3.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

Petroleum hydrocarbons, semivolatile organic compounds (SVOCs), VOCs, and metals have been detected in soil, groundwater, surface water, and sediment at the NMCB Building Expanded Area. The concentrations of contaminants in these media at this site were compared to Alaska DEC cleanup criteria and/or human health and ecological risk-based screening criteria to identify the chemicals of potential concern (COPCs). The COPCs in soil, groundwater, surface water, and sediment are presented below.

3.1 SOIL

A chemical was identified as a COPC if its concentration exceeded the Alaska Method Two cleanup levels established to prevent migration of contaminants from soil to groundwater in the over 40 inches of rainfall zone (18 AAC 75.341, Tables B1 and B2) or if it was identified as a COPC in the human health or ecological risk assessments. The following is a listing of the COPCs identified at the NMCB Building Expanded Area:

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 2-Methylnaphthalene
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Carbazole
- Dibenz(a,h)anthracene
- DRO
- Ethylbenzene
- Gasoline-range organics (GRO)
- Indeno(1,2,3-cd)pyrene
- Methylene chloride
- Naphthalene
- Residual-range organics (RRO)
- Toluene
- Xylenes

Concentrations of all chemicals on the above list exceeded the most stringent Alaska DEC Method Two soil criteria in one or more samples with the exception of 1,2,4-trimethylbenzene,

1,3,5-trimethylbenzene, indeno(1,2,3-cd)pyrene, and RRO. Although the concentrations of carbazole, methylene chloride, and toluene in soil exceeded the most stringent Alaska DEC Method Two soil criteria in one or more samples and they were included on the COPC list above, they were not included as a COPC in the human health risk assessment because they were below the screening criteria used in the risk assessment or the magnitude of the exceedances was low.

3.2 GROUNDWATER

A chemical was identified as a COPC if its concentration exceeded the Alaska DEC groundwater cleanup levels [18 AAC 75.345(b)(2)] and/or it was identified as a COPC in the human health risk assessment. The following is a listing of the COPCs identified at the NMCB Building Expanded Area:

- 1,2-Dichloroethane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 2-Methylnaphthalene
- Arsenic
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Beryllium
- Cadmium
- Carbazole
- cis-1,2-Dichloroethene
- Chromium
- Dibenzofuran
- DRO
- Ethylbenzene
- GRO
- Lead
- Methylene chloride
- Naphthalene
- Nickel
- n-Propylbenzene
- Toluene

- Trichloroethene
- Xylenes

Concentrations of arsenic, benzene, beryllium, cadmium, carbazole, cis-1,2-dichloroethene, chromium, DRO, ethylbenzene, GRO, lead, methylene chloride, naphthalene, nickel, toluene, and trichloroethene in groundwater at the site exceeded the Alaska DEC groundwater cleanup levels for groundwater that is used as drinking in water in one or more samples. Although concentrations of arsenic, beryllium, cadmium, chromium, lead, methylene chloride, and nickel in groundwater at the site exceeded the Alaska DEC groundwater cleanup levels for groundwater used as drinking water in one or more samples and were included on the COPC list above, they were not included as a COPC in the human health risk assessment. Methylene chloride was not included as a COPC in the human health risk assessment because of infrequent detections and because the magnitude of the exceedances was low. Arsenic, beryllium, cadmium, chromium, and nickel were not included as COPCs in the human health risk assessment because the only location where these metals were detected is upgradient of the source. Lead was not included as a COPC in the human health risk assessment because the lead screening value is based on EPA's tap water action level for lead and is protective of children, the most sensitive population to lead exposures. At this site, the only complete exposure pathways to groundwater are inhalation and dermal contact during subsurface construction activities. Lead is not considered a volatile chemical and is not readily absorbed through the skin. Therefore, construction worker exposures to lead in groundwater would not be significant.

3.3 SURFACE WATER AND SEDIMENT

A chemical was identified as a COPC in surface water or sediment if it was identified as a COPC in the human health risk assessment or the ecological risk assessment.

The human health risk assessment concluded that exposure pathways to marine surface water and marine sediment at the NMCB Building Expanded Area were insignificant due to the presence of a large berm and riprap along the shoreline at the site. Therefore, no COPCs for human health were identified for marine surface water and/or marine sediment at the site. In addition, no COPCs for ecological receptors were identified for marine surface water because surface water concentrations were lower than risk-based screening concentrations (RBSCs). The following is a listing of the COPCs in marine sediment:

- 3- and 4-methylphenol
- DRO

East Canal collects surface water runoff from the airfield and receives surface water and groundwater from a large portion of the downtown area on Adak. Only about 1/18 of the total

volume of water entering the East Canal is estimated to originate from the NMCB Building Expanded Area. Given the relatively small portion of water potentially entering East Canal from the NMCB Building Expanded Area, establishing that the impacts in East Canal are the result of contaminant migration from the NMCB Building Expanded Area is not possible. Therefore, establishing that impacts in West Canal and South Sweeper Creek are the result of contaminant migration from the NMCB Building Expanded Area is also not possible, since these surface water bodies are downgradient of East Canal. In addition, known sources of petroleum hydrocarbons are located upgradient of the surface water and sediment sampling locations in East Canal. Finally, there is no habitat of significance within the manmade airport ditch system, including East Canal. As a result, human health and ecological risk assessments were not performed for the East Canal, West Canal, or South Sweeper Creek.

