FINAL GROUNDWATER CHARACTERIZATION REPORT
RPAC - PORTLAND SITE

March 28, 2001

Submitted to:

Oregon Department of Environmental Quality
2020 S.W. 4th Ave., Suite 400
Portland, Oregon 97201

Submitted for:

RPAC
One Copely Parkway, Suite 309
Morrisville, North Carolina 27560

Submitted by:

AMEC Earth & Environmental, Inc.
7376 S.W. Durham Road
Portland, Oregon 97224

0-61M-10703-0/Task 43

March 28, 2003

0-61M-10703-0/Task 43

Tom Roick
Project Manager, Cleanup & Portland Harbor
Oregon Department of Environmental Quality
2020 S.W. 4th Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Roick:

Re: Response to DEQ Comments on Draft Groundwater Characterization Report, and Submittal of Final Groundwater Characterization Report
RPAC - Portland Site

On behalf of RPAC, AMEC Earth & Environmental, Inc. (AMEC) is submitting to the Oregon Department of Environmental Quality (DEQ) the enclosed Final Groundwater Characterization Report (GCR). This letter serves as cover for the GCR as well as a response to DEQ's letter dated January 28, 2003, that includes DEQ's comments to RPAC's Draft Groundwater Characterization Report (Draft GCR) dated December 2, 2002.

Responses to selected DEQ comments are provided below. DEQ's text from the January 28 letter is provided in italics, and each comment (as appropriate) is followed by RPAC's respective response. The comments are numbered in this letter to facilitate future reference. Note that some responses indicate that appropriate changes have been made within the GCR text; where possible, section references from the GCR document are given for ease of reference.

GENERAL COMMENTS

…DEQ agrees with or acknowledges the following observations:

DEQ Comment 1a:

> *DEQ agrees that some conditions that may have influenced contaminant distribution may no longer exist, such as overflow from the dam at the eastern end of WDL, and direct discharge of high concentration waste into WDL. However, the report should describe in more detail what these conditions are and how those conditions are influencing today's observed distribution. Although this evaluation may be presented in the next modeling document, it is important to evaluate and understand these relationships as modeling typically is based upon contaminant movement away from source areas.*

RPAC Response: A brief discussion of conditions that may have influenced the distribution of RPAC-related constituents in groundwater has been added to a new Section 3.4 of the GCR.

DEQ Comment 1b:

The data supports the idea of a preferential flow path that coincidentally parallels the railroad tracks.

RPAC Response: The GCR does not include mention that a preferential flow path parallels the railroad tracks. The railroad "ballast" (or fill material) that was installed across former Doane Lake early this century extends into groundwater and may represent an area of increased hydraulic conductivity. However, this fill material does not extend to the Willamette River, because former Doane Lake did not extend to the Willamette River. Any fill material that was installed beneath the tracks between former Doane Lake and the beginning of the railroad bridge is likely above the groundwater elevation. Therefore, the railroad ballast (fill) is not considered to be a complete migration pathway for groundwater from the vicinity of the RPAC property to the Willamette River. The groundwater flow at the RPAC Site follows a path consistent with the geological and surface water features in the area. For example, a trough or depression on the top of the basalt zone (discussed in Section 3.4 of the GCR) appears to trend to the north, somewhat parallel to the railroad tracks, and may have an influence on the groundwater flow path. The fact that groundwater flow appears to parallel the railroad tracks is a coincidence and not the result of a preferential flow path associated with the railroad fill material.

DEQ Comment 2:

Despite the presentation of the data however, the Groundwater Report does not provide adequate justification for the conclusion that no additional groundwater monitoring is required at the Rhone Poulenc site and that all data quality objectives (DQOs) have been met. Although there appears to be sufficient groundwater data to support the RI and perform the risk assessment, DEQ does not believe that there is adequate data to fully evaluate trends in contaminant concentration (this includes understanding the seasonal variability of groundwater contaminant concentrations and performing a statistical evaluation of the groundwater data) or evaluate contaminant fate and transport processes in the alluvial WBZ downgradient from source areas. This information will be needed to evaluate contaminant discharges to the Willamette River, evaluate the effectiveness of the groundwater extraction and treatment system and evaluate remedial action alternatives in the FS.

RPAC Response: RPAC agrees with the DEQ that there are sufficient groundwater data to support the RI and perform the risk assessment. It is, therefore, unclear why DEQ feels that there are not enough data to evaluate fate and transport, a component of characterization. RPAC has added further justification and clarification of DQO satisfaction, where appropriate, in the GCR.

However, RPAC has conducted an additional assessment of natural attenuation parameters since submittal of the Draft GCR (during development of the Bioremediation Evaluation Work Plan), and proposes additional groundwater data collection for evaluation of natural attenuation at the RPAC Site. RPAC has, therefore, prepared a groundwater monitoring plan for submittal to DEQ under separate cover. The Post-Characterization Groundwater Monitoring Plan (PCGMP) will include specific objectives for the post-characterization monitoring, as well as a

Field Sampling Plan with a detailed list of monitoring wells and analyses. Other than monitoring for natural attenuation purposes, the PCGMP will be designed to provide additional data for the feasibility study, for evaluating the potential for chemical constituent migration to potential receptors and confirming the stability of the chemical distribution in groundwater.

Contaminant Fate and Transport

There are a number of areas where further data will be required to evaluate contaminant fate and transport processes at the Rhone Poulenc site. These include:

DEQ Comment 3a:

> *Groundwater transport to North Doane Lake and the Willamette River: Additional groundwater data are needed to evaluate groundwater contaminant discharges to the Willamette River and North Doane Lake. Monitoring data will be needed to confirm the groundwater modeling results. The groundwater transport issue needs to be resolved before the hot spot determination can be made.*

RPAC Response: Groundwater analytical results from monitoring wells located near surface water bodies do not represent concentrations of constituents discharging to surface water. The data needs for the Groundwater Transport Evaluation (GTE), which will include modeling of constituent transport to surface water, have been considered and groundwater data presented in the GCR are considered sufficient to conduct the GTE. However, additional groundwater and outfall discharge samples will be collected in the PCGMP, and any post-characterization groundwater results that are inconsistent with previous results and are validated prior to the start of modeling may be considered in the GTE.

DEQ Comment 3b:

> *The role of the clay layer downgradient of the site: Some constituents are at higher concentrations beneath the clay layer, while others are higher above the clay layer. The clay layer is depicted as extending to the Willamette River, and perhaps beneath it, and may have a pivotal role in movement of contamination into the river. This factor needs to be evaluated as part of the source control evaluation. The fate and transport evaluation needs to address how all of these geologic, release, distribution, and degradation factors affect contamination movement and eventual discharge to the Willamette River.*

RPAC Response: Constituents in groundwater detected above and below the clayey silt layer will be addressed in the GTE.

DEQ Comment 3c:

> *Preferential Flow Pathways: The fate and transport analysis must also take into account preferential flow pathways. Rhone Poulenc contaminants have been detected in storm drain manholes along Front Avenue, City of Portland outfalls 22-B and 22-C, and an old pipe discharge along the riverbank. This indicates contamination is moving along these features and discharging into the river, albeit at low concentrations. This has been overlooked in any discussion of contaminant distribution and movement. The Groundwater Report should*

evaluate whether the somewhat isolated contamination detected near former East Doane Lake (EDL) may be contributing to the storm water pathway.

RPAC Response: The GCR now includes a brief discussion of potential preferential flow pathways, presented in a new Section 3.4, and how these preferential flow pathways may have affected constituent distribution. The preferential flow pathway discussion summarizes the following information regarding two perceived preferential flow paths for groundwater, as well as the information provided above regarding the railroad track fill material. Preferential flow pathways will be considered further in the GTE.

Storm drain pipes associated with City of Portland Outfalls 22B and 22C have been previously evaluated for their potential to discharge RPAC-related constituents. RPAC collected water samples of the discharge from the City of Portland Outfalls 22B and 22C, representing non-stormwater discharge, in August 2002. Results of the discharge sampling are included in the Remaining Remedial Investigation Technical Memorandum (RRI TM) dated February 4, 2003. The few RPAC constituents detected in the outfall samples were at concentrations below ecological screening values. Based on the recent outfall discharge results, it does not appear that water impacted by RPAC constituents is currently discharging via Outfalls 22B and 22C, and therefore these storm drain pipes may not represent preferential flow paths for groundwater.

The Historic Drainage Ditch (HDD), located between West Doane Lake (WDL) and the Willamette River, at one time served as an overflow channel for WDL and was reportedly cut off from WDL in 1980. Soil from beneath the HDD, as reported in the RRI TM, generally did not contain RPAC constituents at concentrations greater than screening values. Because the HDD received only occasional overflow from WDL during storm events, and soil sampling results indicated no significant impact, RPAC does not believe the HDD currently or historically represented a source to groundwater or a preferential flow path affecting the distribution of constituents in groundwater.

AMEC conducted a reconnaissance of the Willamette River bank during June 2002, as reported in the RRI TM, and found no evidence of any “old pipe discharge” along the river bank or on the beach. The only discharge pipes with visual evidence of significant discharge were Outfalls 22B and 22C. A 48-inch corrugated metal culvert pipe of unknown origin and a mostly buried pipe also of unknown origin were encountered during the reconnaissance. However, no water was observed flowing out of the 48-inch corrugated metal culvert pipe or the buried pipe, and no evidence of channeling, seeps or erosion was observed at these outfalls. These pipes would contribute little, if any, to the overall discharges in this area.

Further, based on the most recent outfall discharge results, constituents from the former EDL area do not appear to be discharging from the storm drain that flows to Outfall 22B. However, additional outfall discharge sampling is proposed in the PCGMP.

Groundwater Contaminant Concentration Trends

DEQ Comment 4:

The chemical concentration trends presented in Appendices C and D are valuable. The text concludes that there are mostly constant or decreasing concentration trends. Although some of these trends may exist, some of the trends noted appear to be taken out of context, or do not appear to DEQ to constitute trends. For some wells, there are only four data points and for other wells there are large gaps in time. The limited number of data points makes it difficult to draw definitive conclusions. The same limitation in data points applies to apparent decreasing trends as well as increasing trends. Eight data points (generally over a two or four year period) is typically a minimum amount to statistically determine trends. Additional data points are required to support conclusions regarding statistical trends in concentrations.

RPAC Response*:* RPAC agrees that the limited number of data points makes it difficult to draw definitive conclusions with regards to groundwater chemistry trends. The evaluation of PCOPC concentration changes provided in the GCR does not and did not intend to include a statistical analysis. The GCR provides a qualitative interpretation of concentration changes based on the data available for those instances where trends are observable from the relative changes in concentration. The analytical results from any additional groundwater monitoring will be considered in evaluation of groundwater concentration changes in the Remedial Investigation (RI) report, as data are available prior to commencement of the RI report preparation. However, there are no current plans to undertake a statistical analysis in development of the RI report.

DEQ Comment 5:

The Groundwater Report states that benzene concentrations have remained fairly constant in the AL5 monitoring well cluster when they have actually increased at AL5-35, which is the approximate depth of non-aqueous phase liquids (NAPL) in this area of the site. Also, 1,2-dichlorobenzene appears to be present in AL5-35 at high concentrations that are increasing over time. The Groundwater Report states that there are no increasing trends for herbicides, when Silvex is increasing in RP-06-87, MW-04-27, W-11-D, RP-02-66, RP-01-51, and RP-01-65. These increases maybe more important than the apparent decreases, as they are near sources and in the down gradient end of the groundwater contamination plume near the Willamette River.

RPAC Response: As DEQ stated in Comment 4, the limited number of data points makes it difficult to draw definitive conclusions; however, benzene concentrations in the AL5 monitoring well cluster show slight increases (AL5-35) and decreases (AL5-19, AL5-62, and BST5W-74). However, overall, these increases and decreases were not considered to constitute notable changes consistent with other temporal change interpretations in the GCR.

As stated in the GCR, 1,2-dichlorobenzene concentrations at AL5-35 have shown an increase since 1995. However, the 1,2-dichlorobenzene concentrations in AL5-19, AL5-62, and BSTW-74 have remained relatively unchanged or have decreased slightly.

Silvex in W-11-D, RP-02-66, RP-01-51, and RP-01-65 does appear to have increased during the last two of the four most recent sampling events. However, at this time there are too few data points to indicate a long-term increasing trend that would warrant discussion. Constituent concentration trends indicate that the increases in these wells are a short-term fluctuation. Decreasing concentrations noted for silvex in RP-01-65 and MW-04-27 prior to the Spring 2001 sampling event would suggest a possibility of short-term fluctuation in silvex concentrations. In addition, at this time, the magnitude of the silvex increases in RP-02-66, RP-01-51, RP-01-65, and W-11-D is not great enough to indicate an appreciable change in concentrations that would warrant discussion.

As mentioned previously, the GCR provides a qualitative interpretation of concentration changes based on the data available for those instances where consistent trends are observable. Some additional discussion has been added to the text in the GCR; however, the overall conclusions regarding trends of 1,2-dichlorobenzene, benzene, and silvex have not been modified in response to DEQ's comment. Additional groundwater data will be collected as part of the PCGMP, and constituent temporal changes will be reevaluated, as appropriate, in the report.

DEQ Comment 6:

> *Further characterization is required to fully evaluate the conflicting trends in contaminant concentrations -decreasing concentrations in areas near the source area but increasing concentrations in the alluvial WBZ downgradient of the source area -observed at the Rhone Poulenc site.*

RPAC Response: As stated previously, groundwater data sufficient for characterization of nature and extent, and for use in the GTE, have been collected. Although analysis of temporal changes is not a specific DQO of the PCGMP, additional monitoring data that may clarify trends in these concentration changes will be considered in development of the RI report.

SPECIFIC COMMENTS

Section 1.3, Data Quality Objectives

DEQ Comment 7:

> *The list of data quality objectives (DQOs) presented in this section is incomplete. Other DQOs identified in the groundwater monitoring plan section of the DEQ work plan include identification of COPCs and evaluating contaminant migration to the Willamette River. The text should include a succinct statement of how the DQOs have been met.*

RPAC Response: The list of DQOs provided in the GCR is consistent with those listed in the DEQ-approved Draft Extended Groundwater Characterization Monitoring Plan (March 2, 2001). Additional DQOs of the groundwater monitoring program that were identified in the RI Work Plan include identification of PCOPCs and evaluating constituent migration to the Willamette River. COPCs will be identified as part of the risk assessment process based on existing groundwater and other media analytical results; the constituents discussed in this GCR are still considered preliminary, as discussed in Section 2.0. Migration of RPAC-related constituents to

the Willamette River will be addressed as part of the GTE, and may be evaluated using a combination of groundwater analytical results, groundwater modeling, and surface water analytical results. Concentrations of constituents that may be entering surface water bodies can not be determined from monitoring well groundwater data alone. Clarification of DQOs has been provided in the GCR, Section 1.3.

DEQ Comment 8:

> *This section describes a set of additional activities to be performed but does not discuss how these will be performed or whether additional groundwater data is required to support these activities. These include the groundwater extraction treatment system evaluation, the bioremediation evaluation and the assessment of groundwater transport to North Doane Lake (NDL) and the Willamette River.*

RPAC Response: The satisfaction of DQOs and the need for additional groundwater data have been discussed in responses provided above and clarified in the GCR, Section 1.3. The GCR does not include details of how additional work will be performed, but does address the adequacy of data for each specified activity.

Section 2.0, Preliminary Constituents of Potential Concern

DEQ Comment 9:

> *The DEQ work plan identified a comprehensive list of preliminary contaminants of potential concern (PCOPCs). Some of these chemicals have been eliminated. The report should describe how this was done. Without this discussion, it is not possible to confirm chemicals that were screened out as PCOPCs. Although DEQ is in general agreement with the PCOPCs that were identified in the Groundwater Report, the failure to fully outline the screening process raises the possibility (perhaps small) that a chemical not evaluated in this report may have an important contribution to risk that would prompt the need for additional data. The report does state that this is a preliminary list of COPCs, and that a final list will be developed in the risk assessment process. Also, the report should include a screening approach that considers surface water (i.e., AWQCs, surface water SLVs). Some of these numbers may be lower than tap water PRGs. This is particularly true for chemicals that have the potential to bioconcentrate in fish tissue. To account for this exposure route, national ambient water quality criteria for fish consumption should be used as screening values. In addition, ecological screening was not discussed in the Groundwater Report. If ecological screening is to occur at another time, it was not stated. The results of the ecological risk assessment will be a significant element in evaluating site cleanup.*

RPAC Response: The PCOPC discussion in the Draft GCR references other DEQ-approved documents for details regarding PCOPC development; however, additional details have now been provided in the GCR, Section 2.0.

The concentrations of PCOPCs in groundwater adjacent to a surface water feature are not representative of water at the sediment interface, and any evaluation of groundwater and surface water interaction will consider both groundwater and surface water analytical results. Further, screening of groundwater against surface water criteria is more appropriately

performed as part of the ecological risk assessment than in the GCR, where screening was provided primarily for presentation and discussion purposes. The distributions of select PCOPCs in groundwater are provided in the GCR as distribution figures in Appendix C, with PCOPC concentrations posted. However, in response to DEQ's request, analytical results for constituents included in Appendix C from groundwater samples collected near the Willamette River have been screened against ten times the surface water ecological receptor (DEQ Level II freshwater chronic SLVs; December 2001) and human health screening criteria (National Recommended Water Quality Criteria for human health, consumption of water plus organism; November 2002). As stated in the GCR, screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only. An evaluation of groundwater discharge to surface water, including the Willamette River and NDL, will be included in the GTE.

Section 3.0, Groundwater Evaluation

DEQ Comment 10:

EPA Region 9 PRGs were used for human health screening (Table 3-2). However, the October 2000 PRGs were updated by EPA in October 2002. The current PRGs should be used for screening with the following exceptions: Since publication of the 2002 PRGs, EPA has withdrawn the new toxicity factors for ethylbenzene and PCE; DEQ considers it appropriate to use the old 2000 PRGs for screening these chemicals.

RPAC Response: The Revised GCR includes screening of constituent concentrations against the most recent (2002) PRGs, with exceptions as noted by DEQ (Table 3-2).

DEQ Comment 11:

The PRGs for herbicides are incorrect in Table 3-2. It appears that the chemical names may have been shifted relative to the CAS numbers and PRGs. It also appears that the correct (2000) PRGs were used in developing the figures in Appendix C.

RPAC Response: The Revised GCR includes a corrected Table 3-2, using the most recent (2002) PRGs.

DEQ Comment 12:

The statement that the fill does not extend to the Willamette River is inaccurate. The cross sections in this regard are also inaccurate. For example, the upper 20 - 30 feet of the Wacker property near the river is fill (RP-07 location). This should be depicted on the cross section even though much of the fill placed near the Willamette River is hydraulically placed river sediments and thus may be indistinguishable from the alluvium. However, a silt unit is typically encountered at the base of the fill. This may be significant with respect to contaminant transport and should be discussed.

RPAC Response: A comprehensive review of available boring logs was completed to address and further interpret lithologic unit (Fill/Shallow Alluvium Zone, Alluvium Zone, and Basalt Zone) presence and thickness. The RP-07 monitoring well cluster located on the Wacker property

along the Willamette River terrace, has been interpreted to contain approximately 25 feet of fill material and Figures 3-6 and 3-10 have been revised to include this fill unit. All of the cross sections have been re-evaluated and revised using the Groundwater Modeling System (GMS, version 3.1) software program, which is currently being used for groundwater modeling and future data collection/evaluation purposes. The correlation of subsurface conditions was based upon information provided on the RPAC Site boring logs. The most reliable data were obtained from the boring logs where continuous and/or discrete soil/rock core samples were collected from individual borings. At many monitoring well boring locations only grab samples of return drill cuttings were collected, and were considered accordingly. Variability noted on the boring logs is the result of numerous field logging personnel, and the drilling and sampling methodologies used. All of these details were given much consideration and attention for the geologic interpretations made, and for the development of the revised geologic cross sections.

All cross section lines, except E-E', were modified slightly, so that cross section lines intersect individual monitoring wells or well clusters. In the Draft GCR, some data presented on the cross sections were obtained from wells offsetting the transect lines up to 250 linear feet. Due to the spatial and vertical variability of the site geology, the revised cross sections presented in the Final GCR directly intersect boring locations, and borings are not projected to the cross section transect. Refer to Section 3.1 and Geologic Cross Section Figures 3-6 through 3-10 for further discussion and graphical presentation of RPAC Site subsurface conditions. Additional evaluations with respect to subsurface geologic conditions and their role in constituent fate and transport will be addressed in the GTE.

Section 3.1.3, Basalt Characterization Zone

DEQ Comment 13:

> *The report should discuss the flow top/gravel zone that is present at the basalt alluvium interface. Does this unit behave more like the basalt or the alluvium or something different altogether? How is this unit characterized? Is it similar to the gravels encountered at RP-07 on the Wacker site.*

RPAC Response: The uppermost surface of the basalt beneath the RPAC Site is generally characterized as moderately weathered to partially decomposed, and at some locations exhibits soil-like properties. Some of the historic boring logs have identified this thin layer as an "alluvial gravel", and it is characterized as consisting of subangular to angular basalt gravels/fragments in a clay matrix. This layer is thin (<5 feet thick) and somewhat discontinuous. A detailed review of boring logs indicates that some of these interpretations may be incorrect. The interpretations made were in part due to limited or non-discrete and/or in-situ sample collection and drilling methodologies used at many locations during past explorations. The uppermost, weathered to partially decomposed basalt was identified and classified as a portion of the Basalt Characterization Zone. The uppermost basalt surface is completely different in physical characteristics than the alluvial gravel encountered elsewhere. At locations where alluvial gravel was encountered, the lithology was generally described as rounded to subrounded gravel in a silty sand or sand matrix. This alluvium is generally thicker, discontinuous, and consists primarily of basalt clasts with minor quantities of terrestrial gravel such as quartz and monzonite, supporting the presence of an alluvial depositional feature. Sections 3.1.2 and 3.1.3 of the GCR include further discussion.

DEQ Comment 14:

The term "poorly fractured" is unfamiliar and its meaning is not clear. Does this term distinguish fresh or relatively fresh basalt from weathered basalt or does it infer that the fractures are not well developed in that they are discontinuous? If there are few fractures, a better descriptive term would be widely spaced fractures or massive basalt.

RPAC Response: The term "poorly fractured" was a typographical error and has been replaced with standard descriptors for rock discontinuities; in this case, "slightly fractured" (also synonymous with "widely spaced'). The descriptive criteria refer to the density or natural fracture/joint spacing occurring within a base length of rock. The number of fractures is divided by the length and is reported as fractures per foot or fractures per meter, which is then correlated to the appropriate descriptor. The fracture density is independent of rock weathering descriptors. Clarification of fracture density and weathering conditions encountered within the basalt zone at the RPAC Site are discussed in GCR Section 3.1.3.

Section 3.1.4, Vertical Hydraulic Gradient

DEQ Comment 15:

An upward gradient between the basalt and the alluvium has been identified at a few locations (e.g., W-11, MW-11). This is consistent with the geologic and hydrogeological setting of the site and important to chemical migration and needs to be discussed further in the Groundwater Report.

RPAC Response: The water level for the Shallow Alluvium/Fill monitoring well W-11-S on Figures 3-3 and 3-5 was mislabeled in the GCR. The gradient at W-11-S between the Shallow Alluvium/Fill and the Alluvium Zone depicted on these figures should be downward. This error has been corrected in the Revised GCR. The vertical gradient between the Alluvium and Basalt Zones at W-11 is nearly neutral. RPAC agrees that there is a slight upward gradient between the Basalt and Alluvium Zones during the Spring 2002 monitoring event at monitoring well cluster MW-11. The localized, slight upward gradient at MW-11 does not appear be significant to the overall hydrogeologic characteristics of the site, and the description of the overall vertical gradient in Section 3.1.4 remains the same in the Final GCR.

Section 3.3, Constituent Distribution and Temporal Changes

DEQ Comment 16:

This section should include a qualitative discussion of contaminant concentration changes that could be due to different sampling methodologies, contactors and analytical methods.

RPAC Response: RPAC has included such a discussion in Section 3.2 of the GCR.

DEQ Comment 17:

Somewhere in this section there should be a discussion of the limited areal coverage of the basalt groundwater monitoring network. For example, elevated levels of 1,2-

dichlorobenzene have been detected in the deep alluvium at the RP-06 and W-15 locations. These locations are on the lateral edges of the dissolved VOC plume. Is it possible that the basalt WBZ is contaminated in these areas as well? DEQ is not recommending additional basalt monitoring wells, rather that the uncertainty should be acknowledged and discussed.

RPAC Response: In any groundwater monitoring program, the groundwater quality information available is limited to the locations where monitoring wells are present or where samples have been collected. A statement to this effect has been added to the GCR. Although basalt wells may not be located directly adjacent to each and every alluvium monitoring well where PCOPCs are detected, basalt wells are located downgradient from these locations and the basalt monitoring network is sufficient for characterization of groundwater for the RI. Should additional information in specific areas be required for remedial design, additional monitoring wells may be installed in those specific areas, as necessary and appropriate.

Section 3.3.1, VOC Distribution and Temporal Changes

DEQ Comment 18:

1,2-Dichlorobenzene: The dichlorobenzene analysis should note that results are reported via SVOC and VOC analyses. This may influence the observed contaminant concentration trends.

RPAC Response: Overall, 1,2-dichlorobenzene results are from EPA Method 8260B analytical test methods. EPA Method 8270 results are only presented for a few monitoring wells where this laboratory method provided the only available data for the October 1990 groundwater sampling event. This is indicated on Figures D-2, D-3, and D-4 where EPA Method 8270 results are presented, and are clearly labeled. The 1,2-dichlorobenzene distribution figures (Appendix C) include only EPA Method 8260B results.

DEQ Comment 19:

Summary of VOC Distribution and Temporal Changes: The report states "downgradient VOC concentrations are decreasing or remaining stable over time." There are examples of increases in 1,2-dichlorobenzene concentrations downgradient of the source area. These include monitoring wells W-19 (deep and intermediate), AL-5-35, AL-5-65, and W-10.

RPAC Response: RPAC disagrees with DEQ's assessment that increasing trends of 1,2-dichlorobenzene groundwater concentrations were noted in monitoring wells W-19-I and D, AL5-62, and W-10. RPAC agrees that 1,2-dichlorobenzene concentrations have increased over the last two of the four most recent sampling events in monitoring well AL5-35, located downgradient of the source area. As stated previously, the GCR provides a qualitative interpretation of concentration changes based on the data available for those instances where trends are observable, and changes in concentration during the four most recent sampling events generally were not considered to constitute a "trend". However, the text in the GCR has been changed to read "downgradient VOC concentrations are generally decreasing or remaining stable over time."

DEQ Comment 20:

The Temporal figures presented in Appendix D are very useful. However, monitoring well W- 19 should be added to the appendix because there is groundwater data that goes back to 1990 at this location and it is near the Willamette River.

RPAC Response: RPAC has added the temporal data for monitoring well W-19, and included these data in Appendix D.

Section 3.3.2, Phenolic Constituent Distribution and Temporal Changes

DEQ Comment 21:

2,4-Dichlorophenol: The 2,4-dichlorophenol distribution should be contrasted with that of 1,2- dichlorobenzene (either here or in Section 4.4). Concentrations of 2,4-dichlorophenol are very high close in the source area but rapidly attenuate. Concentrations in the shallow fill at MW-5 and alluvial deposits at RP-04 help delineate the main source area. However, concentrations drop rapidly downgradient of MW-5, downgradient of RP-04 and in the alluvial zone at MW-5. This may be significant for understanding contaminant fate and transport processes. In addition, the Groundwater Report should discuss the pronounced decline in 2,4-dichlorophenol concentrations at the RP-04 location. Is this decline related to the well installation in some way or is it a factor of contaminant fate and transport processes or the make up of the source area?

RPAC Response: RPAC has included this discussion in Section 3.3.2 of the GCR. There is no evidence to suggest the decline in 2,4-dichlorophenol at RP-04 location is related to well installation procedures.

DEQ Comment 22:

DEQ does not agree with the statement that pentachlorophenol and 2-chlorophenol detections beyond the BNSF railroad and the LA are unrelated to historical operations. These constituents were detected historically in W-11-D, MW-04, W-09, MW-06, and AL5.

RPAC Response: Pentachlorophenol was not detected in the monitoring wells listed in DEQ's comment. There are other potential sources of pentachlorophenol north of the railroad tracks, including the former MGP operations at the NW Natural/Gasco property. RPAC maintains that pentachlorophenol north of the railroad tracks may not be related to historical RPAC operations.

2-Chlorophenol has been detected in all of the monitoring wells listed in DEQ's comment except MW-06-S. Most detections of 2-chlorophenol in groundwater are from samples collected more than 10 years ago. However, based on the detection of 2-chlorophenol at monitoring wells in the IA, the detection of 2-chlorophenol at monitoring well ASW-06 (at Metro) cannot be ruled out as unrelated to RPAC. The GCR text regarding 2-chlorophenol has been modified.

Section 3.3.3, Herbicide Distribution and Temporal Changes

DEQ Comment 23:

DEQ disagrees with the statement that 2,4-D detections at RP-01 are not related to site detections, or is a laboratory error. 2,4-D was detected in W-11-S and W-11-D. 2,4-D has been detected in water discharging to the river via the storm drain and leakage along an old pipeline on the river bank.

RPAC Response: 2,4-D has been detected in W-11-S in one sample in 1995 at a concentration of 0.32 micrograms per liter (µg/L) and in one sample in 2001 at 1.13 µg/L, and has not been otherwise detected above reporting limits of 0.773 and 0.5 µg/L. The project database shows no record of 2,4-D having been detected at W-11-I, W-11-D, or W-11-B. In August 2002, 2,4-D was detected in City of Portland Outfall 22B at a concentration of 0.591 µg/L. The detection at RP-01-65, located downgradient of the W-11 wells, was 380 µg/L in Fall 2000, and was below reporting limits of 0.773, 0.179, and 0.5 µg/L in Spring 2000, Spring 2001, and Spring 2002, respectively. Concentrations of 2,4-D greater than 10 µg/L are not found in any characterization zone beyond the AL2 monitoring well cluster. The results at the RP-01 monitoring well cluster, at monitoring wells between the southern LA and RP-01, and at Outfall 22B, all indicate no 2,4-D concentrations near the magnitude of the concentration reported at RP-01-65 in Fall 2000. Therefore, it is not likely that the 2,4-D concentration in RP-01-65 from Fall 2000 is accurate. A summary of this information has been provided in the Final GCR; however, the conclusion regarding the source of the concentration at RP-01-65 has not been modified.

DEQ Comment 24:

DEQ does not agree that only decreasing trends are seen wherever 2,4-D is detected, as there appear to be increasing trends at AL5 MW-04 and W-11.

RPAC Response: 2,4-D concentration trends were re-evaluated for monitoring wells AL5, MW-04 and W-11. No distinct or quantitative increasing trends were identified (as noted by DEQ); in fact, the concentrations fluctuate. The GCR text has not been modified in response to DEQ's comment.

Section 3.3.4, Dioxin/Furan Distribution and Temporal Changes

DEQ Comment 25:

Summary of Dioxin/Furan Distribution and Temporal Changes: The statement about "industrial or municipal sources distinct from RPAC" needs further justification. Given the widespread occurrence of dioxin and furans at the Rhone Poulenc site, detailed analysis that supports this conclusion must be provided.

RPAC Response: The content in the GCR regarding dioxin distribution is intended to be a summary of a brief evaluation conducted for the purposes of the GCR. Further evaluation and justification will be provided in the RI report. The GCR text has not been modified.

Section 3.3.5, Insecticide Distribution and Temporal Changes

DEQ Comment 26:

Dieldrin: This discussion should note that chlorinated pesticides, such as dieldrin, tend to be long lived in the environment. As a result, the groundwater concentrations of dieldrin have not changed appreciably over time.

RPAC Response: RPAC agrees with DEQ's assessment of dieldrin characteristics. However, this is typically considered a fate and transport issue, and for consistency of the content of the GCR, discussion of chemical properties will be provided in the GTE and/or the RI report, as appropriate. The GCR text has not been modified.

Section 3.3.6: Metal Distribution and Temporal Changes

DEQ Comment 27:

The sentence regarding dissolved arsenic detections at RP-02-31 needs some clarification and/or further justification.

RPAC Response: A typographical error was made in the statement "The distribution of dissolved arsenic concentrations demonstrates dissolved arsenic concentrations detected at monitoring well RP-02-31 **appear to be** associated with an RPAC source." Instead, the statement was intended to say "…..dissolved arsenic concentrations detected at monitoring well RP-02-31 **does not appear to be** associated with an RPAC source." This statement has been corrected in the GCR text. This is supported by the fact that much lower concentrations were present in wells located upgradient and along the groundwater flow path axis from RP-02-31.

Sections 4.2 - 4.4: Natural Attenuation

DEQ Comment 28:

Although the Groundwater Report makes a good case for natural attenuation being an explanation for apparent groundwater contamination plume stability, it is hard to understand this through dozens of graphs. It would be more useful to contour the natural attenuation data with respect to the NAPL source zone and groundwater contamination plume. John Wilson, one of the long time contributors to the field of natural attenuation, uses contouring to depict the changes in natural attenuation parameters with respect to groundwater contaminant plumes and sources.

RPAC Response: Figures including contours for the natural attenuation parameters/data for the RPAC Site will be presented in the Draft Bioremediation Work Plan.

DEQ Comment 29:

In the past it has been difficult to determine how to depict contamination at this site by contouring. The data presentation in this report narrows to specific chemicals and natural attenuation parameters that could be depicted with contouring. It would be useful to see the

NAPL source area and dissolved plume compared to natural attenuation parameters that could show area of active attenuation processes and anaerobic versus aerobic zones.

RPAC Response: Comparison of the NAPL source area and dissolved groundwater plume to natural attenuation parameters may be presented and discussed in the Bioremediation Evaluation Work Plan or Report, as appropriate. The comparison will be limited to available data collected to date.

DEQ Comment 30:

Natural attenuation monitoring should continue in the wells that are used to identify the axis of the groundwater contamination plume in preparation for the FS.

RPAC Response: Natural attenuation parameters are proposed to be collected from selected monitoring wells located along the groundwater flow path, and are identified and discussed in the PCGMP.

Section 5.0, Summary and Conclusions

DEQ Comment 31:

The report, here and elsewhere, refers to the area of the site "beyond N.W. Front Avenue." The report should acknowledge the existence of the Willamette River and note which chemical are discharging to the Willamette River at concentrations exceeding AWQC and/or surface water SLVs.

RPAC Response: RPAC has relabeled monitoring well clusters located "beyond N.W. Front Avenue" as "the distal monitoring wells". Essentially, the distal monitoring wells are defined as the furthest downgradient RPAC Site monitoring well clusters (RP-01, RP-02, RP-07, and W-19) located adjacent to the Willamette River. However, the GCR does not include identification of chemicals discharging to the Willamette River, regardless of screening values, because groundwater quality at monitoring wells is not representative of water quality at the sediment interface. As stated previously, the GTE will address potential migration of constituents in groundwater to surface water.

DEQ Comment 32:

Concentrations of phenols decrease rapidly with depth.

RPAC Response: RPAC agrees and has clarified this in the GCR text.

DEQ Comment 33:

The summary should include more detail regarding chemical fate and transport processes and how these impacts observed contaminant distributions (see General Comments.

RPAC Response: A discussion of potential influences on constituent distribution in groundwater has been provided in a new Section 3.4 in the GCR. This information is also now summarized in Section 5.0 of the GCR.

DEQ Comment 34:

On page 35, the discussion of NAPL occurrence should be folded into the first bullet item. This is a major factor in controlling the distribution of groundwater contaminants.

RPAC Response: RPAC has made the requested change.

DEQ Comment 35:

DQO Satisfaction: As stated in the General Comments, this discussion requires further justification. The Groundwater Report fails to provide sufficient analysis to determine that the DQOs have been satisfied. This not only includes DQOs that DEQ believes require further characterization (i.e., FS GETS evaluation, contaminant fate and transport), but also DQOs that DEQ tends to agree have been met such as nature and extent and supporting the risk assessment.

RPAC Response: As stated previously in this letter (under "General Comments"), further justification of DQO satisfaction has been provided in the GCR.

DEQ Comment 36:

Temporal Patterns: Contaminant concentrations do increase at some locations, particularly in the alluvial WBZ downgradient of the source area.

RPAC Response: The conclusions in the GCR have been modified as appropriate.

DEQ Comment 37:

DEQ disagrees that the conditions that facilitated dioxin transport no longer exist. Elevated levels of dissolved dichlorobenzenes may continue to facilitate contaminant transport.

RPAC Response: The potential for facilitated transport is being further evaluated as part of the Bioremediation Evaluation, and may also be addressed in the GTE. The statement in the GCR regarding current conditions for facilitated transport of dioxins has been removed.

DEQ Comment 38:

Table 3-1: Though this is generally an excellent table, DEQ would like to see an additional column: Date Installed.

RPAC Response: Per DEQ's request, RPAC has included the well installation dates in Table 3-1.

DEQ Comment 39:

Table 3-2: As stated earlier, this table should also include surface water screening criteria that are protective of aquatic receptors including protection of the benthic community and fish consumption exposure pathways.

RPAC Response: As stated previously, groundwater results from wells near the Willamette River have been compared to surface water screening criteria. The results of this screening, including the screening values used, are presented in Table 3-3 of the GCR.

DEQ Comment 40:

Table 3-3a and b: These tables are a useful addition. Constituent analysis of NAPL should be included when available.

RPAC Response: A list of analytical test methods and a discussion of validated NAPL and residual NAPL soil and groundwater results collected to date will be submitted under separate cover in the NAPL Evaluation Work Plan (NAPL WP). Please note that Tables 3-3a and 3-3b have been renumbered to Tables 4-4a and 4-4b in the GCR.

DEQ Comment 41:

Figure 3-3: The water elevations in the vicinity of NDL are anomalous due to the influence of NDL on shallow groundwater and could benefit from some additional interpretation.

RPAC Response: A brief explanation for the groundwater elevation "anomaly" measured in three shallow alluvial monitoring wells located near the Northwest Drainage Pond (NDP) is provided in Section 3.1.2. The groundwater depression that is present in the vicinity of the NDP will be discussed in further detail in the pending GTE.

Figures 3-6 through 3-10:

These cross sections could also benefit from some additional interpretation that considers the influences of stratigraphy on fate and transport of contaminants in groundwater.

DEQ Comment 42a:

Cross Sections A-A' and E-E' should acknowledge that (fill) is present at the RP-07 location to a depth of -25'.

RPAC Response: Additional, comprehensive reviews of boring logs and geologic interpretations were completed. DEQ is correct in regards to the fill material present at RP-02. The fill present at the RP-07 monitoring well cluster extends to a depth of approximately 25 feet, and has been added to Cross Sections A-A' (Figure 3-6) and E-E' (Figure 3-10). Inadvertently, the fill material was also not projected across the length of Cross Section E-E', which has been corrected to reflect this subsurface condition.

DEQ Comment 42b:

The Cross Sections should include a cross section that goes along the axis of the groundwater plume and through RP-01, which has the highest groundwater concentrations and at least on the surface seems like it is along the axis of the groundwater contaminant plume. They should consider taking C-C' through RP-01, bending at AL6-96.

RPAC Response: RPAC has considered the change to Cross Section C-C' suggested by DEQ and, as previously discussed in this letter, modifications to the cross section transect location have been made to directly intersect additional well clusters. Cross section C-C' was modified to bend from W-12 to W-11 then terminate at RP-02. This was done in lieu of taking C-C' through RP-01 from AL6-96 because it provides better aerial RPAC Site coverage and supports the conceptual three-dimensional groundwater model. Both the A-A' and C-C' cross sections generally parallel the groundwater flow path and, with the inclusion of monitoring well cluster W-11, intersect the constituent distribution axis (refer to Figure 3-5).

DEQ Comment 42c:

Cross Section E-E'. There appear to be discrepancies between this cross section and C-C'. RP-02 and RP-07 are common to both, and the discrepancies are with RP-02 on both sections. There is no surface fill on E-E', and C-C' shows 7 or 8 feet of fill. A silt layer is shown intersecting RP-02 below the second screened interval in C-C', but at the first screened interval in E-E'. This would mean a big difference in one or the other cross section, depending on where this silt was really intercepted in RP-02.

RPAC Response: RPAC agrees and has corrected the discrepancies identified by DEQ, and has further expanded the geologic boring log review to correlate information provided on the cross sections, Figures 3-6 through 3-10.

DEQ Comment 43:

Figure C-23 showing the distribution of 2,3,7,8-TCDD. The concentration in W-19-1 of 0.55 pg/l exceeds the screening criteria of 0.45 pg/l, therefore should be shown in green and not purple.

RPAC Response: The drafting error has been corrected on Figure C-23.

DEQ Comment 44:

Please have a revised Groundwater Characterization Report that includes a proposed groundwater monitoring program that addresses the following data needs:

- *Evaluate contaminant concentration trends through a series of statistical analyses;*
- *Evaluate contaminant discharges to the Willamette River;*
- *Evaluate the effectiveness of the groundwater extraction and treatment system;*
- *Evaluate remedial action alternatives in the feasibility study;*

- *Evaluate natural attenuation parameters along the groundwater contamination plume axis, adjacent to the Willamette River, at the margins of the NAPL, and near WDL and NDL.*

RPAC Response: As mentioned previously, RPAC has prepared a groundwater monitoring plan for submittal to DEQ under separate cover. The PCGMP will include specific objectives for the post-characterization monitoring, as well as a Field Sampling Plan with a detailed list of monitoring wells and analyses.

Please contact Roger Gresh at (503) 639-3400 if you have any questions regarding the GCR.

Sincerely,

AMEC Earth & Environmental, Inc.

Teresa A.R. Wilson, R.G.
Geologist

Roger T. Gresh, P.G.
Project Manager

Scott Kranz, R.G.
Senior Hydrogeologist

Attachment: Final Groundwater Characterization Report

TARW/lp

c: R. Ferguson, RPAC
J. Benedict, CHBH&L

Table of Contents

Page

EXECUTIVE SUMMARY iii

1.0 INTRODUCTION 1
- 1.1 Site Description 2
- 1.2 Site History 2
- 1.3 Data Quality Objectives 3

2.0 PRELIMINARY CONSTITUENTS OF POTENTIAL CONCERN 4

3.0 GROUNDWATER EVALUATION 5
- 3.1 Summary of Hydrogeologic Setting 6
  - 3.1.1 Fill/Shallow Alluvium Characterization Zone 7
  - 3.1.2 Alluvium Characterization Zone 8
  - 3.1.3 Basalt Characterization Zone 10
  - 3.1.4 Vertical Hydraulic Gradient 11
- 3.2 Groundwater Characterization Activities 11
- 3.3 Constituent Distribution and Temporal Changes 12
  - 3.3.1 VOC Distribution and Temporal Changes 14
  - 3.3.2 Phenolic Constituent Distribution and Temporal Changes 18
  - 3.3.3 Herbicide Distribution and Temporal Changes 20
  - 3.3.4 Dioxin/Furan Distribution and Temporal Changes 22
  - 3.3.5 Insecticide Distribution and Temporal Changes 23
  - 3.3.6 Metal Distribution and Temporal Changes 24
- 3.4 Factors Influencing Constituent Distribution in Groundwater 25
- 3.5 NAPL 27

4.0 NATURAL ATTENUATION 29
- 4.1 Physical and Chemical Groundwater Conditions 29
- 4.2 Redox Relationships 29
  - 4.2.1 Redox Mediators 29
  - 4.2.2 Redox Indicators 30
- 4.3 Biological Activity 33
- 4.4 Evaluating Biodegradation 34
  - 4.4.1 Relating Constituent Distribution to Geochemical and Biological Indicator Trends 34
  - 4.4.2 Evaluation of Constituent Fate and Putative Degradation Products 36
  - 4.4.3 Natural Attenuation Summary 38

5.0 SUMMARY AND CONCLUSIONS 39

6.0 REFERENCES 42

LIMITATIONS 44

List of Tables

Table 2-1 Preliminary Constituents of Potential Concern for Groundwater
Table 3-1 Groundwater Sampling Locations and Sample Collection Dates
Table 3-2 Preliminary Screening Values Associated with Preliminary Constituents of Potential Concern
Table 3-3 Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Table 3-4a Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
Table 3-4b Non-Aqueous Phase Liquid Occurrence in Groundwater Monitoring Wells
Table 4-1 Groundwater Natural Attenuation Parameter Results
Table 4-2 Summary of Chemical, Geochemical, and Biological Parameters at Selected Alluvium Wells

List of Figures

Figure 1-1 Site and Vicinity Map
Figure 3-1 Groundwater Sampling Locations And Monitoring Wells Displayed by Characterization Zones
Figure 3-2 Groundwater Elevations, Fill/Shallow Alluvium Zone, Spring 2002
Figure 3-3 Groundwater Elevations, Alluvium Zone, Spring 2002
Figure 3-4 Groundwater Elevations, Basalt Zone, Spring 2002
Figure 3-5 Geological Cross Section Locations
Figure 3-6 Simplified Geological Cross Section, Cross Section A-A'
Figure 3-7 Simplified Geological Cross Section, Cross Section B-B'
Figure 3-8 Simplified Geological Cross Section, Cross Section C-C'
Figure 3-9 Simplified Geological Cross Section, Cross Section D-D'
Figure 3-10 Simplified Geological Cross Section, Cross Section E-E'
Figure 3-11 NAPL Occurrence in Soil and Groundwater

Appendices

Appendix A Changes in Groundwater Elevations for Selected Monitoring Well Locations
Appendix B Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
Appendix C Selected Preliminary Constituents of Potential Concern Groundwater Distribution Figures
Appendix D Temporal Concentration Changes for Selected Monitoring Well Locations and Constituents
Appendix E Selected Natural Attenuation Evaluation Parameter Groundwater Figures

EXECUTIVE SUMMARY

The Final Groundwater Characterization Report (GCR) presents an evaluation of the analytical results from groundwater samples collected during the Remedial Investigation/Feasibility Study (RI/FS) at the RPAC Portland Site, including a discussion of the distribution of constituents in groundwater, along with geological information, groundwater elevations, and a summary of natural attenuation parameters in groundwater. The results from all groundwater samples collected from individual monitoring wells at the RPAC Site were used in the evaluation. The primary purpose of this document is to provide a characterization of the nature and extent of the preliminary constituents of potential concern (PCOPCs) in the groundwater at the RPAC Site.

The distribution of PCOPCs in groundwater at the RPAC property is associated with general manufacturing activities that previously occurred in each area of the RPAC property. Sufficient validated groundwater analytical results are now available to satisfy the nature and extent, human heath and ecological risk assessment (HHRA and ERA), hot spot assessment, and groundwater transport evaluation (GTE) Data Quality Objectives (DQOs) of the groundwater characterization portion of the RPAC Site RI. Additional groundwater sampling is planned for the RPAC Site to evaluate natural attenuation, to provide additional data for the FS, and to evaluate the potential for chemical constituent migration to receptors. A separate Post-Characterization Groundwater Monitoring Plan (PCGMP) is being prepared for submittal to DEQ that provides information regarding additional groundwater data collection.

Non-aqueous phase liquid (NAPL) or NAPL residual has been identified in a limited portion of the RPAC property. Further NAPL investigation to fully characterize NAPL at the Site will be proposed in the forthcoming NAPL Evaluation Work Plan.

In general, the limited number of discernable temporal patterns or trends in PCOPC concentrations over time demonstrate the relative stability of the solute phase groundwater plumes at the RPAC Site. Increases that have been observed are generally not seen over more than two sampling events. For certain PCOPCs, concentration decreases have been observed.

Natural attenuation field measurements and analytical results from groundwater samples demonstrate microbial activity is present but variable at the RPAC Site and microbial populations range from very low to extremely high. Although variable, the laboratory and field analytical results demonstrate that natural attenuation is occurring at the RPAC Site and that PCOPCs are being reduced in concentration. Additional natural attenuation evaluation activities will be conducted as part of the Bioremediation Evaluation, as well as groundwater sampling to be conducted under the PCGMP.

Several mechanisms appear to affect the transport of constituents at the RPAC Site, including a preferential flow path related to the hydrogeology at the Site. Possible

preferential flow paths include a trough in the basalt within the Lake Area, the historic drainage ditch, a storm sewer along N.W. Front Avenue, railroad fill material, and shallow fill material. However, characterization results and other information indicate that, other than the basalt trough, these features are not providing a significant flow path for groundwater constituent migration. Preferential flow pathways will be considered further in the GTE. Potential facilitated transport mechanisms, which may have contributed to the current constituent distribution in groundwater, will be evaluated as part of the Bioremediation Evaluation and Section 3.4 of the GCR.

1.0 INTRODUCTION

The Final Groundwater Characterization Report (GCR) presents an evaluation of the analytical results from groundwater samples collected during the Remedial Investigation/Feasibility Study (RI/FS) at the RPAC Portland Site, including a discussion of the distribution of constituents in groundwater, along with geological information, groundwater elevations, and a summary of natural attenuation parameters in groundwater. The primary purpose of this document is to provide a characterization of the nature and extent of the preliminary constituents of potential concern (PCOPCs) in the groundwater at the RPAC Site. The results from all groundwater samples collected from individual monitoring wells at the RPAC Site were used in the evaluation. The RPAC property is located at 6200 N.W. St. Helens Road in Portland, Oregon.

When developing the GCR, RPAC considered the following:

- The Consent Order (the Order) between the Oregon Department of Environmental Quality (DEQ) and RPAC dated July 8, 1999;
- The Remedial Investigation Work Plan, Rhone-Poulenc AG Company, Portland, Oregon (RI Work Plan) dated April 1999 (DEQ 1999);
- The Draft Extended Groundwater Characterization Plan (EGCP) dated March 2, 2001 (AMEC 2001a); and
- The Final RPAC Project Management Plan (PMP) dated March 30, 2001 (AMEC 2001b).

Five groundwater characterization events were conducted: Spring and Fall 2000; Spring and Fall 2001; and Spring 2002. The Fall 2001 event included groundwater and surface water level measurements only and not sampling for laboratory analysis. The analytical results from groundwater samples collected prior to 2000 have been considered in evaluation of groundwater characterization of the RPAC Site; however, because constituent concentrations in groundwater change over time (e.g., due to natural biodegradation processes and groundwater migration), specific emphasis has been placed on the more recent groundwater analytical results in this evaluation. The final validated analytical results from the recent groundwater characterization events are presented in the following documents:

- Final Spring and Fall 2000 Groundwater Data and Evaluation (2000 Groundwater Report) dated July 31, 2001 (AMEC 2001d);
- Focused Spring 2001 Groundwater Characterization Event, Groundwater Monitoring Report (Spring 2001 GMR) dated October 4, 2001 (AMEC 2001e);

- Fall 2001 Groundwater Monitoring Report (Fall 2001 GMR) dated January 11, 2002 (AMEC 2002a); and
- Focused Spring 2002 Groundwater Characterization Event Groundwater Monitoring Report (Spring 2002 GMR) dated July 31, 2002 (AMEC 2002d).

1.1 Site Description

The RPAC property is located in Section 30 of Range 1W, Township 1N and is presented on the RPAC Site location map, Figure 1-1. The Site is located in a heavily industrialized area northwest of Portland, southwest of the Willamette River. The area surrounding the RPAC property was once predominated by lakes, including Kittridge and Doane Lakes, which were interconnected through sloughs. Kittridge and Doane Lakes were filled as industrial development in the area occurred. The Tualatin Mountains adjoin the industrially developed area to the southwest and reach elevations of approximately 1,100 feet above mean sea level at their peak.

The RPAC property historically has been separated, for the purpose of investigation, into three areas identified as the Insecticide Area (IA), the Herbicide Area (HA), and the Lake Area (LA). The IA is located at the southern portion of the RPAC property and was used for the manufacturing, storage, and formulation of insecticides and their components. The HA is located adjacent to and northwest of the IA, and was used for the manufacturing, formulation, storage, and handling of herbicides and their components. The LA is located north of the primary RPAC facility. The administrative buildings and maintenance facility were in the HA. Adjacent to the LA is a remnant of Doane Lake known as West Doane Lake (WDL). An additional remnant of Doane Lake, North Doane Lake (NDL), is located in a triangular-shaped property northwest of the LA. Both WDL and NDL are located on property owned by Burlington Northern and Santa Fe Railway Company (BNSF). Groundwater monitoring wells are located on RPAC property and on adjacent and nearby properties, including property owned by the City of Portland, Wacker Siltronic Corporation, Schnitzer Investment Corporation, ATOFINA Chemicals, Inc., ESCO Corporation (ESCO), Gould Electronics (Gould), Metro, and BNSF. The Gould and Schnitzer properties, along with the LA portion of the RPAC property, are part of the Gould Superfund Site.

1.2 Site History

The RPAC industrial facility was used for the formulation and/or manufacture of insecticides and/or herbicides from 1943 to 1991. Extensive investigation of the soil and groundwater has been conducted on the RPAC property. DEQ provided an analysis of the RPAC property's investigative results in the RI Work Plan (DEQ 1999). Based on their review of the investigative results, DEQ requested RPAC collect

additional information to characterize further the RPAC property and to evaluate the RPAC property's remedial options.

Early operations at the RPAC facility included the formulation of railroad right-of-way treatment liquids, fertilizer and insecticide mixtures, and sodium arsenite liquids. In the early 1950s the formulation of organic products, including phenoxy herbicides, DDT, endrin, aldrin, and heptachlor began and operations were expanded in 1956 to include the manufacture and formulation of 2,4-D acid and esters. During the 1960s, manufacture and formulation of MCPA acid and esters, and 2,4-DB acid occurred at the RPAC facility, and in 1971 the manufacture of bromoxynil products was added.

Prior to 1966, treated wastewater was discharged to WDL, and from 1966 to 1975 treated wastewater was discharged to the Willamette River. Beginning in 1977, treated wastewater was discharged to a City of Portland publicly owned treatment works (POTW). RPAC began operation of a shallow groundwater extraction and treatment system in 1984, which discharges to the Willamette River under a National Pollution Discharge Elimination System (NPDES) permit issued by DEQ.

RPAC and DEQ entered into the Order (No. ESCR-NWR-99-07) in July 1999. The purpose of the Order was to evaluate the nature and extent of potential releases at the RPAC facility and to characterize and develop remedial measures to address soil, sediment, groundwater, and surface water potentially impacted in the locality of the RPAC facility. RPAC has been conducting the RI in compliance with the RI/FS process provided in OAR 340-122-010 through 340-122-115, the scope of work provided in the Order, relevant United States Environmental Protection Agency (USEPA) documents and other relevant guidance documents.

1.3 Data Quality Objectives

The EGCP describes the Data Quality Objectives (DQOs) for the Spring 2001 and Fall 2001 groundwater characterization events. These DQOs can be applied to all recent (2000 through 2002) groundwater data collected and to all the RI data collection activities for characterizing groundwater in general. The DQOs in the EGCP are to provide additional information for:

- Characterizing nature and extent of the RPAC PCOPCs in groundwater;
- Conducting the human health risk assessment (HHRA);
- Conducting the ecological risk assessment (ERA);
- Conducting the groundwater hot spot assessment;
- Conducting the groundwater transport evaluation (GTE); and

- Evaluating natural attenuation processes.

Sufficient validated groundwater analytical results are now available to satisfy the nature and extent, HHRA, ERA, hot spot assessment, and GTE DQOs. These specific RI-related activities can be conducted without further groundwater sample collection and analysis. The nature and extent component of the RI is presented in this GCR. The evaluation of groundwater data for use in the HHRA, ERA, hot spot assessment, and GTE will be presented in the appropriate documents associated with these assessments and evaluations.

Although the DQOs have been met for most of the RI-related activities listed above, additional groundwater chemistry data would be useful in evaluation of natural attenuation processes. For this reason, additional groundwater monitoring will be conducted at the RPAC Site as proposed in the Post-Characterization Groundwater Monitoring Plan (PCGMP) for the RPAC Site, to be submitted to DEQ under separate cover. The specific DQOs for the additional groundwater monitoring will be included in the PCGMP. In addition, as appropriate based on the schedule of individual components, relevant groundwater data collected under the PCGMP may be incorporated into other RI activities (e.g., groundwater elevation data collected prior to commencement of the GTE may be considered in development of the GTE).

Additional DQOs of the groundwater monitoring program that were identified in the RI Work Plan include identification of PCOPCs and evaluating constituent migration to the Willamette River. COPCs will be identified as part of the risk assessment process based on existing groundwater analytical results; the constituents discussed in this GCR are still considered preliminary, as discussed in Section 2.0. Migration of RPAC-related constituents to the Willamette River will be addressed as part of the GTE, and may be evaluated using a combination of groundwater analytical results, groundwater modeling, and surface water analytical results.

Additional activities related to groundwater that are planned for the RPAC Site, other than those mentioned above, include an evaluation for a groundwater extraction and treatment system (GETS) interim remedial action measure (IRAM), and a non-aqueous phase liquid (NAPL) evaluation to compete the characterization of NAPL at the RPAC Site. These evaluations may include use of groundwater information from the project database, but were not defined as specific DQOs for groundwater characterization. Existing data are sufficient to conduct both of these evaluations.

2.0 PRELIMINARY CONSTITUENTS OF POTENTIAL CONCERN

PCOPCs were identified through a screening process described in the RI Work Plan (DEQ 1999). The purpose of the preliminary screening was “to identify likely COPCs

and assess potential exposure routes and data gaps." This included a comparison of maximum detected concentrations of each detected chemical in groundwater to USEPA Region IX Preliminary Remediation Goals for residential exposures (PRGs) (USEPA 1998a), and comparison of maximum detected concentrations of each detected chemical in soil with values protective of migration to groundwater, assuming a dilution attenuation factor of 1 (USEPA 1998a).

Prior to the Spring and Fall 2000 groundwater monitoring events, RPAC completed additional screening to eliminate PCOPCs that had never been detected in groundwater samples collected at the RPAC property or in the vicinity. Current groundwater PCOPCs are summarized in Table 2-1. The PCOPCs presented in Tables 2-1 and 3-2 are considered preliminary; the final COPCs for the Site will be determined through the risk assessment process. The final COPC list will be based on analytical results from all media to be included in the RPAC Site risk assessments (both HHRA and ERA), including groundwater, soil, surface water, and sediment. The final COPC list will be generated independently of the PCOPC list, and any constituents that may have been eliminated from the PCOPC list during preliminary screenings will be included in the risk assessment screening for final COPCs.

3.0 GROUNDWATER EVALUATION

The analytical results from groundwater samples have been compared to preliminary screening values. The preliminary screening values are not intended to serve as cleanup goals or to specify the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only. The HHRA and ERA will evaluate site-specific potential risks associated with final COPCs at the RPAC Site. The preliminary screening values were assigned primarily from the USEPA Region IX Preliminary Remediation Goals for tap water (Tap Water PRGs) (USEPA 2002), with alternate values where Tap Water PRGs were not available or not applicable. The preliminary screening values used in this report are listed in Table 3-2. Table 3-2 also includes detailed notes regarding the source of each preliminary screening value.

In addition to the screening above, the wells near the Willamette River were also compared to surface water screening values. However, the concentrations of PCOPCs in groundwater near a surface water feature are not representative of water discharging into the surface water. An evaluation of groundwater discharge to surface water, including the Willamette River and NDL, will be included in the GTE, and evaluation of groundwater and surface water interaction at the RPAC Site (a component of the GTE) will consider both groundwater and surface water analytical results. Further, screening of groundwater against surface water criteria is more appropriately performed as part of the ERA than as part of groundwater

characterization, where screening is provided primarily for presentation and discussion purposes.

Selected groundwater analytical results have been screened against surface water screening values for ecological receptors and human consumption of organisms. The results of this screening, including only those analytical results that exceed one or more of the surface water screening values, are presented in Table 3-3. The two sets of surface water screening values used are equivalent to ten times the: EPA National Recommended Water Quality Criteria, "consumption of water and organisms" values for human health screening (November 2002); and DEQ ERA Level II Screening Level Values, most protective value for surface water (December 2001). The groundwater analytical results screened against these surface water values are those collected from Spring 2000, Fall 2000, Spring 2001, and Spring 2002, from monitoring wells in the RP-01, RP-02, RP-07, and W-19 well clusters. Because evaluation of potential groundwater migration to ecological receptors will be conducted as part of the ERA, an evaluation or discussion of the groundwater comparison to surface water screening values has not been provided in this GCR.

This section provides a summary of the hydrogeologic setting at the RPAC Site, a description of the groundwater characterization activities conducted by RPAC, the distribution and temporal changes of selected PCOPCs, and preliminary information regarding the nature and extent of NAPL.

3.1 Summary of Hydrogeologic Setting

Historically, groundwater samples and monitoring well completion intervals at the Site have been assigned to an investigation zone depending on depth of sample collection or completion depth of the monitoring well, including fill, shallow alluvium, intermediate alluvium, deep alluvium, and basalt. Groundwater monitoring reports submitted to DEQ in recent years, including the most recently submitted Spring 2002 GMR, have maintained these designations. During completion of the GCR, the lithologic logs and historic groundwater elevations were reviewed in relation to the investigation zones.

The result of the evaluation led to the assignment of three characterization zones that more closely reflect the hydrogeology at the Site, including the Fill/Shallow Alluvium, Alluvium, and Basalt characterization zones. The selection of the characterization zone designation for groundwater samples and monitoring well completion intervals was based on the following criteria: soil type or lithology at the depth of sample collection; groundwater elevation changes relative to completion depths; and sampling location. The characterization zone designations were selected to enhance the descriptions of groundwater flow and constituent transport, and to provide a more hydrogeologically representative analysis of groundwater characterization. The

characterization zone designation is based on a comprehensive review of available boring logs. As such, there is some variability or discrepancies due to differences in sampling and drilling methodologies and field personnel interpretations. The characterization zone selected for each monitoring well is presented on Figure 3-1.

Following the review of the boring logs, subsurface geologic and hydrogeologic information was correlated between individual monitoring well clusters and projected across the RPAC Site. Based upon this information, simplified geologic cross sections (Figures 3-5 through 3-10) were created using the Borehole Module of the Groundwater Modeling System (GMS, version 3.1) software.

3.1.1 Fill/Shallow Alluvium Characterization Zone

The fill/shallow alluvium characterization zone (Fill/Shallow Alluvium Zone) has been defined as a zone of relatively shallow groundwater (generally no more than 30 feet below ground surface [bgs]) that appears to function somewhat hydrologically independent of alluvial material encountered at greater depths. The Fill/Shallow Alluvium Zone is generally laterally continuous along the groundwater flow path throughout the RPAC Site (presented on cross sections Figure 3-6 and 3-8) and extends to the bank of the Willamette River. However, the Fill/Shallow Alluvium Zone is either not laterally continuous or not present in other portions of the RPAC Site. The hydrologic independence of this zone appears to be associated with areas of significant historical fill events, including the former Doane Lake area, a portion of the HA, and a portion of the terrace above the Willamette River that extends from RP-02 to RP-07. The range of the fill is presented in the simplified geological cross sections presented on Figures 3-6 through 3-10, with the location of the cross sections presented on Figure 3-5. The fill material varies in depth across the Site, with the fill areas reaching 30 feet in depth within the LA. The fill material is approximately 25 feet deep at the RP-07 well cluster located on the Wacker property and forms the terrace/bank above and along the Willamette River. Fill material was not noted in monitoring well logs upgradient to the Site.

The fill material consists of variable amounts of sand, silt, clay, organic matter and occasional gravel, and miscellaneous debris. The shallow alluvium underlies the fill material and consists primarily of interbedded sandy silts and silty sands with occasional discontinuous inter-fingered layers or lenses of sand and clayey silt.

Groundwater monitoring wells completed in the Fill/Shallow Alluvium Zone were selected on the basis of the following criteria:

1. Groundwater elevation measurements collected at monitoring wells completed in the Fill/Shallow Alluvium Zone indicate a distinct change in groundwater elevation

in relation to a monitoring well completed in the alluvium characterization zone (Alluvium Zone) completed at the same well cluster (see Appendix A, Figures A-6, A-7, and A-10 as examples);

2. Boring and well construction logs display the sampling location (or screened section of well) within fill material or above what appears to be a semi-permeable layer of sandy silt, silty sand, organic silt, or clay; and/or

3. Groundwater sample depth and monitoring well screened zone are similar to nearby sampling locations designated within the Fill/Shallow Alluvium Zone.

The sampling locations designated within the Fill/Shallow Alluvium Zone are shown on Figure 3-1 and listed in Table 3-1. Groundwater elevations for the Fill/Shallow Alluvium Zone from the Spring 2002 groundwater characterization event are shown on Figure 3-2. The groundwater elevations depicted on Figure 3-2 vary slightly from the elevations presented in the Spring 2002 GMR, due to the variance in the Fill/Shallow Alluvium Zone data set.

3.1.2 Alluvium Characterization Zone

The Alluvium Zone has been defined as the intermediate/deep alluvial deposits between ground surface (if the Fill/Shallow Alluvium Zone is absent) or the bottom of the Fill/Shallow Alluvium Zone, and the underlying basalt. The Alluvium Zone is laterally continuous beneath the RPAC Site. The simplified geology within the Alluvium Zone is presented in Figures 3-6 through 3-10. The Alluvium Zone generally consists of discontinuous fine-grained sandy silt and/or silty sand interbedded with clayey silt and silt lenses.

At some locations gravel was encountered below the fine-grained material and overlies the uppermost surface of the basalt bedrock. The gravel is included in the Alluvium Zone when encountered. Based upon a review and correlation of the well logs included along the cross section lines, the origin of the gravel near the river is interpreted to be different geologically in nature and character than the origin of the gravel elsewhere. The gravel encountered at the RP-06, RP-07, and W-19 well cluster locations appears to be deposited by fluvial processes, and also represents the thickest accumulation of these gravels. The gravel from some of the other wells that intersect the cross section profiles appears to be derived from, and the result of, chemical and physical weathering processes acting on the uppermost surface of the basalt and/or may represent possible colluvial slope wash, derived from the flanks of the Tualatin Mountains. The alluvial gravel overlying basalt bedrock is not laterally continuous across the RPAC Site. Identification of the alluvial gravel is based upon the presence of rounded to subrounded clasts in a silty sand or sand matrix, increased

water production rates noted during drilling, general lack of fines (clay/silt), and the presence of minor amounts (<15%-20%) of terrestrial clasts including quartz, quartzite, and monzonite. In general, the presence of the more significant alluvial gravel deposits underlying the Site coincide with the presence of localized depressions on the basalt surface. Portions of this gravel may possibly represent re-worked Troutdale Gravel Aquifer sediments or older alluvium derived from the Willamette River and deposited in scour depressions incised on the surface of the basalt.

Basalt rock is encountered at greater depths in the LA and forms a NW/SE trending trough; consequently, the Alluvium Zone is thicker in this area, as shown on Figure 3-6 between monitoring well clusters W-08 and W-09, and on Figure 3-8 between monitoring well clusters BST2W/AL2 and AL6. For the purposes of this report, the lithology within the geological cross sections has been simplified (for example, sandy silt and silty sand have been depicted together as sandy silt).

Groundwater monitoring wells completed in the Alluvium Zone were selected on the basis of the following criteria:

1. Groundwater elevation measurements collected at monitoring wells completed in the Alluvium Zone indicate a distinct change in groundwater elevation in relation to a monitoring well completed in the Fill/Shallow Alluvium Zone and/or basalt characterization zone (Basalt Zone) completed at the same well cluster (see Appendix A, Figures A-2 and A-6 as examples);

2. Boring and well construction logs display the sampling location or screened section of the monitoring well are within alluvial material and do not appear to be associated with fill or basalt; and/or

3. Groundwater sample depth and monitoring well screened zone are similar to nearby sampling locations designated within the Alluvium Zone.

The groundwater sampling locations designated in the Alluvium Zone are shown on Figure 3-1 and listed in Table 3-1. Groundwater elevations for the Alluvium Zone from the Spring 2002 groundwater characterization event are shown on Figure 3-3. The groundwater elevation contours depicted on Figure 3-3 vary slightly from the elevation maps presented in the Spring 2002 GMR, due to the variance in the Alluvium Zone data set. The groundwater elevation contours on Figure 3-3 also depict a groundwater depression at monitoring wells MW-06-S, MW-07-S and the RP-03 well cluster located near the Northwest Drainage Pond (NDP). This is likely due to year-round infiltration of groundwater into the NDP, which subsequently results in the localized depression of the water table in this area. Groundwater flow in the NDP area will be further evaluated as part of the GTE.

3.1.3 Basalt Characterization Zone

The Basalt Zone has been defined as the crystalline volcanic rock below the alluvial deposits at the RPAC Site. The Basalt Zone is laterally continuous, and slightly undulated throughout the RPAC Site, and generally is found at a depth ranging from approximately 60 to 120 feet bgs. The extent of fracturing in the basalt at the RPAC Site varies from very intensely fractured to slightly fractured and the basalt is generally slightly weathered to fresh, with the uppermost surface (generally less than 4 feet thick) being generally intensely weathered to decomposed rock, which exhibits soil-like properties. Because the uppermost basalt surface is decomposed at some locations, and exhibits soil-like properties, portions of this unit historically have been logged/interpreted to be alluvial gravel. In fact, what has been interpreted to be alluvium at some locations appears to be intensely weathered to decomposed basalt. This revised interpretation is supported by the many previous explorations that have identified subangular to angular basalt clast/fragments in a clay matrix in many monitoring well borings drilled on the Site. This layer is not considered “gravel”, but rather represents weathered basalt and, therefore has been included within the Basalt Characterization Zone. The distinction between the decomposed basalt and alluvial gravels is complex, and the interpretations were dependent upon interpretations made by numerous individual logging personnel and drilling/sampling methods used through many past subsurface explorations, as was discussed in Section 3.1 of this GCR.

The simplified geology of the Basalt Zone is shown on Figures 3-6 through 3-10. A significant increase in depth of the basalt layer occurs within the LA and near N.W. Front Avenue, as shown on Figures 3-6 and 3-8.

Groundwater monitoring wells completed in the Basalt Zone were selected on the basis of the following criteria:

1. Boring and well construction logs indicate the sample location or screened section of well is in basalt; and/or

2. Previous designation within the basalt beneath the RPAC Site (in cases where no boring logs were available).

The groundwater sampling locations and monitoring wells completed in the Basalt Zone are shown on Figure 3-1 and listed in Table 3-1. Groundwater elevations for the Basalt Zone from the Spring 2002 groundwater characterization event are shown on Figure 3-4. The groundwater elevation contours depicted on Figure 3-4 vary slightly from the elevations presented in the Spring 2002 GMR, due to the variance in the Basalt Zone data set.

3.1.4 Vertical Hydraulic Gradient

The substantial quantity of groundwater elevation measurements collected over the last decade at the RPAC Site demonstrate that a downward vertical hydraulic gradient is generally present from the Fill/Shallow Alluvium to the Alluvium and Basalt Zones, and is observed primarily from the area near the southwestern RPAC property boundary to the northern LA property boundary, as observed at monitoring well clusters MW-01, W-08, W-09, and W-18 (see Figures 3-2, 3-3, and 3-4, in addition to Appendix A Figures A-1, A-7, and A-11) and during the recent monitoring events. The magnitude of the vertical hydraulic gradient typically decreases from the northern LA property boundary toward the Willamette River. Groundwater elevations collected at monitoring wells adjacent to the Willamette River generally show a neutral vertical hydraulic gradient, as observed at monitoring well clusters RP-01, RP-02, and RP-07 (see Figures 3-2, 3-3, and 3-4, in addition to Appendix A Figures A-3 and A-4). A slight upward vertical gradient between the Basalt and the Alluvium Zones was observed at monitoring well cluster MW-11, Spring 2002, but appears to be localized.

3.2 Groundwater Characterization Activities

Groundwater characterization activities in the vicinity of the RPAC facility began in 1982 and have included several focused, as well as comprehensive, groundwater sampling efforts. Recent groundwater characterization events, conducted under the current Order, include the Spring 2000, Fall 2000, Spring 2001, Fall 2001, and Spring 2002 groundwater characterization events. The Fall 2001 groundwater characterization event included only groundwater and surface water level measurements.

The Spring 2000 and Fall 2000 groundwater characterization events were completed in accordance with the Final Early RI Activities Comprehensive Groundwater Monitoring - Field Sampling Plan (URS 1999) and subsequent correspondence between RPAC and DEQ. The Spring 2001 and Spring 2002 groundwater characterization events were conducted as specified in the EGCP (AMEC 2001a) and subsequent correspondence, as well as event-specific field sampling plans (AMEC 2001c; AMEC 2002b). The scope of each of these groundwater characterization events was approved by DEQ prior to implementation. RPAC has maintained sampling protocols consistent with industry standards throughout groundwater data collection, and the four most recent events, conducted Spring 2000 through Spring 2002, were conducted using generally consistent standard operating procedures and analytical testing methods. This was done to reduce potential variability in sampling methods and protocols. Overall, potential variability based on use of different

analytical test methods throughout the duration of the project does not appear to exceed average variability of data sets.

Additional groundwater characterization events included the direct-push groundwater sampling event conducted in 1999 at the RPAC Site (designated as GGW-x locations; see Table 3-1 and Figure 3-1). A summary of groundwater investigations conducted prior to the 1999 direct-push investigation is included in Table 2-1 of the RI Work Plan (DEQ 1999). The dates when groundwater samples were collected at each monitoring well, piezometer, and temporary well point are included in Table 3-1. The groundwater sampling locations include 159 monitoring wells or piezometers (both existing and abandoned) and 45 direct-push or other one-time sampling locations, for a total of 204 groundwater sampling locations. These groundwater sampling locations, sample collection dates, and analytical methods for each sampling date are included in Appendix B.

3.3 Constituent Distribution and Temporal Changes

This section includes a discussion of the distribution of selected chemicals in each PCOPC chemical class, and a qualitative evaluation of temporal changes for each chemical class.

Recently installed monitoring wells at the RPAC Site have been sampled only during the recent groundwater characterization events: Spring 2000 through Spring 2002. Although a large quantity of groundwater analytical results exist for the RPAC Site prior to 2000, these recent groundwater characterization events are considered most representative of the current groundwater conditions (nature and extent).

The seasonal groundwater elevation condition for recent groundwater characterization events was: Spring 2000 - relatively high groundwater elevation; Fall 2000 - relatively low groundwater elevation; Spring 2001 - relatively low groundwater elevation; and Spring 2002 - relatively high groundwater elevation. The Spring 2001 groundwater characterization event was conducted during a drought year and, therefore, constitutes a low groundwater elevation season. The concentrations of select PCOPCs, provided in Appendix D, does not demonstrate a discernable pattern between the PCOPC concentrations and the seasonal groundwater elevation conditions for these recent groundwater characterization events.

The distribution of select PCOPCs from the recent groundwater characterization events are provided in Appendix C, Figures C-1 through C-36. The PCOPCs for the constituent distribution figures were selected to represent each respective PCOPC chemical class (e.g., volatile organic compounds [VOCs], metals) and are generally consistent with the figures provided in the recent GMRs. These PCOPCs were

selected originally for discussion purposes prior to the Spring 2001 groundwater characterization event and were based on prevalence in the environment, perceived abundance at the RPAC facility, and physical properties such as mobility, solubility in water, and toxicity. Similar compounds were selected for discussion in the RI Work Plan (DEQ 1999). Dissolved mercury has been removed from the PCOPC list because dissolved mercury has not been regularly detected in groundwater at the RPAC Site. Dissolved arsenic distribution has been added to the Appendix C figures. The distribution of select PCOPCs is presented for each characterization zone, including Fill/Shallow Alluvium, Alluvium, and Basalt.

The analytical results for groundwater samples at select monitoring well clusters and for select PCOPCs were evaluated to determine if significant changes in groundwater PCOPC concentrations have occurred and if a temporal pattern to the PCOPC concentrations is present. The analytical results from all groundwater samples collected at the select monitoring well locations were included in the evaluation of temporal patterns. The monitoring well locations selected were distributed along the general groundwater flow path from the RPAC property to the furthest downgradient RPAC Site monitoring well clusters (RP-01, RP-02, RP-07, and W-19) located adjacent to the Willamette River. These four well clusters are herein referred to as “the distal monitoring wells”. Of the selected monitoring wells, only those with sufficient analytical results and a discernable trend are discussed in the sections below. In general, the GCR provides a qualitative interpretation of concentration changes based on the data available for those instances where trends are observable, and changes in concentration during the four most recent sampling events (considered to be representative of the current groundwater conditions) generally were not considered to constitute a “trend”. Temporal changes in the select PCOPC concentrations are presented in Appendix D, Figures D-1 through D-44.

The evaluation of lateral and vertical extent of PCOPCs is based on distribution of sampling locations and actual analytical results from groundwater sampling. As with any groundwater monitoring program, the groundwater quality information available is limited to the locations where monitoring wells are present or where samples have been collected. Although the general direction of groundwater flow has been considered, a detailed evaluation of groundwater transport (GTE), including modeling of constituent transport and analysis of the interaction between groundwater and surface water, is currently in process and will be submitted to DEQ under separate cover at a later date. Therefore, a prediction of future extent of PCOPCs cannot be included in this report.

3.3.1 VOC Distribution and Temporal Changes

The distribution of concentrations for select VOCs from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-1 through C-3 for 1,2-dichlorobenzene, Figures C-4 through C-6 for benzene, and Figures C-7 through C-9 for trichloroethene (TCE). The temporal changes for VOCs at select monitoring well clusters are presented in Appendix D, Figures D-1 through D-4 for 1,2-dichlorobenzene, Figures D-5 through D-8 for benzene, and Figures D-9 through D-12 for TCE.

1,2-Dichlorobenzene

1,2-Dichlorobenzene was detected in groundwater samples collected from the Fill/Shallow Alluvium, Alluvium, and Basalt zones, at locations extending from the southern end of the HA to the distal monitoring wells, following the general direction of groundwater flow. The most elevated concentrations of dissolved-phase 1,2-dichlorobenzene were detected in groundwater samples collected from the northern corner of the HA and along the Lake Area Drainage Ditch. These are areas that are at or near locations where NAPL has been observed during recent monitoring events (Table 3-4b) or where NAPL was observed during previous drilling (Table 3-4a, Figure 3-11).

Concentrations of 1,2-dichlorobenzene generally decrease with depth in the HA, and generally increase with depth in the LA and further downgradient. 1,2-Dichlorobenzene was detected in samples from Basalt zone monitoring wells in an area extending generally from the northern corner of the HA to the distal monitoring wells. 1,2-Dichlorobenzene was not detected upgradient from the RPAC property. Concentrations of 1,2-dichlorobenzene were detected east to the Schnitzer property and west to monitoring wells near the Northwest Drainage Pond. However, concentrations exceeding the preliminary screening value for 1,2-dichlorobenzene were detected only in a relatively narrow section of the Site, originating at relatively shallow depths in the HA and near the Lake Area Drainage Ditch and extending into the deep Alluvium Zone and Basalt Zone to the distal monitoring wells. Concentrations exceeding the preliminary screening value for 1,2-dichlorobenzene are differentiated by color on Figures C-1 through C-3 in Appendix C.

In general, notable trends or site-wide changes over time of 1,2-dichlorobenzene concentrations in groundwater have not been observed. Notable changes were observed at a few individual monitoring wells within well clusters, whereas other monitoring well clusters did not show a notable change. Changes in 1,2-dichlorobenzene concentration were observed at monitoring well AL5-35 (Appendix D, Figure D-1), in the LA, where 1,2-dichlorobenzene concentrations have increased

overall between 1995 and 2000. However, the 1,2-dichlorobenzene concentrations in the Fill/Shallow Alluvium (AL5-19), the deep Alluvium (AL5-62), and Basalt (BSTW-74) monitoring wells located at this well cluster have remained relatively unchanged or show slight decreases. Concentrations have varied since 1996 at monitoring well MW-04-27, with some recent elevated concentrations. Concentrations at monitoring well MW-05-34 demonstrate that 1,2-dichlorobenzene has decreased since 1992. Monitoring well MW-09-23 also shows an overall decrease in concentration of 1,2-dichlorobenzene since 1992.

Where possible, 1,2-dichlorobenzene results are reported from EPA Method 8260. However, EPA Method 8270 results are presented on Figures D-3 and D-4 (Appendix D) for the October 1990 groundwater characterization event from a few monitoring wells (W-11-D, W-18-I, W-19-I, and W-19-D) where this laboratory method provides the only available 1,2-dichlorobenzene data for that sampling event.

Benzene

Benzene has been detected in groundwater samples collected from all three characterization zones, at locations extending from the southern end of the HA to the distal monitoring wells, following the general direction of groundwater flow. In general, the most elevated concentrations of benzene have been found at or near areas where NAPL has been observed or where NAPL was observed during previous drilling. Concentrations of benzene generally decrease with depth in the HA, and generally increase with depth in the LA, particularly in the Alluvium Zone along the Lake Area Drainage Ditch to WDL and further downgradient. Concentrations of benzene were detected east to the Schnitzer property, in the Fill/Shallow Alluvium Zone only, and west to MW-06-S near the Northwest Drainage Pond (Alluvium Zone). Benzene concentrations from groundwater samples collected during recent groundwater characterization events exceeding the preliminary screening value are differentiated by color on Figures C-4 through C-6 in Appendix C.

Overall, benzene concentrations at the AL5 monitoring well cluster have remained fairly constant since 1995, as shown in Appendix D, Figure D-5. Although benzene concentrations appear to increase slightly in AL5-35, benzene concentration decreases of a similar magnitude are apparent in AL5-62 and BST5W-74. Benzene concentrations at the MW-05 monitoring well cluster in the HA also have remained fairly constant since the first benzene analysis in 1989, with the exception of monitoring well MW-05-34. Benzene concentrations at monitoring well MW-05-34 decreased between 1989 and 2000, despite the fact that NAPL was observed at monitoring well MW-05-34 during recent sampling events (Table 3-4b). Benzene concentrations at ESCO property Alluvium Zone monitoring wells W-11-S and W-11-I also have remained constant (at low concentrations or not detected) since 1995, as

shown on Figure D-7, Appendix D. Benzene concentrations have decreased significantly at the ESCO property Alluvium Zone monitoring well W-11-D since 1990, and at LA monitoring well RP-04-41 (recent sampling events only), from 3,030 micrograms per liter (µg/L) to 276 µg/L, as shown on Figure D-6, Appendix D. Overall, the notable trends show decreasing benzene concentrations throughout all areas of the RPAC Site.

TCE

TCE has been detected in groundwater samples collected from all three characterization zones, and generally from areas in and downgradient from the northern corner of the HA. The most upgradient detections of TCE were found in the central portion of the HA at the MW-03 monitoring well cluster. The most downgradient detections of TCE were found in the distal monitoring wells, specifically at the RP-07, RP-01, and W-19 monitoring well clusters. TCE was generally not detected at monitoring wells between the LA and N.W. Front Avenue in the Fill/Shallow Alluvium Zone. The TCE was detected at low concentrations between the LA and N.W. Front Avenue in the Alluvium Zone.

In general, the most elevated concentrations of TCE were detected at or near areas where NAPL has been observed during recent monitoring events (Table 3-4b) or where NAPL was observed during drilling (Table 3-4a, Figure 3-11). Concentrations of TCE generally decrease with depth in the HA, and generally increase with depth in the LA and further downgradient (although overall concentrations are significantly lower at downgradient sampling locations). Concentrations of TCE were detected east to the W-15 monitoring well cluster at the Metro property, and TCE was not detected west of WDL, or at the south end of WDL at the RP-04 monitoring well cluster. Concentrations exceeding the preliminary screening value for TCE are differentiated by color on Figures C-7 through C-9 in Appendix C.

TCE concentrations at the MW-05 and AL5 monitoring well clusters in the HA and LA, respectively, have remained fairly constant over time, with the exception of monitoring well MW-05-34 (Appendix D, Figure D-9). TCE concentrations at MW-05-34 have decreased overall between 1991 and 2000 by over 50%, despite the observation of NAPL in MW-05-34 during recent sampling events (Table 3-4b). As with 1,2-dichlorobenzene and benzene, TCE concentrations have decreased overall in the ESCO property Alluvium Zone well W-11-D since 1990, as shown in Appendix D, Figure D-11. Recent TCE concentrations indicate the concentrations are lower than earlier samples collected in 1996 at monitoring well BST5W-74. Overall there are no notable trends of any TCE concentration increases across the RPAC Site, but rather, decreases in some areas.

Cis-1,2-Dichloroethene (cis-1,2-DCE)

Another VOC in groundwater evaluated at the RPAC Site is cis-1,2-dichloroethene, which is a degradation product of TCE. Cis-1,2-DCE has been detected in groundwater in the HA and LA and further downgradient. These locations are often coincident with TCE detection locations. Few detections of cis-1,2-DCE were found at monitoring wells in the Fill/Shallow Alluvium Zone. The highest concentrations of cis-1,2-DCE generally appear in the northern HA and the southern portion of the LA. The presence of cis-1,2-DCE is an indicator of anaerobic biodegradation of TCE. Additional discussion of potential degradation of constituents in groundwater is provided in Section 4.0 below.

Summary of VOC Distribution and Temporal Changes

In general, the distribution of VOCs during recent groundwater characterization events appears consistent with a pattern expected for surface releases in the manufacturing areas of the northern portion of the HA and within or near the Lake Area Drainage Ditch in the southern portion of the LA. The distribution of the remaining VOC PCOPCs, described in Table 2-1, correlate very closely with the overall VOC trends described above. The VOC constituent concentrations demonstrate that VOCs are detected along the general direction of groundwater flow, from locations within the HA towards the location where the railroad tracks cross N.W. Front Avenue. However, downgradient VOC concentrations are generally decreasing or remaining stable over time.

Concentrations of VOCs show an increase in depth at the southern end of the LA, where the Alluvium Zone thickens due to the increasing depth to basalt, as presented on Figures 3-6 and 3-8. Within the area of the deeper basalt in the LA, a clayey silt layer begins at approximately 25 feet bgs at the southern half of the LA, which appears to be acting as a semi-confining layer to the lateral groundwater flow. As a result, the groundwater and dissolved-phase constituents begin to follow a flow path of least resistance, through the deeper sandy silts and, at times, into the basalt. Concentrations of 1,2-dichlorobenzene, provided on cross sections prepared along the groundwater flow path, Figures 3-6 and 3-8, demonstrate a preferential flow path beneath the clayey silt layer in the LA Alluvium Zone and extends to the distal monitoring wells located adjacent to the Willamette River

VOC concentrations have generally remained fairly constant over time since first analyzed in groundwater at the RPAC Site, with a few exceptions that are typically reductions in concentration over time. Further evaluation of the transport of VOCs and other PCOPCs will be conducted as part of the RI Report for the RPAC Site, following completion of the groundwater transport evaluation. Additional evaluation of temporal

changes in VOC concentrations also will be conducted as part of the natural attenuation evaluation (see Section 4.0).

3.3.2 Phenolic Constituent Distribution and Temporal Changes

The distribution of concentrations for select phenolics from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-10 through C-12 for 2,4-dichlorophenol and Figures C-13 through C-15 for phenol. The temporal changes for phenolics at select monitoring well clusters are presented in Appendix D, Figures D-13 through D-16 for 2,4-dichlorphenol and Figures D-17 through D-20 for phenol.

2,4-Dichlorophenol

2,4-Dichlorophenol has been detected in groundwater samples collected from the Fill/Shallow Alluvium and Alluvium Zones, and one detection was reported in the Basalt zone. 2,4-Dichlorophenol was not detected in any RPAC Site monitoring wells downgradient of N.W. Front Avenue or northwest of the BNSF railroad tracks. 2,4-Dichlorophenol was primarily detected in groundwater in the southern portion of the LA and the northeastern portion of the HA. The lateral extent of 2,4-dichlorophenol decreases with depth, with detections at depth in the Alluvium Zone limited to monitoring well MW-05-52 in the northern corner of the HA and monitoring well AL2-46 in the southern portion of the LA. The most upgradient 2,4-dichlorophenol detections were encountered in the Alluvium Zone, within the southeastern corner of the HA. The most downgradient detection of 2,4-dichlorophenol in the Fill/Shallow Alluvium Zone was encountered at the ESCO property. The most downgradient detections of 2,4-dichlorophenol in the Alluvium Zone were found near the southern end of WDL and the Lake Area Drainage Ditch.

In general, the most elevated concentrations of 2,4-dichlorophenol have been found at or near areas where NAPL has been observed during recent groundwater characterization events (Table 3-4b) or where NAPL was observed during drilling (Table 3-4a). Concentrations of 2,4-dichlorophenol generally decrease with depth in the HA, with no detections in the Basalt zone, and generally increase with depth within the Alluvium Zone at the RP-04 and AL2 monitoring well clusters. Concentrations of 2,4-dichlorophenol decrease immediately downgradient of the MW-5, RP-04, and AL2 well clusters, and the migration of 2,4-dichlorophenol from the source area appears to be limited. The 2,4-dichlorophenol concentrations exceeding the preliminary screening value are differentiated by color on Figures C-10 through C-12 in Appendix C.

Changes in 2,4-dichlorophenol concentrations over time are not readily discernable. Variations in method detection limits, the potential influence of NAPL at some

groundwater sampling locations (including monitoring well MW-05-34), and the limited area of the RPAC Site with detected concentrations of 2,4-dichlorophenol all inhibit interpretation of changes in concentration over time. Concentrations of 2,4-dichlorophenol at monitoring well MW-04-27 show several elevated concentrations of the constituent during recent events; however, the results vary greatly between sampling events. The only discernable temporal change was at the HA monitoring well cluster MW-05, at monitoring wells MW-05-34 and MW-05-52, where the 2,4-dichlorophenol concentrations appear to be decreasing. Recent results for monitoring well RP-04-41 demonstrate that 2,4-dichlorophenol concentrations are decreasing overall. There is no evidence to suggest that the decline in 2,4-dichlorophenol at the RP-04 location is related to well installation procedures. Overall, the distribution of 2,4-dichlorophenol is confined to the Fill/Shallow Alluvium and Alluvium Zones in the northern portion of the RPAC facility and near the LA Drainage Ditch.

Phenol

Phenol has been detected in groundwater samples collected from the Alluvium Zone. Minor phenol detections were reported in the Fill/Shallow Alluvium and Basalt zones, with two detections in the Fill/Shallow Alluvium Zone and one in the Basalt zone. Phenol was not detected in any RPAC Site monitoring wells downgradient of N.W. Front Avenue or northwest of the BNSF railroad tracks. The lateral extent of phenol appears to decrease with depth, similar to 2,4-dichlorophenol. In general, the most elevated concentrations of phenol have been found at or near areas where NAPL has been observed during recent groundwater characterization events, including HA monitoring wells MW-02-26, MW-05-34, MW-08-27, and P-07, and near the Lake Area Drainage Ditch. Concentrations of phenol generally decrease with depth in the HA and increase with depth in the LA, similar to VOC constituents. Phenol concentrations exceeding the preliminary screening value are differentiated by color on Figures C-13 through C-15 in Appendix C.

Similar to 2,4-dichlorophenol, temporal changes in phenol concentration are not readily discernable. In general, at the limited monitoring wells where phenol has been detected, the concentrations have not changed significantly. One exception is at HA monitoring well cluster MW-05 where there is a general decrease in phenol concentrations between 1992 and present. In addition, historic concentrations detected at W-09 exhibit a decrease in concentration between 1982 and 1993.

Other Phenolic Constituent Distribution and Temporal Changes

The distribution of phenolics in groundwater appears to be limited to a small area, and phenols generally have not been detected during recent sampling events. The phenolic PCOPC pentachlorophenol has been detected beyond the BNSF railroad

tracks and found outside of the LA. These pentachlorophenol detections may not be related to historic operations on the RPAC property. In addition, the phenolic PCOPC 2-chlorophenol has been detected at the Metro property. Potential sources of off-property phenolic PCOPCs will be evaluated and discussed further in the GTE and/or the RI report, as appropriate.

Summary of Phenolic Constituent Distribution and Temporal Changes

Except for pentachlorophenol, the distribution of phenols during recent groundwater characterization events generally appears consistent with a pattern expected for surface releases in the manufacturing areas of the northern portion of the HA and within or near the Lake Area Drainage Ditch in the southern portion of the LA, with rapid attenuation downgradient and with depth from the relatively higher concentrations near the source areas. The remaining phenolic PCOPCs, described in Table 2-1, correlate with the overall phenolic trends described above. The phenolic constituent concentrations demonstrate that phenolics are not migrating appreciably from the presumed release area. This distribution pattern is in contrast to that of VOCs such as 1,2-dichlorobenzene, which has been detected along the general direction of groundwater flow, from locations within the HA to the distal monitoring wells.

The lateral extent of phenols decreases with depth and is generally limited to the northern portion of the HA and the area near the Lake Area Drainage Ditch. The decrease in phenol concentrations downgradient from the release area demonstrates natural attenuation is acting on the phenol constituents. Natural attenuation trends for the Site are discussed further in Section 4.0. Similar to most PCOPCs, the overall trend is one of stable or decreasing phenol concentrations over time at the RPAC Site.

3.3.3 Herbicide Distribution and Temporal Changes

The distribution of concentrations for select herbicides from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-16 through C-18 for 2,4-D and Figures C-19 through C-21 for 2,4,5-TP (silvex). The temporal changes for herbicides at select monitoring well clusters are presented in Appendix D, Figures D-21 through D-24 for 2,4-D and Figures D-25 through D-28 for silvex.

2,4-D

Concentrations of 2,4-D were detected in groundwater samples collected from the Fill/Shallow Alluvium, Alluvium, and Basalt zones, at groundwater sampling locations within the HA and the southern half of the LA. The highest concentrations of 2,4-D were detected in groundwater samples collected from the northern corner of the HA and along the Lake Area Drainage Ditch, where NAPL has been observed during recent monitoring events (Table 3-4b) or where NAPL was observed during drilling (Table 3-4a). 2,4-D was not detected in the distal monitoring wells within the Fill/Shallow Alluvium and Alluvium Zones. In addition, 2,4-D was not detected during recent groundwater characterization events in the IA, south of the RPAC property, or west of NDL. 2,4-D was detected north of N.W. Front Avenue at monitoring well RP-01-65 during the Fall 2000 groundwater characterization event at a concentration of 380 µg/L. Previous and subsequent groundwater samples collected at monitoring well RP-01-65 (including Spring 2000, 2001, and 2002) have shown no detectable 2,4-D concentrations. Concentrations of 2,4-D greater than 10 µg/L are not found in any characterization zone beyond the AL2 monitoring well cluster. The results at the RP-01 monitoring well cluster and at monitoring wells between the southern LA and RP-01, all indicate no 2,4-D concentrations near the magnitude of the concentration reported at RP-01-65 in Fall 2000. Therefore, it is not likely that the 2,4-D concentration in RP-01-65 from Fall 2000 is accurate or related to a source other than RPAC. Overall, concentrations of 2,4-D are limited to a very narrow and localized area, and the concentrations decrease rapidly with depth.

In general, 2,4-D decreasing concentration trends have been observed. In particular, the analytical results from groundwater samples collected at monitoring well clusters MW-05, MW-09, and RP-04 all show decreasing concentrations of 2,4-D.

Silvex

Silvex (2,4,5-TP) was detected in the Fill/Shallow Alluvium Zone, at two monitoring wells located in the southeastern and northwestern portions of the LA. In the Alluvium Zone, the area with detectable concentrations of silvex appears to be similar to the area with 1,2-dichlorobenzene detections. Detectable concentrations of silvex occur along the western edge of the HA and the Lake Area Drainage Ditch, and are encountered along the groundwater flow path north of N.W. Front Avenue. Detectable silvex concentrations extend to the distal monitoring wells in both the Alluvium and Basalt Zones. Silvex concentrations increase with depth in the northern LA area and further downgradient. Silvex was detected to the east at the Metro property and Gould property. Silvex was detected above the preliminary screening level at two locations: monitoring well AL2-32 at the south end of the LA and monitoring well MW-04-27 at

the northwest portion of the HA. In general, appreciable changes in silvex concentrations in groundwater over time have not been observed.

Summary of Herbicide Constituent Distribution and Temporal Changes

The distribution of herbicides in groundwater varies greatly, depending on the constituent. Detections of 2,4-D appear to be localized and generally do not extend beyond the LA. Other PCOPC herbicides, including 2,4-DB, 2,4,5-T and bromoxynil show similar trends to those observed for 2,4-D. Natural attenuation processes are reducing the concentrations of these herbicides. Silvex does not follow the same distribution pattern observed for 2,4-D. Silvex concentrations indicate that silvex follows the general path of groundwater flow, and extends to the distal monitoring wells, similar to the distribution seen for VOC constituents. Dichlorprop (2,4-DP) also shows similar trends to those observed for silvex and VOCs. Overall, in cases where data are available prior to the Spring 2000 monitoring event, there are no trends of increasing herbicide concentrations at the RPAC Site, with the exception of MW-04-27, which exhibits fluctuating concentrations that constitute an overall increase.

3.3.4 Dioxin/Furan Distribution and Temporal Changes

The distribution of concentrations for select dioxin/furan congeners from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-22 through C-24 for 2,3,7,8-TCDD.

2,3,7,8-TCDD

2,3,7,8-TCDD was detected in groundwater samples collected from all three characterization zones, but generally only at areas in and immediately downgradient of the northern portion of the HA and along the Lake Area Drainage Ditch. In the Fill/Shallow Alluvium Zone, 2,3,7,8-TCDD was not detected in groundwater downgradient from N.W. Front Avenue or northwest of the BNSF railroad tracks. The most upgradient detections of 2,3,7,8-TCDD were found in the central portion of the HA at a maximum of 0.0918 nanograms per liter (ng/L) at MW-02-26, located within the Fill/Shallow Alluvium Zone. Detections of 2,3,7,8-TCDD did occur at trace concentrations within the Alluvium and Basalt Zones at one or more of the distal monitoring wells (RP-01, RP-02, and W-19).

In general, the most elevated concentrations of 2,3,7,8-TCDD were found at or near areas where NAPL has been observed during recent monitoring events (Table 3-4b) or where NAPL was observed during drilling (Table 3-4a). Concentrations of 2,3,7,8-TCDD generally decrease with depth across the RPAC Site.

Summary of Dioxin/Furan Distribution and Temporal Changes

In general, the analytical results demonstrate dioxin/furan constituents follow a similar flow path as that described above for the VOC constituents. The water solubility for dioxins/furans, however, is low and in most cases dioxin/furan constituents are considered immobile in groundwater. Therefore, the presence of the dioxins or furans beyond the HA and LA areas may be associated with historical conditions that enabled facilitated transport to occur. This concept of facilitated transport will be evaluated further in both the Bioremediation Evaluation and the GTE.

Examination of the pattern of dioxin/furan congeners in groundwater samples from the RPAC Site indicates that while the dioxin/furan on portions of the Site originated from manufacture of chlorinated herbicides, the dioxin/furan on other portions of the Site appear to have originated from industrial or municipal sources distinct from RPAC. Congener patterns consistent with chlorinated herbicide manufacturing are limited to the RPAC facility and the LA, and are characterized by a predominance of 2,3,7,8-TCDD and 2,3,7,8-TCDF or of non-2,3,7,8-substituted TCDD and TCDF congeners. Congener patterns consistent with combustion sources and other nonspecific industrial sources are found in other areas of the RPAC Site, and are characterized by the presence of a wide range of congeners at different chlorination levels, and a predominance of OCDD. Further evaluation of dioxin/furan sources will be provided in the RI report for the RPAC Site.

3.3.5 Insecticide Distribution and Temporal Changes

The distribution of concentrations for select insecticides from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-25 through C-27 for 4-4'-DDE, Figures C-28 through C-30 for 4,4'-DDT, and Figures C-31 through C-33 for dieldrin. The temporal changes for these insecticides at select monitoring well clusters are presented in Appendix D, Figures D-29 through D-32 for 4,4'-DDE, Figures D-33 through D-36 for 4,4'-DDT, and Figures D-37 through D-40 for dieldrin.

4,4'-DDE

4,4'-DDE was detected in one groundwater sample in the IA, from monitoring well MW-10-24 during the Spring 2001 sampling event. 4,4'-DDE was not detected in groundwater samples collected during subsequent groundwater characterization events at the RPAC Site. The analytical results of groundwater samples collected at the RPAC Site demonstrate 4,4'-DDE is immobile, and is not persistent at the RPAC Site. 4,4'-DDE is generally considered a product of degradation of 4,4'-DDT,

suggesting natural attenuation processes are actively degrading 4,4'-DDT at the RPAC Site.

4,4'-DDT

4,4'-DDT has only been detected once during the recent groundwater characterization events, at monitoring well RPW-02 in the central portion of the IA. The concentration at monitoring well RPW-02 was only slightly above the preliminary screening level for 4,4'-DDT. Subsequent groundwater samples collected at monitoring well RPW-02 indicate 4,4'-DDT was not detected above the method detection limit. The analytical results of groundwater samples collected at the RPAC Site demonstrate 4,4'-DDT is immobile, relatively insoluble, and is not persistent at the RPAC Site.

Dieldrin

Dieldrin was not detected in samples collected during the recent groundwater characterization events at monitoring wells completed in the Fill/Shallow Alluvium and Basalt zones. Dieldrin concentrations have been detected in groundwater collected at monitoring wells completed in the Alluvium Zone within the northern half of the IA area and the southeastern corner of the Metro property. The analytical results from groundwater characterization event samples demonstrate dieldrin is confined within a relatively narrow area and is relatively immobile.

The concentration of dieldrin has decreased over time at monitoring well MW-09-23. No other notable changes in dieldrin concentration have been observed.

Summary of Insecticide Constituent Distribution and Temporal Changes

In general, the distribution of insecticides in groundwater appears to be very limited, and generally localized to the IA. Insecticide constituents are relatively immobile and generally have not been detected appreciably downgradient of the IA. The analytical results for groundwater samples analyzed for insecticides indicate insecticide PCOPCs generally do not exceed the preliminary screening values.

3.3.6 Metal Distribution and Temporal Changes

The distribution of concentrations for select metals from groundwater samples collected during the Spring 2000 through Spring 2002 groundwater characterization events is provided in Appendix C, Figures C-34 through C-36 for dissolved arsenic. The temporal changes for metals at select monitoring well clusters are presented in Appendix D, Figures D-41 through D-44 for dissolved arsenic.

