about 1 to 20+ feet (in the dock area). Much of the fill material placed on the tidal sediments is below the high tide line and, hence, the water table is likely present in the fill material.

- **Bootlegger Cove Formation.** The Bootlegger Cove formation consists predominately of silts and clays deposited in a glacio-marine or glacio-lacustrine environment, although Updike et al. (1986) have identified sandy and sandy gravelly facies within the Bootlegger Cove formation. The silts and clays are typically gray and massive, and have a low permeability. The Bootlegger is the oldest soil layer exposed within the study area – that is, it extends beneath the entire study area (i.e., the Bootlegger Cove formation underlies the outwash, Ship Creek alluvium and tidal/estuarine sediments).

  The Bootlegger Cove formation is exposed along the base of the west facing bluff above the tank farms and in portions of the bluff north of Ship Creek. For example, in the north bluff area, the Bootlegger Cove formation is clearly visible in the recent excavations west of the “knob area” where it crops out about 8 to 12 feet above the level of the adjacent road and railroad tracks. Although the eastward extent of the Bootlegger Cove formation in the bluffs north of Ship Creek is not

precisely known, Schmoll, Yehle, and Dobrovolny (1996) suggest that the Bootlegger Cove formation may be present above the level of the Ship Creek floodplain upstream to about the Elmendorf power plant location. Note that along the base of the westward facing bluff, the north bluff and the bluff south of the ARRC property, the Bootlegger Cove formation is covered by colluvium, including landslide debris. Hansen (1965) described slope failures that occurred during the 1964 Good Friday Earthquake. His report shows Bootlegger Cove clays and silts present above the Ship Creek valley floor in the Government Hill slide, Alaska Native Hospital slide, and slides along East Bluff Road. The soil stratigraphy of the north bluff is shown in cross-sections through the Government Hill Slide, the East Bluff Road slide, and in the recent excavations west of the knob.

Updike and Carpenter (1986) shows that, within the study area, the Bootlegger Cove formation reaches a maximum thickness of about 200 feet beneath the southwestern tip of Government Hill and a minimum thickness of less than about 120 feet beneath the ARRC heavy equipment shop. Drilling logs show that within the study area, the Bootlegger Cove formation overlies a sequence of sands, gravels, and till several hundred feet thick, which, in turn, overlays bedrock. The sands and gravels underlying the Bootlegger Cove formation are saturated and constitute a confined aquifer (which has been tapped by many wells throughout the Anchorage lowland). The Bootlegger Cove formation thins to the east of the railyard and pinches out completely beneath the alluvial fan formed where Ship Creek debouches from the mountains onto the lowlands. Where the Bootlegger Cove formation pinches out, the Ship Creek alluvium and Naptowne age outwash directly overlie this thick, older sequence of sand and gravels allowing recharge of the confined aquifer.

- **Colluvium.** Much of the faces of the valley walls or bluffs north and south of Ship Creek are covered with colluvium (soils which have been transported down slope by gravity). The colluvial materials include slope wash materials and landslide debris, and tend to cover and obscure the *in situ* Bootlegger Cove and outwash soils. In some places, the colluvium may look like its parent material (which is the outwash and Bootlegger Cove silts and clays), while at other locations, it may be a mixture of sands, gravels, silts, and clays and include organics from plants growing on the slopes. On Figure 1-3, it has been identified as a separate map unit in this report because the colluvium is likely disturbed enough by transport to change its properties. In addition, the colluvium may provide a conduit between the outwash and the Ship Creek alluvium allowing groundwater to flow from the outwash into the alluvium without surfacing as a seep or spring.

- **Landslide Debris**. The 1964 earthquake caused several large landslides on the slide slopes above the Ship Creek valley floor and tidal flats that have been studied by the USGS (Hansen, 1965) and others (Shannon & Wilson, 1964). The slides in the study area include the Government Hill slide and four slides along East Bluff road. Landslides just outside the study area include the 4th Avenue slide, the Native Hospital slide, and a slide north of the tank farms. The Government Hill landslide was described as a "translational slide" in that soil blocks moved primarily horizontally to the south and grabens (down dropped blocks) developed under the Government Hill School. A cross section through the Government Hill slide is shown as cross section A-A' in Figure 1-3. The four landslides along East Bluff Road were described as rotational slides because failed soil blocks moved/rotated about a point along a curved plane. A cross section through one of the East Bluff slides is shown as cross section C-C' in Figure 1-3. Note that Hansen (1965) shows the Bootlegger Cove formation above the Ship Creek valley floor on both the north and south sides of the valley in the Government Hill, East Bluff Road slides, 4th Avenue slide, and Native Hospital slide. The juxtaposition of outwash and silt and clays in the slide blocks will likely influence groundwater flow pathways in and near the slide blocks.

Hydrogeology. The site geology described above controls the distribution and flow of groundwater through the ARRC Anchorage Terminal Reserve. In and near the study area, there are two shallow water-yielding units (aquifers) and a deep confined aquifer. The relatively shallow water table aquifers exist in the outwash extending south of the Elmendorf moraine and in the Ship Creek alluvium. The sands and gravels beneath the Bootlegger Cove formation constitute the deep confined aquifer. The predominately fine grained soils of the Bootlegger Cove formation have a low hydraulic conductivity and consequently the Bootlegger Cove formation serves as an aquitard separating the deep aquifer from the shallow aquifers.

Groundwater in the outwash within and north of the ARRC study area is from precipitation infiltration on the outwash plain and Elmendorf moraine. The groundwater flow direction is generally southward from the Elmendorf moraine toward Ship Creek, although near the westward facing bluffs above the tank farms, the groundwater flow direction is to the west. The saturated zone in the outwash is commonly encountered at a depth of about 40 to 50 feet on the outwash plain at the top of the bluff north of Ship Creek, and the saturated zone thickness (above the Bootlegger Cove formation) appears to be less than about 20 feet distant from the bluff face and to thin to a few feet in thickness near the bluff face (USAF, 1994; CH2MHill, 1998; Montgomery Watson, 2001). The groundwater gradient is expected to increase near the bluff face, coincident with the thinning of the saturated thickness. As

described above, the outwash soils do not appear to be in direct contact with the Ship Creek alluvium; rather the Ship Creek alluvium is incised into the Bootlegger Cove formation. This stratigraphy causes the groundwater in the outwash to either:

- Emerge as seeps in the bluff face just above the contact between the outwash and the Bootlegger Cove formation, and then flow across the surface of the Bootlegger Cove formation to the Ship Creek alluvium where it may re-infiltrate; or

- Flow from the outwash through colluvium or landslide debris at the base of the bluff and into the Ship Creek alluvium.

There is a line of groundwater seeps along the north bluff that are thought to mark the contact between the outwash and the Bootlegger Cove formation. The location of the seeps likely reflects the topography of the contact between the outwash and the Bootlegger Cove formation and/or preferential flow pathways within the colluvium. There is a system of ditches and storm drains at the base of the north bluff that tends to capture much of the flow from the seeps and to channel this water to Ship Creek. Figure 1-3 includes diagramatic cross section B-B' that depicts these hydrogeologic conditions at the North Bluff. The bluff south of Ship Creek has not been investigated as thoroughly as the north bluff; however, flow processes and patterns on the south bluff are thought to mirror those on the north bluff.

Groundwater in the Ship Creek alluvium is derived from:

- Precipitation infiltration on the Ship Creek floodplain

- Groundwater entering the Ship Creek alluvium from the outwash north and south of Ship Creek

- Water that infiltrated through the Ship Creek channel in the "losing section" of the stream and has flowed westward, downgradient through the alluvium

Area-wide monitoring of the groundwater flow direction and gradient in the Ship Creek alluvium has not been conducted; however, flow is interpreted to be generally westward toward Knik Arm with convergence toward Ship Creek (i.e., flow north of Ship Creek is toward the southwest and flow south of Ship Creek is toward the northwest). The water table in the Ship Creek alluvium and the fill over the alluvium is estimated to be about 5 to 10 feet below ground surface (bgs) and the saturated thickness of the alluvium is estimated to be 10 to 15 feet. Because the fill covering the Ship Creek alluvium was likely placed on the floodplain above the normal high groundwater level, the water table is likely present in the Ship Creek alluvium below the fill, and the

texture and hydraulic conductivity of the fill is not expected to significantly alter groundwater flow patterns.

At the western edge of the study area, the Ship Creek alluvium contacts the low permeability tidal and estuarine sediments, and the shape of this contact may influence the groundwater flow pattern and groundwater discharge quantity to both Ship Creek and the inter-tidal zone. For example, if the Ship Creek alluvium pinches out to the west, the low permeability of the tidal and estuarine soils may force groundwater to enter Ship Creek rather than to discharge as seeps on the tidal flats. Alternatively, if the alluvium maintains its thickness across the tidal flats or is buried beneath inter-tidal sediments, the groundwater may discharge directly to the inter-tidal zone.

As described above, the confined aquifer beneath the railyard is recharged primarily from infiltration through alluvial fans at the western edge of the Chugach Mountains where the streams debouch onto the lowlands. The Ship Creek alluvial fan is the most important of these fans and is estimated to provide about 25 percent of the recharge to the confined aquifer (Waller, 1964). Boreholes drilled through the Bootlegger Cove formation in the vicinity of the railyard encountered artesian water in the confined aquifer with a static head above the elevation of the Ship Creek floodplain (when active pumping of the confined aquifer was not occurring). The combination of the upward hydraulic gradient between the shallow and deep aquifers and the low hydraulic conductivity of the Bootlegger Cove aquitard suggest that the deep aquifer is isolated from activities in the surficial areas, including ARRC railyard, and that further study of the confined aquifer is unwarranted.

The hydrogeological CSM will be updated following collection of data in the RI.

1.4.1.1 Summary of Environmental Indicator for Groundwater

Collection of this information can be used to update the *Migration of Contaminated Groundwater Under Control* (U.S. EPA, 2003b) EI for the Site, which was originally completed by U.S. EPA in July 2003. At that time, the U.S. EPA classified this EI as “Indeterminate.” The determination was based on the following information:

- U.S. EPA’s review of the information regarding past releases at the Site presented in the 1996 and 2002 RCRA Facility Assessments (RFAs) caused U.S. EPA to conclude that the groundwater is known or reasonably suspected to be “contaminated” above appropriately protective levels.

- U.S. EPA concluded that it is unknown whether the migration of contaminated groundwater has stabilized.

The information that will be developed during the RI/FS will ensure that the EI can be revised based on new data and refinement of the CSM.

1.4.2 Human Health Conceptual Site Model

Potential human receptors are determined based on current or reasonably foreseeable land use at the Site, and at the area in the immediate vicinity of the Site. The human health CSM (Figure 1-4) provides a graphical picture of site conditions and potentially impacted media transport pathways, potential exposure pathways, and the proximity of receptors. Per U.S. EPA *Risk Assessment Guidance for Superfund Part A* (U.S. EPA, 1989), the human health CSM is created independent of site data and is refined as site conditions and analytical data are better understood. This human health CSM provides a general discussion of how potential sources of constituents could move through the environment to a receptor.

The human health CSM will be used to focus investigations on the collection of data necessary to meet Administrative Order on Consent and RI/FS requirements. In addition, the human health CSM is an important tool used to determine whether more site data are needed. Data gaps can be identified through the development of a human health CSM, No additional data will be needed where sufficient data have been previously collected or there is other information available to conduct fate and transport modeling allowing the COPC concentrations in media (e.g., indoor air) to be estimated where direct measurements are not available. In the absence of such existing data and information, additional data will be collected during the RI/FS to evaluate the exposure pathways of concern. All potentially complete exposure pathways will be evaluated either quantitatively or qualitatively in the risk assessment. A complete exposure pathway includes all of the following elements:

- A source and mechanism of COPC release
- A transport or contact medium (e.g., groundwater, surface water, or soil)
- An exposure point where humans can contact the contaminated media
- An exposure (intake) route, such as ingestion, dermal contact, or inhalation

The absence of any one of these elements results in an incomplete exposure pathway. When there is no potential human exposure pathway, there can be no potential human health risk.

All potentially complete and significant exposure pathways will be quantitatively evaluated in the future risk assessment. Incomplete or

insignificant exposure pathways will not be evaluated in the upcoming risk assessment as the risks associated with those potential exposure pathways have been shown to contribute little to overall cumulative risk.

This section begins with a discussion of potential sources and migration routes and concludes with a discussion of potential human health receptors identified for the Site.

1.4.2.1 Potential Sources and Release Mechanisms

Current and historical releases that originate from the commercial and industrial activities on the Site serve as the primary source of potential site impact. The U.S. EPA RFAs identified Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) both at the railyard and at approximately half of the leased properties. As shown in Figure 1-4, potential release mechanisms could include:

- **Non-aqueous phase liquid (NAPL),** if present, in portions of the Site. NAPL may potentially impact soil and groundwater. In addition, NAPL may volatilize and migrate into indoor air in areas with buildings.

- **Soil** via emission of fugitive dusts (particulates) or vapor phase volatile organics, containing COPCs, into outdoor air. Additionally, although there is no evidence of indoor air quality concerns at the Site, subsurface soils could serve as a potential source for migration of volatile organics into indoor air via soil gas, or as potential sources for groundwater impacts via leaching.

- **Groundwater** via migration of dissolved constituents toward Ship Creek or Knik Arm, migration into indoor air in buildings or direct ingestion in limited areas of the Site where municipal water is not available and an on-site well is used.

- **Soil Gas** via volatilization of constituents in groundwater or soil to indoor air in buildings at the Site, although there is no evidence that this is occurring.

- **Sediment and Surface Water** COPCs present in NAPL and groundwater may potentially discharge to surface water and sediment in Ship Creek or Cook Inlet.

- **Stormwater and Surface Runoff** from the railyard and leased properties is collected in stormwater conveyance systems that ultimately discharge to Ship Creek or directly to Cook Inlet. In certain areas, constructed stormwater drains are absent and runoff, if present, may reach Ship Creek as surface runoff. Ship Creek

also receives permitted stormwater and return flows from non-site related sources, including the Alaska Department of Transportation, the MOA, the Alaska Fish and Game Department, and Elmendorf Air Force Base. Stormwater discharged to Ship Creek also reaches Cook Inlet.

Many stormwater and effluent outfalls and outlets are permitted under the National Pollutant Discharge Elimination System (NPDES) program. Constituents present in permitted stormwater discharges may not be COPCs for the purpose of the RI/FS. Appendix E identifies known outfalls on Ship Creek and briefly describes their source.

1.4.2.2 Summary of Potential Receptors and Exposure Pathways

Exposure pathways are defined as the route between a receptor and an impacted medium whereby COPCs could be assimilated by a potential receptor. Exposure pathways require the existence of a receptor, the presence of COPCs in a medium that the receptor contacts, and an intake route associated with the receptor. Exposure pathways are determined based on a receptor's expected activities within the Site. Since exposure pathways require the presence of a receptor, these pathways depend upon land uses of the Site.

A summary of potential exposure pathways for the potential receptors presented in Figure 1-4 is discussed below.

Current/Future On-Site Indoor Commercial/Industrial Worker

- Direct contact with soil and outdoor air is limited and considered an insignificant exposure pathway for workers indoors.

- Inhalation of indoor air containing volatile compounds that have migrated from groundwater and subsurface soil gas into buildings is a possible pathway, though there is no evidence of such emissions or exposures.

- Exposure via ingestion or dermal contact with site groundwater is incomplete in the majority of the Site because municipal water is provided. However, limited areas without municipal water are present on the Site. The leased properties located in areas without municipal water will be included in the RI. Those lessees either bring in water in tanks from off-site sources or use wells.

Current/Future On-Site Outdoor Commercial/Industrial Worker

- Direct contact with surface soil (i.e., incidental ingestion and dermal contact) is considered a complete exposure pathway for this receptor.

- Inhalation of particulates and volatile constituents from soil COPCs to outdoor air is a potentially complete pathway, but insignificant due to the large mixing zone in outdoor air. The outdoor air exposure pathway does not warrant further investigation.

- Exposure via ingestion or dermal contact with site groundwater for the majority of the Site is an incomplete pathway because municipal water is provided. However, limited areas without municipal water are present on the Site. The leased properties located in areas without municipal water will be included in the RI. Those lessees either bring in water in tanks from off-site sources or use wells.

Current/Future On-Site Construction Worker

- Direct contact exposures with both surface and subsurface soil via incidental ingestion and dermal contact could occur.

- Inhalation of volatilized constituents in outdoor air or inhalation of COPCs in dust emitted during construction activities may occur, but are not considered significant exposure pathways that would require further evaluation, due to the large mixing zone in outdoor air.

- Since groundwater at the Site is relatively shallow, with the average depth to groundwater ranging from 6 to 15 feet bgs, construction workers may also be exposed to constituents in groundwater via dermal contact if excavation work opens holes or trenches that are near or below the water table.

Current/Future On-Site Trespasser

- Trespassers may potentially be exposed to contaminants via direct contact with surface soils, including incidental ingestion and dermal contact.

- Inhalation of volatilized constituents in outdoor air or inhalation of fugitive dust particles is not considered a significant exposure pathway due to the large mixing zone in outdoor air.

- Trespassers do not directly contact site groundwater during their activities (i.e., there is no dermal contact, incidental ingestion, or inhalation of indoor air with respect to groundwater).

- Near Ship Creek, a trespasser may also come into contact with sediment or surface water that has been potentially impacted by contaminants that have migrated with groundwater and discharged into Ship Creek. Exposure to sediments and surface water could include incidental ingestion and dermal contact.

Hypothetical Future On-Site Resident

The Site currently is used and, for the last 90 years, has been used for heavy and light industrial and commercial purposes. Consistent with this use, the Site is currently zoned for industrial and commercial uses (Figure 1-2). Future development of the Site for residential uses is unlikely. Any future residential development would depend on changes to MOA zoning and, ultimately, ARRC management decisions allowing such use. Nevertheless, a conservative hypothetical future residential use scenario will be evaluated for the area designated as the PC area since future MOA zoning and ARRC property management decisions might conceivably allow residential development in this area.

- Hypothetical future on-site residents in the PC area would not be directly exposed to groundwater because municipal water is supplied to this area, which eliminates direct contact with groundwater (i.e., through ingestion or dermal contact).

- However, hypothetical future residents may be exposed inside buildings through inhalation of constituents that have migrated through the groundwater and the soil column and volatilized into indoor air.

- Hypothetical future residents in the PC area also may potentially be exposed to soil via incidental ingestion and dermal contact.

- Inhalation of particulates and volatiles in outdoor air, while a potentially complete exposure pathway, is not considered significant due to the mixing zone for air in the outdoors.

Current/Future Recreational User of Ship Creek

- The portion of Ship Creek nearest the Site is predominantly used for fishing and swimming is not common (indeed, extremely rare) in this portion of the creek. Recreational users of Ship Creek may be exposed to contaminants in the creek that have migrated with groundwater flow. However, significant dilution of groundwater

constituents occurs in the creek, making this pathway potentially insignificant. Additionally, direct contact with surface water is expected to result in very low exposures, because the fishing season is a matter of weeks, resulting in a low exposure frequency and duration.

- Direct contact with sediment via incidental ingestion and dermal contact may potentially occur during wading and fishing.

- An angler ingesting fish caught from Ship Creek is also considered a potential receptor to be evaluated in the future risk assessment.

1.4.2.3 Summary of Human Health Environmental Indicator

In summary, the above receptors and pathways are consistent with those identified by U.S. EPA during completion of the *Current Human Exposures Under Control* (U.S. EPA, 2003a) EI, with the exception that the preliminary CSM for humans also includes residential/unrestricted use of the PC area of the Site. Note: this is a potential future site use and is not summarized by the EI, which focuses only on current site conditions.

U.S. EPA classified the *Current Human Exposures Under Control* (U.S. EPA, 2003a) EI as Indeterminate. The required SOW for fulfilling the Administrative Order on Consent will ensure that the EI can be adequately determined based on new data and refinement of the human health CSM.

1.4.3 Ecological Conceptual Site Model

1.4.3.1 Basis

This section develops a preliminary ecological conceptual site model (ECSM) in accordance with Section 2.2 of the SOW. The ECSM will ultimately be used in the ERA portion of the RI/FS for the Site.

The recommended process for evaluating ecological risk at CERCLA sites is described in *Ecological Risk Assessment Guidelines for Superfund* (U.S. EPA, 1997), commonly referred to as "EcoRAGS," and further clarified in subsequent notices and updates. The ecological risk process is defined as an eight-step process. Each step is iterative, and includes Scientific Management Decision Points (SMDP) where the data are evaluated by risk managers in order to focus further evaluation.

The first step in the risk assessment process is to develop a problem formulation, which may be graphically presented in the form of an ECSM. The problem formulation and the ECSM form the basis for Step 2, the screening level ecological risk assessment (SLERA). This section will present a preliminary ECSM for the Site, with the understanding that the process is

iterative and the ECSM may be modified as further information is acquired from interim actions undertaken at the Site.

Section 2.2.2.1 of the SOW for the Administrative Order on Consent describes an Interim Action, proposed by ARRC and accepted by U.S. EPA, consisting of a literature review summarizing existing data on contamination and biological impacts to Ship Creek. This Interim Action also identified data gaps, and proposed field studies to be completed in 2004 to address these data gaps. These data, to the extent available at this time, form the basis of the preliminary ECSM.

1.4.3.2 Interim Actions

Literature Review. Per the requirements of Section 2.2.2.1 of the SOW, a literature review of Ship Creek was prepared in July 2004 (Hart Crowser, 2004a). The report summarized available data on Ship Creek conditions derived from multiple sources. The literature review concluded that a substantial body of data was available for Ship Creek. The data included source evaluations, biological surveys, and sediment and surface water investigations. When this data was considered jointly with the interim sediment sampling conducted in early 2004 (Hart Crowser, 2004b), it was concluded that there is no evidence for extensive contamination or imminent risk to human health or the environment in Ship Creek. Localized or temporary impacts could not be excluded. A conclusion of the literature review was that additional water, sediment, or biota sampling was not recommended at this time, pending better understanding of sources, transport pathways, and receptors. Immediate data gaps for purposes of developing an ECSM for this portion of the Site, therefore, are related to sources, transport pathways, and overall current conditions in Ship Creek.

Field Studies. The field studies conducted in September 2004, per the requirements of Section 2.2.2.1 of the SOW and further described in the *Interim Action Plan for the Ship Creek Habitat Assessment* (RETEC, 2004) approved on October 5, 2004, focused on a qualitative habitat survey of the two areas preliminarily identified as areas of concern for ecological exposures: Ship Creek and the greenbelt present along the northern boundary of the Site. The ECSM herein will be modified, as necessary, to incorporate information on sources, transport pathways, and ecological receptors identified in the habitat assessment. The results of the field studies will be presented as a separate report to be submitted to U.S. EPA on or near November 15, 2004. Evaluation of data gaps associated with Ship Creek or ecological exposure pathways in the North Bluff area will be presented at that time.

1.4.3.3 Land Use Assumptions

The Site is currently understood to contain two habitat areas of significant ecological concern: 1) Ship Creek and the riparian area, and 2) the greenbelt along the northern boundary of the Site. Cook Inlet is a complete but insignificant exposure pathway due to the intense scouring effects of the large tidal flux (greater than 30 feet range) in Knik Arm and the Ship Creek mouth. Deposition of sediment carried by Ship Creek at or near the mouth of the creek is highly unlikely, and sediment is rapidly dispersed and mixed upon entering Cook Inlet. U. S. EPA has recognized the dynamic environment in Cook Inlet in waivers incorporated into general stormwater permits for this area (U.S. EPA, 2001). The remainder of the Site is under active industrial or commercial use and essentially lacks ecological habitat. This land use pattern is expected to continue. The surrounding landscape is primarily urban, industrial, or military, except for the marine environment of Knik Arm and the riparian corridor along Ship Creek upstream of Reeve Boulevard, the property boundary. These surrounding areas are not part of the Site and are not currently part of the ECSM. The qualitative habitat assessment will confirm whether a model considering two noncontiguous exposure areas is appropriate.

1.4.3.4 Ecological Site Conceptual Model: Ship Creek

Figure 1-5 is a graphical presentation of the ECSM that will form the basis of the problem formulation for the ERA of Ship Creek, subject to modifications based on further information.

A number of current and historical discharges to Ship Creek, permitted and otherwise, have been documented or inferred. These discharges may have resulted in COPCs accumulating or affecting media in Ship Creek: sediment, surface water, and, possibly, riparian areas. Accumulation may be present at the location of the discharge or in downstream locations such as depositional areas and backwaters. Exposure to COPCs may result in ecological risk to:

- Benthic biota in Ship Creek exposed to sediment and surface water
- Fish in Ship Creek exposed to sediment and surface water, and feeding on creek biota exposed to bioaccumulative COPCs
- Aquatic wildlife and birds exposed to sediment and surface water, and feeding on creek biota (aquatic and riparian vegetation, benthic fauna, and fish) exposed to bioaccumulative COPCs

Interim sediment and surface water sampling conducted in early 2004 (Hart Crowser, 2004b) confirmed that no widespread presence of COPCs is currently present, although localized or temporary accumulations could not be

excluded. As part of the qualitative habitat assessment, sources of exposure will be identified to refine the ECSM.

Ship Creek in the lower reach is bisected by the KAPP dam. Above the dam, the habitat is a freshwater system. Ship Creek in this reach is assumed to exhibit characteristics consistent with freshwater streams in this ecoregion. Below the KAPP dam, the last portion of Ship Creek is a tidal estuary, with strong marine influence. The biota that would be expected in this reach are expected to be notably different, although some wildlife (e.g., gulls), as well as migratory anadromous fish, may be common to both.

The ECSM for Ship Creek incorporates the following assumptions, subject to field verification:

- There have been (and may still be) sources and pathways of COPCs from site sources to Ship Creek.
- COPCs may be present in localized accumulations in downstream backwaters and/or depositional zones.
- COPCs include organics and inorganics, some of which may be bioaccumulative and, therefore, could create an increased risk for predators.
- Ship Creek is an urban stream, affected by numerous permitted stormwater discharges and runoff, and potential discharges from industrial and other sources not associated with the Site.
- Current conditions in Ship Creek do not point to any imminent threat or obvious environmental problems, and the habitat and receptors may be expected to be consistent with similar streams in this ecoregion.
- There are separate estuarine and freshwater components to Ship Creek. The adjacent areas of Knik Arm are not considered as an exposure area at this time.
- The Ship Creek corridor is undergoing redevelopment by MOA. A bike trail is under construction along Ship Creek. The trail footprint and public trail use will further affect the riparian habitat along the creek.

1.4.3.5 Ecological Site Conceptual Model: Northern Boundary

Figure 1-5 shows the ECSM for the northern boundary greenbelt. This area is the only upland area expected to be of ecological concern, as the remainder of the Site is exclusively industrial or commercial and is expected to remain so.

Along the northern boundary of the Site, a greenbelt covers the slopes between the plateau, where Elmendorf Air Force Base is located, and the Ship Creek historic floodplain, where the Site is located. Portions of the greenbelt have been removed recently for a planned expansion of the railyard. However, the remaining portions are located on the Site and may be assumed to have ecological receptors present.

Most, if not all, of the greenbelt area is located upgradient of the Site and would not be expected to be exposed to site-derived COPCs. The qualitative habitat survey will evaluate this model and conclude if site-related sources or transport pathways from site sources can be expected. If not, site-related ecological risk will be considered absent, and this area will not be considered further in the ERA. The greenbelt is located downgradient of potential source areas in residential areas and Elmendorf Air Force Base. Potential ecological risk from these sources will not be evaluated in this ERA if site-related contributions are determined to be absent. Ongoing remedial activities associated with Elmendorf Air Force Base Operable Unit 5 (OU-5) occur in portions of the North Bluff. These systems include constructed wastewater treatment ponds, seepage recovery systems, and other facilities. Ecological effects of the permitted treatment activities, or from impacts due to seepage or discharge originating in OU-5, will not be considered a site-related impact.

The ECSM for this area incorporates the following assumptions, subject to field verification:

- The northern boundary greenbelt is assumed to contain ecological receptors, including vegetation, soil biota, birds, and small wildlife.

- Site-related sources or transport pathways from site sources are not likely, but may be present, subject to confirmation in the qualitative habitat survey.

- Sources not related to the Site may be present, as the area is downgradient of residential, commercial, and light industrial areas and military facilities.

1.5 Identification of Preliminary Analytical Concentration Goals

In order to meet the requirements set forth in SOW Section 2.3.2, preliminary analytical concentration goals were developed as part of the planning process to assist in selecting appropriate analytical methods and setting analytical DQOs for human health and ecological exposure pathways identified in the pertinent CSM. The following data requirements and analytical levels, as

appropriate, were considered in developing these analytical concentrations goals:

- Chemical-specific potential ARARs, risk-based screening levels, and preliminary remediation goals (PRGs)
- Location-specific potential ARARs, including sediment concentrations for protection of benthic invertebrates
- Published fish tissue concentrations for protection of resident fish and wildlife was requested in the SOW but is not available information
- Practical quantitation limits for standardized analytical methods for soil and water

Table 1-2 presents a summary of the preliminary analytical concentration goals determined for the Site. Table 1-2 includes the proposed target analyte list, practical quantitation limits per U.S. EPA methods, human health screening levels and potential ARARs (including maximum contaminant levels [MCLs] and drinking water equivalent levels [DWELs]), ADEC and U.S. EPA health screening levels, and ecological screening levels and benchmarks. Note that the ARARs listed here are potential only and will be formally presented in a later deliverable specified under the SOW, the Remedial Action Objectives Technical Memorandum. Lastly, ADEC soil screening levels for protection of groundwater via leaching are also provided.

2 Approach for Evaluation of Existing Site Information

2.1 Existing Site Documentation and Analytical Data

According to the SOW, Section 2.2, the SBR is directed at meeting the following objectives:

> *"1. Identify and compile applicable historical information and data that are of acceptable quality for use during the RI/FS process.*
>
> *2. Identify relevant existing studies regarding the characteristics of environmental media and the condition of receptor populations.*
>
> *3. Identify useable information and data from current and historical studies for use in developing a Conceptual Site Model.*
>
> *4. Collect and analyze existing information and data and document the need for additional information and data to the extent practicable."*

In accordance with the SOW, Section 2.2, before planning RI/FS activities, existing site information and data must be compiled, reviewed, and evaluated to develop a preliminary CSM. As this SOW section states, "*Specifically, this will include presently available information and data relating to the types and quantities/concentrations of hazardous substances and/or solid wastes (including petroleum products) released to the environment at the Site, and past disposal practices and/or releases (including spills and point source discharges) that may have impacted the Site [including] results from any previous sampling events that may have been conducted. Information regarding potential upgradient sources of contamination also will be collected and evaluated.*"

To meet this stated objective, ARRC has completed an extensive evaluation of existing site data on the leased properties and railyard areas that the U.S. EPA identified in its RFA as requiring further action, gathering information and documentation from the multiple sources, including but not limited to:

- ADEC files
- ARRC files
- U.S. EPA Region 10 files

This compilation of documents includes approximately 2,000 documents. The documents were logged into a library system. Each entry assigns a document title, a unique document number, the date of the document, and other potentially important information. The document library primary sorting code is the property number which corresponds to the U.S. EPA site number. The listing of site documents logged into the library as of October 15, 2004 is included as Appendix B.

Some document listings include multiple documents (i.e., "Miscellaneous Correspondence [dates]"), which may include several reports, letters, and correspondence type documents. These documents were not logged individually as the focus for library documentation was reports, lab data, and environmental related documents. In addition, the documents were logged as received. For example, the ADEC files received for leased property LP-067, Spenard Builders, inexplicably include files primarily related to Ship Creek and Hobbs Industries/KAPP (LP-120). ADEC files may have included copies from other geographically related leased properties for reference. These were not separated from the original document source (as shown in the last column of the Appendix B Document List) although they were spot checked to ensure that the documents are included in files for the primary site (in this example, Ship Creek).

Review of the documents for the SBR has been conducted at a preliminary level to extract site physical and chemical data and to understand the environmental site history and investigations to date. During the RI Work Plan development, the understanding of this large body of information will be expanded and, subsequently, our interpretation of site information is likely to evolve.

In an effort to ensure that all available site data were gathered and summarized, ARRC sent a letter to all leaseholders at properties identified by EPA as further action sites, requesting that they review the list of documents that were obtained from ADEC or U.S. EPA and supply ARRC with any documents that may be helpful to the RI/FS. Any responsive information has been included in this SBR, and any relevant new information will be considered prior to submittal of the RI Work Plan and specified as new information at that time.

There are several leased properties where U.S. EPA in the leased properties RFA concluded that further evaluation was needed but for which little, if any, documentation is available for review. These consist of the following:

LP-006	Joe's Body Paint and Frame
LP-015	Inlet Construction
LP-038	JV Rentals
LP-042	York Steel
LP-051	M-K Properties

LP-052	Patrick M. Hickey
LP-070	Golden Ears Investment Corp.
LP-072	Karen's RV Service Center
LP-078	Criterion General, Inc.
LP-089	Rock Partners
LP-098	Constance Hayden Warehouse
LP-109	Beats Walking Automotive
LP-112	Whitney Express
LP-115	Technic Services, Inc.
LP-124	Alma Corp.
LP-128	Seamless Flooring Systems

All other leased properties and the railyard have documentation for review. The absence of data for any given property may be determined to constitute a data gap, or alternatively may be determined not to present a data gap if there is no environmental issue at that property that would require sampling. This will be considered further in Section 4.

During file review, analytical data were entered into an Access database for use in the RI/FS. The database was compiled and includes the following pertinent information:

- **Analyte and CAS Number.** Name of specific constituent analyzed for in sample and chemical abstract service number.

- **Sample Matrix**. Medium in which sample was collected (i.e., soil [SO], groundwater [WG], surface water [WS], and sediment [SE]).

- **Sample Type.** Indicates whether the sample was a primary sample (N), a field duplicate (FD), or a blank (FB, RB, or TB).

- **Sample Date.** Indicates the date on which the sample was collected in the field. (Note: sample dates were not available for all constituents, in which case a dummy date of 1/1/1950 was chosen to populate this field.)

- **Sys Loc Code.** The location from which the sample was collected. This is the site ID that appears on the figures.

- **Start and End Depth.** Depth interval from which sample was collected. Applies solely to soil samples. (Note: sample depths were not available for all samples. They were considered subsurface soil where not available.)

- **Depth Unit.** Either in inches or feet for depth interval of soil samples.

- **Lab Analytical Method.** The method used by the laboratory to analyze the sample (e.g., U.S. EPA Methods 6010, 8260, 8270, etc.). (Note: methods were not available for all constituents that were not detected.)

- **Total or Dissolved.** Applies primarily to groundwater and surface water samples and indicates whether the sample was filtered (dissolved) or non-filtered (total).

- **Test Type.** Indicates whether the result is for the initial sample or if the sample had to be reanalyzed or resampled.

- **Result Value.** Concentration of detected constituents. Column is left blank if the analyte was not detected in that sample.

- **Reporting Limit.** The laboratory reporting limit attained for the sample. (Note: reporting limits were not available for all constituents that were not detected.)

- **Units.** The units in which the sample is reported. For example milligrams per kilogram (mg/kg) for soil and sediment and micrograms per liter (µg/L) for surface water and groundwater.

- **Detect Flag.** Says Yes (Y) to indicate that the analyte was detected in the sample and says No (N) if the analyte was not detected. Y coincides with result values, while N goes with blank result values.

- **Lab Qualifiers**. Qualifiers such as B, R, U, J, etc., were added by the laboratory to describe the sample.

- **Organic Y/N.** Indicates whether the analyte is considered an organic constituent or an inorganic constituent.

- **Result Comment.** Includes useful descriptions regarding the sample, such as where it was collected, or how, or whether the hard copy document provided units or reporting limits.

- **Sampling Company Code.** Attempts to identify if the sample was collected by ARRC, a leaseholder, or a third party.

- **Sampling Reason.** Indicates the event that prompted the sample collection.

- **Task Code.** This field indicates which file number and area, or portion of the Site with which the sample is associated (i.e., railyard [RY], Ship Creek [SC], and leased properties [LP]).

- **Dilution Factor.** If available in the records, the sample dilution factor was included in the database to identify potentially diluted samples.

As of October 15, 2004, the database included more than 145,000 records of analytical data from the Site. Data are shown in the database as two primary types:

1) Data associated with a specific property where the specific location of the sample collection is known

2) Data associated with a specific property where the specific location of sample collection is not known within a property, identified as a center point location

The compilation of this large database in a short period of time will require ongoing QA efforts prior to submittal of the RI Work Plan. For example, site media were not always clearly stated and data from one site may have been reported in multiple site files. Initial data evaluation and interpretation provided in detail in subsequent sections of this report are aligned with the data QA/QC processes completed to date. The data will be further QA'd following the submittal of the SBR and prior to the inclusion of the data for use in the RI. An electronic copy of the database is included in Appendix B.

Lastly, RETEC reviewed project folders in order to assess the level of supporting laboratory QA/QC documentation associated with the supplied historical sample data. Consultant reports and laboratory reports were reviewed, and QA/QC documentation identified as fitting one of five different QA/QC data levels:

- Sample data that were taken from summarized data tables, and with no supporting QA/QC documentation, were assigned the lowest QA/QC level code of A.

- Sample data from laboratory reports that included method reference, reporting limits, and analysis dates for holding time consideration were assigned a QA/QC level code of B.

- Sample data that included all aspects of level B plus organic surrogate recoveries were assigned a QA/QC level code of C.

- Sample data that included all aspects of level C and also included laboratory precision and accuracy documentation (matrix spikes, duplicates, etc.) were assigned a QA/QC level code of D.

- The highest level of QA/QC documentation, level code E, was assigned to sample data that included all aspects of level D plus provided sample chromatograms and instrument calibration data.

The identified QA/QC levels and level definitions are summarized in Table 2-1.

2.2 Leased Properties and Railyard Sites for Further Evaluation

Railyard and leased property sites were originally inspected in the RFA Reports performed by the U.S. EPA (SAIC, 1996; Booz, et al., 2002). In the RFAs, U.S. EPA identified the leased properties (Appendix A of Booz, et al., 2002) and Railyard SWMUs and AOCs (Section 5 of SAIC, 1996) that it determined would require further evaluation. These determinations and ARRC responses are summarized in Tables 2-2 and 2-3, respectively. Figure 2-1 shows the Railyard SWMUs and AOCs that the 1996 RFA identified. Figure 2-2 presents the leased properties identified by U.S. EPA during the 2002 RFA. In both figures, the areas that were identified by U.S. EPA as not requiring further action are outlined in black. The leased properties for which U.S. EPA determined that further action was necessary are shown in blue. Figure 2-3 presents the leased property sites that U.S. EPA identified for further evaluation. Note: U.S. EPA and ARRC agreed to exclude 12 of the leased properties that the 2002 RFA listed for further action based on additional information ARRC provided to U.S. EPA during negotiation of the Administrative Order on Consent. These 12 excluded leased properties consist of the following:

LP-016	Chevron USA, Inc. / Chevron Pipeline ROW
LP-033	Air Van Lines / The Sumiko Group
LP-043	Wright, Bittner, Horton / Alaska Truck Center
LP-045	Morgan-Childs / Newbery Alaska
LP-050	Alaska Crate and Pallet
LP-090	Central Core Redevelopment / Ashley Home Stores
LP-092	PTS, LLC / Odom Corporation
LP-093	M-I LLC
LP-105	Saturn Construction
LP-123	C.A.T. Transportation / Black Gold Express
LP-130	PlasChem Supply / Floyd Apling
LP-132	Carr Gottstein / Whitney Road Warehouse

The leased properties shown in Figure 2-3 that according to U.S. EPA require further evaluation will be the focus of the remainder of the SBR. In addition, the railyard, shown with a thicker yellow dashed line, will be included in its entirety.

Lastly, in the leased properties RFA, nine leaseholds were identified but not designated for either further action or for no further action, as shown in PINK in Figures 2-2 and 2-3. In most cases, this was because the U.S. EPA noted that the leasehold could not be inspected as the business owner could not be contacted. These leaseholds are included in this SBR. The entire 600-acre Site, including the leaseholds the U.S. EPA did not evaluate and those it listed for no further action, will be addressed in the upcoming RI/FS process.

Appendices C and D provide a focused site summary of the railyard and the leased properties identified for further action, including information on site operational history, SWMUs, and AOCs identified by U.S. EPA, ARRC comments on U.S. EPA's RFA, summary of analytical results, investigations, and cleanup actions conducted.

In addition, Appendix E presents a focused site summary for the Ship Creek area, including past and current conditions and information on environmental investigations.

2.3 Comparison of Soil and Groundwater Data to Screening Levels

In order to give some initial perspective on the levels of detected constituents at the Site, a preliminary screening of the Site soil and groundwater database was conducted. The screening included:

- Comparison of the Site soil data to U.S. EPA Region IX Industrial PRGs
- Comparison of the Site soil data to ADEC screening levels for protection of groundwater
- Comparison of site groundwater data to ADEC screening levels for groundwater which include MCLs and risk-based estimates.

Figures 2-4 through 2-6 present the results of this screening. Appendix F provides the sample-specific backup for the reported exceedances.

Note: the sample data will be further evaluated for the RI Work Plan to reconcile data for which the exact location was not known or which may have been removed via excavation or where groundwater coexists with NAPL and should not be considered representative of groundwater conditions.

3 Identification of Acceptable Data for Site Characterization

This section evaluates the available historical site data collected to determine whether it is acceptable for use in the RI/FS. The existing data for the railyard and the leaseholds identified by U.S. EPA for further action were evaluated using the criteria listed in U.S. EPA's *Guidance for Data Usability in Risk Assessment Part A* (U.S. EPA, 1992). The criteria provide decision end-points for determining whether data are acceptable for site characterization and to perform a risk assessment with an adequate degree of confidence.

To determine whether railyard, leased property, and Ship Creek data are acceptable for inclusion in the RI/FS and to define risk, the following six data usability questions were evaluated:

1) Is the suite of analytes representative of potential contaminants of concern? (U.S. EPA, 1992)

2) Are data available to evaluate each potential exposure pathway identified in both the human health and ecological CSMs? (U.S. EPA, 1992)

3) Are detection limits sufficient for comparison to screening level criteria? (U.S. EPA, 1989; 1992)

4) What is the spatial and temporal distribution of the data? (U.S. EPA, 1989; 1992)

5) Are background/upstream reference site data available for comparison to the current dataset? (U.S. EPA, 1989)

6) Are data available to evaluate remedial technologies?

Figure 3-1 presents a flow diagram for addressing data usability. The following sections evaluate each data usability step described above. The evaluation of data usability assists in determining the appropriate use of existing data in the RI/FS. In the event data are determined inadequate for site characterization and risk assessment purposes, the consequence of the data gap and an appropriate path forward will be discussed. This evaluation is a preliminary review and summary of the data available to date. A more detailed evaluation of appropriate analytes, locations, depths, and data needs will be conducted for the RI Work Plan following comment and discussion with U.S. EPA on this SBR.

3.1 Study Areas

The Site is large (600 acres) and incorporates areas of widely divergent physical conditions, land use, access, and potential for risk to human health and the environment. In order not to overlook areas with specific exposed populations (e.g., ecological) or areas with suspected hot spots or localized environmental issues, the Site was grouped into study areas. Grouping the Site into study areas is useful in order to avoid evaluation of the entire site and either "diluting out" more localized, yet still significant areas with environmental impacts, or, conversely, identifying an environmental issue as site-wide which actually may be localized.

ARRC has divided the Site into separate and distinct study areas based on the exposure media, geographical location, and current projected land use at the leased properties and the railyard that the U.S. EPA listed in the RFA for "Further Action." In combination, the study areas encompass all the SWMUs and/or AOCs the U.S. EPA identified at the Site in the RFAs (SAIC, 1996; Booz, et al., 2002). Division of the Site into study areas assists in identifying data gaps to focus future site investigation. The study areas discussed in the SBR may be revised in the RI Work Plan following comment by U.S. EPA or further evaluation of site data.

To evaluate the existing site soil data, six study areas were defined, as shown in Table 3-1. These study areas were selected as convenient divisions that separate areas divided by major land use (e.g., leased properties vs. railyard) or physical separation (e.g., the area northwest of the railyard separated from the other leased properties and dominated by petroleum management facilities). ARRC has not identified any existing analytical data for several of the leased properties that the U.S. EPA listed for "Further Action" in the RFA, as shown in Table 3-1.

Groundwater was divided into three areas based on site hydrology:

- **South of Ship Creek.** This groundwater study area consists of all the leased properties that lie directly south of Ship Creek

- **North of Ship Creek.** This groundwater study area consists of the railyard and leased properties just north of Ship Creek.

- **Terminal.** This groundwater study area coincides with soil Study Area and includes the leased properties located west of the Government Hill subdivision, based on the predominant groundwater transport pathways (north of Ship Creek, south of Ship Creek, and the Terminals area).

The Ship Creek and sediment study area includes the Ship Creek corridor through ARRC properties consisting of sediment and surface water and the remaining "natural" riparian zone adjacent to Ship Creek. The riparian zone includes relict channels, bottomland woodland, and ponds and marsh areas historically associated with Ship Creek. Sediment, surface water, and discharge data have been collected for the Ship Creek area. Data collection is ongoing in this area, notwithstanding completion of the *Ship Creek Literature Review* that ARRC conducted under the SOW. Exposures are primarily ecological in Ship Creek, as human contact recreation (fishing excepted) is of minor extent and duration.

The proposed study areas (and the leased properties located within) for the data usability evaluation are presented on Figure 3-2.

3.2 Is the Suite of Analytes Representative of Potential Contaminants of Concern?

Historical data for the Site have been collected since the early 1980s for a wide variety of purposes, and under a wide variety of environmental objectives and guidance. These investigations have produced an extensive range of analytical results that warrant evaluation for possible inclusion in the RI/FS. Historical data exist for the following constituents:

- Volatile Organic Compounds (VOCs)
- Semivolatile Organic Compounds (SVOCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Fuel Hydrocarbons (TPH, DRO, GRO, RRO, and BTEX)
- Chlorinated solvents (TCE, PCE, vinyl chloride)
- Inorganics (i.e., metals and minerals)
- Polychlorinated biphenyls (PCBs) (i.e., aroclors)
- Dioxins and furans
- Pesticides

The list of analytes historically sampled were intended to address the nature and extent of potential site contamination as needed for the specific investigation being conducted. The list is composed of compounds typically found at industrial sites, and includes many chemicals related specifically to railroad operations. Additional compounds suspected to be unrelated to the Site have also been included, such as many of the SVOC compounds, pesticides, dioxins, and PCBs. Overall, the suite of analytes available in the database includes compounds that are appropriate for inclusion in the RI/FS.

Since historical sampling was conducted to address a specific situation, such as when a release occurred, or where known or suspected types of contamination were associated with industrial operations, some of the

compounds historically analyzed are specific to the type of contamination present on a distinct leased property and, therefore, do not apply universally to all the leased properties or the Site as a whole. For example, PCBs are associated only with areas where PCB-containing transformers were used. Other constituents may be found at various locations across the Site, such as benzene, toluene, ethylbenzene, and xylene (BTEX), diesel range organics (DRO), and metals. The classes of compounds presented above are grouped and discussed further below.

Volatile Organic Compounds (e.g., chlorinated solvents)

VOCs, such as chlorinated solvents, can be found at industrial sites. Therefore, if necessary, future sampling efforts will include evaluation of chlorinated solvents in portions of the Site where existing data indicate they may be present. Note: the presence of chlorinated solvents at this site may also be related to upgradient sources. This will also be evaluated during the RI as stated in the SOW.

Semivolatile Organic Compounds (primarily PAHs)

PAHs are the primary SVOCs expected to occur at the Site. PAHs are ubiquitous and consistently present in the environment. They are typically formed during the incomplete burning of organic material including wood, coal, oil, gasoline, and garbage. PAHs are also found in crude oil, coal tar, creosote, and asphalt. Therefore, PAHs are readily found at most industrial settings, including this Site. PAH sampling is anticipated as part of the RI/FS.

Fuel Hydrocarbons

Data for DRO, gasoline range organics (GRO), and residual range organics (RRO) are available in all study areas for all media. Due to the nature of the Site, these types of petroleum-related impacts are to be expected. BTEX compounds are constituents of fuel and are, thus, often found at industrial sites. Therefore, if necessary, future sampling efforts will include evaluation of BTEX in portions of the Site, as these particular volatiles are important in addressing potential exposure pathways such as indoor air.

Inorganics

Metals are both naturally occurring and found in man-made material (paint, fuel, fertilizers, and pesticides) and are, thus, widely distributed in the environment. Metals can be found at background concentrations in soils, groundwater, sediments, and surface water. Due to their ubiquitous nature, any metals sampling is anticipated as part of the RI/FS to determine background conditions and any site-related conditions as stated in the SOW.

Polychlorinated Biphenyls

PCBs historically were used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. Products that may contain PCBs include pre-1977 fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils. There are no known natural sources of PCBs.

PCB data are available in all study areas for all media except soil in Study Area 1 and groundwater in Study Area 3. PCB have been detected at several leased properties including KAPP, Flint Hills, Prescott, Keystone, Municipal Light & Power (ML&P), Alaska Basic Industries, Arctic Cooperage, Tour Companies, Post Road Co-Tenancy, and also at the Railyard. Any future sampling efforts for PCBs will be limited to only locations of the Site where historical information indicates PCBs are potentially present.

Dioxins/Furans

Chlorinated dibenzo-p-dioxins (CDDs) are a family of 75 chemically related compounds commonly known as chlorinated dioxins, while chlorinated dibenzofurans (CDFs) are a family of chemicals that contain one to eight chlorine atoms attached to the carbon atoms of the parent chemical, dibenzofuran. There are 135 different types of CDFs with varying harmful health and environmental effects. CDDs and CDFs enter the environment as mixtures containing a number of individual components. CDDs are not intentionally manufactured by industry except for research purposes. They (mainly 2,3,7,8-TCDD) may be formed during the chlorine bleaching process at pulp and paper mills. CDDs are also formed during chlorination by waste and drinking water treatment plants. They can occur as contaminants in the manufacture of certain organic chemicals. CDDs and CDFs also are released into the air in emissions from municipal solid waste and industrial incinerators.

Dioxin and furan data are available in study areas 5 and 6. Dioxin/furans are not expected to be present at the Site based on the types of industries they are associated with and will not be evaluated further.

Pesticides

Pesticides have been detected only at Arctic Cooperage and KAPP, both of which are in Study Area 6. Concentrations observed are typical of normal and appropriate pesticide application, and are below levels of concern based on available data (Appendix F). Further sampling efforts for pesticides are not anticipated at the Site.

Summary

The above discussion demonstrates that not all historical constituents found in the database require further analysis and any required evaluation may be limited to specific areas at the Site.

Review of the available historical analytical data, as presented in Tables 3-3 through 3-7, shows that a representative analyte list is available for soil, sediment, surface water, and groundwater. In addition, analytical data are available for a select set of constituents (i.e., chlorinated solvents and PCBs) in certain areas, which further assist in addressing potential impacts associated with a specific type of release not common to all areas of an industrial property. Based on these findings, the analyte list contained in the existing dataset is thorough and acceptable for use in the RI/FS.

3.3 Are Data Available to Evaluate Each Potential Exposure Pathway Identified in the Conceptual Site Model?

According to the *Risk Assessment Guidance for Superfund* (RAGS) *Part A* (U.S. EPA, 1989), the types of data needed for a baseline risk assessment include the following:

- Contaminant concentrations in the key sources and media of interest
- Characteristics of sources, especially information related to release potential
- Characteristics of the environmental setting that may affect the fate, transport, and persistence of the contaminants

These data requirements are typically met through use of a CSM. The CSM guides the data collection process towards evaluating potential media, sources, and migration routes. The preliminary human health and ecological CSMs for the Site were discussed in Section 1.4 and are presented on Figures 1-5 and 1-6, respectively.

Exposure pathways identified in the preliminary human health CSM consist of the following:

- Direct contact with surface soil
- Direct contact with subsurface soil

- Direct contact with groundwater and inhalation of vapors from groundwater into indoor air
- Direct contact with surface water and sediment
- Fish ingestion

Ecological exposure pathways that may require evaluation include:

- Aquatic biota (benthic community) contact with and ingestion of Ship Creek (and surrounding riparian area) sediment and surface water
- Fish direct contact with and ingestion of Ship Creek (and surrounding area) sediment and surface water, including uptake via prey and/or vegetation
- Aquatic wildlife contact with and ingestion of Ship Creek (and surrounding area) sediment and surface water, including uptake via prey (fish)
- Terrestrial herbivore and carnivore contact and uptake via prey with impacted media in the North Bluff area. This pathway is contingent on demonstrating a Site-related source for any contaminants identified in the area

The following sections discuss the dataset used for the data usability evaluation and whether the existing site data are acceptable to evaluate the exposure pathways identified in the human health and ecological CSM.

3.3.1 Dataset Utilized in this Evaluation

Available historical data for the ARRC railyard, leased properties identified for further action by U.S. EPA in the RFA, Ship Creek, and data from other surrounding entities, such as Elemendorf Air Force Base, were reviewed for data usability. Historical data for the Site have been collected since the early 1980s for a wide variety of purposes, and under a wide variety of environmental objectives and guidance. Data collection methods, analytical methods, and quality assurance and validation requirements vary widely for this data. As discussed in Section 2, QA/QC for the data varied within the leased properties depending on the dataset. To provide the most comprehensive overview possible for the SBR, all data for which matrix, analyte, units, and approximate location could be identified were included that meet the following criteria.

All usable data were evaluated in the data evaluation. Usable data were defined as:

- Non-rejected data (i.e., excluding data with validation code of "R") (for all media)

- Data from an unknown matrix (e.g., general water matrix without specific identifier as to groundwater, surface water, wastewater, was not used.)

This dataset was specific to the leased properties and railyard areas that U.S. EPA identified as needing further action in the RFAs (SAIC, 1996, Booz, et al., 2002).

The following subsections define the datasets evaluated by media.

3.3.1.1 Surface and Subsurface Soil Data

The soil dataset includes historical soil data collected from the railyard and individual leased properties between May 1983 and October 2003.

The exposure pathways identified for soil include: incidental ingestion, dermal contact, migration of soil to groundwater, and inhalation of volatiles from subsurface soil in indoor air. Therefore, the following discussion focuses on whether adequate soil data have been collected from the Site in order to evaluate these pathways.

As shown on Tables 3-3 and 3-4, soil data have been collected in each of the six study areas and are available to evaluate direct contact pathways. However, surface soil data are not available in Study Area 1 and are sparse in the remaining study areas, including the railyard (i.e., sample numbers range 1 to 44, with DRO and GRO comprising the majority of the samples). In some instances, this is justifiable, such as in Study Area 3 where the presence of extensive paved and covered areas results in little exposed surface soil. In the other study areas, surface soil to evaluate the direct contact pathway for human health receptors is identified as a data gap to be further evaluated in the RI Work Plan.

Subsurface soil data are found in each study area and can be used for the direct contact, migration to groundwater, and inhalation pathway evaluations. Therefore, subsurface soil data are determined to be adequate for evaluation of the subsurface soil exposure pathways.

3.3.1.2 Groundwater Data

The groundwater dataset includes data collected across the entire site between 1985 and 2004, with the most recent data having been generated in August 2004. Historical groundwater data was considered in the data usability evaluation in order to determine whether temporal data have been collected to present trends in the dataset. For purposes of the risk assessment, typically

only the most recent year of groundwater data are included, as this represents the most current site conditions.

The exposure pathways identified for groundwater include: incidental ingestion, dermal contact, and inhalation of volatiles in indoor air. In addition, groundwater may potentially discharge into surface water at Ship Creek. Therefore, the following discussion focuses on whether adequate groundwater data have been collected from the Site to evaluate these pathways.

As shown on Table 3-5, groundwater data have been collected in all of the three study areas. However, as current groundwater data (collected within the last year) is a key component for evaluation of risk, it is preliminarily identified as a data gap for the RI. Further evaluation of existing groundwater data specific to date of sampling, location, and analytes will be conducted for the RI and will consider the results of the approved interim measure to locate existing wells.

3.3.1.3 Surface Water Data

The surface water dataset includes data collected from 47 locations along Ship Creek and other surface water areas on the ARRC property between 1980 and March of 2004. The historical data review focused on data available for Ship Creek and any backwaters or ponds associated with the creek. The dataset also includes some samples that should be characterized as seep water samples or as stormwater effluent samples. Water samples from open air ditches were characterized as surface water, even if they may be effluent-dominated conveyances. Some locations in the historical record refer to structures of conveyances that no longer exist, and currently are located in Ship Creek riparian dry land. Such samples were still included in the dataset.

Samples collected from Reeve Boulevard and upstream are considered background samples. A significant number of such samples are available, primarily (but not exclusively) from Elmendorf Air Force Base, which is located immediately upstream of the Site.

One large group of samples collected from a drainage ditch on the Tesoro Terminal (LP-003) was identified as surface water. This ditch drains directly to Cook Inlet and is not connected to Ship Creek. Data from these samples were not included in the evaluation of data usability, which focuses on the Ship Creek study area, as this is the only complete exposure pathway identified.

Aside from the above-mentioned discrepancies, all data found in the historical record have been included. The oldest samples are from 1986, but were included for completeness. It should be noted that results reported from older

samples are unlikely to be of current concern, but are useful to provide a more complete picture of past conditions.

The exposure pathways identified for surface water include: incidental ingestion, dermal contact, and fish ingestion. The surface water data that have been collected from Ship Creek are considered acceptable to evaluate these exposure pathways.

Ecological exposure pathways include aquatic life and wildlife using the creek as a resource. Wildlife and aquatic life also contact backwaters, relict channels and riparian marshes and ponds. The adequacy of the existing dataset will be considered following the Ship Creek Habitat Survey to determine if additional data collection is needed to evaluate ecological risk.

3.3.1.4 Sediment Data

The sediment dataset includes data collected from 39 locations along Ship Creek between September 1985 and March 2004. Sediment data are primarily available for Ship Creek and its riparian zone. Samples labeled from treatment lagoons and impoundments not associated with the creek were not included as part of the data adequacy evaluation. Due to changes in Ship Creek fluvial geomorphology, some sites labeled “sediment” may now be located in riparian areas that are dry. Such samples are still considered sediment.

Limited “sediment” data are available for ponds and seeps associated with the North Bluff seep face and the Elmendorf Air Force Base OU-5 treatment system. These samples were not included in the data evaluation.

Samples collected from Reeve Boulevard and upstream were considered background samples. A significant number of such samples are available, primarily (but not exclusively) from Elmendorf Air Force Base, which is located immediately upstream of the Site.

All sediment data found in the historical record were included. The oldest samples are from 1985, but were included for completeness. It should be noted that results reported from older samples are unlikely to be of current concern, but are useful to provide a more complete picture of past conditions.

The exposure pathways identified for sediment include: incidental ingestion, dermal contact, and fish ingestion. The sediment data collected from Ship Creek is determined to be acceptable to evaluate these exposure pathways.

Ecological exposure pathways for sediment include aquatic life (including benthic fauna and fish) and aquatic wildlife. Wildlife may be exposed to sediment present in relict channels, backwaters and riparian marshes and ponds. Some of the riparian channels and marshes reflect recent changes in

Ship Creek's course. The adequacy of the existing dataset will be considered following the Ship Creek Habitat Survey to determine if additional data collection is needed to evaluate ecological risk and the nature and extent of any residual contamination. It is anticipated that focused data collection will be needed.

3.3.1.5 Biological Data

Biological data includes toxicity testing data, benthic bioassessment data, and fish tissue concentration data. There are limited amounts of data available for these endpoints. However, this data adequacy evaluation does not specifically consider this dataset. Further information on bioassessment data is available in the *Ship Creek Literature Review* (Hart Crowser, 2004). If the ongoing or potential future Interim Actions identify a potential need for further biological evaluation, the specific data gaps will be considered as part of the RI and the ecological risk assessment process.

3.3.2 Summary

Review of available data indicates that a large dataset is available for most areas of interest to evaluate human health groundwater and subsurface soil exposure. Surface soil data are more limited in extent, and it is likely data gaps are present for some areas of further concern. Targeted collection of surface soil in such areas may be necessary to evaluate exposure pathways.

Additionally, for risk assessment purposes, it is likely that current site-wide groundwater data will be needed. This will be further evaluated in the RI Work Plan.

Sediment and surface water data from Ship Creek is available. However, it is not clear if the available data are sufficient to evaluate sediment and surface water exposure primarily for ecological receptors. The Ship Creek Habitat Survey, due November 15, 2004, will, in conjunction with this SBR, clarify if data gaps are present in areas where potential sources or transport pathways are identified.

Available biological data, including benthic bioassessment, tissue analysis, and toxicity studies are limited. The need for further collection of biological data will be determined within the context of the U.S. EPA (1997) tiered ecological risk assessment process, following the outcome of Tier 1 (screening level) analysis.

3.4 Are Detection Limits Sufficient for Comparison to Screening Level Criteria?

U.S. EPA guidance states that analytical detection limits for all constituents must be sufficient for comparison to risk-based screening levels (U.S. EPA,

1989, 1992). This step in the data usability process may lead to the re-analysis of some samples, the use of estimated concentrations, and/or the elimination of certain chemicals from further consideration because they are believed to be absent from the Site (U.S. EPA, 1989). Before eliminating chemicals because they are not detected, the following points should be considered:

- The detection limit may be greater than risk-based standards, which may result in undetected risk.
- A particular detection limit may be significantly higher than positively detected values in other samples in a dataset.

Constituents with detection limits higher than screening concentrations should be carried through the screening-level risk assessment process, unless adequate information is presented in the risk assessment work plan to support their elimination.

The process of evaluating detection limits is illustrated on Figure 3-1.

3.4.1 Screening Criteria

3.4.1.1 Human Health Criteria

Table 3-2 presents the ADEC human health Method 2 soil cleanup levels for the "under 40 inch [of precipitation] zone." ADEC's Method 2 soil residential cleanup levels are based on ingestion or inhalation of volatiles in soil and were calculated using the standardized default exposure parameters developed by U.S. EPA, with the exception of exposure frequency related to precipitation and snowfall (ADEC, 2004). Soil cleanup levels for protection of groundwater were also considered in the screening level comparison. Therefore, the soil screening level selected for use in this evaluation (i.e., comparison to detection limits) is identified as the lower of the ADEC ingestion, inhalation, and migration to groundwater soil value. If an ADEC Method 2 soil cleanup level was absent, the U.S. EPA Region IX residential PRGs were used as the screening value.

For human health, sediment screening levels do not exist and, therefore, the ADEC Method 2 soil screening levels based on ingestion for the "under 40 inch zone" were used as the human health screening levels for sediment.

Table 3-2 also provides groundwater screening levels based on the following hierarchy: 1) ADEC 18 AAC 75.345(b) Groundwater Cleanup Levels; 2) U.S. EPA MCLs; 3) Federal Drinking Water Equivalents (DWELs); and 4) U.S. EPA Region IX PRGs for tap water ingestion (U.S. EPA, 2002a).

Human health screening levels for surface water are based on the Alaska Water Quality Criteria (WQC) for fish and water ingestion (Table 3-2). If an Alaska WQC value is not listed, U.S. EPA secondary alternative sources for ambient water quality criteria were used (U.S. EPA, 2002b).

Due to the industrial nature of the majority of the Site, a separate evaluation was conducted in which historically detected soil data were compared to U.S. EPA Region IX industrial PRGs, which more realistically represent current site conditions. This evaluation is provided in Appendix F. Also included in Appendix F is the evaluation of detected constituents in soil compared to leaching standards, and detected constituents in groundwater compared to relevant screening levels. The evaluation of detected constituents provides information regarding where, and to what extent, potential impacts may exist, which is not demonstrated through the use of the detection limit evaluation.

3.4.1.2 Ecological Criteria

Ecological screening levels for surface water (Table 3-2) were selected from the following hierarchy of sources: 1) Alaska Chronic Ambient Water Quality Criteria, 2) U.S. EPA National Recommended Water Quality Criteria, Criteria Continuous Concentrations (CCC) (U.S. EPA, 2002), 3) U.S. EPA Ecotox Thresholds (ET) recommended surface water values from OSWER (U.S. EPA, 1996), and 4) Tier II Secondary Chronic Values (SCV) for surface water, developed by Oak Ridge National Laboratory (Suter and Tsao, 1996). For analytes that require hardness adjustment, a hardness of 100 milligrams per liter (mg/L) was assumed. For analytes that require pH adjustment, a pH of 7 was assumed (ADEC, 2003a).

Ecological screening values for sediment (Table 3-2) are derived from recent ADEC guidance (ADEC, 2004). ADEC recommends the SQuiRT screening values used by National Oceanographic and Atmospheric Administration (NOAA) (Buchman, 1999). The Threshold Effect Level (TEL) is used as the screening level. If no TEL was available, the lowest of the alternate sources listed in the SQuiRT table were used. The SQuiRT table includes separate listings for freshwater and marine sediment.

Fish are consumed by piscivorous wildlife and by recreational fishermen. Both human health and ecological exposure pathways are present. However, screening values for fish tissue are limited to a few known bioaccumulative analytes (e.g., PCBs and mercury, for human health). There are few generally accepted fish tissue screening levels for protection of wildlife. Also, there is very little fish tissue data available. Risk to human health and the environment from fish ingestion will be evaluated as needed in the risk assessment and not compared to screening levels in this report.

3.4.2 Comparison of Detection Limits to Screening Level Criteria

In this section, the human health and ecological screening levels are used to evaluate detection limits for existing data. Exceedance of screening levels, whether for detected or non-detected data, does not mean that human health or ecological risk is necessarily present. Exceedances (assuming sufficient data are available) indicate the possibility of risk cannot be excluded, and the analyte should be retained for further evaluation.

For data adequacy purposes, the detection limit evaluation includes:

- **Analytes whose detection limits are below screening levels**. For these analytes there are no detection limit issues.

- **Non-detected analytes for which all detection limits (i.e., including the minimum detection limit) exceed the screening level.** A number of analytes have screening levels lower than commonly accepted analytical methods, and are, otherwise, non-detected. As the best practicable analytical methods were used, these data are considered usable.

- **Detected analytes for which some detection limits exceed the screening level.** Some exceedances may be due to dilutions caused by interference from other analytes, or varying sensitivity of the analytical method. Tables 3-3 through 3-9 highlight analytes where the maximum detection limit exceeds 10 times the screening level, and also indicates where the maximum detection limit is more than 100 times the minimum detection limit, chosen as an indicator for dilution effects. This cutoff was chosen based on best professional judgment. Data that do have detection limits in excess of screening levels represent potentially inadequate data, and are discussed further below.

Detection limit exceedances of screening levels may not become an issue in the COPC selection process for the risk assessment for some analytes. For example, the organochlorine pesticides are not likely to be associated with improper discharges; elevated detection limits for organics may be due to sampling in groundwater affected by free product that will be eliminated from consideration; and metals concentrations exceeding screening levels may lie within the background range. Further data evaluation will be conducted in preparation of the Remedial Investigation phase.

3.4.2.1 Surface Soil

Surface soil (0 to 0.5 feet bgs) is a medium of concern for human health in the railyard and the leased properties. It is not a medium of concern for ecological receptors, as their focus is the North Bluff and Ship Creek.

There are relatively few surface soil samples available. Table 3-3 shows the evaluation results. Detection limit issues are largely limited to Areas 4 and 5, where detected constituents such as carcinogenic PAHs (e.g., benzo(a)pyrene, dibenz(a,h)anthracene, etc.), metals (chromium and mercury only), occasionally a dioxin, chlorinated solvents (such as tetracholorethene, trichloroethene, and methylene chloride), DRO, and benzene samples contain detection limits above screening criteria. However, in Area 3 and 6 benzene is detected and the maximum detection limit exceeds the screening level.

Non-detected analytes exceeding detection limits are limited to Area 4 and 5. These exceedances include SVOCs (such as dimethylphenol, dinitrophenol, dinitrotoluene, dibenzofuran, hexachlorobenzene, pentachlorophenol, and some nitroso compounds and chlorinated ethers). In addition, a few chlorinated solvents, benzene, and one PAH (dibenz(ah)anthracene) also have detection limits above screening criteria. This may be a result of very low screening levels or high detections of some analytes during analytical runs resulting in elevated detection limits for other analytes that are not detected. During the risk evaluation, this may result in a skewing toward conservative estimates and will have to be discussed in the RI and Risk Assessment.

3.4.2.2 Subsurface Soil

Subsurface soil (greater than 0.5 feet bgs) is exclusively a human health exposure issue for the railyard and leased properties.

Table 3-4 shows the evaluation results for subsurface soil. Detection limit issues are of greater extent in subsurface soil, with exceedances identified in each study area.

Detection limit issues for detected analytes are limited to some carcinogenic PAHs (in Areas 4, 5, and 6), arsenic, selenium, mercury, and cadmium (Areas 2, 4, and 5), PCBs (Area 5 only), and DRO/GRO (Areas 1, 3, 4, and 6). In addition, exceedances of BTEX constituents were found in all study areas, while chlorinated solvent exceedances are found primarily in Areas 2, 3, and 5 (with limited exceedances in Area 6). A single dioxin exceedance is found in Area 5, while gamma-BHC exceeds in Area 6. Where exceedances are noted, use of the data may skew the risk evaluation for some analytes toward the conservative estimate and will have to be discussed in the RI and Risk Assessment.

Detection limit issues for non-detected data are widespread throughout each study area, with the exception of Area 1 where only benzene is not detected

and has a detection limit above screening criteria. Detection limit issues for non-detected data are limited to exceedances for analytes with very low screening levels, but for which the majority would not be expected to be found at the Site, such as: selected chlorinated VOCs (EDB, DBCP, and trichloropropane) and SVOCs (hexachlorobenzene, chlorinated ethers, some nitroso compounds). However, select PAHs, benzene, and pentachlorophenol are the only analytes that could reasonably be expected to be present at the Site. In addition, select PCBs and pesticides that are not detected have exceedances in Areas 2, 5, and 6. The exceedance of screening levels for the majority of these undetected analytes is not expected to be a concern for the Site investigation but could present an issue for the more common site constituents in the future risk assessment.

3.4.2.3 Groundwater

Groundwater is primarily a potential human health concern at this site for the railyard and the leased properties, if exposure were to occur to the shallow aquifer in the area. Groundwater does emerge as seep water, primarily in the North Bluff and is, therefore, available to wildlife. However, as this area is not expected to be a significant site-related exposure route, no ecological evaluation has been done. It should be noted that levels protective of human ingestion also would be protective of ecological exposure.

Table 3-5 presents the detection limit evaluation for groundwater in the three groundwater study areas.

For some analytes, the screening levels are lower than best practicable analytical detection limits. These include PCBs, the metals nickel and silver, some nitroso compounds, some VOCs (trichloropropanes and some volatile ethers), and the pesticides 1,2-dibromoethane and dibromochloropropane. A few of these have been detected in groundwater samples from the Site.

In the “north of Ship Creek” study area, it appears that a number of samples have required dilution or have used less sensitive analytical methods. Detection limits in excess of the screening level have been reported for most of the chlorinated and non-chlorinated volatiles (many of which are detected at the Site), a number of metals, DRO, and GRO, BTEX compounds, and many PAHs. In addition, the detection limits for some analytes that were not detected exceeded their screening levels in at least one sample: these consisted of pesticides, pentachlorophenol, and several uncommon SVOCs. The frequency of these exceedances, particularly for the detected analytes, may skew a future risk assessment in a conservative direction and will have to be discussed in the RI and Risk Assessment.

In the “south of Ship Creek” and the “Terminals” study area, the issue of dilutions or analytical methods causing detection limits in excess of screening

levels is much more limited. In these areas, it is primarily carcinogenic PAHs, benzene and ethylbenzene, and a few VOCs and SVOCs.

For groundwater, elevated detection limits for current and historical data may cause some difficulties in developing risk assessment conclusions for portions of the area north of Ship Creek, and locally elsewhere, primarily for some PAHs. Non-detected analytes, such as PCBs, appear to be reported at best practicable levels and should be adequate for risk assessment purposes.

3.4.2.4 Surface Water

A review of available chemical data for Ship Creek surface water is presented in Table 3-6 for human health and Table 3-8 for ecological exposure. The following summary presents the chemicals for which elevated detection limits are present. Surface water includes available data for Ship Creek, as well as some stormwater samples from outfalls or the discharge ditch from the Tesoro Terminal.

Human Health Evaluation

Detection limit exceedances of screening levels is primarily an issue for a few analytes with extremely low screening levels below best practicable analytical method limits: carcinogenic PAHs, some VOCs (chlorinated VOCs such as vinyl chloride and tetrachlorethanes), and SVOCs (pentachlorphenol, bis-2-ethyl hexyl phthalate, and some chlorinated ethers and nitroso compounds). This is also true for a few metals (thallium, antimony, and mercury). Some additional metals, and a few VOCs and SVOCs, have some detection limits above the screening levels, but are generally non-detected. Detection limits are generally not expected to be an issue for human health exposure to surface water.

Ecological Evaluation

Detection limits for some analytes exceed the screening level: xylenes, many metals, ammonia, and carbon disulfide. The elevated detection limits may result in difficulty interpreting results and evaluating ecological risk, particularly for metals. However, once background is factored in, the metals exceedances may not be an issue. This is also true for some metals (such as cobalt, mercury, and copper) that were not detected, but for which detection limits exceeded the screening levels.

For PCBs, beryllium, most pesticides, 7 of the 18 PAHs, and some other SVOCs (primarily phthalates and pentachlorophenol), the best practicable detection limit in surface water cannot meet the screening levels. These were all non-detected.

3.4.2.5 Sediment

A review of available chemical data for Ship Creek sediments is presented in Table 3-7 for human health exposure and Table 3-9 for ecological exposure. The following summary presents the chemicals for which elevated detection limits are present. Sediment includes surface material from Ship Creek and associated backwaters and areas within the Ship Creek riparian area.

Human Health Evaluation

Detection limits in excess of screening levels are limited to some samples of a few non-detected analytes not expected to be an issue: some chlorinated VOCs, and some nitro compounds. A few samples of benzo(a)pyrene and dibenzo(a,h)anthracene also had elevated detection limits due to dilutions. The low screening level for mercury was exceeded in many samples. These exceedances are not expected to be a concern.

Ecological Evaluation

For detected analytes, exceedances of sediment screening levels have been reported for toluene and xylene, a few metals (cadmium, mercury, and antimony), most common PAHs, PCBs, a few SVOCs, and some pesticides (DDT, Lindane, and Chlordane). All these were detected in at least one sample, and the elevated detection limit for some samples may complicate the risk assessment.

Several other analytes (some pesticides, several phthalates, pentachlorophenol, phenol, and ethylbenzene) were not detected in sediment, but some or all of their detection limits exceed the screening level. For those analytes in this group that may reasonably be considered site-related, this might complicate risk assessment.

3.4.3 Summary

The detection limit evaluation indicates that high detection limits for existing data may be a complicating factor primarily for subsurface soil and groundwater and, to a lesser extent, for sediment and surface water. It does not appear to be an extensive problem in soil, where high detection limits may primarily be associated with unavoidable sample dilution effects. However, oftentimes in soil, the generic leaching cleanup level that was used as the screening criteria is below the lowest practicable detection limit for analytical methods. In this case, site-specific leaching criteria should be applied to more accurately assess the migration to groundwater pathway. Screening levels for groundwater, surface water and, to some extent, sediment, are also frequently lower than the lowest practicable detection limit for analytical methods. In these cases, the detection limit should be considered the screening level. Evaluation of the detection limits of existing data should be considered as part of the sampling needs for the investigation phase at the Site.

3.5 What is the Spatial and Temporal Distribution of the Data?

Data collected during previous investigations were used to determine if the distribution of sampling locations and number of samples within each study area are suitable to define risk both spatially and temporally. The dataset for each media is provided in Table 3-10 and discussed in greater detail below. Figure 3-3 shows all media sample locations for the Site. Figures 3-4 through 3-13 show sampling locations within a study area for specific media. Further information on the railyard, leased properties and Ship Creek is located in Appendices C, D, and E. Note that the dataset used for the evaluation is limited to data collection activities associated with leased properties in areas which U.S. EPA has indicated may be of further concern. There may be additional data available for unconditionally excluded, no further action, or closed properties. This section discusses the proposed study areas as a unit, and also includes a discussion on data from individual leases within the area. A summary of the analytical data for each leased property is presented in Table 3-11 (soil) and Table 3-12 (groundwater).

3.5.1 Area 1

Area 1 is small (2.74 acres), isolated from the remainder of the Site, and consists in its entirety of LP-002 (Consolidated Freightways). There are no surface soil data for this area. Subsurface soil data are available. Approximately 35 samples have been analyzed for BTEX and 61 for selected fuel hydrocarbons from 24 locations. Samples are tightly clustered within the area (Figure 3-4). Some elevated hydrocarbons remain in place in soil, although the Site received a “no further action” from ADEC following the 1993 remediation. Groundwater data are available: 9 samples for BTEX and 12 samples for selected fuel hydrocarbons.

3.5.2 Area 2

Overall Data

Area 2 consists of the ARRC railyard, which also encompasses a small amount of railcar-related leased property (Tour Companies, LP-065). It occupies approximately 166 acres and is, by far, the largest evaluation area at the Site. Data evaluation is discussed in the next section.

Data Evaluation

The following is a summary of available data regarding this area (Figure 3-5). Two properties (the ARRC Railyard and LP-065) are sites for further action.

- RY-065 ARRC Railyard

- **Soil Data:** A relatively large number of samples are available for the railyard. However, samples tend to be clustered around the operations areas, and few samples are available for the eastern portions of the railyard. Sample distribution is highly uneven and concentrated in areas of past concern. Up to 410 samples are available for BTEX, and 298 samples for selected fuel hydrocarbons. Other analytes include PAHs (136 samples), PCBs (up to 55 analyses depending on isomer), lead (153 samples), metals (up to 92 samples for some metals), VOCs (up to 153 samples for some analytes), and SVOCs (64 samples for some analytes).

- **Groundwater Data:** The groundwater dataset (not counting the North Bluff seep samples) is relatively limited and is unevenly distributed. Analytes include fuel hydrocarbons (7 to 89 samples depending on analyte) and BTEX (157 samples). Lesser numbers of samples for VOCs (7 to 55 samples depending on analyte), PAHs (3 to 58 samples depending on analyte), lead (105 samples), and other metals (1 to 13 samples depending on metal) are available.

- **Comment:** While a large set of data are available, the clustering of data and the large area of the railyard suggests additional sampling may be necessary if operational areas are identified where impacts may be present.

- LP-065 Tour Companies (an area within the railyard leased in recent years to several tour companies to handle and store their privately-owned railcars)

  - **Soil Data:** A large dataset is available for this portion of the railyard, including 122 fuel hydrocarbon samples for some analytes, 42 BTEX samples, 23 to 48 PAH samples depending on analytes, up to 86 metals samples for some metals, 39 VOC samples for some analytes, and 29 PCB samples.

  - **Groundwater Data:** A large dataset is available for this portion of the railyard, including approximately 20 to 22 samples for total hydrocarbons and BTEX, and lesser numbers for PAHs, metals, SVOCs, and VOCs.

3.5.3 Area 3

Overall Data

Area 3 occupies 58 acres. A large dataset is available for this area, with over 1000 analyses (depending on analyte) available from 710 locations for

subsurface soil. Fairly extensive surface soil data (34 locations) is also available. The area is an active industrial area (Figure 3-6).

Data Evaluation

Five leased properties were identified as of potential future concern. The following is a summary of available data.

- LP-019 Tesoro Terminal
  - **Soil Data:** A very extensive dataset is available for fuel hydrocarbons (232 samples for some analytes) and BTEX (206 samples). A small amount of analytical data for other constituents (PAHs, SVOCs, and metals) are available.
  - **Groundwater Data:** A very extensive dataset is available for fuel hydrocarbons (up to 447 samples for some analytes) and BTEX (459 samples), with lesser numbers for other analytes.
  - **Comment:** There are surface/stormwater data for a drainage ditch from this property to Cook Inlet. The data are included in the surface water dataset discussed under Ship Creek media.
- LP-003 Flint Hills
  - **Soil Data:** A very extensive dataset is available for total hydrocarbons and BTEX (over 890 samples). A lesser number of samples are available for metals, PCBs, VOCs, and SVOCs.
  - **Groundwater Data:** A very extensive dataset is available for fuel hydrocarbons (149-353 samples) and BTEX (578 samples), with lesser numbers of samples for other analytes.
- LP-025 Chevron and LP-027 Chevron Former Asphalt Plant
  - **Soil Data:** There are 92 BTEX samples for the terminal and another 18 for the former asphalt plant. Fuel hydrocarbon data includes 94 samples for some analytes for the terminal and another 44 for the asphalt plant. Other data are largely absent.
  - **Groundwater Data:** No groundwater data associated with the terminal has been reported. However, over 280 samples for BTEX and selected fuel hydrocarbons are available for the asphalt plant.
  - **Note:** The Chevron terminal dataset is combined with the dataset available for LP-027. These datasets overlap to some

extent and are considered jointly in this section. Additionally, LP-016, an unconditionally excluded site, includes overlapping data that was considered.

- LP-060 North Star Terminal
  - **Soil Data:** Limited soil data available, consisting of 18 samples for fuel hydrocarbons and BTEX.
  - **Groundwater Data:** None

3.5.4 Area 4

Overall Data

Area 4 occupies 20 acres. A limited dataset of up to 33 analyses (depending on analyte) is available from 27 surface soil locations. The subsurface soil dataset is somewhat larger, with up to 128 analyses (depending on analyte) from 131 identified locations. Data have been collected between 1989 and 2003. Data are strongly clustered in two areas (Keystone Services and Prescott).

Data Evaluation

Fourteen leased properties were identified as of potential future concern. The following is a summary of available data.

- LP-015 Inlet Construction
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-083 Pruhs Corporation
  - **Soil Data:** Nine soil samples (9 fuel hydrocarbons, 8 BTEX, 5 PAHs, and between 3 and 5 for selected VOCs)
  - **Groundwater Data:** None
- LP-024 Prescott Equipment
  - **Soil Data:** A large dataset is available from soil investigation southwest of this property, including surface and subsurface soil data. Between 74 and 103 samples for selected fuel hydrocarbons and 75 samples for BTEX are available. In addition, data for metals, PCB, PAH, and VOC data are available.

- **Groundwater Data:** A large dataset is available that includes over 30 BTEX, total hydrocarbon and metals samples. A few VOC and SVOC samples are also available.

- LP-017 Polar Equipment
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-018 LH Construction
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-031 Keystone Services
  - **Soil Data:** Seven sample locations east of this leased property are available. Analytes include 27 PCB samples, a few hydrocarbons, BTEX, PAHs, metals and VOC/SVOC samples.
  - **Groundwater Data:** One sample for metals, PCBs, BTEX, and total hydrocarbons
- LP-110 Bob Benson Trucking
  - **Soil Data:** Three samples from one boring, analyzed for total hydrocarbons and BTEX
  - **Groundwater Data:** None
- LP-051 M-K Properties
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-020 Wholesale Distributors
  - **Soil Data:** None
  - **Groundwater Data:** Eight analyses for fuel hydrocarbons of which five are analyzed for BTEX
- LP-056 Steel Fabricators
  - **Soil Data:** None

- **Groundwater Data:** None

- LP-072 Karen's RV Service Center
  - **Soil Data**: None
  - **Groundwater Data**: None
- LP-094 Alaska Basic Industries
  - **Soil Data**: A fair amount of soil data are available for this leased property, including between 32 and 44 analyses for BTEX and between 29 and 45 analyses for fuel hydrocarbons depending on the analyte. In addition 12 samples are available for PCBs and metals.
  - **Groundwater Data**: Four samples are available for BTEX and fuel hydrocarbons
- LP-125 L&J Cabs – CPR Automotive
  - **Soil Data**: Eighteen samples for fuel hydrocarbons and 16 samples for BTEX are available. One sample for selected metals also has been reported.
  - **Groundwater Data**: None
- LP-006 Joe's Body Paint and Frame
  - **Soil Data**: None
  - **Groundwater Data**: None

3.5.5 Area 5

Overall Data

Area 5 occupies 26 acres. Up to 16 surface soil analyses are available (primarily associated with LP-022 [ML&P] and LP-991 [Arctic Cooperage]). Samples were collected between 1991 and 1996 and are, therefore, fairly recent. The subsurface dataset is considerably larger, with up to 769 analyses depending on the analyte, with a large proportion of the data originating at Arctic Cooperage. Samples were collected from 1989 through 2003 (Figure 3-8).

Data Evaluation

Eighteen leased properties were identified as of potential future concern. The following is a summary of available data.

- LP- 069 Dean's Automotive
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-052 Patrick Hickey
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-991 Arctic Cooperage
  - **Soil Data:** A very extensive dataset is available for this property. Numerous samples are available for all analyte groups (372 fuel hydrocarbons, 536 BTEX, up to 495 analyses for some PAHs, 51 SVOCs, 32 PCBs, 53 pesticides, up to 199 analysis for some metals, up to 303 analyses for some VOCs, and 14 dioxin samples).
  - **Groundwater Data:** Extensive data are available, including 178 samples for BTEX and fuel hydrocarbons, in addition to lesser numbers for other analyte groups (SVOCs, PAHs, metals and VOCs).
  - **Comment:** Analytical data for this site is very extensive. Additional sediment and surface water data for the riparian zone near Ship Creek are discussed under the Ship Creek section above. This site comprises a high fraction of all analytical data available for the leased properties south of the railyard.
- LP-137 Laidlaw Transit
  - **Soil Data:** A fair amount of data are available. Up to 103 analyses for some fuel hydrocarbons and 122 analyses of BTEX, in addition to 48 PAHs and SVOCs, and over 30 VOCs. In addition, some PCB, metals, and SVOC data are available.