4.0 CONTAMINANT CONCENTRATIONS AND POTENTIAL EXTENT OF CONTAMINATION

Decisions documented in this DD are based upon information gathered from various environmental field investigations performed at the NMCB Building Expanded Area between 1990 and 2003. The environmental field investigations that have been performed at or in the vicinity of the NMCB Building Expanded Area are summarized in Table 2-1.

Results of these investigations indicated that free product is still being detected at the site and petroleum-related chemicals, SVOCs, VOCs, and metals were confirmed in samples of subsurface soil, groundwater, sediment or surface water collected from several locations at the NMCB Building Expanded Area. Detailed characterization information for the site is provided in the FFS report (URS 2005a) and is summarized below.

Extent of Free Product

Between September 1997 and July 2005, monitoring wells within the vicinity of the NMCB Building Expanded Area have been gauged periodically for the presence of free product. However, only data through December of 2004 are reported here. Between September 1997 and December 2004, free product has been detected in 15 of the 50 wells installed at the site. The maximum measured thickness of free product reported at the site was 2.33 feet, in well 02-300 on May 11, 2002. Figure 4-1 shows the estimated potential extent of free product remaining at the site based on measurements from August 1, 2004 through December 4, 2004. This figure also shows the estimated extent of free product based on measurements from January 1, 2001 through November 9, 2002, and the estimated extent based on measurements from November 1992 through June 2000.

The estimated extents shown on Figure 4-1 are based on maximum product thickness measurements obtained from each location during each of the three periods. The extent of free product estimated for the initial monitoring period (November 1992 through June 2000), shows a product extent of approximately 128,000 ft^2. This is the largest extent of residual free product estimated at the site for these three monitoring periods. The extent of residual free product decreased from this initial estimate to approximately 55,000 ft^2 for the period between January 2001 and November 2002. Evaluation of product thickness measurements obtained from August through December 2004 results in a further reduction in the estimated free product extent to approximately 24,000 ft^2.

Based on the 2004 product thickness measurements, as indicated in Table 4-1, an estimated 20 to 80 gallons of recoverable free product may remain in the subsurface at the site. This estimated

quantity of recoverable free product was obtained using the procedure described in the FFS for South of Runway 18-36 Area (URS 2005c).

Free-product recovery has been conducted at the NMCB Building Expanded Area from September 1997 through July 1998, May through July 2000, May through November 2001, May though October 2002, and from August through November 2004. As summarized in Table 2-3, approximately 201 gallons of free product were recovered at the site during these periods. Most of this product (189 gallons) was recovered during 2001 and 2002.

Free-product removal began in September 1997 with the installation of one passive-style product skimmer. Additional passive skimmers were installed in two wells during October and November 1997, respectively (URSG 1999). Passive skimmer operations produced 3.9 gallons of recovered product at the NMCB Building Expanded Area between September 1997 and July 1998. Product recovery was suspended at the site from August 1998 through April 2000 due to the presence of halogenated organic compounds identified in one product sample collected from the site. Product recovery resumed during May 2000 with the installation of one passive skimmer. A total of 3.5 gallons of free product were recovered from this well during 2000 before recovery activities were terminated for the winter. Product recovery resumed at the site during May 2001 with the installation of a passive skimmer in one well and the installation of an automated passive skimmer (modified Xitech product recovery device) in a second well. An additional passive skimmer was installed during June 2001. Product recovery activities continued until November 12, 2001 when all recovery activities were terminated for the winter. During the seven months of recovery activities conducted during 2001, approximately 117 gallons of free product were recovered at the site. Product recovery activities were restarted in five wells at the site on May 11, 2002 and continued through October 2002 when all recovery activities were terminated for the winter. During these 6 months of recovery activities, approximately 72 gallons of free product were recovered at the site. Product recovery did not occur at the site during 2003. However, product recovery activities were restarted on August 4, 2004 and are ongoing using automated passive skimmers and passive skimmers. During August through December 2004, 4.9 gallons of free product were recovered at the site. As of July 2005, free-product recovery at the NMCB Building Expanded Area was discontinued in existing site wells because free-product recovery conducted as an interim remedial action has met the practicable endpoint established for the shut down of product recovery as specified in the OU A ROD (TetraTech 2006). The technically practicable endpoint for product recovery systems not dependent on water table depression is as follows:

> *When the monthly volume of recovered product averaged over the most recent 6 months (6-month moving average) is less than 5 gallons of product recovered per month, the technically practicable endpoint for recovery has been reached. If this endpoint criterion has been met for a period of 12 months of product recovery,*

the system is considered to meet the technically practicable endpoint and recovery can be discontinued (URSG 1999b).