Dissolved arsenic has been detected within the Fill/Shallow Alluvium, Alluvium, and Basalt zones in all areas of the RPAC Site. The analytical results from groundwater samples at the RPAC Site indicate dissolved arsenic was detected upgradient of RPAC property, southwest of St. Helens Road, suggesting naturally occurring dissolved arsenic is present at the RPAC Site. The distribution of dissolved arsenic concentrations demonstrates dissolved arsenic concentrations detected at monitoring well RP-02-31 does not appear to be associated with an RPAC source. Dissolved arsenic concentrations detected in wells located upgradient and along the axis of the groundwater flow path from RP-02-31 were well below concentrations detected at monitoring well RP-02-31. The dissolved arsenic concentrations detected in the Spring 2002 event at monitoring well RP-02-31 reflect the highest concentrations from all of the RPAC Site wells tested during that event. Based upon a review of the RP-02 boring logs, approximately 15 feet of fill material was placed in this area, and the dissolved arsenic concentrations at this well may possibly be related to historical fill activities. In general, distinguishable changes over time in dissolved arsenic concentrations in groundwater have not been observed.

Summary of Metal Constituent Distribution and Temporal Changes

Overall, the distribution of PCOPC dissolved metals in groundwater, including dissolved chromium and dissolved vanadium, do not follow any specific trend and concentrations vary greatly between sampling events. The analytical results from groundwater samples collected at the RPAC Site indicate dissolved and total metals have been detected across the entire Site, with the exception of mercury. Concentrations of metals detected at upgradient monitoring well locations provides evidence that naturally occurring concentrations of dissolved and total PCOPC metals are present at the RPAC Site.

3.4 Factors Influencing Constituent Distribution in Groundwater

Several mechanisms appear to have affected the transport of constituents at the RPAC Site, including a preferential flow path related to the hydrogeology at the Site. Features that have been discussed as possible preferential flow paths include a trough in the basalt within the Lake Area, a historic drainage ditch extending from WDL to the Willamette River, a storm sewer along N.W. Front Avenue, railroad fill material, and shallow fill material. These features are discussed briefly in this section. Preferential flow pathways will be considered further in the GTE.

Storm drain pipes associated with City of Portland Outfalls 22B and 22C have been previously evaluated for their potential to discharge RPAC-related constituents. RPAC collected water samples of the discharge from the City of Portland Outfalls 22B and 22C, representing non-stormwater discharge, in August 2002. Results of the

discharge sampling are included in the Remaining Remedial Investigation Technical Memorandum (RRI TM) dated February 4, 2003. The few RPAC constituents detected in the outfall samples were at concentrations below ecological screening values. Based on the recent outfall discharge results, it does not appear that water impacted by RPAC constituents is currently discharging via Outfalls 22B and 22C and, therefore, these storm drain pipes may not represent preferential flow paths for groundwater. However, additional sampling of non-stormwater discharge from Outfalls 22B and 22C is proposed in the PCGMP.

The Historic Drainage Ditch (HDD), located between WDL and the Willamette River, at one time served as an overflow channel for WDL and was reportedly cut off from WDL in 1980. Soil from beneath the HDD, as reported in the RRI TM, generally did not contain RPAC constituents at concentrations greater than screening values. Because it received only occasional overflow during storm events from WDL, and soil sampling results indicated no significant impact, RPAC does not believe the HDD currently or historically represented a source to groundwater or a preferential flow path affecting the distribution of constituents in groundwater.

RPAC conducted a reconnaissance of the Willamette River bank during June 2002, as reported in the RRI TM. The only discharge pipes with visual evidence of significant discharge were Outfalls 22B and 22C. A 48-inch corrugated metal culvert pipe of unknown origin and a mostly buried pipe also of unknown origin were encountered during the reconnaissance. However, no water was observed flowing out of the 48-inch corrugated metal culvert pipe or the buried pipe, and no evidence of channeling, seeps, or erosion was observed at these outfalls. These pipes would contribute little, if any, to the overall discharges in this area or to the distribution of constituents in groundwater.

The railroad “ballast” (or fill material) that was installed across former Doane Lake early this century extends into groundwater and may represent an area of increased hydraulic conductivity. However, this fill material does not extend to the Willamette River, because former Doane Lake did not extend to the Willamette River. Any fill material that was installed beneath the tracks between former Doane Lake and the beginning of the railroad bridge is likely above the groundwater elevation. Therefore, the railroad ballast (fill) is not considered to be a complete migration pathway for groundwater from the vicinity of the RPAC property to the Willamette River. The groundwater flow at the RPAC Site follows a path consistent with the geological and surface water features in the area. The fact that groundwater flow appears to parallel the railroad tracks is a coincidence and not the result of a preferential flow path.

A trough or depression on the top of the basalt in the northern portion of the Lake Area appears to trend to the north, somewhat parallel to the railroad tracks. This geologic

feature, visible on Figures 3-6 and 3-8, may have an influence on the groundwater flow path. This is consistent with VOC and other constituent distributions that indicate increasing concentrations with depth along the groundwater flow path beyond where the groundwater flow path intersects the basalt trough. This feature and its potential influence on the fate and transport of constituents in groundwater at the RPAC Site will be discussed further in the GTE and the RI report.

3.5 NAPL

A description of the distribution of NAPL at the RPAC Site is included in the Draft Source Area Soils Characterization Report submitted to DEQ on June 17, 2002 (AMEC 2002c). A summary of the NAPL information presented in the soils report is included below, and on Tables 3-4a and 3-4b and Figure 3-11, to help complete the evaluation of PCOPC distribution in groundwater. A scope of work for additional NAPL investigation, and a discussion of validated NAPL and residual NAPL soil and groundwater results collected to date, will be submitted as a NAPL Evaluation Work Plan (NAPL Work Plan), under separate cover.

The results of a comprehensive review of borings logs and other information for the observation of NAPL or NAPL residual are summarized in Tables 3-4a and 3-4b. A description of NAPL or NAPL residual encountered during various soil investigations and monitoring well installations is included in Table 3-4a. A description of NAPL observed in groundwater within monitoring wells is included in Table 3-4b. The occurrence of NAPL or NAPL residual in soil and groundwater is displayed on Figure 3-11. This includes information from several investigative events over a period of approximately 20 years.

Field observations exhibit that NAPL or NAPL residual has been observed in the northern portion of the HA and along the Lake Area Drainage Ditch as depicted on Figure 3-11. One reported field observation of NAPL was also made in the IA. NAPL or NAPL residual in soil has been detected at depths ranging from approximately 2 to 60 feet bgs in the HA, at depths ranging from approximately 13 to 45 feet bgs in the LA, and at 25 feet bgs in the IA (Figure 3-11).

4.0 NATURAL ATTENUATION

Groundwater samples were submitted for analysis of specific natural attenuation parameters to assess the presence and effectiveness of natural attenuation processes that demonstrate the reduction of the current PCOPCs concentrations through biodegradation. The information available for the evaluation of evidence for past biotic attenuation and the potential for future biotic attenuation processes includes selected physical, chemical, geochemical, and biological parameters. A preliminary evaluation

of biodegradation processes was completed upon examination of the following Site conditions in groundwater:

- Spatial distributions of constituents;
- Physical, chemical, and geochemical conditions; and
- The populations of bacteria that consume varying carbon sources.

The physical, chemical, geochemical, and/or biological characteristics of groundwater typically will vary with respect to time and spatially in an area with elevated PCOPC concentrations in groundwater. To account for seasonal fluctuations in constituent distributions and groundwater flows, groundwater samples are collected under both wet season and dry season conditions. The five most recent groundwater characterization events were the Spring 2000, Fall 2000, Spring 2001, Fall 2001, and Spring 2002, and are considered most representative of current groundwater conditions. The evaluation of biodegradation processes was conducted with analytical results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater characterization events, with some regard to the analytical results prior to 2000.

Natural attenuation processes such as biodegradation, dispersion, sorption, and volatilization, affect the fate and transport of constituents in all hydrologic systems. Natural attenuation is achieved when naturally occurring processes, such as biodegradation bring about a reduction in the total mass, toxicity, mobility, volume, or concentration of a constituent dissolved in groundwater. Natural attenuation will be able to fit into a larger remedial scheme at the RPAC Site. Understanding the underlying geochemical and biological processes at the RPAC Site will also lead to remedial activities that incorporate enhanced biodegradation.

Biodegradation occurs under two basic conditions: aerobic/anoxic (in the presence of oxygen or other readily used electron acceptors such as nitrate or sulfate); and anaerobic (in the absence of readily used electron acceptors). Both aerobic and anaerobic conditions can be favorable for biodegradation, depending on the type of constituent. For example, electron-rich organic compounds in groundwater, such as diesel fuel, gasoline, and PAHs, generally are most susceptible to biodegradation under aerobic conditions, whereas anaerobic conditions are conducive to the biodegradation of some chlorinated compounds, such as TCE.

The physical, chemical, geochemical, and biological characteristics of groundwater typically will vary temporarily and spatially. This initial evaluation of biodegradation processes at the RPAC Site for nature and extent characterization purposes is qualitative and was completed by evaluating temporal and spatial changes in groundwater characteristics. A more comprehensive natural attenuation evaluation will

be conducted as part of the Bioremediation Evaluation, for which a work plan will be submitted to DEQ under separate cover at a later date

4.1 Physical and Chemical Groundwater Conditions

The results from physical, chemical, geochemical, and biological parameters and measurements for groundwater samples collected at the RPAC Site are summarized on Table 4-1. In addition, the laboratory and field analytical results for the recent groundwater characterization events have been summarized on the Appendix E figures, Figures E-1 through E-33.

The analytical results from groundwater samples collected in the Fill/Shallow Alluvium, Alluvium, and Basalt zones were considered in the assessment of biodegradation processes. Emphasis was placed on PCOPC, geochemical, and biological results collected from the Alluvium Zone, because the Alluvium Zone results provide a more complete data set, and because natural attenuation will play a large role in the Alluvium Zone with respect to site remedy. In addition, the Alluvium Zone is considered to more closely represent natural site hydrogeologic conditions, compared to the Fill/Shallow Alluvium Zone that has been manipulated by outside factors. In addition, a majority of groundwater transport at the RPAC site occurs in the Alluvium Zone.

4.2 Redox Relationships

The oxidation-reduction (redox) conditions at the Site were inferred from the ORP and concentrations of several electron acceptors or reduced products, including oxygen (electron acceptor), nitrate (electron acceptor), ferrous iron (Fe2+, reduced product), sulfate (electron acceptor), sulfide (reduced product), and methane (reduced product). Electron acceptors are chemical species that are reduced by bacteria during the bacterial respiration process by which bacteria derive energy (Wiedemeier, T.H., et al, 1998). As an example, aerobic bacteria utilize oxygen as their primary electron acceptor. The utilization of terminal electron acceptors for bacterial respiration typically proceeds in the following order: oxygen, nitrate, ferric iron (iron [III]), manganese (IV), sulfate, and carbon dioxide; as each acceptor is depleted, respiration focuses on the next acceptor. Under aerobic conditions oxygen is the primary electron acceptor and under strongly anaerobic conditions sulfate and carbon dioxide are the primary electron acceptors.

4.2.1 Redox Mediators

In addition to electron acceptors, electron donors were also monitored to aid in the evaluation of microbial processes responsible for biodegradation. Microorganisms

obtain energy for new cell production and for the maintenance of existing cells through the mediation of redox reactions involving the transfer of electrons from an electron donor to an electron acceptor. In general, the electron donor is an organic compound while the electron acceptor is inorganic. Biodegradation of carbon sources (electron donor), such as diesel-range organics, therefore, can lead to consumption of available oxygen and nitrate (electron receptors), driving the subsurface into an anaerobic state. TOC can serve as an indicator of the carbon available for biodegradation.

4.2.2 Redox Indicators

Groundwater samples collected at selected monitoring wells were analyzed for the following natural attenuation parameters: oxidation reduction potential (ORP); dissolved oxygen (DO); pH; temperature; conductivity; nitrate; sulfate; sulfide; ferrous iron; total iron; total alkalinity; dissolved methane; chloride; ammonia as nitrogen; and orthophosphate. Groundwater samples from select monitoring wells also were analyzed for total aerobic heterotrophic bacteria and diesel-degrading bacteria. Electron acceptors, reduced products, and ORP results are summarized in Table 4-1 and are discussed in more detail below.

ORP

The measured values of ORP ranged from oxidizing (up to 250 millivolts [mV] at MW-10-24 in the Alluvium Zone) to reducing (down to -165 mV in the Fill/Shallow Alluvium Zone). The distribution of ORP measurements collected during the recent groundwater characterization events are shown in Appendix E, Figures E-10 through E-12. ORP measurements prove that reducing conditions are present in the Alluvium Zone at the eastern boundary of the LA (near monitoring well cluster AL2) and at the northern end of the ESCO property (near monitoring well cluster W-11). In the Fill/Shallow Alluvium Zone, ORP measurements demonstrate the reducing conditions occur from the northern boundary of the HA extending west to the BNSF and Wacker properties. In the Basalt zone, ORP measurements demonstrate that reducing conditions occur at the eastern boundary of the LA, the northern boundary of the HA, and at the northern boundary of the ESCO property.

DO

The DO concentrations measured at the RPAC Site indicate the DO varies between high water level and low water level seasons and also varies greatly between characterization zones. The distribution of DO measurements collected during the recent groundwater characterization events are shown in Appendix E, Figures E-13 through E-15. DO concentrations detected in the Alluvium Zone are greater at the upgradient monitoring locations, southwest of the RPAC property near monitoring well

cluster W-18, than DO concentrations detected on the RPAC property in the HA and LA. Relatively elevated DO concentrations were detected near N.W. Front Avenue, and at the ESCO property monitoring locations. Within the Fill/Shallow Alluvium Zone, the DO concentrations measured do not appear to follow a distinct spatial trend. In general, relatively lower DO concentrations were detected within the Basalt zone in the IA and near N.W. Front Avenue.

Nitrate

Nitrate can be either naturally occurring or the result of releases of nitrate salt or mineral acids. Nitrate concentrations were not detected above the method detection limit at most groundwater monitoring locations in the Alluvium Zone. Nitrate concentrations were detected in the Alluvium Zones southwest of the RPAC property at the upgradient monitoring well cluster W-18. Nitrate was detected at the southern portion of the HA, the LA, and at the distal monitoring wells. Nitrate concentrations detected within the Basalt zone provides evidence that nitrate exists southwest of the RPAC property at upgradient monitoring well cluster W-18, at monitoring well MW-11 in the IA, and in the HA at monitoring well MW-09. The nitrate concentrations in the Basalt zone have generally decreased during recent sampling events. In general, nitrate-reducing conditions are exhibited in all characterization zones across the Site. The most recent nitrate concentrations detected at select monitoring well locations are depicted in Appendix E, Figures E-16 through E-18.

Ferrous Iron

Ferrous iron is formed during the reduction of ferric iron. Ferrous iron is detected throughout the Alluvium Zone. The distribution of ferrous iron in groundwater from the recent groundwater characterization events is depicted in Appendix E, Figures E-25 through E-27. Elevated ferrous iron concentrations were detected in the Alluvium Zone at the northeastern boundaries of the IA and the HA, in the LA, and at the ESCO, Gould, Wacker, and BNSF properties. During recent groundwater characterization events, the elevated ferrous iron concentrations were also detected near N.W. Front Avenue at monitoring wells RP-07-55 and RP-01-51. Concentrations slightly above the method detection limit have been reported at upgradient monitoring well locations southwest of the RPAC property, in the IA and at the distal monitoring wells. Concentrations were not detected above the method detection limit south of the RPAC property boundary. In the Fill/Shallow Alluvium Zone, elevated ferrous iron concentrations were detected along the groundwater flow path between monitoring well clusters MW-01 to the distal monitoring wells and at the Schnitzer property monitoring well cluster W-16. Based on the field analytical results, iron-reducing conditions are present in areas with small DO concentrations and negative ORP.

Sulfate

Sulfate can be either naturally occurring or the result of releases of sulfate salts or mineral acids. The analytical results from natural attenuation groundwater samples indicate sulfate was detected across the RPAC Site. The sulfate results from the recent groundwater characterization events are depicted in Appendix E, Figures E-19 through E-21. Sulfate concentrations are generally increasing with depth from the southern portion of the LA following the groundwater flow path towards N.W. Front Avenue. Sulfate concentrations demonstrate the presence of historical sulfate sources at various locations across the Site. A discernable trend is not observed for the sulfate concentrations detected within the Fill/Shallow Alluvium Zone. In the Basalt zone, lower sulfate concentrations were detected at the RPAC property with higher sulfate concentrations detected north of N.W. Front Avenue.

Sulfide

Sulfide is a product of natural sulfate reduction, although sulfides are occasionally associated with an anthropogenic source. The sulfide results in groundwater from the four most recent sampling events are depicted in Appendix E, Figures E-22 through E-24. In the Alluvium Zone, sulfide was detected across much of the RPAC Site, with higher concentrations at the northern end of the HA, and in the LA. Within the Fill/Shallow Alluvium Zone, elevated sulfide concentrations were detected in the HA, the LA, and at the ESCO property monitoring wells. In the Basalt zone, the distribution of sulfide concentrations was similar to the Alluvium Zone. Sulfate-reduction appears to be occurring at locations with the highest sulfide concentrations. Areas with increased sulfide concentrations generally correspond to areas with anaerobic conditions.

Methane

Methane is produced during anaerobic decay of organic or humic materials in the subsurface, and is an indicator of strongly reducing electrochemical conditions. Methane concentrations were detected across the RPAC Site, with the exception of upgradient monitoring locations, as depicted in Appendix E, Figures E-28 through E-30. Elevated concentrations of methane were detected in the Alluvium Zone at the eastern boundaries of the IA and the HA, and at the eastern boundary of the LA. The highest methane concentrations were detected at the northern end of the ESCO property and at the RP-02 monitoring well cluster located near the Willamette River. The methane concentrations decrease with depth at the HA and IA and increase with depth at locations in the LA and in RP-02. In the Fill/Shallow Alluvium Zone methane concentrations increase from below the method detection limit south of the RPAC property to elevated concentrations at the RPAC property and downgradient. In the

Basalt zone, methane concentrations increase from below the method detection limit in the southwest of the RPAC property to the highest concentrations detected in the LA and to the distal monitoring wells. The elevated concentrations of methane provide evidence that methanogenesis is occurring and a methanogenic environment exists at the Site. In general, methane was detected in areas where anaerobic conditions were detected.

4.3 Biological Activity

Aerobic heterotrophic and diesel-degrading bacteria were enumerated at several locations across the Site. Bacteria plate counts ranged from no colonies detected to 600,000 colony forming units per milliliter (cfu/mL) at monitoring well RP-07-30 and 14,000 cfu/mL at monitoring well W-11-D for aerobic heterotrophic and diesel-degrading bacteria respectively. Elevated bacteria plate counts were also detected at monitoring well RP-07-84 and monitoring well RP-01-31, located between the ESCO property and the Willamette River along the groundwater flow path.

Bacteria require a carbon source by which to synthesize biomass. An increase in biomass will increase the efficiency for natural attenuation. Total organic carbon (TOC) was detected at concentrations below the method detection limit to 575 milligrams per liter (mg/L). Elevated TOC levels are generally associated with areas of high PCOPC impact at the Site.

The nutrients necessary for biological growth include available nitrogen (often measured in the form of ammonia) and orthophosphate. Ammonia is available sparingly in the groundwater across most of the Site. In the Alluvium Zone, ammonia and orthophosphate appear to be limited at most locations sampled across the Site. These areas are also the areas where larger carbon loads, or TOC concentrations were detected.

Carbon dioxide is formed as the product of biological oxidation of organic carbon. Alkalinity concentrations tend to become elevated as biological activity increases due to increased production and buffering of carbon dioxide in the groundwater. In the Alluvium Zone, alkalinity concentrations historically have been detected as high as 2,200 mg/L (at monitoring well W-16-I). The alkalinity concentrations detected during recent sampling events ranged from 28 to 1,360 mg/L. Lower alkalinity concentrations are observed at upgradient monitoring locations. The elevated alkalinity concentrations across the Site support the observation that biodegradation is occurring at the RPAC Site.

4.4 Evaluating Biodegradation

To better understand the relationship of geochemical, biological, and PCOPC parameters across the Site, the groundwater analytical results from the Alluvium Zone at monitoring wells W-18, MW-11, MW-04, MW-05, AL5-35, W-09-116, W-11, and RP-01 were reviewed. These monitoring points follow the general groundwater flow path from the RPAC property to north of N.W. Front Avenue. The constituents evaluated in this discussion include 2,4-D, 2,4-DP, 2,4,5-T, silvex, 1,2-dichlorobenzene, benzene, 2,4-dichlorophenol, and diesel-range organics.

The geochemical and biological data demonstrates that conditions are favorable for biodegradation processes at the RPAC Site. In addition, the geochemical and biological trends demonstrate that conditions resulting from biodegradation exist.

4.4.1 Relating Constituent Distribution to Geochemical and Biological Indicator Trends

Analytical results obtained during sampling events under low water conditions (Spring 2001) and high water conditions (Spring 2002) were evaluated to provide additional insight to geochemistry changes. At several of the monitoring well cluster locations, the analytical results exist for samples that have been collected at multiple depths within a characterization zone. The analytical results from groundwater samples collected during the recent groundwater characterization events are summarized in Table 4-1, Table 4-2 (for the select monitoring wells screened within the Alluvium Zone), and in Appendix C Figures C-1 through C-39 and Appendix E Figures E-1 through E-33.

Monitoring Well Cluster W-18

Monitoring well cluster W-18 is the upgradient monitoring location at the RPAC Site, located southwest of the RPAC property across St. Helens Road, and the results from the W-18 monitoring well cluster are indicative of “baseline” conditions at the Site, for the majority of the constituents. Analytical results from the Spring 2001 monitoring event show groundwater entering the RPAC Site in the vicinity of monitoring well cluster W-18 to be aerobic in nature. During the groundwater characterization event conducted in Spring 2002, however, the dissolved oxygen and ORP analytical results provide evidence towards an anoxic groundwater condition in shallow and deeper groundwater at monitoring well cluster W-18. No appreciable decline in electron acceptors (i.e., nitrate, ferric iron, sulfate) and no appreciable increases in reduced products (i.e., ferrous iron, sulfide, methane) between the Spring 2001 and 2002 sampling events were observed, thus demonstrating a marginal anoxic redox environment.

Monitoring Well Cluster MW-11

The analytical results from the recent groundwater characterization event indicate that at monitoring well cluster MW-11 in the IA, the groundwater sampled from monitoring wells MW-11-24 and MW-11-37 is relatively aerobic in character. The groundwater sample collected in the Alluvium Zone at monitoring well MW-11-56 is more anaerobic in character, as demonstrated by lower ORP, DO, nitrate, sulfate, and higher ferrous iron and methane concentrations than those concentrations detected at monitoring wells MW-11-24 and MW-11-37.

Monitoring Well Cluster MW-04

The negative ORP values, depressed nitrate concentrations, and elevated sulfide and ferrous iron concentrations measured at monitoring wells MW-04-27 and MW-04-47 demonstrate anaerobic conditions are present. Methane concentrations were detected at fairly elevated concentrations at monitoring well MW-04-27. Sulfide concentrations increased markedly at monitoring well MW-04-47 between the Spring 2001 and Spring 2002 sampling events. Chloride was detected at monitoring well MW-04-27 during the Spring 2001 sampling event at a relatively high concentration, coinciding with an increase in the concentrations of several chlorinated constituents.

Monitoring Well Cluster MW-05

Analytical results at monitoring well MW-05-52 indicate low concentrations of reduced species (sulfide, ferrous iron, and methane), low DO concentrations, and a near neutral ORP (7.4 to -55.5 mV). The geochemical data demonstrate an anoxic state exists at monitoring well MW-05-52, which remains relatively unchanged seasonally.

Monitoring Well Cluster W-11

The analytical results from groundwater samples collected at monitoring well W-11-I provide evidence of reducing conditions based on methane and ferrous iron concentrations detected. The analytical results at monitoring well W-11-D show that the deeper groundwater is only moderately anaerobic. Moderately elevated methane and ferrous iron concentrations are evidence of somewhat anaerobic conditions at monitoring well W-11-D. Increases in the DO concentrations and decreases in the sulfide and methane concentrations demonstrate groundwater sampled at monitoring wells MW-11-I and MW-11-D became slightly less anaerobic between the Spring 2001 (dry season) and Spring 2002 (wet season) monitoring events.

1,2-Dichlorobenzene, benzene, and diesel-range organics were detected consistently at monitoring well W-11-I with benzene concentrations exhibiting a decreasing trend.

Trace levels of 1,2-dichlorobenzene were detected at monitoring well W-11-D. Elevated chloride concentrations have been detected historically at monitoring well W-11-I, but the results from recent groundwater samples indicate chloride concentrations have decreased.

Ammonia and orthophosphate concentrations are detected at trace concentrations at monitoring well W-11-D. Ammonia and orthophosphate concentrations in monitoring well W-11-I demonstrate ammonia is relatively abundant and orthophosphate is limited.

Monitoring Well Cluster RP-01

Anoxic conditions exist at monitoring well RP-01-31 (one of the distal RPAC Site monitoring wells), indicated by the near neutral ORP, the presence of nitrate, and the deficiency of sulfide, ferrous iron, and methane. Monitoring well RP-01-51 demonstrates a moderately reducing environment, based on the slightly elevated concentrations of sulfide, ferrous iron, and methane. The groundwater geochemistry at the RP-01 monitoring well cluster has remained generally the same between monitoring events.

4.4.2 Evaluation of Constituent Fate and Putative Degradation Products

One method for evaluating analytical results is to compare ratios of constituents and putative degradation products. Analytical results from locations near and downgradient of areas of highest constituent impact can also be contrasted. As an example, the reductive dechlorination of TCE, were it to occur, would produce cis-1,2-DCE and vinyl chloride (VC) downgradient of the highly impacted area.

Another method for examining the analytical results is to compare the fate of select constituents to the fate of analogues that are known to degrade under differing conditions. Examples of analogue compounds to compare include 2,4-D versus 2,4-DP and 2,4,5-T versus silvex.

TCE/DCE Dechlorination

The ratio of TCE to either cis-1,2-DCE or VC appears heavily weighted toward TCE in analytical results from Spring 2000, Fall 2000, and Spring 2001 at two monitoring wells, MW-04-27 and MW-05-52, located in the HA. This area is near where elevated TCE concentrations in groundwater have been detected at the Site. In addition, the TCE concentrations at monitoring wells MW-04-27 and MW-05-52 are higher than the cis-1,2-DCE concentrations, which are higher than VC concentrations. In contrast, analytical results from monitoring wells W-10 and W-19-D, located in a downgradient

position between the ESCO property and the Willamette River, indicate the ratios of TCE to cis-1,2-DCE and TCE to VC concentrations are reversed. VC was detected at concentrations higher than cis-1,2-DCE, which was detected at concentrations higher than TCE.

Monitoring well AL2-46 lies within the LA, between the two sets of wells described above. At AL2-46, the ratios of TCE concentrations to cis-1,2-DCE concentrations and of TCE concentrations to VC concentrations have decreased between 1995 and 2002. One conclusion that can be reasonably drawn from these data is that reductive dechlorination of TCE and cis-1,2-DCE is occurring in the areas of the Site where anaerobic conditions are observed. As mentioned above, these observations will be evaluated further in the Bioremediation Evaluation.

Differential Fate or Transport of 2,4-D and 2,4-DP, 2,4,5-T and Silvex in the Alluvium Zone

In the Alluvium Zone, the phenoxyacetate 2,4-D concentrations were concentrated in the areas at the eastern boundary of the LA, in the northern corner of the HA, and at the west end of the Lake Area Drainage Ditch. 2,4-D concentrations do not appear to be migrating downgradient, as discussed in Section 3.3. Concentrations of phenoxypropionate 2,4-DP, a 2,4-D analogue, were detected along the northeastern boundary of the IA and the HA, in the LA, and downgradient near N.W. Front Avenue.

In the Alluvium Zone, the phenoxyacetate 2,4,5-T is present at the highest concentration of 1,030 µg/L at monitoring well RP-04-16, located at the west end of the Lake Area Drainage Ditch. 2,4,5-T is also detected along the northeastern edge of the IA and the HA, and in the LA. Like 2,4-D, 2,4,5-T does not appear to be migrating downgradient within the Alluvium Zone. In comparison, the phenoxyproprionate silvex is detected at its highest concentrations in alluvium at the south corner of LA (at monitoring well AL2-32) and at the northeastern boundary of the HA (at monitoring well MW-04-27), as described in Section 3.3.3. Silvex is also detected across the LA, at ESCO, and downgradient near N.W. Front Avenue

The distribution of 2,4-DP concentrations in the Alluvium Zone appear to extend from the RPAC property to near N.W. Front Avenue, while the 2,4-D distribution does not. The situation for silvex and 2,4,5-T is analogous. This distribution occurs despite 2,4-D and historical 2,4,5-T concentrations detected on the RPAC property, which are higher than the 2,4-DP and historical silvex concentrations on the RPAC property.

The solubility in water for 2,4-D, 2,4-DP, 2,4,5-T, and silvex are similar (ranging from about 100 mg/L to about 650 mg/L). Therefore, differential transport due to solubility differences would not appear to play a role. The different fate characteristics for the

compounds could, however, play a significant role in differential transport. Phenoxyacetate-type herbicides (i.e., 2,4-D and 2,4,5-T) have been shown to biodegrade under anaerobic conditions (Mikesell and Boyd 1985) and anaerobic conditions appear to be well established at several locations at the Site. In contrast, phenoxypropionate-type herbicides (i.e., 2,4-DP and silvex) have been shown to biodegrade under aerobic conditions but not anaerobically (Degher, et al. 1997). Therefore, the analytical results support the premise that 2,4-D and 2,4,5-T biodegrade under the predominantly anaerobic conditions of the Site, whereas 2,4-DP and silvex do not, which might explain the apparent differential transport.

Chloride

Chloride is produced in the subsurface during biodegradation of chlorinated pesticides, herbicides, and chlorinated precursor compounds. There are also anthropogenic sources of chloride, such as salts and mineral acids. The chloride results in groundwater from the groundwater characterization events are depicted in Appendix E, Figure E-31 through E-33. Within the Alluvium Zone, chloride concentrations are the lowest in the IA and southwest of the RPAC property at monitoring well cluster W-18. Chloride concentrations detected in the Alluvium Zone generally increase within the northern portion of the LA and extends to the distal RPAC Site monitoring wells with elevated concentrations at the downgradient boundary of the IA and HA. Elevated chloride concentrations within the Alluvium Zone were detected in the LA, and on the Gould and ATOFINA properties. In general, the chloride concentrations decrease with depth within the HA and increase with depth within the LA and at the distal monitoring locations . Chloride concentrations detected in the Fill/Shallow Alluvium Zone exhibit concentrations peaking in the LA. The distribution of chloride at the RPAC Site is similar to the distribution of VOCs. Chloride concentrations detected in the Basalt zone demonstrate an increase in chloride concentrations from upgradient locations to some of the distal well locations.

4.4.3 Natural Attenuation Summary

The groundwater at the upgradient monitoring well cluster W-18 shows variations between an aerobic and anaerobic state. Based on the DO concentrations, groundwater becomes anaerobic to the north, in the direction of groundwater flow. The geochemical data show that anaerobic conditions are present in groundwater at areas with increased concentrations of PCOPCs and at areas downgradient of the impacted areas based on: 1) negative ORP measurements; 2) nitrate and sulfate depletion; and 3) sulfide, ferrous iron, and methane enrichment. Decreases in aerobic bacteria plate count results also support a site-wide move toward more anaerobic groundwater conditions from 2000 to 2002.

The most elevated concentrations of diesel-range organics are located in areas that are at or near locations where NAPL has been observed during recent monitoring events (Table 3-4b) or where NAPL was observed during drilling (Table 3-4a, Figure 3-11), which have historically been in the northern portion of the HA and the southern portion of the LA along the Lake Area Drainage Ditch. The higher concentrations of diesel-range organics also correspond with the higher 2,4-D and other constituent concentrations. Areas of higher diesel-range organics concentrations generally correspond to areas with more anaerobic conditions. This would be expected because diesel-range organics can serve as an easily biodegradable carbon source that would consume available oxygen and nitrate, driving the subsurface into an anaerobic state.

A generalized decrease in the ORP was observed at many of the monitoring points between the Spring 2001 and Spring 2002 monitoring events. Unlike other monitoring locations, the groundwater chemistry at the LA monitoring well W-09-116, and ESCO property monitoring well W-11, clearly moved from more anaerobic to less anaerobic conditions in the time between the monitoring events of Spring 2001 and Spring 2002.

5.0 SUMMARY AND CONCLUSIONS

Sampling and analysis events for groundwater have been conducted in the vicinity of the RPAC facility since 1982. The analytical results from all of these groundwater samples collected at the RPAC Site were used to characterize the lateral and vertical extent of PCOPCs at the RPAC Site. This evaluation focused on the analytical results from the recent groundwater characterization events, because the recent results are most representative of existing Site conditions. The analytical results from groundwater samples have been compared to preliminary screening values. Groundwater characterization zones have been defined as the Fill/Shallow Alluvium Zone, the Alluvium Zone, and the Basalt zone. These zones have been defined to more closely reflect the hydrogeology as related to the geology at the Site. Outlined below is a groundwater characterization summary.

- The general groundwater flow direction at the RPAC Site is to the north and northeast, from the wells upgradient of the RPAC property to the distal RPAC Site monitoring wells located near the Willamette River.
- In general, VOCs in groundwater extend along the groundwater flow direction from the HA at the RPAC property to some distal monitoring wells . Concentrations of VOCs generally decrease with depth across the RPAC property to the LA, and generally increase with depth toward the distal monitoring wells .
- In general, phenols in groundwater extend from the northern portion of the HA to the LA, and do not extend to the distal RPAC Site monitoring wells. Concentrations of phenols generally decrease rapidly with depth in the HA and

increase with depth in the southern portion of the LA, with rapid attenuation downgradient and with depth from the LA.

- In general, the extent of herbicides varies based on the constituent. Some constituents remain very localized within the HA and southern LA. Others extend to distal monitoring well locations. The herbicide constituents that extend into the LA and to the distal RPAC Site monitoring wells tend to increase with depth, similar to VOCs, beyond the southern portion of the LA. Herbicides at most monitoring locations have exhibited an overall decreasing trend in concentrations since 1991.
- 2,3,7,8-TCDD was detected in groundwater samples collected from all three characterization zones, generally at and immediately downgradient of the northern portion of the HA and along the Lake Area Drainage Ditch. The dioxin/furan detections on other portions of the Site appear to have originated from industrial or municipal sources distinct from RPAC. Further evaluation of dioxin/furan sources will be provided in the RI report for the RPAC Site.
- In general, insecticides are localized within the IA and within a close proximity of the IA, and do not demonstrate mobility in groundwater.
- In general, metals in groundwater do not show any specific patterns or trends. Metals are detected at locations upgradient of the RPAC Site, which are representative of background concentrations at the RPAC Site.
- Groundwater elevation measurements and the analytical results from groundwater samples collected at the RPAC Site demonstrate a preferential flow path is present at the RPAC Site. Groundwater impacted by PCOPCs originating from the northern portion of the HA and the Lake Area Drainage Ditch, the area where NAPL has been observed, flows north towards the location where the railroad tracks cross N.W. Front Avenue. This is likely due to the presence of a trough in the top of the basalt layer that underlies the alluvium at the RPAC Site, as well as gravel and weathered basalt that overly the basalt layer. Other features that have been discussed as potential preferential flow pathways, such as the railroad fill material, storm drains, the HDD, and shallow fill material, do not appear to have significantly influenced the distribution of groundwater constituents and, therefore, are not preferential flow pathways. Preferential flow pathways will be further evaluated as part of the GTE and in the RI report.

The primary conclusions regarding the groundwater characterization are summarized below.

- The distribution of PCOPCs on the RPAC property is associated with general manufacturing activities that previously occurred in each area of the RPAC property. The distribution of the constituents in groundwater demonstrates a correlation with the occurrence of NAPL, with the most elevated concentrations

detected at the monitoring wells located in the vicinity of the NAPL. Additional investigation of the occurrence and chemical content of NAPL is planned with the NAPL Evaluation.

- The available groundwater information satisfies the nature and extent, HHRA, ERA, hot spot assessment, and GTE DQOs. These specific RI-related activities can be conducted without further groundwater sample collection and analysis. The evaluation of groundwater data for use in the HHRA, ERA, hot spot assessment, and GTE will be presented in the appropriate documents associated with these assessments and evaluations.
- Although the DQOs have been met for most of the RI-related activities, additional groundwater chemistry data would be useful in evaluation of natural attenuation processes. For this reason, additional groundwater monitoring will be conducted at the RPAC Site as proposed in the PCGMP for the RPAC Site, to be to DEQ submitted under separate cover.
- The presence of dioxins beyond the HA and LA areas may be the result of facilitated transport; this will be further evaluated as part of the Bioremediation Evaluation and/or GTE.
- Natural attenuation is occurring at the RPAC Site. The conditions present show that the environment supports primarily anaerobic biodegradation. Certain PCOPCs are being reduced in concentration at the Site. Additional review of the natural attenuation activities will be provided in the work plan for the Bioremediation Evaluation, scheduled for preparation in 2003; and
- In general, the limited number of discernable temporal patterns or trends in PCOPC concentrations over time demonstrates the relative stability of the solute phase groundwater plumes at the RPAC Site.

6.0 REFERENCES

AMEC, 2001a. *Draft Extended Groundwater Characterization Plan (EGCP), RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, March 2, 2001.

AMEC, 2001b. *Final Project Management Plan, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, March 30, 2001.

AMEC, 2001c. *Draft Focused Spring 2001 Groundwater Characterization Field Sampling Plan, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, dated May 30, 2001

AMEC, 2001d. *Final Spring and Fall 2000 Groundwater Data and Evaluation, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, July 31, 2001.

AMEC, 2001e. *Focused Spring 2001 Groundwater Characterization Event, Groundwater Monitoring Report, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, October 4, 2001.

AMEC, 2002a. *Fall 2001 Groundwater Monitoring Report, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, dated January 11, 2002.

AMEC, 2002b. *Final Focused Spring 2002 Groundwater Characterization Field Sampling Plan, RPAC - Portland Site*, prepared for Aventis CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, dated March 8, 2002.

AMEC, 2002c. *Draft Source Area Soils Characterization Report, RPAC - Portland Site*, prepared for RPAC, prepared by AMEC Earth and Environmental, Inc., submitted to Oregon Department of Environmental Quality, June 17, 2002.

AMEC, 2002d. *Focused Spring 2002 Groundwater Characterization Event Groundwater Monitoring Report, RPAC - Portland Site*, prepared for Aventis

CropScience, prepared by AMEC Earth & Environmental, Inc., submitted to Oregon Department of Environmental Quality, dated July 31, 2002.

Degher, A.B., K.G. Wang, K.J. Williamson, S.L. Woods, and Robin Stauss, 1997. "Bioremediation of Soils Contaminated with 2,4-D, 2,4,5-T, Dichlorprop, and Silvex". In Situ and On-Site Bioremediation: Papers from the Fourth International In Situ and On-Site Bioremediation Symposium; Volume 2, p 279.

Mikesell, M.D. and S.A. Boyd, 1985. Reductive Dechlorination of the Pesticides 2,4-D, 2,4-T, and Pentachlorophenol in Anaerobic Sludges. J. Environ. Qual., Vol. 14, no. 3, pp 337-340.

Oregon Department of Environmental Quality (DEQ), 1999. Remedial Investigation Work Plan Rhone-Poulenc AG Company Portland, Oregon, prepared for Oregon Department of Environmental Quality, prepared by Ecology and Environment, Inc., April 1999.

Smucker, Stanford J., 2000. *PRG Concentrations* (version 7). USEPA Region IX, Technical Support Team (SFD-8-B). San Francisco, CA, November 1, 2000.

URS, 1999. Final Early RI Activities Comprehensive Groundwater Monitoring - Field Sampling Plan, prepared by URS, submitted to Oregon Department of Environmental Quality, October 1, 1999.

U.S. Environmental Protection Agency (USEPA) 1989. The USEPA Superfund Groundwater Issue, Facilitated Transport, by Scott G. Huling, Robert S. Kerr Environmental Research Laboratory, Ada, OK, August, 2002

USEPA, 1998a. Smucker, Stanford J., Ph.D. *PRG Concentrations*. USEPA Region IX, Technical Support Team. San Francisco, CA, 1998.

USEPA 1998b. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water by Wiedemeier, T.H., et al., National Risk Management Research Laboratory Subsurface Protection and Remediation Division Ada, OK, September 1998.

USEPA, 2002. Smucker, Stanford J., Ph.D. *PRG Concentrations (version 8)*. USEPA Region IX, Technical Support Team. San Francisco, CA, October 2002.

Woodward Clyde Consultants (WCC), 1995. Modification No. 8 to Final Work Plan Proposed 2nd Round Groundwater Sampling, RPAC - Portland Site, prepared by WCC, submitted to Oregon Department of Environmental Quality, September 28, 1995

LIMITATIONS

This report was prepared exclusively for RPAC by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, and conclusions contained herein are consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation; ii) data supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by RPAC only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 2-1
Preliminary Constitutents of Potential Concern for Groundwater
RPAC - Portland Site

CLASS	CONSTITUENT
VOCs	1,1,2,2-Tetrachloroethane
	1,1-Dichloroethane
	1,2-Dichlorobenzene
	1,2-Dichloroethane
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	Benzene
	Chlorobenzene
	Chloroform
	cis-1,2-Dichloroethene
	Ethylbenzene
	Isobutyl Alcohol
	Methylene Chloride
	Tetrachloroethene
	Toluene
	Trichloroethene
	Vinyl Chloride
	Xylene
Phenols	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dinitrophenol
	2-Chlorophenol
	Pentachlorophenol
Insecticides	4,4'-DDD
	4,4'-DDE
	4,4'-DDT
	Aldrin
	alpha-BHC
	beta-BHC
	Chlordane
	delta-BHC
	Dieldrin
	Endrin
	gamma-BHC (Lindane)
	Heptachlor
	Hexachlorobenzene
	Toxaphene

TABLE 2-1
Preliminary Constitutents of Potential Concern for Groundwater
RPAC - Portland Site

CLASS	CONSTITUENT
Metals	Arsenic
	Cadmium
	Chromium
	Copper
	Lead
	Mercury
	Nickel
	Vanadium
	Zinc
Herbicides	2,4,5-T
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	Bromoxynil
	Dichlorprop
	Dinoseb
Dioxins/Furans	PCDD/PCDF
PCBs	Aroclor 1254

VOCs	volatile organic compounds
PCBs	polychlorinated biphenyls
PCDD	polychlorinated dioxin
PCDF	polychlorinated dibenzofuran

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
A	01/03/84	Extraction Well	26.5	HA	F/SA	03/12/96
AL1-15	03/02/95	Monitoring Well	15	GOULD	F/SA	03/28/95, 06/01/99
AL1-45	03/07/95	Monitoring Well	45	GOULD	A	03/29/95, 06/01/99
AL1-69	01/20/95	Monitoring Well	69.3	GOULD	A	03/28/95, 06/01/99
AL2-17	03/09/95	Monitoring Well	17	LA	F/SA	03/29/95, 10/26/95, 03/31/00, 10/03/00, 10/05/00, 07/05/01, 07/06/01, 04/22/02, 04/23/02
AL2-32	03/07/95	Monitoring Well	32.5	LA	A	03/30/95, 10/26/95, 03/31/00, 10/03/00, 07/05/01, 04/19/02
AL2-46	03/09/95	Monitoring Well	46	LA	A	03/29/95, 10/26/95, 03/30/00, 10/03/00, 07/05/01, 04/22/02
AL4-47	01/26/95	Monitoring Well	46.8	LA	A	03/24/95
AL5-19	03/09/95	Monitoring Well	19	LA	F/SA	04/03/95, 10/27/95, 04/04/00, 10/05/00
AL5-35	03/10/95	Monitoring Well	35	LA	A	04/03/95, 10/27/95, 04/04/00, 10/04/00
AL5-62	03/16/95	Monitoring Well	62	LA	A	04/03/95, 10/27/95, 04/04/00, 10/04/00
AL6-96	12/08/95	Monitoring Well	96.5	LA	A	12/19/95, 04/10/00, 10/12/00, 11/28/00
ASW-01	08/08/88	Monitoring Well	17	METRO	A	08/09/88, 03/22/95
ASW-01A	09/13/91	Monitoring Well	unknown	METRO	A	03/29/00, 09/29/00, 06/22/01, 04/11/02
ASW-02	08/08/88	Monitoring Well	19	METRO	A	08/09/88
ASW-03	NA	Monitoring Well	unknown	METRO	A	08/09/88, 03/17/89, 03/22/95
ASW-04	03/15/89	Monitoring Well	18	METRO	A	03/17/89, 03/22/95, 03/29/00, 09/29/00
ASW-05	03/15/89	Monitoring Well	15	METRO	A	03/17/89
ASW-07	03/15/89	Monitoring Well	15	SCHNITZER	A	03/16/89
B	01/05/84	Monitoring Well	22.5	HA	F/SA	03/12/96
BST1W-88	02/28/95	Extraction Well	88	GOULD	B	03/28/95, 06/02/99
BST2W-61	01/19/95	Monitoring Well	61	LA	B	11/23/94, 03/30/95, 10/26/95, 04/03/00, 10/03/00, 07/05/01, 04/19/02
BST5W-74	02/28/95	Monitoring Well	74.5	LA	B	04/03/95, 10/27/95, 04/04/00, 10/04/00
BTB-4A-84	05/19/93	Monitoring Well	84	LA	B	04/03/95, 12/19/95
BTB-4B-25	05/25/93	Monitoring Well	25	LA	F/SA	04/03/95
BTB-4B-55	05/25/93	Monitoring Well	55	LA	A	04/03/95
C	01/06/84	Extraction Well	24	HA	F/SA	03/12/96
D	12/30/84	Extraction Well	22	HA	F/SA	03/12/96
E	01/11/84	Extraction Well	28.5	HA	A	03/12/96
F	01/12/84	Extraction Well	24	HA	A	06/12/96
G	01/10/84	Extraction Well	25.5	HA	A	03/12/96
GGW-001	08/30/99	Temporary Well Point	82-85	LA	A	08/30/99
GGW-001	08/30/99	Temporary Well Point	95-98	LA	A	08/31/99
GGW-002	08/26/99	Temporary Well Point	73-76	LA	A	08/26/99
GGW-003	08/27/99	Temporary Well Point	22-25	LA	A	08/27/99, 08/30/99
GGW-003	08/27/99	Temporary Well Point	66-69	LA	A	08/26/99, 08/27/99
GGW-004	08/27/99	Temporary Well Point	53-56	LA	A	08/27/99
GGW-005	09/01/99	Temporary Well Point	56-59	LA	A	09/01/99

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
GGW-006	08/27/99	Temporary Well Point	36-39	LA	A	08/27/99
GGW-006	08/27/99	Temporary Well Point	47-50	LA	A	08/27/99
GGW-007	10/19/99	Temporary Well Point	24-27	ESCO	F/SA	10/18/99, 10/19/99
GGW-008	09/01/99	Temporary Well Point	51-54	GOULD	A	08/31/99
GGW-009	08/31/99	Temporary Well Point	25-28	GOULD	F/SA	08/31/99
GGW-009	08/31/99	Temporary Well Point	65-68	GOULD	A	09/01/99
GGW-009	08/31/99	Temporary Well Point	88-91	GOULD	A	09/01/99, 09/02/99
GGW-010	10/25/99	Temporary Well Point	27-30	ATOFINA	A	10/25/99, 10/26/99
GGW-010	10/25/99	Temporary Well Point	36-39	ATOFINA	A	10/25/99, 10/26/99
GGW-010	10/25/99	Temporary Well Point	47-50	ATOFINA	A	10/25/99, 10/26/99
GGW-011	10/22/99	Temporary Well Point	54-57	WACKER	A	10/20/99, 10/22/99
GGW-011	10/22/99	Temporary Well Point	87.5-90.5	WACKER	A	10/20/99, 10/22/99
GGW-013	10/27/99	Temporary Well Point	36-39	ATOFINA	A	10/26/99, 10/27/99
GGW-014	10/27/99	Temporary Well Point	46-49	ATOFINA	A	10/26/99, 10/27/99
GGW-015	10/26/99	Temporary Well Point	27-30	ATOFINA	A	10/27/99, 10/28/99
GGW-015	10/26/99	Temporary Well Point	44-47	ATOFINA	A	10/25/99, 10/26/99
GGW-016	10/28/99	Temporary Well Point	30-33	ATOFINA	A	10/27/99, 10/28/99
GGW-016	10/28/99	Temporary Well Point	42-45	ATOFINA	A	10/27/99, 10/28/99
GGW-022	10/21/99	Temporary Well Point	22-25	WACKER	A	10/20/99, 10/21/99
GGW-022	10/21/99	Temporary Well Point	62-65	WACKER	A	10/20/99, 10/21/99
GGW-023	10/21/99	Temporary Well Point	14-17	WACKER	A	10/20/99, 10/21/99
GGW-024	10/25/99	Temporary Well Point	25-28	WACKER	F/SA	10/24/99, 10/25/99
GGW-024	10/25/99	Temporary Well Point	82-85	WACKER	A	10/24/99, 10/25/99
GGW-025	10/21/99	Temporary Well Point	25-28	BNSF	A	10/20/99, 10/21/99
GGW-025	10/21/99	Temporary Well Point	43-46	BNSF	A	10/20/99, 10/21/99
GGW-026	10/19/99	Temporary Well Point	27-30	BNSF	A	10/18/99, 10/19/99, 10/25/99
GGW-026	10/19/99	Temporary Well Point	48-51	BNSF	A	10/18/99, 10/19/99, 10/25/99
GGW-027	10/20/99	Temporary Well Point	21-24	BNSF	F/SA	10/19/99
GGW-027	10/20/99	Temporary Well Point	72-75	BNSF	A	10/19/99, 10/20/99
GGW-028	10/18/99	Temporary Well Point	12-15	LA	F/SA	10/17/99, 10/18/99
GGW-028	10/18/99	Temporary Well Point	36-39	LA	A	10/17/99, 10/18/99
GGW-028	10/18/99	Temporary Well Point	50-53	LA	A	10/17/99, 10/18/99
GM-1-S	07/05/90	Monitoring Well	unknown	LA	F/SA	08/23/90, 08/24/90, 08/26/90, 08/27/90, 10/24/90, 03/01/94
GM-2-I	06/27/90	Monitoring Well	unknown	GOULD	F/SA	10/26/90, 10/23/92
H	01/09/84	Extraction Well	26.5	HA	A	03/12/96

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
MW-01-26	12/12/88	Monitoring Well	23.6	HA	F/SA	03/22/00, 09/22/00
MW-01-41	12/12/88	Monitoring Well	38.8	HA	A	01/26/89, 02/27/89, 04/24/89, 06/12/91, 03/23/00, 09/20/00
MW-01-56	12/05/88	Monitoring Well	53.9	HA	A	01/25/89, 02/27/89, 04/24/89, 06/12/91, 03/24/00, 09/20/00
MW-01-76	05/23/91	Monitoring Well	76	HA	B	06/14/91, 07/09/91, 08/07/91, 03/22/00, 09/21/00
MW-02-26	12/22/88	Monitoring Well	22.8	HA	A	01/30/89, 02/27/89, 04/25/89, 06/10/91, 09/25/00
MW-02-46	12/21/88	Monitoring Well	42.8	HA	A	01/30/89, 02/28/89, 04/25/89, 06/10/91, 03/23/00, 09/25/00
MW-02-62	12/19/88	Monitoring Well	58.5	HA	A	01/30/89, 02/28/89, 04/25/89, 06/10/91, 03/23/00, 09/25/00
MW-03-27	11/09/88	Monitoring Well	24.8	HA	A	01/31/89, 02/28/89, 04/25/89, 06/10/91, 03/21/95, 03/29/00, 09/27/00
MW-03-49	11/08/88	Monitoring Well	46.8	HA	A	01/26/89, 02/28/89, 04/25/89, 06/10/91, 03/21/95, 03/29/00, 09/27/00
MW-03-68	10/31/88	Monitoring Well	66	HA	A	01/31/89, 02/28/89, 04/25/89, 06/10/91, 03/22/95, 03/29/00, 09/27/00
MW-03-81	02/16/00	Monitoring Well	80	WACKER	A	04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-03-I	06/25/90	Monitoring Well	60	WACKER	A	10/17/90, 04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-03-S	11/09/88	Monitoring Well	27	WACKER	F/SA	10/17/90, 04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-04-27	12/02/88	Monitoring Well	23.8	HA	A	02/08/89, 03/06/89, 04/26/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00, 07/05/01, 04/19/02
MW-04-47	11/30/88	Monitoring Well	43.8	HA	A	01/31/89, 02/28/89, 04/25/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00, 07/05/01, 04/19/02
MW-04-63	11/29/88	Monitoring Well	60.1	HA	A	01/31/89, 02/28/89, 04/25/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00
MW-05-24	11/16/88	Monitoring Well	22.3	HA	F/SA	02/08/89, 03/01/89, 04/26/89, 06/11/91, 03/30/00, 09/28/00
MW-05-34	11/15/88	Monitoring Well	32	HA	F/SA	02/09/89, 03/01/89, 04/26/89, 06/11/91, 12/14/95, 09/28/00
MW-05-52	11/14/88	Monitoring Well	49.4	HA	A	02/08/89, 02/09/89, 03/01/89, 04/26/89, 06/11/91, 12/14/95, 03/30/00, 09/28/00, 07/06/01, 04/22/02
MW-05-70	01/31/00	Monitoring Well	70	HA	B	03/30/00, 09/28/00, 11/29/00, 07/06/01, 04/22/02
MW-06-S	07/23/86	Monitoring Well	unknown	WACKER	A	04/06/00, 10/13/00
MW-07-56	12/29/88	Monitoring Well	53.5	HA	A	01/25/89, 02/27/89, 04/24/89, 06/13/91
MW-07-S	NA	Monitoring Well	unknown	WACKER	A	10/17/90, 04/06/00, 10/13/00
MW-08-27	02/28/90	Monitoring Well	25.1	HA	F/SA	06/12/91, 03/23/00
MW-08-46	01/12/89	Monitoring Well	41	HA	A	02/06/89, 03/01/89, 04/27/89, 07/05/89, 07/06/89, 07/07/89, 06/12/91, 03/28/00, 09/26/00
MW-08-64	01/09/89	Monitoring Well	59	HA	A	02/07/89, 03/06/89, 04/27/89, 06/26/89, 06/27/89, 06/28/89, 06/12/91, 03/24/00, 09/26/00
MW-09-23	05/10/91	Monitoring Well	20.7	HA	A	06/13/91, 07/09/91, 08/07/91, 08/04/93, 09/10/93, 10/28/93, 03/21/95, 03/28/00, 09/26/00, 07/02/01, 04/17/02
MW-09-42	05/10/91	Monitoring Well	40.7	HA	A	06/13/91, 07/08/91, 08/07/91, 08/04/93, 09/10/93, 10/28/93, 03/21/95, 03/28/00, 09/26/00, 07/02/01, 04/17/02
MW-09-58	05/09/91	Monitoring Well	58.5	HA	A	06/13/91, 07/08/91, 08/07/91, 08/03/93, 09/10/93, 10/28/93, 03/21/95, 03/27/00, 09/26/00, 07/02/01, 04/18/02
MW-09-80	06/04/91	Monitoring Well	80.3	HA	B	06/13/91, 07/09/91, 08/07/91, 08/03/93, 09/10/93, 10/28/93, 03/22/95, 03/27/00, 10/05/00, 07/02/01, 04/18/02
MW-10-24	06/22/93	Monitoring Well	22.5	IA	A	08/05/93, 09/09/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02
MW-10-44	06/21/93	Monitoring Well	42	IA	A	08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
MW-10-57	06/22/93	Monitoring Well	55.5	IA	A	08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02
MW-11-24	06/25/93	Monitoring Well	22	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-37	06/25/93	Monitoring Well	35	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-56	06/24/93	Monitoring Well	54	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-79	07/22/93	Monitoring Well	76.6	IA	B	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-12-27	06/17/93	Monitoring Well	24.5	IA	A	08/03/93, 09/08/93, 10/27/93, 04/11/95, 03/22/00, 09/20/00
MW-12-41	06/17/93	Monitoring Well	39	IA	A	08/03/93, 09/08/93, 10/27/93, 03/22/00, 09/20/00
MW-12-59	06/17/93	Monitoring Well	57.5	IA	A	08/03/93, 09/08/93, 10/27/93, 03/22/00, 09/20/00
MW-12-79	07/13/93	Monitoring Well	78	IA	B	08/02/93, 09/09/93, 10/27/93, 03/22/00, 09/20/00
P-02	01/01/80	Piezometer	18	IA	A	03/23/95
P-07	NA	Piezometer	unknown	HA	A	01/01/82
P-103	12/27/83	Piezometer	29	HA	A	03/24/95, 05/09/95, 07/31/95
P-104	12/27/83	Piezometer	20.4	LA	F/SA	10/23/92
P-11	NA	Piezometer	unknown	HA	F/SA	01/01/82
PP-06	06/15/81	Piezometer	20	LA	F/SA	01/01/82, 12/29/86, 02/21/87, 09/29/88, 05/01/89, 10/13/89, 05/10/90, 10/23/90, 11/13/90, 10/21/92
PP-08	06/23/81	Piezometer	25	LA	A	01/01/82, 12/30/86, 02/21/87, 10/19/88, 05/01/89, 10/13/89, 05/10/90, 11/13/90, 10/21/92, 03/27/95, 04/03/00, 10/05/00
PP-11	07/08/81	Piezometer	38	ATOFINA	A	01/01/82, 12/29/86, 02/25/87
PZ-1-11	03/15/95	Piezometer	11.5	IA	F/SA	03/24/95
RP-01-31	02/10/00	Monitoring Well	30	BNSF	A	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/05/02
RP-01-51	02/09/00	Monitoring Well	50	BNSF	A	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/08/02
RP-01-65	02/08/00	Monitoring Well	64	BNSF	B	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/05/02
RP-02-31	02/03/00	Monitoring Well	30	ATOFINA	A	04/18/00, 10/16/00, 06/19/01, 04/04/02
RP-02-49	02/03/00	Monitoring Well	48	ATOFINA	A	04/18/00, 10/16/00, 06/19/01, 04/04/02, 05/03/02
RP-02-66	02/02/00	Monitoring Well	65	ATOFINA	B	04/18/00, 10/16/00, 06/19/01, 04/04/02
RP-03-26	02/17/00	Monitoring Well	25	BNSF	A	04/07/00
RP-03-30R	09/13/00	Monitoring Well	28	BNSF	A	10/12/00, 11/28/00, 06/27/01, 04/10/02
RP-03-52R	09/12/00	Monitoring Well	51	BNSF	A	10/12/00, 11/28/00, 06/27/01, 04/10/02
RP-04-16	01/13/00	Monitoring Well	15	BNSF	A	04/05/00, 10/04/00, 07/03/01, 04/18/02
RP-04-41	02/22/00	Monitoring Well	40	BNSF	A	04/05/00, 10/04/00, 07/03/01, 04/18/02
RP-05-16	01/13/00	Monitoring Well	15	BNSF	A	04/05/00, 10/04/00
RP-06-30	02/08/00	Monitoring Well	29.5	BNSF	F/SA	04/14/00, 10/12/00, 11/29/00, 06/27/01, 04/10/02
RP-06-87	02/07/00	Monitoring Well	86	BNSF	A	04/14/00, 10/12/00, 11/29/00, 06/27/01, 04/10/02
RP-07-119	05/01/02	Monitoring Well	119	WACKER	B	04/29/02, 05/03/02
RP-07-30	04/22/02	Monitoring Well	24.5	WACKER	F/SA	05/03/02
RP-07-55	04/22/02	Monitoring Well	54.5	WACKER	A	05/03/02
RP-07-84	04/22/02	Monitoring Well	83	WACKER	A	05/03/02
RPW-01	07/01/81	Monitoring Well	48	IA	A	01/01/82

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
RPW-02	06/30/81	Monitoring Well	38	IA	A	01/01/82, 10/17/90, 08/05/93, 09/10/93, 10/28/93, 03/22/00, 09/20/00, 06/28/01, 04/12/02
RPW-03	06/29/81	Monitoring Well	53	IA	A	01/01/82, 08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/28/00, 09/22/00
RPW-04	07/02/81	Monitoring Well	38.5	HA	A	01/01/82, 06/01/84, 09/18/86, 12/14/86, 02/26/87, 09/30/88, 05/01/89, 10/13/89, 05/10/90, 11/13/90
RPW-05	06/16/81	Monitoring Well	40.75	HA	A	01/01/82, 01/25/89, 02/27/89, 04/25/89, 06/12/91, 03/27/00, 09/27/00
TB-01-22	04/30/91	Temporary Well Point	23.5	HA	A	04/30/91
TB-02	04/30/91	Temporary Well Point	23.5	HA	A	04/30/91
TB-03-23	05/01/91	Temporary Well Point	23.5	HA	A	05/01/91
TB-04-23	05/02/91	Temporary Well Point	23.5	HA	A	05/03/91
UB-3	NA	Temporary Well Point	18-22	HA	A	01/14/98
UB-4	NA	Temporary Well Point	18-22	HA	A	01/15/98
W-01-I	01/27/82	Monitoring Well	50	GOULD	A	08/28/86, 12/10/86, 02/17/87, 10/23/92
W-02-S	01/26/82	Monitoring Well	18	GOULD	F/SA	12/22/86, 02/17/87, 10/26/90, 10/23/92
W-03-D	12/02/86	Monitoring Well	89	GOULD	A	08/27/86, 12/17/86, 12/21/86, 02/19/87, 12/21/87, 10/25/90, 12/11/96, 04/12/00, 10/09/00
W-03-I	01/29/82	Monitoring Well	40.5	GOULD	A	10/25/90, 03/30/95, 12/12/96, 04/12/00, 10/09/00, 06/26/01, 04/08/02
W-03-S	01/01/82	Monitoring Well	17	GOULD	F/SA	12/29/86, 02/19/87, 10/25/90, 03/29/95, 12/11/96, 04/12/00, 10/09/00
W-04-89	01/26/00	Monitoring Well	88	GOULD	A	04/12/00, 10/09/00, 06/26/01, 04/08/02
W-04-I	02/01/82	Monitoring Well	49	GOULD	A	08/27/86, 12/11/86, 02/21/87, 12/12/96, 04/12/00, 10/09/00
W-04-S	01/01/82	Monitoring Well	16	GOULD	F/SA	12/11/86, 02/21/87, 12/12/96, 04/12/00, 10/09/00
W-06-B	08/05/86	Monitoring Well	67.9	LA	B	09/04/86, 12/15/86, 02/22/87, 06/12/91, 07/09/91, 08/07/91, 03/27/95, 03/30/00, 09/28/00
W-06-D	06/22/81	Monitoring Well	49	LA	A	01/01/82, 09/04/86, 12/15/86, 02/22/87, 02/08/89, 03/01/89, 04/26/89, 06/12/91, 03/30/00, 09/28/00
W-06-S	07/23/86	Monitoring Well	27.25	LA	A	09/04/86, 12/12/86, 02/22/87, 02/07/89, 03/01/89, 04/26/89, 06/12/91, 03/30/00, 09/28/00
W-07-S	07/24/86	Monitoring Well	15	LA	F/SA	10/24/90, 11/13/90, 10/21/92, 03/01/94
W-07-I	06/18/81	Monitoring Well	54	LA	A	01/01/82, 09/15/86, 12/18/86, 02/26/87, 09/30/88, 05/01/89, 10/13/89, 05/10/90
W-07-D	06/28/90	Monitoring Well	70	LA	A	09/05/86, 12/22/86, 02/26/87, 10/24/90, 10/21/92, 02/24/94
W-08	06/24/81	Monitoring Well	54	LA	A	01/01/82, 09/15/86, 12/21/86, 02/26/87, 10/23/90, 10/22/92, 04/04/00, 10/05/00, 07/03/01, 04/17/02
W-08-26	01/18/00	Monitoring Well	25	LA	F/SA	04/05/00, 10/06/00, 07/02/01, 04/16/02, 04/18/02
W-08-74	01/19/00	Monitoring Well	73	LA	B	04/04/00, 10/05/00, 07/03/01, 04/16/02
W-09	06/25/81	Monitoring Well	38	LA	F/SA	01/01/82, 08/29/86, 12/18/86, 02/23/87, 10/22/92, 04/10/00, 10/06/00
W-09-116	01/21/00	Monitoring Well	115.5	LA	A	04/07/00, 10/06/00, 06/29/01, 04/15/02
W-09-86	01/25/00	Monitoring Well	85	LA	A	04/07/00, 10/06/00
W-10	07/06/81	Monitoring Well	70.5	COP	A	01/01/82, 06/01/84, 09/18/86, 12/21/86, 02/25/87, 09/29/88, 05/01/89, 10/13/89, 05/10/90, 10/18/90, 11/13/90, 10/22/92, 03/27/95, 12/15/95, 04/14/00, 10/11/00
W-11-B	08/15/86	Monitoring Well	121.9	ESCO	B	09/03/86, 12/16/86, 02/24/87, 04/11/00, 10/10/00, 06/21/01, 04/09/02

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
W-11-D	07/29/86	Monitoring Well	91.3	ESCO	A	09/16/86, 01/20/87, 02/25/87, 10/22/90, 04/05/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-11-I	07/03/86	Monitoring Well	60	ESCO	A	09/03/86, 12/16/86, 02/24/87, 10/22/90, 04/04/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-11-S	07/23/86	Monitoring Well	21.5	ESCO	F/SA	09/03/86, 12/17/86, 02/24/87, 04/04/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-12-D	01/09/87	Monitoring Well	100	ESCO	A	01/21/87, 02/23/87, 10/22/90, 04/04/95, 12/19/95, 04/11/00, 10/10/00
W-12-I	01/09/87	Monitoring Well	58.5	ESCO	A	01/21/87, 02/23/87, 10/22/90, 04/04/95, 12/18/95, 04/11/00, 10/10/00
W-12-S	01/12/87	Monitoring Well	20	ESCO	F/SA	10/22/90, 04/11/00, 10/10/00
W-15-D	08/12/86	Monitoring Well	62	METRO	A	09/17/86, 12/14/86, 02/19/87, 10/23/90, 10/24/90, 04/10/00, 09/29/00, 06/22/01, 06/29/01, 04/11/02
W-15-I	08/12/86	Monitoring Well	38.8	METRO	A	09/17/86, 12/14/86, 02/19/87, 08/09/88, 10/24/90, 04/10/00, 09/29/00, 06/20/01, 04/11/02
W-15-S	07/24/86	Monitoring Well	14.8	METRO	A	09/17/86, 12/17/86, 02/19/87, 10/24/90, 04/10/00, 10/04/00, 06/20/01, 06/22/01, 04/11/02
W-16-31	02/11/00	Monitoring Well	30	SCHNITZER	F/SA	04/19/00, 10/17/00, 06/22/01, 04/08/02
W-16-D	12/19/86	Monitoring Well	85.5	SCHNITZER	A	12/30/86, 02/18/87, 04/05/95, 12/19/96, 04/19/00, 10/17/00
W-16-I	12/19/86	Monitoring Well	50	SCHNITZER	A	12/30/86, 02/18/87, 04/05/95, 12/19/96, 04/19/00, 10/17/00, 06/22/01, 06/27/01, 04/08/02
W-16-S	12/29/86	Monitoring Well	13	SCHNITZER	F/SA	12/30/86, 02/18/87, 04/05/95, 12/19/96
W-17	06/18/90	Monitoring Well	50	METRO	A	10/22/90
W-18-D	07/17/90	Monitoring Well	64	OFFSITE W	B	10/15/90, 03/21/00, 09/19/00, 06/18/01, 04/04/02
W-18-I	07/18/90	Monitoring Well	54	OFFSITE W	A	10/16/90, 03/21/00, 09/19/00, 06/18/01, 04/04/02
W-18-S	07/19/90	Monitoring Well	30	OFFSITE W	A	10/16/90, 03/21/00, 09/19/00, 06/19/01, 04/04/02
W-19-D	07/10/90	Monitoring Well	67.5	ATOFINA	A	10/18/90, 03/28/95, 12/20/95, 04/02/98, 04/18/00, 10/16/00, 06/20/01, 04/05/02
W-19-I	06/20/90	Monitoring Well	49	ATOFINA	A	10/18/90, 03/28/95, 12/20/95, 04/02/98, 04/18/00, 10/16/00, 06/20/01, 04/05/02
W-19-S	06/21/90	Monitoring Well	25	ATOFINA	A	03/28/95, 04/02/98, 04/18/00, 04/05/02

Notes:

NA Boring Log not available

[1]LOCATION TYPE

Monitoring Well, Extraction Well or Piezometer	Monitoring well, extraction well or piezometer - permanent installation (although may have been abandoned)
Temporary Well Point	One-time sampling location, such as direct-push or during drilling

[2]SAMPLE DEPTH

Bottom of screened interval for monitoring wells, or discrete depth interval for one-time sampling locations

[3]GENERAL LOCATION

LA	RPAC LAKE AREA
HA	RPAC HERBICIDE AREA
IA	RPAC INSECTICIDE AREA
OFFSITE W	OFFSITE TO THE WEST OF THE RPAC PROPERTY
COP	CITY OF PORTLAND

[4]CHARACTERIZATION DEPTH

F/SA	FILL/SHALLOW ALLUVIUM ZONE
A	ALLUVIUM ZONE
B	BASALT ZONE

TABLE 3-2
Preliminary Screening Values Associated with Preliminary Constituents of Potential Concern
Groundwater Characterization Report
RPAC - Portland Site

Chemical Class	Analyte	CAS #	Groundwater Screening Value	Units	Ref
Dioxin/Furans	1,2,3,4,6,7,8,9-OCDF	39001-02-0	NA	ng/L	a
Dioxin/Furans	1,2,3,4,6,7,8-HpCDD	35822-46-9	NA	ng/L	a
Dioxin/Furans	1,2,3,4,6,7,8-HpCDF	67562-39-4	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8,9-HpCDF	55673-89-7	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8-HxCDD	39227-28-6	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8-HxCDF	70648-26-9	NA	ng/L	a
Dioxin/Furans	1,2,3,6,7,8-HxCDD	57653-85-7	NA	ng/L	a
Dioxin/Furans	1,2,3,6,7,8-HxCDF	57117-44-9	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8,9-HxCDD	19408-74-3	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8,9-HxCDF	72918-21-9	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8-PeCDD	40321-76-4	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8-PeCDF	57117-41-6	NA	ng/L	a
Dioxin/Furans	2,3,4,6,7,8-HxCDF	60851-34-5	NA	ng/L	a
Dioxin/Furans	2,3,4,7,8-PeCDF	57117-31-4	NA	ng/L	a
Dioxin/Furans	2,3,7,8-TCDD	1746-01-6	4.48E-04	ng/L	a
Dioxin/Furans	2,3,7,8-TCDF	51207-31-9	NA	ng/L	a
Herbicides	2,4,5-T	93-76-5	3.65E+02	µg/L	a
Herbicides	2,4,5-TP (Silvex)	93-72-1	2.92E+02	µg/L	a
Herbicides	2,4-D	94-75-7	3.65E+02	µg/L	a
Herbicides	2,4-DB	94-82-6	2.92E+02	µg/L	a
Herbicides	2,4-DP (Dichlorprop)	120-36-5	NA	µg/L	a
Herbicides	Bromoxynil	1689-84-5	7.30E+02	µg/L	a
Herbicides	Dinoseb	88-85-7	3.65E+01	µg/L	a
Insecticides	4,4'-DDD	72-54-8	2.80E-01	µg/L	a
Insecticides	4,4'-DDE	72-55-9	1.98E-01	µg/L	a
Insecticides	4,4'-DDT	50-29-3	1.98E-01	µg/L	a
Insecticides	Aldrin	309-00-2	3.95E-03	µg/L	a
Insecticides	alpha-BHC	319-84-6	1.07E-02	µg/L	a
Insecticides	beta-BHC	319-85-7	3.74E-02	µg/L	a
Insecticides	Chlordane (tech)	57-74-9	NA	µg/L	a
Insecticides	delta-BHC	319-86-8	NA	µg/L	a
Insecticides	Dieldrin	60-57-1	4.20E-03	µg/L	a
Insecticides	Endrin	72-20-8	1.09E+01	µg/L	a
Insecticides	gamma-BHC (Lindane)	58-89-9	5.17E-02	µg/L	a
Insecticides	Heptachlor	76-44-8	1.49E-02	µg/L	a
Insecticides	Hexachlorobenzene	118-74-1	4.20E-02	µg/L	a
Insecticides	Toxaphene	8001-35-2	6.11E-02	µg/L	a
Metals	Arsenic	7440-38-2	2.00E+00	µg/L	d
Metals	Cadmium	7440-43-9	1.82E+01	µg/L	a
Metals	Chromium*	7440-47-3	1.09E+02	µg/L	a
Metals	Copper	7440-50-8	1.46E+03	µg/L	a
Metals	Lead	7439-92-1	1.50E+01	µg/L	b
Metals	Mercury and compounds	7439-97-6	2.00E+00	µg/L	c
Metals	Nickel	7440-02-0	7.30E+02	µg/L	a
Metals	Vanadium	7440-62-2	2.55E+02	µg/L	a
Metals	Zinc	7440-66-6	1.09E+04	µg/L	a

TABLE 3-2
Preliminary Screening Values Associated with Preliminary Constituents of Potential Concern
Groundwater Characterization Report
RPAC - Portland Site

Chemical Class	Analyte	CAS #	Groundwater Screening Value	Units	Ref
PCBs	Aroclor 1254	11097-69-1	3.36E-02	µg/L	a
SVOCs	2,4,6-Trichlorophenol	88-06-2	3.65E+00	µg/L	a
SVOCs	2,4-Dichlorophenol	120-83-2	1.09E+02	µg/L	a
SVOCs	2,4-Dinitrophenol	51-28-5	7.30E+01	µg/L	a
SVOCs	2-Chlorophenol	95-57-8	3.04E+01	µg/L	a
SVOCs	Pentachlorophenol	87-86-5	5.60E-01	µg/L	a
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	5.53E-02	µg/L	a
VOCs	1,1-Dichloroethane	75-34-3	8.11E+02	µg/L	a
VOCs	1,2-Dichlorobenzene	95-50-1	3.70E+02	µg/L	a
VOCs	1,2-Dichloroethane	107-06-2	1.23E-01	µg/L	a
VOCs	1,3-Dichlorobenzene	541-73-1	5.48E+00	µg/L	a
VOCs	1,4-Dichlorobenzene	106-46-7	5.02E-01	µg/L	a
VOCs	Benzene	71-43-2	3.36E-01	µg/L	a
VOCs	Chlorobenzene	108-90-7	1.06E+02	µg/L	a
VOCs	Chloroform	67-66-3	6.17E+00	µg/L	a
VOCs	cis-1,2-Dichloroethene	156-59-2	6.08E+01	µg/L	a
VOCs	Ethylbenzene	100-41-4	1.34E+03	µg/L	f
VOCs	Isobutyl alcohol	78-83-1	1.83E+03	µg/L	a
VOCs	m,p-Xylene	1330-20-7	2.10E+02	µg/L	e
VOCs	Methyl chloride (chloromethane)	74-87-3	1.51E+00	µg/L	a
VOCs	o-Xylene	95-47-6	2.10E+02	µg/L	e
VOCs	Tetrachloroethene (PCE)	127-18-4	1.08E+00	µg/L	f
VOCs	Toluene	108-88-3	7.23E+02	µg/L	a
VOCs	Trichloroethene (TCE)	79-01-6	2.80E-02	µg/L	a
VOCs	Vinyl chloride	75-01-4	1.98E-02	µg/L	a

NA	No applicable screening value available
ng/L	nanograms per liter
µg/L	micrograms per liter

Reference Key:

a	USEPA Region IX Preliminary Remediation Goals (PRGs), tap water (October 2002)
b	USEPA National Primary Drinking Water Regulations, Action Level (July 2002)
c	USEPA National Primary Drinking Water Regulations, Maximum Contaminant Level (MCL) (July 2002)
d	DEQ Default Background Concentrations for Metals (October 2002)
e	There is no PRG available; the PRG for xylenes has been listed and can be used as a surrogate
f	2000 PRG; according to DEQ, EPA has withdrawn the new toxicity factors for ethylbenzene and PCE, and the 2000 PRG should be used
*	Because total chromium PRG values are not available, the screening value for hexavalent chromium (Cr+6) has been used

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	RP-01-51	4/17/2000	8260B	75-35-4	1,1-Dichloroethene	0.65	µg/L	0.151	1		0.57	250
A	RP-01-51	4/8/2002	8260B	75-35-4	1,1-Dichloroethene	0.74	µg/L	0.302	2		0.57	250
B	RP-01-65	4/17/2000	8260B	75-35-4	1,1-Dichloroethene	1.61	µg/L	0.151	1		0.57	250
B	RP-01-65	10/11/2000	8260B	75-35-4	1,1-Dichloroethene	1.55	µg/L	0.755	5		0.57	250
B	RP-01-65	6/26/2001	8260B	75-35-4	1,1-Dichloroethene	1.85	µg/L	0.755	5		0.57	250
B	RP-01-65	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	2	µg/L	0.755	5		0.57	250
A	W-19-D	4/18/2000	8260B	75-35-4	1,1-Dichloroethene	4.75	µg/L	0.151	1		0.57	250
A	W-19-D	10/16/2000	8260B	75-35-4	1,1-Dichloroethene	3.35	µg/L	0.755	5		0.57	250
A	W-19-D	6/20/2001	8260B	75-35-4	1,1-Dichloroethene	0.93	µg/L	0.151	1		0.57	250
A	W-19-D	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	2.95	µg/L	0.755	5		0.57	250
A	W-19-I	4/18/2000	8260B	75-35-4	1,1-Dichloroethene	1.8	µg/L	0.151	1	J	0.57	250
A	W-19-I	10/16/2000	8260B	75-35-4	1,1-Dichloroethene	1.56	µg/L	0.302	2		0.57	250
A	W-19-I	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	1.04	µg/L	0.302	2		0.57	250
A	RP-01-51	4/17/2000	8260B	95-50-1	1,2-Dichlorobenzene	227	µg/L	0.174	2		27000	140
A	RP-01-51	10/11/2000	8260B	95-50-1	1,2-Dichlorobenzene	150	µg/L	0.087	1		27000	140
A	RP-01-51	4/8/2002	8260B	95-50-1	1,2-Dichlorobenzene	197	µg/L	0.174	2		27000	140
B	RP-01-65	4/17/2000	8260B	95-50-1	1,2-Dichlorobenzene	640	µg/L	0.87	10		27000	140
B	RP-01-65	10/11/2000	8260B	95-50-1	1,2-Dichlorobenzene	537	µg/L	0.435	5		27000	140
B	RP-01-65	6/26/2001	8260B	95-50-1	1,2-Dichlorobenzene	722	µg/L	0.435	5		27000	140
B	RP-01-65	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	546	µg/L	0.435	5		27000	140
B	RP-07-119	5/3/2002	8260B	95-50-1	1,2-Dichlorobenzene	248	µg/L	0.172	2		27000	140
A	RP-07-84	5/3/2002	8260B	95-50-1	1,2-Dichlorobenzene	426	µg/L	0.859	10		27000	140
A	W-19-D	4/18/2000	8260B	95-50-1	1,2-Dichlorobenzene	830	µg/L	0.87	10		27000	140
A	W-19-D	10/16/2000	8260B	95-50-1	1,2-Dichlorobenzene	861	µg/L	0.435	5		27000	140
A	W-19-D	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	657	µg/L	0.435	5		27000	140
A	W-19-I	4/18/2000	8260B	95-50-1	1,2-Dichlorobenzene	329	µg/L	0.435	5	J	27000	140
A	W-19-I	10/16/2000	8260B	95-50-1	1,2-Dichlorobenzene	312	µg/L	0.174	2		27000	140
A	W-19-I	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	188	µg/L	0.174	2		27000	140
B	RP-01-65	4/17/2000	8260B	106-46-7	1,4-Dichlorobenzene	187	µg/L	1.76	10		4000	150
B	RP-01-65	10/11/2000	8260B	106-46-7	1,4-Dichlorobenzene	180	µg/L	0.88	5		4000	150
B	RP-01-65	6/26/2001	8260B	106-46-7	1,4-Dichlorobenzene	207	µg/L	0.88	5		4000	150
B	RP-01-65	4/5/2002	8260B	106-46-7	1,4-Dichlorobenzene	171	µg/L	0.88	5		4000	150
A	W-19-D	4/18/2000	8260B	106-46-7	1,4-Dichlorobenzene	244	µg/L	1.76	10		4000	150
A	W-19-D	10/16/2000	8260B	106-46-7	1,4-Dichlorobenzene	248	µg/L	0.88	5		4000	150
A	W-19-D	4/5/2002	8260B	106-46-7	1,4-Dichlorobenzene	201	µg/L	0.88	5		4000	150
A	RP-01-31	4/5/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0045	ng/l	5.81	1.4	J	0.00005	76
A	RP-02-31	10/16/2000	8290	1746-01-6	2,3,7,8-TCDD	0.0009	ng/l	0.4	0.4		0.00005	76
A	RP-02-31	4/4/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0031	ng/l	5.81	0.4	J	0.00005	76
B	RP-02-66	4/4/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0052	ng/l	5.81	1.7	J	0.00005	76
A	W-19-I	10/16/2000	8290	1746-01-6	2,3,7,8-TCDD	0.00055	ng/l	0.5	0.5		0.00005	76
A	RP-01-31	10/11/2000	6010A	7429-90-5	Aluminum	23700	µg/L	0.015	0.1		NA	870
A	RP-01-31	6/26/2001	6010A	7429-90-5	Aluminum	136000	µg/L	1	1		NA	870
A	RP-01-31	4/5/2002	6010A	7429-90-5	Aluminum	50600	µg/L	0.0415	0.1		NA	870
A	RP-02-31	10/16/2000	6010A	7429-90-5	Aluminum	1030	µg/L	0.015	0.1		NA	870
A	RP-02-49	10/16/2000	6010A	7429-90-5	Aluminum	1080	µg/L	0.015	0.1		NA	870
A	RP-07-55	5/3/2002	6010A	7429-90-5	Aluminum	1250	µg/L	0.0415	0.1		NA	870
A	RP-07-84	5/3/2002	6010A	7429-90-5	Aluminum	6100	µg/L	0.0415	0.1		NA	870

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	W-19-I	10/16/2000	6010A	7429-90-5	Aluminum	1760	µg/L	0.015	0.1		NA	870
A	RP-01-31	6/26/2001	6020	7440-38-2	Arsenic	34.4	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	4/5/2002	6020	7440-38-2	Arsenic	23.7	µg/L	0.000663	0.001		0.18	1500
A	RP-01-51	6/26/2001	6020	7440-38-2	Arsenic	6.19	µg/L	0.00022	0.001		0.18	1500
A	RP-01-51	4/8/2002	6020	7440-38-2	Arsenic	14.4	µg/L	0.000663	0.001		0.18	1500
A	RP-02-31	6/19/2001	6020	7440-38-2	Arsenic	140	µg/L	0.00247	0.0112	J	0.18	1500
A	RP-02-31	4/4/2002	6020	7440-38-2	Arsenic	140	µg/L	0.000663	0.001		0.18	1500
A	RP-02-49	6/19/2001	6020	7440-38-2	Arsenic	4.23	µg/L	0.00022	0.001	J	0.18	1500
A	RP-02-49	4/4/2002	6020	7440-38-2	Arsenic	7.99	µg/L	0.000663	0.001		0.18	1500
B	RP-07-119	5/3/2002	6020	7440-38-2	Arsenic	1.19	µg/L	0.000663	0.001		0.18	1500
F/SA	RP-07-30	5/3/2002	6020	7440-38-2	Arsenic	1.84	µg/L	0.000663	0.001		0.18	1500
A	RP-07-55	5/3/2002	6020	7440-38-2	Arsenic	9.78	µg/L	0.000663	0.001		0.18	1500
A	RP-07-84	5/3/2002	6020	7440-38-2	Arsenic	3.82	µg/L	0.000663	0.001		0.18	1500
A	W-19-I	6/20/2001	6020	7440-38-2	Arsenic	3.17	µg/L	0.00022	0.001	J	0.18	1500
A	W-19-I	4/5/2002	6020	7440-38-2	Arsenic	6.52	µg/L	0.000663	0.001		0.18	1500
A	W-19-S	4/5/2002	6020	7440-38-2	Arsenic	86	µg/L	0.000663	0.001		0.18	1500
A	RP-01-31	4/17/2000	6020	7440-38-2	Arsenic - Dissolved	3.25	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	10/11/2000	6020	7440-38-2	Arsenic - Dissolved	9.7	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	6/26/2001	6020	7440-38-2	Arsenic - Dissolved	4.29	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	4.28	µg/L	0.000663	0.001		0.18	1500
A	RP-01-51	6/26/2001	6020	7440-38-2	Arsenic - Dissolved	5.11	µg/L	0.00022	0.001		0.18	1500
A	RP-01-51	4/8/2002	6020	7440-38-2	Arsenic - Dissolved	11.6	µg/L	0.000663	0.001		0.18	1500
A	RP-02-31	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	73.9	µg/L	0.00022	0.001		0.18	1500
A	RP-02-31	10/16/2000	6020	7440-38-2	Arsenic - Dissolved	154	µg/L	0.00147	0.00667		0.18	1500
A	RP-02-31	6/19/2001	6020	7440-38-2	Arsenic - Dissolved	127	µg/L	0.00277	0.0126	J	0.18	1500
A	RP-02-31	4/4/2002	6020	7440-38-2	Arsenic - Dissolved	132	µg/L	0.000663	0.001		0.18	1500
A	RP-02-49	6/19/2001	6020	7440-38-2	Arsenic - Dissolved	3.89	µg/L	0.00022	0.001	J	0.18	1500
A	RP-02-49	4/4/2002	6020	7440-38-2	Arsenic - Dissolved	3.77	µg/L	0.000663	0.001		0.18	1500
A	RP-07-55	5/3/2002	6020	7440-38-2	Arsenic - Dissolved	9.11	µg/L	0.000663	0.001		0.18	1500
A	W-19-I	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	2.29	µg/L	0.00022	0.001		0.18	1500
A	W-19-I	6/20/2001	6020	7440-38-2	Arsenic - Dissolved	2.92	µg/L	0.00022	0.001	J	0.18	1500
A	W-19-I	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	5.57	µg/L	0.000663	0.001		0.18	1500
A	W-19-S	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	1.35	µg/L	0.00022	0.001		0.18	1500
A	W-19-S	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	1.03	µg/L	0.000663	0.001		0.18	1500
B	RP-01-65	4/17/2000	8260B	71-43-2	Benzene	27.4	µg/L	0.121	1		22	1300
B	RP-01-65	6/26/2001	8260B	71-43-2	Benzene	41.4	µg/L	0.605	5		22	1300
A	W-19-I	6/20/2001	6020	7440-43-9	Cadmium	2.93	µg/L	0.000032	0.001		NA	22
A	W-19-I	10/16/2000	6020	7440-43-9	Cadmium - Dissolved	2.88	µg/L	0.000032	0.001		NA	22
A	W-19-S	4/5/2002	6020	7440-47-3	Chromium	203	µg/L	0.000292	0.001		NA	110
A	W-19-S	4/5/2002	6020	7440-50-8	Copper	336	µg/L	0.00017	0.002		13000	90
A	RP-01-31	10/11/2000	6010A	7439-89-6	Iron	50300	µg/L	0.03	0.1		NA	10000
A	RP-01-31	6/26/2001	6010A	7439-89-6	Iron	393000	µg/L	0.96	1		NA	10000
A	RP-01-31	4/5/2002	6010A	7439-89-6	Iron	126000	µg/L	0.225	2.5		NA	10000
A	RP-02-31	4/18/2000	6010A	7439-89-6	Iron	51700	µg/L	0.96	1		NA	10000
A	RP-02-31	10/16/2000	6010A	7439-89-6	Iron	85700	µg/L	0.3	1		NA	10000
F/SA	RP-07-30	5/3/2002	6010A	7439-89-6	Iron	11900	µg/L	0.009	0.1		NA	10000
A	RP-07-55	5/3/2002	6010A	7439-89-6	Iron	10300	µg/L	0.009	0.1		NA	10000

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	RP-07-84	5/3/2002	6010A	7439-89-6	Iron	12400	µg/L	0.009	0.1		NA	10000
A	RP-01-31	6/26/2001	6020	7439-92-1	Lead	51.4	µg/L	0.000039	0.001	J	NA	25
A	RP-01-31	4/5/2002	6020	7439-92-1	Lead	31.9	µg/L	0.000107	0.001		NA	25
A	RP-02-31	4/4/2002	6020	7439-92-1	Lead	42.7	µg/L	0.000107	0.001		NA	25
A	W-19-S	4/5/2002	6020	7439-92-1	Lead	298	µg/L	0.000535	0.005		NA	25
A	RP-01-31	10/11/2000	6010A	7439-96-5	Manganese	1820	µg/L	0.002	0.01		NA	1200
A	RP-01-31	6/26/2001	6010A	7439-96-5	Manganese	6970	µg/L	0.002	0.01		NA	1200
A	RP-01-31	4/5/2002	6010A	7439-96-5	Manganese	2200	µg/L	0.0039	0.01		NA	1200
A	RP-01-51	4/17/2000	6010A	7439-96-5	Manganese	4140	µg/L	0.002	0.01		NA	1200
A	RP-01-51	10/11/2000	6010A	7439-96-5	Manganese	3040	µg/L	0.002	0.01		NA	1200
A	RP-01-51	6/26/2001	6010A	7439-96-5	Manganese	3240	µg/L	0.002	0.01		NA	1200
A	RP-01-51	4/8/2002	6010A	7439-96-5	Manganese	2940	µg/L	0.0039	0.01		NA	1200
B	RP-01-65	10/11/2000	6010A	7439-96-5	Manganese	2010	µg/L	0.002	0.01		NA	1200
B	RP-01-65	6/26/2001	6010A	7439-96-5	Manganese	2100	µg/L	0.002	0.01		NA	1200
B	RP-01-65	4/5/2002	6010A	7439-96-5	Manganese	3340	µg/L	0.0039	0.01		NA	1200
A	RP-02-31	4/18/2000	6010A	7439-96-5	Manganese	7840	µg/L	0.002	0.01		NA	1200
A	RP-02-31	10/16/2000	6010A	7439-96-5	Manganese	5840	µg/L	0.002	0.01		NA	1200
A	RP-02-49	4/18/2000	6010A	7439-96-5	Manganese	25200	µg/L	0.02	0.1		NA	1200
A	RP-02-49	10/16/2000	6010A	7439-96-5	Manganese	14300	µg/L	0.02	0.1		NA	1200
F/SA	RP-07-30	5/3/2002	6010A	7439-96-5	Manganese	2990	µg/L	0.0039	0.01		NA	1200
A	RP-07-55	5/3/2002	6010A	7439-96-5	Manganese	12900	µg/L	0.039	0.1		NA	1200
A	RP-07-84	5/3/2002	6010A	7439-96-5	Manganese	8640	µg/L	0.0039	0.01		NA	1200
A	W-19-I	4/18/2000	6010A	7439-96-5	Manganese	20200	µg/L	0.02	0.1		NA	1200
A	W-19-I	10/16/2000	6010A	7439-96-5	Manganese	16800	µg/L	0.02	0.1		NA	1200
A	RP-01-31	6/26/2001	6020	7440-62-2	Vanadium	249	µg/L	0.00015	0.005	J	NA	200
A	W-19-S	4/5/2002	6020	7440-62-2	Vanadium	539	µg/L	0.00035	0.005		NA	200
A	W-19-D	4/18/2000	8260B	75-01-4	Vinyl chloride	32.3	µg/L	0.31	1		20	13000
A	W-19-D	10/16/2000	8260B	75-01-4	Vinyl chloride	60.5	µg/L	1.55	5		20	13000
A	W-19-D	4/5/2002	8260B	75-01-4	Vinyl chloride	21.6	µg/L	1.55	5		20	13000
A	W-19-I	10/16/2000	8260B	75-01-4	Vinyl chloride	24.7	µg/L	0.62	2		20	13000

a EPA National Recommended Water Quality Criteria, consumption of water and organisms values for human health screening (November 2002)
b DEQ ERA Level II Screening Level Values, most protective value for surface water (December 2001)
Constituent concentration exceeds highlighted screening value.

µg/L micrograms per liter
ng/l nanograms per liter

Characterization Zones
F/SA Fill/Shallow Alluvium Zone
A Alluvium Zone
B Basalt Zone

Note
This table includes groundwater analytical results from monitoring wells in the RP-01, RP-02, RP-07, and W-19 clusters, from Spring 2000 through Spring 2002, that exceed one or more of the surface water screening values shown. Groundwater analytical results that did not exceed these screening values were excluded from the table. Groundwater results exceeding surface water screening values, or 10 times surface water screening values, at monitoring well locations do not represent concentrations discharging to surface water.

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
AL4-47	19'-22'	Dark brown, viscous NAPL, heavy iridescent sheen	Sandy silt/silty sand
B	21.75'-21.80'	Black, very thick product below water in bailer	Sand
B-05	32'	Brown free product	Sand
BST1W-88	20'-22'	Unknown	Unknown
BST2W-61	17.5'-23.5'	Dark brown IDOR bleb visible	Silt/sandy silt
BST-3	18'-19'	Dark blebs "bleed" out of iridescent sheen spots, IDOR	Sandy silt/silty sand
C	24.63'-25.30'	Black product below water in bailer	Sandy silt
DB-01	8.5'-15.5'	Visible blobs of product	Sandy silt
DNB-02	13.5'-17.5'	Heavily discolored with black streaks	Sandy silt/silty sand
E	27.34'-27.51'	Dark brown product below water in bailer	Sandy silt/sand
F	25.43'-25.50'	Dark brown product above water in bailer	Sand
G-1	18'-20' 33.5'-34'	~20 brown NAPL blebs ~50 brown NAPL blebs	Fine sandy silt with clay, micaceous Sand with silt, micaceous
G-2	16'-26' 30'-32' 40'-42'	Discontinuous presence of NAPL blebs Thin LNAPL layer and dark brown NAPL blebs	Fine sandy silt, micaceous Silty sand, micaceous
G-3	9.5'-10.5' 16'-17' 20'-24'	8 NAPL blebs 3 NAPL blebs 2 NAPL blebs and ~30 faint NAPL blebs	Dark gray sand, micaceous Medium brown silt with sand Medium gray sandy silt, micaceous
G-4	10'-11' 12'-14' 30'-32' 34'-36' 42'-44'	NAPL blebs, continuous sheen Abundant (>30) NAPL blebs; faint continuous sheen NAPL blebs and sheen NAPL blebs and sheen Brown NAPL blebs, faint sheen	Dark gray sand, micaceous Medium brown silt with sand Medium brown, silty fine sand, micaceous
G-5	6'-8' 17.5'-34' 24'-26' & 38'-40' 42'-44' 46'-48'	Brown NAPL blebs, continuous sheen Various amounts of NAPL blebs and sheen LNAPL floating on water at top of tube, sheen LNAPL floating on water and DNAPL at bottom of water Brown NAPL blebs, continuous sheen	 Dark gray, sandy silt with gravel, micaceous Medium brown, silty sand, micaceous

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
G-6	17'-19' 17'-21' 27'-31' 37'-39'	Layer of dark brown LNAPL NAPL blebs, sheen Dark brown NAPL blebs, continuous sheen ~15 dark brown NAPL blebs, continuous sheen	Light brown sand with silt Dark gray sand with silt, micaceous
G-7	18'-20' 28'-30'	2 NAPL blebs, faint sheen ~10 NAPL blebs, sheen	Medium brown, fine sandy silt, micaceous
G-8	16'-18' 23'-24'	>50 NAPL blebs ~10 NAPL blebs	Medium brown, fine sandy silt, micaceous Medium brown sand with silt, micaceous
G-9	32'-36' 40'-42'	NAPL blebs, continuous sheen >100 NAPL blebs, continuous sheen	Medium brown, silty sand, micaceous
G-10	13'-18' 16'-18'	Brown NAPL blebs, sheen LNAPL floating on water at top of sample	Medium brown silty sand
G-11	10', 13', 19', & 24'-26' 24'-26'	NAPL blebs, sheen LNAPL floating on water at top of tube	Sandy silt, micaceous
G-12	30.5'-32	~10 brown NAPL blebs, continuous sheen	Medium gray silty sand, micaceous
G-14	19'-22'	NAPL blebs, sheen	Sandy silt/silty sand
G-15	33'-34'	~100 brown NAPL blebs	Dark grayish brown silty sand, micaceous
G-16	15'-20' 45.5'	Brown NAPL blebs Saturated with brown NAPL	Dark gray/brown fine sandy silt Dark grayish brown, with no mica. Basalt at 47'
G-17	13'-20', 24'-28', & 38'-39' 14'-20'	NAPL blebs LNAPL floating on water at top of sample	Medium brown sandy silt, micaceous
HA-01	12'-19'	NAPL blebs noted in soil and water	Fine-grained clayey, silty sands and clayey sandy silts
HA-03	15'-24'	Some disseminated NAPL blebs and NAPL observed visually at 20'-22'	Silty sand to sandy silt
HA-04	15'	Strong odor and visual evidence of NAPLs (sheen and blebs)	Clayey, sandy silt
HA-07	12'	Sheen, odor, and NAPL blebs noted	Clayey silt with trace fine-grained sand
HA-08	20'-25'	Honey brown to dark brown NAPL blebs, strong sheen to water	Fine-grained, poorly graded micaceous sand with trace silt
HA-201	10'-15'	Dark brown NAPL blebs	Light gray, clayey silt
HA-203	8'-11'	NAPL blebs noted	Clayey silt

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
HE-10	1.9'	Floating product on water	Sand (fill)
HE-14	3'	Product streaks	Clayey silt (fill)
HE-8	4'-6'	Product streaks in soil	Clayey silt (fill)
HSB-2	30'	Abundant brown, viscous DNAPL	Silty sand
HSB-3	20'&22'	Abundant NAPL visible as dark viscous liquid, dark brown NAPL blebs with sheen	Silty sand to sandy silt
ITB-15	25'	Faint brown NAPL-saturated areas	Silty sand, fine-grained
MW-03-68	see notes (-->)	Fill to 2' included "gravel-size green foundry slag and sand" and "two squashed barrels lying on their sides without tops"; reddish FeOX staining at 2'-6', 10'-11', 48'-49', 58'-59' -- handwriting on log copy calls this DNAPL at 58'	Silt, sandy silt, sand, sandy clayey silt (63'-65'), basalt gravel below 65', basalt at 67.7'
MW-05-34	31.3'-34.3'	Bailer full of dark brown product	Silty sand
MW-05-52	sheen at 11.3'-11.7', strong sheen from 15.4'-16.1', trace sheen 18'-19.5', no sheen, trace dark brn free product at 30.5'-31', no sheen below	Missing first page of log… reddish FeOX staining at 11'	Sandy silt, silty sand, sand, gravel at 47', basalt at 52'
MW-05-70	NAPL in cuttings drum noted at 35', NAPL globules in water at 45'-49'	Odor from 5' to gw (15'), PID readings max 149 ppm at 25'	Silty sand/sandy silt, silt (10' to 33'), silty sand, sand, 1/2" clay lens, gravel at 49', basalt at 60.5'
MW-08-27	slight sheen 2.6'-2.9', slight sheen on wet soil 6.5'-9', 11.5'-12.2', free product as brown beads 18.5'-21.5', diminished visible product to slight sheen on soil 21.5'-23', sheen on soil and water surface at 23'-27'	FeOX red mottling with no product sheen 13.3'-15.2' Brown beads of free product @18.5'-21.5'	Clayey sandy silt 2.9'-3.5', sandy silt, silty sand
MW-08-46	45.7'-46'	Dark brown product below water in bailer	Silty sand
MW-08-64	sandy slurry with sheen (?) at 13.3'-13.6', silver sheen on surface at 18'-22.5', 23.2'-24', slight sheen on fine sand horizon at 25.5', slight sheen on surface at 45'-45.4', slight sheen at 50.1' (0.1' thick), slight sheen at 55'-55.3' and 56.1'-56.5'	Red brown FeOX and black organic grain coloration at 11.5'-13', reddish FeOX coloration on blebs at 13.6'-14'; red brown FeOX blebs with no sheen at 25.5'-27'; "dark brown product below water in bailer 45.7'-46' on 5/4/93" handwritten on log; red brown FeO	Fill to 15', sandy silt, silty sand, cemented gravel in clay matrix at 60-61.5', basalt gravel and sand to at least 63.5'

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
P-07	14.91'-15.60'	Dark brown product above water in bailer	Sandy silt
P-100	17.05'-17.36'	Dark brown product above water in bailer	Sandy silt
RP-04-16	15'	NAPL globules	Sand; black, coarse, rounded, loose
RP-04-41	15' 24'	Visible sheen with NAPL globules NAPL globules	Sand; black, fine to coarse Silt; dark gray, trace very fine sand
T-04	19'-24'	Dark brown free product	Sandy silt
T-08	14'-24'	Core saturated with dark brown free product	Sandy silt
T-09	21'-29'	Dark brown free product beading on soil & floating on water	Sandy silt
T-10	23.2'-25.5'	Dark brown free product in core, floating & sinking dk brown free product	Sandy silt, sand
T-11	22.3'-29'	Transparent product coating length of core	Sandy silt
T-12	19'-29'	Brown product in core	Sandy silt
T-13	19'-24'	Brown product beads	Sandy silt
T-17	2.2'-3'	Brown, oily-feeling perched water, product in water sample	Gravelly sand (fill)
T-19	9'-14'	Minor free brown product in sandier horizons	Sandy silt
T-20	19'-24'	Dark brown product in sandier horizons	Sandy silt
TP-3	7.5'-8.4'	Brown blobs of product	Gravelly silt (fill)
TP-8	5'-8.5'	Floating black product, product flows freely from sidewall	Sandy gravel (fill)

NAPL = Non-aqueous phase liquid
IDOR = Indeterminate density organic residual
DNAPL = Dense non-aqueous phase liquid
LNAPL = Light non-aqueous phase liquid
N/A = Not applicable
FeOX = Iron Oxide
PID = Photoionization Detector

Note: Information contained in this table was obtained directly from soil boring and test pit logs.