- **Groundwater Data:** A fair amount of data are available. Up to 85 analyses for BTEX components, 57 fuel hydrocarbon samples, and 41 VOC samples. Data for PAHs are available for 14 to 53 samples, depending on the analyte, 12 samples for metals.

- LP-127 Post Road Tenancy
  - **Soil Data:** A large number of samples for PCBs are available (153 samples). A fair number of samples are available for other analytes, including 41 samples for fuel hydrocarbons, 20 for BTEX, and up to 22 samples for selected VOCs.
  - **Groundwater Data:** A few samples are available, up to 9 samples for fuel hydrocarbons, 11 samples for BTEX and VOCs, 7 for SVOCs, and a few samples for PCBs and metals.
- LP-026 Alaska Teamster
  - **Soil Data:** Data for this lease is limited to a single fuel hydrocarbon sample
  - **Groundwater Data:** None
- LP-112 Whitney Enterprises
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-079 Alaska Pride Bakery
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-098 Hayden Warehouse
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-085 CBS Equipment
  - **Soil Data:** A limited number of samples is available for BTEX (7) and fuel hydrocarbons (2-3)

- **Groundwater Data:** A fair amount of data are available, between 51 and 53 samples for BTEX, and lesser numbers for metals, VOCs, and SVOCs

- LP-134 HW Alaska
  - **Soil Data:** The data are limited to a couple of analyses for fuel hydrocarbons
  - **Groundwater Data:** A fair amount of data available, including 46 samples for fuel hydrocarbons and BTEX, and up to 30 samples for VOCs and SVOCs
- LP-109 Beats Walking Automotive
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-014 UCSC Motor
  - **Soil Data:** Three fuel hydrocarbon samples are the only available data for this lease
  - **Groundwater Data:** None
- LP-115 Technic Services
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-022 ML&P
  - **Soil Data:** A large dataset is available for this site, although for limited analytes. Additional data are available for areas owned by ML&P and located to the south, outside ARRC property. Analytes include total hydrocarbons (up to 247 samples for some analytes), VOCs and BTEX (up to 74 samples for some analytes), and PCBs (47 samples).
  - **Groundwater Data:** A large dataset is available, including 262 samples for BTEX and 217 for fuel hydrocarbons, and lesser numbers for SVOCs, VOCs, and metals. There are also 7 PCB samples.
- LP-055 Altex Distributing (CR Wells)

- **Soil Data:** Some data are available for this lease. A little over a dozen samples for fuel hydrocarbons, BTEX, and selected VOCs are available.
- **Groundwater Data:** Half a dozen samples for total hydrocarbons and BTEX, and three SVOC samples are available

- LP-034 CDF Inc.
  - **Soil Data:** None
  - **Groundwater Data:** None (Note: groundwater samples from Arctic Cooperage were reportedly taken at CDF also.)
- LP-078 Criterion General
  - **Soil Data:** None
  - **Groundwater Data:** None

3.5.6 Area 6

Overall Data Evaluation

Area 6 occupies 24 acres. Surface soil data are very limited, with only up to 4 analyses at two locations, collected in 1998. Subsurface soil data are more abundant, with up to 157 analyses (depending on analyte) from 81 locations, collected between 1990 and 2000 (Figure 3-9).

Data Evaluation

Ten leased properties were identified as of potential future concern. The following is a summary of available data.

- LP-038 (JV Rentals), LP-089 (Rock Partners), LP-070 (Golden Ears Investment), LP-128 (Seamless Flooring)
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-049 Wrightway Auto
  - **Soil Data:** Up to 10 samples are available from half a dozen subsurface locations for fuel hydrocarbons, BTEX, lead and selected VOC
  - **Groundwater Data:** Limited to two samples for total hydrocarbons and BTEX

- LP-120 KAPP
  - **Soil Data:** A substantial dataset is available for this lease, primarily subsurface data. There are two surface soil locations. All classes of analytes have been sampled in this area: total hydrocarbons (up to 48 samples depending on analyte), BTEX (up to 146 samples depending on analyte), PAHs (up to 121 samples depending on analyte), other SVOCs (up to 134 samples depending on analyte), VOCs (up to 76 samples depending on analyte), pesticides (up to 78 samples depending on analyte), PCBs (up to 59 samples depending on analyte), metals (up to 87 samples depending on analyte), and dioxins (4 samples).
  - **Groundwater Data:** A somewhat more limited dataset is available for most analyte classes, ranging from about 25 BTEX samples to a few pesticide and PCB analyses
  - **Comments:** This leased property includes portions of Ship Creek. Sediment and water data are available and considered under Ship Creek media above. Some subsurface sediment samples from the riparian area were classified as soil samples in these evaluations.
- LP-042 York Steel
  - **Soil Data:** None
  - **Groundwater Data:** None
- LP-131 Alaska Sheet Metal
  - **Soil Data:** Ten samples for total hydrocarbons from four locations are available. BTEX, PCBs, and metals were evaluated in up to seven samples.
  - **Groundwater Data:** None
  - **Other properties:** Limited soil data appears to be available for soil located near the south bank of Ship Creek
- LP-124 Alma Corporation
  - **Soil Data:** None
  - **Groundwater Data:** None

- LP-107 Safety Kleen
  - **Soil Data:** None
  - **Groundwater Data:** None

3.5.7 Overall Groundwater Data

Groundwater data were divided into three areas: south of Ship Creek, north of Ship Creek, and the terminals area. Groundwater associated with individual leased properties is described above. This section describes the total dataset for groundwater. Groundwater data exist for sections of the railyard and many of the leased properties the RFAs listed for further action. Additional groundwater data may be available for these and other areas.

Up to 603 analyses (depending on the analyte) are available for the area north of the creek, from 221 locations (Figure 3-10). This does not include North Bluff seep samples. Groundwater data are available from 1985 through March 2004. Some of these data are relatively old and may not be representative of current conditions. For the area south of the creek there are up to 284 analyses (depending on the analyte) at 101 locations (Figure 3-11). Data collection ranges from 1989 through February 2004, meaning that this dataset includes older data that may be of limited use for evaluating current conditions.

The terminals area has 229 locations for groundwater, with up to 1035 analyses for some analytes (Figure 3-12). The data go back to 1987.

3.5.8 Ship Creek

Ship Creek is described more fully in Appendix E. The media of interest in Ship Creek are sediment and surface water (including stormwater). Riparian areas adjacent to the creek contain backwater and ponds as well as relict channels and ditches that may include surface water and sediment data. Surface water includes Ship Creek surface water, backwater and drainages into Ship Creek, stormwater outfalls to Ship Creek, and samples from the drainage ditch from Tesoro directly to Cook Inlet. Sediment includes Ship Creek sediment, and backwater and drainages into Ship Creek.

Sediment and surface water (or stormwater) samples are available for all major reaches of Ship Creek (Appendix E), although extensive areas do not have analytical data reported (Figure 3-13). The Ship Creek Habitat Survey will evaluate data needs for areas lacking coverage. Sediment data for the evaluation were collected between 1985 and 2004, and the older data may not be representative of current conditions. Surface water data goes back as far as 1980. Much of this data is not representative of current conditions.

Additional data needs will be defined following the Ship Creek Habitat Survey.

3.6 Are Background/Upstream Reference Site Data Available for Comparison to the Current Dataset?

A comparison of sample concentrations with background concentrations is useful for identifying non-site related chemicals that are found at or near a site. Background comparison is typically undertaken for inorganic, naturally occurring constituents. Most organic constituents are assumed to have no true natural background conditions, even though they may be common or even ubiquitous due to anthropogenic input. Due to the existence of recognized source areas for organic contaminants upgradient and north of the ARRC site (i.e., Elmendorf Air Force Base) and the potential presence of source areas associated with the urbanized area upgradient and to the south of the Site, background conditions for the Site will include concentrations of organic constituents. Background data for use at the Site may include collection of site-specific background samples at the upgradient property line and/or data derived from literature sources. Evaluation of background data will differentiate between natural background in the absence of other sources, and the true background for the Site accounting for upgradient sources.

Background data are used during the RI/FS process to screen site data against background concentrations for determining site-related COPCs (ADEC, 2001). Procedures for deriving background data are available (e.g., ADEC, 2003b for soil). The type of "background concentration" is defined by ADEC as either the concentration of a hazardous substance that is consistently present and naturally occurring (particularly metals), or that is the result of human activities unrelated to a discharge or release from the Site (e.g., atmospheric deposition of dioxins or PAHs).

For some data types, particularly stream biological data such as fish tissue concentrations or biological community data, the use of an appropriate background that is not affected by the Site is essential. Locations of this type are called reference sites. Such locations may consist of sites located upstream of the Site, or separate streams that are physically similar but lack potential impacts from the Site.

Current conditions at the Site are discussed below:

- **Surface and Subsurface Soil.** Most previous soil investigations at the Site focused on limited areas to address a specific environmental impact or concern. In some cases, samples were collected nearby that were identified as "background." However,

such samples, in most cases, qualified as background for the specific investigation area, but were not necessarily representative of background conditions for the Site as a whole. It appears that no existing soil samples can unequivocally be labeled as background samples for the Site at this time. It is possible that suitable background data can be found in the literature, state guidance, or, in particular, the Elmendorf RI/FS data. This will be further evaluated for the RI Work Plan submittal.

- **Groundwater.** Previous groundwater investigations have sometimes assumed that North Bluff seepage and groundwater influx is the background condition for the northern portion of the Site. Extensive sampling of groundwater seeps along the North Bluff has been conducted, as suspected off-site sources of organic constituents have been identified in this area. It is likely that some or all of these seeps may be considered as background groundwater conditions for shallow aquifer groundwater on the north side of Ship Creek. In addition, existing Elmendorf Air Force Base RI/FS and/or OU-5 monitoring data may be suitable for use as background data. This will be further evaluated in the RI Work Plan submittal.

- **Sediment and Surface Water.** A number of studies of Ship Creek sediment, surface water, and biota have been conducted. A background location, typically upstream of Reeve Boulevard and/or at the Elmendorf Hatchery dam was sometimes included. These data points are usable as background data. In addition, extensive sampling and analysis of surface water, sediment, stormwater and seepages along Ship Creek has been collected as part of the environmental monitoring program at Elmendorf Air Force Base and Fort Richardson Army Base. Finally, many of these studies, in their turn, included background samples from pristine areas of Ship Creek located upstream of Glenn Highway. Adequate background data are present to evaluate historical site data.

Overall, specific background samples that are representative of background conditions for the Site as a whole have not been collected for soil and groundwater. Reference site data (i.e., upgradient) for sediment, surface water, and probably groundwater on the north side of Ship Creek are available for use as background. Therefore, it is recommended that background samples be collected for soil and groundwater from appropriate locations outside the Site that have not been impacted by Site contaminants to assist in further characterizing the nature and extent of background inorganic and organic compounds to determine the Site COPCs.

3.7 Are Data Available to Evaluate Remedial Technologies?

The range of potential remedial alternatives encompasses those in which treatment significantly reduces the toxicity, mobility, or volume of contaminants; options for containment with little or no treatment; removal actions, institutional controls, natural attenuation, and a no-action or base-line alternative. Examples of potential remedial alternatives include excavation, capping, *in situ* treatment, monitored and enhanced natural attenuation, and other alternatives. Table 3-13 provides a general list of potential remedial alternatives, the types of response actions they would involve, the available data relevant to these potential actions, and data needs for the RI/FS. This table provides a means of identifying data gaps needed to evaluate potential remedial alternatives in the FS.

Historical data collected from the Site are limited in certain parameters needed to evaluate remediation technologies. Table 3-14 summarizes the available data to evaluate natural attenuation and conduct fate and transport modeling. Additional data will be collected during the RI/FS implementation as outlined in Section 4.

4 Summary and Proposed Path for RI Work Plan

This report presents a summary of existing site information for use or incorporation in the RI. This was conducted in two primary ways:

1. The Site operational and environmental history was summarized and utilized to present the Site hydrogeological setting and preliminary human and ecological CSMs. This information was combined with that contained in the RFAs and ARRC's responses to those documents to bring together the Site background information contained in this report. Specific information regarding the railyard, Ship Creek and the leased properties that the RFAs identified for further action is presented in Appendices C, D, and E.

2. The chemical data available for Ship Creek, the railyard and the leased properties identified for further action in the RFAs were compiled into an electronic database and evaluated in regard to level of QA/QC associated with the data, initial comparison to screening levels and the use of the data for the upcoming RI.

The following two sections present the resulting conclusions of these efforts. First, the evaluation of property information concludes that some properties can be proposed for no further evaluation, while some properties will be considered further in the RI. Next, this report identified a number of data gaps that will be evaluated further in the RI Work Plan.

4.1 Review of Existing Area and SWMU/AOC Information

Review of the available analytical data in combination with the Site history of operation and environmental concerns has lead to the conclusion that some properties should not be evaluated further in the RI process, while others clearly should. This conclusion is based on two primary factors:

1. Documentation of existing participation with another regulatory program (ADEC) making inclusion in this program duplicative.

2. A level of certainty that the participation in the other regulatory program is addressing the Site issues for determining nature and extent of potential sources at the Site.

If the leased properties in particular met these two primary criteria, they have been proposed for no further evaluation as a source area in the RI. Note, in some cases there were other compelling reasons to propose exclusion from the

RI and these are noted in Table 4-1. Additionally, work with respect to certain media or exposure pathways relating to these media (e.g., volatilization of VOCs from groundwater to indoor air) may still be needed at certain sites.

4.1.1 Leased Properties Proposed for No Further Evaluation as Source Areas

Following the review of available site documents and data, a summary of the report information suggests that some of the leased properties should be eliminated from further consideration as source areas. As stated above, there may be groundwater monitoring conducted on some of these properties.

Table 4-1 presents a summary of leased property status where a weight of evidence approach was utilized to determine that further evaluation of these properties as potential source areas is not necessary. The information relevant to this determination includes:

- The regulatory concerns as stated in the leased properties RFA
- ARRC written comments submitted to U.S. EPA regarding the leased properties RFA
- Review of investigations conducted to date and the status of regulatory involvement on those projects
- Analytical data review including some recently collected data
- ARRC personnel input based on working site knowledge
- Site conditions, such as several instances where the U.S. EPA concern relates to an off-site source and is not an ARRC issue

This report addresses the 40 leased property sites that U.S. EPA designated for further action in the leased properties RFA. This report also includes information regarding 9 leased property sites where that RFA did not designate the sites either for further action or not for further action.

As shown in Table 4-1, there is a sound basis for excluding 23 of the leased properties from further evaluation as source areas in the RI/FS. These consist of the following:

- LP-038 JV Rentals
- LP-070 Golden Ears Investment
- LP-089 CV Wells/Rock Partners
- LP-098 Constance Hayden
- LP-003 Flint Hills

- LP-014 Curtis Josaitis & Daniel Helton UCSC/Motor Doctor
- LP-015 Cherrier & Cherrier/ Inlet Construction
- LP-017 Post Road Properties LLC/ Polar Equipment
- LP-019 Tesoro
- LP-020 Robert Carlson/ Wholesale Distributors of Alaska
- LP-022 Municipal Light & Power
- LP-024 Prescott Equipment
- LP-025 Chevron USA
- LP-026 Alaska Teamster/ Teamster Training
- LP-031 Keystone Distribution
- LP-051 M-K Properties
- LP-055 CV Wells/ Altex Distributing
- LP-083 Pruhs Corp.
- LP-094 Alaska Basic Industries
- LP-107 Safety Kleen
- LP-110 Bob Benson Trucking
- LP-112 Whitney Enterprises
- LP-127 Post Road Co-Tenancy

In addition, 6 leased properties also are being proposed for exclusion as potential source areas. A property review, where ARRC will visit the property to determine if any U.S. EPA identified issues are still of concern and visually determine if there are other environmental issues, will be conducted. These consist of the following:

- LP-002 Consolidated Freightways
- LP-042 York Steel
- LP-072 Karen's RV
- LP-115 Technic Services
- LP-124 Alma Corp.
- LP-128 Seamless Flooring Systems

Table 4-1 provides specific justification for this conclusion.

4.1.2 Leased Properties Identified for Further Evaluation in the RI

Following the compilation for site data and evaluation as presented above, a considerable number of leased properties will be further evaluated during the RI. These include:

- LP-079 Alaska Pride Baking
- LP-125 L&J Cabs/ CPR Automotive
- LP-991 Arctic Cooperage
- LP-006 Joe's Body Paint and Frame

- LP-018 Alaska Plumbing and Heating/ LH Construction
- LP-027 Chevron Former Asphalt Plant
- LP-034 CDF
- LP-049 Wrightway Auto
- LP-052 Patrick M. Hickey
- LP-056 Steel Fabricators
- LP-060 North Star Terminal/ Stevedore
- LP-065 Tour Companies
- LP-069 Dean's Automotive
- LP-078 Criterion General
- LP-085 CBS Equipment
- LP-109 Beat's Walking Automotive
- LP120 KAPP
- LP-131 Alaska Sheet Metal
- LP-134 HW Alaska
- LP-137 Laidlaw/ Alaska West

In addition, Ship Creek will be further evaluated as stated in several sections of this report.

4.1.3 Summary of Railyard SWMUs/AOCs

The table provided in Appendix C presents a summary of information for the railyard SWMUs and AOCs requiring further action, which was derived from reviewing the files and records relating to this area. The information summarized in Appendix C includes the SWMU and AOC locations, an overview of the environmental issues/concerns, associated with those areas, recommended actions outlined in the RFA, and ARRC comments regarding those recommendations. Recommended actions for several SWMUs and AOCs designated as "further action" within the RFA have been addressed; these areas are not included on the summary table in Appendix C, but are listed below.

- SWMU 28, Drum Storage
- AOC 4, Former Diesel UST
- AOC 5, Former Unleaded Gasoline UST

A total of 35 SWMUs and 5 AOCs remain for evaluation at the railyard. Based on preliminary evaluation of the available records, 5 SWMUs and 3 AOCs appear to be candidates for location-specific investigation (e.g., soil sample collection for analytical and physical parameters, free phase gauging [if such COPCs are present], and collection of groundwater samples). Table 4-2 includes a list of these eight railyard areas.

4.2 Summary of Identified Data Gaps for Focus in the RI Work Plan

The preliminary CSMs developed in Section 2 for hydrogeological conditions and for human health and ecological exposure were used as a framework to evaluate existing site analytical data. This review, presented in Section 3, is intended to identify major data gaps for those properties and areas not proposed for exclusion in Section 4-1. Several Interim Actions mandated under the SOW are currently in progress to add information to the CSM for the Site. The CSM, and thereby also the extent and nature of any data gaps, may be modified as a result of the Interim Actions. This section therefore presents a preliminary review of identified data gaps. The upcoming RI Work Plan will further refine this evaluation of data gaps and identify proposed actions to address them.

4.2.1 Site Hydrogeological Conditions

Recognized data gaps associated with the hydrogeological conceptual model include:

- Site-wide groundwater elevation data are needed to evaluate groundwater flow direction and gradient in the shallow aquifer. U.S. EPA has approved an Interim Action that address this data gap.

- Data are needed to characterize the relationship between the shallow groundwater aquifer and Ship Creek. In addition, the possible influence of tides on flow direction and/or gradient within the shallow aquifer at the western portion of the Site should be evaluated to determine contaminant fate and transport implications.

4.2.2 Human Health and Ecological Exposure Pathways and Receptors

The CSM for human health exposure to site soil, groundwater, sediment and surface water identified key receptors, including on-site construction workers, indoor and outdoor commercial and industrial workers, recreational users of Ship Creek and trespassers. For completeness, an unrestricted use scenario (i.e., assuming residents) will be considered for in the PC zone area. Not all these receptors will be exposed to all site exposure study areas and media. When exposure study areas and receptors are further refined, it is likely that specific pathways may not be applicable to certain areas or receptors, which may affect data sufficiency and the magnitude of data gaps. Detailed evaluation of exposure areas and applicable pathways and receptors were not conducted based on the existing data but will be considered for the RI Work Plan.

The CSM for ecological exposure focuses on Ship Creek. Ship Creek also includes potential human health exposure to creek media due to fish ingestion. The extent and nature of human exposure to contamination from Ship Creek is a data gap that will be evaluated following completion of the Ship Creek Habitat Survey and evaluation of appropriate sediment and surface water data.

Ecological habitat is largely absent at the Site, except for the Ship Creek corridor and the North Bluff area. However, the occasional presence of wildlife or birds in other, industrial and commercial, areas of the Site has not been fully defined and may be a minor data gap. However, due to the lack of forage and shelter in the active railyard and leased properties, this presence would be expected to be of minor consequence.

4.2.3 Evaluation of Existing Dataset for Site Characterization and Risk-Based Evaluation

Six criteria were evaluated to determine if the existing data are useable for the RI/FS and risk assessment at the Site. From this preliminary evaluation of existing site data, a number of broad data gaps were defined for further evaluation in the RI Work Plan, as summarized below.

Is the suite of analytes representative of potential contaminants of concern? (U.S. EPA, 1992)

YES. The Site as a whole has sufficient and representative analytes in the historical data of two types:

- A focused list of analytes specific to the environmental issue that was being addressed. For example, for UST removal sites, the appropriate analytes of fuel hydrocarbons, or BTEX were generally analyzed; in areas with transformer issues, PCBs were analyzed.

- Complete sets of analytes are found in several properties where more complex environmental issues exist. For example, at LP-127, where extensive environmental investigations and remedial action are underway currently with ADEC, the suite of analytes has been extensive to characterize all potential impacts at that property.

Therefore, in the existing dataset, the suite of analytes is adequate to collect the information needed for that particular sampling. This use of focused analyte lists and a more comprehensive analyte list will be utilized in the upcoming RI Work Plan consistent with the information and site history for each study area and property requiring further evaluation.

Are sufficient data available to evaluate each potential exposure pathway identified in the CSM? (U.S. EPA, 1992)

NO. Sufficient data are available in some areas and for selected analytes. However, appropriate distribution may be missing in other areas where human or ecological exposures are likely. The data needed to evaluate the human health exposure pathways include data for:

- Direct contact with surface soil
- Direct contact with subsurface soil
- Direct contact with groundwater and inhalation of vapors from groundwater into indoor air
- Direct contact with surface water
- Fish ingestion

Data gaps for human health include:

Soil Data. In order to evaluate direct contact by site workers or other receptors, surface soil data may need to be collected in several of the study areas.

Groundwater. While current data are available for some portions of the Site, other areas may require data collection to understand current conditions, possible exposures, and nature and extent of potential contamination.

Fish Ingestion. If fish ingestion is a pathway of significant concern based on evaluation of surface water or sediment data, then the need for biological tissue or predictive modeling will be evaluated.

Ecological Exposure. Sediment and surface water data (primarily from Ship Creek) can be used to evaluate screening risk levels for aquatic flora and fauna. There are only limited data available for these media, and data appears to be absent from certain backwater areas of particular ecological concern, where key ecological receptors such as beaver and waterfowl may congregate. Complete evaluation of ecological pathways may require biological analysis such as bioassessment or toxicity assays. Only limited data of this kind are currently available. However, within the ecological risk assessment process, such data are not collected or evaluated until higher tiers of investigation and, therefore, does not represent a current data gap.

Are detection limits sufficient for comparison to screening level criteria? (U.S. EPA, 1989; 1992)

YES. The evaluation of detection limits indicates that, for most analytes, detection limits reported are sufficient for site decision-making and inclusion of the data in the RI/ FS. Existing soil data is largely acceptable, with some exceedances primarily attributed to analytical dilution due to sample interferences. These exceedances may skew risk assessment results in a conservative direction and will have to be discussed in the RI and Risk Assessment.

Particularly in groundwater, but also in sediment and surface water, some analytes screening levels are so low that all analytes exceed the screening levels (for instance groundwater chlorinated solvents and PCB screening levels). See Section 3 for specific analytes. The exceedance of these screening levels should not affect risk evaluation provided that data using best practicable detection limits are available. The overall result of detection limits exceeding screening levels is skewing of risk estimates in a conservative direction, and this will have to be discussed in the RI and Risk Assessment. If further data evaluation suggests detection limits for key areas of concern have been inappropriately high and not attributable to justifiable sample dilution, focused supplemental sampling may be proposed in the RI Work Plan.

What is the spatial and temporal distribution of the data? (U.S. EPA, 1989; 1992)

Area 1

Area 1 includes LP-002 (Consolidated Freightways). There are no surface soil data for this area. Subsurface soil data are available. Approximately 35 samples have been analyzed for BTEX and hydrocarbons from 24 locations. Samples are tightly clustered within this small area.

Conclusion: Data coverage expected to be adequate.

Area 2

Area 2 includes the ARRC Railyard (RY-065) and the Tour Companies lease (LP-065).

A relatively large number of soil samples are available for the railyard. However, samples tend to be clustered around the operations areas, and few samples are available for the eastern portions of the railyard. The Tour Companies lease has been extensively sampled. Up to 410 samples are available for BTEX, and up to 298 samples for fuel hydrocarbons. Other analytes include PAHs, PCBs, metals, VOCs, and SVOCs. A large dataset is also available for LP-065, including up to 122 fuel hydrocarbon samples, 42

BTEX samples, up to 48 PAH samples, up to 57 metals samples, up to 39 VOC samples, and 29 PCB samples.

While a large set of data are available, the clustering of data and the large area of the railyard suggests additional focused sampling in areas of concern will be necessary.

Groundwater data is available from about 25 locations in the operations area (including the Tour Companies), but only from 2 wells in the eastern portion of the railyard, and one or two wells in the southern portion of the railyard near Whitney Road. Additional groundwater data collection points may be needed to define any plumes, to allow development of site-wide groundwater maps.

Conclusion: Additional soil and groundwater sampling points will likely be necessary, focused on areas of concern to be identified in the RI Work Plan.

Area 3

Area 3 includes the Terminals area northwest of the railyard and incorporates LP-019 (Tesoro), LP-003/005 (Flint Hills), LP-025/027 (Chevron) and LP-060 (North Star).

A very extensive soil dataset is available for this study area, for fuel hydrocarbons and BTEX (over 800 samples) from a large number of locations. Portions of this study area have been sampled in a systematic grid manner, although for limited number of analytes. A lesser number of samples is available for metals, PCBs, and SVOCs. Only limited soil data for total hydrocarbons and BTEX are available for the LP-060 (North Star), and additional sampling will be necessary if sources and pathways are determined to be necessary.

Groundwater data is equally extensive and should be sufficient for characterization purposes, except in LP-060 (North Star). There is additionally a set of surface water data from a drainage ditch from the Tesoro Terminal to Cook Inlet.

Conclusion: Data expected to be sufficient for characterization except at LP-060 (North Star) where additional soil and groundwater data collection may be necessary.

Area 4

Area 4 includes a number of small leases for which existing data is absent or minimal. However, many of these areas are being proposed for exclusion from further evaluation. The leases proposed for further evaluation include: LP-056 (Steel Fabricators), LP-018 (LH Construction), LP-006 (Joe's Body and Paint), and LP-125 (CPR Automotive).

A limited dataset of up to 33 analyses (depending on analyte) is available from 27 surface soil locations in this study area. Subsurface soil data are somewhat larger, with up to 128 analyses (depending on analyte) from 131 identified locations, none of which are from the leased properties identified for further evaluation. Data have been collected between 1989 and 2003. Data are strongly clustered in two areas (LP-031 Keystone Services and LP-024 Prescott), which are proposed for exclusion from further evaluation.

Groundwater data from 10 well locations is available, although none are directly associated with leased properties proposed for further evaluation.

It is likely additional focused sampling of soil and groundwater may be needed in this study area if the leased properties concerned may represent sources and pathways.

Conclusion: If the leased properties proposed for further evaluation are determined to be potential sources, additional soil and groundwater sampling may be indicated.

Area 5

Area 5 includes a number of leased properties recommended for exclusion. Leased properties that need further evaluation include: LP-069 (Dean's Auto), LP-991 (Arctic Cooperage), LP-034 (CDF), LP137 (Laidlaw), LP-085 (CBS Equipment), LP-134 (HW Alaska), and LP-109 (Beats Walking).

Up to 16 surface soil analyses are available (primarily associated with LP-022 (MPL&P) and LP-991 (Arctic Cooperage). Samples were collected between 1991 and 1996 and are therefore fairly recent. The subsurface dataset is large, with up to 769 analyses depending on the analyte, with a very large proportion of the data originating at LP-991 (Arctic Cooperage). Samples were collected from 1991 through 2003. LP-137 (Laidlaw) and LP-127 (Post Rd. Co.) have been extensively sampled, primarily for PCBs, although some additional sample locations are available. LP-085 (CBS Equipment) has been sampled at 7 locations, 5 of which are tightly clustered. The remaining properties have limited or no soil data.

Groundwater data is similar to the pattern for soil, with very extensive sampling at LP-991 (Arctic Cooperage) from over 20 well and trench locations. Additional wells have been sampled at LP-137 (10 locations), LP-127 (10 locations), LP-083 (3 locations). On the south side of Ship Creek, the ML&P site (LP-022) has been extensively sampled, as has LP-055 (Altex). Other areas have little data available.

Conclusion: Several areas on the north side of Ship Creek have reported potential subsurface issues. Except for the Arctic Cooperage site itself, which

has been very extensively characterized, this study area is likely to require focused sampling in areas of potential concern for both soil and groundwater.

Area 6

This area includes a number of small leased properties south of Ship Creek recommended for no further action. On the north side several leases are recommended for further evaluation: LP-049 (Wrightway), LP-120 (KAPP), and LP-131 (Alaska Sheet Metal).

Surface soil data are very limited, with only up to 4 analyses at 2 locations, collected in 1998 at KAPP (LP-120). KAPP includes undeveloped areas near Ship Creek.

Subsurface soil data are more abundant, with up to 157 analyses (depending on analyte) from over 81 locations, collected between 1990 and 2000. Half a dozen of these locations are in LP-049 (Wrightway Auto), with most of the remainder at KAPP (LP-120). Four locations at Alaska Sheet Metal have been sampled. The datasets appear largely sufficient unless specific sources are identified in this area.

Limited groundwater is available for Wrightway Auto (LP-049) and a more extensive dataset for KAPP (3 to 4 locations sampled). However, these leased properties are located adjacent to or within the Ship Creek area, and potential pathways may be present. Additional sampling is likely to be needed.

Conclusion: Sampling of groundwater and/or seeps is likely to be needed to evaluate potential discharges to Ship Creek.

Overall Groundwater Data

Groundwater data are divided into three areas: south of Ship Creek, north of Ship Creek, and terminals area. This section describes the total dataset for groundwater. Groundwater data exist for sections of the railyard and many of the leased properties that the RFAs listed for further action. Additional groundwater data may be available.

Up to 606 analyses (depending on the analyte) are available for the area north of the creek, from 238 locations. This does not include North Bluff seep samples. Groundwater data were generated from 1985 through March 2004. Some of these data are relatively old and may not be representative of current conditions. For the area south of the creek, there are up to 284 analyses (depending on the analyte) at 99 locations. Data collection ranges from 1989 through September 2002, suggesting that some of these data are relatively old and may be of limited use for evaluating current conditions.

The terminals area has 269 locations for groundwater, with up to 1,319 analyses for some analytes. The data goes back to 1987.

Ship Creek

The media of interest in Ship Creek are sediment and surface water (including stormwater). Surface water includes Ship Creek surface water, backwater, and drainages into Ship Creek, stormwater outfalls to Ship Creek, and samples from the drainage ditch that discharges from Tesoro directly to Cook Inlet. Sediment includes Ship Creek sediment, and backwater and drainages into Ship Creek.

Sediment and surface water (or stormwater) samples are available for all the major reaches of Ship Creek (Appendix E), although there are no apparent analytical data for a number of creek segments. The Ship Creek Habitat Survey will evaluate data needs for segments lacking coverage. Sediment data for the evaluation were collected between 1985 and 2004, and the older data may not be representative of current conditions. Surface water data go back as far as 1980. Many of these data are not representative of current conditions. Data needs for Ship Creek will be determined following the Ship Creek Habitat Survey and will be detailed in the RI Work Plan.

Are background / upstream reference site data available for comparison to the current dataset?

Overall, samples that are representative of background conditions for the Site as a whole have not been collected for soil or groundwater. However, the Site is located downgradient of Elmendorf Air Force Base and extensive soil and groundwater data has been collected as part of the RI/FS process at that site. It is possible that some of these data may be used as representative background for the Site. Seep data from the North Bluff may also be useful as background groundwater data.

Reference Site data (i.e., upgradient) for sediment and surface water are also available for use as background based on Elmendorf Air Force Base collections.

Existing Elmendorf data should be evaluated for use as background data, although additional collection for soil is likely to be needed.

Are data adequate to evaluate remedial technologies?

Some information is available regarding physical and chemical site characteristics for evaluating remedial technologies. The range of inputs needed was summarized and will be further evaluated in the RI Work Plan. Data needs for natural attenuation were also defined.

Additional sampling to address the data adequacy issues stated above is recommended. If site management plans, existing commitments to address or excavate areas, or constraints due to the active nature of the railyard or leased properties so indicate, additional sampling may become unnecessary.

5 References

ADEC, 1996. *Ship Creek Water Quality Assessment Draft Report*.

ADEC, 2001. *Screening Procedures for COPCs Under Methods Two and Three*. Technical Memorandum – 01-002. Division of Spill Prevention and Response. Contaminated Sites Remediation Program. January 16, 2001.

ADEC, 2003a. *Water Quality Criteria*.

ADEC, 2003b. *Determining Background Concentrations in Soil*. State of Alaska. Department of Environmental Conservation. June 13, 2003.

ADEC, 2004. *Cleanup Levels Guidance*. Alaska Department of Environmental Conservation. Division of Spill Prevention and Response. Contaminated Sites Program. January 30, 2004.

Booz, Allen, and Hamilton, 2002. *RCRA Facility Assessment Report*. Alaska Railroad Corporation Leased Properties. Prepared for U.S. EPA by Booz, Allen, and Hamilton. EPA Id No. AKD 98176-7403. July 16, 2002.

Buchman, M., 1999. NCAA Screening Quick Reference Tables, NCAA Hazmat Report 99-1.

Cederstrom, D.J., Frank Trainer & Roger Waller, 1964. Geology and Ground-Water Resources of the Anchorage Area, Alaska. USGS Water-Supply Paper 1773.

CH2M Hill, 1998. *Arctic Cooperage Report of Findings, Anchorage, Alaska*. Prepared for Alaska Railroad Corporation. March 1998.

CH2M Hill, 1999. *Arctic Cooperage Site Discussion of Findings and Conceptual Site Model*. Prepared for Alaska Railroad Corporation. February 25, 1999.

ENSR, 1996. Letter report regarding, "Hydrogeologic Factors Affecting the Alaska Railroad, Anchorage Yard, Anchorage, Alaska." Five pages with attachments, addressed to Susan Schrader.

Hansen, W.R., 1965. Effects of the Earthquake of March 27, 1964 at Anchorage, Alaska. USGS Professional Paper 542-A.

Hart Crowser, 2004a. *Ship Creek Literature Review, Alaska Railroad Corporation, April 2004*. Document 8877. July 2004.

Hart Crowser, 2004b. *Ship Creek Water and Sediment Assessment Report, Anchorage, Alaska*. May 2004.

Montgomery Watson Harza, 2002. *North Ship Creek Railroad Yard Expansion Groundwater Investigation Report*. A report prepared for the ARRC. April 2002.

RETEC, 2004. *Interim Action Plan for the Ship Creek Habitat Assessment*. September 2004.

SAIC, 1996. *RCRA Facility Assessment Report*. Alaska Railroad Corporation. Prepared for U.S. Environmental Protection Agency by Science Applications International Corporation. EPA I.D. No. AKD 98176 7403. March 1996.

Schmoll, Henry and Ernest Dobrovolny, 1972. Generalized Geologic Map of Anchorage and Vicinity, Alaska. USGS Map I-787-A.

Schmoll, Henry, Lynn Yehle, and Ernest Dobrovolny, 1996. Surficial Geology of the Anchorage A8 NE Quadrangle, Alaska. USGS Open File Report 96-003.

Shannon & Wilson, 1964. Report on Anchorage Area Soil Studies, to U.S. Army Engineer District, Anchorage, Alaska, 109 p.

Suter, G. and C. Tsao, 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects of Aquatic Biota. U.S. Department of Energy, Oak Ridge Laboratory, ES/ER/TM-96/R2. June 1996.

Ulery and Updike, 1983. *Subsurface Structure of the Cohesive Facies of the Bootlegger Cove Formation, Southwest Anchorage, Alaska, Professional Report 84*. Division of Geological and Geophysical Surveys.

Updike, Randall, 1986. Engineering Geologic Maps of the Government Hill Area, Anchorage, Alaska. USGS Map I-1610.

Updike, Randall and B. Carpenter, 1986. Engineering Geology of the Government Hill Area, Anchorage, Alaska. USGS Bulletin 1588.

USAF, 1994. *Operable Unit 5, Remedial Investigation/Feasibility Study, Volume I – Text*. Prepared by Radian Corporation. March 1994.

U.S. EPA, 1989. *Risk Assessment Guidance for Superfund, Volume I—Human Health Evaluation Manual (Part A).* U.S. EPA/540/1-89/002. Washington D.C.: Office of Emergency and Remedial Response. December 1989.

U.S. EPA, 1992. *Guidance for Data Usability in Risk Assessment (Part A).* Publication 9285.7-09A. PB92-963356. Washington, D.C.: Office of Emergency and Remedial Response. April 1992.

U.S. EPA, 1996a. *Advance Notice of Proposed Rulemaking for Corrective Action for Releases from Solid Waste Management Units at Hazardous Waste Management Facilities*, 85 FR 19431. May 1, 1996.

U.S. EPA, 1996b. *Guidance for Data Quality Assessment, Practical Methods for Data Analysis*, EPA QA/G-9. QA96 Version. Washington, D.C.: U.S. Environmental Protection Agency, Office of Research and Development. July 1996.

U.S. EPA, 1997. *Ecological Risk Assessment Guidelines for Superfund.*

U.S. EPA, 2000. *Guidance for the Data Quality Objectives Process*. EPA QA/G-4, U.S. EPA, Office of Environmental Information, EPA/600/R-96/055, August 2000.

U.S. EPA, 2001. *Storm Water Multi-Sector General Permit for Industrial Activities for Facilities in Alaska,* 66 FR 19483-19485. April 16, 2001.

U.S. EPA, 2002a. *Draft Guidance for Evaluating Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance).* Office of Solid Waste and Emergency Response, Washington, D.C. November 29, 2002.

U.S. EPA, 2002b. *Region IX Preliminary Remediation Goals (PRGs).* October 2002.

U.S. EPA, 2002c. *National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix. Office of Water*. EPA-822-R-02-012. November 2002.

U.S. EPA, 2003a. *Current Human Exposures Under Control*. July 2003.

U.S. EPA, 2003b. *Migration of Contaminated Groundwater Under Control*. July 2003.

U.S. EPA, 2004. (Statement of Work, on page 1-1)

Waller, Roger M., 1964. Hydrology and the Effects of Increased Ground-Water Pumping in the Anchorage Area, Alaska. USGS Water Supply Paper 1779-D.

Warhaftag, 1970. Physiographic Provinces of Alaska. USGS Paper.

Weeks, John B., 1970. The Relationship between Surface Water and Ground Water in Ship Creek Near Anchorage, Alaska. USGS Professional Paper 700-B.

Tables

Table 1-1 Data Quality Objectives for Site Background Report ARRC Anchorage Terminal Reserve, Anchorage, AK

Data quality objectives (DQOs) are qualitative and quantitative statements that clarify the objectives of a site investigation, define the appropriate type of data to be collected, and specify tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support site remediation decisions.

STEP 1: STATE THE PROBLEM

Team Members include stakeholders from the U.S. EPA and ARRC supported by technical staff and other resources of The RETEC Group, Inc. (and other Consultants). Decision-making will be the result of a collaborative process involving the Team Members conducted according to CERCLA and RCRA requirements. U.S. EPA holds ultimate decision-making authority.

The 2004 Administrative Order on Consent identifies the need to characterize the nature and extent of any release of hazardous substances and solid waste at the Anchorage Terminal Reserve (approximately 600-acre site) by performing an investigation (RI) and to identify and evaluate alternatives for remedial action in a Feasibility Study (FS). Objectives of the order include protection of human health via exposure to contaminants at or from site soil, groundwater, surface water, and sediment exposure, and protection of ecological receptors affected by potential water or sediment contamination in Ship Creek.

STEP 2: IDENTIFY THE DECISION

Principal Question: Has sufficient data been collected to characterize possible releases including the nature and extent of contamination to the degree necessary to assess likely exposure pathways within a risk-based decision-making framework? The likely pathways for exposure to site media are defined by the risk assessment conceptual site model (CSM). The potential effects on human and ecological receptors will be quantified during the risk assessment.

Potential Decision Options:

1) *The conclusion of the Site Background Report (SBR) assessment is that site impacts are adequately defined and sufficient data are available to complete the RI Report and support the risk assessment.*
2) *The conclusion of the SBR assessment is that impacts are not adequately defined to complete the RI Report and further data collection is warranted to define the nature and extent and/or in order to refine the risk assessment for site-specific conditions.*
3) *The conclusion of the SBR assessment is that the site requires no further action and will be documented in the SBR.*

STEP 3: IDENTIFY INPUTS TO THE DECISION

Input 1) Collect chemical analytical data for soil, groundwater, surface water and sediment in the RI in areas of the site where data gaps are identified in the Site Background Report.

Input 2) Soil and Process Residual Characteristics – physical characteristics both observed visually (staining) and measured (grain-size), and concentrations of industrial constituents within each area where a release has occurred or where residuals may be present. The concentrations in soils at different depths within the various study areas or SWMUs/AOCs are determined to assess various exposure pathways under the risk assessment (i.e., surface vs subsurface soil contact to receptors).

Input 3) Groundwater and Free Product Characteristics – Groundwater monitoring wells throughout the site will be sampled to evaluate site conditions and groundwater migration pathways to Ship Creek. Fluid levels in monitoring wells are measured to define the presence and areal extent of free product that may make it technically impracticable to identify a release from a given unit.

STEP 4: DEFINE THE BOUNDARIES OF THE STUDY

The spatial study boundary is the Anchorage Terminal Reserve with emphasis given to the SWMUs/AOCs and lease properties within this facility that require further action as defined by U.S. EPA during the RCRA Facility Assessment (RFA). These SWMUs/ AOCS and properties have been grouped into study areas for investigation and risk assessment purposes. The soil samples will be taken from depth strata in order to define surface and subsurface soil exposure parameters. Groundwater upgradient, beneath, and downgradient of Ship Creek will be investigated and included in the risk assessment. Surface water and sediment in Ship Creek will also be included.

The temporal boundaries are defined as current conditions at the time of the investigation. Groundwater data will be collected to establish site conditions. The practical constraints on data collection (such as harsh winters) and access restrictions presented by leased properties must also be considered.

STEP 5: DEVELOP A DECISION RULE

If chemical impacts or releases are identified which could result in either unacceptable exposure to potential human or ecological receptors or impact Ship Creek as a significant ongoing source, then the risk assessment included with the RI will be used to target areas that will be evaluated as part of the Feasibility Study.

STEP 6: SPECIFY TOLERABLE LIMITS ON DECISION ERRORS

The tolerable limits are defined as impacts above action levels in soil or groundwater with the performance goal of the investigation being definition of the concentration of industrial-related chemicals and understanding of the potential for impacts in a complete exposure pathway as defined in the Conceptual Site Model. The null hypothesis is that impacts to receptors are below risk-based levels; the alternate hypothesis is that impacts are above risk-based levels and corrective measures will be evaluated. The basis for selecting the number and location of soil, groundwater, surface water, and sediment sampling points is professional judgment with objectives of sufficient data to determine the statistical nature of exposure point concentrations for receptors. Since adequate data is not available to select decision error limits, these will be defined under the risk assessment through the use of the 95% Upper Confidence Level (UCL) for exposure point concentrations in the study areas, per U.S. EPA guidance.

STEP 7: OPTIMIZE THE DESIGN FOR OBTAINING DATA

Utilizing all reasonably available historical site data, strategies for characterizing each study area will be documented through development of a Remedial Investigation Work Plan. The data collection design will be reviewed and revised as necessary to satisfy the data needs of the risk assessment and subsequent data collection.

Table 1-2 Preliminary Analytical Concentration Goals
ARRC Anchorage Terminal Reserve, Anchorage, AK

				Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water			Human Health Screening Levels for Soil and Sediment							Migration to Groundwater		Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water				Ecological Screening Levels for Soil			
CAS No.	Analyte	Practical Quantitation Limit [1]	Practical Quantitation Limit [2]	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Aquatic Organisms Only	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference	Plants	Reference	Soil Biota	Reference
		µg/L	µg/kg	µg/L		µg/L		µg/L		µg/L		µg/L	µg/L		mg/kg	mg/kg		mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/L		mg/L		mg/kg		mg/kg	
Volatile Organic Compounds																																				
71556	1,1,1-Trichloroethane	2	2	200	3	1000	3	200	4	3.17E+03	5	NA	NA		NA	460	4	1.20E+03	1.20E+03	5	1	4	0.17	13	NA		0.062	13	NA		NA		NA	
630206	1,1,1,2-Tetrachloroethane	2	2	NA		1	3	NA		4.30E-01	5	NA	NA		NA	NA		3.20E+00	7.30E+00	5	NA		NA		NA		NA		NA		NA		NA	
79345	1,1,2,2-Tetrachloroethane	2	2	NA		2	3	4	4	5.53E-02	5	0.17	4	8	42	5.4	4	4.08E-01	9.29E-01	5	0.017	4	0.94	13	NA		0.42	13	NA		NA		NA	
7311	1,1,2-Trichloro-1,2,2-trifluoroethane [2a]	10	10	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
79005	1,1,2-Trichloroethane	2	2	5	3	100	3	5	4	2.00E-01	5	0.59	16	8	150	10	4	7.29E-01	1.61E+00	5	0.017	4	NA		NA		1.2	16	NA		NA		NA	
75354	1,1,-Dichloroethene	2	2	7	3	300	3	7	4	3.39E+02	5	330	7100	7	14	0.9	4	1.24E+02	4.13E+02	5	0.03	4	NA		NA		0.025	16	NA		NA		NA	
75343	1,1-Dichloroethane	2	2	NA		NA		3650	4	8.11E+02	5	NA	NA		10000	890	4	5.06E+02	1.74E+03	5	12	4	NA		NA		0.047	16	NA		NA		NA	
78999	1,1-Dichloropropane	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
563586	1,1-Dichloropropene	2	2.5	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
120821	1,2,4-Trichlorobenzene	5	180	70	3	400	3	70	4	1.94E+02	5	260	940	6	1000	570	4	6.50E+02	3.00E+03	5	2	4	9.2	13	NA		NA		NA		NA		20	17
95636	1,2,4-Trimethylbenzene	2.7	2	NA		NA		NA		1.20E+01	5	NA	NA		NA	NA		5.20E+01	1.70E+02	5	NA		NA		NA		NA		NA		NA		NA	
108678	1,3,5-Trimethylbenzene	2	2	NA		NA		NA		1.20E+01	5	NA	NA		NA	NA		2.10E+01	7.00E+01	5	NA		NA		NA		NA		NA		NA		NA	
87616	1,2,3-Trichlorobenzene	2.8	2	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		20	17
96184	1,2,3-Trichloropropane	2.5	2	NA		0.2	3	NA		5.60E-03	5	NA	NA		NA	NA		5.00E-03	1.10E-02	5	NA		NA		NA		NA		NA		NA		NA	
96128	1,2-Dibromo-3-chloropropane*	10	10	0.2	3	NA		NA		4.8E-02	5	NA	NA		NA	NA		4.54E-01	2.02E+00	5	NA		NA		NA		NA		NA		NA		NA	
106934	1,2-Dibromoethane	2	2	0.05	3	NA		0.05	4	7.57E-04	5	NA	NA		0.1	1.2	4	6.89E-03	2.81E-02	5	3.06E-05	4	NA		NA		NA		NA		NA		NA	
95501	1,2-Dichlorobenzene	2	2	NA		3000	3	600	4	3.70E+02	5	2,700	17,000	6	9100	110	4	3.70E+02	3.70E+02	5	7	4	0.34	13	0.023	10	0.014	13	NA		NA		NA	
107062	1,2-Dichloroethane	2	2	5	3	NA		5	4	1.23E-01	5	0.38	37	8	91	5	4	2.78E-01	6.03E-01	5	0.015	4	NA		NA		0.91	16	NA		NA		NA	
78875	1,2-Dichloropropane	2	2	5	3	NA		5	4	1.65E-01	5	0.5	15	8	120	17	4	3.42E-01	7.42E-01	5	0.017	4	NA		NA		NA		NA		NA		700	17
541731	1,3-Dichlorobenzene	2	2	NA		3000	3	1100	4	5.48E+00	5	400	2,600	6	3040	NA		1.59E+01	6.27E+01	5	12.1	4	1.7	13	NA		0.071	13	NA		NA		NA	
142289	1,3-Dichloropropane	2	2	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
106467	1,4-Dichlorobenzene	2	2	NA		NA		75	4	5.00E-01	5	2,600	400	6	350	8000	4	3.40E+00	7.90E+00	5	0.8	4	0.35	13	0.031	10	0.015	13	NA		NA		20	17
78933	2-Butanone (MEK)	50	50	NA		20000	3	22000	4	1.90E+03	5	NA	NA		60800	28100	4	7.33E+03	2.71E+04	5	60	4	NA		NA		NA		NA		NA		NA	
591786	2-Hexanone	20	20	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		0.099	16	NA		NA		NA	
594207	2,2-Dichloropropane	2	2	NA		1		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
108101	4-Methyl-2-pentanone (MIBK)	20	20	NA		NA		NA		1.58E+02	5	NA	NA		NA	NA		7.87E+02	2.84E+03	5	NA		NA		NA		NA		NA		NA		NA	
67641	Acetone	50	50	NA		NA		3650	4	6.08E+02	5	NA	NA		10000	NA	4	1.57E+03	6.04E+03	5	10	4	NA		NA		1.5	16	NA		NA		NA	
71432	Benzene	2	2	5	3	NA		5	4	3.36E-01	5	2.2	51	8	150	9	4	6.01E-01	1.31E+00	5	0.02	4	NA		NA		0.046	13	NA		NA		NA	
108861	Bromobenzene	2	2	NA		NA		NA		2.00E+01	5	NA	NA		NA	NA		2.70E+01	9.20E+01	5	NA		NA		NA		NA		NA		NA		NA	
74975	Bromochloromethane	2	2	NA		0.5	3	NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
75274	Bromodichloromethane	2	2	80	3	700	3	100	4	1.81E-01	5	0.55	17	8	NA	NA	4	8.24E-01	1.83E+00	5	NA	4	NA		NA		NA		NA		NA		NA	
75252	Bromoform	2	2	80	3	700	3	100	4	8.51E+00	5	4.3	140	8	1050	500	4	6.16E+01	2.18E+02	5	0.38	4	NA		NA		NA		NA		NA		NA	
74839	Bromomethane (Methyl bromide)	5	5	NA		50	3	NA		8.66E+00	5	47	1500	8	NA	NA		3.90E+00	1.31E+01	5	NA		NA		NA		0.019	13	NA		NA		NA	
75150	Carbon Disulfide	2	2	NA		NA		3650	4	1.04E+03	5	NA	NA		10000	453	4	3.55E+02	7.20E+02	5	17	4	NA		NA		0.00092	16	NA		NA		NA	
56235	Carbon Tetrachloride	2	2	5	3	30	3	5	4	1.71E-01	5	0.23	1.6	8	64	3.4	4	2.51E-01	5.49E-01	5	0.03	4	NA		NA		0.24	13	NA		NA		1000	18
108907	Chlorobenzene	2	2	100	3	NA		100	4	1.06E+02	5	680	21,000	6	2000	110	4	1.51E+02	5.30E+02	5	0.6	4	0.82	13	NA		0.13	13	NA		NA		40	17
75003	Chloroethane	5	5	NA		NA		NA		4.64E+00	5	NA	NA		NA	NA		3.03E+00	6.49E+00	5	NA		NA		NA		NA		NA		NA		NA	
67663	Chloroform	2	2	80	3	400	3	100	4	6.17E+00	5	5.7	470	8	1000	3.4	4	3.56E+00	1.17E+01	5	0.34	4	NA		NA		0.028	16	NA		NA		NA	
74873	Chloromethane	5	5	NA		100	3	NA		1.51E+00	5	NA	NA		NA	NA		1.23E+00	2.65E+00	5	NA		NA		NA		NA		NA		NA		NA	
156592	cis-1,2-Dichloroethene	2	2	70	3	400	3	70	4	6.08E+01	5	NA	NA		1000	NA		4.29E+01	1.46E+02	5	0.2	4	NA		NA		NA		NA		NA		NA	
10061015	cis-1,3-Dichloropropene*	2.3	2	NA		1000	3	9	4	4.00E-01	5	10	1700	6	83	14	4	7.80E-01	1.80E+00	5	0.02	4	NA		NA		0.023	16	NA		NA		NA	
110827	Cyclohexane[2a]	10	10	NA		NA		NA		3.50E+04	5	NA	NA		NA	NA		1.40E+02	1.40E+02	5	NA		NA		NA		NA		NA		NA		NA	
124481	Dibromochloromethane	2	2	80	3	700	3	NA		1.33E-01	5	0.4	13	8	NA	NA		1.11E+00	2.55E+00	5	NA		NA		NA		NA		NA		NA		NA	
74953	Dibromomethane	2.2	2	NA		NA		NA		NA	5	NA	NA		NA	NA		NA	NA	5	NA		NA		NA		NA		NA		NA		NA	
75718	Dichlorodifluoromethane	5	5	NA		5000	3	7300	4	3.95E+02	5	NA	NA		20300	260	4	9.39E+01	3.08E+02	5	60	4	NA		NA		NA		NA		NA		NA	
100414	Ethylbenzene	2	2	700	3	3000	3	700	4	2.91E+00	5	3,100	29,000	6	10000	89	4	8.92E+00	1.95E+01	5	5.5	4	3.6	13	NA		0.29	13	NA		NA		NA	
98828	Isopropylbenzene	2.6	2	NA		4000	3	3650	4	6.58E+02	5	NA	NA		10100	585	4	5.72E+02	1.98E+03	5	227	4	NA		NA		NA		NA		NA		NA	
79209	Methyl Acetate[2a]	10	10	NA		NA		NA		6.08E+03	5	NA	NA		NA	NA		2.21E+04	9.15E+04	5	NA		NA		NA		NA		NA		NA		NA	
1634044	Methyl tert-Butyl Ether	2	2	20	3	NA		NA		1.33E+01	5	NA	NA		NA	NA		6.15E+01	1.57E+02	5	NA		NA		NA		NA		NA		NA		NA	
108872	Methylcyclohexane[2a]	10	10	NA		NA		NA		5.22E+03	5	NA	NA		NA	NA		2.59E+03	8.72E+03	5	NA		NA		NA		NA		NA		NA		NA	
75092	Methylene Chloride	5	8.4	5	3	2000	3	5	4	4.28E+00	5	4.6	590	8	1100	180	4	9.11E+00	2.05E+01	5	0.015	4	NA		NA		2.2	16	NA		NA		NA	
63072446	Methyl pentanone	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
100425	Styrene	2.3	2	100	3	7000	3	100	4	1.64E+03	5	NA	NA		20300	280	4	1.70E+03	1.70E+03	5	1.3	4	NA		NA		0		NA		300	17	NA	
127184	Tetrachloroethene	2.4	2	5	3	500	3	5	4	6.59E-01	5	0.69	3.3	8	160	80	4	1.51E+00	3.42E+00	5	0.03	4	0.53	13	NA		0.12	13	NA		NA		NA	
108883	Toluene	2	2	1000	3	7000	3	1000	4	7.23E+02	5	6,800	200,000	6	20300	180	4	5.20E+02	5.20E+02	5	5.4	4	0.67	13	NA		0.13	13	NA		200	17	NA	
156605	trans-1,2-Dichloroethene	2	2	100	3	700	3	100	4	1.20E+02	5	140	10000	7	2000	NA	4	6.90E+01	2.30E+02	5	0.4	4	NA		NA		NA		NA		NA		NA	
10061026	trans-1,3-Dichloropropene*	2.1	2	NA		1000	3	9	4	4.00E-01	5	10	1700	6	83	14	4	7.80E-01	1.80E+00	5	0.02	4	NA		NA		NA		NA		NA		NA	
79016	Trichloroethene	2	2	5	3	200	3	5	4	2.80E-02	5	2.5	30	8	750	43	4	5.30E-02	1.15E-01	5	0.027	4	1.6	13	0		NA		NA		NA		NA	
75694	Trichlorofluoromethane	2	2	NA		10,000	3	NA		1.29E+03	5	NA	NA		NA	NA		3.86E+02	2.00E+03	5	NA		NA		NA		NA		NA		NA		NA	
26523648	Trichlorotriflouroethane	2	2	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
75014	Vinyl Chloride	2	2	2	3	100	3	2	4	1.98E-02	5	0.025	2.4	7	6	4	4	7.91E-02	7.50E-01	5	0.009	4	NA		NA		NA		NA		NA		NA	
1330207	Xylene (total)	NA	NA	10000	3	70000	3	10000	4	2.10E+02	5	NA	NA		203000	81	4	2.75E+02	4.20E+02	5	78	4	0.025	13	NA		0.0018	13	NA		NA		NA	
136777612	m&p-Xylene	2	2	10000	3	NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		0.0018	13	NA		NA		NA	
95476	o-Xylene	2.3	2	10000	3	70	3	NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
SemiVolatile Organic Compounds																																				
92524	1,1'-Biphenyl[2a]	10	330	NA		NA		NA		3.04E+02	5	NA	NA		NA	NA		3.50E+02	3.50E+02	5	NA		1.1	13	NA		NA		NA		60	17	NA	
103651	n-Propylbenzene	2	2	NA		NA		NA		2.40E+02	5	NA	NA		NA	NA		2.40E+02	2.40E+02	5	NA		NA		NA		NA		NA		NA		NA	
108601	2,2'-oxybis(1-Chloropropane)[2a]	10	330	NA		1000	3	NA		2.74E-01	5	NA	NA		NA	NA		2.88E+00	7.35E+00	5	NA		NA		NA		NA		NA		NA		NA	
95954	2,4,5-Trichlorophenol	5	170	NA		NA		3650	4	3.65E+03	5	2,600	9,800	6	10000	NA	4	6.11E+03	6.16E+04	5	90	4	NA		NA		NA		NA		4	17	9	17
88062	2,4,6-Trichlorophenol	5	170	NA		10	3	77	4	3.65E+00	5	1.4	2.4	8	750	1500	4	6.11E+00	6.16E+01	5	0.6	4	NA		NA		NA		NA		NA		10	17
94757	2,4-D	NA	NA	NA		NA		NA		3.60E+02	5	NA	NA		NA	NA		4.90E+02	4.90E+03	5	NA		NA		NA		NA		NA		NA		NA	

Table 1-2 Preliminary Analytical Concentration Goals
ARRC Anchorage Terminal Reserve, Anchorage, AK

				Human Health Screening Levels for Groundwater							Human Health Screening Levels for Surface Water			Human Health Screening Levels for Soil and Sediment							Migration to Groundwater		Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water				Ecological Screening Levels for Soil			
CAS No.	Analyte	Practical Quantitation Limit [1]	Practical Quantitation Limit [2]	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Aquatic Organisms Only	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference	Plants	Reference	Soil Biota	Reference
		µg/L	µg/kg	µg/L		µg/L		µg/L		µg/L		µg/L	µg/L		mg/kg	mg/kg		mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/L		mg/L		mg/kg		mg/kg	
120832	2,4-Dichlorophenol	5	170	NA		100	3	100	4	1.09E+02	5	93	790	6	300	NA	4	1.83E+02	1.85E+03	5	0.45	4	NA		NA		NA		NA		20	18	20	18
105679	2,4-Dimethylphenol	25	170	NA		NA		700	4	7.30E+02	5	540	2,300	6	2000	NA	4	1.22E+03	1.23E+04	5	4	4	NA		0.029	10	NA		NA		NA		NA	
51285	2,4-Dinitrophenol	100	1100	NA		NA		70	4	7.30E+01	5	93	790	6	200	NA	4	1.22E+02	1.23E+03	5	0.2	4	NA		NA		NA		NA		20	17	NA	
121142	2,4-Dinitrotoluene	5	170	NA		100	3	1.25	4	7.30E+01	5	0.11	3.4	8	12	NA	4	1.22E+02	1.23E+03	5	0.005	4	NA		NA		NA		NA		NA		NA	
606202	2,6-Dinitrotoluene	5	170	NA		40	3	1.25	4	3.65E+01	5	NA	NA		12	NA	4	6.11E+01	6.16E+02	5	0.0044	4	NA		NA		NA		NA		NA		NA	
110758	2-Chloroethylvinyl ether	10	10	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
91587	2-Chloronaphthalene	10	170	NA		NA		2900	4	4.87E+02	5	1,700	4,300	6	8110	NA	4	4.94E+03	2.34E+04	5	70	4	NA		NA		NA		NA		NA		NA	
95578	2-Chlorophenol	5	170	NA		200	3	200	4	3.04E+01	5	120	400	6	510	NA	4	6.34E+01	2.36E+02	5	1.4	4	NA		NA		NA		NA		7	18	10	18
95498	2-Chlorotoluene	2	2	NA		NA		NA		1.20E+02	5	NA	NA		NA	NA		1.60E+02	5.60E+02	5	NA		NA		NA		NA		NA		NA		NA	
90120	1-Methylnaphthalene	NA	NA	NA		NA		NA		NA		NA	NA		4100	NA	4	NA	NA		43	4	NA		NA		0.0021	16	NA		NA		NA	
110496	2-Methoxyethyl acetate	NA	NA	NA		NA		NA		7.30E+01	5	NA	NA		NA	NA		1.20E+02	1.20E+03	5	NA		NA		NA		NA		NA		NA		NA	
91576	2-Methylnaphthalene	5	170	NA		NA		780	4	NA		NA	NA		2030	NA	4	NA	NA		60.9	4	NA		0.0202	9	NA		NA		NA		NA	
95487	2-Methylphenol	5	170	NA		NA		1800	4	1.82E+03	5	NA	NA		5100	NA	4	3.06E+03	3.08E+04	5	7	4	NA		0.063	10	0.013	16	NA		NA		NA	
88744	2-Nitroaniline	100	170	NA		NA		NA		1.04E+00	5	NA	NA		NA	NA		1.75E+00	1.76E+01	5	NA		NA		NA		NA		NA		NA		NA	
88755	2-Nitrophenol	5	170	NA		300	3	NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
91941	3,3'-Dichlorobenzidine	20	170	NA		NA		2	4	1.49E-01	5	0.021	0.028	8	18	NA	4	1.08E+00	3.83E+00	5	0.02	4	NA		NA		NA		NA		NA		NA	
34MP	3,4-Methylphenol*	5	170	NA		NA		NA		NA		NA	NA		NA	NA		3.1E+02	3.1E+03	5	NA		NA		0.67	10	NA		NA		NA		NA	
108394	3-Methylphenol	NA	NA	NA		NA		NA		1.80E+03	5	NA	NA		NA	NA		3.10E+03	3.10E+04	5	NA		NA		NA		NA		NA		NA		NA	
99092	3-Nitroaniline	50	170	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
534521	4,6-Dinitro-2-methylphenol	25	170	NA		NA		NA		NA		13	280	8	NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
101553	4-Bromophenyl-phenylether	5	170	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		0.0015	13	NA		NA		NA	
59507	4-Chloro-3-methylphenol	5	170	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
106478	4-Chloroaniline	5	270	NA		NA		150	4	1.46E+02	5	NA	NA		410	NA	4	2.44E+02	2.46E+03	5	0.5	4	NA		NA		NA		NA		NA		NA	
7005723	4-Chlorophenyl-phenylether	5	170	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
106434	4-Chlorotoluene	2	2	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
99876	4-Isopropyltoluene	2.8	2	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
106445	4-Methylphenol[2a]	10	330	NA		NA		NA		1.82E+02	5	NA	NA		NA	NA		3.06E+02	3.08E+03	5	NA		NA		NA		NA		NA		NA		NA	
100016	4-Nitroaniline	5	170	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
100027	4-Nitrophenol	100	170	NA		300	3	NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		7	17
83329	Acenaphthene	5	170	NA		2000	3	2200	4	3.65E+02	5	1,200	2,700	6	6100	NA	4	3.68E+03	2.92E+04	5	210	4	0.62	12	0.00671	9	0.023	13	0.04	13	20	17	NA	
208968	Acenaphthylene	5	170	NA		2000	3	2200	4	NA		NA	NA		6100	NA	4	NA	NA		210	4	NA		0.00587	9	NA		NA		NA		NA	
98862	Acetophenone[2a]	10	330	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
62533	Aniline	NA	NA	NA		NA		NA		1.20E+01	5	NA	NA		NA	NA		8.50E+01	3.00E+02	5	NA		NA		NA		NA		NA		NA		NA	
120127	Anthracene	5	170	NA		10000	3	11000	4	1.83E+03	5	9,600	110,000	6	30000	NA	4	2.19E+04	1.00E+05	5	4300	4	0.01	9	0.0468	9	0.00073	16	NA		NA		NA	
1912249	Atrazine[2a]	10	330	3	3	1000	3	NA		3.03E-01	5	NA	NA		NA	NA		2.19E+00	7.76E+00	5	NA		NA		NA		NA		NA		NA		NA	
100527	Benzaldehyde[2a]	10	330	NA		NA		NA		3.65E+03	5	NA	NA		NA	NA		6.11E+03	6.16E+04	5	NA		NA		NA		NA		NA		NA		NA	
56553	Benzo (a) anthracene	5	170	NA		NA		1	4	9.21E-02	5	0.0038	0.018	8	11	NA	4	6.21E-01	2.11E+00	5	6	4	0.0317	9	0.0748	9	0.000027	16	NA		NA		NA	
50328	Benzo (a) pyrene	5	170	0.2	3	NA		0.2	4	9.21E-03	5	0.0038	0.018	8	1	NA	4	6.21E-02	2.11E-01	5	3	4	0.0319	9	0.0888	9	0.000014	13	NA		NA		NA	
205992	Benzo (b) fluoranthene	5	170	NA		NA		1	4	9.21E-02	5	0.0038	0.018	8	11	NA	4	6.21E-01	2.11E+00	5	20	4	NA		2.3	10	NA		NA		NA		NA	
191242	Benzo (g,h,i) perylene	5	170	NA		NA		1100	4	NA		NA	NA		3000	NA	4	NA	NA		1500	4	NA		0.31	10	NA		NA		NA		NA	
207089	Benzo (k) fluoranthene	5	170	NA		NA		10	4	9.21E-01	5	0.0038	0.018	8	110	NA	4	6.21E+00	2.11E+01	5	200	4	0.0272	9	2.3	10	NA		NA		NA		NA	
65850	Benzoic Acid	130	1300	NA		NA		146000	4	1.50E+05	5	NA	NA		410000	NA	4	1.00E+05	1.00E+05	5	390	4	NA		0.65	10	0.042	16	NA		NA		NA	
100516	Benzyl alcohol	10	170	NA		NA		NA	4	1.10E+04	5	NA	NA		NA	NA		1.80E+04	1.00E+05	5	NA		NA		0.057	10	0.0086	16	NA		NA		NA	
117817	bis (2-Ethylhexyl) phthalate	2.5	170	NA		NA		6	4	4.80E+00	5	1.2	2.2	8	590	NA	4	3.47E+01	1.23E+02	5	1200	4	NA	9	0.182	9	0.032	13	NA		NA		NA	
111911	bis(2-Chloroethoxy)methane	5	190	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
111444	bis(2-Chloroethyl)ether	5	200	NA		NA		0.77	4	9.78E-03	5	0.03	0.53	8	8	3	4	2.11E-01	5.54E-01	5	0.002	4	NA		NA		NA		NA		NA		NA	
39638329	bis(2-Chloroisopropyl)ether	5	220	NA		NA		NA		2.70E-01	5	1400	170000	6	NA	NA		2.90E+00	7.40E+00	5	NA		NA		NA		NA		NA		NA		NA	
85687	Butylbenzylphthalate	5	170	NA		7000	3	7300	4	7.30E+03	5	3,000	5,200	6	20000	NA	4	1.22E+04	1.00E+05	5	5600	4	11	13	0.049	10	NA		NA		NA		NA	
105602	Caprolactam[2a]	10	330	NA		NA		NA		1.82E+04	5	NA	NA		NA	NA		3.06E+04	1.00E+05	5	NA		NA		NA		NA		NA		NA		NA	
86748	Carbazole[2a]	10	330	NA		NA		40	4	3.36E+00	5	NA	NA		420	NA	4	2.43E+01	8.62E+01	5	2	4	NA		NA		NA		NA		NA		NA	
218019	Chrysene	5	170	NA		NA		100	4	9.21E+00	5	0.0038	0.018	8	1100	NA	4	6.21E+01	2.11E+02	5	620	4	0.0571	9	0.108	9	NA		NA		NA		NA	
53703	Dibenzo (a,h) anthracene	5	170	NA		NA		0.1	4	9.21E-03	5	0.0038	0.018	8	1	NA	4	6.21E-02	2.11E-01	5	6	4	0.01	9	0.00622	9	NA		NA		NA		NA	
84662	Diethylphthalate	5	170	NA		30000	3	29000	4	2.92E+04	5	23,000	120,000	6	81000	NA	4	4.89E+04	1.00E+05	5	190	4	0.63	13	0.61	10	0.22	13	NA		100	17	NA	
131113	Dimethylphthalate	5	170	NA		NA		NA		3.65E+05	5	313,000	2,900,000	6	1000000	NA	4	1.00E+05	1.00E+05	5	1400	4	NA		0.53	10	NA		NA		NA		200	17
84742	Di-n-butylphthalate	5	170	NA		4000	3	3650	4	3.65E+03	5	2,700	12,000	6	10000	NA	4	6.11E+03	6.16E+04	5	1700	4	11	13	2.2	10	NA		NA		200	17	NA	
117840	Di-n-octylphthalate	5	170	NA		NA		700	4	1.46E+03	5	NA	NA		2000	NA	4	2.44E+03	2.46E+04	5	810000	4	NA		0.58	10	NA		0		NA		NA	
206440	Fluoranthene	5	170	NA		NA		1460	4	1.46E+03	5	300	370	6	4100	NA	4	2.29E+03	2.20E+04	5	2100	4	0.111	9	0.113	9	0.0081	13	0.011	13	NA		NA	
86737	Fluorene	5	170	NA		1000	3	1460	4	2.43E+02	5	1,300	14,000	6	4100	NA	4	2.75E+03	2.63E+04	5	270	4	0.01	9	0.0212	9	0.0039	13	NA		30	18	30	17
118741	Hexachlorobenzene	5	170	1	3	30	3	1	4	4.20E-02	5	0.00028	0.00029	8	5	7	4	3.04E-01	1.08E+00	5	0.73	4	NA		0.0038	10	NA		NA		NA		1000	18
87683	Hexachlorobutadiene	5	200	NA		7	3	10	4	8.62E-01	5	0.44	18	8	20	55	4	6.24E+00	2.21E+01	5	8	4	NA		0.039	10	NA		NA		NA		NA	
77474	Hexachlorocyclopentadiene	10	170	50	3	200	3	50	4	2.19E+02	5	240	17,000	6	710	7	4	3.65E+02	3.66E+03	5	130	4	NA		NA		NA		NA		10	17	NA	
67721	Hexachloroethane	5	180	NA		40	3	60	4	4.80E+00	5	1.4	3.3	8	101	390	4	3.47E+01	1.23E+02	5	1.6	4	1	13	NA		0.012	13	NA		NA		NA	
193395	Indeno (1,2,3-cd) pyrene	5	170	NA		NA		1	4	9.21E-02	5	0.0038	0.018	8	11	NA	4	6.21E-01	2.11E+00	5	54	4	NA		0.34	10	NA		NA		NA		NA	
78591	Isophorone	5	170	NA		7000	3	900	4	7.08E+01	5	35	960	8	8700	NA	4	5.12E+02	1.81E+03	5	3	4	NA		NA		NA		NA		NA		NA	
104518	n-Butylbenzene	2.7	2	NA		NA		NA		2.40E+02	5	NA	NA		NA	NA		2.40E+02	2.40E+02	5	NA		NA		NA		NA		NA		NA		NA	
91203	Naphthalene	10	170	NA		700	3	700	4	6.20E+00	5	NA	NA		2000	120	4	5.59E+01	1.88E+02	5	21	4	0.0146	9	0.0346	9	0.024	13	NA		NA		NA	
98953	Nitrobenzene	5	170	NA		NA		18	4	3.40E+00	5	17	1,900	6	51	90	4	1.96E+01	1.03E+02	5	0.06	4	NA		NA		NA		NA		NA		40	17
62759	N-Nitrosodimethylamine[2a]	10	260	NA		NA		NA		1.40E+01	5	NA	NA		1700	NA	4	9.90E+01	3.50E+02	5	3.4	4	NA		NA		NA		NA		NA		NA	
621647	N-Nitroso-di-n-propylamine	5	170	NA		NA		0.1	4	9.60E-03	5	0.005	0.51	8	1.2	NA	4	6.95E-02	2.46E-01	5	0.00036	4	NA		NA		NA		NA		NA		NA	
86306	N-Nitrosodiphenylamine	10	260	NA		NA		170	4	1.37E+01	5	3.3	6	8	1700	NA	4	9.93E+01	3.52E+02	5	3.4	4	NA		0.11	10	0.21	16	NA		20	18	20	17
87865	Pentachlorophenol	5	170	1	3	1000	3	1	4	5.60E-01	5	0.27	3	8	35	NA	4	2.98E+00	9.00E+00	5	0.01	4	NA		0.36	10	0.015	15	0.0079	14	3	17	6	17
85018	Phenanthrene	5	170	NA		NA		11,000	4	NA		NA	NA		30000	NA	4	NA	NA		4300	4	0.0187	9	0.0867	9	0.0063	13	0.0083	13	NA		NA	

Table 1-2 Preliminary Analytical Concentration Goals
ARRC Anchorage Terminal Reserve, Anchorage, AK

				Human Health Screening Levels for Groundwater							Human Health Screening Levels for Surface Water			Human Health Screening Levels for Soil and Sediment							Migration to Groundwater		Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water				Ecological Screening Levels for Soil			
CAS No.	Analyte	Practical Quantitation Limit [1]	Practical Quantitation Limit [2]	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Aquatic Organisms Only	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference	Plants	Reference	Soil Biota	Reference
		µg/L	µg/kg	µg/L		µg/L		µg/L		µg/L		µg/L	µg/L		mg/kg	mg/kg		mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/L		mg/L		mg/kg		mg/kg	
108952	Phenol	5	170	NA		20000	3	22,000	4	2.19E+04	5	21,000	4,600,000	6	60800	NA	4	3.67E+04	1.00E+05	5	67	4	NA		0.42	10	NA		NA		70	17	30	17
129000	Pyrene	5	170	NA		NA		1,100	4	1.83E+02	5	960	11,000	6	3000	NA	4	2.32E+03	2.91E+04	5	1500	4	0.0443	9	0.153	9	NA		NA		NA		NA	
483658	Retene	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
135988	sec-Butylbenzene	2.2	2	NA		NA		NA		2.40E+02	5	NA	NA		NA	NA		2.20E+02	2.20E+02	5	NA		NA		NA		NA		NA		NA		NA	
98066	tert-Butylbenzene	3	2	NA		NA		NA		2.40E+02	5	NA	NA		NA	NA		3.90E+02	3.90E+02	5	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/L and mg/kg)																																			
GRO	Gasoline Range Organics (GRO)	0.25	5	NA		NA		1,300	4	1.82E+03	5	NA	NA		1400	1400	4	3.06E+03	1.00E+05	5	300	4	NA		NA		NA		NA		NA		100	17
DRO	Diesel Range Organics (DRO)	0.25	5	NA		NA		1,500	4	1.82E+03	5	NA	NA		10250	12500	4	3.06E+03	1.00E+05	5	250	4	NA		NA		NA		NA		NA		200	17
RRO	Residual Range Organics (RRO)	0.5	10	NA		NA		1,100	4	1.82E+03	5	NA	NA		10000	22000	4	3.06E+03	1.00E+05	5	11000	4	NA		NA		NA		NA		NA		NA	
Dioxins and Furans																																			
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA		NA		NA		4.50E-05	19	NA	NA		NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA		NA		NA		NA	
67562394	1,2,3,4,6,7,8-HPCDF	NA	NA	NA		NA		NA		4.50E-05	19	NA	NA		NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA		NA		NA		NA	
55673897	1,2,3,4,7,8,9-HPCDF	NA	NA	NA		NA		NA		4.50E-05	19	NA	NA		NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA		NA		NA		NA	
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
70648269	1,2,3,4,7,8-HXCDF	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
72918219	1,2,3,7,8,9-HXCDF	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
57117416	1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA		NA		NA		9.00E-06	19	NA	NA		NA	NA		7.80E-05	3.20E-04	19	NA		NA		NA		NA		NA		NA		NA	
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
60851345	2,3,4,6,7,8-HXCDF	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
57117314	2,3,4,7,8-PECDF	NA	NA	NA		NA		NA		9.00E-06	19	NA	NA		NA	NA		7.80E-06	3.20E-05	19	NA		NA		NA		NA		NA		NA		NA	
1746016	2,3,7,8-TCDD	NA	NA	NA		NA		0.00003	4	4.50E-07	5	NA	NA		NA	NA		3.90E-06	1.60E-05	5	NA		NA		NA		NA		NA		NA		NA	
51207319	2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
132649	Dibenzofuran	5	170	NA		NA		73	4	2.43E+01	5	NA	NA		203	NA	4	2.91E+02	3.13E+03	5	7.78	4	2	13	0.15	10	NA		NA		NA		NA	
3268879	OCDD	NA	NA	NA		NA		NA		4.50E-03	19	NA	NA		NA	NA		3.90E-02	1.60E-01	19	NA		NA		NA		NA		NA		NA		NA	
39001020	OCDF	NA	NA	NA		NA		NA		4.50E-03	19	NA	NA		NA	NA		3.90E-02	1.60E-01	19	NA		NA		NA		NA		NA		NA		NA	
37871004	HPCDD, total	NA	NA	NA		NA		NA		4.50E-05	19	NA	NA		NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA		NA		NA		NA	
38998753	HPCDF, total	NA	NA	NA		NA		NA		4.50E-05	19	NA	NA		NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA		NA		NA		NA	
34465468	HXCDD, total	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
55684941	HXCDF, total	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
36088229	PeCDD, total	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
30402154	PeCDF, total	NA	NA	NA		NA		NA		9.00E-06	19	NA	NA		NA	NA		7.80E-05	3.20E-04	19	NA		NA		NA		NA		NA		NA		NA	
41903575	TCDD, total	NA	NA	NA		NA		NA		4.50E-07	19	NA	NA		NA	NA		3.90E-06	1.60E-05	19	NA		NA		NA		NA		NA		NA		NA	
55722275	TCDF, total	NA	NA	NA		NA		NA		4.50E-06	19	NA	NA		NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA		NA		NA		NA	
Pestcides																																			
309002	Aldrin	0.019	3.4	NA		NA		0.05	4	4.30E-03	5	NA	NA		0.5	24	4	2.90E-02	1.00E-01	5	1.6	4	NA		NA		NA		NA		NA		NA	
319846	alpha-BHC	0.011	2.5	NA		NA		0.1	4	1.10E-02	5	NA	NA		1.3	5.5	4	9.00E-02	3.60E-01	5	0.0026	4	NA		NA		NA		NA		NA		NA	
5103719	alpha-Chlordane	0.01	2.7	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
319857	beta-BHC	0.012	5	NA		NA		0.47	4	3.70E-02	5	NA	NA		4.6	43	4	3.20E-01	1.30E+00	5	0.009	4	NA		NA		NA		NA		NA		NA	
12789036	Chlordane	0.5	NA	NA		NA		2	4	NA	5	NA	NA		24	510	4	NA	NA		3	4	0.0032	11	NA		0.0000043	14	0.000004	14	NA		1	17
72548	4,4'-DDD	0.02	3.8	NA		NA		3.6	4	NA	5	NA	NA		35	NA	4	NA	NA		47	4	0.0035	9	0.0012	9	0.000011	16	NA		NA		NA	
72559	4,4'-DDE	0.02	2.3	NA		NA		2.5	4	NA	5	NA	NA		24	NA	4	NA	NA		150	4	0.0014	9	0.0021	9	NA		NA		NA		NA	
50293	4,4'-DDT	0.02	2.7	NA		NA		2.5	4	NA	5	NA	NA		24	5300	4	NA	NA		88	4	0.0070	9	0.0019	9	0.000001	14	0.000001	14	NA		NA	
319868	delta-BHC	0.01	4	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
Dichloprop	Dichloropropanol	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
60571	Dieldrin	0.02	2.5	NA		NA		0.05	4	4.20E-03	5	NA	NA		0.5	8	4	3.00E-02	1.10E-01	5	0.015	4	0.0019	11	0.0950	12	0.000056	14	0.0000019	14	NA		NA	
959988	Endosulfan I*	0.02	2.1	NA		NA		NA		NA		110	240	6	610	NA	4	NA	NA		7	4	0.0029	13	NA		0.000056	14	0.0000087	14	NA		NA	
33213659	Endosulfan II*	0.02	3.3	NA		NA		NA		NA		110	240	6	610	NA	4	NA	NA		7	4	0.0140	13	NA		0.000056	14	0.0000087	14	NA		NA	
1031078	Endosulfan Sulfate	0.02	1.8	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
72208	Endrin	0.02	5.5	NA		NA		2	4	1.10E+01	5	1	0.81	6	30	NA	4	1.80E+01	1.80E+02	5	0.3	4	0.0022	11	0.0035	12	0.000036	14	0.0000023	14	NA		NA	
7421934	Endrin aldehyde	0.021	8.6	NA		NA		NA		NA		1	0.81	6	NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
53494705	Endrin ketone	0.02	1.5	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
57749	gamma Chlordane	0.01	6.5	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		0.0045	9	0.00026	9	0.0000043	15	0.000004	15	NA		NA	
58899	gamma-BHC (Lindane)	0.01	6.5	NA		NA		0.2	4	5.20E-02	5	NA	NA		6.4	NA	4	4.40E-01	1.70E+00	5	0.003	4	0.00094	9	0.00032	9	0.00008	13	NA		NA		NA	
76448	Heptachlor	0.018	9.8	NA		NA		0.4	4	1.50E-02	5	NA	NA		2	0.8	4	1.10E-01	3.80E-01	5	8	4	NA		NA		0.0000038	14	0.0000036	14	NA		NA	
1024573	Heptachlor epoxide	0.0084	5.5	NA		NA		0.2	4	7.40E-03	5	NA	NA		0.9	33	4	5.30E-02	1.90E-01	5	0.2	4	0.0006	9	NA		0.0000038	14	0.0000036	14	NA		NA	
72435	Methoxychlor	0.05	12	NA		NA		40	4	1.80E+02	5	NA	NA		510	NA	4	3.10E+02	3.10E+03	5	52	4	0.0190	13	NA		0.00003	14	0.00003	14	NA		NA	
8001352	Toxaphene	0.5	20	NA		NA		3	4	6.10E-02	5	NA	NA		8	620	4	4.40E-01	1.60E+00	5	10	4	2.80E-02	13	NA		0.0002	14	0.0000002	14	NA		NA	
Inorganics																																			
7429905	Aluminum	50	8,000	NA		NA		NA		3.60E+04	5	NA	NA		NA	NA		7.60E+04	1.00E+05	5	NA		25500	9	NA	9	0.087	14	NA		50	17	NA	
7664417	Ammonia (as N)	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		0.000035	14	NA		NA	
7440360	Antimony	50	11,000	6	3	0.01	3	6	4	1.50E+01	5	14	4300	6	41	NA	4	3.10E+01	4.10E+02	5	3.6	4	0.16	9	NA	9	0.03	16	NA		5	17	NA	
7440382	Arsenic	100	13,000	10	3	0.01	3	50	4	4.5E-02	5	NA	NA		5.5	NA	4	3.9E-01	1.6E+00	5	2	4	5.9	9	7.24	9	0.15	14	0.036	14	10	17	60	17
7440393	Barium	10	400	2000	3	2	3	2000	4	2.60E+03	5	NA	NA		7100	NA	4	5.40E+03	6.70E+04	5	1100	4	NA		NA		0.004	16	NA		500	18	500	18
7440417	Beryllium	1	200	4	3	0.07	3	4	4	3.60E+00	5	NA	NA		200	NA	4	6.10E+00	6.20E+01	5	42	4	NA		NA		0.00066	16	NA		10	18	10	18
7440439	Cadmium	6	800	5	3	0.02	3	5	4	1.80E+01	5	NA	NA		100	NA	4	3.70E+01	4.50E+02	5	5	4	0.596	9	0.676	9	0.00025	15	0.0088	14	4	17	20	17
7440702	Calcium	100	14,000	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
7440473	Chromium	10	2,000	100	3	0.1	3	100	4	NA		NA	NA		300	NA	4	2.1E+02	4.5E+02	5	26	4	37.3	9	52.3	9	0.011*used CrVI	14	0.050*used CrVI	14	42	17	42	17
7440484	Cobalt	5	3,000	NA		NA		NA		7.30E+02	5	NA	NA		NA	NA		9.00E+02	1.90E+03	5	NA		NA		NA		0.003	13	NA		20	17	NA	
7440508	Copper	5	600	1.3E+00		NA		1300	4	1.50E+03	5	NA	NA		4060	NA	4	3.10E+03	4.10E+04	5	7000	4	35.7	9	18.7	9	0.009	15	0.031	14	100	17	50	17
7439896	Iron	50	6,000	NA		NA		NA		1.10E+04	5	NA	NA		NA	NA		2.30E+04	1.00E+05	5	NA		NA		NA		1	14	NA		NA		200	18

Table 1-2 Preliminary Analytical Concentration Goals
ARRC Anchorage Terminal Reserve, Anchorage, AK

				Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water			Human Health Screening Levels for Soil and Sediment							Migration to Groundwater		Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water				Ecological Screening Levels for Soil			
CAS No.	Analyte	Practical Quantitation Limit [1]	Practical Quantitation Limit [2]	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Aquatic Organisms Only	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference	Plants	Reference	Soil Biota	Reference
		µg/L	µg/kg	µg/L		µg/L		µg/L		µg/L		µg/L	µg/L		mg/kg	mg/kg		mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/L		mg/L		mg/kg		mg/kg	
7439921	Lead	50	6,000	15	3	NA		15	4	NA		NA	NA		400	400	4	4.00E+02	7.50E+02	5	NA		35	9	30.24	9	0.0025	15	0.0081	14	50	17	500	17
7439954	Magnesium	100	10,000	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
7439965	Manganese	100	1,000	NA		NA		NA		8.80E+02	5	50	100	6	NA	NA		1.80E+03	1.90E+04	5	NA		630	9	NA		0.08	13	NA		1100	17	NA	
7439976	Mercury	0.2	NA	2	3	0.01	3	2	4	NA		0.050	0.051	6	NA	18	4	0.00E+00	0.00E+00	5	1.4	4	0.174	9	0.13	9	0.00077	14	0.00094	14	0.3	17	0.1	17
7440020	Nickel	40	4,000	1.0E-01		0.7	3	100	4	7.30E+02	5	610	4600	6	2000	NA	4	1.60E+03	2.00E+04	5	87	4	18	9	15.9	9	0.052	15	0.0082	15	30	17	200	17
NO3/NO2	Nitrate/Nitrite	NA	NA	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
7440097	Potassium	1000	100,000	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
7782492	Selenium	100	10,000	50	3	0.2	3	50	4	1.80E+02	5	170	11000	6	510	NA	4	3.90E+02	5.10E+03	5	3.5	4	NA		NA		0.005	14	0.071	14	1	17	70	17
7440224	Silver	15	1,500	1.0E-01	3	NA		180	4	1.80E+02	5	NA	NA		510	NA	4	3.90E+02	5.10E+03	5	21	4	NA		0.73	9	0.00036	16	NA		2	17	NA	
7440235	Sodium	3000	300,000	NA		NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
14808798	Sulfate	NA	NA	250000	3	NA		NA		NA		NA	NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA	
7440280	Thallium	400	20,000	NA		NA		2	4	2.40E+00	5	2	6.3	6	NA	NA		5.20E+00	6.70E+01	5	NA		NA		NA		0.012	16	NA		1	17	NA	
7440622	Vanadium	10	1,000	NA		NA		260	4	2.60E+02	5	NA	NA		710	NA	4	5.50E+02	7.20E+03	5	3400	4	NA		NA		0.019	13	NA		2	17	NA	
7440666	Zinc	5	600	NA		10	3	11000	4	1.10E+04	5	9100	69000	6	30000	NA	4	2.30E+04	1.00E+05	5	9100	4	123.1	9	124	9	0.12	15	81	15	86	17	200	17
PCBs																																				
12674112	Aroclor 1016*	0.5	13	5.0E-04	3	NA		0.5	4	9.60E-01	5	NA	NA		1	1	4	3.90E+00	2.10E+01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
11104282	Aroclor 1221*	0.5	14	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
11141165	Aroclor 1232*	0.5	13	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
53469219	Aroclor 1242*	0.5	13	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
12672296	Aroclor 1248*	0.5	13	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
11097691	Aroclor 1254*	0.5	13	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
11096825	Aroclor 1260*	0.5	13	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	
1336363	PCBs, total	NA	NA	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA	NA		1	1	4	2.20E-01	7.40E-01	5	NA		0.0341	9	0.02155	9	0.000014	14	0.00003	14	40	17	NA	

Notes:
NA = not available
ADEC = Alaska Department of Environmental Conservation
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram
U.S. EPA = United States Environmental Protection Agency
PRG = preliminary remediation goal
TEL = threshold effect level
* Surrogate compound was used.