Potential Extent of Contamination in Soil and Groundwater

The potential extent of contamination in soil and groundwater at the NMCB Building Expanded Area was estimated in the FFS report (URS 2005a) and is summarized in this DD. The potential extent of contamination in soil and groundwater was based on data collected through 2002. Since no soil samples were collected after 2002 and groundwater samples were only collected from E-701, which is upgradient of the site, data collected after 2002 do not change the conclusions regarding the potential extent of contamination. The potential extent of contamination was estimated by comparing site concentrations from samples collected between 1992 and 2002 to the Alaska DEC cleanup levels. Locations where the concentrations exceeded the Alaska DEC cleanup levels were identified and then used to delineate the area of potential contamination on Figure 4-2.

The Alaska DEC Method Two cleanup levels established to prevent migration of contaminants from soil to groundwater in the over 40 inches of rainfall zone (18 AAC 75.341, Tables B1 and B2) were used to estimate the potential extent of soil impacted by petroleum contamination at the NMCB Building Expanded Area. The tabulated groundwater cleanup levels [18 AAC 75.345(b)(1), Table C] were used to estimate the potential extent of groundwater impacted by petroleum contamination at the site. The potential extent of contamination shown in Figure 4-2 are based solely on exceedances of the Alaska DEC cleanup levels. The potential extent of contamination shown on this figure do not necessarily represent areas where risks are unacceptable or where cleanup actions will be required. However, these areas were considered to be a potential concern and therefore required further evaluation in a risk assessment. The site data used to estimate the potential extents of contamination were used in the risk assessment to determine if contaminant concentrations at the site poses an unacceptable risk to humans and ecological receptors.

The analytical results for benzene, ethylbenzene, DRO, GRO, toluene, and xylenes are provided on Plates 1 and 2 for soil and groundwater, respectively. Although known contamination at this site is predominantly petroleum related, certain non-petroleum chemicals, including VOCs, SVOCs, and metals are known to exist at very low concentrations in soil and groundwater in the vicinity of the NMCB Building Expanded Area. Analytical results obtained for these chemicals are included in the analysis conducted to establish the potential extent of contamination at the site. Basic summary statistics for all COPCs in soil and groundwater are provided in Table 4-2. The COPCs were previously identified in Section 3. These statistics include:

- Total number of samples collected at the NMCB Building Expanded Area including field duplicates

- Samples used in the risk assessment
- Minimum concentration used in the risk assessment
- Maximum concentration used in the risk assessment
- Location of the maximum concentration used in the risk assessment
- Detection frequency
- Range of detection limits

The concentrations of contaminants at the site were compared to Alaska DEC cleanup criteria and/or human health and ecological risk-based screening criteria to identify the COPCs in soil, groundwater, surface water, and sediment. Therefore, some chemicals listed in Table 4-2 may only have been detected at concentrations which exceed the human health or ecological risk-based screening criteria and not the Alaska DEC cleanup levels.

The extent of contamination in soil at the site was estimated by comparing analytical results to the most stringent Alaska DEC soil cleanup criteria established for the protection of groundwater in the over 40-inches of rainfall zone. Detected concentrations of chemicals were reported in soil samples collected from 47 locations at concentrations greater than their respective Alaska DEC soil cleanup levels. These 47 locations occur over a large area across the site extending from the intersection of Main and Seawall Roads east to the vicinity of the Fish and Wildlife Building including nearly the entire site south of Seawall Road. The chemicals that exceed the most stringent criteria are 2-methylnaphthalene, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole, dibenz(a,h)anthracene, DRO, ethylbenzene, GRO, methylene chloride, naphthalene, toluene, and xylenes. Therefore, detected concentrations of these chemicals above their Alaska DEC soil cleanup levels were used to estimate the potential extent of contamination in soil. The site area estimated to contain detected concentrations of chemicals in soil at concentrations greater than their respective most stringent Alaska DEC soil criteria is indicated by the dashed lines on Figure 4-2. Combined, these areas are estimated to encompass approximately 10 acres.

The potential extent of contamination in groundwater was estimated by comparing analytical results to their respective Alaska DEC groundwater cleanup levels which were established for groundwater that is used as a drinking water source. Monitoring wells at the site have been sampled multiple times on a nonuniform schedule. In addition, groundwater samples collected from the monitoring wells were chemically analyzed for a nonuniform list of chemicals. Only the most recent information available for each chemical at each location is compared to the groundwater cleanup levels to determine the potential extent of contamination in groundwater.