TABLE 3-4b
Non-Aqueous Phase Liquid Occurrence in Groundwater Monitoring Wells
RPAC - Portland Site

MONITORING WELL ID	Monitoring Event Detected					NAPL OCCURRENCE
	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	
AL5-62		X				A trace of LNAPL was detected in this well during groundwater monitoring activities.
BST5W-74		X				Approximately 2 feet of DNAPL was detected in this well during groundwater monitoring activities.
C	X					1.67 feet of DNAPL was detected in this well during groundwater monitoring activities.
E	X					5.3 feet of DNAPL was detected in this well during groundwater monitoring activities.
MW-02-26	X	X				10 feet and 1.5 feet DNAPL were detected in this well during groundwater sampling activities in Spring 2000 and Fall 2000, respectively.
MW-05-34	X	X	X	X		During the Spring 2000 groundwater sampling event a trace of DNAPL was detected, and 0.4 feet of DNAPL was detected during the Fall 2000 groundwater sampling activities. In Spring 2001 0.17 feet of DNAPL was detected. In Fall 2001 LNAPL and DNAPL were detected on the probe but not in the bailer.
MW-05-52				X		LNAPL and DNAPL were detected on probe but not in bailer. The well had a slight odor.
MW-08-27		X	X	X	X	Approximately 3.1 feet of LNAPL was detected in this well during the Fall 2000 groundwater sampling activities and 3 feet of DNAPL was detected during the Spring 2001 groundwater sampling activities. Greater than 2.5 feet of LNAPL and 0.05 feet of DNAPL were detected during the Fall 2001 groundwater sampling activities. An estimated NAPL thickness of 8.5 feet was recorded during the Spring 2002 sampling event on April 3, 2002 using an electronic water level probe; this well was re-measured using an interface probe on April 9, 2002, measuring 6.63 feet of LNAPL.

TABLE 3-4b
Non-Aqueous Phase Liquid Occurrence in Groundwater Monitoring Wells
RPAC - Portland Site

MONITORING WELL ID	Monitoring Event Detected					NAPL OCCURRENCE
	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	
MW-08-46	X	X	X	X		Approximately 0.4 feet of DNAPL was detected in this well during the Spring 2000 groundwater sampling activities and 0.5 feet of DNAPL during the Fall 2000 groundwater sampling activities. Approximately 0.25 feet and 0.02 feet of DNAPL were detected during the Spring and Fall 2001 groundwater sampling activities, respectively.
P-07	X		X	X		Approximately 3.83 feet of DNAPL was detected during the Spring 2000 groundwater sampling activities. During the Spring 2001 sampling event 3.5 feet of DNAPL was detected and in Fall 2001 0.6 feet of LNAPL and 0.07 feet of DNAPL were detected.
RP-03-30R				X		NAPL was detected on probe, but not in bailer.
W-08	X					Approximately 0.01 feet of LNAPL was detected in this well during the Spring 2000 groundwater sampling event.

NAPL = Non-aqueous phase liquid
LNAPL = Light non-aqueous phase liquid
DNAPL = Dense non-aqueous phase liquid
N/A = Not applicable

Note: Information contained in this table was obtained from groundwater monitoring field notes of Spring 2000 through Spring 2002.

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
AL2-17	3/31/00	7.06	NT	0.55	0.0570	6.0	6.08	<6.0	1190	914	30.8	68.5	<4.61	12700	NT	1.07	NT
AL2-17	10/3/00	6.79	NT	3.63	NT	NT	NT	NT	1250	NT	NT	73.5	21.2	NT	NT	0.666	NT
AL2-17	7/5/01	6.72	-83.7	1.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL2-17	4/22/02	6.97	-162.2	0.93	NT	NT	NT	22.4	7.63	NT	NT	63.6	20.6	680	380	1.45	NT
AL2-32	3/31/00	6.61	NT	0.23	<0.0049	4.0	62.8	<0.40	1740	1200	1830	142	47.3	1410	NT	0.318	NT
AL2-32	10/3/00	5.67	NT	0.81	<0.0049	NT	65.6	2.40	2580	1140	1780	211	59.6	310	NT	0.460	NT
AL2-32	7/5/01	6.52	-58.9	1.20	<0.0049	4.6	64.8	14.8	15.2	1350	2080	190	63.9	7	120	0.151	0.0136
AL2-32	4/19/02	6.70	-94.2	1.92	0.175	6.0	63.7	27.0	11.3	1360	1830	284	95.0	2400	36	0.169	0.0204
AL2-46	3/30/00	7.02	NT	1.29	<0.0049	4.0	40.1	<0.200	433	818	338	265	107	805	NT	<0.0060	NT
AL2-46	10/3/00	5.93	NT	0.66	<0.0049	2.8	33.6	3.20	587	800	209	356	108	310	NT	<0.0060	NT
AL2-46	7/5/01	6.88	-76.0	1.70	<0.0049	3.0	37.6	22.9	4.47	856	432	280	70.8	17	5	<0.0060	0.0125
AL2-46	4/22/02	7.05	-117.1	0.58	<0.0365	3.7	29.9	4.08	3.44	810	203	146	49.5	5200	38	<0.0258	0.340
AL5-19	4/3/95	6.75	NT	1.40	NT	NT	NT	NT	NT	NT	NT	189	39.8	NT	NT	4.40	<0.050
AL5-19	4/4/00	7.18	NT	1.50	<0.049	4.8	<0.475	3.20	5930	796	1020	141	10.8	5200	NT	3.33	NT
AL5-19	10/5/00	6.86	NT	3.26	0.138	NT	5.41	0.80	2470	671	922	143	49.0	1100	NT	4.01	NT
AL5-35	4/3/95	6.21	NT	1.70	NT	NT	NT	NT	NT	NT	NT	52.3	9.70	NT	NT	<0.1	0.0830
AL5-35	10/27/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL5-35	4/4/00	6.32	NT	0.71	<0.049	3.8	225	<0.200	3430	706	1610	51.2	<4.61	245	NT	0.357	NT
AL5-35	10/4/00	6.05	NT	0.66	<0.0049	NT	214	3.20	1110	608	1460	21.0	9.30	5	NT	0.540	NT
AL5-62	4/3/95	6.61	NT	1.20	NT	NT	NT	NT	NT	NT	NT	63.7	13.4	NT	NT	0.510	0.0850
AL5-62	4/4/00	6.79	NT	0.36	0.112	4.5	0.31	<0.200	8540	364	128	64.2	<4.61	73	NT	<0.0060	NT
AL5-62	10/4/00	6.67	NT	0.40	<0.0049	NT	0.38	2.40	3650	389	116	44.4	13.6	55	NT	<0.0060	NT
AL6-96	4/10/00	6.72	NT	1.68	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL6-96	10/12/00	6.60	NT	0.54	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	3/29/00	5.80	NT	1.40	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	9/29/00	5.67	NT	4.45	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	6/22/01	5.62	96.2	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	4/11/02	5.96	17.5	5.30	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-04	3/29/00	6.96	NT	1.70	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-04	9/29/00	6.79	NT	2.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-06	3/30/00	6.76	NT	1.94	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-06	9/29/00	6.70	NT	2.21	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	4/3/00	6.52	NT	0.26	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	10/3/00	6.89	NT	0.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	7/5/01	6.84	-61.8	2.40	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	4/19/02	6.98	-114.5	2.11	NT	2.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BST5W-74	4/3/95	6.85	NT	1.15	NT	NT	NT	NT	NT	NT	NT	129	30.7	NT	NT	<0.1	0.100
BST5W-74	4/4/00	6.90	NT	1.72	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BST5W-74	10/4/00	6.60	NT	0.61	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-26	3/22/00	6.26	NT	5.92	4.71	0.0	7.79	<0.200	<1.00	28.0	1.94	87.3	12.2	30000	NT	0.030	NT
MW-01-26	9/20/00	5.95	NT	11.66	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-41	3/23/00	6.42	NT	1.31	0.581	0.0	21.5	<0.200	<1.00	150	11.3	<4.05	<0.461	35	NT	<0.0060	NT
MW-01-41	9/20/00	5.30	NT	0.67	0.667	0.0	2.24	0.32	<1.00	165	10.8	3.70	2.47	31	NT	<0.0060	NT
MW-01-56	3/24/00	6.54	NT	3.03	2.88	0.0	17.0	<0.200	<1.00	73.0	24.6	<4.05	<0.461	5	NT	<0.0060	NT
MW-01-56	9/20/00	5.52	NT	2.83	3.16	0.0	16.4	0.80	<1.00	74.2	4.50	<1.80	0.730	19	NT	<0.0060	NT
MW-01-76	3/22/00	8.34	NT	4.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-76	9/20/00	6.09	NT	4.85	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-02-26	9/25/00	6.89	NT	0.34	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-46	3/23/00	6.71	NT	1.07	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-46	9/25/00	6.46	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-62	3/23/00	7.34	NT	2.53	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-62	9/25/00	6.69	NT	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-49	3/29/00	6.84	NT	1.41	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-49	9/27/00	6.30	NT	0.56	NT	4.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-68	3/29/00	6.98	NT	2.82	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-68	9/27/00	6.35	NT	1.44	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	4/6/00	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	10/13/00	6.65	NT	0.61	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	6/25/01	6.66	-112.5	1.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	4/16/02	7.12	6.7	2.38	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-27	3/29/00	6.50	NT	1.37	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-27	9/27/00	5.97	NT	0.55	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	4/6/00	6.52	NT	0.87	NT	3.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	10/13/00	6.59	NT	2.12	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	6/25/01	6.60	-120.0	0.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	4/16/02	6.62	17.9	1.52	NT	5.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	4/6/00	6.72	NT	2.40	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	6/25/01	6.58	-104.0	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	10/13/01	6.52	NT	0.96	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	4/16/02	6.86	13.2	4.95	NT	4.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	2/8/89	6.75	NT	NT	NT	NT	34.0	NT	NT	NT	61.0	NT	NT	NT	NT	NT	NT
MW-04-27	3/6/89	6.75	NT	NT	NT	NT	22.0	NT	NT	NT	47.0	NT	NT	NT	NT	NT	NT
MW-04-27	4/26/89	6.67	NT	NT	NT	NT	70.8	NT	NT	NT	123	NT	NT	NT	NT	NT	NT
MW-04-27	6/11/91	6.43	NT	1.80	NT	NT	NT	NT	NT	761	NT	NT	99.2	NT	NT	0.320	0.160
MW-04-27	3/31/95	6.11	NT	2.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	3/27/00	6.77	NT	1.79	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	9/27/00	6.34	NT	0.48	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	7/5/01	6.49	-53.8	1.20	<0.0049	4.4	98.2	21.2	9900	597	570	772	99.6	1100	800	0.096	0.00796
MW-04-27	4/19/02	6.75	-90.2	2.67	<0.0365	4.0	40.5	12.9	6760	613	290	254	84.8	39	35	<0.0258	0.00712
MW-04-47	1/31/89	6.39	NT	NT	NT	NT	254	NT	NT	NT	184	NT	NT	NT	NT	NT	NT
MW-04-47	2/28/89	6.55	NT	NT	NT	NT	268	NT	NT	NT	171	NT	NT	NT	NT	NT	NT
MW-04-47	4/25/89	6.51	NT	NT	NT	NT	192	NT	NT	NT	195	NT	NT	NT	NT	NT	NT
MW-04-47	6/11/91	6.76	NT	1.40	NT	NT	NT	NT	NT	213	NT	NT	2.40	NT	NT	<0.05	0.160
MW-04-47	3/31/95	6.61	NT	2.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	3/27/00	7.02	NT	1.29	NT	2.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	9/27/00	6.51	NT	0.44	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	7/5/01	6.67	-21.5	1.20	<0.0049	3.4	17.1	<0.200	434	283	210	<3.6	1.89	43	70	<0.0060	0.0268
MW-04-47	4/19/02	6.76	-54.4	1.46	<0.0365	3.8	12.1	11.5	616	268	151	7.78	1.51	180	130	<0.0258	0.0594
MW-04-63	1/31/89	6.76	NT	NT	NT	NT	15.0	NT	NT	NT	3.70	NT	NT	NT	NT	NT	NT
MW-04-63	2/28/89	6.63	NT	NT	NT	NT	<5.00	NT	NT	NT	34.0	NT	NT	NT	NT	NT	NT
MW-04-63	4/25/89	6.84	NT	NT	NT	NT	<5.00	NT	NT	NT	22.3	NT	NT	NT	NT	NT	NT
MW-04-63	6/11/91	6.79	NT	1.70	NT	NT	NT	NT	NT	164	NT	NT	476	NT	NT	0.050	0.150
MW-04-63	3/31/95	6.65	NT	5.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-63	3/27/00	7.13	NT	0.43	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-63	9/27/00	6.14	NT	0.46	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-05-24	2/8/89	6.00	NT	NT	NT	NT	76.0	NT	NT	NT	190	NT	NT	NT	NT	NT	NT
MW-05-24	3/1/89	5.88	NT	NT	NT	NT	64.0	NT	NT	NT	178	NT	NT	NT	NT	NT	NT
MW-05-24	4/26/89	6.20	NT	NT	NT	NT	116	NT	NT	NT	234	NT	NT	NT	NT	NT	NT
MW-05-24	6/11/91	6.03	NT	1.50	NT	NT	NT	NT	NT	128	NT	NT	120	NT	NT	0.330	0.160
MW-05-24	3/30/00	5.87	NT	0.62	0.0570	3.6	64.3	5.60	347	266	49.3	439	177	<1	NT	0.017	NT
MW-05-24	9/28/00	6.07	NT	0.42	<0.0049	NT	58.4	4.96	647	589	61.5	592	193	<1	NT	0.053	NT
MW-05-34	2/9/89	5.10	NT	NT	NT	NT	280	NT	NT	NT	615	NT	NT	NT	NT	NT	NT
MW-05-34	3/1/89	5.11	NT	NT	NT	NT	179	NT	NT	NT	440	NT	NT	NT	NT	NT	NT
MW-05-34	4/26/89	5.03	NT	NT	NT	NT	168	NT	NT	NT	478	NT	NT	NT	NT	NT	NT
MW-05-34	6/11/91	5.34	NT	1.70	NT	NT	NT	NT	NT	76.0	NT	NT	363	NT	NT	0.230	0.0900
MW-05-34	12/14/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1390	249	NT	NT	<0.1	0.100
MW-05-34	3/30/00	5.79	NT	0.30	0.0911	1.6	31.9	<1.6	11.7	82.0	28.7	345	169	<1	NT	<0.0060	NT
MW-05-34	9/28/00	4.93	NT	0.51	<0.0049	NT	23.9	2.32	11.4	104	27.7	348	99.5	<1	NT	0.008	NT
MW-05-52	2/8/89	6.43	NT	NT	NT	NT	97.0	NT	NT	NT	309	NT	NT	NT	NT	NT	NT
MW-05-52	2/9/89	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-05-52	3/1/89	6.26	NT	NT	NT	NT	86.0	NT	NT	NT	336	NT	NT	NT	NT	NT	NT
MW-05-52	4/26/89	6.30	NT	NT	NT	NT	107	NT	NT	NT	409	NT	NT	NT	NT	NT	NT
MW-05-52	6/11/91	6.62	NT	1.10	NT	NT	NT	NT	NT	468	NT	NT	68.7	NT	NT	0.130	12.2
MW-05-52	12/14/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	479	127	NT	NT	<0.1	1.40
MW-05-52	3/30/00	6.52	NT	0.47	<0.0049	2.4	25.4	<0.200	NT	276	66.5	49.8	<0.461	12	NT	<0.0060	NT
MW-05-52	9/28/00	6.22	NT	0.71	<0.0049	NT	13.5	3.44	56.8	445	117	54.7	14.8	5.5	NT	<0.0060	NT
MW-05-52	7/6/01	6.65	7.4	1.60	<0.0049	2.6	21.2	2.24	40.4	257	77.6	55.8	14.7	18	5	0.010	10.0
MW-05-52	4/22/02	6.70	-55.5	1.74	<0.0365	2.6	37.4	3.76	57.0	325	140	47.3	12.5	1	7	<0.0258	12.1
MW-05-70	3/30/00	7.83	NT	0.31	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-05-70	7/6/01	7.76	-42.5	1.40	<0.0049	0.6	34.8	3.36	461	277	63.5	6.35	1.24	720	100	<0.0060	1.14
MW-05-70	4/22/02	7.92	-103.7	1.42	<0.0365	0.6	34.2	12.9	365	284	56.1	9.34	1.39	720	36	<0.0258	1.16
MW-06-S	4/6/00	5.91	NT	1.88	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-07-S	4/6/00	6.06	NT	1.75	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-07-S	10/13/00	5.90	NT	2.25	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-08-27	3/23/00	6.98	NT	1.55	<0.0049	0.0	60.0	31.6	308	409	579	2120	575	70	NT	7.38	NT
MW-08-46	3/28/00	5.98	NT	1.37	0.0568	0.0	9.7	<0.200	<1.00	96.0	16.8	95.9	33.0	20400	NT	<0.0060	NT
MW-08-46	9/26/00	5.48	NT	0.91	0.0525	NT	6.94	1.68	3.33	98.2	10.5	94.9	20.4	470	NT	<0.0060	NT
MW-08-64	3/24/00	8.01	NT	1.97	<0.0049	0.0	20.1	<0.200	<1.00	130	21.2	<4.05	<0.461	8450	NT	<0.0060	NT
MW-08-64	9/26/00	7.75	NT	0.61	0.0551	NT	20.3	0.80	<1.00	148	6.79	2.96	2.36	610	NT	<0.0060	NT
MW-09-23	6/13/91	6.77	NT	2.40	NT	NT	NT	NT	NT	452	NT	NT	7.10	NT	NT	<0.05	0.200
MW-09-23	7/9/91	6.59	NT	1.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	8/7/91	6.83	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	8/4/93	6.52	NT	2.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	9/10/93	6.98	NT	9.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	10/28/93	6.92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	3/21/95	6.49	NT	0.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	3/28/00	6.82	NT	1.75	0.0667	4.4	15.3	<0.200	350	360	46.6	21.6	14.8	500	NT	<0.0060	NT
MW-09-23	9/26/00	6.67	NT	0.32	0.102	NT	9.35	<0.200	366	411	49.5	13.8	3.38	8	NT	0.014	NT
MW-09-23	7/2/01	6.71	172.1	0.50	<0.0049	4.0	9.61	18.3	1470	422	65.2	21.4	4.57	7	27	0.017	0.0104
MW-09-23	4/17/02	7.15	221.0	1.07	<0.0365	5.1	17.3	<0.499	1070	370	47.7	16.5	3.55	<1	<1	<0.0258	0.00744
MW-09-42	6/13/91	6.75	NT	1.80	NT	NT	NT	NT	NT	280	NT	NT	3.60	NT	NT	<0.05	0.100
MW-09-42	7/8/91	6.81	NT	2.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	8/7/91	6.87	NT	<? DB	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-09-42	8/4/93	6.36	NT	3.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	9/10/93	7.05	NT	15.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	3/21/95	6.55	NT	4.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	3/28/00	6.80	NT	2.52	<0.0049	4.2	3.57	<0.200	266	424	43.6	16.3	15.7	900	NT	<0.0060	NT
MW-09-42	9/26/00	6.23	NT	0.96	0.0577	NT	5.97	0.24	287	382	34.4	12.6	4.63	55	NT	<0.0060	NT
MW-09-42	7/2/01	6.74	-1.7	1.00	<0.0049	4.2	7.24	<0.200	835	370	42.7	19.0	3.64	280	3500	<0.0060	0.0161
MW-09-42	4/17/02	7.08	218.1	3.35	<0.0365	3.2	9.70	<0.499	861	383	40.8	18.8	3.73	880	71	<0.0258	0.0402
MW-09-58	6/13/91	7.11	NT	4.00	NT	NT	NT	NT	NT	122	NT	NT	0.500	NT	NT	0.230	0.100
MW-09-58	7/8/91	7.30	NT	1.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	8/7/91	7.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	8/3/93	6.52	NT	2.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	9/10/93	7.27	NT	13.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	10/28/93	6.92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	3/21/95	7.15	NT	9.35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	3/27/00	7.06	NT	2.03	0.0867	1.5	2.77	<0.200	4.46	138	23.4	5.05	3.74	810	NT	0.060	NT
MW-09-58	9/26/00	5.78	NT	1.01	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	7/2/01	6.89	39.4	0.80	0.0240	2.0	2.61	<0.200	32.5	118	13.3	3.70	<0.100	1100	440	0.091	0.0286
MW-09-58	4/18/02	7.01	-65.3	2.74	<0.0365	2.2	2.98	<0.499	21.5	119	6.86	<4	0.812	290	11	<0.0258	0.0103
MW-09-80	6/13/91	7.28	NT	1.40	NT	NT	NT	NT	NT	132	NT	NT	1.00	NT	NT	0.500	0.220
MW-09-80	7/9/91	6.83	NT	2.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	8/7/91	7.02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	8/3/93	7.79	NT	2.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	9/10/93	7.39	NT	17.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	10/28/93	6.32	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	3/22/95	6.72	NT	6.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	3/27/00	7.15	NT	2.20	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	9/26/00	6.80	NT	0.38	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	10/5/00	7.00	NT	0.50	0.0719	0.6	0.46	<0.200	16.4	140	6.20	<1.8	0.372	190	NT	0.347	NT
MW-09-80	7/2/01	6.98	101.5	0.60	0.0350	0.8	0.61	<0.200	72.4	129	14.1	<3.6	0.367	260	630	0.349	0.115
MW-09-80	4/18/02	7.13	-20.3	0.78	<0.0365	0.4	<0.0634	<0.499	89.9	132	6.99	<4	0.923	53	9	0.409	0.130
MW-10-24	3/29/00	6.49	NT	3.08	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-24	9/25/00	6.52	NT	0.47	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-24	6/29/01	6.45	250.2	0.90	0.412	0.6	14.6	<0.200	0.0925	140	17.6	<3.60	1.97	15	39	<0.0060	0.0318
MW-10-24	4/15/02	6.96	1.0	4.11	0.947	0.0	21.7	<0.499	<0.790	121	9.26	6.49	1.80	3	<1	<0.0258	0.0582
MW-10-44	3/29/00	6.55	NT	1.30	NT	4.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-44	9/25/00	6.22	NT	0.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-44	6/29/01	6.31	109.1	0.70	0.111	1.2	14.4	<0.200	<0.380	189	14.1	9.5	1.77	640	520	<0.0060	0.00704
MW-10-44	4/15/02	6.76	-5.6	1.60	0.177	6.4	15.7	<0.499	<0.790	205	6.66	8.31	1.93	89	16	<0.0258	0.0490
MW-10-57	3/29/00	7.21	NT	4.40	NT	4.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-57	9/25/00	6.97	NT	0.43	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-57	6/29/01	6.98	-109.1	0.70	0.0660	3.4	0.15	<0.200	2.15	152	14.9	5.56	0.595	400	680	0.609	0.0465
MW-10-57	4/15/02	7.42	5.6	0.75	<0.0365	3.6	<0.0634	<0.499	1.23	150	7.22	4.13	<0.129	250	47	0.528	0.0115

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-11-24	8/4/93	6.57	NT	2.00	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	9/9/93	6.41	NT	8.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	10/27/93	6.72	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	3/23/95	6.26	NT	1.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	3/28/00	6.86	NT	1.72	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	9/22/00	5.85	NT	0.61	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	6/28/01	6.31	102.1	6.30	0.0200	0.0	18.5	<0.200	38.6	218	26.6	11.1	3.53	20	110	<0.0060	0.0847
MW-11-24	4/12/02	7.20	-7.8	1.46	0.711	0.0	10.4	<0.499	<0.38	284	4.11	<4	2.37	9	5	<0.0258	0.0525
MW-11-37	8/4/93	6.59	NT	3.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	9/9/93	6.49	NT	11.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	10/27/93	7.44	NT	1.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/23/95	6.05	NT	0.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/28/00	6.35	NT	0.09	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	9/22/00	5.55	NT	0.51	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	6/28/01	6.42	90.4	4.00	9.44	0.0	19.0	0.24	<0.38	83.9	12.2	<3.6	1.11	770	610	<0.0060	0.0976
MW-11-37	4/12/02	6.92	-8.7	0.98	8.29	0.0	18.8	<0.499	0.635	81.6	5.14	<4	1.63	23	15	<0.0258	0.0828
MW-11-56	8/4/93	7.12	NT	3.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	9/9/93	6.99	NT	8.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	10/27/93	7.36	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/23/95	6.55	NT	7.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/28/00	7.23	NT	0.97	NT	3.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	9/22/00	7.02	NT	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	6/28/01	7.12	-90.0	2.50	0.0260	2.5	6.78	<0.200	228	148	14.0	5.82	0.377	230	210	0.281	0.204
MW-11-56	4/12/02	7.67	-27.7	0.66	<0.0365	3.2	6.19	<0.499	198	142	6.59	<4	0.950	55	16	0.240	0.0235
MW-11-79	8/4/93	6.70	NT	1.60	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	9/9/93	6.88	NT	5.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	10/27/93	7.30	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	3/23/95	7.00	NT	7.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	3/28/00	7.38	NT	0.19	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	9/22/00	6.97	NT	0.35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	6/28/01	7.27	-35.0	4.00	0.0720	0.9	0.33	<0.200	120	124	16.9	<3.6	0.282	55	140	0.287	0.239
MW-11-79	4/12/02	7.64	-13.4	0.54	<0.0365	1.3	<0.0634	<0.499	107	122	9.01	<4	1.37	360	66	0.302	0.158
MW-12-27	3/22/02	6.19	NT	1.23	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-27	10/2/02	5.82	NT	0.46	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-41	3/22/00	6.19	NT	1.15	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-41	10/2/02	5.23	NT	0.69	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-59	3/22/00	6.80	NT	6.23	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-59	9/20/00	5.31	NT	6.31	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-79	3/22/00	7.11	NT	1.20	NT	1.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-79	9/20/00	5.87	NT	0.51	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
PP-08	4/3/00	6.77	NT	1.04	NT	5.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
PP-08	10/4/00	6.38	NT	4.99	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-01-31	4/17/00	NT	NT	NT	0.177	NT	33.7	<0.200	1.53	172	20.2	<4.05	<0.461	7500	NT	<0.0060	NT
RP-01-31	10/11/00	6.97	NT	3.66	0.326	0.0	54.2	<0.200	<1.00	141	35.3	1.97	0.738	3200	NT	0.110	NT
RP-01-31	6/26/01	6.87	39.5	6.80	0.368	0.0	20.6	<0.200	<0.38	148	12.7	11.4	1.53	4100	11000	0.023	0.339
RP-01-31	4/5/02	6.78	-22.4	0.00	1.43	NT	30.9	<0.200	2.29	148	9.71	244	1.54	810	81	<0.0258	0.383
RP-01-51	4/17/00	NT	NT	NT	<0.0049	NT	221	1.60	37.6	554	776	22.8	<0.461	1600	NT	0.119	NT
RP-01-51	10/11/00	6.70	NT	0.70	0.0462	0.0	284	<0.200	112	571	714	30.6	10.3	54	NT	0.330	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
RP-01-51	6/26/01	6.72	-3.9	0.70	<0.0049	0.2	269	4.80	454	509	853	32.0	10.4	290	400	0.280	0.0683
RP-01-51	4/8/02	6.92	-29.4	0.14	<0.0049	0.4	256	<0.200	814	559	804	30.7	10.9	150	9	0.285	0.0919
RP-01-65	4/17/00	--	--	--	<0.0049	NT	155	<0.200	69.7	378	675	11.0	<4.61	1040	NT	<0.0060	NT
RP-01-65	10/11/00	5.98	NT	0.47	<0.0049	NT	174	<0.200	192	396	1480	14.3	3.75	150	NT	0.010	NT
RP-01-65	6/26/01	5.61	59.4	0.20	<0.0049	0.0	153	<0.200	1300	367	1710	21.4	3.32	52	480	0.018	NT
RP-01-65	4/5/02	6.55	-19.2	0.01	<0.0365	0.0	154	<0.200	1480	424	1420	28.9	5.32	8	3	<0.0258	0.0963
RP-02-31	4/18/00	NT	NT	NT	0.0673	NT	58.4	<0.200	57000	1030	1980	289	107	470	NT	3.20	NT
RP-02-31	10/16/00	6.45	NT	3.50	0.210	NT	21.5	4.63	1390	914	2200	211	37.9	1500	NT	4.34	NT
RP-02-31	6/19/01	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-31	4/4/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	4/18/00	NT	NT	NT	0.0753	NT	99.7	<0.200	654	378	10500	504	43.6	5500	NT	2.30	NT
RP-02-49	10/16/00	5.82	NT	0.77	0.330	0.4	82.0	<0.200	395	619	8390	139	15.5	400	NT	2.63	NT
RP-02-49	6/19/01	5.81	75.5	1.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	4/4/02	6.03	-28.0	0.10	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	5/3/02	5.97	116.8	0.83	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	10/16/00	5.18	NT	0.63	NT	0.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	6/19/01	5.30	128.3	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	4/4/02	5.09	-21.4	0.38	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	10/12/00	5.62	NT	6.63	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	6/27/01	6.70	-100.3	1.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	4/10/02	7.15	-36.5	1.60	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	10/12/00	6.16	NT	0.51	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	6/27/01	NT	44.7	1.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	4/10/02	6.72	-10.8	1.46	NT	0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-04-16	4/5/00	6.70	NT	2.25	0.112	3.5	55.0	1.60	4180	318	100	85.6	40.0	1250	NT	0.223	NT
RP-04-16	10/4/00	NT	NT	NT	<0.0049	NT	64.8	<0.200	768	182	138	497	142	1000	NT	1.72	NT
RP-04-16	7/3/01	6.13	69.7	1.00	0.0270	4.6	33.7	3.60	17200	332	144	153	42.2	76	670	1.40	0.0162
RP-04-16	4/18/02	6.70	-68.6	0.64	<0.0365	3.0	27.4	3.60	12900	224	36.0	85.5	25.6	1100	81	0.254	0.00650
RP-04-41	4/5/00	6.75	NT	0.44	0.467	0.6	18.6	<0.200	<0.38	149	12.9	138	33.4	35	NT	<0.0060	NT
RP-04-41	10/4/00	NT	NT	NT	0.121	NT	16.8	1.60	1.22	143	8.25	108	26.5	330	NT	<0.0060	NT
RP-04-41	7/3/01	6.27	179.0	2.10	0.0300	0.0	17.6	1.60	<0.38	142	15.9	99.5	27.2	28	590	<0.0060	0.0877
RP-04-41	4/18/02	6.58	64.7	1.12	<0.0365	0.0	19.1	<0.499	<0.79	127	6.26	41.5	9.07	370	140	<0.0258	0.143
RP-05-16	4/5/00	5.92	NT	5.07	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-05-16	10/4/00[1]	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	10/12/00	6.92	NT	4.99	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	6/27/01	6.66	-120.7	1.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	4/10/02	7.16	-46.1	0.64	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-87	4/14/00	NT	NT	NT	<0.0049	NT	103	<0.200	1000	428	997	20.0	10.1	19800	NT	<0.0060	NT
RP-06-87	10/12/00	5.27	NT	0.78	0.0459	4.0	94.2	0.37	316	398	1330	4.68	0.728	540	NT	0.010	NT
RP-06-87	6/27/01	6.73	-62.8	0.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-87	4/10/02	7.12	-23.8	7.87	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-07-30	5/3/02	6.37	9.1	2.11	<0.0365	4.6	<0.0634	<0.499	10.6	301	7.42	28.9	9.34	600000	800	17.7	0.00555
RP-07-55	5/3/02	6.39	-1.0	2.61	<0.0365	3.8	1.52	<0.499	0.144	552	9.8	33.3	8.77	2200	340	3.26	0.0128
RP-07-84	5/3/02	6.60	53.8	4.04	<0.0365	0.0	88.4	<2.50	0.368	152	1130	57.8	0.285	82000	1400	<0.0258	0.0213
RP-07-119	5/3/02	6.45	-11.8	0.66	<0.0365	0.2	37.4	<0.499	0.160	148	632	<4.00	0.874	2000	10	<0.0258	0.0361
RPW-02	3/22/00	6.81	NT	1.39	NT	0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	9/20/00	5.96	NT	1.50	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	6/28/01	6.88	-43.3	1.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	4/12/02	7.35	-29.7	1.66	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
RPW-03	3/28/00	7.26	NT	0.98	NT	2.9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-03	9/22/00	7.05	NT	0.39	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-05	3/27/00	6.54	NT	2.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-05	9/27/00	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-S	4/12/00	8.07	NT	1.66	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-S	10/9/00	7.88	NT	0.45	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	4/12/00	6.28	NT	0.54	NT	7.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	10/9/00	6.29	NT	0.42	NT	8.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	6/26/01	6.19	-87.7	0.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	4/8/02	5.79	-46.5	0.91	NT	7.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-D	4/12/00	7.40	NT	1.88	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-D	10/9/00	6.97	NT	1.14	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-S	4/12/00	8.99	NT	1.26	<0.134	0.0	67.6	<0.200	0.288	103	10.1	28.4	<4.61	1350	NT	0.610	NT
W-04-S	10/9/00	9.29	NT	0.66	0.847	0.0	114	1.95	728	123	18.4	47.1	3.36	2800	NT	37.5	NT
W-04-I	4/12/00	6.27	NT	0.89	0.0582	8.6	241	4.00	1.11	166	1620	63.9	<4.61	400	NT	44.8	NT
W-04-I	10/9/00	NT	NT	0.68	<0.0049	2.6	245	6.85	594	126	1640	22.4	5.65	NT	NT	1.59	NT
W-04-89	10/9/00	6.98	NT	NT	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-89	6/26/01	7.22	-112.4	0.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-89	4/8/02	6.89	-48.5	0.49	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-S	3/30/00	7.21	NT	1.98	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-S	9/28/00	6.35	NT	1.76	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-D	9/28/00	6.74	NT	0.49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-D	3/30/02	7.20	NT	21.70	NT	0.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-B	3/30/00	7.68	NT	1.66	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-B	9/28/00	6.38	NT	0.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	4/4/00	6.49	NT	0.49	NT	5.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	10/5/00	6.41	NT	0.46	NT	4.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	7/3/01	6.31	-93.0	0.70	<0.0049	NT	158	13.6	5.12	486	3800	83.9	13.2	110	1700	22.8	0.00569
W-08	4/17/02	6.69	215.7	0.14	<0.365	4.8	94.5	5.60	1.14	702	2710	94.1	25.4	41	8	22.2	0.00965
W-08-26	4/5/00	6.96	NT	0.93	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-26	10/5/00	6.98	NT	1.15	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-26	7/2/01	6.81	-148.3	0.70	<0.0049	1.8	5.62	2.48	16.3	1160	1660	136	42.8	17	1600	5.07	0.00596
W-08-26	4/16/02	6.93	13.8	0.22	<0.0365	4.1	5.28	2.56	7.48	1010	1090	121	41.2	280	120	2.38	0.00460
W-08-26	4/18/02	7.25	-164.7	2.69	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-74	4/4/00	7.04	NT	1.54	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-74	10/5/00	6.92	NT	0.72	0.0676	3.0	<0.475	<0.200	3060	335	146	8.14	2.30	610	NT	0.594	NT
W-08-74	7/3/01	6.76	-81.0	0.70	<0.0049	2.2	10.3	0.80	12.9	321	122	19.0	3.60	52	260	0.253	0.341
W-08-74	4/16/02	7.26	23.4	4.40	<0.0365	5.0	12.5	<0.499	9.39	300	71.5	12.4	2.53	3	<1	0.085	0.0681
W-09	8/29/86	7.00	NT	NT	<0.05	NT	5.00	NT	NT	870	1700	NT	NT	NT	NT	NT	NT
W-09	12/18/86	7.00	NT	NT	0.150	NT	6400	NT	NT	760	1900	NT	120	NT	NT	NT	NT
W-09	2/23/87	6.30	NT	NT	<0.05	NT	100	NT	NT	760	1800	NT	84.0	NT	NT	NT	NT
W-09	10/22/92	6.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09	4/10/00	7.50	NT	1.40	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09	10/6/00	7.04	NT	0.42	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-86	10/6/00	5.87	NT	0.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-86	4/7/02	6.72	NT	1.70	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-09-116	4/7/00	6.52	NT	0.72	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-116	10/6/00	6.32	NT	0.54	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-116	6/29/01	6.35	101.4	0.70	<0.0049	2.5	66.7	8.00	7010	507	838	21.2	2.95	390	1400	0.68	0.0383
W-09-116	4/15/02	6.87	24.6	3.85	<0.0365	3.0	60.5	<0.499	2650	458	703	16.0	2.35	99	13	0.392	0.0301
W-10	10/11/00	6.20	NT	0.51	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-S	9/3/86	11.50	NT	NT	0.0500	0.0	36.0	NT	NT	510	40.0	NT	NT	NT	NT	NT	NT
W-11-S	12/17/86	11.70	NT	NT	<0.05	0.2	30.0	NT	NT	490	39.0	NT	33.0	NT	NT	NT	NT
W-11-S	2/24/87	11.80	NT	NT	<0.05	NT	28.0	NT	NT	450	32.0	NT	29.0	NT	NT	NT	NT
W-11-S	4/4/95	11.88	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-S	4/11/00	11.76	NT	0.62	0.0587	0.0	12.4	1.60	NT	266	7.82	33.2	6.51	390	NT	2.43	NT
W-11-S	10/10/00	11.59	NT	4.00	0.0476	0.2	2.03	8.5	NT	321	8.68	75.2	6.94	4.5	NT	4.72	NT
W-11-S	6/21/01	11.81	-110.4	0.10	<0.0049	0.0	4.41	5.60	1710	290	17.6	41.0	10.3	2	6	5.10	0.0190
W-11-S	4/9/02	12.34	-57.9	2.33	<0.0365	0.0	12.5	0.80	985	241	11.2	10.3	4.52	4	<1	2.40	0.00366
W-11-I	9/3/86	6.90	NT	NT	<0.05	NT	49.0	NT	NT	540	29.0	NT	NT	NT	NT	NT	NT
W-11-I	12/16/86	7.10	NT	NT	<0.05	NT	9.00	NT	NT	490	14.0	NT	68.0	NT	NT	NT	NT
W-11-I	2/24/87	6.50	NT	NT	<0.05	NT	7.00	NT	NT	490	11.0	NT	33.0	NT	NT	NT	NT
W-11-I	10/22/90	NT	NT	NT	NT	NT	<10.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/4/95	6.78	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/11/00	6.71	NT	0.25	0.0533	8.0	0.18	0.80	2730	530	28.9	36.3	8.03	330	NT	3.64	NT
W-11-I	10/10/00	5.85	NT	1.01	0.913	NT	0.81	<0.200	849	516	28.4	25.9	6.00	870	NT	2.35	NT
W-11-I	6/21/01	6.65	-118.0	0.30	1.62	6.6	3.43	1.20	3110	526	33.2	25.9	7.30	55	370	3.01	0.00401
W-11-I	4/9/02	6.91	-59.6	1.26	0.0370	5.2	0.26	0.56	534	502	31.5	18.3	7.04	110	49	3.07	0.00366
W-11-D	9/16/86	6.30	NT	NT	<0.05	4.0	200	NT	NT	780	1900	NT	NT	NT	NT	NT	NT
W-11-D	1/20/87	6.50	NT	NT	0.0500	NT	180	NT	NT	740	1400	NT	27.0	NT	NT	NT	NT
W-11-D	2/25/87	6.40	NT	NT	0.100	NT	200	NT	NT	670	1800	NT	49.0	NT	NT	NT	NT
W-11-D	10/22/90	NT	NT	NT	NT	NT	92.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	4/5/95	6.76	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	4/11/00	6.96	NT	2.10	0.0894	NT	172	1.60	3810	555	874	60.3	10.8	1220	NT	0.210	NT
W-11-D	10/10/00	6.78	NT	0.43	<0.0049	4.0	209	0.37	10300	433	900	13.8	2.25	200	NT	0.020	NT
W-11-D	6/21/01	6.69	-7.9	0.60	<0.0049	2.2	196	<0.200	40000	427	961	16.7	3.03	180	14000	0.050	<0.0016
W-11-D	4/9/02	6.97	-29.4	5.03	<0.0365	2.8	216	<0.200	33300	421	824	15.3	3.13	30	17	<0.0258	0.00494
W-11-B	9/3/86	7.00	NT	NT	<0.05	NT	36.0	NT	NT	170	500	NT	NT	NT	NT	NT	NT
W-11-B	12/16/86	7.80	NT	NT	<0.05	NT	32.0	NT	NT	160	430	NT	14.0	NT	NT	NT	NT
W-11-B	2/24/87	6.80	NT	NT	<0.05	NT	28.0	NT	NT	170	380	NT	5.10	NT	NT	NT	NT
W-11-B	4/5/95	7.20	NT	5.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	4/11/00	8.01	NT	1.44	NT	0.0	NT	NT	341	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	10/10/00	6.13	NT	0.86	NT	4.0	NT	NT	1310	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	6/21/01	6.97	-125.8	0.80	<0.0049	NT	101	1.20	6000	285	830	11.9	1.33	530	1200	0.090	<0.0016
W-11-B	4/9/02	7.25	-54.5	7.14	<0.0365	4.6	113	<0.200	1370	321	730	7.14	1.53	360	10	0.069	0.00303
W-12-S	4/11/00	11.52	NT	0.68	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-S	10/10/00	8.67	NT	3.46	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-I	4/11/00	7.26	NT	2.38	NT	3.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-I	10/10/00	7.23	NT	2.42	NT	2.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-D	10/10/00	7.28	NT	0.63	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-D	4/11/02	7.42	NT	3.18	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-15-S	6/22/01	NT	NT	NT	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-S	4/10/02	11.84	NT	0.88	NT	0.6	NT	NT	0.437	NT	NT	NT	NT	NT	NT	NT	NT
W-15-S	4/11/02	7.12	-19.9	0.73	0.427	0.0	46.2	<0.499	NT	93.4	7.42	24.1	5.00	330	18	<0.0258	0.138
W-15-S	9/29/02	6.81	NT	NT	NT	NT	NT	NT	0.353	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	4/10/00	6.22	NT	1.42	NT	10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	6/20/01	6.31	-157.9	0.00	NT	5.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	4/11/02	6.41	-41.6	1.24	NT	6.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	4/10/00	6.28	NT	2.04	NT	4.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	6/22/01	6.11	-6.6	0.50	<0.0049	4.0	19.8	24.3	NT	179	61.2	8.99	2.72	360	380	0.010	0.234
W-15-D	6/29/01	6.02	67.2	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	4/11/02	6.37	-1.4	1.35	<0.0365	4.0	26.4	<0.499	0.0106	165	68.5	4.76	2.95	470	52	<0.0258	0.00807
W-16-31	4/19/00	14.40	NT	1.59	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	6/22/01	7.35	-129.1	0.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	4/8/02	7.14	-129.4	0.00	NT	6.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	10/17/02	6.62	NT	1.58	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	12/30/86	7.80	NT	NT	0.320	NT	14.0	NT	NT	340	43.0	NT	16.0	NT	NT	NT	NT
W-16-S	2/18/87	11.20	NT	NT	0.110	NT	130	NT	NT	2100	25.0	NT	36.0	NT	NT	NT	NT
W-16-S	4/5/95	12.76	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	4/19/00	7.34	NT	1.59	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	10/17/00	6.62	NT	1.58	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	12/30/86	12.20	NT	NT	0.180	NT	71.0	NT	NT	2200	39.0	NT	56.0	NT	NT	NT	NT
W-16-I	2/18/87	7.40	NT	NT	0.0500	NT	18.0	NT	NT	410	67.0	NT	9.60	NT	NT	NT	NT
W-16-I	4/5/95	7.02	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	4/19/00	6.92	NT	1.13	NT	5.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	10/17/00	6.77	NT	0.97	NT	3.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	6/22/01	6.73	-140.7	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	6/27/01	6.84	-124.0	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	4/8/02	6.87	-74.4	0.00	NT	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	12/30/86	7.00	NT	NT	0.310	0.6	16.0	NT	NT	220	100	NT	14.0	NT	NT	NT	NT
W-16-D	2/18/87	7.00	NT	NT	0.0600	NT	4.00	NT	NT	220	95.0	NT	4.10	NT	NT	NT	NT
W-16-D	4/5/95	7.38	NT	3.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	4/19/00	7.54	NT	3.30	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	10/17/00	7.26	NT	1.42	NT	1.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	10/16/90	NT	NT	NT	NT	NT	35.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	3/21/00	6.54	NT	3.17	0.195	0.0	24.2	<0.200	<1.00	167	4.19	10.0	2.83	23200	NT	<0.0060	NT
W-18-S	9/19/00	--	--	--	0.310	NT	24.2	0.80	<1.00	166	3.23	2.47	3.15	2900	NT	<0.0060	NT
W-18-S	6/19/01	6.35	159.8	1.00	0.0940	0.2	26.7	<0.200	<0.38	163	4.00	6.61	2.39	130	120	<0.0060	0.0887
W-18-S	4/4/02	6.48	-45.3	0.58	0.233	0.0	23.0	<0.200	<0.38	150	3.40	13.3	3.22	16	13	<0.0258	0.0944
W-18-I	10/16/90	NT	NT	NT	NT	NT	28.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-I	3/21/00	6.57	NT	2.88	2.16	0.0	17.4	<0.200	<1.00	108	3.95	<4.05	<0.461	4440	NT	<0.0060	NT
W-18-I	9/19/00	5.18	NT	3.99	2.18	NT	17.3	<0.200	<1.00	114	3.84	<1.8	0.978	750	NT	<0.0060	NT
W-18-I	6/18/01	6.26	148.5	4.90	1.80	0.2	15.9	<0.200	<0.38	93.0	5.67	<3.6	0.424	870	370	<0.0060	0.175
W-18-I	4/4/02	6.59	-39.6	0.44	1.64	0.0	15.7	<0.200	<0.38	85.1	3.57	13.3	2.35	2400	78	<0.0258	0.171
W-18-D	10/15/90	NT	NT	NT	NT	NT	19.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-D	3/21/00	7.12	NT	2.70	2.00	0.0	24.0	<0.200	<1.00	108	4.52	<4.05	0.962	19	NT	<0.0060	NT
W-18-D	9/19/00	--	--	--	1.97	NT	22.4	0.72	<1.00	111	4.68	<1.8	0.893	10	NT	<0.0060	NT
W-18-D	6/18/01	6.73	97.7	6.10	1.69	0.2	19.1	<0.200	<0.38	92.0	11.9	<3.6	0.232	59	21	<0.0060	0.341
W-18-D	4/4/02	7.33	-31.6	2.75	1.64	0.8	22.0	0.32	<0.38	103	5.28	6.67	0.802	130	36	<0.0258	0.399
W-19-S	4/18/00	6.08	NT	4.04	<0.253	0.0	6.72	<1.6	<3.48	74.0	189	55.9	<0.461	580	NT	<0.0060	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-19-S	10/16/00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-S	4/5/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-S	6/20/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-I	4/18/00	6.28	NT	0.51	0.0649	0.0	36.5	<0.200	0.707	436	1880	52.4	4.78	390	NT	<0.0060	NT
W-19-I	10/16/00	6.10	NT	0.65	0.100	0.0	53.5	<0.200	329	377	2420	15.5	3.49	65	NT	<0.0060	NT
W-19-I	6/20/01	6.42	100.9	2.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-I	4/5/02	6.52	-19.1	0.00	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-D	4/18/00	6.72	NT	1.77	<0.0049	0.0	61.4	<0.200	1.28	464	1230	41.9	<4.61	200	NT	0.017	NT
W-19-D	10/16/00	5.80	NT	0.68	<0.0049	0.0	73.5	<0.200	802	439	1240	8.63	2.93	28	NT	<0.0060	NT
W-19-D	6/20/01	6.68	134.6	1.30	<0.0049	NT	71.9	0.80	0.72	429	1230	13.8	1.88	19	600	<0.0060	0.0863
W-19-D	4/5/02	6.65	-17.8	0.00	<0.0365	0.0	79.3	0.32	1.75	454	1230	17.8	2.25	59	13	<0.0258	0.128

Notes:

--	Groundwater not tested for this parameter, or information was not recorded
NT	Not tested
cfu/mL	Colony forming units per milliliter
mg/L	Milligrams per liter
mV	Millivolts
mS	Millisiemens
SU	Standard pH units
µg/L	Micrograms per liter

[1] Field measurements suspect due to recorded sampling procedure.

TABLE 4-2
Summary of Chemical, Geochemical, and Biological Parameters at Selected Alluvium Wells
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Specific Conductivity	Chloride	COD	TOC	Hetero-trophic Bacteria	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate	2,4-D	2,4-DP	2,4,5-T	2,4,5-TP (Silvex)	1,2-Dichloro-benzene	2,4-Dichloro-phenol	Benzene	Diesel Range Organics
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mS)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
W-18-I	10/16/1990	NT	NT	NT	NT	NT	28	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	<10	NT	NT
W-18-I	3/21/2000	6.57	NT	2.88	2.16	0	17.4	<0.200	<1	108	NT	3.95	<4.05	<0.461	4440	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-I	9/19/2000	5.18	NT	3.99	2.18	NT	17.3	<0.200	<1	114	25.9	3.84	<1.8	0.978	750	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-I	6/18/2001	6.26	148.5	4.9	1.8	0.2	15.9	<0.200	<0.38	93	0.189	5.67	<3.6	0.424	870	370	<0.006	0.175	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-I	4/4/2002	6.59	-39.6	0.44	1.64	0	15.7	<0.200	<0.38	85.1	0.226	3.57	13.3	2.35	2400	78	<0.0258	0.171	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-S	10/16/1990	NT	NT	NT	NT	NT	35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	3/21/2000	6.54	NT	3.17	0.195	0	24.2	<0.200	<1	167	1.22	4.19	9.96	2.83	23200	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-S	9/19/2000	NT	NT	NT	0.31	NT	24.2	0.8	<1	166	NT	3.23	2.47	3.15	2900	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-S	6/19/2001	6.35	159.8	1	0.094	0.2	26.7	<0.200	<0.38	163	0.279	4	6.61	2.39	130	120	<0.006	0.0887	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-S	4/4/2002	6.48	-45.3	0.58	0.233	0	23	<0.200	<0.38	150	0.335	3.4	13.3	3.22	16	13	<0.0258	0.0944	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-24	8/4/1993	6.57	NT	2	NT	NT	NT	NT	NT	NT	0.714	NT	NT	NT	NT	NT	NT	NT	2.6	<2	<1.2	3.1	<1	9	2	NT
MW-11-24	9/9/1993	6.41	NT	8	NT	NT	NT	NT	NT	NT	0.769	NT	NT	NT	NT	NT	NT	NT	3.3	2.2	<0.4	2.2	1	15	2.8	NT
MW-11-24	10/27/1993	6.72	NT	0.8	NT	NT	NT	NT	NT	NT	0.820	NT	NT	NT	NT	NT	NT	NT	3.5	6.6	<0.6	3.3	1	<2	4	NT
MW-11-24	3/23/1995	6.26	NT	1.4	NT	NT	NT	NT	NT	NT	0.474	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-24	3/28/2000	6.86	NT	1.72	NT	0	NT	NT	NT	NT	1.71	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-24	9/22/2000	5.85	NT	0.61	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	6/28/2001	6.31	102.1	6.3	0.02	0	18.5	<0.200	38.6	218	0.437	26.6	11.1	3.53	20	110	<0.006	0.0847	NT	NT	NT	NT	NT	NT	NT	0.137
MW-11-24	4/12/2002	7.2	-7.8	1.46	0.711	0	10.4	<0.499	<0.38	284	0.547	4.11	<4	2.37	9	5	<0.0258	0.0525	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-37	8/4/1993	6.59	NT	3.6	NT	NT	NT	NT	NT	NT	0.286	NT	NT	NT	NT	NT	NT	NT	<6	<1	<0.2	0.5	<1	<2	1.6	NT
MW-11-37	9/9/1993	6.49	NT	11	NT	NT	NT	NT	NT	NT	0.345	NT	NT	NT	NT	NT	NT	NT	<2	<0.8	<0.2	0.3	<1	<2	<0.5	NT
MW-11-37	10/27/1993	7.44	NT	1.7	NT	NT	NT	NT	NT	NT	0.295	NT	NT	NT	NT	NT	NT	NT	<1.8	<0.6	<0.2	0.3	<1	<2	<0.5	NT
MW-11-37	3/23/1995	6.05	NT	0.3	NT	NT	NT	NT	NT	NT	0.286	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/28/2000	6.35	NT	0.09	NT	0	NT	NT	NT	NT	1.11	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-37	9/22/2000	5.55	NT	0.51	NT	NT	NT	NT	NT	NT	32.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-37	6/28/2001	6.42	90.4	4	9.44	0	19	0.24	<0.38	83.9	0.286	12.2	<3.6	1.11	770	610	<0.006	0.0976	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-37	4/12/2002	6.92	-8.7	0.98	8.29	0	18.8	<0.499	0.635	81.6	0.309	5.14	<4	1.63	23	15	<0.0258	0.0828	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-56	8/4/1993	7.12	NT	3.4	NT	NT	NT	NT	NT	NT	0.380	NT	NT	NT	NT	NT	NT	NT	<1	<0.6	<0.2	<0.2	<1	<2	2.1	NT
MW-11-56	9/9/1993	6.99	NT	8	NT	NT	NT	NT	NT	NT	0.440	NT	NT	NT	NT	NT	NT	NT	1.5	<0.6	<0.2	<0.2	<1	<2	4.1	NT
MW-11-56	10/27/1993	7.36	NT	1	NT	NT	NT	NT	NT	NT	0.377	NT	NT	NT	NT	NT	NT	NT	<1	<0.6	<0.2	<0.2	<1	<2	1	NT
MW-11-56	3/23/1995	6.55	NT	7.4	NT	NT	NT	NT	NT	NT	0.341	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/28/2000	7.23	NT	0.97	NT	3.1	NT	NT	NT	NT	1.04	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-56	9/22/2000	7.02	NT	0.5	NT	NT	NT	NT	NT	NT	34.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-56	6/28/2001	7.12	-90	2.5	0.026	2.5	6.78	<0.200	228	148	0.305	14	5.82	0.377	230	210	0.281	0.204	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-56	4/12/2002	7.67	-27.7	0.66	<0.0365	3.2	6.19	<0.499	198	142	0.354	6.59	<4	0.95	55	16	0.24	0.0235	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-04-27	2/8/1989	6.75	NT	NT	NT	NT	34	NT	NT	NT	0.870	61	NT	NT	NT	NT	NT	NT	280	NT	11	18	84	303	<5	NT
MW-04-27	3/6/1989	6.75	NT	NT	NT	NT	22	NT	NT	NT	0.870	47	NT	NT	NT	NT	NT	NT	157	NT	19	31	<1	280	<1	NT
MW-04-27	4/26/1989	6.67	NT	NT	NT	NT	70.8	NT	NT	NT	1.293	123	NT	NT	NT	NT	NT	NT	206	NT	6	49	48	530	13	NT
MW-04-27	6/11/1991	6.43	NT	1.8	NT	NT	NT	NT	NT	761	1.966	NT	NT	99.2	NT	NT	0.32	0.16	4150	2120	270	210	110	9	81	NT
MW-04-27	3/31/1995	6.11	NT	2	NT	NT	NT	NT	NT	NT	1.731	NT	NT	NT	NT	NT	NT	NT	79	76	<5	180	3800	<250	190	NT
MW-04-27	3/27/2000	6.77	NT	1.79	NT	4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1140	<0.584	<0.563	<0.622	4850	1250	47.4	NT
MW-04-27	9/27/2000	6.34	NT	0.48	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	2740	<59	<56.9	<62.8	10700	11000	83.9	NT
MW-04-27	7/5/2001	6.49	-53.8	1.2	<0.049	4.4	98.2	21.2	10000	597	2.201	570	772	99.6	1100	800	0.096	0.00796	2700	<3.63	103	346	10200	10800	74	182
MW-04-27	4/19/2002	6.75	-90.2	2.67	<0.0365	4	40.5	12.9	6760	613	2.657	290	254	84.8	39	35	<0.0258	0.00712	376	17.2	7.83	220	7250	<2500	0.58	44.1
MW-04-47	1/31/1989	6.39	NT	NT	NT	NT	254	NT	NT	NT	1.830	184	NT	NT	NT	NT	NT	NT	<5	NT	<1	92	42	390	44	NT
MW-04-47	2/28/1989	6.55	NT	NT	NT	NT	268	NT	NT	NT	1.640	171	NT	NT	NT	NT	NT	NT	74	NT	<0.5	276	237	303	180	NT
MW-04-47	4/25/1989	6.51	NT	NT	NT	NT	192	NT	NT	NT	1.520	195	NT	NT	NT	NT	NT	NT	53	NT	<10	212	175	99	95	NT
MW-04-47	6/11/1991	6.76	NT	1.4	NT	NT	NT	NT	NT	213	0.483	NT	NT	2.4	NT	NT	<0.05	0.16	<10	<6	<2	9.4	141	1300	7.2	NT
MW-04-47	3/31/1995	6.61	NT	2.7	NT	NT	NT	NT	NT	NT	0.332	NT	NT	NT	NT	NT	NT	NT	1.5	<1	0.35	1.5	71	<0.5	<0.5	NT
MW-04-47	3/27/2000	7.02	NT	1.29	NT	2.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	50.9	<10	0.13	NT

TABLE 4-2
Summary of Chemical, Geochemical, and Biological Parameters at Selected Alluvium Wells
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Specific Conductivity	Chloride	COD	TOC	Hetero-trophic Bacteria	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate	2,4-D	2,4-DP	2,4,5-T	2,4,5-TP (Silvex)	1,2-Dichloro-benzene	2,4-Dichloro-phenol	Benzene	Diesel Range Organics
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mS)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
MW-04-47	9/27/2000	6.51	NT	0.44	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	77.6	<10	0.72	NT
MW-04-47	7/5/2001	6.67	-21.5	1.2	<0.0049	3.4	17.1	<0.200	434	283	0.93	210	<3.6	1.89	43	70	<0.006	0.0268	<0.179	18.4	<0.15	1.81	165	<10	1.25	<0.125
MW-04-47	4/19/2002	6.76	-54.4	1.46	<0.0365	3.8	12.1	11.5	616	268	1.263	151	7.78	1.51	180	130	<0.0258	0.0594	17.1	25.9	4.17	1.82	191	<10	<0.147	0.217
MW-04-63	1/31/1989	6.76	NT	NT	NT	NT	15	NT	NT	NT	0.443	3.7	NT	NT	NT	NT	NT	NT	<5	NT	<1	<1	<1	<5	<1	NT
MW-04-63	2/28/1989	6.63	NT	NT	NT	NT	<5	NT	NT	NT	0.464	34	NT	NT	NT	NT	NT	NT	10	NT	<0.5	<0.5	<1	<5	3	NT
MW-04-63	4/25/1989	6.84	NT	NT	NT	NT	<5	NT	NT	NT	0.412	22.3	NT	NT	NT	NT	NT	NT	<2	NT	<0.5	<0.5	1	<5	<1	NT
MW-04-63	6/11/1991	6.79	NT	1.7	NT	NT	NT	NT	NT	164	0.344	NT	NT	476	NT	NT	0.05	0.15	<10	<6	<2	<2	<4.8	<6	<0.5	NT
MW-04-63	3/31/1995	6.65	NT	5.4	NT	NT	NT	NT	NT	NT	0.297	NT	NT	NT	NT	NT	NT	NT	1	0.44	<0.05	<0.05	<1.2	<0.5	<0.5	NT
MW-04-63	3/27/2000	7.13	NT	0.43	NT	1.6	NT	NT	NT	NT	1.04	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<10	<0.121	NT
MW-04-63	9/27/2000	6.14	NT	0.46	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	<0.36	<10	<0.121	NT
MW-05-52	2/8/1989	6.43	NT	NT	NT	NT	97	NT	NT	NT	2.19	309	NT	NT	NT	NT	NT	NT	82000	NT	2780	<10	1890	47700	165	NT
MW-05-52	2/9/1989	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	16000	NT	<600	<2000	2180	NT	274	NT
MW-05-52	3/1/1989	6.26	NT	NT	NT	NT	86	NT	NT	NT	2.22	336	NT	NT	NT	NT	NT	NT	88100	NT	2170	520	1130	59700	124	NT
MW-05-52	4/26/1989	6.3	NT	NT	NT	NT	107	NT	NT	NT	2.24	409	NT	NT	NT	NT	NT	NT	95300	NT	1240	280	1430	47500	85.3	NT
MW-05-52	6/11/1991	6.62	NT	1.1	NT	NT	NT	NT	NT	468	1.292	NT	NT	68.7	NT	NT	0.13	12.2	44000	16000	<200	<200	1700	11000	92	NT
MW-05-52	12/14/1995	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	479	127	NT	NT	<0.1	1.4	7400	<120	200	130	4300	12000	210	NT
MW-05-52	3/30/2000	6.52	NT	0.47	<0.0049	2.4	25.4	<0.200	NT	276	NT	66.5	49.8	<0.461	12	NT	<0.006	NT	856	<0.584	<0.563	<0.622	3640	745	51	11.8
MW-05-52	9/28/2000	6.22	NT	0.71	<0.0049	NT	13.5	3.44	56.8	445	115.0	117	54.7	14.8	5.5	NT	<0.006	NT	194	<0.584	12.2	<62.8	1530	382	40.6	4.47
MW-05-52	7/6/2001	6.65	7.4	1.6	<0.0049	2.6	21.2	2.24	40.4	257	0.886	77.6	55.8	14.7	18	5	0.01	10	557	<0.173	<7.29	16.6	3990	251	33.5	1.92
MW-05-52	4/22/2002	6.7	-55.5	1.74	<0.0365	2.6	37.4	3.76	57	325	0.458	140	47.3	12.5	1	7	<0.0258	12.1	304	15.7	<50	17.5	3740	539	44	7.92
AL5-35	4/3/1995	6.21	NT	1.7	NT	NT	NT	NT	NT	NT	3.65	NT	52.3	9.7	NT	NT	<0.1	0.083	<5	15	17	<1	4300	<0.5	180	NT
AL5-35	10/27/1995	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	5.8	16	0.31	15	4500	5.9	200	NT
AL5-35	4/4/2000	6.32	NT	0.71	<0.049	3.8	225	<0.200	3430	706	6.16	1610	51.2	<4.61	245	NT	0.357	NT	2.28	5.08	<0.563	3.02	6050	21.1	229	NT
AL5-35	10/4/2000	6.05	NT	0.66	<0.049	NT	214	3.2	1110	608	0.704	1460	21	9.3	5	NT	0.54	NT	8.81	11	<1.13	4.28	6350	<20	211	NT
W-09-116	4/7/2000	6.52	NT	0.72	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<3.87	<2.92	<2.82	23.3	888	<10	114	NT
W-09-116	10/6/2000	6.32	NT	0.54	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	19.8	744	<10	143	NT
W-09-116	6/29/2001	6.35	101.4	0.7	<0.0049	2.5	66.7	8	7010	507	2.32	838	21.2	2.95	390	1400	0.684	0.0383	0.8	0.8	<0.15	15.8	881	NT	113	0.67
W-09-116	4/15/2002	6.87	24.6	3.85	<0.0365	3	60.5	<0.499	2650	458	2.333	703	16	2.35	99	13	0.392	0.0301	<0.5	30.6	<0.5	19.2	617	NT	46.4	0.505
W-11-D	9/16/1986	6.3	NT	NT	<0.05	4	200	NT	NT	780	8.3	1900	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	1/20/1987	6.5	NT	NT	0.05	NT	180	NT	NT	740	6.3	1400	NT	27	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	2/25/1987	6.4	NT	NT	0.1	NT	200	NT	NT	670	5.3	1800	NT	49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	10/22/1990	NT	NT	NT	NT	NT	92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	740	40	340	NT
W-11-D	4/5/1995	6.76	NT	0.7	NT	NT	NT	NT	NT	NT	1.717	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT
W-11-D	4/11/2000	6.96	NT	2.1	0.0894	NT	172	1.6	2730	555	3.94	874	60.3	10.8	1220	NT	0.21	NT	<0.773	1.64	<0.563	26.6	360	<20	68.4	NT
W-11-D	10/10/2000	6.78	NT	0.43	<0.0049	4	209	0.368	849	433	0.242	900	13.8	2.25	200	NT	0.02	NT	<0.773	<0.584	<0.563	25.6	739	<10	27.7	NT
W-11-D	6/21/2001	6.69	-7.9	0.6	<0.0049	2.2	196	<0.200	3110	427	3.343	961	16.7	3.03	180	14000	0.05	<0.0016	<0.179	<0.173	<0.15	38.3	456	NT	44.5	0.764
W-11-D	4/9/2002	6.97	-29.4	5.03	<0.0365	2.8	216	<0.200	534	421	3.86	824	15.3	3.13	30	17	<0.0258	0.00492	<0.5	25.3	<0.5	48	437	NT	16.9	0.422
W-11-I	9/3/1986	6.9	NT	NT	<0.05	NT	49	NT	NT	540	1.1	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	12/16/1986	7.1	NT	NT	<0.05	NT	9	NT	NT	490	0.93	14	NT	68	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	2/24/1987	6.5	NT	NT	<0.05	NT	7	NT	NT	490	0.9	11	NT	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	10/22/1990	NT	NT	NT	NT	NT	<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/4/1995	6.78	NT	0.8	NT	NT	NT	NT	NT	NT	0.808	NT	NT	NT	NT	NT	NT	NT	<0.25	<0.25	<0.05	<0.05	<1	<0.5	<0.5	NT
W-11-I	4/11/2000	6.71	NT	0.25	0.0533	8	0.18	0.8	3810	530	1.05	28.9	36.3	8.03	330	NT	3.64	NT	<0.773	<0.584	<0.563	<0.622	0.57	<10	<0.121	NT
W-11-I	10/10/2000	5.85	NT	1.01	0.913	NT	0.805	<0.200	10300	516	93.4	28.4	25.9	6	870	NT	2.35	NT	<0.773	<0.584	<0.563	<0.622	1.13	<10	<0.121	NT
W-11-I	6/21/2001	6.65	-118	0.3	1.62	6.6	3.43	1.2	40000	526	0.853	33.2	25.9	7.3	55	370	3.01	0.00401	<0.179	<0.173	<0.15	<0.133	<0.087	NT	<0.121	<0.125
W-11-I	4/9/2002	6.91	-59.6	1.26	0.037	5.2	0.255	0.56	33300	502	0.937	31.5	18.3	7.04	110	49	3.07	0.00366	<0.5	<0.5	<0.5	<0.5	0.72	NT	<0.121	<0.125
RP-01-31	4/17/2000	NT	NT	NT	<1.53	NT	33.7	<0.200	1.53	172	NT	20.2	<4.05	<0.461	7500	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	3.74	<10	0.16	NT
RP-01-31	10/11/2000	6.97	NT	3.66	0.326	0	54.2	<0.200	<1	141	54.2	35.3	1.97	0.738	3200	NT	0.11	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<10	<0.121	NT
RP-01-31	6/26/2001	6.87	39.5	6.8	0.368	0	20.6	<0.200	<0.38	148	0.126	12.7	11.4	1.53	4100	11000	0.023	0.339	<0.179	<0.173	0.811	<0.133	<0.087	NT	<0.121	<0.125
RP-01-31	4/5/2002	6.78	-22.4	0.0	1.43	NT	30.9	<0.200	2.29	148	0.365	9.71	244	1.54	810	81	<0.0258	0.383	<0.5	<0.5	<0.5	<0.5	0.69	NT	<0.121	<0.125
RP-01-51	4/17/2000	NT	NT	NT	<0.0049	NT	221	<1.6	37.6	554	NT	776	22.8	<0.461	1600	NT	0.119	NT	<0.773	1.49	<0.563	7.92	227	<10	1.12	NT
RP-01-51	10/11/2000	6.7	NT	0.7	0.0462	0	284	<0.200	112	571	0.401	714	30.6	10.3	54	NT	0.33	NT	<0.773	<0.584	<0.563	6.94	150	<10	0.16	NT
RP-01-51	6/26/2001	6.72	-3.9	0.7	<0.0049	0.2	269	4.8	454	509	2.859	853	32	10.4	290	400	0.28	0.0683	<0.179	5.57	0.161	9.07	124	NT	0.18	0.305
RP-01-51	4/8/2002	6.92	-29.4	0.14	<0.0049	0.4	256	<0.200	814	559	3.149	804	30.7	10.9	150	9	0.285	0.0919	<0.5	4.04	<0.5	16.7	197	NT	0.5	0.222

Notes:

NT	Not tested
cfu/mL	Colony forming units per milliliter
mg/L	Milligrams per liter
mV	Millivolts
mS	Millisiemens
SU	Standard pH units
µg/L	Micrograms per liter

TABLE 2-1
Preliminary Constitutents of Potential Concern for Groundwater
RPAC - Portland Site

CLASS	CONSTITUENT
VOCs	1,1,2,2-Tetrachloroethane
	1,1-Dichloroethane
	1,2-Dichlorobenzene
	1,2-Dichloroethane
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	Benzene
	Chlorobenzene
	Chloroform
	cis-1,2-Dichloroethene
	Ethylbenzene
	Isobutyl Alcohol
	Methylene Chloride
	Tetrachloroethene
	Toluene
	Trichloroethene
	Vinyl Chloride
	Xylene
Phenols	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dinitrophenol
	2-Chlorophenol
	Pentachlorophenol
Insecticides	4,4'-DDD
	4,4'-DDE
	4,4'-DDT
	Aldrin
	alpha-BHC
	beta-BHC
	Chlordane
	delta-BHC
	Dieldrin
	Endrin
	gamma-BHC (Lindane)
	Heptachlor
	Hexachlorobenzene
	Toxaphene

TABLE 2-1
Preliminary Constitutents of Potential Concern for Groundwater
RPAC - Portland Site

CLASS	CONSTITUENT
Metals	Arsenic
	Cadmium
	Chromium
	Copper
	Lead
	Mercury
	Nickel
	Vanadium
	Zinc
Herbicides	2,4,5-T
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	Bromoxynil
	Dichlorprop
	Dinoseb
Dioxins/Furans	PCDD/PCDF
PCBs	Aroclor 1254

VOCs	volatile organic compounds
PCBs	polychlorinated biphenyls
PCDD	polychlorinated dioxin
PCDF	polychlorinated dibenzofuran

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
A	01/03/84	Extraction Well	26.5	HA	F/SA	03/12/96
AL1-15	03/02/95	Monitoring Well	15	GOULD	F/SA	03/28/95, 06/01/99
AL1-45	03/07/95	Monitoring Well	45	GOULD	A	03/29/95, 06/01/99
AL1-69	01/20/95	Monitoring Well	69.3	GOULD	A	03/28/95, 06/01/99
AL2-17	03/09/95	Monitoring Well	17	LA	F/SA	03/29/95, 10/26/95, 03/31/00, 10/03/00, 10/05/00, 07/05/01, 07/06/01, 04/22/02, 04/23/02
AL2-32	03/07/95	Monitoring Well	32.5	LA	A	03/30/95, 10/26/95, 03/31/00, 10/03/00, 07/05/01, 04/19/02
AL2-46	03/09/95	Monitoring Well	46	LA	A	03/29/95, 10/26/95, 03/30/00, 10/03/00, 07/05/01, 04/22/02
AL4-47	01/26/95	Monitoring Well	46.8	LA	A	03/24/95
AL5-19	03/09/95	Monitoring Well	19	LA	F/SA	04/03/95, 10/27/95, 04/04/00, 10/05/00
AL5-35	03/10/95	Monitoring Well	35	LA	A	04/03/95, 10/27/95, 04/04/00, 10/04/00
AL5-62	03/16/95	Monitoring Well	62	LA	A	04/03/95, 10/27/95, 04/04/00, 10/04/00
AL6-96	12/08/95	Monitoring Well	96.5	LA	A	12/19/95, 04/10/00, 10/12/00, 11/28/00
ASW-01	08/08/88	Monitoring Well	17	METRO	A	08/09/88, 03/22/95
ASW-01A	09/13/91	Monitoring Well	unknown	METRO	A	03/29/00, 09/29/00, 06/22/01, 04/11/02
ASW-02	08/08/88	Monitoring Well	19	METRO	A	08/09/88
ASW-03	NA	Monitoring Well	unknown	METRO	A	08/09/88, 03/17/89, 03/22/95
ASW-04	03/15/89	Monitoring Well	18	METRO	A	03/17/89, 03/22/95, 03/29/00, 09/29/00
ASW-05	03/15/89	Monitoring Well	15	METRO	A	03/17/89
ASW-07	03/15/89	Monitoring Well	15	SCHNITZER	A	03/16/89
B	01/05/84	Monitoring Well	22.5	HA	F/SA	03/12/96
BST1W-88	02/28/95	Extraction Well	88	GOULD	B	03/28/95, 06/02/99
BST2W-61	01/19/95	Monitoring Well	61	LA	B	11/23/94, 03/30/95, 10/26/95, 04/03/00, 10/03/00, 07/05/01, 04/19/02
BST5W-74	02/28/95	Monitoring Well	74.5	LA	B	04/03/95, 10/27/95, 04/04/00, 10/04/00
BTB-4A-84	05/19/93	Monitoring Well	84	LA	B	04/03/95, 12/19/95
BTB-4B-25	05/25/93	Monitoring Well	25	LA	F/SA	04/03/95
BTB-4B-55	05/25/93	Monitoring Well	55	LA	A	04/03/95
C	01/06/84	Extraction Well	24	HA	F/SA	03/12/96
D	12/30/84	Extraction Well	22	HA	F/SA	03/12/96
E	01/11/84	Extraction Well	28.5	HA	A	03/12/96
F	01/12/84	Extraction Well	24	HA	A	06/12/96
G	01/10/84	Extraction Well	25.5	HA	A	03/12/96
GGW-001	08/30/99	Temporary Well Point	82-85	LA	A	08/30/99
GGW-001	08/30/99	Temporary Well Point	95-98	LA	A	08/31/99
GGW-002	08/26/99	Temporary Well Point	73-76	LA	A	08/26/99
GGW-003	08/27/99	Temporary Well Point	22-25	LA	A	08/27/99, 08/30/99
GGW-003	08/27/99	Temporary Well Point	66-69	LA	A	08/26/99, 08/27/99
GGW-004	08/27/99	Temporary Well Point	53-56	LA	A	08/27/99
GGW-005	09/01/99	Temporary Well Point	56-59	LA	A	09/01/99

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
GGW-006	08/27/99	Temporary Well Point	36-39	LA	A	08/27/99
GGW-006	08/27/99	Temporary Well Point	47-50	LA	A	08/27/99
GGW-007	10/19/99	Temporary Well Point	24-27	ESCO	F/SA	10/18/99, 10/19/99
GGW-008	09/01/99	Temporary Well Point	51-54	GOULD	A	08/31/99
GGW-009	08/31/99	Temporary Well Point	25-28	GOULD	F/SA	08/31/99
GGW-009	08/31/99	Temporary Well Point	65-68	GOULD	A	09/01/99
GGW-009	08/31/99	Temporary Well Point	88-91	GOULD	A	09/01/99, 09/02/99
GGW-010	10/25/99	Temporary Well Point	27-30	ATOFINA	A	10/25/99, 10/26/99
GGW-010	10/25/99	Temporary Well Point	36-39	ATOFINA	A	10/25/99, 10/26/99
GGW-010	10/25/99	Temporary Well Point	47-50	ATOFINA	A	10/25/99, 10/26/99
GGW-011	10/22/99	Temporary Well Point	54-57	WACKER	A	10/20/99, 10/22/99
GGW-011	10/22/99	Temporary Well Point	87.5-90.5	WACKER	A	10/20/99, 10/22/99
GGW-013	10/27/99	Temporary Well Point	36-39	ATOFINA	A	10/26/99, 10/27/99
GGW-014	10/27/99	Temporary Well Point	46-49	ATOFINA	A	10/26/99, 10/27/99
GGW-015	10/26/99	Temporary Well Point	27-30	ATOFINA	A	10/27/99, 10/28/99
GGW-015	10/26/99	Temporary Well Point	44-47	ATOFINA	A	10/25/99, 10/26/99
GGW-016	10/28/99	Temporary Well Point	30-33	ATOFINA	A	10/27/99, 10/28/99
GGW-016	10/28/99	Temporary Well Point	42-45	ATOFINA	A	10/27/99, 10/28/99
GGW-022	10/21/99	Temporary Well Point	22-25	WACKER	A	10/20/99, 10/21/99
GGW-022	10/21/99	Temporary Well Point	62-65	WACKER	A	10/20/99, 10/21/99
GGW-023	10/21/99	Temporary Well Point	14-17	WACKER	A	10/20/99, 10/21/99
GGW-024	10/25/99	Temporary Well Point	25-28	WACKER	F/SA	10/24/99, 10/25/99
GGW-024	10/25/99	Temporary Well Point	82-85	WACKER	A	10/24/99, 10/25/99
GGW-025	10/21/99	Temporary Well Point	25-28	BNSF	A	10/20/99, 10/21/99
GGW-025	10/21/99	Temporary Well Point	43-46	BNSF	A	10/20/99, 10/21/99
GGW-026	10/19/99	Temporary Well Point	27-30	BNSF	A	10/18/99, 10/19/99, 10/25/99
GGW-026	10/19/99	Temporary Well Point	48-51	BNSF	A	10/18/99, 10/19/99, 10/25/99
GGW-027	10/20/99	Temporary Well Point	21-24	BNSF	F/SA	10/19/99
GGW-027	10/20/99	Temporary Well Point	72-75	BNSF	A	10/19/99, 10/20/99
GGW-028	10/18/99	Temporary Well Point	12-15	LA	F/SA	10/17/99, 10/18/99
GGW-028	10/18/99	Temporary Well Point	36-39	LA	A	10/17/99, 10/18/99
GGW-028	10/18/99	Temporary Well Point	50-53	LA	A	10/17/99, 10/18/99
GM-1-S	07/05/90	Monitoring Well	unknown	LA	F/SA	08/23/90, 08/24/90, 08/26/90, 08/27/90, 10/24/90, 03/01/94
GM-2-I	06/27/90	Monitoring Well	unknown	GOULD	F/SA	10/26/90, 10/23/92
H	01/09/84	Extraction Well	26.5	HA	A	03/12/96

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
MW-01-26	12/12/88	Monitoring Well	23.6	HA	F/SA	03/22/00, 09/22/00
MW-01-41	12/12/88	Monitoring Well	38.8	HA	A	01/26/89, 02/27/89, 04/24/89, 06/12/91, 03/23/00, 09/20/00
MW-01-56	12/05/88	Monitoring Well	53.9	HA	A	01/25/89, 02/27/89, 04/24/89, 06/12/91, 03/24/00, 09/20/00
MW-01-76	05/23/91	Monitoring Well	76	HA	B	06/14/91, 07/09/91, 08/07/91, 03/22/00, 09/21/00
MW-02-26	12/22/88	Monitoring Well	22.8	HA	A	01/30/89, 02/27/89, 04/25/89, 06/10/91, 09/25/00
MW-02-46	12/21/88	Monitoring Well	42.8	HA	A	01/30/89, 02/28/89, 04/25/89, 06/10/91, 03/23/00, 09/25/00
MW-02-62	12/19/88	Monitoring Well	58.5	HA	A	01/30/89, 02/28/89, 04/25/89, 06/10/91, 03/23/00, 09/25/00
MW-03-27	11/09/88	Monitoring Well	24.8	HA	A	01/31/89, 02/28/89, 04/25/89, 06/10/91, 03/21/95, 03/29/00, 09/27/00
MW-03-49	11/08/88	Monitoring Well	46.8	HA	A	01/26/89, 02/28/89, 04/25/89, 06/10/91, 03/21/95, 03/29/00, 09/27/00
MW-03-68	10/31/88	Monitoring Well	66	HA	A	01/31/89, 02/28/89, 04/25/89, 06/10/91, 03/22/95, 03/29/00, 09/27/00
MW-03-81	02/16/00	Monitoring Well	80	WACKER	A	04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-03-I	06/25/90	Monitoring Well	60	WACKER	A	10/17/90, 04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-03-S	11/09/88	Monitoring Well	27	WACKER	F/SA	10/17/90, 04/06/00, 10/13/00, 06/25/01, 04/16/02
MW-04-27	12/02/88	Monitoring Well	23.8	HA	A	02/08/89, 03/06/89, 04/26/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00, 07/05/01, 04/19/02
MW-04-47	11/30/88	Monitoring Well	43.8	HA	A	01/31/89, 02/28/89, 04/25/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00, 07/05/01, 04/19/02
MW-04-63	11/29/88	Monitoring Well	60.1	HA	A	01/31/89, 02/28/89, 04/25/89, 06/11/91, 03/31/95, 03/27/00, 09/27/00
MW-05-24	11/16/88	Monitoring Well	22.3	HA	F/SA	02/08/89, 03/01/89, 04/26/89, 06/11/91, 03/30/00, 09/28/00
MW-05-34	11/15/88	Monitoring Well	32	HA	F/SA	02/09/89, 03/01/89, 04/26/89, 06/11/91, 12/14/95, 09/28/00
MW-05-52	11/14/88	Monitoring Well	49.4	HA	A	02/08/89, 02/09/89, 03/01/89, 04/26/89, 06/11/91, 12/14/95, 03/30/00, 09/28/00, 07/06/01, 04/22/02
MW-05-70	01/31/00	Monitoring Well	70	HA	B	03/30/00, 09/28/00, 11/29/00, 07/06/01, 04/22/02
MW-06-S	07/23/86	Monitoring Well	unknown	WACKER	A	04/06/00, 10/13/00
MW-07-56	12/29/88	Monitoring Well	53.5	HA	A	01/25/89, 02/27/89, 04/24/89, 06/13/91
MW-07-S	NA	Monitoring Well	unknown	WACKER	A	10/17/90, 04/06/00, 10/13/00
MW-08-27	02/28/90	Monitoring Well	25.1	HA	F/SA	06/12/91, 03/23/00
MW-08-46	01/12/89	Monitoring Well	41	HA	A	02/06/89, 03/01/89, 04/27/89, 07/05/89, 07/06/89, 07/07/89, 06/12/91, 03/28/00, 09/26/00
MW-08-64	01/09/89	Monitoring Well	59	HA	A	02/07/89, 03/06/89, 04/27/89, 06/26/89, 06/27/89, 06/28/89, 06/12/91, 03/24/00, 09/26/00
MW-09-23	05/10/91	Monitoring Well	20.7	HA	A	06/13/91, 07/09/91, 08/07/91, 08/04/93, 09/10/93, 10/28/93, 03/21/95, 03/28/00, 09/26/00, 07/02/01, 04/17/02
MW-09-42	05/10/91	Monitoring Well	40.7	HA	A	06/13/91, 07/08/91, 08/07/91, 08/04/93, 09/10/93, 10/28/93, 03/21/95, 03/28/00, 09/26/00, 07/02/01, 04/17/02
MW-09-58	05/09/91	Monitoring Well	58.5	HA	A	06/13/91, 07/08/91, 08/07/91, 08/03/93, 09/10/93, 10/28/93, 03/21/95, 03/27/00, 09/26/00, 07/02/01, 04/18/02
MW-09-80	06/04/91	Monitoring Well	80.3	HA	B	06/13/91, 07/09/91, 08/07/91, 08/03/93, 09/10/93, 10/28/93, 03/22/95, 03/27/00, 10/05/00, 07/02/01, 04/18/02
MW-10-24	06/22/93	Monitoring Well	22.5	IA	A	08/05/93, 09/09/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02
MW-10-44	06/21/93	Monitoring Well	42	IA	A	08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
MW-10-57	06/22/93	Monitoring Well	55.5	IA	A	08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/29/00, 09/25/00, 06/29/01, 04/15/02
MW-11-24	06/25/93	Monitoring Well	22	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-37	06/25/93	Monitoring Well	35	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-56	06/24/93	Monitoring Well	54	IA	A	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-11-79	07/22/93	Monitoring Well	76.6	IA	B	08/04/93, 09/09/93, 10/27/93, 03/23/95, 03/28/00, 09/22/00, 06/28/01, 04/12/02
MW-12-27	06/17/93	Monitoring Well	24.5	IA	A	08/03/93, 09/08/93, 10/27/93, 04/11/95, 03/22/00, 09/20/00
MW-12-41	06/17/93	Monitoring Well	39	IA	A	08/03/93, 09/08/93, 10/27/93, 03/22/00, 09/20/00
MW-12-59	06/17/93	Monitoring Well	57.5	IA	A	08/03/93, 09/08/93, 10/27/93, 03/22/00, 09/20/00
MW-12-79	07/13/93	Monitoring Well	78	IA	B	08/02/93, 09/09/93, 10/27/93, 03/22/00, 09/20/00
P-02	01/01/80	Piezometer	18	IA	A	03/23/95
P-07	NA	Piezometer	unknown	HA	A	01/01/82
P-103	12/27/83	Piezometer	29	HA	A	03/24/95, 05/09/95, 07/31/95
P-104	12/27/83	Piezometer	20.4	LA	F/SA	10/23/92
P-11	NA	Piezometer	unknown	HA	F/SA	01/01/82
PP-06	06/15/81	Piezometer	20	LA	F/SA	01/01/82, 12/29/86, 02/21/87, 09/29/88, 05/01/89, 10/13/89, 05/10/90, 10/23/90, 11/13/90, 10/21/92
PP-08	06/23/81	Piezometer	25	LA	A	01/01/82, 12/30/86, 02/21/87, 10/19/88, 05/01/89, 10/13/89, 05/10/90, 11/13/90, 10/21/92, 03/27/95, 04/03/00, 10/05/00
PP-11	07/08/81	Piezometer	38	ATOFINA	A	01/01/82, 12/29/86, 02/25/87
PZ-1-11	03/15/95	Piezometer	11.5	IA	F/SA	03/24/95
RP-01-31	02/10/00	Monitoring Well	30	BNSF	A	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/05/02
RP-01-51	02/09/00	Monitoring Well	50	BNSF	A	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/08/02
RP-01-65	02/08/00	Monitoring Well	64	BNSF	B	04/17/00, 10/11/00, 11/28/00, 06/26/01, 04/05/02
RP-02-31	02/03/00	Monitoring Well	30	ATOFINA	A	04/18/00, 10/16/00, 06/19/01, 04/04/02
RP-02-49	02/03/00	Monitoring Well	48	ATOFINA	A	04/18/00, 10/16/00, 06/19/01, 04/04/02, 05/03/02
RP-02-66	02/02/00	Monitoring Well	65	ATOFINA	B	04/18/00, 10/16/00, 06/19/01, 04/04/02
RP-03-26	02/17/00	Monitoring Well	25	BNSF	A	04/07/00
RP-03-30R	09/13/00	Monitoring Well	28	BNSF	A	10/12/00, 11/28/00, 06/27/01, 04/10/02
RP-03-52R	09/12/00	Monitoring Well	51	BNSF	A	10/12/00, 11/28/00, 06/27/01, 04/10/02
RP-04-16	01/13/00	Monitoring Well	15	BNSF	A	04/05/00, 10/04/00, 07/03/01, 04/18/02
RP-04-41	02/22/00	Monitoring Well	40	BNSF	A	04/05/00, 10/04/00, 07/03/01, 04/18/02
RP-05-16	01/13/00	Monitoring Well	15	BNSF	A	04/05/00, 10/04/00
RP-06-30	02/08/00	Monitoring Well	29.5	BNSF	F/SA	04/14/00, 10/12/00, 11/29/00, 06/27/01, 04/10/02
RP-06-87	02/07/00	Monitoring Well	86	BNSF	A	04/14/00, 10/12/00, 11/29/00, 06/27/01, 04/10/02
RP-07-119	05/01/02	Monitoring Well	119	WACKER	B	04/29/02, 05/03/02
RP-07-30	04/22/02	Monitoring Well	24.5	WACKER	F/SA	05/03/02
RP-07-55	04/22/02	Monitoring Well	54.5	WACKER	A	05/03/02
RP-07-84	04/22/02	Monitoring Well	83	WACKER	A	05/03/02
RPW-01	07/01/81	Monitoring Well	48	IA	A	01/01/82

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
RPW-02	06/30/81	Monitoring Well	38	IA	A	01/01/82, 10/17/90, 08/05/93, 09/10/93, 10/28/93, 03/22/00, 09/20/00, 06/28/01, 04/12/02
RPW-03	06/29/81	Monitoring Well	53	IA	A	01/01/82, 08/05/93, 09/10/93, 10/28/93, 03/23/95, 03/28/00, 09/22/00
RPW-04	07/02/81	Monitoring Well	38.5	HA	A	01/01/82, 06/01/84, 09/18/86, 12/14/86, 02/26/87, 09/30/88, 05/01/89, 10/13/89, 05/10/90, 11/13/90
RPW-05	06/16/81	Monitoring Well	40.75	HA	A	01/01/82, 01/25/89, 02/27/89, 04/25/89, 06/12/91, 03/27/00, 09/27/00
TB-01-22	04/30/91	Temporary Well Point	23.5	HA	A	04/30/91
TB-02	04/30/91	Temporary Well Point	23.5	HA	A	04/30/91
TB-03-23	05/01/91	Temporary Well Point	23.5	HA	A	05/01/91
TB-04-23	05/02/91	Temporary Well Point	23.5	HA	A	05/03/91
UB-3	NA	Temporary Well Point	18-22	HA	A	01/14/98
UB-4	NA	Temporary Well Point	18-22	HA	A	01/15/98
W-01-I	01/27/82	Monitoring Well	50	GOULD	A	08/28/86, 12/10/86, 02/17/87, 10/23/92
W-02-S	01/26/82	Monitoring Well	18	GOULD	F/SA	12/22/86, 02/17/87, 10/26/90, 10/23/92
W-03-D	12/02/86	Monitoring Well	89	GOULD	A	08/27/86, 12/17/86, 12/21/86, 02/19/87, 12/21/87, 10/25/90, 12/11/96, 04/12/00, 10/09/00
W-03-I	01/29/82	Monitoring Well	40.5	GOULD	A	10/25/90, 03/30/95, 12/12/96, 04/12/00, 10/09/00, 06/26/01, 04/08/02
W-03-S	01/01/82	Monitoring Well	17	GOULD	F/SA	12/29/86, 02/19/87, 10/25/90, 03/29/95, 12/11/96, 04/12/00, 10/09/00
W-04-89	01/26/00	Monitoring Well	88	GOULD	A	04/12/00, 10/09/00, 06/26/01, 04/08/02
W-04-I	02/01/82	Monitoring Well	49	GOULD	A	08/27/86, 12/11/86, 02/21/87, 12/12/96, 04/12/00, 10/09/00
W-04-S	01/01/82	Monitoring Well	16	GOULD	F/SA	12/11/86, 02/21/87, 12/12/96, 04/12/00, 10/09/00
W-06-B	08/05/86	Monitoring Well	67.9	LA	B	09/04/86, 12/15/86, 02/22/87, 06/12/91, 07/09/91, 08/07/91, 03/27/95, 03/30/00, 09/28/00
W-06-D	06/22/81	Monitoring Well	49	LA	A	01/01/82, 09/04/86, 12/15/86, 02/22/87, 02/08/89, 03/01/89, 04/26/89, 06/12/91, 03/30/00, 09/28/00
W-06-S	07/23/86	Monitoring Well	27.25	LA	A	09/04/86, 12/12/86, 02/22/87, 02/07/89, 03/01/89, 04/26/89, 06/12/91, 03/30/00, 09/28/00
W-07-S	07/24/86	Monitoring Well	15	LA	F/SA	10/24/90, 11/13/90, 10/21/92, 03/01/94
W-07-I	06/18/81	Monitoring Well	54	LA	A	01/01/82, 09/15/86, 12/18/86, 02/26/87, 09/30/88, 05/01/89, 10/13/89, 05/10/90
W-07-D	06/28/90	Monitoring Well	70	LA	A	09/05/86, 12/22/86, 02/26/87, 10/24/90, 10/21/92, 02/24/94
W-08	06/24/81	Monitoring Well	54	LA	A	01/01/82, 09/15/86, 12/21/86, 02/26/87, 10/23/90, 10/22/92, 04/04/00, 10/05/00, 07/03/01, 04/17/02
W-08-26	01/18/00	Monitoring Well	25	LA	F/SA	04/05/00, 10/06/00, 07/02/01, 04/16/02, 04/18/02
W-08-74	01/19/00	Monitoring Well	73	LA	B	04/04/00, 10/05/00, 07/03/01, 04/16/02
W-09	06/25/81	Monitoring Well	38	LA	F/SA	01/01/82, 08/29/86, 12/18/86, 02/23/87, 10/22/92, 04/10/00, 10/06/00
W-09-116	01/21/00	Monitoring Well	115.5	LA	A	04/07/00, 10/06/00, 06/29/01, 04/15/02
W-09-86	01/25/00	Monitoring Well	85	LA	A	04/07/00, 10/06/00
W-10	07/06/81	Monitoring Well	70.5	COP	A	01/01/82, 06/01/84, 09/18/86, 12/21/86, 02/25/87, 09/29/88, 05/01/89, 10/13/89, 05/10/90, 10/18/90, 11/13/90, 10/22/92, 03/27/95, 12/15/95, 04/14/00, 10/11/00
W-11-B	08/15/86	Monitoring Well	121.9	ESCO	B	09/03/86, 12/16/86, 02/24/87, 04/11/00, 10/10/00, 06/21/01, 04/09/02

TABLE 3-1
Groundwater Sampling Locations and Sample Collection Dates
Groundwater Characterization Report
RPAC - Portland Site

Location ID	Date Installed	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Dates Sample Collected
W-11-D	07/29/86	Monitoring Well	91.3	ESCO	A	09/16/86, 01/20/87, 02/25/87, 10/22/90, 04/05/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-11-I	07/03/86	Monitoring Well	60	ESCO	A	09/03/86, 12/16/86, 02/24/87, 10/22/90, 04/04/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-11-S	07/23/86	Monitoring Well	21.5	ESCO	F/SA	09/03/86, 12/17/86, 02/24/87, 04/04/95, 04/11/00, 10/10/00, 06/21/01, 04/09/02
W-12-D	01/09/87	Monitoring Well	100	ESCO	A	01/21/87, 02/23/87, 10/22/90, 04/04/95, 12/19/95, 04/11/00, 10/10/00
W-12-I	01/09/87	Monitoring Well	58.5	ESCO	A	01/21/87, 02/23/87, 10/22/90, 04/04/95, 12/18/95, 04/11/00, 10/10/00
W-12-S	01/12/87	Monitoring Well	20	ESCO	F/SA	10/22/90, 04/11/00, 10/10/00
W-15-D	08/12/86	Monitoring Well	62	METRO	A	09/17/86, 12/14/86, 02/19/87, 10/23/90, 10/24/90, 04/10/00, 09/29/00, 06/22/01, 06/29/01, 04/11/02
W-15-I	08/12/86	Monitoring Well	38.8	METRO	A	09/17/86, 12/14/86, 02/19/87, 08/09/88, 10/24/90, 04/10/00, 09/29/00, 06/20/01, 04/11/02
W-15-S	07/24/86	Monitoring Well	14.8	METRO	A	09/17/86, 12/17/86, 02/19/87, 10/24/90, 04/10/00, 10/04/00, 06/20/01, 06/22/01, 04/11/02
W-16-31	02/11/00	Monitoring Well	30	SCHNITZER	F/SA	04/19/00, 10/17/00, 06/22/01, 04/08/02
W-16-D	12/19/86	Monitoring Well	85.5	SCHNITZER	A	12/30/86, 02/18/87, 04/05/95, 12/19/96, 04/19/00, 10/17/00
W-16-I	12/19/86	Monitoring Well	50	SCHNITZER	A	12/30/86, 02/18/87, 04/05/95, 12/19/96, 04/19/00, 10/17/00, 06/22/01, 06/27/01, 04/08/02
W-16-S	12/29/86	Monitoring Well	13	SCHNITZER	F/SA	12/30/86, 02/18/87, 04/05/95, 12/19/96
W-17	06/18/90	Monitoring Well	50	METRO	A	10/22/90
W-18-D	07/17/90	Monitoring Well	64	OFFSITE W	B	10/15/90, 03/21/00, 09/19/00, 06/18/01, 04/04/02
W-18-I	07/18/90	Monitoring Well	54	OFFSITE W	A	10/16/90, 03/21/00, 09/19/00, 06/18/01, 04/04/02
W-18-S	07/19/90	Monitoring Well	30	OFFSITE W	A	10/16/90, 03/21/00, 09/19/00, 06/19/01, 04/04/02
W-19-D	07/10/90	Monitoring Well	67.5	ATOFINA	A	10/18/90, 03/28/95, 12/20/95, 04/02/98, 04/18/00, 10/16/00, 06/20/01, 04/05/02
W-19-I	06/20/90	Monitoring Well	49	ATOFINA	A	10/18/90, 03/28/95, 12/20/95, 04/02/98, 04/18/00, 10/16/00, 06/20/01, 04/05/02
W-19-S	06/21/90	Monitoring Well	25	ATOFINA	A	03/28/95, 04/02/98, 04/18/00, 04/05/02

Notes:

NA Boring Log not available

[1]LOCATION TYPE

Monitoring Well, Extraction Well or Piezometer	Monitoring well, extraction well or piezometer - permanent installation (although may have been abandoned)
Temporary Well Point	One-time sampling location, such as direct-push or during drilling

[2]SAMPLE DEPTH

Bottom of screened interval for monitoring wells, or discrete depth interval for one-time sampling locations

[3]GENERAL LOCATION

LA	RPAC LAKE AREA
HA	RPAC HERBICIDE AREA
IA	RPAC INSECTICIDE AREA
OFFSITE W	OFFSITE TO THE WEST OF THE RPAC PROPERTY
COP	CITY OF PORTLAND

[4]CHARACTERIZATION DEPTH

F/SA	FILL/SHALLOW ALLUVIUM ZONE
A	ALLUVIUM ZONE
B	BASALT ZONE

TABLE 3-2
Preliminary Screening Values Associated with Preliminary Constituents of Potential Concern
Groundwater Characterization Report
RPAC - Portland Site

Chemical Class	Analyte	CAS #	Groundwater Screening Value	Units	Ref
Dioxin/Furans	1,2,3,4,6,7,8,9-OCDF	39001-02-0	NA	ng/L	a
Dioxin/Furans	1,2,3,4,6,7,8-HpCDD	35822-46-9	NA	ng/L	a
Dioxin/Furans	1,2,3,4,6,7,8-HpCDF	67562-39-4	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8,9-HpCDF	55673-89-7	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8-HxCDD	39227-28-6	NA	ng/L	a
Dioxin/Furans	1,2,3,4,7,8-HxCDF	70648-26-9	NA	ng/L	a
Dioxin/Furans	1,2,3,6,7,8-HxCDD	57653-85-7	NA	ng/L	a
Dioxin/Furans	1,2,3,6,7,8-HxCDF	57117-44-9	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8,9-HxCDD	19408-74-3	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8,9-HxCDF	72918-21-9	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8-PeCDD	40321-76-4	NA	ng/L	a
Dioxin/Furans	1,2,3,7,8-PeCDF	57117-41-6	NA	ng/L	a
Dioxin/Furans	2,3,4,6,7,8-HxCDF	60851-34-5	NA	ng/L	a
Dioxin/Furans	2,3,4,7,8-PeCDF	57117-31-4	NA	ng/L	a
Dioxin/Furans	2,3,7,8-TCDD	1746-01-6	4.48E-04	ng/L	a
Dioxin/Furans	2,3,7,8-TCDF	51207-31-9	NA	ng/L	a
Herbicides	2,4,5-T	93-76-5	3.65E+02	µg/L	a
Herbicides	2,4,5-TP (Silvex)	93-72-1	2.92E+02	µg/L	a
Herbicides	2,4-D	94-75-7	3.65E+02	µg/L	a
Herbicides	2,4-DB	94-82-6	2.92E+02	µg/L	a
Herbicides	2,4-DP (Dichlorprop)	120-36-5	NA	µg/L	a
Herbicides	Bromoxynil	1689-84-5	7.30E+02	µg/L	a
Herbicides	Dinoseb	88-85-7	3.65E+01	µg/L	a
Insecticides	4,4'-DDD	72-54-8	2.80E-01	µg/L	a
Insecticides	4,4'-DDE	72-55-9	1.98E-01	µg/L	a
Insecticides	4,4'-DDT	50-29-3	1.98E-01	µg/L	a
Insecticides	Aldrin	309-00-2	3.95E-03	µg/L	a
Insecticides	alpha-BHC	319-84-6	1.07E-02	µg/L	a
Insecticides	beta-BHC	319-85-7	3.74E-02	µg/L	a
Insecticides	Chlordane (tech)	57-74-9	NA	µg/L	a
Insecticides	delta-BHC	319-86-8	NA	µg/L	a
Insecticides	Dieldrin	60-57-1	4.20E-03	µg/L	a
Insecticides	Endrin	72-20-8	1.09E+01	µg/L	a
Insecticides	gamma-BHC (Lindane)	58-89-9	5.17E-02	µg/L	a
Insecticides	Heptachlor	76-44-8	1.49E-02	µg/L	a
Insecticides	Hexachlorobenzene	118-74-1	4.20E-02	µg/L	a
Insecticides	Toxaphene	8001-35-2	6.11E-02	µg/L	a
Metals	Arsenic	7440-38-2	2.00E+00	µg/L	d
Metals	Cadmium	7440-43-9	1.82E+01	µg/L	a
Metals	Chromium*	7440-47-3	1.09E+02	µg/L	a
Metals	Copper	7440-50-8	1.46E+03	µg/L	a
Metals	Lead	7439-92-1	1.50E+01	µg/L	b
Metals	Mercury and compounds	7439-97-6	2.00E+00	µg/L	c
Metals	Nickel	7440-02-0	7.30E+02	µg/L	a
Metals	Vanadium	7440-62-2	2.55E+02	µg/L	a
Metals	Zinc	7440-66-6	1.09E+04	µg/L	a