References:

1) Practical Quantitation Limits for water provided by Analytica Laboratory.
2) Pactical Quantitation Limits for soil provided by Analytica Laboratory.
2a) Practical Quantitation Limits for individual compounds provided by EPA Contract Lab Program, Analytica could not provide.
3) U.S. EPA, 2002. 2002 Edition of the Drinking Water Standards and Health Advisories. MCLs and DWELs. EPA 822R02038. Office of Water. Summer 2002.
4) ADEC, 2003. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control. State of Alaska Department of Environmental Conservation. Table B1 and C in 18 AAC 75.345(b) Method 2 Soil Cleanup Levels and Groundwater Cleanup Levels.
5) US. EPA, 2002. Region IX Preliminary Remediation Goals (PRGs). Available at U.S. EPA Region IX website: www.epa.gov/region 09/waste/sfund/prg/intro.htm October, 2002.
6) ADEC, 2003. Alaska Water Quality Criteria Manual For Toxic and Other Deleterious Organic and Inorganic Substances. State Of Alaska, Department Of Environmental Conservation. May 2003.
7) U.S. EPA, 2003. Human Health Fact Sheet: Revised National Recommended Water Quality Criteria. EPA822F03012. December 2003.
8) U.S. EPA, 2002. National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix. EPA822R02012. Office of Water. November 2002.
9) NOAA Screening Quick Reference Tables (SQuiRTs). SQG TEL Sediment Quality Guidelines were used as recommended by ADEC. The TELHA28 value was used in the absence of a TEL value for freshwater.These values can be referenced at http://response.restortaion.noaa.gov/index.html.
10) Washington Ecology (WA Ecology), 2003. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173-201A. Washington Administrative Code (WAC). Department of Ecology. July 1. Concentrations reported in ug/g organic caron and were converted based on 1% organic carbon.
11) McDonald, D.D., C.G. Ingersoll, and T.A. Berger, 2000. Development and Evaluation of consensus based Sediment Quality Guidelines for Freshwater ecosystems. *Archives of Environmental Contamination and Toxicology* 39:20-31.
12) U.S. EPA.1996. Ecotox Thresholds. ECO Update, Intermittent Bulletin Volume 3 Number 2. Office of Solid Waste and Emergency Response. Publication 9345.0-12FSI,EPA 540/F-95/038,PB95-963324.January.
13) U.S. EPA Office of Solid Waste and Emergency Response (OSWER) Sediment Quality Benchmark based on EPA Tier II Chronic Value (Region IV 1996), assuming 1% total organic carbon.
14) Alaksa Department of Environmental Conservation, Alaska Water Quality Criteria Manual For Toxic and Other Deletrious Organic and Inorganic Substances, May 15, 2003.
15) U.S. EPA, 1999. National Recommended Water Qualtiy Criteria Chronic Surface Water Values.
16) Oak Ridge National Laboratory, Tsao and Suter. 1996.Tier 2 Secondary Chronic Values.
17) Washington Department of Ecology, 2001. Terrestrial Ecological Evaluation Process, http://www.ecy.wa.gov/.
18) U.S. EPA, 2000 (The Eco SSL development document). In the absence of Eco SSL sources, data compiled in Efroymson et al. (1997a) was used.
19) PCBs, PCDDs, and PCDFs for humans based on using 2,3,7,8-TCDD as in the guidance for toxic equivalency factor (TEF). Van den Berg. Martin, et.al. Environmental Health Perspectives, Volume 106, Number 12, December 1998;Federal register, May 18, 2000, Volume 65, Number 97, pg. 31696.

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
LP-002	2	Consolidated Freightways	LP-002-002	B
			LP-002-003	B
			LP-002-010	B
LP-003	3&5	Flint Hills Resources	LP-003-001	C
			LP-003-002	D
			LP-003-003	D
			LP-003-005	D
			LP-003-008	C
			LP-003-011	B
			LP-003-017	D
			LP-003-018	A
			LP-003-019	A
			LP-003-020	B
			LP-003-021	D
			LP-003-022	D
			LP-003-023	B
			LP-003-024	B
			LP-003-027	D
			LP-003-028	D
LP-014	14	Curtis Josaitis & Daniel Helton (UCSC / Motor Doctor)	LP-014-001	C
LP-016	16	Chevron USA	LP-016-002	A
LP-027	27	Asphalt Plant	LP-016-003	D
			LP-016-017	D
			LP-016-018	D
			LP-016-022	D
			LP-016-026	A
			LP-016-033	D
			LP-016-036	A
			LP-016-037	D
			LP-016-041	D
			LP-016-042	D
			LP-016-045	D
			LP-016-046	D
			LP-016-048	D
LP-017	17	Polar Equipment, Inc.	LP-017-002	B
LP-019	19	Tesoro Alaska Petroleum	LP-019-001	D
			LP-019-002	D
			LP-019-005	D
			LP-019-009	D
			LP-019-011	C
			LP-019-012	D
			LP-019-016	D
			LP-019-033	D
			LP-019-034	D
			LP-019-036	A
			LP-019-040	D
			LP-019-045	A
			LP-019-048	D
			LP-019-049	C
			LP-019-050	D

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
LP-019 (con't)	19	Tesoro Alaska Petroleum	LP-019-053	B
			LP-019-054	D
			LP-019-055	A
			LP-019-056	A
			LP-019-057	D
			LP-019-058	A
			LP-019-060	D
			LP-019-063	A
LP-020	20	Robert Carlson (Wholesale Distributors of Alaska)	LP-020-001	A
			LP-020-002	D
LP-022	22	Municipal Light & Power	LP-022-001	A
			LP-022-002	C
			LP-022-003	C
			LP-022-004	C
			LP-022-011	C
			LP-022-012	C
			LP-022-013	C
			LP-022-014	C
			LP-022-015	D
			LP-022-036	C
			LP-022-039	B
			LP-022-042	A
			LP-022-044	A
			LP-022-053	C
			LP-022-058	C
			LP-022-064	C
			LP-022-069	A
			LP-022-073	C
			LP-022-075	D
			LP-022-077	C
			LP-022-079	A
LP-024	24	Prescott Equipment	LP-024-001	C
			LP-024-002	C
			LP-024-003	C
			LP-024-004	D
			LP-024-005	B
			LP-024-013	C
			LP-024-017	B
			LP-024-019	A
			LP-024-021	A
			LP-024-022	A
			LP-024-024	A
LP-025	25 & 27	Chevron USA	LP-025-001	A
			LP-025-004	B
			LP-025-010	B
LP-026	26	Alaska Teamster Employer Service / Teamster Training	LP-026-001	B

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
LP-031	31	Keystone Distribution Services	LP-031-001	C
			LP-031-003	D
			LP-031-007	A
LP-049	49	Wrightway Auto Carriers	LP-049-001	C
			LP-049-002	C
			LP-049-014	C
LP-055	55	C.V. Wells (Altex Distributing)	LP-055-001	A
			LP-055-002	B
LP-060	60	North Star Terminal / Stevedore	LP-060-002	C
LP-065	65	Princess Tours/ West Tours / Motorcoaches / Royal Celebrity Tours	LP-065-006	D
			LP-065-007	E
			LP-065-009	A
			LP-065-012	C
			LP-065-019	B
LP-083	83	Pruhs Corp.	LP-083-004	D
			LP-085-001	D
			LP-085-002	D
			LP-085-003	D
			LP-085-004	D
			LP-085-005	A
			LP-085-014	D
			LP-085-015	D
			LP-085-016	B
			LP-085-017	B
			LP-085-018	D
			LP-085-019	D
			LP-085-020	C
LP-094	94	Alaska Basic Industries	LP-094-001	C
			LP-094-002	B
			LP-094-003	A
			LP-094-004	C
			LP-094-010	C
			LP-094-020	A
LP-110	110	Bob Benson Trucking	LP-110-009	D
LP-120	120	KAPP LLC (Hobbs Industries)	LP-120-001	A
			LP-120-004	B
			LP-120-005	B
			LP-120-006	B
			LP-120-012	D
			LP-120-013	D
			LP-120-017	D
			LP-120-021	C
LP-125	125	Judith Kobbs & Linda Taylor (L&J Cabs / CPR Automotive)	LP-125-010	B

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
LP-127	127	Post Road Co - Tenancy / Swalling Construction / Kelly Moore Paints / Westinghouse	LP-127-001	D
			LP-127-003	B
			LP-127-005	C
			LP-127-006	D
			LP-127-007	C
			LP-127-010	C
			LP-127-012	C
			LP-127-018	A
			LP-127-022	A
			LP-127-023	A
			LP-127-024	C
			LP-127-027	C
LP-131	131	Alaska Sheet Metal	LP-131-001	B
			LP-131-003	C
LP-134	134	HW Alaska, LLC	LP-134-001	D
			LP-134-002	D
			LP-134-007	C
			LP-134-013	D
			LP-134-017	C
			LP-134-026	A
			LP-134-028	A
LP-137	137	Laidlaw Transit	LP-137-003	B
			LP-137-013	D
			LP-137-025	C
			LP-137-026	C
			LP-137-030	B
			LP-137-036	B
			LP-137-039	B
			LP-137-040	D
			LP-137-043	C
			LP-137-044	C
			LP-137-045	B
LP-991		Arctic Cooperage	LP-991-004	A
			LP-991-005	C
			LP-991-006	A
			LP-991-009	A
			LP-991-010	A
			LP-991-022	C
			LP-991-025	C
			LP-991-027	D
			LP-991-028	A
			LP-991-031	A
			LP-991-036	D
			LP-991-037	D
			LP-991-042	C
			LP-991-043	B
			LP-991-045	B
			LP-991-046	D
LP-994		Railyard	LP-994-002	B

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
RY-065		Railyard	RY-065-005	B
			RY-065-015	B
			RY-065-022	B
			RY-065-023	D
			RY-065-035	C
			RY-065-036	C
			RY-065-038	B
			RY-065-048	B
			RY-065-050	B
			RY-065-051	B
			RY-065-052	B
			RY-065-056	A
			RY-065-060	B
			RY-065-079	D
			RY-065-080	D
			RY-065-086	C
			RY-065-087	C
			RY-065-088	D
			RY-065-089	D
			RY-065-090	A
			RY-065-094	A
			RY-065-100	A
			RY-065-108	A
			RY-065-109	D
			RY-065-112	B
			RY-065-114	D
			RY-065-116	B
			RY-065-117	A
			RY-065-118	C
			RY-065-119	B
			RY-065-120	A
			RY-065-121	B
			RY-065-126	D
			RY-065-127	D
			RY-065-128	B
			RY-065-132	B
			RY-065-133	C
			RY-065-134	B
			RY-065-137	A
			RY-065-139	B
			RY-065-146	A
			RY-065-159	B
			RY-065-172	B
			RY-065-177	B
			RY-065-178	B
			RY-065-179	B
			RY-065-180	B
			RY-065-181	B
			RY-065-182	B
			RY-065-183	B

Table 2-1 Summary of Laboratory QA/QC Levels for Existing Site Data
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No	EPA Site No	Site Name	RETEC File No	Level of QA/QC available
RY-065 (con't)		Railyard	RY-065-190	A
			RY-065-191	B
			RY-065-194	A
SC-001			SC-001-012	B
			SC-001-016	A
			SC-001-026	B
			SC-001-031	A
			SC-001-037	A
			SC-001-038	B
			SC-001-055	A
			SC-001-068	A
			SC-001-087	A
			SC-001-092	D

QA/QC Level Defined:
A - data is from consultant summary tables, no laboratory QA/QC available
B - method reference and reporting limits provided; holding time compliance can be assessed
C - includes components of level B plus surrogate recovery for organics
D - includes components of level C plus laboratory blank, spike, duplicate information
E - includes components of level D plus system measurements (calibration) and sample chromatograms

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-991		923 Whitney Rd.		Arctic Cooperage			See LP-034	
LP-001	1	1632 Post Road	Jansen Construction	Alaska Iron Works	No Further Action	YES - question regarding who is current lessor	No Further Action	
LP-002	2	801 W. 1st Avenue	CF bankrupt, Spenard Builders current tenant	Consolidated Freightways	Further Action	YES - Summarize information regarding contaminated soil, UST removal and sludge from oil/water separator.	Determine if releases have occurred. Determine status of UST removal action. Evaluate waste analysis to determine if oil/water separator sludge is hazardous. Sampling of sludge may be needed.	COND EXEMPT
LP-003	3&5	1076 Ocean Dock Road	Flint Hills Resources	Williams Alaska / MAPCO Alaska Petroleum	Further Action	YES - Former asphalt plan- closure conducted? Information needed on old drum storage area. Summarize remedial activities to date.	Summarize characterization and remedial action activities.	
LP-004	4	849 Ocean Dock Road	Flint Hills Resources	MAPCO (FROG)	No Further Action	NO	No Further Action	
LP-005	3&5	1076 Ocean Dock Road	Flint Hills Resources	Williams Alaska / MAPCO Alaska Petroleum	Further Action	See Site 3	See Site 3	
LP-006	6	1648 N. Post Road	AASL General Contracting	Joe's Body Paint and Frame	Further Action	YES - Determine where two floor drains are connected to.	Sampling suggested SWMU 6-3, SWMU 6-6	
LP-007	7	1300 Ocean Dock Road		Lone Star Northwest	No Further Action	NO	No Further Action	
LP-008	8	733 East Whitney Road		Craig Taylor Equipment	No Further Action	NO	No Further Action	
LP-009	9	566 E. Bluff Avenue		William Dam (Anchorage Auto Detail)	Further Action	YES - Several USTs removed. Were confirmatory samples taken? Describe solvent use. Determine definitive floor drain connection.	Determine if releases have occurred. UST removal of 1995 - adequately addressed? Are floor drains connected to a leach field.	
LP-010	10	1301 First Avenue		Five Star Partnership	No Further Action	NO	No Further Action	
LP-011	11	2217 Post Road		Auto Electric Sales & Service	No Further Action	YES - Is the oil/water separator connected to the floor drain?	No Further Action	
LP-012	12	349 Ship Creek Avenue		Midnight Sun Tile	No Further Action	NO	No Further Action	
LP-013	13	501 Warehouse Avenue		Alaska Flor-Wall	No Further Action	NO	No Further Action	
LP-014	14	1425 Spar Avenue		Curtis Josaitis & Daniel Helton (UCSC / Motor Doctor)	Further Action	NO	Sampling suggested at SWMU 1, SWMU2, SWMU 3 AOC 12. Characterize wastes at site.	
LP-015	15	1833 Post Road	Cherrier & Cherrier	Inlet Construction	Further Action	NO	Request existing analytical groundwater data otherwise sample groundwater.	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-016	16	ROW		Chevron USA (ROW)	Further Action	YES - Summarize remedial activities associated with 1998 fuel spill per ADEC	Sampling is suggested to characterize contamination resulting from 1998 aviation fuel spill unless documentation of cleanup is provided.	No Further Action
LP-017	17	2116 Post Road	Post Road Properties LLC	Polar Equipment, Inc.	Further Action	YES - Provide information regarding disposal of sanitary sewage.	Request existing analytical groundwater data otherwise sample groundwater.	
LP-018	18	2132 Post Road	LH Construction	Alaska Plumbing & Heating (LH Construction)	Further Action	NO	Sampling suggested at SWMU 18-2. Determine if light ballasts contain PCBs	
LP-019	19	1321 Anchorage Port Rd.		Tesoro Alaska Petroleum	Further Action	YES - Summarize existing ADEC activities	Documented contamination exists. Has it been adequately characterized. Is remedial action necessary? Verify AOC 19-1 soil was sampled for TPH. Sampling suggested at AOC 19-2.	
LP-020	20	2548 Post Road		Robert Carlson (Wholesale Distributors of Alaska)	Further Action	NO	Request existing analytical groundwater data otherwise sample groundwater.	COND EXEMPT
LP-021	21	620 E. Whitney		Inupiat Drillers (SKW Eskimos)	No Further Action	NO	No Further Action	
LP-022	22	821 West 1st Avenue		Municipal Light & Power	Further Action	Summarize current site conditions related to soil and groundwater impacts and their impact on Ship Creek	Determine if former diesel UST requires further characterization or remedial action.	COND EXEMPT
LP-023	23	320 West 1st Avenue		Denali Credit Union	No Further Action	NO	No Further Action	
LP-024	24	1924 Post Road		Prescott Equipment	Further Action	YES - Summarize current site status via ADEC. Were the NFA conditions met?	Determine whether ADEC formally closed this site. A deed notice or restriction should be required identifying the areas of petroleum contamination.	
LP-025	25 & 27	459 W. Bluff Road		Chevron USA	Further Action	YES - Provide summary of groundwater sampling data and of operation and waste management practices of former asphalt plant prior to 1995.	Evaluate existing groundwater data to determine if further action should be required.	
LP-026	26	1049 Whitney Road		Alaska Teamster Employer Service / Teamster Training	Further Action	NO	Groundwater impacts should be delineated. Remedial action may be needed.	
LP-027	25 & 27	South side of West Bluff Drive		Chevron USA	See Site 25		Investigate waste management practices associated with the former asphalt plant to determine if further action is needed. Was hazardous waste used as a fuel in the asphalt plant?	
LP-028	28	Elmendorf Access / Viking		State of Alaska DNR	No Further Action	NO	No Further Action	
LP-029	29	2014 Post Road		Polar Equipment	No Further Action	NO	No Further Action	
LP-030	30	2510 Post Road		Denali Transportation Corp.	No Further Action	NO	No Further Action	
LP-031	31	2320 Post Road	2320 Post Road LLC & Jed LLC	Keystone Distribution Services	Further Action	YES - Provide investigation and/or remediation information for PCB soil impact.	Determine if characterization or remedial activities were performed to address PCBs.	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-032	32	1907 Post Road	Charlotte Davis	Charlotte Davis (Eyak Trucking / Allison's Relocation)	No Further Action	NO	No Further Action	
LP-033	33	2216 Post Road	Jed LLC & Hiller LLC	The Sumiko Group/ Air Van Lines	Further Action	YES- Determine status of septic system. Confirm details of LUST removal and remedial action	Review past sampling and remedial efforts for AOC33-1	No Further Action
LP-034	34	1000 Whitney Road		Jerry P. Willis (CDF Inc.)	Further Action	YES - Determine if the previous paint can storage caused a release of hazardous constituents.	Delineate groundwater impacts. Perform remedial action. Delineate soil and groundwater impacts at adjacent Arctic Cooperage. Suggest sampling at SWMU 34-1	
LP-035	35	1520 & 1530 Post Road		Janssen Contracting	No Further Action	NO	No Further Action	
LP-036	36	2002 Post Road		Longstaff	No Further Action	NO	No Further Action	
LP-037	37	1520-1530-1613 Post Road		21st Century Trust	No Further Action	NO	No Further Action	
LP-038	38	333 Ship Creek Avenue		JV Rentals	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	
LP-039	39	Elm Street / Hollywood Dr.		Anchorage Neighborhood Housing Services	No Further Action	NO	No Further Action	
LP-040	40	251 Post Road		Walsky Construction	No Further Action	NO	No Further Action	
LP-041	41	655 E. Ship Creek Ave.		Lorna Stern/Brado Properties (Rowan Pacific Decorators)	No Further Action	NO	No Further Action	
LP-042	42	115 Whitney Road		York Steel Company Inc.	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted - Notes --Site appears to be a metals salvage yard.	This site could not be investigated during the VSI.	
LP-043	43	1301 Post Road		Wright, Bittner, Horton (Alaska Truck Center)	Further Action	YES- Identify solvent used in parts washer and used oil procedures	A compliance inspection conducted by ADEC or EPA Is suggested for this facility.	No Further Action
LP-044	44	2433 Post Road		Inlet Glass & Millwork	No Further Action	NO	No Further Action	
LP-045	45	1848 North Post Road	Morgan & Childs	Newbery Alaska Inc.	Further Action	YES - Request for Phase I EA	Review the Phase I EA for need for further action.	No Further Action
LP-046	46	Potter House Site		State of Alaska DNR	OPEN	NO	This site was removed from the RFA due to its off-site location	
LP-047	47	Loop Road / 500 Hollywood Drive		Tesoro Northshore Co. (Gas Station)	No Further Action	NO	No Further Action	
LP-048	48	209 Post Road		Air Van Lines (Arrow Moving & Storage)	No Further Action	NO	No Further Action	
LP-049	49	101 West Whitney Road		Wrightway Auto Carriers	Further Action	YES - Determine if UST sampling or remedial action have been performed.	Documented contamination exists in former UST area. Remedial action unlikely to have occurred. Review ARRC oil pipeline information to determine if further action is warranted. Sampling suggested at AOC 49-2.	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-050	50	1860 Post Road		Alaska Crate and Pallet	Further Action	YES - Site was not inspected by EPA. Owner could not be contacted. Releases reported	This site could not be investigated during the VSI. A release of urethane was reported was investigation conducted? Sampling is suggested at AOC50-1.	No Further Action
LP-051	51	2530 Railroad Avenue		M-K Properties (Great Land Fence /KC Corp.)	Further Action	Yes - The storage of large quantities of potentially hazardous waste at this site may require notification as a small or large quantity hazardous waste generator.	Sampling is suggested at SWMU 51-1. A compliance inspection should be conducted by EPA or ADEC	
LP-052	52	826 Whitney Road		Patrick M. Hickey	Further Action	YES - Confirm if sampling was conducted following excavation of an UST in 1980	Sampling is suggested at AOC52-1. Characterization of wastes managed at SWMU 52-2.	
LP-053	53	2121 Post Road		F&M Small Engine Repair	No Further Action	NO	No Further Action	
LP-054	54	Greenbelt		MOA Greenbelt	No Further Action	NO	No Further Action	
LP-055	55	800 E. Ship Creek Ave.		C.V. Wells (Altex Distributing)	Further Action	YES - Report analytical well data from 1990. Summarize ADEC involvement and site activities including remedial action associated with a 1991 diesel odor in water during excavation	Sample 3 existing monitoring wells. If sampled recently evaluate results.	
LP-056	56	2132 Railroad Ave.	R.J.H. Inc. dba SteelFab	Steel Fabricators	Further Action	YES - Determine if the painting operations caused a release of hazardous constituents.	Sampling suggested at SWMU 56-4. Obtain a complete list of paint types used at the site to determine if characterization of paint distiller sludge should be required. Request data from drinking water well. If unavailable sample groundwater.	
LP-057	57	327 W. Ship Creek Ave.		Railroad Office Building LLC	No Further Action	NO	No Further Action	
LP-058	58	111 W. Ship Creek Ave.		Inn-Vestment Association	No Further Action	NO	No Further Action	
LP-059	59	Tidelands		MOA Tidelands	No Further Action	NO	No Further Action	
LP-060	60	790 Ocean Dock Road		North Star Terminal & Stevedore Co.	Further Action	YES - Provide copies of Phase I & II Site Assessments.	Review Site Investigation Reports. Groundwater sampling should be conducted.	COND EXEMPT
LP-061	61	South of Ship Creek		MOA City Dock	No Further Action	NO	No Further Action	
LP-062	62	128 W. 1st Avenue		Anchorage Cold Storage	No Further Action	NO	No Further Action	
LP-063	63	1730 & 1820 Railroad Ave.		Denali Leasing Company	No Further Action	YES - Phase III 1991/1992 shows containers and drums - were they removed?	Sampling is suggested at SWMU63-1. Available data is for TPH only.	
LP-064	64	"C" Street and First Ave.		Anchorage Cold Storage	No Further Action	NO	No Further Action	
LP-065	65	Whitney Rd (within Railyard)		Princess Tours/ West Tours / Motorcoaches / Royal Celebrity Tours	Further Action	YES - Summarize 1994 Supplemental Site Assessment and subsequent site activities.	Determine if 1994 Work plan was implemented. Summarize findings. Suggested sampling at SWMU 63-1, SWMU 63-2 (typo 65?)	
LP-066	66	2114 Railroad Avenue		Susitna Investment Co. (Welding School)	No Further Action	NO	No Further Action	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-067	67	Along rail line south of W. Tudor Road		Spenard Building Supply	OPEN	NO	Investigation of this site is no longer required under this RFA	
LP-068	68	628 Ocean Dock Road		Premier Industries, Inc.	No Further Action	NO	No Further Action	
LP-069	69	720 Whitney Road		Dean's Automotive	Further Action	YES - Determine where the floor drains in the paint shop empty. Determine what solvents are used in the operations.	Sampling suggested at SWMU 69-4 and SWMU 69-8	
LP-070	70	333 Ship Creek Avenue		Golden Ears Investment Corp.	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted - Notes --Site is currently a print shop	This site could not be investigated during the VSI.	
LP-071	71	241 W. Ship Creek Ave.		BDK Partnership	No Further Action	NO	No Further Action	
LP-072	72	1849 Ship Avenue		Joe D. and Mary P. Blackard (Karen's RV Service Center)	Further Action	NO	Sampling is suggested at AOC72-1	
LP-073	73	500 E. Ship Creek Ave.		D.F. Investments (Glass, Sash & Door Supply)	No Further Action	NO	No Further Action	
LP-074	74	601 Yakutat Street		K&T Enterprises (DiTomaso)	No Further Action	NO	No Further Action	
LP-075	75	250, 298 & 313 E. Ship Creek		Odom Corp / Anchorage Cold Storage / David E. and Jeanne Gransbury (Ulu Factory)	No Further Action	NO	No Further Action	
LP-076	76	1940 Post Road		1940 Post Road LLC (Guardian Security Systems)	No Further Action	NO	No Further Action	
LP-077	77	600 E. Ship Creek Ave.		Cumic LLC (Tire Centers LLC)	No Further Action	NO	No Further Action	
LP-078	78	816 Whitney Road	Laser Properties LLC	Criterion General, Inc.	Further Action	NO	Sampling is suggested at AOC78-1	
LP-079	79	1115 East Whitney Road	Robert Pfiel Estate	Alaska Pride Baking	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted	Determine generator status	
LP-080	80	155 W. 1st Ave. (Partial)		Fleenor Paper Co.	No Further Action	NO	No Further Action	
LP-081	81	751 E. Loop Road		Jack L. and Holly A. Ward (Video City)	No Further Action	NO	No Further Action	
LP-082	82	2401 Viking Drive	**Targeted for long term lease, so need to characterize**	Summit Paving & Construction	No Further Action	NO	No Further Action	
LP-083	83	2193 Viking Drive		Pruhs Corp.	Further Action	YES - Provide information on solvents used in parts washer, sludge characterization from washer, disposal of sludge and used solvent. Sludge from oil /water separator sample results.	Sampling is suggested at SWMU 83-3. Compliance Evaluation Inspection is also suggested.	
LP-084	84	658 Ocean Dock Road		Swan Bay Holdings	No Further Action	NO	No Further Action	

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ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-085	85	1300 & 1500 Post Road		Carl C. Black (CBS Equipment)	Further Action	NO	Documented groundwater [impacts] at AOC85-2. Delineate and propose remedial action if needed. Sampling suggested at SMWU 85-3, AOC 85-1	
LP-086	86	786 & 800 Delaney St.		MOA Cottages	No Further Action	NO	No Further Action	
LP-087	87	303 Ship Creek Avenue		R.D. & S.L. Horrell (Alaska Marble & Granite)	No Further Action	NO	No Further Action	
LP-088	88	ROW		World Net (Fiber Optic Lines)	No Further Action	NO	No Further Action	
LP-089	89	319 E. Ship Creek Ave.	C.V. Wells (GSA sublease)	Rock Partners	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted -site appeared deserted	This site could not be investigated during the VSI.	
LP-090	90	920 Whitney Road		Central Core Redevelopment (Ashley Home Stores)	Further Action	YES - 2 USTs from 1970s - any contamination?	Sampling is suggested at AOC90-1	No Further Action
LP-091	91	1748 Post Road		Chenega Mgt./ SLW Eskimos / 1748 Post Road LLC (General Metals of AK)	No Further Action	NO	No Further Action	
LP-092	92	1519 Ship Avenue		Odom Corp.	Further Action	YES - Provide information on diesel fuel spill and UST removal, site remedial activities.	Provide remedial action information. Sampling suggested at AOC92-1	No Further Action
LP-093	93	721 W. 1st Avenue		M-I LLC	Further Action	NO	Delineate documented soil impacts at AOC93-1. Sample groundwater. Conduct remedial action if necessary.	No Further Action
LP-094	94	2301 Spar Avenue		Alaska Basic Industries	Further Action	YES - Information on disposal procedures for baghouse filters should be provided. Report groundwater monitoring results. Summarize site activities prior to 1998 related to DRO in groundwater at a minimum.	Sampling is suggested at SWMU 94-1, SMWU 94-2 SWMU 94-4	
LP-095	95	619 E. Ship Creek Ave.		Bayview Commercial Building LLC	No Further Action	NO	No Further Action	
LP-096	96	ROW		Alaska Fiber Star LLC	No Further Action	NO	This site could not be investigated during the VSI.	
LP-097	97	Loop Road & Hollywood Drive		Lighthouse Christian Fellowship	No Further Action	NO	No Further Action	
LP-098	98	1224 Whitney Road		Constance Hayden (Warehouse)	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	
LP-099	99	2111 Viking Drive		Emulsion Products of Alaska	No Further Action	NO	No Further Action	
LP-100	100	ROW		Signature Flight Support - Bulk Fuel Storage	No Further Action	NO	No Further Action	
LP-101	101	660 Ocean Dock Road		Swan Bay Holdings (Barge Docking)	No Further Action	NO	No Further Action	
LP-102	102	ROW		Signature Flight Support	No Further Action	NO	No Further Action	
LP-103	103	ROW		Lone Star	No Further Action	NO	No Further Action	
LP-104	104	ROW	Flint Hills Resources	Williams Alaska Petroleum	No Further Action	NO	No Further Action	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

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LP-105	105	1628 Post Road / 1614 Post Road		Saturn Construction	Further Action	YES-Determine where floor drains flow.	Investigation of SWMU 105-3 is suggested. If septic system is connected to floor drain suggest sampling.	No Further Action
LP-106	106	421 W. 1st Avenue		Trade Center Associates	No Further Action	NO	It is unclear if former tenant used the site for waste storage. - mixed up with 107?	
LP-107	107	155 1st Avenue		Safety Kleen, Inc.	Further Action	YES - Was the site used for waste storage? If so was adequate closure conducted?	No Further Action - mixed up with 106?	
LP-108	108	Ship Creek	The Covered Bridge LLC	Covered Bridge	No Further Action	NO	No Further Action	
LP-109	109	1425 Viking Drive		Dennis French & Arden Anderson (Beat's Walking Automotive)	Further Action	YES - Provide information on the type of solvent used at the site.	Sampling suggested at SWMU SWMU 109-3	
LP-110	110	2400 (2332) Railroad Avenue		K&T Enterprises (Bob Benson Trucking)	Further Action	NO	Sampling suggested at SWMU 110-3	
LP-111	111	601 Whitney Road		E.J. Bartells Co.	No Further Action	NO	No Further Action	
LP-112	112	1101 E. Whitney Road	Paul Reid dba Sagaya Properties	Whitney Enterprises	Further Action	YES - Site not inspected, facility personnel were not present.	This site could not be investigated during the VSI. Delineate groundwater impacts. Perform remedial action if needed.	
LP-113	113	737 Ship Creek Avenue		S&W Properties (AAA Moving & Storage)	No Further Action	NO	No Further Action	
LP-114	114	ROW		Anchorage Fueling & Service Co.	No Further Action	NO	No Further Action	
LP-115	115	101 N. Post Road	Bruce Burnett	Technic Services, Inc.	OPEN	YES - Previous use as convenience store, not inspected as it was currently unoccupied. Lessee was the only open issue	This site could not be investigated during the VSI.	
LP-116	116	1200 Whitney Road		Suburban Propane	No Further Action	NO	No Further Action	
LP-117	117	155 W. 1st Avenue		Walker Preflight	No Further Action	NO	No Further Action	
LP-118	118	ROW		Enstar Natural Gas Company	No Further Action	NO	No Further Action	
LP-119	119	Second Ave. & "H" Street		MOA (Substation)	No Further Action	NO	No Further Action	
LP-120	120	229 Whitney Road	KAPP LLC	KAPP LLC (Hobbs Industries)	Further Action	YES - Determine the responsibility for drummed waste observed at the site.	Sampling suggested at SWMU 120-1, SWMU 120-2 AOC 120-1. A Compliance Evaluation Inspection is suggested.	
LP-121	121	345 W. 1st Avenue		Nana Management Services	No Further Action	NO	No Further Action	
LP-122	122	1716 Post Road		Jackovich Industrial & Construction	No Further Action	NO	No Further Action	
LP-123	123	900 Whitney Road	Charles Leonard dba Underfoot Enterprises	Black Gold Express (C.A.T. Transportation)	Further Action	YES- Determine the type of solvent used in the parts washer	Sampling suggested at SMWU 123-2	No Further Action
LP-124	124	222 E. Ship Creek Ave.		Alma Corp.	OPEN	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	
LP-125	125	1825 Ship Avenue / 1800 Viking Drive		Judith Kobbs & Linda Taylor (L&J Cabs / CPR Automotive)	POSSIBLE	YES - Need to determine whether the drain connects to a oil/water separator, the city sewer or to a leach filed. Maintenance and repair shop for cars	Additional information is necessary to determine if sampling should be required at SWMU 125-2 (wastewater system)	

Table 2-2 Summary of Leased Property Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	Unconditionally Excluded-AOC
LP-126	126	West of 619 E. Ship Creek Avenue		Bayview Commercial Building LLC (Parking Lot)	No Further Action	NO	No Further Action	
LP-127	127	200/250 Post Road	Post Road Co - Tenancy / Swalling Construction / Kelly Moore Paints / Westinghouse	Post Road Co - Tenancy	Further Action	YES - Determine if the site has been adequately characterized and cleaned up. Previous PCB cleanup did not address other potential contaminants.	Documented contamination detected in soil and groundwater. Contamination migrated off-site. Site wide sampling is suggested with remedial action as needed. A compliance evaluation inspection should be performed. Review historical documentation. Sampling suggested at SWMU 127-2, SW\MU 127-4, WMU 127-5, SWMU 127-6, SMWU 127-8, SWMU 127-9	
LP-128	128	321 E. Ship Creek Ave.		Fred T. Wade (Seamless Flooring Systems)	Further Action	NO	Compliance Evaluation Inspection is suggested.	
LP-129	129	221 Ship Creek Avenue		WMLS Inc. (Statewide Door & Glass)	No Further Action	NO	No Further Action	
LP-130	130	1415 Spar Road		Floyd Apling (Plaschem Supply & Consulting)	Further Action	YES _ UST remove din 1989 0r 1990 provide details	Sampling suggested at AOC 130-1	No Further Action
LP-131	131	568 E. Whitney Road	I.F.R. LLC	Alaska Sheet Metal	Further Action	YES - Provide 1996 sampling results. Determine if corrective action as requested by ADEC was performed.	Review site files. Sampling suggested at SMWU 131-1 SWMU 131-3	
LP-132	132	1301 Whitney Road	Whitney Road Warehouse LLC (Carr Gottstein)	Whitney Road Warehouse LLC	OPEN	NO	This site could not be investigated during the VSI.	No Further Action
LP-133	133	150 N. Ingra Street		Northrim Bank	No Further Action	NO	No Further Action	
LP-134	134	1500 Post Road		HW Alaska, LLC	Further Action	YES - Provide information on the final fate of stockpiled soil.	Further Action	
LP-135	135	601-655 E. Ship Creek Ave.		Brado Properties, LLC	OPEN	NO	See Site 41 - No further Action	
LP-136	136	2600 Railroad Avenue		Hickel Construction & Engineering	No Further Action	NO	No Further Action	
LP-137	137	1048 Whitney Road	Alaska West Express	Laidlaw Transit	Further Action	YES - Provide information regarding ADEC site status, sampling, remedial action, cleanup levels.	Documented soil and groundwater [impacts] exist at AOC134-1. Delineate and perform remedial action if needed. Suggest sampling of SWMU 134-2, SMWU 134-3, SWMU 134-4	
LP-138	138	ROW		Tesoro Alaska Pipeline Co.	No Further Action	NO	No Further Action	
LP-139	139	West of 601 Whitney Rd.		Suburban Propane	No Further Action	NO	No Further Action	

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	**ARRC comment on RFA**
RY-065	**65**	**ENV-A150**	**Anchorage Rail Yard (Whitney Road)-421 West 1st Avenue, Anchorage, AK**		
RY-065 SWMU10	65		Diesel Shop Satellite Accumulation Area	Further Action	
RY-065 SWMU13	65		Electric Shop Oil Collection Sump	Further Action	The sludge quantity ARRC provided was an annual estimate. ARRC has also visually inspected the interior of the sump and found it to be in good condition.
RY-065 SWMU14	65		Electric Shop Oil Storage Tank	Further Action	ADEC requires reporting of any spills to secondary containment in excess of 55 gallons. Therefore, any large spills from this tank should have been reported. Since there have not been any reported spills and the tank is inside a building with a concrete floor, ARRC believes there is a low likelihood for potential for releases.
RY-065 SWMU15	65		Former Oil Storage Containers	Further Action	
RY-065 SWMU16	65		Oil Storage Tank Cars	Further Action	The Unit Description should note that ARRC has successfully rebutted the presumption that the high halogen content in the oil was from mixing of solvents. In addition, although journal oil has been generated, it has not been placed in a railcar. The Conclusions should note that although lead was detected in some of the samples where 9114R was stored, the values were within background levels observed in the Anchorage Bowl.
RY-065 SWMU20	65		Car Shop Air Room Hazardous Waste Storage Area	Further Action	
RY-065 SWMU22	65		Heavy Equipment Shop Floor Drain	Further Action	The tank was used infrequently and a more accurate process description is "solids from the floor drains in the wash bay were collected." ARRC disagrees with the assertion that the sludges were hazardous. The CEI inspection report states that analytical results were not provided. EPA received information that the sludges were hazardous from an uninformed ARRC employee who was not knowledgeable about the specific testing and other criteria fo designating a material as a hazardous waste. ARRC recently discovered test results identified as "Heavy Equipment & Shop Sump Solids" misfiled. These results probably reflect the constituents in the floor drain material and confirm the conclusion that this material was non-hazardous. The earliest results were from August 1991, not 1992 as stated. The third paragraph (page 53) is a summary of the 1991 results. The highlighted numbers inaccurately indicate that all the samples were from the Heavy Equipment Shop. Paragraph 3 (page 53) contains errors that should be corrected as follows: - Generally six samples were composite, not 12. - Composites 2, 7, 8, 9 and Group 9 are from the Heavy Equipment Shop. Composite 5 is from a different source. - The second reference to COMP 9 should read Group 9 as it is clearly a different sample. - The second reference to COMP 9 (Group 9) should read: 0.0039 mg/l of ethylbenzene; 0.024 mg/l of TCLP p & m xylene and 137,000 ppm total petroleum hydrocarbon. ARRC disagrees that the floor drain creates a high potential for releases to soil and groundwater and that the concrete has cracks and visible chips.

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	ARRC comment on RFA
RY-065 SWMU23	65		Heavy equipment shop Drum Storage area	Further Action	
RY-065 SWMU24	65		Heavy Equipment Shop Former Drum Storage Area	Further Action	
RY-065 SWMU26	65		Engineering Shop Equipment Wash Area	Further Action	
RY-065 SWMU27	65		Used Battery Totes	Further Action	The battery tote was located at both the east and west side of the Heavy Equipment Shop as illustrated on Figure entitled "Response to Question 14" of the August 31, 1994 response to U.S. EPA. The tote is currently located on the west side as noted in the notes of the VSI. The tote, which is successfully used as secondary containment, has not failed and there have been no releases. Transfer of batteries is done by pulling a truck up to the totes and placing them in the truck. ARRC is not aware of the June 30, 1994 sample result that allegedly showed that one of these totes contained lead at a concentration of 120 mg/l and has difficulty accepting the conclusions without the supporting information.
RY-065 SWMU28	65		Former Bridges and Buildings Shop Drum Storage	Further Action	
RY-065 SWMU29	65		Former Boxcar 10631	Further Action	
RY-065 SWMU30	65		Former Boxcar 10181	Further Action	
RY-065 SWMU31	65		Boxcar 10157	Further Action	
RY-065 SWMU32	65		Boxcar 10160	Further Action	
RY-065 SWMU33	65		Railcar 15780	Further Action	
RY-065 SWMU34	65		Railcar 15140	Further Action	
RY-065 SWMU35	65		Welding Shop Waste Storage	Further Action	
RY-065 SWMU37	65		Contaminated soil Stockpile	Further Action	The 10 stockpiles referenced in the report were retested in June 1995. The stockpiles are non-hazardous. One of the stockpiles (Track 13 Ballast, which is covered with plastic) has been treated because of petroleum residue. The other 9 stockpiles have been determined to meet ADEC's clean up levels for soil in the railyard and have been removed. A copy of the stockpile results and ADEC's matrix is attached.
RY-065 SWMU38	65		Former Stockpile of Fuel Rack Soil	Further Action	The value given for diesel range organics is incorrect. The correct value is 40,900 mg/kg. In addition, the analysis was conducted in October and November 1993. Although the soil was held in this area for approximately 9 months, the majority of the time the soil could not have been moved because of weather conditions (the soil was frozen). The likelihood of releases from the soil was, therefore, minimal. In addition, when the soil was removed, the liner was noted to be intact. If releases had occurred, it would have been noted during the VSI, since the VSI occurred shortly after the soil was moved.

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	**ARRC comment on RFA**
RY-065 SWMU39	65		Former Stockpile of Westours and Princess Tours Soil	Further Action	The report is confusing two separate reports that were submitted. SWMU #39 is a soil stockpile excavated during a construction project and tested for diesel range organics, total petroleum hydrocarbons, arsenic, cadmium, and lead in accordance with the ADEC plan. All excavated soil that exceeded ADEC cleanup levels for soil that could be placed in the railyard was sent for thermal treatment (including the 40 yds3 that the report states was unaccounted). The BTEX and solvent data referenced was taken from Level I & II Environmental Site Assessment and Geotechnical Recommendations, Princess Tours / Westours Leasehold Properties, Alaska Railroad Corporation Anchorage Rail Yard, Anchorage, AK July 1992; and Supplemental Site Assessment, Final Report, Westours McKinley Explorer Rail Yard Facility, Alaska Railroad Reserve, Anchorage, AK, August 1994. Both reports were derived from investigations in the area south of the Car Shop, but they did not evaluate soil from the same location where the stockpile in SWMU #39 was excavated. Therefore, the soil referenced in the report as having BTEX and solvents was not the same soil that is referenc ARRC does not agree that the sample results from the borings drilled in 1992 are representative of soil excavated over one year later in the general vicinity. None of the 90 yds3 which is referenced was analyzed for TCLP metals. The reference to failing TCLP for lead in one test sample is inaccurate. The report is not specific as to which sample failed, but it appears the analytical result referenced was a total metal result, not a TCLP result. (The total metal result is above the TCLP threshold.) The Wastes Managed description incorrectly states that soils were known to be contaminated with toluene, ethylbenzene, xylene, etc. The results referred are for the borings collected, which is different soil than the soil excavated. Soil was held in this area for a minimal amount of time. Although the unit was used from August 1993 to November 1994 (approximately 15 months -- significantly less than 2 years), soil was excavated, placed in the area designated, and subsequently removed. Although construction occurred between August 1993 and November 1994, the same soil was not held during this period.
RY-065 SWMU40	65		Former Onsite Landfill	Further Action	Neither ARRC nor U.S. EPA have been able to identify the location of the alleged former landfill. Therefore, it cannot be classified as a SWMU because it is not possible to identify any location where any follow-up action may be warranted. Without a delineation, there is no "unit" to consider listing as a SWMU.
RY-065 SWMU41	65		Railroad Tie Storage Area	Further Action	ARRC disagrees with the conclusion that there is a moderate potential for releases to soil. Attachment F is a report, *A Review of Toxicity Characteristic Leaching Procedure Testing of Railroad Crossties*, prepared by Resource Consultants, Inc., demonstrating the low potential for releases.

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	ARRC comment on RFA
RY-065 SWMU42	65		Barrel Farm	Further Action	ARRC does not consider the asphalt "new." Asphalt has been in the barrel farm location since before 1983. The south side area has only been used for storage of barrels since 1991. The list provided in the August 1993 response was in response to the question, "Types and quantities of hazardous or non-hazardous waste stored in the unit; and length of time wastes remain in the unit." The list provided was a comprehensive response. As noted in the report, there were approximately 57 intact drums present, not 180. The report implies that many of the drums were open and leaking, but only about 25 drums, which were non-hazardous, were open. There was only one drum of non-hazardous waste "crater lube" on the edge of the pavement in the southeast side that showed evidence of spillage beyond the asphalt. The analytes present do not correspond with the wastes listed. (PCBs were not found in any of the wastes listed.) Since the report was prepared, ARRC completed "RCRA Closure" at the Barrel Farm. The sampling conducted demonstrated that releases to the environment did not occur and the site was "clean closed."
RY-065 SWMU43	65		Boiler Plant	Further Action	
RY-065 SWMU63	65		Heavy Equipment Shop 400 Gallon Former Dip Tank	Further Action	
RY-065 SWMU64	65		Tank Car Steaming Area	Further Action	ARRC disagrees with the conclusion in the report. Responsibility for the Steaming Area has been clearly designated to one individual. Operation of the area is checked on a regular basis. Historically, responsibility was not given to an individual. ARRC believes that this management change, in addition to the structural changes, will minimize the chances for a release.
RY-065 SWMU65	65		Former Tank Car Steaming Area	Further Action	The unit descriptions are confusing. The report is also confusing as to whether this SWMU is the same unit described in SWMU #69 (Former Tank Car Steaming Area Oil/Water Separator). Figure 2, Page 7, shows SWMU 65 and 69 as the same SWMU, which is incorrect and adds to the confusion. ARRC had several tank cleaning areas. The first general area is shown on Figure 2 of the report and labeled 65, 69. Any groundwater impacts from these area(s) are historical and were addressed with the installation of interceptor trenches. The second area, which was decommissioned in 1993, is in the vicinity of the Westours leasehold shown on Figure 2. See the discussion under SWMU #69 regarding the evaluation of this area.
RY-065 SWMU66	65		Former Temporary Tank Car Steaming Area	Further Action	Although there was a release to the soil at the Former Temporary Tank Car Steaming Area, the area has been cleaned up. A copy of the test results demonstrating all soil impacted was provided to U.S. EPA.
RY-065 SWMU67	65		Electric Shop Oil/Water Separator	Further Action	

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	**ARRC comment on RFA**
RY-065 SWMU69	65		Former Tank Car Steaming Area Oil/Water Separator	Further Action	The report mistakenly identified the oil/water separator identified as SWMU 69 as one that was identified in the 1986 CERCLA report and that was discovered to be leaking in 1986. The oil/water separator that is SWMU 69 was in the Westours leasehold area until it was decommissioned in 1993 and replaced by the oil/water separator identifed as SWMU 68. The oil/water separator that was referenced by U.S. EPA and was discovered to be leaking is identified on Figure 2 report as SWMU 65. The data presented on page 28, Section 3.5.4, is work that was done in the vicinity of SWMU 69, within the Westours leasehold. The data is from an RZA AGRA report dated July 1992 and a report by Environmental Systems, Ltd. (ESL) dated August 1994. The ESL report of 1994 incorporates some of the findings of RZA's 1992 report and adds information from field activities in 1993 and 1994 in the same area. Both reports contain significant technical deficiencies and, in the case of the ESL report, some misinformation and erroneous conclusions. These include: 1. The laboratory RZA used in 1992 (Sound Analytical Services, Tacoma, WA) had a severe contamination problem, as evidenced by the high number of analytes in the lab blanks, at the time samples from the area were analyzed. Not all of the required blank data is accounted for in the appendices to the report, but the blanks that are reported had levels of toluene, methylene chloride (dichloromethane), 1,1-dichloroethen, and 1,3-dichlorobenzene at the same concentration ranges reported in the samples. The laboratory noted the contamination problem, but used an unacceptable method of "blank correction" to report the sample data (i.e., subracting the blank value of the reported constituent from the sample value). This procedure has been rejected by the U.S. EPA and reputable laboratories because of the potential for resultant negative sample results (less than zero), and because of the possibility of false positives in the sample data. RZA did not recognize that there was a laboratory problem in 1992, and presented the solvent data with sample results. ESL continued the error and presented "blank corrected" data in their report of 199 ARRC believes that, in the presence of the severe contamination problem, all data on volatiles is suspect and should be rejected. 2. RZA and ESL tested for metals in groundwater and several were reported. In both cases, they collected groundwater and did not filter the samples to get the sediment out, analyzed the water with metal-containing sediment, then reported the metals as contaminants. The shallow aquifer at ARRC is not potable, is subject to tidal influences, and is high in metals and minerals. Comparisons to drinking water MCLs are misleading and serve no purpose. 3. ESL neglected to note that in RZA's assessment of the property in 1992, and again during their own investigation of 1994, an abundance of data was presented that clearly indicates that petroleum hydrocarbons are coming on to the site from upgradient locations at the level of the water table. ESL failed to note the presence of upgradient sites with floating product to the north and east of the yard (e.g., EAFB) and neglected any discussion of RZA's references to upgradient sources from 1992. An assessment of the presence of petroleum hydrocarbons at the yard is not complete unless locations upgradient are considered.

Table 2-3 Summary of Railyard SWMU and AOC Status
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	ARRC File No.	ARRC Site Name	SWMU Status	
				NFA - RFA	ARRC comment on RFA
					4. Neither RZA nor ESL obtained data from upgradient of the areas under investigation, although RZA notes the possibility of upgradient sources of fuel residue. Despite the lack o upgradient data, ESL attempts to attribute fuel at the groundwater table to the oil/water separator, which is downgradient of most of ELS's sampling locations. The highest levels of fuel residue at the water table in 1992 were at the furthest upgardient data point (MW-4) within the leasehold area. ARRC does not agree that upgradient sources can be ruled out in the absence of upgradient data and that the impact, if any, of the separator be ascertained. 5. Soil that was high in fuel residue was removed and treated in 1993 as part of the Westours property improvement.
RY-065 SWMU70	65		Former Blowdown Sump	Further Action	Any soil contaminated from releases from this area has been removed. Sample results from the base of the excavation demonstrate any contaminated soil was removed. Further investigation is not needed.
RY-065 SWMU72	65		Former waste Oil Underground Storage Tank	Further Action	Two 10,000-gallon used oil tanks were excavated from the same pit. The tank and piping was determined to be in good condition and no evidence of leaks was observed. Results for samples collected at the base and side of the excavation are within cleanup levels established by the state, including the "volatile compounds" referenced.
RY-065 SWMU73	65		Former waste Oil Underground Storage Tank	Further Action	
RY-AOC1	66		Refueling Area	Further Action	
RY-AOC2	67		Former Refueling Area	Further Action	
RY-AOC3	68		Above Ground Storage Tank	Further Action	
RY-AOC4	69		Former Diesel Underground Storage Tank	Further Action	
RY-AOC5	70		Former Unleaded Gasoline Underground Storage Tank	Further Action	
RY-AOC6	71		Former Gasoline Underground Storage Tank	Further Action	
RY-AOC7			Former Heating Oil Underground Storage Tank	Further Action	

Table 3-1 Description of Study Areas Used in the Data Usability Evaluation ARRC Anchorage Terminal Reserve, Anchorage, AK

Media	Study Area	Lease Property	Name	Status	Analytical Data Available?
Soil	Area 1	LP-002	Consolidated Freightways	FA	Yes
	Area 2	LP-065	Princess Tours	FA	Yes
		RY-065	Railyard	FA	Yes
	Area 3	LP-003	Flint Hills	FA	Yes
		LP-019	Tesoro Terminal #1	FA	Yes
		LP-025	Chevron	FA	Yes
		LP-027	Chevron Former Asphalt	FA	No
		LP-060	North Star Terminal	FA	Yes
	Area 4	LP-006	Joes' Body Paint and Frame	FA	No
		LP-015	Inlet Construction	FA	No
		LP-017	Polar Equipment	FA	No
		LP-018	LH Construction	FA	No
		LP-020	Wholesale Distributors of Alaska	FA	Yes
		LP-024	Prescott Equipment	FA	Yes
		LP-031	Keystone Services	FA	Yes
		LP-051	M-K Properties	FA	No
		LP-056	Steel Fabricators	FA	No
		LP-072	Karen's RV Service Center	FA	No
		LP-083	Pruhs Corp.	FA	Yes
		LP-094	Alaska Basic Industries	FA	Yes
		LP-110	Bob Benson Trucking	FA	Yes
		LP-125	L&J Cabs - CPR Automotive	FA	Yes
	Area 5	LP-014	UCSC/Motor Doctor	FA	Yes
		LP-022	Municipal Light & Power	FA	Yes
		LP-026	Alaska Teamster	FA	Yes
		LP-034	CDF Inc.	FA	No
		LP-052	Patrick M Hickey	FA	No
		LP-055	Altex Distributing	FA	Yes
		LP-069	Dean's Automotive	FA	No
		LP-078	Criterion General Inc.	FA	No
		LP-079	Alaska Pride Baking	Open	No
		LP-085	CBS Equipment	FA	Yes
		LP-098	Constance Hayden Warehouse	Open	No
		LP-109	Beats Walking Automotive	FA	No
		LP-112	Whitney Express	FA	No
		LP-115	Technic Services Inc	Open	No
		LP-127	Post Road Company - Tenancy	FA	Yes
		LP-134	HW Alaska LLC	FA	Yes
		LP-137	Laidlaw Transit	FA	Yes
		LP-991	Arctic Cooperage	FA	Yes
	Area 6	LP-038	JV Rentals	Open	No
		LP-042	York Steel	Open	No
		LP-049	Wrightway Auto Carriers	FA	Yes
		LP-070	Golden Ears Investment Corp.	Open	No
		LP-089	Rock Partners	Open	No
		LP-107	Safety Kleen	FA	No
		LP-120	KAPP	FA	Yes
		LP-124	Alma Corp.	Open	No
		LP-128	Seamless Flooring Systems	FA	No
		LP-131	Alaska Sheetmetal	FA	Yes

Media	Study Area	Lease Property	Name	Status	Analytical Data Available?
Groundwater	North of Ship Creek	LP-006	Joes' Body Paint and Frame	FA	No
		LP-015	Inlet Construction	FA	No
		LP-017	Polar Equipment	FA	No
		LP-018	LH Construction	FA	No
		LP-020	Wholesale Distributors of Alaska	FA	Yes
		LP-024	Prescott Equipment	FA	Yes
		LP-026	Alaska Teamster	FA	Yes
		LP-031	Keystone Services	FA	Yes
		LP-034	CDF Inc.	FA	No
		LP-042	York Steel	Open	No
		LP-049	Wrightway Auto Carriers	FA	Yes
		LP-051	M-K Properties	FA	No
		LP-052	Patrick M Hickey	FA	No
		LP-056	Steel Fabricators	FA	No
		LP-069	Dean's Automotive	FA	No
		LP-078	Criterion General Inc.	FA	No
		LP-079	Alaska Pride Baking	Open	No
		LP-085	CBS Equipment	FA	Yes
		LP-098	Constance Hayden Warehouse	Open	No
		LP-110	Bob Benson Trucking	FA	Yes
		LP-112	Whitney Express	FA	No
		LP-120	KAPP	FA	Yes
		LP-127	Post Road Company - Tenancy	FA	Yes
		LP-131	Alaska Sheetmetal	FA	Yes
		LP-134	HW Alaska LLC	FA	Yes
		LP-137	Laidlaw Transit	FA	Yes
		LP-991	Arctic Cooperage	FA	Yes
		RY-065	Railyard	FA	Yes
	South of Ship Creek	LP-014	UCSC/Motor Doctor	FA	Yes
		LP-022	Municipal Light & Power	FA	Yes
		LP-038	JV Rentals	Open	No
		LP-055	Altex Distributing	FA	Yes
		LP-070	Golden Ears Investment Corp.	Open	No
		LP-072	Karen's RV Service Center	FA	No
		LP-083	Pruhs Corp.	FA	Yes
		LP-089	Rock Partners	Open	No
		LP-094	Alaska Basic Industries	FA	Yes
		LP-107	Safety Kleen	FA	No
		LP-109	Beats Walking Automotive	FA	No
		LP-115	Technic Services Inc	Open	No
		LP-124	Alma Corp.	Open	No
		LP-125	L&J Cabs - CPR Automotive	FA	Yes
		LP-128	Seamless Flooring Systems	FA	No
	Terminal	LP-003	Flint Hills	FA	Yes
		LP-019	Tesoro Terminal #1	FA	Yes
		LP-025	Chevron	FA	Yes
		LP-027	Chevron Former Asphalt	FA	No
		LP-060	North Star Terminal	FA	Yes
Surface Water	Ship Creek	SC-001		FA	Yes
Sediment	Ship Creek	SC-001		FA	Yes

Note:
Only includes lease properties designated as further action sites or open sites
FA = further action per U.S. EPA RFA

Table 3-2 Summary of Screening Levels Used for Data Usability Evaluation
ARRC Anchorage Terminal Reserve, Anchorage, AK

		Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water		Human Health Screening Levels for Soil and Sediment							Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water			
CAS No.	Analyte	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference
		µg/L		µg/L		µg/L		µg/L		µg/L		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg		mg/kg		mg/kg		mg/L		mg/L	
Volatile Organic Compounds																										
71556	1,1,1-Trichloroethane	200	3	1000	3	200	4	3.17E+03	5	NA		NA	460	1	4	1.20E+03	1.20E+03	5	0.17	13	NA		0.062	13	NA	
630206	1,1,1,2-Tetrachloroethane	NA		1	3	NA		4.30E-01	5	NA		NA	NA	NA		3.20E+00	7.30E+00	5	NA		NA		NA		NA	
79345	1,1,2,2-Tetrachloroethane	NA		2	3	4	4	5.53E-02	5	0.17	8	42	5.4	0.017	4	4.08E-01	9.29E-01	5	0.94	13	NA		0.42	13	NA	
7311	1,1,2-Trichloro-1,2,2-trifluoroethane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
79005	1,1,2-Trichloroethane	5	3	100	3	5	4	2.00E-01	5	0.59	8	150	10	0.017	4	7.29E-01	1.61E+00	5	NA		NA		1.2	16	NA	
75354	1,1,-Dichloroethene	7	3	300	3	7	4	3.39E+02	5	330	7	14	0.9	0.03	4	1.24E+02	4.13E+02	5	NA		NA		0.025	16	NA	
75343	1,1-Dichloroethane	NA		NA		3650	4	8.11E+02	5	NA		10000	890	12	4	5.06E+02	1.74E+03	5	NA		NA		0.047	16	NA	
78999	1,1-Dichloropropane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
563586	1,1-Dichloropropene	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
120821	1,2,4-Trichlorobenzene	70	3	400	3	70	4	1.94E+02	5	260	6	1000	570	2	4	6.50E+02	3.00E+03	5	9.2	13	NA		NA		NA	
95636	1,2,4-Trimethylbenzene	NA		NA		NA		1.20E+01	5	NA		NA	NA	NA		5.20E+01	1.70E+02	5	NA		NA		NA		NA	
108678	1,3,5-Trimethylbenzene	NA		NA		NA		1.20E+01	5	NA		NA	NA	NA		2.10E+01	7.00E+01	5	NA		NA		NA		NA	
87616	1,2,3-Trichlorobenzene	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
96184	1,2,3-Trichloropropane	NA		0.2	3	NA		5.60E-03	5	NA		NA	NA	NA		5.00E-03	1.10E-02	5	NA		NA		NA		NA	
96128	1,2-Dibromo-3-chloropropane*	0.2	3	NA		NA		4.8E-02	5	NA		NA	NA	NA		4.54E-01	2.02E+00	5	NA		NA		NA		NA	
106934	1,2-Dibromoethane	0.05	3	NA		0.05	4	7.57E-04	5	NA		0.1	1.2	3.06E-05	4	6.89E-03	2.81E-02	5	NA		NA		NA		NA	
95501	1,2-Dichlorobenzene	NA		3000	3	600	4	3.70E+02	5	2,700	6	9100	110	7	4	3.70E+02	3.70E+02	5	0.34	13	0.023	10	0.014	13	NA	
107062	1,2-Dichloroethane	5	3	NA		5	4	1.23E-01	5	0.38	8	91	5	0.015	4	2.78E-01	6.03E-01	5	NA		NA		0.91	16	NA	
78875	1,2-Dichloropropane	5	3	NA		5	4	1.65E-01	5	0.5	8	120	17	0.017	4	3.42E-01	7.42E-01	5	NA		NA		NA		NA	
541731	1,3-Dichlorobenzene	NA		3000	3	1100	4	5.48E+00	5	400	6	3040	NA	12.1	4	1.59E+01	6.27E+01	5	1.7	13	NA		0.071	13	NA	
142289	1,3-Dichloropropane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
106467	1,4-Dichlorobenzene	NA		NA		75	4	5.00E-01	5	2,600	6	350	8000	0.8	4	3.40E+00	7.90E+00	5	0.35	13	0.031	10	0.015	13	NA	
78933	2-Butanone (MEK)	NA		20000	3	22000	4	1.90E+03	5	NA		60800	28100	60	4	7.33E+03	2.71E+04	5	NA		NA		NA		NA	
591786	2-Hexanone	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		0.099	16	NA	
594207	2,2-Dichloropropane	NA		1		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
108101	4-Methyl-2-pentanone (MIBK)	NA		NA		NA		1.58E+02	5	NA		NA	NA	NA		7.87E+02	2.84E+03	5	NA		NA		NA		NA	
67641	Acetone	NA		NA		3650	4	6.08E+02	5	NA		10000	NA	10	4	1.57E+03	6.04E+03	5	NA		NA		1.5	16	NA	
71432	Benzene	5	3	NA		5	4	3.36E-01	5	2.2	8	150	9	0.02	4	6.01E-01	1.31E+00	5	NA		NA		0.046	13	NA	
108861	Bromobenzene	NA		NA		NA		2.00E+01	5	NA		NA	NA	NA		2.70E+01	9.20E+01	5	NA		NA		NA		NA	
74975	Bromochloromethane	NA		0.5	3	NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
75274	Bromodichloromethane	80	3	700	3	100	4	1.81E-01	5	0.55	8	NA	NA	NA	4	8.24E-01	1.83E+00	5	NA		NA		NA		NA	
75252	Bromoform	80	3	700	3	100	4	8.51E+00	5	4.3	8	1050	500	0.38	4	6.16E+01	2.18E+02	5	NA		NA		NA		NA	
74839	Bromomethane (Methyl bromide)	NA		50	3	NA		8.66E+00	5	47	8	NA	NA	NA		3.90E+00	1.31E+01	5	NA		NA		0.019	13	NA	
75150	Carbon Disulfide	NA		NA		3650	4	1.04E+03	5	NA		10000	453	17	4	3.55E+02	7.20E+02	5	NA		NA		0.00092	16	NA	
56235	Carbon Tetrachloride	5	3	30	3	5	4	1.71E-01	5	0.23	8	64	3.4	0.03	4	2.51E-01	5.49E-01	5	NA		NA		0.24	13	NA	
108907	Chlorobenzene	100	3	NA		100	4	1.06E+02	5	680	6	2000	110	0.6	4	1.51E+02	5.30E+02	5	0.82	13	NA		0.13	13	NA	
75003	Chloroethane	NA		NA		NA		4.64E+00	5	NA		NA	NA	NA		3.03E+00	6.49E+00	5	NA		NA		NA		NA	
67663	Chloroform	80	3	400	3	100	4	6.17E+00	5	5.7	8	1000	3.4	0.34	4	3.56E+00	1.17E+01	5	NA		NA		0.028	16	NA	
74873	Chloromethane	NA		100	3	NA		1.51E+00	5	NA		NA	NA	NA		1.23E+00	2.65E+00	5	NA		NA		NA		NA	
156592	cis-1,2-Dichloroethene	70	3	400	3	70	4	6.08E+01	5	NA		1000	NA	0.2	4	4.29E+01	1.46E+02	5	NA		NA		NA		NA	
10061015	cis-1,3-Dichloropropene*	NA		1000	3	9	4	4.00E-01	5	10	6	83	14	0.02	4	7.80E-01	1.80E+00	5	NA		NA		0.023	16	NA	
110827	Cyclohexane	NA		NA		NA		3.50E+04	5	NA		NA	NA	NA		1.40E+02	1.40E+02	5	NA		NA		NA		NA	
124481	Dibromochloromethane	80	3	700	3	NA		1.33E-01	5	0.4	8	NA	NA	NA		1.11E+00	2.55E+00	5	NA		NA		NA		NA	
74953	Dibromomethane	NA		NA		NA		NA	5	NA		NA	NA	NA		NA	NA	5	NA		NA		NA		NA	
75718	Dichlorodifluoromethane	NA		5000	3	7300	4	3.95E+02	5	NA		20300	260	60	4	9.39E+01	3.08E+02	5	NA		NA		NA		NA	
100414	Ethylbenzene	700	3	3000	3	700	4	2.91E+00	5	3,100	6	10000	89	5.5	4	8.92E+00	1.95E+01	5	3.6	13	NA		0.29	13	NA	
98828	Isopropylbenzene	NA		4000	3	3650	4	6.58E+02	5	NA		10100	585	227	4	5.72E+02	1.98E+03	5	NA		NA		NA		NA	
79209	Methyl Acetate	NA		NA		NA		6.08E+03	5	NA		NA	NA	NA		2.21E+04	9.15E+04	5	NA		NA		NA		NA	
1634044	Methyl tert-Butyl Ether	20	3	NA		NA		1.33E+01	5	NA		NA	NA	NA		6.15E+01	1.57E+02	5	NA		NA		NA		NA	
108872	Methylcyclohexane	NA		NA		NA		5.22E+03	5	NA		NA	NA	NA		2.59E+03	8.72E+03	5	NA		NA		NA		NA	
75092	Methylene Chloride	5	3	2000	3	5	4	4.28E+00	5	4.6	8	1100	180	0.015	4	9.11E+00	2.05E+01	5	NA		NA		2.2	16	NA	
63072446	Methyl pentanone	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
100425	Styrene	100	3	7000	3	100	4	1.64E+03	5	NA		20300	280	1.3	4	1.70E+03	1.70E+03	5	NA		NA		0		NA	
127184	Tetrachloroethene	5	3	500	3	5	4	6.59E-01	5	0.69	8	160	80	0.03	4	1.51E+00	3.42E+00	5	0.53	13	NA		0.12	13	NA	
108883	Toluene	1000	3	7000	3	1000	4	7.23E+02	5	6,800	6	20300	180	5.4	4	5.20E+02	5.20E+02	5	0.67	13	NA		0.13	13	NA	
156605	trans-1,2-Dichloroethene	100	3	700	3	100	4	1.20E+02	5	140	7	2000	NA	0.4	4	6.90E+01	2.30E+02	5	NA		NA		NA		NA	
10061026	trans-1,3-Dichloropropene*	NA		1000	3	9	4	4.00E-01	5	10	6	83	14	0.02	4	7.80E-01	1.80E+00	5	NA		NA		NA		NA	
79016	Trichloroethene	5	3	200	3	5	4	2.80E-02	5	2.5	8	750	43	0.027	4	5.30E-02	1.15E-01	5	1.6	13	0		NA		NA	
75694	Trichlorofluoromethane	NA		10,000	3	NA		1.29E+03	5	NA		NA	NA	NA		3.86E+02	2.00E+03	5	NA		NA		NA		NA	
26523648	Trichlorotriflouroethane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
75014	Vinyl Chloride	2	3	100	3	2	4	1.98E-02	5	0.025	7	6	4	0.009	4	7.91E-02	7.50E-01	5	NA		NA		NA		NA	
1330207	Xylene (total)	10000	3	70000	3	10000	4	2.10E+02	5	NA		203000	81	78	4	2.75E+02	4.20E+02	5	0.025	13	NA		0.0018	13	NA	
136777612	m&p-Xylene	10000	3	NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		0.0018	13	NA	
95476	o-Xylene	10000	3	70	3	NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	

Table 3-2 Summary of Screening Levels Used for Data Usability Evaluation
ARRC Anchorage Terminal Reserve, Anchorage, AK

		Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water		Human Health Screening Levels for Soil and Sediment							Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water			
CAS No.	Analyte	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference
SemiVolatile Organic Compounds																										
92524	1,1'-Biphenyl	NA		NA		NA		3.04E+02	5	NA		NA	NA	NA		3.50E+02	3.50E+02	5	1.1	13	NA		NA		NA	
103651	n-Propylbenzene	NA		NA		NA		2.40E+02	5	NA		NA	NA	NA		2.40E+02	2.40E+02	5	NA		NA		NA		NA	
108601	2,2'-oxybis(1-Chloropropane)	NA		1000	3	NA		2.74E-01	5	NA		NA	NA	NA		2.88E+00	7.35E+00	5	NA		NA		NA		NA	
95954	2,4,5-Trichlorophenol	NA		NA		3650	4	3.65E+03	5	2,600	6	10000	NA	90	4	6.11E+03	6.16E+04	5	NA		NA		NA		NA	
88062	2,4,6-Trichlorophenol	NA		10	3	77	4	3.65E+00	5	1.4	8	750	1500	0.6	4	6.11E+00	6.16E+01	5	NA		NA		NA		NA	
94757	2,4-D	NA		NA		NA		3.60E+02	5	NA		NA	NA	NA		4.90E+02	4.90E+03	5	NA		NA		NA		NA	
120832	2,4-Dichlorophenol	NA		100	3	100	4	1.09E+02	5	93	6	300	NA	0.45	4	1.83E+02	1.85E+03	5	NA		NA		NA		NA	
105679	2,4-Dimethylphenol	NA		NA		700	4	7.30E+02	5	540	6	2000	NA	4	4	1.22E+03	1.23E+04	5	NA		0.029	10	NA		NA	
51285	2,4-Dinitrophenol	NA		NA		70	4	7.30E+01	5	93	6	200	NA	0.2	4	1.22E+02	1.23E+03	5	NA		NA		NA		NA	
121142	2,4-Dinitrotoluene	NA		100	3	1.25	4	7.30E+01	5	0.11	8	12	NA	0.005	4	1.22E+02	1.23E+03	5	NA		NA		NA		NA	
606202	2,6-Dinitrotoluene	NA		40	3	1.25	4	3.65E+01	5	NA		12	NA	0.0044	4	6.11E+01	6.16E+02	5	NA		NA		NA		NA	
110758	2-Chloroethylvinyl ether	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
91587	2-Chloronaphthalene	NA		NA		2900	4	4.87E+02	5	1,700	6	8110	NA	70	4	4.94E+03	2.34E+04	5	NA		NA		NA		NA	
95578	2-Chlorophenol	NA		200	3	200	4	3.04E+01	5	120	6	510	NA	1.4	4	6.34E+01	2.36E+02	5	NA		NA		NA		NA	
95498	2-Chlorotoluene	NA		NA		NA		1.20E+02	5	NA		NA	NA	NA		1.60E+02	5.60E+02	5	NA		NA		NA		NA	
90120	1-Methylnaphthalene	NA		NA		NA		NA		NA		4100	NA	43	4	NA	NA		NA		NA		0.0021	16	NA	
110496	2-Methoxyethyl acetate	NA		NA		NA		7.30E+01	5	NA		NA	NA	NA		1.20E+02	1.20E+03	5	NA		NA		NA		NA	
91576	2-Methylnaphthalene	NA		NA		780	4	NA		NA		2030	NA	60.9	4	NA	NA		NA		0.0202	9	NA		NA	
95487	2-Methylphenol	NA		NA		1800	4	1.82E+03	5	NA		5100	NA	7	4	3.06E+03	3.08E+04	5	NA		0.063	10	0.013	16	NA	
88744	2-Nitroaniline	NA		NA		NA		1.04E+00	5	NA		NA	NA	NA		1.75E+00	1.76E+01	5	NA		NA		NA		NA	
88755	2-Nitrophenol	NA		300	3	NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
91941	3,3'-Dichlorobenzidine	NA		NA		2	4	1.49E-01	5	0.021	8	18	NA	0.02	4	1.08E+00	3.83E+00	5	NA		NA		NA		NA	
34MP	3,4-Methylphenol	NA		NA		NA		NA		NA		NA	NA	NA		3.1E+02	3.1E+03	5	NA		0.67	10	NA		NA	
108394	3-Methylphenol	NA		NA		NA		1.80E+03	5	NA		NA	NA	NA		3.10E+03	3.10E+04	5	NA		NA		NA		NA	
99092	3-Nitroaniline	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
534521	4,6-Dinitro-2-methylphenol	NA		NA		NA		NA		13	8	NA	NA	NA		NA	NA		NA		NA		NA		NA	
101553	4-Bromophenyl-phenylether	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		0.0015	13	NA	
59507	4-Chloro-3-methylphenol	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
106478	4-Chloroaniline	NA		NA		150	4	1.46E+02	5	NA		410	NA	0.5	4	2.44E+02	2.46E+03	5	NA		NA		NA		NA	
7005723	4-Chlorophenyl-phenylether	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
106434	4-Chlorotoluene	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
99876	4-Isopropyltoluene	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
106445	4-Methylphenol	NA		NA		NA		1.82E+02	5	NA		NA	NA	NA		3.06E+02	3.08E+03	5	NA		NA		NA		NA	
100016	4-Nitroaniline	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
100027	4-Nitrophenol	NA		300	3	NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
83329	Acenaphthene	NA		2000	3	2200	4	3.65E+02	5	1,200	6	6100	NA	210	4	3.68E+03	2.92E+04	5	0.62	12	0.00671	9	0.023	13	0.04	13
208968	Acenaphthylene	NA		2000	3	2200	4	NA		NA		6100	NA	210	4	NA	NA		NA		0.00587	9	NA		NA	
98862	Acetophenone	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
62533	Aniline	NA		NA		NA		1.20E+01	5	NA		NA	NA	NA		8.50E+01	3.00E+02	5	NA		NA		NA		NA	
120127	Anthracene	NA		10000	3	11000	4	1.83E+03	5	9,600	6	30000	NA	4300	4	2.19E+04	1.00E+05	5	0.01	9	0.0468	9	0.00073	16	NA	
1912249	Atrazine	3	3	1000	3	NA		3.03E-01	5	NA		NA	NA	NA		2.19E+00	7.76E+00	5	NA		NA		NA		NA	
100527	Benzaldehyde	NA		NA		NA		3.65E+03	5	NA		NA	NA	NA		6.11E+03	6.16E+04	5	NA		NA		NA		NA	
56553	Benzo (a) anthracene	NA		NA		1	4	9.21E-02	5	0.0038	8	11	NA	6	4	6.21E-01	2.11E+00	5	0.0317	9	0.0748	9	0.000027	16	NA	
50328	Benzo (a) pyrene	0.2	3	NA		0.2	4	9.21E-03	5	0.0038	8	1	NA	3	4	6.21E-02	2.11E-01	5	0.0319	9	0.0888	9	0.000014	13	NA	
205992	Benzo (b) fluoranthene	NA		NA		1	4	9.21E-02	5	0.0038	8	11	NA	20	4	6.21E-01	2.11E+00	5	NA		2.3	10	NA		NA	
191242	Benzo (g,h,i) perylene	NA		NA		1100	4	NA		NA		3000	NA	1500	4	NA	NA		NA		0.31	10	NA		NA	
207089	Benzo (k) fluoranthene	NA		NA		10	4	9.21E-01	5	0.0038	8	110	NA	200	4	6.21E+00	2.11E+01	5	0.0272	9	2.3	10	NA		NA	
65850	Benzoic Acid	NA		NA		146000	4	1.50E+05	5	NA		410000	NA	390	4	1.00E+05	1.00E+05	5	NA		0.65	10	0.042	16	NA	
100516	Benzyl alcohol	NA		NA		NA	4	1.10E+04	5	NA		NA	NA	NA		1.80E+04	1.00E+05	5	NA		0.057	10	0.0086	16	NA	
117817	bis (2-Ethylhexyl) phthalate	NA		NA		6	4	4.80E+00	5	1.2	8	590	NA	1200	4	3.47E+01	1.23E+02	5	NA	9	0.182	9	0.032	13	NA	
111911	bis(2-Chloroethoxy)methane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
111444	bis(2-Chloroethyl)ether	NA		NA		0.77	4	9.78E-03	5	0.03	8	8	3	0.002	4	2.11E-01	5.54E-01	5	NA		NA		NA		NA	
39638329	bis(2-Chloroisopropyl)ether	NA		NA		NA		2.70E-01	5	1400	6	NA	NA	NA		2.90E+00	7.40E+00	5	NA		NA		NA		NA	
85687	Butylbenzylphthalate	NA		7000	3	7300	4	7.30E+03	5	3,000	6	20000	NA	5600	4	1.22E+04	1.00E+05	5	11	13	0.049	10	NA		NA	
105602	Caprolactam	NA		NA		NA		1.82E+04	5	NA		NA	NA	NA		3.06E+04	1.00E+05	5	NA		NA		NA		NA	
86748	Carbazole	NA		NA		40	4	3.36E+00	5	NA		420	NA	2	4	2.43E+01	8.62E+01	5	NA		NA		NA		NA	
218019	Chrysene	NA		NA		100	4	9.21E+00	5	0.0038	8	1100	NA	620	4	6.21E+01	2.11E+02	5	0.0571	9	0.108	9	NA		NA	
53703	Dibenzo (a,h) anthracene	NA		NA		0.1	4	9.21E-03	5	0.0038	8	1	NA	6	4	6.21E-02	2.11E-01	5	0.01	9	0.00622	9	NA		NA	
84662	Diethylphthalate	NA		30000	3	29000	4	2.92E+04	5	23,000	6	81000	NA	190	4	4.89E+04	1.00E+05	5	0.63	13	0.61	10	0.22	13	NA	
131113	Dimethylphthalate	NA		NA		NA		3.65E+05	5	313,000	6	1000000	NA	1400	4	1.00E+05	1.00E+05	5	NA		0.53	10	NA		NA	
84742	Di-n-butylphthalate	NA		4000	3	3650	4	3.65E+03	5	2,700	6	10000	NA	1700	4	6.11E+03	6.16E+04	5	11	13	2.2	10	NA		NA	
117840	Di-n-octylphthalate	NA		NA		700	4	1.46E+03	5	NA		2000	NA	810000	4	2.44E+03	2.46E+04	5	NA		0.58	10	NA		0	
206440	Fluoranthene	NA		NA		1460	4	1.46E+03	5	300	6	4100	NA	2100	4	2.29E+03	2.20E+04	5	0.111	9	0.113	9	0.0081	13	0.011	13
86737	Fluorene	NA		1000	3	1460	4	2.43E+02	5	1,300	6	4100	NA	270	4	2.75E+03	2.63E+04	5	0.01	9	0.0212	9	0.0039	13	NA	
118741	Hexachlorobenzene	1	3	30	3	1	4	4.20E-02	5	0.00028	8	5	7	0.73	4	3.04E-01	1.08E+00	5	NA		0.0038	10	NA		NA	

Table 3-2 Summary of Screening Levels Used for Data Usability Evaluation
ARRC Anchorage Terminal Reserve, Anchorage, AK

		Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water		Human Health Screening Levels for Soil and Sediment							Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water			
CAS No.	Analyte	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference
87683	Hexachlorobutadiene	NA		7	3	10	4	8.62E-01	5	0.44	8	20	55	8	4	6.24E+00	2.21E+01	5	NA		0.039	10	NA		NA	
77474	Hexachlorocyclopentadiene	50	3	200	3	50	4	2.19E+02	5	240	6	710	7	130	4	3.65E+02	3.66E+03	5	NA		NA		NA		NA	
67721	Hexachloroethane	NA		40	3	60	4	4.80E+00	5	1.4	8	101	390	1.6	4	3.47E+01	1.23E+02	5	1	13	NA		0.012	13	NA	
193395	Indeno (1,2,3-cd) pyrene	NA		NA		1	4	9.21E-02	5	0.0038	8	11	NA	54	4	6.21E-01	2.11E+00	5	NA		0.34	10	NA		NA	
78591	Isophorone	NA		7000	3	900	4	7.08E+01	5	35	8	8700	NA	3	4	5.12E+02	1.81E+03	5	NA		NA		NA		NA	
104518	n-Butylbenzene	NA		NA		NA		2.40E+02	5	NA		NA	NA	NA		2.40E+02	2.40E+02	5	NA		NA		NA		NA	
91203	Naphthalene	NA		700	3	700	4	6.20E+00	5	NA		2000	120	21	4	5.59E+01	1.88E+02	5	0.0146	9	0.0346	9	0.024	13	NA	
98953	Nitrobenzene	NA		NA		18	4	3.40E+00	5	17	6	51	90	0.06	4	1.96E+01	1.03E+02	5	NA		NA		NA		NA	
62759	N-Nitrosodimethylamine	NA		NA		NA		1.40E+01	5	NA		1700	NA	3.4	4	9.90E+01	3.50E+02	5	NA		NA		NA		NA	
621647	N-Nitroso-di-n-propylamine	NA		NA		0.1	4	9.60E-03	5	0.005	8	1.2	NA	0.00036	4	6.95E-02	2.46E-01	5	NA		NA		NA		NA	
86306	N-Nitrosodiphenylamine	NA		NA		170	4	1.37E+01	5	3.3	8	1700	NA	3.4	4	9.93E+01	3.52E+02	5	NA		0.11	10	0.21	16	NA	
87865	Pentachlorophenol	1	3	1000	3	1	4	5.60E-01	5	0.27	8	35	NA	0.01	4	2.98E+00	9.00E+00	5	NA		0.36	10	0.015	15	0.0079	14
85018	Phenanthrene	NA		NA		11,000	4	NA		NA		30000	NA	4300	4	NA	NA		0.0187	9	0.0867	9	0.0063	13	0.0083	13
108952	Phenol	NA		20000	3	22,000	4	2.19E+04	5	21,000	6	60800	NA	67	4	3.67E+04	1.00E+05	5	NA		0.42	10	NA		NA	
129000	Pyrene	NA		NA		1,100	4	1.83E+02	5	960	6	3000	NA	1500	4	2.32E+03	2.91E+04	5	0.0443	9	0.153	9	NA		NA	
483658	Retene	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
135988	sec-Butylbenzene	NA		NA		NA		2.40E+02	5	NA		NA	NA	NA		2.20E+02	2.20E+02	5	NA		NA		NA		NA	
98066	tert-Butylbenzene	NA		NA		NA		2.40E+02	5	NA		NA	NA	NA		3.90E+02	3.90E+02	5	NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/L and mg/kg)																										
GRO	Gasoline Range Organics (GRO)	NA		NA		1,300	4	1.82E+03	5	NA		1400	1400	300	4	3.06E+03	1.00E+05	5	NA		NA		NA		NA	
DRO	Diesel Range Organics (DRO)	NA		NA		1,500	4	1.82E+03	5	NA		10250	12500	250	4	3.06E+03	1.00E+05	5	NA		NA		NA		NA	
RRO	Residual Range Organics (RRO)	NA		NA		1,100	4	1.82E+03	5	NA		10000	22000	11000	4	3.06E+03	1.00E+05	5	NA		NA		NA		NA	
Dioxins and Furans																										
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA		NA		NA		4.50E-05	19	NA		NA	NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA	
67562394	1,2,3,4,6,7,8-HPCDF	NA		NA		NA		4.50E-05	19	NA		NA	NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA	
55673897	1,2,3,4,7,8,9-HPCDF	NA		NA		NA		4.50E-05	19	NA		NA	NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA	
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
70648269	1,2,3,4,7,8-HXCDF	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
72918219	1,2,3,7,8,9-HXCDF	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
57117416	1,2,3,7,8-Pentachlorodibenzofuran	NA		NA		NA		9.00E-06	19	NA		NA	NA	NA		7.80E-05	3.20E-04	19	NA		NA		NA		NA	
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
60851345	2,3,4,6,7,8-HXCDF	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
57117314	2,3,4,7,8-PECDF	NA		NA		NA		9.00E-06	19	NA		NA	NA	NA		7.80E-06	3.20E-05	19	NA		NA		NA		NA	
1746016	2,3,7,8-TCDD	NA		NA		0.00003	4	4.50E-07	5	NA		NA	NA	NA		3.90E-06	1.60E-05	5	NA		NA		NA		NA	
51207319	2,3,7,8-Tetrachlorodibenzofuran	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
132649	Dibenzofuran	NA		NA		73	4	2.43E+01	5	NA		203	NA	7.78	4	2.91E+02	3.13E+03	5	2	13	0.15	10	NA		NA	
3268879	OCDD	NA		NA		NA		4.50E-03	19	NA		NA	NA	NA		3.90E-02	1.60E-01	19	NA		NA		NA		NA	
39001020	OCDF	NA		NA		NA		4.50E-03	19	NA		NA	NA	NA		3.90E-02	1.60E-01	19	NA		NA		NA		NA	
37871004	HPCDD, total	NA		NA		NA		4.50E-05	19	NA		NA	NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA	
38998753	HPCDF, total	NA		NA		NA		4.50E-05	19	NA		NA	NA	NA		3.90E-04	1.60E-03	19	NA		NA		NA		NA	
34465468	HXCDD, total	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
55684941	HXCDF, total	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
36088229	PeCDD, total	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
30402154	PeCDF, total	NA		NA		NA		9.00E-06	19	NA		NA	NA	NA		7.80E-05	3.20E-04	19	NA		NA		NA		NA	
41903575	TCDD, total	NA		NA		NA		4.50E-07	19	NA		NA	NA	NA		3.90E-06	1.60E-05	19	NA		NA		NA		NA	
55722275	TCDF, total	NA		NA		NA		4.50E-06	19	NA		NA	NA	NA		3.90E-05	1.60E-04	19	NA		NA		NA		NA	
Pestcides																										
309002	Aldrin	NA		NA		0.05	4	4.30E-03	5	NA		0.5	24	1.6	4	2.90E-02	1.00E-01	5	NA		NA		NA		NA	
319846	alpha-BHC	NA		NA		0.1	4	1.10E-02	5	NA		1.3	5.5	0.0026	4	9.00E-02	3.60E-01	5	NA		NA		NA		NA	
5103719	alpha-Chlordane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
319857	beta-BHC	NA		NA		0.47	4	3.70E-02	5	NA		4.6	43	0.009	4	3.20E-01	1.30E+00	5	NA		NA		NA		NA	
12789036	Chlordane	NA		NA		2	4	NA	5	NA		24	510	3	4	NA	NA		0.0032	11	NA		0.0000043	14	0.000004	14
72548	4,4'-DDD	NA		NA		3.6	4	NA	5	NA		35	NA	47	4	NA	NA		0.0035	9	0.0012	9	0.000011	16	NA	
72559	4,4'-DDE	NA		NA		2.5	4	NA	5	NA		24	NA	150	4	NA	NA		0.0014	9	0.0021	9	NA		NA	
50293	4,4'-DDT	NA		NA		2.5	4	NA	5	NA		24	5300	88	4	NA	NA		0.0070	9	0.0019	9	0.000001	14	0.000001	14
319868	delta-BHC	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
Dichloprop	Dichloropropanol	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
60571	Dieldrin	NA		NA		0.05	4	4.20E-03	5	NA		0.5	8	0.015	4	3.00E-02	1.10E-01	5	0.0019	11	0.0950	12	0.000056	14	0.0000019	14
959988	Endosulfan I	NA		NA		NA		NA		110	6	610	NA	7	4	NA	NA		0.0029	13	NA		0.000056	14	0.0000087	14
33213659	Endosulfan II	NA		NA		NA		NA		110	6	610	NA	7	4	NA	NA		0.0140	13	NA		0.000056	14	0.0000087	14
1031078	Endosulfan Sulfate	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
72208	Endrin	NA		NA		2	4	1.10E+01	5	1	6	30	NA	0.3	4	1.80E+01	1.80E+02	5	0.0022	11	0.0035	12	0.000036	14	0.0000023	14
7421934	Endrin aldehyde	NA		NA		NA		NA		1	6	NA	NA	NA		NA	NA		NA		NA		NA		NA	
53494705	Endrin ketone	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	

Table 3-2 Summary of Screening Levels Used for Data Usability Evaluation
ARRC Anchorage Terminal Reserve, Anchorage, AK

		Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water		Human Health Screening Levels for Soil and Sediment							Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water			
CAS No.	Analyte	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference
57749	gamma Chlordane	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		0.0045	9	0.00026	9	0.0000043	15	0.000004	15
58899	gamma-BHC (Lindane)	NA		NA		0.2	4	5.20E-02	5	NA		6.4	NA	0.003	4	4.40E-01	1.70E+00	5	0.00094	9	0.00032	9	0.00008	13	NA	
76448	Heptachlor	NA		NA		0.4	4	1.50E-02	5	NA		2	0.8	8	4	1.10E-01	3.80E-01	5	NA		NA		0.0000038	14	0.0000036	14
1024573	Heptachlor epoxide	NA		NA		0.2	4	7.40E-03	5	NA		0.9	33	0.2	4	5.30E-02	1.90E-01	5	0.0006	9	NA		0.0000038	14	0.0000036	14
72435	Methoxychlor	NA		NA		40	4	1.80E+02	5	NA		510	NA	52	4	3.10E+02	3.10E+03	5	0.0190	13	NA		0.00003	14	0.00003	14
8001352	Toxaphene	NA		NA		3	4	6.10E-02	5	NA		8	620	10	4	4.40E-01	1.60E+00	5	2.80E-02	13	NA		0.0002	14	0.0000002	14
Inorganics																										
7429905	Aluminum	NA		NA		NA		3.60E+04	5	NA		NA	NA	NA		7.60E+04	1.00E+05	5	25500	9	NA	9	0.087	14	NA	
7664417	Ammonia (as N)	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		0.000035	14
7440360	Antimony	6	3	0.01	3	6	4	1.50E+01	5	14	6	41	NA	3.6	4	3.10E+01	4.10E+02	5	0.16	9	NA	9	0.03	16	NA	
7440382	Arsenic	10	3	0.01	3	50	4	4.5E-02	5	NA		5.5	NA	2	4	3.9E-01	1.6E+00	5	5.9	9	7.24	9	0.15	14	0.036	14
7440393	Barium	2000	3	2	3	2000	4	2.60E+03	5	NA		7100	NA	1100	4	5.40E+03	6.70E+04	5	NA		NA		0.004	16	NA	
7440417	Beryllium	4	3	0.07	3	4	4	3.60E+00	5	NA		200	NA	42	4	6.10E+00	6.20E+01	5	NA		NA		0.00066	16	NA	
7440439	Cadmium	5	3	0.02	3	5	4	1.80E+01	5	NA		100	NA	5	4	3.70E+01	4.50E+02	5	0.596	9	0.676	9	0.00025	15	0.0088	14
7440702	Calcium	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
7440473	Chromium	100	3	0.1	3	100	4	NA		NA		300	NA	26	4	2.1E+02	4.5E+02	5	37.3	9	52.3	9	0.011*used CrVI	14	0.050*used CrVI	14
7440484	Cobalt	NA		NA		NA		7.30E+02	5	NA		NA	NA	NA		9.00E+02	1.90E+03	5	NA		NA		0.003	13	NA	
7440508	Copper	1.3E+00		NA		1300	4	1.50E+03	5	NA		4060	NA	7000	4	3.10E+03	4.10E+04	5	35.7	9	18.7	9	0.009	15	0.031	14
7439896	Iron	NA		NA		NA		1.10E+04	5	NA		NA	NA	NA		2.30E+04	1.00E+05	5	NA		NA		1	14	NA	
7439921	Lead	15	3	NA		15	4	NA		NA		400	400	NA	4	4.00E+02	7.50E+02	5	35	9	30.24	9	0.0025	15	0.0081	14
7439954	Magnesium	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
7439965	Manganese	NA		NA		NA		8.80E+02	5	50	6	NA	NA	NA		1.80E+03	1.90E+04	5	630	9	NA		0.08	13	NA	
7439976	Mercury	2	3	0.01	3	2	4	NA		0.050	6	NA	18	1.4	4	0.00E+00	0.00E+00	5	0.174	9	0.13	9	0.00077	14	0.00094	14
7440020	Nickel	1.0E-01		0.7	3	100	4	7.30E+02	5	610	6	2000	NA	87	4	1.60E+03	2.00E+04	5	18	9	15.9	9	0.052	15	0.0082	15
NO3/NO2	Nitrate/Nitrite	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
7440097	Potassium	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
7782492	Selenium	50	3	0.2	3	50	4	1.80E+02	5	170	6	510	NA	3.5	4	3.90E+02	5.10E+03	5	NA		NA		0.005	14	0.071	14
7440224	Silver	1.0E-01	3	NA		180	4	1.80E+02	5	NA		510	NA	21	4	3.90E+02	5.10E+03	5	NA		0.73	9	0.00036	16	NA	
7440235	Sodium	NA		NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
14808798	Sulfate	250000	3	NA		NA		NA		NA		NA	NA	NA		NA	NA		NA		NA		NA		NA	
7440280	Thallium	NA		NA		2	4	2.40E+00	5	2	6	NA	NA	NA		5.20E+00	6.70E+01	5	NA		NA		0.012	16	NA	
7440622	Vanadium	NA		NA		260	4	2.60E+02	5	NA		710	NA	3400	4	5.50E+02	7.20E+03	5	NA		NA		0.019	13	NA	
7440666	Zinc	NA		10	3	11000	4	1.10E+04	5	9100	6	30000	NA	9100	4	2.30E+04	1.00E+05	5	123.1	9	124	9	0.12	15	81	15
PCBs																										
12674112	Aroclor 1016*	5.0E-04	3	NA		0.5	4	9.60E-01	5	NA		1	1	NA	4	3.90E+00	2.10E+01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
11104282	Aroclor 1221*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
11141165	Aroclor 1232*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
53469219	Aroclor 1242*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
12672296	Aroclor 1248*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
11097691	Aroclor 1254*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
11096825	Aroclor 1260*	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14
1336363	PCBs, total	5.0E-04	3	NA		0.5	4	3.40E-02	5	NA		1	1	NA	4	2.20E-01	7.40E-01	5	0.0341	9	0.02155	9	0.000014	14	0.00003	14

Notes:
NA = not available
ADEC = Alaska Department of Environmental Conservation
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram
U.S. EPA = United States Environmental Protection Agency
PRG = preliminary remediation goal
* Surrogate compound was used.

References:

3) U.S. EPA, 2002. 2002 Edition of the Drinking Water Standards and Health Advisories. MCLs and DWELs. EPA 822R02038. Office of Water. Summer 2002.
4) ADEC, 2003. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control. State of Alaska Department of Environmental Conservation. Table B1 and C in 18 AAC 75.345(b) Soil and Groundwater Cleanup Levels.
5) US. EPA, 2002. Region IX Preliminary Remediation Goals (PRGs). Available at U.S. EPA Region IX website:
www.epa.gov/region 09/waste/sfund/prg/intro.htm October, 2002.
6) ADEC, 2003. Alaska Water Quality Criteria Manual For Toxic and Other Deleterious Organic and Inorganic Substances. State Of Alaska, Department Of Environmental Conservation. May 2003.
7) U.S. EPA, 2003. Human Health Fact Sheet: Revised National Recommended Water Quality Criteria. EPA822F03012. December 2003.
8) U.S. EPA, 2002. National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix. EPA822R02012. Office of Water. November 2002.
9) NOAA Screening Quick Reference Tables (SQuiRTs). SQG TEL Sediment Quality Guidelines were used as recommended by ADEC. The TELHA28 value was used in the absence of a TEL value for freshwater.These values can be referenced at http://response.restortaion.noaa.gov/index.html.
10) Washington Ecology (WA Ecology).2003. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173-201A. Washington Administrative Code (WAC). Department of Ecology. July 1.Concentrations reported in ug/g organic caron and were converted based on 1% organic carbon.
11) McDonald, D.D., C.G. Ingersoll, and T.A. Berger.2000. Development and Evaluation of consensus based Sediment Quality Guidelines for Freshwater ecosystems. *Archives of Environmental Contamination and Toxicology* 39:20-31.
12) US EPA.1996. Ecotox Thresholds. ECO Update, Intermittent Bulletin Volume 3 Number 2. Office of solid waste and Emergency Response. Publication 9345.0-12FSI,EPA 540/F-95/038,PB95-963324.January

Table 3-2 Summary of Screening Levels Used for Data Usability Evaluation
ARRC Anchorage Terminal Reserve, Anchorage, AK

		Human Health Screening Levels for Groundwater								Human Health Screening Levels for Surface Water		Human Health Screening Levels for Soil and Sediment							Ecological Screening Levels for Sediment				Ecological Screening Levels for Surface Water			
CAS No.	Analyte	Maximum Contaminant Level	Reference	Federal Drinking Water Equivalent	Reference	ADEC Screening Level	Reference	U.S. EPA Region IX Tap Water PRG	Reference	Water + Aquatic Organisms	Reference	ADEC "Under 40 inch Zone" Method 2 Screening Level for Ingestion	ADEC "Under 40 inch Zone" Method 2 Screening Level for Inhalation	ADEC "Under 40 inch Zone" Method 2 Screening Level for Migration to Groundwater	Reference	U.S. EPA Region IX Residential Soil PRG	U.S. EPA Region IX Industrial Soil PRG	Reference	Freshwater TEL	Reference	Marine TEL	Reference	Freshwater	Reference	Marine	Reference

13) US EPA Office of Solid Waste and Emergency Response (OSWER) Sediment Quality Benchmark based on EPA Tier II Chronic Value (Region IV 1996), assuming 1% total organic carbon.
14) Alaksa Department of Environmental Conservation, Alaska Water Quality Criteria Manual For Toxic and Other Deletrious Organic and Inorganic Substances, May 15, 2003
15) US EPA 1999,National Recommended Water Qualtiy Criteria chronic surface water values
16) Oak Ridge National Laboratory, Tsao and Suter. 1996.Tier 2 Secondary Chronic Values.
17) Washington Department of Ecology, 2001,Terrestrial Ecological Evaluation Process, http://www.ecy.wa.gov/
18) USEPA 2000 (The EcoSSL development document). In the absence of Eco SSL sources, data compiled in Efroymson et al. (1997a) was used.

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 2	2-Butanone	78-93-3	3	Yes	0	No	0.00					60	No	No	No	No	DL Missing
Area 2	2-Methylnaphthalene	91-57-6	3	Yes	0	No	0.00					60.9	No	No	No	No	DL Missing
Area 2	Acetone	67-64-1	3	Yes	2	Yes	66.67	0.01	0.03			10	No	No	No	No	DL Missing
Area 2	Anthracene	120-12-7	3	Yes	1	Yes	33.33	0.32	0.32			4300	No	No	No	No	DL Missing
Area 2	Benzene	71-43-2	3	Yes	1	Yes	33.33	0.006	0.006			0.02	No	No	No	No	DL Missing
Area 2	bis(2-Ethylhexyl)phthalate	117-81-7	3	Yes	3	Yes	100.00	0.02	0.17			590	No	No	No	No	DL Missing
Area 2	Bunker Oil	BUNKER	3	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Carbon disulfide	75-15-0	3	Yes	0	No	0.00					17	No	No	No	No	DL Missing
Area 2	Chrysene	218-01-9	3	Yes	1	Yes	33.33	0.05	0.05			620	No	No	No	No	DL Missing
Area 2	Diesel Range Hydrocarbons	DRO	4	Yes	1	Yes	25.00	185	185			250	No	No	No	No	DL Missing
Area 2	Di-n-butylphthalate	84-74-2	3	Yes	0	No	0.00					1700	No	No	No	No	DL Missing
Area 2	Ethylbenzene	100-41-4	3	Yes	0	No	0.00					5.5	No	No	No	No	DL Missing
Area 2	Fluoranthene	206-44-0	3	Yes	0	No	0.00					2100	No	No	No	No	DL Missing
Area 2	Fluorene	86-73-7	3	Yes	0	No	0.00					270	No	No	No	No	DL Missing
Area 2	Gasoline Range Hydrocarbons	GRO	3	Yes	0	No	0.00					300	No	No	No	No	DL Missing
Area 2	Jet Fuel	JET	3	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Kerosene	8008-20-6	3	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Methylene chloride	75-09-2	3	Yes	2	Yes	66.67	0.009	0.01			0.015	No	No	No	No	DL Missing
Area 2	Naphthalene	91-20-3	3	Yes	0	No	0.00					21	No	No	No	No	DL Missing
Area 2	PCBs, total	PCBs	3	Yes	3	Yes	100.00	0.03	0.28			1	No	No	No	No	DL Missing
Area 2	Phenanthrene	85-01-8	3	Yes	1	Yes	33.33	0.11	0.11			4300	No	No	No	No	DL Missing
Area 2	Pyrene	129-00-0	3	Yes	1	Yes	33.33	0.11	0.11			1500	No	No	No	No	DL Missing
Area 2	Tetrachloroethene	127-18-4	3	Yes	0	No	0.00					0.03	No	No	No	No	DL Missing
Area 2	Toluene	108-88-3	3	Yes	0	No	0.00					5.4	No	No	No	No	DL Missing
Area 2	Total BTEX	BTEX	3	Yes	1	Yes	33.33	0.006	0.006				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Trichloroethene	79-01-6	3	Yes	0	No	0.00					0.027	No	No	No	No	DL Missing
Area 2	Xylene, total	1330-20-7	3	Yes	0	No	0.00					78	No	No	No	No	DL Missing
Area 3	2-Methoxyethyl Acetate	110-49-6	1	Yes	1	Yes	100.00	4.3	4.3			120	No	No	No	No	DL Missing
Area 3	Ammonia (as N)	7664-41-7	12	No	12	Yes	100.00	8	11				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Benzene	71-43-2	18	No	2	Yes	11.11	590	590	0.01	11	0.02	No	Yes	Yes	Yes	Yes
Area 3	Diesel Range Hydrocarbons	DRO	44	No	39	Yes	88.64	9.9	14400	9.9	212	250	No	No	No	No	No
Area 3	Ethylbenzene	100-41-4	18	No	4	Yes	22.22	12	340	0.05	0.05	5.5	No	No	No	No	No
Area 3	Gasoline Range Hydrocarbons	GRO	19	No	5	Yes	26.32	230	13000	2.89	2.98	300	No	No	No	No	No
Area 3	PCBs, total	PCBs	11	No	4	Yes	36.36	0.042	0.083			1	No	No	No	No	DL Missing
Area 3	Percent Solids	SOLID	6	Yes	6	Yes	100.00	91.9	97.7				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Polynuclear Aromatic Hydrocarbons	PAH	11	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Toluene	108-88-3	18	No	4	Yes	22.22	58	2100	0.05	0.05	5.4	No	No	No	No	No
Area 3	Total BTEX	BTEX	2	Yes	2	Yes	100.00	540	4730				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Total Petroleum Hydrocarbons	TPH	13	No	11	Yes	84.62	49	3430				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Total Solids	TSO	14	No	14	Yes	100.00	72.8	95.1				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Xylene, total	1330-20-7	19	No	5	Yes	26.32	4.8	1700	0.05	0.05	78	No	No	No	No	No
Area 4	1,1,1,2-Tetrachloroethane	630-20-6	3	Yes	0	No	0.00			0.0083	0.03	3.2	No	No	No	No	No
Area 4	1,1,1-Trichloroethane	71-55-6	5	Yes	0	No	0.00			0.0071	0.05	1	No	No	No	No	No
Area 4	1,1,2,2-Tetrachloroethane	79-34-5	5	Yes	0	No	0.00			0.011	0.05	0.017	No	Yes	No	No	No
Area 4	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	2	Yes	0	No	0.00			0.0071	0.011		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,1,2-Trichloroethane	79-00-5	3	Yes	0	No	0.00			0.01	0.02	0.017	No	Yes	No	No	No
Area 4	1,1-Dichloroethane	75-34-3	5	Yes	0	No	0.00			0.0071	0.05	12	No	No	No	No	No
Area 4	1,1-Dichloroethene	75-35-4	5	Yes	0	No	0.00			0.014	0.05	0.03	No	Yes	No	No	No
Area 4	1,1-Dichloropropene	563-58-6	3	Yes	0	No	0.00			0.0071	0.011		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,2,3-Trichlorobenzene	87-61-6	3	Yes	0	No	0.00			0.03	0.073		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,2,3-Trichloropropane	96-18-4	3	Yes	0	No	0.00			0.014	0.03	0.005	Yes	Yes	No	No	No
Area 4	1,2,4-Trichlorobenzene	120-82-1	3	Yes	0	No	0.00			0.011	0.03	2	No	No	No	No	No
Area 4	1,2,4-Trimethylbenzene	95-63-6	3	Yes	0	No	0.00			0.0057	0.03	52	No	No	No	No	No

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 4	1,2-Dibromo-3-chloropropane	96-12-8	3	Yes	0	No	0.00			0.071	0.14	0.45	No	No	No	No	No
Area 4	1,2-Dibromoethane	106-93-4	3	Yes	0	No	0.00			0.013	0.03	0.0000306	Yes	Yes	Yes	Yes	No
Area 4	1,2-Dichlorobenzene	95-50-1	5	Yes	0	No	0.00			0.0096	0.05	7	No	No	No	No	No
Area 4	1,2-Dichloroethane	107-06-2	5	Yes	0	No	0.00			0.0078	0.05	0.015	No	Yes	No	No	No
Area 4	1,2-Dichloropropane	78-87-5	5	Yes	0	No	0.00			0.0092	0.05	0.017	No	Yes	No	No	No
Area 4	1,3,5-Trimethylbenzene	108-67-8	3	Yes	0	No	0.00			0.0073	0.03	21	No	No	No	No	No
Area 4	1,3-Dichlorobenzene	541-73-1	5	Yes	0	No	0.00			0.007	0.05	12.1	No	No	No	No	No
Area 4	1,3-Dichloropropane	142-28-9	3	Yes	0	No	0.00			0.0071	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,4-Dichlorobenzene	106-46-7	5	Yes	0	No	0.00			0.0079	0.05	0.8	No	No	No	No	No
Area 4	2,2-Dichloropropane	594-20-7	3	Yes	0	No	0.00			0.012	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	2-Butanone	78-93-3	3	Yes	0	No	0.00			0.071	0.35	60	No	No	No	No	No
Area 4	2-Chloroethylvinyl ether	110-75-8	1	Yes	0	No	0.00			0.14	0.14		SL NA	SL NA	SL NA	SL NA	No
Area 4	2-Chlorotoluene	95-49-8	3	Yes	0	No	0.00			0.0083	0.03	160	No	No	No	No	No
Area 4	2-Hexanone	591-78-6	3	Yes	0	No	0.00			0.0072	0.35		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Chlorotoluene	106-43-4	3	Yes	0	No	0.00			0.0071	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Isopropyl toluene	99-87-6	3	Yes	0	No	0.00			0.0094	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Methyl-2-pentanone	108-10-1	3	Yes	0	No	0.00			0.02	0.35	786.53	No	No	No	No	No
Area 4	Acenaphthene	83-32-9	6	Yes	2	Yes	33.33	0.18	0.187	0.17	2.5	210	No	No	No	No	No
Area 4	Acenaphthylene	208-96-8	4	Yes	0	No	0.00			0.17	2.5	210	No	No	No	No	No
Area 4	Acetone	67-64-1	2	Yes	0	No	0.00			0.14	0.22	10	No	No	No	No	No
Area 4	Anthracene	120-12-7	6	Yes	2	Yes	33.33	0.25	0.256	0.17	2.5	4300	No	No	No	No	No
Area 4	Antimony	7440-36-0	4	Yes	4	Yes	100.00	1.23	1.32	0.17	0.17	3.6	No	No	No	No	No
Area 4	Aroclor 1016	12674-11-2	2	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1221	11104-28-2	2	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1232	11141-16-5	3	Yes	3	Yes	100.00	0.42	0.84	0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1242	53469-21-9	2	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1248	12672-29-6	2	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1254	11097-69-1	2	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1260	11096-82-5	3	Yes	3	Yes	100.00	0.27	0.5	0.03	0.03	1	No	No	No	No	No
Area 4	Arsenic	7440-38-2	5	Yes	5	Yes	100.00	21.5	24.7	1.76	1.76	2	No	No	No	No	No
Area 4	Benzene	71-43-2	31	No	6	Yes	19.35	0.18	0.2	0.0093	0.07	0.02	No	Yes	No	No	No
Area 4	Benzo(a)anthracene	56-55-3	6	Yes	4	Yes	66.67	1.02	1.13	0.17	2.5	6	No	No	No	No	No
Area 4	Benzo(a)pyrene	50-32-8	6	Yes	4	Yes	66.67	0.83	1.08	0.17	2.5	1	No	Yes	No	No	No
Area 4	Benzo(b)fluoranthene	205-99-2	6	Yes	4	Yes	66.67	1.26	1.91	0.17	2.5	11	No	No	No	No	No
Area 4	Benzo(g,h,i)perylene	191-24-2	6	Yes	2	Yes	33.33	0.54	0.548	0.17	2.5	1500	No	No	No	No	No
Area 4	Benzo(k)fluoranthene	207-08-9	6	Yes	2	Yes	33.33	0.31	0.315	0.17	2.5	110	No	No	No	No	No
Area 4	Beryllium	7440-41-7	4	Yes	4	Yes	100.00	0.45	0.47	0.17	0.17	42	No	No	No	No	No
Area 4	Bromobenzene	108-86-1	3	Yes	0	No	0.00			0.0071	0.03	27	No	No	No	No	No
Area 4	Bromochloromethane	74-97-5	3	Yes	0	No	0.00			0.03	0.046		SL NA	SL NA	SL NA	SL NA	No
Area 4	Bromodichloromethane	75-27-4	5	Yes	0	No	0.00			0.007	0.05	0.82	No	No	No	No	No
Area 4	Bromoform	75-25-2	5	Yes	0	No	0.00			0.0099	0.05	0.38	No	No	No	No	No
Area 4	Bromomethane	74-83-9	3	Yes	0	No	0.00			0.032	0.14	3.9	No	No	No	No	No
Area 4	Cadmium	7440-43-9	5	Yes	5	Yes	100.00	4.05	4.88	0.35	0.35	5	No	No	No	No	No
Area 4	Carbon disulfide	75-15-0	3	Yes	0	No	0.00			0.012	0.14	17	No	No	No	No	No
Area 4	Carbon tetrachloride	56-23-5	5	Yes	0	No	0.00			0.0076	0.05	0.03	No	Yes	No	No	No
Area 4	Chlorobenzene	108-90-7	5	Yes	0	No	0.00			0.0086	0.05	0.6	No	No	No	No	No
Area 4	Chloroethane	75-00-3	3	Yes	0	No	0.00			0.049	0.14	3.03	No	No	No	No	No
Area 4	Chloroform	67-66-3	5	Yes	0	No	0.00			0.0092	0.05	0.34	No	No	No	No	No
Area 4	Chloromethane	74-87-3	3	Yes	0	No	0.00			0.015	0.03	1.23	No	No	No	No	No
Area 4	Chromium	7440-47-3	5	Yes	5	Yes	100.00	61.9	65.9	17.6	35.2	26	No	Yes	No	No	No
Area 4	Chrysene	218-01-9	6	Yes	4	Yes	66.67	1	1.17	0.17	2.5	620	No	No	No	No	No
Area 4	cis-1,2-Dichloroethene	156-59-2	5	Yes	0	No	0.00			0.015	0.05	0.2	No	No	No	No	No
Area 4	cis-1,3-Dichloropropene	10061-01-5	3	Yes	0	No	0.00			0.0084	0.02	0.02	No	No	No	No	No

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 4	Copper	7440-50-8	4	Yes	4	Yes	100.00	272	2250	4.18	4.37	4060	No	No	No	No	No
Area 4	Dibenz(a,h)anthracene	53-70-3	6	Yes	0	No	0.00			0.17	2.5	1	No	Yes	No	No	No
Area 4	Dibromochloromethane	124-48-1	5	Yes	0	No	0.00			0.0071	0.05	1.11	No	No	No	No	No
Area 4	Dibromomethane	74-95-3	3	Yes	0	No	0.00			0.019	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	Dichlorodifluoromethane	75-71-8	3	Yes	0	No	0.00			0.008	0.03	60	No	No	No	No	No
Area 4	Diesel Range Hydrocarbons	DRO	31	No	30	Yes	96.77	0.36	29900	10	658	250	No	Yes	No	No	No
Area 4	Ethylbenzene	100-41-4	31	No	11	Yes	35.48	0.08	0.26	0.0077	0.07	5.5	No	No	No	No	No
Area 4	Fluoranthene	206-44-0	6	Yes	4	Yes	66.67	2.22	2.61	0.17	2.5	2100	No	No	No	No	No
Area 4	Fluorene	86-73-7	6	Yes	2	Yes	33.33	0.25	0.251	0.17	2.5	270	No	No	No	No	No
Area 4	Gasoline Range Hydrocarbons	GRO	33	No	17	Yes	51.52	1.58	8.96	1.23	5	300	No	No	No	No	No
Area 4	Hexachlorobutadiene	87-68-3	3	Yes	0	No	0.00			0.02	0.031	8	No	No	No	No	No
Area 4	Indeno(1,2,3-cd)pyrene	193-39-5	6	Yes	2	Yes	33.33	0.48	0.482	0.17	2.5	11	No	No	No	No	No
Area 4	Isobutyl Acetate	110-19-0	2	Yes	0	No	0.00			0.012	0.019		SL NA	SL NA	SL NA	SL NA	No
Area 4	Isopropylbenzene	98-82-8	3	Yes	0	No	0.00			0.0094	0.03	227	No	No	No	No	No
Area 4	Lead	7439-92-1	5	Yes	5	Yes	100.00	322	553	17.6	35.2	400	No	No	No	No	No
Area 4	m,p-Xylene	136777-61-2	10	No	7	Yes	70.00	0.05	0.87	0.018	0.07		SL NA	SL NA	SL NA	SL NA	No
Area 4	Magnesium	7439-95-4	4	Yes	4	Yes	100.00	6030	6790	0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 4	Mercury	7439-97-6	5	Yes	5	Yes	100.00	27.8	31.2	1.62	1.74	1.4	Yes	Yes	No	No	No
Area 4	Methyl Iodide	74-88-4	2	Yes	1	Yes	50.00	0.19	0.19	0.063	0.098		SL NA	SL NA	SL NA	SL NA	No
Area 4	Methyl tert-Butyl Ether	1634-04-4	2	Yes	0	No	0.00			0.0094	0.015	61.54	No	No	No	No	No
Area 4	Methylene chloride	75-09-2	5	Yes	2	Yes	40.00	0.039	0.074	0.035	0.14	0.015	Yes	Yes	No	No	No
Area 4	Naphthalene	91-20-3	9	Yes	0	No	0.00			0.03	2.5	21	No	No	No	No	No
Area 4	n-Butylbenzene	104-51-8	3	Yes	0	No	0.00			0.0088	0.03	240	No	No	No	No	No
Area 4	Nickel	7440-02-0	2	Yes	2	Yes	100.00	78.8	82.6	8.37	8.74	87	No	No	No	No	No
Area 4	n-Propylbenzene	103-65-1	3	Yes	0	No	0.00			0.0076	0.03	240	No	No	No	No	No
Area 4	o-Xylene	95-47-6	10	No	7	Yes	70.00	0.04	1.4	0.0096	0.07		SL NA	SL NA	SL NA	SL NA	No
Area 4	PCBs, total	PCBs	4	Yes	2	Yes	50.00	1.4	2.04	0.03	0.6	1	No	No	No	No	No
Area 4	Percent Moisture	MOIST	2	Yes	2	Yes	100.00	33	33	0.03	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 4	Phenanthrene	85-01-8	6	Yes	6	Yes	100.00	0.72	3	0.17	2.5	4300	No	No	No	No	No
Area 4	Polynuclear Aromatic Hydrocarbons	PAH	2	Yes	0	No	0.00			0.17	0.89		SL NA	SL NA	SL NA	SL NA	No
Area 4	Pyrene	129-00-0	6	Yes	4	Yes	66.67	2.66	2.73	0.17	2.5	1500	No	No	No	No	No
Area 4	Residual Range Organics	RRO	22	No	21	Yes	95.45	920	12900	58	1230	10000	No	No	No	No	No
Area 4	sec-Butylbenzene	135-98-8	3	Yes	0	No	0.00			0.0084	0.03	220	No	No	No	No	No
Area 4	Selenium	7782-49-2	4	Yes	4	Yes	100.00	0.31	0.44	0.17	0.17	3.5	No	No	No	No	No
Area 4	Silver	7440-22-4	4	Yes	4	Yes	100.00	0.18	0.32	0.03	0.03	21	No	No	No	No	No
Area 4	Styrene	100-42-5	3	Yes	0	No	0.00			0.0073	0.03	1.3	No	No	No	No	No
Area 4	tert-Butylbenzene	98-06-6	3	Yes	0	No	0.00			0.0081	0.03	390	No	No	No	No	No
Area 4	Tetrachloroethene	127-18-4	5	Yes	0	No	0.00			0.012	0.05	0.03	No	Yes	No	No	No
Area 4	Thallium	7440-28-0	4	Yes	0	No	0.00			0.17	0.17	5.2	No	No	No	No	No
Area 4	Toluene	108-88-3	31	No	20	Yes	64.52	0.014	1.16	0.0084	0.07	5.4	No	No	No	No	No
Area 4	Total BTEX	BTEX	6	Yes	6	Yes	100.00	0.16	3.32				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 4	Total Solids	TSO	15	No	15	Yes	100.00	76.2	93.9				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 4	trans-1,2-Dichloroethene	156-60-5	5	Yes	0	No	0.00			0.025	0.51	0.4	No	Yes	No	No	No
Area 4	trans-1,3-Dichloropropene	10061-02-6	3	Yes	0	No	0.00			0.0071	0.03	0.02	No	Yes	No	No	No
Area 4	Trichloroethene	79-01-6	5	Yes	0	No	0.00			0.0089	0.05	0.027	No	Yes	No	No	No
Area 4	Trichlorofluoromethane	75-69-4	3	Yes	1	Yes	33.33	0.22	0.22	0.027	0.042	385.82	No	No	No	No	No
Area 4	Vinyl chloride	75-01-4	3	Yes	0	No	0.00			0.0071	0.011	0.009	No	Yes	No	No	No
Area 4	Xylene, total	1330-20-7	20	No	13	Yes	65.00	0.08	1.68	0.05	0.05	78	No	No	No	No	No
Area 4	Zinc	7440-66-6	4	Yes	4	Yes	100.00	1660	1790	8.37	8.74	9100	No	No	No	No	No
Area 5	1,1,1-Trichloroethane	71-55-6	11	No	0	No	0.00			0.01	0.05	1	No	No	No	No	No
Area 5	1,1,2,2-Tetrachloroethane	79-34-5	11	No	0	No	0.00			0.02	0.08	0.017	Yes	Yes	No	No	No
Area 5	1,1,2-Trichloroethane	79-00-5	11	No	0	No	0.00			0.01	0.05	0.017	No	Yes	No	No	No
Area 5	1,1-Dichloroethane	75-34-3	11	No	0	No	0.00			0.01	0.05	12	No	No	No	No	No

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	1,1-Dichloroethene	75-35-4	11	No	0	No	0.00			0.01	0.24	0.03	No	Yes	No	No	No
Area 5	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	6	Yes	6	Yes	100.00	1.50E-06	3.30E-04			3.90E-04	No	No	No	No	DL Missing
Area 5	1,2,3,4,6,7,8-HPCDF	67562-39-4	5	Yes	4	Yes	80.00	1.00E-05	2.70E-04	5.50E-06	5.50E-06	3.90E-04	No	No	No	No	No
Area 5	1,2,3,4,7,8,9-HPCDF	55673-89-7	5	Yes	2	Yes	40.00	7.60E-06	1.00E-05	1.20E-06	1.00E-05	3.90E-04	No	No	No	No	No
Area 5	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5	Yes	1	Yes	20.00	3.30E-06	3.30E-06	9.10E-07	8.10E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,4,7,8-HXCDF	70648-26-9	5	Yes	1	Yes	20.00	4.20E-06	4.20E-06	7.60E-07	4.20E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	5	Yes	3	Yes	60.00	2.30E-06	2.00E-05	3.40E-06	4.50E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5	Yes	2	Yes	40.00	1.30E-06	3.40E-06	4.30E-06	7.20E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8,9-HxCDF	72918-21-9	5	Yes	1	Yes	20.00	1.20E-06	1.20E-06	4.80E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5	Yes	1	Yes	20.00	1.50E-06	1.50E-06	9.20E-07	9.30E-06	7.80E-05	No	No	No	No	No
Area 5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5	Yes	1	Yes	20.00	1.90E-06	1.90E-06	6.10E-07	6.40E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,4-Trichlorobenzene	120-82-1	5	Yes	0	No	0.00			0.3	30	2	No	Yes	Yes	No	No
Area 5	1,2-Dichlorobenzene	95-50-1	16	No	0	No	0.00			0.01	30	7	No	Yes	No	No	Yes
Area 5	1,2-Dichloroethane	107-06-2	11	No	0	No	0.00			0.01	0.05	0.015	No	Yes	No	No	No
Area 5	1,2-Dichloropropane	78-87-5	11	No	0	No	0.00			0.01	0.06	0.017	No	Yes	No	No	No
Area 5	1,3-Dichlorobenzene	541-73-1	16	No	0	No	0.00			0.01	30	12.1	No	Yes	No	No	Yes
Area 5	1,4-Dichlorobenzene	106-46-7	16	No	0	No	0.00			0.01	30	0.8	No	Yes	Yes	No	Yes
Area 5	2,3,4,6,7,8-HXCDF	60851-34-5	5	Yes	2	Yes	40.00	1.60E-06	6.30E-06	2.70E-06	4.10E-06	3.90E-05	No	No	No	No	No
Area 5	2,3,4,7,8-PECDF	57117-31-4	5	Yes	2	Yes	40.00	1.60E-06	5.70E-06	3.80E-06	9.40E-06	7.80E-06	No	Yes	No	No	No
Area 5	2,3,7,8-TCDD	1746-01-6	5	Yes	1	Yes	20.00	3.40E-07	3.40E-07	5.80E-07	3.70E-06	3.90E-06	No	No	No	No	No
Area 5	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5	Yes	1	Yes	20.00	3.80E-06	3.80E-06	6.80E-07	3.10E-06	3.90E-05	No	No	No	No	No
Area 5	2,4,5-Trichlorophenol	95-95-4	5	Yes	0	No	0.00			0.3	30	90	No	No	No	No	No
Area 5	2,4,6-Trichlorophenol	88-06-2	5	Yes	0	No	0.00			0.3	30	0.6	No	Yes	Yes	No	No
Area 5	2,4-Dichlorophenol	120-83-2	5	Yes	0	No	0.00			0.3	30	0.45	No	Yes	Yes	No	No
Area 5	2,4-Dimethylphenol	105-67-9	5	Yes	0	No	0.00			0.3	30	4	No	Yes	No	No	No
Area 5	2,4-Dinitrophenol	51-28-5	5	Yes	0	No	0.00			2	200	0.2	Yes	Yes	Yes	Yes	No
Area 5	2,4-Dinitrotoluene	121-14-2	5	Yes	0	No	0.00			0.3	30	0.005	Yes	Yes	Yes	Yes	No
Area 5	2,6-Dinitrotoluene	606-20-2	5	Yes	0	No	0.00			0.3	30	0.0044	Yes	Yes	Yes	Yes	No
Area 5	2-Chloroethylvinyl ether	110-75-8	11	No	0	No	0.00			0.12	0.5		SL NA	SL NA	SL NA	SL NA	No
Area 5	2-Chloronaphthalene	91-58-7	5	Yes	0	No	0.00			0.3	30	70	No	No	No	No	No
Area 5	2-Chlorophenol	95-57-8	5	Yes	0	No	0.00			0.3	30	1.4	No	Yes	Yes	No	No
Area 5	2-Methylnaphthalene	91-57-6	5	Yes	1	Yes	20.00	0.59	0.59	0.3	30	60.9	No	No	No	No	No
Area 5	2-Methylphenol	95-48-7	5	Yes	0	No	0.00			0.3	30	7	No	Yes	No	No	No
Area 5	2-Nitroaniline	88-74-4	5	Yes	0	No	0.00			2	200	1.75	Yes	Yes	Yes	Yes	No
Area 5	2-Nitrophenol	88-75-5	5	Yes	0	No	0.00			0.3	30		SL NA	SL NA	SL NA	SL NA	No
Area 5	3,3'-Dichlorobenzidine	91-94-1	5	Yes	0	No	0.00			0.3	30	0.02	Yes	Yes	Yes	Yes	No
Area 5	3-Methylphenol	108-39-4	5	Yes	0	No	0.00			0.3	30	3100	No	No	No	No	No
Area 5	3-Nitroaniline	99-09-2	5	Yes	0	No	0.00			2	200		SL NA	SL NA	SL NA	SL NA	No
Area 5	4,6-Dinitro-2-methylphenol	534-52-1	5	Yes	0	No	0.00			2	200		SL NA	SL NA	SL NA	SL NA	No
Area 5	4-Bromophenyl-phenylether	101-55-3	5	Yes	0	No	0.00			0.3	30		SL NA	SL NA	SL NA	SL NA	No
Area 5	4-Chloro-3-methylphenol	59-50-7	5	Yes	0	No	0.00			0.3	30		SL NA	SL NA	SL NA	SL NA	No
Area 5	4-Chloroaniline	106-47-8	5	Yes	0	No	0.00			0.3	30	0.5	No	Yes	Yes	No	No
Area 5	4-Chlorophenyl-phenylether	7005-72-3	5	Yes	0	No	0.00			0.3	30		SL NA	SL NA	SL NA	SL NA	No
Area 5	4-Methylphenol	106-44-5	5	Yes	0	No	0.00			0.3	30	305.52	No	No	No	No	No
Area 5	4-Nitroaniline	100-01-6	5	Yes	0	No	0.00			2	200		SL NA	SL NA	SL NA	SL NA	No
Area 5	4-Nitrophenol	100-02-7	5	Yes	0	No	0.00			2	200		SL NA	SL NA	SL NA	SL NA	No
Area 5	Acenaphthene	83-32-9	5	Yes	0	No	0.00			0.3	30	210	No	No	No	No	No
Area 5	Acenaphthylene	208-96-8	5	Yes	0	No	0.00			0.3	30	210	No	No	No	No	No
Area 5	Aniline	62-53-3	5	Yes	0	No	0.00			0.3	30	85	No	No	No	No	No
Area 5	Anthracene	120-12-7	5	Yes	1	Yes	20.00	0.11	0.11	0.3	30	4300	No	No	No	No	No
Area 5	Aroclor 1016	12674-11-2	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No
Area 5	Aroclor 1221	11104-28-2	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No
Area 5	Aroclor 1232	11141-16-5	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	Aroclor 1242	53469-21-9	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No
Area 5	Aroclor 1248	12672-29-6	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No
Area 5	Aroclor 1254	11097-69-1	13	No	0	No	0.00			0.01	0.1	1	No	No	No	No	No
Area 5	Aroclor 1260	11096-82-5	13	No	11	Yes	84.62	0.03	73	0.01	0.1	1	No	No	No	No	No
Area 5	Benzene	71-43-2	2	Yes	0	No	0.00			0.05	0.05	0.02	Yes	Yes	No	No	No
Area 5	Benzo(a)anthracene	56-55-3	5	Yes	1	Yes	20.00	0.19	0.19	0.3	30	6	No	Yes	No	No	No
Area 5	Benzo(a)pyrene	50-32-8	5	Yes	1	Yes	20.00	1.5	1.5	0.3	60	1	No	Yes	Yes	No	Yes
Area 5	Benzo(b)fluoranthene	205-99-2	5	Yes	1	Yes	20.00	0.6	0.6	0.3	60	11	No	Yes	No	No	Yes
Area 5	Benzo(g,h,i)perylene	191-24-2	5	Yes	1	Yes	20.00	0.88	0.88	0.3	60	1500	No	No	No	No	Yes
Area 5	Benzo(k)fluoranthene	207-08-9	5	Yes	1	Yes	20.00	0.53	0.53	0.3	60	110	No	No	No	No	Yes
Area 5	Benzoic acid	65-85-0	5	Yes	0	No	0.00			2	200	390	No	No	No	No	No
Area 5	Benzyl alcohol	100-51-6	5	Yes	0	No	0.00			0.3	30	18000	No	No	No	No	No
Area 5	bis(2-Chloroethoxy)methane	111-91-1	5	Yes	0	No	0.00			0.3	30		SL NA	SL NA	SL NA	SL NA	No
Area 5	bis(2-Chloroethyl)ether	111-44-4	5	Yes	0	No	0.00			0.3	30	0.002	Yes	Yes	Yes	Yes	No
Area 5	Bis(2-chloroisopropyl)ether	39638-32-9	5	Yes	0	No	0.00			0.3	30	2.9	No	Yes	Yes	No	No
Area 5	bis(2-Ethylhexyl)phthalate	117-81-7	5	Yes	2	Yes	40.00	0.11	1.4	0.3	30	590	No	No	No	No	No
Area 5	Bromodichloromethane	75-27-4	11	No	0	No	0.00			0.02	0.08	0.82	No	No	No	No	No
Area 5	Bromoform	75-25-2	11	No	0	No	0.00			0.05	0.24	0.38	No	No	No	No	No
Area 5	Bromomethane	74-83-9	11	No	0	No	0.00			0.1	0.48	3.9	No	No	No	No	No
Area 5	Butylbenzylphthalate	85-68-7	5	Yes	0	No	0.00			0.3	30	5600	No	No	No	No	No
Area 5	Carbon tetrachloride	56-23-5	11	No	0	No	0.00			0.01	0.05	0.03	No	Yes	No	No	No
Area 5	Chlorobenzene	108-90-7	11	No	0	No	0.00			0.01	0.05	0.6	No	No	No	No	No
Area 5	Chloroethane	75-00-3	11	No	0	No	0.00			0.04	0.12	3.03	No	No	No	No	No
Area 5	Chloroform	67-66-3	11	No	0	No	0.00			0.01	0.05	0.34	No	No	No	No	No
Area 5	Chloromethane	74-87-3	11	No	0	No	0.00			0.1	0.48	1.23	No	No	No	No	No
Area 5	Chrysene	218-01-9	5	Yes	1	Yes	20.00	0.87	0.87	0.3	30	620	No	No	No	No	No
Area 5	cis-1,2-Dichloroethene	156-59-2	3	Yes	0	No	0.00			0.05	0.05	0.2	No	No	No	No	No
Area 5	cis-1,3-Dichloropropene	10061-01-5	11	No	0	No	0.00			0.01	0.05	0.02	No	Yes	No	No	No
Area 5	Dibenz(a,h)anthracene	53-70-3	5	Yes	1	Yes	20.00	0.64	0.64	0.3	60	1	No	Yes	Yes	No	Yes
Area 5	Dibenzofuran	132-64-9	5	Yes	0	No	0.00			0.3	30	7.78	No	Yes	No	No	No
Area 5	Dibromochloromethane	124-48-1	11	No	0	No	0.00			0.03	0.12	1.11	No	No	No	No	No
Area 5	Dichlorodifluoromethane	75-71-8	3	Yes	0	No	0.00			0.1	0.1	60	No	No	No	No	No
Area 5	Diesel Range Hydrocarbons	DRO	15	No	15	Yes	100.00	14	28000	10	10	250	No	No	No	No	No
Area 5	Diethylphthalate	84-66-2	5	Yes	0	No	0.00			0.3	30	190	No	No	No	No	No
Area 5	Dimethylphthalate	131-11-3	5	Yes	0	No	0.00			0.3	30	1400	No	No	No	No	No
Area 5	Di-n-butylphthalate	84-74-2	5	Yes	3	Yes	60.00	0.22	0.29	0.3	30	1700	No	No	No	No	No
Area 5	Di-n-octylphthalate	117-84-0	5	Yes	0	No	0.00			0.3	60	2000	No	No	No	No	Yes
Area 5	Ethylbenzene	100-41-4	2	Yes	0	No	0.00			0.05	0.05	5.5	No	No	No	No	No
Area 5	Fluoranthene	206-44-0	5	Yes	1	Yes	20.00	0.17	0.17	0.3	30	2100	No	No	No	No	No
Area 5	Fluorene	86-73-7	5	Yes	0	No	0.00			0.3	30	270	No	No	No	No	No
Area 5	Gasoline Range Hydrocarbons	GRO	16	No	0	No	0.00			5	5	300	No	No	No	No	No
Area 5	Hexachlorobenzene	118-74-1	5	Yes	0	No	0.00			0.3	30	0.73	No	Yes	Yes	No	No
Area 5	Hexachlorobutadiene	87-68-3	5	Yes	0	No	0.00			0.3	30	8	No	Yes	No	No	No
Area 5	Hexachlorocyclopentadiene	77-47-4	5	Yes	0	No	0.00			0.3	30	7	No	Yes	No	No	No
Area 5	Hexachloroethane	67-72-1	5	Yes	0	No	0.00			0.3	30	1.6	No	Yes	Yes	No	No
Area 5	Indeno(1,2,3-cd)pyrene	193-39-5	5	Yes	1	Yes	20.00	0.89	0.89	0.3	60	11	No	Yes	No	No	Yes
Area 5	Isophorone	78-59-1	5	Yes	0	No	0.00			0.3	30	3	No	Yes	No	No	No
Area 5	Methylene chloride	75-09-2	11	No	0	No	0.00			0.01	0.24	0.015	No	Yes	Yes	No	No
Area 5	Naphthalene	91-20-3	5	Yes	1	Yes	20.00	0.35	0.35	0.3	30	21	No	Yes	No	No	No
Area 5	Nitrobenzene	98-95-3	5	Yes	0	No	0.00			0.3	30	0.06	Yes	Yes	Yes	Yes	No
Area 5	N-Nitrosodimethylamine	62-75-9	5	Yes	0	No	0.00			0.3	30	3.4	No	Yes	No	No	No
Area 5	N-Nitroso-di-n-propylamine	621-64-7	5	Yes	0	No	0.00			0.3	30	0.00036	Yes	Yes	Yes	Yes	No
Area 5	N-Nitrosodiphenylamine	86-30-6	5	Yes	0	No	0.00			0.3	30	3.4	No	Yes	No	No	No

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	OCDD	3268-87-9	5	Yes	5	Yes	100.00	0.00006	0.0052			0.039	No	No	No	No	DL Missing
Area 5	OCDF	39001-02-0	5	Yes	4	Yes	80.00	2.20E-05	1.10E-03	7.90E-06	7.90E-06	0.039	No	No	No	No	No
Area 5	PCBs, total	PCBs	3	Yes	3	Yes	100.00	0.6	3.86			1	No	No	No	No	DL Missing
Area 5	Pentachlorophenol	87-86-5	5	Yes	0	No	0.00			2	200	0.01	Yes	Yes	Yes	Yes	No
Area 5	Phenanthrene	85-01-8	5	Yes	2	Yes	40.00	0.1	0.28	0.3	30	4300	No	No	No	No	No
Area 5	Phenol	108-95-2	5	Yes	0	No	0.00			0.3	30	67	No	No	No	No	No
Area 5	Pyrene	129-00-0	5	Yes	1	Yes	20.00	0.23	0.23	0.3	30	1500	No	No	No	No	No
Area 5	Tetrachloroethene	127-18-4	12	No	3	Yes	25.00	0.2	0.23	0.01	0.05	0.03	No	Yes	No	No	No
Area 5	Toluene	108-88-3	2	Yes	2	Yes	100.00	0.05	0.05	0.05	0.05	5.4	No	No	No	No	No
Area 5	TOTAL HPCDD	37871-00-4	5	Yes	5	Yes	100.00	2.00E-05	5.80E-04			3.90E-04	No	No	No	No	DL Missing
Area 5	TOTAL HPCDF	38998-75-3	5	Yes	4	Yes	80.00	2.80E-05	1.10E-03	7.20E-06	7.20E-06	3.90E-04	No	No	No	No	No
Area 5	TOTAL HXCDD	34465-46-8	5	Yes	4	Yes	80.00	1.00E-05	7.90E-05	8.10E-06	8.10E-06	3.90E-05	No	No	No	No	No
Area 5	TOTAL HXCDF	55684-94-1	5	Yes	4	Yes	80.00	9.40E-06	3.60E-04	5.00E-06	5.00E-06	3.90E-05	No	No	No	No	No
Area 5	TOTAL PECDD	36088-22-9	5	Yes	1	Yes	20.00	2.10E-05	2.10E-05	3.70E-06	6.40E-06	3.90E-05	No	No	No	No	No
Area 5	TOTAL PECDF	30402-15-4	5	Yes	4	Yes	80.00	1.00E-05	6.70E-05	3.80E-06	3.80E-06	7.80E-05	No	No	No	No	No
Area 5	Total Petroleum Hydrocarbons	TPH	9	Yes	8	Yes	88.89	40	1520	20	20		SL NA	SL NA	SL NA	SL NA	No
Area 5	TOTAL TCDD	41903-57-5	5	Yes	1	Yes	20.00	1.70E-05	1.70E-05	5.80E-07	3.70E-06	3.90E-06	No	No	No	No	No
Area 5	TOTAL TCDF	55722-27-5	5	Yes	4	Yes	80.00	7.00E-06	7.40E-05	3.40E-06	3.40E-06	3.90E-05	No	No	No	No	No
Area 5	trans-1,2-Dichloroethene	156-60-5	11	No	0	No	0.00			0.05	0.24	0.4	No	No	No	No	No
Area 5	trans-1,3-Dichloropropene	10061-02-6	11	No	0	No	0.00			0.01	0.05	0.02	No	Yes	No	No	No
Area 5	Trichloroethene	79-01-6	13	No	4	Yes	30.77	0.15	6.5	0.01	0.05	0.027	No	Yes	No	No	No
Area 5	Trichlorofluoromethane	75-69-4	11	No	0	No	0.00			0.03	0.12	385.82	No	No	No	No	No
Area 5	Trichlorotriflouroethane	26523-64-8	3	Yes	0	No	0.00			0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 5	Vinyl chloride	75-01-4	11	No	0	No	0.00			0.1	0.4	0.009	Yes	Yes	Yes	No	No
Area 5	Volatile Organic Hydrocarbons	HVOC	3	Yes	0	No	0.00			0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 5	Xylene, total	1330-20-7	2	Yes	0	No	0.00			0.05	0.05	78	No	No	No	No	No
Area 6	1,2,4-Trimethylbenzene	95-63-6	2	Yes	0	No	0.00			0.0044	0.0046	52	No	No	No	No	No
Area 6	1,3,5-Trimethylbenzene	108-67-8	2	Yes	0	No	0.00			0.0044	0.0046	21	No	No	No	No	No
Area 6	1-Methylnaphthalene	90-12-0	2	Yes	2	Yes	100.00	0.122	1.13			43	No	No	No	No	DL Missing
Area 6	2-Butanone	78-93-3	2	Yes	1	Yes	50.00	0.0385	0.0385	0.0184	0.0184	60	No	No	No	No	No
Area 6	2-Methylnaphthalene	91-57-6	2	Yes	2	Yes	100.00	0.158	1.45			60.9	No	No	No	No	DL Missing
Area 6	4,4'-DDE	72-55-9	2	Yes	0	No	0.00			0.0014	0.0015	24	No	No	No	No	No
Area 6	4,4'-DDT	50-29-3	2	Yes	1	Yes	50.00	0.0034	0.0034	0.0023	0.0023	24	No	No	No	No	No
Area 6	4-Methylphenol	106-44-5	2	Yes	0	No	0.00			0.136	0.146	305.52	No	No	No	No	No
Area 6	alpha-Chlordane	5103-71-9	2	Yes	0	No	0.00			0.00068	0.00073		SL NA	SL NA	SL NA	SL NA	No
Area 6	Aluminum	7429-90-5	2	Yes	2	Yes	100.00	17200	19900			76000	No	No	No	No	DL Missing
Area 6	Anthracene	120-12-7	2	Yes	0	No	0.00			0.136	0.146	4300	No	No	No	No	No
Area 6	Antimony	7440-36-0	1	Yes	1	Yes	100.00	4.7	4.7			3.6	No	No	No	No	DL Missing
Area 6	Aroclor 1260	11096-82-5	2	Yes	0	No	0.00			0.034	0.036	1	No	No	No	No	No
Area 6	Arsenic	7440-38-2	2	Yes	2	Yes	100.00	26.9	53.9			2	No	No	No	No	DL Missing
Area 6	Barium	7440-39-3	2	Yes	2	Yes	100.00	357	695			1100	No	No	No	No	DL Missing
Area 6	Benzene	71-43-2	4	Yes	1	Yes	25.00	0.08	0.08	0.0044	0.05	0.02	No	Yes	No	No	No
Area 6	Benzo(a)pyrene	50-32-8	2	Yes	1	Yes	50.00	0.257	0.257	0.136	0.136	1	No	No	No	No	No
Area 6	Benzo(b)fluoranthene	205-99-2	2	Yes	1	Yes	50.00	0.325	0.325	0.136	0.136	11	No	No	No	No	No
Area 6	Benzo(g,h,i)perylene	191-24-2	2	Yes	2	Yes	100.00	0.158	0.239			1500	No	No	No	No	DL Missing
Area 6	Beryllium	7440-41-7	2	Yes	2	Yes	100.00	0.61	0.78			42	No	No	No	No	DL Missing
Area 6	Cadmium	7440-43-9	2	Yes	2	Yes	100.00	0.36	0.79			5	No	No	No	No	DL Missing
Area 6	Calcium	7440-70-2	2	Yes	2	Yes	100.00	10300	43800				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Chloroform	67-66-3	2	Yes	1	Yes	50.00	0.005	0.005	0.0046	0.0046	0.34	No	No	No	No	No
Area 6	Chromium	7440-47-3	2	Yes	2	Yes	100.00	76.8	243			26	No	No	No	No	DL Missing
Area 6	Chrysene	218-01-9	2	Yes	1	Yes	50.00	0.196	0.196	0.136	0.136	620	No	No	No	No	No
Area 6	Cobalt	7440-48-4	2	Yes	2	Yes	100.00	13.3	17.6			900	No	No	No	No	DL Missing
Area 6	Copper	7440-50-8	2	Yes	2	Yes	100.00	41.2	846			4060	No	No	No	No	DL Missing

Table 3-3 Comparison of Detection Limits for Surface Soil (0-0.5 ft) Soil to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 6	Dibenz(a,h)anthracene	53-70-3	2	Yes	0	No	0.00			0.136	0.146	1	No	No	No	No	No
Area 6	Dibenzofuran	132-64-9	2	Yes	1	Yes	50.00	0.342	0.342	0.136	0.136	7.78	No	No	No	No	No
Area 6	Diesel Range Hydrocarbons	DRO	2	Yes	2	Yes	100.00	114	297			250	No	No	No	No	DL Missing
Area 6	Ethylbenzene	100-41-4	4	Yes	2	Yes	50.00	0.06	0.15	0.0044	0.0046	5.5	No	No	No	No	No
Area 6	Fluoranthene	206-44-0	2	Yes	1	Yes	50.00	0.208	0.208	0.136	0.136	2100	No	No	No	No	No
Area 6	gamma Chlordane	57-74-9	2	Yes	0	No	0.00			0.00068	0.00073		SL NA	SL NA	SL NA	SL NA	No
Area 6	Gasoline Range Hydrocarbons	GRO	2	Yes	2	Yes	100.00	10	10			300	No	No	No	No	DL Missing
Area 6	Heptachlor	76-44-8	2	Yes	0	No	0.00			0.00068	0.00073	0.8	No	No	No	No	No
Area 6	Heptachlor epoxide	1024-57-3	2	Yes	0	No	0.00			0.00073	0.001	0.2	No	No	No	No	No
Area 6	Indeno(1,2,3-cd)pyrene	193-39-5	2	Yes	1	Yes	50.00	0.308	0.308	0.136	0.136	11	No	No	No	No	No
Area 6	Iron	7439-89-6	2	Yes	2	Yes	100.00	24300	72900			23000	No	No	No	No	DL Missing
Area 6	Lead	7439-92-1	2	Yes	2	Yes	100.00	37	201			400	No	No	No	No	DL Missing
Area 6	m,p-Xylene	136777-61-2	2	Yes	0	No	0.00			0.0087	0.0092		SL NA	SL NA	SL NA	SL NA	No
Area 6	Magnesium	7439-95-4	2	Yes	2	Yes	100.00	6350	16400				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Manganese	7439-96-5	2	Yes	2	Yes	100.00	814	880			1800	No	No	No	No	DL Missing
Area 6	Mercury	7439-97-6	2	Yes	2	Yes	100.00	0.22	1.14			1.4	No	No	No	No	DL Missing
Area 6	Naphthalene	91-20-3	2	Yes	2	Yes	100.00	0.189	1.06			21	No	No	No	No	DL Missing
Area 6	Nickel	7440-02-0	2	Yes	2	Yes	100.00	37.9	94.4			87	No	No	No	No	DL Missing
Area 6	o-Xylene	95-47-6	2	Yes	0	No	0.00			0.0044	0.0046		SL NA	SL NA	SL NA	SL NA	No
Area 6	P-Cymene	25155-15-1	2	Yes	0	No	0.00			0.0044	0.0046		SL NA	SL NA	SL NA	SL NA	No
Area 6	Phenanthrene	85-01-8	2	Yes	1	Yes	50.00	0.329	0.329	0.136	0.136	4300	No	No	No	No	No
Area 6	Phenol	108-95-2	2	Yes	1	Yes	50.00	0.247	0.247	0.146	0.146	67	No	No	No	No	No
Area 6	Potassium	7440-09-7	2	Yes	2	Yes	100.00	1280	2280				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Pyrene	129-00-0	2	Yes	1	Yes	50.00	0.265	0.265	0.136	0.136	1500	No	No	No	No	No
Area 6	Residual Range Organics	RRO	2	Yes	1	Yes	50.00	650	650	500	500	10000	No	No	No	No	No
Area 6	Retene	483-65-8	2	Yes	2	Yes	100.00	0.876	8.62				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Selenium	7782-49-2	2	Yes	2	Yes	100.00	0.38	0.96			3.5	No	No	No	No	DL Missing
Area 6	Silver	7440-22-4	2	Yes	1	Yes	50.00	0.58	0.58	0.4	0.4	21	No	No	No	No	No
Area 6	Sodium	7440-23-5	2	Yes	2	Yes	100.00	671	788				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Tetrachloroethene	127-18-4	2	Yes	0	No	0.00			0.0044	0.0046	0.03	No	No	No	No	No
Area 6	Toluene	108-88-3	4	Yes	3	Yes	75.00	0.0067	0.42	0.0044	0.0044	5.4	No	No	No	No	No
Area 6	Vanadium	7440-62-2	2	Yes	2	Yes	100.00	69.7	86.8			710	No	No	No	No	DL Missing
Area 6	Xylene, total	1330-20-7	2	Yes	2	Yes	100.00	0.13	1.07			78	No	No	No	No	DL Missing
Area 6	Zinc	7440-66-6	2	Yes	2	Yes	100.00	99.6	2080			9100	No	No	No	No	DL Missing

Notes:
mg/kg = milligrams per kilogram
Max = maximum
Min = minimum
DL = detection limit
SL NA = screening level not available
Screening levels are based on ADEC Method 2 values for the "under 40 inch zone" unless not available, then the U.S.Region IX residential PRGs were applied.

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 1	Benzene	71-43-2	35	No	0	No	0.00			0.025	25	0.02	Yes	Yes	Yes	Yes	Yes
Area 1	Diesel Range Hydrocarbons	DRO	61	No	18	Yes	29.51	12	12000	10	1000	250	No	Yes	No	No	No
Area 1	Ethylbenzene	100-41-4	36	No	6	Yes	16.67	0.06	63	0.075	75	5.5	No	Yes	Yes	No	Yes
Area 1	Gasoline Range Hydrocarbons	GRO	36	No	9	Yes	25.00	28	6200	10	1000	300	No	Yes	No	No	No
Area 1	Motor Oil	MOTOR	42	No	16	Yes	38.10	12	990	10	1000		SL NA	SL NA	SL NA	SL NA	No
Area 1	Toluene	108-88-3	35	No	5	Yes	14.29	0.03	39	0.025	25	5.4	No	Yes	No	No	Yes
Area 1	Xylene, total	1330-20-7	35	No	4	Yes	11.43	0.46	460	0.075	75	78	No	No	No	No	Yes
Area 2	1,1,1,2-Tetrachloroethane	630-20-6	54	No	0	No	0.00			0.0001	0.16	3.2	No	No	No	No	Yes
Area 2	1,1,1-Trichloroethane	71-55-6	111	No	3	Yes	2.70	0.055	1.6	0.0001	0.2	1	No	No	No	No	Yes
Area 2	1,1,2,2-Tetrachloroethane	79-34-5	111	No	0	No	0.00			0.0001	0.3	0.017	No	Yes	Yes	No	Yes
Area 2	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	4	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Area 2	1,1,2-Trichloroethane	79-00-5	110	No	0	No	0.00			0.0001	0.2	0.017	No	Yes	Yes	No	Yes
Area 2	1,1-Dichloroethane	75-34-3	123	No	2	Yes	1.63	0.06	0.06	0.0001	0.2	12	No	No	No	No	Yes
Area 2	1,1-Dichloroethene	75-35-4	121	No	5	Yes	4.13	0.06	0.24	0.0001	0.2	0.03	No	Yes	No	No	Yes
Area 2	1,1-Dichloropropene	563-58-6	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	1,2,3-Trichlorobenzene	87-61-6	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	1,2,3-Trichloropropane	96-18-4	54	No	0	No	0.00			0.0001	0.16	0.005	No	Yes	Yes	No	Yes
Area 2	1,2,3-Trimethylbenzene	526-73-8	3	Yes	1	Yes	33.33	0.0029	0.0029	0.0022	0.0022	52	No	No	No	No	No
Area 2	1,2,4-Trichlorobenzene	120-82-1	53	No	0	No	0.00			0.0001	0.45	2	No	No	No	No	Yes
Area 2	1,2,4-Trimethylbenzene	95-63-6	54	No	9	Yes	16.67	0.0029	0.63	0.0001	0.16	52	No	No	No	No	Yes
Area 2	1,2-Dibromo-3-chloropropane	96-12-8	54	No	0	No	0.00			0.0005	1.6	0.45	No	Yes	No	No	Yes
Area 2	1,2-Dibromoethane	106-93-4	54	No	0	No	0.00			0.0001	0.16	0.0000306	Yes	Yes	Yes	Yes	Yes
Area 2	1,2-Dichlorobenzene	95-50-1	131	No	0	No	0.00			0.0001	2.5	7	No	No	No	No	Yes
Area 2	1,2-Dichloroethane	107-06-2	111	No	0	No	0.00			0.0001	0.2	0.015	No	Yes	Yes	No	Yes
Area 2	1,2-Dichloropropane	78-87-5	112	No	0	No	0.00			0.0001	0.2	0.017	No	Yes	Yes	No	Yes
Area 2	1,2-Dichloropropene	563-54-2	17	No	0	No	0.00			0.001	0.05	0.78	No	No	No	No	No
Area 2	1,3,5-Trimethylbenzene	108-67-8	51	No	6	Yes	11.76	0.13	0.62	0.0001	0.16	21	No	No	No	No	Yes
Area 2	1,3-Dichlorobenzene	541-73-1	131	No	0	No	0.00			0.0001	2.5	12.1	No	No	No	No	Yes
Area 2	1,3-Dichloropropane	142-28-9	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	1,4-Dichlorobenzene	106-46-7	131	No	0	No	0.00			0.0001	2.5	0.8	No	Yes	No	No	Yes
Area 2	2,2-Dichloropropane	594-20-7	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	2,4,5-T	93-76-5	3	Yes	0	No	0.00			0.3	0.3	610	No	No	No	No	No
Area 2	2,4,5-TP (Silvex)	93-72-1	3	Yes	0	No	0.00			0.3	0.3	490	No	No	No	No	No
Area 2	2,4,5-Trichlorophenol	95-95-4	1	Yes	0	No	0.00			2.3	2.3	90	No	No	No	No	No
Area 2	2,4,6-Trichlorophenol	88-06-2	1	Yes	0	No	0.00			0.45	0.45	0.6	No	No	No	No	No
Area 2	2,4-D	94-75-7	3	Yes	0	No	0.00			0.3	0.3	490	No	No	No	No	No
Area 2	2,4-DB	94-82-6	3	Yes	0	No	0.00			0.3	0.3	490	No	No	No	No	No
Area 2	2,4-Dichlorophenol	120-83-2	1	Yes	0	No	0.00			0.45	0.45	0.45	No	No	No	No	No
Area 2	2,4-Dimethylphenol	105-67-9	1	Yes	0	No	0.00			0.45	0.45	4	No	No	No	No	No
Area 2	2,4-Dinitrophenol	51-28-5	1	Yes	0	No	0.00			2.3	2.3	0.2	Yes	Yes	Yes	No	No
Area 2	2,4-Dinitrotoluene	121-14-2	1	Yes	0	No	0.00			0.45	0.45	0.005	Yes	Yes	Yes	No	No
Area 2	2,6-Dinitrotoluene	606-20-2	1	Yes	0	No	0.00			0.45	0.45	0.0044	Yes	Yes	Yes	Yes	No
Area 2	2-Butanone	78-93-3	131	No	4	Yes	3.05	0.02	0.04	0.001	1.6	60	No	No	No	No	Yes
Area 2	2-Chloroethylvinyl ether	110-75-8	50	No	0	No	0.00			0.001	1.6		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	2-Chloronaphthalene	91-58-7	1	Yes	0	No	0.00			0.45	0.45	70	No	No	No	No	No
Area 2	2-Chlorophenol	95-57-8	1	Yes	0	No	0.00			0.45	0.45	1.4	No	No	No	No	No
Area 2	2-Chlorotoluene	95-49-8	54	No	0	No	0.00			0.0001	0.16	160	No	No	No	No	Yes
Area 2	2-Hexanone	591-78-6	65	No	0	No	0.00			0.001	1.6		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	2-Methylnaphthalene	91-57-6	61	No	13	Yes	21.31	0.03	26	0.45	0.45	60.9	No	No	No	No	No
Area 2	2-Methylphenol	95-48-7	1	Yes	0	No	0.00			0.45	0.45	7	No	No	No	No	No
Area 2	2-Nitroaniline	88-74-4	1	Yes	0	No	0.00			2.3	2.3	1.75	Yes	Yes	No	No	No
Area 2	2-Nitrophenol	88-75-5	1	Yes	0	No	0.00			0.45	0.45		SL NA	SL NA	SL NA	SL NA	No
Area 2	3,3'-Dichlorobenzidine	91-94-1	1	Yes	0	No	0.00			0.91	0.91	0.02	Yes	Yes	Yes	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 2	3-Nitroaniline	99-09-2	1	Yes	0	No	0.00			2.3	2.3		SL NA	SL NA	SL NA	SL NA	No
Area 2	4,4'-DDD	72-54-8	1	Yes	0	No	0.00			0.022	0.022	35	No	No	No	No	No
Area 2	4,4'-DDE	72-55-9	1	Yes	0	No	0.00			0.022	0.022	24	No	No	No	No	No
Area 2	4,4'-DDT	50-29-3	1	Yes	0	No	0.00			0.022	0.022	24	No	No	No	No	No
Area 2	4,6-Dinitro-2-methylphenol	534-52-1	1	Yes	0	No	0.00			2.3	2.3		SL NA	SL NA	SL NA	SL NA	No
Area 2	4-Bromophenyl-phenylether	101-55-3	1	Yes	0	No	0.00			0.45	0.45		SL NA	SL NA	SL NA	SL NA	No
Area 2	4-Chloro-3-methylphenol	59-50-7	1	Yes	0	No	0.00			0.45	0.45		SL NA	SL NA	SL NA	SL NA	No
Area 2	4-Chloroaniline	106-47-8	1	Yes	0	No	0.00			0.45	0.45	0.5	No	No	No	No	No
Area 2	4-Chlorophenyl-phenylether	7005-72-3	1	Yes	0	No	0.00			0.45	0.45		SL NA	SL NA	SL NA	SL NA	No
Area 2	4-Chlorotoluene	106-43-4	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	4-Isopropyl toluene	99-87-6	55	No	9	Yes	16.36	0.01	0.16	0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	4-Methyl-2-pentanone	108-10-1	70	No	2	Yes	2.86	0.03	0.53	0.001	1.6	786.53	No	No	No	No	Yes
Area 2	4-Nitroaniline	100-01-6	1	Yes	0	No	0.00			2.3	2.3		SL NA	SL NA	SL NA	SL NA	No
Area 2	4-Nitrophenol	100-02-7	1	Yes	0	No	0.00			2.3	2.3		SL NA	SL NA	SL NA	SL NA	No
Area 2	Acenaphthene	83-32-9	48	No	23	Yes	47.92	0.21	60	0.21	60	210	No	No	No	No	Yes
Area 2	Acenaphthylene	208-96-8	48	No	23	Yes	47.92	0.21	60	0.21	60	210	No	No	No	No	Yes
Area 2	Acetone	67-64-1	113	No	31	Yes	27.43	0.0048	1.3	0.001	1.6	10	No	No	No	No	Yes
Area 2	Acrylonitrile	107-13-1	4	Yes	0	No	0.00			0.01	0.011	0.21	No	No	No	No	No
Area 2	Aldrin	309-00-2	1	Yes	0	No	0.00			0.011	0.011	0.5	No	No	No	No	No
Area 2	alpha-BHC	319-84-6	1	Yes	0	No	0.00			0.011	0.011	0.0026	Yes	Yes	No	No	No
Area 2	Aniline	62-53-3	1	Yes	0	No	0.00			0.45	0.45	85	No	No	No	No	No
Area 2	Anthracene	120-12-7	126	No	26	Yes	20.63	0.01	3	0.01	3	4300	No	No	No	No	Yes
Area 2	Aroclor 1016	12674-11-2	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1221	11104-28-2	84	No	0	No	0.00			0.04	1	1	No	No	No	No	No
Area 2	Aroclor 1232	11141-16-5	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1242	53469-21-9	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1248	12672-29-6	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1254	11097-69-1	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1260	11096-82-5	84	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Area 2	Aroclor 1262	37324-23-5	32	No	0	No	0.00			0.025	0.025	1	No	No	No	No	No
Area 2	Aroclor 1268	11100-14-4	32	No	0	No	0.00			0.025	0.025	1	No	No	No	No	No
Area 2	Arsenic	7440-38-2	148	No	104	Yes	70.27	2	15.2	0.005	14	2	No	Yes	No	No	Yes
Area 2	Barium	7440-39-3	66	No	60	Yes	90.91	0.5	680	0.41	9.26	1100	No	No	No	No	No
Area 2	Benzene	71-43-2	443	No	90	Yes	20.32	0.0012	38	0.0001	0.79	0.02	No	Yes	Yes	No	Yes
Area 2	Benzidine	92-87-5	1	Yes	0	No	0.00			2.3	2.3	0.0021	Yes	Yes	Yes	Yes	No
Area 2	Benzo(a)anthracene	56-55-3	66	No	40	Yes	60.61	0.00022	0.21	0.00022	0.45	6	No	No	No	No	Yes
Area 2	Benzo(a)pyrene	50-32-8	66	No	35	Yes	53.03	0.00108	0.74	0.00108	0.45	1	No	No	No	No	Yes
Area 2	Benzo(b)fluoranthene	205-99-2	66	No	43	Yes	65.15	0.00022	0.92	0.00022	0.45	11	No	No	No	No	Yes
Area 2	Benzo(g,h,i)perylene	191-24-2	66	No	36	Yes	54.55	0.00112	2.85	0.00112	0.45	1500	No	No	No	No	Yes
Area 2	Benzo(k)fluoranthene	207-08-9	66	No	37	Yes	56.06	0.00022	0.36	0.00022	0.45	110	No	No	No	No	Yes
Area 2	Benzoic acid	65-85-0	1	Yes	0	No	0.00			2.3	2.3	390	No	No	No	No	No
Area 2	Benzyl alcohol	100-51-6	1	Yes	0	No	0.00			0.45	0.45	18000	No	No	No	No	No
Area 2	beta-BHC	319-85-7	1	Yes	0	No	0.00			0.011	0.011	0.009	Yes	Yes	No	No	No
Area 2	bis(2-Chloroethoxy)methane	111-91-1	1	Yes	0	No	0.00			0.45	0.45		SL NA	SL NA	SL NA	SL NA	No
Area 2	bis(2-Chloroethyl)ether	111-44-4	1	Yes	0	No	0.00			0.45	0.45	0.002	Yes	Yes	Yes	Yes	No
Area 2	Bis(2-chloroisopropyl)ether	39638-32-9	1	Yes	0	No	0.00			0.45	0.45	2.9	No	No	No	No	No
Area 2	bis(2-Ethylhexyl)phthalate	117-81-7	61	No	34	Yes	55.74	0.03	0.67	0.45	0.45	590	No	No	No	No	No
Area 2	Bromobenzene	108-86-1	54	No	0	No	0.00			0.0001	0.16	27	No	No	No	No	Yes
Area 2	Bromochloromethane	74-97-5	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	Bromodichloromethane	75-27-4	111	No	0	No	0.00			0.0001	0.2	0.82	No	No	No	No	Yes
Area 2	Bromoform	75-25-2	112	No	0	No	0.00			0.0001	0.2	0.38	No	No	No	No	Yes
Area 2	Bromomethane	74-83-9	89	No	0	No	0.00			0.0001	1.6	3.9	No	No	No	No	Yes
Area 2	Bunker Oil	BUNKER	60	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 2	Butylbenzylphthalate	85-68-7	1	Yes	0	No	0.00			0.45	0.45	5600	No	No	No	No	No
Area 2	Cadmium	7440-43-9	122	No	62	Yes	50.82	0.06	24	0.04	0.92	5	No	No	No	No	No
Area 2	Carbon disulfide	75-15-0	131	No	8	Yes	6.11	0.0018	0.08	0.0001	1.6	17	No	No	No	No	Yes
Area 2	Carbon tetrachloride	56-23-5	112	No	0	No	0.00			0.0001	0.3	0.03	No	Yes	No	No	Yes
Area 2	Chlordane	12789-03-6	1	Yes	0	No	0.00			0.11	0.11	3	No	No	No	No	No
Area 2	Chlorobenzene	108-90-7	137	No	3	Yes	2.19	0.01	0.03	0.0001	2.5	0.6	No	Yes	No	No	Yes
Area 2	Chloroethane	75-00-3	90	No	0	No	0.00			0.0001	1.6	3.03	No	No	No	No	Yes
Area 2	Chloroform	67-66-3	112	No	3	Yes	2.68	0.0013	0.07	0.0001	0.2	0.34	No	No	No	No	Yes
Area 2	Chloromethane	74-87-3	89	No	0	No	0.00			0.0005	0.79	1.23	No	No	No	No	Yes
Area 2	Chromium	7440-47-3	149	No	140	Yes	93.96	0.99	200	0.5	5.77	26	No	No	No	No	No
Area 2	Chrysene	218-01-9	127	No	37	Yes	29.13	0.01	9.92	0.01	0.7	620	No	No	No	No	No
Area 2	cis-1,2-Dichloroethene	156-59-2	73	No	0	No	0.00			0.0001	0.2	0.2	No	No	No	No	Yes
Area 2	cis-1,3-Dichloropropene	10061-01-5	111	No	0	No	0.00			0.0001	0.3	0.02	No	Yes	Yes	No	Yes
Area 2	Dalapon	75-99-0	3	Yes	0	No	0.00			3	3	1800	No	No	No	No	No
Area 2	delta-BHC	319-86-8	1	Yes	0	No	0.00			0.011	0.011		SL NA	SL NA	SL NA	SL NA	No
Area 2	Dibenz(a,h)anthracene	53-70-3	48	No	23	Yes	47.92	0.00216	0.6	0.00216	0.6	1	No	No	No	No	Yes
Area 2	Dibenzofuran	132-64-9	1	Yes	0	No	0.00			0.45	0.45	7.78	No	No	No	No	No
Area 2	Dibromochloromethane	124-48-1	112	No	0	No	0.00			0.0001	0.3	1.11	No	No	No	No	Yes
Area 2	Dibromomethane	74-95-3	54	No	0	No	0.00			0.0001	0.16		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	Dicamba	1918-00-9	3	Yes	0	No	0.00			0.3	0.3	1800	No	No	No	No	No
Area 2	Dichlorodifluoromethane	75-71-8	66	No	0	No	0.00			0.0001	0.16	60	No	No	No	No	Yes
Area 2	Dichloroprop	120-36-5	3	Yes	0	No	0.00			0.3	0.3		SL NA	SL NA	SL NA	SL NA	No
Area 2	Dieldrin	60-57-1	1	Yes	0	No	0.00			0.022	0.022	0.015	Yes	Yes	No	No	No
Area 2	Diesel Range Hydrocarbons	DRO	416	No	255	Yes	61.30	4	290000	1	62.5	250	No	No	No	No	No
Area 2	Diethylphthalate	84-66-2	1	Yes	0	No	0.00			0.45	0.45	190	No	No	No	No	No
Area 2	Dimethylphthalate	131-11-3	1	Yes	0	No	0.00			0.45	0.45	1400	No	No	No	No	No
Area 2	Di-n-butylphthalate	84-74-2	61	No	3	Yes	4.92	0.06	0.14			1700	No	No	No	No	DL Missing
Area 2	Di-n-octylphthalate	117-84-0	1	Yes	0	No	0.00			0.45	0.45	2000	No	No	No	No	No
Area 2	Dinoseb	88-85-7	3	Yes	0	No	0.00			0.3	0.3	61	No	No	No	No	No
Area 2	Endosulfan I	959-98-8	1	Yes	0	No	0.00			0.011	0.011	7	No	No	No	No	No
Area 2	Endosulfan II	33213-65-9	1	Yes	0	No	0.00			0.022	0.022	7	No	No	No	No	No
Area 2	Endosulfan Sulfate	1031-07-8	1	Yes	0	No	0.00			0.022	0.022		SL NA	SL NA	SL NA	SL NA	No
Area 2	Endrin	72-20-8	1	Yes	0	No	0.00			0.022	0.022	0.3	No	No	No	No	No
Area 2	Endrin aldehyde	7421-93-4	1	Yes	0	No	0.00			0.022	0.022		SL NA	SL NA	SL NA	SL NA	No
Area 2	Endrin Ketone	53494-70-5	1	Yes	0	No	0.00			0.022	0.022		SL NA	SL NA	SL NA	SL NA	No
Area 2	Ethylbenzene	100-41-4	445	No	151	Yes	33.93	0.0011	134	0.0001	3.17	5.5	No	No	No	No	Yes
Area 2	Fluoranthene	206-44-0	126	No	49	Yes	38.89	0.00056	1.4	0.00056	0.45	2100	No	No	No	No	Yes
Area 2	Fluorene	86-73-7	126	No	30	Yes	23.81	0.0043	6	0.02	6	270	No	No	No	No	Yes
Area 2	gamma-BHC (Lindane)	58-89-9	1	Yes	0	No	0.00			0.011	0.011	0.003	Yes	Yes	No	No	No
Area 2	Gasoline Range Hydrocarbons	GRO	239	No	79	Yes	33.05	0.7	35000	1	159	300	No	No	No	No	Yes
Area 2	Heavy Oil Range Hydrocarbons	OIL	34	No	28	Yes	82.35	32.9	2190	12.5	125		SL NA	SL NA	SL NA	SL NA	No
Area 2	Heptachlor	76-44-8	1	Yes	0	No	0.00			0.011	0.011	0.8	No	No	No	No	No
Area 2	Heptachlor epoxide	1024-57-3	1	Yes	0	No	0.00			0.011	0.011	0.2	No	No	No	No	No
Area 2	Hexachlorobenzene	118-74-1	1	Yes	0	No	0.00			0.45	0.45	0.73	No	No	No	No	No
Area 2	Hexachlorobutadiene	87-68-3	55	No	0	No	0.00			0.0001	0.45	8	No	No	No	No	Yes
Area 2	Hexachlorocyclopentadiene	77-47-4	1	Yes	0	No	0.00			0.45	0.45	7	No	No	No	No	No
Area 2	Hexachloroethane	67-72-1	1	Yes	0	No	0.00			0.45	0.45	1.6	No	No	No	No	No
Area 2	Indeno(1,2,3-cd)pyrene	193-39-5	66	No	28	Yes	42.42	0.00216	0.6	0.00216	0.6	11	No	No	No	No	Yes
Area 2	Isophorone	78-59-1	1	Yes	0	No	0.00			0.45	0.45	3	No	No	No	No	No
Area 2	Isopropylbenzene	98-82-8	54	No	2	Yes	3.70	0.06	0.06	0.0001	0.16	227	No	No	No	No	Yes
Area 2	Jet Fuel	JET	60	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Kerosene	8008-20-6	60	No	8	Yes	13.33	8.3	9400				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Lead	7439-92-1	239	No	206	Yes	86.19	0.006	7100	0.5	36.1	400	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 2	m,p-Xylene	136777-61-2	98	No	38	Yes	38.78	0.0016	92.5	0.0002	3.17		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	MCPA	94-74-6	3	Yes	0	No	0.00			0.3	0.3	31	No	No	No	No	No
Area 2	MCPP	93-65-2	3	Yes	0	No	0.00			0.3	0.3	61	No	No	No	No	No
Area 2	Mercury	7439-97-6	67	No	16	Yes	23.88	0.04	21	0.0002	0.41	1.4	No	No	No	No	Yes
Area 2	Methoxychlor	72-43-5	1	Yes	0	No	0.00			0.11	0.11	52	No	No	No	No	No
Area 2	Methyl Iodide	74-88-4	4	Yes	0	No	0.00			0.0052	0.0056		SL NA	SL NA	SL NA	SL NA	No
Area 2	Methyl Pentanone	63072-44-6	7	Yes	1	Yes	14.29	0.53	0.53				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Methyl tert-Butyl Ether	1634-04-4	18	No	0	No	0.00			0.0021	0.16	61.54	No	No	No	No	No
Area 2	Methylene chloride	75-09-2	186	No	96	Yes	51.61	0.0035	28	0.001	1.58	0.015	No	Yes	Yes	Yes	Yes
Area 2	m-Xylene	108-38-3	3	Yes	0	No	0.00			0.005	1	78	No	No	No	No	Yes
Area 2	Naphthalene	91-20-3	181	No	48	Yes	26.52	0.02	60	0.0001	60	21	No	Yes	No	No	Yes
Area 2	n-Butylbenzene	104-51-8	51	No	2	Yes	3.92	0.06	0.24	0.0001	0.16	240	No	No	No	No	Yes
Area 2	Nickel	7440-02-0	3	Yes	0	No	0.00			0.0022	0.0022	87	No	No	No	No	No
Area 2	Nitrobenzene	98-95-3	1	Yes	0	No	0.00			0.45	0.45	0.06	Yes	Yes	No	No	No
Area 2	N-Nitrosodimethylamine	62-75-9	1	Yes	0	No	0.00			0.45	0.45	3.4	No	No	No	No	No
Area 2	N-Nitroso-di-n-propylamine	621-64-7	1	Yes	0	No	0.00			0.45	0.45	0.00036	Yes	Yes	Yes	Yes	No
Area 2	n-Propylbenzene	103-65-1	55	No	1	Yes	1.82	0.07	0.07	0.0001	0.16	240	No	No	No	No	Yes
Area 2	Oil & Grease	O&G	12	No	12	Yes	100.00	60	8500				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	o-Xylene	95-47-6	100	No	35	Yes	35.00	0.0037	38.4	0.0001	3.17		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	PCBs, total	PCBs	38	No	8	Yes	21.05	0.03	0.28	0.02	1	1	No	No	No	No	No
Area 2	Pentachlorophenol	87-86-5	1	Yes	0	No	0.00			2.3	2.3	0.01	Yes	Yes	Yes	Yes	No
Area 2	pH	PH	2	Yes	2	Yes	100.00	3.6	3.9	0.1	0.1		SL NA	SL NA	SL NA	SL NA	No
Area 2	Phenanthrene	85-01-8	126	No	47	Yes	37.30	0.01	8.96	0.01	3	4300	No	No	No	No	Yes
Area 2	Phenol	108-95-2	1	Yes	0	No	0.00			0.45	0.45	67	No	No	No	No	No
Area 2	Polynuclear Aromatic Hydrocarbons	PAH	28	No	28	Yes	100.00	0.008	10.9				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	p-Xylene	106-42-3	3	Yes	0	No	0.00			0.005	1	78	No	No	No	No	Yes
Area 2	Pyrene	129-00-0	127	No	35	Yes	27.56	0.01	3	0.00816	3	1500	No	No	No	No	Yes
Area 2	Residual Range Organics	RRO	33	No	0	No	0.00			16.8	100	10000	No	No	No	No	No
Area 2	sec-Butylbenzene	135-98-8	55	No	3	Yes	5.45	0.11	0.17	0.0001	0.16	220	No	No	No	No	Yes
Area 2	Selenium	7782-49-2	66	No	3	Yes	4.55	0.47	16	0.005	10	3.5	No	Yes	No	No	Yes
Area 2	Silver	7440-22-4	63	No	1	Yes	1.59	8.4	8.4	0.1	1.6	21	No	No	No	No	No
Area 2	Styrene	100-42-5	69	No	0	No	0.00			0.0001	0.2	1.3	No	No	No	No	Yes
Area 2	Sulfate	14808-79-8	1	Yes	1	Yes	100.00	9700	9700	52	52		SL NA	SL NA	SL NA	SL NA	No
Area 2	SVOC	SVOC	19	No	12	Yes	63.16	1.55	5800				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	tert-Butylbenzene	98-06-6	54	No	0	No	0.00			0.0001	0.16	390	No	No	No	No	Yes
Area 2	Tetrachloroethene	127-18-4	178	No	8	Yes	4.49	0.002	1.5	0.0001	0.2	0.03	No	Yes	No	No	Yes
Area 2	Toluene	108-88-3	449	No	181	Yes	40.31	0.00089	390	0.0001	3.17	5.4	No	No	No	No	Yes
Area 2	Total 1,2-Dichloroethenes	540-59-0	11	No	0	No	0.00			0.015	0.2	43	No	No	No	No	No
Area 2	Total BTEX	BTEX	219	No	134	Yes	61.19	0.0021	1322				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Total Organic Carbon	TOC	8	Yes	8	Yes	100.00	0.2	2.46	0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 2	Total Organic Halides	TOX	6	Yes	6	Yes	100.00	1.1	1.6				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Total Petroleum Hydrocarbons	TPH	227	No	189	Yes	83.26	7.7	154000	0.05	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 2	Total Recoverable Petroleum Hydrocarbons	TRPH	12	No	9	Yes	75.00	60	3500	25	25		SL NA	SL NA	SL NA	SL NA	No
Area 2	Total Solids	TSO	190	No	190	Yes	100.00	23.4	98	1	1		SL NA	SL NA	SL NA	SL NA	No
Area 2	Toxaphene	8001-35-2	1	Yes	0	No	0.00			0.22	0.22	8	No	No	No	No	No
Area 2	trans-1,2-Dichloroethene	156-60-5	100	No	0	No	0.00			0.0001	0.2	0.4	No	No	No	No	Yes
Area 2	trans-1,3-Dichloropropene	10061-02-6	94	No	0	No	0.00			0.0001	0.3	0.02	No	Yes	Yes	No	Yes
Area 2	trans-1,4-Dichloro-2-butene	110-57-6	4	Yes	0	No	0.00			0.01	0.011	0.0079	Yes	Yes	No	No	No
Area 2	Trichloroethene	79-01-6	185	No	23	Yes	12.43	0.00062	0.64	0.0001	0.2	0.027	No	Yes	No	No	Yes
Area 2	Trichlorofluoromethane	75-69-4	84	No	2	Yes	2.38	0.0062	0.39	0.0001	0.3	385.82	No	No	No	No	Yes
Area 2	Trichlorotriflouroethane	26523-64-8	4	Yes	0	No	0.00			0.0021	0.0022		SL NA	SL NA	SL NA	SL NA	No
Area 2	Trichlorotrifluoromethane	TCTFM	3	Yes	0	No	0.00			0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 2	Vinyl Acetate	108-05-4	20	No	0	No	0.00			0.0052	3	430	No	No	No	No	Yes