Detected concentrations of chemicals were reported in the most recent groundwater samples collected from 37 locations at concentrations greater than their respective Alaska DEC groundwater cleanup criteria for groundwater that is used as a drinking water source. These 37 locations are situated in an area extending from the southern end of Runway 18-36 southeast to Sweeper Cove. This area contains approximately 1,200 feet of Seawall Road, the PEB, Building T-1416, the vehicle wash rack, and former Building T-1421. The remaining location (02-813) is in the extreme northeast portion of the site just north of Seawall Road. The chemicals that exceed the Alaska DEC groundwater cleanup levels for groundwater that is used as a drinking water source are arsenic, benzene, beryllium, cadmium, carbazole, chromium, cis-1,2-dichloroethene, DRO, ethylbenzene, GRO, lead, methylene chloride, naphthalene, nickel, toluene, and trichloroethene. However, data for arsenic, beryllium, cadmium, chromium, and nickel were not included in the evaluation of the potential extent of contamination in groundwater because the only location where these metals were detected is upgradient of the source. The two site areas, estimated to contain detected concentrations of chemicals in groundwater at concentrations greater than the respective Alaska DEC groundwater cleanup levels for groundwater used as a drinking water source, are indicated by the solid lines on Figure 4-2. This area is estimated to be approximately 13 acres.

Potential Extent of Contamination in Surface Water and Sediment

The potential extent of contamination for surface water and sediment is based on a review of analytical results for petroleum-related chemicals, VOCs, SVOCs, and inorganics in surface water and sediment samples collected in Sweeper Cove and East Canal. The extent of petroleum contamination in marine sediment and surface water of Sweeper Cove was evaluated based on review of analytical results obtained for 11 sediment-surface water sample pairs collected during 1998 and the results from an additional 8 sediment samples collected in 2003. All sediment samples were collected from within 0 to 4 inches of the surface of the sediment. The 1998 sediment and surface water samples were analyzed for benzene, DRO, ethylbenzene, GRO, toluene, total xylenes, and SVOCs including polycyclic aromatic hydrocarbons (PAHs). The 2003 sediment samples were analyzed for DRO and SVOCs only.

DRO, 3- and 4-methylphenol, phenol, and selected SVOCs were detected in marine sediment samples from Sweeper Cove. DRO was detected in all 11 marine sediment samples collected in 1998. It was detected in 1 of 8 samples collected in 2003. Detected DRO concentrations in sediment samples from Sweeper Cove ranged from a minimum of 37 mg/kg to a maximum of 146 mg/kg. A co-elution of 3- and 4-methylphenol was detected in 13 of the 19 sediment samples, 9 of 11 in 1998 and 4 of 8 in 2003. Detected concentrations of 3- and 4-methylphenol in Sweeper Cove sediment samples range from a minimum of 0.3 mg/kg to a maximum of 10 mg/kg. The location of this maximum concentration was resampled in 2003, and the resultant concentration was 0.027 mg/kg. Phenol was detected in 9 of the 19 sediment samples, 5 of 11 in 1998 and 4 of 8 in 2003. Detected phenol concentrations in sediment samples from Sweeper

Cove ranged from a minimum of 0.037 mg/kg to a maximum of 0.6 mg/kg. The two locations of the maximum detected concentration were resampled in 2003, and phenol was not detected at either location. Additional SVOCs (not including 3- and 4-methylphenol and phenol) were detected in 5 of the 19 sediment samples, 2 of 11 in 1998 and 3 of 8 in 2003.

Benzene, ethylbenzene, GRO, toluene, total xylenes, total aromatic hydrocarbons (TAH), and total aqueous hydrocarbons (TAqH) were detected in marine surface water samples from Sweeper Cove. GRO was detected in 3 of the 11 surface water samples collected from Sweeper Cove. Detected GRO concentrations ranged from a minimum of 62 micrograms per liter (µg/L) to a maximum of 67 µg/L. Benzene, ethylbenzene, toluene, and total xylenes (BTEX) were detected at low concentrations in surface water samples collected at six locations in Sweeper Cove. Benzene, ethylbenzene, toluene, and total xylenes combined constitute TAH. The TAH concentrations in marine surface water samples collected during 1998 from five locations exceeded the water quality criteria of 10 µg/L established for TAH. PAH compounds in combination with BTEX compounds collectively constitute TAqH. Because PAH compounds were not detected in any of the 11 marine surface water samples collected during 1998, TAqH concentrations were identical to the TAH concentrations at the site. Since the water quality criteria for TAqH is higher than for TAH, the TAqH concentrations exceeded the water quality criteria of 15 µg/L in only four surface water samples collected at the site.