TABLE 3-2
Preliminary Screening Values Associated with Preliminary Constituents of Potential Concern
Groundwater Characterization Report
RPAC - Portland Site

Chemical Class	Analyte	CAS #	Groundwater Screening Value	Units	Ref
PCBs	Aroclor 1254	11097-69-1	3.36E-02	µg/L	a
SVOCs	2,4,6-Trichlorophenol	88-06-2	3.65E+00	µg/L	a
SVOCs	2,4-Dichlorophenol	120-83-2	1.09E+02	µg/L	a
SVOCs	2,4-Dinitrophenol	51-28-5	7.30E+01	µg/L	a
SVOCs	2-Chlorophenol	95-57-8	3.04E+01	µg/L	a
SVOCs	Pentachlorophenol	87-86-5	5.60E-01	µg/L	a
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	5.53E-02	µg/L	a
VOCs	1,1-Dichloroethane	75-34-3	8.11E+02	µg/L	a
VOCs	1,2-Dichlorobenzene	95-50-1	3.70E+02	µg/L	a
VOCs	1,2-Dichloroethane	107-06-2	1.23E-01	µg/L	a
VOCs	1,3-Dichlorobenzene	541-73-1	5.48E+00	µg/L	a
VOCs	1,4-Dichlorobenzene	106-46-7	5.02E-01	µg/L	a
VOCs	Benzene	71-43-2	3.36E-01	µg/L	a
VOCs	Chlorobenzene	108-90-7	1.06E+02	µg/L	a
VOCs	Chloroform	67-66-3	6.17E+00	µg/L	a
VOCs	cis-1,2-Dichloroethene	156-59-2	6.08E+01	µg/L	a
VOCs	Ethylbenzene	100-41-4	1.34E+03	µg/L	f
VOCs	Isobutyl alcohol	78-83-1	1.83E+03	µg/L	a
VOCs	m,p-Xylene	1330-20-7	2.10E+02	µg/L	e
VOCs	Methyl chloride (chloromethane)	74-87-3	1.51E+00	µg/L	a
VOCs	o-Xylene	95-47-6	2.10E+02	µg/L	e
VOCs	Tetrachloroethene (PCE)	127-18-4	1.08E+00	µg/L	f
VOCs	Toluene	108-88-3	7.23E+02	µg/L	a
VOCs	Trichloroethene (TCE)	79-01-6	2.80E-02	µg/L	a
VOCs	Vinyl chloride	75-01-4	1.98E-02	µg/L	a

NA	No applicable screening value available
ng/L	nanograms per liter
µg/L	micrograms per liter

Reference Key:

a	USEPA Region IX Preliminary Remediation Goals (PRGs), tap water (October 2002)
b	USEPA National Primary Drinking Water Regulations, Action Level (July 2002)
c	USEPA National Primary Drinking Water Regulations, Maximum Contaminant Level (MCL) (July 2002)
d	DEQ Default Background Concentrations for Metals (October 2002)
e	There is no PRG available; the PRG for xylenes has been listed and can be used as a surrogate
f	2000 PRG; according to DEQ, EPA has withdrawn the new toxicity factors for ethylbenzene and PCE, and the 2000 PRG should be used
*	Because total chromium PRG values are not available, the screening value for hexavalent chromium (Cr+6) has been used

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	RP-01-51	4/17/2000	8260B	75-35-4	1,1-Dichloroethene	0.65	µg/L	0.151	1		0.57	250
A	RP-01-51	4/8/2002	8260B	75-35-4	1,1-Dichloroethene	0.74	µg/L	0.302	2		0.57	250
B	RP-01-65	4/17/2000	8260B	75-35-4	1,1-Dichloroethene	1.61	µg/L	0.151	1		0.57	250
B	RP-01-65	10/11/2000	8260B	75-35-4	1,1-Dichloroethene	1.55	µg/L	0.755	5		0.57	250
B	RP-01-65	6/26/2001	8260B	75-35-4	1,1-Dichloroethene	1.85	µg/L	0.755	5		0.57	250
B	RP-01-65	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	2	µg/L	0.755	5		0.57	250
A	W-19-D	4/18/2000	8260B	75-35-4	1,1-Dichloroethene	4.75	µg/L	0.151	1		0.57	250
A	W-19-D	10/16/2000	8260B	75-35-4	1,1-Dichloroethene	3.35	µg/L	0.755	5		0.57	250
A	W-19-D	6/20/2001	8260B	75-35-4	1,1-Dichloroethene	0.93	µg/L	0.151	1		0.57	250
A	W-19-D	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	2.95	µg/L	0.755	5		0.57	250
A	W-19-I	4/18/2000	8260B	75-35-4	1,1-Dichloroethene	1.8	µg/L	0.151	1	J	0.57	250
A	W-19-I	10/16/2000	8260B	75-35-4	1,1-Dichloroethene	1.56	µg/L	0.302	2		0.57	250
A	W-19-I	4/5/2002	8260B	75-35-4	1,1-Dichloroethene	1.04	µg/L	0.302	2		0.57	250
A	RP-01-51	4/17/2000	8260B	95-50-1	1,2-Dichlorobenzene	227	µg/L	0.174	2		27000	140
A	RP-01-51	10/11/2000	8260B	95-50-1	1,2-Dichlorobenzene	150	µg/L	0.087	1		27000	140
A	RP-01-51	4/8/2002	8260B	95-50-1	1,2-Dichlorobenzene	197	µg/L	0.174	2		27000	140
B	RP-01-65	4/17/2000	8260B	95-50-1	1,2-Dichlorobenzene	640	µg/L	0.87	10		27000	140
B	RP-01-65	10/11/2000	8260B	95-50-1	1,2-Dichlorobenzene	537	µg/L	0.435	5		27000	140
B	RP-01-65	6/26/2001	8260B	95-50-1	1,2-Dichlorobenzene	722	µg/L	0.435	5		27000	140
B	RP-01-65	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	546	µg/L	0.435	5		27000	140
B	RP-07-119	5/3/2002	8260B	95-50-1	1,2-Dichlorobenzene	248	µg/L	0.172	2		27000	140
A	RP-07-84	5/3/2002	8260B	95-50-1	1,2-Dichlorobenzene	426	µg/L	0.859	10		27000	140
A	W-19-D	4/18/2000	8260B	95-50-1	1,2-Dichlorobenzene	830	µg/L	0.87	10		27000	140
A	W-19-D	10/16/2000	8260B	95-50-1	1,2-Dichlorobenzene	861	µg/L	0.435	5		27000	140
A	W-19-D	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	657	µg/L	0.435	5		27000	140
A	W-19-I	4/18/2000	8260B	95-50-1	1,2-Dichlorobenzene	329	µg/L	0.435	5	J	27000	140
A	W-19-I	10/16/2000	8260B	95-50-1	1,2-Dichlorobenzene	312	µg/L	0.174	2		27000	140
A	W-19-I	4/5/2002	8260B	95-50-1	1,2-Dichlorobenzene	188	µg/L	0.174	2		27000	140
B	RP-01-65	4/17/2000	8260B	106-46-7	1,4-Dichlorobenzene	187	µg/L	1.76	10		4000	150
B	RP-01-65	10/11/2000	8260B	106-46-7	1,4-Dichlorobenzene	180	µg/L	0.88	5		4000	150
B	RP-01-65	6/26/2001	8260B	106-46-7	1,4-Dichlorobenzene	207	µg/L	0.88	5		4000	150
B	RP-01-65	4/5/2002	8260B	106-46-7	1,4-Dichlorobenzene	171	µg/L	0.88	5		4000	150
A	W-19-D	4/18/2000	8260B	106-46-7	1,4-Dichlorobenzene	244	µg/L	1.76	10		4000	150
A	W-19-D	10/16/2000	8260B	106-46-7	1,4-Dichlorobenzene	248	µg/L	0.88	5		4000	150
A	W-19-D	4/5/2002	8260B	106-46-7	1,4-Dichlorobenzene	201	µg/L	0.88	5		4000	150
A	RP-01-31	4/5/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0045	ng/l	5.81	1.4	J	0.00005	76
A	RP-02-31	10/16/2000	8290	1746-01-6	2,3,7,8-TCDD	0.0009	ng/l	0.4	0.4		0.00005	76
A	RP-02-31	4/4/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0031	ng/l	5.81	0.4	J	0.00005	76
B	RP-02-66	4/4/2002	8290	1746-01-6	2,3,7,8-TCDD	0.0052	ng/l	5.81	1.7	J	0.00005	76
A	W-19-I	10/16/2000	8290	1746-01-6	2,3,7,8-TCDD	0.00055	ng/l	0.5	0.5		0.00005	76
A	RP-01-31	10/11/2000	6010A	7429-90-5	Aluminum	23700	µg/L	0.015	0.1		NA	870
A	RP-01-31	6/26/2001	6010A	7429-90-5	Aluminum	136000	µg/L	1	1		NA	870
A	RP-01-31	4/5/2002	6010A	7429-90-5	Aluminum	50600	µg/L	0.0415	0.1		NA	870
A	RP-02-31	10/16/2000	6010A	7429-90-5	Aluminum	1030	µg/L	0.015	0.1		NA	870
A	RP-02-49	10/16/2000	6010A	7429-90-5	Aluminum	1080	µg/L	0.015	0.1		NA	870
A	RP-07-55	5/3/2002	6010A	7429-90-5	Aluminum	1250	µg/L	0.0415	0.1		NA	870
A	RP-07-84	5/3/2002	6010A	7429-90-5	Aluminum	6100	µg/L	0.0415	0.1		NA	870

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	W-19-I	10/16/2000	6010A	7429-90-5	Aluminum	1760	µg/L	0.015	0.1		NA	870
A	RP-01-31	6/26/2001	6020	7440-38-2	Arsenic	34.4	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	4/5/2002	6020	7440-38-2	Arsenic	23.7	µg/L	0.000663	0.001		0.18	1500
A	RP-01-51	6/26/2001	6020	7440-38-2	Arsenic	6.19	µg/L	0.00022	0.001		0.18	1500
A	RP-01-51	4/8/2002	6020	7440-38-2	Arsenic	14.4	µg/L	0.000663	0.001		0.18	1500
A	RP-02-31	6/19/2001	6020	7440-38-2	Arsenic	140	µg/L	0.00247	0.0112	J	0.18	1500
A	RP-02-31	4/4/2002	6020	7440-38-2	Arsenic	140	µg/L	0.000663	0.001		0.18	1500
A	RP-02-49	6/19/2001	6020	7440-38-2	Arsenic	4.23	µg/L	0.00022	0.001	J	0.18	1500
A	RP-02-49	4/4/2002	6020	7440-38-2	Arsenic	7.99	µg/L	0.000663	0.001		0.18	1500
B	RP-07-119	5/3/2002	6020	7440-38-2	Arsenic	1.19	µg/L	0.000663	0.001		0.18	1500
F/SA	RP-07-30	5/3/2002	6020	7440-38-2	Arsenic	1.84	µg/L	0.000663	0.001		0.18	1500
A	RP-07-55	5/3/2002	6020	7440-38-2	Arsenic	9.78	µg/L	0.000663	0.001		0.18	1500
A	RP-07-84	5/3/2002	6020	7440-38-2	Arsenic	3.82	µg/L	0.000663	0.001		0.18	1500
A	W-19-I	6/20/2001	6020	7440-38-2	Arsenic	3.17	µg/L	0.00022	0.001	J	0.18	1500
A	W-19-I	4/5/2002	6020	7440-38-2	Arsenic	6.52	µg/L	0.000663	0.001		0.18	1500
A	W-19-S	4/5/2002	6020	7440-38-2	Arsenic	86	µg/L	0.000663	0.001		0.18	1500
A	RP-01-31	4/17/2000	6020	7440-38-2	Arsenic - Dissolved	3.25	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	10/11/2000	6020	7440-38-2	Arsenic - Dissolved	9.7	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	6/26/2001	6020	7440-38-2	Arsenic - Dissolved	4.29	µg/L	0.00022	0.001		0.18	1500
A	RP-01-31	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	4.28	µg/L	0.000663	0.001		0.18	1500
A	RP-01-51	6/26/2001	6020	7440-38-2	Arsenic - Dissolved	5.11	µg/L	0.00022	0.001		0.18	1500
A	RP-01-51	4/8/2002	6020	7440-38-2	Arsenic - Dissolved	11.6	µg/L	0.000663	0.001		0.18	1500
A	RP-02-31	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	73.9	µg/L	0.00022	0.001		0.18	1500
A	RP-02-31	10/16/2000	6020	7440-38-2	Arsenic - Dissolved	154	µg/L	0.00147	0.00667		0.18	1500
A	RP-02-31	6/19/2001	6020	7440-38-2	Arsenic - Dissolved	127	µg/L	0.00277	0.0126	J	0.18	1500
A	RP-02-31	4/4/2002	6020	7440-38-2	Arsenic - Dissolved	132	µg/L	0.000663	0.001		0.18	1500
A	RP-02-49	6/19/2001	6020	7440-38-2	Arsenic - Dissolved	3.89	µg/L	0.00022	0.001	J	0.18	1500
A	RP-02-49	4/4/2002	6020	7440-38-2	Arsenic - Dissolved	3.77	µg/L	0.000663	0.001		0.18	1500
A	RP-07-55	5/3/2002	6020	7440-38-2	Arsenic - Dissolved	9.11	µg/L	0.000663	0.001		0.18	1500
A	W-19-I	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	2.29	µg/L	0.00022	0.001		0.18	1500
A	W-19-I	6/20/2001	6020	7440-38-2	Arsenic - Dissolved	2.92	µg/L	0.00022	0.001	J	0.18	1500
A	W-19-I	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	5.57	µg/L	0.000663	0.001		0.18	1500
A	W-19-S	4/18/2000	6020	7440-38-2	Arsenic - Dissolved	1.35	µg/L	0.00022	0.001		0.18	1500
A	W-19-S	4/5/2002	6020	7440-38-2	Arsenic - Dissolved	1.03	µg/L	0.000663	0.001		0.18	1500
B	RP-01-65	4/17/2000	8260B	71-43-2	Benzene	27.4	µg/L	0.121	1		22	1300
B	RP-01-65	6/26/2001	8260B	71-43-2	Benzene	41.4	µg/L	0.605	5		22	1300
A	W-19-I	6/20/2001	6020	7440-43-9	Cadmium	2.93	µg/L	0.000032	0.001		NA	22
A	W-19-I	10/16/2000	6020	7440-43-9	Cadmium - Dissolved	2.88	µg/L	0.000032	0.001		NA	22
A	W-19-S	4/5/2002	6020	7440-47-3	Chromium	203	µg/L	0.000292	0.001		NA	110
A	W-19-S	4/5/2002	6020	7440-50-8	Copper	336	µg/L	0.00017	0.002		13000	90
A	RP-01-31	10/11/2000	6010A	7439-89-6	Iron	50300	µg/L	0.03	0.1		NA	10000
A	RP-01-31	6/26/2001	6010A	7439-89-6	Iron	393000	µg/L	0.96	1		NA	10000
A	RP-01-31	4/5/2002	6010A	7439-89-6	Iron	126000	µg/L	0.225	2.5		NA	10000
A	RP-02-31	4/18/2000	6010A	7439-89-6	Iron	51700	µg/L	0.96	1		NA	10000
A	RP-02-31	10/16/2000	6010A	7439-89-6	Iron	85700	µg/L	0.3	1		NA	10000
F/SA	RP-07-30	5/3/2002	6010A	7439-89-6	Iron	11900	µg/L	0.009	0.1		NA	10000
A	RP-07-55	5/3/2002	6010A	7439-89-6	Iron	10300	µg/L	0.009	0.1		NA	10000

TABLE 3-3
Comparison of Selected Groundwater Analytical Results Against Surface Water Screening Values
Spring 2000 - Spring 2002
RPAC - Portland Site

Characterization Zone	Location	Date	Analytical Method	CAS#	Analyte	Concentration	Units	Method Detection Limit (MDL)	Method Reporting Limit (MRL)	Expert Review Qualifier	10x Human Health Consumption of Water + Organism (AWQC)[a]	10x Ecological Screening Values for Surface Water[b]
A	RP-07-84	5/3/2002	6010A	7439-89-6	Iron	12400	µg/L	0.009	0.1		NA	10000
A	RP-01-31	6/26/2001	6020	7439-92-1	Lead	51.4	µg/L	0.000039	0.001	J	NA	25
A	RP-01-31	4/5/2002	6020	7439-92-1	Lead	31.9	µg/L	0.000107	0.001		NA	25
A	RP-02-31	4/4/2002	6020	7439-92-1	Lead	42.7	µg/L	0.000107	0.001		NA	25
A	W-19-S	4/5/2002	6020	7439-92-1	Lead	298	µg/L	0.000535	0.005		NA	25
A	RP-01-31	10/11/2000	6010A	7439-96-5	Manganese	1820	µg/L	0.002	0.01		NA	1200
A	RP-01-31	6/26/2001	6010A	7439-96-5	Manganese	6970	µg/L	0.002	0.01		NA	1200
A	RP-01-31	4/5/2002	6010A	7439-96-5	Manganese	2200	µg/L	0.0039	0.01		NA	1200
A	RP-01-51	4/17/2000	6010A	7439-96-5	Manganese	4140	µg/L	0.002	0.01		NA	1200
A	RP-01-51	10/11/2000	6010A	7439-96-5	Manganese	3040	µg/L	0.002	0.01		NA	1200
A	RP-01-51	6/26/2001	6010A	7439-96-5	Manganese	3240	µg/L	0.002	0.01		NA	1200
A	RP-01-51	4/8/2002	6010A	7439-96-5	Manganese	2940	µg/L	0.0039	0.01		NA	1200
B	RP-01-65	10/11/2000	6010A	7439-96-5	Manganese	2010	µg/L	0.002	0.01		NA	1200
B	RP-01-65	6/26/2001	6010A	7439-96-5	Manganese	2100	µg/L	0.002	0.01		NA	1200
B	RP-01-65	4/5/2002	6010A	7439-96-5	Manganese	3340	µg/L	0.0039	0.01		NA	1200
A	RP-02-31	4/18/2000	6010A	7439-96-5	Manganese	7840	µg/L	0.002	0.01		NA	1200
A	RP-02-31	10/16/2000	6010A	7439-96-5	Manganese	5840	µg/L	0.002	0.01		NA	1200
A	RP-02-49	4/18/2000	6010A	7439-96-5	Manganese	25200	µg/L	0.02	0.1		NA	1200
A	RP-02-49	10/16/2000	6010A	7439-96-5	Manganese	14300	µg/L	0.02	0.1		NA	1200
F/SA	RP-07-30	5/3/2002	6010A	7439-96-5	Manganese	2990	µg/L	0.0039	0.01		NA	1200
A	RP-07-55	5/3/2002	6010A	7439-96-5	Manganese	12900	µg/L	0.039	0.1		NA	1200
A	RP-07-84	5/3/2002	6010A	7439-96-5	Manganese	8640	µg/L	0.0039	0.01		NA	1200
A	W-19-I	4/18/2000	6010A	7439-96-5	Manganese	20200	µg/L	0.02	0.1		NA	1200
A	W-19-I	10/16/2000	6010A	7439-96-5	Manganese	16800	µg/L	0.02	0.1		NA	1200
A	RP-01-31	6/26/2001	6020	7440-62-2	Vanadium	249	µg/L	0.00015	0.005	J	NA	200
A	W-19-S	4/5/2002	6020	7440-62-2	Vanadium	539	µg/L	0.00035	0.005		NA	200
A	W-19-D	4/18/2000	8260B	75-01-4	Vinyl chloride	32.3	µg/L	0.31	1		20	13000
A	W-19-D	10/16/2000	8260B	75-01-4	Vinyl chloride	60.5	µg/L	1.55	5		20	13000
A	W-19-D	4/5/2002	8260B	75-01-4	Vinyl chloride	21.6	µg/L	1.55	5		20	13000
A	W-19-I	10/16/2000	8260B	75-01-4	Vinyl chloride	24.7	µg/L	0.62	2		20	13000

a EPA National Recommended Water Quality Criteria, consumption of water and organisms values for human health screening (November 2002)
b DEQ ERA Level II Screening Level Values, most protective value for surface water (December 2001)
Constituent concentration exceeds highlighted screening value.

µg/L micrograms per liter
ng/l nanograms per liter

Characterization Zones
F/SA Fill/Shallow Alluvium Zone
A Alluvium Zone
B Basalt Zone

Note
This table includes groundwater analytical results from monitoring wells in the RP-01, RP-02, RP-07, and W-19 clusters, from Spring 2000 through Spring 2002, that exceed one or more of the surface water screening values shown. Groundwater analytical results that did not exceed these screening values were excluded from the table. Groundwater results exceeding surface water screening values, or 10 times surface water screening values, at monitoring well locations do not represent concentrations discharging to surface water.

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
AL4-47	19'-22'	Dark brown, viscous NAPL, heavy iridescent sheen	Sandy silt/silty sand
B	21.75'-21.80'	Black, very thick product below water in bailer	Sand
B-05	32'	Brown free product	Sand
BST1W-88	20'-22'	Unknown	Unknown
BST2W-61	17.5'-23.5'	Dark brown IDOR bleb visible	Silt/sandy silt
BST-3	18'-19'	Dark blebs "bleed" out of iridescent sheen spots, IDOR	Sandy silt/silty sand
C	24.63'-25.30'	Black product below water in bailer	Sandy silt
DB-01	8.5'-15.5'	Visible blobs of product	Sandy silt
DNB-02	13.5'-17.5'	Heavily discolored with black streaks	Sandy silt/silty sand
E	27.34'-27.51'	Dark brown product below water in bailer	Sandy silt/sand
F	25.43'-25.50'	Dark brown product above water in bailer	Sand
G-1	18'-20' 33.5'-34'	~20 brown NAPL blebs ~50 brown NAPL blebs	Fine sandy silt with clay, micaceous Sand with silt, micaceous
G-2	16'-26' 30'-32' 40'-42'	Discontinuous presence of NAPL blebs Thin LNAPL layer and dark brown NAPL blebs	Fine sandy silt, micaceous Silty sand, micaceous
G-3	9.5'-10.5' 16'-17' 20'-24'	8 NAPL blebs 3 NAPL blebs 2 NAPL blebs and ~30 faint NAPL blebs	Dark gray sand, micaceous Medium brown silt with sand Medium gray sandy silt, micaceous
G-4	10'-11' 12'-14' 30'-32' 34'-36' 42'-44'	NAPL blebs, continuous sheen Abundant (>30) NAPL blebs; faint continuous sheen NAPL blebs and sheen NAPL blebs and sheen Brown NAPL blebs, faint sheen	Dark gray sand, micaceous Medium brown silt with sand Medium brown, silty fine sand, micaceous
G-5	6'-8' 17.5'-34' 24'-26' & 38'-40' 42'-44' 46'-48'	Brown NAPL blebs, continuous sheen Various amounts of NAPL blebs and sheen LNAPL floating on water at top of tube, sheen LNAPL floating on water and DNAPL at bottom of water Brown NAPL blebs, continuous sheen	 Dark gray, sandy silt with gravel, micaceous Medium brown, silty sand, micaceous

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
G-6	17'-19' 17'-21' 27'-31' 37'-39'	Layer of dark brown LNAPL NAPL blebs, sheen Dark brown NAPL blebs, continuous sheen ~15 dark brown NAPL blebs, continuous sheen	Light brown sand with silt Dark gray sand with silt, micaceous
G-7	18'-20' 28'-30'	2 NAPL blebs, faint sheen ~10 NAPL blebs, sheen	Medium brown, fine sandy silt, micaceous
G-8	16'-18' 23'-24'	>50 NAPL blebs ~10 NAPL blebs	Medium brown, fine sandy silt, micaceous Medium brown sand with silt, micaceous
G-9	32'-36' 40'-42'	NAPL blebs, continuous sheen >100 NAPL blebs, continuous sheen	Medium brown, silty sand, micaceous
G-10	13'-18' 16'-18'	Brown NAPL blebs, sheen LNAPL floating on water at top of sample	Medium brown silty sand
G-11	10', 13', 19', & 24'-26' 24'-26'	NAPL blebs, sheen LNAPL floating on water at top of tube	Sandy silt, micaceous
G-12	30.5'-32	~10 brown NAPL blebs, continuous sheen	Medium gray silty sand, micaceous
G-14	19'-22'	NAPL blebs, sheen	Sandy silt/silty sand
G-15	33'-34'	~100 brown NAPL blebs	Dark grayish brown silty sand, micaceous
G-16	15'-20' 45.5'	Brown NAPL blebs Saturated with brown NAPL	Dark gray/brown fine sandy silt Dark grayish brown, with no mica. Basalt at 47'
G-17	13'-20', 24'-28', & 38'-39' 14'-20'	NAPL blebs LNAPL floating on water at top of sample	Medium brown sandy silt, micaceous
HA-01	12'-19'	NAPL blebs noted in soil and water	Fine-grained clayey, silty sands and clayey sandy silts
HA-03	15'-24'	Some disseminated NAPL blebs and NAPL observed visually at 20'-22'	Silty sand to sandy silt
HA-04	15'	Strong odor and visual evidence of NAPLs (sheen and blebs)	Clayey, sandy silt
HA-07	12'	Sheen, odor, and NAPL blebs noted	Clayey silt with trace fine-grained sand
HA-08	20'-25'	Honey brown to dark brown NAPL blebs, strong sheen to water	Fine-grained, poorly graded micaceous sand with trace silt
HA-201	10'-15'	Dark brown NAPL blebs	Light gray, clayey silt
HA-203	8'-11'	NAPL blebs noted	Clayey silt

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
HE-10	1.9'	Floating product on water	Sand (fill)
HE-14	3'	Product streaks	Clayey silt (fill)
HE-8	4'-6'	Product streaks in soil	Clayey silt (fill)
HSB-2	30'	Abundant brown, viscous DNAPL	Silty sand
HSB-3	20'&22'	Abundant NAPL visible as dark viscous liquid, dark brown NAPL blebs with sheen	Silty sand to sandy silt
ITB-15	25'	Faint brown NAPL-saturated areas	Silty sand, fine-grained
MW-03-68	see notes (-->)	Fill to 2' included "gravel-size green foundry slag and sand" and "two squashed barrels lying on their sides without tops"; reddish FeOX staining at 2'-6', 10'-11', 48'-49', 58'-59' -- handwriting on log copy calls this DNAPL at 58'	Silt, sandy silt, sand, sandy clayey silt (63'-65'), basalt gravel below 65', basalt at 67.7'
MW-05-34	31.3'-34.3'	Bailer full of dark brown product	Silty sand
MW-05-52	sheen at 11.3'-11.7', strong sheen from 15.4'-16.1', trace sheen 18'-19.5', no sheen, trace dark brn free product at 30.5'-31', no sheen below	Missing first page of log… reddish FeOX staining at 11'	Sandy silt, silty sand, sand, gravel at 47', basalt at 52'
MW-05-70	NAPL in cuttings drum noted at 35', NAPL globules in water at 45'-49'	Odor from 5' to gw (15'), PID readings max 149 ppm at 25'	Silty sand/sandy silt, silt (10' to 33'), silty sand, sand, 1/2" clay lens, gravel at 49', basalt at 60.5'
MW-08-27	slight sheen 2.6'-2.9', slight sheen on wet soil 6.5'-9', 11.5'-12.2', free product as brown beads 18.5'-21.5', diminished visible product to slight sheen on soil 21.5'-23', sheen on soil and water surface at 23'-27'	FeOX red mottling with no product sheen 13.3'-15.2' Brown beads of free product @18.5'-21.5'	Clayey sandy silt 2.9'-3.5', sandy silt, silty sand
MW-08-46	45.7'-46'	Dark brown product below water in bailer	Silty sand
MW-08-64	sandy slurry with sheen (?) at 13.3'-13.6', silver sheen on surface at 18'-22.5', 23.2'-24', slight sheen on fine sand horizon at 25.5', slight sheen on surface at 45'-45.4', slight sheen at 50.1' (0.1' thick), slight sheen at 55'-55.3' and 56.1'-56.5'	Red brown FeOX and black organic grain coloration at 11.5'-13', reddish FeOX coloration on blebs at 13.6'-14'; red brown FeOX blebs with no sheen at 25.5'-27'; "dark brown product below water in bailer 45.7'-46' on 5/4/93" handwritten on log; red brown FeO	Fill to 15', sandy silt, silty sand, cemented gravel in clay matrix at 60-61.5', basalt gravel and sand to at least 63.5'

TABLE 3-4a
Non-Aqueous Phase Liquid Occurrence in Soil Boring Logs
RPAC - Portland Site

SOIL BORING LOG ID	NAPL DEPTH(S)	NOTES	LITHOLOGY
P-07	14.91'-15.60'	Dark brown product above water in bailer	Sandy silt
P-100	17.05'-17.36'	Dark brown product above water in bailer	Sandy silt
RP-04-16	15'	NAPL globules	Sand; black, coarse, rounded, loose
RP-04-41	15' 24'	Visible sheen with NAPL globules NAPL globules	Sand; black, fine to coarse Silt; dark gray, trace very fine sand
T-04	19'-24'	Dark brown free product	Sandy silt
T-08	14'-24'	Core saturated with dark brown free product	Sandy silt
T-09	21'-29'	Dark brown free product beading on soil & floating on water	Sandy silt
T-10	23.2'-25.5'	Dark brown free product in core, floating & sinking dk brown free product	Sandy silt, sand
T-11	22.3'-29'	Transparent product coating length of core	Sandy silt
T-12	19'-29'	Brown product in core	Sandy silt
T-13	19'-24'	Brown product beads	Sandy silt
T-17	2.2'-3'	Brown, oily-feeling perched water, product in water sample	Gravelly sand (fill)
T-19	9'-14'	Minor free brown product in sandier horizons	Sandy silt
T-20	19'-24'	Dark brown product in sandier horizons	Sandy silt
TP-3	7.5'-8.4'	Brown blobs of product	Gravelly silt (fill)
TP-8	5'-8.5'	Floating black product, product flows freely from sidewall	Sandy gravel (fill)

NAPL = Non-aqueous phase liquid
IDOR = Indeterminate density organic residual
DNAPL = Dense non-aqueous phase liquid
LNAPL = Light non-aqueous phase liquid
N/A = Not applicable
FeOX = Iron Oxide
PID = Photoionization Detector

Note: Information contained in this table was obtained directly from soil boring and test pit logs.

TABLE 3-4b
Non-Aqueous Phase Liquid Occurrence in Groundwater Monitoring Wells
RPAC - Portland Site

MONITORING WELL ID	Monitoring Event Detected					NAPL OCCURRENCE
	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	
AL5-62		X				A trace of LNAPL was detected in this well during groundwater monitoring activities.
BST5W-74		X				Approximately 2 feet of DNAPL was detected in this well during groundwater monitoring activities.
C	X					1.67 feet of DNAPL was detected in this well during groundwater monitoring activities.
E	X					5.3 feet of DNAPL was detected in this well during groundwater monitoring activities.
MW-02-26	X	X				10 feet and 1.5 feet DNAPL were detected in this well during groundwater sampling activities in Spring 2000 and Fall 2000, respectively.
MW-05-34	X	X	X	X		During the Spring 2000 groundwater sampling event a trace of DNAPL was detected, and 0.4 feet of DNAPL was detected during the Fall 2000 groundwater sampling activities. In Spring 2001 0.17 feet of DNAPL was detected. In Fall 2001 LNAPL and DNAPL were detected on the probe but not in the bailer.
MW-05-52				X		LNAPL and DNAPL were detected on probe but not in bailer. The well had a slight odor.
MW-08-27		X	X	X	X	Approximately 3.1 feet of LNAPL was detected in this well during the Fall 2000 groundwater sampling activities and 3 feet of DNAPL was detected during the Spring 2001 groundwater sampling activities. Greater than 2.5 feet of LNAPL and 0.05 feet of DNAPL were detected during the Fall 2001 groundwater sampling activities. An estimated NAPL thickness of 8.5 feet was recorded during the Spring 2002 sampling event on April 3, 2002 using an electronic water level probe; this well was re-measured using an interface probe on April 9, 2002, measuring 6.63 feet of LNAPL.

TABLE 3-4b
Non-Aqueous Phase Liquid Occurrence in Groundwater Monitoring Wells
RPAC - Portland Site

MONITORING WELL ID	Monitoring Event Detected					NAPL OCCURRENCE
	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	
MW-08-46	X	X	X	X		Approximately 0.4 feet of DNAPL was detected in this well during the Spring 2000 groundwater sampling activities and 0.5 feet of DNAPL during the Fall 2000 groundwater sampling activities. Approximately 0.25 feet and 0.02 feet of DNAPL were detected during the Spring and Fall 2001 groundwater sampling activities, respectively.
P-07	X		X	X		Approximately 3.83 feet of DNAPL was detected during the Spring 2000 groundwater sampling activities. During the Spring 2001 sampling event 3.5 feet of DNAPL was detected and in Fall 2001 0.6 feet of LNAPL and 0.07 feet of DNAPL were detected.
RP-03-30R				X		NAPL was detected on probe, but not in bailer.
W-08	X					Approximately 0.01 feet of LNAPL was detected in this well during the Spring 2000 groundwater sampling event.

NAPL = Non-aqueous phase liquid
LNAPL = Light non-aqueous phase liquid
DNAPL = Dense non-aqueous phase liquid
N/A = Not applicable

Note: Information contained in this table was obtained from groundwater monitoring field notes of Spring 2000 through Spring 2002.

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
AL2-17	3/31/00	7.06	NT	0.55	0.0570	6.0	6.08	<6.0	1190	914	30.8	68.5	<4.61	12700	NT	1.07	NT
AL2-17	10/3/00	6.79	NT	3.63	NT	NT	NT	NT	1250	NT	NT	73.5	21.2	NT	NT	0.666	NT
AL2-17	7/5/01	6.72	-83.7	1.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL2-17	4/22/02	6.97	-162.2	0.93	NT	NT	NT	22.4	7.63	NT	NT	63.6	20.6	680	380	1.45	NT
AL2-32	3/31/00	6.61	NT	0.23	<0.0049	4.0	62.8	<0.40	1740	1200	1830	142	47.3	1410	NT	0.318	NT
AL2-32	10/3/00	5.67	NT	0.81	<0.0049	NT	65.6	2.40	2580	1140	1780	211	59.6	310	NT	0.460	NT
AL2-32	7/5/01	6.52	-58.9	1.20	<0.0049	4.6	64.8	14.8	15.2	1350	2080	190	63.9	7	120	0.151	0.0136
AL2-32	4/19/02	6.70	-94.2	1.92	0.175	6.0	63.7	27.0	11.3	1360	1830	284	95.0	2400	36	0.169	0.0204
AL2-46	3/30/00	7.02	NT	1.29	<0.0049	4.0	40.1	<0.200	433	818	338	265	107	805	NT	<0.0060	NT
AL2-46	10/3/00	5.93	NT	0.66	<0.0049	2.8	33.6	3.20	587	800	209	356	108	310	NT	<0.0060	NT
AL2-46	7/5/01	6.88	-76.0	1.70	<0.0049	3.0	37.6	22.9	4.47	856	432	280	70.8	17	5	<0.0060	0.0125
AL2-46	4/22/02	7.05	-117.1	0.58	<0.0365	3.7	29.9	4.08	3.44	810	203	146	49.5	5200	38	<0.0258	0.340
AL5-19	4/3/95	6.75	NT	1.40	NT	NT	NT	NT	NT	NT	NT	189	39.8	NT	NT	4.40	<0.050
AL5-19	4/4/00	7.18	NT	1.50	<0.049	4.8	<0.475	3.20	5930	796	1020	141	10.8	5200	NT	3.33	NT
AL5-19	10/5/00	6.86	NT	3.26	0.138	NT	5.41	0.80	2470	671	922	143	49.0	1100	NT	4.01	NT
AL5-35	4/3/95	6.21	NT	1.70	NT	NT	NT	NT	NT	NT	NT	52.3	9.70	NT	NT	<0.1	0.0830
AL5-35	10/27/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL5-35	4/4/00	6.32	NT	0.71	<0.049	3.8	225	<0.200	3430	706	1610	51.2	<4.61	245	NT	0.357	NT
AL5-35	10/4/00	6.05	NT	0.66	<0.0049	NT	214	3.20	1110	608	1460	21.0	9.30	5	NT	0.540	NT
AL5-62	4/3/95	6.61	NT	1.20	NT	NT	NT	NT	NT	NT	NT	63.7	13.4	NT	NT	0.510	0.0850
AL5-62	4/4/00	6.79	NT	0.36	0.112	4.5	0.31	<0.200	8540	364	128	64.2	<4.61	73	NT	<0.0060	NT
AL5-62	10/4/00	6.67	NT	0.40	<0.0049	NT	0.38	2.40	3650	389	116	44.4	13.6	55	NT	<0.0060	NT
AL6-96	4/10/00	6.72	NT	1.68	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
AL6-96	10/12/00	6.60	NT	0.54	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	3/29/00	5.80	NT	1.40	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	9/29/00	5.67	NT	4.45	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	6/22/01	5.62	96.2	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-01A	4/11/02	5.96	17.5	5.30	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-04	3/29/00	6.96	NT	1.70	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-04	9/29/00	6.79	NT	2.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-06	3/30/00	6.76	NT	1.94	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ASW-06	9/29/00	6.70	NT	2.21	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	4/3/00	6.52	NT	0.26	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	10/3/00	6.89	NT	0.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	7/5/01	6.84	-61.8	2.40	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BSTW-61	4/19/02	6.98	-114.5	2.11	NT	2.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BST5W-74	4/3/95	6.85	NT	1.15	NT	NT	NT	NT	NT	NT	NT	129	30.7	NT	NT	<0.1	0.100
BST5W-74	4/4/00	6.90	NT	1.72	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BST5W-74	10/4/00	6.60	NT	0.61	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-26	3/22/00	6.26	NT	5.92	4.71	0.0	7.79	<0.200	<1.00	28.0	1.94	87.3	12.2	30000	NT	0.030	NT
MW-01-26	9/20/00	5.95	NT	11.66	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-41	3/23/00	6.42	NT	1.31	0.581	0.0	21.5	<0.200	<1.00	150	11.3	<4.05	<0.461	35	NT	<0.0060	NT
MW-01-41	9/20/00	5.30	NT	0.67	0.667	0.0	2.24	0.32	<1.00	165	10.8	3.70	2.47	31	NT	<0.0060	NT
MW-01-56	3/24/00	6.54	NT	3.03	2.88	0.0	17.0	<0.200	<1.00	73.0	24.6	<4.05	<0.461	5	NT	<0.0060	NT
MW-01-56	9/20/00	5.52	NT	2.83	3.16	0.0	16.4	0.80	<1.00	74.2	4.50	<1.80	0.730	19	NT	<0.0060	NT
MW-01-76	3/22/00	8.34	NT	4.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-01-76	9/20/00	6.09	NT	4.85	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-02-26	9/25/00	6.89	NT	0.34	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-46	3/23/00	6.71	NT	1.07	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-46	9/25/00	6.46	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-62	3/23/00	7.34	NT	2.53	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-02-62	9/25/00	6.69	NT	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-49	3/29/00	6.84	NT	1.41	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-49	9/27/00	6.30	NT	0.56	NT	4.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-68	3/29/00	6.98	NT	2.82	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-68	9/27/00	6.35	NT	1.44	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	4/6/00	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	10/13/00	6.65	NT	0.61	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	6/25/01	6.66	-112.5	1.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-81	4/16/02	7.12	6.7	2.38	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-27	3/29/00	6.50	NT	1.37	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-27	9/27/00	5.97	NT	0.55	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	4/6/00	6.52	NT	0.87	NT	3.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	10/13/00	6.59	NT	2.12	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	6/25/01	6.60	-120.0	0.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-S	4/16/02	6.62	17.9	1.52	NT	5.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	4/6/00	6.72	NT	2.40	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	6/25/01	6.58	-104.0	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	10/13/01	6.52	NT	0.96	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-03-I	4/16/02	6.86	13.2	4.95	NT	4.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	2/8/89	6.75	NT	NT	NT	NT	34.0	NT	NT	NT	61.0	NT	NT	NT	NT	NT	NT
MW-04-27	3/6/89	6.75	NT	NT	NT	NT	22.0	NT	NT	NT	47.0	NT	NT	NT	NT	NT	NT
MW-04-27	4/26/89	6.67	NT	NT	NT	NT	70.8	NT	NT	NT	123	NT	NT	NT	NT	NT	NT
MW-04-27	6/11/91	6.43	NT	1.80	NT	NT	NT	NT	NT	761	NT	NT	99.2	NT	NT	0.320	0.160
MW-04-27	3/31/95	6.11	NT	2.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	3/27/00	6.77	NT	1.79	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	9/27/00	6.34	NT	0.48	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-27	7/5/01	6.49	-53.8	1.20	<0.0049	4.4	98.2	21.2	9900	597	570	772	99.6	1100	800	0.096	0.00796
MW-04-27	4/19/02	6.75	-90.2	2.67	<0.0365	4.0	40.5	12.9	6760	613	290	254	84.8	39	35	<0.0258	0.00712
MW-04-47	1/31/89	6.39	NT	NT	NT	NT	254	NT	NT	NT	184	NT	NT	NT	NT	NT	NT
MW-04-47	2/28/89	6.55	NT	NT	NT	NT	268	NT	NT	NT	171	NT	NT	NT	NT	NT	NT
MW-04-47	4/25/89	6.51	NT	NT	NT	NT	192	NT	NT	NT	195	NT	NT	NT	NT	NT	NT
MW-04-47	6/11/91	6.76	NT	1.40	NT	NT	NT	NT	NT	213	NT	NT	2.40	NT	NT	<0.05	0.160
MW-04-47	3/31/95	6.61	NT	2.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	3/27/00	7.02	NT	1.29	NT	2.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	9/27/00	6.51	NT	0.44	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-47	7/5/01	6.67	-21.5	1.20	<0.0049	3.4	17.1	<0.200	434	283	210	<3.6	1.89	43	70	<0.0060	0.0268
MW-04-47	4/19/02	6.76	-54.4	1.46	<0.0365	3.8	12.1	11.5	616	268	151	7.78	1.51	180	130	<0.0258	0.0594
MW-04-63	1/31/89	6.76	NT	NT	NT	NT	15.0	NT	NT	NT	3.70	NT	NT	NT	NT	NT	NT
MW-04-63	2/28/89	6.63	NT	NT	NT	NT	<5.00	NT	NT	NT	34.0	NT	NT	NT	NT	NT	NT
MW-04-63	4/25/89	6.84	NT	NT	NT	NT	<5.00	NT	NT	NT	22.3	NT	NT	NT	NT	NT	NT
MW-04-63	6/11/91	6.79	NT	1.70	NT	NT	NT	NT	NT	164	NT	NT	476	NT	NT	0.050	0.150
MW-04-63	3/31/95	6.65	NT	5.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-63	3/27/00	7.13	NT	0.43	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-04-63	9/27/00	6.14	NT	0.46	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-05-24	2/8/89	6.00	NT	NT	NT	NT	76.0	NT	NT	NT	190	NT	NT	NT	NT	NT	NT
MW-05-24	3/1/89	5.88	NT	NT	NT	NT	64.0	NT	NT	NT	178	NT	NT	NT	NT	NT	NT
MW-05-24	4/26/89	6.20	NT	NT	NT	NT	116	NT	NT	NT	234	NT	NT	NT	NT	NT	NT
MW-05-24	6/11/91	6.03	NT	1.50	NT	NT	NT	NT	NT	128	NT	NT	120	NT	NT	0.330	0.160
MW-05-24	3/30/00	5.87	NT	0.62	0.0570	3.6	64.3	5.60	347	266	49.3	439	177	<1	NT	0.017	NT
MW-05-24	9/28/00	6.07	NT	0.42	<0.0049	NT	58.4	4.96	647	589	61.5	592	193	<1	NT	0.053	NT
MW-05-34	2/9/89	5.10	NT	NT	NT	NT	280	NT	NT	NT	615	NT	NT	NT	NT	NT	NT
MW-05-34	3/1/89	5.11	NT	NT	NT	NT	179	NT	NT	NT	440	NT	NT	NT	NT	NT	NT
MW-05-34	4/26/89	5.03	NT	NT	NT	NT	168	NT	NT	NT	478	NT	NT	NT	NT	NT	NT
MW-05-34	6/11/91	5.34	NT	1.70	NT	NT	NT	NT	NT	76.0	NT	NT	363	NT	NT	0.230	0.0900
MW-05-34	12/14/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1390	249	NT	NT	<0.1	0.100
MW-05-34	3/30/00	5.79	NT	0.30	0.0911	1.6	31.9	<1.6	11.7	82.0	28.7	345	169	<1	NT	<0.0060	NT
MW-05-34	9/28/00	4.93	NT	0.51	<0.0049	NT	23.9	2.32	11.4	104	27.7	348	99.5	<1	NT	0.008	NT
MW-05-52	2/8/89	6.43	NT	NT	NT	NT	97.0	NT	NT	NT	309	NT	NT	NT	NT	NT	NT
MW-05-52	2/9/89	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-05-52	3/1/89	6.26	NT	NT	NT	NT	86.0	NT	NT	NT	336	NT	NT	NT	NT	NT	NT
MW-05-52	4/26/89	6.30	NT	NT	NT	NT	107	NT	NT	NT	409	NT	NT	NT	NT	NT	NT
MW-05-52	6/11/91	6.62	NT	1.10	NT	NT	NT	NT	NT	468	NT	NT	68.7	NT	NT	0.130	12.2
MW-05-52	12/14/95	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	479	127	NT	NT	<0.1	1.40
MW-05-52	3/30/00	6.52	NT	0.47	<0.0049	2.4	25.4	<0.200	NT	276	66.5	49.8	<0.461	12	NT	<0.0060	NT
MW-05-52	9/28/00	6.22	NT	0.71	<0.0049	NT	13.5	3.44	56.8	445	117	54.7	14.8	5.5	NT	<0.0060	NT
MW-05-52	7/6/01	6.65	7.4	1.60	<0.0049	2.6	21.2	2.24	40.4	257	77.6	55.8	14.7	18	5	0.010	10.0
MW-05-52	4/22/02	6.70	-55.5	1.74	<0.0365	2.6	37.4	3.76	57.0	325	140	47.3	12.5	1	7	<0.0258	12.1
MW-05-70	3/30/00	7.83	NT	0.31	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-05-70	7/6/01	7.76	-42.5	1.40	<0.0049	0.6	34.8	3.36	461	277	63.5	6.35	1.24	720	100	<0.0060	1.14
MW-05-70	4/22/02	7.92	-103.7	1.42	<0.0365	0.6	34.2	12.9	365	284	56.1	9.34	1.39	720	36	<0.0258	1.16
MW-06-S	4/6/00	5.91	NT	1.88	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-07-S	4/6/00	6.06	NT	1.75	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-07-S	10/13/00	5.90	NT	2.25	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-08-27	3/23/00	6.98	NT	1.55	<0.0049	0.0	60.0	31.6	308	409	579	2120	575	70	NT	7.38	NT
MW-08-46	3/28/00	5.98	NT	1.37	0.0568	0.0	9.7	<0.200	<1.00	96.0	16.8	95.9	33.0	20400	NT	<0.0060	NT
MW-08-46	9/26/00	5.48	NT	0.91	0.0525	NT	6.94	1.68	3.33	98.2	10.5	94.9	20.4	470	NT	<0.0060	NT
MW-08-64	3/24/00	8.01	NT	1.97	<0.0049	0.0	20.1	<0.200	<1.00	130	21.2	<4.05	<0.461	8450	NT	<0.0060	NT
MW-08-64	9/26/00	7.75	NT	0.61	0.0551	NT	20.3	0.80	<1.00	148	6.79	2.96	2.36	610	NT	<0.0060	NT
MW-09-23	6/13/91	6.77	NT	2.40	NT	NT	NT	NT	NT	452	NT	NT	7.10	NT	NT	<0.05	0.200
MW-09-23	7/9/91	6.59	NT	1.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	8/7/91	6.83	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	8/4/93	6.52	NT	2.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	9/10/93	6.98	NT	9.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	10/28/93	6.92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	3/21/95	6.49	NT	0.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-23	3/28/00	6.82	NT	1.75	0.0667	4.4	15.3	<0.200	350	360	46.6	21.6	14.8	500	NT	<0.0060	NT
MW-09-23	9/26/00	6.67	NT	0.32	0.102	NT	9.35	<0.200	366	411	49.5	13.8	3.38	8	NT	0.014	NT
MW-09-23	7/2/01	6.71	172.1	0.50	<0.0049	4.0	9.61	18.3	1470	422	65.2	21.4	4.57	7	27	0.017	0.0104
MW-09-23	4/17/02	7.15	221.0	1.07	<0.0365	5.1	17.3	<0.499	1070	370	47.7	16.5	3.55	<1	<1	<0.0258	0.00744
MW-09-42	6/13/91	6.75	NT	1.80	NT	NT	NT	NT	NT	280	NT	NT	3.60	NT	NT	<0.05	0.100
MW-09-42	7/8/91	6.81	NT	2.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	8/7/91	6.87	NT	<? DB	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-09-42	8/4/93	6.36	NT	3.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	9/10/93	7.05	NT	15.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	3/21/95	6.55	NT	4.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-42	3/28/00	6.80	NT	2.52	<0.0049	4.2	3.57	<0.200	266	424	43.6	16.3	15.7	900	NT	<0.0060	NT
MW-09-42	9/26/00	6.23	NT	0.96	0.0577	NT	5.97	0.24	287	382	34.4	12.6	4.63	55	NT	<0.0060	NT
MW-09-42	7/2/01	6.74	-1.7	1.00	<0.0049	4.2	7.24	<0.200	835	370	42.7	19.0	3.64	280	3500	<0.0060	0.0161
MW-09-42	4/17/02	7.08	218.1	3.35	<0.0365	3.2	9.70	<0.499	861	383	40.8	18.8	3.73	880	71	<0.0258	0.0402
MW-09-58	6/13/91	7.11	NT	4.00	NT	NT	NT	NT	NT	122	NT	NT	0.500	NT	NT	0.230	0.100
MW-09-58	7/8/91	7.30	NT	1.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	8/7/91	7.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	8/3/93	6.52	NT	2.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	9/10/93	7.27	NT	13.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	10/28/93	6.92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	3/21/95	7.15	NT	9.35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	3/27/00	7.06	NT	2.03	0.0867	1.5	2.77	<0.200	4.46	138	23.4	5.05	3.74	810	NT	0.060	NT
MW-09-58	9/26/00	5.78	NT	1.01	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-58	7/2/01	6.89	39.4	0.80	0.0240	2.0	2.61	<0.200	32.5	118	13.3	3.70	<0.100	1100	440	0.091	0.0286
MW-09-58	4/18/02	7.01	-65.3	2.74	<0.0365	2.2	2.98	<0.499	21.5	119	6.86	<4	0.812	290	11	<0.0258	0.0103
MW-09-80	6/13/91	7.28	NT	1.40	NT	NT	NT	NT	NT	132	NT	NT	1.00	NT	NT	0.500	0.220
MW-09-80	7/9/91	6.83	NT	2.20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	8/7/91	7.02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	8/3/93	7.79	NT	2.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	9/10/93	7.39	NT	17.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	10/28/93	6.32	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	3/22/95	6.72	NT	6.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	3/27/00	7.15	NT	2.20	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	9/26/00	6.80	NT	0.38	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-09-80	10/5/00	7.00	NT	0.50	0.0719	0.6	0.46	<0.200	16.4	140	6.20	<1.8	0.372	190	NT	0.347	NT
MW-09-80	7/2/01	6.98	101.5	0.60	0.0350	0.8	0.61	<0.200	72.4	129	14.1	<3.6	0.367	260	630	0.349	0.115
MW-09-80	4/18/02	7.13	-20.3	0.78	<0.0365	0.4	<0.0634	<0.499	89.9	132	6.99	<4	0.923	53	9	0.409	0.130
MW-10-24	3/29/00	6.49	NT	3.08	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-24	9/25/00	6.52	NT	0.47	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-24	6/29/01	6.45	250.2	0.90	0.412	0.6	14.6	<0.200	0.0925	140	17.6	<3.60	1.97	15	39	<0.0060	0.0318
MW-10-24	4/15/02	6.96	1.0	4.11	0.947	0.0	21.7	<0.499	<0.790	121	9.26	6.49	1.80	3	<1	<0.0258	0.0582
MW-10-44	3/29/00	6.55	NT	1.30	NT	4.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-44	9/25/00	6.22	NT	0.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-44	6/29/01	6.31	109.1	0.70	0.111	1.2	14.4	<0.200	<0.380	189	14.1	9.5	1.77	640	520	<0.0060	0.00704
MW-10-44	4/15/02	6.76	-5.6	1.60	0.177	6.4	15.7	<0.499	<0.790	205	6.66	8.31	1.93	89	16	<0.0258	0.0490
MW-10-57	3/29/00	7.21	NT	4.40	NT	4.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-57	9/25/00	6.97	NT	0.43	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-10-57	6/29/01	6.98	-109.1	0.70	0.0660	3.4	0.15	<0.200	2.15	152	14.9	5.56	0.595	400	680	0.609	0.0465
MW-10-57	4/15/02	7.42	5.6	0.75	<0.0365	3.6	<0.0634	<0.499	1.23	150	7.22	4.13	<0.129	250	47	0.528	0.0115

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
MW-11-24	8/4/93	6.57	NT	2.00	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	9/9/93	6.41	NT	8.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	10/27/93	6.72	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	3/23/95	6.26	NT	1.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	3/28/00	6.86	NT	1.72	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	9/22/00	5.85	NT	0.61	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	6/28/01	6.31	102.1	6.30	0.0200	0.0	18.5	<0.200	38.6	218	26.6	11.1	3.53	20	110	<0.0060	0.0847
MW-11-24	4/12/02	7.20	-7.8	1.46	0.711	0.0	10.4	<0.499	<0.38	284	4.11	<4	2.37	9	5	<0.0258	0.0525
MW-11-37	8/4/93	6.59	NT	3.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	9/9/93	6.49	NT	11.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	10/27/93	7.44	NT	1.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/23/95	6.05	NT	0.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/28/00	6.35	NT	0.09	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	9/22/00	5.55	NT	0.51	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	6/28/01	6.42	90.4	4.00	9.44	0.0	19.0	0.24	<0.38	83.9	12.2	<3.6	1.11	770	610	<0.0060	0.0976
MW-11-37	4/12/02	6.92	-8.7	0.98	8.29	0.0	18.8	<0.499	0.635	81.6	5.14	<4	1.63	23	15	<0.0258	0.0828
MW-11-56	8/4/93	7.12	NT	3.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	9/9/93	6.99	NT	8.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	10/27/93	7.36	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/23/95	6.55	NT	7.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/28/00	7.23	NT	0.97	NT	3.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	9/22/00	7.02	NT	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	6/28/01	7.12	-90.0	2.50	0.0260	2.5	6.78	<0.200	228	148	14.0	5.82	0.377	230	210	0.281	0.204
MW-11-56	4/12/02	7.67	-27.7	0.66	<0.0365	3.2	6.19	<0.499	198	142	6.59	<4	0.950	55	16	0.240	0.0235
MW-11-79	8/4/93	6.70	NT	1.60	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	9/9/93	6.88	NT	5.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	10/27/93	7.30	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	3/23/95	7.00	NT	7.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	3/28/00	7.38	NT	0.19	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	9/22/00	6.97	NT	0.35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-79	6/28/01	7.27	-35.0	4.00	0.0720	0.9	0.33	<0.200	120	124	16.9	<3.6	0.282	55	140	0.287	0.239
MW-11-79	4/12/02	7.64	-13.4	0.54	<0.0365	1.3	<0.0634	<0.499	107	122	9.01	<4	1.37	360	66	0.302	0.158
MW-12-27	3/22/02	6.19	NT	1.23	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-27	10/2/02	5.82	NT	0.46	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-41	3/22/00	6.19	NT	1.15	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-41	10/2/02	5.23	NT	0.69	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-59	3/22/00	6.80	NT	6.23	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-59	9/20/00	5.31	NT	6.31	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-79	3/22/00	7.11	NT	1.20	NT	1.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-12-79	9/20/00	5.87	NT	0.51	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
PP-08	4/3/00	6.77	NT	1.04	NT	5.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
PP-08	10/4/00	6.38	NT	4.99	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-01-31	4/17/00	NT	NT	NT	0.177	NT	33.7	<0.200	1.53	172	20.2	<4.05	<0.461	7500	NT	<0.0060	NT
RP-01-31	10/11/00	6.97	NT	3.66	0.326	0.0	54.2	<0.200	<1.00	141	35.3	1.97	0.738	3200	NT	0.110	NT
RP-01-31	6/26/01	6.87	39.5	6.80	0.368	0.0	20.6	<0.200	<0.38	148	12.7	11.4	1.53	4100	11000	0.023	0.339
RP-01-31	4/5/02	6.78	-22.4	0.00	1.43	NT	30.9	<0.200	2.29	148	9.71	244	1.54	810	81	<0.0258	0.383
RP-01-51	4/17/00	NT	NT	NT	<0.0049	NT	221	1.60	37.6	554	776	22.8	<0.461	1600	NT	0.119	NT
RP-01-51	10/11/00	6.70	NT	0.70	0.0462	0.0	284	<0.200	112	571	714	30.6	10.3	54	NT	0.330	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
RP-01-51	6/26/01	6.72	-3.9	0.70	<0.0049	0.2	269	4.80	454	509	853	32.0	10.4	290	400	0.280	0.0683
RP-01-51	4/8/02	6.92	-29.4	0.14	<0.0049	0.4	256	<0.200	814	559	804	30.7	10.9	150	9	0.285	0.0919
RP-01-65	4/17/00	--	--	--	<0.0049	NT	155	<0.200	69.7	378	675	11.0	<4.61	1040	NT	<0.0060	NT
RP-01-65	10/11/00	5.98	NT	0.47	<0.0049	NT	174	<0.200	192	396	1480	14.3	3.75	150	NT	0.010	NT
RP-01-65	6/26/01	5.61	59.4	0.20	<0.0049	0.0	153	<0.200	1300	367	1710	21.4	3.32	52	480	0.018	NT
RP-01-65	4/5/02	6.55	-19.2	0.01	<0.0365	0.0	154	<0.200	1480	424	1420	28.9	5.32	8	3	<0.0258	0.0963
RP-02-31	4/18/00	NT	NT	NT	0.0673	NT	58.4	<0.200	57000	1030	1980	289	107	470	NT	3.20	NT
RP-02-31	10/16/00	6.45	NT	3.50	0.210	NT	21.5	4.63	1390	914	2200	211	37.9	1500	NT	4.34	NT
RP-02-31	6/19/01	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-31	4/4/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	4/18/00	NT	NT	NT	0.0753	NT	99.7	<0.200	654	378	10500	504	43.6	5500	NT	2.30	NT
RP-02-49	10/16/00	5.82	NT	0.77	0.330	0.4	82.0	<0.200	395	619	8390	139	15.5	400	NT	2.63	NT
RP-02-49	6/19/01	5.81	75.5	1.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	4/4/02	6.03	-28.0	0.10	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-49	5/3/02	5.97	116.8	0.83	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	10/16/00	5.18	NT	0.63	NT	0.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	6/19/01	5.30	128.3	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-02-66	4/4/02	5.09	-21.4	0.38	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	10/12/00	5.62	NT	6.63	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	6/27/01	6.70	-100.3	1.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-30R	4/10/02	7.15	-36.5	1.60	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	10/12/00	6.16	NT	0.51	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	6/27/01	NT	44.7	1.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-03-52R	4/10/02	6.72	-10.8	1.46	NT	0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-04-16	4/5/00	6.70	NT	2.25	0.112	3.5	55.0	1.60	4180	318	100	85.6	40.0	1250	NT	0.223	NT
RP-04-16	10/4/00	NT	NT	NT	<0.0049	NT	64.8	<0.200	768	182	138	497	142	1000	NT	1.72	NT
RP-04-16	7/3/01	6.13	69.7	1.00	0.0270	4.6	33.7	3.60	17200	332	144	153	42.2	76	670	1.40	0.0162
RP-04-16	4/18/02	6.70	-68.6	0.64	<0.0365	3.0	27.4	3.60	12900	224	36.0	85.5	25.6	1100	81	0.254	0.00650
RP-04-41	4/5/00	6.75	NT	0.44	0.467	0.6	18.6	<0.200	<0.38	149	12.9	138	33.4	35	NT	<0.0060	NT
RP-04-41	10/4/00	NT	NT	NT	0.121	NT	16.8	1.60	1.22	143	8.25	108	26.5	330	NT	<0.0060	NT
RP-04-41	7/3/01	6.27	179.0	2.10	0.0300	0.0	17.6	1.60	<0.38	142	15.9	99.5	27.2	28	590	<0.0060	0.0877
RP-04-41	4/18/02	6.58	64.7	1.12	<0.0365	0.0	19.1	<0.499	<0.79	127	6.26	41.5	9.07	370	140	<0.0258	0.143
RP-05-16	4/5/00	5.92	NT	5.07	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-05-16	10/4/00[1]	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	10/12/00	6.92	NT	4.99	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	6/27/01	6.66	-120.7	1.30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-30	4/10/02	7.16	-46.1	0.64	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-87	4/14/00	NT	NT	NT	<0.0049	NT	103	<0.200	1000	428	997	20.0	10.1	19800	NT	<0.0060	NT
RP-06-87	10/12/00	5.27	NT	0.78	0.0459	4.0	94.2	0.37	316	398	1330	4.68	0.728	540	NT	0.010	NT
RP-06-87	6/27/01	6.73	-62.8	0.60	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-06-87	4/10/02	7.12	-23.8	7.87	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RP-07-30	5/3/02	6.37	9.1	2.11	<0.0365	4.6	<0.0634	<0.499	10.6	301	7.42	28.9	9.34	600000	800	17.7	0.00555
RP-07-55	5/3/02	6.39	-1.0	2.61	<0.0365	3.8	1.52	<0.499	0.144	552	9.8	33.3	8.77	2200	340	3.26	0.0128
RP-07-84	5/3/02	6.60	53.8	4.04	<0.0365	0.0	88.4	<2.50	0.368	152	1130	57.8	0.285	82000	1400	<0.0258	0.0213
RP-07-119	5/3/02	6.45	-11.8	0.66	<0.0365	0.2	37.4	<0.499	0.160	148	632	<4.00	0.874	2000	10	<0.0258	0.0361
RPW-02	3/22/00	6.81	NT	1.39	NT	0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	9/20/00	5.96	NT	1.50	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	6/28/01	6.88	-43.3	1.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-02	4/12/02	7.35	-29.7	1.66	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
RPW-03	3/28/00	7.26	NT	0.98	NT	2.9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-03	9/22/00	7.05	NT	0.39	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-05	3/27/00	6.54	NT	2.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
RPW-05	9/27/00	--	--	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-S	4/12/00	8.07	NT	1.66	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-S	10/9/00	7.88	NT	0.45	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	4/12/00	6.28	NT	0.54	NT	7.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	10/9/00	6.29	NT	0.42	NT	8.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	6/26/01	6.19	-87.7	0.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-I	4/8/02	5.79	-46.5	0.91	NT	7.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-D	4/12/00	7.40	NT	1.88	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-03-D	10/9/00	6.97	NT	1.14	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-S	4/12/00	8.99	NT	1.26	<0.134	0.0	67.6	<0.200	0.288	103	10.1	28.4	<4.61	1350	NT	0.610	NT
W-04-S	10/9/00	9.29	NT	0.66	0.847	0.0	114	1.95	728	123	18.4	47.1	3.36	2800	NT	37.5	NT
W-04-I	4/12/00	6.27	NT	0.89	0.0582	8.6	241	4.00	1.11	166	1620	63.9	<4.61	400	NT	44.8	NT
W-04-I	10/9/00	NT	NT	0.68	<0.0049	2.6	245	6.85	594	126	1640	22.4	5.65	NT	NT	1.59	NT
W-04-89	10/9/00	6.98	NT	NT	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-89	6/26/01	7.22	-112.4	0.90	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-04-89	4/8/02	6.89	-48.5	0.49	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-S	3/30/00	7.21	NT	1.98	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-S	9/28/00	6.35	NT	1.76	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-D	9/28/00	6.74	NT	0.49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-D	3/30/02	7.20	NT	21.70	NT	0.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-B	3/30/00	7.68	NT	1.66	NT	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-06-B	9/28/00	6.38	NT	0.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	4/4/00	6.49	NT	0.49	NT	5.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	10/5/00	6.41	NT	0.46	NT	4.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08	7/3/01	6.31	-93.0	0.70	<0.0049	NT	158	13.6	5.12	486	3800	83.9	13.2	110	1700	22.8	0.00569
W-08	4/17/02	6.69	215.7	0.14	<0.365	4.8	94.5	5.60	1.14	702	2710	94.1	25.4	41	8	22.2	0.00965
W-08-26	4/5/00	6.96	NT	0.93	NT	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-26	10/5/00	6.98	NT	1.15	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-26	7/2/01	6.81	-148.3	0.70	<0.0049	1.8	5.62	2.48	16.3	1160	1660	136	42.8	17	1600	5.07	0.00596
W-08-26	4/16/02	6.93	13.8	0.22	<0.0365	4.1	5.28	2.56	7.48	1010	1090	121	41.2	280	120	2.38	0.00460
W-08-26	4/18/02	7.25	-164.7	2.69	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-74	4/4/00	7.04	NT	1.54	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-08-74	10/5/00	6.92	NT	0.72	0.0676	3.0	<0.475	<0.200	3060	335	146	8.14	2.30	610	NT	0.594	NT
W-08-74	7/3/01	6.76	-81.0	0.70	<0.0049	2.2	10.3	0.80	12.9	321	122	19.0	3.60	52	260	0.253	0.341
W-08-74	4/16/02	7.26	23.4	4.40	<0.0365	5.0	12.5	<0.499	9.39	300	71.5	12.4	2.53	3	<1	0.085	0.0681
W-09	8/29/86	7.00	NT	NT	<0.05	NT	5.00	NT	NT	870	1700	NT	NT	NT	NT	NT	NT
W-09	12/18/86	7.00	NT	NT	0.150	NT	6400	NT	NT	760	1900	NT	120	NT	NT	NT	NT
W-09	2/23/87	6.30	NT	NT	<0.05	NT	100	NT	NT	760	1800	NT	84.0	NT	NT	NT	NT
W-09	10/22/92	6.74	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09	4/10/00	7.50	NT	1.40	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09	10/6/00	7.04	NT	0.42	NT	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-86	10/6/00	5.87	NT	0.66	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-86	4/7/02	6.72	NT	1.70	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-09-116	4/7/00	6.52	NT	0.72	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-116	10/6/00	6.32	NT	0.54	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-09-116	6/29/01	6.35	101.4	0.70	<0.0049	2.5	66.7	8.00	7010	507	838	21.2	2.95	390	1400	0.68	0.0383
W-09-116	4/15/02	6.87	24.6	3.85	<0.0365	3.0	60.5	<0.499	2650	458	703	16.0	2.35	99	13	0.392	0.0301
W-10	10/11/00	6.20	NT	0.51	NT	4.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-S	9/3/86	11.50	NT	NT	0.0500	0.0	36.0	NT	NT	510	40.0	NT	NT	NT	NT	NT	NT
W-11-S	12/17/86	11.70	NT	NT	<0.05	0.2	30.0	NT	NT	490	39.0	NT	33.0	NT	NT	NT	NT
W-11-S	2/24/87	11.80	NT	NT	<0.05	NT	28.0	NT	NT	450	32.0	NT	29.0	NT	NT	NT	NT
W-11-S	4/4/95	11.88	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-S	4/11/00	11.76	NT	0.62	0.0587	0.0	12.4	1.60	NT	266	7.82	33.2	6.51	390	NT	2.43	NT
W-11-S	10/10/00	11.59	NT	4.00	0.0476	0.2	2.03	8.5	NT	321	8.68	75.2	6.94	4.5	NT	4.72	NT
W-11-S	6/21/01	11.81	-110.4	0.10	<0.0049	0.0	4.41	5.60	1710	290	17.6	41.0	10.3	2	6	5.10	0.0190
W-11-S	4/9/02	12.34	-57.9	2.33	<0.0365	0.0	12.5	0.80	985	241	11.2	10.3	4.52	4	<1	2.40	0.00366
W-11-I	9/3/86	6.90	NT	NT	<0.05	NT	49.0	NT	NT	540	29.0	NT	NT	NT	NT	NT	NT
W-11-I	12/16/86	7.10	NT	NT	<0.05	NT	9.00	NT	NT	490	14.0	NT	68.0	NT	NT	NT	NT
W-11-I	2/24/87	6.50	NT	NT	<0.05	NT	7.00	NT	NT	490	11.0	NT	33.0	NT	NT	NT	NT
W-11-I	10/22/90	NT	NT	NT	NT	NT	<10.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/4/95	6.78	NT	0.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/11/00	6.71	NT	0.25	0.0533	8.0	0.18	0.80	2730	530	28.9	36.3	8.03	330	NT	3.64	NT
W-11-I	10/10/00	5.85	NT	1.01	0.913	NT	0.81	<0.200	849	516	28.4	25.9	6.00	870	NT	2.35	NT
W-11-I	6/21/01	6.65	-118.0	0.30	1.62	6.6	3.43	1.20	3110	526	33.2	25.9	7.30	55	370	3.01	0.00401
W-11-I	4/9/02	6.91	-59.6	1.26	0.0370	5.2	0.26	0.56	534	502	31.5	18.3	7.04	110	49	3.07	0.00366
W-11-D	9/16/86	6.30	NT	NT	<0.05	4.0	200	NT	NT	780	1900	NT	NT	NT	NT	NT	NT
W-11-D	1/20/87	6.50	NT	NT	0.0500	NT	180	NT	NT	740	1400	NT	27.0	NT	NT	NT	NT
W-11-D	2/25/87	6.40	NT	NT	0.100	NT	200	NT	NT	670	1800	NT	49.0	NT	NT	NT	NT
W-11-D	10/22/90	NT	NT	NT	NT	NT	92.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	4/5/95	6.76	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	4/11/00	6.96	NT	2.10	0.0894	NT	172	1.60	3810	555	874	60.3	10.8	1220	NT	0.210	NT
W-11-D	10/10/00	6.78	NT	0.43	<0.0049	4.0	209	0.37	10300	433	900	13.8	2.25	200	NT	0.020	NT
W-11-D	6/21/01	6.69	-7.9	0.60	<0.0049	2.2	196	<0.200	40000	427	961	16.7	3.03	180	14000	0.050	<0.0016
W-11-D	4/9/02	6.97	-29.4	5.03	<0.0365	2.8	216	<0.200	33300	421	824	15.3	3.13	30	17	<0.0258	0.00494
W-11-B	9/3/86	7.00	NT	NT	<0.05	NT	36.0	NT	NT	170	500	NT	NT	NT	NT	NT	NT
W-11-B	12/16/86	7.80	NT	NT	<0.05	NT	32.0	NT	NT	160	430	NT	14.0	NT	NT	NT	NT
W-11-B	2/24/87	6.80	NT	NT	<0.05	NT	28.0	NT	NT	170	380	NT	5.10	NT	NT	NT	NT
W-11-B	4/5/95	7.20	NT	5.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	4/11/00	8.01	NT	1.44	NT	0.0	NT	NT	341	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	10/10/00	6.13	NT	0.86	NT	4.0	NT	NT	1310	NT	NT	NT	NT	NT	NT	NT	NT
W-11-B	6/21/01	6.97	-125.8	0.80	<0.0049	NT	101	1.20	6000	285	830	11.9	1.33	530	1200	0.090	<0.0016
W-11-B	4/9/02	7.25	-54.5	7.14	<0.0365	4.6	113	<0.200	1370	321	730	7.14	1.53	360	10	0.069	0.00303
W-12-S	4/11/00	11.52	NT	0.68	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-S	10/10/00	8.67	NT	3.46	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-I	4/11/00	7.26	NT	2.38	NT	3.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-I	10/10/00	7.23	NT	2.42	NT	2.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-D	10/10/00	7.28	NT	0.63	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-12-D	4/11/02	7.42	NT	3.18	NT	1.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-15-S	6/22/01	NT	NT	NT	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-S	4/10/02	11.84	NT	0.88	NT	0.6	NT	NT	0.437	NT	NT	NT	NT	NT	NT	NT	NT
W-15-S	4/11/02	7.12	-19.9	0.73	0.427	0.0	46.2	<0.499	NT	93.4	7.42	24.1	5.00	330	18	<0.0258	0.138
W-15-S	9/29/02	6.81	NT	NT	NT	NT	NT	NT	0.353	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	4/10/00	6.22	NT	1.42	NT	10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	6/20/01	6.31	-157.9	0.00	NT	5.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-I	4/11/02	6.41	-41.6	1.24	NT	6.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	4/10/00	6.28	NT	2.04	NT	4.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	6/22/01	6.11	-6.6	0.50	<0.0049	4.0	19.8	24.3	NT	179	61.2	8.99	2.72	360	380	0.010	0.234
W-15-D	6/29/01	6.02	67.2	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-15-D	4/11/02	6.37	-1.4	1.35	<0.0365	4.0	26.4	<0.499	0.0106	165	68.5	4.76	2.95	470	52	<0.0258	0.00807
W-16-31	4/19/00	14.40	NT	1.59	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	6/22/01	7.35	-129.1	0.40	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	4/8/02	7.14	-129.4	0.00	NT	6.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-31	10/17/02	6.62	NT	1.58	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	12/30/86	7.80	NT	NT	0.320	NT	14.0	NT	NT	340	43.0	NT	16.0	NT	NT	NT	NT
W-16-S	2/18/87	11.20	NT	NT	0.110	NT	130	NT	NT	2100	25.0	NT	36.0	NT	NT	NT	NT
W-16-S	4/5/95	12.76	NT	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	4/19/00	7.34	NT	1.59	NT	2.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-S	10/17/00	6.62	NT	1.58	NT	2.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	12/30/86	12.20	NT	NT	0.180	NT	71.0	NT	NT	2200	39.0	NT	56.0	NT	NT	NT	NT
W-16-I	2/18/87	7.40	NT	NT	0.0500	NT	18.0	NT	NT	410	67.0	NT	9.60	NT	NT	NT	NT
W-16-I	4/5/95	7.02	NT	0.70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	4/19/00	6.92	NT	1.13	NT	5.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	10/17/00	6.77	NT	0.97	NT	3.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	6/22/01	6.73	-140.7	0.50	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	6/27/01	6.84	-124.0	1.00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-I	4/8/02	6.87	-74.4	0.00	NT	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	12/30/86	7.00	NT	NT	0.310	0.6	16.0	NT	NT	220	100	NT	14.0	NT	NT	NT	NT
W-16-D	2/18/87	7.00	NT	NT	0.0600	NT	4.00	NT	NT	220	95.0	NT	4.10	NT	NT	NT	NT
W-16-D	4/5/95	7.38	NT	3.80	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	4/19/00	7.54	NT	3.30	NT	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-16-D	10/17/00	7.26	NT	1.42	NT	1.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	10/16/90	NT	NT	NT	NT	NT	35.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	3/21/00	6.54	NT	3.17	0.195	0.0	24.2	<0.200	<1.00	167	4.19	10.0	2.83	23200	NT	<0.0060	NT
W-18-S	9/19/00	--	--	--	0.310	NT	24.2	0.80	<1.00	166	3.23	2.47	3.15	2900	NT	<0.0060	NT
W-18-S	6/19/01	6.35	159.8	1.00	0.0940	0.2	26.7	<0.200	<0.38	163	4.00	6.61	2.39	130	120	<0.0060	0.0887
W-18-S	4/4/02	6.48	-45.3	0.58	0.233	0.0	23.0	<0.200	<0.38	150	3.40	13.3	3.22	16	13	<0.0258	0.0944
W-18-I	10/16/90	NT	NT	NT	NT	NT	28.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-I	3/21/00	6.57	NT	2.88	2.16	0.0	17.4	<0.200	<1.00	108	3.95	<4.05	<0.461	4440	NT	<0.0060	NT
W-18-I	9/19/00	5.18	NT	3.99	2.18	NT	17.3	<0.200	<1.00	114	3.84	<1.8	0.978	750	NT	<0.0060	NT
W-18-I	6/18/01	6.26	148.5	4.90	1.80	0.2	15.9	<0.200	<0.38	93.0	5.67	<3.6	0.424	870	370	<0.0060	0.175
W-18-I	4/4/02	6.59	-39.6	0.44	1.64	0.0	15.7	<0.200	<0.38	85.1	3.57	13.3	2.35	2400	78	<0.0258	0.171
W-18-D	10/15/90	NT	NT	NT	NT	NT	19.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-D	3/21/00	7.12	NT	2.70	2.00	0.0	24.0	<0.200	<1.00	108	4.52	<4.05	0.962	19	NT	<0.0060	NT
W-18-D	9/19/00	--	--	--	1.97	NT	22.4	0.72	<1.00	111	4.68	<1.8	0.893	10	NT	<0.0060	NT
W-18-D	6/18/01	6.73	97.7	6.10	1.69	0.2	19.1	<0.200	<0.38	92.0	11.9	<3.6	0.232	59	21	<0.0060	0.341
W-18-D	4/4/02	7.33	-31.6	2.75	1.64	0.8	22.0	0.32	<0.38	103	5.28	6.67	0.802	130	36	<0.0258	0.399
W-19-S	4/18/00	6.08	NT	4.04	<0.253	0.0	6.72	<1.6	<3.48	74.0	189	55.9	<0.461	580	NT	<0.0060	NT

TABLE 4-1
Groundwater Natural Attenuation Parameter Results
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Chloride	COD	TOC	Heterotrophic Plate Count	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)
W-19-S	10/16/00	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-S	4/5/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-S	6/20/02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-I	4/18/00	6.28	NT	0.51	0.0649	0.0	36.5	<0.200	0.707	436	1880	52.4	4.78	390	NT	<0.0060	NT
W-19-I	10/16/00	6.10	NT	0.65	0.100	0.0	53.5	<0.200	329	377	2420	15.5	3.49	65	NT	<0.0060	NT
W-19-I	6/20/01	6.42	100.9	2.10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-I	4/5/02	6.52	-19.1	0.00	NT	0.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-19-D	4/18/00	6.72	NT	1.77	<0.0049	0.0	61.4	<0.200	1.28	464	1230	41.9	<4.61	200	NT	0.017	NT
W-19-D	10/16/00	5.80	NT	0.68	<0.0049	0.0	73.5	<0.200	802	439	1240	8.63	2.93	28	NT	<0.0060	NT
W-19-D	6/20/01	6.68	134.6	1.30	<0.0049	NT	71.9	0.80	0.72	429	1230	13.8	1.88	19	600	<0.0060	0.0863
W-19-D	4/5/02	6.65	-17.8	0.00	<0.0365	0.0	79.3	0.32	1.75	454	1230	17.8	2.25	59	13	<0.0258	0.128

Notes:

--	Groundwater not tested for this parameter, or information was not recorded
NT	Not tested
cfu/mL	Colony forming units per milliliter
mg/L	Milligrams per liter
mV	Millivolts
mS	Millisiemens
SU	Standard pH units
µg/L	Micrograms per liter

[1] Field measurements suspect due to recorded sampling procedure.

TABLE 4-2
Summary of Chemical, Geochemical, and Biological Parameters at Selected Alluvium Wells
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Specific Conductivity	Chloride	COD	TOC	Hetero-trophic Bacteria	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate	2,4-D	2,4-DP	2,4,5-T	2,4,5-TP (Silvex)	1,2-Dichloro-benzene	2,4-Dichloro-phenol	Benzene	Diesel Range Organics
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mS)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
W-18-I	10/16/1990	NT	NT	NT	NT	NT	28	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	<10	NT	NT
W-18-I	3/21/2000	6.57	NT	2.88	2.16	0	17.4	<0.200	<1	108	NT	3.95	<4.05	<0.461	4440	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-I	9/19/2000	5.18	NT	3.99	2.18	NT	17.3	<0.200	<1	114	25.9	3.84	<1.8	0.978	750	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-I	6/18/2001	6.26	148.5	4.9	1.8	0.2	15.9	<0.200	<0.38	93	0.189	5.67	<3.6	0.424	870	370	<0.006	0.175	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-I	4/4/2002	6.59	-39.6	0.44	1.64	0	15.7	<0.200	<0.38	85.1	0.226	3.57	13.3	2.35	2400	78	<0.0258	0.171	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-S	10/16/1990	NT	NT	NT	NT	NT	35	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-18-S	3/21/2000	6.54	NT	3.17	0.195	0	24.2	<0.200	<1	167	1.22	4.19	9.96	2.83	23200	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-S	9/19/2000	NT	NT	NT	0.31	NT	24.2	0.8	<1	166	NT	3.23	2.47	3.15	2900	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<5.0	<0.121	<0.125
W-18-S	6/19/2001	6.35	159.8	1	0.094	0.2	26.7	<0.200	<0.38	163	0.279	4	6.61	2.39	130	120	<0.006	0.0887	NT	NT	NT	NT	NT	NT	NT	<0.125
W-18-S	4/4/2002	6.48	-45.3	0.58	0.233	0	23	<0.200	<0.38	150	0.335	3.4	13.3	3.22	16	13	<0.0258	0.0944	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-24	8/4/1993	6.57	NT	2	NT	NT	NT	NT	NT	NT	0.714	NT	NT	NT	NT	NT	NT	NT	2.6	<2	<1.2	3.1	<1	9	2	NT
MW-11-24	9/9/1993	6.41	NT	8	NT	NT	NT	NT	NT	NT	0.769	NT	NT	NT	NT	NT	NT	NT	3.3	2.2	<0.4	2.2	1	15	2.8	NT
MW-11-24	10/27/1993	6.72	NT	0.8	NT	NT	NT	NT	NT	NT	0.820	NT	NT	NT	NT	NT	NT	NT	3.5	6.6	<0.6	3.3	1	<2	4	NT
MW-11-24	3/23/1995	6.26	NT	1.4	NT	NT	NT	NT	NT	NT	0.474	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-24	3/28/2000	6.86	NT	1.72	NT	0	NT	NT	NT	NT	1.71	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-24	9/22/2000	5.85	NT	0.61	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-24	6/28/2001	6.31	102.1	6.3	0.02	0	18.5	<0.200	38.6	218	0.437	26.6	11.1	3.53	20	110	<0.006	0.0847	NT	NT	NT	NT	NT	NT	NT	0.137
MW-11-24	4/12/2002	7.2	-7.8	1.46	0.711	0	10.4	<0.499	<0.38	284	0.547	4.11	<4	2.37	9	5	<0.0258	0.0525	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-37	8/4/1993	6.59	NT	3.6	NT	NT	NT	NT	NT	NT	0.286	NT	NT	NT	NT	NT	NT	NT	<6	<1	<0.2	0.5	<1	<2	1.6	NT
MW-11-37	9/9/1993	6.49	NT	11	NT	NT	NT	NT	NT	NT	0.345	NT	NT	NT	NT	NT	NT	NT	<2	<0.8	<0.2	0.3	<1	<2	<0.5	NT
MW-11-37	10/27/1993	7.44	NT	1.7	NT	NT	NT	NT	NT	NT	0.295	NT	NT	NT	NT	NT	NT	NT	<1.8	<0.6	<0.2	0.3	<1	<2	<0.5	NT
MW-11-37	3/23/1995	6.05	NT	0.3	NT	NT	NT	NT	NT	NT	0.286	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-37	3/28/2000	6.35	NT	0.09	NT	0	NT	NT	NT	NT	1.11	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-37	9/22/2000	5.55	NT	0.51	NT	NT	NT	NT	NT	NT	32.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-37	6/28/2001	6.42	90.4	4	9.44	0	19	0.24	<0.38	83.9	0.286	12.2	<3.6	1.11	770	610	<0.006	0.0976	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-37	4/12/2002	6.92	-8.7	0.98	8.29	0	18.8	<0.499	0.635	81.6	0.309	5.14	<4	1.63	23	15	<0.0258	0.0828	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-56	8/4/1993	7.12	NT	3.4	NT	NT	NT	NT	NT	NT	0.380	NT	NT	NT	NT	NT	NT	NT	<1	<0.6	<0.2	<0.2	<1	<2	2.1	NT
MW-11-56	9/9/1993	6.99	NT	8	NT	NT	NT	NT	NT	NT	0.440	NT	NT	NT	NT	NT	NT	NT	1.5	<0.6	<0.2	<0.2	<1	<2	4.1	NT
MW-11-56	10/27/1993	7.36	NT	1	NT	NT	NT	NT	NT	NT	0.377	NT	NT	NT	NT	NT	NT	NT	<1	<0.6	<0.2	<0.2	<1	<2	1	NT
MW-11-56	3/23/1995	6.55	NT	7.4	NT	NT	NT	NT	NT	NT	0.341	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MW-11-56	3/28/2000	7.23	NT	0.97	NT	3.1	NT	NT	NT	NT	1.04	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-56	9/22/2000	7.02	NT	0.5	NT	NT	NT	NT	NT	NT	34.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<10	NT	NT
MW-11-56	6/28/2001	7.12	-90	2.5	0.026	2.5	6.78	<0.200	228	148	0.305	14	5.82	0.377	230	210	0.281	0.204	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-11-56	4/12/2002	7.67	-27.7	0.66	<0.0365	3.2	6.19	<0.499	198	142	0.354	6.59	<4	0.95	55	16	0.24	0.0235	NT	NT	NT	NT	NT	NT	NT	<0.125
MW-04-27	2/8/1989	6.75	NT	NT	NT	NT	34	NT	NT	NT	0.870	61	NT	NT	NT	NT	NT	NT	280	NT	11	18	84	303	<5	NT
MW-04-27	3/6/1989	6.75	NT	NT	NT	NT	22	NT	NT	NT	0.870	47	NT	NT	NT	NT	NT	NT	157	NT	19	31	<1	280	<1	NT
MW-04-27	4/26/1989	6.67	NT	NT	NT	NT	70.8	NT	NT	NT	1.293	123	NT	NT	NT	NT	NT	NT	206	NT	6	49	48	530	13	NT
MW-04-27	6/11/1991	6.43	NT	1.8	NT	NT	NT	NT	NT	761	1.966	NT	NT	99.2	NT	NT	0.32	0.16	4150	2120	270	210	110	9	81	NT
MW-04-27	3/31/1995	6.11	NT	2	NT	NT	NT	NT	NT	NT	1.731	NT	NT	NT	NT	NT	NT	NT	79	76	<5	180	3800	<250	190	NT
MW-04-27	3/27/2000	6.77	NT	1.79	NT	4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1140	<0.584	<0.563	<0.622	4850	1250	47.4	NT
MW-04-27	9/27/2000	6.34	NT	0.48	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	2740	<59	<56.9	<62.8	10700	11000	83.9	NT
MW-04-27	7/5/2001	6.49	-53.8	1.2	<0.049	4.4	98.2	21.2	10000	597	2.201	570	772	99.6	1100	800	0.096	0.00796	2700	<3.63	103	346	10200	10800	74	182
MW-04-27	4/19/2002	6.75	-90.2	2.67	<0.0365	4	40.5	12.9	6760	613	2.657	290	254	84.8	39	35	<0.0258	0.00712	376	17.2	7.83	220	7250	<2500	0.58	44.1
MW-04-47	1/31/1989	6.39	NT	NT	NT	NT	254	NT	NT	NT	1.830	184	NT	NT	NT	NT	NT	NT	<5	NT	<1	92	42	390	44	NT
MW-04-47	2/28/1989	6.55	NT	NT	NT	NT	268	NT	NT	NT	1.640	171	NT	NT	NT	NT	NT	NT	74	NT	<0.5	276	237	303	180	NT
MW-04-47	4/25/1989	6.51	NT	NT	NT	NT	192	NT	NT	NT	1.520	195	NT	NT	NT	NT	NT	NT	53	NT	<10	212	175	99	95	NT
MW-04-47	6/11/1991	6.76	NT	1.4	NT	NT	NT	NT	NT	213	0.483	NT	NT	2.4	NT	NT	<0.05	0.16	<10	<6	<2	9.4	141	1300	7.2	NT
MW-04-47	3/31/1995	6.61	NT	2.7	NT	NT	NT	NT	NT	NT	0.332	NT	NT	NT	NT	NT	NT	NT	1.5	<1	0.35	1.5	71	<0.5	<0.5	NT
MW-04-47	3/27/2000	7.02	NT	1.29	NT	2.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	50.9	<10	0.13	NT

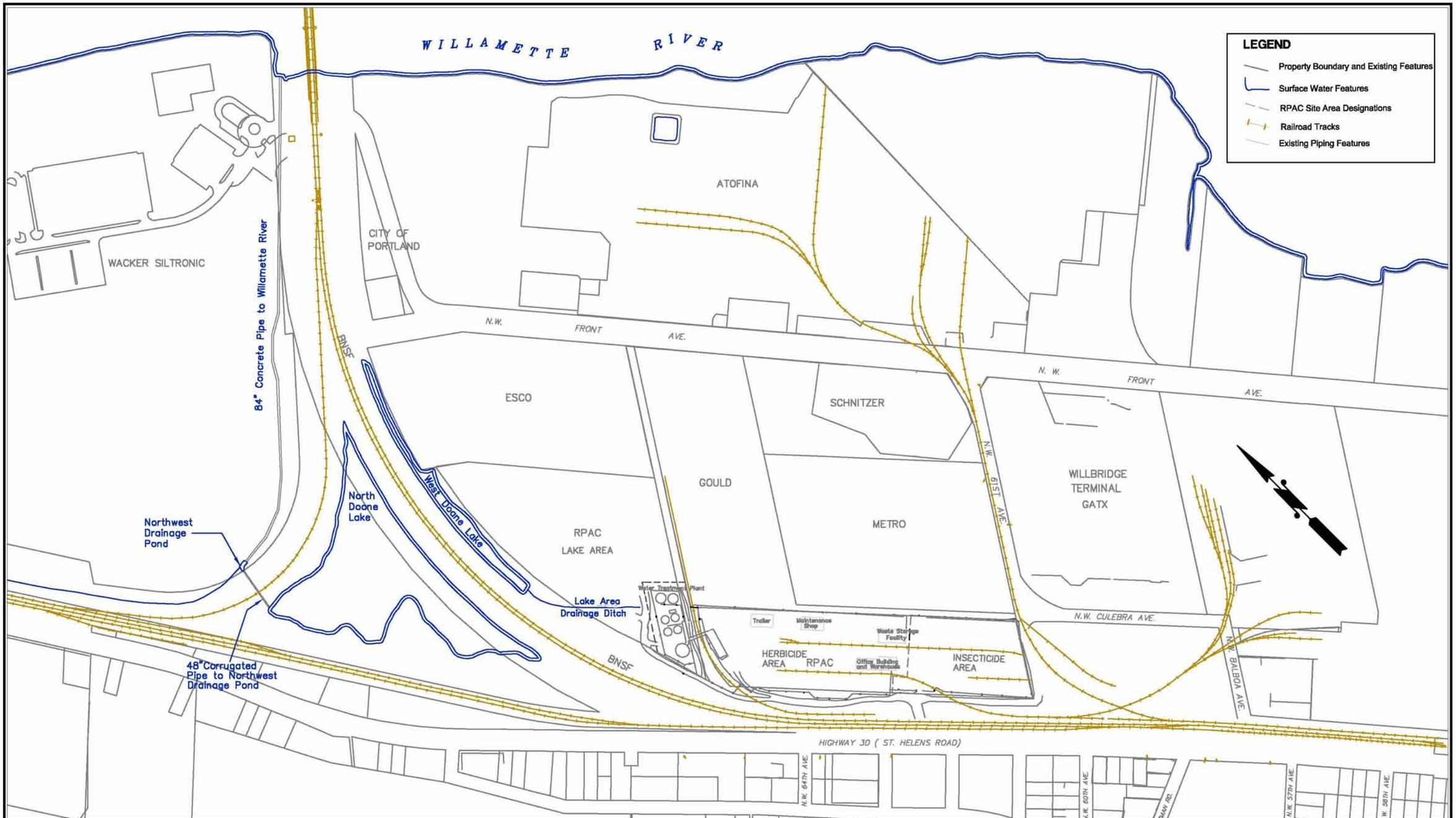
TABLE 4-2
Summary of Chemical, Geochemical, and Biological Parameters at Selected Alluvium Wells
RPAC - Portland Site

Monitoring Well ID	Sample Date	pH	ORP	Dissolved Oxygen	Nitrate	Ferrous Iron	Sulfate	Sulfide	Methane	Alkalinity	Specific Conductivity	Chloride	COD	TOC	Hetero-trophic Bacteria	Diesel Degrading Bacteria	Ammonia as Nitrogen	Ortho-phosphate	2,4-D	2,4-DP	2,4,5-T	2,4,5-TP (Silvex)	1,2-Dichloro-benzene	2,4-Dichloro-phenol	Benzene	Diesel Range Organics
		(SU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)	(mS)	(mg/L)	(mg/L)	(mg/L)	(cfu/mL)	(cfu/mL)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
MW-04-47	9/27/2000	6.51	NT	0.44	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	77.6	<10	0.72	NT
MW-04-47	7/5/2001	6.67	-21.5	1.2	<0.0049	3.4	17.1	<0.200	434	283	0.93	210	<3.6	1.89	43	70	<0.006	0.0268	<0.179	18.4	<0.15	1.81	165	<10	1.25	<0.125
MW-04-47	4/19/2002	6.76	-54.4	1.46	<0.0365	3.8	12.1	11.5	616	268	1.263	151	7.78	1.51	180	130	<0.0258	0.0594	17.1	25.9	4.17	1.82	191	<10	<0.147	0.217
MW-04-63	1/31/1989	6.76	NT	NT	NT	NT	15	NT	NT	NT	0.443	3.7	NT	NT	NT	NT	NT	NT	<5	NT	<1	<1	<1	<5	<1	NT
MW-04-63	2/28/1989	6.63	NT	NT	NT	NT	<5	NT	NT	NT	0.464	34	NT	NT	NT	NT	NT	NT	10	NT	<0.5	<0.5	<1	<5	3	NT
MW-04-63	4/25/1989	6.84	NT	NT	NT	NT	<5	NT	NT	NT	0.412	22.3	NT	NT	NT	NT	NT	NT	<2	NT	<0.5	<0.5	1	<5	<1	NT
MW-04-63	6/11/1991	6.79	NT	1.7	NT	NT	NT	NT	NT	164	0.344	NT	NT	476	NT	NT	0.05	0.15	<10	<6	<2	<2	<4.8	<6	<0.5	NT
MW-04-63	3/31/1995	6.65	NT	5.4	NT	NT	NT	NT	NT	NT	0.297	NT	NT	NT	NT	NT	NT	NT	1	0.44	<0.05	<0.05	<1.2	<0.5	<0.5	NT
MW-04-63	3/27/2000	7.13	NT	0.43	NT	1.6	NT	NT	NT	NT	1.04	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<10	<0.121	NT
MW-04-63	9/27/2000	6.14	NT	0.46	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	<0.622	<0.36	<10	<0.121	NT
MW-05-52	2/8/1989	6.43	NT	NT	NT	NT	97	NT	NT	NT	2.19	309	NT	NT	NT	NT	NT	NT	82000	NT	2780	<10	1890	47700	165	NT
MW-05-52	2/9/1989	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	16000	NT	<600	<2000	2180	NT	274	NT
MW-05-52	3/1/1989	6.26	NT	NT	NT	NT	86	NT	NT	NT	2.22	336	NT	NT	NT	NT	NT	NT	88100	NT	2170	520	1130	59700	124	NT
MW-05-52	4/26/1989	6.3	NT	NT	NT	NT	107	NT	NT	NT	2.24	409	NT	NT	NT	NT	NT	NT	95300	NT	1240	280	1430	47500	85.3	NT
MW-05-52	6/11/1991	6.62	NT	1.1	NT	NT	NT	NT	NT	468	1.292	NT	NT	68.7	NT	NT	0.13	12.2	44000	16000	<200	<200	1700	11000	92	NT
MW-05-52	12/14/1995	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	479	127	NT	NT	<0.1	1.4	7400	<120	200	130	4300	12000	210	NT
MW-05-52	3/30/2000	6.52	NT	0.47	<0.0049	2.4	25.4	<0.200	NT	276	NT	66.5	49.8	<0.461	12	NT	<0.006	NT	856	<0.584	<0.563	<0.622	3640	745	51	11.8
MW-05-52	9/28/2000	6.22	NT	0.71	<0.0049	NT	13.5	3.44	56.8	445	115.0	117	54.7	14.8	5.5	NT	<0.006	NT	194	<0.584	12.2	<62.8	1530	382	40.6	4.47
MW-05-52	7/6/2001	6.65	7.4	1.6	<0.0049	2.6	21.2	2.24	40.4	257	0.886	77.6	55.8	14.7	18	5	0.01	10	557	<0.173	<7.29	16.6	3990	251	33.5	1.92
MW-05-52	4/22/2002	6.7	-55.5	1.74	<0.0365	2.6	37.4	3.76	57	325	0.458	140	47.3	12.5	1	7	<0.0258	12.1	304	15.7	<50	17.5	3740	539	44	7.92
AL5-35	4/3/1995	6.21	NT	1.7	NT	NT	NT	NT	NT	NT	3.65	NT	52.3	9.7	NT	NT	<0.1	0.083	<5	15	17	<1	4300	<0.5	180	NT
AL5-35	10/27/1995	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	5.8	16	0.31	15	4500	5.9	200	NT
AL5-35	4/4/2000	6.32	NT	0.71	<0.049	3.8	225	<0.200	3430	706	6.16	1610	51.2	<4.61	245	NT	0.357	NT	2.28	5.08	<0.563	3.02	6050	21.1	229	NT
AL5-35	10/4/2000	6.05	NT	0.66	<0.049	NT	214	3.2	1110	608	0.704	1460	21	9.3	5	NT	0.54	NT	8.81	11	<1.13	4.28	6350	<20	211	NT
W-09-116	4/7/2000	6.52	NT	0.72	NT	1.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<3.87	<2.92	<2.82	23.3	888	<10	114	NT
W-09-116	10/6/2000	6.32	NT	0.54	NT	1.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.773	<0.584	<0.563	19.8	744	<10	143	NT
W-09-116	6/29/2001	6.35	101.4	0.7	<0.0049	2.5	66.7	8	7010	507	2.32	838	21.2	2.95	390	1400	0.684	0.0383	0.8	0.8	<0.15	15.8	881	NT	113	0.67
W-09-116	4/15/2002	6.87	24.6	3.85	<0.0365	3	60.5	<0.499	2650	458	2.333	703	16	2.35	99	13	0.392	0.0301	<0.5	30.6	<0.5	19.2	617	NT	46.4	0.505
W-11-D	9/16/1986	6.3	NT	NT	<0.05	4	200	NT	NT	780	8.3	1900	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	1/20/1987	6.5	NT	NT	0.05	NT	180	NT	NT	740	6.3	1400	NT	27	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	2/25/1987	6.4	NT	NT	0.1	NT	200	NT	NT	670	5.3	1800	NT	49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-D	10/22/1990	NT	NT	NT	NT	NT	92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	740	40	340	NT
W-11-D	4/5/1995	6.76	NT	0.7	NT	NT	NT	NT	NT	NT	1.717	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT
W-11-D	4/11/2000	6.96	NT	2.1	0.0894	NT	172	1.6	2730	555	3.94	874	60.3	10.8	1220	NT	0.21	NT	<0.773	1.64	<0.563	26.6	360	<20	68.4	NT
W-11-D	10/10/2000	6.78	NT	0.43	<0.0049	4	209	0.368	849	433	0.242	900	13.8	2.25	200	NT	0.02	NT	<0.773	<0.584	<0.563	25.6	739	<10	27.7	NT
W-11-D	6/21/2001	6.69	-7.9	0.6	<0.0049	2.2	196	<0.200	3110	427	3.343	961	16.7	3.03	180	14000	0.05	<0.0016	<0.179	<0.173	<0.15	38.3	456	NT	44.5	0.764
W-11-D	4/9/2002	6.97	-29.4	5.03	<0.0365	2.8	216	<0.200	534	421	3.86	824	15.3	3.13	30	17	<0.0258	0.00492	<0.5	25.3	<0.5	48	437	NT	16.9	0.422
W-11-I	9/3/1986	6.9	NT	NT	<0.05	NT	49	NT	NT	540	1.1	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	12/16/1986	7.1	NT	NT	<0.05	NT	9	NT	NT	490	0.93	14	NT	68	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	2/24/1987	6.5	NT	NT	<0.05	NT	7	NT	NT	490	0.9	11	NT	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	10/22/1990	NT	NT	NT	NT	NT	<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
W-11-I	4/4/1995	6.78	NT	0.8	NT	NT	NT	NT	NT	NT	0.808	NT	NT	NT	NT	NT	NT	NT	<0.25	<0.25	<0.05	<0.05	<1	<0.5	<0.5	NT
W-11-I	4/11/2000	6.71	NT	0.25	0.0533	8	0.18	0.8	3810	530	1.05	28.9	36.3	8.03	330	NT	3.64	NT	<0.773	<0.584	<0.563	<0.622	0.57	<10	<0.121	NT
W-11-I	10/10/2000	5.85	NT	1.01	0.913	NT	0.805	<0.200	10300	516	93.4	28.4	25.9	6	870	NT	2.35	NT	<0.773	<0.584	<0.563	<0.622	1.13	<10	<0.121	NT
W-11-I	6/21/2001	6.65	-118	0.3	1.62	6.6	3.43	1.2	40000	526	0.853	33.2	25.9	7.3	55	370	3.01	0.00401	<0.179	<0.173	<0.15	<0.133	<0.087	NT	<0.121	<0.125
W-11-I	4/9/2002	6.91	-59.6	1.26	0.037	5.2	0.255	0.56	33300	502	0.937	31.5	18.3	7.04	110	49	3.07	0.00366	<0.5	<0.5	<0.5	<0.5	0.72	NT	<0.121	<0.125
RP-01-31	4/17/2000	NT	NT	NT	<1.53	NT	33.7	<0.200	1.53	172	NT	20.2	<4.05	<0.461	7500	NT	<0.006	NT	<0.773	<0.584	<0.563	<0.622	3.74	<10	0.16	NT
RP-01-31	10/11/2000	6.97	NT	3.66	0.326	0	54.2	<0.200	<1	141	54.2	35.3	1.97	0.738	3200	NT	0.11	NT	<0.773	<0.584	<0.563	<0.622	<0.087	<10	<0.121	NT
RP-01-31	6/26/2001	6.87	39.5	6.8	0.368	0	20.6	<0.200	<0.38	148	0.126	12.7	11.4	1.53	4100	11000	0.023	0.339	<0.179	<0.173	0.811	<0.133	<0.087	NT	<0.121	<0.125
RP-01-31	4/5/2002	6.78	-22.4	0.0	1.43	NT	30.9	<0.200	2.29	148	0.365	9.71	244	1.54	810	81	<0.0258	0.383	<0.5	<0.5	<0.5	<0.5	0.69	NT	<0.121	<0.125
RP-01-51	4/17/2000	NT	NT	NT	<0.0049	NT	221	<1.6	37.6	554	NT	776	22.8	<0.461	1600	NT	0.119	NT	<0.773	1.49	<0.563	7.92	227	<10	1.12	NT
RP-01-51	10/11/2000	6.7	NT	0.7	0.0462	0	284	<0.200	112	571	0.401	714	30.6	10.3	54	NT	0.33	NT	<0.773	<0.584	<0.563	6.94	150	<10	0.16	NT
RP-01-51	6/26/2001	6.72	-3.9	0.7	<0.0049	0.2	269	4.8	454	509	2.859	853	32	10.4	290	400	0.28	0.0683	<0.179	5.57	0.161	9.07	124	NT	0.18	0.305
RP-01-51	4/8/2002	6.92	-29.4	0.14	<0.0049	0.4	256	<0.200	814	559	3.149	804	30.7	10.9	150	9	0.285	0.0919	<0.5	4.04	<0.5	16.7	197	NT	0.5	0.222

Notes:

NT	Not tested
cfu/mL	Colony forming units per milliliter
mg/L	Milligrams per liter
mV	Millivolts
mS	Millisiemens
SU	Standard pH units
µg/L	Micrograms per liter

FIGURES



amec

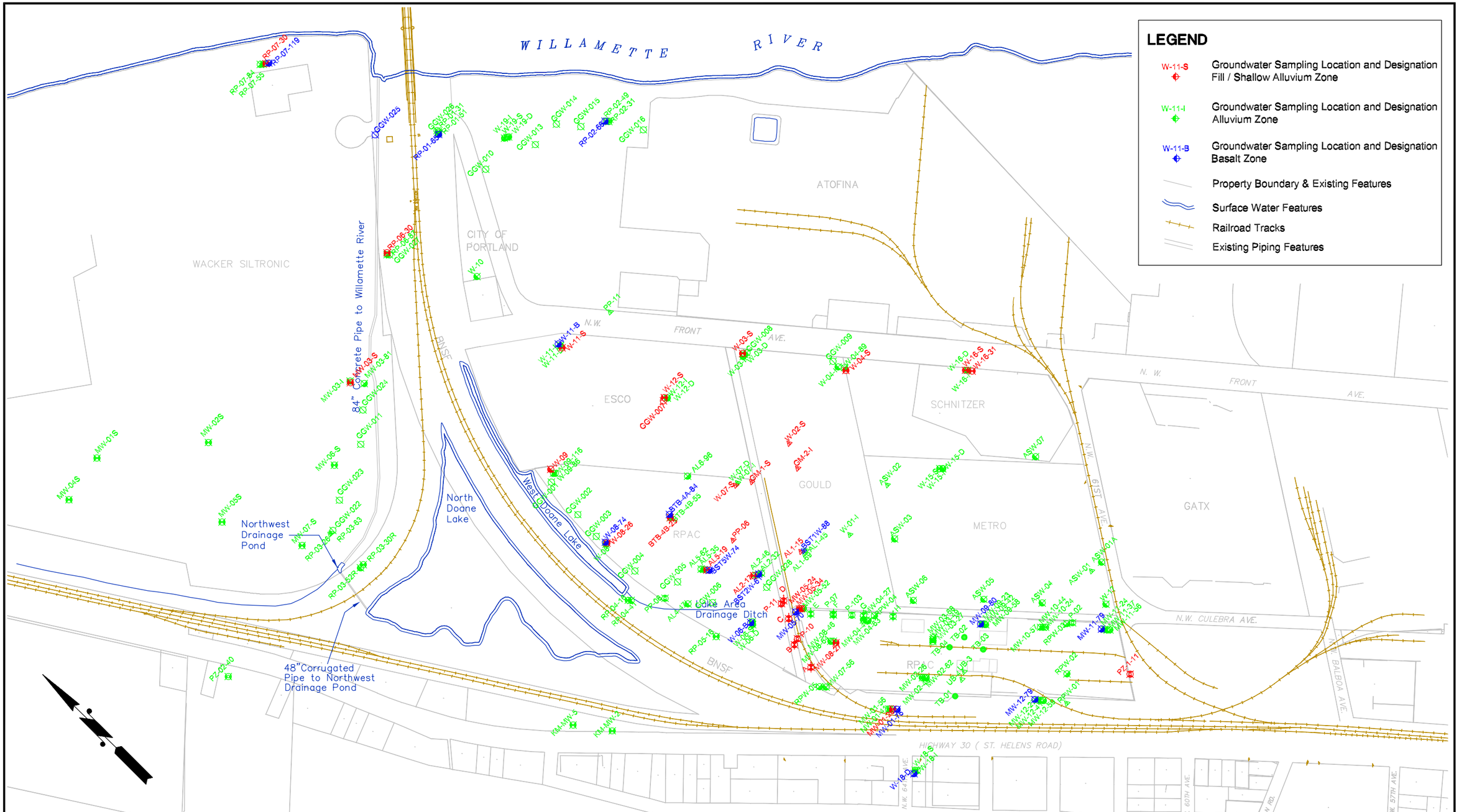
7376 SW Durham Road
Portland, OR, U.S.A. 97224-7307

W.O.	0-61M-10703-0
DESIGN	HWN
DRAWN	BRJ
DATE	MARCH 2003
SCALE	1"=350'

FIGURE 1-1
SITE AND VICINITY MAP

RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\DWG\Site and Vicinity – March 2003.dwg



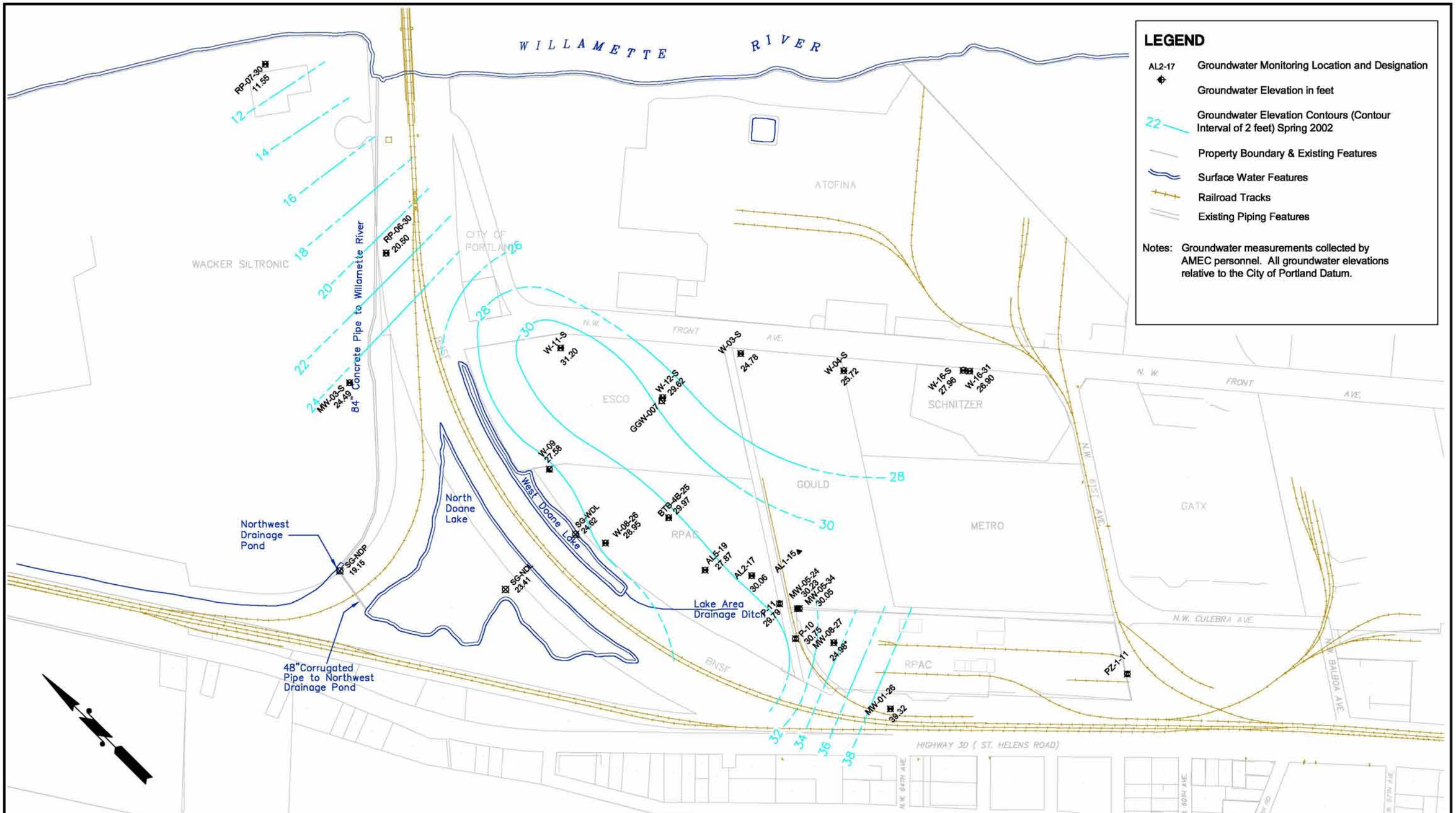
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ
DATE	AUGUST 2002
SCALE	1"=350'

FIGURE 3-1
GROUNDWATER SAMPLING LOCATIONS AND MONITORING WELLS DISPLAYED BY CHARACTERIZATION ZONES
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\Figure 3-1.dwg



* Groundwater elevation not included in contour evaluation, groundwater elevation is suspect due to the presence of LNAPL.