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 2	Vinyl chloride	75-01-4	111	No	0	No	0.00			0.0001	0.5	0.009	No	Yes	Yes	No	Yes
Area 2	VOC	VOC	20	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Volatile Organic Hydrocarbons	HVOC	5	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 2	Xylene, total	1330-20-7	359	No	188	Yes	52.37	0.0021	995	0.007	0.5	78	No	No	No	No	No
Area 3	1,1,1-Trichloroethane	71-55-6	71	No	4	Yes	5.63	0.007	0.05	0.0005	0.05	1	No	No	No	No	No
Area 3	1,1,2,2-Tetrachloroethane	79-34-5	60	No	0	No	0.00			0.0005	0.1	0.017	No	Yes	No	No	Yes
Area 3	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	Yes	0	No	0.00			0.1	0.1		SL NA	SL NA	SL NA	SL NA	No
Area 3	1,1,2-Trichloroethane	79-00-5	60	No	0	No	0.00			0.0005	0.1	0.017	No	Yes	No	No	Yes
Area 3	1,1-Dichloroethane	75-34-3	60	No	1	Yes	1.67	0.034	0.034	0.0005	0.05	12	No	No	No	No	No
Area 3	1,1-Dichloroethene	75-35-4	60	No	0	No	0.00			0.0005	0.05	0.03	No	Yes	No	No	No
Area 3	1,2,4-Trichlorobenzene	120-82-1	4	Yes	0	No	0.00			50	50	2	Yes	Yes	Yes	No	No
Area 3	1,2-Dibromoethane	106-93-4	23	No	0	No	0.00			0.005	0.2	0.0000306	Yes	Yes	Yes	Yes	No
Area 3	1,2-Dichlorobenzene	95-50-1	78	No	1	Yes	1.28	0.0091	0.0091	0.0005	50	7	No	Yes	No	No	Yes
Area 3	1,2-Dichloroethane	107-06-2	59	No	0	No	0.00			0.0005	0.1	0.015	No	Yes	No	No	Yes
Area 3	1,2-Dichloropropane	78-87-5	60	No	0	No	0.00			0.0005	0.1	0.017	No	Yes	No	No	Yes
Area 3	1,3-Dichlorobenzene	541-73-1	78	No	0	No	0.00			0.0005	50	12.1	No	Yes	No	No	Yes
Area 3	1,4-Dichlorobenzene	106-46-7	78	No	0	No	0.00			0.0005	50	0.8	No	Yes	Yes	No	Yes
Area 3	1-Methylnaphthalene	90-12-0	3	Yes	3	Yes	100.00	4.2	44			43	No	No	No	No	DL Missing
Area 3	2,4,5-Trichlorophenol	95-95-4	4	Yes	0	No	0.00			250	250	90	Yes	Yes	No	No	No
Area 3	2,4,6-Trichlorophenol	88-06-2	4	Yes	0	No	0.00			50	50	0.6	Yes	Yes	Yes	No	No
Area 3	2,4-Dichlorophenol	120-83-2	4	Yes	0	No	0.00			50	50	0.45	Yes	Yes	Yes	Yes	No
Area 3	2,4-Dimethylphenol	105-67-9	4	Yes	0	No	0.00			50	50	4	Yes	Yes	Yes	No	No
Area 3	2,4-Dinitrophenol	51-28-5	4	Yes	0	No	0.00			250	250	0.2	Yes	Yes	Yes	Yes	No
Area 3	2,4-Dinitrotoluene	121-14-2	4	Yes	0	No	0.00			50	50	0.005	Yes	Yes	Yes	Yes	No
Area 3	2,6-Dinitrotoluene	606-20-2	4	Yes	0	No	0.00			50	50	0.0044	Yes	Yes	Yes	Yes	No
Area 3	2-Butanone	78-93-3	5	Yes	3	Yes	60.00	0.017	0.1	0.03	0.3	60	No	No	No	No	No
Area 3	2-Chloroethylvinyl ether	110-75-8	13	No	0	No	0.00			0.005	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 3	2-Chloronaphthalene	91-58-7	4	Yes	0	No	0.00			50	50	70	No	No	No	No	No
Area 3	2-Chlorophenol	95-57-8	4	Yes	0	No	0.00			50	50	1.4	Yes	Yes	Yes	No	No
Area 3	2-Methylnaphthalene	91-57-6	8	Yes	4	Yes	50.00	2.5	59	50	50	60.9	No	No	No	No	No
Area 3	2-Methylphenol	95-48-7	4	Yes	0	No	0.00			50	50	7	Yes	Yes	No	No	No
Area 3	2-Nitroaniline	88-74-4	4	Yes	0	No	0.00			250	250	1.75	Yes	Yes	Yes	Yes	No
Area 3	2-Nitrophenol	88-75-5	4	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 3	3,3'-Dichlorobenzidine	91-94-1	4	Yes	0	No	0.00			100	100	0.02	Yes	Yes	Yes	Yes	No
Area 3	3-Nitroaniline	99-09-2	4	Yes	0	No	0.00			250	250		SL NA	SL NA	SL NA	SL NA	No
Area 3	4,6-Dinitro-2-methylphenol	534-52-1	4	Yes	0	No	0.00			250	250		SL NA	SL NA	SL NA	SL NA	No
Area 3	4-Bromophenyl-phenylether	101-55-3	4	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 3	4-Chloro-3-methylphenol	59-50-7	4	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 3	4-Chloroaniline	106-47-8	4	Yes	0	No	0.00			50	50	0.5	Yes	Yes	Yes	No	No
Area 3	4-Chlorophenyl-phenylether	7005-72-3	4	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 3	4-Chlorotoluene	106-43-4	14	No	14	Yes	100.00	0.051	102				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	4-Methyl-2-pentanone	108-10-1	2	Yes	0	No	0.00			0.3	0.3	786.53	No	No	No	No	No
Area 3	4-Methylphenol	106-44-5	4	Yes	0	No	0.00			50	50	305.52	No	No	No	No	No
Area 3	4-Nitroaniline	100-01-6	4	Yes	0	No	0.00			50	250		SL NA	SL NA	SL NA	SL NA	No
Area 3	4-Nitrophenol	100-02-7	4	Yes	0	No	0.00			250	250		SL NA	SL NA	SL NA	SL NA	No
Area 3	Acenaphthylene	208-96-8	4	Yes	0	No	0.00			50	50	210	No	No	No	No	No
Area 3	Acetone	67-64-1	43	No	26	Yes	60.47	0.007	7			10	No	No	No	No	DL Missing
Area 3	Ammonia (as N)	7664-41-7	1	Yes	1	Yes	100.00	14	14				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Anthracene	120-12-7	4	Yes	0	No	0.00			50	50	4300	No	No	No	No	No
Area 3	Aroclor 1016	12674-11-2	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Aroclor 1221	11104-28-2	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Aroclor 1232	11141-16-5	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Aroclor 1242	53469-21-9	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 3	Aroclor 1248	12672-29-6	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Aroclor 1254	11097-69-1	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Aroclor 1260	11096-82-5	32	No	0	No	0.00			0.03	0.05	1	No	No	No	No	No
Area 3	Arsenic	7440-38-2	63	No	59	Yes	93.65	0.009	22.7	0.005	1	2	No	No	No	No	Yes
Area 3	Barium	7440-39-3	33	No	21	Yes	63.64	0.5	82	0.5	0.5	1100	No	No	No	No	No
Area 3	Benzene	71-43-2	1168	No	436	Yes	37.33	0.00058	7200	0.00002	100	0.02	No	Yes	Yes	Yes	Yes
Area 3	Benzo(a)anthracene	56-55-3	4	Yes	0	No	0.00			50	50	6	Yes	Yes	No	No	No
Area 3	Benzo(a)pyrene	50-32-8	4	Yes	0	No	0.00			50	50	1	Yes	Yes	Yes	No	No
Area 3	Benzo(b)fluoranthene	205-99-2	4	Yes	0	No	0.00			50	50	11	Yes	Yes	No	No	No
Area 3	Benzo(g,h,i)perylene	191-24-2	4	Yes	0	No	0.00			50	50	1500	No	No	No	No	No
Area 3	Benzo(k)fluoranthene	207-08-9	4	Yes	0	No	0.00			50	50	110	No	No	No	No	No
Area 3	Benzoic acid	65-85-0	4	Yes	0	No	0.00			250	250	390	No	No	No	No	No
Area 3	Benzyl alcohol	100-51-6	4	Yes	0	No	0.00			50	50	18000	No	No	No	No	No
Area 3	bis(2-Chloroethoxy)methane	111-91-1	4	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 3	bis(2-Chloroethyl)ether	111-44-4	4	Yes	0	No	0.00			50	50	0.002	Yes	Yes	Yes	Yes	No
Area 3	Bis(2-chloroisopropyl)ether	39638-32-9	4	Yes	0	No	0.00			50	50	2.9	Yes	Yes	Yes	No	No
Area 3	bis(2-Ethylhexyl)phthalate	117-81-7	4	Yes	0	No	0.00			50	50	590	No	No	No	No	No
Area 3	Bromochloromethane	74-97-5	1	Yes	0	No	0.00			0.005	0.005		SL NA	SL NA	SL NA	SL NA	No
Area 3	Bromodichloromethane	75-27-4	59	No	0	No	0.00			0.0005	0.1	0.82	No	No	No	No	Yes
Area 3	Bromoethane	74-96-4	2	Yes	0	No	0.00			0.02	0.02		SL NA	SL NA	SL NA	SL NA	No
Area 3	Bromoform	75-25-2	60	No	0	No	0.00			0.0005	0.5	0.38	No	Yes	No	No	Yes
Area 3	Bromomethane	74-83-9	57	No	0	No	0.00			0.001	0.5	3.9	No	No	No	No	Yes
Area 3	Butylbenzylphthalate	85-68-7	4	Yes	0	No	0.00			50	50	5600	No	No	No	No	No
Area 3	Cadmium	7440-43-9	57	No	3	Yes	5.26	0.5	1	0.5	1	5	No	No	No	No	No
Area 3	Carbon disulfide	75-15-0	2	Yes	0	No	0.00			0.03	0.03	17	No	No	No	No	No
Area 3	Carbon tetrachloride	56-23-5	60	No	0	No	0.00			0.0005	0.05	0.03	No	Yes	No	No	No
Area 3	Chlorobenzene	108-90-7	77	No	0	No	0.00			0.0005	0.31	0.6	No	No	No	No	Yes
Area 3	Chloroethane	75-00-3	39	No	0	No	0.00			0.005	0.5	3.03	No	No	No	No	No
Area 3	Chloroform	67-66-3	60	No	0	No	0.00			0.0005	0.05	0.34	No	No	No	No	No
Area 3	Chloromethane	74-87-3	57	No	0	No	0.00			0.001	0.5	1.23	No	No	No	No	Yes
Area 3	Chromium	7440-47-3	65	No	48	Yes	73.85	1.1	57	0.5	5	26	No	No	No	No	No
Area 3	Chrysene	218-01-9	4	Yes	0	No	0.00			50	50	620	No	No	No	No	No
Area 3	cis-1,2-Dichloroethene	156-59-2	43	No	1	Yes	2.33	0.043	0.043	0.0005	0.01	0.2	No	No	No	No	No
Area 3	cis-1,3-Dichloropropene	10061-01-5	60	No	0	No	0.00			0.0005	0.2	0.02	No	Yes	No	No	Yes
Area 3	Dibenz(a,h)anthracene	53-70-3	4	Yes	0	No	0.00			50	50	1	Yes	Yes	Yes	No	No
Area 3	Dibenzofuran	132-64-9	4	Yes	0	No	0.00			50	50	7.78	Yes	Yes	No	No	No
Area 3	Dibromochloromethane	124-48-1	60	No	0	No	0.00			0.0005	0.1	1.11	No	No	No	No	Yes
Area 3	Dichlorobenzene	25321-22-6	1	Yes	1	Yes	100.00	0.022	0.022				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Dichloroethane	DCA	12	No	3	Yes	25.00	0.0081	0.02			510	No	No	No	No	DL Missing
Area 3	Dichloromethane	DCM	2	Yes	0	No	0.00			0.01	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 3	Diesel Range Hydrocarbons	DRO	1153	No	774	Yes	67.13	2	805000	1	10000	250	No	Yes	Yes	No	Yes
Area 3	Diethylphthalate	84-66-2	4	Yes	0	No	0.00			50	50	190	No	No	No	No	No
Area 3	Dimethylphthalate	131-11-3	4	Yes	0	No	0.00			50	50	1400	No	No	No	No	No
Area 3	Di-n-butylphthalate	84-74-2	4	Yes	0	No	0.00			50	50	1700	No	No	No	No	No
Area 3	Di-n-octylphthalate	117-84-0	4	Yes	0	No	0.00			50	50	2000	No	No	No	No	No
Area 3	Ethylbenzene	100-41-4	1208	No	509	Yes	42.14	0.003	1139	0.00005	100	5.5	No	Yes	Yes	No	Yes
Area 3	Flashpoint	FLASH	1	Yes	1	Yes	100.00	125	125	70	70		SL NA	SL NA	SL NA	SL NA	No
Area 3	Fluoranthene	206-44-0	4	Yes	0	No	0.00			50	50	2100	No	No	No	No	No
Area 3	Fluorene	86-73-7	4	Yes	0	No	0.00			50	50	270	No	No	No	No	No
Area 3	Gasoline Range Hydrocarbons	GRO	1203	No	614	Yes	51.04	0.001	290000	0.1	4000	300	No	Yes	Yes	No	Yes
Area 3	Hexachlorobenzene	118-74-1	4	Yes	0	No	0.00			50	50	0.73	Yes	Yes	Yes	No	No
Area 3	Hexachlorobutadiene	87-68-3	4	Yes	0	No	0.00			50	50	8	Yes	Yes	No	No	No
Area 3	Hexachlorocyclopentadiene	77-47-4	4	Yes	0	No	0.00			50	50	7	Yes	Yes	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 3	Hexachloroethane	67-72-1	4	Yes	0	No	0.00			50	50	1.6	Yes	Yes	Yes	No	No
Area 3	Indeno(1,2,3-cd)pyrene	193-39-5	4	Yes	0	No	0.00			50	50	11	Yes	Yes	No	No	No
Area 3	Isophorone	78-59-1	4	Yes	0	No	0.00			50	50	3	Yes	Yes	Yes	No	No
Area 3	Lead	7439-92-1	70	No	51	Yes	72.86	1.5	220	1	10	400	No	No	No	No	No
Area 3	m,p-Xylene	136777-61-2	142	No	87	Yes	61.27	0.03	1000	0.0022	11		SL NA	SL NA	SL NA	SL NA	Yes
Area 3	Mercury	7439-97-6	33	No	2	Yes	6.06	0.1	0.3	0.0002	0.1	1.4	No	No	No	No	Yes
Area 3	Methyl tert-Butyl Ether	1634-04-4	7	Yes	0	No	0.00			0.01	0.03	61.54	No	No	No	No	No
Area 3	Methylene chloride	75-09-2	143	No	66	Yes	46.15	0.005	8.44	0.0005	0.79	0.015	No	Yes	Yes	No	Yes
Area 3	Naphthalene	91-20-3	7	Yes	3	Yes	42.86	2.1	22	50	50	21	Yes	Yes	No	No	No
Area 3	N-Nitroso-di-n-propylamine	621-64-7	4	Yes	0	No	0.00			50	50	0.00036	Yes	Yes	Yes	Yes	No
Area 3	N-Nitrosodiphenylamine	86-30-6	4	Yes	0	No	0.00			50	250	3.4	Yes	Yes	Yes	No	No
Area 3	Oil & Grease	O&G	2	Yes	2	Yes	100.00	5.9	46.6				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Organic Lead	ORG Pb	46	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	o-Xylene	95-47-6	142	No	67	Yes	47.18	0.02	1700	0.0011	5.7		SL NA	SL NA	SL NA	SL NA	Yes
Area 3	PCBs, total	PCBs	65	No	3	Yes	4.62	0.051	0.58	0.99	0.99	1	No	No	No	No	No
Area 3	Pentachlorophenol	87-86-5	4	Yes	0	No	0.00			250	250	0.01	Yes	Yes	Yes	Yes	No
Area 3	Percent Moisture	MOIST	65	No	65	Yes	100.00	3.4	36	0.1	0.14		SL NA	SL NA	SL NA	SL NA	No
Area 3	Phenanthrene	85-01-8	4	Yes	0	No	0.00			50	50	4300	No	No	No	No	No
Area 3	Phenol	108-95-2	4	Yes	0	No	0.00			50	50	67	No	No	No	No	No
Area 3	Polynuclear Aromatic Hydrocarbons	PAH	53	No	1	Yes	1.89	0.5	0.5				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Pyrene	129-00-0	4	Yes	0	No	0.00			50	50	1500	No	No	No	No	No
Area 3	Residual Range Organics	RRO	235	No	185	Yes	78.72	5.8	17000	3.3	1300	10000	No	No	No	No	Yes
Area 3	Selenium	7782-49-2	33	No	0	No	0.00			0.005	1	3.5	No	No	No	No	Yes
Area 3	Silver	7440-22-4	33	No	0	No	0.00			0.1	5	21	No	No	No	No	No
Area 3	Styrene	100-42-5	2	Yes	0	No	0.00			0.03	0.03	1.3	No	No	No	No	No
Area 3	Tetrachloroethane	PCA	12	No	3	Yes	25.00	0.06	0.08				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Tetrachloroethene	127-18-4	60	No	0	No	0.00			0.0005	0.05	0.03	No	Yes	No	No	No
Area 3	Toluene	108-88-3	1190	No	519	Yes	43.61	0.002	4200	0.00005	100	5.4	No	Yes	Yes	No	Yes
Area 3	Total 1,2-Dichloroethenes	540-59-0	2	Yes	0	No	0.00			0.03	0.03	43	No	No	No	No	No
Area 3	Total BTEX	BTEX	108	No	99	Yes	91.67	0.02	1038	0.2	0.2		SL NA	SL NA	SL NA	SL NA	No
Area 3	Total Organic Carbon	TOC	8	Yes	8	Yes	100.00	0.31	0.97				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Total Organic Halides	TOX	1	Yes	0	No	0.00			134	134		SL NA	SL NA	SL NA	SL NA	No
Area 3	Total Petroleum Hydrocarbons	TPH	632	No	436	Yes	68.99	0.12	27000	1	250		SL NA	SL NA	SL NA	SL NA	Yes
Area 3	Total Recoverable Petroleum Hydrocarbons	TRPH	10	No	9	Yes	90.00	39	1700				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	Total Solids	TSO	130	No	130	Yes	100.00	63.7	96.7				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 3	trans-1,2-Dichloroethene	156-60-5	58	No	0	No	0.00			0.0005	0.05	0.4	No	No	No	No	No
Area 3	trans-1,3-Dichloropropene	10061-02-6	59	No	0	No	0.00			0.0005	0.1	0.02	No	Yes	No	No	Yes
Area 3	Trichloroethene	79-01-6	60	No	1	Yes	1.67	0.021	0.021	0.0005	0.05	0.027	No	Yes	No	No	No
Area 3	Trichlorofluoromethane	75-69-4	57	No	0	No	0.00			0.0005	0.05	385.82	No	No	No	No	No
Area 3	Vinyl Acetate	108-05-4	2	Yes	0	No	0.00			3	3	430	No	No	No	No	No
Area 3	Vinyl chloride	75-01-4	39	No	0	No	0.00			0.005	0.1	0.009	No	Yes	Yes	No	No
Area 3	Volatile Organic Hydrocarbons	HVOC	34	No	0	No	0.00			0.04	0.04		SL NA	SL NA	SL NA	SL NA	No
Area 3	Xylene, total	1330-20-7	1157	No	626	Yes	54.11	0.0014	4400	0.00005	100	78	No	Yes	No	No	Yes
Area 3	Zinc	7440-66-6	18	No	17	Yes	94.44	50	100	0.05	0.05	9100	No	No	No	No	No
Area 4	1,1,1,2-Tetrachloroethane	630-20-6	4	Yes	0	No	0.00			0.0032	0.01	3.2	No	No	No	No	No
Area 4	1,1,1-Trichloroethane	71-55-6	9	Yes	0	No	0.00			0.0032	0.05	1	No	No	No	No	No
Area 4	1,1,2,2-Tetrachloroethane	79-34-5	9	Yes	0	No	0.00			0.0032	0.05	0.017	No	Yes	No	No	No
Area 4	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	3	Yes	0	No	0.00			0.0032	0.0048		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,1,2-Trichloroethane	79-00-5	6	Yes	0	No	0.00			0.0032	0.00662	0.017	No	No	No	No	No
Area 4	1,1-Dichloroethane	75-34-3	9	Yes	0	No	0.00			0.0032	0.05	12	No	No	No	No	No
Area 4	1,1-Dichloroethene	75-35-4	9	Yes	0	No	0.00			0.0032	0.05	0.03	No	Yes	No	No	No
Area 4	1,1-Dichloropropene	563-58-6	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,2,3-Trichlorobenzene	87-61-6	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No

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Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 4	1,2,3-Trichloropropane	96-18-4	4	Yes	2	Yes	50.00	0.0044	0.0063	0.0032	0.01	0.005	No	Yes	No	No	No
Area 4	1,2,4-Trichlorobenzene	120-82-1	5	Yes	0	No	0.00			0.0032	0.33	2	No	No	No	No	Yes
Area 4	1,2,4-Trimethylbenzene	95-63-6	4	Yes	1	Yes	25.00	0.0011	0.0011	0.0032	0.01	52	No	No	No	No	No
Area 4	1,2-Dibromo-3-chloropropane	96-12-8	4	Yes	0	No	0.00			0.016	0.05	0.45	No	No	No	No	No
Area 4	1,2-Dibromoethane	106-93-4	4	Yes	0	No	0.00			0.0032	0.01	0.0000306	Yes	Yes	Yes	Yes	No
Area 4	1,2-Dichlorobenzene	95-50-1	24	No	0	No	0.00			0.0032	0.33	7	No	No	No	No	Yes
Area 4	1,2-Dichloroethane	107-06-2	9	Yes	0	No	0.00			0.0032	0.05	0.015	No	Yes	No	No	No
Area 4	1,2-Dichloropropane	78-87-5	9	Yes	0	No	0.00			0.0032	0.05	0.017	No	Yes	No	No	No
Area 4	1,2-Dichloropropene	563-54-2	1	Yes	0	No	0.00			0.005	0.005	0.78	No	No	No	No	No
Area 4	1,3,5-Trimethylbenzene	108-67-8	4	Yes	0	No	0.00			0.0032	0.01	21	No	No	No	No	No
Area 4	1,3-Dichlorobenzene	541-73-1	24	No	0	No	0.00			0.0032	0.33	12.1	No	No	No	No	Yes
Area 4	1,3-Dichloropropane	142-28-9	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	1,4-Dichlorobenzene	106-46-7	24	No	0	No	0.00			0.0032	0.33	0.8	No	No	No	No	Yes
Area 4	2,2-Dichloropropane	594-20-7	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	2,4,5-Trichlorophenol	95-95-4	1	Yes	0	No	0.00			0.33	0.33	90	No	No	No	No	No
Area 4	2,4,6-Trichlorophenol	88-06-2	1	Yes	0	No	0.00			0.33	0.33	0.6	No	No	No	No	No
Area 4	2,4-Dichlorophenol	120-83-2	1	Yes	0	No	0.00			0.33	0.33	0.45	No	No	No	No	No
Area 4	2,4-Dimethylphenol	105-67-9	1	Yes	0	No	0.00			0.33	0.33	4	No	No	No	No	No
Area 4	2,4-Dinitrophenol	51-28-5	1	Yes	0	No	0.00			1.65	1.65	0.2	Yes	Yes	No	No	No
Area 4	2,4-Dinitrotoluene	121-14-2	1	Yes	0	No	0.00			0.33	0.33	0.005	Yes	Yes	Yes	No	No
Area 4	2,6-Dinitrotoluene	606-20-2	1	Yes	0	No	0.00			0.33	0.33	0.0044	Yes	Yes	Yes	No	No
Area 4	2-Butanone	78-93-3	6	Yes	1	Yes	16.67	0.05	0.05	0.05	0.12	60	No	No	No	No	No
Area 4	2-Chloroethylvinyl ether	110-75-8	5	Yes	0	No	0.00			0.005	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 4	2-Chloronaphthalene	91-58-7	1	Yes	0	No	0.00			0.33	0.33	70	No	No	No	No	No
Area 4	2-Chlorophenol	95-57-8	1	Yes	0	No	0.00			0.33	0.33	1.4	No	No	No	No	No
Area 4	2-Chlorotoluene	95-49-8	4	Yes	0	No	0.00			0.0032	0.01	160	No	No	No	No	No
Area 4	2-Hexanone	591-78-6	5	Yes	0	No	0.00			0.02	0.12		SL NA	SL NA	SL NA	SL NA	No
Area 4	2-Methylnaphthalene	91-57-6	1	Yes	0	No	0.00			0.33	0.33	60.9	No	No	No	No	No
Area 4	2-Methylphenol	95-48-7	1	Yes	0	No	0.00			0.33	0.33	7	No	No	No	No	No
Area 4	2-Nitroaniline	88-74-4	1	Yes	0	No	0.00			1.65	1.65	1.75	No	No	No	No	No
Area 4	2-Nitrophenol	88-75-5	1	Yes	0	No	0.00			0.33	0.33		SL NA	SL NA	SL NA	SL NA	No
Area 4	3,3'-Dichlorobenzidine	91-94-1	1	Yes	0	No	0.00			0.66	0.66	0.02	Yes	Yes	Yes	No	No
Area 4	3-Nitroaniline	99-09-2	2	Yes	0	No	0.00			0.65	1.65		SL NA	SL NA	SL NA	SL NA	No
Area 4	4,6-Dinitro-2-methylphenol	534-52-1	1	Yes	0	No	0.00			1.65	1.65		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Bromophenyl-phenylether	101-55-3	1	Yes	0	No	0.00			0.33	0.33		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Chloro-3-methylphenol	59-50-7	1	Yes	0	No	0.00			0.33	0.33		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Chloroaniline	106-47-8	1	Yes	0	No	0.00			0.33	0.33	0.5	No	No	No	No	No
Area 4	4-Chlorophenyl-phenylether	7005-72-3	1	Yes	0	No	0.00			0.33	0.33		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Chlorotoluene	106-43-4	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Isopropyl toluene	99-87-6	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Methyl-2-pentanone	108-10-1	5	Yes	0	No	0.00			0.02	0.12	786.53	No	No	No	No	No
Area 4	4-Methylphenol	106-44-5	1	Yes	0	No	0.00			0.33	0.33	305.52	No	No	No	No	No
Area 4	4-Nitroaniline	100-01-6	1	Yes	0	No	0.00			1.65	1.65		SL NA	SL NA	SL NA	SL NA	No
Area 4	4-Nitrophenol	100-02-7	1	Yes	0	No	0.00			1.65	1.65		SL NA	SL NA	SL NA	SL NA	No
Area 4	Acenaphthene	83-32-9	10	No	0	No	0.00			0.0016	1.4	210	No	No	No	No	Yes
Area 4	Acenaphthylene	208-96-8	7	Yes	0	No	0.00			0.0016	1.4	210	No	No	No	No	Yes
Area 4	Acetone	67-64-1	5	Yes	2	Yes	40.00	0.08	0.094	0.005	0.12	10	No	No	No	No	No
Area 4	Acrylonitrile	107-13-1	3	Yes	0	No	0.00			0.016	0.024	0.21	No	No	No	No	No
Area 4	Anthracene	120-12-7	11	No	4	Yes	36.36	0.04	0.7	0.0016	1.4	4300	No	No	No	No	Yes
Area 4	Antimony	7440-36-0	6	Yes	0	No	0.00			0.22	0.25	3.6	No	No	No	No	No
Area 4	Aroclor 1016	12674-11-2	3	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1221	11104-28-2	3	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1232	11141-16-5	6	Yes	2	Yes	33.33	0.81	0.81	0.03	0.03	1	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 4	Aroclor 1242	53469-21-9	3	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1248	12672-29-6	3	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1254	11097-69-1	3	Yes	0	No	0.00			0.03	0.03	1	No	No	No	No	No
Area 4	Aroclor 1260	11096-82-5	6	Yes	2	Yes	33.33	0.62	0.62	0.03	0.03	1	No	No	No	No	No
Area 4	Arsenic	7440-38-2	45	No	23	Yes	51.11	0.01	13.2	1.36	30.1	2	No	Yes	Yes	No	No
Area 4	Barium	7440-39-3	1	Yes	1	Yes	100.00	76	76			1100	No	No	No	No	DL Missing
Area 4	Benzene	71-43-2	108	No	17	Yes	15.74	0.002	0.89	0.0017	0.06	0.02	No	Yes	No	No	No
Area 4	Benzo(a)anthracene	56-55-3	11	No	3	Yes	27.27	0.19	1.1	0.0016	1.4	6	No	No	No	No	Yes
Area 4	Benzo(a)pyrene	50-32-8	11	No	3	Yes	27.27	0.089	0.139	0.0016	1.4	1	No	Yes	No	No	Yes
Area 4	Benzo(b)fluoranthene	205-99-2	11	No	4	Yes	36.36	0.11	0.235	0.0016	1.4	11	No	No	No	No	Yes
Area 4	Benzo(g,h,i)perylene	191-24-2	11	No	2	Yes	18.18	0.0772	0.77	0.0016	1.4	1500	No	No	No	No	Yes
Area 4	Benzo(k)fluoranthene	207-08-9	11	No	2	Yes	18.18	0.03	0.0357	0.0016	1.4	110	No	No	No	No	Yes
Area 4	Benzoic acid	65-85-0	1	Yes	0	No	0.00			1.65	1.65	390	No	No	No	No	No
Area 4	Benzyl alcohol	100-51-6	1	Yes	0	No	0.00			0.33	0.33	18000	No	No	No	No	No
Area 4	Beryllium	7440-41-7	6	Yes	6	Yes	100.00	0.36	0.6	0.12	0.22	42	No	No	No	No	No
Area 4	bis(2-Chloroethoxy)methane	111-91-1	1	Yes	0	No	0.00			0.33	0.33		SL NA	SL NA	SL NA	SL NA	No
Area 4	bis(2-Chloroethyl)ether	111-44-4	1	Yes	0	No	0.00			0.33	0.33	0.002	Yes	Yes	Yes	Yes	No
Area 4	Bis(2-chloroisopropyl)ether	39638-32-9	1	Yes	0	No	0.00			0.33	0.33	2.9	No	No	No	No	No
Area 4	bis(2-Ethylhexyl)phthalate	117-81-7	1	Yes	0	No	0.00			0.33	0.33	590	No	No	No	No	No
Area 4	Bromobenzene	108-86-1	4	Yes	0	No	0.00			0.0032	0.01	27	No	No	No	No	No
Area 4	Bromochloromethane	74-97-5	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	Bromodichloromethane	75-27-4	9	Yes	0	No	0.00			0.0032	0.05	0.82	No	No	No	No	No
Area 4	Bromoform	75-25-2	9	Yes	0	No	0.00			0.0032	0.05	0.38	No	No	No	No	No
Area 4	Bromomethane	74-83-9	6	Yes	0	No	0.00			0.005	0.05	3.9	No	No	No	No	No
Area 4	Butylbenzylphthalate	85-68-7	1	Yes	0	No	0.00			0.33	0.33	5600	No	No	No	No	No
Area 4	Cadmium	7440-43-9	45	No	22	Yes	48.89	0.08	3.16	0.02	258	5	No	Yes	Yes	No	Yes
Area 4	Carbon disulfide	75-15-0	5	Yes	1	Yes	20.00	0.0095	0.0095	0.0032	0.05	17	No	No	No	No	No
Area 4	Carbon tetrachloride	56-23-5	9	Yes	0	No	0.00			0.0032	0.05	0.03	No	Yes	No	No	No
Area 4	Chlorobenzene	108-90-7	24	No	0	No	0.00			0.0032	0.05	0.6	No	No	No	No	No
Area 4	Chloroethane	75-00-3	6	Yes	0	No	0.00			0.005	0.05	3.03	No	No	No	No	No
Area 4	Chloroform	67-66-3	9	Yes	1	Yes	11.11	0.01	0.01	0.0032	0.05	0.34	No	No	No	No	No
Area 4	Chloromethane	74-87-3	6	Yes	0	No	0.00			0.005	0.012	1.23	No	No	No	No	No
Area 4	Chromium	7440-47-3	46	No	27	Yes	58.70	0.01	58.6	1	21.7	26	No	No	No	No	No
Area 4	Chrysene	218-01-9	11	No	5	Yes	45.45	0.17	1.1	0.0016	1.4	620	No	No	No	No	Yes
Area 4	cis-1,2-Dichloroethene	156-59-2	8	Yes	0	No	0.00			0.0032	0.05	0.2	No	No	No	No	No
Area 4	cis-1,3-Dichloropropene	10061-01-5	6	Yes	0	No	0.00			0.0032	0.01	0.02	No	No	No	No	No
Area 4	Copper	7440-50-8	6	Yes	6	Yes	100.00	18.1	111	2.47	5.62	4060	No	No	No	No	No
Area 4	Dibenz(a,h)anthracene	53-70-3	11	No	2	Yes	18.18	0.02	0.0207	0.0016	1.4	1	No	Yes	No	No	Yes
Area 4	Dibenzofuran	132-64-9	1	Yes	0	No	0.00			0.33	0.33	7.78	No	No	No	No	No
Area 4	Dibromochloromethane	124-48-1	9	Yes	0	No	0.00			0.0032	0.05	1.11	No	No	No	No	No
Area 4	Dibromomethane	74-95-3	4	Yes	0	No	0.00			0.0032	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	Dichlorodifluoromethane	75-71-8	4	Yes	0	No	0.00			0.0079	0.012	60	No	No	No	No	No
Area 4	Diesel Range Hydrocarbons	DRO	128	No	110	Yes	85.94	0.2	12000	0.02	527	250	No	Yes	No	No	Yes
Area 4	Diethylphthalate	84-66-2	1	Yes	0	No	0.00			0.33	0.33	190	No	No	No	No	No
Area 4	Dimethylphthalate	131-11-3	1	Yes	0	No	0.00			0.33	0.33	1400	No	No	No	No	No
Area 4	Di-n-butylphthalate	84-74-2	1	Yes	0	No	0.00			0.33	0.33	1700	No	No	No	No	No
Area 4	Di-n-octylphthalate	117-84-0	1	Yes	0	No	0.00			0.33	0.33	2000	No	No	No	No	No
Area 4	EP Toxicity	EPTOX	1	Yes	1	Yes	100.00	0.0094	0.0094				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 4	Ethylbenzene	100-41-4	96	No	19	Yes	19.79	0.02	1.44	0.0017	0.24	5.5	No	No	No	No	Yes
Area 4	Fluoranthene	206-44-0	11	No	3	Yes	27.27	0.17	0.268	0.0016	1.4	2100	No	No	No	No	Yes
Area 4	Fluorene	86-73-7	11	No	4	Yes	36.36	0.02	0.92	0.0016	1.4	270	No	No	No	No	Yes
Area 4	Gasoline Range Hydrocarbons	GRO	91	No	20	Yes	21.98	0.2	244	0.02	12.2	300	No	No	No	No	Yes
Area 4	Hexachlorobenzene	118-74-1	1	Yes	0	No	0.00			0.33	0.33	0.73	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 4	Hexachlorobutadiene	87-68-3	5	Yes	0	No	0.00			0.0032	0.33	8	No	No	No	No	Yes
Area 4	Hexachlorocyclopentadiene	77-47-4	1	Yes	0	No	0.00			0.33	0.33	7	No	No	No	No	No
Area 4	Hexachloroethane	67-72-1	1	Yes	0	No	0.00			0.33	0.33	1.6	No	No	No	No	No
Area 4	Indeno(1,2,3-cd)pyrene	193-39-5	11	No	2	Yes	18.18	0.07	0.0736	0.0016	1.4	11	No	No	No	No	Yes
Area 4	Isophorone	78-59-1	1	Yes	0	No	0.00			0.33	0.33	3	No	No	No	No	No
Area 4	Isopropylbenzene	98-82-8	4	Yes	0	No	0.00			0.0032	0.01	227	No	No	No	No	No
Area 4	Lead	7439-92-1	46	No	27	Yes	58.70	0.01	239	2.52	21.7	400	No	No	No	No	No
Area 4	m,p-Xylene	136777-61-2	49	No	20	Yes	40.82	0.02	24.7	0.0032	0.24		SL NA	SL NA	SL NA	SL NA	No
Area 4	Magnesium	7439-95-4	6	Yes	6	Yes	100.00	7.7	7830	24.7	56.2		SL NA	SL NA	SL NA	SL NA	No
Area 4	Mercury	7439-97-6	33	No	22	Yes	66.67	0.07	15.4	0.01	2	1.4	No	Yes	No	No	Yes
Area 4	Methyl Iodide	74-88-4	3	Yes	0	No	0.00			0.0034	0.012		SL NA	SL NA	SL NA	SL NA	No
Area 4	Methyl tert-Butyl Ether	1634-04-4	3	Yes	0	No	0.00			0.0032	0.0048	61.54	No	No	No	No	No
Area 4	Methylene chloride	75-09-2	10	No	3	Yes	30.00	0.0044	0.02	0.005	0.53	0.015	No	Yes	Yes	No	Yes
Area 4	Naphthalene	91-20-3	14	No	4	Yes	28.57	0.0042	0.0265	0.0016	1.4	21	No	No	No	No	Yes
Area 4	n-Butylbenzene	104-51-8	4	Yes	0	No	0.00			0.0032	0.01	240	No	No	No	No	No
Area 4	Nickel	7440-02-0	6	Yes	6	Yes	100.00	25.9	41.7	4.94	11.2	87	No	No	No	No	No
Area 4	Nitrobenzene	98-95-3	1	Yes	0	No	0.00			0.33	0.33	0.06	Yes	Yes	No	No	No
Area 4	N-Nitroso-di-n-propylamine	621-64-7	1	Yes	0	No	0.00			0.33	0.33	0.00036	Yes	Yes	Yes	Yes	No
Area 4	N-Nitrosodiphenylamine	86-30-6	1	Yes	0	No	0.00			0.33	0.33	3.4	No	No	No	No	No
Area 4	n-Propylbenzene	103-65-1	4	Yes	0	No	0.00			0.0032	0.01	240	No	No	No	No	No
Area 4	o-Xylene	95-47-6	49	No	9	Yes	18.37	0.02	19	0.0017	0.24		SL NA	SL NA	SL NA	SL NA	Yes
Area 4	PCBs, total	PCBs	49	No	15	Yes	30.61	0.03	48	0.03	1	1	No	No	No	No	No
Area 4	Pentachlorophenol	87-86-5	1	Yes	0	No	0.00			1.65	1.65	0.01	Yes	Yes	Yes	Yes	No
Area 4	Percent Moisture	MOIST	7	Yes	7	Yes	100.00	4.8	58	0.02	0.04		SL NA	SL NA	SL NA	SL NA	No
Area 4	Phenanthrene	85-01-8	11	No	4	Yes	36.36	0.07	5.7	0.0016	1.4	4300	No	No	No	No	Yes
Area 4	Phenol	108-95-2	1	Yes	0	No	0.00			0.33	0.33	67	No	No	No	No	No
Area 4	Polynuclear Aromatic Hydrocarbons	PAH	3	Yes	0	No	0.00			0.0016	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 4	Pyrene	129-00-0	11	No	5	Yes	45.45	0.41	0.87	0.0016	1.4	1500	No	No	No	No	Yes
Area 4	Residual Range Organics	RRO	111	No	73	Yes	65.77	13.3	81800	0.02	870	10000	No	No	No	No	Yes
Area 4	sec-Butylbenzene	135-98-8	4	Yes	0	No	0.00			0.0032	0.01	220	No	No	No	No	No
Area 4	Selenium	7782-49-2	7	Yes	2	Yes	28.57	0.48	0.48	0.22	10	3.5	No	Yes	No	No	No
Area 4	Silver	7440-22-4	7	Yes	2	Yes	28.57	0.14	0.14	0.04	0.5	21	No	No	No	No	No
Area 4	Styrene	100-42-5	5	Yes	0	No	0.00			0.0032	0.01	1.3	No	No	No	No	No
Area 4	tert-Butylbenzene	98-06-6	4	Yes	0	No	0.00			0.0032	0.01	390	No	No	No	No	No
Area 4	Tetrachloroethene	127-18-4	9	Yes	0	No	0.00			0.0032	0.05	0.03	No	Yes	No	No	No
Area 4	Thallium	7440-28-0	6	Yes	0	No	0.00			0.22	0.25	5.2	No	No	No	No	No
Area 4	Toluene	108-88-3	97	No	45	Yes	46.39	0.008	3.23	0.0017	0.24	5.4	No	No	No	No	Yes
Area 4	Total BTEX	BTEX	18	No	8	Yes	44.44	0.03	0.76				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 4	Total Organic Halides	TOX	4	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Area 4	Total Petroleum Hydrocarbons	TPH	26	No	21	Yes	80.77	7	1520	0.005	15		SL NA	SL NA	SL NA	SL NA	Yes
Area 4	Total Solids	TSO	50	No	50	Yes	100.00	0.02	98.3	1.06	1.06		SL NA	SL NA	SL NA	SL NA	No
Area 4	trans-1,2-Dichloroethene	156-60-5	9	Yes	0	No	0.00			0.0032	0.05	0.4	No	No	No	No	No
Area 4	trans-1,3-Dichloropropene	10061-02-6	5	Yes	0	No	0.00			0.0032	0.01	0.02	No	No	No	No	No
Area 4	trans-1,4-Dichloro-2-butene	110-57-6	3	Yes	0	No	0.00			0.016	0.024	0.0079	Yes	Yes	No	No	No
Area 4	Trichloroethene	79-01-6	9	Yes	0	No	0.00			0.0032	0.05	0.027	No	Yes	No	No	No
Area 4	Trichlorofluoromethane	75-69-4	5	Yes	0	No	0.00			0.0032	0.01	385.82	No	No	No	No	No
Area 4	Vinyl Acetate	108-05-4	4	Yes	0	No	0.00			0.0079	0.02	430	No	No	No	No	No
Area 4	Vinyl chloride	75-01-4	6	Yes	0	No	0.00			0.0032	0.01	0.009	No	Yes	No	No	No
Area 4	Volatile Organic Hydrocarbons	HVOC	21	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 4	Xylene, total	1330-20-7	57	No	36	Yes	63.16	0.006	44	0.005	0.07	78	No	No	No	No	No
Area 4	Zinc	7440-66-6	6	Yes	6	Yes	100.00	44.9	321	4.94	11.2	9100	No	No	No	No	No
Area 5	1,1,1,2-Tetrachloroethane	630-20-6	79	No	0	No	0.00			0.0005	10	3.2	No	Yes	No	No	Yes
Area 5	1,1,1-Trichloroethane	71-55-6	294	No	7	Yes	2.38	0.007	0.05	0.0005	10	1	No	Yes	No	No	Yes

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	1,1,2,2-Tetrachloroethane	79-34-5	193	No	0	No	0.00			0.0005	10	0.017	No	Yes	Yes	Yes	Yes
Area 5	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	13	No	0	No	0.00			1	10		SL NA	SL NA	SL NA	SL NA	No
Area 5	1,1,2-Trichloroethane	79-00-5	180	No	2	Yes	1.11	0.02	4.5	0.0005	10	0.017	No	Yes	Yes	Yes	Yes
Area 5	1,1-Dichloroethane	75-34-3	193	No	1	Yes	0.52	0.00153	0.00153	0.0005	10	12	No	No	No	No	Yes
Area 5	1,1-Dichloroethene	75-35-4	192	No	1	Yes	0.52	0.04	0.04	0.0005	10	0.03	No	Yes	Yes	Yes	Yes
Area 5	1,1-Dichloropropane	78-99-9	28	No	0	No	0.00			0.2	0.2		SL NA	SL NA	SL NA	SL NA	No
Area 5	1,1-Dichloropropene	563-58-6	51	No	1	Yes	1.96	0.081	0.081	0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	9	Yes	9	Yes	100.00	8.70E-06	3.30E-04			3.90E-04	No	No	No	No	DL Missing
Area 5	1,2,3,4,6,7,8-HPCDF	67562-39-4	9	Yes	8	Yes	88.89	1.00E-05	2.70E-04	5.50E-06	5.50E-06	3.90E-04	No	No	No	No	No
Area 5	1,2,3,4,7,8,9-HPCDF	55673-89-7	9	Yes	2	Yes	22.22	7.60E-06	1.00E-05	1.20E-06	1.70E-05	3.90E-04	No	No	No	No	No
Area 5	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	9	Yes	1	Yes	11.11	3.30E-06	3.30E-06	6.10E-07	8.10E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,4,7,8-HXCDF	70648-26-9	9	Yes	1	Yes	11.11	4.20E-06	4.20E-06	7.60E-07	4.20E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	12	No	1	Yes	8.33	2.00E-05	2.00E-05	7.20E-07	4.30E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	9	Yes	2	Yes	22.22	1.30E-06	3.40E-06	3.50E-06	7.20E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8,9-HxCDF	72918-21-9	9	Yes	1	Yes	11.11	4.20E-06	4.20E-06	4.80E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9	Yes	1	Yes	11.11	1.50E-06	1.50E-06	9.20E-07	9.30E-06	7.80E-05	No	No	No	No	No
Area 5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	9	Yes	1	Yes	11.11	1.90E-06	1.90E-06	5.80E-07	6.40E-06	3.90E-05	No	No	No	No	No
Area 5	1,2,3-Trichlorobenzene	87-61-6	211	No	2	Yes	0.95	0.98	0.98	0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	1,2,3-Trichloropropane	96-18-4	79	No	0	No	0.00			0.0005	10	0.005	No	Yes	Yes	Yes	Yes
Area 5	1,2,4-Trichlorobenzene	120-82-1	83	No	1	Yes	1.20	3.85	3.85	0.0005	10	2	No	Yes	No	No	Yes
Area 5	1,2,4-Trimethylbenzene	95-63-6	248	No	102	Yes	41.13	0.001	360	0.0005	13	52	No	No	No	No	Yes
Area 5	1,2-Dibromo-3-chloropropane	96-12-8	79	No	0	No	0.00			0.0005	10	0.45	No	Yes	Yes	No	Yes
Area 5	1,2-Dibromoethane	106-93-4	79	No	0	No	0.00			0.0005	10	0.0000306	Yes	Yes	Yes	Yes	Yes
Area 5	1,2-Dichlorobenzene	95-50-1	230	No	4	Yes	1.74	0.02	0.69	0.0005	10	7	No	Yes	No	No	Yes
Area 5	1,2-Dichloroethane	107-06-2	183	No	0	No	0.00			0.0005	10	0.015	No	Yes	Yes	Yes	Yes
Area 5	1,2-Dichloropropane	78-87-5	194	No	1	Yes	0.52	1.3	1.3	0.0005	10	0.017	No	Yes	Yes	Yes	Yes
Area 5	1,2-Dichloropropene	563-54-2	15	No	0	No	0.00			0.02	0.02	0.78	No	No	No	No	No
Area 5	1,3,5-Trimethylbenzene	108-67-8	247	No	98	Yes	39.68	0.0046	110	0.0005	10	21	No	No	No	No	Yes
Area 5	1,3-Dichlorobenzene	541-73-1	231	No	0	No	0.00			0.0005	10	12.1	No	No	No	No	Yes
Area 5	1,3-Dichloropropane	142-28-9	79	No	0	No	0.00			0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	1,4-Dichlorobenzene	106-46-7	230	No	3	Yes	1.30	0.02	0.14	0.0005	10	0.8	No	Yes	Yes	No	Yes
Area 5	2,2-Dichloropropane	594-20-7	79	No	0	No	0.00			0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	2,3,4,6,7,8-HXCDF	60851-34-5	9	Yes	2	Yes	22.22	1.60E-06	6.30E-06	2.00E-06	4.10E-06	3.90E-05	No	No	No	No	No
Area 5	2,3,4,7,8-PECDF	57117-31-4	9	Yes	2	Yes	22.22	1.60E-06	5.70E-06	3.70E-06	9.40E-06	7.80E-06	No	Yes	No	No	No
Area 5	2,3,7,8-TCDD	1746-01-6	9	Yes	1	Yes	11.11	3.40E-07	3.40E-07	2.00E-06	3.70E-06	3.90E-06	No	No	No	No	No
Area 5	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9	Yes	1	Yes	11.11	3.80E-06	3.80E-06	6.80E-07	4.40E-06	3.90E-05	No	No	No	No	No
Area 5	2,4,5-Trichlorophenol	95-95-4	30	No	0	No	0.00			0.01	6	90	No	No	No	No	Yes
Area 5	2,4,6-Trichlorophenol	88-06-2	30	No	0	No	0.00			0.01	6	0.6	No	Yes	No	No	Yes
Area 5	2,4-Dichlorophenol	120-83-2	30	No	0	No	0.00			0.01	6	0.45	No	Yes	Yes	No	Yes
Area 5	2,4-Dimethylphenol	105-67-9	30	No	0	No	0.00			0.01	6	4	No	Yes	No	No	Yes
Area 5	2,4-Dinitrophenol	51-28-5	30	No	0	No	0.00			0.01	40	0.2	No	Yes	Yes	Yes	Yes
Area 5	2,4-Dinitrotoluene	121-14-2	30	No	0	No	0.00			0.01	6	0.005	Yes	Yes	Yes	Yes	Yes
Area 5	2,6-Dinitrotoluene	606-20-2	30	No	0	No	0.00			0.01	6	0.0044	Yes	Yes	Yes	Yes	Yes
Area 5	2-Butanone	78-93-3	320	No	30	Yes	9.38	0.033	2.1	0.0025	100	60	No	Yes	No	No	Yes
Area 5	2-Chloroethylvinyl ether	110-75-8	104	No	0	No	0.00			0.005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	2-Chloronaphthalene	91-58-7	30	No	0	No	0.00			0.01	6	70	No	No	No	No	Yes
Area 5	2-Chlorophenol	95-57-8	30	No	0	No	0.00			0.01	6	1.4	No	Yes	No	No	Yes
Area 5	2-Chlorotoluene	95-49-8	79	No	0	No	0.00			0.0005	10	160	No	No	No	No	Yes
Area 5	2-Hexanone	591-78-6	106	No	1	Yes	0.94	7.7	7.7	0.0025	51		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	2-Methylnaphthalene	91-57-6	314	No	61	Yes	19.43	1.4	470	0.3	6	60.9	No	No	No	No	No
Area 5	2-Methylphenol	95-48-7	30	No	0	No	0.00			0.01	6	7	No	No	No	No	Yes
Area 5	2-Nitroaniline	88-74-4	30	No	0	No	0.00			0.01	40	1.75	No	Yes	Yes	No	Yes
Area 5	2-Nitrophenol	88-75-5	30	No	0	No	0.00			0.01	6		SL NA	SL NA	SL NA	SL NA	Yes

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	3,3'-Dichlorobenzidine	91-94-1	30	No	0	No	0.00			0.01	6	0.02	No	Yes	Yes	Yes	Yes
Area 5	3-Methylphenol	108-39-4	29	No	0	No	0.00			0.3	6	3100	No	No	No	No	No
Area 5	3-Nitroaniline	99-09-2	30	No	0	No	0.00			0.01	40		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4,4'-DDD	72-54-8	53	No	19	Yes	35.85	0.006	2.3	0.01	0.6	35	No	No	No	No	No
Area 5	4,4'-DDE	72-55-9	53	No	4	Yes	7.55	0.005	0.02	0.01	0.6	24	No	No	No	No	No
Area 5	4,4'-DDT	50-29-3	53	No	5	Yes	9.43	0.01	0.18	0.01	0.6	24	No	No	No	No	No
Area 5	4,6-Dinitro-2-methylphenol	534-52-1	30	No	0	No	0.00			0.01	40		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Bromophenyl-phenylether	101-55-3	30	No	0	No	0.00			0.01	6		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Chloro-3-methylphenol	59-50-7	30	No	0	No	0.00			0.01	6		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Chloroaniline	106-47-8	30	No	0	No	0.00			0.01	6	0.5	No	Yes	Yes	No	Yes
Area 5	4-Chlorophenyl-phenylether	7005-72-3	30	No	0	No	0.00			0.01	6		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Chlorotoluene	106-43-4	79	No	0	No	0.00			0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Isopropyl toluene	99-87-6	247	No	63	Yes	25.51	0.052	340	0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Methyl-2-pentanone	108-10-1	231	No	3	Yes	1.30	0.17	4	0.0005	50	786.53	No	No	No	No	Yes
Area 5	4-Methylphenol	106-44-5	30	No	0	No	0.00			0.01	6	305.52	No	No	No	No	Yes
Area 5	4-Nitroaniline	100-01-6	30	No	0	No	0.00			0.01	40		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	4-Nitrophenol	100-02-7	30	No	0	No	0.00			0.01	40		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	Acenaphthene	83-32-9	310	No	6	Yes	1.94	0.5	0.5	0.01	6	210	No	No	No	No	Yes
Area 5	Acenaphthylene	208-96-8	64	No	0	No	0.00			0.01	6	210	No	No	No	No	Yes
Area 5	Acetone	67-64-1	339	No	57	Yes	16.81	0.013	17	0.0025	120	10	No	Yes	Yes	No	Yes
Area 5	Acrylonitrile	107-13-1	3	Yes	0	No	0.00			0.2	0.22	0.21	No	Yes	No	No	No
Area 5	Aldrin	309-00-2	29	No	0	No	0.00			0.01	0.6	0.5	No	Yes	No	No	No
Area 5	alpha-BHC	319-84-6	30	No	0	No	0.00			0.01	0.6	0.0026	Yes	Yes	Yes	Yes	No
Area 5	Aluminum	7429-90-5	59	No	59	Yes	100.00	1200	124000	20	20	76000	No	No	No	No	No
Area 5	Aniline	62-53-3	29	No	0	No	0.00			0.3	6	85	No	No	No	No	No
Area 5	Anthracene	120-12-7	310	No	7	Yes	2.26	0.049	1.3	0.01	6	4300	No	No	No	No	Yes
Area 5	Antifreeze, quantitative	ANTIFreeze	9	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
Area 5	Antimony	7440-36-0	34	No	1	Yes	2.94	10	10	10	10	3.6	Yes	Yes	No	No	No
Area 5	Aroclor 1016	12674-11-2	89	No	0	No	0.00			0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1221	11104-28-2	94	No	5	Yes	5.32	0.69	24	0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1232	11141-16-5	89	No	0	No	0.00			0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1242	53469-21-9	98	No	12	Yes	12.24	1.14	109	0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1248	12672-29-6	88	No	1	Yes	1.14	0.63	0.63	0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1254	11097-69-1	88	No	2	Yes	2.27	0.89	2	0.01	2	1	No	Yes	No	No	Yes
Area 5	Aroclor 1260	11096-82-5	103	No	46	Yes	44.66	0.04	1342	0.01	2	1	No	Yes	No	No	Yes
Area 5	Arsenic	7440-38-2	94	No	90	Yes	95.74	0.01	94	0.2	2.4	2	No	Yes	No	No	No
Area 5	Barium	7440-39-3	87	No	80	Yes	91.95	0.2	302	0.48	4.49	1100	No	No	No	No	No
Area 5	Benzene	71-43-2	727	No	173	Yes	23.80	0.0019	63	0.00005	10	0.02	No	Yes	Yes	Yes	Yes
Area 5	Benzo(a)anthracene	56-55-3	310	No	10	Yes	3.23	0.058	1	0.01	6	6	No	No	No	No	Yes
Area 5	Benzo(a)pyrene	50-32-8	315	No	14	Yes	4.44	0.4	2	0.01	60	1	No	Yes	Yes	No	Yes
Area 5	Benzo(b)fluoranthene	205-99-2	310	No	10	Yes	3.23	0.087	1.7	0.01	60	11	No	Yes	No	No	Yes
Area 5	Benzo(g,h,i)perylene	191-24-2	310	No	6	Yes	1.94	0.4	0.9	0.01	60	1500	No	No	No	No	Yes
Area 5	Benzo(k)fluoranthene	207-08-9	310	No	6	Yes	1.94	0.5	0.6	0.01	60	110	No	No	No	No	Yes
Area 5	Benzoic acid	65-85-0	30	No	0	No	0.00			0.01	40	390	No	No	No	No	Yes
Area 5	Benzyl alcohol	100-51-6	30	No	0	No	0.00			0.01	6	18000	No	No	No	No	Yes
Area 5	Beryllium	7440-41-7	34	No	0	No	0.00			1	1	42	No	No	No	No	No
Area 5	beta-BHC	319-85-7	30	No	0	No	0.00			0.01	0.6	0.009	Yes	Yes	Yes	No	No
Area 5	bis(2-Chloroethoxy)methane	111-91-1	30	No	0	No	0.00			0.01	6		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	bis(2-Chloroethyl)ether	111-44-4	30	No	0	No	0.00			0.01	6	0.002	Yes	Yes	Yes	Yes	Yes
Area 5	Bis(2-chloroisopropyl)ether	39638-32-9	30	No	0	No	0.00			0.01	6	2.9	No	Yes	No	No	Yes
Area 5	bis(2-Ethylhexyl)phthalate	117-81-7	30	No	1	Yes	3.33	0.17	0.17	0.3	6	590	No	No	No	No	No
Area 5	Bromobenzene	108-86-1	79	No	0	No	0.00			0.0005	10	27	No	No	No	No	Yes
Area 5	Bromochloromethane	74-97-5	79	No	0	No	0.00			0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	Bromodichloromethane	75-27-4	194	No	0	No	0.00			0.0005	10	0.82	No	Yes	Yes	No	Yes
Area 5	Bromoethane	74-96-4	22	No	0	No	0.00			0.01	0.2		SL NA	SL NA	SL NA	SL NA	No
Area 5	Bromoform	75-25-2	193	No	0	No	0.00			0.0005	10	0.38	No	Yes	Yes	No	Yes
Area 5	Bromomethane	74-83-9	156	No	14	Yes	8.97	0.2	0.5	0.0005	10	3.9	No	Yes	No	No	Yes
Area 5	Butylbenzylphthalate	85-68-7	30	No	0	No	0.00			0.01	6	5600	No	No	No	No	Yes
Area 5	Cadmium	7440-43-9	62	No	10	Yes	16.13	0.03	38.5	0.01	1	5	No	No	No	No	No
Area 5	Calcium	7440-70-2	58	No	58	Yes	100.00	4200	20800	10	10		SL NA	SL NA	SL NA	SL NA	No
Area 5	Carbon disulfide	75-15-0	195	No	4	Yes	2.05	0.007	0.01	0.0005	10	17	No	No	No	No	Yes
Area 5	Carbon tetrachloride	56-23-5	194	No	0	No	0.00			0.0005	10	0.03	No	Yes	Yes	Yes	Yes
Area 5	Chlordane	12789-03-6	30	No	0	No	0.00			0.4	24	3	No	Yes	No	No	No
Area 5	Chlorobenzene	108-90-7	233	No	2	Yes	0.86	0.0031	0.053	0.0005	10	0.6	No	Yes	Yes	No	Yes
Area 5	Chloroethane	75-00-3	178	No	0	No	0.00			0.0005	10	3.03	No	Yes	No	No	Yes
Area 5	Chloroform	67-66-3	194	No	2	Yes	1.03	0.00033	0.11	0.0005	10	0.34	No	Yes	Yes	No	Yes
Area 5	Chloromethane	74-87-3	178	No	0	No	0.00			0.0005	10	1.23	No	Yes	No	No	Yes
Area 5	Chromium	7440-47-3	94	No	89	Yes	94.68	0.04	65	0.01	2.4	26	No	No	No	No	Yes
Area 5	Chrysene	218-01-9	310	No	11	Yes	3.55	0.061	1.2	0.01	6	620	No	No	No	No	Yes
Area 5	cis-1,2-Dichloroethene	156-59-2	292	No	26	Yes	8.90	0.0016	5	0.0005	10	0.2	No	Yes	Yes	No	Yes
Area 5	cis-1,3-Dichloropropene	10061-01-5	178	No	0	No	0.00			0.0005	10	0.02	No	Yes	Yes	Yes	Yes
Area 5	Cobalt	7440-48-4	58	No	58	Yes	100.00	7	27	2	2	900	No	No	No	No	No
Area 5	Copper	7440-50-8	199	No	192	Yes	96.48	10	6740	2	2	4060	No	No	No	No	No
Area 5	delta-BHC	319-86-8	29	No	0	No	0.00			0.01	0.6		SL NA	SL NA	SL NA	SL NA	No
Area 5	Density	DENSITY	2	Yes	2	Yes	100.00	78	119				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 5	Dibenz(a,h)anthracene	53-70-3	64	No	0	No	0.00			0.01	60	1	No	Yes	Yes	No	Yes
Area 5	Dibenzofuran	132-64-9	276	No	6	Yes	2.17	0.4	0.7	0.01	6	7.78	No	No	No	No	Yes
Area 5	Dibromochloromethane	124-48-1	194	No	0	No	0.00			0.0005	10	1.11	No	Yes	No	No	Yes
Area 5	Dibromomethane	74-95-3	79	No	0	No	0.00			0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	Dichlorodifluoromethane	75-71-8	85	No	0	No	0.00			0.0005	10	60	No	No	No	No	Yes
Area 5	Dieldrin	60-57-1	30	No	0	No	0.00			0.01	0.6	0.015	No	Yes	Yes	No	No
Area 5	Diesel Range Hydrocarbons	DRO	769	No	690	Yes	89.73	0.12	66000	0.02	100	250	No	No	No	No	Yes
Area 5	Diethylphthalate	84-66-2	30	No	0	No	0.00			0.01	6	190	No	No	No	No	Yes
Area 5	Dimethylphthalate	131-11-3	30	No	0	No	0.00			0.01	6	1400	No	No	No	No	Yes
Area 5	Di-n-butylphthalate	84-74-2	34	No	2	Yes	5.88	0.3	0.3	0.3	6	1700	No	No	No	No	No
Area 5	Di-n-octylphthalate	117-84-0	30	No	0	No	0.00			0.01	60	2000	No	No	No	No	Yes
Area 5	Endosulfan I	959-98-8	30	No	0	No	0.00			0.01	0.6	7	No	No	No	No	No
Area 5	Endosulfan II	33213-65-9	30	No	0	No	0.00			0.01	0.6	7	No	No	No	No	No
Area 5	Endosulfan Sulfate	1031-07-8	30	No	0	No	0.00			0.01	0.6		SL NA	SL NA	SL NA	SL NA	No
Area 5	Endrin	72-20-8	30	No	0	No	0.00			0.01	0.6	0.3	No	Yes	No	No	No
Area 5	Endrin aldehyde	7421-93-4	30	No	0	No	0.00			0.01	0.6		SL NA	SL NA	SL NA	SL NA	No
Area 5	EP Toxicity	EPTOX	45	No	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Area 5	Ethylbenzene	100-41-4	728	No	257	Yes	35.30	0.00069	190	0.00005	10	5.5	No	Yes	No	No	Yes
Area 5	Fluoranthene	206-44-0	271	No	15	Yes	5.54	0.054	1.9	0.01	6	2100	No	No	No	No	Yes
Area 5	Fluorene	86-73-7	310	No	18	Yes	5.81	0.11	3.9	0.01	6	270	No	No	No	No	Yes
Area 5	gamma-BHC (Lindane)	58-89-9	30	No	0	No	0.00			0.01	0.6	0.003	Yes	Yes	Yes	Yes	No
Area 5	Gasoline Range Hydrocarbons	GRO	494	No	186	Yes	37.65	1.17	8400	0.4	50	300	No	No	No	No	Yes
Area 5	Heptachlor	76-44-8	29	No	0	No	0.00			0.01	0.6	0.8	No	No	No	No	No
Area 5	Heptachlor epoxide	1024-57-3	30	No	0	No	0.00			0.01	0.6	0.2	No	Yes	No	No	No
Area 5	Hexachlorobenzene	118-74-1	30	No	0	No	0.00			0.01	6	0.73	No	Yes	No	No	Yes
Area 5	Hexachlorobutadiene	87-68-3	77	No	0	No	0.00			0.0005	10	8	No	Yes	No	No	Yes
Area 5	Hexachlorocyclopentadiene	77-47-4	30	No	0	No	0.00			0.01	6	7	No	No	No	No	Yes
Area 5	Hexachloroethane	67-72-1	30	No	0	No	0.00			0.01	6	1.6	No	Yes	No	No	Yes
Area 5	Indeno(1,2,3-cd)pyrene	193-39-5	310	No	6	Yes	1.94	0.4	0.9	0.01	60	11	No	Yes	No	No	Yes
Area 5	Iron	7439-89-6	58	No	58	Yes	100.00	2680	56500	4	4	23000	No	No	No	No	No
Area 5	Isophorone	78-59-1	30	No	0	No	0.00			0.01	6	3	No	Yes	No	No	Yes