The extent of petroleum contamination in sediment and surface water of the East Canal was evaluated based on review of analytical results obtained for three surface water samples collected during 1993, two surface water samples collected during 1997, two sediment samples collected during 1993, and one sediment sample collected during 1997. All sediment samples were collected from within 0 to 4 inches of the surface of the sediment. The sediment samples collected during 1993 were analyzed for DRO, 3- and 4-methylphenol, and total lead. The 1997 sediment sample was analyzed for benzene, ethylbenzene, GRO, DRO, toluene, total xylenes, and PAHs. The surface water samples were analyzed for benzene, ethylbenzene, GRO, DRO, toluene, total xylenes, di-n-butylphthalate, and dissolved and total lead. The surface water samples collected during 1997, were analyzed for GRO, DRO, VOCs, and SVOCs.

DRO, selected SVOCs, and lead were detected in sediment samples from East Canal. DRO was detected in the sediment samples at estimated concentrations that ranged from 3,120 mg/kg to 33,000 mg/kg. Fluoranthene and pyrene were both detected in one sediment sample tested for PAHs, each at a concentration of 0.3 mg/kg. Total lead was detected in sediment samples from two locations at 25 mg/kg and 190 mg/kg.

Benzene, ethylbenzene, DRO, toluene, total xylenes, TAH, and TAqH were detected in marine surface water samples from Sweeper Cove. DRO was detected in two surface water samples at 8,400 µg/L and 1,700 µg/L. Benzene, ethylbenzene, toluene, and total xylenes were detected in the three surface water samples collected from two locations at concentrations that range from an

estimated value of 1.1 µg/L for toluene to 5.2 µg/L for total xylenes. The VOC, cis-1,2-dichloroethene, was detected in the two surface water samples collected from one location at estimated concentrations of 0.79 and 0.82 µg/L.