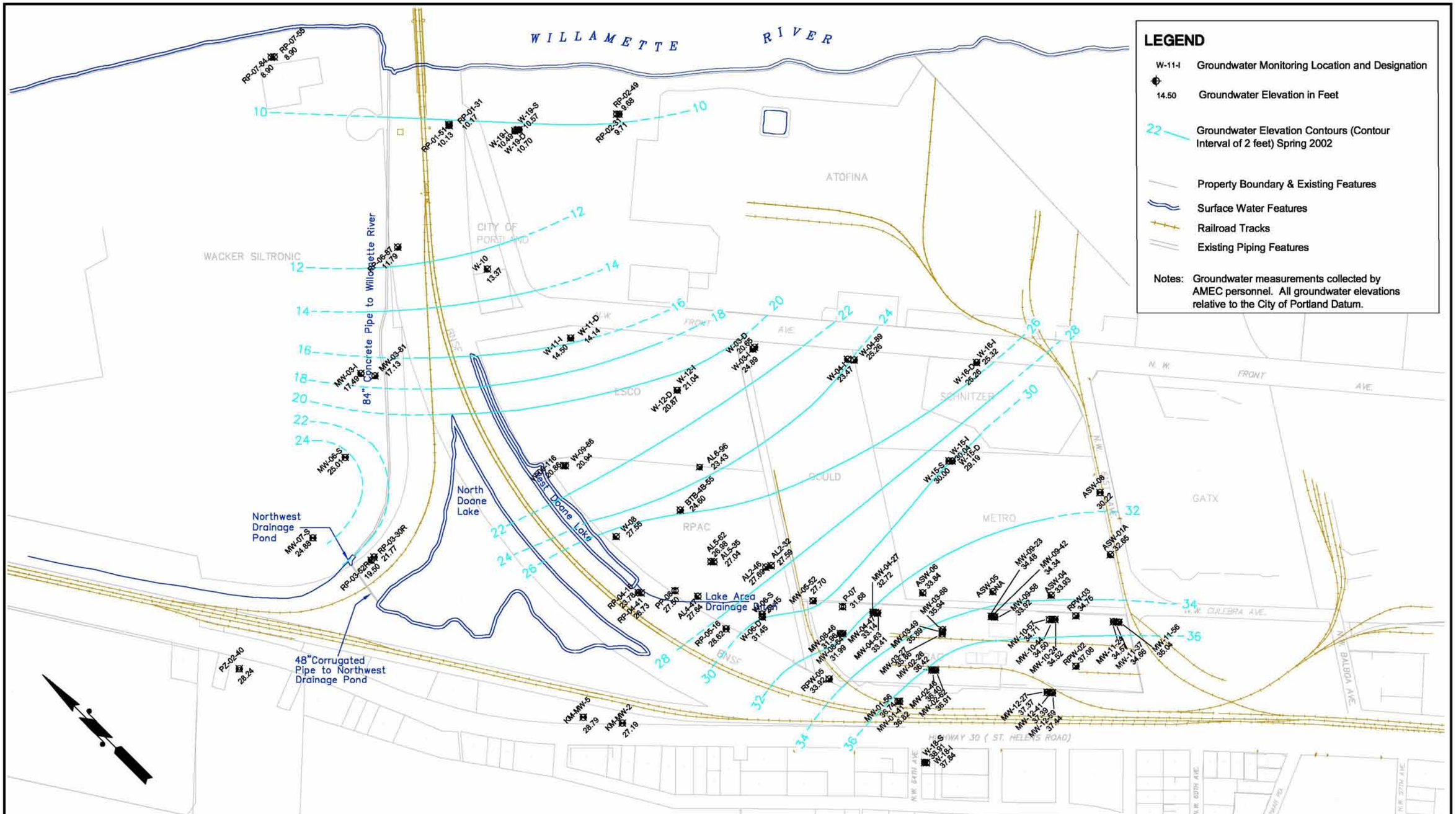
amec

7375 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ
DATE	AUGUST 2002
SCALE	1"=350'

FIGURE 3-2
GROUNDWATER ELEVATIONS
FILL / SHALLOW ALLUVIUM ZONE
SPRING 2002
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\Figure 3-2.dwg



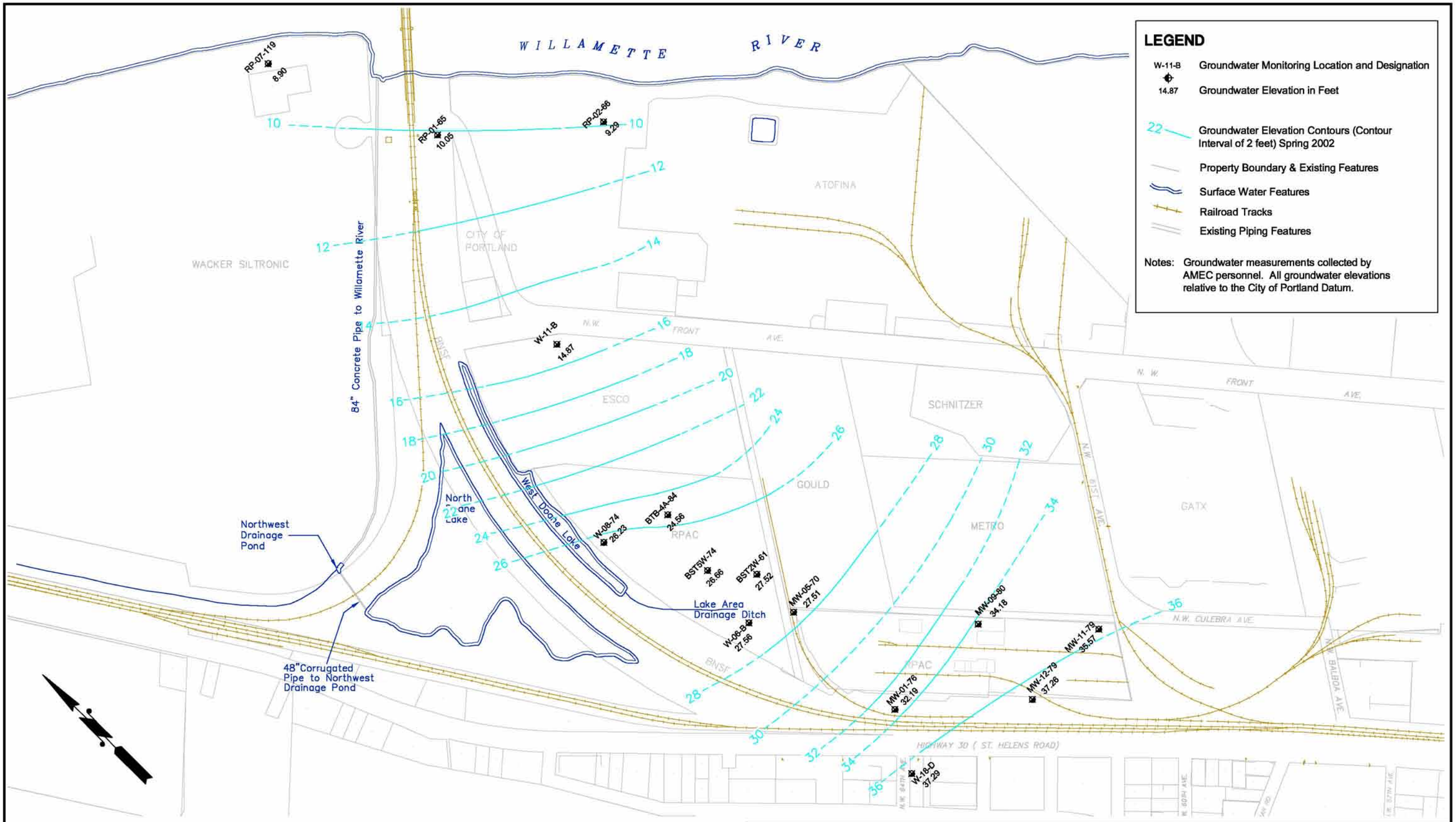
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ
DATE	AUGUST 2002
SCALE	1"=350'

FIGURE 3-3
GROUNDWATER ELEVATIONS
ALLUVIUM ZONE
SPRING 2002
RPAC - PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\Figure 3-3.dwg



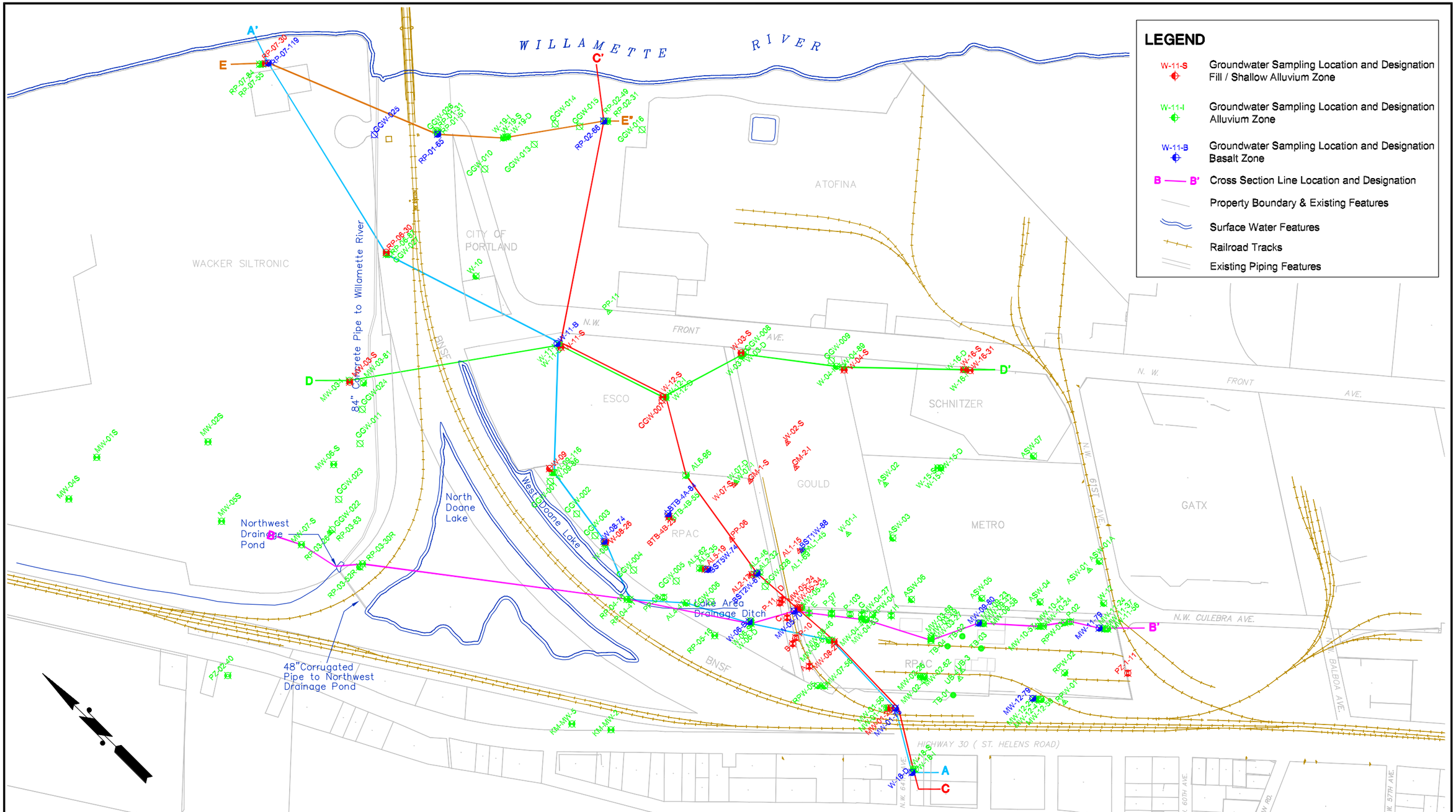
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ
DATE	AUGUST 2002
SCALE	1"=350'

FIGURE 3-4
GROUNDWATER ELEVATIONS
BASALT ZONE
SPRING 2002
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\Figure 3-4.dwg



amec

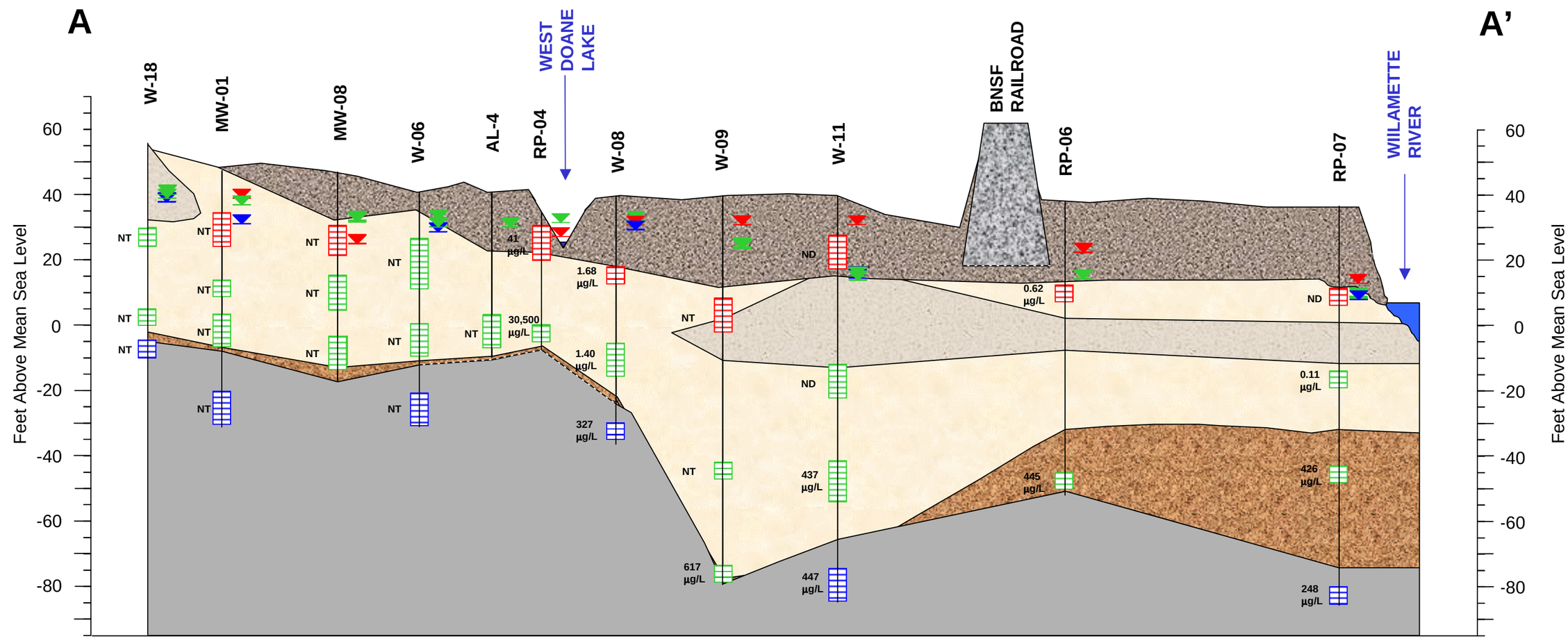
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ
DATE	NOVEMBER 2002
SCALE	1"=350'

FIGURE 3-5
GEOLOGICAL CROSS SECTION LOCATIONS

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\Figure 3-5A.dwg



LEGEND

W-18 Monitoring well cluster number and location

Screened interval from monitoring well located in the Fill/Shallow Alluvium Characterization Zone

Screened interval from monitoring well located in the Alluvium Characterization Zone

Screened interval from monitoring well located in the Basalt Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Fill/Shallow Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Basalt Characterization Zone

Approximate lithologic contact (dashed where inferred)

FILL

SANDY SILT OF THE ALLUVIUM ZONE

CLAYEY SILT OF THE ALLUVIUM ZONE

GRAVEL OF THE ALLUVIUM ZONE

BASALT ZONE

µg/L micrograms per liter

ND Concentration not detected at or above the method detection limit

NT Constituent not tested for during the Spring 2002 sampling event

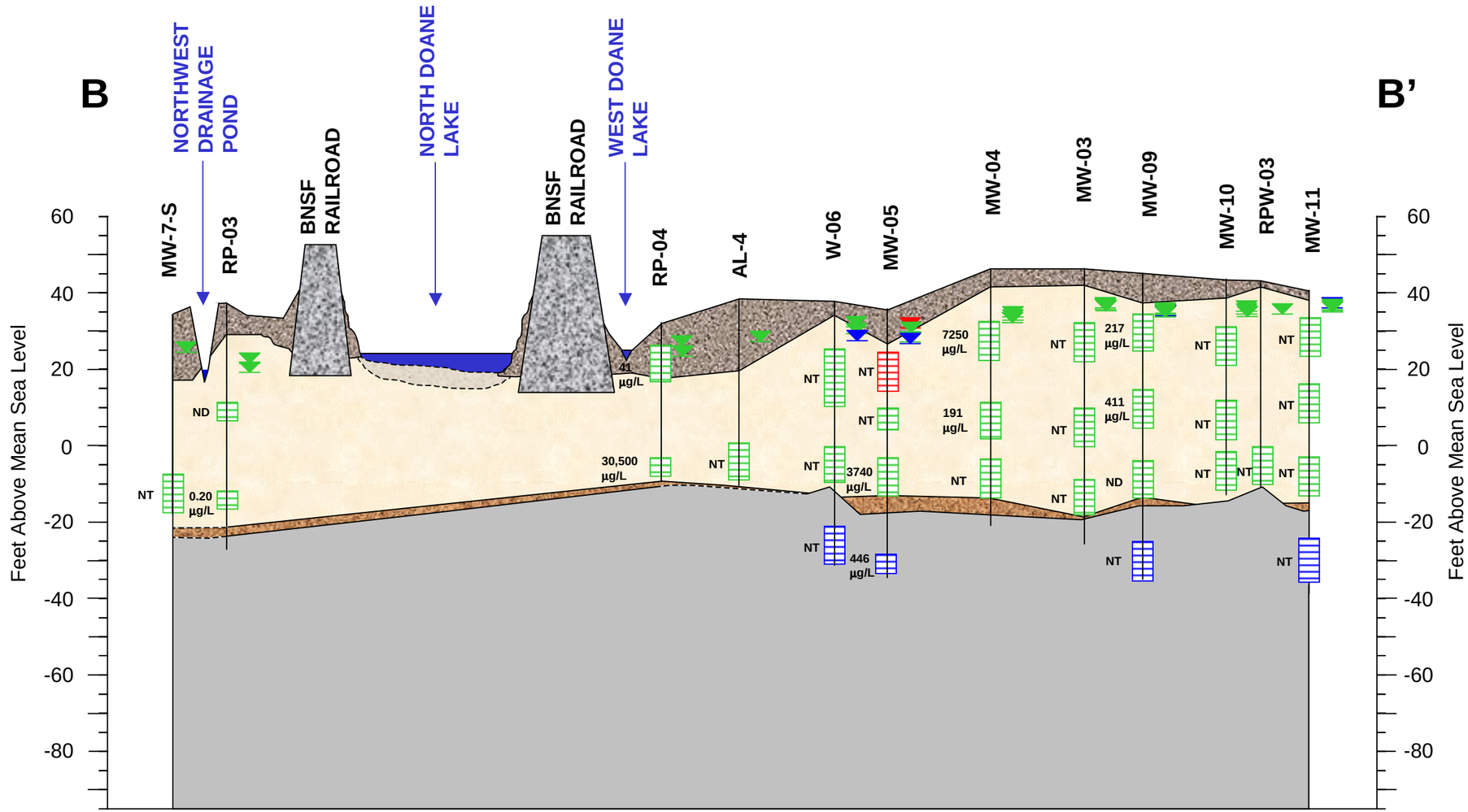
617 µg/L 1,2-dichlorobenzene concentration in micrograms per liter in Spring 2002

amec
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10793-T43
DESIGN	MVK
DRAWN	MVK
DATE	MARCH 2003
SCALE	AS NOTED

FIGURE 3-6
SIMPLIFIED GEOLOGICAL CROSS SECTION W\ GROUNDWATER ELEVATIONS AND 1,2 DCB CONCENTRATIONS FOR SPRING 2002
SECTION A - A'
RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\Task43\Groundwater Monitoring\xsections\A to A'.ppt



VERTICAL EXAGGERATION IS 10x

LEGEND

W-18 Monitoring well cluster number and location

Screened interval from monitoring well located in the Fill/Shallow Alluvium Characterization Zone

Screened interval from monitoring well located in the Alluvium Characterization Zone

Screened interval from monitoring well located in the Basalt Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Fill/Shallow Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Basalt Characterization Zone

Approximate lithologic contact (dashed where inferred)

FILL

SANDY SILT OF THE ALLUVIUM ZONE

CLAYEY SILT OF THE ALLUVIUM ZONE

GRAVEL OF THE ALLUVIUM ZONE

BASALT ZONE

µg/L micrograms per liter

ND Concentration not detected at or above the method detection limit

NT Constituent not tested for during the Spring 2002 sampling event

617 µg/L 1,2-Dichlorobenzene concentration in micrograms per liter, Spring 2002

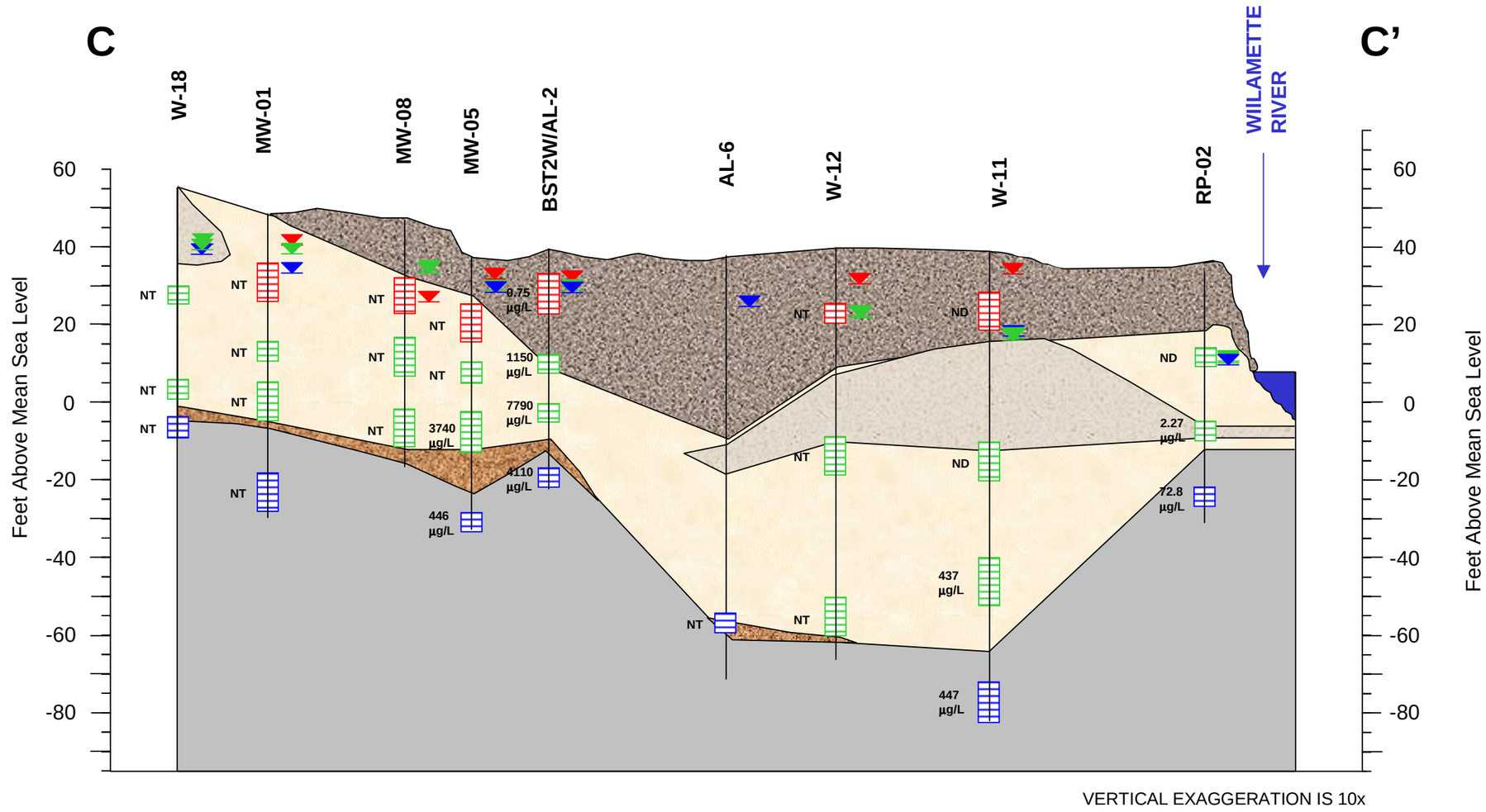
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10793-T43
DESIGN	MVK
DRAWN	MVK
DATE	MARCH 2003
SCALE	AS NOTED

FIGURE 3-7
SIMPLIFIED GEOLOGICAL CROSS SECTION W\ GROUNDWATER ELEVATIONS AND 1,2 DCB CONCENTRATIONS FOR SPRING 2002
SECTION B - B'
RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\Task43\Groundwater Monitoring\xsections\B to B'.ppt



LEGEND

W-18 Monitoring well cluster number and location

Screened interval from monitoring well located in the Fill/Shallow Alluvium Characterization Zone

Screened interval from monitoring well located in the Alluvium Characterization Zone

Screened interval from monitoring well located in the Basalt Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Fill/Shallow Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Basalt Characterization Zone

Approximate lithologic contact (dashed where inferred)

FILL

SANDY SILT OF THE ALLUVIUM ZONE

CLAYEY SILT OF THE ALLUVIUM ZONE

GRAVEL OF THE ALLUVIUM ZONE

BASALT ZONE

µg/L micrograms per liter

ND Concentration not detected at or above the method detection limit

NT Constituent not tested for during the Spring 2002 sampling event

617 µg/L 1,2-Dichlorobenzene concentration in micrograms per liter, Spring 2002

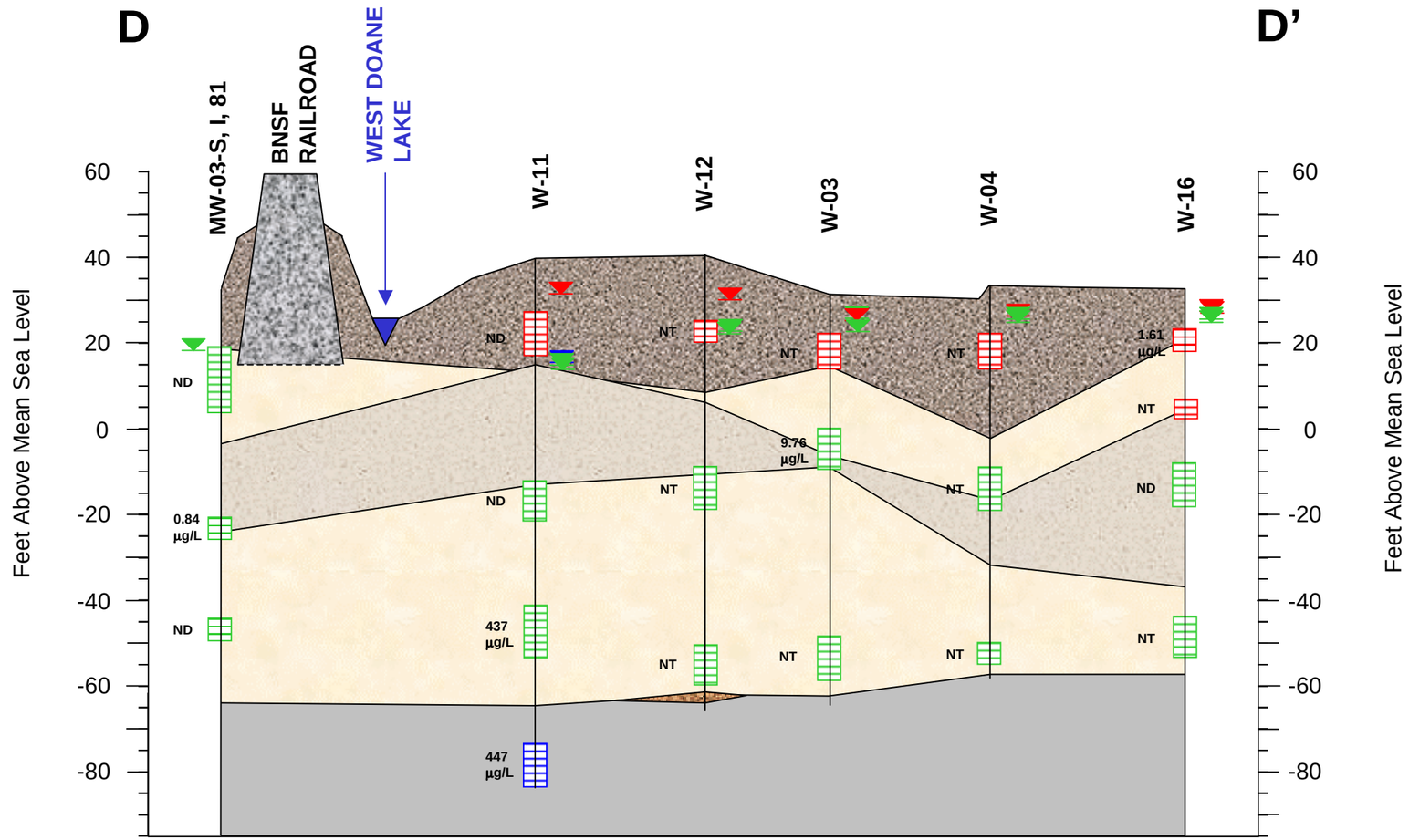
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10793-T43
DESIGN	MVK
DRAWN	MVK
DATE	MARCH 2003
SCALE	AS NOTED

FIGURE 3-8
SIMPLIFIED GEOLOGICAL CROSS SECTION W\ GROUNDWATER ELEVATIONS AND 1,2 DCB CONCENTRATIONS FOR SPRING 2002
SECTION C - C'
RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\Task43\Groundwater Monitoring\xsections\C to C'.ppt



VERTICAL EXAGGERATION IS 10x

LEGEND

W-18 Monitoring well cluster number and location

Screened interval from monitoring well located in the Fill/Shallow Alluvium Characterization Zone

Screened interval from monitoring well located in the Alluvium Characterization Zone

Screened interval from monitoring well located in the Basalt Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Fill/Shallow Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Basalt Characterization Zone

Approximate lithologic contact (dashed where inferred)

FILL

SANDY SILT OF THE ALLUVIUM ZONE

CLAYEY SILT OF THE ALLUVIUM ZONE

GRAVEL OF THE ALLUVIUM ZONE

BASALT ZONE

µg/L micrograms per liter

ND Concentration not detected at or above the method detection limit

NT Constituent not tested for during the Spring 2002 sampling event

617 µg/L 1,2-Dichlorobenzene concentration in micrograms per liter, Spring 2002

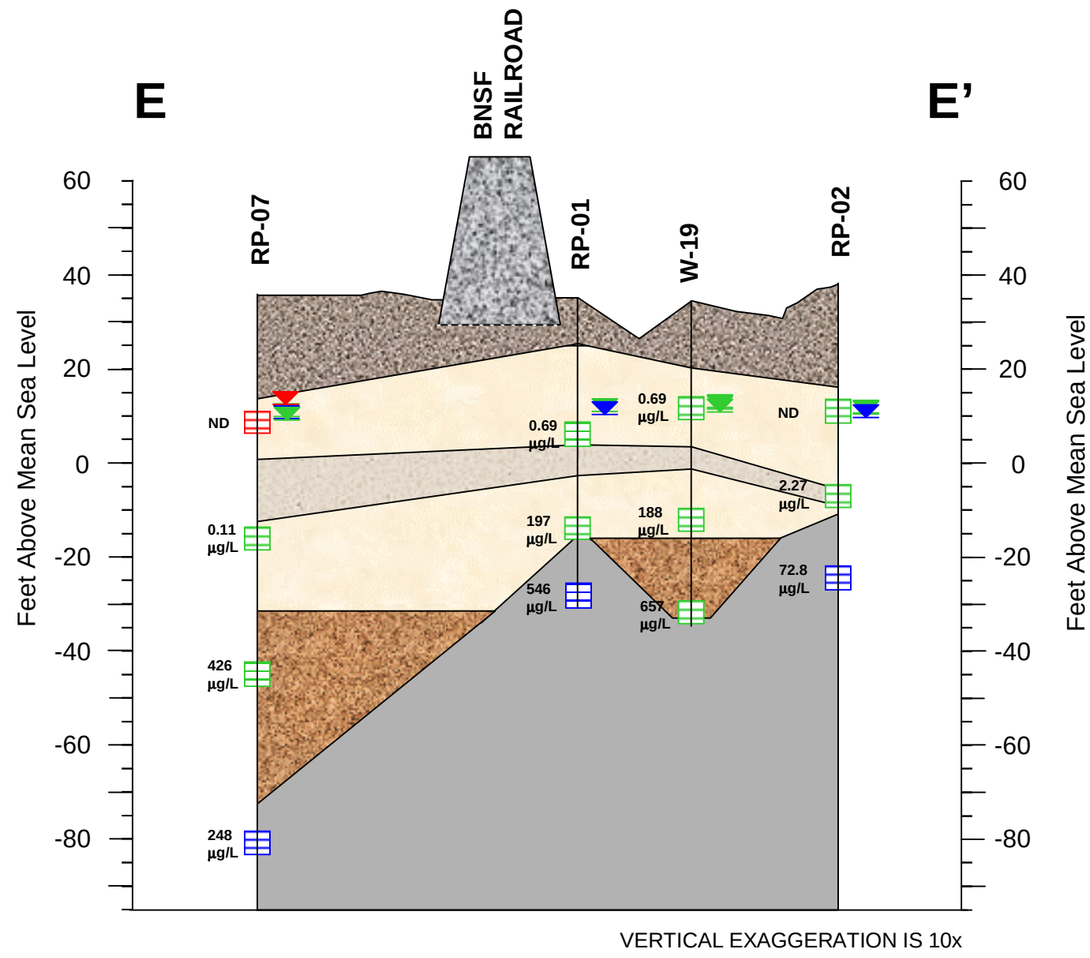
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10793-T43
DESIGN	MVK
DRAWN	MVK
DATE	MARCH 2003
SCALE	AS NOTED

FIGURE 3-9
SIMPLIFIED GEOLOGICAL CROSS SECTION W\ GROUNDWATER ELEVATIONS AND 1,2 DCB CONCENTRATIONS FOR SPRING 2002
SECTION D - D'
RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\Task43\Groundwater Monitoring\xsections\D to D'.ppt



LEGEND

W-18 Monitoring well cluster number and location

Screened interval from monitoring well located in the Fill/Shallow Alluvium Characterization Zone

Screened interval from monitoring well located in the Alluvium Characterization Zone

Screened interval from monitoring well located in the Basalt Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Fill/Shallow Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Alluvium Characterization Zone

Groundwater elevation from Spring 2002 survey for monitoring well screened in the Basalt Characterization Zone

Approximate lithologic contact (dashed where inferred)

FILL

SANDY SILT OF THE ALLUVIUM ZONE

CLAYEY SILT OF THE ALLUVIUM ZONE

GRAVEL OF THE ALLUVIUM ZONE

BASALT ZONE

µg/L	micrograms per liter
ND	Concentration not detected at or above the method detection limit
NT	Constituent not tested for during the Spring 2002 sampling event
617 µg/L	1,2-Dichlorobenzene concentration in micrograms per liter, Spring 2002

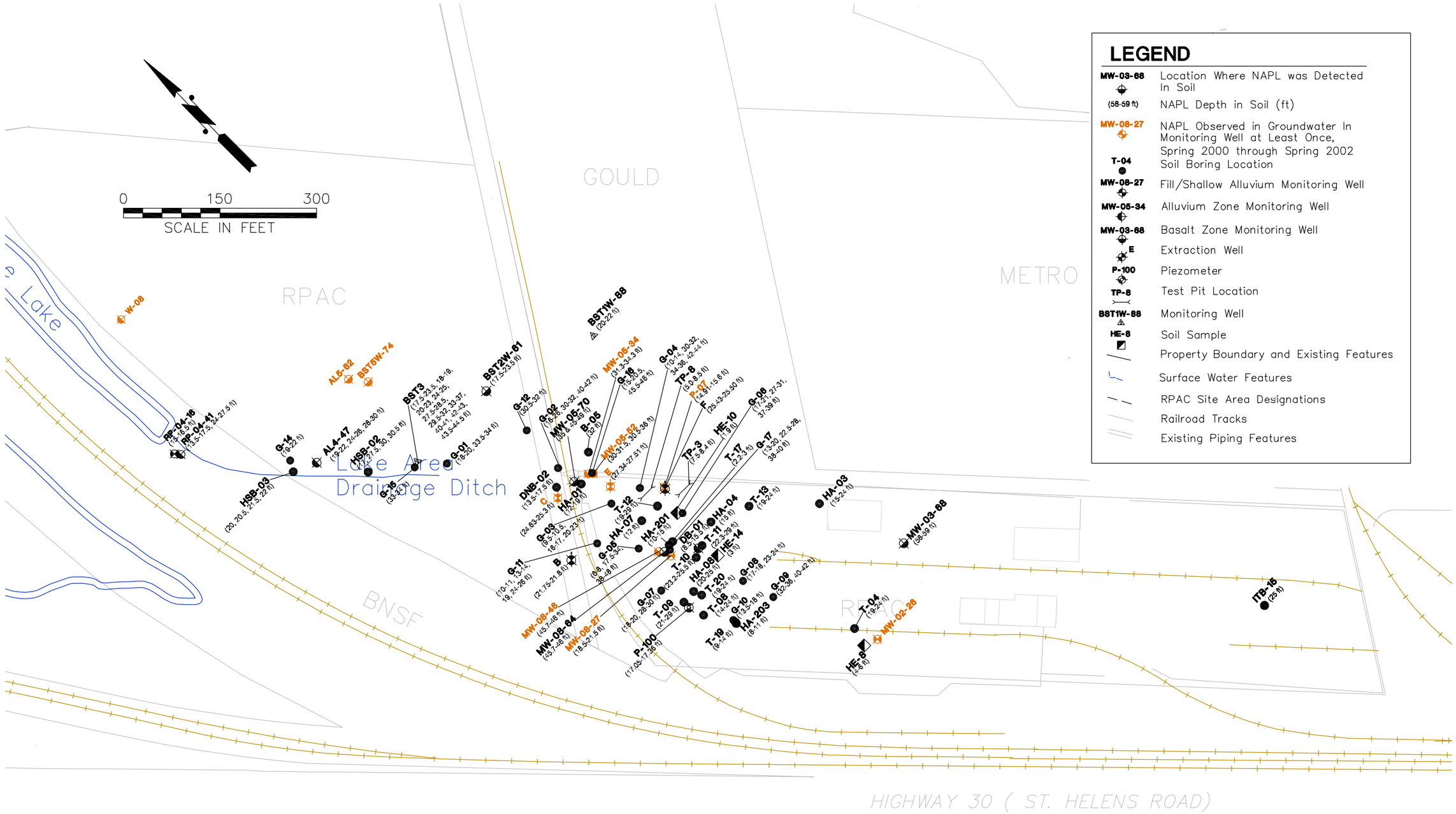
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10793-T43
DESIGN	MVK
DRAWN	MVK
DATE	MARCH 2003
SCALE	AS NOTED

FIGURE 3-10
SIMPLIFIED GEOLOGICAL CROSS SECTION W\ GROUNDWATER ELEVATIONS AND 1,2 DCB CONCENTRATIONS FOR SPRING 2002
SECTION E - E'
RPAC - PORTLAND SITE

AMEC DRAWING NO. k:\10000\10700\10703\Task43\Groundwater Monitoring\xsections\E to E'.ppt



NOTE: LOCATIONS OF FEATURES ARE APPROXIMATE.
INFORMATION PRESENTED ON THIS FIGURE IS BASED ON FIELD DOCUMENTATION.
INFORMATION INCLUDED ON FIGURE IS FROM SEVERAL INVESTIGATIVE EVENTS OVER A PERIOD OF 20 YEARS, AND MAY NOT BE REPRESENTATIVE OF CURRENT RPAC SITE CONDITIONS.

amec

7376 SW Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-107030-T43
DESIGN	HB
DRAWN	TS
DATE	NOVEMBER 2002
SCALE	1"=150'

FIGURE 3-11

NAPL OCCURRENCE IN SOIL AND GROUNDWATER

RPAC - PORTLAND, OR

AMEC DRAWING NO. k:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\ dwg \ FIG3-11_DNAPL.DWG

APPENDIX A

Changes in Groundwater Elevations for
Selected Monitoring Well Locations

FIGURE A-1
Changes in Groundwater Elevation at Monitoring Well Series W-18
RPAC - Portland Site

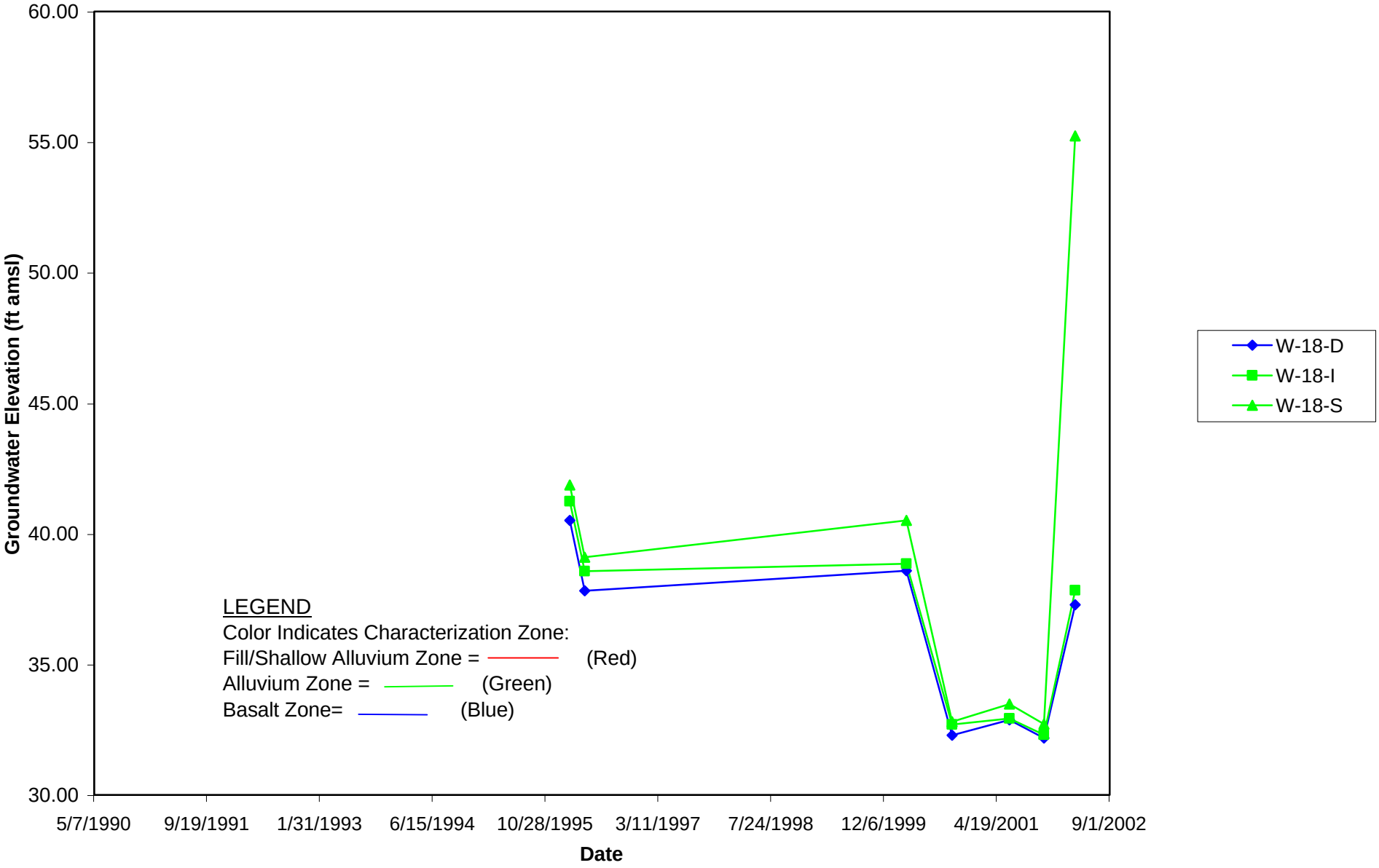


FIGURE A-2
Changes in Groundwater Elevation at Monitoring Well Series MW-09
RPAC - Portland Site

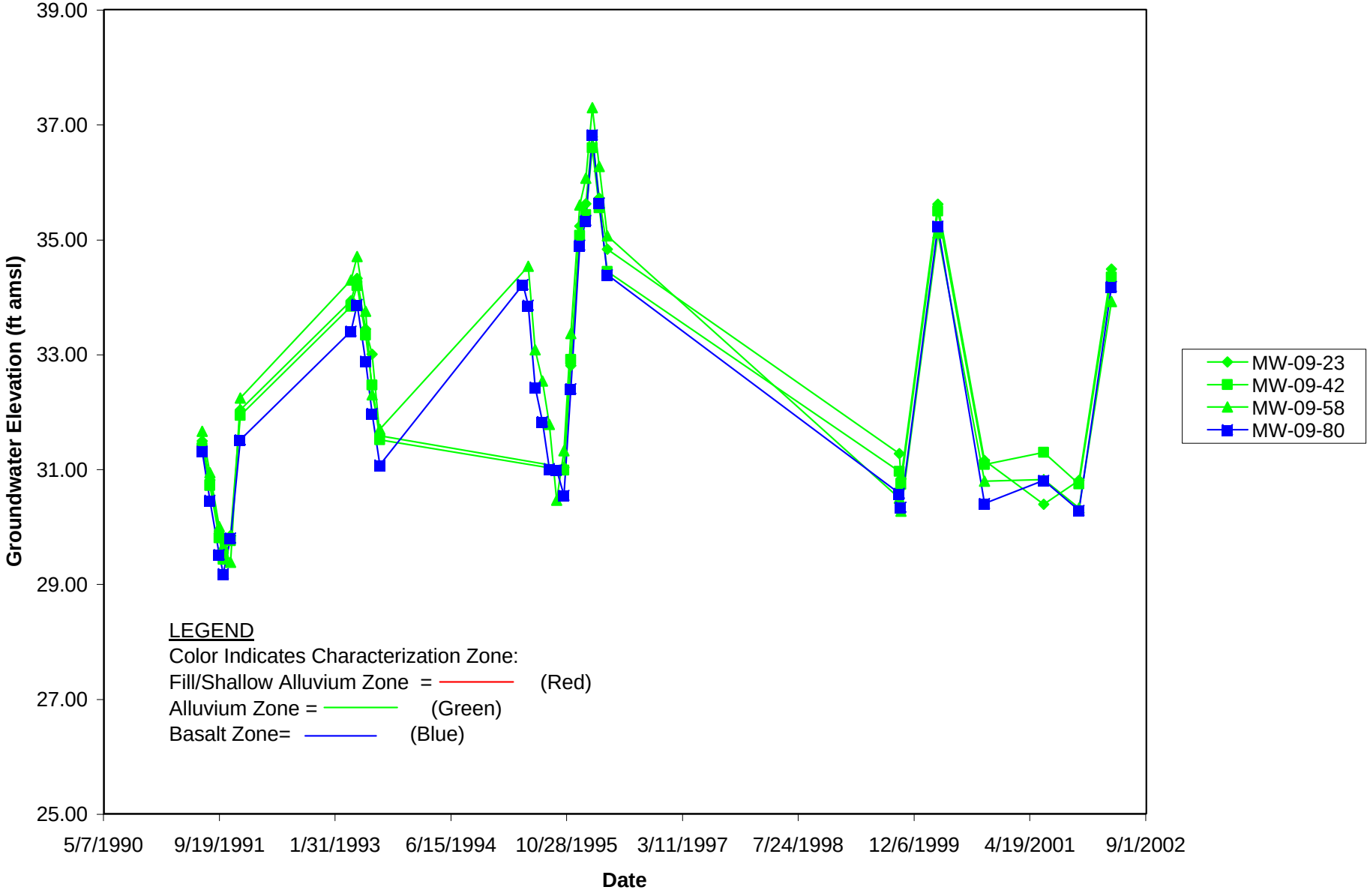


FIGURE A-3
Changes in Groundwater Elevation at Monitoring Well Series RP-02
RPAC - Portland Site

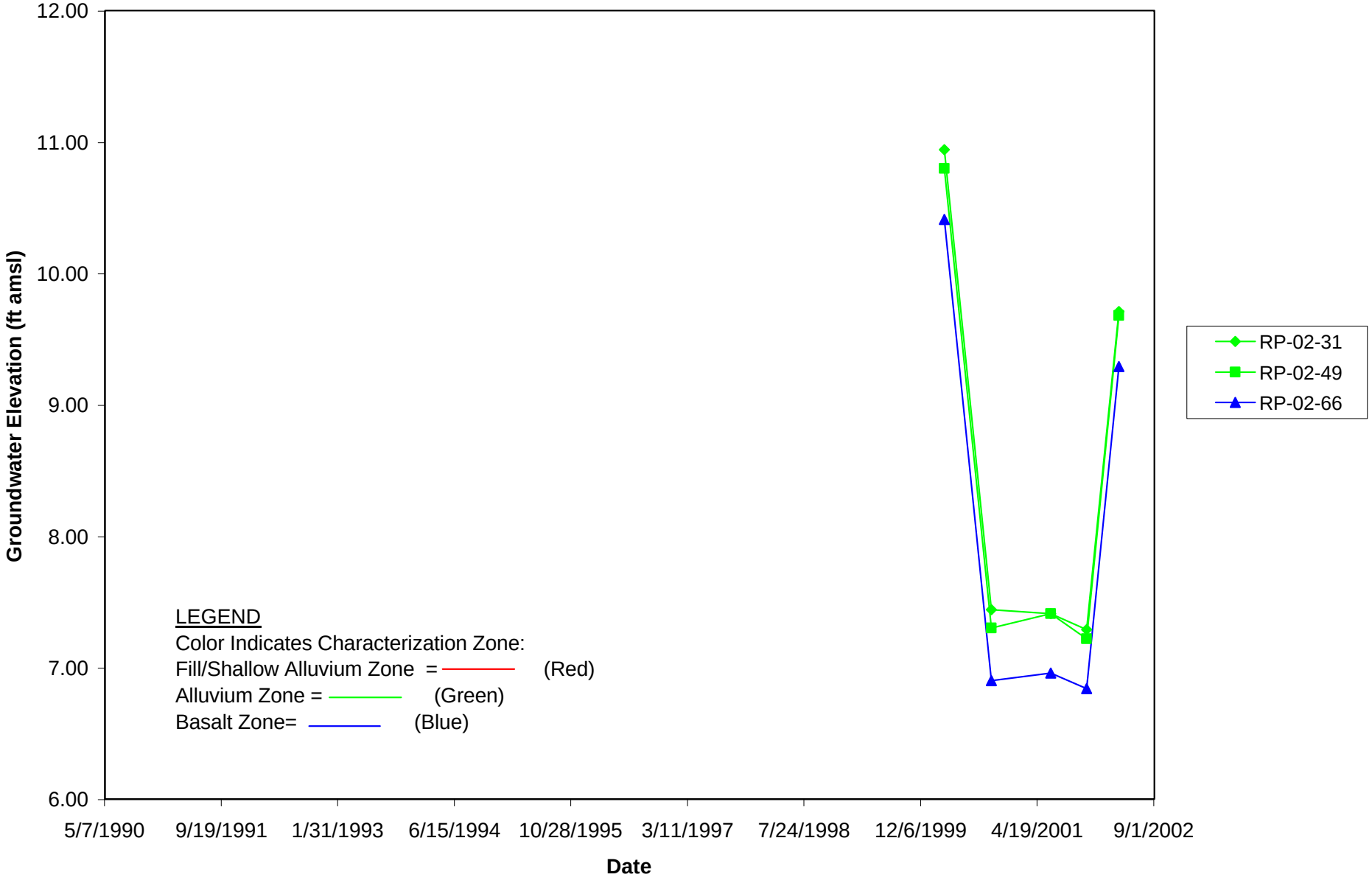


FIGURE A-4
Changes in Groundwater Elevation at Monitoring Well Series RP-01
RPAC - Portland Site

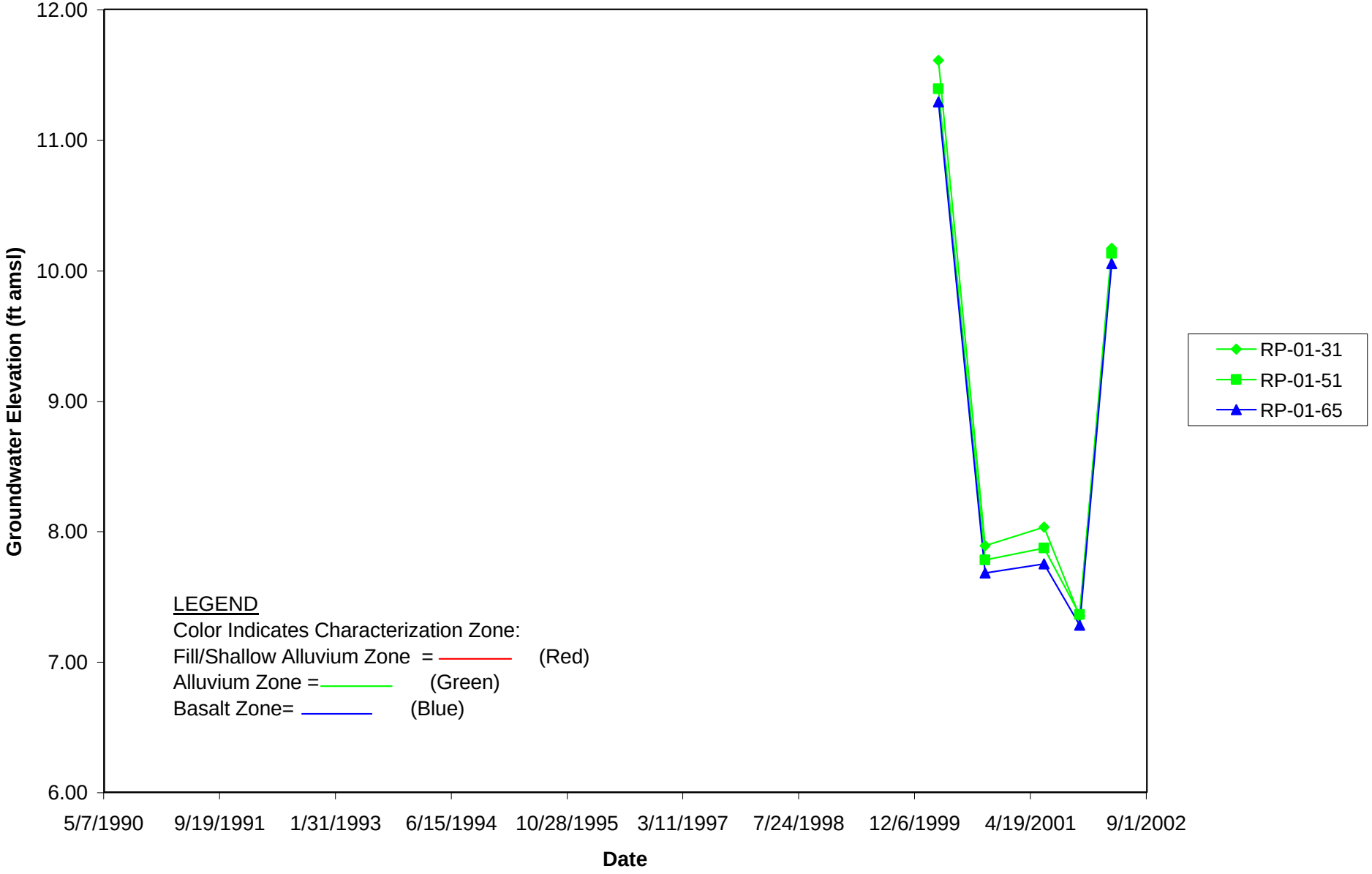


TABLE A-5
Changes in Groundwater Elevation at Monitoring Well Series W-16
RPAC - Portland Site

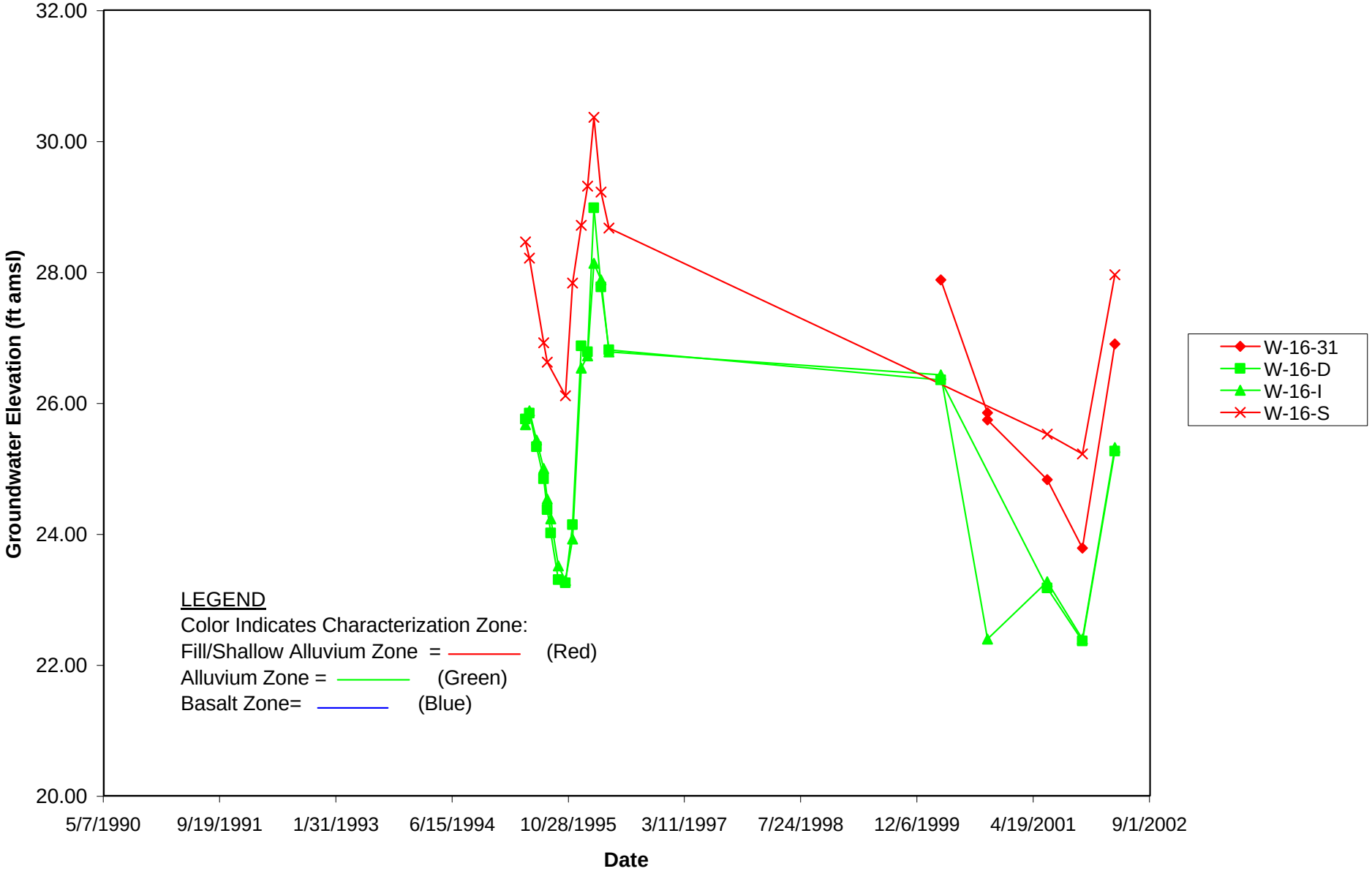


FIGURE A-6
Changes in Groundwater Elevation at Monitoring Well Series W-11
RPAC - Portland Site

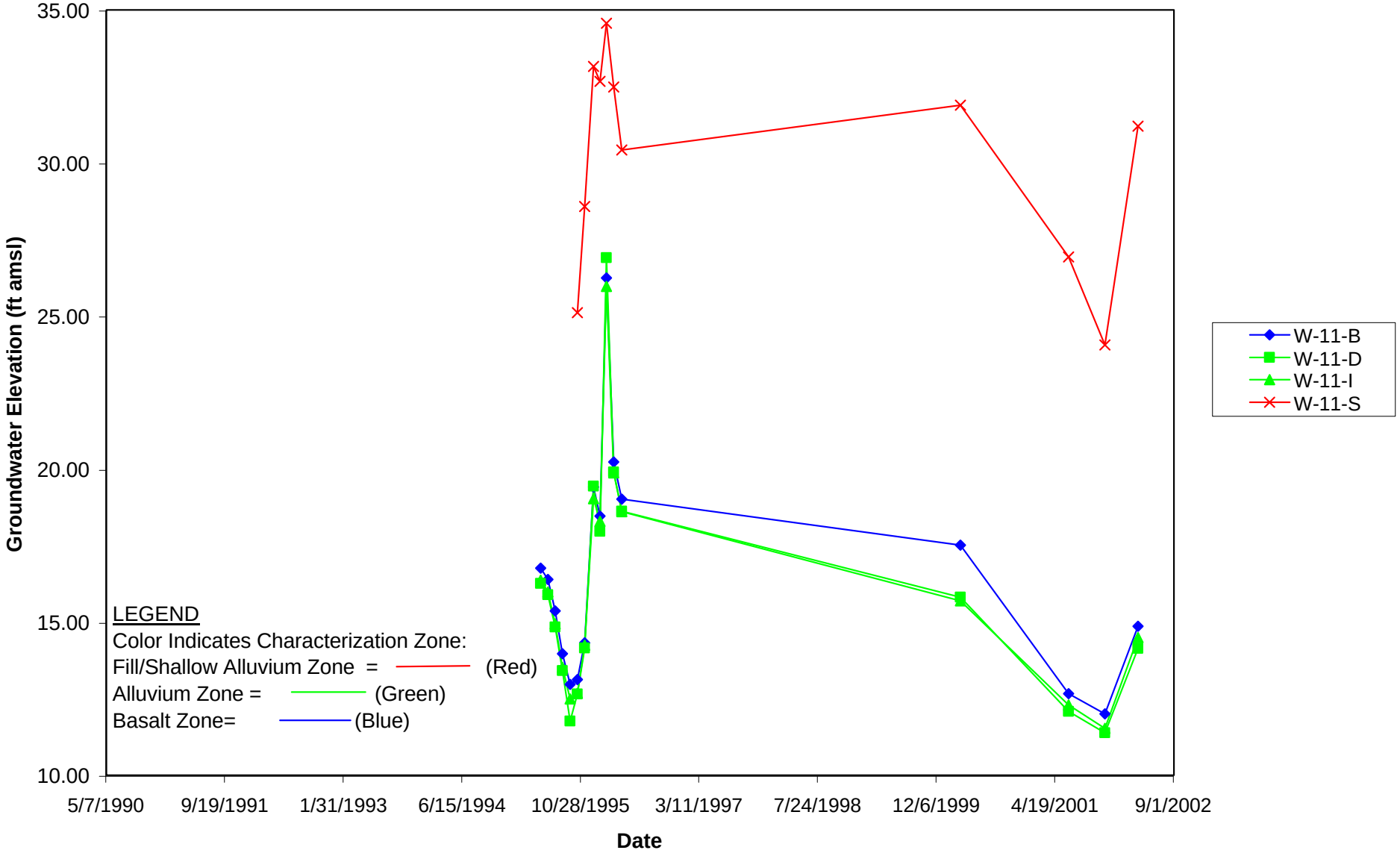


FIGURE A-7
Changes in Groundwater Elevation at Monitoring Well Series W-09
RPAC - Portland Site

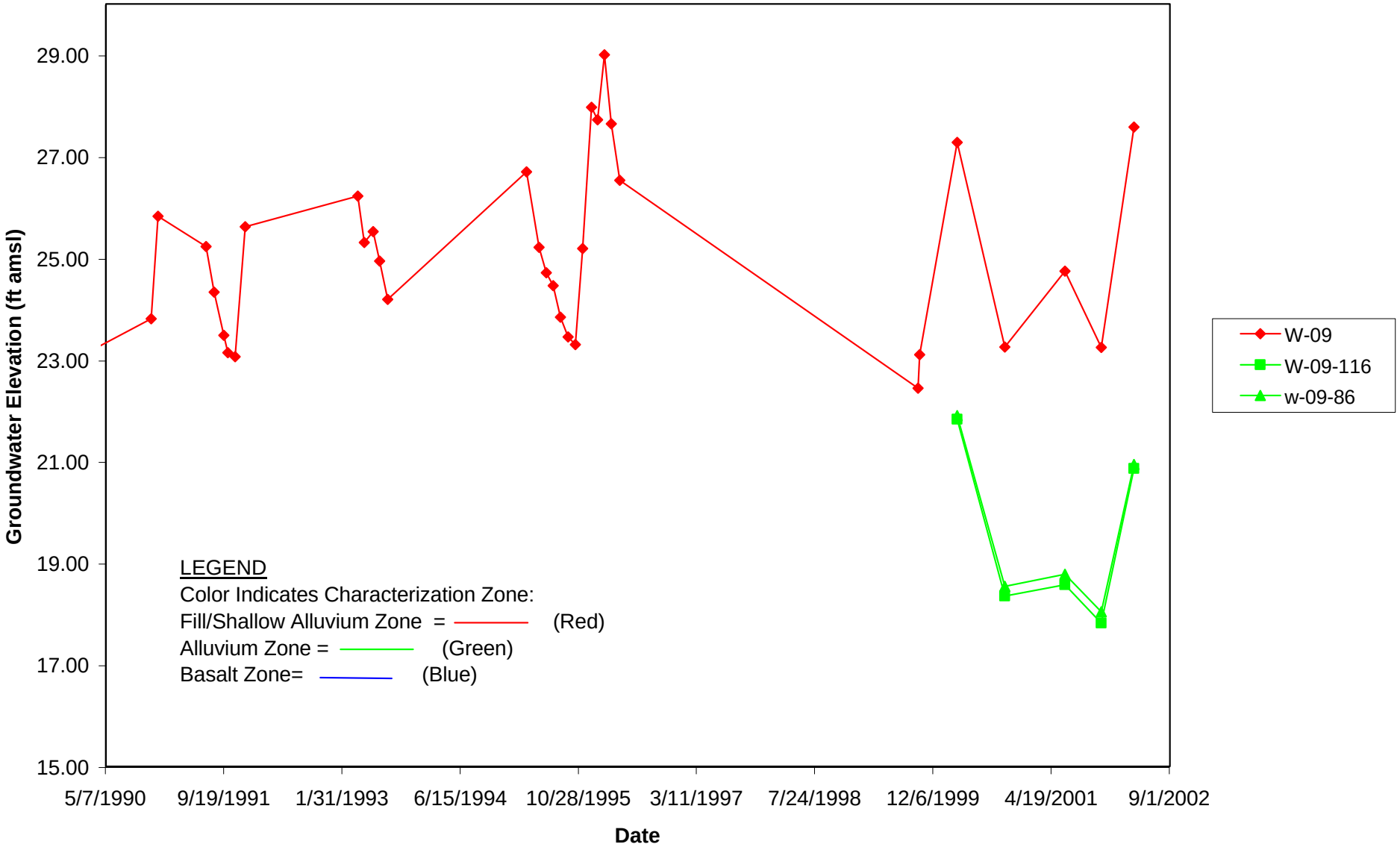


FIGURE A-8
Changes in Groundwater Elevation at Monitoring Well Series RP-04
RPAC - Portland Site

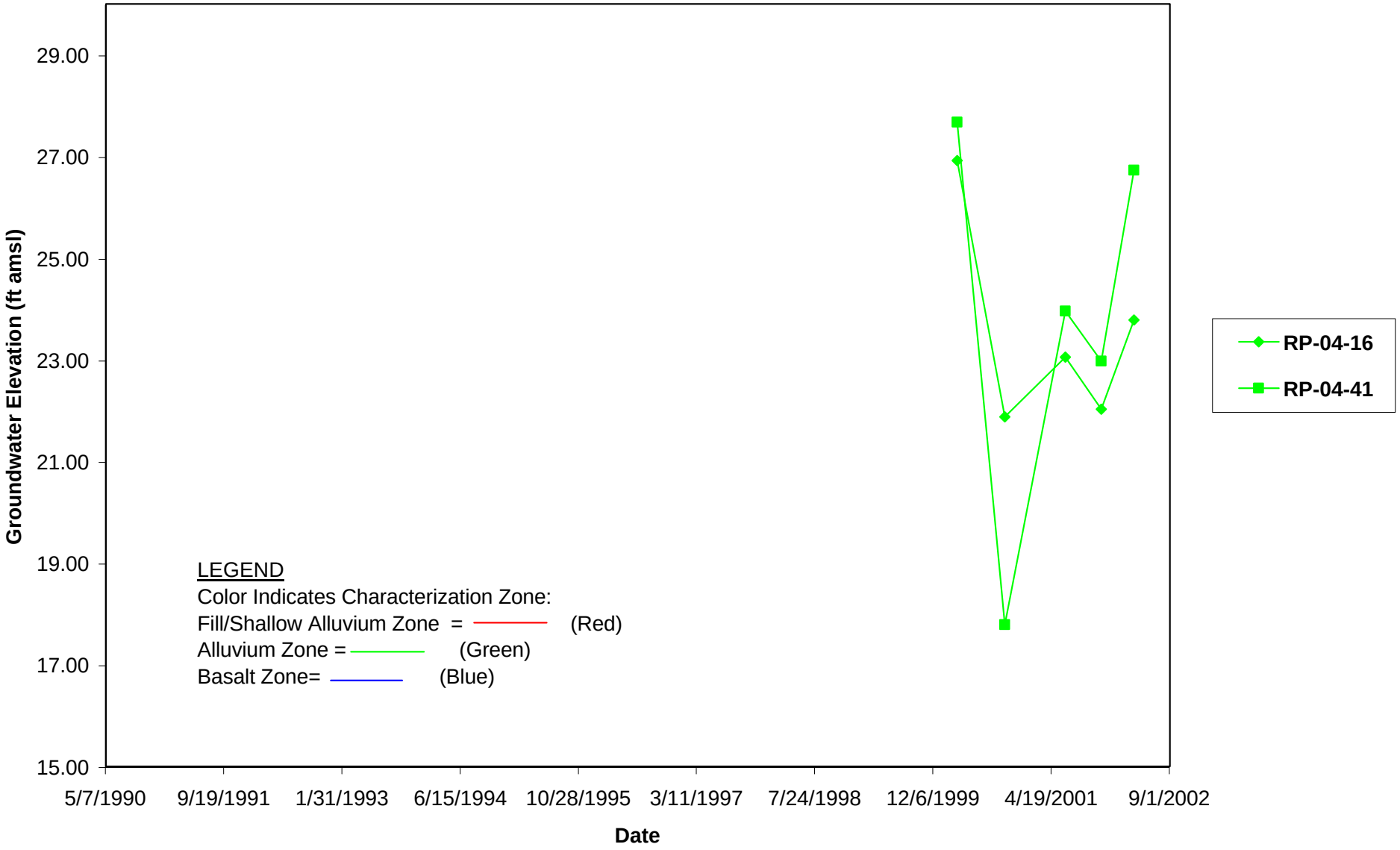


FIGURE A-9
Changes in Groundwater Elevation at Monitoring Well Series BST5W and AL5
RPAC - Portland Site

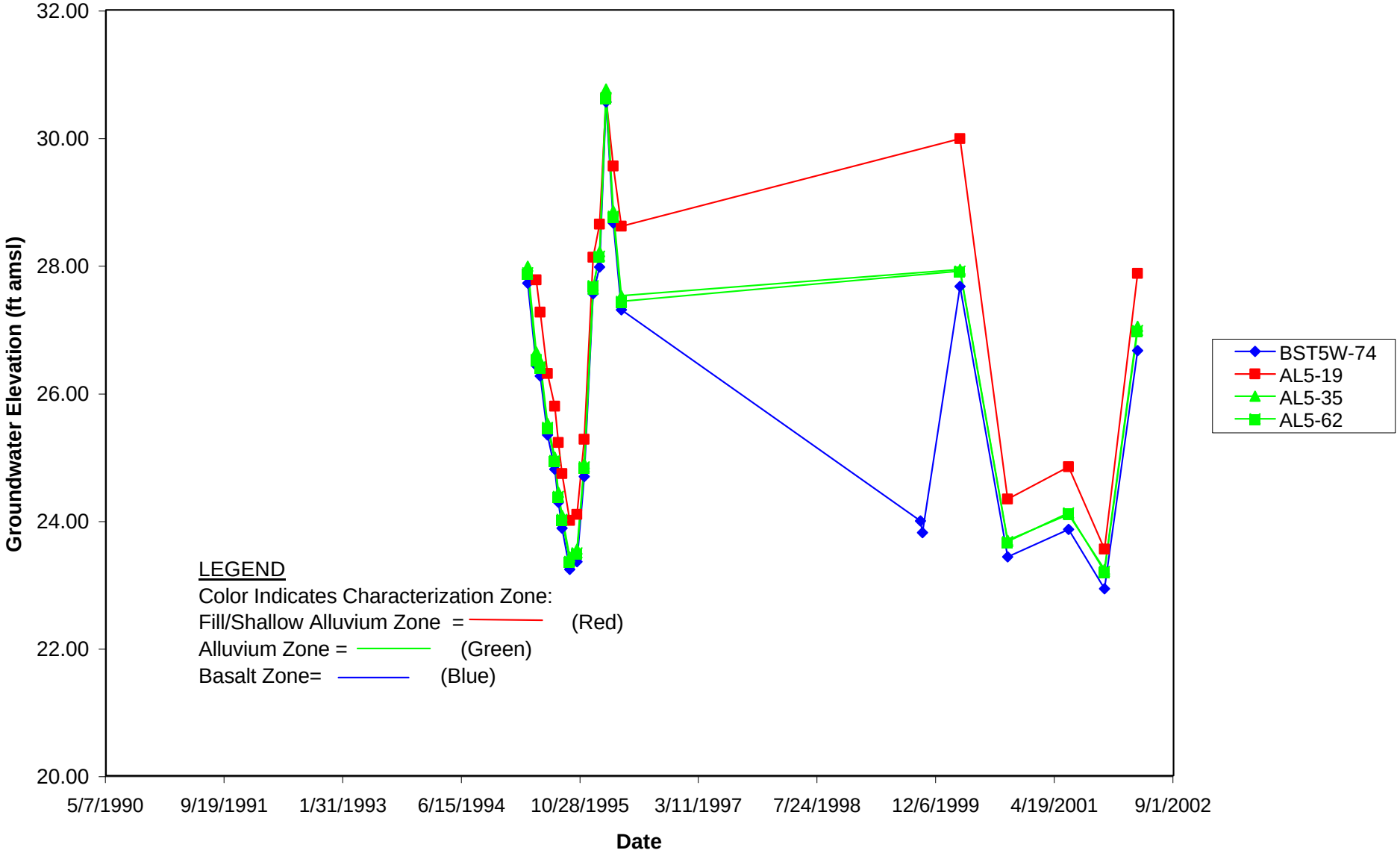


FIGURE A-10
Changes in Groundwater Elevation at Monitoring Well Series MW-05
RPAC - Portland Site

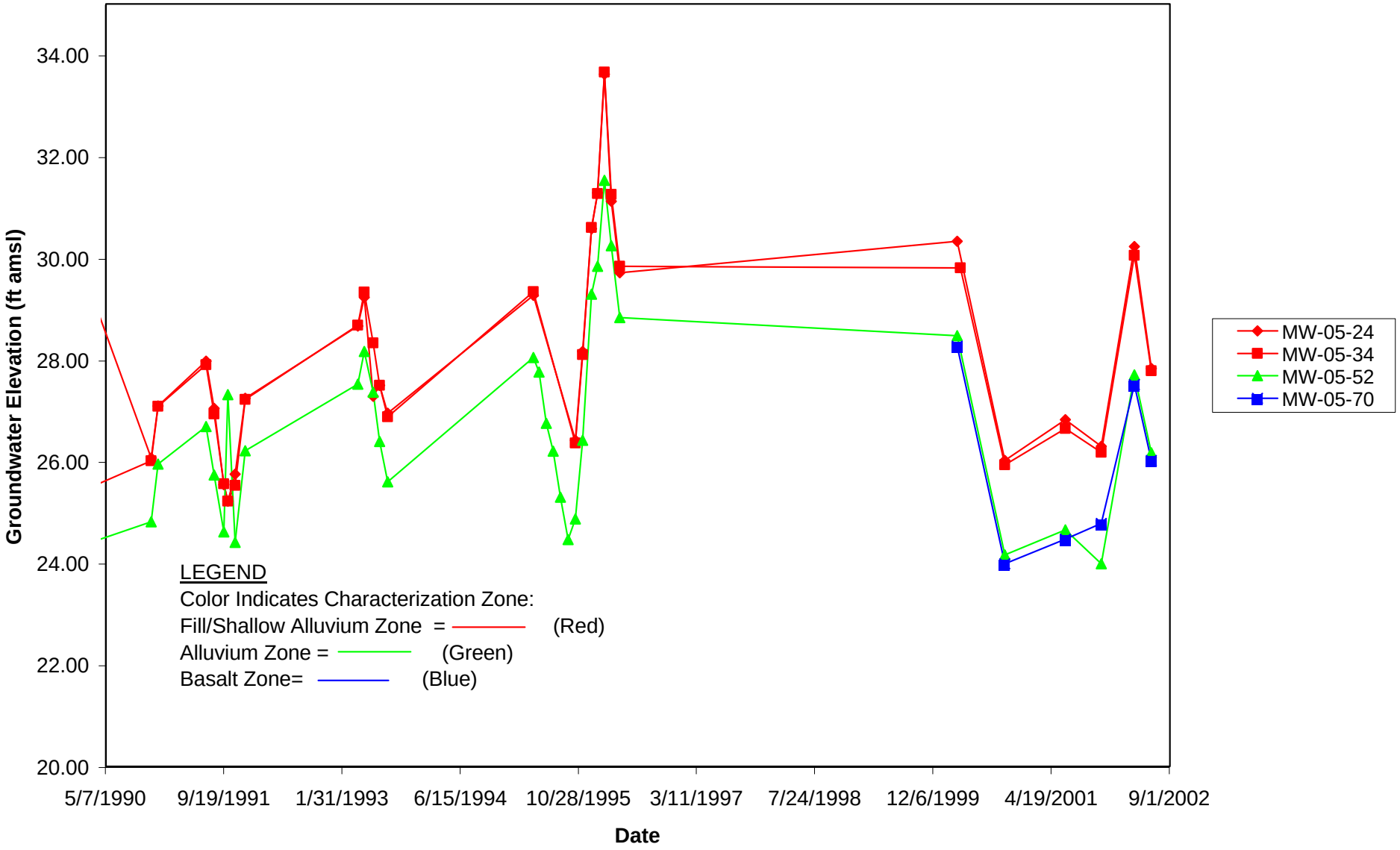
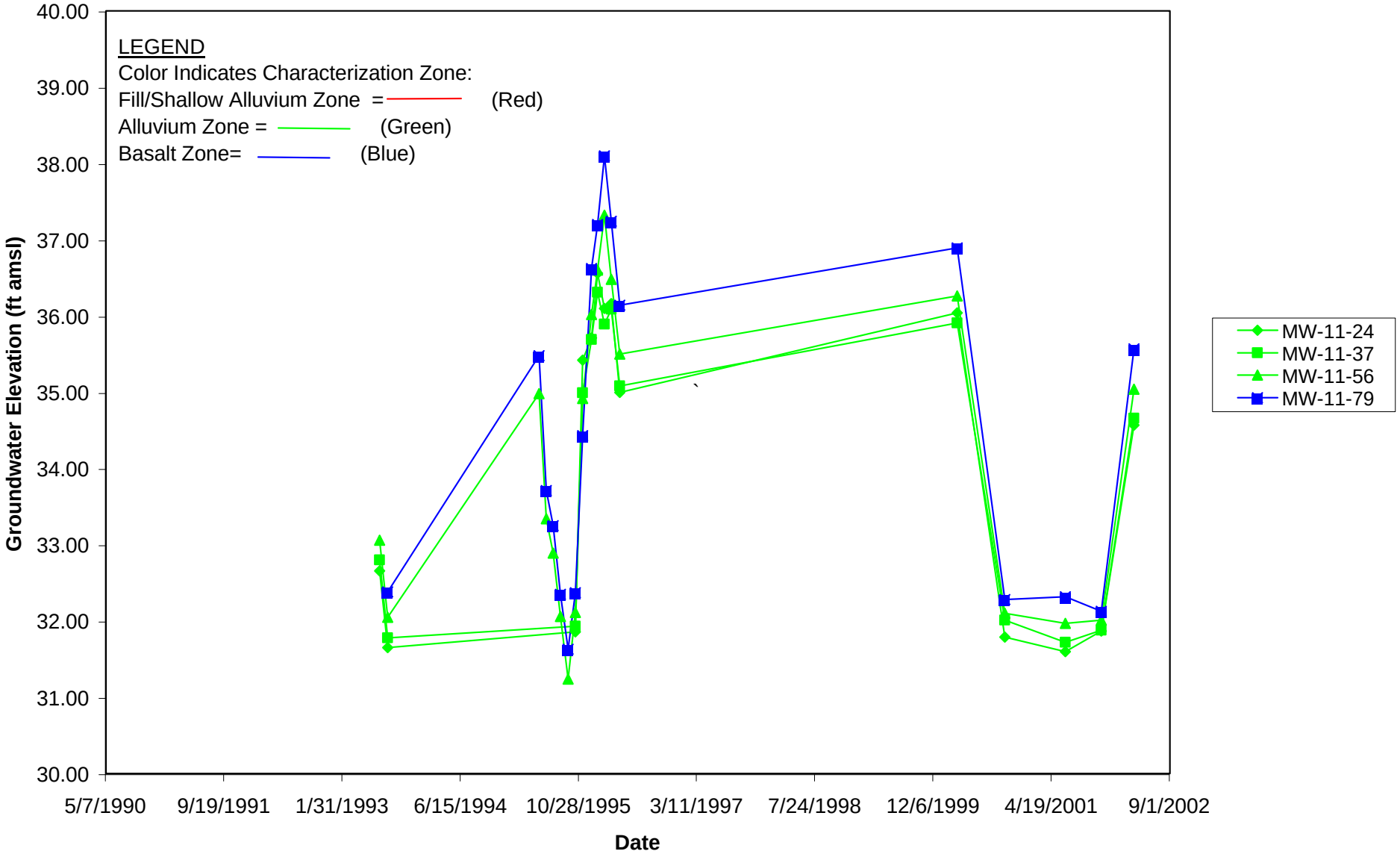


FIGURE A-11
Changes in Groundwater Elevation at Monitoring Well Series MW-11
RPAC - Portland Site



APPENDIX B

Table of Groundwater Sampling Locations,
Sample Collection Dates, and Analytical Methods

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
A	Extraction Well	26.5	HA	F/SA	03/12/96	625, 632, 8270C, CLIGCFID.S, EPA 8260
AL1-15	Monitoring Well	15	GOULD	F/SA	03/28/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290, SM 9215C
AL1-15	Monitoring Well	15	GOULD	F/SA	06/01/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270B, 8290, NWTPH-DX
AL1-45	Monitoring Well	45	GOULD	A	03/29/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290, SM 9215C
AL1-45	Monitoring Well	45	GOULD	A	06/01/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270B, 8290, NWTPH-DX
AL1-69	Monitoring Well	69.3	GOULD	A	03/28/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290, SM 9215C
AL1-69	Monitoring Well	69.3	GOULD	A	06/01/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270B, 8290, NWTPH-DX
AL2-17	Monitoring Well	17	LA	F/SA	03/29/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290, SM 9215C
AL2-17	Monitoring Well	17	LA	F/SA	10/26/95	8020, 8040A, 8150
AL2-17	Monitoring Well	17	LA	F/SA	03/31/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
AL2-17	Monitoring Well	17	LA	F/SA	10/03/00	350.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, GC/FID, NWTPH-DX
AL2-17	Monitoring Well	17	LA	F/SA	10/05/00	300.0, 310.1, 376.1, 405.1, 9215
AL2-17	Monitoring Well	17	LA	F/SA	07/05/01	8151A, 8260B
AL2-17	Monitoring Well	17	LA	F/SA	07/06/01	8041, 8290
AL2-17	Monitoring Well	17	LA	F/SA	04/22/02	350.1, 376.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, RSK 175
AL2-17	Monitoring Well	17	LA	F/SA	04/23/02	300.0, 310.1, 365.1, 405.1, NWTPH-DX
AL2-32	Monitoring Well	32.5	LA	A	03/30/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8080, 8150, 8240, 8290, SM 9215C
AL2-32	Monitoring Well	32.5	LA	A	10/26/95	8020, 8040A, 8150, 8290
AL2-32	Monitoring Well	32.5	LA	A	03/31/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
AL2-32	Monitoring Well	32.5	LA	A	10/03/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
AL2-32	Monitoring Well	32.5	LA	A	07/05/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
AL2-32	Monitoring Well	32.5	LA	A	04/19/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
AL2-46	Monitoring Well	46	LA	A	03/29/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290, SM 9215C
AL2-46	Monitoring Well	46	LA	A	10/26/95	8020, 8040A, 8150
AL2-46	Monitoring Well	46	LA	A	03/30/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
AL2-46	Monitoring Well	46	LA	A	10/03/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
AL2-46	Monitoring Well	46	LA	A	07/05/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
AL2-46	Monitoring Well	46	LA	A	04/22/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
AL4-47	Monitoring Well	46.8	LA	A	03/24/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240, 8290
AL5-19	Monitoring Well	19	LA	F/SA	04/03/95	239.2, 350.1, 350.1M, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8080, 8140, 8150, 8240, 8290
AL5-19	Monitoring Well	19	LA	F/SA	10/27/95	8020, 8040A, 8150
AL5-19	Monitoring Well	19	LA	F/SA	04/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL5-19	Monitoring Well	19	LA	F/SA	10/05/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL5-35	Monitoring Well	35	LA	A	04/03/95	239.2, 350.1, 350.1M, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8080, 8140, 8150, 8240, 8290
AL5-35	Monitoring Well	35	LA	A	10/27/95	8020, 8040A, 8150
AL5-35	Monitoring Well	35	LA	A	04/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL5-35	Monitoring Well	35	LA	A	10/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL5-62	Monitoring Well	62	LA	A	04/03/95	239.2, 350.1, 350.1M, 365.3, 405.1, 410.4, 415.1, 8010, 8020, 8040A, 8080, 8140, 8150, 8240, 8290
AL5-62	Monitoring Well	62	LA	A	10/27/95	8020, 8040A, 8150
AL5-62	Monitoring Well	62	LA	A	04/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL5-62	Monitoring Well	62	LA	A	10/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
AL6-96	Monitoring Well	96.5	LA	A	12/19/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150, 8290
AL6-96	Monitoring Well	96.5	LA	A	04/10/00	8041, 8151A, 8260B
AL6-96	Monitoring Well	96.5	LA	A	10/12/00	8041, 8260B
AL6-96	Monitoring Well	96.5	LA	A	11/28/00	8151A