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	Isopropylbenzene	98-82-8	246	No	48	Yes	19.51	0.07	763	0.0005	10	227	No	No	No	No	Yes
Area 5	Lead	7439-92-1	269	No	157	Yes	58.36	0.1	7700	0.1	2000	400	No	Yes	No	No	Yes
Area 5	m,p-Xylene	136777-61-2	77	No	39	Yes	50.65	0.02	445	0.001	20		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	Magnesium	7439-95-4	58	No	58	Yes	100.00	609	14600	2	2		SL NA	SL NA	SL NA	SL NA	No
Area 5	Manganese	7439-96-5	58	No	58	Yes	100.00	290	1040	1	1	1800	No	No	No	No	No
Area 5	Mercury	7439-97-6	81	No	14	Yes	17.28	0.07	5.01	0.0002	0.2	1.4	No	No	No	No	Yes
Area 5	Methoxychlor	72-43-5	30	No	0	No	0.00			0.01	0.6	52	No	No	No	No	No
Area 5	Methyl Iodide	74-88-4	3	Yes	0	No	0.00			0.098	0.11		SL NA	SL NA	SL NA	SL NA	No
Area 5	Methyl tert-Butyl Ether	1634-04-4	3	Yes	0	No	0.00			0.039	0.043	61.54	No	No	No	No	No
Area 5	Methylene chloride	75-09-2	426	No	24	Yes	5.63	0.00084	0.63	0.0005	10	0.015	No	Yes	Yes	Yes	Yes
Area 5	Naphthalene	91-20-3	547	No	141	Yes	25.78	0.03	130	0.0005	10	21	No	No	No	No	Yes
Area 5	n-Butylbenzene	104-51-8	239	No	30	Yes	12.55	0.08	250	0.0005	10	240	No	No	No	No	Yes
Area 5	Nickel	7440-02-0	58	No	58	Yes	100.00	10	60	10	10	87	No	No	No	No	No
Area 5	Nitrobenzene	98-95-3	30	No	0	No	0.00			0.01	6	0.06	No	Yes	Yes	No	Yes
Area 5	N-Nitrosodimethylamine	62-75-9	29	No	0	No	0.00			0.3	6	3.4	No	Yes	No	No	No
Area 5	N-Nitroso-di-n-propylamine	621-64-7	30	No	0	No	0.00			0.01	6	0.00036	Yes	Yes	Yes	Yes	Yes
Area 5	N-Nitrosodiphenylamine	86-30-6	30	No	0	No	0.00			0.01	6	3.4	No	Yes	No	No	Yes
Area 5	n-Propylbenzene	103-65-1	247	No	65	Yes	26.32	0.0084	65	0.0005	10	240	No	No	No	No	Yes
Area 5	OCDD	3268-87-9	9	Yes	9	Yes	100.00	6.80E-05	5.20E-03			0.039	No	No	No	No	DL Missing
Area 5	OCDF	39001-02-0	9	Yes	8	Yes	88.89	1.00E-05	1.10E-03	7.90E-06	7.90E-06	0.039	No	No	No	No	No
Area 5	o-Xylene	95-47-6	77	No	37	Yes	48.05	0.002	273	0.0005	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	PCBs, total	PCBs	177	No	144	Yes	81.36	0.06	310	0.02	0.02	1	No	No	No	No	No
Area 5	Pentachlorophenol	87-86-5	30	No	0	No	0.00			0.01	40	0.01	No	Yes	Yes	Yes	Yes
Area 5	Percent Moisture	MOIST	23	No	23	Yes	100.00	3.7	35				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 5	pH	PH	7	Yes	7	Yes	100.00	5.3	6.8				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 5	Phenanthrene	85-01-8	313	No	35	Yes	11.18	0.2	18	0.01	6	4300	No	No	No	No	Yes
Area 5	Phenol	108-95-2	30	No	0	No	0.00			0.01	6	67	No	No	No	No	Yes
Area 5	Potassium	7440-09-7	58	No	58	Yes	100.00	550	2130	20	400		SL NA	SL NA	SL NA	SL NA	No
Area 5	Pyrene	129-00-0	310	No	19	Yes	6.13	0.089	2	0.01	6	1500	No	No	No	No	Yes
Area 5	Residual Range Organics	RRO	152	No	106	Yes	69.74	34.3	58000	10	1000	10000	No	No	No	No	No
Area 5	sec-Butylbenzene	135-98-8	246	No	51	Yes	20.73	0.06	18	0.0005	10	220	No	No	No	No	Yes
Area 5	Selenium	7782-49-2	80	No	5	Yes	6.25	0.16	2	0.01	12	3.5	No	Yes	No	No	Yes
Area 5	Silver	7440-22-4	56	No	7	Yes	12.50	0.04	1	0.01	2	21	No	No	No	No	Yes
Area 5	Sodium	7440-23-5	58	No	58	Yes	100.00	100	460	20	20		SL NA	SL NA	SL NA	SL NA	No
Area 5	Styrene	100-42-5	100	No	2	Yes	2.00	0.0011	0.034	0.0005	10	1.3	No	Yes	No	No	Yes
Area 5	tert-Butylbenzene	98-06-6	72	No	0	No	0.00			0.0005	10	390	No	No	No	No	Yes
Area 5	Tetrachloroethene	127-18-4	334	No	28	Yes	8.38	0.0024	1.33	0.0005	10	0.03	No	Yes	Yes	Yes	Yes
Area 5	Thallium	7440-28-0	34	No	0	No	0.00			1	2	5.2	No	No	No	No	No
Area 5	Toluene	108-88-3	719	No	199	Yes	27.68	0.0013	640	0.00005	10	5.4	No	Yes	No	No	Yes
Area 5	Total 1,2-Dichloroethenes	540-59-0	1	Yes	0	No	0.00			0.028	0.028	43	No	No	No	No	No
Area 5	Total BTEX	BTEX	377	No	210	Yes	55.70	0.0062	1823				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 5	TOTAL HPCDD	37871-00-4	2	Yes	2	Yes	100.00	2.10E-06	2.60E-04			3.90E-04	No	No	No	No	DL Missing
Area 5	TOTAL HPCDF	38998-75-3	2	Yes	2	Yes	100.00	2.00E-05	1.70E-04			3.90E-04	No	No	No	No	DL Missing
Area 5	TOTAL HXCDD	34465-46-8	2	Yes	1	Yes	50.00	2.00E-05	2.00E-05	3.90E-06	3.90E-06	3.90E-05	No	No	No	No	No
Area 5	TOTAL HXCDF	55684-94-1	2	Yes	2	Yes	100.00	7.30E-06	4.00E-05			3.90E-05	No	No	No	No	DL Missing
Area 5	Total Organic Carbon	TOC	256	No	256	Yes	100.00	0.06	16000	0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 5	TOTAL PECDD	36088-22-9	2	Yes	0	No	0.00			1.90E-06	2.70E-06	3.90E-05	No	No	No	No	No
Area 5	TOTAL PECDF	30402-15-4	2	Yes	0	No	0.00			3.70E-06	5.90E-06	7.80E-05	No	No	No	No	No
Area 5	Total Petroleum Hydrocarbons	TPH	91	No	74	Yes	81.32	8.8	53200	0.02	20		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	Total Recoverable Petroleum Hydrocarbons	TRPH	2	Yes	2	Yes	100.00	180	1489	18	25		SL NA	SL NA	SL NA	SL NA	No
Area 5	Total Solids	TSO	197	No	196	Yes	99.49	30.5	100	0.03	10		SL NA	SL NA	SL NA	SL NA	Yes
Area 5	TOTAL TCDD	41903-57-5	2	Yes	0	No	0.00			2.00E-06	2.40E-06	3.90E-06	No	No	No	No	No
Area 5	TOTAL TCDF	55722-27-5	2	Yes	1	Yes	50.00	1.00E-05	1.00E-05	4.40E-06	4.40E-06	3.90E-05	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 5	Toxaphene	8001-35-2	30	No	0	No	0.00			0.05	6	8	No	No	No	No	Yes
Area 5	trans-1,2-Dichloroethene	156-60-5	358	No	4	Yes	1.12	0.01	0.018	0.0005	10	0.4	No	Yes	Yes	No	Yes
Area 5	trans-1,3-Dichloropropene	10061-02-6	172	No	3	Yes	1.74	1.8	1.8	0.0005	51	0.02	No	Yes	Yes	Yes	Yes
Area 5	trans-1,4-Dichloro-2-butene	110-57-6	3	Yes	0	No	0.00			0.2	0.22	0.0079	Yes	Yes	Yes	No	No
Area 5	Trichloroethene	79-01-6	194	No	17	Yes	8.76	0.00031	6.5	0.0005	10	0.027	No	Yes	Yes	Yes	Yes
Area 5	Trichlorofluoromethane	75-69-4	182	No	3	Yes	1.65	0.13	0.4	0.0005	10	385.82	No	No	No	No	Yes
Area 5	Trichlorotriflouroethane	26523-64-8	18	No	0	No	0.00			0.01	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 5	Vanadium	7440-62-2	61	No	61	Yes	100.00	27	119	1.2	2	710	No	No	No	No	No
Area 5	Vinyl Acetate	108-05-4	25	No	0	No	0.00			0.028	10	430	No	No	No	No	Yes
Area 5	Vinyl chloride	75-01-4	177	No	0	No	0.00			0.0005	10	0.009	No	Yes	Yes	Yes	Yes
Area 5	VOC	VOC	9	Yes	0	No	0.00			0.02	0.02		SL NA	SL NA	SL NA	SL NA	No
Area 5	Volatile Organic Hydrocarbons	HVOC	8	Yes	0	No	0.00			0.02	0.05		SL NA	SL NA	SL NA	SL NA	No
Area 5	Xylene, total	1330-20-7	671	No	295	Yes	43.96	0.007	980	0.00005	2	78	No	No	No	No	Yes
Area 5	Zinc	7440-66-6	58	No	58	Yes	100.00	27	398	2	2	9100	No	No	No	No	No
Area 6	1,1,1,2-Tetrachloroethane	630-20-6	47	No	0	No	0.00			0.001	0.01	3.2	No	No	No	No	No
Area 6	1,1,1-Trichloroethane	71-55-6	54	No	0	No	0.00			0.001	0.05	1	No	No	No	No	No
Area 6	1,1,2,2-Tetrachloroethane	79-34-5	53	No	0	No	0.00			0.001	0.05	0.017	No	Yes	No	No	No
Area 6	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	36	No	0	No	0.00			0.001	0.007		SL NA	SL NA	SL NA	SL NA	No
Area 6	1,1,2-Trichloroethane	79-00-5	53	No	0	No	0.00			0.001	0.05	0.017	No	Yes	No	No	No
Area 6	1,1-Dichloroethane	75-34-3	54	No	0	No	0.00			0.001	0.05	12	No	No	No	No	No
Area 6	1,1-Dichloroethene	75-35-4	54	No	0	No	0.00			0.001	0.05	0.03	No	Yes	No	No	No
Area 6	1,1-Dichloropropene	563-58-6	47	No	0	No	0.00			0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2	Yes	2	Yes	100.00	6.30E-05	7.40E-05	6.30E-07	7.40E-07	3.90E-04	No	No	No	No	No
Area 6	1,2,3,4,6,7,8-HPCDF	67562-39-4	2	Yes	2	Yes	100.00	5.80E-06	2.90E-05	5.00E-08	2.90E-07	3.90E-04	No	No	No	No	No
Area 6	1,2,3,4,7,8,9-HPCDF	55673-89-7	2	Yes	1	Yes	50.00	2.10E-06	2.10E-06	2.00E-08	5.00E-06	3.90E-04	No	No	No	No	Yes
Area 6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2	Yes	1	Yes	50.00	1.20E-06	1.20E-06	1.20E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3,4,7,8-HXCDF	70648-26-9	2	Yes	1	Yes	50.00	3.20E-06	3.20E-06	3.20E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	3	Yes	2	Yes	66.67	1.90E-06	3.30E-06	1.90E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2	Yes	1	Yes	50.00	2.20E-06	2.20E-06	2.20E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3,7,8,9-HxCDF	72918-21-9	2	Yes	1	Yes	50.00	9.40E-07	9.40E-07	9.00E-08	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2	Yes	1	Yes	50.00	9.20E-07	9.20E-07	5.00E-08	5.00E-06	7.80E-05	No	No	No	No	No
Area 6	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2	Yes	1	Yes	50.00	6.90E-07	6.90E-07	3.50E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	1,2,3-Trichlorobenzene	87-61-6	47	No	0	No	0.00			0.0024	0.014		SL NA	SL NA	SL NA	SL NA	No
Area 6	1,2,3-Trichloropropane	96-18-4	47	No	0	No	0.00			0.001	0.01	0.005	No	Yes	No	No	No
Area 6	1,2,4-Trichlorobenzene	120-82-1	109	No	2	Yes	1.83	0.0139	0.0139	0.0024	1.25	2	No	No	No	No	Yes
Area 6	1,2,4-Trimethylbenzene	95-63-6	72	No	6	Yes	8.33	0.00097	0.0221	0.001	0.01	52	No	No	No	No	No
Area 6	1,2-Dibromo-3-chloropropane	96-12-8	47	No	0	No	0.00			0.001	0.27	0.45	No	No	No	No	Yes
Area 6	1,2-Dibromoethane	106-93-4	47	No	0	No	0.00			0.001	0.01	0.0000306	Yes	Yes	Yes	Yes	No
Area 6	1,2-Dichlorobenzene	95-50-1	142	No	0	No	0.00			0.001	1.25	7	No	No	No	No	Yes
Area 6	1,2-Dichloroethane	107-06-2	54	No	0	No	0.00			0.001	0.05	0.015	No	Yes	No	No	No
Area 6	1,2-Dichloropropane	78-87-5	54	No	0	No	0.00			0.001	0.05	0.017	No	Yes	No	No	No
Area 6	1,2-Diphenylhydrazine	122-66-7	37	No	0	No	0.00			0.135	1.25	0.61	No	Yes	No	No	No
Area 6	1,3,5-Trimethylbenzene	108-67-8	74	No	2	Yes	2.70	0.0047	0.0047	0.001	0.01	21	No	No	No	No	No
Area 6	1,3-Dichlorobenzene	541-73-1	142	No	0	No	0.00			0.001	1.25	12.1	No	No	No	No	Yes
Area 6	1,3-Dichloropropane	142-28-9	47	No	0	No	0.00			0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	1,4-Dichlorobenzene	106-46-7	141	No	0	No	0.00			0.001	1.25	0.8	No	Yes	No	No	Yes
Area 6	1-Chlornaphthalene	90-13-1	11	No	0	No	0.00			0.33	0.64		SL NA	SL NA	SL NA	SL NA	No
Area 6	1-Methylnaphthalene	90-12-0	65	No	14	Yes	21.54	0.122	8.05	0.135	0.232	43	No	No	No	No	No
Area 6	2,2-Dichloropropane	594-20-7	11	No	0	No	0.00			0.0059	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	2,2-Difluoropropane	420-45-1	36	No	0	No	0.00			0.001	0.007		SL NA	SL NA	SL NA	SL NA	No
Area 6	2,3,4,6,7,8-HXCDF	60851-34-5	2	Yes	1	Yes	50.00	2.80E-06	2.80E-06	2.80E-07	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	2,3,4,7,8-PECDF	57117-31-4	2	Yes	1	Yes	50.00	3.60E-06	3.60E-06	1.80E-06	5.00E-06	7.80E-06	No	No	No	No	No
Area 6	2,3,7,8-TCDD	1746-01-6	2	Yes	1	Yes	50.00	3.30E-07	3.30E-07	3.30E-07	1.00E-06	3.90E-06	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 6	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2	Yes	1	Yes	50.00	1.70E-06	1.70E-06	1.70E-07	1.00E-06	3.90E-05	No	No	No	No	No
Area 6	2,4,5-Trichlorophenol	95-95-4	47	No	0	No	0.00			0.135	1.25	90	No	No	No	No	No
Area 6	2,4,6-Trichlorophenol	88-06-2	47	No	0	No	0.00			0.135	1.25	0.6	No	Yes	No	No	No
Area 6	2,4-Dichlorophenol	120-83-2	47	No	0	No	0.00			0.135	1.25	0.45	No	Yes	No	No	No
Area 6	2,4-Dimethylphenol	105-67-9	47	No	0	No	0.00			0.135	1.25	4	No	No	No	No	No
Area 6	2,4-Dinitrophenol	51-28-5	47	No	0	No	0.00			0.677	6.26	0.2	Yes	Yes	Yes	No	No
Area 6	2,4-Dinitrotoluene	121-14-2	47	No	0	No	0.00			0.271	2.5	0.005	Yes	Yes	Yes	Yes	No
Area 6	2,6-Dichlorophenol	87-65-0	11	No	0	No	0.00			0.33	0.64	180	No	No	No	No	No
Area 6	2,6-Dinitrotoluene	606-20-2	48	No	0	No	0.00			0.271	2.5	0.0044	Yes	Yes	Yes	Yes	No
Area 6	2-Amino-4,6-dinitrotoluene	35572-78-2	1	Yes	0	No	0.00			1.7	1.7		SL NA	SL NA	SL NA	SL NA	No
Area 6	2-Butanone	78-93-3	81	No	8	Yes	9.88	0.0121	0.14	0.001	0.27	60	No	No	No	No	Yes
Area 6	2-Chloroethylvinyl ether	110-75-8	11	No	0	No	0.00			0.11	0.27		SL NA	SL NA	SL NA	SL NA	No
Area 6	2-Chloronaphthalene	91-58-7	48	No	0	No	0.00			0.135	1.25	70	No	No	No	No	No
Area 6	2-Chlorophenol	95-57-8	47	No	0	No	0.00			0.135	1.25	1.4	No	No	No	No	No
Area 6	2-Chlorotoluene	95-49-8	47	No	0	No	0.00			0.001	0.01	160	No	No	No	No	No
Area 6	2-Hexanone	591-78-6	47	No	0	No	0.00			0.0048	0.27		SL NA	SL NA	SL NA	SL NA	No
Area 6	2-Methylnaphthalene	91-57-6	76	No	25	Yes	32.89	0.142	9.1	0.135	0.64	60.9	No	No	No	No	No
Area 6	2-Methylphenol	95-48-7	47	No	0	No	0.00			0.135	1.25	7	No	No	No	No	No
Area 6	2-Nitroaniline	88-74-4	48	No	0	No	0.00			0.677	6.26	1.75	No	Yes	No	No	No
Area 6	2-Nitrophenol	88-75-5	47	No	0	No	0.00			0.33	6.26		SL NA	SL NA	SL NA	SL NA	No
Area 6	3,3'-Dichlorobenzidine	91-94-1	48	No	0	No	0.00			0.542	5.01	0.02	Yes	Yes	Yes	Yes	No
Area 6	3,4-Dimethylphenol	95-65-8	1	Yes	0	No	0.00			0.62	0.62	61	No	No	No	No	No
Area 6	3,4-Methylphenol	34MP	9	Yes	0	No	0.00			0.33	0.64	305.52	No	No	No	No	No
Area 6	3-Methylphenol	108-39-4	1	Yes	0	No	0.00			0.33	0.33	3100	No	No	No	No	No
Area 6	3-Nitroaniline	99-09-2	48	No	0	No	0.00			0.271	3.2		SL NA	SL NA	SL NA	SL NA	No
Area 6	4,4'-DDD	72-54-8	48	No	1	Yes	2.08	0.0024	0.0024	0.0014	0.012	35	No	No	No	No	No
Area 6	4,4'-DDE	72-55-9	57	No	4	Yes	7.02	0.0019	0.0032	0.0014	0.012	24	No	No	No	No	No
Area 6	4,4'-DDT	50-29-3	76	No	12	Yes	15.79	0.0025	0.064	0.0014	0.012	24	No	No	No	No	No
Area 6	4,6-Dinitro-2-methylphenol	534-52-1	46	No	0	No	0.00			0.271	3.2		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Bromophenyl-phenylether	101-55-3	48	No	0	No	0.00			0.135	1.25		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Chloro-3-methylphenol	59-50-7	48	No	1	Yes	2.08	0.754	0.754	0.677	6.26		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Chloroaniline	106-47-8	48	No	0	No	0.00			0.135	1.3	0.5	No	Yes	No	No	No
Area 6	4-Chlorophenyl-phenylether	7005-72-3	48	No	0	No	0.00			0.135	1.25		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Chlorotoluene	106-43-4	47	No	0	No	0.00			0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Isopropyl toluene	99-87-6	47	No	1	Yes	2.13	0.0116	0.0116	0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Methyl-2-pentanone	108-10-1	54	No	0	No	0.00			0.0048	0.27	786.53	No	No	No	No	No
Area 6	4-Methylphenol	106-44-5	45	No	4	Yes	8.89	0.214	67.4	0.135	0.232	305.52	No	No	No	No	No
Area 6	4-Nitroaniline	100-01-6	48	No	0	No	0.00			0.33	6.26		SL NA	SL NA	SL NA	SL NA	No
Area 6	4-Nitrophenol	100-02-7	47	No	0	No	0.00			0.677	6.26		SL NA	SL NA	SL NA	SL NA	No
Area 6	Acenaphthene	83-32-9	64	No	3	Yes	4.69	0.225	0.317	0.135	1.25	210	No	No	No	No	No
Area 6	Acenaphthylene	208-96-8	48	No	0	No	0.00			0.135	1.25	210	No	No	No	No	No
Area 6	Acetone	67-64-1	36	No	0	No	0.00			0.0048	0.3	10	No	No	No	No	No
Area 6	Aldrin	309-00-2	48	No	0	No	0.00			0.00068	0.0063	0.5	No	No	No	No	No
Area 6	alpha-BHC	319-84-6	48	No	0	No	0.00			0.00068	0.0063	0.0026	No	Yes	No	No	No
Area 6	alpha-Chlordane	5103-71-9	75	No	5	Yes	6.67	0.0039	0.023	0.00068	0.0063		SL NA	SL NA	SL NA	SL NA	No
Area 6	Aluminum	7429-90-5	65	No	65	Yes	100.00	661	33700			76000	No	No	No	No	DL Missing
Area 6	Aniline	62-53-3	48	No	0	No	0.00			0.271	2.5	85	No	No	No	No	No
Area 6	Anthracene	120-12-7	75	No	6	Yes	8.00	0.123	1.67	0.135	1.25	4300	No	No	No	No	No
Area 6	Antimony	7440-36-0	13	No	2	Yes	15.38	4.7	6.3	0.16	0.29	3.6	No	No	No	No	No
Area 6	Aroclor 1016	12674-11-2	48	No	0	No	0.00			0.034	0.31	1	No	No	No	No	No
Area 6	Aroclor 1221	11104-28-2	48	No	0	No	0.00			0.035	0.63	1	No	No	No	No	No
Area 6	Aroclor 1232	11141-16-5	48	No	0	No	0.00			0.034	0.31	1	No	No	No	No	No
Area 6	Aroclor 1242	53469-21-9	48	No	0	No	0.00			0.034	0.31	1	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 6	Aroclor 1248	12672-29-6	48	No	0	No	0.00			0.034	0.31	1	No	No	No	No	No
Area 6	Aroclor 1254	11097-69-1	48	No	0	No	0.00			0.034	0.31	1	No	No	No	No	No
Area 6	Aroclor 1260	11096-82-5	57	No	5	Yes	8.77	0.046	0.084	0.028	0.31	1	No	No	No	No	No
Area 6	Aroclor 1262	37324-23-5	11	No	0	No	0.00			0.035	0.057	1	No	No	No	No	No
Area 6	Aroclor 1268	11100-14-4	11	No	0	No	0.00			0.035	0.057	1	No	No	No	No	No
Area 6	Arsenic	7440-38-2	88	No	83	Yes	94.32	0.0056	53.9	0.005	0.29	2	No	No	No	No	No
Area 6	Azobenzene	103-33-3	11	No	0	No	0.00			0.33	0.64	4.4	No	No	No	No	No
Area 6	Barium	7440-39-3	85	No	76	Yes	89.41	34.2	1590	0.27	1	1100	No	No	No	No	No
Area 6	Benzene	71-43-2	140	No	13	Yes	9.29	0.0068	0.64	0.001	0.1	0.02	No	Yes	No	No	No
Area 6	Benzidine	92-87-5	37	No	0	No	0.00			0.542	5.01	0.0021	Yes	Yes	Yes	Yes	No
Area 6	Benzo(a)anthracene	56-55-3	66	No	4	Yes	6.06	0.502	3.21	0.135	1.25	6	No	No	No	No	No
Area 6	Benzo(a)pyrene	50-32-8	76	No	17	Yes	22.37	0.174	3.84	0.135	1.25	1	No	Yes	No	No	No
Area 6	Benzo(b)fluoranthene	205-99-2	76	No	22	Yes	28.95	0.151	2.91	0.135	1.25	11	No	No	No	No	No
Area 6	Benzo(g,h,i)perylene	191-24-2	76	No	25	Yes	32.89	0.158	2.18	0.135	1.25	1500	No	No	No	No	No
Area 6	Benzo(k)fluoranthene	207-08-9	66	No	4	Yes	6.06	0.208	0.823	0.135	1.25	110	No	No	No	No	No
Area 6	Benzoic acid	65-85-0	47	No	0	No	0.00			0.34	6.26	390	No	No	No	No	No
Area 6	Benzyl alcohol	100-51-6	47	No	0	No	0.00			0.135	1.25	18000	No	No	No	No	No
Area 6	Beryllium	7440-41-7	75	No	74	Yes	98.67	0.05	1.51	0.01	0.1	42	No	No	No	No	No
Area 6	beta-BHC	319-85-7	48	No	0	No	0.00			0.00068	0.0063	0.009	No	No	No	No	No
Area 6	bis(2-Chloroethoxy)methane	111-91-1	48	No	0	No	0.00			0.135	1.25		SL NA	SL NA	SL NA	SL NA	No
Area 6	bis(2-Chloroethyl)ether	111-44-4	47	No	0	No	0.00			0.135	1.25	0.002	Yes	Yes	Yes	Yes	No
Area 6	Bis(2-chloroisopropyl)ether	39638-32-9	45	No	0	No	0.00			0.135	1.25	2.9	No	No	No	No	No
Area 6	bis(2-Ethylhexyl)phthalate	117-81-7	48	No	1	Yes	2.08	0.5	0.5	0.33	6.26	590	No	No	No	No	No
Area 6	Bis(Chloromethyl)ether	542-88-1	1	Yes	0	No	0.00			0.34	0.34	0.00019	Yes	Yes	Yes	Yes	No
Area 6	Bromobenzene	108-86-1	47	No	0	No	0.00			0.001	0.01	27	No	No	No	No	No
Area 6	Bromochloromethane	74-97-5	47	No	0	No	0.00			0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	Bromodichloromethane	75-27-4	53	No	0	No	0.00			0.001	0.05	0.82	No	No	No	No	No
Area 6	Bromoethane	74-96-4	2	Yes	0	No	0.00			0.13	0.17		SL NA	SL NA	SL NA	SL NA	No
Area 6	Bromoform	75-25-2	54	No	0	No	0.00			0.001	0.05	0.38	No	No	No	No	No
Area 6	Bromomethane	74-83-9	52	No	0	No	0.00			0.001	0.27	3.9	No	No	No	No	Yes
Area 6	Butylbenzylphthalate	85-68-7	48	No	0	No	0.00			0.135	1.25	5600	No	No	No	No	No
Area 6	Cadmium	7440-43-9	88	No	38	Yes	43.18	0.04	1.74	0.01	0.5	5	No	No	No	No	No
Area 6	Calcium	7440-70-2	65	No	65	Yes	100.00	5630	43800				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Carbazole	86-74-8	55	No	2	Yes	3.64	0.264	0.264	0.135	1.25	2	No	No	No	No	No
Area 6	Carbon disulfide	75-15-0	55	No	3	Yes	5.45	0.004	0.0133	0.001	0.27	17	No	No	No	No	Yes
Area 6	Carbon tetrachloride	56-23-5	54	No	0	No	0.00			0.001	0.05	0.03	No	Yes	No	No	No
Area 6	Chlordane	12789-03-6	39	No	3	Yes	7.69	0.0037	0.023	0.00068	0.029	3	No	No	No	No	No
Area 6	Chlorobenzene	108-90-7	105	No	0	No	0.00			0.001	0.1	0.6	No	No	No	No	No
Area 6	Chloroethane	75-00-3	54	No	0	No	0.00			0.0024	0.27	3.03	No	No	No	No	Yes
Area 6	Chloroform	67-66-3	81	No	3	Yes	3.70	0.005	0.005	0.001	0.05	0.34	No	No	No	No	No
Area 6	Chloromethane	74-87-3	53	No	0	No	0.00			0.001	0.05	1.23	No	No	No	No	No
Area 6	Chromium	7440-47-3	88	No	79	Yes	89.77	21.7	243	0.05	3.83	26	No	No	No	No	No
Area 6	Chrysene	218-01-9	76	No	11	Yes	14.47	0.184	3.47	0.135	1.25	620	No	No	No	No	No
Area 6	cis-1,2-Dichloroethene	156-59-2	47	No	0	No	0.00			0.001	0.01	0.2	No	No	No	No	No
Area 6	cis-1,3-Dichloropropene	10061-01-5	53	No	0	No	0.00			0.0013	0.05	0.02	No	Yes	No	No	No
Area 6	Cobalt	7440-48-4	65	No	65	Yes	100.00	6.12	19.5			900	No	No	No	No	DL Missing
Area 6	Copper	7440-50-8	76	No	76	Yes	100.00	17.4	846	0.27	0.53	4060	No	No	No	No	No
Area 6	delta-BHC	319-86-8	48	No	0	No	0.00			0.00068	0.0063		SL NA	SL NA	SL NA	SL NA	No
Area 6	Dibenz(a,h)anthracene	53-70-3	76	No	8	Yes	10.53	0.321	0.728	0.135	1.25	1	No	Yes	No	No	No
Area 6	Dibenzofuran	132-64-9	57	No	6	Yes	10.53	0.24	2.54	0.135	1.25	7.78	No	No	No	No	No
Area 6	Dibromochloromethane	124-48-1	54	No	0	No	0.00			0.001	0.05	1.11	No	No	No	No	No
Area 6	Dibromomethane	74-95-3	47	No	0	No	0.00			0.001	0.01		SL NA	SL NA	SL NA	SL NA	No
Area 6	Dichlorodifluoromethane	75-71-8	47	No	0	No	0.00			0.001	0.01	60	No	No	No	No	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 6	Dieldrin	60-57-1	48	No	0	No	0.00			0.00071	0.012	0.015	No	No	No	No	No
Area 6	Diesel Range Hydrocarbons	DRO	59	No	35	Yes	59.32	0.012	5250	0.01	500	250	No	Yes	No	No	Yes
Area 6	Diethylphthalate	84-66-2	48	No	0	No	0.00			0.135	1.25	190	No	No	No	No	No
Area 6	Dimethylphthalate	131-11-3	47	No	0	No	0.00			0.135	6.08	1400	No	No	No	No	No
Area 6	Di-n-butylphthalate	84-74-2	48	No	0	No	0.00			0.135	1.25	1700	No	No	No	No	No
Area 6	Di-n-octylphthalate	117-84-0	48	No	0	No	0.00			0.271	2.5	2000	No	No	No	No	No
Area 6	Endosulfan I	959-98-8	48	No	0	No	0.00			0.00068	0.03	7	No	No	No	No	No
Area 6	Endosulfan II	33213-65-9	66	No	2	Yes	3.03	0.0037	0.0037	0.00074	0.03	7	No	No	No	No	No
Area 6	Endosulfan Sulfate	1031-07-8	48	No	0	No	0.00			0.0014	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 6	Endrin	72-20-8	48	No	0	No	0.00			0.0014	0.012	0.3	No	No	No	No	No
Area 6	Endrin aldehyde	7421-93-4	66	No	2	Yes	3.03	0.005	0.005	0.0014	0.018		SL NA	SL NA	SL NA	SL NA	No
Area 6	Endrin Ketone	53494-70-5	66	No	2	Yes	3.03	0.0028	0.0028	0.0014	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 6	EP Toxicity	EPTOX	3	Yes	2	Yes	66.67	0.00000001	0.001338	5.98E-06	5.98E-06		SL NA	SL NA	SL NA	SL NA	No
Area 6	Ethylbenzene	100-41-4	140	No	28	Yes	20.00	0.00042	1.17	0.001	0.1	5.5	No	No	No	No	No
Area 6	Fluoranthene	206-44-0	74	No	13	Yes	17.57	0.169	3.52	0.135	1.25	2100	No	No	No	No	No
Area 6	Fluorene	86-73-7	66	No	2	Yes	3.03	0.502	0.502	0.135	1.25	270	No	No	No	No	No
Area 6	gamma Chlordane	57-74-9	38	No	2	Yes	5.26	0.0037	0.023	0.00068	0.006		SL NA	SL NA	SL NA	SL NA	No
Area 6	gamma-BHC (Lindane)	58-89-9	48	No	1	Yes	2.08	0.0019	0.0019	0.00068	0.0063	0.003	No	Yes	No	No	No
Area 6	Gasoline Range Hydrocarbons	GRO	29	No	10	Yes	34.48	5	170	0.64	10	300	No	No	No	No	No
Area 6	Heptachlor	76-44-8	75	No	4	Yes	5.33	0.0014	0.0072	0.00068	0.0063	0.8	No	No	No	No	No
Area 6	Heptachlor epoxide	1024-57-3	75	No	11	Yes	14.67	0.0011	0.0045	0.00068	0.0063	0.2	No	No	No	No	No
Area 6	Hexachlorobenzene	118-74-1	48	No	0	No	0.00			0.135	1.25	0.73	No	Yes	No	No	No
Area 6	Hexachlorobutadiene	87-68-3	91	No	0	No	0.00			0.001	2.5	8	No	No	No	No	Yes
Area 6	Hexachlorocyclopentadiene	77-47-4	48	No	0	No	0.00			0.33	6.26	7	No	No	No	No	No
Area 6	Hexachloroethane	67-72-1	81	No	0	No	0.00			0.001	1.25	1.6	No	No	No	No	Yes
Area 6	Hexavalent Chrome	CR6	7	Yes	1	Yes	14.29	1.1	1.1	0.6	0.6	30	No	No	No	No	No
Area 6	Indeno(1,2,3-cd)pyrene	193-39-5	76	No	15	Yes	19.74	0.278	2.18	0.135	1.25	11	No	No	No	No	No
Area 6	Iron	7439-89-6	65	No	65	Yes	100.00	16500	143000			23000	No	No	No	No	DL Missing
Area 6	Isophorone	78-59-1	48	No	0	No	0.00			0.135	1.25	3	No	No	No	No	No
Area 6	Isopropylbenzene	98-82-8	47	No	0	No	0.00			0.001	0.01	227	No	No	No	No	No
Area 6	Lead	7439-92-1	96	No	87	Yes	90.63	4.1	290	0.05	3.5	400	No	No	No	No	No
Area 6	m,p-Xylene	136777-61-2	117	No	40	Yes	34.19	0.0019	2.68	0.0024	0.03		SL NA	SL NA	SL NA	SL NA	No
Area 6	Magnesium	7439-95-4	65	No	65	Yes	100.00	956	18000				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Manganese	7439-96-5	64	No	64	Yes	100.00	239	2290			1800	No	No	No	No	DL Missing
Area 6	Mercury	7439-97-6	85	No	76	Yes	89.41	0.04	2.56	0.0002	0.02	1.4	No	No	No	No	No
Area 6	Methoxychlor	72-43-5	48	No	0	No	0.00			0.0068	0.063	52	No	No	No	No	No
Area 6	Methylene chloride	75-09-2	54	No	0	No	0.00			0.006	0.14	0.015	No	Yes	No	No	No
Area 6	Naphthalene	91-20-3	119	No	18	Yes	15.13	0.0126	5.56	0.0024	1.25	21	No	No	No	No	Yes
Area 6	n-Butylbenzene	104-51-8	47	No	0	No	0.00			0.001	0.01	240	No	No	No	No	No
Area 6	Nickel	7440-02-0	76	No	76	Yes	100.00	13.5	94.4	0.55	1.07	87	No	No	No	No	No
Area 6	Nitrobenzene	98-95-3	48	No	0	No	0.00			0.135	1.25	0.06	Yes	Yes	Yes	No	No
Area 6	N-Nitrosodimethylamine	62-75-9	11	No	0	No	0.00			0.33	0.64	3.4	No	No	No	No	No
Area 6	N-Nitrosodi-n-butylamine	924-16-3	37	No	0	No	0.00			0.135	1.25	0.024	Yes	Yes	Yes	No	No
Area 6	N-Nitroso-di-n-propylamine	621-64-7	11	No	0	No	0.00			0.33	0.64	0.00036	Yes	Yes	Yes	Yes	No
Area 6	N-Nitrosodiphenylamine	86-30-6	48	No	1	Yes	2.08	1.13	1.13	0.135	1.25	3.4	No	No	No	No	No
Area 6	n-Propylbenzene	103-65-1	47	No	2	Yes	4.26	0.0033	0.02	0.001	0.01	240	No	No	No	No	No
Area 6	OCDD	3268-87-9	4	Yes	3	Yes	75.00	0.000012	0.00064	1E-08	0.00001	0.039	No	No	No	No	Yes
Area 6	OCDF	39001-02-0	2	Yes	2	Yes	100.00	0.00003	0.000044	3E-08	4E-08	0.039	No	No	No	No	No
Area 6	o-Xylene	95-47-6	117	No	31	Yes	26.50	0.00086	0.88	0.001	0.04		SL NA	SL NA	SL NA	SL NA	No
Area 6	PCBs, total	PCBs	52	No	8	Yes	15.38	0.034	12	0.00002	0.5	1	No	No	No	No	Yes
Area 6	P-Cymene	25155-15-1	27	No	1	Yes	3.70	0.0116	0.0116	0.0012	0.007		SL NA	SL NA	SL NA	SL NA	No
Area 6	Pentachloroethane	76-01-7	36	No	0	No	0.00			0.001	0.007		SL NA	SL NA	SL NA	SL NA	No
Area 6	Pentachlorophenol	87-86-5	47	No	0	No	0.00			0.271	3.2	0.01	Yes	Yes	Yes	Yes	No

Table 3-4 Comparison of Detection Limits for Subsurface Soil (>0.5 ft) to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Soil Screening Level mg/kg	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Area 6	Phenanthrene	85-01-8	76	No	13	Yes	17.11	0.195	4.46	0.135	1.25	4300	No	No	No	No	No
Area 6	Phenol	108-95-2	56	No	2	Yes	3.57	0.247	1.42	0.135	0.64	67	No	No	No	No	No
Area 6	Potassium	7440-09-7	65	No	65	Yes	100.00	742	3310				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Pyrene	129-00-0	75	No	13	Yes	17.33	0.133	9.24	0.135	1.25	1500	No	No	No	No	No
Area 6	Pyridine	110-86-1	11	No	0	No	0.00			0.33	0.64	61	No	No	No	No	No
Area 6	Residual Range Organics	RRO	49	No	18	Yes	36.73	0.11	1500	0.1	110	10000	No	No	No	No	Yes
Area 6	Retene	483-65-8	65	No	43	Yes	66.15	0.173	610	0.135	1.25		SL NA	SL NA	SL NA	SL NA	No
Area 6	sec-Butylbenzene	135-98-8	47	No	0	No	0.00			0.001	0.01	220	No	No	No	No	No
Area 6	Selenium	7782-49-2	85	No	16	Yes	18.82	0.16	0.96	0.005	0.4	3.5	No	No	No	No	No
Area 6	Silver	7440-22-4	66	No	5	Yes	7.58	0.03	0.58	0.03	0.5	21	No	No	No	No	No
Area 6	Sodium	7440-23-5	65	No	65	Yes	100.00	216	1990				SL NA	SL NA	SL NA	SL NA	DL Missing
Area 6	Styrene	100-42-5	54	No	0	No	0.00			0.001	0.05	1.3	No	No	No	No	No
Area 6	tert-Butylbenzene	98-06-6	45	No	0	No	0.00			0.001	0.01	390	No	No	No	No	No
Area 6	Tetrachloroethene	127-18-4	81	No	6	Yes	7.41	0.0022	0.0226	0.001	0.05	0.03	No	Yes	No	No	No
Area 6	Thallium	7440-28-0	48	No	1	Yes	2.08	0.16	0.16	0.16	2	5.2	No	No	No	No	No
Area 6	Toluene	108-88-3	157	No	84	Yes	53.50	0.00007	7.42	0.00005	0.2	5.4	No	No	No	No	Yes
Area 6	Total 1,2-Dichloroethenes	540-59-0	36	No	0	No	0.00			0.001	0.007	43	No	No	No	No	No
Area 6	TOTAL HPCDD	37871-00-4	2	Yes	2	Yes	100.00	1.30E-04	2.70E-04			3.90E-04	No	No	No	No	DL Missing
Area 6	TOTAL HPCDF	38998-75-3	2	Yes	2	Yes	100.00	1.50E-05	8.50E-05			3.90E-04	No	No	No	No	DL Missing
Area 6	TOTAL HXCDD	34465-46-8	2	Yes	1	Yes	50.00	3.30E-05	3.30E-05	5.00E-06	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	TOTAL HXCDF	55684-94-1	2	Yes	1	Yes	50.00	5.00E-05	5.00E-05	5.00E-06	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	TOTAL PECDD	36088-22-9	2	Yes	1	Yes	50.00	7.00E-06	7.00E-06	5.00E-06	5.00E-06	3.90E-05	No	No	No	No	No
Area 6	TOTAL PECDF	30402-15-4	2	Yes	1	Yes	50.00	3.40E-05	3.40E-05	5.00E-06	5.00E-06	7.80E-05	No	No	No	No	No
Area 6	Total Petroleum Hydrocarbons	TPH	55	No	54	Yes	98.18	8.54	17200	9.56	9.56		SL NA	SL NA	SL NA	SL NA	No
Area 6	Total Solids	TSO	63	No	63	Yes	100.00	76.9	97.9	1	1		SL NA	SL NA	SL NA	SL NA	No
Area 6	TOTAL TCDD	41903-57-5	2	Yes	1	Yes	50.00	5.40E-06	5.40E-06	1.00E-06	1.00E-06	3.90E-06	No	No	No	No	No
Area 6	TOTAL TCDF	55722-27-5	2	Yes	1	Yes	50.00	2.70E-05	2.70E-05	1.00E-06	1.00E-06	3.90E-05	No	No	No	No	No
Area 6	Toxaphene	8001-35-2	37	No	0	No	0.00			0.17	1.6	8	No	No	No	No	No
Area 6	trans-1,2-Dichloroethene	156-60-5	18	No	0	No	0.00			0.0059	0.05	0.4	No	No	No	No	No
Area 6	trans-1,3-Dichloropropene	10061-02-6	54	No	0	No	0.00			0.0011	0.05	0.02	No	Yes	No	No	No
Area 6	Trichloroethene	79-01-6	54	No	1	Yes	1.85	0.0032	0.0032	0.001	0.05	0.027	No	Yes	No	No	No
Area 6	Trichlorofluoromethane	75-69-4	47	No	0	No	0.00			0.001	0.01	385.82	No	No	No	No	No
Area 6	Vanadium	7440-62-2	65	No	65	Yes	100.00	10.2	153			710	No	No	No	No	DL Missing
Area 6	Vinyl chloride	75-01-4	54	No	0	No	0.00			0.001	0.05	0.009	No	Yes	No	No	No
Area 6	Xylene, total	1330-20-7	43	No	18	Yes	41.86	0.00016	6.44	0.00005	0.4	78	No	No	No	No	Yes
Area 6	Zinc	7440-66-6	76	No	76	Yes	100.00	22.4	2080	0.55	1.07	9100	No	No	No	No	No

Notes:
mg/kg = milligrams per kilogram
Max = maximum
Min = minimum
DL = detection limit
SL NA = screening level not available
Screening levels are based on ADEC Method 2 values for the "under 40 inch zone" unless not available, then the U.S.Region IX residential PRGs were applied.
Subsurface soil data set includes all soil collected at a depth greater than 0.5 ft. Note, this also includes data where the exact depth is unknown

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
North of Ship Creek	1,1,1,2-Tetrachloroethane (T)	630-20-6	140	No	2	Yes	1.43	1	1	0.5	250	1	No	Yes	Yes	Yes	Yes
North of Ship Creek	1,1,1-Trichloroethane (T)	71-55-6	245	No	25	Yes	10.20	0.09	6.46	0.5	500	200	No	Yes	No	No	Yes
North of Ship Creek	1,1,2,2-Tetrachloroethane (T)	79-34-5	166	No	2	Yes	1.20	1	1	0.5	500	4	No	Yes	Yes	Yes	Yes
North of Ship Creek	1,1,2-Trichloro-1,2,2-trifluoroethane (T)	76-13-1	6	Yes	0	No	0.00			1	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	1,1,2-Trichloroethane (T)	79-00-5	156	No	2	Yes	1.28	1	1	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	1,1-Dichloroethane (T)	75-34-3	240	No	39	Yes	16.25	0.63	120	0.5	500	3650	No	No	No	No	Yes
North of Ship Creek	1,1-Dichloroethene (T)	75-35-4	193	No	9	Yes	4.66	1	20	0.5	500	7	No	Yes	Yes	No	Yes
North of Ship Creek	1,1-Dichloropropene (T)	563-58-6	109	No	2	Yes	1.83	1	1	0.5	250		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	1,2,3-Trichlorobenzene (T)	87-61-6	109	No	3	Yes	2.75	1	3.3	1	1000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	1,2,3-Trichloropropane (T)	96-18-4	142	No	16	Yes	11.27	1	35	0.5	250	0.2	Yes	Yes	Yes	Yes	Yes
North of Ship Creek	1,2,3-Trimethylbenzene (T)	526-73-8	1	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	1,2,4-Trichlorobenzene (T)	120-82-1	116	No	6	Yes	5.17	1	140	0.38	1000	70	No	Yes	Yes	No	Yes
North of Ship Creek	1,2,4-Trimethylbenzene (T)	95-63-6	166	No	60	Yes	36.14	1	4700	1	2000	12	No	Yes	Yes	Yes	Yes
North of Ship Creek	1,2-Dibromo-3-chloropropane (T)	96-12-8	136	No	2	Yes	1.47	1	1	1	1000	0.2	Yes	Yes	Yes	Yes	Yes
North of Ship Creek	1,2-Dibromoethane (T)	106-93-4	142	No	3	Yes	2.11	1	10	1	1000	0.05	Yes	Yes	Yes	Yes	Yes
North of Ship Creek	1,2-Dichlorobenzene (T)	95-50-1	178	No	5	Yes	2.81	0.5	1	0.2	250	600	No	No	No	No	Yes
North of Ship Creek	1,2-Dichloroethane (T)	107-06-2	199	No	9	Yes	4.52	0.7	71.8	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	1,2-Dichloropropane (T)	78-87-5	166	No	2	Yes	1.20	1	1	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	1,2-Diphenylhydrazine (T)	122-66-7	3	Yes	0	No	0.00			0.38	0.41		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	1,3,5-Trimethylbenzene (T)	108-67-8	168	No	56	Yes	33.33	0.72	5400	1	1000	12	No	Yes	Yes	No	Yes
North of Ship Creek	1,3-Dichlorobenzene (T)	541-73-1	184	No	4	Yes	2.17	1	20	0.2	250	1100	No	No	No	No	Yes
North of Ship Creek	1,3-Dichloropropane (T)	142-28-9	109	No	2	Yes	1.83	1	1	0.4	250		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	1,4-Dichlorobenzene (T)	106-46-7	184	No	4	Yes	2.17	1	30	0.2	250	75	No	Yes	No	No	Yes
North of Ship Creek	1-Methylnaphthalene (T)	90-12-0	3	Yes	0	No	0.00			0.38	0.41		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	2,2-Dichloropropane (T)	594-20-7	87	No	2	Yes	2.30	1	1	0.5	100	1	No	Yes	Yes	No	Yes
North of Ship Creek	2,2-Difluoropropane (T)	420-45-1	23	No	0	No	0.00			0.5	250		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	2,4,5-Trichlorophenol (T)	95-95-4	8	Yes	0	No	0.00			0.38	50	3650	No	No	No	No	Yes
North of Ship Creek	2,4,6-Trichlorophenol (T)	88-06-2	8	Yes	0	No	0.00			0.38	10	77	No	No	No	No	No
North of Ship Creek	2,4-Dichlorophenol (T)	120-83-2	8	Yes	0	No	0.00			0.38	10	100	No	No	No	No	No
North of Ship Creek	2,4-Dimethylphenol (T)	105-67-9	8	Yes	1	Yes	12.50	40.8	40.8	0.38	10	700	No	No	No	No	No
North of Ship Creek	2,4-Dinitrophenol (T)	51-28-5	8	Yes	0	No	0.00			1.9	50	70	No	No	No	No	No
North of Ship Creek	2,4-Dinitrotoluene (T)	121-14-2	8	Yes	0	No	0.00			0.77	10	1.25	No	Yes	No	No	No
North of Ship Creek	2,6-Dinitrotoluene (T)	606-20-2	8	Yes	0	No	0.00			0.77	10	1.25	No	Yes	No	No	No
North of Ship Creek	2-Butanone (T)	78-93-3	164	No	3	Yes	1.83	10	3200	0.5	10000	22000	No	No	No	No	Yes
North of Ship Creek	2-Chloroethylvinyl ether (T)	110-75-8	78	No	2	Yes	2.56	10	10	5	500		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	2-Chloronaphthalene (T)	91-58-7	8	Yes	0	No	0.00			0.38	25	2900	No	No	No	No	No
North of Ship Creek	2-Chlorophenol (T)	95-57-8	8	Yes	0	No	0.00			0.38	10	200	No	No	No	No	No
North of Ship Creek	2-Chlorotoluene (T)	95-49-8	112	No	2	Yes	1.79	1	1	1	1000	120	No	Yes	No	No	Yes
North of Ship Creek	2-Hexanone (T)	591-78-6	142	No	2	Yes	1.41	1	10	1	10000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	2-Methylnaphthalene (T)	91-57-6	174	No	43	Yes	24.71	2.4	7900	0.38	50	780	No	No	No	No	Yes
North of Ship Creek	2-Methylphenol (T)	95-48-7	8	Yes	1	Yes	12.50	19.8	19.8	0.38	10	1800	No	No	No	No	No
North of Ship Creek	2-Nitroaniline (T)	88-74-4	8	Yes	0	No	0.00			1.9	50	1.043899999	Yes	Yes	Yes	No	No
North of Ship Creek	2-Nitrophenol (T)	88-75-5	8	Yes	0	No	0.00			1.9	10	300	No	No	No	No	No
North of Ship Creek	3,3'-Dichlorobenzidine (T)	91-94-1	8	Yes	0	No	0.00			1.5	25	2	No	Yes	Yes	No	No
North of Ship Creek	3-Methylphenol (T)	108-39-4	3	Yes	0	No	0.00			10	10	1800	No	No	No	No	No
North of Ship Creek	3-Nitroaniline (T)	99-09-2	8	Yes	0	No	0.00			0.77	50		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4,4'-DDD (T)	72-54-8	4	Yes	0	No	0.00			0.01	1	3.6	No	No	No	No	No
North of Ship Creek	4,4'-DDE (T)	72-55-9	4	Yes	0	No	0.00			0.01	1	2.5	No	No	No	No	No
North of Ship Creek	4,4'-DDT (T)	50-29-3	4	Yes	0	No	0.00			0.01	1	2.5	No	No	No	No	No
North of Ship Creek	4,6-Dinitro-2-methylphenol (T)	534-52-1	8	Yes	0	No	0.00			0.77	50		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4-Bromophenyl-phenylether (T)	101-55-3	8	Yes	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4-Chloro-3-methylphenol (T)	59-50-7	8	Yes	0	No	0.00			1.9	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4-Chloroaniline (T)	106-47-8	8	Yes	0	No	0.00			0.38	10	150	No	No	No	No	No
North of Ship Creek	4-Chlorophenyl-phenylether (T)	7005-72-3	8	Yes	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4-Chlorotoluene (T)	106-43-4	112	No	2	Yes	1.79	1	1	1	1000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	4-Isopropyl toluene (T)	99-87-6	175	No	32	Yes	18.29	1	80	0.5	2000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	4-Methyl-2-pentanone (T)	108-10-1	143	No	2	Yes	1.40	1	1	1	10000	157.8378378	No	Yes	Yes	No	Yes
North of Ship Creek	4-Methylphenol (T)	106-44-5	8	Yes	1	Yes	12.50	30	30	0.38	10	182.4999667	No	No	No	No	No
North of Ship Creek	4-Nitroaniline (T)	100-01-6	8	Yes	0	No	0.00			1.9	50		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	4-Nitrophenol (T)	100-02-7	8	Yes	0	No	0.00			1.9	50	300	No	No	No	No	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
North of Ship Creek	Acenaphthene (T)	83-32-9	38	No	5	Yes	13.16	0.53	10	0.4	50	2200	No	No	No	No	Yes
North of Ship Creek	Acenaphthylene (T)	208-96-8	34	No	3	Yes	8.82	10	10	0.38	50	2200	No	No	No	No	Yes
North of Ship Creek	Acetone (T)	67-64-1	187	No	13	Yes	6.95	3.1	1200	0.5	10000	3650	No	Yes	No	No	Yes
North of Ship Creek	Acetonitrile (T)	75-08-8	28	No	0	No	0.00			10	100		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Acrolein (T)	107-02-8	57	No	6	Yes	10.53	49	49	0.5	2000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Acrylonitrile (T)	107-13-1	79	No	6	Yes	7.59	20	20	0.5	2000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Aldrin (T)	309-00-2	4	Yes	0	No	0.00			0.0097	0.5	0.05	No	Yes	No	No	No
North of Ship Creek	Alkalinity, Bicarbonate (T)	ALKB	4	Yes	4	Yes	100.00	5260	279520				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Alkalinity, Carbonate (T)	ALKC	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Alkalinity, Total (T)	ALKT	4	Yes	4	Yes	100.00	4310	229220				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Allyl chloride (T)	107-05-1	17	No	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	alpha-BHC (T)	319-84-6	4	Yes	0	No	0.00			0.0097	0.5	0.1	No	Yes	No	No	No
North of Ship Creek	alpha-Chlordane (T)	5103-71-9	3	Yes	0	No	0.00			0.0097	0.01		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Aluminum (D)	7429-90-5	9	Yes	1	Yes	11.11	50	50	50	100	36000	No	No	No	No	No
North of Ship Creek	Aluminum (T)	7429-90-5	21	No	21	Yes	100.00	310	242000000	50	100	36000	No	No	No	No	No
North of Ship Creek	Ammonia (as N) (T)	7664-41-7	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Aniline (T)	62-53-3	6	Yes	0	No	0.00			0.77	25	12	No	Yes	No	No	No
North of Ship Creek	Anthracene (T)	120-12-7	35	No	3	Yes	8.57	0.5	0.5	0.38	50	11000	No	No	No	No	Yes
North of Ship Creek	Antimony (D)	7440-36-0	17	No	0	No	0.00			5	50	6	No	Yes	No	No	No
North of Ship Creek	Antimony (T)	7440-36-0	24	No	3	Yes	12.50	1.1	500000	0.63	50	6	No	Yes	No	No	No
North of Ship Creek	Aroclor 1016 (T)	12674-11-2	11	No	0	No	0.00			0.1	5	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1221 (T)	11104-28-2	11	No	0	No	0.00			0.1	5	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1232 (T)	11141-16-5	11	No	0	No	0.00			0.1	5	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1242 (T)	53469-21-9	11	No	0	No	0.00			0.1	5	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1248 (T)	12672-29-6	11	No	0	No	0.00			0.1	5	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1254 (T)	11097-69-1	11	No	0	No	0.00			0.1	10	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Aroclor 1260 (T)	11096-82-5	11	No	0	No	0.00			0.1	10	0.0005	Yes	Yes	Yes	Yes	No
North of Ship Creek	Arsenic (D)	7440-38-2	16	No	4	Yes	25.00	5	7.6	5	6.25	10	No	No	No	No	No
North of Ship Creek	Arsenic (T)	7440-38-2	73	No	55	Yes	75.34	1.4	170000	5	5000	10	No	Yes	Yes	Yes	Yes
North of Ship Creek	Barium (D)	7440-39-3	11	No	11	Yes	100.00	28	191	5	10	2000	No	No	No	No	No
North of Ship Creek	Barium (T)	7440-39-3	35	No	35	Yes	100.00	40	1560000	5	22.7	2000	No	No	No	No	No
North of Ship Creek	Benzene (T)	71-43-2	602	No	255	Yes	42.36	0.5	2100000	0.2	1000	5	No	Yes	Yes	Yes	Yes
North of Ship Creek	Benzidine (T)	92-87-5	3	Yes	0	No	0.00			1.5	1.6		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Benzo(a)anthracene (T)	56-55-3	35	No	3	Yes	8.57	0.01	0.01	0.01	50	1	No	Yes	Yes	No	Yes
North of Ship Creek	Benzo(a)pyrene (T)	50-32-8	34	No	2	Yes	5.88	0.05	0.05	0.05	50	0.2	No	Yes	Yes	Yes	Yes
North of Ship Creek	Benzo(b)fluoranthene (T)	205-99-2	35	No	3	Yes	8.57	0.01	0.01	0.01	50	1	No	Yes	Yes	No	Yes
North of Ship Creek	Benzo(g,h,i)perylene (T)	191-24-2	34	No	2	Yes	5.88	0.05	0.05	0.05	50	1100	No	No	No	No	Yes
North of Ship Creek	Benzo(k)fluoranthene (T)	207-08-9	35	No	3	Yes	8.57	0.01	0.01	0.01	50	10	No	Yes	No	No	Yes
North of Ship Creek	Benzoic acid (T)	65-85-0	55	No	3	Yes	5.45	10	60	1.9	50	146000	No	No	No	No	No
North of Ship Creek	Benzyl alcohol (T)	100-51-6	8	Yes	0	No	0.00			0.38	10	11000	No	No	No	No	No
North of Ship Creek	Benzyl chloride (T)	100-44-7	17	No	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Beryllium (D)	7440-41-7	17	No	0	No	0.00			0.5	5	4	No	Yes	No	No	No
North of Ship Creek	Beryllium (T)	7440-41-7	24	No	8	Yes	33.33	1.93	6.33	0.568	4000	4	No	Yes	Yes	Yes	Yes
North of Ship Creek	beta-BHC (T)	319-85-7	4	Yes	0	No	0.00			0.0097	0.5	0.47	No	Yes	No	No	No
North of Ship Creek	Biological Oxygen Demand (T)	BOD5	7	Yes	4	Yes	57.14	8000	16000	4000	4000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	bis(2-Chloroethoxy)methane (T)	111-91-1	8	Yes	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	bis(2-Chloroethyl)ether (T)	111-44-4	8	Yes	0	No	0.00			0.38	10	0.77	No	Yes	Yes	No	No
North of Ship Creek	Bis(2-chloroisopropyl)ether (T)	39638-32-9	8	Yes	0	No	0.00			0.38	10	0.27	Yes	Yes	Yes	No	No
North of Ship Creek	bis(2-Ethylhexyl)phthalate (T)	117-81-7	55	No	17	Yes	30.91	5	70	1.9	10	6	No	Yes	No	No	No
North of Ship Creek	Boron (T)	7440-42-8	5	Yes	5	Yes	100.00	30	1280				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Bromobenzene (T)	108-86-1	112	No	2	Yes	1.79	1	1	0.5	250	20	No	Yes	Yes	No	Yes
North of Ship Creek	Bromochloromethane (T)	74-97-5	112	No	3	Yes	2.68	1	44	0.5	250	0.5	No	Yes	Yes	Yes	Yes
North of Ship Creek	Bromodichloromethane (T)	75-27-4	170	No	2	Yes	1.18	1	1	0.5	500	80	No	Yes	No	No	Yes
North of Ship Creek	Bromoethane (T)	74-96-4	22	No	0	No	0.00			0.5	50		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Bromoform (T)	75-25-2	173	No	2	Yes	1.16	1	1	0.5	500	80	No	Yes	No	No	Yes
North of Ship Creek	Bromomethane (T)	74-83-9	138	No	2	Yes	1.45	1	1	0.5	500	50	No	Yes	No	No	Yes
North of Ship Creek	Butylbenzylphthalate (T)	85-68-7	8	Yes	0	No	0.00			0.38	10	7300	No	No	No	No	No
North of Ship Creek	Cadmium (D)	7440-43-9	20	No	2	Yes	10.00	0.5	10	0.5	10	5	No	Yes	No	No	No
North of Ship Creek	Cadmium (T)	7440-43-9	74	No	39	Yes	52.70	0.05	4000	0.556	100	5	No	Yes	Yes	No	Yes
North of Ship Creek	Calcium (D)	7440-70-2	9	Yes	9	Yes	100.00	50000	295000	50	50		SL NA	SL NA	SL NA	SL NA	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
North of Ship Creek	Calcium (T)	7440-70-2	21	No	21	Yes	100.00	21800	266000000	50	50		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Carbazole (T)	86-74-8	3	Yes	0	No	0.00			0.38	0.41	40	No	No	No	No	No
North of Ship Creek	Carbon disulfide (T)	75-15-0	210	No	11	Yes	5.24	0.5	10	0.5	500	3650	No	No	No	No	Yes
North of Ship Creek	Carbon tetrachloride (T)	56-23-5	173	No	2	Yes	1.16	1	1	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	Chemical Oxygen Demand (T)	COD	4	Yes	4	Yes	100.00	12000	42000	5000	5000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Chlordane (T)	12789-03-6	4	Yes	0	No	0.00			0.0098	5	2	No	Yes	No	No	Yes
North of Ship Creek	Chloride (T)	16887-00-6	10	No	10	Yes	100.00	31800	151030	200	200		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Chlorobenzene (T)	108-90-7	218	No	6	Yes	2.75	0.4	2.3	0.5	500	100	No	Yes	No	No	Yes
North of Ship Creek	Chloroethane (T)	75-00-3	184	No	4	Yes	2.17	1	35	0.5	500	4.637023572	No	Yes	Yes	Yes	Yes
North of Ship Creek	Chloroform (T)	67-66-3	220	No	15	Yes	6.82	1	10	0.5	500	80	No	Yes	No	No	Yes
North of Ship Creek	Chloromethane (T)	74-87-3	159	No	3	Yes	1.89	1	1.48	0.5	500	100	No	Yes	No	No	Yes
North of Ship Creek	Chloropropane (T)	26446-76-4	8	Yes	0	No	0.00			10	500		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Chromium (D)	7440-47-3	21	No	4	Yes	19.05	0.5	280	0.5	10	100	No	No	No	No	No
North of Ship Creek	Chromium (T)	7440-47-3	76	No	64	Yes	84.21	0.6	449000	0.5	10000	100	No	Yes	Yes	No	Yes
North of Ship Creek	Chrysene (T)	218-01-9	35	No	3	Yes	8.57	0.5	0.5	0.38	50	100	No	No	No	No	Yes
North of Ship Creek	cis-1,2-Dichloroethene (T)	156-59-2	235	No	109	Yes	46.38	0.7	1100	0.5	500	70	No	Yes	No	No	Yes
North of Ship Creek	cis-1,3-Dichloropropene (T)	10061-01-5	163	No	2	Yes	1.23	1	1	0.5	500	9	No	Yes	Yes	No	Yes
North of Ship Creek	Cobalt (D)	7440-48-4	9	Yes	1	Yes	11.11	21	21	10	10	730	No	No	No	No	No
North of Ship Creek	Cobalt (T)	7440-48-4	16	No	12	Yes	75.00	9.7	240000	10	10	730	No	No	No	No	No
North of Ship Creek	Copper (D)	7440-50-8	18	No	3	Yes	16.67	20	23	10	10	1.3	Yes	Yes	No	No	No
North of Ship Creek	Copper (T)	7440-50-8	30	No	25	Yes	83.33	10	596000	10	10	1.3	Yes	Yes	No	No	No
North of Ship Creek	delta-BHC (T)	319-86-8	4	Yes	0	No	0.00			0.0097	0.5		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Dibenz(a,h)anthracene (T)	53-70-3	34	No	3	Yes	8.82	0.1	0.1	0.1	50	0.1	No	Yes	Yes	Yes	Yes
North of Ship Creek	Dibenzofuran (T)	132-64-9	13	No	0	No	0.00			0.38	10	73	No	No	No	No	No
North of Ship Creek	Dibromochloromethane (T)	124-48-1	173	No	2	Yes	1.16	1	1	0.5	500	80	No	Yes	No	No	Yes
North of Ship Creek	Dibromomethane (T)	74-95-3	148	No	2	Yes	1.35	1	1	0.5	250		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Dichlorodifluoromethane (T)	75-71-8	154	No	7	Yes	4.55	1	12	0.5	250	7300	No	No	No	No	Yes
North of Ship Creek	Dieldrin (T)	60-57-1	4	Yes	0	No	0.00			0.01	1	0.05	No	Yes	Yes	No	No
North of Ship Creek	Diesel Range Hydrocarbons (T)	DRO	389	No	281	Yes	72.24	1	130000000	10	10000	1500	No	Yes	No	No	Yes
North of Ship Creek	Diethylphthalate (T)	84-66-2	10	No	1	Yes	10.00	14	14	0.38	10	29000	No	No	No	No	No
North of Ship Creek	Dimethylphthalate (T)	131-11-3	8	Yes	0	No	0.00			0.38	10	364866.8236	No	No	No	No	No
North of Ship Creek	Di-n-butylphthalate (T)	84-74-2	7	Yes	0	No	0.00			0.38	10	3650	No	No	No	No	No
North of Ship Creek	Di-n-octylphthalate (T)	117-84-0	8	Yes	0	No	0.00			0.77	10	700	No	No	No	No	No
North of Ship Creek	Dissolved Oxygen (T)	DO	5	Yes	5	Yes	100.00	1900	8000				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Endosulfan I (T)	959-98-8	4	Yes	0	No	0.00			0.0097	0.5		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Endosulfan II (T)	33213-65-9	4	Yes	0	No	0.00			0.01	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Endosulfan Sulfate (T)	1031-07-8	4	Yes	0	No	0.00			0.01	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Endrin (T)	72-20-8	4	Yes	0	No	0.00			0.01	1	2	No	No	No	No	No
North of Ship Creek	Endrin aldehyde (T)	7421-93-4	4	Yes	0	No	0.00			0.01	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Endrin Ketone (T)	53494-70-5	4	Yes	0	No	0.00			0.01	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Ethyl Methacrylate (T)	97-63-2	17	No	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Ethylbenzene (T)	100-41-4	604	No	218	Yes	36.09	0.28	5600	0.05	1000	700	No	Yes	No	No	Yes
North of Ship Creek	Flashpoint (T)	FLASH	2	Yes	2	Yes	100.00	75	135	70	100		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Fluoranthene (T)	206-44-0	35	No	3	Yes	8.57	0.03	0.03	0.03	50	1460	No	No	No	No	Yes
North of Ship Creek	Fluorene (T)	86-73-7	126	No	8	Yes	6.35	1	42	0.38	50	1460	No	No	No	No	Yes
North of Ship Creek	Fluoride (T)	16984-48-8	10	No	2	Yes	20.00	1160	1160	200	1000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	gamma-BHC (Lindane) (T)	58-89-9	4	Yes	0	No	0.00			0.0097	0.5	0.2	No	Yes	No	No	No
North of Ship Creek	Gasoline Range Hydrocarbons (T)	GRO	347	No	147	Yes	42.36	20	2400000	5	500000	1300	No	Yes	Yes	Yes	Yes
North of Ship Creek	Heptachlor (T)	76-44-8	4	Yes	0	No	0.00			0.0097	0.5	0.4	No	Yes	No	No	No
North of Ship Creek	Heptachlor epoxide (T)	1024-57-3	4	Yes	0	No	0.00			0.0097	0.5	0.2	No	Yes	No	No	No
North of Ship Creek	Hexachlorobenzene (T)	118-74-1	8	Yes	0	No	0.00			0.38	10	1	No	Yes	No	No	No
North of Ship Creek	Hexachlorobutadiene (T)	87-68-3	123	No	2	Yes	1.63	1	1	0.77	1000	10	No	Yes	Yes	No	Yes
North of Ship Creek	Hexachlorocyclopentadiene (T)	77-47-4	8	Yes	0	No	0.00			1.9	10	50	No	No	No	No	No
North of Ship Creek	Hexachloroethane (T)	67-72-1	10	No	0	No	0.00			0.38	10	60	No	No	No	No	No
North of Ship Creek	Indeno(1,2,3-cd)pyrene (T)	193-39-5	35	No	3	Yes	8.57	0.1	1	0.1	50	1	No	Yes	Yes	No	Yes
North of Ship Creek	Iron (D)	7439-89-6	10	No	10	Yes	100.00	56	17800	20	20	11000	No	No	No	No	No
North of Ship Creek	Iron (T)	7439-89-6	21	No	21	Yes	100.00	290	452000000	20	20	11000	No	No	No	No	No
North of Ship Creek	Isophorone (T)	78-59-1	8	Yes	0	No	0.00			0.38	10	900	No	No	No	No	No
North of Ship Creek	Isopropylbenzene (T)	98-82-8	173	No	40	Yes	23.12	1	90	0.5	2000	3650	No	No	No	No	Yes
North of Ship Creek	Jet Fuel (T)	JET	24	No	8	Yes	33.33	940	140000				SL NA	SL NA	SL NA	SL NA	DL Missing

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
North of Ship Creek	Kerosene (T)	8008-20-6	41	No	1	Yes	2.44	21000	21000				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Lead (D)	7439-92-1	75	No	5	Yes	6.67	2	4400	2	6.25	15	No	No	No	No	No
North of Ship Creek	Lead (T)	7439-92-1	129	No	95	Yes	73.64	1	170000	2	100000	15	No	Yes	Yes	Yes	Yes
North of Ship Creek	m,p-Xylene (T)	136777-61-2	131	No	43	Yes	32.82	1	2000	0.5	100	10000	No	No	No	No	Yes
North of Ship Creek	Magnesium (D)	7439-95-4	18	No	18	Yes	100.00	14700	91100	10	100		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Magnesium (T)	7439-95-4	29	No	29	Yes	100.00	400	181000000	10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Manganese (D)	7439-96-5	10	No	10	Yes	100.00	13	11200	5	5	880	No	No	No	No	No
North of Ship Creek	Manganese (T)	7439-96-5	21	No	19	Yes	90.48	255	20400000	5	5	880	No	No	No	No	No
North of Ship Creek	Mercury (D)	7439-97-6	20	No	2	Yes	10.00	0.2	0.2	0.2	0.2	2	No	No	No	No	No
North of Ship Creek	Mercury (T)	7439-97-6	60	No	29	Yes	48.33	0.15	70	0.2	200	2	No	Yes	Yes	No	Yes
North of Ship Creek	Methacrylonitrile (T)	126-98-7	17	No	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Methoxychlor (T)	72-43-5	4	Yes	0	No	0.00			0.09	5	40	No	No	No	No	No
North of Ship Creek	Methyl Iodide (T)	74-88-4	92	No	0	No	0.00			0.5	200		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Methyl Methacrylate (T)	80-62-6	17	No	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Methyl tert-Butyl Ether (T)	1634-04-4	34	No	2	Yes	5.88	1	1	1	100	20	No	Yes	No	No	No
North of Ship Creek	Methylene chloride (T)	75-09-2	245	No	42	Yes	17.14	0.48	110	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	Molybdenum (T)	7439-98-7	5	Yes	3	Yes	60.00	110	190				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	m-Xylene (T)	108-38-3	2	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Naphthalene (T)	91-20-3	300	No	90	Yes	30.00	0.52	4300	0.4	1000	700	No	Yes	No	No	Yes
North of Ship Creek	n-Butylbenzene (T)	104-51-8	172	No	11	Yes	6.40	1	17	1	2000	240	No	Yes	No	No	Yes
North of Ship Creek	Nickel (D)	7440-02-0	17	No	0	No	0.00			20	30	0.1	Yes	Yes	Yes	Yes	No
North of Ship Creek	Nickel (T)	7440-02-0	25	No	21	Yes	84.00	15	611000	20	30	0.1	Yes	Yes	Yes	Yes	No
North of Ship Creek	Nitrate (T)	14797-55-8	8	Yes	2	Yes	25.00	3970	3970	300	600		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Nitrate/Nitrite (T)	NO3/NO2	13	No	4	Yes	30.77	1700	8900	100	3000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Nitrobenzene (T)	98-95-3	8	Yes	0	No	0.00			0.38	10	18	No	No	No	No	No
North of Ship Creek	N-Nitrosodimethylamine (T)	62-75-9	3	Yes	0	No	0.00			25	25	14	Yes	Yes	No	No	No
North of Ship Creek	N-Nitrosodi-n-butylamine (T)	924-16-3	3	Yes	0	No	0.00			0.38	0.41		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	N-Nitroso-di-n-propylamine (T)	621-64-7	5	Yes	0	No	0.00			10	10	0.1	Yes	Yes	Yes	No	No
North of Ship Creek	N-Nitrosodiphenylamine (T)	86-30-6	8	Yes	0	No	0.00			0.38	10	170	No	No	No	No	No
North of Ship Creek	n-Propylbenzene (T)	103-65-1	174	No	44	Yes	25.29	1	310	1	2000	240	No	Yes	No	No	Yes
North of Ship Creek	Oil & Grease (T)	O&G	12	No	12	Yes	100.00	500	41000				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Orthophosphate (T)	14265-44-2	4	Yes	2	Yes	50.00	400	400				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	o-Terphenyl (T)	84-15-1	3	Yes	1	Yes	33.33	200	200	100	100		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	o-Xylene (T)	95-47-6	130	No	42	Yes	32.31	1	1000	0.5	100	10000	No	No	No	No	Yes
North of Ship Creek	PCBs, total (T)	PCBs	3	Yes	0	No	0.00			0.002	1000	0.0005	Yes	Yes	Yes	Yes	Yes
North of Ship Creek	Pentachloroethane (T)	76-01-7	20	No	0	No	0.00			1	5		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Pentachlorophenol (T)	87-86-5	8	Yes	0	No	0.00			0.77	50	1	No	Yes	Yes	No	No
North of Ship Creek	pH (T)	PH	10	No	10	Yes	100.00	6.3	6500				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Phenanthrene (T)	85-01-8	128	No	8	Yes	6.25	0.5	68	0.38	50	11000	No	No	No	No	Yes
North of Ship Creek	Phenol (T)	108-95-2	56	No	9	Yes	16.07	4	10	0.38	10	22000	No	No	No	No	No
North of Ship Creek	Phosphorus (T)	7723-14-0	1	Yes	1	Yes	100.00	19300	19300				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Potassium (D)	7440-09-7	9	Yes	7	Yes	77.78	1000	10000	200	2000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Potassium (T)	7440-09-7	20	No	20	Yes	100.00	2030	17200000	2000	2000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	p-Xylene (T)	106-42-3	2	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Pyrene (T)	129-00-0	91	No	5	Yes	5.49	0.5	11	0.38	50	1100	No	No	No	No	Yes
North of Ship Creek	Residual Range Organics (T)	RRO	84	No	52	Yes	61.90	330	660000	200	10000	1100	No	Yes	No	No	No
North of Ship Creek	Retene (T)	483-65-8	6	Yes	2	Yes	33.33	1.3	1.3	0.4	0.41		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	sec-Butylbenzene (T)	135-98-8	169	No	38	Yes	22.49	0.94	90	1	2000	240	No	Yes	No	No	Yes
North of Ship Creek	Selenium (D)	7782-49-2	17	No	0	No	0.00			5	10	50	No	No	No	No	No
North of Ship Creek	Selenium (T)	7782-49-2	42	No	14	Yes	33.33	5.5	57.2	1.3	25000	50	No	Yes	Yes	Yes	Yes
North of Ship Creek	Silicon (T)	7440-21-3	1	Yes	1	Yes	100.00	17300	17300				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Silver (D)	7440-22-4	17	No	0	No	0.00			1	10	0.1	Yes	Yes	Yes	No	No
North of Ship Creek	Silver (T)	7440-22-4	43	No	17	Yes	39.53	2.36	54.9	1.11	3000	0.1	Yes	Yes	Yes	Yes	Yes
North of Ship Creek	Sodium (D)	7440-23-5	10	No	10	Yes	100.00	11300	77800	100	100		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Sodium (T)	7440-23-5	21	No	20	Yes	95.24	12000	212000000	100	1000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Styrene (T)	100-42-5	145	No	3	Yes	2.07	1	650	0.5	500	100	No	Yes	No	No	Yes
North of Ship Creek	Sulfate (T)	14808-79-8	14	No	12	Yes	85.71	660	195280	200	600	250000	No	No	No	No	No
North of Ship Creek	tert-Butylbenzene (T)	98-06-6	132	No	9	Yes	6.82	0.64	3	1	1000	240	No	Yes	No	No	Yes
North of Ship Creek	Tetrachloroethene (T)	127-18-4	232	No	60	Yes	25.86	1	150	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	Thallium (D)	7440-28-0	17	No	0	No	0.00			2	5	2	No	Yes	No	No	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
North of Ship Creek	Thallium (T)	7440-28-0	21	No	0	No	0.00			0.63	10000	2	No	Yes	Yes	Yes	Yes
North of Ship Creek	Tin (T)	7440-31-5	2	Yes	1	Yes	50.00	91000	91000	1000	1000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Toluene (T)	108-88-3	606	No	208	Yes	34.32	0.48	200000	0.2	1000	1000	No	No	No	No	Yes
North of Ship Creek	Total 1,2-Dichloroethenes (T)	540-59-0	29	No	2	Yes	6.90	0.5	0.8	1	500		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Total BTEX (T)	BTEX	207	No	132	Yes	63.77	0.64	77400	0.2	0.2		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Total Cyanide (T)	CN	1	Yes	0	No	0.00			10000	10000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Total dissolved solids (T)	TDS	6	Yes	6	Yes	100.00	360000	1470000	20000	20000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Total Organic Carbon (T)	TOC	2	Yes	2	Yes	100.00	2200	12700				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Total Organic Halides (T)	TOX	1	Yes	1	Yes	100.00	443000	443000	1000000	1000000		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Total Petroleum Hydrocarbons (T)	TPH	62	No	46	Yes	74.19	400	3240000	100	200		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Total Solids (T)	TSO	7	Yes	7	Yes	100.00	89	93.7				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Toxaphene (T)	8001-35-2	4	Yes	0	No	0.00			2.4	10	3	No	Yes	No	No	No
North of Ship Creek	trans-1,2-Dichloroethene (T)	156-60-5	227	No	11	Yes	4.85	0.5	7.6	0.5	500	100	No	Yes	No	No	Yes
North of Ship Creek	trans-1,3-Dichloropropene (T)	10061-02-6	159	No	3	Yes	1.89	1	4	0.5	500	9	No	Yes	Yes	No	Yes
North of Ship Creek	trans-1,4-Dichloro-2-butene (T)	110-57-6	90	No	0	No	0.00			0.5	2000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Trichloroethene (T)	79-01-6	276	No	68	Yes	24.64	0.5	30	0.5	500	5	No	Yes	Yes	No	Yes
North of Ship Creek	Trichlorofluoroethane (T)	27154-33-2	3	Yes	0	No	0.00			3	3		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Trichlorofluoromethane (T)	75-69-4	151	No	3	Yes	1.99	0.0496	40	0.5	250	10000	No	No	No	No	Yes
North of Ship Creek	Trichlorotriflouroethane (T)	26523-64-8	50	No	0	No	0.00			0.5	100		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Vanadium (D)	7440-62-2	9	Yes	0	No	0.00			10	10	260	No	No	No	No	No
North of Ship Creek	Vanadium (T)	7440-62-2	17	No	17	Yes	100.00	10	795000	10	10	260	No	No	No	No	No
North of Ship Creek	Vinyl Acetate (T)	108-05-4	91	No	0	No	0.00			0.5	2000		SL NA	SL NA	SL NA	SL NA	Yes
North of Ship Creek	Vinyl chloride (T)	75-01-4	218	No	29	Yes	13.30	1	27	0.5	500	2	No	Yes	Yes	Yes	Yes
North of Ship Creek	VOC (T)	VOC	7	Yes	1	Yes	14.29	71.8	71.8				SL NA	SL NA	SL NA	SL NA	DL Missing
North of Ship Creek	Volatile Organic Hydrocarbons (T)	HVOC	19	No	0	No	0.00			0.05	0.05		SL NA	SL NA	SL NA	SL NA	No
North of Ship Creek	Xylene, total (T)	1330-20-7	474	No	232	Yes	48.95	0.6	34000	0.05	1000	10000	No	No	No	No	Yes
North of Ship Creek	Zinc (D)	7440-66-6	17	No	4	Yes	23.53	10	5220	10	20	11000	No	No	No	No	No
North of Ship Creek	Zinc (T)	7440-66-6	29	No	29	Yes	100.00	10	1060000	10	20	11000	No	No	No	No	No
South of Ship Creek	1,1,1,2-Tetrachloroethane (T)	630-20-6	3	Yes	0	No	0.00			1	1	1	No	No	No	No	No
South of Ship Creek	1,1,1-Trichloroethane (T)	71-55-6	4	Yes	1	Yes	25.00	8	8	1	1	200	No	No	No	No	No
South of Ship Creek	1,1,2,2-Tetrachloroethane (T)	79-34-5	3	Yes	0	No	0.00			1	1	4	No	No	No	No	No
South of Ship Creek	1,1,2-Trichloroethane (T)	79-00-5	3	Yes	0	No	0.00			1	1	5	No	No	No	No	No
South of Ship Creek	1,1-Dichloroethane (T)	75-34-3	5	Yes	2	Yes	40.00	5	6	1	1	3650	No	No	No	No	No
South of Ship Creek	1,1-Dichloroethene (T)	75-35-4	3	Yes	0	No	0.00			1	1	7	No	No	No	No	No
South of Ship Creek	1,1-Dichloropropene (T)	563-58-6	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	1,2,3-Trichlorobenzene (T)	87-61-6	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	1,2,3-Trichloropropane (T)	96-18-4	3	Yes	0	No	0.00			2	2	0.2	Yes	Yes	No	No	No
South of Ship Creek	1,2,4-Trichlorobenzene (T)	120-82-1	3	Yes	0	No	0.00			1	1	70	No	No	No	No	No
South of Ship Creek	1,2-Dibromo-3-chloropropane (T)	96-12-8	3	Yes	0	No	0.00			2	2	0.2	Yes	Yes	No	No	No
South of Ship Creek	1,2-Dibromoethane (T)	106-93-4	3	Yes	0	No	0.00			1	1	0.05	Yes	Yes	Yes	No	No
South of Ship Creek	1,2-Dichlorobenzene (T)	95-50-1	29	No	2	Yes	6.90	5	37	0.001	1000	600	No	Yes	No	No	Yes
South of Ship Creek	1,2-Dichloroethane (T)	107-06-2	3	Yes	0	No	0.00			1	1	5	No	No	No	No	No
South of Ship Creek	1,2-Dichloropropane (T)	78-87-5	3	Yes	0	No	0.00			1	1	5	No	No	No	No	No
South of Ship Creek	1,3-Dichlorobenzene (T)	541-73-1	30	No	0	No	0.00			0.001	1000	1100	No	No	No	No	Yes
South of Ship Creek	1,3-Dichloropropane (T)	142-28-9	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	1,4-Dichlorobenzene (T)	106-46-7	31	No	1	Yes	3.23	12	12	0.001	10	75	No	No	No	No	Yes
South of Ship Creek	2,2-Dichloropropane (T)	594-20-7	3	Yes	0	No	0.00			1	1	1	No	No	No	No	No
South of Ship Creek	2-Chloroethylvinyl ether (T)	110-75-8	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	2-Chlorotoluene (T)	95-49-8	3	Yes	0	No	0.00			1	1	120	No	No	No	No	No
South of Ship Creek	4-Chlorotoluene (T)	106-43-4	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	4-Isopropyl toluene (T)	99-87-6	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	Acenaphthene (T)	83-32-9	6	Yes	0	No	0.00			10.3	20	2200	No	No	No	No	No
South of Ship Creek	Acenaphthylene (T)	208-96-8	6	Yes	0	No	0.00			10.3	20	2200	No	No	No	No	No
South of Ship Creek	Anthracene (T)	120-12-7	6	Yes	1	Yes	16.67	0.52	0.52	0.51	20	11000	No	No	No	No	No
South of Ship Creek	Aroclor 1016 (T)	12674-11-2	7	Yes	0	No	0.00			0.02	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Aroclor 1221 (T)	11104-28-2	7	Yes	0	No	0.00			0.02	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Aroclor 1232 (T)	11141-16-5	7	Yes	0	No	0.00			0.02	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Aroclor 1242 (T)	53469-21-9	7	Yes	0	No	0.00			0.02	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Aroclor 1248 (T)	12672-29-6	7	Yes	0	No	0.00			0.02	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Aroclor 1254 (T)	11097-69-1	7	Yes	0	No	0.00			0.01	1	0.0005	Yes	Yes	Yes	Yes	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
South of Ship Creek	Aroclor 1260 (T)	11096-82-5	7	Yes	2	Yes	28.57	16	23	0.01	1	0.0005	Yes	Yes	Yes	Yes	No
South of Ship Creek	Arsenic (T)	7440-38-2	3	Yes	0	No	0.00			5	5	10	No	No	No	No	No
South of Ship Creek	Barium (T)	7440-39-3	3	Yes	3	Yes	100.00	21.8	62.5	3	3	2000	No	No	No	No	No
South of Ship Creek	Benzene (T)	71-43-2	284	No	207	Yes	72.89	0.3	678000	0.2	500	5	No	Yes	Yes	No	Yes
South of Ship Creek	Benzo(a)anthracene (T)	56-55-3	6	Yes	0	No	0.00			0.01	20	1	No	Yes	Yes	No	Yes
South of Ship Creek	Benzo(a)pyrene (T)	50-32-8	6	Yes	0	No	0.00			0.05	20	0.2	No	Yes	Yes	No	Yes
South of Ship Creek	Benzo(b)fluoranthene (T)	205-99-2	6	Yes	0	No	0.00			0.01	20	1	No	Yes	Yes	No	Yes
South of Ship Creek	Benzo(g,h,i)perylene (T)	191-24-2	6	Yes	0	No	0.00			0.02	0.05	1100	No	No	No	No	No
South of Ship Creek	Benzo(k)fluoranthene (T)	207-08-9	6	Yes	0	No	0.00			0.01	20	10	No	Yes	No	No	Yes
South of Ship Creek	Bromobenzene (T)	108-86-1	3	Yes	0	No	0.00			1	1	20	No	No	No	No	No
South of Ship Creek	Bromochloromethane (T)	74-97-5	3	Yes	0	No	0.00			1	1	0.5	Yes	Yes	No	No	No
South of Ship Creek	Bromodichloromethane (T)	75-27-4	3	Yes	0	No	0.00			1	1	80	No	No	No	No	No
South of Ship Creek	Bromoform (T)	75-25-2	3	Yes	0	No	0.00			1	1	80	No	No	No	No	No
South of Ship Creek	Bromomethane (T)	74-83-9	3	Yes	0	No	0.00			1	1	50	No	No	No	No	No
South of Ship Creek	Cadmium (T)	7440-43-9	3	Yes	0	No	0.00			2	2	5	No	No	No	No	No
South of Ship Creek	Carbon tetrachloride (T)	56-23-5	3	Yes	0	No	0.00			1	1	5	No	No	No	No	No
South of Ship Creek	Chlorobenzene (T)	108-90-7	31	No	1	Yes	3.23	33	33	0.01	1000	100	No	Yes	No	No	Yes
South of Ship Creek	Chloroethane (T)	75-00-3	3	Yes	0	No	0.00			1	1	4.637023572	No	No	No	No	No
South of Ship Creek	Chloroform (T)	67-66-3	3	Yes	0	No	0.00			1	1	80	No	No	No	No	No
South of Ship Creek	Chloromethane (T)	74-87-3	3	Yes	0	No	0.00			1	1	100	No	No	No	No	No
South of Ship Creek	Chromium (T)	7440-47-3	3	Yes	0	No	0.00			4	4	100	No	No	No	No	No
South of Ship Creek	Chrysene (T)	218-01-9	6	Yes	0	No	0.00			0.51	20	100	No	No	No	No	No
South of Ship Creek	cis-1,2-Dichloroethene (T)	156-59-2	3	Yes	2	Yes	66.67	2.44	20	1	1	70	No	No	No	No	No
South of Ship Creek	cis-1,3-Dichloropropene (T)	10061-01-5	3	Yes	0	No	0.00			1	1	9	No	No	No	No	No
South of Ship Creek	Dibenz(a,h)anthracene (T)	53-70-3	6	Yes	0	No	0.00			0.1	20	0.1	No	Yes	Yes	Yes	Yes
South of Ship Creek	Dibromochloromethane (T)	124-48-1	3	Yes	0	No	0.00			1	1	80	No	No	No	No	No
South of Ship Creek	Dibromomethane (T)	74-95-3	3	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	Dichlorodifluoromethane (T)	75-71-8	3	Yes	1	Yes	33.33	2.08	2.08	1	1	7300	No	No	No	No	No
South of Ship Creek	Diesel Range Hydrocarbons (D)	DRO	4	Yes	2	Yes	50.00	46000	122000	1000	1000	1500	No	No	No	No	No
South of Ship Creek	Diesel Range Hydrocarbons (T)	DRO	231	No	161	Yes	69.70	100	139000	30	3520	1500	No	Yes	No	No	Yes
South of Ship Creek	Dissolved Oxygen (T)	DO	18	No	18	Yes	100.00	500	2900				SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Dissolved Oxygen, Field (T)	DO-F	7	Yes	7	Yes	100.00	400	1800				SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Ethylbenzene (T)	100-41-4	283	No	107	Yes	37.81	0.7	108000	0.2	1500	700	No	Yes	No	No	Yes
South of Ship Creek	Fluoranthene (T)	206-44-0	6	Yes	3	Yes	50.00	0.03	0.04	0.02	20	1460	No	No	No	No	Yes
South of Ship Creek	Fluorene (T)	86-73-7	6	Yes	3	Yes	50.00	4.74	5.53	1.03	20	1460	No	No	No	No	No
South of Ship Creek	Gasoline Range Hydrocarbons (T)	GRO	80	No	32	Yes	40.00	10	22000	40	100	1300	No	No	No	No	No
South of Ship Creek	Hexachlorobutadiene (T)	87-68-3	3	Yes	0	No	0.00			1	1	10	No	No	No	No	No
South of Ship Creek	Indeno(1,2,3-cd)pyrene (T)	193-39-5	6	Yes	0	No	0.00			0.1	20	1	No	Yes	Yes	No	Yes
South of Ship Creek	Iron (D)	7439-89-6	7	Yes	7	Yes	100.00	2000	6400			11000	No	No	No	No	DL Missing
South of Ship Creek	Lead (T)	7439-92-1	3	Yes	0	No	0.00			2	2	15	No	No	No	No	No
South of Ship Creek	m,p-Xylene (T)	136777-61-2	72	No	32	Yes	44.44	1.05	129000	1	2	10000	No	No	No	No	No
South of Ship Creek	Methylene chloride (T)	75-09-2	3	Yes	0	No	0.00			5	5	5	No	No	No	No	No
South of Ship Creek	Motor Oil (T)	MOTOR	6	Yes	0	No	0.00			50	50		SL NA	SL NA	SL NA	SL NA	No
South of Ship Creek	Naphthalene (T)	91-20-3	6	Yes	0	No	0.00			10.3	20	700	No	No	No	No	No
South of Ship Creek	Nickel (T)	7440-02-0	3	Yes	3	Yes	100.00	2.81	5.54	2	2	0.1	Yes	Yes	Yes	No	No
South of Ship Creek	o-Xylene (T)	95-47-6	63	No	21	Yes	33.33	1.3	188000	1	2	10000	No	No	No	No	No
South of Ship Creek	pH (T)	PH	16	No	16	Yes	100.00	5.3	8.1				SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Phenanthrene (T)	85-01-8	6	Yes	3	Yes	50.00	3.5	4.27	0.51	20	11000	No	No	No	No	No
South of Ship Creek	Pyrene (T)	129-00-0	6	Yes	0	No	0.00			0.51	20	1100	No	No	No	No	No
South of Ship Creek	Residual Range Organics (T)	RRO	3	Yes	0	No	0.00			530	1080	1100	No	No	No	No	No
South of Ship Creek	Specific Conductivity (T)	SC	20	No	20	Yes	100.00	232	320				SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Temperature (T)	TEMP	19	No	19	Yes	100.00	8.6	10.3				SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Tetrachloroethene (T)	127-18-4	3	Yes	2	Yes	66.67	4.46	10	1	1	5	No	No	No	No	No
South of Ship Creek	Toluene (T)	108-88-3	282	No	118	Yes	41.84	0.35	99000	0.3	500	1000	No	No	No	No	Yes
South of Ship Creek	Total Petroleum Hydrocarbons (T)	TPH	156	No	76	Yes	48.72	147	99300	0.2	1000		SL NA	SL NA	SL NA	SL NA	Yes
South of Ship Creek	trans-1,2-Dichloroethene (T)	156-60-5	3	Yes	0	No	0.00			1	1	100	No	No	No	No	No
South of Ship Creek	trans-1,3-Dichloropropene (T)	10061-02-6	3	Yes	0	No	0.00			1	1	9	No	No	No	No	No
South of Ship Creek	Trichloroethene (T)	79-01-6	3	Yes	2	Yes	66.67	3.3	20	1	3.3	5	No	No	No	No	No
South of Ship Creek	Trichlorofluoromethane (T)	75-69-4	3	Yes	0	No	0.00			1	1	10000	No	No	No	No	No
South of Ship Creek	Vanadium (T)	7440-62-2	3	Yes	0	No	0.00			20	20	260	No	No	No	No	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
South of Ship Creek	Vinyl chloride (T)	75-01-4	3	Yes	0	No	0.00			1	1	2	No	No	No	No	No
South of Ship Creek	VOC (T)	VOC	9	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
South of Ship Creek	Xylene, total (T)	1330-20-7	227	No	94	Yes	41.41	0.5	22350	0.4	1500	10000	No	No	No	No	Yes
Terminal Reserve	1,1,1-Trichloroethane (T)	71-55-6	8	Yes	0	No	0.00			0.5	1	200	No	No	No	No	No
Terminal Reserve	1,1,2,2-Tetrachloroethane (T)	79-34-5	8	Yes	0	No	0.00			0.5	1	4	No	No	No	No	No
Terminal Reserve	1,1,2-Trichloroethane (T)	79-00-5	8	Yes	0	No	0.00			0.5	1	5	No	No	No	No	No
Terminal Reserve	1,1-Dichloroethane (T)	75-34-3	4	Yes	0	No	0.00			0.5	0.5	3650	No	No	No	No	No
Terminal Reserve	1,1-Dichloroethene (T)	75-35-4	9	Yes	1	Yes	11.11	7.54	7.54	0.5	1	7	No	No	No	No	No
Terminal Reserve	1,2-Dichlorobenzene (T)	95-50-1	16	No	0	No	0.00			0.5	10	600	No	No	No	No	No
Terminal Reserve	1,2-Dichloroethane (T)	107-06-2	8	Yes	1	Yes	12.50	4.57	4.57	0.5	1	5	No	No	No	No	No
Terminal Reserve	1,2-Dichloropropane (T)	78-87-5	8	Yes	0	No	0.00			0.5	1	5	No	No	No	No	No
Terminal Reserve	1,3-Dichlorobenzene (T)	541-73-1	16	No	0	No	0.00			0.5	10	1100	No	No	No	No	No
Terminal Reserve	1,4-Dichlorobenzene (T)	106-46-7	16	No	0	No	0.00			0.5	10	75	No	No	No	No	No
Terminal Reserve	1-Methylnaphthalene (T)	90-12-0	7	Yes	5	Yes	71.43	5.2	26	0.04	0.48		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	2-Chloroethylvinyl ether (T)	110-75-8	4	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	2-Methylnaphthalene (T)	91-57-6	9	Yes	5	Yes	55.56	8.6	420	0.09	0.94	780	No	No	No	No	No
Terminal Reserve	2-Methylphenol (T)	95-48-7	6	Yes	1	Yes	16.67	28	28	20	20	1800	No	No	No	No	No
Terminal Reserve	4-Chlorotoluene (T)	106-43-4	4	Yes	4	Yes	100.00	88	108				SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	4-Methylphenol (T)	106-44-5	8	Yes	2	Yes	25.00	61	61	20	20	182.4999667	No	No	No	No	No
Terminal Reserve	Acenaphthene (T)	83-32-9	4	Yes	2	Yes	50.00	2.3	340	0.04	1.6	2200	No	No	No	No	No
Terminal Reserve	Acenaphthylene (T)	208-96-8	11	No	4	Yes	36.36	0.68	4.8	0.04	1.6	2200	No	No	No	No	No
Terminal Reserve	Acetone (T)	67-64-1	12	No	7	Yes	58.33	13	55	10	100	3650	No	No	No	No	No
Terminal Reserve	Alkalinity, Total (T)	ALKT	27	No	27	Yes	100.00	84000	1230000	1000	1000		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Anthracene (T)	120-12-7	6	Yes	0	No	0.00			0.04	0.04	11000	No	No	No	No	No
Terminal Reserve	Arsenic (D)	7440-38-2	7	Yes	6	Yes	85.71	4.3	56	4	4	10	No	No	No	No	No
Terminal Reserve	Arsenic (T)	7440-38-2	18	No	15	Yes	83.33	6.7	140	10	10	10	No	No	No	No	No
Terminal Reserve	Barium (T)	7440-39-3	11	No	10	Yes	90.91	100	2000			2000	No	No	No	No	DL Missing
Terminal Reserve	Benzene (T)	71-43-2	1318	No	900	Yes	68.29	0.2	24000000	0.2	1000	5	No	Yes	Yes	Yes	Yes
Terminal Reserve	Benzo(a)anthracene (T)	56-55-3	7	Yes	1	Yes	14.29	0.04	0.04	0.04	0.04	1	No	No	No	No	No
Terminal Reserve	Benzo(a)pyrene (T)	50-32-8	6	Yes	0	No	0.00			0.04	0.04	0.2	No	No	No	No	No
Terminal Reserve	Benzo(b)fluoranthene (T)	205-99-2	7	Yes	0	No	0.00			0.09	0.09	1	No	No	No	No	No
Terminal Reserve	Benzo(g,h,i)perylene (T)	191-24-2	7	Yes	0	No	0.00			0.09	0.09	1100	No	No	No	No	No
Terminal Reserve	Benzo(k)fluoranthene (T)	207-08-9	6	Yes	0	No	0.00			0.04	0.04	10	No	No	No	No	No
Terminal Reserve	Benzoic acid (T)	65-85-0	6	Yes	1	Yes	16.67	57	57	20	20	146000	No	No	No	No	No
Terminal Reserve	Bromodichloromethane (T)	75-27-4	8	Yes	0	No	0.00			0.5	1	80	No	No	No	No	No
Terminal Reserve	Bromoform (T)	75-25-2	8	Yes	0	No	0.00			0.5	1	80	No	No	No	No	No
Terminal Reserve	Bromomethane (T)	74-83-9	8	Yes	0	No	0.00			1	1	50	No	No	No	No	No
Terminal Reserve	Cadmium (D)	7440-43-9	4	Yes	0	No	0.00			5	5	5	No	No	No	No	No
Terminal Reserve	Cadmium (T)	7440-43-9	16	No	1	Yes	6.25	5	5	5	50	5	No	Yes	No	No	No
Terminal Reserve	Carbon tetrachloride (T)	56-23-5	8	Yes	0	No	0.00			0.5	1	5	No	No	No	No	No
Terminal Reserve	Chlorobenzene (T)	108-90-7	16	No	0	No	0.00			0.5	10	100	No	No	No	No	No
Terminal Reserve	Chloroethane (T)	75-00-3	4	Yes	0	No	0.00			1	1	4.637023572	No	No	No	No	No
Terminal Reserve	Chloroform (T)	67-66-3	8	Yes	0	No	0.00			0.5	1	80	No	No	No	No	No
Terminal Reserve	Chloromethane (T)	74-87-3	8	Yes	0	No	0.00			1	1	100	No	No	No	No	No
Terminal Reserve	Chromium (D)	7440-47-3	5	Yes	0	No	0.00			20	20	100	No	No	No	No	No
Terminal Reserve	Chromium (T)	7440-47-3	14	No	12	Yes	85.71	10	400	10	20	100	No	No	No	No	No
Terminal Reserve	Chrysene (T)	218-01-9	7	Yes	1	Yes	14.29	0.07	0.07	0.04	0.04	100	No	No	No	No	No
Terminal Reserve	cis-1,2-Dichloroethene (T)	156-59-2	4	Yes	0	No	0.00			0.5	0.5	70	No	No	No	No	No
Terminal Reserve	cis-1,3-Dichloropropene (T)	10061-01-5	8	Yes	0	No	0.00			0.5	1	9	No	No	No	No	No
Terminal Reserve	Dibenz(a,h)anthracene (T)	53-70-3	7	Yes	0	No	0.00			0.09	0.09	0.1	No	No	No	No	No
Terminal Reserve	Dibromochloromethane (T)	124-48-1	8	Yes	0	No	0.00			0.5	1	80	No	No	No	No	No
Terminal Reserve	Diesel Range Hydrocarbons (T)	DRO	1011	No	935	Yes	92.48	3.93	7000000	24	79000	1500	No	Yes	Yes	No	Yes
Terminal Reserve	Ethylbenzene (T)	100-41-4	1319	No	677	Yes	51.33	0.4	2500000	0.1	2000	700	No	Yes	No	No	Yes
Terminal Reserve	Ferrous Iron (T)	Fe+2	27	No	12	Yes	44.44	1640	5700	500	4000		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Fluoranthene (T)	206-44-0	7	Yes	2	Yes	28.57	0.54	0.58	0.09	0.09	1460	No	No	No	No	No
Terminal Reserve	Fluorene (T)	86-73-7	7	Yes	5	Yes	71.43	0.61	2.1	0.09	0.09	1460	No	No	No	No	No
Terminal Reserve	Gasoline Range Hydrocarbons (T)	GRO	1057	No	695	Yes	65.75	6	170000000	10	50000	1300	No	Yes	Yes	No	Yes
Terminal Reserve	Indeno(1,2,3-cd)pyrene (T)	193-39-5	6	Yes	0	No	0.00			0.04	0.04	1	No	No	No	No	No
Terminal Reserve	Lead (D)	7439-92-1	5	Yes	1	Yes	20.00	2.7	2.7	2	2	15	No	No	No	No	No
Terminal Reserve	Lead (T)	7439-92-1	17	No	7	Yes	41.18	6.9	120	100	1000	15	Yes	Yes	Yes	No	No