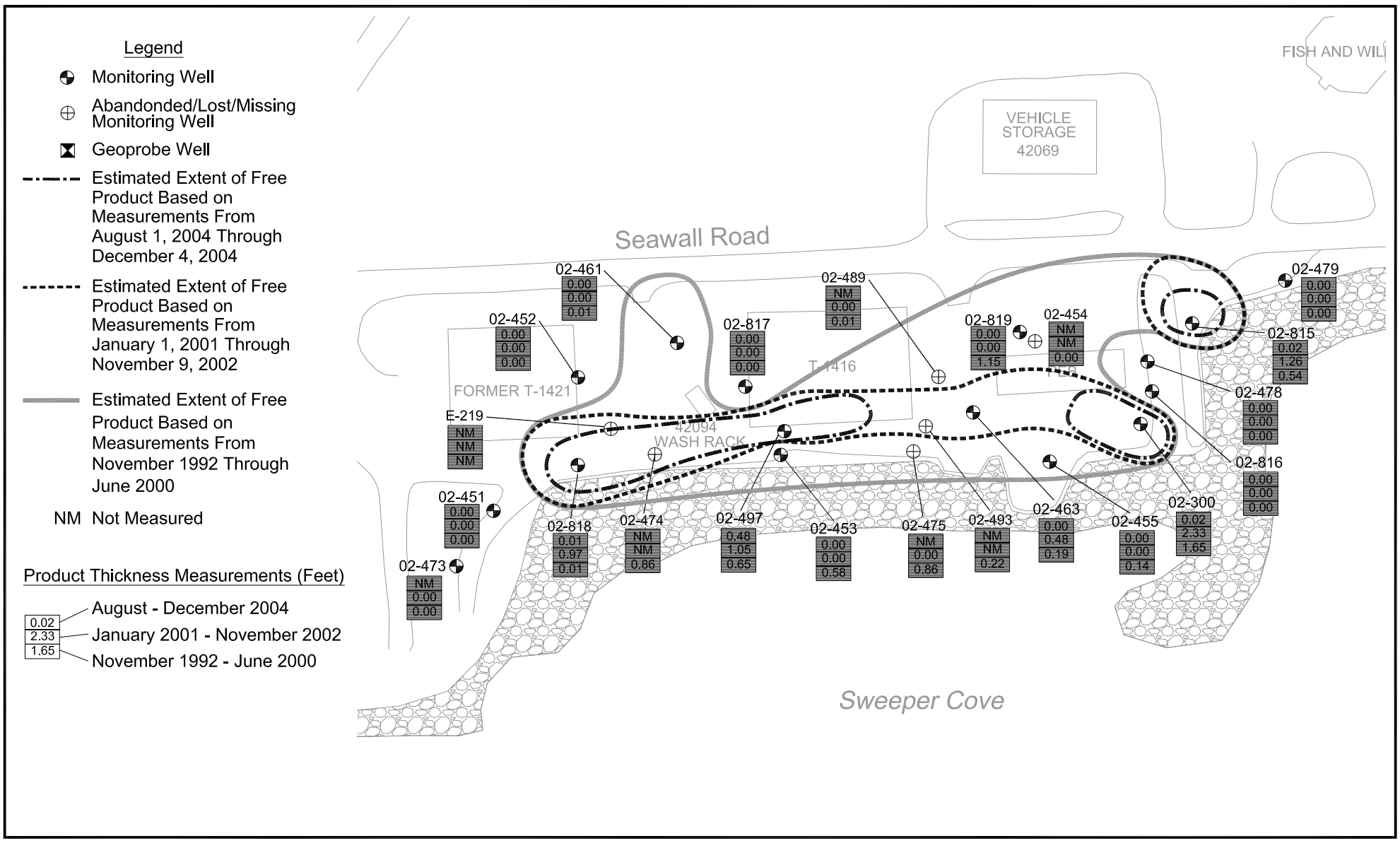

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Figure 4-1
Estimated Extent of Residual Free Product
NMCB Building Expanded Area

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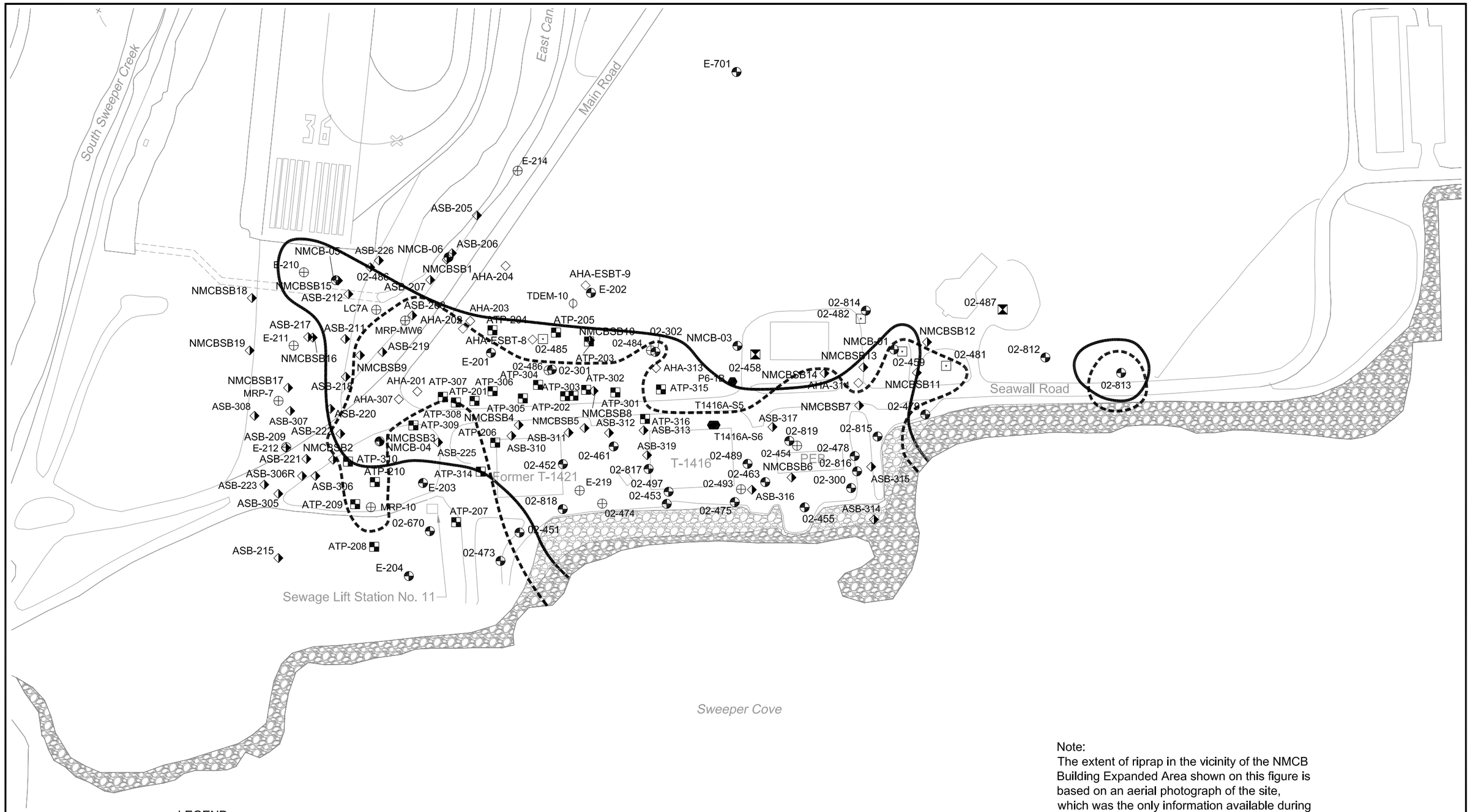