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
ASW-01	Monitoring Well	17	METRO	A	08/09/88	6010, 7060, 7196, 7421, 8240
ASW-01	Monitoring Well	17	METRO	A	03/22/95	239.2, 8080, 8140
ASW-01A	Monitoring Well	unknown	METRO	A	03/29/00	8041, 8081A/8082, 8141A
ASW-01A	Monitoring Well	unknown	METRO	A	09/29/00	8041, 8081A/8082, 8141A
ASW-01A	Monitoring Well	unknown	METRO	A	06/22/01	8081A
ASW-01A	Monitoring Well	unknown	METRO	A	04/11/02	8081A
ASW-02	Monitoring Well	19	METRO	A	08/09/88	6010, 7060, 7196, 7421, 8240
ASW-03	Monitoring Well	unknown	METRO	A	08/09/88	6010, 7060, 7196, 7421, 8240
ASW-03	Monitoring Well	unknown	METRO	A	03/17/89	608, 614, 624, 625, 7060, 7131, 7190, 7210, 7421, 7520, 7950, 8150
ASW-03	Monitoring Well	unknown	METRO	A	03/22/95	239.2, 8080
ASW-04	Monitoring Well	18	METRO	A	03/17/89	608, 614, 624, 625, 7060, 7131, 7190, 7210, 7421, 7520, 7950, 8150
ASW-04	Monitoring Well	18	METRO	A	03/22/95	239.2, 8080, 8140
ASW-04	Monitoring Well	18	METRO	A	03/29/00	8041, 8081A/8082, 8141A
ASW-04	Monitoring Well	18	METRO	A	09/29/00	8041, 8081A/8082, 8141A
ASW-05	Monitoring Well	15	METRO	A	03/17/89	608, 614, 624, 625, 7060, 7131, 7190, 7210, 7421, 7520, 7950, 8150
ASW-06	Monitoring Well	17	METRO	A	03/17/89	608, 614, 624, 625, 7060, 7131, 7190, 7210, 7421, 7520, 7950, 8150
ASW-06	Monitoring Well	17	METRO	A	03/30/00	8041, 8081A/8082, 8141A
ASW-06	Monitoring Well	17	METRO	A	09/29/00	8041, 8081A/8082, 8141A
ASW-07	Monitoring Well	15	SCHNITZER	A	03/16/89	602
B	Extraction Well	22.5	HA	F/SA	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
BST1W-88	Monitoring Well	88	GOULD	B	03/28/95	239.2, 350.1, 350.1 MODI, 350.1M, 353.2, 365.3, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290
BST1W-88	Monitoring Well	88	GOULD	B	06/02/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270B, 8290, NWTPH-DX
BST2W-61	Monitoring Well	61	LA	B	11/23/94	206.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
BST2W-61	Monitoring Well	61	LA	B	03/30/95	239.2, 350.1, 350.1 MODI, 353.2, 365.3, 410.4, 415.1, 8010, 8020, 8040A, 8150, 8240, 8290
BST2W-61	Monitoring Well	61	LA	B	10/26/95	8020, 8040A, 8150
BST2W-61	Monitoring Well	61	LA	B	04/03/00	8015B, 8041, 8151A, 8260B
BST2W-61	Monitoring Well	61	LA	B	10/03/00	8015B, 8041, 8151A, 8260B
BST2W-61	Monitoring Well	61	LA	B	07/05/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
BST2W-61	Monitoring Well	61	LA	B	04/19/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
BST5W-74	Monitoring Well	74.5	LA	B	04/03/95	239.2, 350.1, 350.1M, 365.3, 410.4, 415.1, 8010, 8020, 8040A, 8080, 8140, 8150, 8240, 8290
BST5W-74	Monitoring Well	74.5	LA	B	10/27/95	8020, 8040A, 8150, 8290
BST5W-74	Monitoring Well	74.5	LA	B	04/04/00	8041, 8151A, 8260B
BST5W-74	Monitoring Well	74.5	LA	B	10/04/00	8041, 8151A, 8260B
BTB-4A-84	Monitoring Well	84	LA	B	04/03/95	239.2, 8020, 8040A, 8150, 8240
BTB-4A-84	Monitoring Well	84	LA	B	12/19/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150
BTB-4B-25	Monitoring Well	25	LA	F/SA	04/03/95	239.2, 8020, 8040A, 8150, 8240
BTB-4B-55	Monitoring Well	55	LA	A	04/03/95	239.2, 8020, 8040A, 8150, 8240
C	Extraction Well	24	HA	F/SA	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
D	Extraction Well	22	HA	F/SA	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
E	Extraction Well	28.5	HA	A	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
F	Extraction Well	24	HA	A	06/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
G	Extraction Well	25.5	HA	A	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
GGW-001	Temporary Well Point	82-85	LA	A	08/30/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX
GGW-001	Temporary Well Point	95-98	LA	A	08/31/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX
GGW-002	Temporary Well Point	73-76	LA	A	08/26/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
GGW-003	Temporary Well Point	22-25	LA	A	08/27/99	6020, 7470A, 8015, 8041, 8151A, 8260B
GGW-003	Temporary Well Point	22-25	LA	A	08/30/99	8290, NWTPH-DX
GGW-003	Temporary Well Point	66-69	LA	A	08/26/99	8290
GGW-003	Temporary Well Point	66-69	LA	A	08/27/99	6020, 7470A, 8015, 8041, 8151A, 8260B, NWTPH-DX
GGW-004	Temporary Well Point	53-56	LA	A	08/27/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX
GGW-005	Temporary Well Point	56-59	LA	A	09/01/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX
GGW-006	Temporary Well Point	36-39	LA	A	08/27/99	6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX, 6020, 7470A, 8015, 8041, 8151A, 8260B, 8290, NWTPH-DX
GGW-007	Temporary Well Point	24-27	ESCO	F/SA	10/18/99	8290
GGW-007	Temporary Well Point	24-27	ESCO	F/SA	10/19/99	6020, 7470A, 8015, 8151A, 8260B
GGW-008	Temporary Well Point	51-54	GOULD	A	08/31/99	6020, 7470A, 8015, 8151A, 8260B, 8290
GGW-009	Temporary Well Point	25-28	GOULD	F/SA	08/31/99	6020, 7470A, 8015, 8151A, 8260B, 8290
GGW-009	Temporary Well Point	65-68	GOULD	A	09/01/99	6020, 7470A, 8015, 8151A, 8260B, 8290, 8290
GGW-009	Temporary Well Point	88-91	GOULD	A	09/02/99	6020, 7470A, 8015, 8151A, 8260B
GGW-010	Temporary Well Point	27-30	ATOFINA	A	10/25/99	8015, 8260B
GGW-010	Temporary Well Point	27-30	ATOFINA	A	10/26/99	6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8290
GGW-010	Temporary Well Point	36-39	ATOFINA	A	10/25/99	8151A
GGW-010	Temporary Well Point	36-39	ATOFINA	A	10/26/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8260B
GGW-010	Temporary Well Point	47-50	ATOFINA	A	10/25/99	8151A, 8290
GGW-010	Temporary Well Point	47-50	ATOFINA	A	10/26/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8260B
GGW-011	Temporary Well Point	54-57	WACKER	A	10/20/99	8290
GGW-011	Temporary Well Point	54-57	WACKER	A	10/22/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-011	Temporary Well Point	87.5-90.5	WACKER	A	10/20/99	8290
GGW-011	Temporary Well Point	87.5-90.5	WACKER	A	10/22/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-013	Temporary Well Point	36-39	ATOFINA	A	10/26/99	8290
GGW-013	Temporary Well Point	36-39	ATOFINA	A	10/27/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-014	Temporary Well Point	46-49	ATOFINA	A	10/26/99	8290
GGW-014	Temporary Well Point	46-49	ATOFINA	A	10/27/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-015	Temporary Well Point	0	ATOFINA	A	10/27/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290
GGW-015	Temporary Well Point	27-30	ATOFINA	A	10/28/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-015	Temporary Well Point	44-47	ATOFINA	A	10/25/99	8151A
GGW-015	Temporary Well Point	44-47	ATOFINA	A	10/26/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8260B
GGW-016	Temporary Well Point	30-33	ATOFINA	A	10/27/99	8290
GGW-016	Temporary Well Point	30-33	ATOFINA	A	10/28/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-016	Temporary Well Point	42-45	ATOFINA	A	10/27/99	8290
GGW-016	Temporary Well Point	42-45	ATOFINA	A	10/28/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-022	Temporary Well Point	22-25	WACKER	A	10/20/99	8290
GGW-022	Temporary Well Point	22-25	WACKER	A	10/21/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-022	Temporary Well Point	62-65	WACKER	A	10/20/99	8290
GGW-022	Temporary Well Point	62-65	WACKER	A	10/21/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-023	Temporary Well Point	14-17	WACKER	A	10/20/99	8290
GGW-023	Temporary Well Point	14-17	WACKER	A	10/21/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-024	Temporary Well Point	25-28	WACKER	F/SA	10/24/99	8290
GGW-024	Temporary Well Point	25-28	WACKER	F/SA	10/25/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-024	Temporary Well Point	82-85	WACKER	A	10/24/99	8290
GGW-024	Temporary Well Point	82-85	WACKER	A	10/25/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
GGW-025	Temporary Well Point	25-28	BSNF	A	10/20/99	8290
GGW-025	Temporary Well Point	25-28	BSNF	A	10/21/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-025	Temporary Well Point	43-46	BSNF	A	10/20/99	8290
GGW-025	Temporary Well Point	43-46	BSNF	A	10/21/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-026	Temporary Well Point	27-30	BSNF	A	10/18/99	8290
GGW-026	Temporary Well Point	27-30	BSNF	A	10/19/99	8041, 8081A/8082, 8141A
GGW-026	Temporary Well Point	27-30	BSNF	A	10/25/99	6020, 7470A, 8015, 8151A, 8260B
GGW-026	Temporary Well Point	48-51	BSNF	A	10/18/99	8290
GGW-026	Temporary Well Point	48-51	BSNF	A	10/19/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-027	Temporary Well Point	21-24	BSNF	F/SA	10/19/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 8290
GGW-027	Temporary Well Point	72-75	BSNF	A	10/20/99	6020, 7470A, 8015, 8041, 8081A/8082, 8141A, 8151A, 8260B
GGW-028	Temporary Well Point	12-15	LA	F/SA	10/17/99	8290
GGW-028	Temporary Well Point	12-15	LA	F/SA	10/18/99	6020, 7470A, 8015, 8041, 8151A, 8260B, NWTPH-DX
GGW-028	Temporary Well Point	36-39	LA	A	10/17/99	8290
GGW-028	Temporary Well Point	36-39	LA	A	10/18/99	6020, 7470A, 8015, 8041, 8151A, 8260B, NWTPH-DX
GGW-028	Temporary Well Point	50-53	LA	A	10/17/99	8290
GGW-028	Temporary Well Point	50-53	LA	A	10/18/99	6020, 7470A, 8015, 8041, 8151A, 8260B
GM-1-S	Monitoring Well	unknown	LA	F/SA	08/23/90	6010, 7060, 7421, 8240, 8270
GM-1-S	Monitoring Well	unknown	LA	F/SA	08/24/90	6010, 7060, 7421, 8240, 8270
GM-1-S	Monitoring Well	unknown	LA	F/SA	08/26/90	6010, 7060, 7060M, 7130M, 7190M, 7420M, 7421, 8240, 8270
GM-1-S	Monitoring Well	unknown	LA	F/SA	08/27/90	8270
GM-1-S	Monitoring Well	unknown	LA	F/SA	10/24/90	375.4, 6010, 7060, 7421, 7470, 8080, 8240, 8270
GM-1-S	Monitoring Well	unknown	LA	F/SA	03/01/94	7421, 8010M, 8040A, 8080M, 8140, 8150A, TEPPT
GM-2-I	Monitoring Well	unknown	GOULD	F/SA	10/26/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
GM-2-I	Monitoring Well	unknown	GOULD	F/SA	10/23/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
H	Extraction Well	26.5	HA	A	03/12/96	415.1, 625, 632, CLIGCFID.S, EPA 8260
MW-01-26	Monitoring Well	23.6	HA	F/SA	03/22/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-26	Monitoring Well	23.6	HA	F/SA	09/22/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-41	Monitoring Well	38.8	HA	A	01/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-41	Monitoring Well	38.8	HA	A	02/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-41	Monitoring Well	38.8	HA	A	04/24/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-41	Monitoring Well	38.8	HA	A	06/12/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, 8270, WQUAL
MW-01-41	Monitoring Well	38.8	HA	A	03/23/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-41	Monitoring Well	38.8	HA	A	09/20/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-56	Monitoring Well	53.9	HA	A	01/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-56	Monitoring Well	53.9	HA	A	02/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-56	Monitoring Well	53.9	HA	A	04/24/89	8000, 8010M, 8040, 8150, WQUAL
MW-01-56	Monitoring Well	53.9	HA	A	06/12/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-01-56	Monitoring Well	53.9	HA	A	03/24/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-56	Monitoring Well	53.9	HA	A	09/20/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 9215, GC/FID
MW-01-76	Monitoring Well	76	HA	B	06/14/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, WQUAL
MW-01-76	Monitoring Well	76	HA	B	07/09/91	8010M, 8040, 8150
MW-01-76	Monitoring Well	76	HA	B	08/07/91	8010M, 8040, 8150
MW-01-76	Monitoring Well	76	HA	B	03/22/00	8041, 8151A, 8260B
MW-01-76	Monitoring Well	76	HA	B	09/21/00	8041, 8151A, 8260B

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-02-26	Monitoring Well	22.8	HA	A	01/30/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-26	Monitoring Well	22.8	HA	A	02/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-26	Monitoring Well	22.8	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-26	Monitoring Well	22.8	HA	A	06/10/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, 8290, WQUAL
MW-02-26	Monitoring Well	22.8	HA	A	09/25/00	8015B, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290
MW-02-46	Monitoring Well	42.8	HA	A	01/30/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-46	Monitoring Well	42.8	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-46	Monitoring Well	42.8	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-46	Monitoring Well	42.8	HA	A	06/10/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-02-46	Monitoring Well	42.8	HA	A	03/23/00	6020, 7470A, 8041, 8151A, 8260B
MW-02-46	Monitoring Well	42.8	HA	A	09/25/00	6020, 7470A, 8041, 8151A, 8260B
MW-02-62	Monitoring Well	58.5	HA	A	01/30/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-62	Monitoring Well	58.5	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-62	Monitoring Well	58.5	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-02-62	Monitoring Well	58.5	HA	A	06/10/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-02-62	Monitoring Well	58.5	HA	A	03/23/00	8041, 8151A, 8260B
MW-02-62	Monitoring Well	58.5	HA	A	09/25/00	8041, 8151A, 8260B
MW-03-27	Monitoring Well	24.8	HA	A	01/31/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-27	Monitoring Well	24.8	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-27	Monitoring Well	24.8	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-27	Monitoring Well	24.8	HA	A	06/10/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-03-27	Monitoring Well	24.8	HA	A	03/21/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-03-27	Monitoring Well	24.8	HA	A	03/29/00	8041, 8151A, 8260B
MW-03-27	Monitoring Well	24.8	HA	A	09/27/00	8041, 8151A, 8260B
MW-03-49	Monitoring Well	46.8	HA	A	01/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-49	Monitoring Well	46.8	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-49	Monitoring Well	46.8	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-49	Monitoring Well	46.8	HA	A	06/10/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, 8290, WQUAL
MW-03-49	Monitoring Well	46.8	HA	A	03/21/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-03-49	Monitoring Well	46.8	HA	A	03/29/00	8041, 8151A, 8260B
MW-03-49	Monitoring Well	46.8	HA	A	09/27/00	8041, 8151A, 8260B
MW-03-68	Monitoring Well	66	HA	A	01/31/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-68	Monitoring Well	66	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-68	Monitoring Well	66	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-03-68	Monitoring Well	66	HA	A	06/10/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-03-68	Monitoring Well	66	HA	A	03/22/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-03-68	Monitoring Well	66	HA	A	03/29/00	8041, 8151A, 8260B
MW-03-68	Monitoring Well	66	HA	A	09/27/00	8041, 8151A, 8260B
MW-03-81	Monitoring Well	80	WACKER	A	04/06/00	8041, 8151A, 8260B, 8290
MW-03-81	Monitoring Well	80	WACKER	A	10/13/00	8015B, 8041, 8151A, 8260B, 8290
MW-03-81	Monitoring Well	80	WACKER	A	06/25/01	8151A, 8260B, 8290
MW-03-81	Monitoring Well	80	WACKER	A	04/16/02	8151A, 8260B, 8290
MW-03-I	Monitoring Well	60	WACKER	A	10/17/90	375.4, 6010, 7060, 7421, 7470, 8240
MW-03-I	Monitoring Well	60	WACKER	A	04/06/00	6020, 7470A, 8041, 8151A, 8260B, 8290
MW-03-I	Monitoring Well	60	WACKER	A	10/13/00	6020, 7470A, 8015B, 8041, 8151A, 8260B, 8290

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-03-I	Monitoring Well	60	WACKER	A	06/25/01	6020, 8151A, 8260B, 8290
MW-03-I	Monitoring Well	60	WACKER	A	04/16/02	6020, 8151A, 8260B, 8290
MW-03-S	Monitoring Well	27	WACKER	F/SA	10/17/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
MW-03-S	Monitoring Well	27	WACKER	F/SA	04/06/00	8041, 8151A, 8260B, 8290
MW-03-S	Monitoring Well	27	WACKER	F/SA	10/13/00	8015B, 8041, 8151A, 8260B, 8290
MW-03-S	Monitoring Well	27	WACKER	F/SA	06/25/01	8151A, 8260B
MW-03-S	Monitoring Well	27	WACKER	F/SA	04/16/02	8151A, 8260B
MW-04-27	Monitoring Well	23.8	HA	A	02/08/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-27	Monitoring Well	23.8	HA	A	03/06/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-27	Monitoring Well	23.8	HA	A	04/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-27	Monitoring Well	23.8	HA	A	06/11/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-04-27	Monitoring Well	23.8	HA	A	03/31/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-04-27	Monitoring Well	23.8	HA	A	03/27/00	8041, 8151A, 8260B
MW-04-27	Monitoring Well	23.8	HA	A	09/27/00	8041, 8151A, 8260B
MW-04-27	Monitoring Well	23.8	HA	A	07/05/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
MW-04-27	Monitoring Well	23.8	HA	A	04/19/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
MW-04-47	Monitoring Well	43.8	HA	A	01/31/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-47	Monitoring Well	43.8	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-47	Monitoring Well	43.8	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-47	Monitoring Well	43.8	HA	A	06/11/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-04-47	Monitoring Well	43.8	HA	A	03/31/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-04-47	Monitoring Well	43.8	HA	A	03/27/00	8041, 8151A, 8260B, 8290
MW-04-47	Monitoring Well	43.8	HA	A	09/27/00	8041, 8151A, 8260B, 8290
MW-04-47	Monitoring Well	43.8	HA	A	07/05/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-04-47	Monitoring Well	43.8	HA	A	04/19/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-04-63	Monitoring Well	60.1	HA	A	01/31/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-63	Monitoring Well	60.1	HA	A	02/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-63	Monitoring Well	60.1	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-04-63	Monitoring Well	60.1	HA	A	06/11/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-04-63	Monitoring Well	60.1	HA	A	03/31/95	239.2, 8010, 8020, 8040A, 8150, 8240
MW-04-63	Monitoring Well	60.1	HA	A	03/27/00	8041, 8151A, 8260B
MW-04-63	Monitoring Well	60.1	HA	A	09/27/00	8041, 8151A, 8260B
MW-05-24	Monitoring Well	22.3	HA	F/SA	02/08/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-24	Monitoring Well	22.3	HA	F/SA	03/01/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-24	Monitoring Well	22.3	HA	F/SA	04/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-24	Monitoring Well	22.3	HA	F/SA	06/11/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, 8290, WQUAL
MW-05-24	Monitoring Well	22.3	HA	F/SA	03/30/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 9215, GC/FID, NWTPH-DX
MW-05-24	Monitoring Well	22.3	HA	F/SA	09/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 9215, GC/FID, NWTPH-DX
MW-05-34	Monitoring Well	32	HA	F/SA	02/09/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-34	Monitoring Well	32	HA	F/SA	03/01/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-34	Monitoring Well	32	HA	F/SA	04/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-34	Monitoring Well	32	HA	F/SA	06/11/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-05-34	Monitoring Well	32	HA	F/SA	12/14/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150
MW-05-34	Monitoring Well	32	HA	F/SA	09/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 9215, GC/FID, NWTPH-DX
MW-05-52	Monitoring Well	49.4	HA	A	02/08/89	8000, 8010M, 8040, 8150, WQUAL

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-05-52	Monitoring Well	49.4	HA	A	02/09/89	8150
MW-05-52	Monitoring Well	49.4	HA	A	03/01/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-52	Monitoring Well	49.4	HA	A	04/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-05-52	Monitoring Well	49.4	HA	A	06/11/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-05-52	Monitoring Well	49.4	HA	A	12/14/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150
MW-05-52	Monitoring Well	49.4	HA	A	03/30/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 9215, NWTPH-DX
MW-05-52	Monitoring Well	49.4	HA	A	09/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 9215, GC/FID, NWTPH-DX
MW-05-52	Monitoring Well	49.4	HA	A	07/06/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-05-52	Monitoring Well	49.4	HA	A	04/22/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-05-70	Monitoring Well	70	HA	B	03/30/00	8015B, 8041, 8151A, 8260B, NWTPH-DX
MW-05-70	Monitoring Well	70	HA	B	09/28/00	8015B, 8041, 8260B, NWTPH-DX
MW-05-70	Monitoring Well	70	HA	B	11/29/00	8151A
MW-05-70	Monitoring Well	70	HA	B	07/06/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-05-70	Monitoring Well	70	HA	B	04/22/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-06-S	Monitoring Well	unknown	WACKER	A	04/06/00	8041, 8151A, 8260B, 8270C
MW-06-S	Monitoring Well	unknown	WACKER	A	10/13/00	8015B, 8041, 8151A, 8260B, 8270C
MW-07-56	Monitoring Well	53.5	HA	A	01/25/89	8000, 8010M, 8040, 8150, WQUAL
MW-07-56	Monitoring Well	53.5	HA	A	02/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-07-56	Monitoring Well	53.5	HA	A	04/24/89	8000, 8010M, 8040, 8150, WQUAL
MW-07-56	Monitoring Well	53.5	HA	A	06/13/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
MW-07-S	Monitoring Well	unknown	WACKER	A	10/17/90	375.4, 6010, 7060, 7421, 7470, 8270
MW-07-S	Monitoring Well	unknown	WACKER	A	04/06/00	8041, 8151A, 8260B, 8270C
MW-07-S	Monitoring Well	unknown	WACKER	A	10/13/00	8015B, 8041, 8151A, 8260B, 8270C
MW-08-27	Monitoring Well	25.1	HA	F/SA	06/12/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, 8290, WQUAL
MW-08-27	Monitoring Well	25.1	HA	F/SA	03/23/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 9215, GC/FID
MW-08-46	Monitoring Well	41	HA	A	02/06/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	03/01/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	04/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	07/05/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	07/06/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	07/07/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	06/12/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-08-46	Monitoring Well	41	HA	A	03/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 9215, GC/FID
MW-08-46	Monitoring Well	41	HA	A	09/26/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8015B, 8041, 8151A, 8260B, 8270C, 9215, GC/FID
MW-08-64	Monitoring Well	59	HA	A	02/07/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	03/06/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	04/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	06/26/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	06/27/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	06/28/89	8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	06/12/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-08-64	Monitoring Well	59	HA	A	03/24/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8015B, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
MW-08-64	Monitoring Well	59	HA	A	09/26/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8015B, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
MW-09-23	Monitoring Well	20.7	HA	A	06/13/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-09-23	Monitoring Well	20.7	HA	A	07/09/91	8010M, 8040, 8150

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-09-23	Monitoring Well	20.7	HA	A	08/07/91	8010M, 8040, 8150
MW-09-23	Monitoring Well	20.7	HA	A	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-09-23	Monitoring Well	20.7	HA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-09-23	Monitoring Well	20.7	HA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-09-23	Monitoring Well	20.7	HA	A	03/21/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
MW-09-23	Monitoring Well	20.7	HA	A	03/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-23	Monitoring Well	20.7	HA	A	09/26/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-23	Monitoring Well	20.7	HA	A	07/02/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-23	Monitoring Well	20.7	HA	A	04/17/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-42	Monitoring Well	40.7	HA	A	06/13/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, 8270, WQUAL
MW-09-42	Monitoring Well	40.7	HA	A	07/08/91	8010M, 8040, 8150
MW-09-42	Monitoring Well	40.7	HA	A	08/07/91	8010M, 8040, 8150
MW-09-42	Monitoring Well	40.7	HA	A	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-09-42	Monitoring Well	40.7	HA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-09-42	Monitoring Well	40.7	HA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-09-42	Monitoring Well	40.7	HA	A	03/21/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
MW-09-42	Monitoring Well	40.7	HA	A	03/28/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-42	Monitoring Well	40.7	HA	A	09/26/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-42	Monitoring Well	40.7	HA	A	07/02/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8081A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-42	Monitoring Well	40.7	HA	A	04/17/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8081A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-58	Monitoring Well	58.5	HA	A	06/13/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-09-58	Monitoring Well	58.5	HA	A	07/08/91	8010M, 8040, 8150
MW-09-58	Monitoring Well	58.5	HA	A	08/07/91	8010M, 8040, 8150
MW-09-58	Monitoring Well	58.5	HA	A	08/03/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-09-58	Monitoring Well	58.5	HA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-09-58	Monitoring Well	58.5	HA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-09-58	Monitoring Well	58.5	HA	A	03/21/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
MW-09-58	Monitoring Well	58.5	HA	A	03/27/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-58	Monitoring Well	58.5	HA	A	09/26/00	8081A/8082, 8141A, 8151A, 8260B, 8290
MW-09-58	Monitoring Well	58.5	HA	A	07/02/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-58	Monitoring Well	58.5	HA	A	04/18/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-80	Monitoring Well	80.3	HA	B	06/13/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
MW-09-80	Monitoring Well	80.3	HA	B	07/09/91	8010M, 8040, 8150
MW-09-80	Monitoring Well	80.3	HA	B	08/07/91	8010M, 8040, 8150
MW-09-80	Monitoring Well	80.3	HA	B	08/03/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-09-80	Monitoring Well	80.3	HA	B	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-09-80	Monitoring Well	80.3	HA	B	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-09-80	Monitoring Well	80.3	HA	B	03/22/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
MW-09-80	Monitoring Well	80.3	HA	B	03/27/00	8041, 8081A/8082, 8141A, 8151A, 8260B, 8290
MW-09-80	Monitoring Well	80.3	HA	B	10/05/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
MW-09-80	Monitoring Well	80.3	HA	B	07/02/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-09-80	Monitoring Well	80.3	HA	B	04/18/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8290, MICROTESTS, NWTPH-DX, RSK 175
MW-10-24	Monitoring Well	22.5	IA	A	08/05/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-10-24	Monitoring Well	22.5	IA	A	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-10-24	Monitoring Well	22.5	IA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-10-24	Monitoring Well	22.5	IA	A	03/23/95	239.2, 8080, 8140
MW-10-24	Monitoring Well	22.5	IA	A	03/29/00	6020, 7470A, 8041, 8081A/8082, 8141A
MW-10-24	Monitoring Well	22.5	IA	A	09/25/00	6020, 7470A, 8041, 8081A/8082, 8141A
MW-10-24	Monitoring Well	22.5	IA	A	06/29/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-10-24	Monitoring Well	22.5	IA	A	04/15/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-10-44	Monitoring Well	42	IA	A	08/05/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-10-44	Monitoring Well	42	IA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-10-44	Monitoring Well	42	IA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-10-44	Monitoring Well	42	IA	A	03/23/95	239.2, 8080, 8140
MW-10-44	Monitoring Well	42	IA	A	03/29/00	6020, 7470A, 8041, 8081A/8082, 8141A
MW-10-44	Monitoring Well	42	IA	A	09/25/00	6020, 7470A, 8041, 8081A/8082, 8141A
MW-10-44	Monitoring Well	42	IA	A	06/29/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-10-44	Monitoring Well	42	IA	A	04/15/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-10-57	Monitoring Well	55.5	IA	A	08/05/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-10-57	Monitoring Well	55.5	IA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-10-57	Monitoring Well	55.5	IA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-10-57	Monitoring Well	55.5	IA	A	03/23/95	239.2, 8080, 8140
MW-10-57	Monitoring Well	55.5	IA	A	03/29/00	8041, 8081A/8082, 8141A
MW-10-57	Monitoring Well	55.5	IA	A	09/25/00	8041, 8081A/8082, 8141A
MW-10-57	Monitoring Well	55.5	IA	A	06/29/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-10-57	Monitoring Well	55.5	IA	A	04/15/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-24	Monitoring Well	22	IA	A	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-11-24	Monitoring Well	22	IA	A	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-11-24	Monitoring Well	22	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-11-24	Monitoring Well	22	IA	A	03/23/95	239.2, 8080, 8140
MW-11-24	Monitoring Well	22	IA	A	03/28/00	8041, 8081A/8082, 8141A
MW-11-24	Monitoring Well	22	IA	A	09/22/00	8041, 8081A/8082
MW-11-24	Monitoring Well	22	IA	A	06/28/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-24	Monitoring Well	22	IA	A	04/12/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-37	Monitoring Well	35	IA	A	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-11-37	Monitoring Well	35	IA	A	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-11-37	Monitoring Well	35	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-11-37	Monitoring Well	35	IA	A	03/23/95	239.2, 8080, 8140
MW-11-37	Monitoring Well	35	IA	A	03/28/00	6020, 7470A, 8041, 8081A/8082, 8141A
MW-11-37	Monitoring Well	35	IA	A	09/22/00	6020, 7470A, 8041, 8081A/8082
MW-11-37	Monitoring Well	35	IA	A	06/28/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-37	Monitoring Well	35	IA	A	04/12/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8081A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-56	Monitoring Well	54	IA	A	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-11-56	Monitoring Well	54	IA	A	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-11-56	Monitoring Well	54	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-11-56	Monitoring Well	54	IA	A	03/23/95	239.2, 8080, 8140
MW-11-56	Monitoring Well	54	IA	A	03/28/00	8041, 8081A/8082, 8141A
MW-11-56	Monitoring Well	54	IA	A	09/22/00	8041, 8081A/8082
MW-11-56	Monitoring Well	54	IA	A	06/28/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-56	Monitoring Well	54	IA	A	04/12/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
MW-11-79	Monitoring Well	76.6	IA	B	08/04/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-11-79	Monitoring Well	76.6	IA	B	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-11-79	Monitoring Well	76.6	IA	B	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-11-79	Monitoring Well	76.6	IA	B	03/23/95	239.2, 8080, 8140
MW-11-79	Monitoring Well	76.6	IA	B	03/28/00	8041, 8081A/8082, 8141A
MW-11-79	Monitoring Well	76.6	IA	B	09/22/00	8041, 8081A/8082
MW-11-79	Monitoring Well	76.6	IA	B	06/28/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
MW-11-79	Monitoring Well	76.6	IA	B	04/12/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
MW-12-27	Monitoring Well	24.5	IA	A	08/03/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-12-27	Monitoring Well	24.5	IA	A	09/08/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-12-27	Monitoring Well	24.5	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-12-27	Monitoring Well	24.5	IA	A	04/11/95	8020
MW-12-27	Monitoring Well	24.5	IA	A	03/22/00	8041, 8081A/8082, 8141A
MW-12-27	Monitoring Well	24.5	IA	A	09/20/00	8041, 8081A/8082, 8141A
MW-12-41	Monitoring Well	39	IA	A	08/03/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-12-41	Monitoring Well	39	IA	A	09/08/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-12-41	Monitoring Well	39	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-12-41	Monitoring Well	39	IA	A	03/22/00	8041, 8081A/8082, 8141A
MW-12-41	Monitoring Well	39	IA	A	09/20/00	8041, 8081A/8082, 8141A
MW-12-59	Monitoring Well	57.5	IA	A	08/03/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-12-59	Monitoring Well	57.5	IA	A	09/08/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-12-59	Monitoring Well	57.5	IA	A	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-12-59	Monitoring Well	57.5	IA	A	03/22/00	8041, 8081A/8082, 8141A
MW-12-59	Monitoring Well	57.5	IA	A	09/20/00	8041, 8081A/8082, 8141A
MW-12-79	Monitoring Well	78	IA	B	08/02/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
MW-12-79	Monitoring Well	78	IA	B	09/09/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
MW-12-79	Monitoring Well	78	IA	B	10/27/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
MW-12-79	Monitoring Well	78	IA	B	03/22/00	8041, 8081A/8082, 8141A
MW-12-79	Monitoring Well	78	IA	B	09/20/00	8041, 8081A/8082, 8141A
P-02	Piezometer	18	IA	A	03/23/95	239.2, 8010, 8020, 8040A, 8080, 8140, 8150, 8240
P-07	Piezometer	unknown	HA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
P-103	Piezometer	29	HA	A	03/24/95	8010, 8020, 8240
P-103	Piezometer	29	HA	A	05/09/95	239.2, 8010, 8020, 8040A, 8240
P-103	Piezometer	29	HA	A	07/31/95	8150
P-104	Piezometer	20.4	LA	F/SA	10/23/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
P-11	Piezometer	unknown	HA	F/SA	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
PP-06	Piezometer	20	LA	F/SA	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
PP-06	Piezometer	20	LA	F/SA	12/29/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PP-06	Piezometer	20	LA	F/SA	02/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PP-06	Piezometer	20	LA	F/SA	09/29/88	7060, 7421
PP-06	Piezometer	20	LA	F/SA	05/01/89	7060, 7421
PP-06	Piezometer	20	LA	F/SA	10/13/89	7060, 7421
PP-06	Piezometer	20	LA	F/SA	05/10/90	7060, 7421
PP-06	Piezometer	20	LA	F/SA	10/23/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
PP-06	Piezometer	20	LA	F/SA	11/13/90	7060, 7421

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
PP-06	Piezometer	20	LA	F/SA	10/21/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150, 8290
PP-08	Piezometer	25	LA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
PP-08	Piezometer	25	LA	A	12/30/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PP-08	Piezometer	25	LA	A	02/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PP-08	Piezometer	25	LA	A	10/19/88	8040, 8150
PP-08	Piezometer	25	LA	A	05/01/89	7421, 8040, 8150
PP-08	Piezometer	25	LA	A	10/13/89	8040, 8150
PP-08	Piezometer	25	LA	A	05/10/90	8040, 8150
PP-08	Piezometer	25	LA	A	11/13/90	8040, 8150
PP-08	Piezometer	25	LA	A	10/21/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
PP-08	Piezometer	25	LA	A	03/27/95	239.2, 8010, 8020, 8040A, 8080, 8150, 8240
PP-08	Piezometer	25	LA	A	04/03/00	8041, 8151A, 8260B
PP-08	Piezometer	25	LA	A	10/05/00	8041, 8151A, 8260B
PP-11	Piezometer	38	ATOFINA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
PP-11	Piezometer	38	ATOFINA	A	12/29/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PP-11	Piezometer	38	ATOFINA	A	02/25/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
PZ-1-11	Piezometer	11.5	IA	F/SA	03/24/95	239.2, 8040A, 8080, 8140
RP-01-31	Monitoring Well	30	BNSF	A	04/17/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
RP-01-31	Monitoring Well	30	BNSF	A	10/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8260B, 8290, 9215, GC/FID
RP-01-31	Monitoring Well	30	BNSF	A	11/28/00	8151A
RP-01-31	Monitoring Well	30	BNSF	A	06/26/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-01-31	Monitoring Well	30	BNSF	A	04/05/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-01-51	Monitoring Well	50	BNSF	A	04/17/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
RP-01-51	Monitoring Well	50	BNSF	A	10/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8260B, 8290, 9215, GC/FID
RP-01-51	Monitoring Well	50	BNSF	A	11/28/00	8151A
RP-01-51	Monitoring Well	50	BNSF	A	06/26/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-01-51	Monitoring Well	50	BNSF	A	04/08/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-01-65	Monitoring Well	64	BNSF	B	04/17/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
RP-01-65	Monitoring Well	64	BNSF	B	10/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8260B, 8290, 9215, GC/FID
RP-01-65	Monitoring Well	64	BNSF	B	11/28/00	8151A
RP-01-65	Monitoring Well	64	BNSF	B	06/26/01	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-01-65	Monitoring Well	64	BNSF	B	04/05/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-02-31	Monitoring Well	30	ATOFINA	A	04/18/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
RP-02-31	Monitoring Well	30	ATOFINA	A	10/16/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
RP-02-31	Monitoring Well	30	ATOFINA	A	06/19/01	6020, 8151A, 8260B, 8290
RP-02-31	Monitoring Well	30	ATOFINA	A	04/04/02	6020, 8151A, 8260B, 8290
RP-02-49	Monitoring Well	48	ATOFINA	A	04/18/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
RP-02-49	Monitoring Well	48	ATOFINA	A	10/16/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
RP-02-49	Monitoring Well	48	ATOFINA	A	06/19/01	6020, 8151A, 8260B, 8290
RP-02-49	Monitoring Well	48	ATOFINA	A	04/04/02	6020, 8260B, 8290
RP-02-49	Monitoring Well	48	ATOFINA	A	05/03/02	8151A
RP-02-66	Monitoring Well	65	ATOFINA	B	04/18/00	8041, 8151A, 8260B, 8290
RP-02-66	Monitoring Well	65	ATOFINA	B	10/16/00	8041, 8151A, 8260B, 8290
RP-02-66	Monitoring Well	65	ATOFINA	B	06/19/01	8151A, 8260B, 8290
RP-02-66	Monitoring Well	65	ATOFINA	B	04/04/02	8151A, 8260B, 8290

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
RP-03-26	Monitoring Well	25	BNSF	A	04/07/00	8041, 8151A, 8260B, 8270C, 8290
RP-03-30R	Monitoring Well	28	BNSF	A	10/12/00	8041, 8260B, 8270C, 8290
RP-03-30R	Monitoring Well	28	BNSF	A	11/28/00	8151A
RP-03-30R	Monitoring Well	28	BNSF	A	06/27/01	8260B, 8290
RP-03-30R	Monitoring Well	28	BNSF	A	04/10/02	8260B, 8290
RP-03-52R	Monitoring Well	51	BNSF	A	10/12/00	8041, 8260B, 8270C, 8290
RP-03-52R	Monitoring Well	51	BNSF	A	11/28/00	8151A
RP-03-52R	Monitoring Well	51	BNSF	A	06/27/01	8151A, 8260B, 8290
RP-03-52R	Monitoring Well	51	BNSF	A	04/10/02	8151A, 8260B, 8290
RP-04-16	Monitoring Well	15	BNSF	A	04/05/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
RP-04-16	Monitoring Well	15	BNSF	A	10/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
RP-04-16	Monitoring Well	15	BNSF	A	07/03/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-04-16	Monitoring Well	15	BNSF	A	04/18/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-04-41	Monitoring Well	40	BNSF	A	04/05/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
RP-04-41	Monitoring Well	40	BNSF	A	10/04/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8270C, 8290, 9215, GC/FID
RP-04-41	Monitoring Well	40	BNSF	A	07/03/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-04-41	Monitoring Well	40	BNSF	A	04/18/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-05-16	Monitoring Well	15	BNSF	A	04/05/00	8041, 8151A, 8260B, 8290
RP-05-16	Monitoring Well	15	BNSF	A	10/04/00	8041, 8151A, 8260B, 8290
RP-06-30	Monitoring Well	29.5	BNSF	F/SA	04/14/00	6020, 7470A, 8041, 8151A, 8260B
RP-06-30	Monitoring Well	29.5	BNSF	F/SA	10/12/00	6020, 7470A, 8041, 8260B, 8290
RP-06-30	Monitoring Well	29.5	BNSF	F/SA	11/29/00	8151A
RP-06-30	Monitoring Well	29.5	BNSF	F/SA	06/27/01	6020, 8151A, 8260B
RP-06-30	Monitoring Well	29.5	BNSF	F/SA	04/10/02	6020, 8151A, 8260B
RP-06-87	Monitoring Well	86	BNSF	A	04/14/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
RP-06-87	Monitoring Well	86	BNSF	A	10/12/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8260B, 8290, 9215, GC/FID
RP-06-87	Monitoring Well	86	BNSF	A	11/29/00	8151A
RP-06-87	Monitoring Well	86	BNSF	A	06/27/01	6020, 8151A, 8260B, 8290
RP-06-87	Monitoring Well	86	BNSF	A	04/10/02	6020, 8151A, 8260B, 8290
RP-07-119	Monitoring Well	119	WACKER	B	04/29/02	6020, 8041, 8081A, 8151A, 8260B, 8290
RP-07-119	Monitoring Well	119	WACKER	B	05/03/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-07-30	Monitoring Well	29.5	WACKER	F/SA	05/03/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-07-55	Monitoring Well	54.5	WACKER	A	05/03/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RP-07-84	Monitoring Well	83	WACKER	A	05/03/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8041, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
RPW-01	Monitoring Well	48	IA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
RPW-02	Monitoring Well	38	IA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
RPW-02	Monitoring Well	38	IA	A	10/17/90	375.4, 6010, 7060, 7421, 7470, 8080, 8240, 8270
RPW-02	Monitoring Well	38	IA	A	08/05/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
RPW-02	Monitoring Well	38	IA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
RPW-02	Monitoring Well	38	IA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
RPW-02	Monitoring Well	38	IA	A	03/22/00	8041, 8081A/8082, 8141A
RPW-02	Monitoring Well	38	IA	A	09/20/00	8041, 8081A/8082, 8141A
RPW-02	Monitoring Well	38	IA	A	06/28/01	8081A
RPW-02	Monitoring Well	38	IA	A	04/12/02	8081A
RPW-03	Monitoring Well	53	IA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
RPW-03	Monitoring Well	53	IA	A	08/05/93	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8080, 8140, 8150, 8290, TEPPT
RPW-03	Monitoring Well	53	IA	A	09/10/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8140, 8150, TEPPT
RPW-03	Monitoring Well	53	IA	A	10/28/93	6010, 7060, 7421, 7470, 8010M, 8040, 8080, 8150, TEPPT
RPW-03	Monitoring Well	53	IA	A	03/23/95	239.2, 8080, 8140
RPW-03	Monitoring Well	53	IA	A	03/28/00	6020, 7470A, 8041, 8081A/8082, 8141A
RPW-03	Monitoring Well	53	IA	A	09/22/00	6020, 7470A, 8041, 8081A/8082
RPW-04	Monitoring Well	38.5	HA	A	01/01/82	6010, 7470, 8010M, 808M, 8270M
RPW-04	Monitoring Well	38.5	HA	A	06/01/84	8080M, 8290M, 9010M
RPW-04	Monitoring Well	38.5	HA	A	09/18/86	120.1, 130.2, 206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
RPW-04	Monitoring Well	38.5	HA	A	12/14/86	120.1, 130.2, 206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 415.2, 7420, 325.3M, 353.2M, 365.2, 375.4M, 7420M
RPW-04	Monitoring Well	38.5	HA	A	02/26/87	120.1, 130.2, 206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 415.2, 7420, 325.3M, 353.2M, 365.2, 375.4M, 7420M
RPW-04	Monitoring Well	38.5	HA	A	09/30/88	8040, 8150
RPW-04	Monitoring Well	38.5	HA	A	05/01/89	7421, 8040, 8150
RPW-04	Monitoring Well	38.5	HA	A	10/13/89	8040, 8150
RPW-04	Monitoring Well	38.5	HA	A	05/10/90	8040, 8150
RPW-04	Monitoring Well	38.5	HA	A	11/13/90	8040, 8150
RPW-05	Monitoring Well	40.75	HA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
RPW-05	Monitoring Well	40.75	HA	A	01/25/89	8000, 8010M, 8040, 8150, WQUAL
RPW-05	Monitoring Well	40.75	HA	A	02/27/89	8000, 8010M, 8040, 8150, WQUAL
RPW-05	Monitoring Well	40.75	HA	A	04/25/89	8000, 8010M, 8040, 8150, WQUAL
RPW-05	Monitoring Well	40.75	HA	A	06/12/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, 8270, WQUAL
RPW-05	Monitoring Well	40.75	HA	A	03/27/00	8041, 8151A, 8260B
RPW-05	Monitoring Well	40.75	HA	A	09/27/00	8041, 8151A, 8260B
TB-01	Temporary Well Point	23.5	HA	A	04/30/91	8010M, 8040, 8150
TB-02	Temporary Well Point	23.5	HA	A	04/30/91	8010M, 8040, 8150
TB-03	Temporary Well Point	23.5	HA	A	05/01/91	8010M, 8040, 8150
TB-04	Temporary Well Point	23.5	HA	A	05/03/91	8010M, 8040, 8150
UB-3	Temporary Well Point	18-22	HA	A	01/14/98	206.2, 8040A, 8150
UB-4	Temporary Well Point	18-22	HA	A	01/15/98	206.2, 8040A, 8150
W-01-I	Monitoring Well	50	GOULD	A	08/28/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-01-I	Monitoring Well	50	GOULD	A	12/10/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-01-I	Monitoring Well	50	GOULD	A	02/17/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-01-I	Monitoring Well	50	GOULD	A	10/23/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
W-02-S	Monitoring Well	18	GOULD	F/SA	12/22/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-02-S	Monitoring Well	18	GOULD	F/SA	02/17/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-02-S	Monitoring Well	18	GOULD	F/SA	10/26/90	375.4, 6010, 7060, 7421, 7470
W-02-S	Monitoring Well	18	GOULD	F/SA	10/23/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
W-03-D	Monitoring Well	89	GOULD	A	08/27/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-03-D	Monitoring Well	89	GOULD	A	12/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-D	Monitoring Well	89	GOULD	A	12/21/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-D	Monitoring Well	89	GOULD	A	02/19/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-D	Monitoring Well	89	GOULD	A	12/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-D	Monitoring Well	89	GOULD	A	10/25/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-03-D	Monitoring Well	89	GOULD	A	12/11/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-03-D	Monitoring Well	89	GOULD	A	04/12/00	8041, 8081A/8082, 8141A, 8151A, 8260B

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-03-D	Monitoring Well	89	GOULD	A	10/09/00	8041, 8081A/8082, 8141A, 8151A, 8260B
W-03-I	Monitoring Well	40.5	GOULD	A	10/25/90	375.4, 6010, 7060, 7421, 7470, 8080, 8240, 8270
W-03-I	Monitoring Well	40.5	GOULD	A	03/30/95	206.2, 239.2
W-03-I	Monitoring Well	40.5	GOULD	A	12/12/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-03-I	Monitoring Well	40.5	GOULD	A	04/12/00	8041, 8081A/8082, 8141A, 8151A, 8260B
W-03-I	Monitoring Well	40.5	GOULD	A	10/09/00	8041, 8081A/8082, 8141A, 8151A, 8260B
W-03-I	Monitoring Well	40.5	GOULD	A	06/26/01	8151A, 8260B
W-03-I	Monitoring Well	40.5	GOULD	A	04/08/02	8151A, 8260B
W-03-S	Monitoring Well	17	GOULD	F/SA	12/29/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-S	Monitoring Well	17	GOULD	F/SA	02/19/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-03-S	Monitoring Well	17	GOULD	F/SA	10/25/90	375.4, 6010, 7060, 7421, 7470, 8270
W-03-S	Monitoring Well	17	GOULD	F/SA	03/29/95	206.2, 239.2
W-03-S	Monitoring Well	17	GOULD	F/SA	12/11/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-03-S	Monitoring Well	17	GOULD	F/SA	04/12/00	6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B
W-03-S	Monitoring Well	17	GOULD	F/SA	10/09/00	6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B
W-04-89	Monitoring Well	88	GOULD	A	04/12/00	6020, 7470A, 8041, 8151A, 8260B, 8290
W-04-89	Monitoring Well	88	GOULD	A	10/09/00	6020, 7470A, 8041, 8151A, 8260B, 8290
W-04-89	Monitoring Well	88	GOULD	A	06/26/01	6020, 8290
W-04-89	Monitoring Well	88	GOULD	A	04/08/02	6020, 8290
W-04-I	Monitoring Well	49	GOULD	A	08/27/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-04-I	Monitoring Well	49	GOULD	A	12/11/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-04-I	Monitoring Well	49	GOULD	A	02/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-04-I	Monitoring Well	49	GOULD	A	12/12/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-04-I	Monitoring Well	49	GOULD	A	04/12/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
W-04-I	Monitoring Well	49	GOULD	A	10/09/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, GC/FID
W-04-S	Monitoring Well	16	GOULD	F/SA	12/11/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-04-S	Monitoring Well	16	GOULD	F/SA	02/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-04-S	Monitoring Well	16	GOULD	F/SA	12/12/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-04-S	Monitoring Well	16	GOULD	F/SA	04/12/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 9215, GC/FID
W-04-S	Monitoring Well	16	GOULD	F/SA	10/09/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 9215, GC/FID
W-06-B	Monitoring Well	67.9	LA	B	09/04/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-06-B	Monitoring Well	67.9	LA	B	12/15/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-B	Monitoring Well	67.9	LA	B	02/22/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-B	Monitoring Well	67.9	LA	B	06/12/91	6010, 7060, 7421, 7470, 8000, 8010M, 8040, 8150, WQUAL
W-06-B	Monitoring Well	67.9	LA	B	07/09/91	8010M, 8040, 8150
W-06-B	Monitoring Well	67.9	LA	B	08/07/91	8010M, 8040, 8150
W-06-B	Monitoring Well	67.9	LA	B	03/27/95	239.2, 8010, 8020, 8040A, 8150, 8240
W-06-B	Monitoring Well	67.9	LA	B	03/30/00	8041, 8151A, 8260B, 8270C
W-06-B	Monitoring Well	67.9	LA	B	09/28/00	8290
W-06-D	Monitoring Well	49	LA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
W-06-D	Monitoring Well	49	LA	A	09/04/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-06-D	Monitoring Well	49	LA	A	12/15/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-D	Monitoring Well	49	LA	A	02/22/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-D	Monitoring Well	49	LA	A	02/08/89	8000, 8010M, 8040, 8150, WQUAL
W-06-D	Monitoring Well	49	LA	A	03/01/89	8000, 8010M, 8040, 8150, WQUAL

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-06-D	Monitoring Well	49	LA	A	04/26/89	8000, 8010M, 8040, 8150, WQUAL
W-06-D	Monitoring Well	49	LA	A	06/12/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
W-06-D	Monitoring Well	49	LA	A	03/30/00	6020, 7470A, 8041, 8151A, 8260B, 8270C, 8290
W-06-D	Monitoring Well	49	LA	A	09/28/00	8041, 8151A, 8260B, 8270C, 8290
W-06-S	Monitoring Well	27.25	LA	A	09/04/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-06-S	Monitoring Well	27.25	LA	A	12/12/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-S	Monitoring Well	27.25	LA	A	02/22/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-06-S	Monitoring Well	27.25	LA	A	02/07/89	8000, 8010M, 8040, 8150, WQUAL
W-06-S	Monitoring Well	27.25	LA	A	03/01/89	8000, 8010M, 8040, 8150, WQUAL
W-06-S	Monitoring Well	27.25	LA	A	04/26/89	8000, 8010M, 8040, 8150, WQUAL
W-06-S	Monitoring Well	27.25	LA	A	06/12/91	6010, 7060, 7421, 7470, 8010M, 8040, 8150, WQUAL
W-06-S	Monitoring Well	27.25	LA	A	03/30/00	8041, 8151A, 8260B, 8270C, 8290
W-06-S	Monitoring Well	27.25	LA	A	09/28/00	8290
W-07-D	Monitoring Well	70	LA	A	10/24/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-07-D	Monitoring Well	70	LA	A	11/13/90	7060, 7421, 8040, 8150
W-07-D	Monitoring Well	70	LA	A	10/21/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150, 8290
W-07-D	Monitoring Well	70	LA	A	03/01/94	7421, 8010M, 8040A, 8080M, 8140, 8150A, TEPPT
W-07-I	Monitoring Well	54	LA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
W-07-I	Monitoring Well	54	LA	A	09/15/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-07-I	Monitoring Well	54	LA	A	12/18/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-07-I	Monitoring Well	54	LA	A	02/26/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-07-I	Monitoring Well	54	LA	A	09/30/88	7060, 7421, 8040, 8150
W-07-I	Monitoring Well	54	LA	A	05/01/89	7060, 7421, 8040, 8150
W-07-I	Monitoring Well	54	LA	A	10/13/89	7060, 7421, 8040, 8150
W-07-I	Monitoring Well	54	LA	A	05/10/90	7060, 7421, 8040, 8150
W-07-S	Monitoring Well	15	LA	F/SA	09/05/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-07-S	Monitoring Well	15	LA	F/SA	12/22/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-07-S	Monitoring Well	15	LA	F/SA	02/26/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-07-S	Monitoring Well	15	LA	F/SA	10/24/90	375.4, 6010, 7060, 7421, 7470, 8270
W-07-S	Monitoring Well	15	LA	F/SA	10/21/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150, 8290
W-07-S	Monitoring Well	15	LA	F/SA	02/24/94	7421, 8010M, 8040A, 8080M, 8140, 8150A, TEPPT
W-08	Monitoring Well	54	LA	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
W-08	Monitoring Well	54	LA	A	09/15/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-08	Monitoring Well	54	LA	A	12/21/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-08	Monitoring Well	54	LA	A	02/26/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-08	Monitoring Well	54	LA	A	10/23/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-08	Monitoring Well	54	LA	A	10/22/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150
W-08	Monitoring Well	54	LA	A	04/04/00	6020, 7470A, 8041, 8151A, 8260B, 8270C
W-08	Monitoring Well	54	LA	A	10/05/00	6020, 7470A, 8041, 8151A, 8260B, 8270C
W-08	Monitoring Well	54	LA	A	07/03/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-08	Monitoring Well	54	LA	A	04/17/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-08-26	Monitoring Well	25	LA	F/SA	04/05/00	6020, 7470A, 8041, 8151A, 8260B, 8270C
W-08-26	Monitoring Well	25	LA	F/SA	10/06/00	6020, 7470A, 8041, 8151A, 8260B, 8270C
W-08-26	Monitoring Well	25	LA	F/SA	07/02/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-08-26	Monitoring Well	25	LA	F/SA	04/16/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-08-26	Monitoring Well	25	LA	F/SA	04/18/02	6020
W-08-74	Monitoring Well	73	LA	B	04/04/00	8041, 8151A, 8260B
W-08-74	Monitoring Well	73	LA	B	10/05/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 9215, GC/FID
W-08-74	Monitoring Well	73	LA	B	07/03/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-08-74	Monitoring Well	73	LA	B	04/16/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-09	Monitoring Well	38	LA	F/SA	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
W-09	Monitoring Well	38	LA	F/SA	08/29/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-09	Monitoring Well	38	LA	F/SA	12/18/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-09	Monitoring Well	38	LA	F/SA	02/23/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-09	Monitoring Well	38	LA	F/SA	10/22/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150, 8290
W-09	Monitoring Well	38	LA	F/SA	04/10/00	8041, 8151A, 8260B, 8270C
W-09	Monitoring Well	38	LA	F/SA	10/06/00	8041, 8151A, 8260B, 8270C
W-09-116	Monitoring Well	115.5	LA	A	04/07/00	8041, 8151A, 8260B
W-09-116	Monitoring Well	115.5	LA	A	10/06/00	8041, 8151A, 8260B
W-09-116	Monitoring Well	115.5	LA	A	06/29/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-09-116	Monitoring Well	115.5	LA	A	04/15/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-09-86	Monitoring Well	85	LA	A	04/07/00	8041, 8151A, 8260B
W-09-86	Monitoring Well	85	LA	A	10/06/00	8041, 8151A, 8260B
W-10	Monitoring Well	70.5	COP	A	01/01/82	6010M, 7470, 8010M, 8080M, 8270M
W-10	Monitoring Well	70.5	COP	A	06/01/84	8080M, 8290M, 9010M
W-10	Monitoring Well	70.5	COP	A	09/18/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-10	Monitoring Well	70.5	COP	A	12/21/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-10	Monitoring Well	70.5	COP	A	02/25/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-10	Monitoring Well	70.5	COP	A	09/29/88	8040, 8150
W-10	Monitoring Well	70.5	COP	A	05/01/89	7421, 8040, 8150
W-10	Monitoring Well	70.5	COP	A	10/13/89	8040, 8150
W-10	Monitoring Well	70.5	COP	A	05/10/90	8040, 8150
W-10	Monitoring Well	70.5	COP	A	10/18/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-10	Monitoring Well	70.5	COP	A	11/13/90	8040, 8150
W-10	Monitoring Well	70.5	COP	A	10/22/92	6010, 8000, 8010/8020, 8040, 8080, 8140, 8150, 8290
W-10	Monitoring Well	70.5	COP	A	03/27/95	239.2, 8020, 8240
W-10	Monitoring Well	70.5	COP	A	12/15/95	8020, 8040A, 8150
W-10	Monitoring Well	70.5	COP	A	04/14/00	8260B
W-10	Monitoring Well	70.5	COP	A	10/11/00	8260B
W-11-B	Monitoring Well	121.9	ESCO	B	09/03/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-11-B	Monitoring Well	121.9	ESCO	B	12/16/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-B	Monitoring Well	121.9	ESCO	B	02/24/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-B	Monitoring Well	121.9	ESCO	B	04/11/00	8041, 8081A/8082, 8141A, 8151A, 8260B
W-11-B	Monitoring Well	121.9	ESCO	B	10/10/00	8041, 8081A/8082, 8141A, 8151A, 8260B
W-11-B	Monitoring Well	121.9	ESCO	B	06/21/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-B	Monitoring Well	121.9	ESCO	B	04/09/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-D	Monitoring Well	91.3	ESCO	A	09/16/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-11-D	Monitoring Well	91.3	ESCO	A	01/20/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-D	Monitoring Well	91.3	ESCO	A	02/25/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-D	Monitoring Well	91.3	ESCO	A	10/22/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-11-D	Monitoring Well	91.3	ESCO	A	04/05/95	8040A
W-11-D	Monitoring Well	91.3	ESCO	A	04/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-D	Monitoring Well	91.3	ESCO	A	10/10/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-D	Monitoring Well	91.3	ESCO	A	06/21/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-D	Monitoring Well	91.3	ESCO	A	04/09/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-I	Monitoring Well	60	ESCO	A	09/03/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-11-I	Monitoring Well	60	ESCO	A	12/16/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-I	Monitoring Well	60	ESCO	A	02/24/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-I	Monitoring Well	60	ESCO	A	10/22/90	375.4, 6010, 7060, 7421, 7470
W-11-I	Monitoring Well	60	ESCO	A	04/04/95	206.2, 239.2, 8020, 8040A, 8150, 8240
W-11-I	Monitoring Well	60	ESCO	A	04/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-I	Monitoring Well	60	ESCO	A	10/10/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-I	Monitoring Well	60	ESCO	A	06/21/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-I	Monitoring Well	60	ESCO	A	04/09/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-S	Monitoring Well	21.5	ESCO	F/SA	09/03/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-11-S	Monitoring Well	21.5	ESCO	F/SA	12/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-S	Monitoring Well	21.5	ESCO	F/SA	02/24/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-11-S	Monitoring Well	21.5	ESCO	F/SA	04/04/95	206.2, 239.2, 8020, 8040A, 8150, 8240
W-11-S	Monitoring Well	21.5	ESCO	F/SA	04/11/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-S	Monitoring Well	21.5	ESCO	F/SA	10/10/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8290, 9215, GC/FID
W-11-S	Monitoring Well	21.5	ESCO	F/SA	06/21/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-11-S	Monitoring Well	21.5	ESCO	F/SA	04/09/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-12-D	Monitoring Well	100	ESCO	A	01/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-12-D	Monitoring Well	100	ESCO	A	02/23/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-12-D	Monitoring Well	100	ESCO	A	10/22/90	375.4, 6010, 7060, 7421, 7470, 8240
W-12-D	Monitoring Well	100	ESCO	A	04/04/95	239.2, 8020, 8240, 8290
W-12-D	Monitoring Well	100	ESCO	A	12/19/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150
W-12-D	Monitoring Well	100	ESCO	A	04/11/00	8041, 8151A, 8260B
W-12-D	Monitoring Well	100	ESCO	A	10/10/00	8041, 8151A, 8260B
W-12-I	Monitoring Well	58.5	ESCO	A	01/21/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-12-I	Monitoring Well	58.5	ESCO	A	02/23/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-12-I	Monitoring Well	58.5	ESCO	A	10/22/90	375.4, 6010, 7060, 7421, 7470
W-12-I	Monitoring Well	58.5	ESCO	A	04/04/95	239.2, 8020, 8240, 8290
W-12-I	Monitoring Well	58.5	ESCO	A	12/18/95	350.1, 351.2, 365.3, 405.1, 410.4, 415.1, 8020, 8040A, 8150
W-12-I	Monitoring Well	58.5	ESCO	A	04/11/00	6020, 7470A, 8041, 8151A, 8260B
W-12-I	Monitoring Well	58.5	ESCO	A	10/10/00	6010A, 8041, 8151A, 8260B
W-12-S	Monitoring Well	20	ESCO	F/SA	10/22/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-12-S	Monitoring Well	20	ESCO	F/SA	04/11/00	8041, 8151A, 8260B
W-12-S	Monitoring Well	20	ESCO	F/SA	10/10/00	8041, 8151A, 8260B
W-15-D	Monitoring Well	62	METRO	A	09/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-15-D	Monitoring Well	62	METRO	A	12/14/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-D	Monitoring Well	62	METRO	A	02/19/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-D	Monitoring Well	62	METRO	A	10/23/90	8080
W-15-D	Monitoring Well	62	METRO	A	10/24/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-15-D	Monitoring Well	62	METRO	A	04/10/00	8151A, 8260B, 8290

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-15-D	Monitoring Well	62	METRO	A	09/29/00	8151A, 8260B, 8290
W-15-D	Monitoring Well	62	METRO	A	06/22/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-15-D	Monitoring Well	62	METRO	A	06/29/01	8151A
W-15-D	Monitoring Well	62	METRO	A	04/11/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-15-I	Monitoring Well	38.8	METRO	A	09/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-15-I	Monitoring Well	38.8	METRO	A	12/14/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-I	Monitoring Well	38.8	METRO	A	02/19/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-I	Monitoring Well	38.8	METRO	A	08/09/88	6010, 7060, 7196, 7421, 8240
W-15-I	Monitoring Well	38.8	METRO	A	10/24/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-15-I	Monitoring Well	38.8	METRO	A	04/10/00	6020, 7470A, 8151A, 8260B, 8290
W-15-I	Monitoring Well	38.8	METRO	A	09/29/00	6020, 7470A, 8151A, 8260B, 8290
W-15-I	Monitoring Well	38.8	METRO	A	06/20/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-15-I	Monitoring Well	38.8	METRO	A	04/11/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-15-S	Monitoring Well	14.8	METRO	A	09/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 7420M
W-15-S	Monitoring Well	14.8	METRO	A	12/17/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-S	Monitoring Well	14.8	METRO	A	02/19/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-15-S	Monitoring Well	14.8	METRO	A	10/24/90	375.4, 6010, 7060, 7421, 7470, 8270
W-15-S	Monitoring Well	14.8	METRO	A	04/10/00	8151A, 8260B, 8290
W-15-S	Monitoring Well	14.8	METRO	A	10/04/00	6020, 7470A, 8151A, 8260B, 8290
W-15-S	Monitoring Well	14.8	METRO	A	06/20/01	6020, 8151A, 8260B
W-15-S	Monitoring Well	14.8	METRO	A	06/22/01	8290
W-15-S	Monitoring Well	14.8	METRO	A	04/11/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 8151A, 8260B, 8290, MICROTESTS, NWTPH-DX, RSK 175
W-16-31	Monitoring Well	30	SCHNITZER	F/SA	04/19/00	8081A/8082, 8141A, 8260B, 8290
W-16-31	Monitoring Well	30	SCHNITZER	F/SA	10/17/00	8041, 8081A/8082, 8141A, 8260B, 8290
W-16-31	Monitoring Well	30	SCHNITZER	F/SA	06/22/01	8041, 8151A, 8260B, 8290
W-16-31	Monitoring Well	30	SCHNITZER	F/SA	04/08/02	8041, 8151A, 8260B, 8290
W-16-D	Monitoring Well	85.5	SCHNITZER	A	12/30/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-16-D	Monitoring Well	85.5	SCHNITZER	A	02/18/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 365.2, 415.2, 429, 7420, 7420M
W-16-D	Monitoring Well	85.5	SCHNITZER	A	04/05/95	206.2, 239.2, 8080
W-16-D	Monitoring Well	85.5	SCHNITZER	A	12/19/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-16-D	Monitoring Well	85.5	SCHNITZER	A	04/19/00	8041, 8081A/8082, 8141A, 8260B, 8290
W-16-D	Monitoring Well	85.5	SCHNITZER	A	10/17/00	8041, 8081A/8082, 8141A, 8260B, 8290
W-16-I	Monitoring Well	50	SCHNITZER	A	12/30/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-16-I	Monitoring Well	50	SCHNITZER	A	02/18/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-16-I	Monitoring Well	50	SCHNITZER	A	04/05/95	206.2, 239.2, 8080
W-16-I	Monitoring Well	50	SCHNITZER	A	12/19/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290
W-16-I	Monitoring Well	50	SCHNITZER	A	04/19/00	6020, 7470A, 8041, 8081A/8082, 8141A, 8260B, 8290
W-16-I	Monitoring Well	50	SCHNITZER	A	10/17/00	6020, 7470A, 8041, 8081A/8082, 8141A, 8260B, 8290
W-16-I	Monitoring Well	50	SCHNITZER	A	06/22/01	6020, 8260B, 8290
W-16-I	Monitoring Well	50	SCHNITZER	A	06/27/01	8151A
W-16-I	Monitoring Well	50	SCHNITZER	A	04/08/02	6020, 8151A, 8260B, 8290
W-16-S	Monitoring Well	13	SCHNITZER	F/SA	12/30/86	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-16-S	Monitoring Well	13	SCHNITZER	F/SA	02/18/87	206.3, 213.1, 215.1, 218.1, 236.1, 242.1, 258.1, 273.1, 289.1, 310.1, 325.3M, 353.2M, 365.2, 375.4M, 415.2, 7420, 7420M
W-16-S	Monitoring Well	13	SCHNITZER	F/SA	04/05/95	206.2, 239.2, 8080
W-16-S	Monitoring Well	13	SCHNITZER	F/SA	12/19/96	245.1, 6010, 7060, 7131, 7191, 7421, 8010, 8020, 8040A, 8080, 8140, 8150, 8260, 8270, 8290

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-17	Monitoring Well	50	METRO	A	10/22/90	375.4, 6010, 7060, 7421, 7470, 8080, 8240, 8270
W-18-D	Monitoring Well	64	OFFSITE W	B	10/15/90	375.4, 6010, 7060, 7421, 7470, 8240
W-18-D	Monitoring Well	64	OFFSITE W	B	03/21/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-D	Monitoring Well	64	OFFSITE W	B	09/19/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-D	Monitoring Well	64	OFFSITE W	B	06/18/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, MICROTESTS, NWTPH-DX, RSK 175
W-18-D	Monitoring Well	64	OFFSITE W	B	04/04/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, MICROTESTS, NWTPH-DX, RSK 175
W-18-I	Monitoring Well	54	OFFSITE W	A	10/16/90	375.4, 6010, 7060, 7421, 7470, 8270
W-18-I	Monitoring Well	54	OFFSITE W	A	03/21/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-I	Monitoring Well	54	OFFSITE W	A	09/19/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-I	Monitoring Well	54	OFFSITE W	A	06/18/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
W-18-I	Monitoring Well	54	OFFSITE W	A	04/04/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
W-18-S	Monitoring Well	30	OFFSITE W	A	10/16/90	375.4, 6010, 7060, 7421, 7470
W-18-S	Monitoring Well	30	OFFSITE W	A	03/21/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-S	Monitoring Well	30	OFFSITE W	A	09/19/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8081A/8082, 8141A, 8151A, 8260B, 8270C, 8290, 9215, GC/FID, NWTPH-DX
W-18-S	Monitoring Well	30	OFFSITE W	A	06/19/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
W-18-S	Monitoring Well	30	OFFSITE W	A	04/04/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, MICROTESTS, NWTPH-DX, RSK 175
W-19-D	Monitoring Well	67.5	ATOFINA	A	10/18/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-19-D	Monitoring Well	67.5	ATOFINA	A	03/28/95	239.2, 8020, 8240
W-19-D	Monitoring Well	67.5	ATOFINA	A	12/20/95	8020, 8040A, 8150
W-19-D	Monitoring Well	67.5	ATOFINA	A	04/02/98	200.7, 206.2, 213.2, 218.2, 239.2, 6010, 7191, 7470, 8010, 8020, 8080, 8140, 8150, 8260, 8290
W-19-D	Monitoring Well	67.5	ATOFINA	A	04/18/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
W-19-D	Monitoring Well	67.5	ATOFINA	A	10/16/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
W-19-D	Monitoring Well	67.5	ATOFINA	A	06/20/01	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-19-D	Monitoring Well	67.5	ATOFINA	A	04/05/02	300.0, 310.1, 350.1, 365.1, 376.1, 405.1, 410.4, 415.1, 6010A, 8151A, 8260B, MICROTESTS, NWTPH-DX, RSK 175
W-19-I	Monitoring Well	49	ATOFINA	A	10/18/90	375.4, 6010, 7060, 7421, 7470, 8240, 8270
W-19-I	Monitoring Well	49	ATOFINA	A	03/28/95	239.2, 8020, 8240
W-19-I	Monitoring Well	49	ATOFINA	A	12/20/95	8020, 8040A, 8150
W-19-I	Monitoring Well	49	ATOFINA	A	04/02/98	200.7, 206.2, 213.2, 218.2, 239.2, 6010, 7191, 7470, 8010, 8020, 8080, 8140, 8150, 8260, 8290
W-19-I	Monitoring Well	49	ATOFINA	A	04/18/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
W-19-I	Monitoring Well	49	ATOFINA	A	10/16/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID

APPENDIX B
Table of Groundwater Sampling Locations, Sample Collection Dates, and Analytical Methods
RPAC - Portland Site

Location ID	Location Type[1]	Sample Depth[2]	General Location[3]	Characterization Zone[4]	Sample Date	Analytical Methods[5]
W-19-I	Monitoring Well	49	ATOFINA	A	06/20/01	6020, 8151A, 8260B
W-19-I	Monitoring Well	49	ATOFINA	A	04/05/02	6020, 8151A, 8260B
W-19-S	Monitoring Well	25	ATOFINA	A	03/28/95	239.2, 8020, 8240
W-19-S	Monitoring Well	25	ATOFINA	A	04/02/98	200.7, 206.2, 213.2, 218.2, 239.2, 6010, 7191, 7470, 8010, 8020, 8080, 8140, 8150, 8260, 8290
W-19-S	Monitoring Well	25	ATOFINA	A	04/18/00	300.0, 310.1, 350.1, 376.1, 405.1, 410.4, 415.1, 6010A, 6020, 7470A, 8041, 8151A, 8260B, 8290, 9215, GC/FID
W-19-S	Monitoring Well	25	ATOFINA	A	04/05/02	6020, 8151A, 8260B

NOTES:

[1]LOCATION TYPE

Monitoring Well, Extraction Well, or Piezometer	Monitoring well, extraction well or piezometer - permanent installation (although may have been abandoned)
Temporary Well Point	One-time sampling location, such as direct-push or during drilling

[2]SAMPLE DEPTH

Bottom of screened interval for monitoring wells, or discrete depth interval for one-time sampling locations

[3]GENERAL LOCATION

LA	RPAC LAKE AREA
HA	RPAC HERBICIDE AREA
IA	RPAC INSECTICIDE AREA
OFFSITE W	OFFSITE TO THE WEST OF THE RPAC PROPERTY
COP	CITY OF PORTLAND

[4]CHARACTERIZATION DEPTH

F/SA	FILL/SHALLOW ALLUVIUM ZONE
A	ALLUVIUM ZONE
B	BASALT ZONE

[5]ANALYTICAL METHODS INDEX

CONSTITUENT GROUP	ASSOCIATED ANALYTICAL METHODS
METALS	200.7, 206.2, 206.3, 213.1, 213.2, 215.1, 218.2, 236.1, 239.2, 242.1, 245.1, 258.1, 289.1, 6010, 6020, 7060, 7130, 7130M, 7131, 7190M, 7191, 7195M, 7196, 7210, 7420, 7421, 7470, 7470A, 7471, 7471A, 7520, 7950M
FUELS	8015B, GC/FID, NWTPH-DX
HERBICIDES	8140, 8141A, 8150, 8150M, 8151A
DIOXINS/FURANS	8280, 8280A, 8290, 8290M
INSECTICIDES	608, 614, 632, 8080, 8081A, 8081A/8082, 8082, TEPPT
PHENOLS	8040, 8040A, 8040M, 8041
SEMIVOLATILE ORGANIC COMPOUNDS	8270, 8270C, 8270C-SIM, 8270M
VOLATILE ORGANIC COMPOUNDS	602, 624, 8000, 8010, 8010M, 8015, 8020, 8240, 8260, 8260B, RSK175, CLIGCFID.S
CATIONS, ANIONS AND PHYSICAL	120.1, 130.2, 150.1, 160.1, 300.0, 310.1, 325.3M, 350.1, 350.1MOD, 350.3, 351.1, 351.2, 353.2, 353.2M, 365.1, 365.3, 375.4, 375.4M, 376.1, 405.1, 410.4, 415.1, 415.2, 429, 9010M, 9030B, 9030M, 9040, 9045, 9060MOD, 9060M, 9080M, WQUAL
MICROBIOLOGICAL	9215, A17, MICROBIAL, MOSA37, SM9515C, MICROTESTS

APPENDIX C

Selected Preliminary Constituents of Potential Concern
Groundwater Distribution Figures

APPENDIX C

Groundwater Distribution Figure List with Screening Values
RPAC - Portland Site

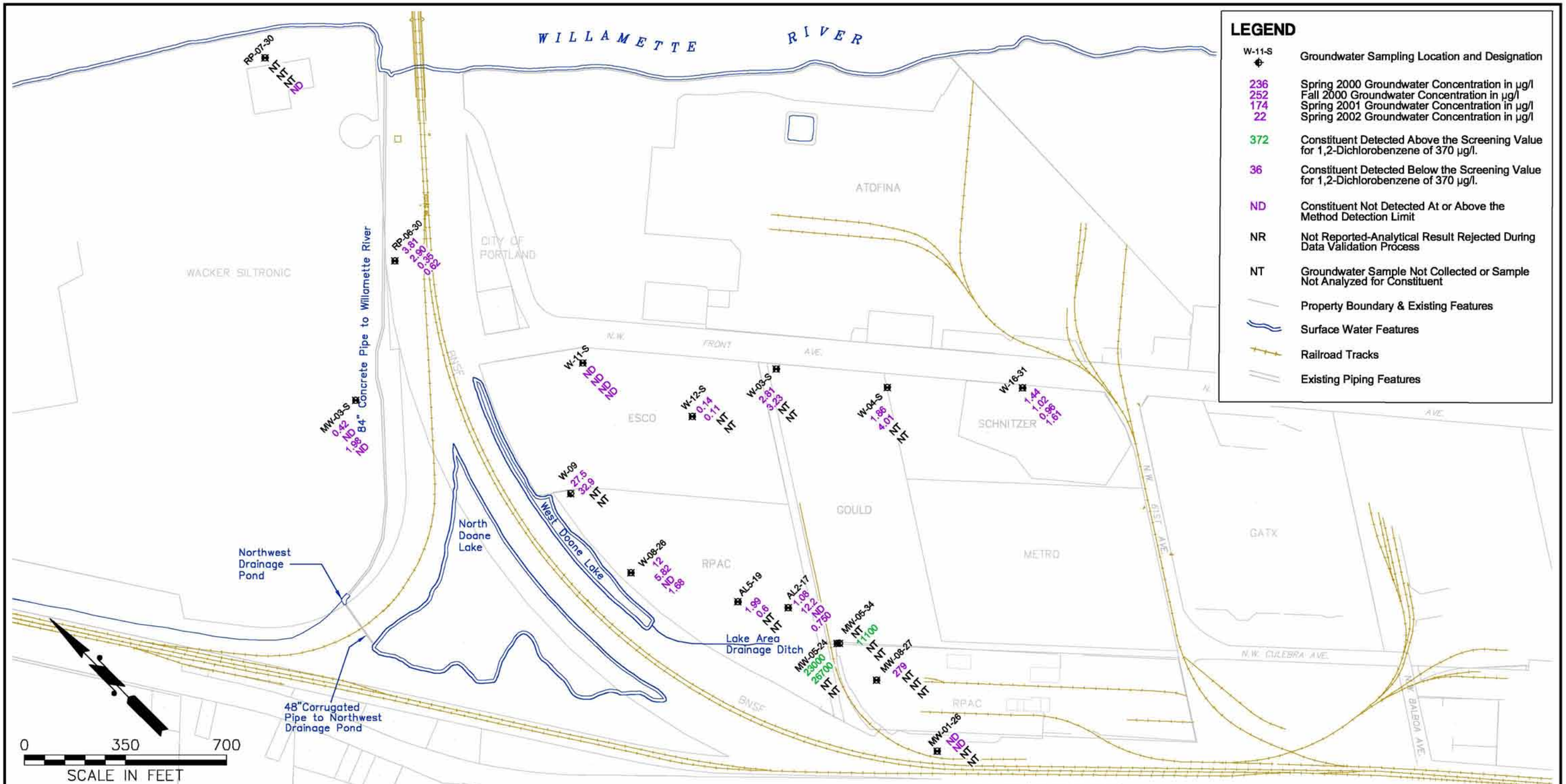
Figure Numbers	Chemical Class	Constituent	Screening Value[1]
C-1 through C-3	VOCs	1,2-Dichlorobenzene	370 µg/L
C-4 through C-6	VOCs	Benzene	0.34 µg/L
C-7 through C-9	VOCs	Trichloroethene	0.028 µg/L
C-10 through C-12	Phenols	2,4-Dichlorophenol	110 µg/L
C-13 through C-15	Phenols	Phenol	21900 µg/L
C-16 through C-18	Herbicides	2,4-D	360 µg/L
C-19 through C-21	Herbicides	2,4,5-TP (Silvex)	290 µg/L
C-22 through C-24	Dioxins/Furans	2,3,7,8-TCDD	0.00045 ng/L
C-25 through C-27	Insecticides	4,4'-DDE	0.20 µg/L
C-28 through C-30	Insecticides	4,4'-DDT	0.20 µg/L
C-31 through C-33	Insecticides	Dieldrin	0.004 µg/L
C-34 through C-36	Metals	Dissolved Arsenic	2 µg/L

VOCs	volatile organic compounds
D	dichlorophenoxyacetic acid
TCDD	tetrachlorodibenzo-p-dioxin
DDE	1,1-dichloro-2,2-bis(p-dichlorodiphenyl)ethylene
DDT	dichlorodiphenyltrichloroethane
µg/L	micrograms per liter
ng/L	nanograms per liter

APPENDIX C

Groundwater Distribution Figure List with Screening Values
RPAC - Portland Site

Figure Numbers	Chemical Class	Constituent	Screening Value[1]
C-1 through C-3	VOCs	1,2-Dichlorobenzene	370 µg/L
C-4 through C-6	VOCs	Benzene	0.34 µg/L
C-7 through C-9	VOCs	Trichloroethene	0.028 µg/L
C-10 through C-12	Phenols	2,4-Dichlorophenol	110 µg/L
C-13 through C-15	Phenols	Phenol	21900 µg/L
C-16 through C-18	Herbicides	2,4-D	360 µg/L
C-19 through C-21	Herbicides	2,4,5-TP (Silvex)	290 µg/L
C-22 through C-24	Dioxins/Furans	2,3,7,8-TCDD	0.00045 ng/L
C-25 through C-27	Insecticides	4,4'-DDE	0.20 µg/L
C-28 through C-30	Insecticides	4,4'-DDT	0.20 µg/L
C-31 through C-33	Insecticides	Dieldrin	0.004 µg/L
C-34 through C-36	Metals	Dissolved Arsenic	2 µg/L



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

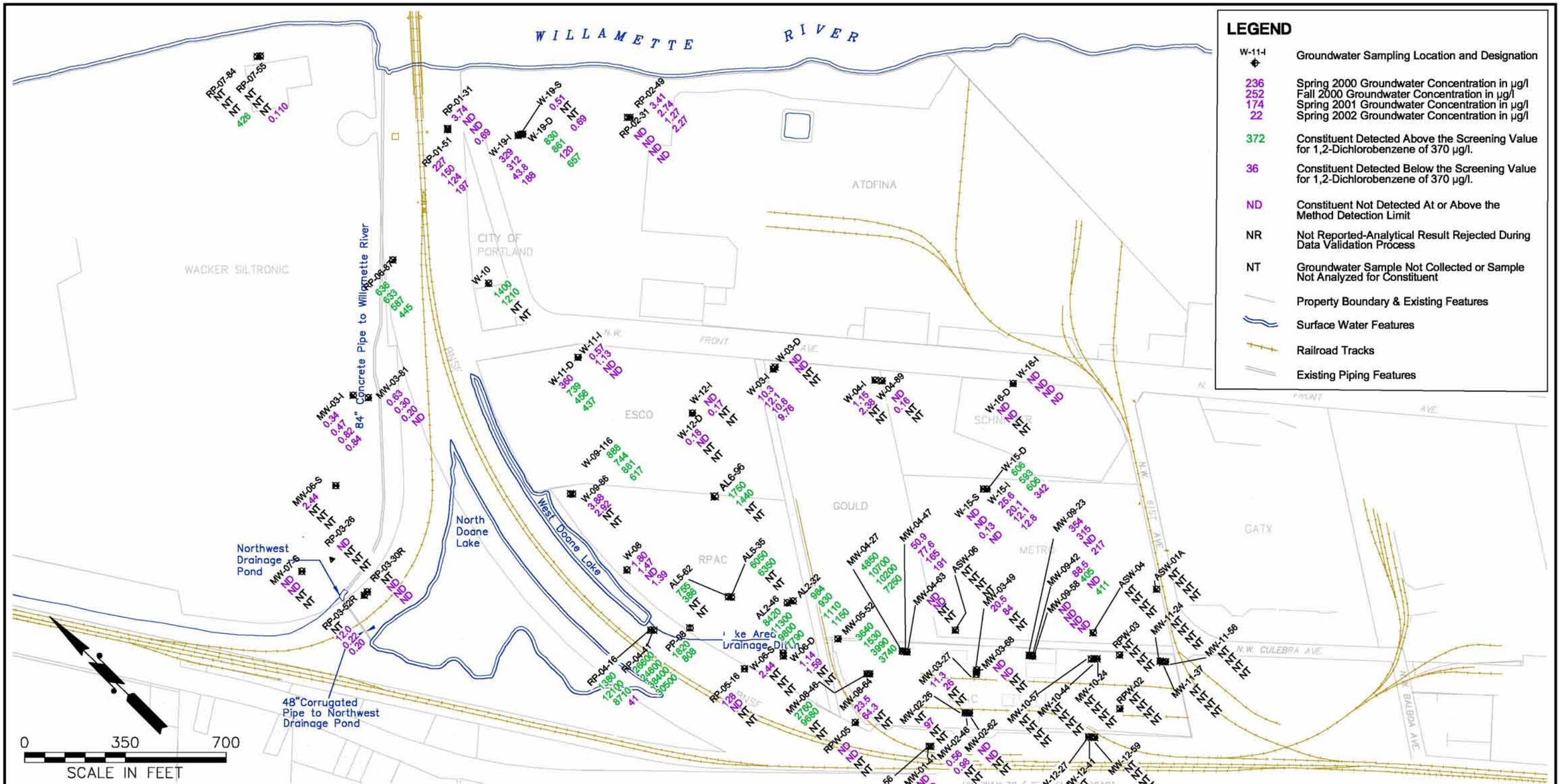
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-1
1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER SPRING 2000-SPRING 2002 FILL / SHALLOW ALLUVIUM ZONE RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPEDIX C\FIG-01_1-2 Dichlor.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

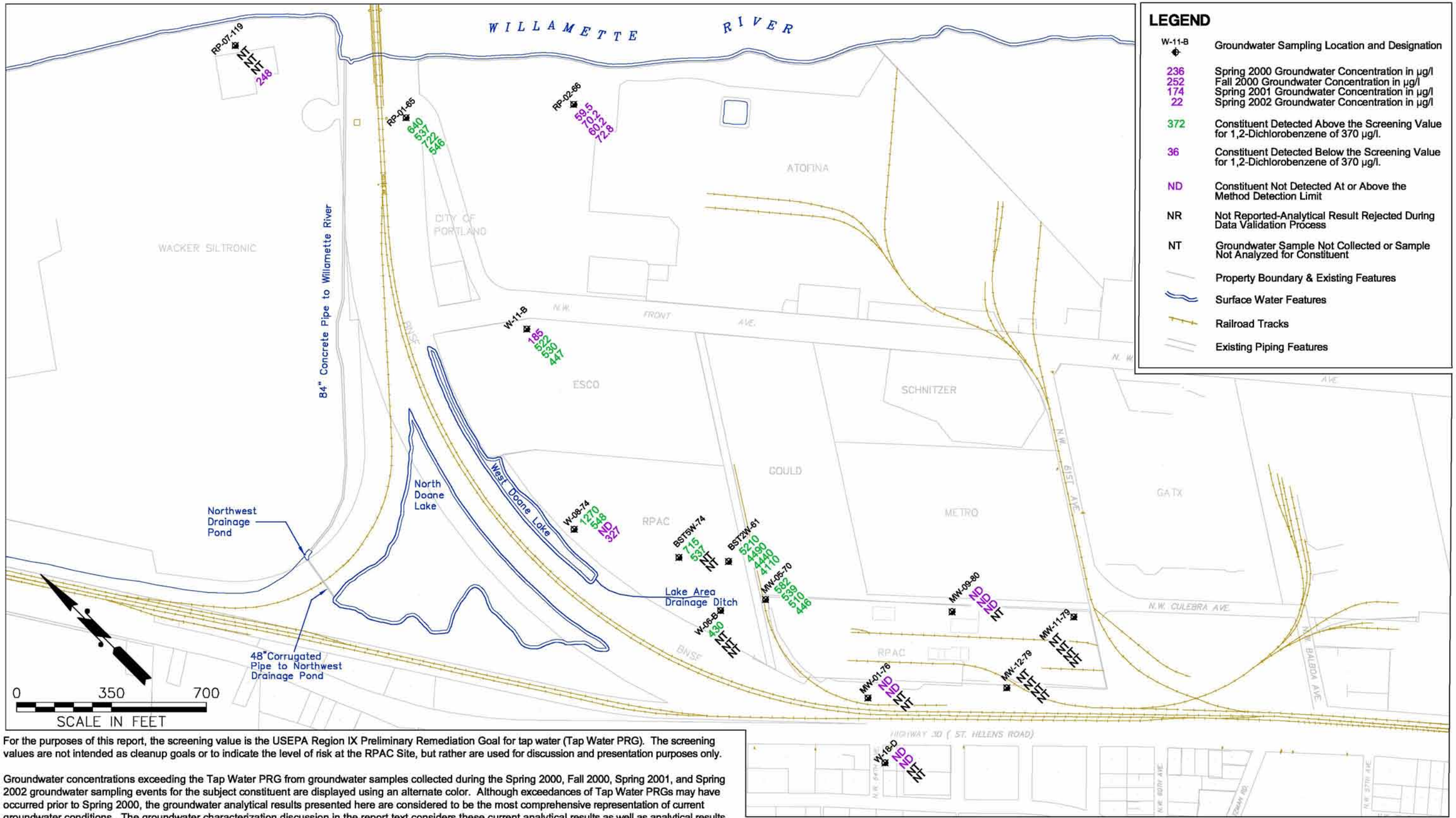
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-2
1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-02_1-2 Dichlor.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

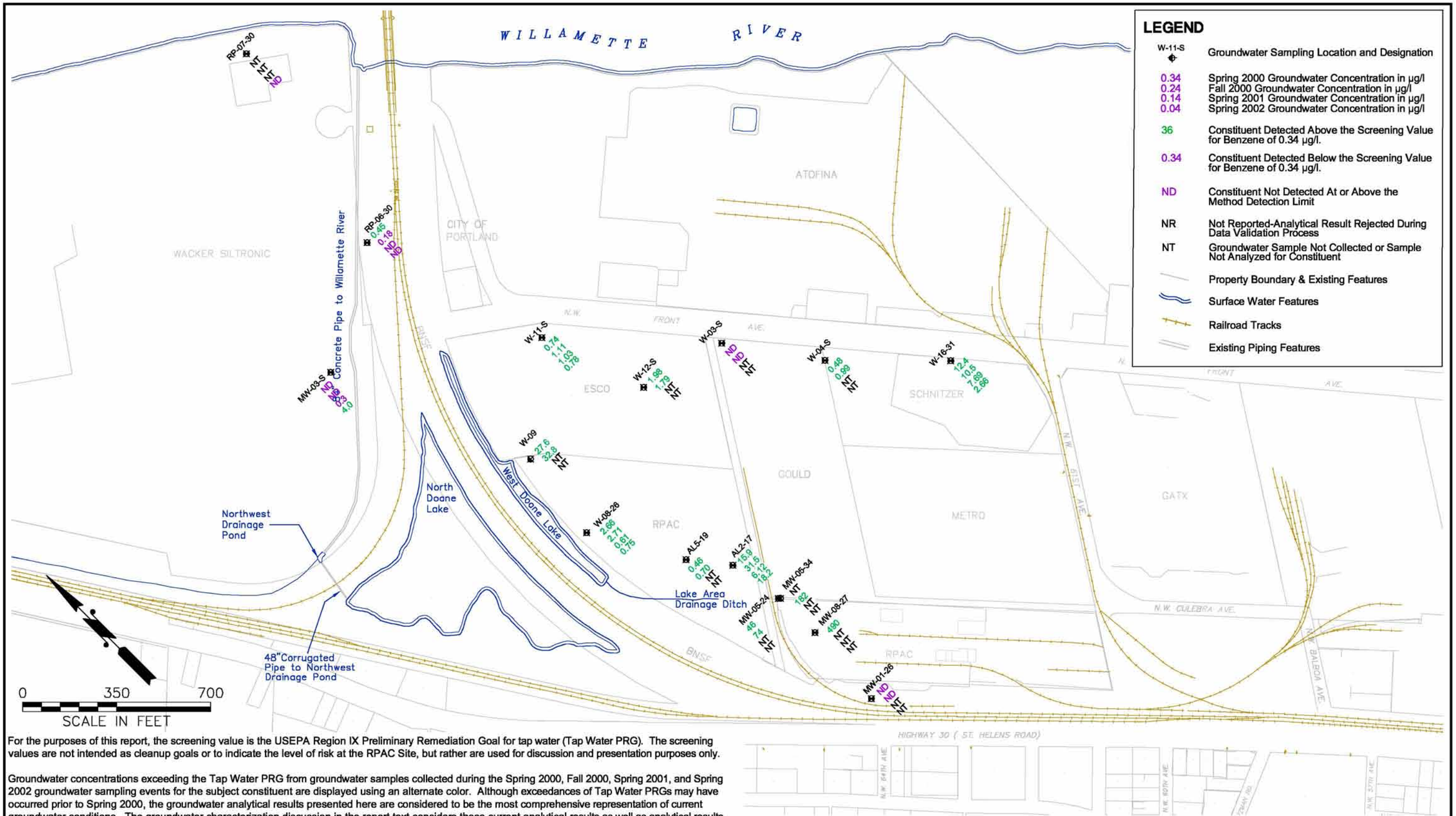
amec

7375 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-3
1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER SPRING 2000-SPRING 2002 BASALT ZONE RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-3_1-2 Dichlor.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

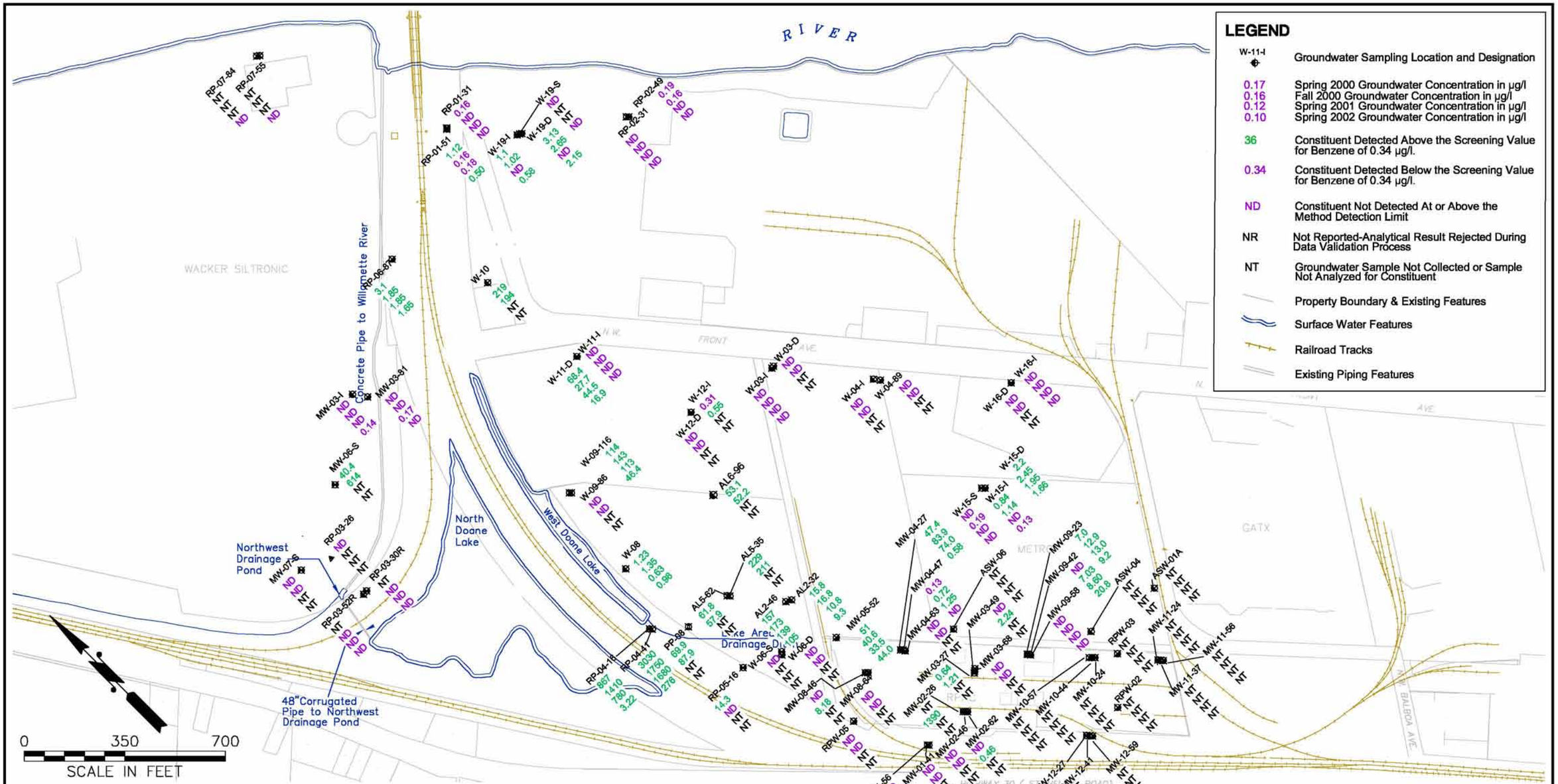
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-4
BENZENE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-4_BENZ.dwg



LEGEND

W-11-I	Groundwater Sampling Location and Designation
0.17	Spring 2000 Groundwater Concentration in µg/l
0.16	Fall 2000 Groundwater Concentration in µg/l
0.12	Spring 2001 Groundwater Concentration in µg/l
0.10	Spring 2002 Groundwater Concentration in µg/l
36	Constituent Detected Above the Screening Value for Benzene of 0.34 µg/l.
0.34	Constituent Detected Below the Screening Value for Benzene of 0.34 µg/l.
ND	Constituent Not Detected At or Above the Method Detection Limit
NR	Not Reported-Analytical Result Rejected During Data Validation Process
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
	Property Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features

For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

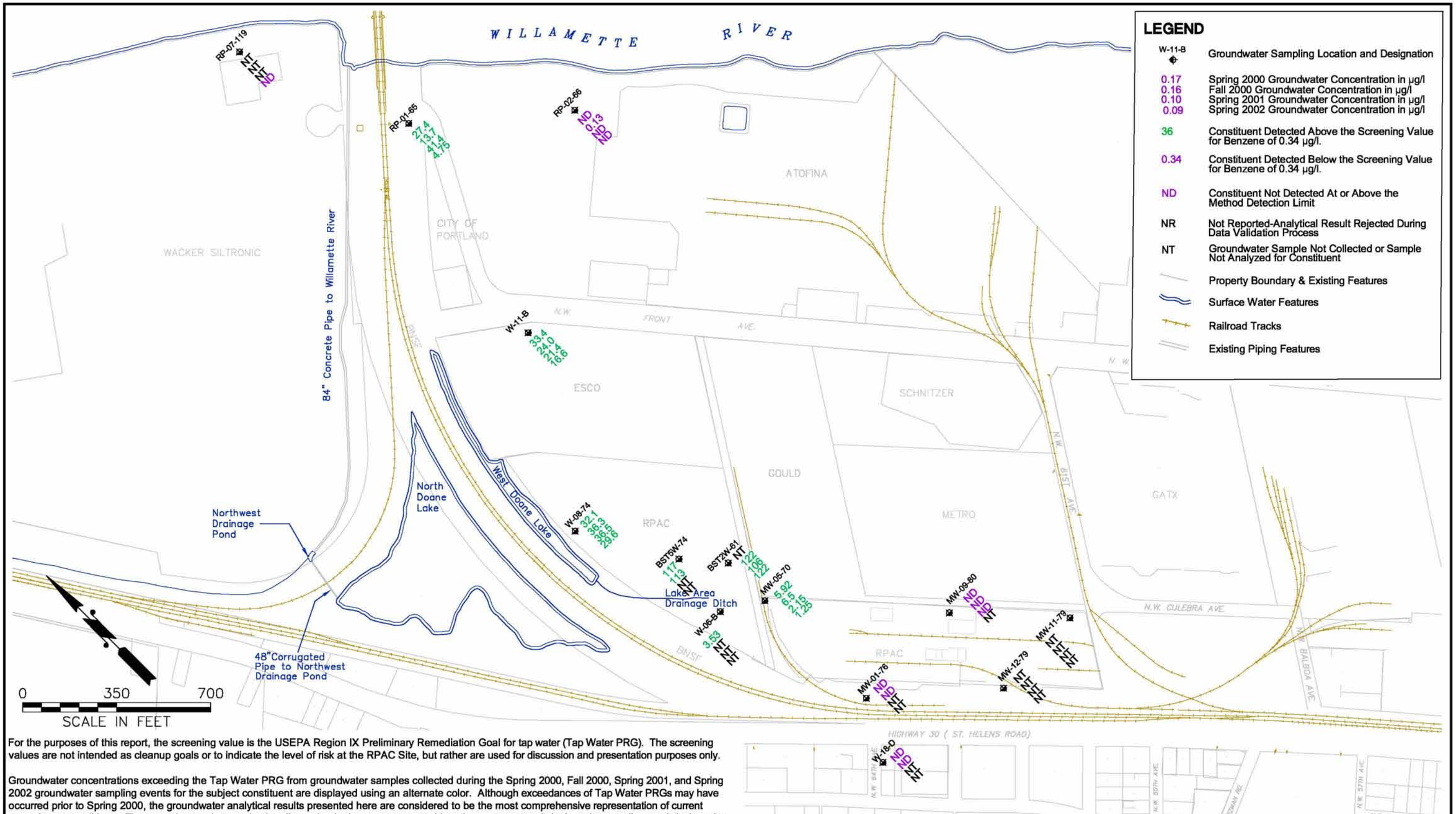
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-5
BENZENE
SCREENING VALUE EXCEEDANCES
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-5_BENZ.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

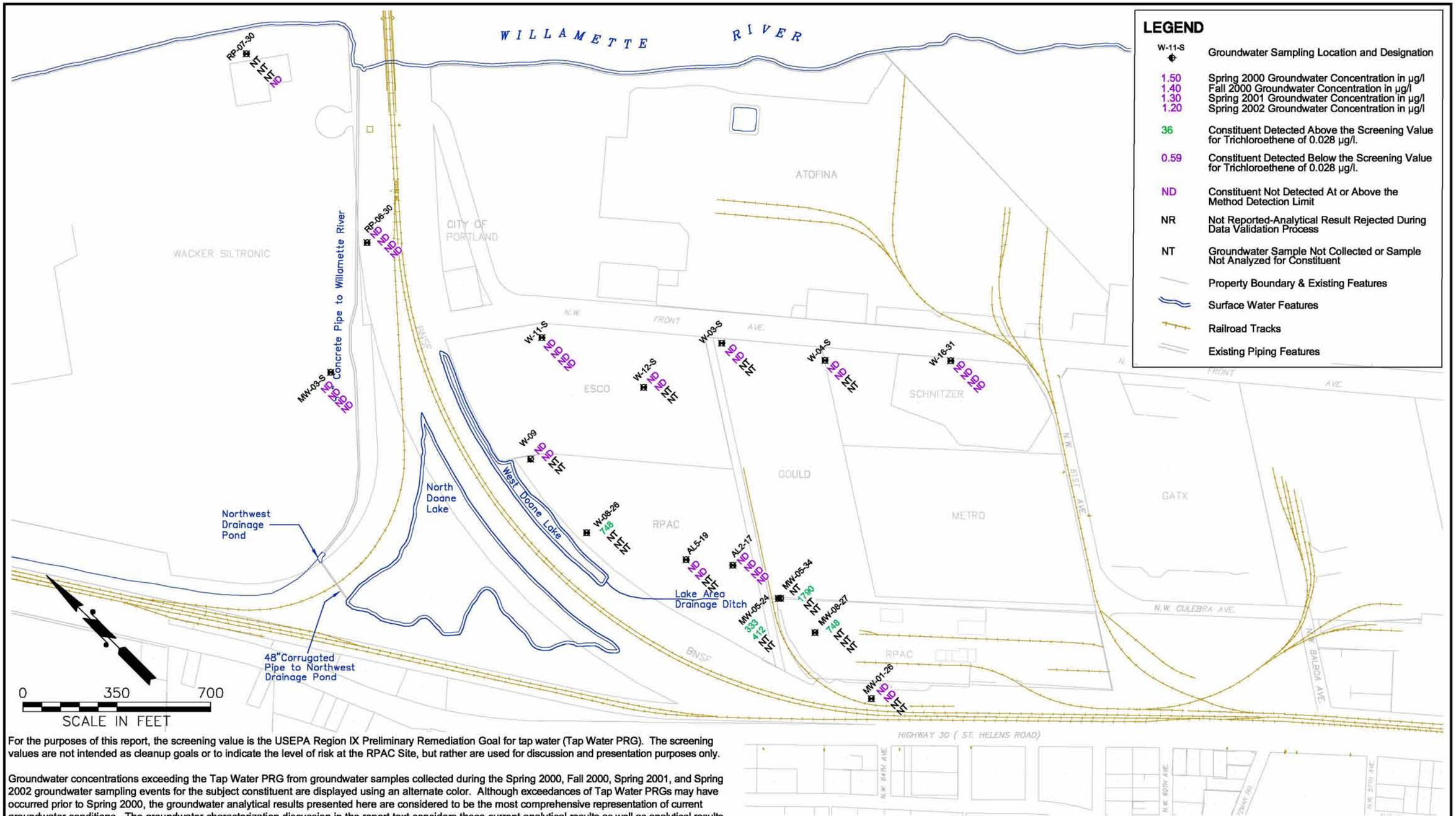
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-6
BENZENE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-6_BENZ.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