Table 3-5 Comparison of Detection Limits for Groundwater to Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Area	Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Groundwater Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Terminal Reserve	m,p-Xylene (T)	136777-61-2	155	No	94	Yes	60.65	2	8460	1	1000	10000	No	No	No	No	Yes
Terminal Reserve	Mercury (T)	7439-97-6	11	No	0	No	0.00			2	2	2	No	No	No	No	No
Terminal Reserve	Methyl tert-Butyl Ether (T)	1634-04-4	4	Yes	0	No	0.00			1	1	20	No	No	No	No	No
Terminal Reserve	Methylene chloride (T)	75-09-2	11	No	2	Yes	18.18	6	38	0.5	10	5	No	Yes	No	No	No
Terminal Reserve	Naphthalene (T)	91-20-3	17	No	9	Yes	52.94	6.5	4800	0.04	20	700	No	No	No	No	Yes
Terminal Reserve	Nickel (T)	7440-02-0	18	No	2	Yes	11.11	635	635	10	10	0.1	Yes	Yes	Yes	No	No
Terminal Reserve	Nitrate (T)	14797-55-8	9	Yes	1	Yes	11.11	635	635	10	10		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Organic Lead (T)	ORG Pb	7	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	o-Xylene (T)	95-47-6	128	No	58	Yes	45.31	0.582	3590	1	1000	10000	No	No	No	No	Yes
Terminal Reserve	PCBs, total (T)	PCBs	7	Yes	0	No	0.00					0.0005	No	No	No	No	DL Missing
Terminal Reserve	Phenanthrene (T)	85-01-8	7	Yes	4	Yes	57.14	0.21	11	0.04	0.04	11000	No	No	No	No	No
Terminal Reserve	Phenol (T)	108-95-2	2	Yes	1	Yes	50.00	25	25			22000	No	No	No	No	DL Missing
Terminal Reserve	Polynuclear Aromatic Hydrocarbons (T)	PAH	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	Pyrene (T)	129-00-0	7	Yes	0	No	0.00			0.04	0.2	1100	No	No	No	No	No
Terminal Reserve	Residual Range Organics (T)	RRO	200	No	136	Yes	68.00	140	2480	1	5100	1100	No	Yes	No	No	Yes
Terminal Reserve	Selenium (T)	7782-49-2	11	No	1	Yes	9.09	50	50	5	5	50	No	No	No	No	No
Terminal Reserve	Silver (T)	7440-22-4	11	No	1	Yes	9.09	100	100	50	50	0.1	Yes	Yes	Yes	Yes	No
Terminal Reserve	Sulfate (T)	14808-79-8	27	No	27	Yes	100.00	1210	64600	200	10000	250000	No	No	No	No	No
Terminal Reserve	Tetrachloroethene (T)	127-18-4	8	Yes	0	No	0.00			0.5	1	5	No	No	No	No	No
Terminal Reserve	Toluene (T)	108-88-3	1309	No	565	Yes	43.16	0.2	16000000	0.05	1000	1000	No	No	No	No	Yes
Terminal Reserve	Total BTEX (T)	BTEX	100	No	69	Yes	69.00	0.2	53820				SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	Total dissolved solids (T)	TDS	7	Yes	7	Yes	100.00	110	10000				SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	Total Petroleum Hydrocarbons (T)	TPH	158	No	69	Yes	43.67	140	80000	200	150000		SL NA	SL NA	SL NA	SL NA	Yes
Terminal Reserve	Total Recoverable Petroleum Hydrocarbons (T)	TRPH	5	Yes	1	Yes	20.00	2000	2000	1000	1000		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Total suspended solids (T)	TSS	7	Yes	7	Yes	100.00	110	7000				SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	trans-1,2-Dichloroethene (T)	156-60-5	8	Yes	0	No	0.00			0.5	1	100	No	No	No	No	No
Terminal Reserve	trans-1,3-Dichloropropene (T)	10061-02-6	8	Yes	0	No	0.00			0.5	1	9	No	No	No	No	No
Terminal Reserve	Trichloroethane (T)	TCA	4	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Trichloroethene (T)	79-01-6	4	Yes	0	No	0.00			0.5	0.5	5	No	No	No	No	No
Terminal Reserve	Trichlorofluoromethane (T)	75-69-4	8	Yes	0	No	0.00			0.5	1	10000	No	No	No	No	No
Terminal Reserve	Turbidity (T)	TURB	4	Yes	4	Yes	100.00	90	900	0.2	1.2		SL NA	SL NA	SL NA	SL NA	No
Terminal Reserve	Vinyl chloride (T)	75-01-4	4	Yes	0	No	0.00			1	1	2	No	No	No	No	No
Terminal Reserve	VOC (T)	VOC	5	Yes	1	Yes	20.00	71.8	71.8				SL NA	SL NA	SL NA	SL NA	DL Missing
Terminal Reserve	Xylene, total (T)	1330-20-7	1233	No	718	Yes	58.23	0.5	14000000	0.1	1000	10000	No	No	No	No	Yes

Notes:
µg/L = micrograms per liter
SL NA = screening level not available
DL = detection limit
T = Total
D = Dissolved
Min = minimum
Max = maximum

Table 3-6 Comparison of Detection Limits for Surface Water at Ship Creek to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
1,1,1,2-Tetrachloroethane	630-20-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,1,1-Trichloroethane	71-55-6	33	No	0	No	0.00			0.5	5		SL NA	SL NA	SL NA	SL NA	No
1,1,2,2-Tetrachloroethane	79-34-5	25	No	0	No	0.00			0.5	5	0.17	Yes	Yes	Yes	No	No
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	20	No	0	No	0.00			1	10		SL NA	SL NA	SL NA	SL NA	No
1,1,2-Trichloroethane	79-00-5	33	No	0	No	0.00			0.5	5	0.59	No	Yes	No	No	No
1,1-Dichloroethane	75-34-3	38	No	2	Yes	5.26	1.1	1.1	0.5	5		SL NA	SL NA	SL NA	SL NA	No
1,1-Dichloroethene	75-35-4	33	No	0	No	0.00			0.5	5	330	No	No	No	No	No
1,1-Dichloropropene	563-58-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,2,3-Trichlorobenzene	87-61-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,2,3-Trichloropropane	96-18-4	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,2,4-Trichlorobenzene	120-82-1	66	No	0	No	0.00			0.38	10	260	No	No	No	No	No
1,2,4-Trimethylbenzene	95-63-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,2-Dibromo-3-chloropropane	96-12-8	26	No	0	No	0.00			1	5		SL NA	SL NA	SL NA	SL NA	No
1,2-Dibromoethane	106-93-4	18	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,2-Dichlorobenzene	95-50-1	69	No	0	No	0.00			0.38	10	2700	No	No	No	No	No
1,2-Dichloroethane	107-06-2	33	No	0	No	0.00			0.5	5	0.38	Yes	Yes	Yes	No	No
1,2-Dichloropropane	78-87-5	33	No	0	No	0.00			0.5	5	0.5	No	Yes	No	No	No
1,2-Diphenylhydrazine	122-66-7	15	No	0	No	0.00			0.38	0.45		SL NA	SL NA	SL NA	SL NA	No
1,3,5-Trimethylbenzene	108-67-8	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,3-Dichlorobenzene	541-73-1	69	No	0	No	0.00			0.38	10	400	No	No	No	No	No
1,3-Dichloropropane	142-28-9	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
1,4-Dichlorobenzene	106-46-7	69	No	0	No	0.00			0.38	10	2600	No	No	No	No	No
1-Methylnaphthalene	90-12-0	15	No	0	No	0.00			0.38	0.45		SL NA	SL NA	SL NA	SL NA	No
2,2-Dichloropropane	594-20-7	8	Yes	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
2,2-Difluoropropane	420-45-1	18	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
2,4,5-Trichlorophenol	95-95-4	19	No	0	No	0.00			0.38	50	2600	No	No	No	No	Yes
2,4,6-Trichlorophenol	88-06-2	19	No	0	No	0.00			0.38	10	1.4	No	Yes	No	No	No
2,4-Dichlorophenol	120-83-2	19	No	0	No	0.00			0.38	10	93	No	No	No	No	No
2,4-Dimethylphenol	105-67-9	19	No	0	No	0.00			0.38	10	540	No	No	No	No	No
2,4-Dinitrophenol	51-28-5	19	No	0	No	0.00			1.9	50	93	No	No	No	No	No
2,4-Dinitrotoluene	121-14-2	41	No	2	Yes	4.88	35.1	35.1	0.76	10	0.11	Yes	Yes	Yes	No	No
2,6-Dinitrotoluene	606-20-2	41	No	0	No	0.00			0.76	10		SL NA	SL NA	SL NA	SL NA	No
2-Butanone	78-93-3	35	No	8	Yes	22.86	2.6	6.6	1	20		SL NA	SL NA	SL NA	SL NA	No
2-Chloroethylvinyl ether	110-75-8	4	Yes	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
2-Chloronaphthalene	91-58-7	41	No	0	No	0.00			0.38	25	1700	No	No	No	No	No
2-Chlorophenol	95-57-8	19	No	0	No	0.00			0.38	10	120	No	No	No	No	No
2-Chlorotoluene	95-49-8	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
2-Hexanone	591-78-6	32	No	0	No	0.00			1	20		SL NA	SL NA	SL NA	SL NA	No
2-Methylnaphthalene	91-57-6	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
2-Methylphenol	95-48-7	19	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
2-Nitroaniline	88-74-4	19	No	0	No	0.00			1.9	50		SL NA	SL NA	SL NA	SL NA	No
2-Nitrophenol	88-75-5	19	No	0	No	0.00			1.9	10		SL NA	SL NA	SL NA	SL NA	No
3,3'-Dichlorobenzidine	91-94-1	41	No	0	No	0.00			1.5	25	0.021	Yes	Yes	Yes	Yes	No
3-Methylphenol	108-39-4	3	Yes	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No

Table 3-6 Comparison of Detection Limits for Surface Water at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
3-Nitroaniline	99-09-2	19	No	0	No	0.00			0.76	50		SL NA	SL NA	SL NA	SL NA	No
4,4'-DDD	72-54-8	18	No	0	No	0.00			0.0097	0.1		SL NA	SL NA	SL NA	SL NA	No
4,4'-DDE	72-55-9	18	No	0	No	0.00			0.0097	0.1		SL NA	SL NA	SL NA	SL NA	No
4,4'-DDT	50-29-3	18	No	0	No	0.00			0.0097	0.1		SL NA	SL NA	SL NA	SL NA	No
4,6-Dinitro-2-methylphenol	534-52-1	19	No	0	No	0.00			0.76	50	13	No	Yes	No	No	No
4-Bromophenyl-phenylether	101-55-3	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
4-Chloro-3-methylphenol	59-50-7	19	No	0	No	0.00			1.9	10		SL NA	SL NA	SL NA	SL NA	No
4-Chloroaniline	106-47-8	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
4-Chlorophenyl-phenylether	7005-72-3	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
4-Chlorotoluene	106-43-4	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
4-Isopropyl toluene	99-87-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
4-Methyl-2-pentanone	108-10-1	31	No	0	No	0.00			1	20		SL NA	SL NA	SL NA	SL NA	No
4-Methylphenol	106-44-5	19	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
4-Nitroaniline	100-01-6	19	No	0	No	0.00			1.9	50		SL NA	SL NA	SL NA	SL NA	No
4-Nitrophenol	100-02-7	19	No	0	No	0.00			1.9	50		SL NA	SL NA	SL NA	SL NA	No
Acenaphthene	83-32-9	42	No	0	No	0.00			0.38	10	1200	No	No	No	No	No
Acenaphthylene	208-96-8	42	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
Acetone	67-64-1	29	No	0	No	0.00			10	30.5		SL NA	SL NA	SL NA	SL NA	No
Acrolein	107-02-8	1	Yes	0	No	0.00			100	100		SL NA	SL NA	SL NA	SL NA	No
Acrylonitrile	107-13-1	1	Yes	0	No	0.00			10	10		SL NA	SL NA	SL NA	SL NA	No
Aldrin	309-00-2	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
Alkalinity, Total	ALKT	23	No	23	Yes	100.00	1000	570000				SL NA	SL NA	SL NA	SL NA	No
alpha-BHC	319-84-6	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
alpha-Chlordane	5103-71-9	15	No	0	No	0.00			0.0086	0.01		SL NA	SL NA	SL NA	SL NA	No
Aluminum	7429-90-5	53	No	33	Yes	62.26	10	1020000	10	300		SL NA	SL NA	SL NA	SL NA	No
Ammonia (as N)	7664-41-7	24	No	17	Yes	70.83	2.1	51450	1.1	200		SL NA	SL NA	SL NA	SL NA	Yes
Aniline	62-53-3	18	No	0	No	0.00			0.76	25		SL NA	SL NA	SL NA	SL NA	No
Anthracene	120-12-7	42	No	0	No	0.00			0.1	10	9600	No	No	No	No	No
Antimony	7440-36-0	37	No	1	Yes	2.70	0.94	0.94	0.63	50000	14	No	Yes	Yes	Yes	Yes
Aroclor 1016	12674-11-	38	No	0	No	0.00			0.2	0.53		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1221	11104-28-	38	No	0	No	0.00			0.2	1		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1232	11141-16-	38	No	0	No	0.00			0.2	0.53		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1242	53469-21-	38	No	0	No	0.00			0.2	0.53		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1248	12672-29-	38	No	0	No	0.00			0.2	0.53		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1254	11097-69-	38	No	0	No	0.00			0.2	1		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1260	11096-82-	40	No	0	No	0.00			0.1	1		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1262	37324-23-	20	No	0	No	0.00			0.5	0.5		SL NA	SL NA	SL NA	SL NA	No
Aroclor 1268	11100-14-	20	No	0	No	0.00			0.5	0.5		SL NA	SL NA	SL NA	SL NA	No
Arsenic	7440-38-2	52	No	12	Yes	23.08	0.71	2.4	0.63	6000		SL NA	SL NA	SL NA	SL NA	Yes
Barium	7440-39-3	53	No	47	Yes	88.68	10	19000	1.3	50		SL NA	SL NA	SL NA	SL NA	No
Benzene	71-43-2	86	No	49	Yes	56.98	0.09	140	0.2	5	2.2	No	Yes	No	No	No
Benzidine	92-87-5	15	No	0	No	0.00			1.5	1.8		SL NA	SL NA	SL NA	SL NA	No
Benzo(a)anthracene	56-55-3	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No
Benzo(a)pyrene	50-32-8	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No

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Benzo(b)fluoranthene	205-99-2	42	No	0	No	0.00			0.2	10	0.0038	Yes	Yes	Yes	Yes	No
Benzo(g,h,i)perylene	191-24-2	42	No	0	No	0.00			0.2	10		SL NA	SL NA	SL NA	SL NA	No
Benzo(k)fluoranthene	207-08-9	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No
Benzoic acid	65-85-0	19	No	0	No	0.00			1.9	50		SL NA	SL NA	SL NA	SL NA	No
Benzyl alcohol	100-51-6	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
Beryllium	7440-41-7	19	No	0	No	0.00			1.3	4000		SL NA	SL NA	SL NA	SL NA	Yes
beta-BHC	319-85-7	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethoxy)methane	111-91-1	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethyl)ether	111-44-4	41	No	0	No	0.00			0.38	10	0.03	Yes	Yes	Yes	Yes	No
Bis(2-chloroisopropyl)ether	39638-32-	41	No	0	No	0.00			0.38	10	1400	No	No	No	No	No
bis(2-Ethylhexyl)phthalate	117-81-7	41	No	0	No	0.00			1.9	50	1.2	Yes	Yes	Yes	No	No
Boron	7440-42-8	2	Yes	0	No	0.00			1000	1000		SL NA	SL NA	SL NA	SL NA	No
Bromobenzene	108-86-1	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Bromochloromethane	74-97-5	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Bromodichloromethane	75-27-4	33	No	0	No	0.00			0.5	5	0.55	No	Yes	No	No	No
Bromoethane	74-96-4	2	Yes	0	No	0.00			2	2		SL NA	SL NA	SL NA	SL NA	No
Bromoform	75-25-2	33	No	0	No	0.00			0.5	5	4.3	No	Yes	No	No	No
Bromomethane	74-83-9	29	No	0	No	0.00			0.5	10	47	No	No	No	No	No
Butylbenzylphthalate	85-68-7	41	No	0	No	0.00			0.38	10	3000	No	No	No	No	No
Cadmium	7440-43-9	45	No	2	Yes	4.44	0.05	0.05	0.05	2000		SL NA	SL NA	SL NA	SL NA	Yes
Calcium	7440-70-2	52	No	52	Yes	100.00	141	27400000	50	1500		SL NA	SL NA	SL NA	SL NA	No
Carbazole	86-74-8	37	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
Carbon disulfide	75-15-0	31	No	12	Yes	38.71	2	23.4	0.5	5		SL NA	SL NA	SL NA	SL NA	No
Carbon tetrachloride	56-23-5	33	No	0	No	0.00			0.5	5	0.23	Yes	Yes	Yes	No	No
Chlordane	12789-03-	18	No	0	No	0.00			0.0086	0.5		SL NA	SL NA	SL NA	SL NA	No
Chloride	16887-00-	5	Yes	5	Yes	100.00	3000	10000				SL NA	SL NA	SL NA	SL NA	No
Chlorobenzene	108-90-7	33	No	0	No	0.00			0.5	5	680	No	No	No	No	No
Chloroethane	75-00-3	31	No	0	No	0.00			0.5	10		SL NA	SL NA	SL NA	SL NA	No
Chloroform	67-66-3	33	No	7	Yes	21.21	0.83	3.6	0.5	5	5.7	No	No	No	No	No
Chloromethane	74-87-3	40	No	9	Yes	22.50	0.81	2.5	0.5	10		SL NA	SL NA	SL NA	SL NA	No
Chromium	7440-47-3	45	No	8	Yes	17.78	1.21	7000	1	5000		SL NA	SL NA	SL NA	SL NA	Yes
Chrysene	218-01-9	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No
cis-1,2-Dichloroethene	156-59-2	29	No	0	No	0.00			0.5	2		SL NA	SL NA	SL NA	SL NA	No
cis-1,3-Dichloropropene	10061-01-	33	No	0	No	0.00			0.5	5	10	No	No	No	No	No
Cobalt	7440-48-4	37	No	0	No	0.00			1	4000		SL NA	SL NA	SL NA	SL NA	Yes
Color	COLOR	18	No	18	Yes	100.00	3	18				SL NA	SL NA	SL NA	SL NA	No
Copper	7440-50-8	45	No	23	Yes	51.11	1.56	7900	1	6000		SL NA	SL NA	SL NA	SL NA	Yes
delta-BHC	319-86-8	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
Dibenz(a,h)anthracene	53-70-3	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No
Dibenzofuran	132-64-9	41	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
Dibromochloromethane	124-48-1	33	No	0	No	0.00			0.5	5	0.4	Yes	Yes	Yes	No	No
Dibromomethane	74-95-3	18	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Dichlorodifluoromethane	75-71-8	27	No	0	No	0.00			0.5	1		SL NA	SL NA	SL NA	SL NA	No
Dieldrin	60-57-1	18	No	0	No	0.00			0.01	0.1		SL NA	SL NA	SL NA	SL NA	No

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Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Diesel Range Hydrocarbons	DRO	33	No	4	Yes	12.12	110	160	0.1	100000		SL NA	SL NA	SL NA	SL NA	Yes
Diethylphthalate	84-66-2	41	No	0	No	0.00			0.38	10	23000	No	No	No	No	No
Dimethylphthalate	131-11-3	41	No	0	No	0.00			0.38	10	313000	No	No	No	No	No
Di-n-butylphthalate	84-74-2	41	No	0	No	0.00			0.38	10	2700	No	No	No	No	No
Di-n-octylphthalate	117-84-0	41	No	0	No	0.00			0.76	10		SL NA	SL NA	SL NA	SL NA	No
Endosulfan I	959-98-8	18	No	0	No	0.00			0.0086	0.06	110	No	No	No	No	No
Endosulfan II	33213-65-	18	No	0	No	0.00			0.0097	0.1	110	No	No	No	No	No
Endosulfan Sulfate	1031-07-8	18	No	0	No	0.00			0.0097	0.1		SL NA	SL NA	SL NA	SL NA	No
Endrin	72-20-8	18	No	0	No	0.00			0.0097	0.1	0.76	No	No	No	No	No
Endrin aldehyde	7421-93-4	18	No	0	No	0.00			0.0097	0.1	0.76	No	No	No	No	No
Endrin Ketone	53494-70-	16	No	0	No	0.00			0.0097	0.1		SL NA	SL NA	SL NA	SL NA	No
Ethylbenzene	100-41-4	86	No	27	Yes	31.40	0.502	10	0.5	5	3100	No	No	No	No	No
Fluoranthene	206-44-0	42	No	0	No	0.00			0.2	10	300	No	No	No	No	No
Fluorene	86-73-7	42	No	0	No	0.00			0.2	10	1300	No	No	No	No	No
Fluoride	16984-48-	4	Yes	3	Yes	75.00	240	1200	100	100		SL NA	SL NA	SL NA	SL NA	No
gamma-BHC (Lindane)	58-89-9	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
Gasoline Range Hydrocarbons	GRO	63	No	24	Yes	38.10	60	330	50	100		SL NA	SL NA	SL NA	SL NA	No
H2S	7783-06-4	5	Yes	1	Yes	20.00	70	70	2	200		SL NA	SL NA	SL NA	SL NA	No
Hardness (as CaCO3) calculated	HARD	1	Yes	1	Yes	100.00	70000	70000				SL NA	SL NA	SL NA	SL NA	No
Heptachlor	76-44-8	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
Heptachlor epoxide	1024-57-3	18	No	0	No	0.00			0.0086	0.06		SL NA	SL NA	SL NA	SL NA	No
Hexachlorobenzene	118-74-1	41	No	0	No	0.00			0.38	10	0.00028	Yes	Yes	Yes	Yes	No
Hexachlorobutadiene	87-68-3	66	No	0	No	0.00			0.76	10	0.44	Yes	Yes	Yes	No	No
Hexachlorocyclopentadiene	77-47-4	29	No	0	No	0.00			1.9	10	240	No	No	No	No	No
Hexachloroethane	67-72-1	59	No	0	No	0.00			0.38	10	1.4	No	Yes	No	No	No
Indeno(1,2,3-cd)pyrene	193-39-5	42	No	0	No	0.00			0.1	10	0.0038	Yes	Yes	Yes	Yes	No
Iron	7439-89-6	57	No	46	Yes	80.70	30	1350000	20	300		SL NA	SL NA	SL NA	SL NA	No
Isophorone	78-59-1	41	No	0	No	0.00			0.38	10	35	No	No	No	No	No
Isopropylbenzene	98-82-8	28	No	0	No	0.00			1	10		SL NA	SL NA	SL NA	SL NA	No
Lead	7439-92-1	54	No	30	Yes	55.56	0.19	35500	0.13	5000		SL NA	SL NA	SL NA	SL NA	Yes
m,p-Xylene	136777-61	35	No	4	Yes	11.43	2.23	9.16	2	2		SL NA	SL NA	SL NA	SL NA	No
Magnesium	7439-95-4	57	No	55	Yes	96.49	32	8390000	10	300		SL NA	SL NA	SL NA	SL NA	No
Manganese	7439-96-5	53	No	53	Yes	100.00	8.99	95000	5	10	50	No	No	No	No	No
Mercury	7439-97-6	45	No	3	Yes	6.67	0.1	0.21	0.1	200	0.05	Yes	Yes	Yes	Yes	Yes
Methoxychlor	72-43-5	18	No	0	No	0.00			0.06	0.5		SL NA	SL NA	SL NA	SL NA	No
Methylene chloride	75-09-2	33	No	1	Yes	3.03	0.4	0.4	1	5	4.6	No	Yes	No	No	No
Molybdenum	7439-98-7	2	Yes	1	Yes	50.00	100	100	100	100		SL NA	SL NA	SL NA	SL NA	No
Naphthalene	91-20-3	71	No	0	No	0.00			0.38	10		SL NA	SL NA	SL NA	SL NA	No
n-Butylbenzene	104-51-8	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Nickel	7440-02-0	44	No	8	Yes	18.18	1.03	400	1	20000	610	No	Yes	Yes	No	Yes
Nitrate	14797-55-	10	No	5	Yes	50.00	150	1200	10	100		SL NA	SL NA	SL NA	SL NA	No
Nitrate/Nitrite	NO3/NO2	38	No	36	Yes	94.74	18	15780				SL NA	SL NA	SL NA	SL NA	No
Nitrite	14797-65-	6	Yes	0	No	0.00			10	100		SL NA	SL NA	SL NA	SL NA	No
Nitrobenzene	98-95-3	41	No	0	No	0.00			0.38	10	17	No	No	No	No	No

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N-Nitrosodimethylamine	62-75-9	3	Yes	0	No	0.00			25	25		SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodi-n-butylamine	924-16-3	15	No	0	No	0.00			0.38	0.45		SL NA	SL NA	SL NA	SL NA	No
N-Nitroso-di-n-propylamine	621-64-7	4	Yes	0	No	0.00			10	10	0.005	Yes	Yes	Yes	Yes	No
N-Nitrosodiphenylamine	86-30-6	19	No	0	No	0.00			0.38	10	3.3	No	Yes	No	No	No
n-Propylbenzene	103-65-1	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Oil & Grease	O&G	31	No	17	Yes	54.84	10	1100	1	20		SL NA	SL NA	SL NA	SL NA	No
o-Xylene	95-47-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Pentachloroethane	76-01-7	18	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Pentachlorophenol	87-86-5	19	No	0	No	0.00			0.76	50	0.27	Yes	Yes	Yes	Yes	No
Pesticide/PCB, total	Pest/PCB	2	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	No
pH	PH	23	No	23	Yes	100.00	5.6	8.8				SL NA	SL NA	SL NA	SL NA	No
Phenanthrene	85-01-8	42	No	0	No	0.00			0.1	10		SL NA	SL NA	SL NA	SL NA	No
Phenol	108-95-2	19	No	0	No	0.00			0.38	10	21000	No	No	No	No	No
Phosphorus	7723-14-0	20	No	20	Yes	100.00	1.7	12900				SL NA	SL NA	SL NA	SL NA	No
Potassium	7440-09-7	42	No	27	Yes	64.29	40	969000	600	2000		SL NA	SL NA	SL NA	SL NA	No
Pyrene	129-00-0	42	No	0	No	0.00			0.2	10	960	No	No	No	No	No
Reactive Phosphorus	ReactP	2	Yes	2	Yes	100.00	2.3	5.4				SL NA	SL NA	SL NA	SL NA	No
Reactive Silicon	ReactSi	4	Yes	4	Yes	100.00	2591	4187				SL NA	SL NA	SL NA	SL NA	No
Residual Range Organics	RRO	22	No	0	No	0.00			370	400		SL NA	SL NA	SL NA	SL NA	No
Retene	483-65-8	15	No	0	No	0.00			0.38	0.45		SL NA	SL NA	SL NA	SL NA	No
Salinity	Salinity	5	Yes	3	Yes	60.00	0.005	0.006	0.005	1		SL NA	SL NA	SL NA	SL NA	Yes
sec-Butylbenzene	135-98-8	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Selenium	7782-49-2	41	No	2	Yes	4.88	1.34	1.34	1	4000	170	No	Yes	Yes	No	Yes
Silicon	7440-21-3	2	Yes	2	Yes	100.00	100	1400				SL NA	SL NA	SL NA	SL NA	No
Silver	7440-22-4	26	No	0	No	0.00			1	3000		SL NA	SL NA	SL NA	SL NA	Yes
Sodium	7440-23-5	53	No	51	Yes	96.23	82	6080000	100	1500		SL NA	SL NA	SL NA	SL NA	No
Specific Conductivity	SC	20	No	20	Yes	100.00	6	2740				SL NA	SL NA	SL NA	SL NA	No
Styrene	100-42-5	31	No	0	No	0.00			0.5	5		SL NA	SL NA	SL NA	SL NA	No
Sulfate	14808-79-	5	Yes	5	Yes	100.00	1400	18000				SL NA	SL NA	SL NA	SL NA	No
SVOC	SVOC	2	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	No
tert-Butylbenzene	98-06-6	26	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Tetrachloroethene	127-18-4	33	No	1	Yes	3.03	11.8	11.8	0.5	5	0.69	No	Yes	No	No	No
Thallium	7440-28-0	19	No	0	No	0.00			0.63	3000	1.7	No	Yes	Yes	Yes	Yes
Tin	7440-31-5	4	Yes	0	No	0.00			1000	22000		SL NA	SL NA	SL NA	SL NA	No
Toluene	108-88-3	90	No	23	Yes	25.56	0.09	40.1	0.5	5	6800	No	No	No	No	No
Total 1,2-Dichloroethenes	540-59-0	19	No	0	No	0.00			1	1		SL NA	SL NA	SL NA	SL NA	No
Total Cyanide	CN	2	Yes	1	Yes	50.00	10000	10000	10000	10000		SL NA	SL NA	SL NA	SL NA	No
Total dissolved solids	TDS	5	Yes	5	Yes	100.00	127000	190000				SL NA	SL NA	SL NA	SL NA	No
Total Kjeldahl Nitrogen	TKN	2	Yes	2	Yes	100.00	37.5	44.4				SL NA	SL NA	SL NA	SL NA	No
Total Petroleum Hydrocarbons	TPH	2	Yes	0	No	0.00			10	200		SL NA	SL NA	SL NA	SL NA	No
Total suspended solids	TSS	15	No	15	Yes	100.00	4000	88000				SL NA	SL NA	SL NA	SL NA	No
Toxaphene	8001-35-2	18	No	0	No	0.00			1	2.6		SL NA	SL NA	SL NA	SL NA	No
trans-1,2-Dichloroethene	156-60-5	14	No	1	Yes	7.14	1	1	0.5	5	140	No	No	No	No	No
trans-1,3-Dichloropropene	10061-02-	33	No	0	No	0.00			0.5	5	10	No	No	No	No	No

Table 3-6 Comparison of Detection Limits for Surface Water at Ship Creek to Human Health Screening Level Criteria ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Screening Level (µg/L)	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Trichloroethene	79-01-6	33	No	0	No	0.00			0.5	5	2.5	No	Yes	No	No	No
Trichlorofluoromethane	75-69-4	29	No	0	No	0.00			0.5	2		SL NA	SL NA	SL NA	SL NA	No
Trichlorotriflouroethane	26523-64-	1	Yes	0	No	0.00			0.5	0.5		SL NA	SL NA	SL NA	SL NA	No
Turbidity	TURB	12	No	12	Yes	100.00	0.2	680	0.5	0.5		SL NA	SL NA	SL NA	SL NA	No
Vanadium	7440-62-2	44	No	8	Yes	18.18	1.16	1300	1	4000		SL NA	SL NA	SL NA	SL NA	Yes
Vinyl Acetate	108-05-4	5	Yes	0	No	0.00			1	10		SL NA	SL NA	SL NA	SL NA	No
Vinyl chloride	75-01-4	31	No	0	No	0.00			0.5	10	0.025	Yes	Yes	Yes	Yes	No
VOC	VOC	2	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	No
Xylene, total	1330-20-7	57	No	37	Yes	64.91	0.011	30	0.5	5		SL NA	SL NA	SL NA	SL NA	No
Zinc	7440-66-6	50	No	11	Yes	22.00	5.2	14000	2	10	9100	No	No	No	No	No
Zirconium	7440-67-7	5	Yes	0	No	0.00			10	50		SL NA	SL NA	SL NA	SL NA	No

Notes:
µg/L = micrograms per liter
SL NA = Screening level not available
DL = Detection Limit
T = total
D = Dissolved
Min = minimum
Max = maximum

Table 3-7 Comparison of Detection Limits for Sediment at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Screening Level mg/kg [1]	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
1,1,1,2-Tetrachloroethane	630-20-6	44	No	0	No	0.00			0.001	5	3.2	No	Yes	No	No	Yes
1,1,1-Trichloroethane	71-55-6	53	No	0	No	0.00			0.001	5	1200	No	No	No	No	Yes
1,1,2,2-Tetrachloroethane	79-34-5	28	No	0	No	0.00			0.0017	5	42	No	No	No	No	Yes
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	10	No	0	No	0.00			0.0017	1		SL NA	SL NA	SL NA	SL NA	Yes
1,1,2-Trichloroethane	79-00-5	53	No	0	No	0.00			0.001	5	150	No	No	No	No	Yes
1,1-Dichloroethane	75-34-3	53	No	0	No	0.00			0.001	5	10000	No	No	No	No	Yes
1,1-Dichloroethene	75-35-4	53	No	0	No	0.00			0.001	5	14	No	No	No	No	Yes
1,1-Dichloropropene	563-58-6	43	No	0	No	0.00			0.001	5		SL NA	SL NA	SL NA	SL NA	Yes
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	4	Yes	4	Yes	100.00	9.60E-06	1.20E-05			3.90E-04	No	No	No	No	DL Missing
1,2,3,4,6,7,8-HPCDF	67562-39-4	4	Yes	0	No	0.00			2.50E-06	3.50E-06	3.90E-04	No	No	No	No	No
1,2,3,4,7,8,9-HPCDF	55673-89-7	4	Yes	0	No	0.00			3.20E-06	4.60E-06	3.90E-04	No	No	No	No	No
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4	Yes	0	No	0.00			3.40E-06	6.90E-06	3.90E-05	No	No	No	No	No
1,2,3,4,7,8-HXCDF	70648-26-9	4	Yes	0	No	0.00			2.10E-06	2.60E-06	3.90E-05	No	No	No	No	No
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	4	Yes	0	No	0.00			1.80E-06	2.20E-05	3.90E-05	No	No	No	No	No
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4	Yes	0	No	0.00			3.00E-06	6.20E-06	3.90E-05	No	No	No	No	No
1,2,3,7,8,9-HxCDF	72918-21-9	4	Yes	0	No	0.00			2.50E-06	3.10E-06	3.90E-05	No	No	No	No	No
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4	Yes	0	No	0.00			3.50E-06	8.00E-06	7.80E-05	No	No	No	No	No
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4	Yes	0	No	0.00			5.90E-06	5.90E-06	3.90E-05	No	No	No	No	No
1,2,3-Trichlorobenzene	87-61-6	43	No	0	No	0.00			0.001	20		SL NA	SL NA	SL NA	SL NA	Yes
1,2,3-Trichloropropane	96-18-4	43	No	0	No	0.00			0.001	5	0.005	No	Yes	Yes	Yes	Yes
1,2,4-Trichlorobenzene	120-82-1	80	No	0	No	0.00			0.001	20	1000	No	No	No	No	Yes
1,2,4-Trimethylbenzene	95-63-6	48	No	2	Yes	4.17	0.0042	0.0042	0.001	20	52	No	No	No	No	Yes
1,2-Dibromo-3-chloropropane	96-12-8	43	No	0	No	0.00			0.0017	20	0.455	No	Yes	Yes	No	Yes
1,2-Dibromoethane	106-93-4	19	No	0	No	0.00			0.0017	20	0.1	No	Yes	Yes	Yes	Yes
1,2-Dichlorobenzene	95-50-1	84	No	0	No	0.00			0.001	5	9100	No	No	No	No	Yes
1,2-Dichloroethane	107-06-2	48	No	0	No	0.00			0.001	0.2	91	No	No	No	No	Yes
1,2-Dichloropropane	78-87-5	48	No	0	No	0.00			0.001	0.2	120	No	No	No	No	Yes
1,2-Dichloropropene	563-54-2	5	Yes	0	No	0.00			5	5	0.78	Yes	Yes	No	No	No
1,2-Diphenylhydrazine	122-66-7	6	Yes	0	No	0.00			0.156	0.179	0.61	No	No	No	No	No
1,3,5-Trimethylbenzene	108-67-8	48	No	2	Yes	4.17	0.0018	0.0018	0.001	20	21	No	No	No	No	Yes
1,3-Dichlorobenzene	541-73-1	84	No	0	No	0.00			0.001	5	3040	No	No	No	No	Yes
1,3-Dichloropropane	142-28-9	38	No	0	No	0.00			0.001	0.1		SL NA	SL NA	SL NA	SL NA	No
1,3-dichloropropene	542-75-6	5	Yes	0	No	0.00			5	5	0.78	Yes	Yes	No	No	No
1,4-Dichlorobenzene	106-46-7	84	No	0	No	0.00			0.001	5	350	No	No	No	No	Yes
1-Methylnaphthalene	90-12-0	17	No	3	Yes	17.65	0.278	0.885	0.156	0.232	4100	No	No	No	No	No
2,2-Dichloropropane	594-20-7	37	No	0	No	0.00			0.001	5		SL NA	SL NA	SL NA	SL NA	Yes
2,2-Difluoropropane	420-45-1	6	Yes	0	No	0.00			0.0017	0.0023		SL NA	SL NA	SL NA	SL NA	No
2,3,4,6,7,8-HXCDF	60851-34-5	4	Yes	0	No	0.00			2.00E-06	2.50E-06	3.90E-05	No	No	No	No	No
2,3,4,7,8-PECDF	57117-31-4	4	Yes	0	No	0.00			3.50E-06	8.10E-06	7.80E-06	No	Yes	No	No	No
2,3,7,8-TCDD	1746-01-6	4	Yes	0	No	0.00			2.40E-06	2.90E-06	3.90E-06	No	No	No	No	No
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4	Yes	0	No	0.00			1.60E-06	2.90E-06	3.90E-05	No	No	No	No	No
2,4,5-Trichlorophenol	95-95-4	16	No	0	No	0.00			0.156	3.4	10000	No	No	No	No	No
2,4,6-Trichlorophenol	88-06-2	16	No	0	No	0.00			0.156	1.2	750	No	No	No	No	No
2,4-Dichlorophenol	120-83-2	16	No	0	No	0.00			0.156	1.2	300	No	No	No	No	No
2,4-Dimethylphenol	105-67-9	16	No	0	No	0.00			0.156	1.2	2000	No	No	No	No	No
2,4-Dinitrophenol	51-28-5	16	No	0	No	0.00			0.782	8	200	No	No	No	No	No
2,4-Dinitrotoluene	121-14-2	38	No	0	No	0.00			0.3	1.2	12	No	No	No	No	No
2,6-Dinitrotoluene	606-20-2	38	No	0	No	0.00			0.3	1.2	12	No	No	No	No	No
2-Butanone	78-93-3	63	No	8	Yes	12.70	0.0058	0.0806	0.0017	20	60800	No	No	No	No	Yes
2-Chloroethylvinyl ether	110-75-8	10	No	0	No	0.00			0.012	1		SL NA	SL NA	SL NA	SL NA	No
2-Chloronaphthalene	91-58-7	38	No	0	No	0.00			0.156	1.2	8110	No	No	No	No	No
2-Chlorophenol	95-57-8	16	No	0	No	0.00			0.156	1.2	510	No	No	No	No	No
2-Chlorotoluene	95-49-8	43	No	0	No	0.00			0.001	20	160	No	No	No	No	Yes
2-Hexanone	591-78-6	53	No	0	No	0.00			0.0067	20		SL NA	SL NA	SL NA	SL NA	Yes
2-Methylnaphthalene	91-57-6	59	No	3	Yes	5.08	0.008	0.885	0.005	1.2	2030	No	No	No	No	Yes
2-Methylphenol	95-48-7	16	No	0	No	0.00			0.156	1.2	5100	No	No	No	No	No

Table 3-7 Comparison of Detection Limits for Sediment at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Screening Level mg/kg [1]	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
2-Nitroaniline	88-74-4	16	No	0	No	0.00			0.782	8	1.75	No	Yes	No	No	No
2-Nitrophenol	88-75-5	16	No	0	No	0.00			0.3	1.2		SL NA	SL NA	SL NA	SL NA	No
3,3'-Dichlorobenzidine	91-94-1	38	No	0	No	0.00			0.3	5	18	No	No	No	No	No
3-Methylphenol	108-39-4	4	Yes	0	No	0.00			0.3	1.2	3100	No	No	No	No	No
3-Nitroaniline	99-09-2	16	No	0	No	0.00			0.313	8		SL NA	SL NA	SL NA	SL NA	No
4,4'-DDD	72-54-8	26	No	1	Yes	3.85	0.0024	0.0024	0.0016	0.1	35	No	No	No	No	No
4,4'-DDE	72-55-9	21	No	0	No	0.00			0.0016	0.1	24	No	No	No	No	No
4,4'-DDT	50-29-3	32	No	3	Yes	9.38	0.0028	0.0044	0.0016	0.1	24	No	No	No	No	No
4,6-Dinitro-2-methylphenol	534-52-1	16	No	0	No	0.00			0.313	8		SL NA	SL NA	SL NA	SL NA	No
4-Bromophenyl-phenylether	101-55-3	38	No	0	No	0.00			0.156	1.2		SL NA	SL NA	SL NA	SL NA	No
4-Chloro-3-methylphenol	59-50-7	17	No	0	No	0.00			0.3	1.2		SL NA	SL NA	SL NA	SL NA	No
4-Chloroaniline	106-47-8	38	No	0	No	0.00			0.156	1.2	410	No	No	No	No	No
4-Chlorophenyl-phenylether	7005-72-3	38	No	0	No	0.00			0.156	1.2		SL NA	SL NA	SL NA	SL NA	No
4-Chlorotoluene	106-43-4	43	No	0	No	0.00			0.001	20		SL NA	SL NA	SL NA	SL NA	Yes
4-Isopropyl toluene	99-87-6	43	No	1	Yes	2.33	0.0033	0.0033	0.001	20		SL NA	SL NA	SL NA	SL NA	Yes
4-Methyl-2-pentanone	108-10-1	58	No	2	Yes	3.45	0.0075	0.0075	0.0067	20	787	No	No	No	No	Yes
4-Methylphenol	106-44-5	24	No	5	Yes	20.83	0.193	2.49	0.156	1.2	306	No	No	No	No	No
4-Nitroaniline	100-01-6	16	No	0	No	0.00			0.782	8		SL NA	SL NA	SL NA	SL NA	No
4-Nitrophenol	100-02-7	16	No	0	No	0.00			0.782	8		SL NA	SL NA	SL NA	SL NA	No
Acenaphthene	83-32-9	53	No	1	Yes	1.89	0.225	0.225	0.005	1.2	6100	No	No	No	No	Yes
Acenaphthylene	208-96-8	48	No	0	No	0.00			0.005	1.2	6100	No	No	No	No	Yes
Acetone	67-64-1	53	No	1	Yes	1.89	0.13	0.13	0.0067	50	10000	No	No	No	No	Yes
Aldrin	309-00-2	21	No	0	No	0.00			0.00078	0.1	0.5	No	No	No	No	Yes
alpha-BHC	319-84-6	21	No	0	No	0.00			0.00078	0.1	1.3	No	No	No	No	Yes
alpha-Chlordane	5103-71-9	11	No	1	Yes	9.09	0.0043	0.0043	0.00078	0.0012		SL NA	SL NA	SL NA	SL NA	No
Aluminum	7429-90-5	43	No	41	Yes	95.35	1700	22800	0.3	833	76000	No	No	No	No	Yes
Aniline	62-53-3	16	No	0	No	0.00			0.3	1.2	85	No	No	No	No	No
Anthracene	120-12-7	48	No	1	Yes	2.08	0.01	0.01	0.005	1.2	30000	No	No	No	No	Yes
Antimony	7440-36-0	29	No	3	Yes	10.34	4.8	6.3	0.003	20	41	No	No	No	No	Yes
Aroclor 1016	12674-11-2	41	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Aroclor 1221	11104-28-2	41	No	0	No	0.00			0.05	1	1	No	No	No	No	No
Aroclor 1232	11141-16-5	41	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Aroclor 1242	53469-21-9	41	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Aroclor 1248	12672-29-6	41	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Aroclor 1254	11097-69-1	41	No	0	No	0.00			0.025	1	1	No	No	No	No	No
Aroclor 1260	11096-82-5	53	No	6	Yes	11.32	0.046	1.58	0.025	1	1	No	No	No	No	No
Aroclor 1262	37324-23-5	20	No	0	No	0.00			0.025	0.025	1	No	No	No	No	No
Aroclor 1268	11100-14-4	20	No	0	No	0.00			0.025	0.025	1	No	No	No	No	No
Arsenic	7440-38-2	49	No	47	Yes	95.92	3	18.8	0.001	1	5.5	No	No	No	No	Yes
Barium	7440-39-3	49	No	47	Yes	95.92	31	202	0.01	5.56	7100	No	No	No	No	Yes
Benzene	71-43-2	54	No	0	No	0.00			0.001	5	150	No	No	No	No	Yes
Benzidine	92-87-5	12	No	0	No	0.00			0.626	3.4	0.0021	Yes	Yes	Yes	Yes	No
Benzo(a)anthracene	56-55-3	48	No	2	Yes	4.17	0.009	0.044	0.005	1.2	11	No	No	No	No	Yes
Benzo(a)pyrene	50-32-8	49	No	2	Yes	4.08	0.008	0.041	0.005	6	1	No	Yes	No	No	Yes
Benzo(b)fluoranthene	205-99-2	49	No	2	Yes	4.08	0.009	0.031	0.005	6	11	No	No	No	No	Yes
Benzo(g,h,i)perylene	191-24-2	59	No	7	Yes	11.86	0.007	0.299	0.005	6	3000	No	No	No	No	Yes
Benzo(k)fluoranthene	207-08-9	48	No	2	Yes	4.17	0.008	0.042	0.005	6	110	No	No	No	No	Yes
Benzoic acid	65-85-0	16	No	0	No	0.00			0.782	8	410000	No	No	No	No	No
Benzyl alcohol	100-51-6	43	No	2	Yes	4.65	0.201	0.201	0.156	1.2	18000	No	No	No	No	No
Beryllium	7440-41-7	20	No	16	Yes	80.00	0.44	0.67	1	1	200	No	No	No	No	No
beta-BHC	319-85-7	21	No	0	No	0.00			0.00078	0.1	4.6	No	No	No	No	Yes
bis(2-Chloroethoxy)methane	111-91-1	38	No	0	No	0.00			0.156	1.2		SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethyl)ether	111-44-4	38	No	0	No	0.00			0.156	1.2	8	No	No	No	No	No
Bis(2-chloroisopropyl)ether	39638-32-9	38	No	0	No	0.00			0.156	1.2	2.9	No	No	No	No	No
bis(2-Ethylhexyl)phthalate	117-81-7	38	No	2	Yes	5.26	0.37	0.37	0.25	1.2	590	No	No	No	No	No
Bromobenzene	108-86-1	43	No	0	No	0.00			0.001	5	27	No	No	No	No	Yes

Table 3-7 Comparison of Detection Limits for Sediment at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Screening Level mg/kg [1]	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Bromochloromethane	74-97-5	43	No	0	No	0.00			0.001	5		SL NA	SL NA	SL NA	SL NA	Yes
Bromodichloromethane	75-27-4	53	No	0	No	0.00			0.001	5	0.824	No	Yes	No	No	Yes
Bromoethane	74-96-4	4	Yes	0	No	0.00			0.2	0.2		SL NA	SL NA	SL NA	SL NA	No
Bromoform	75-25-2	53	No	0	No	0.00			0.001	5	1050	No	No	No	No	Yes
Bromomethane	74-83-9	49	No	0	No	0.00			0.0017	5	3.9	No	Yes	No	No	Yes
Butylbenzylphthalate	85-68-7	38	No	0	No	0.00			0.156	1.2	20000	No	No	No	No	No
Cadmium	7440-43-9	49	No	8	Yes	16.33	0.22	1.13	0.001	1	100	No	No	No	No	Yes
Calcium	7440-70-2	43	No	43	Yes	100.00	40.5	19800	1.5	167		SL NA	SL NA	SL NA	SL NA	Yes
Carbazole	86-74-8	28	No	0	No	0.00			0.156	0.33	420	No	No	No	No	No
Carbon disulfide	75-15-0	30	No	0	No	0.00			0.0017	5	10000	No	No	No	No	Yes
Carbon tetrachloride	56-23-5	53	No	0	No	0.00			0.001	5	64	No	No	No	No	Yes
Chlordane	12789-03-6	21	No	0	No	0.00			0.0008	10	24	No	No	No	No	Yes
Chlorobenzene	108-90-7	53	No	0	No	0.00			0.001	5	2000	No	No	No	No	Yes
Chloroethane	75-00-3	53	No	0	No	0.00			0.001	5	3.03	No	Yes	No	No	Yes
Chloroform	67-66-3	53	No	0	No	0.00			0.001	5	1000	No	No	No	No	Yes
Chloromethane	74-87-3	53	No	0	No	0.00			0.0017	5	1.23	No	Yes	No	No	Yes
Chromium	7440-47-3	49	No	47	Yes	95.92	21.9	68.2	0.001	2	300	No	No	No	No	Yes
Chrysene	218-01-9	49	No	2	Yes	4.08	0.013	0.053	0.005	1.2	1100	No	No	No	No	Yes
cis-1,2-Dichloroethene	156-59-2	47	No	1	Yes	2.13	0.002	0.002	0.001	5	1000	No	No	No	No	Yes
cis-1,3-Dichloropropene	10061-01-5	53	No	0	No	0.00			0.001	5	83	No	No	No	No	Yes
Cobalt	7440-48-4	43	No	41	Yes	95.35	7.48	21	0.001	2	900	No	No	No	No	Yes
Copper	7440-50-8	44	No	42	Yes	95.45	22.7	65.1	0.001	2	4060	No	No	No	No	Yes
delta-BHC	319-86-8	21	No	0	No	0.00			0.00078	0.1		SL NA	SL NA	SL NA	SL NA	Yes
Dibenz(a,h)anthracene	53-70-3	49	No	1	Yes	2.04	0.007	0.007	0.005	6	1	No	Yes	No	No	Yes
Dibenzofuran	132-64-9	58	No	3	Yes	5.17	0.206	0.24	0.005	1.2	203	No	No	No	No	Yes
Dibromochloromethane	124-48-1	53	No	0	No	0.00			0.001	5	1.11	No	Yes	No	No	Yes
Dibromomethane	74-95-3	19	No	0	No	0.00			0.0017	5		SL NA	SL NA	SL NA	SL NA	Yes
Dichlorodifluoromethane	75-71-8	43	No	0	No	0.00			0.001	5	20300	No	No	No	No	Yes
Dieldrin	60-57-1	21	No	0	No	0.00			0.0016	0.1	0.5	No	No	No	No	No
Diesel Range Hydrocarbons	DRO	42	No	13	Yes	30.95	16	660	10	125	10250	No	No	No	No	No
Diethylphthalate	84-66-2	38	No	0	No	0.00			0.156	1.2	81000	No	No	No	No	No
Dimethylphthalate	131-11-3	38	No	0	No	0.00			0.156	1.2	1000000	No	No	No	No	No
Di-n-butylphthalate	84-74-2	38	No	1	Yes	2.63	0.12	0.12	0.12	1.2	10000	No	No	No	No	No
Di-n-octylphthalate	117-84-0	38	No	0	No	0.00			0.14	6	2000	No	No	No	No	No
Endosulfan I	959-98-8	21	No	0	No	0.00			0.00078	0.1	610	No	No	No	No	Yes
Endosulfan II	33213-65-9	21	No	0	No	0.00			0.0016	0.1	610	No	No	No	No	No
Endosulfan Sulfate	1031-07-8	21	No	0	No	0.00			0.0016	0.1		SL NA	SL NA	SL NA	SL NA	No
Endrin	72-20-8	21	No	0	No	0.00			0.0016	0.1	30	No	No	No	No	No
Endrin aldehyde	7421-93-4	21	No	0	No	0.00			0.0016	0.1		SL NA	SL NA	SL NA	SL NA	No
Endrin Ketone	53494-70-5	12	No	0	No	0.00			0.0016	0.033		SL NA	SL NA	SL NA	SL NA	No
Ethylbenzene	100-41-4	54	No	0	No	0.00			0.001	5	10000	No	No	No	No	Yes
Fluoranthene	206-44-0	59	No	7	Yes	11.86	0.023	0.65	0.005	1.2	4100	No	No	No	No	Yes
Fluorene	86-73-7	48	No	1	Yes	2.08	0.005	0.005	0.005	1.2	4100	No	No	No	No	Yes
gamma Chlordane	57-74-9	5	Yes	1	Yes	20.00	0.0041	0.0041	0.00081	0.0012		SL NA	SL NA	SL NA	SL NA	No
gamma-BHC (Lindane)	58-89-9	26	No	1	Yes	3.85	0.0019	0.0019	0.00078	0.1	6.4	No	No	No	No	Yes
Gasoline Range Hydrocarbons	GRO	33	No	0	No	0.00			0.83	5	1400	No	No	No	No	No
Heptachlor	76-44-8	21	No	0	No	0.00			0.00078	0.1	2	No	No	No	No	Yes
Heptachlor epoxide	1024-57-3	26	No	1	Yes	3.85	0.0045	0.0045	0.00078	0.1	0.9	No	No	No	No	Yes
Hexachlorobenzene	118-74-1	38	No	0	No	0.00			0.156	1.2	5	No	No	No	No	No
Hexachlorobutadiene	87-68-3	80	No	0	No	0.00			0.001	20	20	No	No	No	No	Yes
Hexachlorocyclopentadiene	77-47-4	37	No	0	No	0.00			0.3	1.2	710	No	No	No	No	No
Hexachloroethane	67-72-1	44	No	0	No	0.00			0.0017	1.2	101	No	No	No	No	Yes
Indeno(1,2,3-cd)pyrene	193-39-5	49	No	2	Yes	4.08	0.006	0.026	0.005	6	11	No	No	No	No	Yes
Iron	7439-89-6	43	No	41	Yes	95.35	984	43400	0.3	833	23000	No	No	No	No	Yes
Isophorone	78-59-1	38	No	0	No	0.00			0.156	1.2	8700	No	No	No	No	No
Isopropylbenzene	98-82-8	43	No	0	No	0.00			0.001	20	10100	No	No	No	No	Yes

Table 3-7 Comparison of Detection Limits for Sediment at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Screening Level mg/kg [1]	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Lead	7439-92-1	49	No	47	Yes	95.92	4	158	0.001	1	400	No	No	No	No	Yes
m,p-Xylene	136777-61-2	30	No	0	No	0.00			0.002	0.2		SL NA	SL NA	SL NA	SL NA	No
Magnesium	7439-95-4	43	No	43	Yes	100.00	5.96	12800	0.3	167		SL NA	SL NA	SL NA	SL NA	Yes
Manganese	7439-96-5	43	No	43	Yes	100.00	0.16	2470	0.01	27.8	1800	No	No	No	No	Yes
Mercury	7439-97-6	48	No	19	Yes	39.58	0.05	0.93	0.0002	0.2	0	Yes	Yes	Yes	Yes	Yes
Methoxychlor	72-43-5	21	No	0	No	0.00			0.0009	0.16	510	No	No	No	No	Yes
Methylene chloride	75-09-2	53	No	2	Yes	3.77	0.001	0.008	0.002	10	1100	No	No	No	No	Yes
Naphthalene	91-20-3	111	No	11	Yes	9.91	0.0046	0.6	0.001	20	2000	No	No	No	No	Yes
n-Butylbenzene	104-51-8	43	No	0	No	0.00			0.001	20	240	No	No	No	No	Yes
Nickel	7440-02-0	48	No	46	Yes	95.83	21	60	0.001	10	2000	No	No	No	No	Yes
Nitrobenzene	98-95-3	38	No	0	No	0.00			0.156	1.2	51	No	No	No	No	No
N-Nitrosodimethylamine	62-75-9	10	No	0	No	0.00			0.3	1.2	1700	No	No	No	No	No
N-Nitrosodi-n-butylamine	924-16-3	6	Yes	0	No	0.00			0.156	0.179	0.024	Yes	Yes	No	No	No
N-Nitroso-di-n-propylamine	621-64-7	10	No	0	No	0.00			0.3	1.2	1.2	No	No	No	No	No
N-Nitrosodiphenylamine	86-30-6	13	No	1	Yes	7.69	0.753	0.753	0.156	1.2	1700	No	No	No	No	No
n-Propylbenzene	103-65-1	48	No	1	Yes	2.08	0.0033	0.0033	0.001	20	240	No	No	No	No	Yes
OCDD	3268-87-9	4	Yes	4	Yes	100.00	0.00004	0.000095			0.039	No	No	No	No	DL Missing
OCDF	39001-02-0	5	Yes	3	Yes	60.00	0.0000013	0.000013	0.0000086	0.0000086	0.039	No	No	No	No	No
o-Xylene	95-47-6	30	No	0	No	0.00			0.001	0.1		SL NA	SL NA	SL NA	SL NA	No
PCBs, total	PCBs	2	Yes	1	Yes	50.00	2.5	2.5	0.1	0.1	1	No	No	No	No	No
P-Cymene	25155-15-1	5	Yes	1	Yes	20.00	0.0033	0.0033	0.0017	0.0022		SL NA	SL NA	SL NA	SL NA	No
Pentachloroethane	76-01-7	6	Yes	0	No	0.00			0.0017	0.0023		SL NA	SL NA	SL NA	SL NA	No
Pentachlorophenol	87-86-5	16	No	0	No	0.00			0.313	8	35	No	No	No	No	No
Pesticide/PCB, total	Pest/PCB	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Phenanthrene	85-01-8	54	No	5	Yes	9.26	0.016	0.506	0.005	1.2	30000	No	No	No	No	Yes
Phenol	108-95-2	16	No	0	No	0.00			0.156	1.2	60800	No	No	No	No	No
Potassium	7440-09-7	43	No	31	Yes	72.09	0.6	4270	0.6	1670		SL NA	SL NA	SL NA	SL NA	Yes
Pyrene	129-00-0	58	No	6	Yes	10.34	0.021	0.445	0.005	1.2	3000	No	No	No	No	Yes
Residual Range Organics	RRO	33	No	14	Yes	42.42	52.4	1200	44.4	250	10000	No	No	No	No	No
Retene	483-65-8	17	No	6	Yes	35.29	0.182	21.1	0.156	0.232		SL NA	SL NA	SL NA	SL NA	No
sec-Butylbenzene	135-98-8	43	No	0	No	0.00			0.001	20	220	No	No	No	No	Yes
Selenium	7782-49-2	48	No	19	Yes	39.58	0.32	1	0.001	2	510	No	No	No	No	Yes
Silver	7440-22-4	15	No	0	No	0.00			0.4	2	510	No	No	No	No	No
Sodium	7440-23-5	43	No	43	Yes	100.00	3.57	5700	0.3	167		SL NA	SL NA	SL NA	SL NA	Yes
Styrene	100-42-5	53	No	0	No	0.00			0.001	5	20300	No	No	No	No	Yes
SVOC	SVOC	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
tert-Butylbenzene	98-06-6	43	No	0	No	0.00			0.001	20	390	No	No	No	No	Yes
Tetrachloroethene	127-18-4	53	No	1	Yes	1.89	0.006	0.006	0.001	5	160	No	No	No	No	Yes
Thallium	7440-28-0	10	No	0	No	0.00			0.3	1	5.2	No	No	No	No	No
Toluene	108-88-3	74	No	8	Yes	10.81	0.0018	0.46	0.001	5	20300	No	No	No	No	Yes
Total 1,2-Dichloroethenes	540-59-0	11	No	0	No	0.00			0.0017	5	43	No	No	No	No	Yes
TOTAL HPCDD	37871-00-4	2	Yes	2	Yes	100.00	9.60E-06	2.00E-05			3.90E-04	No	No	No	No	DL Missing
TOTAL HPCDF	38998-75-3	2	Yes	1	Yes	50.00	9.30E-06	9.30E-06	4.60E-06	4.60E-06	3.90E-04	No	No	No	No	No
TOTAL HXCDD	34465-46-8	2	Yes	0	No	0.00			3.40E-06	6.90E-06	3.90E-05	No	No	No	No	No
TOTAL HXCDF	55684-94-1	2	Yes	0	No	0.00			2.50E-06	3.10E-06	3.90E-05	No	No	No	No	No
TOTAL PECDD	36088-22-9	2	Yes	0	No	0.00			5.90E-06	5.90E-06	3.90E-05	No	No	No	No	No
TOTAL PECDF	30402-15-4	2	Yes	0	No	0.00			3.50E-06	8.10E-06	7.80E-05	No	No	No	No	No
Total Petroleum Hydrocarbons	TPH	5	Yes	2	Yes	40.00	13	29	10	10		SL NA	SL NA	SL NA	SL NA	No
Total Solids	TSO	25	No	25	Yes	100.00	37.9	85.8				SL NA	SL NA	SL NA	SL NA	DL Missing
TOTAL TCDD	41903-57-5	2	Yes	0	No	0.00			2.40E-06	2.90E-06	3.90E-06	No	No	No	No	No
TOTAL TCDF	55722-27-5	2	Yes	0	No	0.00			1.60E-06	2.90E-06	3.90E-05	No	No	No	No	No
Toxaphene	8001-35-2	21	No	0	No	0.00			0.1	2.5	8	No	No	No	No	No
trans-1,2-Dichloroethene	156-60-5	47	No	0	No	0.00			0.001	5	2000	No	No	No	No	Yes
trans-1,3-Dichloropropene	10061-02-6	53	No	0	No	0.00			0.001	5	83	No	No	No	No	Yes
Trichloroethene	79-01-6	53	No	0	No	0.00			0.001	5	750	No	No	No	No	Yes
Trichlorofluoromethane	75-69-4	47	No	0	No	0.00			0.001	5	386	No	No	No	No	Yes

Table 3-7 Comparison of Detection Limits for Sediment at Ship Creek to Human Health Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total number of samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Screening Level mg/kg [1]	Min DL > Screening Level?	Max DL > Screening Level?	Max DL > 10x Screening Level?	Max DL > 100x Screening Level?	Is Maximum DL> 100x Min DL?
Vanadium	7440-62-2	43	No	41	Yes	95.35	40	82	0.001	2	710	No	No	No	No	Yes
Vinyl Acetate	108-05-4	10	No	0	No	0.00			0.012	1	430	No	No	No	No	No
Vinyl chloride	75-01-4	53	No	0	No	0.00			0.001	5	6	No	No	No	No	Yes
VOC	VOC	4	Yes	0	No	0.00						SL NA	SL NA	SL NA	SL NA	DL Missing
Xylene, total	1330-20-7	29	No	1	Yes	3.45	0.06	0.06	0.005	5	203000	No	No	No	No	Yes
Zinc	7440-66-6	44	No	42	Yes	95.45	55.1	238	0.01	5.56	30000	No	No	No	No	Yes

Notes:
mg/kg = milligrams per kilogram
DL = detection limit
SL NA = screening level not available

[1] Human Health screening levels for sediment are based on the ADEC Method 2 under 40 inch zone residential ingestion values for soil; if an ADEC value is not available, the U.S. EPA Region IX soil residential PRG was applied.

Table 3-8 Comparison of Detection Limits for Surface Water at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Freshwater Screening Level µg/L	Surface Water Marine Screening Level µg/L	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100x Min DL?
1,1,1,2-Tetrachloroethane (T)	630-20-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,1,1-Trichloroethane (T)	71-55-6	33	No	0	No	0.00			0.5	5	62		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,1,2,2-Tetrachloroethane (T)	79-34-5	25	No	0	No	0.00			0.5	5	420		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,1,2-Trichloro-1,2,2-trifluoroethane (T)	76-13-1	20	No	0	No	0.00			1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,1,2-Trichloroethane (T)	79-00-5	33	No	0	No	0.00			0.5	5	1200		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,1-Dichloroethane (T)	75-34-3	38	No	2	Yes	5.26	1.1	1.1	0.5	5	47		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,1-Dichloroethene (T)	75-35-4	33	No	0	No	0.00			0.5	5	25		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,1-Dichloropropene (T)	563-58-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3-Trichlorobenzene (T)	87-61-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3-Trichloropropane (T)	96-18-4	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,4-Trichlorobenzene (D)	120-82-1	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,4-Trichlorobenzene (T)	120-82-1	60	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,4-Trimethylbenzene (T)	95-63-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2-Dibromo-3-chloropropane (T)	96-12-8	26	No	0	No	0.00			1	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2-Dibromoethane (T)	106-93-4	18	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2-Dichlorobenzene (D)	95-50-1	6	Yes	0	No	0.00			10	10	14		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,2-Dichlorobenzene (T)	95-50-1	63	No	0	No	0.00			0.38	10	14		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,2-Dichloroethane (T)	107-06-2	33	No	0	No	0.00			0.5	5	910		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,2-Dichloropropane (T)	78-87-5	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2-Diphenylhydrazine (T)	122-66-7	15	No	0	No	0.00			0.38	0.45			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,3,5-Trimethylbenzene (T)	108-67-8	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,3-Dichlorobenzene (D)	541-73-1	6	Yes	0	No	0.00			10	10	71		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,3-Dichlorobenzene (T)	541-73-1	63	No	0	No	0.00			0.38	10	71		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,3-Dichloropropane (T)	142-28-9	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,4-Dichlorobenzene (D)	106-46-7	6	Yes	0	No	0.00			10	10	15		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1,4-Dichlorobenzene (T)	106-46-7	63	No	0	No	0.00			0.38	10	15		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
1-Methylnaphthalene (T)	90-12-0	15	No	0	No	0.00			0.38	0.45	2.1		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
2,2-Dichloropropane (T)	594-20-7	8	Yes	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,2-Difluoropropane (T)	420-45-1	18	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4,5-Trichlorophenol (T)	95-95-4	19	No	0	No	0.00			0.38	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
2,4,6-Trichlorophenol (T)	88-06-2	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dichlorophenol (T)	120-83-2	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dimethylphenol (T)	105-67-9	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dinitrophenol (T)	51-28-5	19	No	0	No	0.00			1.9	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dinitrotoluene (D)	121-14-2	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dinitrotoluene (T)	121-14-2	35	No	2	Yes	5.71	35.1	35.1	0.76	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,6-Dinitrotoluene (D)	606-20-2	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,6-Dinitrotoluene (T)	606-20-2	35	No	0	No	0.00			0.76	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Butanone (T)	78-93-3	35	No	8	Yes	22.86	2.6	6.6	1	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chloroethylvinyl ether (T)	110-75-8	4	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chloronaphthalene (D)	91-58-7	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chloronaphthalene (T)	91-58-7	35	No	0	No	0.00			0.38	25			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chlorophenol (T)	95-57-8	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chlorotoluene (T)	95-49-8	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Hexanone (T)	591-78-6	32	No	0	No	0.00			1	20	99		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
2-Methylnaphthalene (D)	91-57-6	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Methylnaphthalene (T)	91-57-6	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Methylphenol (T)	95-48-7	19	No	0	No	0.00			0.38	10	13		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
2-Nitroaniline (T)	88-74-4	19	No	0	No	0.00			1.9	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Nitrophenol (T)	88-75-5	19	No	0	No	0.00			1.9	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3,3'-Dichlorobenzidine (D)	91-94-1	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3,3'-Dichlorobenzidine (T)	91-94-1	35	No	0	No	0.00			1.5	25			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3-Methylphenol (T)	108-39-4	3	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3-Nitroaniline (T)	99-09-2	19	No	0	No	0.00			0.76	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4,4'-DDD (T)	72-54-8	18	No	0	No	0.00			0.0097	0.1	0.011		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
4,4'-DDE (T)	72-55-9	18	No	0	No	0.00			0.0097	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4,4'-DDT (T)	50-29-3	18	No	0	No	0.00			0.0097	0.1	0.001	0.001	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
4,6-Dinitro-2-methylphenol (T)	534-52-1	19	No	0	No	0.00			0.76	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Bromophenyl-phenylether (D)	101-55-3	6	Yes	0	No	0.00			10	10	1.5		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
4-Bromophenyl-phenylether (T)	101-55-3	35	No	0	No	0.00			0.38	10	1.5		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
4-Chloro-3-methylphenol (T)	59-50-7	19	No	0	No	0.00			1.9	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chloroaniline (D)	106-47-8	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chloroaniline (T)	106-47-8	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chlorophenyl-phenylether (D)	7005-72-3	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chlorophenyl-phenylether (T)	7005-72-3	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chlorotoluene (T)	106-43-4	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Isopropyl toluene (T)	99-87-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No

Table 3-8 Comparison of Detection Limits for Surface Water at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Freshwater Screening Level µg/L	Surface Water Marine Screening Level µg/L	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100x Min DL?
4-Methyl-2-pentanone (T)	108-10-1	31	No	0	No	0.00			1	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Methylphenol (T)	106-44-5	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Nitroaniline (T)	100-01-6	19	No	0	No	0.00			1.9	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Nitrophenol (T)	100-02-7	19	No	0	No	0.00			1.9	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Acenaphthene (D)	83-32-9	6	Yes	0	No	0.00			10	10	23	40	No	No	No	No	No	No	No	No	No
Acenaphthene (T)	83-32-9	36	No	0	No	0.00			0.38	10	23	40	No	No	No	No	No	No	No	No	No
Acenaphthylene (D)	208-96-8	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Acenaphthylene (T)	208-96-8	36	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Acetone (T)	67-64-1	29	No	0	No	0.00			10	30.5	1500		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Acrolein (T)	107-02-8	1	Yes	0	No	0.00			100	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Acrylonitrile (T)	107-13-1	1	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aldrin (T)	309-00-2	18	No	0	No	0.00			0.0086	0.06			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Alkalinity, Total (T)	ALKT	23	No	23	Yes	100.00	1000	570000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
alpha-BHC (T)	319-84-6	18	No	0	No	0.00			0.0086	0.06			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
alpha-Chlordane (T)	5103-71-9	15	No	0	No	0.00			0.0086	0.01			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aluminum (D)	7429-90-5	4	Yes	0	No	0.00			300	300	87		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Aluminum (T)	7429-90-5	49	No	33	Yes	67.35	10	1020000	10	300	87		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Ammonia (as N) (T)	7664-41-7	24	No	17	Yes	70.83	2.1	51450	1.1	200		0.035	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	Yes	Yes
Aniline (T)	62-53-3	18	No	0	No	0.00			0.76	25			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Anthracene (D)	120-12-7	6	Yes	0	No	0.00			10	10	0.73		Yes	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	No
Anthracene (T)	120-12-7	36	No	0	No	0.00			0.1	10	0.73		No	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	No
Antimony (D)	7440-36-0	4	Yes	0	No	0.00			3	3	30		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Antimony (T)	7440-36-0	33	No	1	Yes	3.03	0.94	0.94	0.63	50000	30		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Aroclor 1016 (D)	12674-11-2	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1016 (T)	12674-11-2	33	No	0	No	0.00			0.2	0.53	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1221 (D)	11104-28-2	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1221 (T)	11104-28-2	33	No	0	No	0.00			0.2	1	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1232 (D)	11141-16-5	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1232 (T)	11141-16-5	33	No	0	No	0.00			0.2	0.53	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1242 (D)	53469-21-9	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1242 (T)	53469-21-9	33	No	0	No	0.00			0.2	0.53	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1248 (D)	12672-29-6	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1248 (T)	12672-29-6	33	No	0	No	0.00			0.2	0.53	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1254 (D)	11097-69-1	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1254 (T)	11097-69-1	33	No	0	No	0.00			0.2	1	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1260 (D)	11096-82-5	5	Yes	0	No	0.00			0.5	0.5	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1260 (T)	11096-82-5	35	No	0	No	0.00			0.1	1	0.014	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1262 (D)	37324-23-5	5	Yes	0	No	0.00			0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aroclor 1262 (T)	37324-23-5	15	No	0	No	0.00			0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aroclor 1268 (D)	11100-14-4	5	Yes	0	No	0.00			0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aroclor 1268 (T)	11100-14-4	15	No	0	No	0.00			0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Arsenic (D)	7440-38-2	4	Yes	0	No	0.00			1	1	150	36	No	No	No	No	No	No	No	No	No
Arsenic (T)	7440-38-2	48	No	12	Yes	25.00	0.71	2.4	0.63	6000	150	36	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Barium (D)	7440-39-3	4	Yes	4	Yes	100.00	10	10	10	10	4		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Barium (T)	7440-39-3	49	No	43	Yes	87.76	10	19000	1.3	50	4		No	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	No
Benzene (T)	71-43-2	86	No	49	Yes	56.98	0.09	140	0.2	5	46		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Benzidine (T)	92-87-5	15	No	0	No	0.00			1.5	1.8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(a)anthracene (D)	56-55-3	6	Yes	0	No	0.00			10	10	0.027		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No
Benzo(a)anthracene (T)	56-55-3	36	No	0	No	0.00			0.1	10	0.027		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No
Benzo(a)pyrene (D)	50-32-8	6	Yes	0	No	0.00			10	10	0.014		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No
Benzo(a)pyrene (T)	50-32-8	36	No	0	No	0.00			0.1	10	0.014		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No
Benzo(b)fluoranthene (D)	205-99-2	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(b)fluoranthene (T)	205-99-2	36	No	0	No	0.00			0.2	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(g,h,i)perylene (D)	191-24-2	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(g,h,i)perylene (T)	191-24-2	36	No	0	No	0.00			0.2	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(k)fluoranthene (D)	207-08-9	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(k)fluoranthene (T)	207-08-9	36	No	0	No	0.00			0.1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzoic acid (T)	65-85-0	19	No	0	No	0.00			1.9	50	42		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Benzyl alcohol (D)	100-51-6	6	Yes	0	No	0.00			10	10	8.6		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Benzyl alcohol (T)	100-51-6	35	No	0	No	0.00			0.38	10	8.6		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Beryllium (T)	7440-41-7	19	No	0	No	0.00			1.3	4000	0.66		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
beta-BHC (T)	319-85-7	18	No	0	No	0.00			0.0086	0.06			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethoxy)methane (D)	111-91-1	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethoxy)methane (T)	111-91-1	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethyl)ether (D)	111-44-4	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethyl)ether (T)	111-44-4	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bis(2-chloroisopropyl)ether (D)	39638-32-9	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No

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ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Freshwater Screening Level µg/L	Surface Water Marine Screening Level µg/L	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100x Min DL?
Bis(2-chloroisopropyl)ether (T)	39638-32-9	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Ethylhexyl)phthalate (D)	117-81-7	6	Yes	0	No	0.00			50	50	32		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
bis(2-Ethylhexyl)phthalate (T)	117-81-7	35	No	0	No	0.00			1.9	50	32		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Boron (T)	7440-42-8	2	Yes	0	No	0.00			1000	1000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromobenzene (T)	108-86-1	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromochloromethane (T)	74-97-5	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromodichloromethane (T)	75-27-4	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromoethane (T)	74-96-4	2	Yes	0	No	0.00			2	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromoform (T)	75-25-2	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromomethane (T)	74-83-9	29	No	0	No	0.00			0.5	10	19		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Butylbenzylphthalate (D)	85-68-7	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Butylbenzylphthalate (T)	85-68-7	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Cadmium (D)	7440-43-9	4	Yes	0	No	0.00			1	1	0.25	8.8	Yes	Yes	No	No	No	No	No	No	No
Cadmium (T)	7440-43-9	41	No	2	Yes	4.88	0.05	0.05	0.05	2000	0.25	8.8	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Calcium (D)	7440-70-2	4	Yes	4	Yes	100.00	39000	42300	1500	1500			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Calcium (T)	7440-70-2	48	No	48	Yes	100.00	141	27400000	50	1500			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Carbazole (D)	86-74-8	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Carbazole (T)	86-74-8	31	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Carbon disulfide (T)	75-15-0	31	No	12	Yes	38.71	2	23.4	0.5	5	0.92		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Carbon tetrachloride (T)	56-23-5	33	No	0	No	0.00			0.5	5	240		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Chlordane (T)	12789-03-6	18	No	0	No	0.00			0.0086	0.5	0.0043	0.004	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Chloride (T)	16887-00-6	5	Yes	5	Yes	100.00	3000	10000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Chlorobenzene (T)	108-90-7	33	No	0	No	0.00			0.5	5	130		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Chloroethane (T)	75-00-3	31	No	0	No	0.00			0.5	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Chloroform (T)	67-66-3	33	No	7	Yes	21.21	0.83	3.6	0.5	5	28		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Chloromethane (T)	74-87-3	40	No	9	Yes	22.50	0.81	2.5	0.5	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Chromium (D)	7440-47-3	4	Yes	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Chromium (T)	7440-47-3	41	No	8	Yes	19.51	1.21	7000	1	5000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Chrysene (D)	218-01-9	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Chrysene (T)	218-01-9	36	No	0	No	0.00			0.1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
cis-1,2-Dichloroethene (T)	156-59-2	29	No	0	No	0.00			0.5	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
cis-1,3-Dichloropropene (T)	10061-01-5	33	No	0	No	0.00			0.5	5	23		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Cobalt (D)	7440-48-4	4	Yes	0	No	0.00			1	1	3		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Cobalt (T)	7440-48-4	33	No	0	No	0.00			1	4000	3		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Color (T)	COLOR	18	No	18	Yes	100.00	3	18					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Copper (D)	7440-50-8	4	Yes	4	Yes	100.00	1.61	1.8	1	1	9	31	No	No	No	No	No	No	No	No	No
Copper (T)	7440-50-8	41	No	19	Yes	46.34	1.56	7900	1	6000	9	31	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
delta-BHC (T)	319-86-8	18	No	0	No	0.00			0.0086	0.06			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibenz(a,h)anthracene (D)	53-70-3	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibenz(a,h)anthracene (T)	53-70-3	36	No	0	No	0.00			0.1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibenzofuran (D)	132-64-9	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibenzofuran (T)	132-64-9	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibromochloromethane (T)	124-48-1	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dibromomethane (T)	74-95-3	18	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dichlorodifluoromethane (T)	75-71-8	27	No	0	No	0.00			0.5	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dieldrin (T)	60-57-1	18	No	0	No	0.00			0.01	0.1	0.056	0.0019	No	Yes	Yes	Yes	No	No	Yes	No	No
Diesel Range Hydrocarbons (D)	DRO	6	Yes	0	No	0.00			370	400			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Diesel Range Hydrocarbons (T)	DRO	27	No	4	Yes	14.81	110	160	0.1	100000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Diethylphthalate (D)	84-66-2	6	Yes	0	No	0.00			10	10	220		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Diethylphthalate (T)	84-66-2	35	No	0	No	0.00			0.38	10	220		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Dimethylphthalate (D)	131-11-3	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Dimethylphthalate (T)	131-11-3	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Di-n-butylphthalate (D)	84-74-2	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Di-n-butylphthalate (T)	84-74-2	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Di-n-octylphthalate (D)	117-84-0	6	Yes	0	No	0.00			10	10		0	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	Yes	No
Di-n-octylphthalate (T)	117-84-0	35	No	0	No	0.00			0.76	10		0	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	Yes	No
Endosulfan I (T)	959-98-8	18	No	0	No	0.00			0.0086	0.06	0.056	0.0087	No	Yes	No	Yes	No	No	No	No	No
Endosulfan II (T)	33213-65-9	18	No	0	No	0.00			0.0097	0.1	0.056	0.0087	No	Yes	Yes	Yes	No	No	Yes	No	No
Endosulfan Sulfate (T)	1031-07-8	18	No	0	No	0.00			0.0097	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Endrin (T)	72-20-8	18	No	0	No	0.00			0.0097	0.1	0.036	0.0023	No	Yes	Yes	Yes	No	No	Yes	No	No
Endrin aldehyde (T)	7421-93-4	18	No	0	No	0.00			0.0097	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Endrin Ketone (T)	53494-70-5	16	No	0	No	0.00			0.0097	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Ethylbenzene (T)	100-41-4	86	No	27	Yes	31.40	0.502	10	0.5	5	290		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Fluoranthene (D)	206-44-0	6	Yes	0	No	0.00			10	10	8.1	11	Yes	Yes	No	No	No	No	No	No	No
Fluoranthene (T)	206-44-0	36	No	0	No	0.00			0.2	10	8.1	11	No	Yes	No	No	No	No	No	No	No
Fluorene (D)	86-73-7	6	Yes	0	No	0.00			10	10	3.9		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Fluorene (T)	86-73-7	36	No	0	No	0.00			0.2	10	3.9		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No