LEGEND

- Monitoring Well
- Abandonded/ Lost Monitoring Well
- Geoprobe Well
- Geoprobe Boring
- Ground Surface Sample
- Groundwater Grab Sample
- Hand Augar
- Bore Hole
- Test Pit
- Approximate Extent of Riprap
- Generalized Extent of Groundwater Contamination in Excess of The Most Stringent Alaska DEC Cleanup Criteria
- Generalized Extent of Soil Contamination in Excess of The Most Stringent Alaska DEC Cleanup Criteria

Note:
The extent of riprap in the vicinity of the NMCB Building Expanded Area shown on this figure is based on an aerial photograph of the site, which was the only information available during preparation of the NMCB Building Expanded Area FFS. The extent of riprap on this figure was not updated based on field measurements collected in September of 2005.

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Figure 4-2
Estimated Potential Extent of Soil and Groundwater Contamination
NMCB Building Expanded Area

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Table 4-1
Recoverable Free Product Volume Estimate
NMCB Building Expanded Area

Plume Area (square feet)	Theoretical Volume Containing Free Product (a) (cubic yards)	Theoretical Volume	Formation Volume (b)		Pore-Space Volume Assuming 100% Saturation (c)	
			Minimum (10 %) (gallons)	Maximum (50 %) (gallons)	Minimum (gallons)	Maximum (gallons)
24,000	21	4,242	424	2,121	127	636

Total Minimum Recoverable LNAPL assuming 12% yield[(d)]: 20

Total Maximum Recoverable LNAPL assuming 12% yield[(d)]: 80

Notes:

(a) Theoretical Volume with free product is calculated based on "apparent" product thickness measurements which are measured in the field. This value was estimated using the product thicknesses and areas for each product thickness contour to come up with cross-sections, and to calculate a volume from the cross-section. The areas for each product thickness were calculated using AutoCAD.

(b) Formation Volume is the calculated Theoretical Volume multiplied by a factor to convert "apparent" free product thickness as measured in the field to "true" or "formation" thickness. The factors (10 and 50%) used to calculate the corrected volume are only an estimate based on literature values for LNAPL thickness in soil as calculated from measured thickness in monitoring wells located within the LNAPL plume. The typical values to convert from apparent to true thickness range from 10 to 50 percent.

(c) The Pore-Space Volume is the Formation Volume multiplied by $n_e(1-S_r)$
where: n_e = effective porosity factor (typically ranges from 0.267 to .421)
S_r = irreducible water content (typically ranges from 5 to 20 percent)
Therefore: $n_e(1-S_r)$ typically ranges from 0.21 to 0.40

(d) The quantity of LNAPL recoverable is calculated by multiplying the Pore-Space Volume by S_y
where: Sy = specific yield (typically ranges from 5-20 % of apparent volume)

Table 4-2
Summary of Analytical Results for Chemicals of Potential Concern
NMCB Building Expanded Area

Chemical	Total Number of Samples Collected (1)	Number of Samples Used in Risk Assessment (2) (3) (4)	Minimum Concentration (5)	Minimum Qualifier	Maximum Concentration (5)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits
Soil										
Volatile Organic Compounds (VOCs)										
1,2,4-Trimethylbenzene	17	12	0.006	J	130	J	mg/kg	02-818	8/12	0.02 - 0.2
1,3,5-Trimethylbenzene	17	12	0.008	J	61	J	mg/kg	02-818	9/12	0.02 - 0.2
2-Methylnaphthalene (6)	17	16	0.6		120		mg/kg	02-451	8/16	0.2 - 1
Benzene	171	143	0.007	J	80		mg/kg	02-474	14/143	0.005 - 4.5
Ethylbenzene	171	143	0.025	J	180		mg/kg	02-474	51/143	0.005 - 0.25
Methylene Chloride	20	15	0.08	J	2.09	J	mg/kg	NMCBSB9	3/15	0.01 - 2.2
Naphthalene	24	19	0.01	J	280		mg/kg	02-451	11/19	0.01 - 0.2
Toluene	170	143	0.016	J	120		mg/kg	02-474	38/143	0.005 - 0.729
Xylenes	169	143	0.022	J	920		mg/kg	02-474	69/143	0.005 - 0.15
Semivolatile Organic Compounds (SVOCs)										
Benzo(a)anthracene	21	17	0.0647		80		mg/kg	02-451	3/17	0.2 - 2
Benzo(a)pyrene	21	17	0.0464		40		mg/kg	02-451	3/17	0.2 - 2
Benzo(b)fluoranthene	21	17	0.0401		43	J	mg/kg	02-451	3/17	0.2 - 2
Carbazole	9	9	107	J	107	J	mg/kg	02-451	1/9	0.2 - 0.8
Dibenz(a,h)anthracene	21	17	0.0126		8		mg/kg	02-451	2/17	0.2 - 2
Indeno(1,2,3-cd)pyrene	21	17	0.0295		16		mg/kg	02-451	3/17	0.2 - 2
Total Petroleum Hydrocarbons (TPHs)										
Diesel Range Organics	171	146	4.08	J	43,000	J	mg/kg	02-475	103/146	4-1100
Gasoline Range Organics	168	145	2.1		27,000		mg/kg	02-474	69/145	0.3-600
Residual Range Organics	4	4	110		1,310	J	mg/kg	02-451	3/4	600