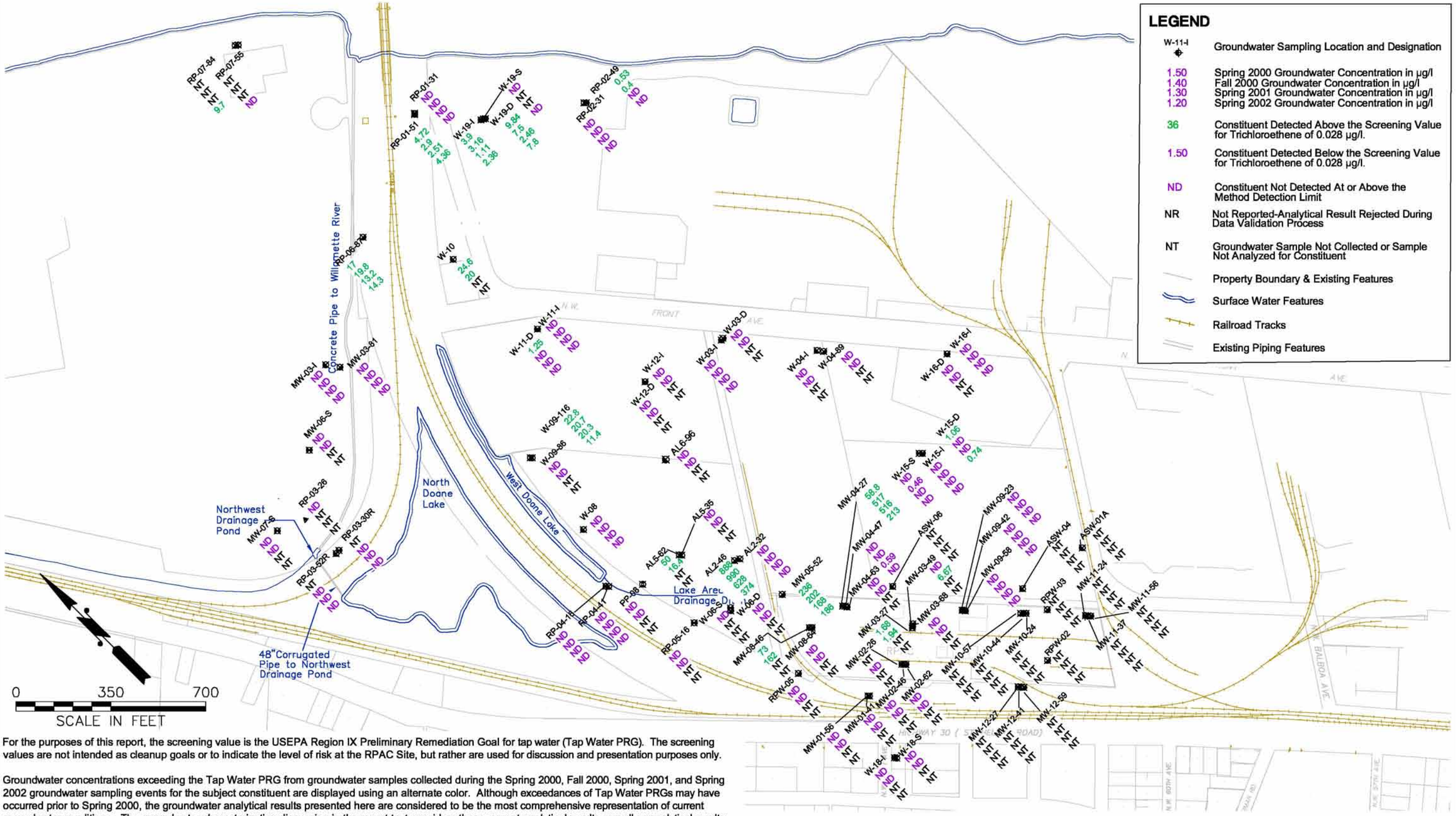
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-7
TRICHLOROETHENE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-7_TCE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

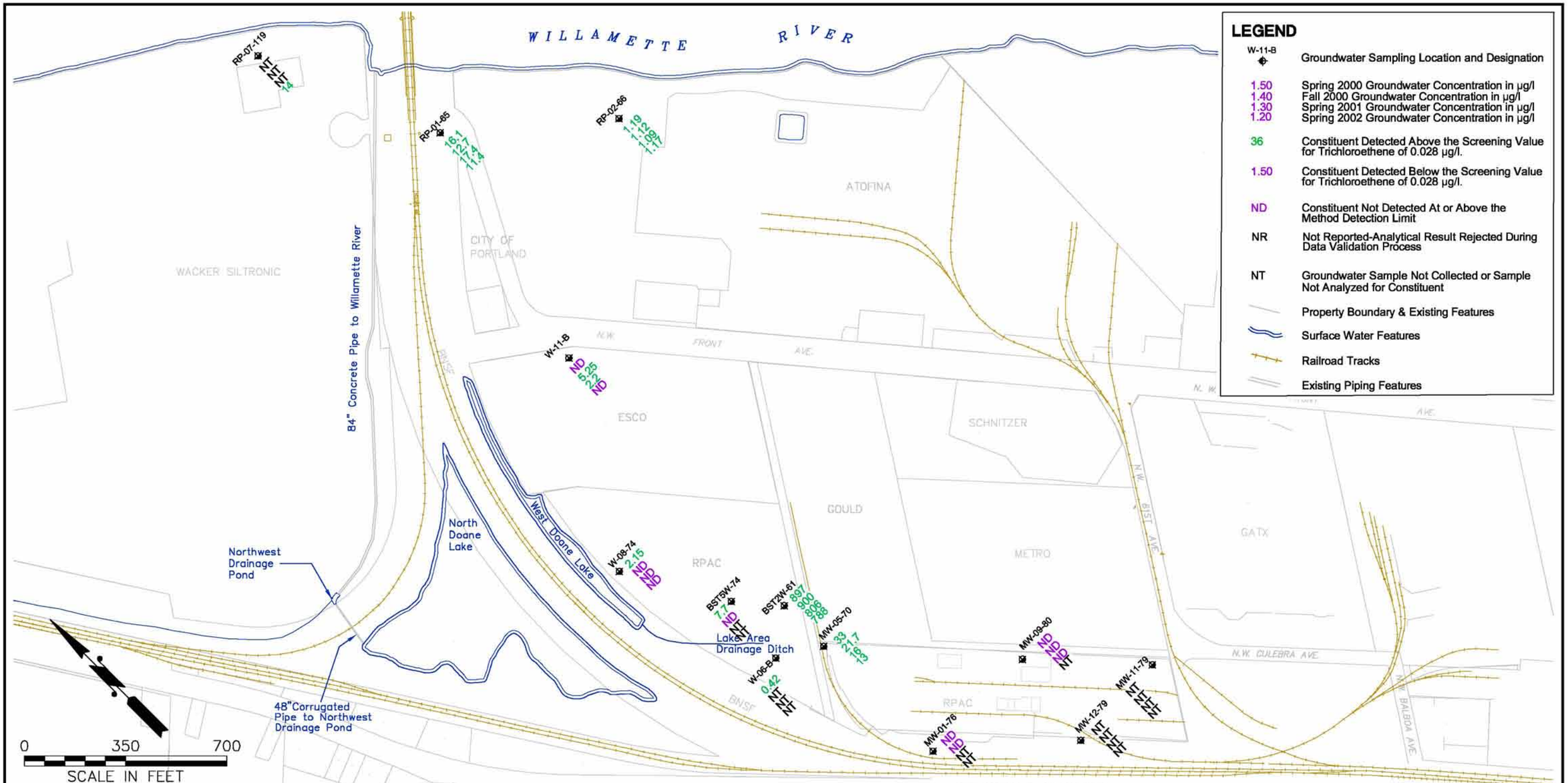
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-8
TRICHLOROETHENE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-8_TCE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

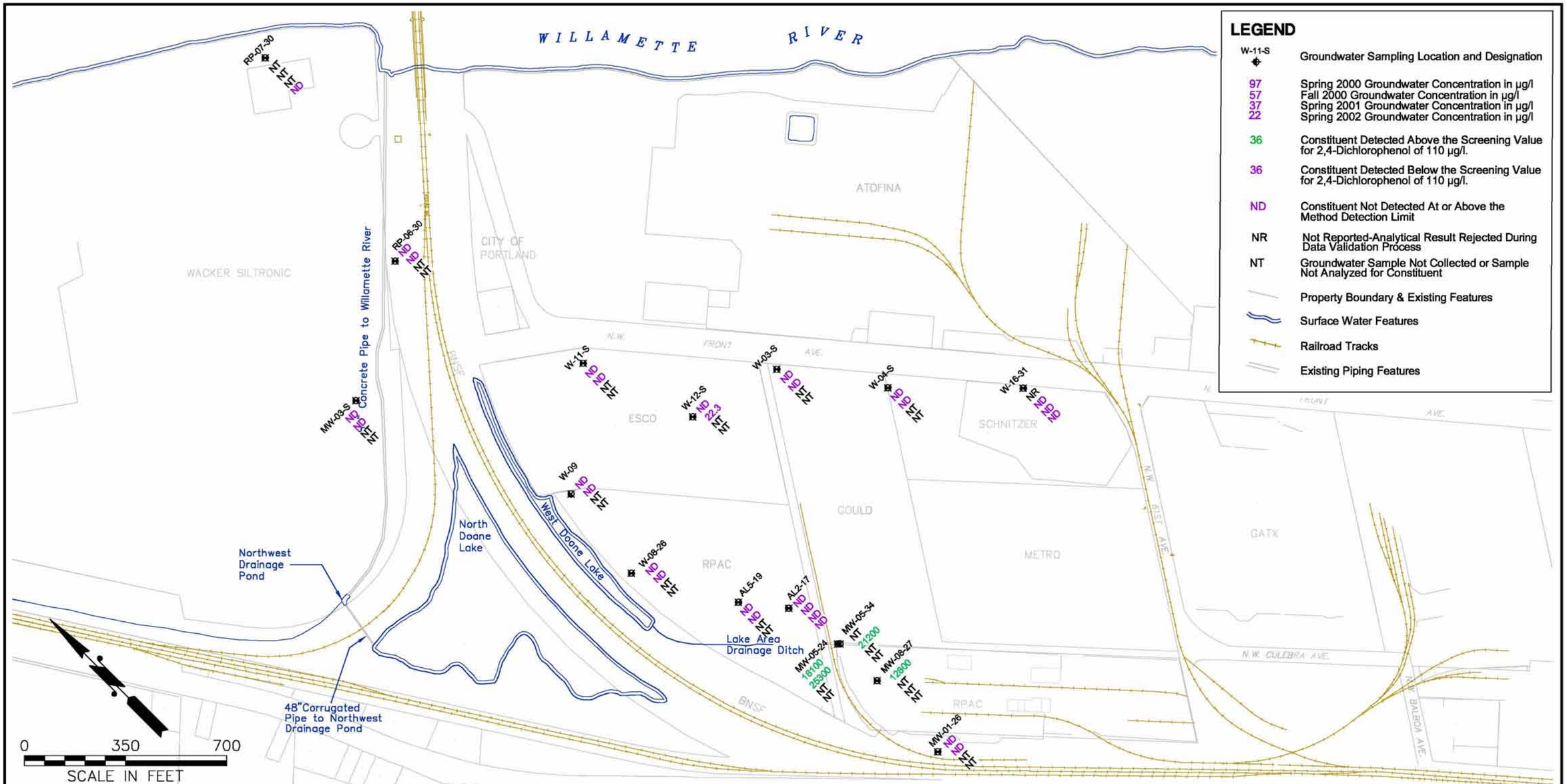
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-9
TRICHLOROETHENE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-9-TCE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

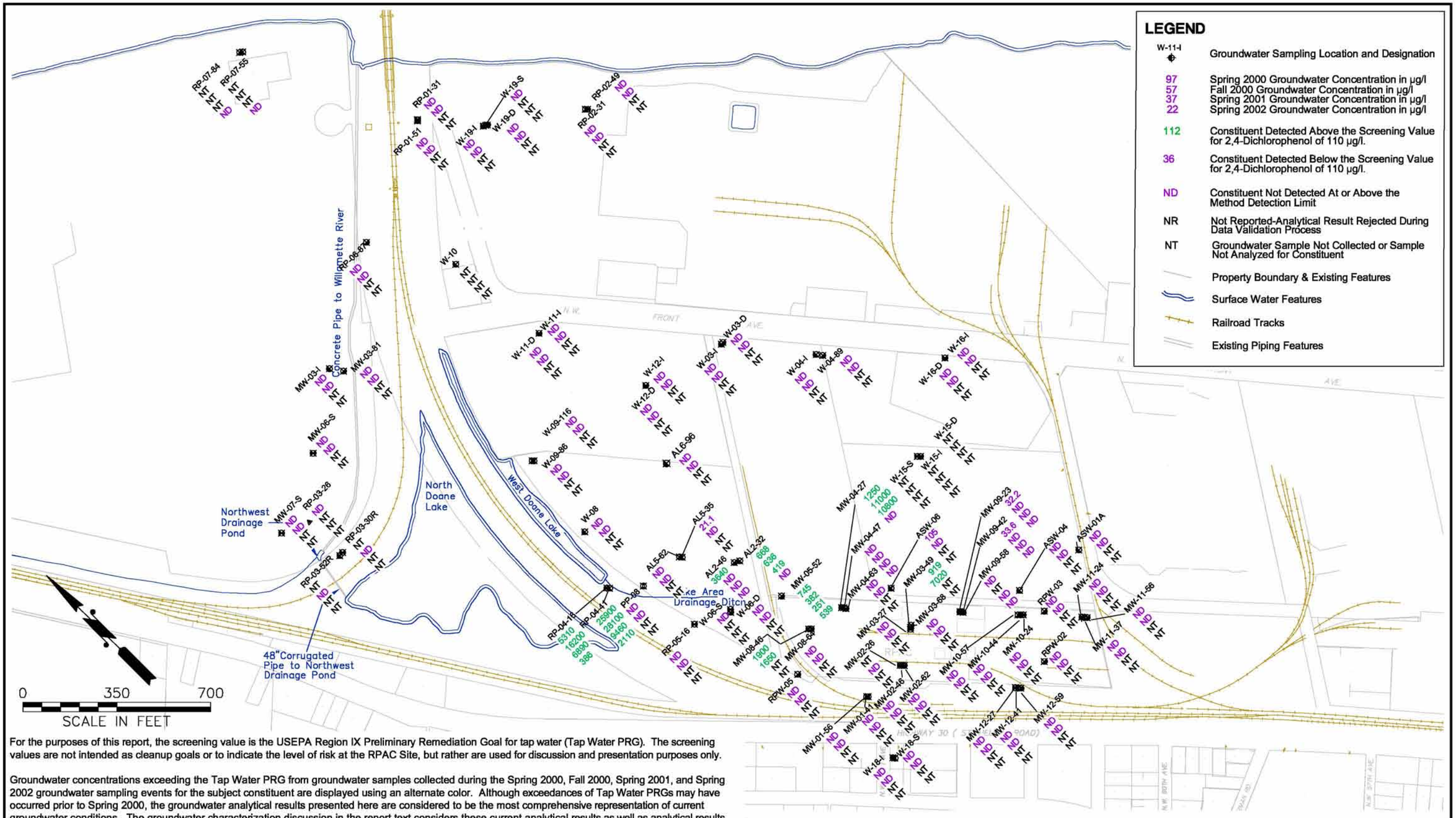
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-10
2,4-DICHLOROPHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-1D_2-4-DICHLORO.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

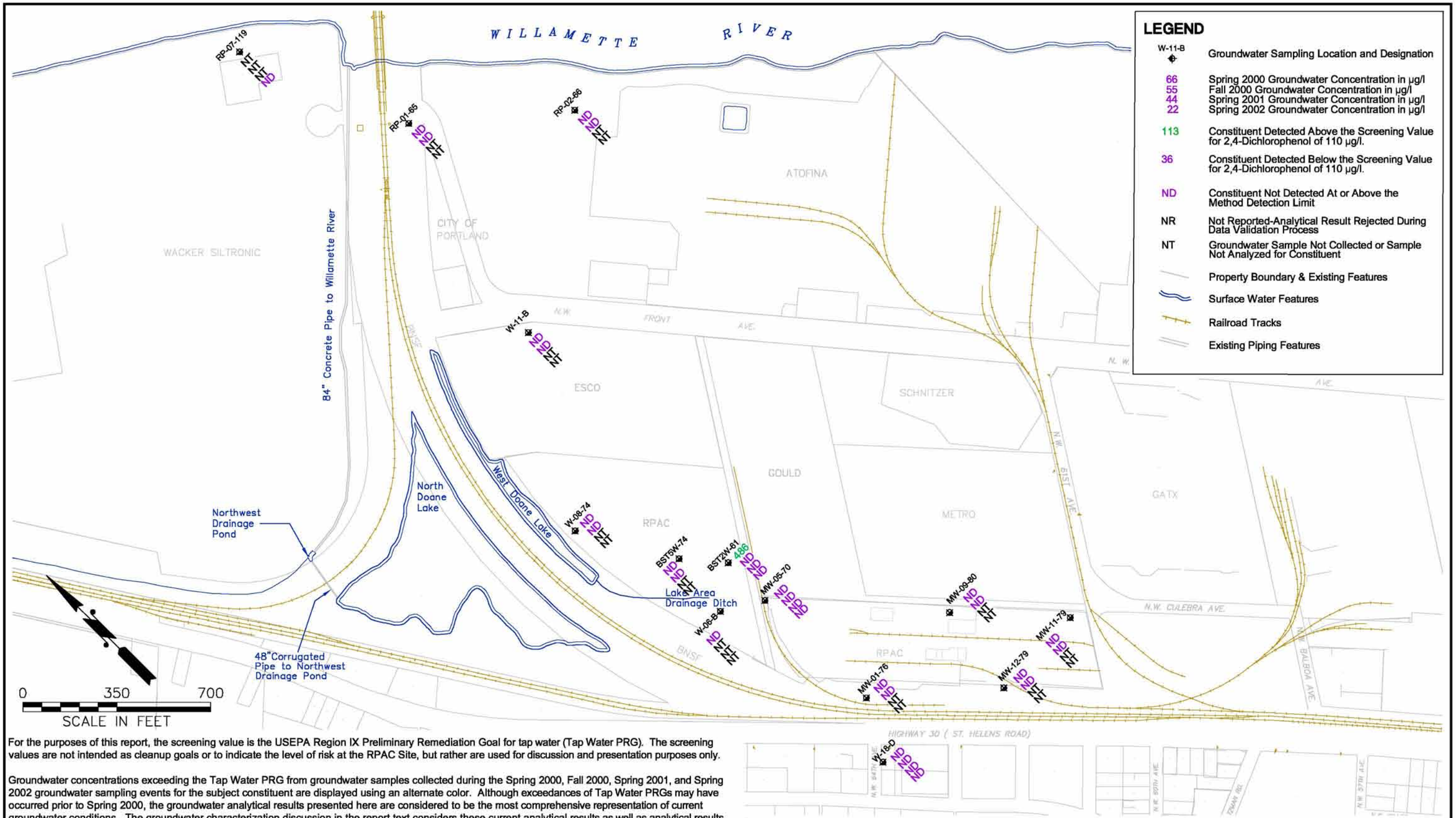
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-11
2,4-DICHLOROPHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-11_2-4-DICH.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

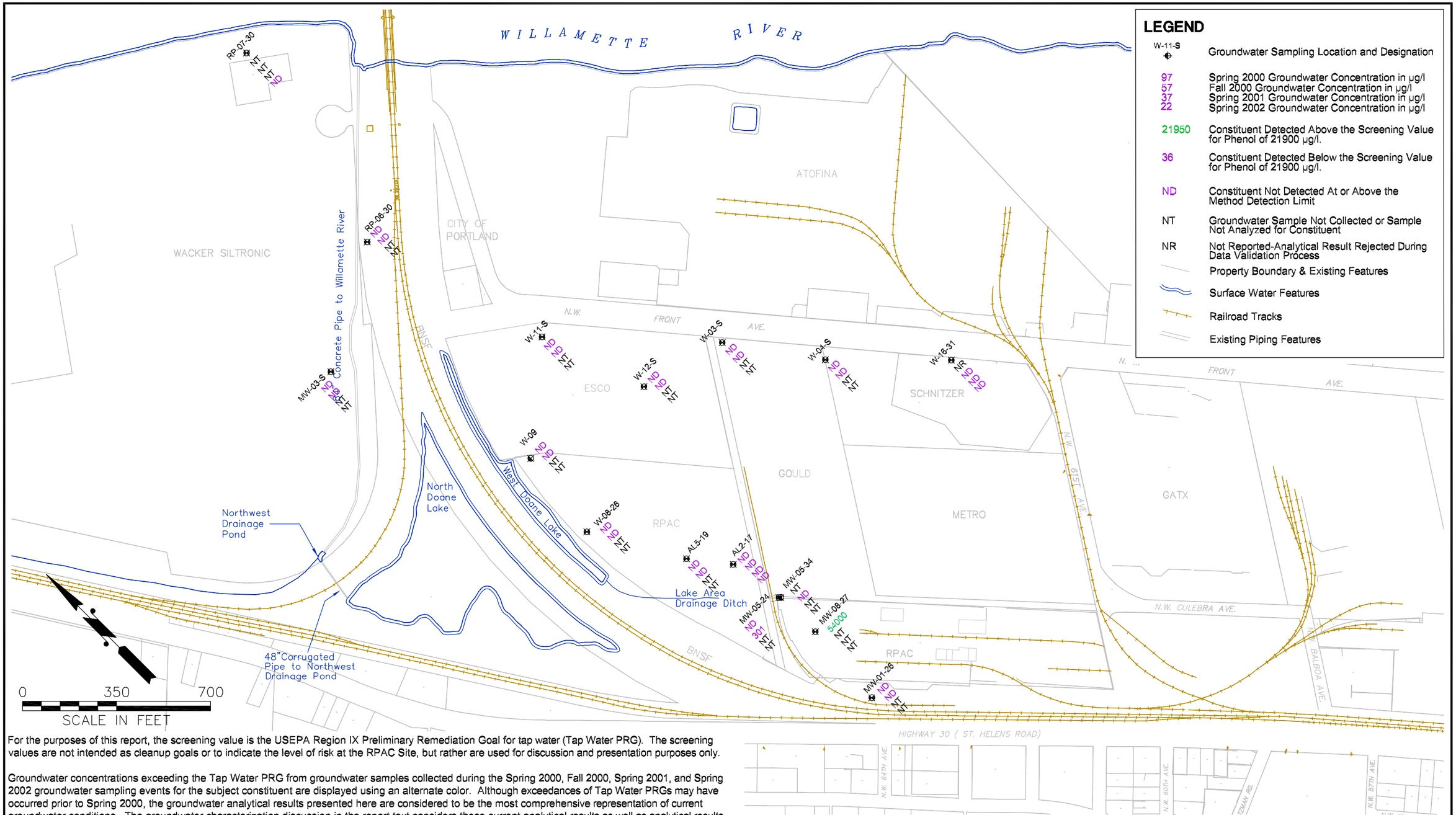
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-12
2,4-DICHLOROPHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-12_2-4-DICH.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

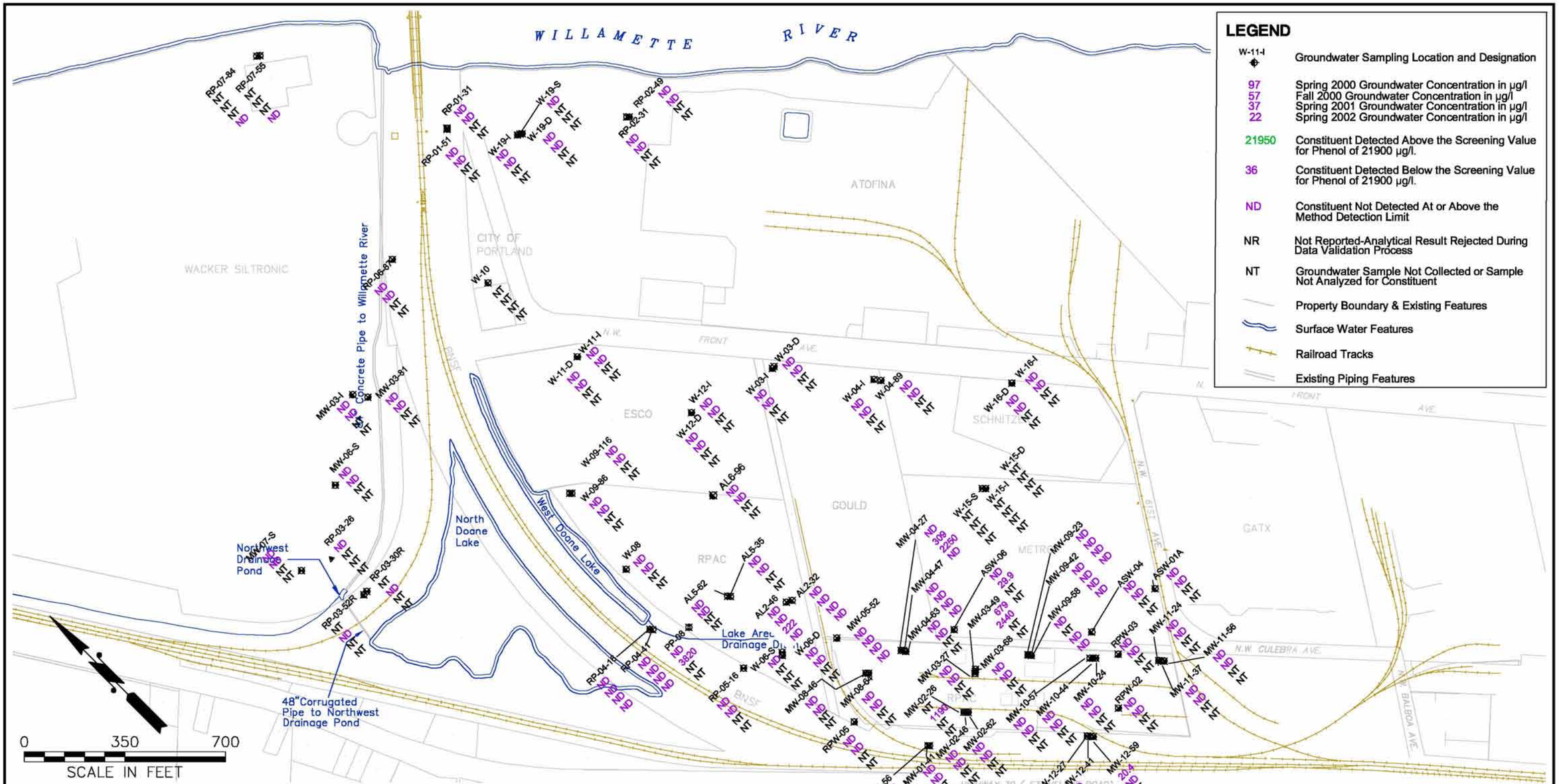
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-13
PHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-13_PHENOL.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

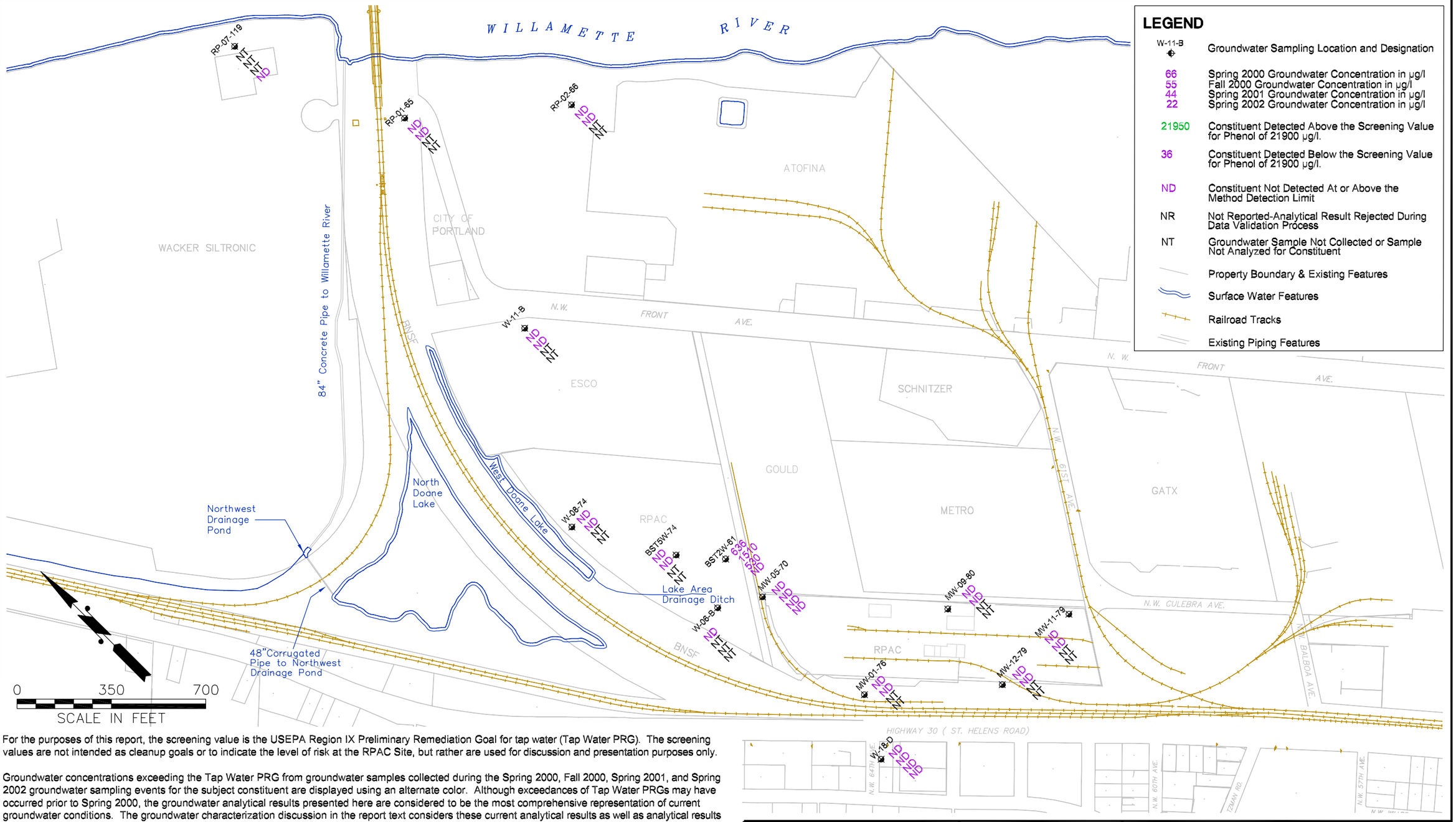
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-14
PHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-14_PHENOL.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

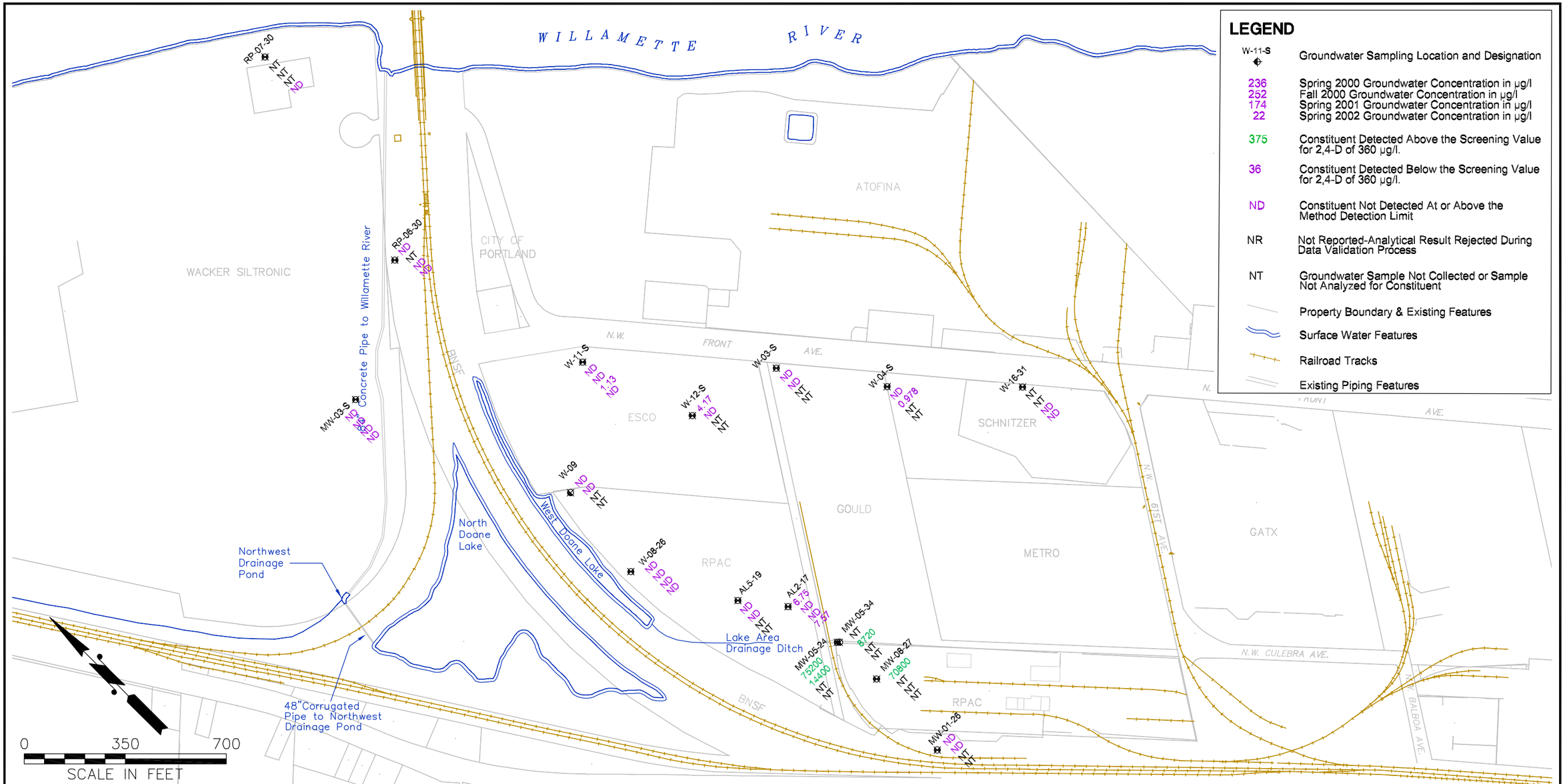
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-15
PHENOL
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-15_PHENOL.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

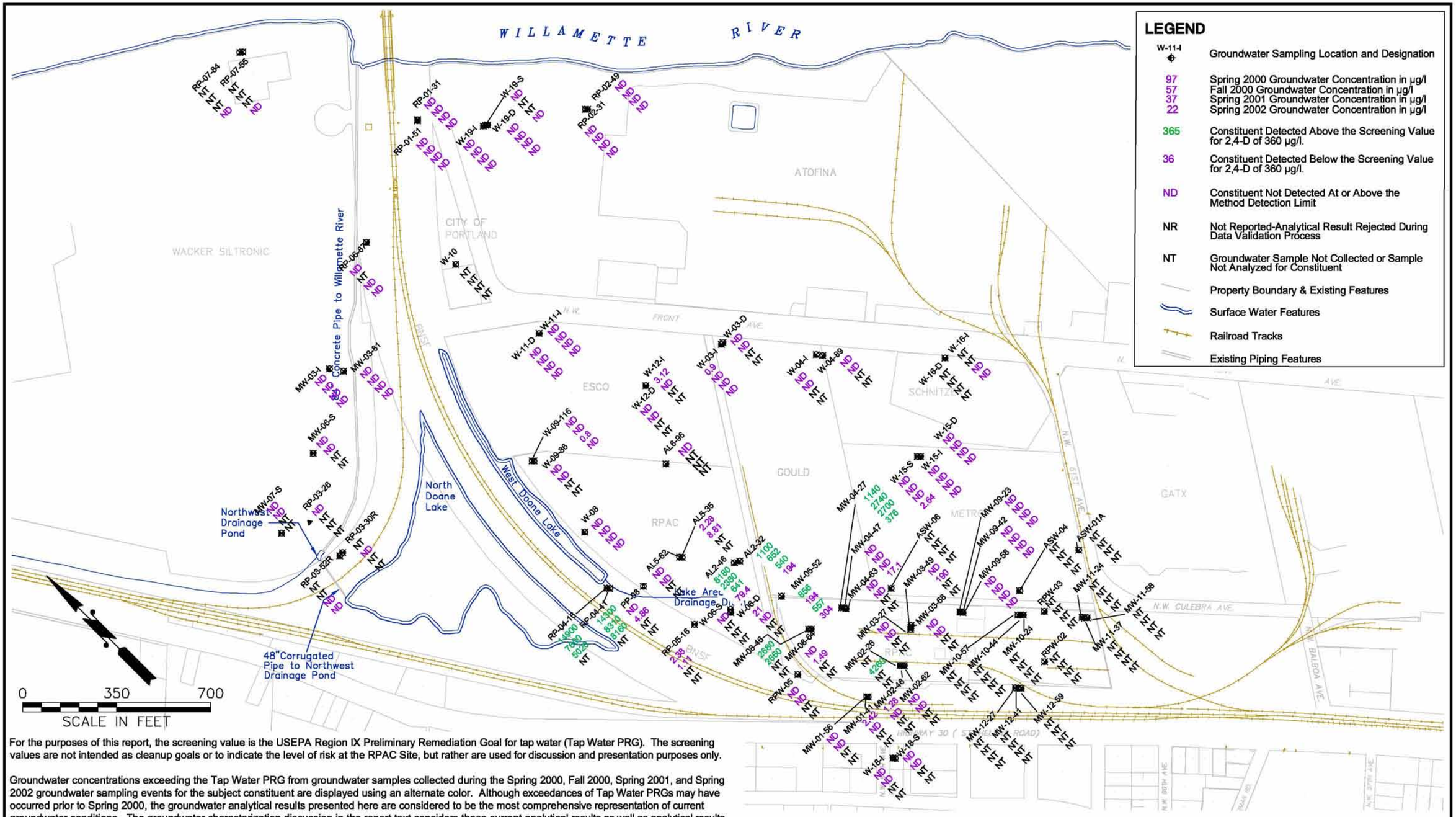
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-16
2,4-D
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-16_2-4-D.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

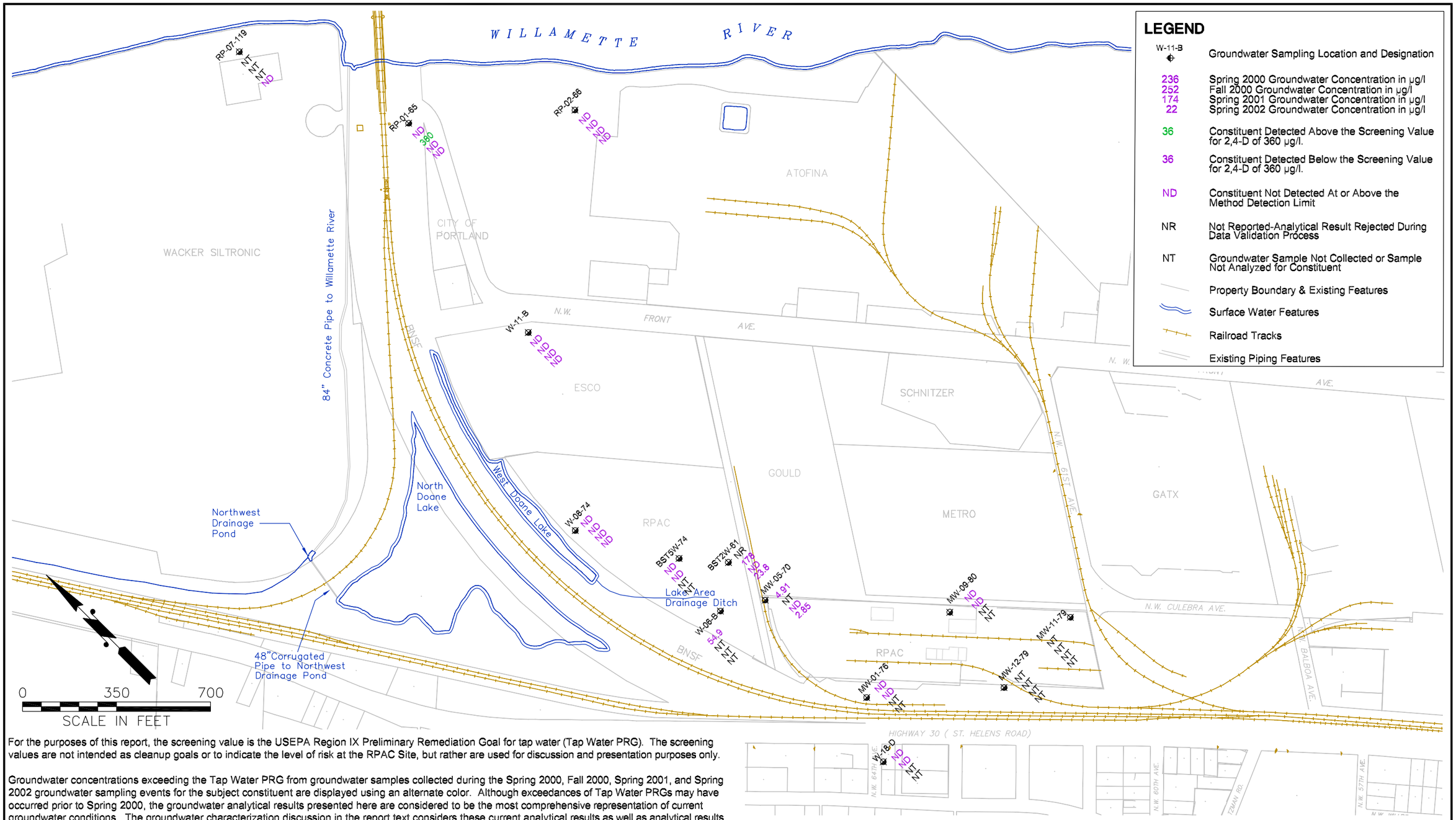
amec

7378 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-17
2,4-D
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG_C-17_2-4-D.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

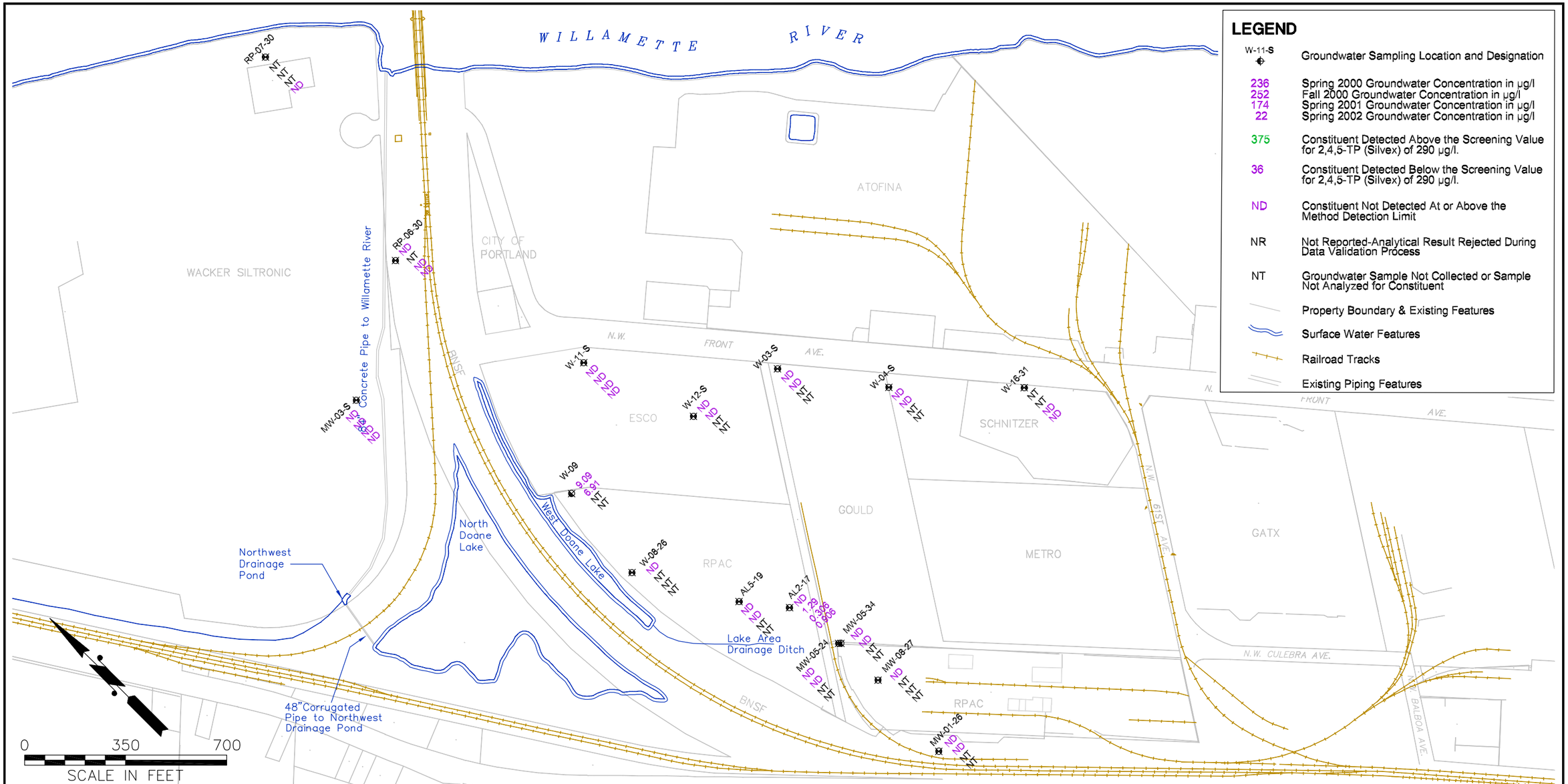
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-18
2,4-D
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG_C-18_2-4-D.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

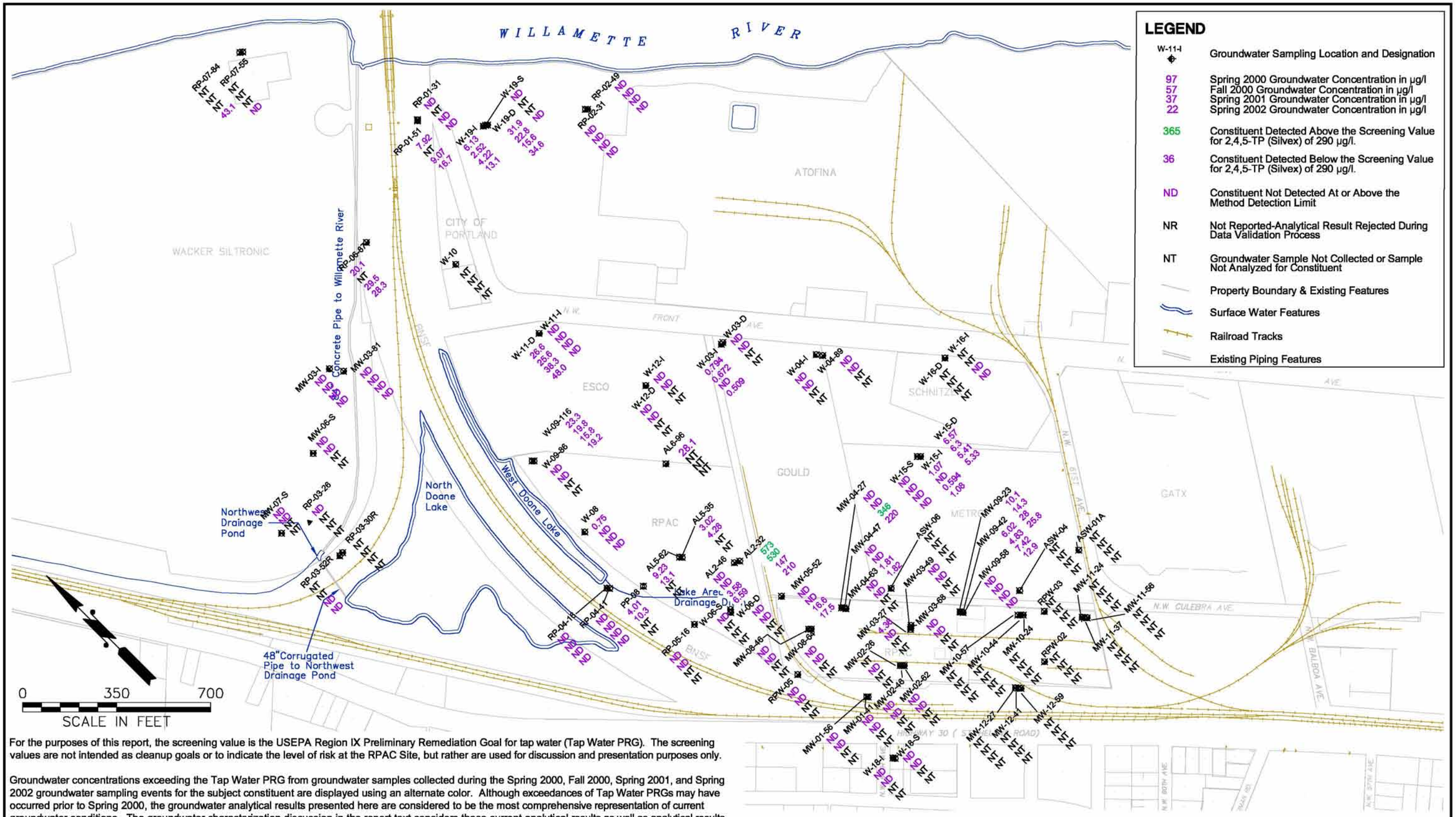
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-19
2,4,5-TP (SILVEX)
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-19_SILVEX.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

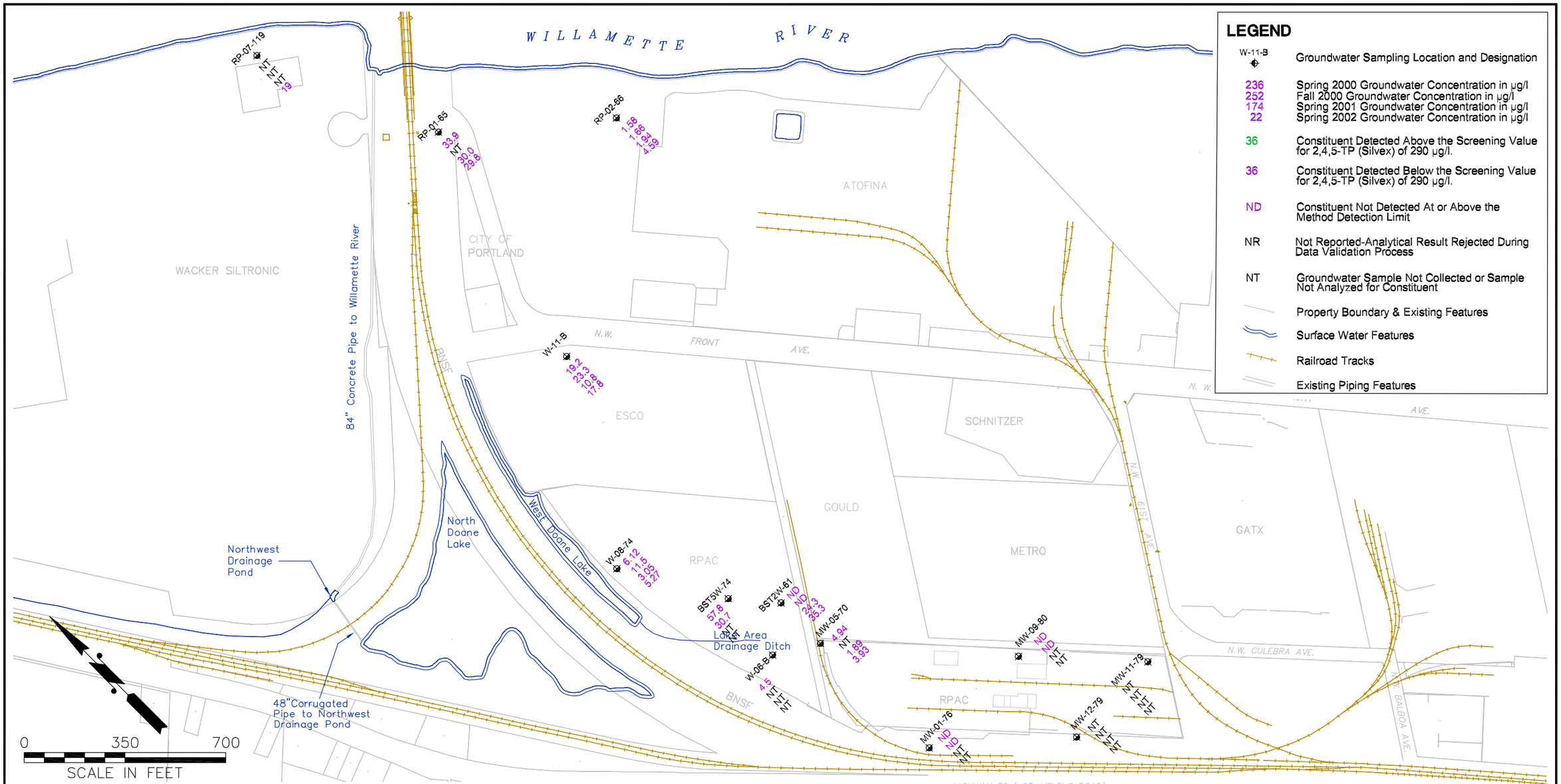
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-20
2,4,5-TP (SILVEX)
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-20_SILVEX.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

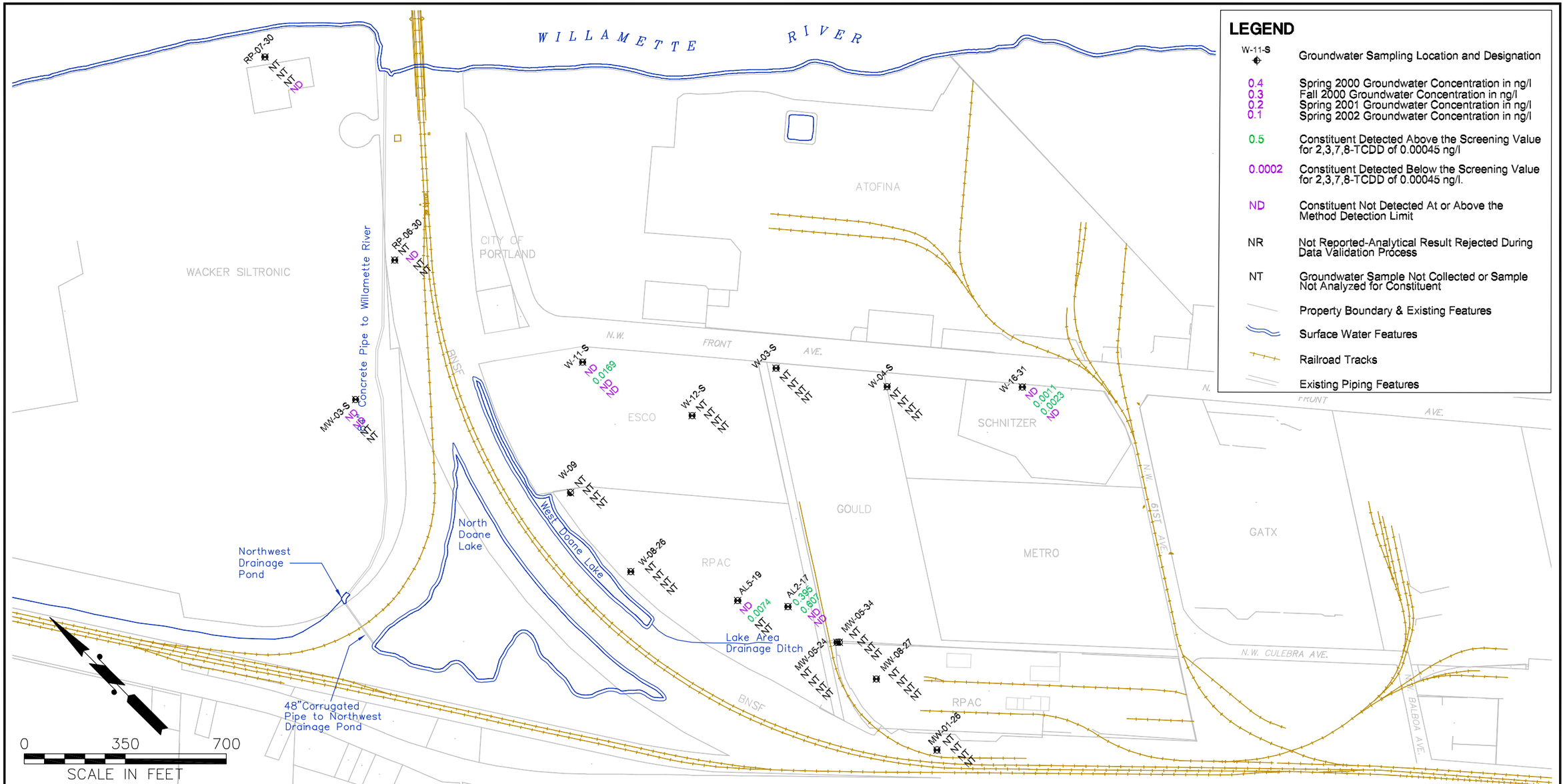
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-21
2,4,5-TP (SILVEX)
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-21_SILVEX.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

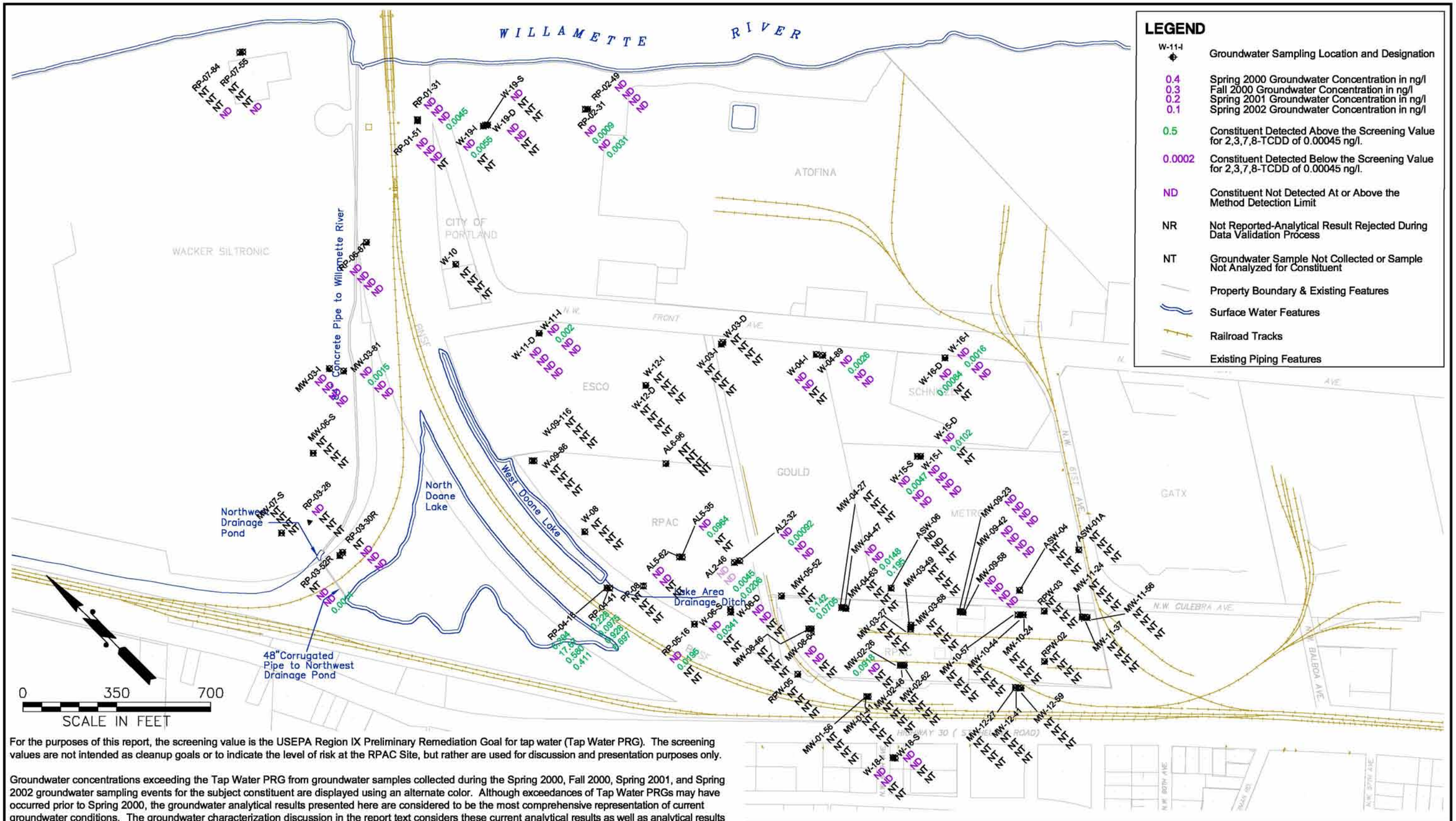
µg/l = micrograms per liter ng/l = nanograms per liter

amec
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-22
2,3,7,8-TCDD
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-22_TCDD.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

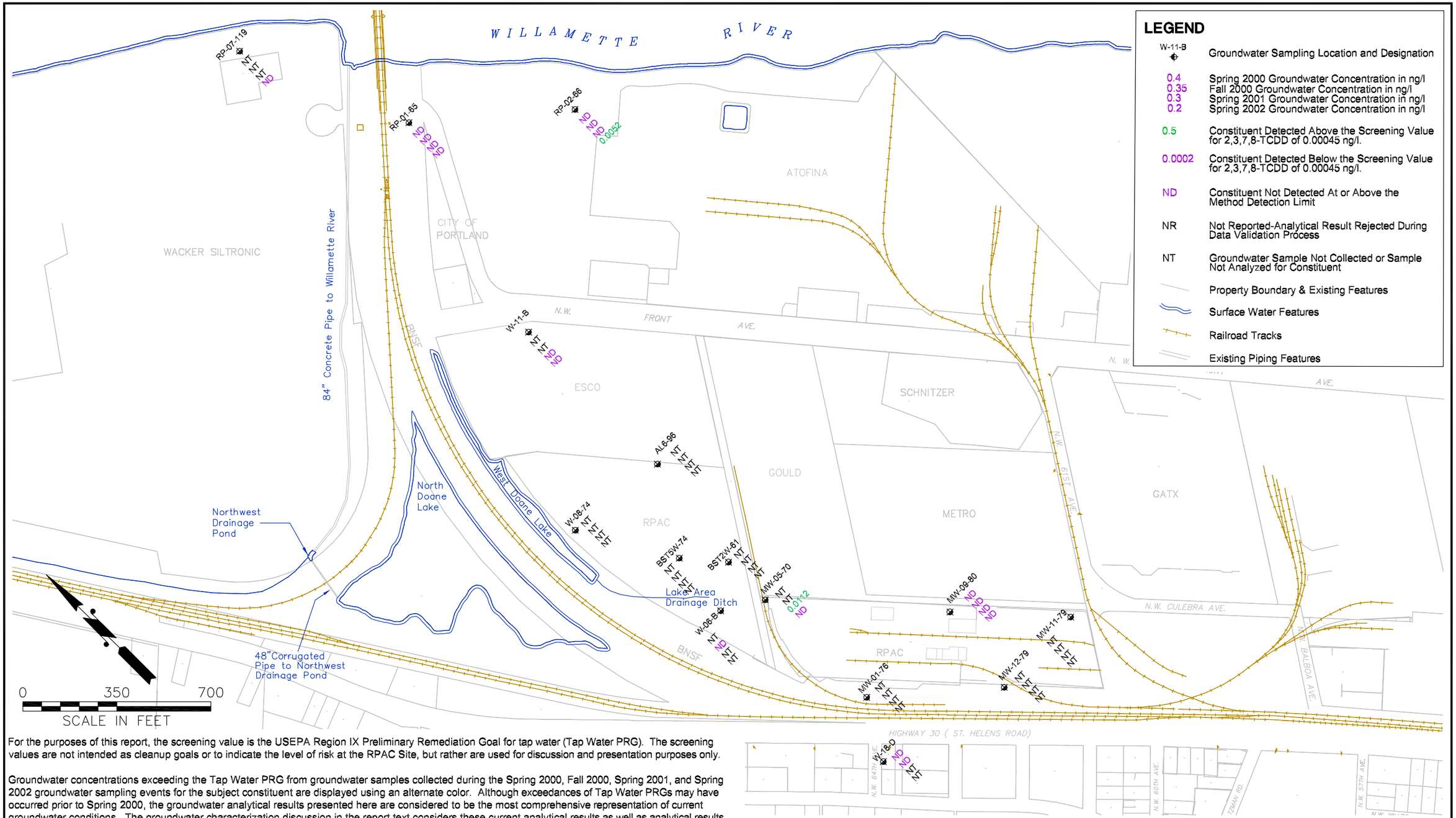
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-23
2,3,7,8-TCDD
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-23_TCDD.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

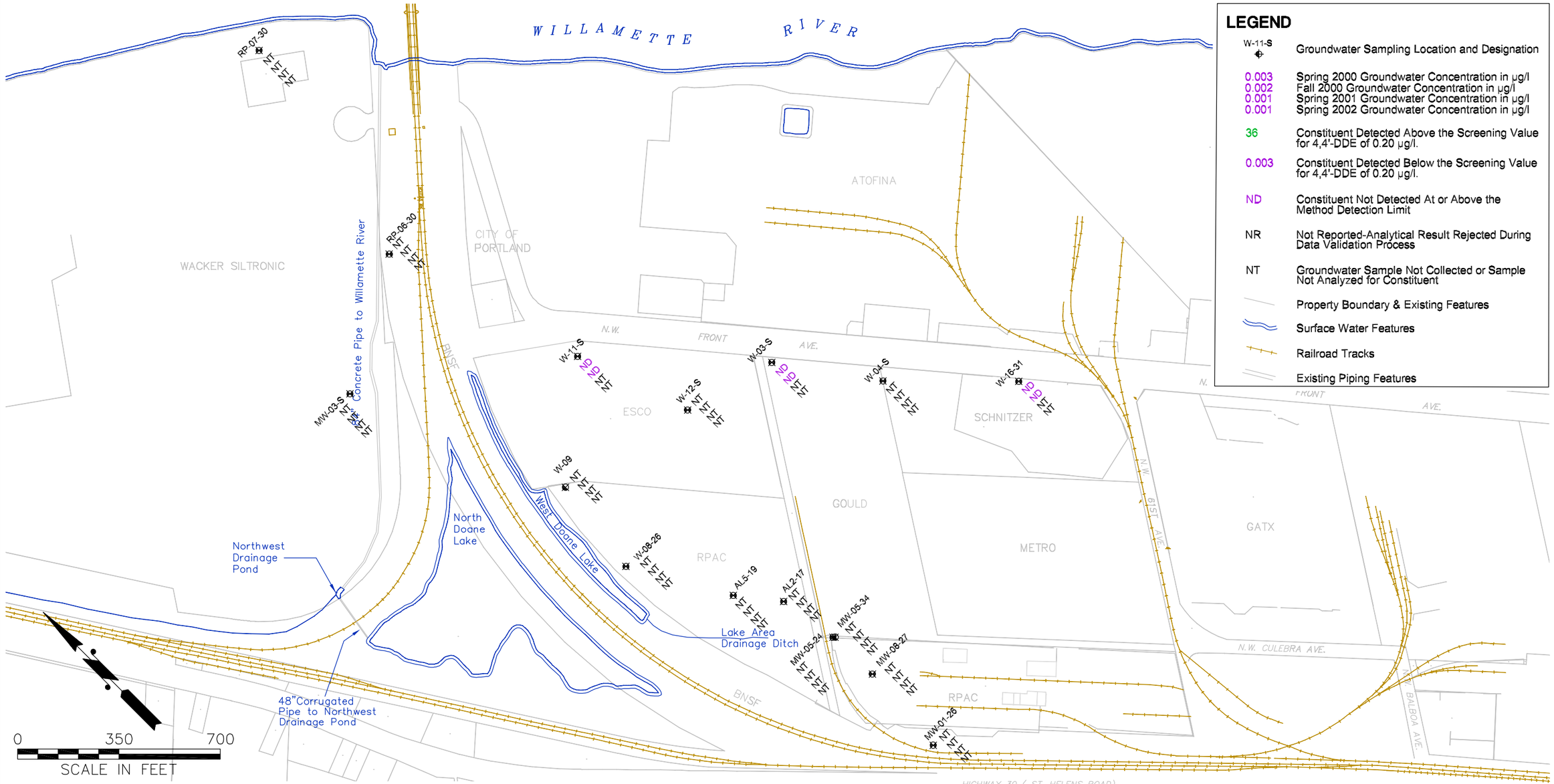
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-24
2,3,7,8-TCDD
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-24_TCDD.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

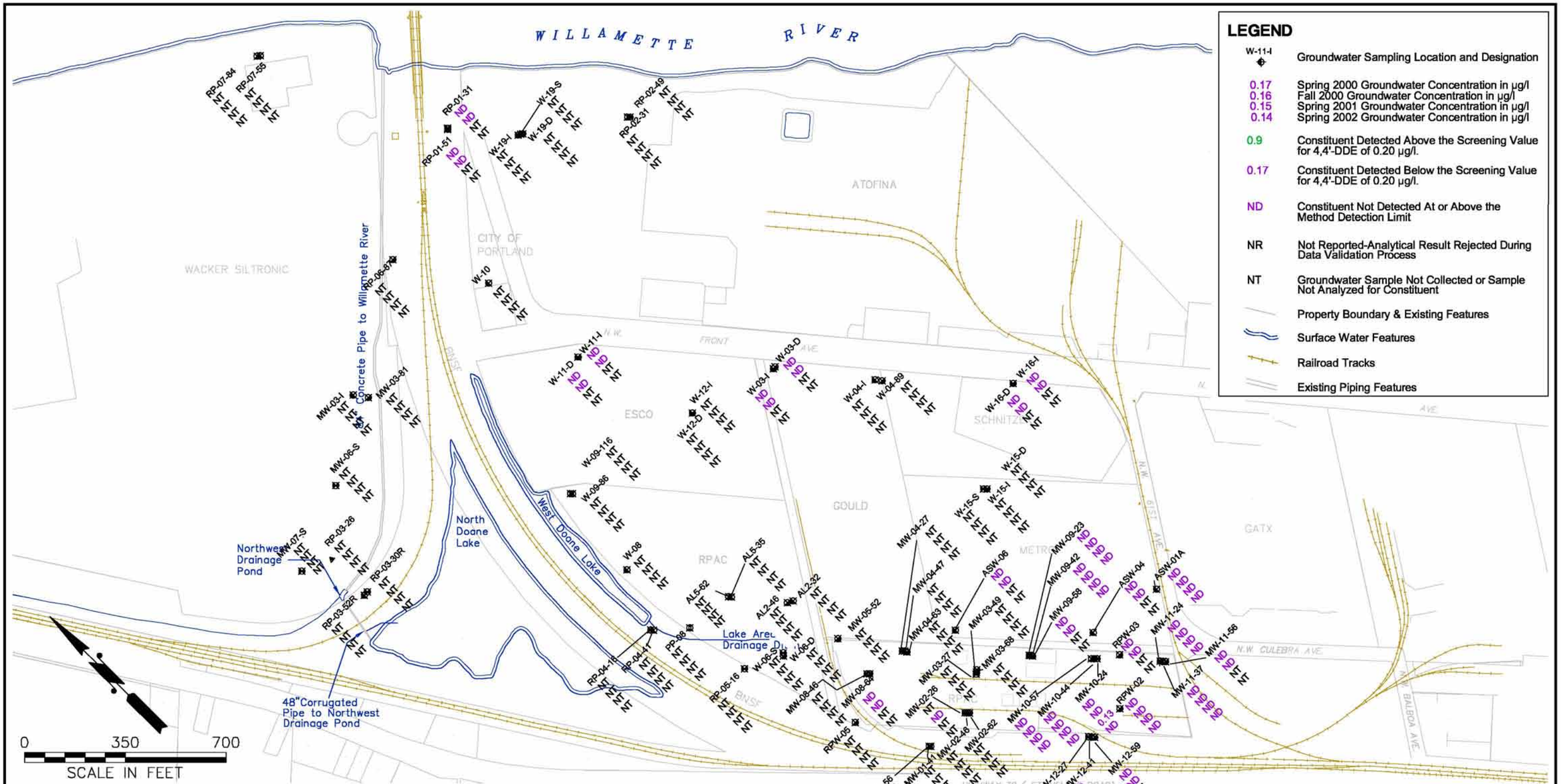
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-25
4,4'-DDE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-25_DDE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

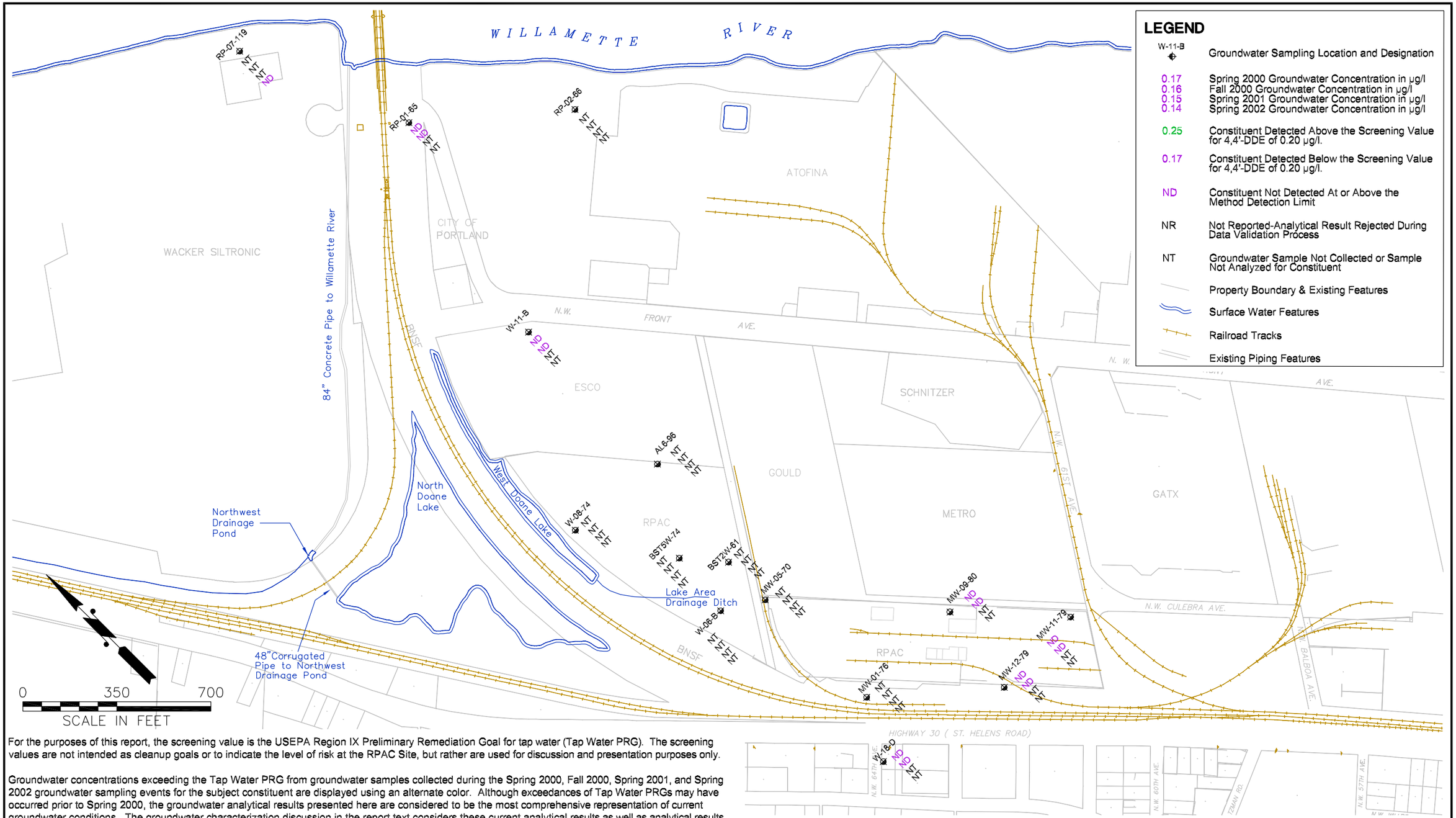
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-26
4,4'-DDE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-26_DDE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

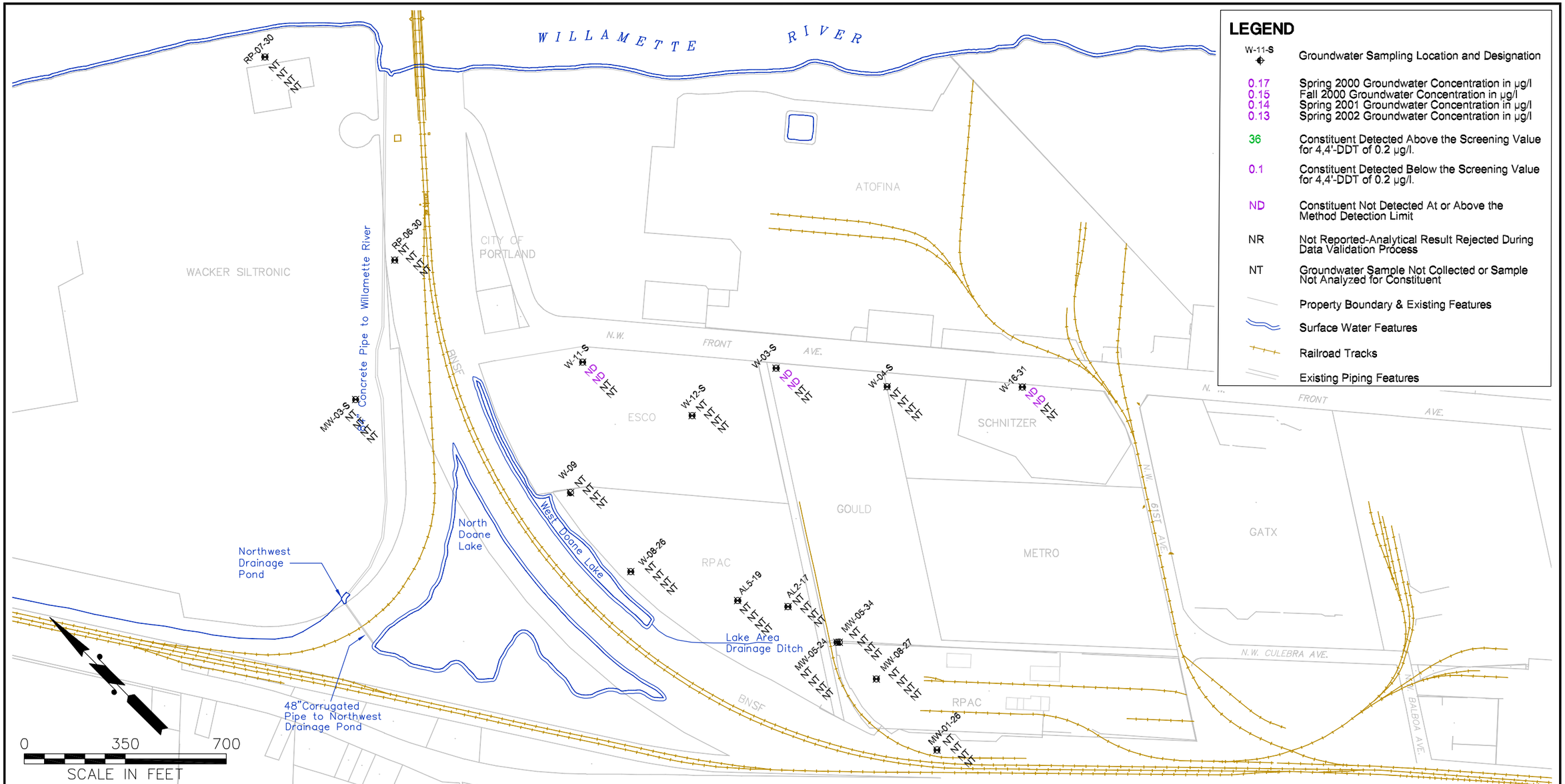
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-27
4,4'-DDE
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-27_DDE.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

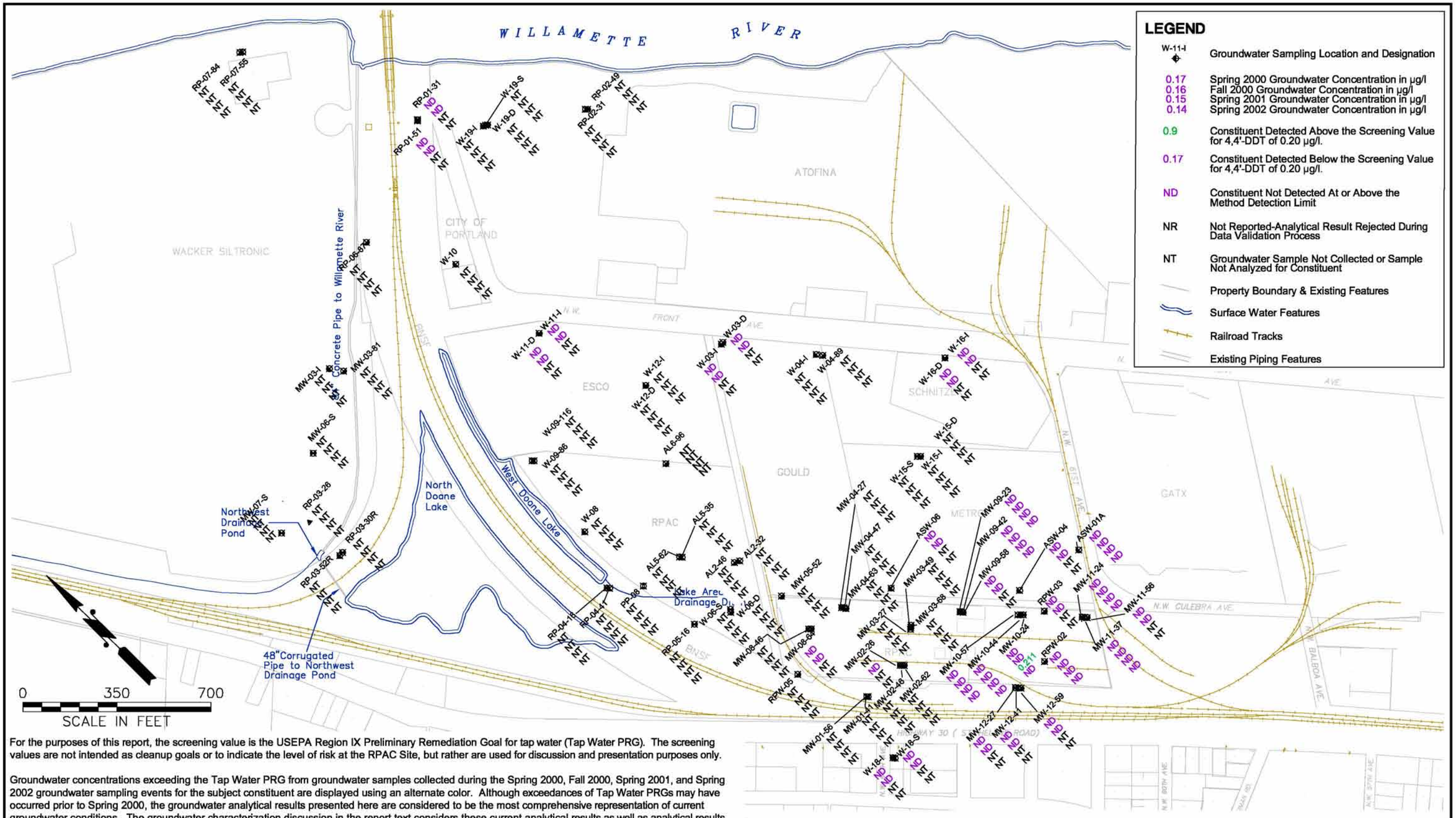
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-28
4,4'-DDT
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-28_DDT.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = naograms per liter

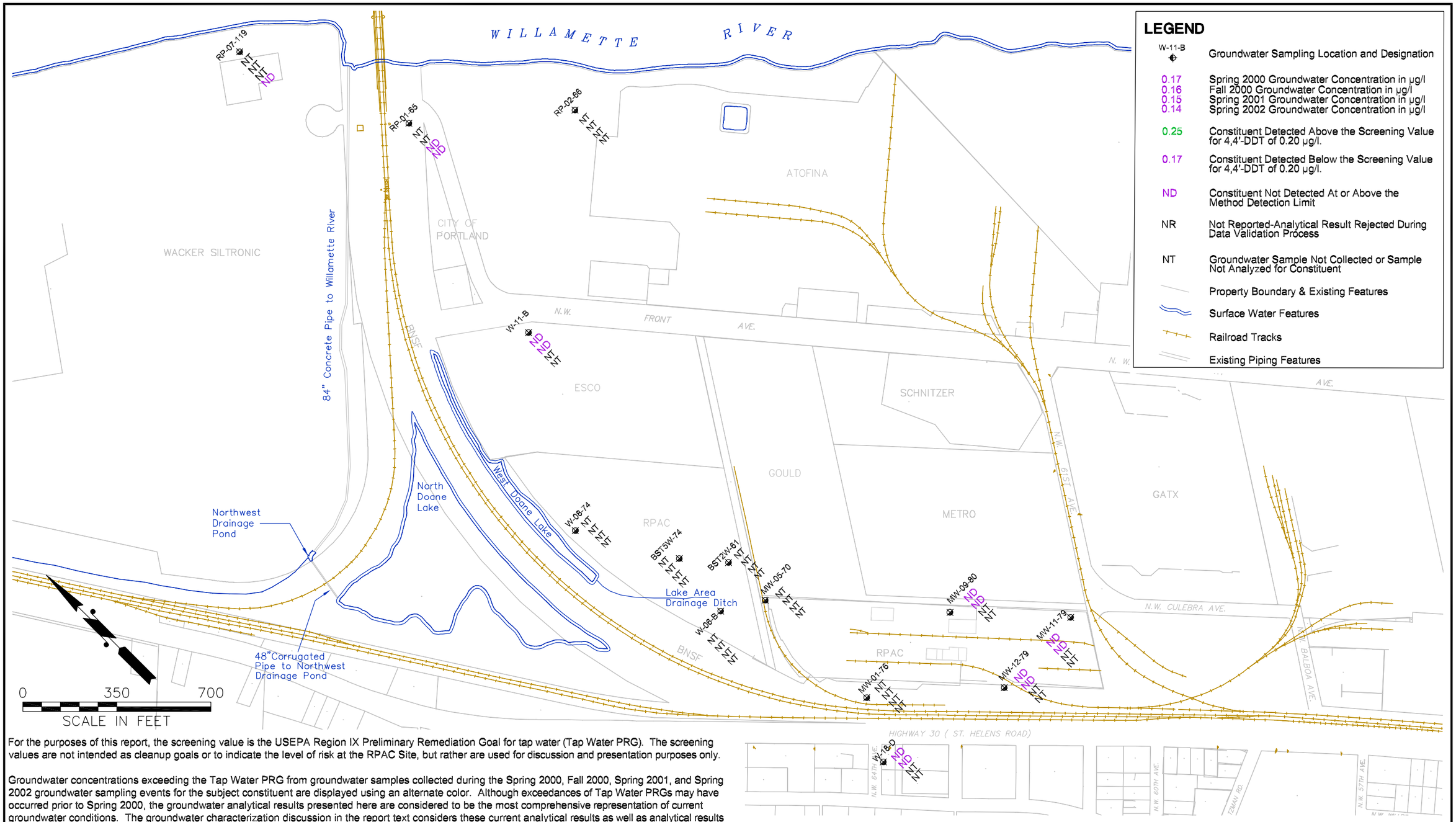
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-29
4,4'-DDT
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-29_DDT.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

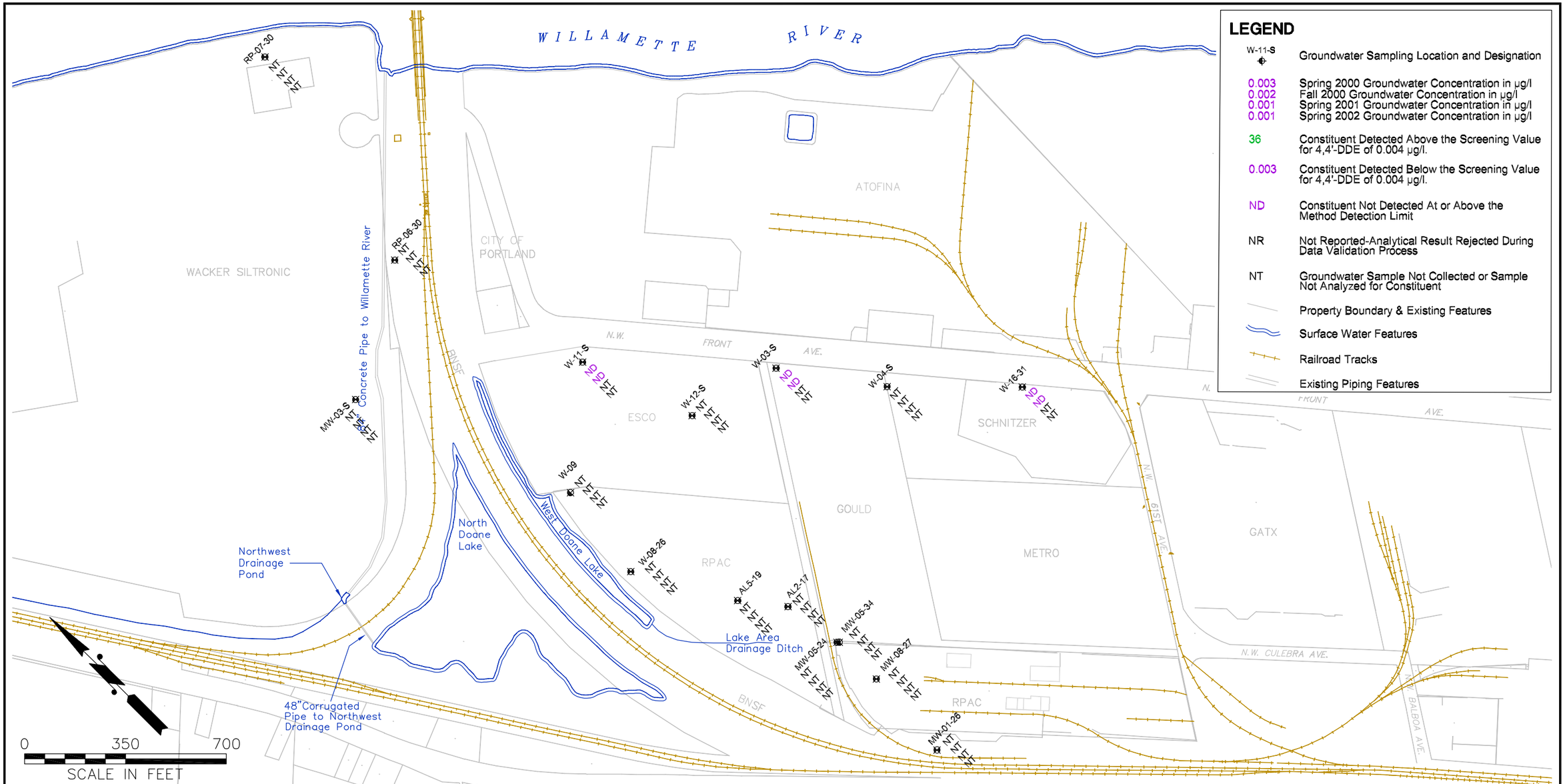
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-30
4,4'-DDT
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-30_DDT.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

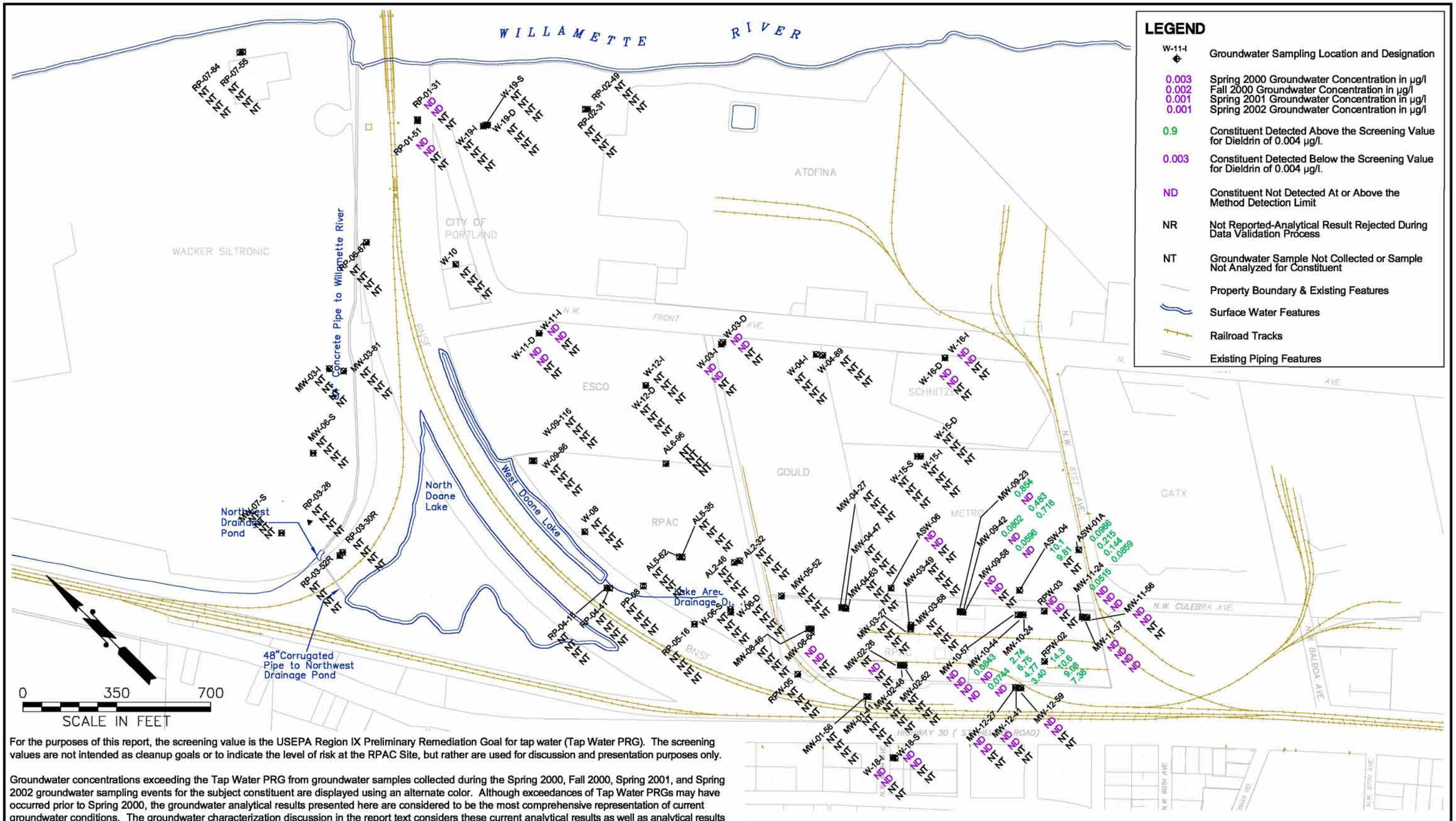
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-31
DIELDRIN
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-31_Dieldrin.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

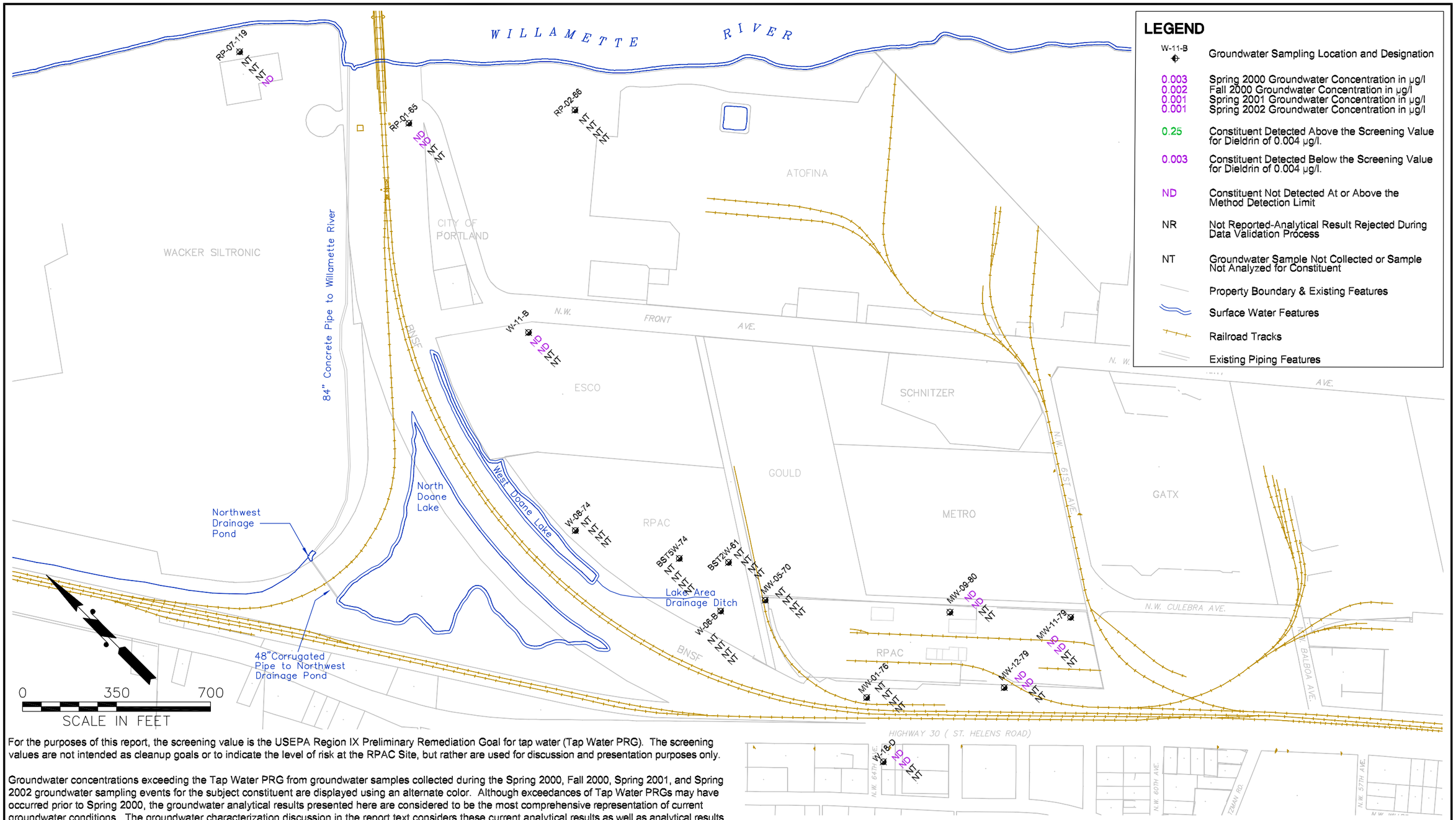
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-32
DIELDRIN
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-32_DIELDRIN.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

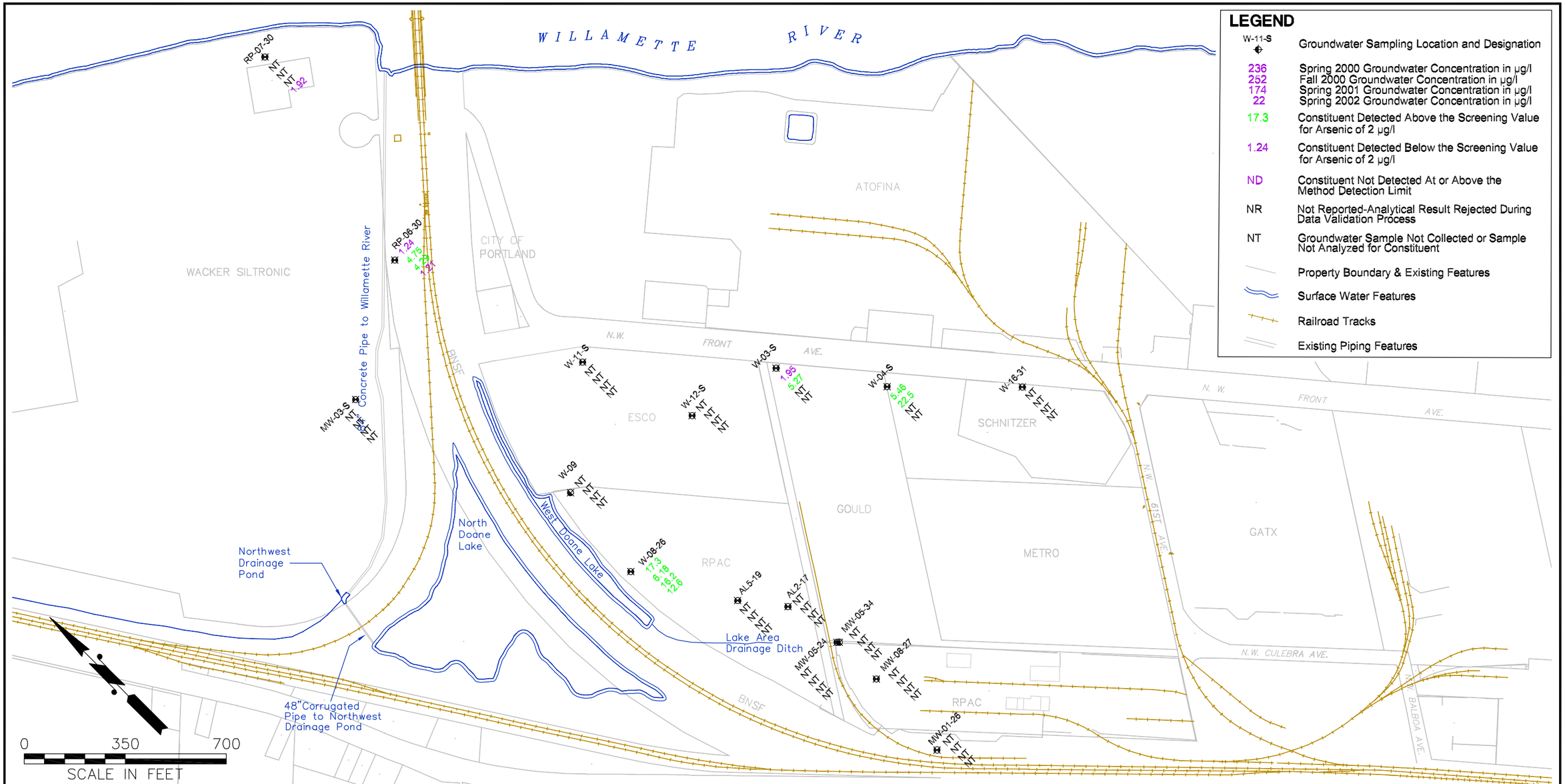
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-33
DIELDRIN
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-33_DIELDRIN.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

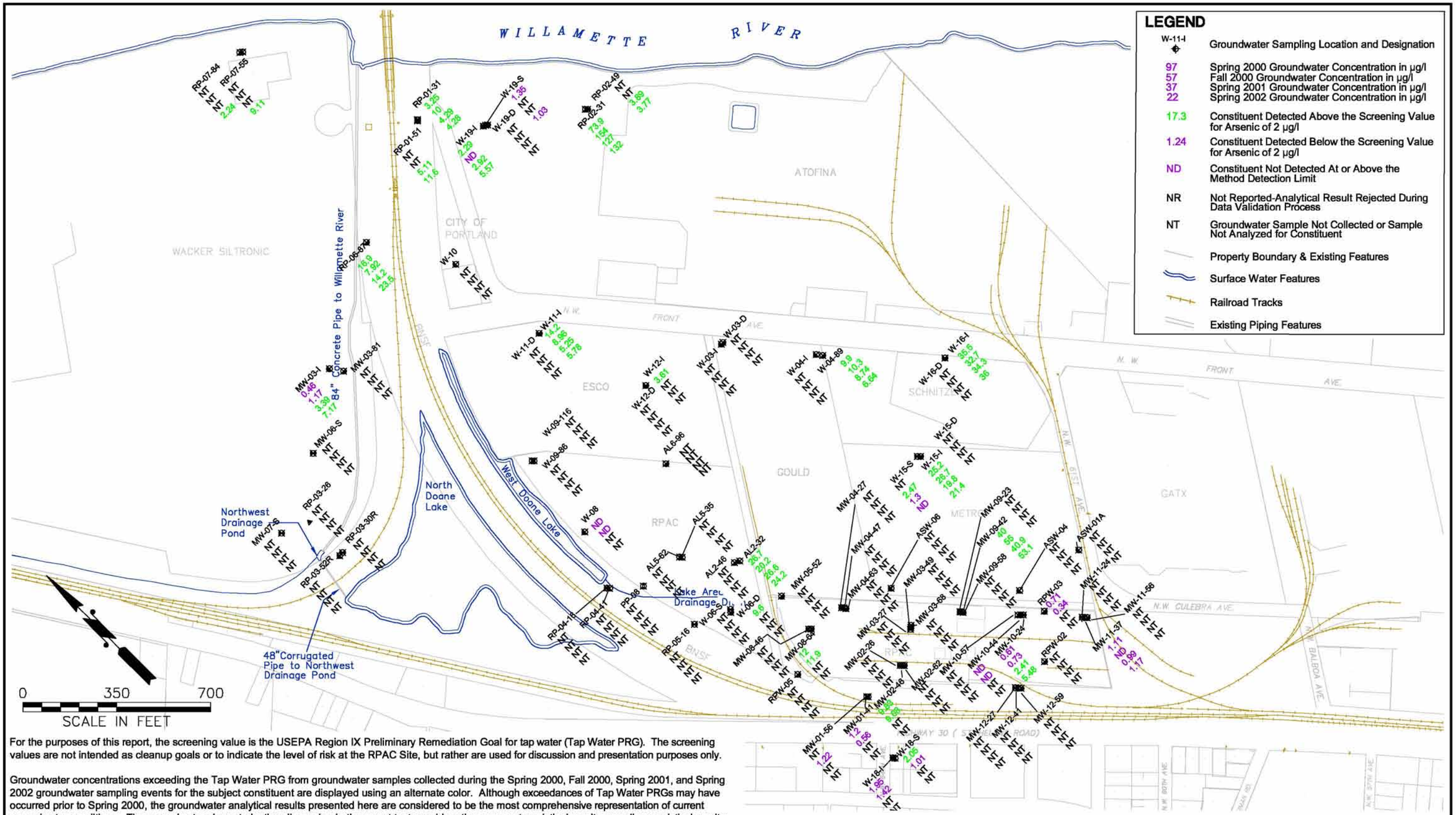
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-34
DISSOLVED ARSENIC
DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-34_ARSENIC_1.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

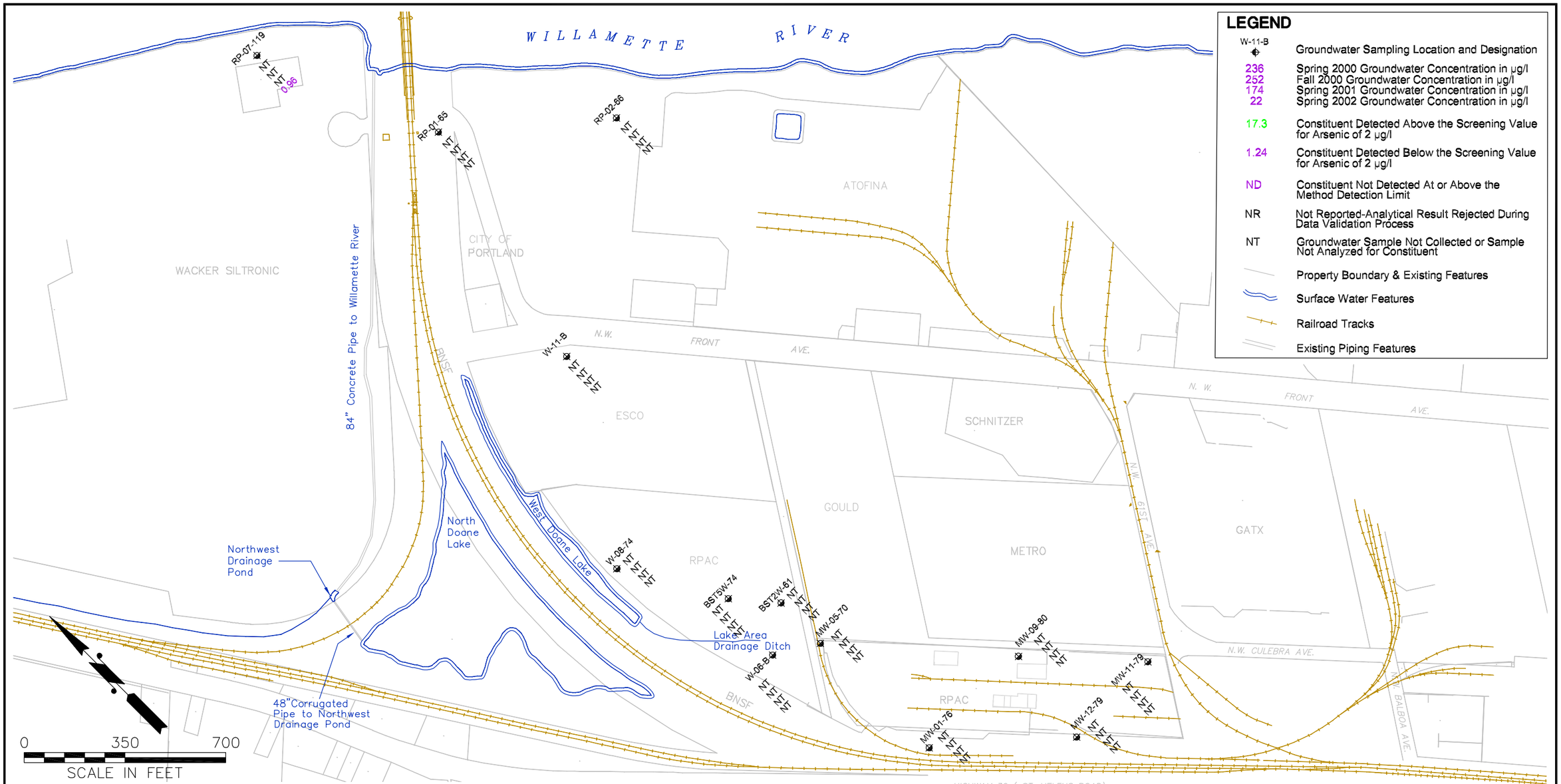
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-35
DISSOLVED ARSENIC DISTRIBUTION IN GROUNDWATER SPRING 2000-SPRING 2002
ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\Fig-35_Arsenic.dwg



For the purposes of this report, the screening value is the USEPA Region IX Preliminary Remediation Goal for tap water (Tap Water PRG). The screening values are not intended as cleanup goals or to indicate the level of risk at the RPAC Site, but rather are used for discussion and presentation purposes only.