Table 3-8 Comparison of Detection Limits for Surface Water at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Freshwater Screening Level µg/L	Surface Water Marine Screening Level µg/L	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100x Min DL?
Fluoride (T)	16984-48-8	4	Yes	3	Yes	75.00	240	1200	100	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
gamma-BHC (Lindane) (T)	58-89-9	18	No	0	No	0.00			0.0086	0.06	0.08		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Gasoline Range Hydrocarbons (D)	GRO	1	Yes	0	No	0.00			50	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Gasoline Range Hydrocarbons (T)	GRO	62	No	24	Yes	38.71	60	330	50	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
H2S (T)	7783-06-4	5	Yes	1	Yes	20.00	70	70	2	200			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hardness (as CaCO3) calculated (T)	HARD	1	Yes	1	Yes	100.00	70000	70000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Heptachlor (T)	76-44-8	18	No	0	No	0.00			0.0086	0.06	0.0038	0.0036	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Heptachlor epoxide (T)	1024-57-3	18	No	0	No	0.00			0.0086	0.06	0.0038	0.0036	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Hexachlorobenzene (D)	118-74-1	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachlorobenzene (T)	118-74-1	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachlorobutadiene (D)	87-68-3	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachlorobutadiene (T)	87-68-3	60	No	0	No	0.00			0.76	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachlorocyclopentadiene (D)	77-47-4	3	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachlorocyclopentadiene (T)	77-47-4	26	No	0	No	0.00			1.9	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachloroethane (D)	67-72-1	6	Yes	0	No	0.00			10	10	12		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Hexachloroethane (T)	67-72-1	53	No	0	No	0.00			0.38	10	12		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Indeno(1,2,3-cd)pyrene (D)	193-39-5	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Indeno(1,2,3-cd)pyrene (T)	193-39-5	36	No	0	No	0.00			0.1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Iron (D)	7439-89-6	4	Yes	0	No	0.00			300	300	1000		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Iron (T)	7439-89-6	53	No	46	Yes	86.79	30	1350000	20	300	1000		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Isophorone (D)	78-59-1	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Isophorone (T)	78-59-1	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Isopropylbenzene (T)	98-82-8	28	No	0	No	0.00			1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Lead (D)	7439-92-1	4	Yes	0	No	0.00			1	1	2.5	8.1	No	No	No	No	No	No	No	No	No
Lead (T)	7439-92-1	50	No	30	Yes	60.00	0.19	35500	0.13	5000	2.5	8.1	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
m,p-Xylene (T)	136777-61-2	35	No	4	Yes	11.43	2.23	9.16	2	2	1.8		Yes	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Magnesium (D)	7439-95-4	4	Yes	4	Yes	100.00	6110	11000	300	300			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Magnesium (T)	7439-95-4	53	No	51	Yes	96.23	32	8390000	10	300			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Manganese (D)	7439-96-5	4	Yes	4	Yes	100.00	60	70	10	10	80		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Manganese (T)	7439-96-5	49	No	49	Yes	100.00	8.99	95000	5	10	80		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Mercury (D)	7439-97-6	4	Yes	0	No	0.00			0.2	2	0.77	0.94	No	Yes	No	Yes	No	No	No	No	No
Mercury (T)	7439-97-6	41	No	3	Yes	7.32	0.1	0.21	0.1	200	0.77	0.94	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Methoxychlor (T)	72-43-5	18	No	0	No	0.00			0.06	0.5	0.03	0.03	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Methylene chloride (T)	75-09-2	33	No	1	Yes	3.03	0.4	0.4	1	5	2200		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Molybdenum (T)	7439-98-7	2	Yes	1	Yes	50.00	100	100	100	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Naphthalene (D)	91-20-3	6	Yes	0	No	0.00			10	10	24		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Naphthalene (T)	91-20-3	65	No	0	No	0.00			0.38	10	24		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
n-Butylbenzene (T)	104-51-8	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Nickel (D)	7440-02-0	4	Yes	1	Yes	25.00	1.23	1.23	1	1	52	8.2	No	No	No	No	No	No	No	No	No
Nickel (T)	7440-02-0	40	No	7	Yes	17.50	1.03	400	1	20000	52	8.2	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Nitrate (T)	14797-55-8	10	No	5	Yes	50.00	150	1200	10	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Nitrate/Nitrite (T)	NO3/NO2	38	No	36	Yes	94.74	18	15780					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Nitrite (T)	14797-65-0	6	Yes	0	No	0.00			10	100			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Nitrobenzene (D)	98-95-3	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Nitrobenzene (T)	98-95-3	35	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodimethylamine (T)	62-75-9	3	Yes	0	No	0.00			25	25			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodi-n-butylamine (T)	924-16-3	15	No	0	No	0.00			0.38	0.45			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitroso-di-n-propylamine (T)	621-64-7	4	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodiphenylamine (T)	86-30-6	19	No	0	No	0.00			0.38	10	210		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
n-Propylbenzene (T)	103-65-1	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Oil & Grease (T)	O&G	31	No	17	Yes	54.84	10	1100	1	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
o-Xylene (T)	95-47-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pentachloroethane (T)	76-01-7	18	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pentachlorophenol (T)	87-86-5	19	No	0	No	0.00			0.76	50	15	7.9	No	Yes	No	Yes	No	No	No	No	No
Pesticide/PCB, total (T)	Pest/PCB	2	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
pH (T)	PH	23	No	23	Yes	100.00	5.6	8.8					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Phenanthrene (D)	85-01-8	6	Yes	0	No	0.00			10	10	6.3	8.3	Yes	Yes	Yes	Yes	No	No	No	No	No
Phenanthrene (T)	85-01-8	36	No	0	No	0.00			0.1	10	6.3	8.3	No	Yes	No	Yes	No	No	No	No	No
Phenol (T)	108-95-2	19	No	0	No	0.00			0.38	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Phosphorus (T)	7723-14-0	20	No	20	Yes	100.00	1.7	12900					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Potassium (D)	7440-09-7	4	Yes	4	Yes	100.00	670	2090	600	600			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Potassium (T)	7440-09-7	38	No	23	Yes	60.53	40	969000	600	2000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pyrene (D)	129-00-0	6	Yes	0	No	0.00			10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pyrene (T)	129-00-0	36	No	0	No	0.00			0.2	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Reactive Phosphorus (T)	ReactP	2	Yes	2	Yes	100.00	2.3	5.4					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Reactive Silicon (T)	ReactSi	4	Yes	4	Yes	100.00	2591	4187					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Residual Range Organics (D)	RRO	6	Yes	0	No	0.00			370	400			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No

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ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Minimum Detection Limit (µg/L)	Maximum Detection Limit (µg/L)	Surface Water Freshwater Screening Level µg/L	Surface Water Marine Screening Level µg/L	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100x Min DL?
Residual Range Organics (T)	RRO	16	No	0	No	0.00			370	400			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Retene (T)	483-65-8	15	No	0	No	0.00			0.38	0.45			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Salinity (T)	Salinity	5	Yes	3	Yes	60.00	0.005	0.006	0.005	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
sec-Butylbenzene (T)	135-98-8	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Selenium (D)	7782-49-2	4	Yes	1	Yes	25.00	1.34	1.34	1	1	5	71	No	No	No	No	No	No	No	No	No
Selenium (T)	7782-49-2	37	No	1	Yes	2.70	1.34	1.34	1	4000	5	71	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Silicon (T)	7440-21-3	2	Yes	2	Yes	100.00	100	1400					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Silver (T)	7440-22-4	26	No	0	No	0.00			1	3000	0.36		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Sodium (D)	7440-23-5	4	Yes	4	Yes	100.00	4000	38400	300	1500			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Sodium (T)	7440-23-5	49	No	47	Yes	95.92	82	6080000	100	1500			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Specific Conductivity (T)	SC	20	No	20	Yes	100.00	6	2740					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Styrene (T)	100-42-5	31	No	0	No	0.00			0.5	5	0		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No
Sulfate (T)	14808-79-8	5	Yes	5	Yes	100.00	1400	18000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
SVOC (T)	SVOC	2	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
tert-Butylbenzene (T)	98-06-6	26	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Tetrachloroethene (T)	127-18-4	33	No	1	Yes	3.03	11.8	11.8	0.5	5	120		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Thallium (T)	7440-28-0	19	No	0	No	0.00			0.63	3000	12		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Tin (T)	7440-31-5	4	Yes	0	No	0.00			1000	22000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Toluene (T)	108-88-3	90	No	23	Yes	25.56	0.09	40.1	0.5	5	130		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Total 1,2-Dichloroethenes (T)	540-59-0	19	No	0	No	0.00			1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total Cyanide (T)	CN	2	Yes	1	Yes	50.00	10000	10000	10000	10000			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total dissolved solids (T)	TDS	5	Yes	5	Yes	100.00	127000	190000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total Kjeldahl Nitrogen (T)	TKN	2	Yes	2	Yes	100.00	37.5	44.4					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total Petroleum Hydrocarbons (T)	TPH	2	Yes	0	No	0.00			10	200			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total suspended solids (T)	TSS	15	No	15	Yes	100.00	4000	88000					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Toxaphene (T)	8001-35-2	18	No	0	No	0.00			1	2.6	0.2	0.0002	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
trans-1,2-Dichloroethene (T)	156-60-5	14	No	1	Yes	7.14	1	1	0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
trans-1,3-Dichloropropene (T)	10061-02-6	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Trichloroethene (T)	79-01-6	33	No	0	No	0.00			0.5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Trichlorofluoromethane (T)	75-69-4	29	No	0	No	0.00			0.5	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Trichlorotriflouroethane (T)	26523-64-8	1	Yes	0	No	0.00			0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Turbidity (T)	TURB	12	No	12	Yes	100.00	0.2	680	0.5	0.5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Vanadium (D)	7440-62-2	4	Yes	0	No	0.00			1	1	19		No	No	SL NA	SL NA	No	No	SL NA	SL NA	No
Vanadium (T)	7440-62-2	40	No	8	Yes	20.00	1.16	1300	1	4000	19		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Vinyl Acetate (T)	108-05-4	5	Yes	0	No	0.00			1	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Vinyl chloride (T)	75-01-4	31	No	0	No	0.00			0.5	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
VOC (T)	VOC	2	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Xylene, total (T)	1330-20-7	57	No	37	Yes	64.91	0.011	30	0.5	5	1.8		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Zinc (D)	7440-66-6	4	Yes	0	No	0.00			10	10	120	81000	No	No	No	No	No	No	No	No	No
Zinc (T)	7440-66-6	46	No	11	Yes	23.91	5.2	14000	2	10	120	81000	No	No	No	No	No	No	No	No	No
Zirconium (T)	7440-67-7	5	Yes	0	No	0.00			10	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No

Notes:
µg/L = micrograms per liter
SL NA = screening level not available
DL = detection limit
T = Total
D = Dissolved
Min = minimum
Max = maximum

Table 3-9 Comparison of Detection Limits for Sediment at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Freshwater Screening Level -TEL- mg/kg	Sediment Marine Screening Level -TEL- mg/kg	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100 x Minimum DL?
1,1,1,2-Tetrachloroethane	630-20-6	44	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,1,1-Trichloroethane	71-55-6	53	No	0	No	0.00			0.001	5	0.17		No	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	Yes
1,1,2,2-Tetrachloroethane	79-34-5	28	No	0	No	0.00			0.0017	5	0.94		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	10	No	0	No	0.00			0.0017	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,1,2-Trichloroethane	79-00-5	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,1-Dichloroethane	75-34-3	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,1-Dichloroethene	75-35-4	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,1-Dichloropropene	563-58-6	43	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	4	Yes	4	Yes	100.00	0.0000096	0.000012					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
1,2,3,4,6,7,8-HPCDF	67562-39-4	4	Yes	0	No	0.00			0.0000025	0.0000035			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,4,7,8,9-HPCDF	55673-89-7	4	Yes	0	No	0.00			0.0000032	0.0000046			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4	Yes	0	No	0.00			0.0000034	0.0000069			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,4,7,8-HXCDF	70648-26-9	4	Yes	0	No	0.00			0.0000021	0.0000026			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	4	Yes	0	No	0.00			0.0000018	0.000022			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4	Yes	0	No	0.00			0.000003	0.0000062			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,7,8,9-HxCDF	72918-21-9	4	Yes	0	No	0.00			0.0000025	0.0000031			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4	Yes	0	No	0.00			0.0000035	0.000008			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4	Yes	0	No	0.00			0.0000059	0.0000059			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2,3-Trichlorobenzene	87-61-6	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2,3-Trichloropropane	96-18-4	43	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2,4-Trichlorobenzene	120-82-1	80	No	0	No	0.00			0.001	20	9.2		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
1,2,4-Trimethylbenzene	95-63-6	48	No	2	Yes	4.17	0.0042	0.0042	0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2-Dibromo-3-chloropropane	96-12-8	43	No	0	No	0.00			0.0017	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2-Dibromoethane	106-93-4	19	No	0	No	0.00			0.0017	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2-Dichlorobenzene	95-50-1	84	No	0	No	0.00			0.001	5	0.34	0.023	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
1,2-Dichloroethane	107-06-2	48	No	0	No	0.00			0.001	0.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2-Dichloropropane	78-87-5	48	No	0	No	0.00			0.001	0.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,2-Dichloropropene	563-54-2	5	Yes	0	No	0.00			5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,2-Diphenylhydrazine	122-66-7	6	Yes	0	No	0.00			0.156	0.179			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,3,5-Trimethylbenzene	108-67-8	48	No	2	Yes	4.17	0.0018	0.0018	0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
1,3-Dichlorobenzene	541-73-1	84	No	0	No	0.00			0.001	5	1.7		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
1,3-Dichloropropane	142-28-9	38	No	0	No	0.00			0.001	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,3-dichloropropene	542-75-6	5	Yes	0	No	0.00			5	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
1,4-Dichlorobenzene	106-46-7	84	No	0	No	0.00			0.001	5	0.35	0.031	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
1-Methylnaphthalene	90-12-0	17	No	3	Yes	17.65	0.278	0.885	0.156	0.232			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,2-Dichloropropane	594-20-7	37	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
2,2-Difluoropropane	420-45-1	6	Yes	0	No	0.00			0.0017	0.0023			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,3,4,6,7,8-HXCDF	60851-34-5	4	Yes	0	No	0.00			0.000002	0.0000025			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,3,4,7,8-PECDF	57117-31-4	4	Yes	0	No	0.00			0.0000035	0.0000081			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,3,7,8-TCDD	1746-01-6	4	Yes	0	No	0.00			0.0000024	0.0000029			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4	Yes	0	No	0.00			0.0000016	0.0000029			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4,5-Trichlorophenol	95-95-4	16	No	0	No	0.00			0.156	3.4			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4,6-Trichlorophenol	88-06-2	16	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dichlorophenol	120-83-2	16	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dimethylphenol	105-67-9	16	No	0	No	0.00			0.156	1.2		0.029	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	No	No
2,4-Dinitrophenol	51-28-5	16	No	0	No	0.00			0.782	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,4-Dinitrotoluene	121-14-2	38	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2,6-Dinitrotoluene	606-20-2	38	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Butanone	78-93-3	63	No	8	Yes	12.70	0.0058	0.0806	0.0017	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
2-Chloroethylvinyl ether	110-75-8	10	No	0	No	0.00			0.012	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chloronaphthalene	91-58-7	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chlorophenol	95-57-8	16	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Chlorotoluene	95-49-8	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
2-Hexanone	591-78-6	53	No	0	No	0.00			0.0067	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
2-Methylnaphthalene	91-57-6	59	No	3	Yes	5.08	0.008	0.885	0.005	1.2		0.0202	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	No	Yes
2-Methylphenol	95-48-7	16	No	0	No	0.00			0.156	1.2		0.063	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	No	No
2-Nitroaniline	88-74-4	16	No	0	No	0.00			0.782	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
2-Nitrophenol	88-75-5	16	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3,3'-Dichlorobenzidine	91-94-1	38	No	0	No	0.00			0.3	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3-Methylphenol	108-39-4	4	Yes	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
3-Nitroaniline	99-09-2	16	No	0	No	0.00			0.313	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4,4'-DDD	72-54-8	26	No	1	Yes	3.85	0.0024	0.0024	0.0016	0.1	0.00354	0.00122	No	Yes	Yes	Yes	Yes	No	Yes	No	No
4,4'-DDE	72-55-9	21	No	0	No	0.00			0.0016	0.1	0.00142	0.00207	Yes	Yes	No	Yes	Yes	No	Yes	No	No
4,4'-DDT	50-29-3	32	No	3	Yes	9.38	0.0028	0.0044	0.0016	0.1	0.00698	0.0019	No	Yes	No	Yes	Yes	No	Yes	No	No
4,6-Dinitro-2-methylphenol	534-52-1	16	No	0	No	0.00			0.313	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No

Table 3-9 Comparison of Detection Limits for Sediment at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Freshwater Screening Level -TEL- mg/kg	Sediment Marine Screening Level -TEL- mg/kg	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100 x Minimum DL?
4-Bromophenyl-phenylether	101-55-3	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chloro-3-methylphenol	59-50-7	17	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chloroaniline	106-47-8	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chlorophenyl-phenylether	7005-72-3	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Chlorotoluene	106-43-4	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
4-Isopropyl toluene	99-87-6	43	No	1	Yes	2.33	0.0033	0.0033	0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
4-Methyl-2-pentanone	108-10-1	58	No	2	Yes	3.45	0.0075	0.0075	0.0067	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
4-Methylphenol	106-44-5	24	No	5	Yes	20.83	0.193	2.49	0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Nitroaniline	100-01-6	16	No	0	No	0.00			0.782	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
4-Nitrophenol	100-02-7	16	No	0	No	0.00			0.782	8			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Acenaphthene	83-32-9	53	No	1	Yes	1.89	0.225	0.225	0.005	1.2	0.62	0.00671	No	Yes	No	Yes	No	No	Yes	Yes	Yes
Acenaphthylene	208-96-8	48	No	0	No	0.00			0.005	1.2		0.00587	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	Yes	Yes
Acetone	67-64-1	53	No	1	Yes	1.89	0.13	0.13	0.0067	50			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Aldrin	309-00-2	21	No	0	No	0.00			0.00078	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
alpha-BHC	319-84-6	21	No	0	No	0.00			0.00078	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
alpha-Chlordane	5103-71-9	11	No	1	Yes	9.09	0.0043	0.0043	0.00078	0.0012			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aluminum	7429-90-5	43	No	41	Yes	95.35	1700	22800	0.3	833	25500		No	No	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Aniline	62-53-3	16	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Anthracene	120-12-7	48	No	1	Yes	2.08	0.01	0.01	0.005	1.2	0.01	0.0468	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Antimony	7440-36-0	29	No	3	Yes	10.34	4.8	6.3	0.003	20	0.16		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Aroclor 1016	12674-11-2	41	No	0	No	0.00			0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1221	11104-28-2	41	No	0	No	0.00			0.05	1	0.0341	0.02155	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1232	11141-16-5	41	No	0	No	0.00			0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1242	53469-21-9	41	No	0	No	0.00			0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1248	12672-29-6	41	No	0	No	0.00			0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1254	11097-69-1	41	No	0	No	0.00			0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1260	11096-82-5	53	No	6	Yes	11.32	0.046	1.58	0.025	1	0.0341	0.02155	No	Yes	Yes	Yes	Yes	No	Yes	No	No
Aroclor 1262	37324-23-5	20	No	0	No	0.00			0.025	0.025			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Aroclor 1268	11100-14-4	20	No	0	No	0.00			0.025	0.025			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Arsenic	7440-38-2	49	No	47	Yes	95.92	3	18.8	0.001	1	5.9	7.24	No	No	No	No	No	No	No	No	Yes
Barium	7440-39-3	49	No	47	Yes	95.92	31	202	0.01	5.56			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Benzene	71-43-2	54	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Benzidine	92-87-5	12	No	0	No	0.00			0.626	3.4			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Benzo(a)anthracene	56-55-3	48	No	2	Yes	4.17	0.009	0.044	0.005	1.2	0.0317	0.0748	No	Yes	No	Yes	Yes	No	Yes	No	Yes
Benzo(a)pyrene	50-32-8	49	No	2	Yes	4.08	0.008	0.041	0.005	6	0.0319	0.0888	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Benzo(b)fluoranthene	205-99-2	49	No	2	Yes	4.08	0.009	0.031	0.005	6		2.3	SL NA	SL NA	No	Yes	SL NA	SL NA	No	No	Yes
Benzo(g,h,i)perylene	191-24-2	59	No	7	Yes	11.86	0.007	0.299	0.005	6		0.31	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	No	Yes
Benzo(k)fluoranthene	207-08-9	48	No	2	Yes	4.17	0.008	0.042	0.005	6	0.0272	2.3	No	Yes	No	Yes	Yes	Yes	No	No	Yes
Benzoic acid	65-85-0	16	No	0	No	0.00			0.782	8		0.65	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	No	No
Benzyl alcohol	100-51-6	43	No	2	Yes	4.65	0.201	0.201	0.156	1.2		0.057	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	No	No
Beryllium	7440-41-7	20	No	16	Yes	80.00	0.44	0.67	1	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
beta-BHC	319-85-7	21	No	0	No	0.00			0.00078	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
bis(2-Chloroethoxy)methane	111-91-1	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Chloroethyl)ether	111-44-4	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bis(2-chloroisopropyl)ether	39638-32-9	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
bis(2-Ethylhexyl)phthalate	117-81-7	38	No	2	Yes	5.26	0.37	0.37	0.25	1.2		0.182	SL NA	SL NA	Yes	Yes	SL NA	SL NA	No	No	No
Bromobenzene	108-86-1	43	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Bromochloromethane	74-97-5	43	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Bromodichloromethane	75-27-4	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Bromoethane	74-96-4	4	Yes	0	No	0.00			0.2	0.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Bromoform	75-25-2	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Bromomethane	74-83-9	49	No	0	No	0.00			0.0017	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Butylbenzylphthalate	85-68-7	38	No	0	No	0.00			0.156	1.2	11	0.049	No	No	Yes	Yes	No	No	Yes	No	No
Cadmium	7440-43-9	49	No	8	Yes	16.33	0.22	1.13	0.001	1	0.596	0.676	No	Yes	No	Yes	No	No	No	No	Yes
Calcium	7440-70-2	43	No	43	Yes	100.00	40.5	19800	1.5	167			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Carbazole	86-74-8	28	No	0	No	0.00			0.156	0.33			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Carbon disulfide	75-15-0	30	No	0	No	0.00			0.0017	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Carbon tetrachloride	56-23-5	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Chlordane	12789-03-6	21	No	0	No	0.00			0.0008	10	0.00324		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Chlorobenzene	108-90-7	53	No	0	No	0.00			0.001	5	0.82		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Chloroethane	75-00-3	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Chloroform	67-66-3	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Chloromethane	74-87-3	53	No	0	No	0.00			0.0017	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Chromium	7440-47-3	49	No	47	Yes	95.92	21.9	68.2	0.001	2	37.3	52.3	No	No	No	No	No	No	No	No	Yes
Chrysene	218-01-9	49	No	2	Yes	4.08	0.013	0.053	0.005	1.2	0.0571	0.108	No	Yes	No	Yes	Yes	No	Yes	No	Yes

Table 3-9 Comparison of Detection Limits for Sediment at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Freshwater Screening Level -TEL- mg/kg	Sediment Marine Screening Level -TEL- mg/kg	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100 x Minimum DL?
cis-1,2-Dichloroethene	156-59-2	47	No	1	Yes	2.13	0.002	0.002	0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
cis-1,3-Dichloropropene	10061-01-5	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Cobalt	7440-48-4	43	No	41	Yes	95.35	7.48	21	0.001	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Copper	7440-50-8	44	No	42	Yes	95.45	22.7	65.1	0.001	2	35.7	18.7	No	No	No	No	No	No	No	No	Yes
delta-BHC	319-86-8	21	No	0	No	0.00			0.00078	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Dibenz(a,h)anthracene	53-70-3	49	No	1	Yes	2.04	0.007	0.007	0.005	6	0.01	0.00622	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Dibenzofuran	132-64-9	58	No	3	Yes	5.17	0.206	0.24	0.005	1.2	2	0.15	No	No	No	Yes	No	No	No	No	Yes
Dibromochloromethane	124-48-1	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Dibromomethane	74-95-3	19	No	0	No	0.00			0.0017	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Dichlorodifluoromethane	75-71-8	43	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Dieldrin	60-57-1	21	No	0	No	0.00			0.0016	0.1	0.0019	0.095	No	Yes	No	Yes	Yes	No	No	No	No
Diesel Range Hydrocarbons	DRO	42	No	13	Yes	30.95	16	660	10	125			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Diethylphthalate	84-66-2	38	No	0	No	0.00			0.156	1.2	0.63	0.61	No	Yes	No	Yes	No	No	No	No	No
Dimethylphthalate	131-11-3	38	No	0	No	0.00			0.156	1.2		0.53	SL NA	SL NA	No	Yes	SL NA	SL NA	No	No	No
Di-n-butylphthalate	84-74-2	38	No	1	Yes	2.63	0.12	0.12	0.12	1.2	11	2.2	No	No	No	No	No	No	No	No	No
Di-n-octylphthalate	117-84-0	38	No	0	No	0.00			0.14	6		0.58	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	No	No
Endosulfan I	959-98-8	21	No	0	No	0.00			0.00078	0.1	0.0029		No	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	Yes
Endosulfan II	33213-65-9	21	No	0	No	0.00			0.0016	0.1	0.014		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	No
Endosulfan Sulfate	1031-07-8	21	No	0	No	0.00			0.0016	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Endrin	72-20-8	21	No	0	No	0.00			0.0016	0.1	0.00222	0.0035	No	Yes	No	Yes	Yes	No	Yes	No	No
Endrin aldehyde	7421-93-4	21	No	0	No	0.00			0.0016	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Endrin Ketone	53494-70-5	12	No	0	No	0.00			0.0016	0.033			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Ethylbenzene	100-41-4	54	No	0	No	0.00			0.001	5	3.6		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Fluoranthene	206-44-0	59	No	7	Yes	11.86	0.023	0.65	0.005	1.2	0.111	0.113	No	Yes	No	Yes	Yes	No	Yes	No	Yes
Fluorene	86-73-7	48	No	1	Yes	2.08	0.005	0.005	0.005	1.2	0.01	0.0212	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
gamma Chlordane	57-74-9	5	Yes	1	Yes	20.00	0.0041	0.0041	0.00081	0.0012	0.0045	0.00026	No	No	Yes	Yes	No	No	No	No	No
gamma-BHC (Lindane)	58-89-9	26	No	1	Yes	3.85	0.0019	0.0019	0.00078	0.1	0.00094	0.00032	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gasoline Range Hydrocarbons	GRO	33	No	0	No	0.00			0.83	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Heptachlor	76-44-8	21	No	0	No	0.00			0.00078	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Heptachlor epoxide	1024-57-3	26	No	1	Yes	3.85	0.0045	0.0045	0.00078	0.1	0.0006		Yes	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Hexachlorobenzene	118-74-1	38	No	0	No	0.00			0.156	1.2		0.0038	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	Yes	No
Hexachlorobutadiene	87-68-3	80	No	0	No	0.00			0.001	20		0.039	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	Yes	Yes
Hexachlorocyclopentadiene	77-47-4	37	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Hexachloroethane	67-72-1	44	No	0	No	0.00			0.0017	1.2	1		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Indeno(1,2,3-cd)pyrene	193-39-5	49	No	2	Yes	4.08	0.006	0.026	0.005	6		0.34	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	No	Yes
Iron	7439-89-6	43	No	41	Yes	95.35	984	43400	0.3	833			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Isophorone	78-59-1	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Isopropylbenzene	98-82-8	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Lead	7439-92-1	49	No	47	Yes	95.92	4	158	0.001	1	35	30.24	No	No	No	No	No	No	No	No	Yes
m,p-Xylene	136777-61-2	30	No	0	No	0.00			0.002	0.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Magnesium	7439-95-4	43	No	43	Yes	100.00	5.96	12800	0.3	167			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Manganese	7439-96-5	43	No	43	Yes	100.00	0.16	2470	0.01	27.8	630		No	No	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Mercury	7439-97-6	48	No	19	Yes	39.58	0.05	0.93	0.0002	0.2	0.174	0.13	No	Yes	No	Yes	No	No	No	No	Yes
Methoxychlor	72-43-5	21	No	0	No	0.00			0.0009	0.16	0.019		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Methylene chloride	75-09-2	53	No	2	Yes	3.77	0.001	0.008	0.002	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Naphthalene	91-20-3	111	No	11	Yes	9.91	0.0046	0.6	0.001	20	0.0146	0.0346	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
n-Butylbenzene	104-51-8	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Nickel	7440-02-0	48	No	46	Yes	95.83	21	60	0.001	10	18	15.9	No	No	No	No	No	No	No	No	Yes
Nitrobenzene	98-95-3	38	No	0	No	0.00			0.156	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodimethylamine	62-75-9	10	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodi-n-butylamine	924-16-3	6	Yes	0	No	0.00			0.156	0.179			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitroso-di-n-propylamine	621-64-7	10	No	0	No	0.00			0.3	1.2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
N-Nitrosodiphenylamine	86-30-6	13	No	1	Yes	7.69	0.753	0.753	0.156	1.2		0.11	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes	No	No
n-Propylbenzene	103-65-1	48	No	1	Yes	2.08	0.0033	0.0033	0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
OCDD	3268-87-9	4	Yes	4	Yes	100.00	0.00004	0.000095					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
OCDF	39001-02-0	5	Yes	3	Yes	60.00	0.0000013	0.000013	0.0000086	0.0000086			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
o-Xylene	95-47-6	30	No	0	No	0.00			0.001	0.1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
PCBs, total	PCBs	2	Yes	1	Yes	50.00	2.5	2.5	0.1	0.1	0.0341	0.02155	Yes	Yes	Yes	Yes	No	No	No	No	No
P-Cymene	25155-15-1	5	Yes	1	Yes	20.00	0.0033	0.0033	0.0017	0.0022			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pentachloroethane	76-01-7	6	Yes	0	No	0.00			0.0017	0.0023			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Pentachlorophenol	87-86-5	16	No	0	No	0.00			0.313	8		0.36	SL NA	SL NA	No	Yes	SL NA	SL NA	Yes	No	No
Pesticide/PCB, total	Pest/PCB	4	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
Phenanthrene	85-01-8	54	No	5	Yes	9.26	0.016	0.506	0.005	1.2	0.0187	0.0867	No	Yes	No	Yes	Yes	No	Yes	No	Yes
Phenol	108-95-2	16	No	0	No	0.00			0.156	1.2		0.42	SL NA	SL NA	No	Yes	SL NA	SL NA	No	No	No
Potassium	7440-09-7	43	No	31	Yes	72.09	0.6	4270	0.6	1670			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes

Table 3-9 Comparison of Detection Limits for Sediment at Ship Creek to Ecological Screening Level Criteria
ARRC Anchorage Terminal Reserve, Anchorage, AK

Analyte	Cas Number	Number of Samples	Total Number of Samples <10?	Number of Detections	Detected Analyte?	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Sediment Freshwater Screening Level -TEL- mg/kg	Sediment Marine Screening Level -TEL- mg/kg	Is Min DL > Freshwater Screening Level?	Is Max DL > Freshwater Screening Level?	Is Min DL > Marine Screening Level?	Is Max DL > Marine Screening Level?	Is Max DL > 10x Freshwater Screening Level?	Is Max DL > 100x Freshwater Screening Level?	Is Max DL > 10x Marine Screening Level?	Is Max DL > 100x Marine Screening Level?	Is Maximum DL> 100 x Minimum DL?
Pyrene	129-00-0	58	No	6	Yes	10.34	0.021	0.445	0.005	1.2	0.0443	0.153	No	Yes	No	Yes	Yes	No	No	No	Yes
Residual Range Organics	RRO	33	No	14	Yes	42.42	52.4	1200	44.4	250			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Retene	483-65-8	17	No	6	Yes	35.29	0.182	21.1	0.156	0.232			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
sec-Butylbenzene	135-98-8	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Selenium	7782-49-2	48	No	19	Yes	39.58	0.32	1	0.001	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Silver	7440-22-4	15	No	0	No	0.00			0.4	2		0.73	SL NA	SL NA	No	Yes	SL NA	SL NA	No	No	No
Sodium	7440-23-5	43	No	43	Yes	100.00	3.57	5700	0.3	167			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Styrene	100-42-5	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
SVOC	SVOC	4	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
tert-Butylbenzene	98-06-6	43	No	0	No	0.00			0.001	20			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Tetrachloroethene	127-18-4	53	No	1	Yes	1.89	0.006	0.006	0.001	5	0.53		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Thallium	7440-28-0	10	No	0	No	0.00			0.3	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Toluene	108-88-3	74	No	8	Yes	10.81	0.0018	0.46	0.001	5	0.67		No	Yes	SL NA	SL NA	No	No	SL NA	SL NA	Yes
Total 1,2-Dichloroethenes	540-59-0	11	No	0	No	0.00			0.0017	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
TOTAL HPCDD	37871-00-4	2	Yes	2	Yes	100.00	0.0000096	0.00002					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
TOTAL HPCDF	38998-75-3	2	Yes	1	Yes	50.00	0.0000093	0.0000093	0.0000046	0.0000046			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
TOTAL HXCDD	34465-46-8	2	Yes	0	No	0.00			0.0000034	0.0000069			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
TOTAL HXCDF	55684-94-1	2	Yes	0	No	0.00			0.0000025	0.0000031			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
TOTAL PECDD	36088-22-9	2	Yes	0	No	0.00			0.0000059	0.0000059			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
TOTAL PECDF	30402-15-4	2	Yes	0	No	0.00			0.0000035	0.0000081			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total Petroleum Hydrocarbons	TPH	5	Yes	2	Yes	40.00	13	29	10	10			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Total Solids	TSO	25	No	25	Yes	100.00	37.9	85.8					SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
TOTAL TCDD	41903-57-5	2	Yes	0	No	0.00			0.0000024	0.0000029			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
TOTAL TCDF	55722-27-5	2	Yes	0	No	0.00			0.0000016	0.0000029			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Toxaphene	8001-35-2	21	No	0	No	0.00			0.1	2.5	0.028		Yes	Yes	SL NA	SL NA	Yes	No	SL NA	SL NA	No
trans-1,2-Dichloroethene	156-60-5	47	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
trans-1,3-Dichloropropene	10061-02-6	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Trichloroethene	79-01-6	53	No	0	No	0.00			0.001	5	1.6	0	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Trichlorofluoromethane	75-69-4	47	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Vanadium	7440-62-2	43	No	41	Yes	95.35	40	82	0.001	2			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
Vinyl Acetate	108-05-4	10	No	0	No	0.00			0.012	1			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	No
Vinyl chloride	75-01-4	53	No	0	No	0.00			0.001	5			SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	Yes
VOC	VOC	4	Yes	0	No	0.00							SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA	SL NA
Xylene, total	1330-20-7	29	No	1	Yes	3.45	0.06	0.06	0.005	5	0.025		No	Yes	SL NA	SL NA	Yes	Yes	SL NA	SL NA	Yes
Zinc	7440-66-6	44	No	42	Yes	95.45	55.1	238	0.01	5.56	123.1	124	No	No	No	No	No	No	No	No	Yes

Notes:
SL NA = screening level not available
mg/kg = milligrams per kilogram
Max = maximum
Min = minimum
DL = detection limit

Table 3-10 Number of Analyses Conducted within Each Study Area
ARRC Anchorage Terminal Reserve, Anchorage, AK

Media	Location	Area	Surface Soil			Subsurface Soil			Groundwater			Surface Water			Sediment		
		(acres)	# Analyses/Area	# Sample Locations	Date Range	#Analyses/Area	# Sample Locations	Date Range	#Analyses/Area	# Sample Locations	Date Range	#Analyses/Area	# Sample Locations	Date Range	#Analyses/Area	# Sample Locations	Date Range
Soil	Study Area 1	2.74	0	0	NA	35-61	24	June 1989 - August 1989	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Study Area 2	166	3-4	7	October 1991 - September 1993	1-449	148	May 1983 - October 2003	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Study Area 3	57.72	1-44	34	October 1990 - May 2002	1-1208	710	May 1989 - October 2003	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Study Area 4	20.43	1-33	27	October 1997 - October 2003	1-128	131	September 1989 - October 2003	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Study Area 5	25.62	2-16	28	September 1991 - July 1996	1-769	335	April 1989 - October 2003	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Study Area 6	24.1	1-4	2	January 1998	1-157	81	April 1990 - April 2000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Groundwater	North of Ship Creek	NA	NA	NA	NA	NA	NA	NA	1-606	238	May 1985 - March 2004	NA	NA	NA	NA	NA	NA
	South of Ship Creek	NA	NA	NA	NA	NA	NA	NA	3-284	99	April 1989 - September 2002	NA	NA	NA	NA	NA	NA
	Terminal	NA	NA	NA	NA	NA	NA	NA	2-1319	269	May 1987 - August 2004	NA	NA	NA	NA	NA	NA
Surface Water	Ship Creek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1-90	47	January 1980 - March 2004	NA	NA	NA
Sediment	Ship Creek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2-111	39	September 1985 - March 2004

Notes:
Sample Number varies for different analytes. More common analytes suspected to be present at the site were sampled and analyzed for more frequently
Number of sample locations is approximate
NA = not applicable
ft =feet
bgs = below ground surface
[1] Unknown sample dates are present in the database; these dates are currently assigned 1/1/1950
[2] Not all sample locations have coordinates. Therefore, they are represented on figures as a center point
[3] Often times the more recent sampling events only contain a limited suite of constituents - not a broad range of analyses
The majority of Study Area 3 is covered with pavement, and exposure to surface soil is not anticipated to be a significant exposure pathway in this area.
Note, duplicate records may be present in the database at this time, which will skew the analyses numbe

Table 3-11 Summary of Analytical Soil Data for Properties Proposed for Further Action
ARRC Anchorage Terminal Reserve, Anchorage, AK

Study Area	Property		Fuel Hydrocarbons	BTEX	SVOCs	PAHs	PCBs	Pesticides	Lead	Metals	VOCs	Dioxins
Area 1	LP-002	Cons Freight	**36-61**	**35-36**	0	0	0	0	0	0	0	0
Area 2	LP-065	Princess Tours	**7-122**	**32-42**	0	**23-48**	**29**	**3**	**86**	**7-57**	**7-39**	0
	RY-065	Railyard	**26-298**	**405-410**	**1-64**	**25-136**	**32-55**	**1**	**153**	**3-92**	**20-153**	0
Area 3	LP-003	Flint Hills	**203-857**	**861-893**	**1-12**	**3-4**	**32**	0	**64**	**33-64**	**14-74**	0
	LP-019	Tesoro	**9-232**	**205-206**	**4**	**4**	0	0	**5**	**1-5**	0	0
	LP-025	Chevron	**92-94**	**92**	0	0	0	0	0	0	0	0
	LP-016	Chevron ROW	**32-44**	**17-18**	0	0	0	0	**1**	0	**7**	0
	LP-027	Chevron Asphalt	0	0	0	0	0	0	0	0	0	0
	LP-060	Northstar	**18**	**18**	0	0	0	0	0	0	0	0
Area 4	LP-006	Joe's Body	0	0	0	0	0	0	0	0	0	0
	LP-015	Inlet Constr.	0	0	0	0	0	0	0	0	0	0
	LP-017	Polar Equip.	0	0	0	0	0	0	0	0	0	0
	LP-018	LH Contractors	0	0	0	0	0	0	0	0	0	0
	LP-020	Wholesale Dist.	0	0	0	0	0	0	0	0	0	0
	LP-024	Prescott	**74-103**	**75**	0	**10**	**5-12**	0	**37**	**8-37**	**5**	0
	LP-031	Keystone	**2-8**	**3-4**	**1-3**	**1-2**	**27**	0	**1**	**1**	**2-4**	0
	LP-051	M-K Properties	0	0	0	0	0	0	0	0	0	0
	LP-056	Steel Fabricators	0	0	0	0	0	0	0	0	0	0
	LP-072	Karen's RV	0	0	0	0	0	0	0	0	0	0
	LP-083	Pruhs	**5-9**	**8**	**5**	**5**	0	0	0	0	**3-5**	0
	LP-094	Alaska Basic	**29-45**	**22-34**	0	0	**12**	0	**12**	**12**	0	0
	LP-110	Bob Benson	**3**	**3**	0	0	0	0	0	0	0	0
	LP-125	L&J Cabs	**18**	**16**	0	0	0	0	**1**	**1**	**1**	0
Area 5	LP-014	UCSC	**3**	0	0	0	0	0	0	0	0	0
	LP-022	MPL	**47-247**	**33**	0	0	**46-47**	0	**2**	**1-2**	**53-74**	0
	LP-026	Alaska Teamster	**1**	0	0	0	0	0	0	0	0	0
	LP-034	CDF Inc.	0	0	0	0	0	0	0	0	0	0
	LP-052	Patrick Hickey	0	0	0	0	0	0	0	0	0	0
	LP-055	Altex	**6-16**	**13-14**	0	0	0	0	0	0	**10-14**	0
	LP-069	Dean's Auto	0	0	0	0	0	0	0	0	0	0
	LP-078	Criterion Grl.	0	0	0	0	0	0	0	0	0	0
	LP-079	Alaska Pride	0	0	0	0	0	0	0	0	0	0
	LP-085	CBS Equipm.	**2-3**	**7**	0	0	0	0	0	0	**5**	0
	LP-098	C. Hayden	0	0	0	0	0	0	0	0	0	0
	LP-109	Beats Walking	0	0	0	0	0	0	0	0	0	0
	LP-112	Whitney Express	0	0	0	0	0	0	0	0	0	0
	LP-115	Technic Serv.	0	0	0	0	0	0	0	0	0	0

Table 3-11 Summary of Analytical Soil Data for Properties Proposed for Further Action ARRC Anchorage Terminal Reserve, Anchorage, AK

Study Area	Property		Fuel Hydrocarbons	BTEX	SVOCs	PAHs	PCBs	Pesticides	Lead	Metals	VOCs	Dioxins
Area 5 (cont)	LP-127	Post Rd. Co.	**5-41**	**20**	**1**	**1**	**23-153**	0	**6**	**6**	**7-22**	0
	LP-134	HW Alaska	**1-2**	0	0	0	0	0	0	0	0	0
	LP-137	Laidlaw	**41-103**	**19-122**	**48**	**30-60**	**3**	0	**13**	**3-13**	**30-54**	0
	LP-991	Arctic Coop	**80-372**	**526-536**	**24-51**	**38-491**	**7-32**	**29-53**	**244**	**34-199**	**140-303**	**7-14**
Area 6	LP-038	JV Rentals	0	0	0	0	0	0	0	0	0	0
	LP-042	York Steel	0	0	0	0	0	0	0	0	0	0
	LP-049	Wrightway	**8-9**	**8**	0	0	0	0	**10**	0	0	0
	LP-070	Golden Ears	0	0	0	0	0	0	0	0	0	0
	LP-089	Rock Partners	0	0	0	0	0	0	0	0	0	0
	LP-107	Safety Kleen	0	0	0	0	0	0	0	0	0	0
	LP-120	KAPP	**13-48**	**129-146**	**37-134**	**45-121**	**11-59**	**39-78**	**85**	**14-87**	**11-76**	**2-4**
	LP-124	Alma Corp.	0	0	0	0	0	0	0	0	0	0
	LP-128	Seamless Floor	0	0	0	0	0	0	0	0	0	0
	LP-131	Alaska Sheetm.	**10**	**7**	0	0	**7**	0	**3**	**3**	**7**	0

Notes:

Total may not include some very unusual or rare analytes

Fuel hydrocarbons includes DRO/GRO/RRO as well as TPH by 418.1

Ranges show the range of reported values for analytes within the group

LP-016 is a no further action site. However, potential data for LP-025 is associated with LP-016 and therefore data designated as LP-016 was included for further evaluation of LP-025

Table 3-12 Summary of Analytical Groundwater Data for Properties Proposed for Further Action
ARRC Anchorage Terminal Reserve, Anchorage, AK

Study Area	Property		Fuel Hydrocarbons	BTEX	SVOCs	PAHs	PCBs	Pesticides	Lead	Metals	VOCs	Dioxins
Area 1	LP-002	Cons Freight	**6-12**	**9**	0	0	0	0	0	0	0	0
Area 2	LP-065	Princess Tours	**7-22**	**18-20**	**1-11**	**2-10**	**4**	0	**15**	**7-18**	**7-11**	0
	RY-065	Railyard	**7-89**	**155-157**	**1-49**	**3-58**	**1**	**1**	**105**	**1-13**	**7-55**	0
Area 3	LP-003	Flint Hills	**149-345**	**575-578**	**2-16**	**1-10**	**7**	0	**22**	**1-21**	**4-16**	0
	LP-019	Tesoro	**51-447**	**457-459**	0	**3-11**	0	0	0	0	**4**	0
	LP-025	Chevron	0	0	0	0	0	0	0	0	0	0
	LP-016	Chevron ROW	**265-274**	**283-287**	0	0	0	0	0	**18**	0	0
	LP-027	Chevron Asphalt	0	0	0	0	0	0	0	0	0	0
	LP-060	Northstar	0	0	0	0	0	0	0	0	0	0
Area 4	LP-006	Joe's Body	0	0	0	0	0	0	0	0	0	0
	LP-015	Inlet Constr.	0	0	0	0	0	0	0	0	0	0
	LP-017	Polar Equip.	0	0	0	0	0	0	0	0	0	0
	LP-018	LH Construction	0	0	0	0	0	0	0	0	0	0
	LP-020	Wholesale Dist.	**8**	**5**	0	0	0	0	0	0	0	0
	LP-024	Prescott	**1-33**	**34**	**2-8**	0	0	0	**37**	**16-37**	**2-11**	0
	LP-031	Keystone	**1**	**1**	0	0	**1**	0	**1**	**1**	**0**	0
	LP-051	M-K Properties	0	0	0	0	0	0	0	0	0	0
	LP-056	Steel Fabricators	0	0	0	0	0	0	0	0	0	0
	LP-072	Karen's RV	0	0	0	0	0	0	0	0	0	0
	LP-083	Pruhs	0	0	0	0	0	0	0	0	0	0
	LP-094	Alaska Basic	**4**	**4**	0	0	0	0	0	0	0	0
	LP-110	Bob Benson	0	0	0	0	0	0	0	0	0	0
Area 5	LP-014	UCSC	0	0	0	0	0	0	0	0	0	0
	LP-022	MPL	**65-217**	**260-262**	**3-25**	**6**	**7**	0	**3**	**3-7**	**3-27**	0
	LP-026	Alaska Teamster	0	0	0	0	0	0	0	0	0	0
	LP-034	CDF Inc.	0	0	0	0	0	0	0	0	0	0
	LP-052	Patrick Hickey	0	0	0	0	0	0	0	0	0	0
	LP-055	Altex	**6**	**6**	0	0	0	0	0	0	0	0
	LP-069	Dean's Auto	0	0	0	0	0	0	0	0	0	0
	LP-078	Criterion Grl.	0	0	0	0	0	0	0	0	0	0
	LP-079	Alaska Pride	0	0	0	0	0	0	0	0	0	0
	LP-085	CBS Equipm.	**13-24**	**51-53**	0	0	0	0	0	**2**	**6-20**	0
	LP-098	C. Hayden	0	0	0	0	0	0	0	0	0	0
	LP-109	Beats Walking	0	0	0	0	0	0	0	0	0	0

Table 3-12 Summary of Analytical Groundwater Data for Properties Proposed for Further Action
ARRC Anchorage Terminal Reserve, Anchorage, AK

Study Area	Property		Fuel Hydrocarbons	BTEX	SVOCs	PAHs	PCBs	Pesticides	Lead	Metals	VOCs	Dioxins
Area 5 (cont)	LP-112	Whitney Express	0	0	0	0	0	0	0	0	0	0
	LP-115	Technic Serv.	0	0	0	0	0	0	0	0	0	0
	LP-127	Post Rd. Co.	**3-9**	**11**	**1-7**	**1**	**3**	0	**4**	**3-4**	**1-12**	0
	LP-134	HW Alaska	**18-20**	**46**	**12**	0	0	0	0	**2**	**12-30**	0
	LP-137	Laidlaw	**28-57**	**78-85**	**26-32**	**14-53**	0	0	**12**	**12**	**26-41**	0
	LP-991	Arctic Coop	**169-178**	**173-178**	**3-89**	**9-150**	0	0	**24**	**6-7**	**20-100**	0
Area 6	LP-038	JV Rentals	0	0	0	0	0	0	0	0	0	0
	LP-042	York Steel	0	0	0	0	0	0	0	0	0	0
	LP-049	Wrightway	**2**	**2**	0	0	0	0	0	0	0	0
	LP-070	Golden Ears	0	0	0	0	0	0	0	0	0	0
	LP-089	Rock Partners	0	0	0	0	0	0	0	0	0	0
	LP-107	Safety Kleen	0	0	0	0	0	0	0	0	0	0
	LP-120	KAPP	**1-22**	**25-29**	**3-7**	**3-8**	**3**	**3**	**6**	**6**	**3-6**	0
	LP-124	Alma Corp.	0	0	0	0	0	0	0	0	0	0
	LP-128	Seamless Floor	0	0	0	0	0	0	0	0	0	0
	LP-131	Alaska Sheetm.	0	0	0	0	0	0	0	0	0	0

Notes:
Total may not include some very unusual or rare analytes
Fuel hydrocarbons includes DRO/GRO/RRO as well as TPH by 418.1
Ranges show the range of reported values for analytes within the group
LP-016 is a no further action site. However, potential data for LP-025 is associated with LP-016 and therefore data designated as LP-016 was included for further evaluation of LP-025

Table 3-13 Potential Remediation Data Requirements
ARRC Anchorage Terminal Reserve, Anchorage, AK

Data Requirements	Potential Remedies															Data Status	
	No Action	Institutional controls	Monitored Natural Attenuation	Enhanced Monitored Natural Attenuation	Soil Vapor Extraction	Dual Phase Extraction	Pump and Treat	*In situ* treatment of groundwater	*In situ* stabilization or amendment of soils	Excavation/Disposal	Phytoremediation	Soil cover or cap	Containment/Barrier	LNAPL Skimming	Technical Impracticability	Data Gap for FS	Description
Media; s-soil, gw-groundwater, A-air, b-both soil and groundwater	b	b	b	b	s	b	gw	gw	s	s	b	b	gw	gw	gw		
General Response Action; C-Containment, T-Treatment, RA-Removal Action, IC - Institutional Controls	-	IC	T	T	RA	RA	C	T	T	RA	T	C	C	RA	IC		
Physical Parameters																	
LNAPL Thickness, Distribution, Specific Gravity, Saturation, Recoverability	-	-							-	-		-	-				
Infiltration Rate	-	-	-	-	-	-	-		-	-			-	-	-		
Area Accessibility	-	?	?	?	?	?	?	?	?	?	?	?	?	?	-	?	May need more information for design stage.
Climatological Data	-	-	-	+	+	+	-	+	-	-	+	+	+	-	-	+	May need more information for design stage.
Debris/Utility Presence Evaluation	-	-	-	-	+	+	+	+	+	+	+	+	+	+	-	+	May need more information for design stage.
Geotechnical Properties		-	-	-			-				-			-	-		
Moisture Content of Soil	-	-	-	-	+	-	-	-	-	-	+	+	-	-	-	+	May need more information for design stage.
Suspended Solids in GW	-	-	+	+	-	+	+	+	-	-	-	-	-	-	-	+	May need more information for design stage.
Aquifer Thickness		-	+	+	-	+	+	+	-	-	+	-	+	+	+	+	May need more information for design stage.
Depth to Bedrock	-	-	-	+	-	+	+	+	-	-	+	-	+	+	+	+	May need more information for design stage.
Depth of Impacted Soils		-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	May need more information for design stage.
Depth to Groundwater	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	May need more information for design stage.
Hydraulic Conductivity	-	-	+	+	+	+	+	+	-	-	-	-	+	+	+	+	May need more information for design stage.
Soil Permeability	-	-															
Homogeneity of Soils	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	May need more information for design stage.
Porosity	-	-															
Saturated Thickness and Seasonal Variability	-	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	May need more information for design stage.
Soil Bulk Density	-	-	-	-			-	-			-			-	-		
Specific Conductance	-	-			-				-	-	-	-	-		-		
Chemical Parameters																	
Asbestos Sampling and Analysis	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	May need more information for design stage.
Background Groundwater Data (metals/COCs)	-	-			-	-	-	-	-	-	-	-	-	-	-		
Background Surface Water Data - Springs (metals/COCs)	-	-	X	X	-	-	-	-	-	-	-	-	X	-	-	X	Adequacy to be determined upon receipt of the data
Total Dissolved Solids	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	+	May need more information for design stage.
Valence of Specific Metals in Soil (As/Cr)	-	-		-	-	-	-	-		-	-		-	-	-		

Table 3-13 Potential Remediation Data Requirements
ARRC Anchorage Terminal Reserve, Anchorage, AK

Data Requirements	Potential Remedies															Data Status	
	No Action	Institutional controls	Monitored Natural Attenuation	Enhanced Monitored Natural Attenuation	Soil Vapor Extraction	Dual Phase Extraction	Pump and Treat	*In situ* treatment of groundwater	*In situ* stabilization or amendment of soils	Excavation/Disposal	Phytoremediation	Soil cover or cap	Containment/Barrier	LNAPL Skimming	Technical Impracticability	Data Gap for FS	Description
Background Soil Data (metals/COCs)	-	-			-	-	-	-					-	-	-		
Total Organic Carbon (GW)/Fraction Organic Carbon (Soil)	-	-			-	-	-						-	-	-		
Alkalinity and Hardness in GW	-	-	-	+	-	+	+	+	-	-	+	-	-	-	-		
Dissolved Oxygen in GW	-	-	+	+	-	+	+	+	-	-	-	-	-	-	-	+	May need more information for design stage.
Ferrous Iron in GW	-	-			-				-	-	-	-	-	-	-		
LNAPL GC Characterization	-	-					-		-	-	-	-	-				
Nature and Extent of COCs	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	May need more information for design stage.
Methane and MNA parameters in GW (see table)	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	Have some MNA data, need more dissolved gas data.
Nitrate in GW	-	-	+	+	-	+	+	+	-	-	+	-	-	-	-	+	May need more information for design stage.
TPH Content of Soil	-	-	+	+	+	+	-	+	+	+	+	-	+	-	-	+	May need more information for design stage.
pH	-	-	+	+	-	+	-	+	+	+	+	+	+	-	-	+	May need more information for design stage.
Redox Potential (ORP/Eh)	-	-	+	+	-	-	+	+	-	-	-	-	-	-	-	+	May need more information for design stage.
Shallow Soil Chemistry and Composition	-	-	-	-	+	-	-	+	+	+	+	+	-	-	-	+	May need more information for design stage.
Soil Gas or Vapor Characterization	-	-	-	-		-	-	-	-			-			-		
TCLP/Leaching Tests	+	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+	May need more information for design stage.

- Gray shaded cell means that data not available and will be a data gap for the RI/FS
+ - Means data exists but more data will be needed during the design phase if the alternative is sellected.
- - Not needed/not applicable to evaluate feasibility of alternative
X - Data already obtained
? - Data need to be determined

Table 3-14 Summary of Data Necessary to Evaluate MNA and Fate and Transport Modeling
ARRC Anchorage Terminal Reserve, Anchorage, AK

Type of Remedial Technology	Required Parameter (s)	Units	Is Parameter Available?	If Available, what is result?	Need to Collect?
Natural Attenuation	Dissolved Oxygen	mg/L	Yes	0.2-13.4	No
	Temperature	degrees Celcius	Yes	1-21.3	No
	Conductivity		Yes		No
	pH	standard units	Yes	3.6-11.9	No
	Oxidation/Reduction Potential	mV	Yes	42-377	No
	Nitrate	mg/L	Yes	0.01-210	No
	Nitrite	mg/L	Yes	ND(0.001) 0.02	No
	Sulfate	mg/L and mg/kg	Yes	0.66-195.3 mg/L, 5.2-9700 mg/kg	No
	Sulfide		No		Yes
	Ferrous Iron (Filtered)	µg/L	Yes	56-17,800	No
	Manganese (Filtered)	mg/L	Yes	0.013-11.2	No
	Alkalinity (Total, Carbonate, Bicarbonate)	mg/L	Yes	1-2,123	No
	Dissolved Gases (N_2,O_2,CO,CO_2,CH_4^+)		No		Yes
	And, over time:				
	BTEX	mg/L, mg/kg	Yes	NA-complete dataset	Yes
	Trimethylbenzenes	mg/L, mg/kg	Yes	0.00072-2300 mg/L	Yes
Fate and Transport	Hydraulic conductivity	feet/second	Yes	$K=3x10^{-3}$ to $3x10^{-6}$	Yes
	Hydraulic gradient	foot/foot	Yes	0.04 to 0.007	Yes
	Groundwater Velocity		No		Yes
	Fraction Organic Content (foc)		No		Yes
	Average Depth to Groundwater in Areas	feet	Yes	4.7 to 16.1	No
	Water filled porosity	unitless	No		Yes
	Air-filled porostiy	unitless	No		Yes
	Total porosity	unitless	No		Yes
	Soil Bulk density	g/cm^3	No		Yes
	Soil type	NA	Yes	Sand, gravel, and silty gravel	Yes
	Specific gravity		No		Yes
	Viscosity		No		Yes
	Gas Chromatographs		No		Yes
	Interfacial tensions		No		Yes
	Apparent LNAPL thickness at each well		No		Yes

Notes:
Data were obtained directly from the database or the files containing previous investigation reports
Parameters such as these vary across portions of the site
Even if this data is currently available, it may need to be collected again in order to obtain more representative current information

Table 4-1 Proposed Leased Properties for Exclusion from Further Action
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	ARRC comment responses May 1, 2003	Agency Lead and Current Status	Investigation and/or Cleanup Actions Conducted	Proposed for Exclusion?	Comment
LP-038	38	333 Ship Creek Avenue		JV Rentals	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	No additional comments		No information is available at this time for review.	YES	No reason to believe a release has occurred at this lease property. The site has been most recently used for storage space for sporting equipment
LP-042	42	115 Whitney Road		York Steel Company Inc.	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted - Notes --Site appears to be a metals salvage yard.	This site could not be investigated during the VSI.	No additional comments		No information is available at this time for review.	Conditionally based on a property review	No reason to believe a release has occurred however a property review will be conducted to determine the need for site inspection
LP-070	70	333 Ship Creek Avenue		Golden Ears Investment Corp.	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted - Notes --Site is currently a print shop	This site could not be investigated during the VSI.	No additional comments	No information.	No information is available at this time for review.	YES	No reason to believe a release has occurred at this lease property. The site has been most recently used as warehousing property
LP-089	89	319 E. Ship Creek Ave.	C.V. Wells (GSA sublease)	Rock Partners	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted -site appeared deserted	This site could not be investigated during the VSI.	No additional comments		No information is available at this time for review.	YES	No reason to believe a release has occurred at this lease property. The site has been most recently used as warehousing property
LP-098	98	1224 Whitney Road		Constance Hayden (Warehouse)	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	No additional comments		No information is available at this time for review.	YES	No reason to believe a release has occurred at this lease property. The site has been most recently used as warehousing property
LP-115	115	101 N. Post Road	Bruce Burnett	Technic Services, Inc.	Not designated	YES - Previous use as convenience store, not inspected as it was currently unoccupied. Leasee was the only open issue	This site could not be investigated during the VSI.	No additional comments	Not Known.	One document. Little available information except RFA which states that asbestos is temporarily stored at the site and that oily waste is generated.	Conditionally based on a property review	No reason to believe a release has occurred at this lease property. Property was used for general contracting/ retail sales and servicing of motorcycles. Reference to SMWU - asbestos storage lends to a property review.
LP-124	124	222 E. Ship Creek Ave.		Alma Corp.	Not designated	YES - Site was not inspected by EPA. Owner could not be contacted	This site could not be investigated during the VSI.	No additional comments		No information is available at this time for review. Audit in 1999 for lease - no haz materials.	Conditionally based on a property review	No reason to believe a release has occurred at this lease property. The site has been most recently used as warehousing property however oil drum storage was reported in 1970
LP-002	2	801 W. 1st Avenue	CF bankrupt, Spenard Builders current tenant	Consolidated Freightways	Further Action	YES - Summarize information regarding contaminated soil, UST removal and sludge from oil/water separator.	Deternine if releases have occurred. Determine status of UST removal action. Evaluate waste analysis to determine if oil/water separator sludge is hazardous.Sampling of sludge may be needed.	Correction - Freight arrives by truck not steam ship. SWMU 2-1 ADEC files show soil removal and site closure with No Further Action letter February 23, 1993. Adding this site is duplicative and unwarranted.	ADEC - site closure (USTs) provided in NFA letter dated February 1993.	Phase 1 Contamination Investigation (1989). Diesel / Gasoline UST Contaminated Soils Thermal Remed. Project Report (1992). NFA letter from ADEC dated Feb 24, 1993. Phase 1 ESA (2004).	Conditionally based on a property review	1993 NFA letter from ADEC (see Appendix D). Phase I conducted 11 years later (2004) did not idenitfy areas of concern. However, the ground surface was not checked due to snow cover. A property reveiw will be conducted as suggested in the ESA (2004). Site leased for warehouse, office, storage yard, and garage functions (freight distribution services).

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RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	ARRC comment responses May 1, 2003	Agency Lead and Current Status	Investigation and/or Cleanup Actions Conducted	Proposed for Exclusion?	Comment
LP-003	3&5	1076 Ocean Dock Road	Flint Hills Resources	Williams Alaska / MAPCO Alaska Petroleum	Further Action	YES - Former asphalt plant - closure conducted? Information needed on old drum storage area. Summarize remedial activities to date.	Summarize characterization and remedial action activities.	There is no basis for characterization of old drum storage area as a "hot spot". ADEC file search indicates active involvement of ADEC on this facilty. Adding this site is duplicative and unwarranted.	ACTIVE ADEC	Gasoline Spill Cleanup (July 1991). JP-4 Spill Cleanup (August 1991). Disposal of JP-4 Waste Soils from MAPI Anchorage Terminal Facility (March 1991). Geotechnical and Environmental Report (December 1991). Site Assessment Chugach Electric Association Sub-Lease - 1200 Ocean Dock Road (March 1992). Phase II Site Assessment Chugach Electric Association Sub-Lease (May 1992). New Bulk Fuel Storage Tank Site Cleanup (November 1992). Final Report Anchorage Terminal Baseline Site Assessment (April 1994). Environmental Site Assessment and Clean-up Report, Volume I and II, Chugach Electric Association - 1200 Ocean Dock Road (March 1996). Groundwater Assessment Report (January 2003). Soil Screening and Sampling Report, Rail Track and Pipeline Construction Report (January / February 2003). Groundwater Assessment, Flint Hills Resources Alaska, Anchorage Terminal (June 2004).	YES	Site is actively managed through the ADEC program. Inclusion in this project would be duplicative and unwwaranted.
LP-014	14	1425 Spar Avenue		Curtis Josaitis & Daniel Helton (UCSC / Motor Doctor)	Further Action	NO	Sampling suggested at SWMU 1, SWMU2, SWMU 3 AOC 1. Characterize wastes at site.	AOC 14-1 The facilty operator informed ARRC that they have addressed the stained soil	EPA lead on waste oil management issues.	1. Stained soil north of main building excavated, approximate dimensions of 6 feet wide, 200 feet long, as much as 4 feet deep. 2. EPA issued NOV to Motor Doctor for 3 violations (2001): (1) failure to properly label containers and AST containing used oil; (2) observed area of oil-impacted soils along west and north sides of building and slow releases from 55-gallon containers; and (3) application of used oil as a dust suppressant. 3. Three soil samples collected from site, detecting DRO (ranging from <11 to 218 mg/kg), and RRO (ranging from 34.3 to 791 mg/kg) below their respective Method Two cleanup levels (250 and 11,000 mg/kg).	YES	There are no site issues to address. According to US EPA Oct. 30, 2003 correspondence a compliance evaluation inspection "no violations of RCRA were found." (see Appendix D)
LP-015	15	1833 Post Road	Cherrier & Cherrier	Inlet Construction	Further Action	NO	Request existing analytical groundwater data otherwise sample groundwater.	There are no SWMUs or AOCs at this site. RFA findings are inconsistent with Appendix A of RFA. Further action is not warranted.		No information is available at this time for review.	YES	Small office/ warehouse structure. Listed only because of the water well on site - water is tested on a regular basis. No known environmental issues.
LP-017	17	2116 Post Road	Post Road Properties LLC	Polar Equipment, Inc.	Further Action	YES - Provide information regarding disposal of sanitary sewage.	Request existing analytical groundwater data otherwise sample groundwater.	There are no SWMUs or AOCs at this site. RFA findings are inconsistent with Appendix A of RFA. Further action is not warranted.		500-gal gasoline UST removed from site, reportedly no evidence of release (c. 1991). "Cabin Sink" and "Cabin Wall" samples submitted June 2002 for general water quality and asbestos analysis, respectively; no anomalous results.	YES	Office/ warehouse structure. Listed for further action to clarify the use of a water well. The well is used to flush the toilet only as stated in the July 3, 2003 Third Transmittal letter of ADEC and ARRC site records to EPA. No further site evaluation is warranted.

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ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	ARRC comment responses May 1, 2003	Agency Lead and Current Status	Investigation and/or Cleanup Actions Conducted	Proposed for Exclusion?	Comment
LP-019	19	1321 Anchorage Port Rd.		Tesoro Alaska Petroleum	Further Action	YES - Summarize existing ADEC actiivities	Documented contamination exists. Has it been adequately characterized. Is remedial action necessary? Verify AOC 19-1 soil was sampled for TPH. Sampling suggested at AOC 19-2.	Conditional approval of the water quality monitoring plan was granted by ADEC to Tesoro in 2000. The site is actively managed by ADEC. Adding this site is duplicative and unwarranted. AOC 19-1 ADEC documented soil treatment with ADEC approval. Therefore it is not an area of concern. Soil concentrations are below ADEC screening levels	ADEC requires ongoing groundwater monitoring program at site. Program implemented with numerous groundwater and surface water monitoring locations, apparently on semi-annual basis.	1. February 1975, 3,000 gallons of JP-4 recovered from Tank No. 3 overfilling. 2. May 1989, 60 cyds of impacted soil excavated from around leaking diesel line. Diesel recovery efforts from groundwater initiated with open excavation. 3. Site Investigation report completed (1989). 4. Site Characterization Workplan including truck rack approved by ADEC (1989). 5. Interim Removal Action (dispose 375 cyd soil) approved by ADEC (1989). 6. Application to install "additional" recovery well received by ADEC (1989). 7. Approved Interim Action, removal of 670 cyd impacted soil (1990). 8. Site Closure approved by ADEC (1992). 9. Site Closure and ACLs rescinded by ADEC due to lack of risk assessment evaluating impacts of soil / groundwater contamination, which was not completed (1999). 10. ADEC requests surface water sampling and installation of groundwater monitoring wells (1999). 11. Jet fuel release, estimated in the range of 4,000 to 5,000 gallons - 3,789 gallons recovered (2000). 12. ADEC approval of Water Quality Monitoring Plan dated April 14, 2000 (2000).	YES	The site is actively managed by ADEC. Adding this site is duplicative and unwarranted.
LP-020	20	2548 Post Road		Robert Carlson (Wholesale Distributors of Alaska)	Further Action	NO	Request existing analytical groundwater data otherwise sample groundwater.	There are no SWMUs or AOCs at this site. RFA findings are inconsistent with Appendix A of RFA. Further action is not warranted.	Note in file indicates that site would be conditionally exempt with submittal of analytical results from water supply well. Data collected 8/22/03 were summarized by Analytica Alaska Inc. on 9/2/03 and submitted to Hart Crowser.	Water quality for water supply well has been analyzed in 2003 for DRO, GRO, RRO, VOCs, and metals - results were ND for organics, barium at 0.018 mg/L.	YES	Office/ retail and warehouse structures. No wastes other than office paper and cardboard currently are generated on site. Well has been sampled (9/2/03) all analytes are non detect with the exception of method blank contamination of MeCl2 and barium at 0.018 mg/l (below MCL) (see Appendix D). No further issues exist for the site.
LP-022	22	821 West 1st Avenue		Municipal Light & Power	Further Action	Summarize current site conditions related to soil and groundwater impacts and their impact on Ship Creek	Determine if former diesel UST requires further characterization or remedial action.	AOC22-1 not an area of concern as the normal use of power poles is direct placement into the ground and the RFA provides no evidence of release. AOC 22-2 Several investigations have been completed to evaluate the diesel residue remaining in the subsurface soil from releases that occurred during the 1964 earthquake and to evaluate remedial options.	ADEC lead, site actively managed (groundwater monitoring, efforts to recover free product)	1. Environmental Site Assessment conducted at 800 Ship Creek Ave, LP-055 (downgradient of this site). 2. Limited On-Site Characterization (1991). 3. Request to thermally treat low-level PCB soils communicated to ADEC (1992). 4. Field program to determine vertical / lateral extent of diesel contamination, and bench / pilot studies of biotreatability (1994-1995). 5. In response to ADEC, characterization of diesel contamination and migration (1996). 6. On- and off-site groundwater sampling event (1999). 7. ADEC requested work plan for groundwater monitoring, free-product recovery (well B-3), and assessment of impacts to Ship Creek (2004).	YES	Site is actively managed by ADEC. Inclusion in this project would be duplicative an unwarranted. AOC22-1 not an area of concern as the normal use of power poles is direct placement into the ground and the RFA provides no evidence of release. AOC 22-2 Several investigations have been completed to evaluate the diesel residue remaining in the subsurface soil from releases that occurred during the 1964 earthquake and to evaluate remedial options. See aerial photo in Appendix D.
LP-024	24	1924 Post Road		Prescott Equipment	Further Action	YES - Summarize current site status via ADEC. Were the NFA conditions met?	Determine whether ADEC formally closed this site. A deed notice or restriction should be required identifying the areas of petroleum contamination.	Conditions of No Further Action letter were met and work was completed in 2002 to address the concerns raised by EPA. Adding this site is duplicative and unwarranted.	ADEC lead. Correspondence between ADEC and Prescott Equipment Co indicates that ACLs were established and met, and that a NFA determination was made. ADEC No Further Action/Institutional Control Letter dated June 23, 2003 documents that the site has been remediated to applicable cleanup levels.	All investigations appear to have been initiated / managed by Prescott. 1998, Phase I and Phase II ESA, conducted by Prescott, as a condition of terminating their lease (RFA). 1999, Phase I Site Characterization Report. 1999, Phase II Site Characterization Report. 1999, Phase III and IV Soil Excavation and Confirmation Sampling Report. 2000, Phase V Final Report.	YES	June 9, 2003 letter from ADEC granting no further remedial action planned/ Institutional control status for the site. Inclusion in this project would be duplicative and unwarranted. Upon a recent assignment of this lease (8/26/04) institutional controls have been imposed consist with the June 9, 2003 ADEC letter (see Appendix D).

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LP-025	25 & 27	459 W. Bluff Road		Chevron USA	Further Action	YES - Provide summary of groundwater sampling data and of operation and waste management practices of former asphalt plant prior to 1995.	Evaluate existing groundwater data to determine if further action should be required.	A groundwater handling plan and cleanup plan have been approved by ADEC for the site. Adding this site is duplicative and unwarranted.	ADEC lead, with active management by Chevron.	A March 31, 1992 fax transmittal between Chevron USA and MAPCO describes documented releases ocurring between 1978 and 1992. More recent data have not been identified. Pump over of tank in terminal yard released 75 gallons Jet B (March 1978). Tank car run over released 15 gallons Jet A-50 (December 1978). Hose burst released 2,000 gallons Jet A-50 (August 1981). Pump over of tank in terminal yard released 12,100 gallons gasoline (October 1981). Failure of tank car valve released 9,500 gallons Avgas 100 (August 1983). Overfilled tank car (set stop meter failure) released 178 gallons gasoline (August 1983). Hose failure during loading released 1,400 gallons Jet A-50 (January 1984). Failure of 6-inch underground transfer line between Chevron and Butler released 106,900 gallons Jet A-50 (December	YES	The site is actively managed by ADEC. Adding this site is duplicative and unwarranted.
LP-026	26	1049 Whitney Road		Alaska Teamster Employer Service / Teamster Training	Further Action	NO - add general comments	Groundwater impacts should be delineated. Remedial action may be needed.	AOC-1 [AOC26-1] EPA reported that free product was present at this site. The referenced 1999 report does not discuss "petroleum constituents, solvents and metals" in groundwater at this site. ARRC knows of no testing of groundwater at this site. A sheen was noted by ARRC at a location near Whitney Road and is being addressed with ADEC.	ADEC. UST presumed to be close, additional information required for floating product investigation.	1. Removal of 1,000-gallon gasoline UST (1989). 2. Whitney Road Floating Product Investigation (1999). Confirmation soil sampling conducted with UST removal revealed TPH at 8.8 ppm.	YES	There were errors in reporting in this site. There is no free product. The site is actively managed by ADEC. Adding this site is duplicative and unwarranted.
LP-031	31	2320 Post Road	2320 Post Road LLC & Jed LLC	Keystone Distribution Services	Further Action	YES - Provide investigation and/or remediation information for PCB soil impact.	Determine if characterizaiton or remedial activities were performed to address PCBs.	AOC 31-1 ADEC files indicate the UST was removed and closed in 1990 with no further action required by ADEC. This is not an area of concern. Adding this site is duplicative and unwarranted.	ADEC lead. USTs closed. Fuel residue concentrations at site were below ADEC cleanup level, so remediation not required. EPA representative agreed with Alta study that PCB remediation not required as part of Standard Steel ROD (see HC summary)	1. 1990 UST closure report 2. 1991 ESA 3. 1999 PCB Investigation 4. 2001 Phase I/Phase II ESA RFA states that site not used for vehicle maintenance, nor haz materials storage.	YES	Per transmittal letter #1 of June 5, 2003, the fuel residue found was below ADEC's default cleanup level, no remediation was required. In addition, it is located within the study area of the original Standard Steel Superfund site and was included in the RI/FS and corrective action order. Adding this site is duplicative and unwarranted.
LP-051	51	2530 Railroad Avenue		M-K Properties (Great Land Fence /KC Corp.)	Further Action	Yes - The storage of large quantities of potentially hazardous waste at this site may require notification as a small or large quantity hazardous waste generator.	Sampling is suggested at SWMU 51-1. A compliance inspection should be conducted by EPA or ADEC	Owner/operator of the facility informed ARRC that the referenced containers have been properly removed and disposed, as was described in June 21, 2002 and August 13, 2002 correspondence to EPA from K-C Corp. the sub leasee. ARRC checked the site Sept. 6, 2002 after the containers were removed and no stains were observed on the soil. This site should have been screened from further evaluation.	EPA	1 document	YES	Correspondence dated June 21, 2002 and August 13, 2002 to EPA confirmed that referenced containers have been removed. No staining was observed in an ARRC inspection of Sept. 6, 2002. No further evaluation is warranted.
LP-055	55	800 E. Ship Creek Ave.		C.V. Wells (Altex Distributing)	Further Action	YES - Report analytical well data from 1990. Summarize ADEC involvement and site activities including remedial action associated with a 1991 diesel odor in water during excavation	Sample 3 existing monitoirng wells. If sampled recently evaluate results.	This site is downgradient of MLP above ground tank release. It has been included in the ADEC investigations (for LP-022), remediation evaluations and monitoring activities. Adding this site is duplicative and unwarranted.	ADEC	1. Environmental Site Assessment included installation of five soil borings, three gw monitoring wells (1990). 2. Diesel UST removed from site, date unknown.	YES	This site is downgradient of the MLP above ground tank release. It has been included in the ADEC investigations (for LP-022), remediation evaluations and monitoring activities. Adding this site is duplicative and unwarranted.

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LP-072	72	1849 Ship Avenue		Joe D. and Mary P. Blackard (Karen's RV Service Center)	Further Action	NO	Sampling is suggested at AOC72-1	No additional comments	Site status listed as "inactive" on ADEC contaminated sites database.	1. UST removal included stockpiling of contaminated soils (1989). 2. Stockpiled soils thermally treated by ESI (1992). RFA states that site contains construction debris and suspicious surface staining.	Conditionally based on a property review	Inactive ADEC site. No Known outstanding environmental issues. Site is covered with asphalt parking lot and buliding.
LP-083	83	2193 Viking Drive		Pruhs Corp.	Further Action	YES - Provide information on solvents used in parts washer, sludge characterization from washer, disposal of sludge and used solvent. Sludge from oil /water separtor sample results.	Sampling is suggested at SWMU 83-3. Compliance Evaluation Inspection is also suggested.	No additional comments	No information.	No information is available at this time for review.	YES	No known history of environmental contamination. RFA did not indicate any releases at the site.
LP-094	94	2301 Spar Avenue		Alaska Basic Industries	Further Action	YES - Information on disposal procedures for baghouse filters should be provided. Report groundwater monitoring results. Summarize site activities prior to 1998 related to DRO in groundwater at a minimum.	Sampling is suggested at SWMU 94-1, SMWU 94-2 SWMU 94-4	This facility treats soil with petroleum contamination. It is managed by the owner/ operator and regulated, permitted, inspected and monitored by the ADEC.	ADEC lead. Site believed to be conducting annual groundwater monitoring. Soil remediation activities operate under air quality permit with ADEC, which requires continuous emission monitoring. CSA received 3 separate NOVs in 1996, and an additional NOV in 1997, all related to poor management practices for contaminated soil. CSA also issued "numerous NOVs regarding air quality" (RFA). Letter dated April 17, 1997 from Alaska Soil Recycling to ADEC outlined several tasks planned which would resolve outstanding environmental management issues for the site.	Subsurface Exploration (1992). Site Assessment Report (1997). Ad Hoc activities to evaluate nature / extent of subsurface contamination associated with CleanSoils activities (early 1998). Phase I Environmental Site Assessment (1998). Soil and Groundwater Investigation (1998) Three or four groundwater monitoring wells are sampled annually for petroleum constituents.	YES	Permitted Soil Treatment facility actively managed by ADEC and current Lessee. Conducting annual groundwater monitoring. Adding this site is duplicative and unwarranted.
LP-107	107	155 1st Avenue		Safety Kleen, Inc.	Further Action	YES - Was the site used for waste storage? If so was adequate closure conducted?	No Further Action - mixed up with 106?	The facility is described as office and warehouse		Property is included in Phase I Environmental Site Assessment, Ship Creek Intermodal Transportation Center (February 2003).	YES	Site was not used for waste management. Office/ warehouse. No known environmental issues Feb. 2003 ESA confirms.

Table 4-1 Proposed Leased Properties for Exclusion from Further Action
ARRC Anchorage Terminal Reserve, Anchorage, AK

RETEC Site No.	EPA Site No.	Corrected Address*	ARRC Site Name (if no entry, same as EPA)	EPA Site Name	Status-RFA Appendix A (July 16, 2002)	Noted in RFA Section 9 (July 16, 2002)	EPA RFA Suggestions for Further Action (July 16, 2002)	ARRC comment responses May 1, 2003	Agency Lead and Current Status	Investigation and/or Cleanup Actions Conducted	Proposed for Exclusion?	Comment
LP-110	110	2400 (2332) Railroad Avenue		K&T Enterprises (Bob Benson Trucking)	Further Action	NO	Sampling suggested at SWMU 110-3	No additional comments	ADEC. USTs removed, one apparently inactive, one apparently closed.	1. 1992 UST removal, no record of completed site assessment (inactive status?). 2. 1995 UST removal, along with excavation of 60 cyds of soil, apparently closed by ADEC.	YES	No known environmental issues. This site was fully characterized and remediated during the Standard Steel Superfund process. Minimal risk of environmental releases since completion of the Superfund process.
LP-112	112	1101 E. Whitney Road	Paul Reid dba Sagaya Properties	Whitney Enterprises	Further Action	YES - Site not inspected, facility personnel were not present.	This site could not be investigated during the VSI. Delineate groundwater impacts. Perform remedial action if needed.	AOC - 1 [AOC 112-1] Reference to 1999 report that groundwater is contaminated with petroleum constituents, solvents and metals is in error. The RFA reference does not state that groundwater at the site is contaminated or even that the site was part of the investigation described.	Not known	No information is available at this time for review.No hazardous materials utilized or generated at this location,	YES	Reported site impacts were in error. No known environmental releases from this site.
LP-127	127	200/250 Post Road	Post Road Co - Tenancy / Swalling Construction / Kelly Moore Paints / Westinghouse	Post Road Co - Tenancy	Further Action	YES - Determine if the site has been adequately characterized and cleaned up. Previous PCB cleanup did not address other potential contaminants.	Documented contamination detected in soil and groundwater. Contamination migrated off-site. Site wide sampling is suggested with remedial action as needed. A Compliance Evaluation Inspection should be performed. Review historical documentation. Sampling suggested at SWMU 127-2, SW\MU 127-4, SWMU 127-5, SWMU 127-6, SMWU 127-8, SWMU 127-9	SWMU 127-4 ADEC file review indicates a groundwater management and cleanup plan have been approved by ADEC. Mulitple sampling events. Adding corrective action is duplicative and unwarranted. AOC 127-2. Storage of creosote treated pilings on the ground. This is not of concern - normal use of piling is direct placement into the ground. No factual grounds for release.	1. ADEC Lead with active management by Kelly - Moore Paint Co. 2. In 1993, ADEC issued letter providing for NFA to AMFAC Warehouse based on low PCB levels, diesel levels near cleanup limit, and concerns re impacts to Ship Creek wetlands / riparian areas from further excavation. 3. HC summary states that PCB cleanup standard has been reduced from 10 mg/kg to 1 mg/kg. 4. Kelly-Moore Paint Store and Warehouse considered "Active" by ADEC. 5. Preservative Paint Co. considered "Inactive" by ADEC.	1. Early 1990s - USTs removed. 2. Contaminant Assessment Report, 1991. 3. Interim Remedial Action Report, 1992. 4. Remedial Action Report, 1993. 5. TCE Contaminated Soil Assessment, 1999. 6. Additional TCE Contaminated Soil Assessment, 1999. 7. Remedial Action Feasibility Study and Work Plan, 2002. 8. Remedial Action Investigation, 2003. 9. Five groundwater monitoring wells reported on site.	YES	The site is actively managed by ADEC. Adding this site is duplicative and unwarranted.
LP-128	128	321 E. Ship Creek Ave.		Fred T. Wade (Seamless Flooring Systems)	Further Action	NO	Compliance Evaluation Inspection is suggested.	No additional comments	Not known	No information is available at this time for review.	Conditionally based on a property review	Warehouse, storage, retail building. No known environmental issues.

Figures

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