Table 4-2 (Continued)
Summary of Analytical Results for Chemicals of Potential Concern
NMCB Building Expanded Area

Chemical	Total Number of Samples Collected (1)	Number of Samples Used in Risk Assessment (2) (3) (4)	Minimum Concentration (5)	Minimum Qualifier	Maximum Concentration (5)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits
Groundwater										
Volatile Organic Compounds (VOCs)										
1,2,4-Trimethylbenzene	20	17	2.33		752		ug/L	02-452	17/17	--
1,2-Dichloroethane	39	33	1.4	J	1.5	J	ug/L	E-201	2/33	0.5 - 200
cis-1,2-Dichloroethene (7)	39	33	10.5		400		ug/L	02-474	8/33	0.5 - 200
1,3,5-Trimethylbenzene	20	17	2.41		241		ug/L	02-452	17/17	--
2-Methylnaphthalene (6)	56	50	0.02	J	130		ug/L	02-474	31/50	0.2 - 2.17
Benzene	125	103	0.872		360		ug/L	02-493	47/103	0.2 - 200
Dibenzofuran	18	16	0.4		68		ug/L	02-474	6/16	0.2 - 11
Ethylbenzene	128	106	1.1		970		ug/L	MRP-MW6	70/106	0.2 - 1
Methylene Chloride	39	33	3	J	8	J	ug/L	02-474	2/33	1 - 200
Naphthalene	78	66	0.07	J	1,100		ug/L	02-474	47/66	0.2 - 2.17
n-Propylbenzene	20	17	2.9		89		ug/L	02-461	15/17	1 - 10
Toluene	128	106	0.5		1,600		ug/L	LC7A	64/106	0.2 - 25
Trichloroethene	39	33	12	J	24		ug/L	02-474	3/33	0.5 - 200
Xylenes	128	106	1.1	J	5,000		ug/L	LC7A	73/106	0.2 - 2
Semivolatile Organic Compounds (SVOCs)										
Benzo(a)anthracene	58	51	0.02	J	1		ug/L	02-474	12/51	0.2 - 11
Benzo(a)pyrene	58	51	0.01	J	0.14	J	ug/L	02-474	4/51	0.02 - 11
Benzo(b)fluoranthene	58	51	0.01	J	0.5	J	ug/L	02-474	3/51	0.2 - 11
Carbazole	51	46	0.02	J	160		ug/L	02-455	25/46	0.2 - 0.22

Table 4-2 (Continued)
Summary of Analytical Results for Chemicals of Potential Concern
NMCB Building Expanded Area

Chemical	Total Number of Samples Collected (1)	Number of Samples Used in Risk Assessment (2) (3) (4)	Minimum Concentration (5)	Minimum Qualifier	Maximum Concentration (5)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits
Total Petroleum Hydrocarbons (TPHs)										
Diesel Range Organics	115	99	105		44500	J	ug/L	02-475	71/99	100-260
Gasoline Range Organics	112	97	55		33000		ug/L	MRP-MW6	68/97	5-250
Metals										
Arsenic	1	0	NA		NA			NA	NA	NA
Beryllium	1	0	NA		NA			NA	NA	NA
Cadmium	1	0	NA		NA			NA	NA	NA
Chromium	1	0	NA		NA			NA	NA	NA
Lead	18	14	1.6	J	330		ug/L	MRP-MW6	13/14	1
Nickel	1	0	NA		NA			NA	NA	NA

Notes:

(1) Number includes field duplicates.

(2) Number does not include groundwater samples collected at Locations E-701 or TDEM-10 because these wells are not impacted by site contamination.

(3) Number does not include soil samples collected at depths greater than 17 feet below ground surface.

(4) Number does not include groundwater samples analyzed using VPH or AK-102-AA.

(5) Minimum/maximum detected concentration in samples used for the risk assessment.

(6) The surrogate chemical of naphthalene was used for the screening value for 2-methylnaphthalene.

(7) 1,2-Dichloroethene results were pooled with cis-1,2-dichloroethene results for screening.

AK-102-M - State of Alaska analytical method

J - estimated value

mg/kg - milligrams per kilograms

ug/L - micrograms per liter

NA - not applicable, risk assessment was not conducted for this chemical

VPH - volatile petroleum hydrocarbon