Groundwater concentrations exceeding the Tap Water PRG from groundwater samples collected during the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are displayed using an alternate color. Although exceedances of Tap Water PRGs may have occurred prior to Spring 2000, the groundwater analytical results presented here are considered to be the most comprehensive representation of current groundwater conditions. The groundwater characterization discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or reported from a dilution; these qualifiers are not indicated on the figures.

µg/l = micrograms per liter ng/l = nanograms per liter

amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/DLD
DATE	MARCH 2003
SCALE	1"=350'

FIGURE C-36
DISSOLVED ARSENIC DISTRIBUTION IN GROUNDWATER
SPRING 2000-SPRING 2002
BASALT ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX C\FIG-36_ARSENIC.dwg

APPENDIX D

Temporal Concentration Changes for Selected Monitoring Well Locations and Constituents

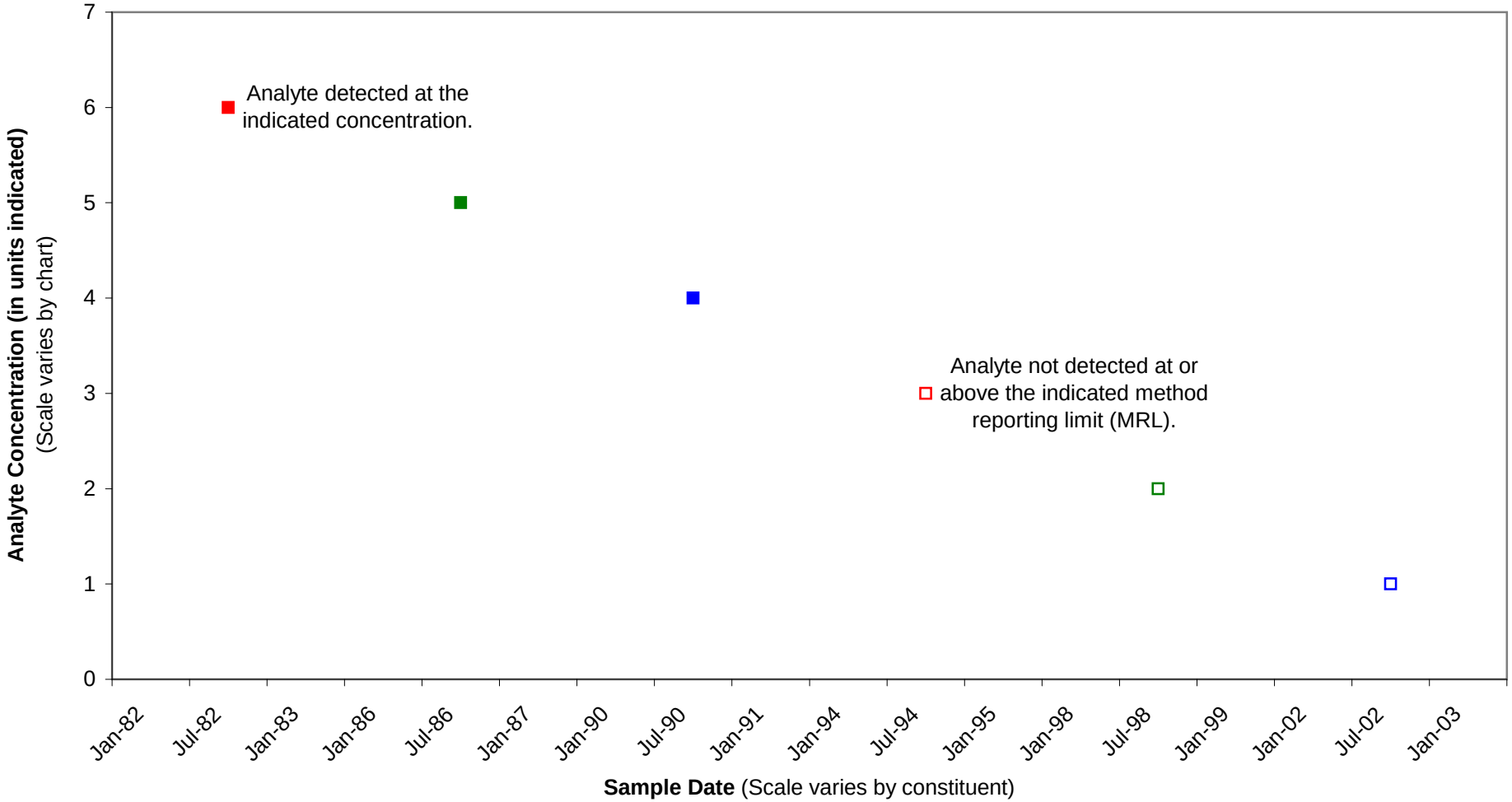
APPENDIX D

Temporal Changes Figure List
RPAC - Portland Site

Figure Numbers	Chemical Class	Constituent
D-1 through D-4	VOCs	1,2-Dichlorobenzene
D-5 through D-8	VOCs	Benzene
D-9 through D-12	VOCs	Trichloroethene
D-13 through D-16	Phenols	2,4-Dichlorophenol
D-17 through D-20	Phenols	Phenol
D-21 through D-24	Herbicides	2,4-D
D-25 through D-28	Herbicides	2,4,5-TP (Silvex)
D-29 through D-32	Insecticides	2,3,7,8-TCDD
D-33 through D-36	Insecticides	4,4'-DDT
D-37 through D-40	Insecticides	Dieldrin
D-41 through D-44	Metals	Dissolved Arsenic
D-45 through D-48	NAP	Diesel Range Organics
D-49 through D-52	NAP	Redox Potential
D-53 through D-56	NAP	Dissolved Oxygen
D-57 through D-60	NAP	Nitrate
D-61 through D-64	NAP	Sulfate
D-65 through D-68	NAP	Ferrous Iron
D-69 through D-72	NAP	Methane
D-73 through D-76	NAP	Chloride

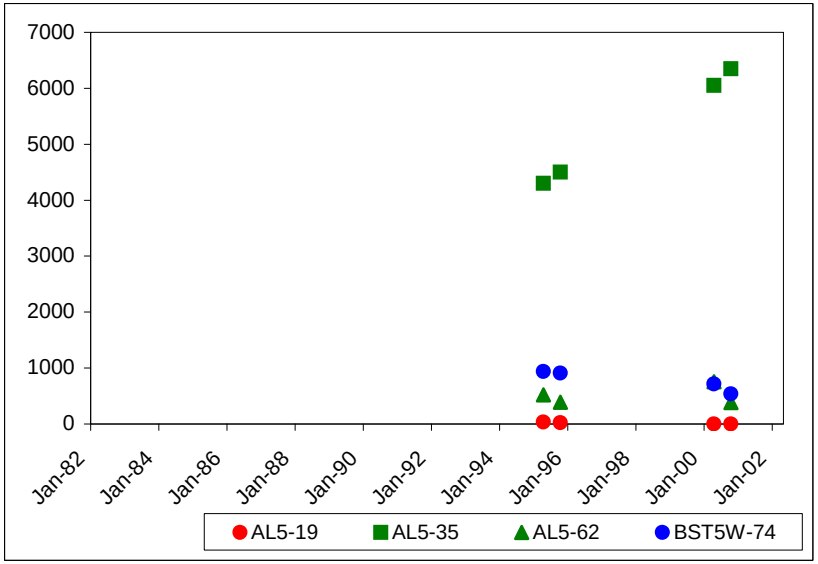
VOCs	volatile organic compounds
DDE	1,1-dichloro-2,2-bis(p-dichlorodiphenyl)ethylene
DDT	dichlorodiphenyltrichloroethane
D	dichlorophenoxyacetic acid
TCDD	tetrachlorodibenzo-p-dioxin
NAP	Natural Attenuation Parameter

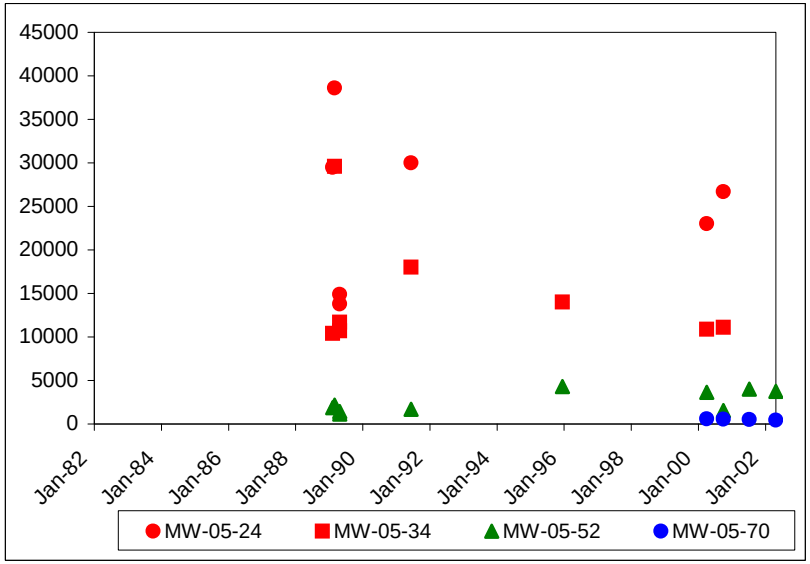
Temporal Concentration Chart Legend

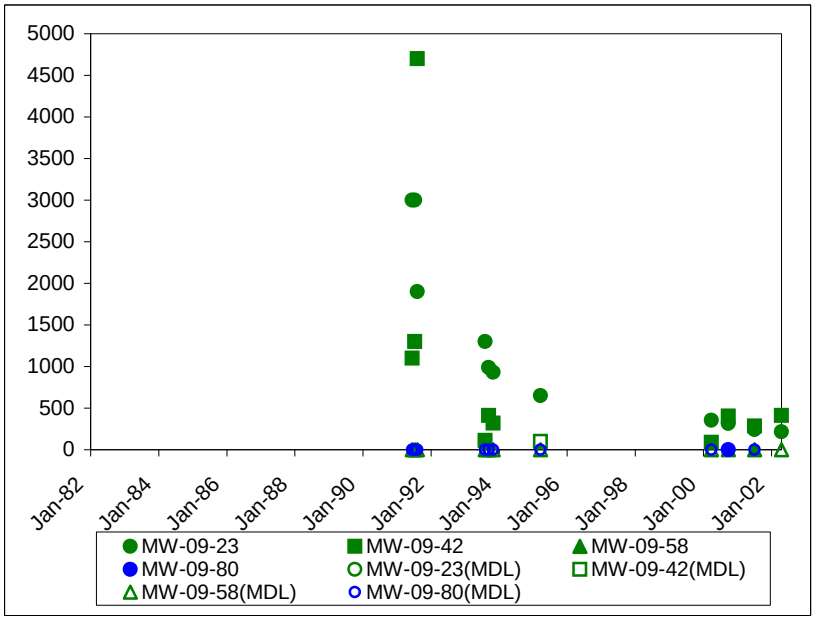


■ Concentration in Fill/Shallow Alluvium Zone Well	□ Concentration Not Detected in Fill/Shallow Alluvium Zone Well (MRL)
■ Concentration in Alluvium Zone Well	□ Concentration Not Detected in Alluvium Zone Well (MRL)
■ Concentration in Basalt Zone Well	□ Concentration Not Detected in Basalt Zone Well (MRL)

Figure D-1
1,2-Dichlorobenzene
(Concentrations in µg/L)







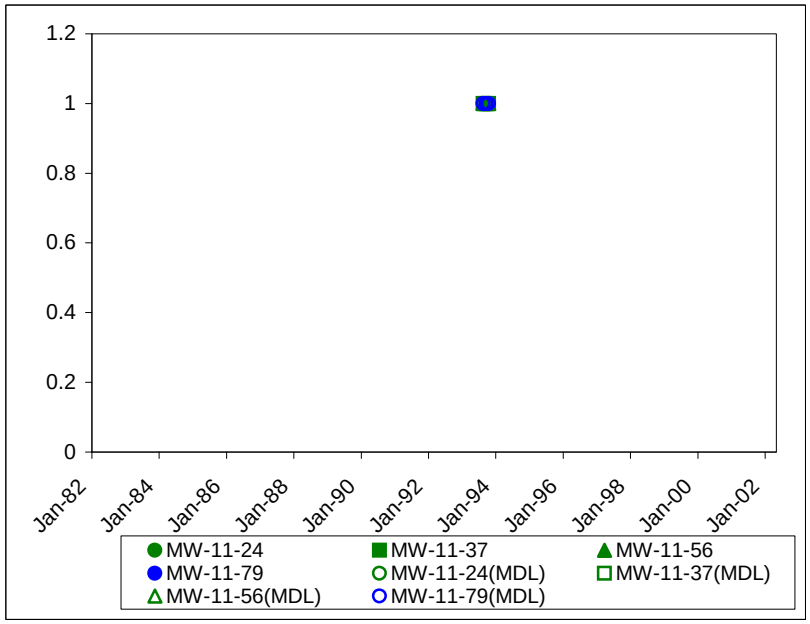
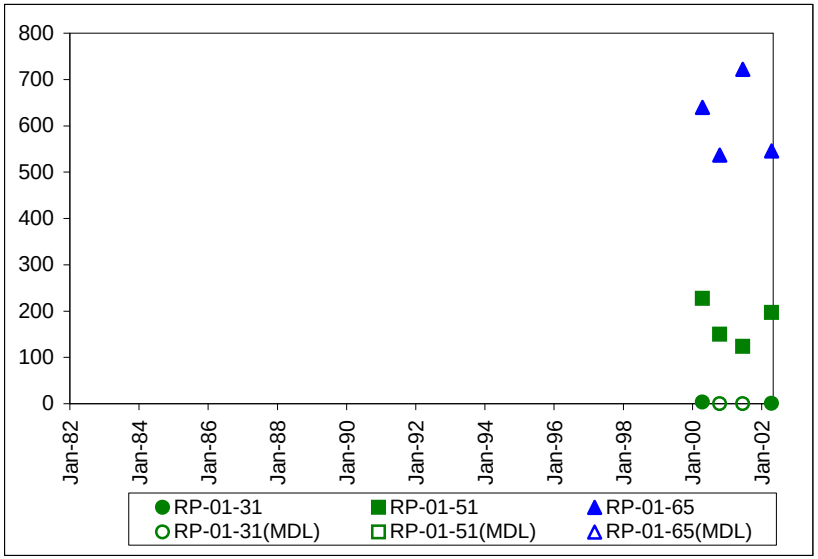
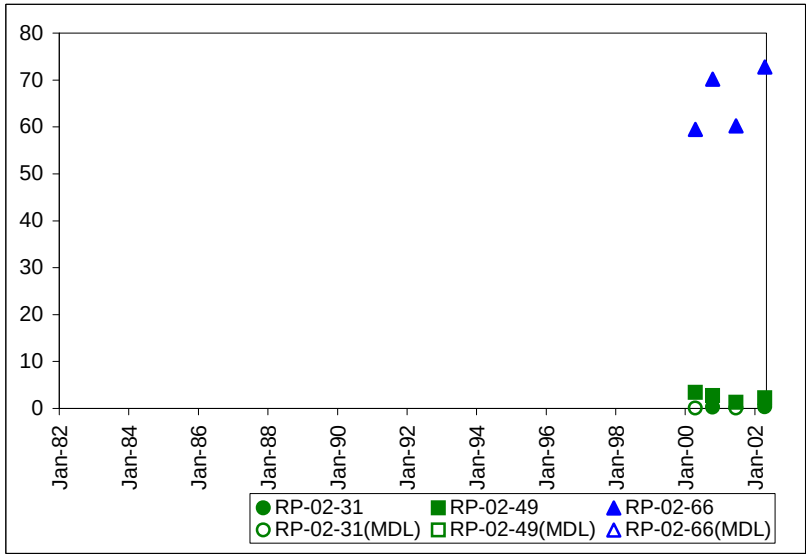
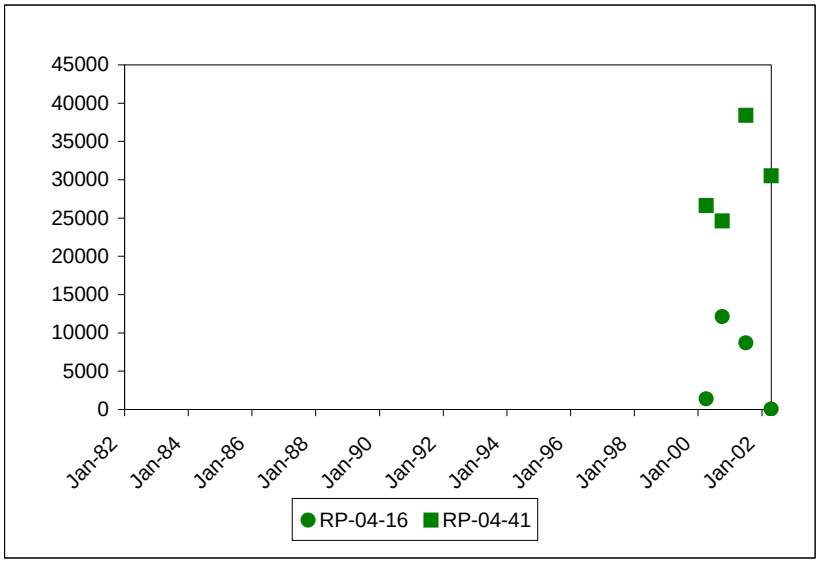


Figure D-2
1,2-Dichlorobenzene
(Concentrations in µg/L)







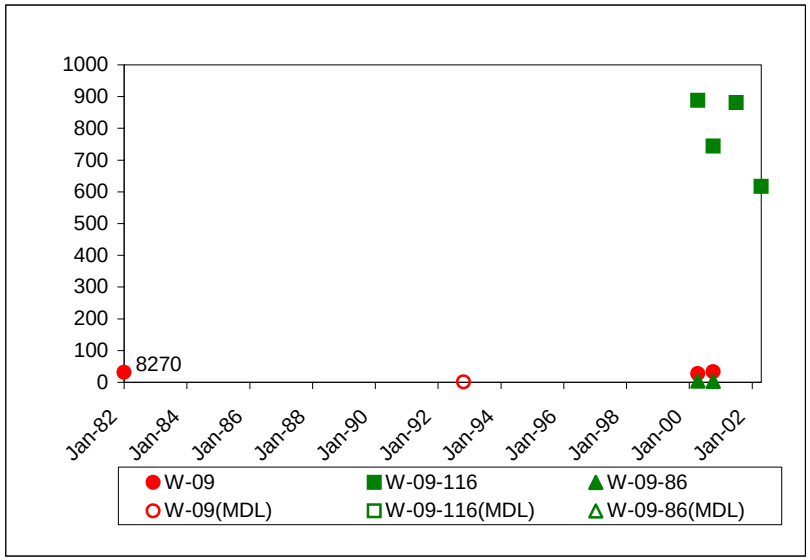
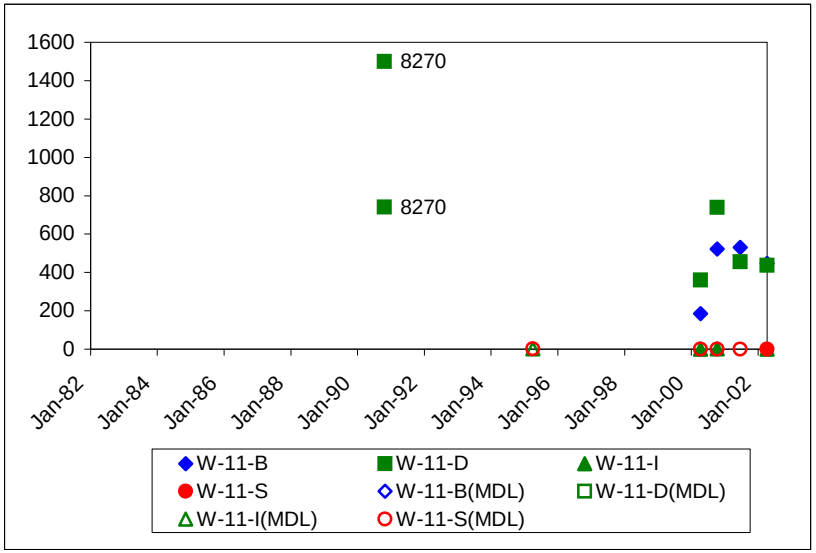
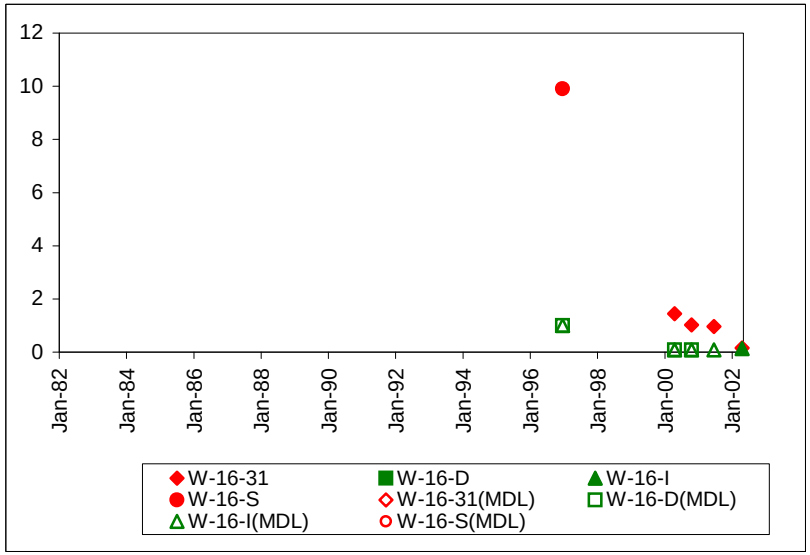
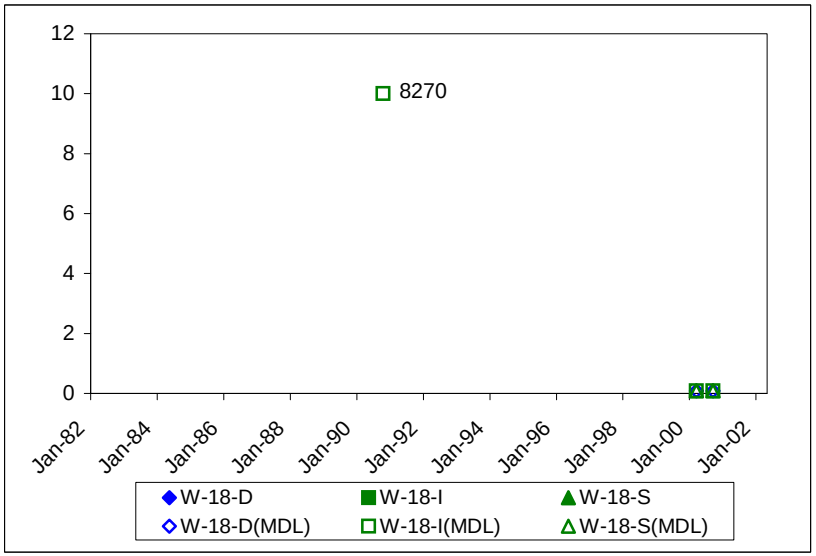


Figure D-3
1,2-Dichlorobenzene
(Concentrations in µg/L)







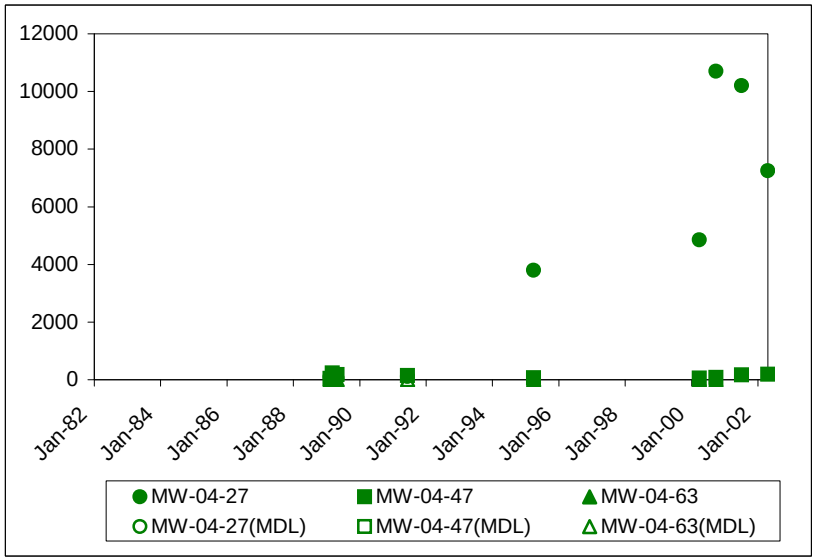
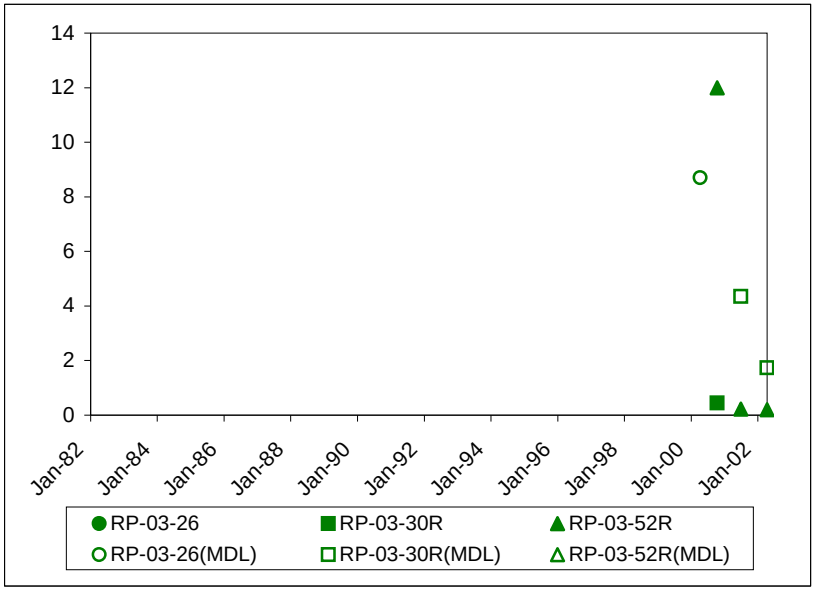
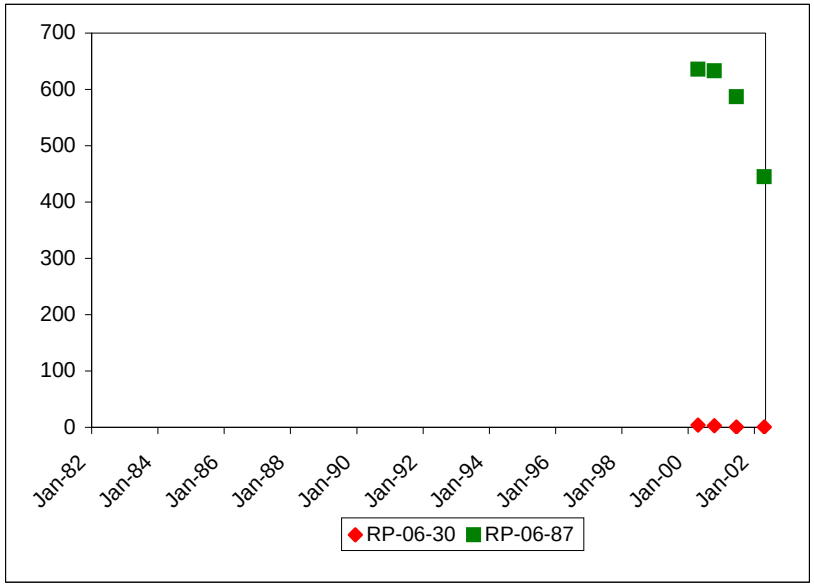


Figure D-4
1,2-Dichlorobenzene
(Concentrations in µg/L)





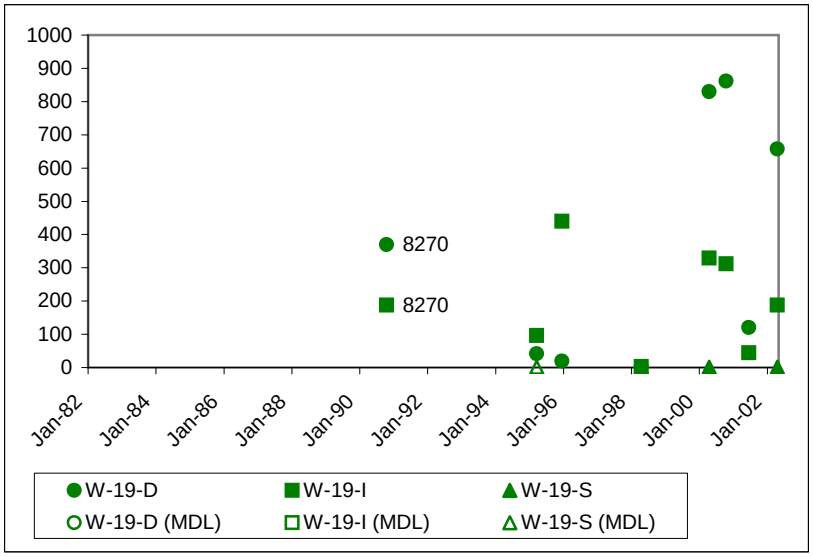
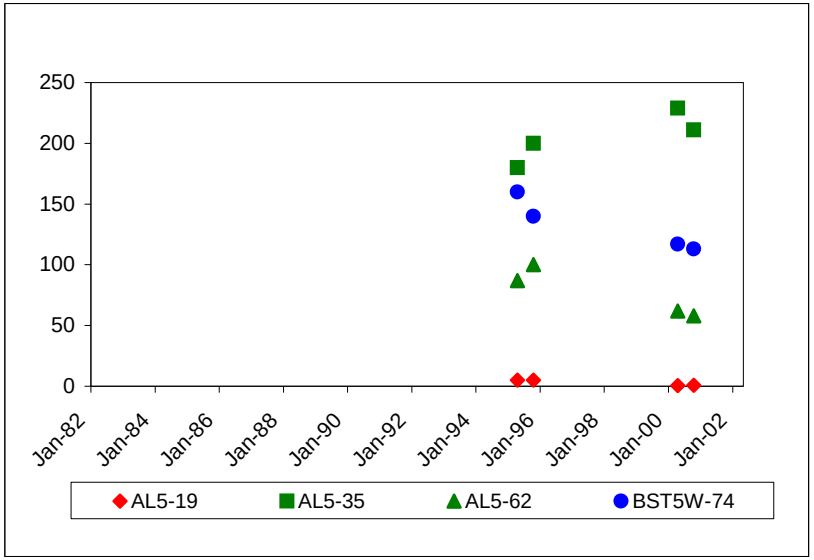
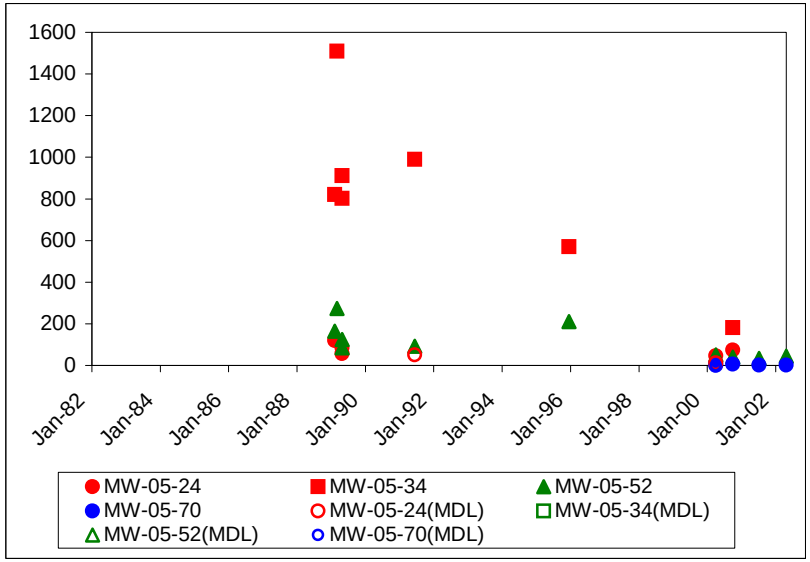
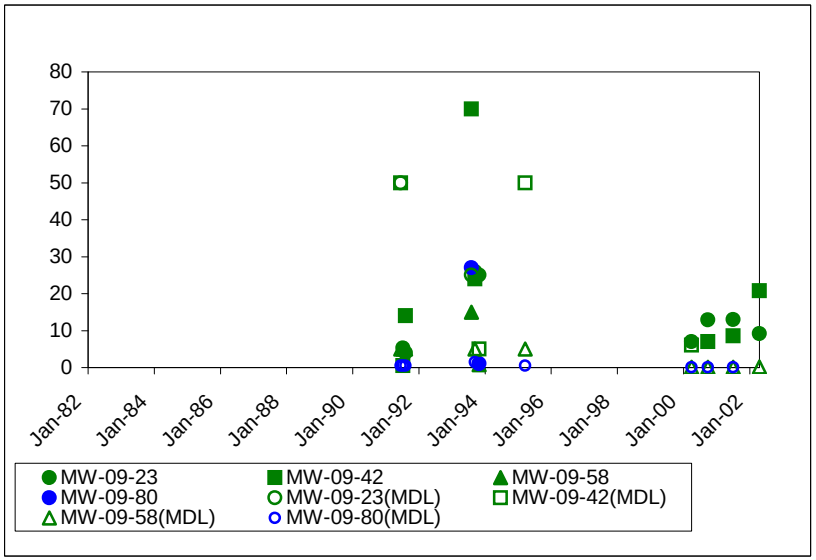


Figure D-5
Benzene
(Concentrations in µg/L)







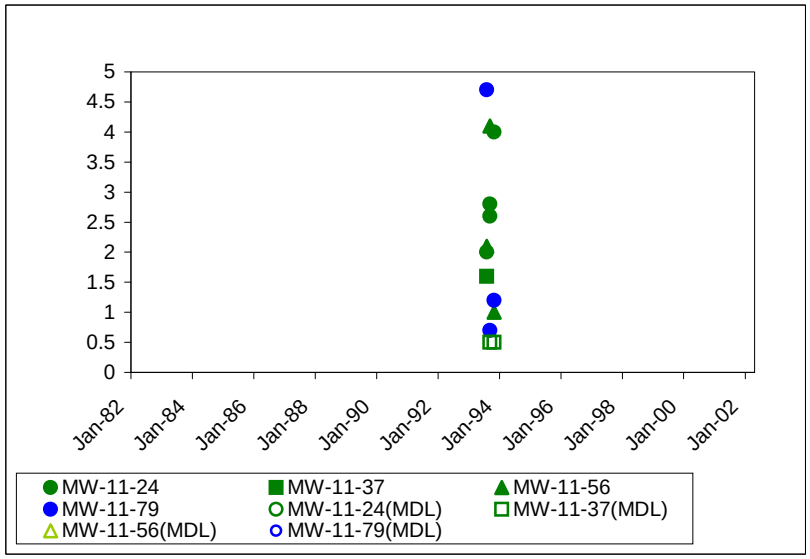
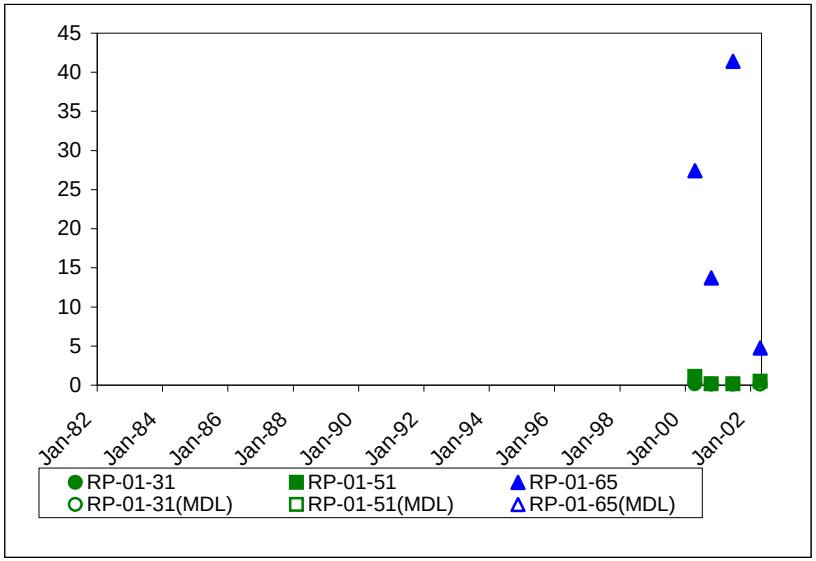
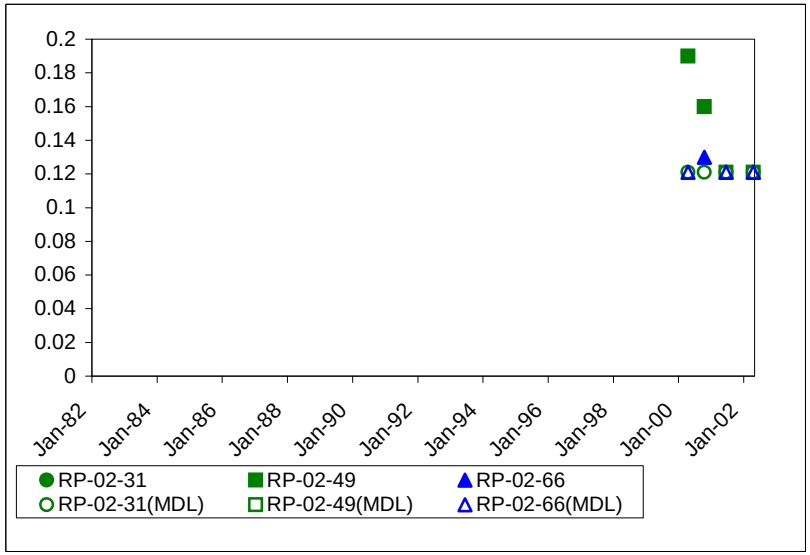
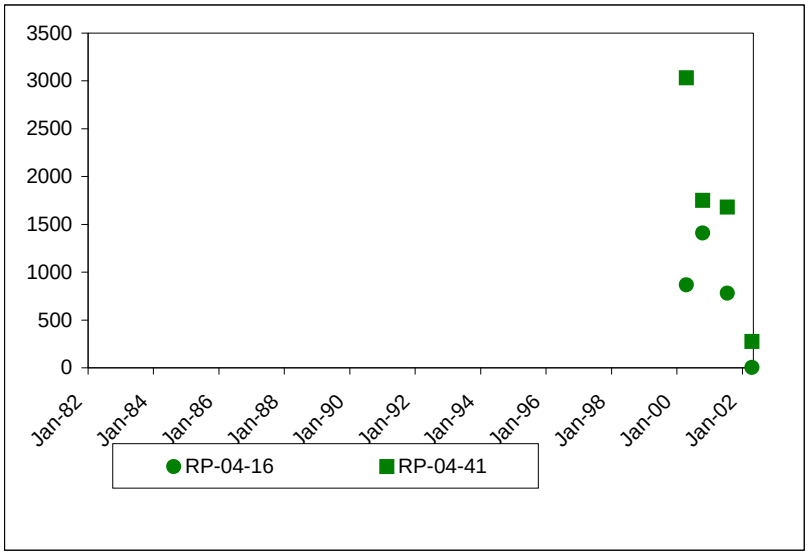


Figure D-6
Benzene
(Concentrations in µg/L)







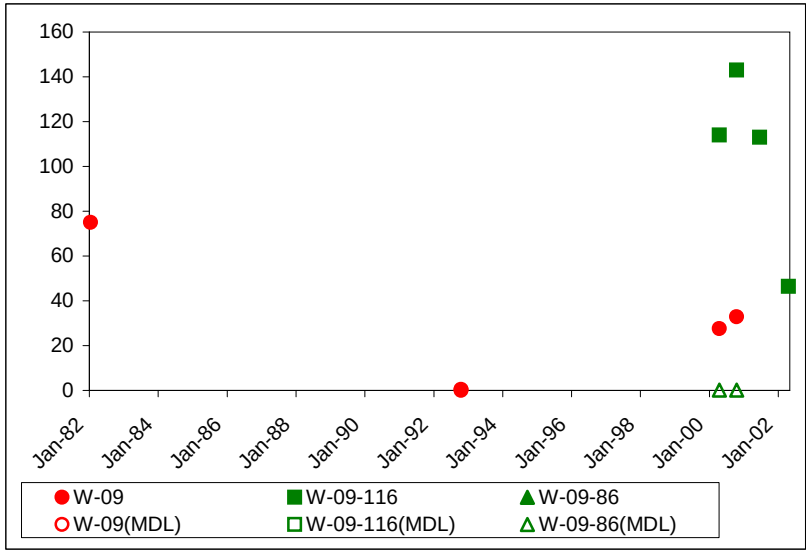
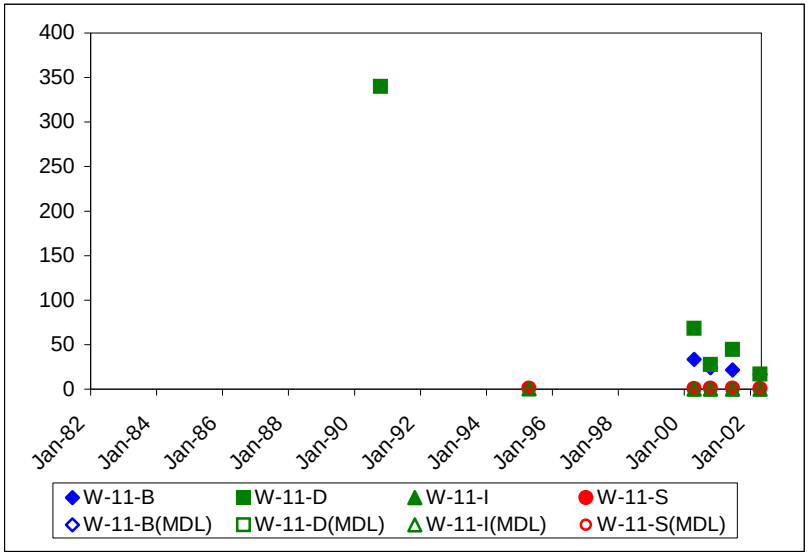
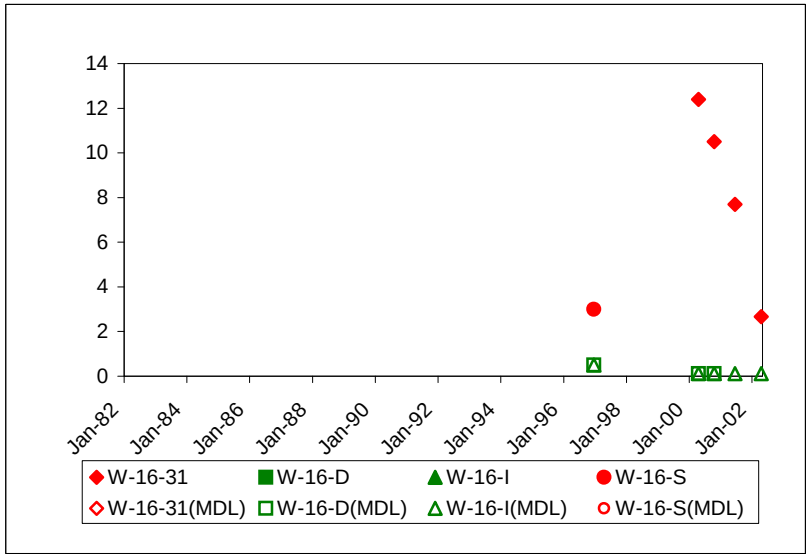
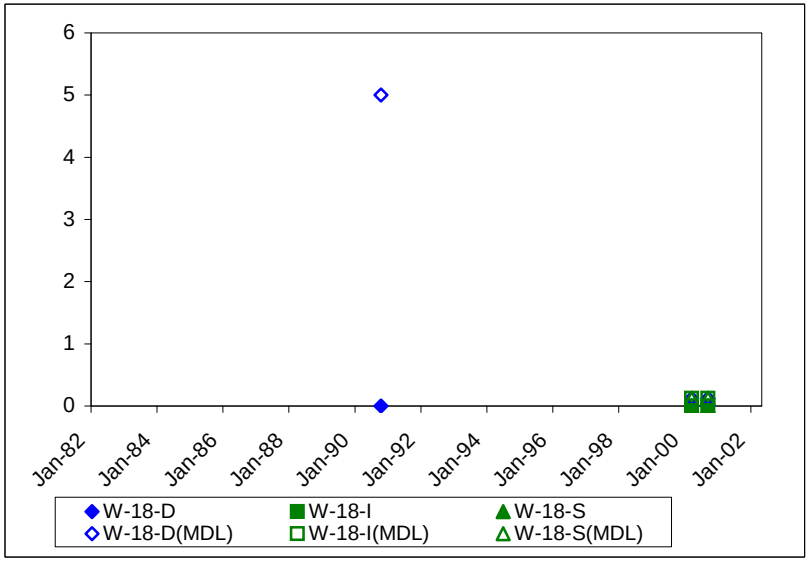


Figure D-7
Benzene
(Concentrations in µg/L)







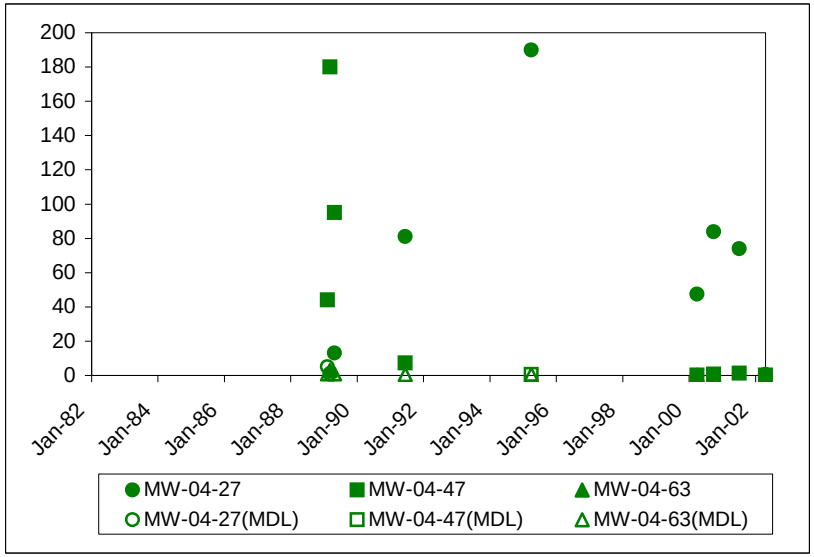
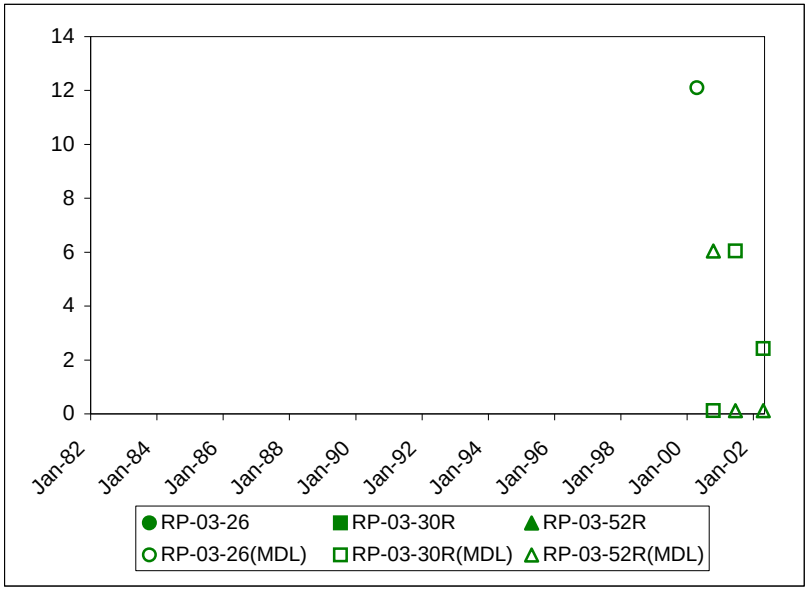
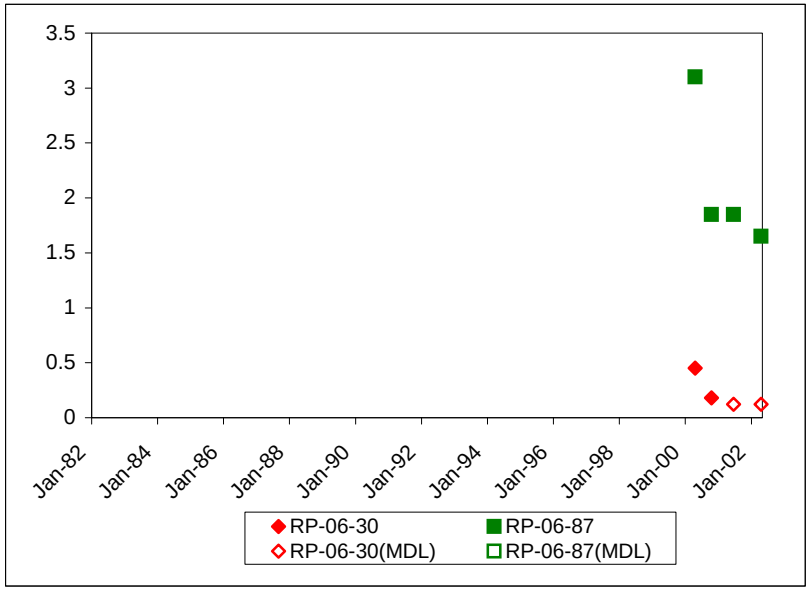


Figure D-8
Benzene
(Concentrations in µg/L)





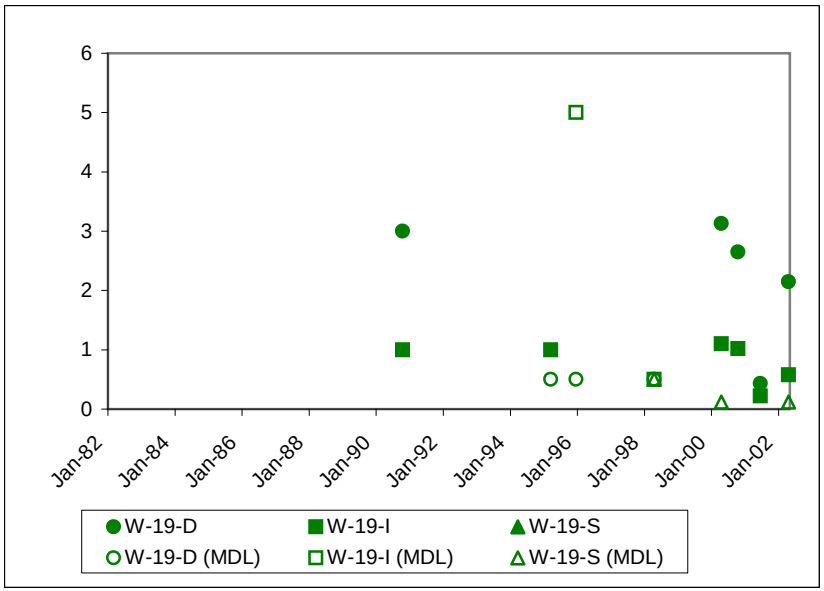
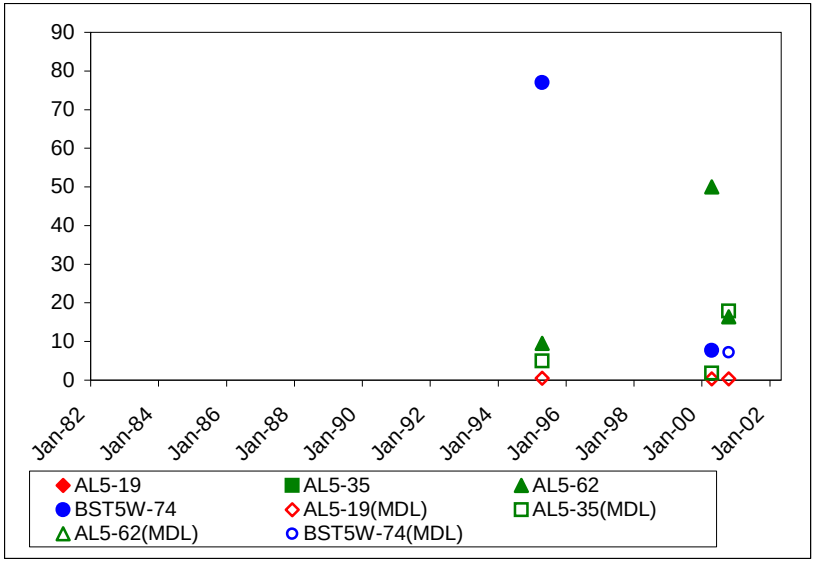
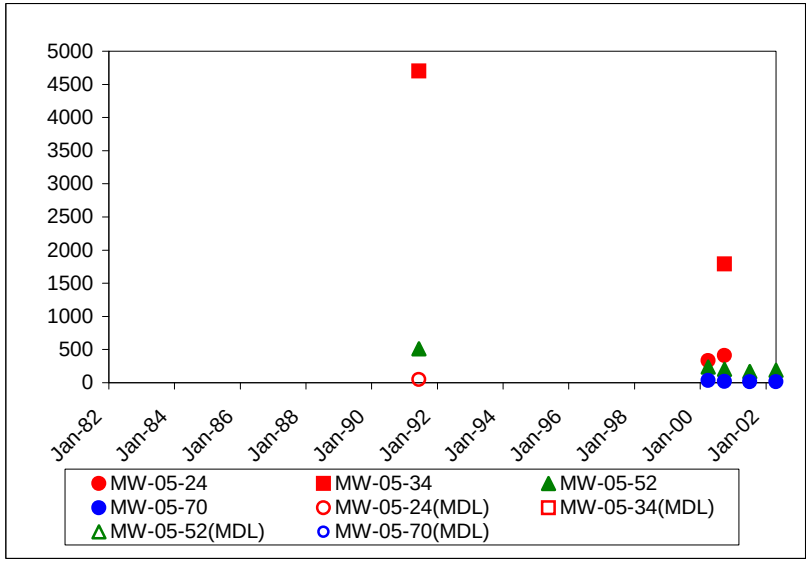
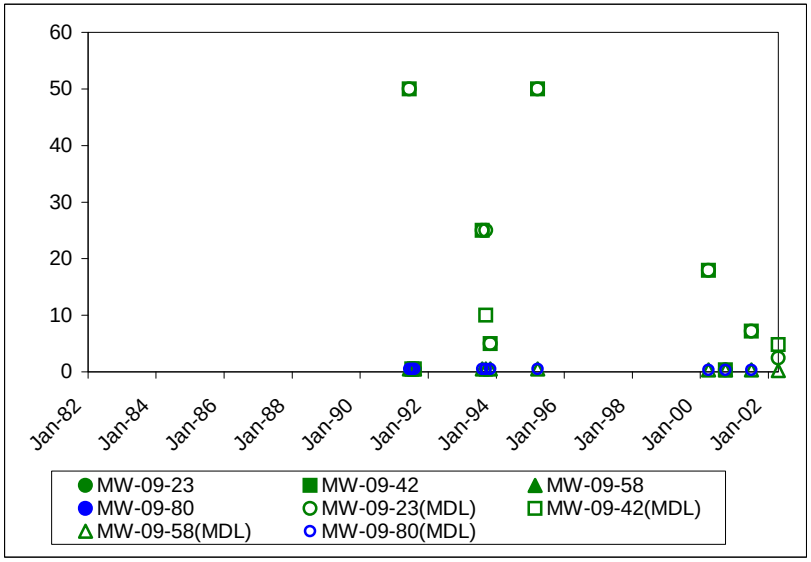


Figure D-9
Trichloroethene (TCE)
(Concentrations in µg/L)







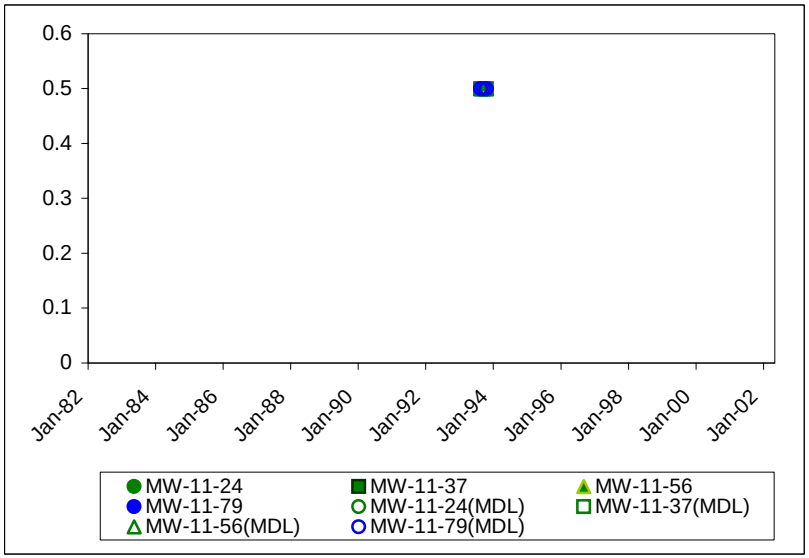
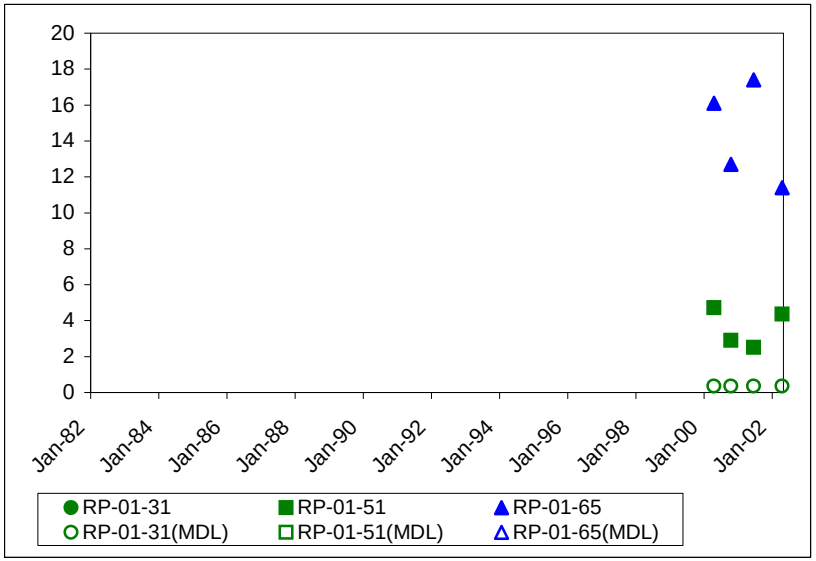
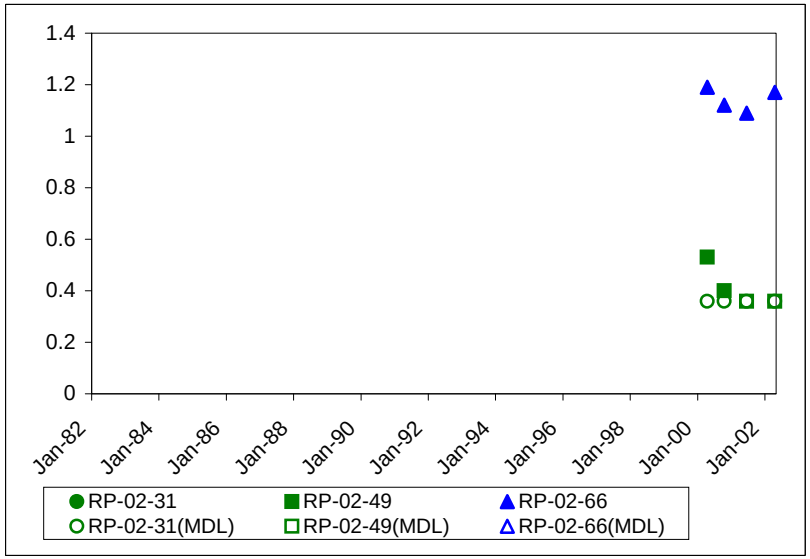
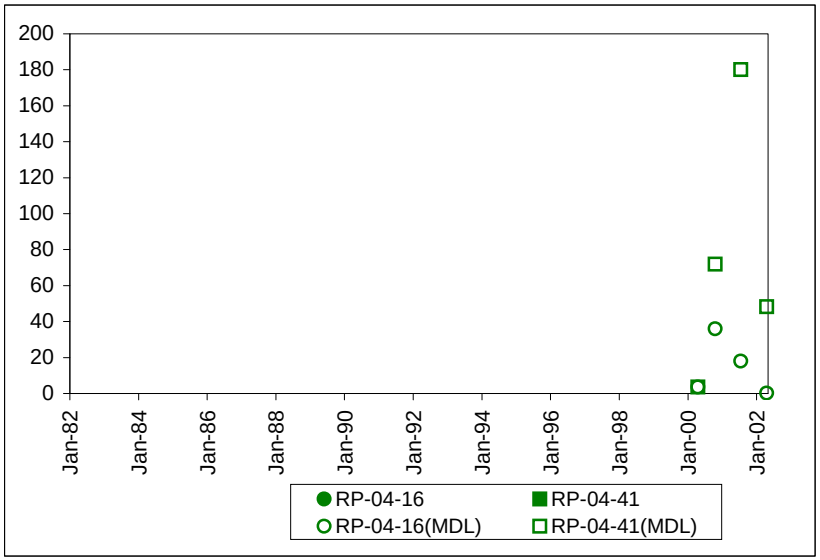


Figure D-10
Trichloroethene (TCE)
(Concentrations in µg/L)







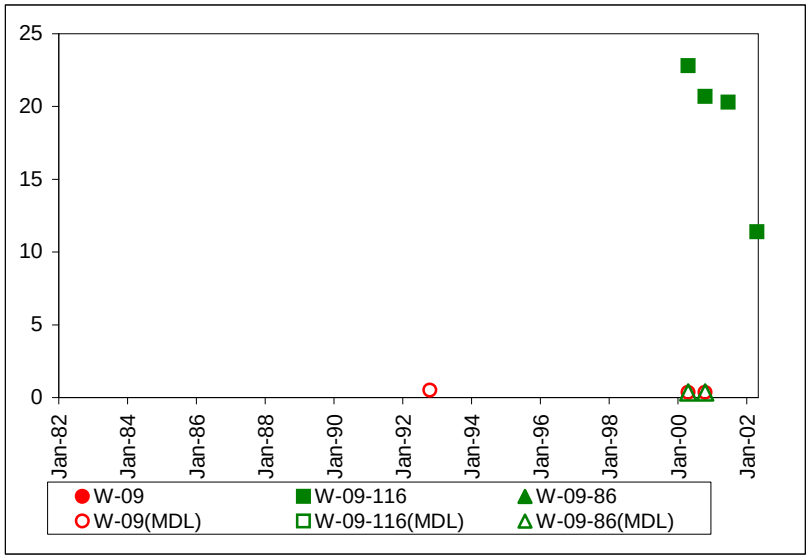
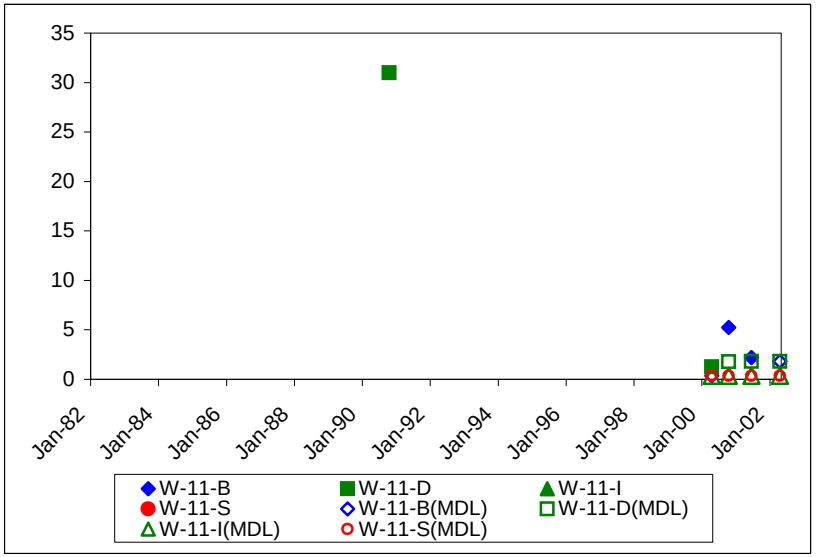
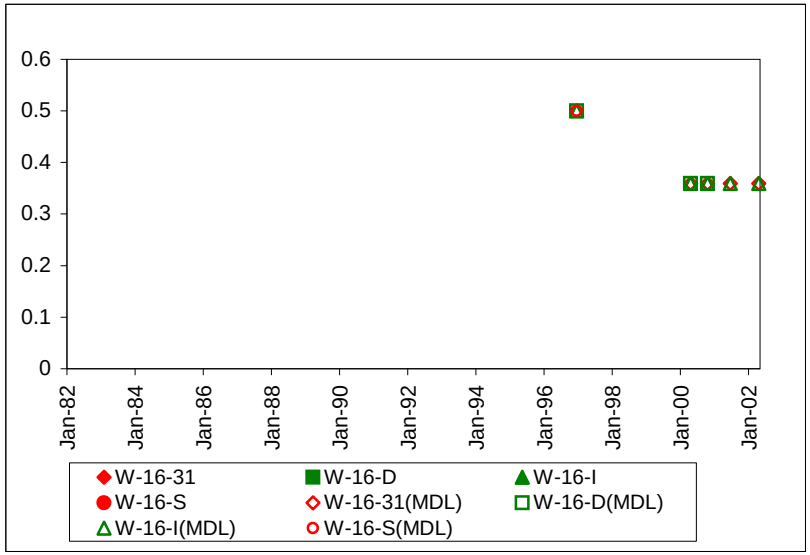
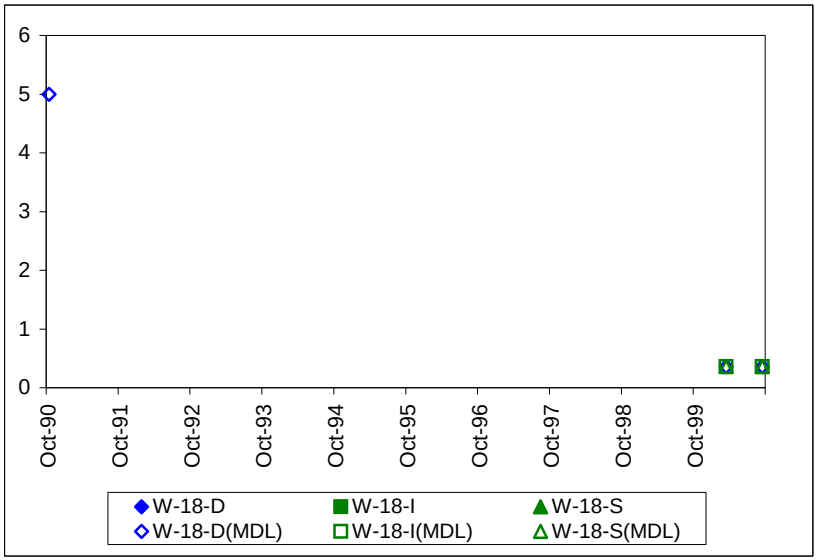


Figure D-11
Trichloroethene (TCE)
(Concentrations in µg/L)







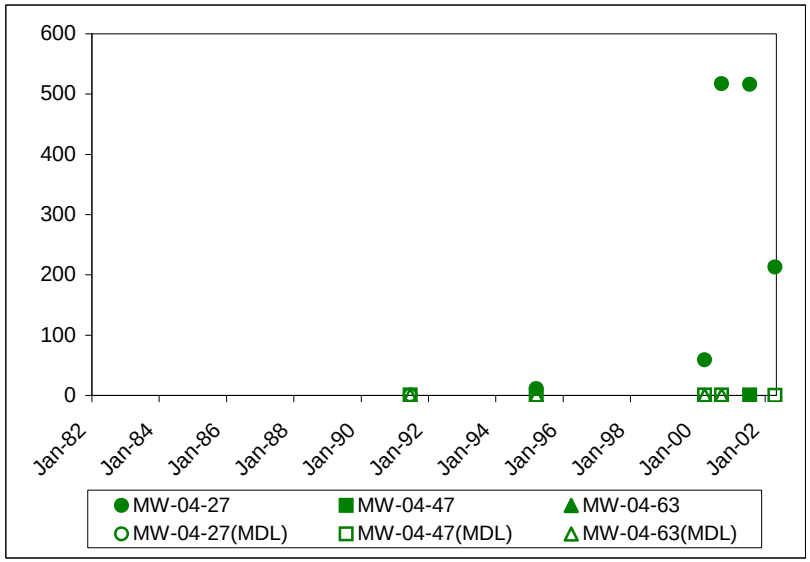
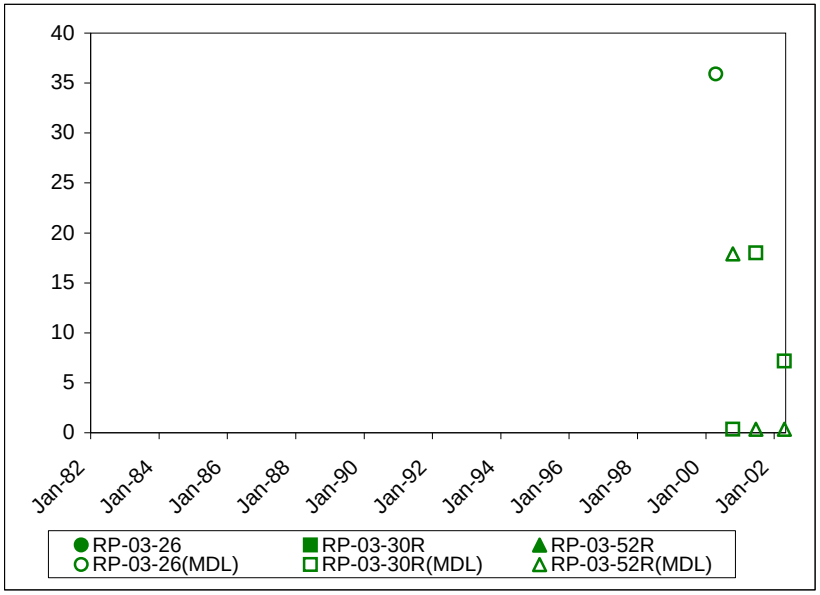
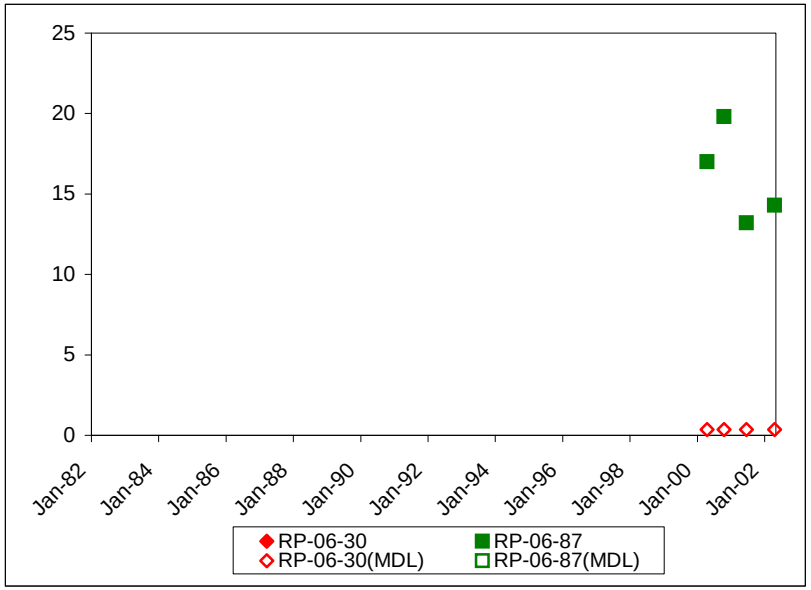


Figure D-12
Trichloroethene (TCE)
(Concentrations in µg/L)





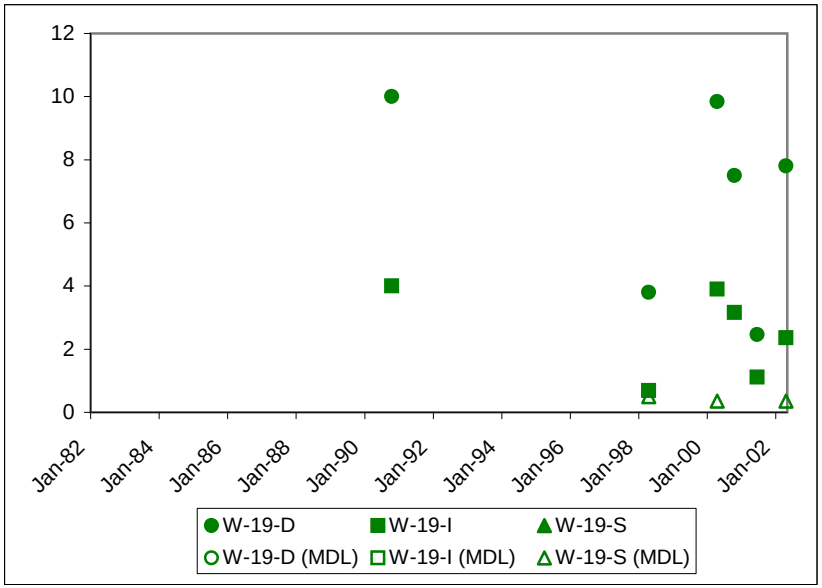
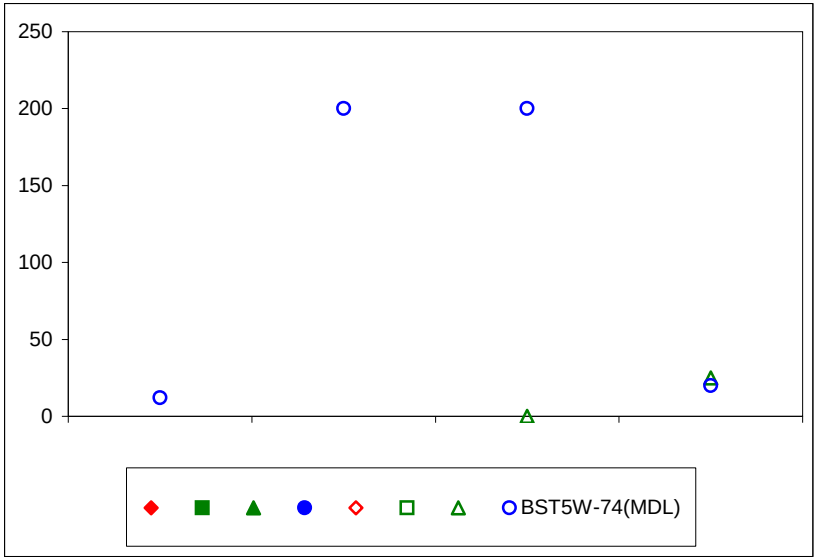
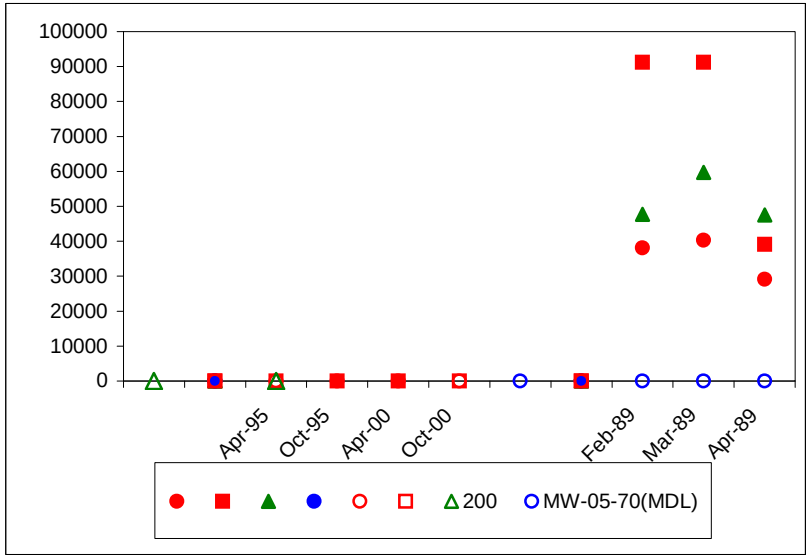
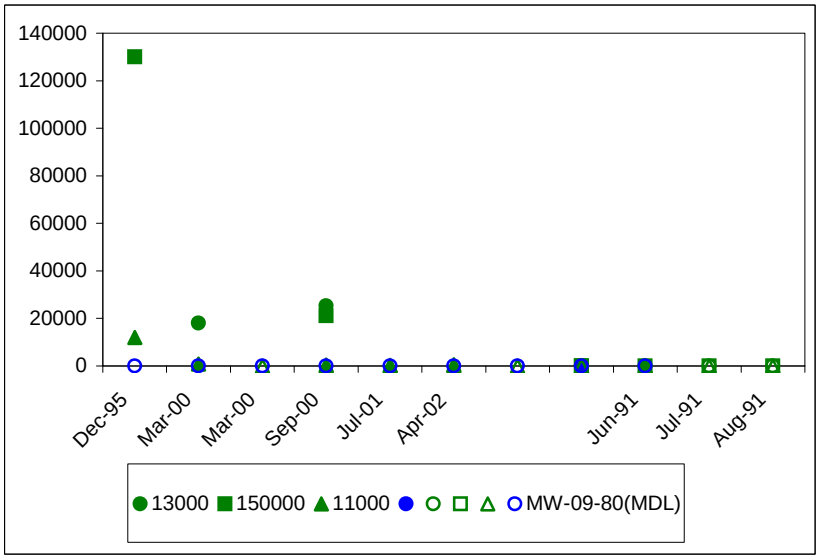


Figure D-13
2,4-Dichlorophenol
(Concentrations in µg/L)







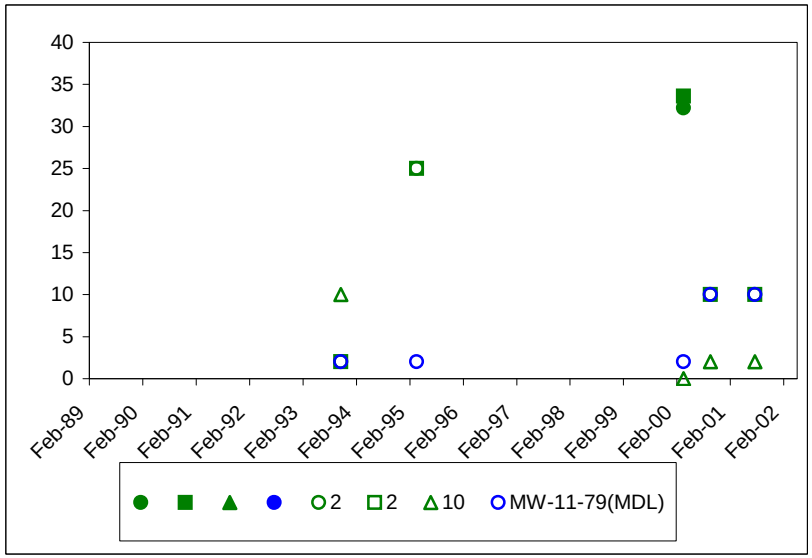
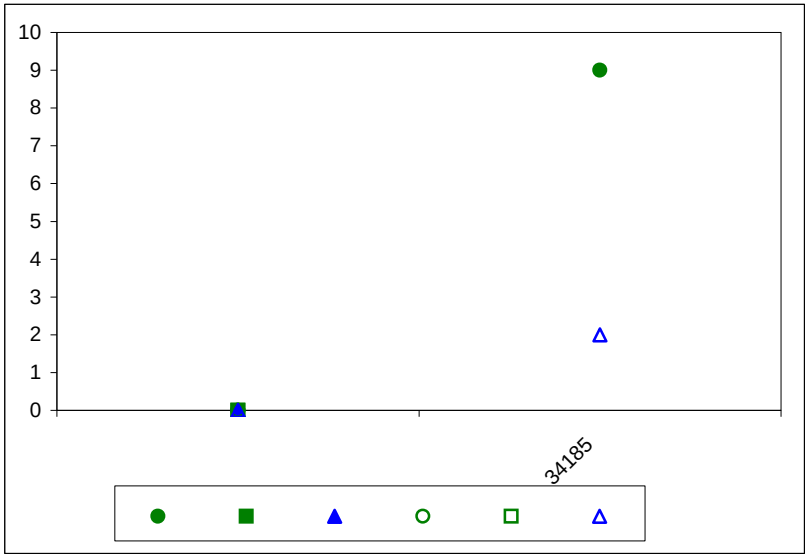
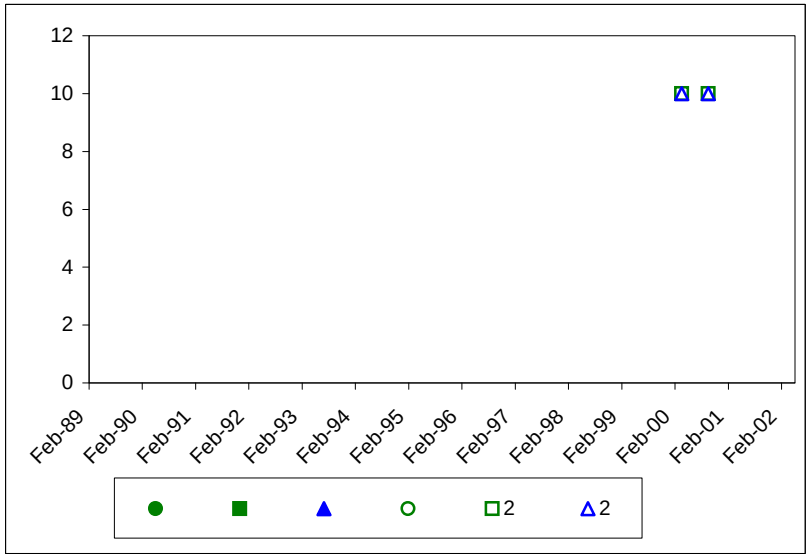
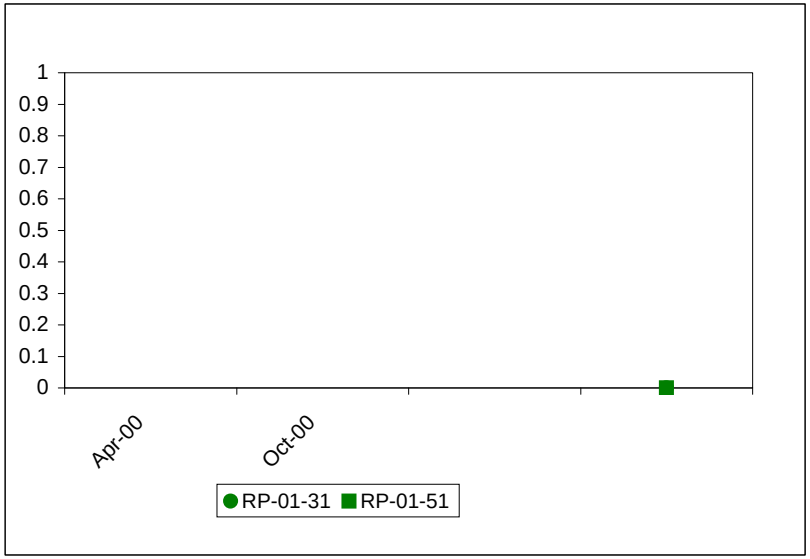


Figure D-14
2,4-Dichlorophenol
(Concentrations in µg/L)







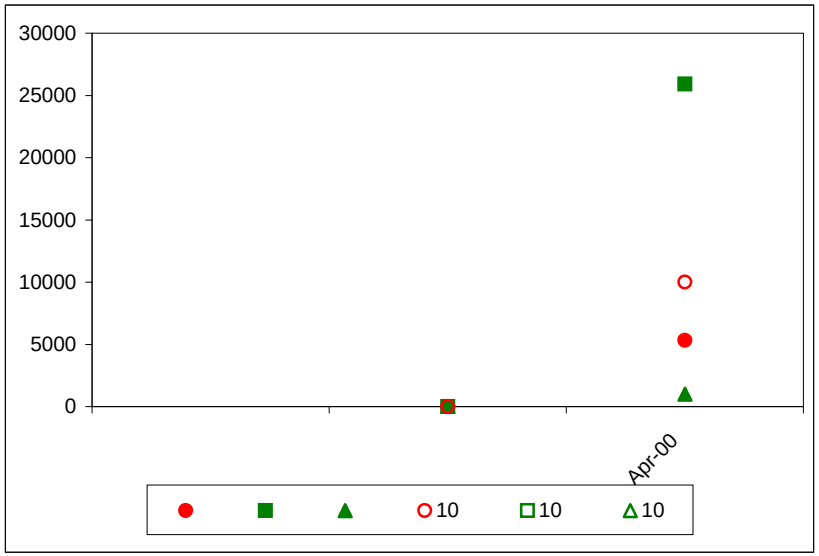
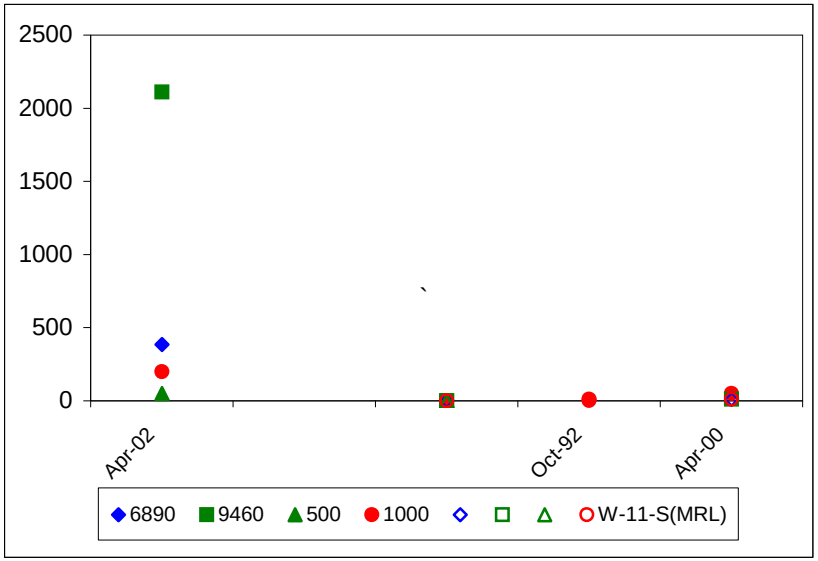
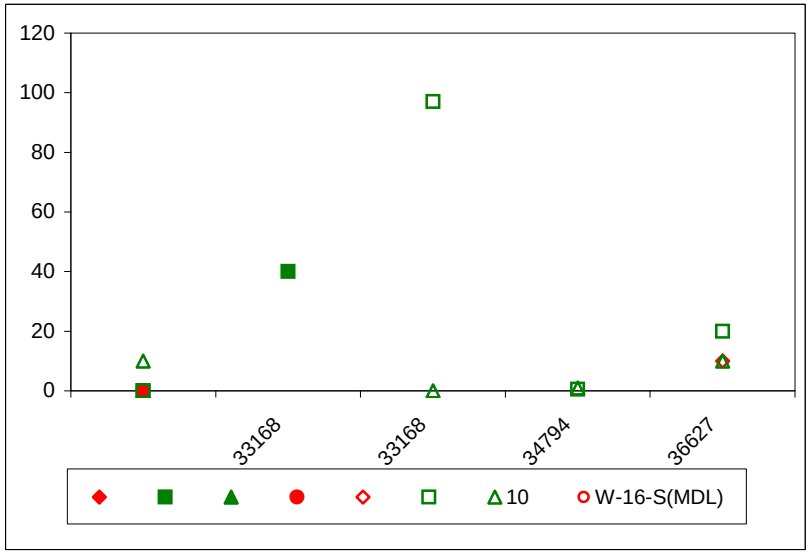
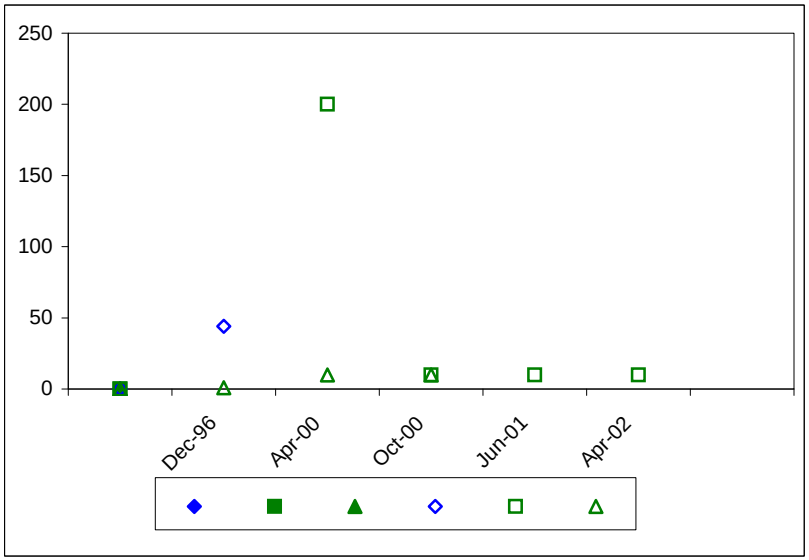


Figure D-15
2,4-Dichlorophenol
(Concentrations in µg/L)







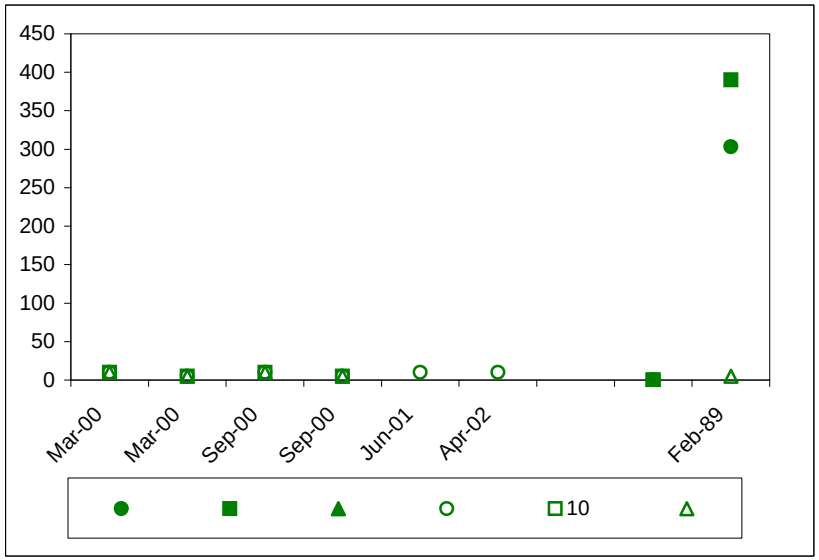
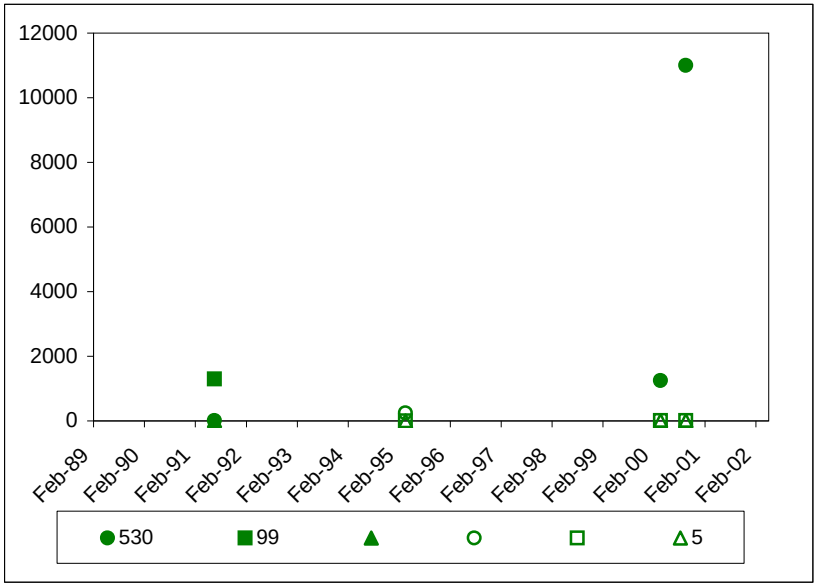
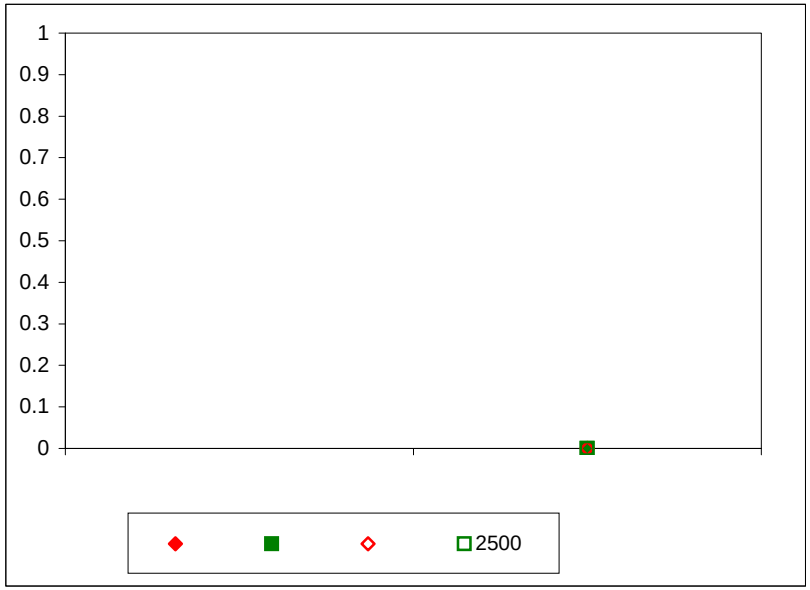


Figure D-16
2,4-Dichlorophenol
(Concentrations in µg/L)





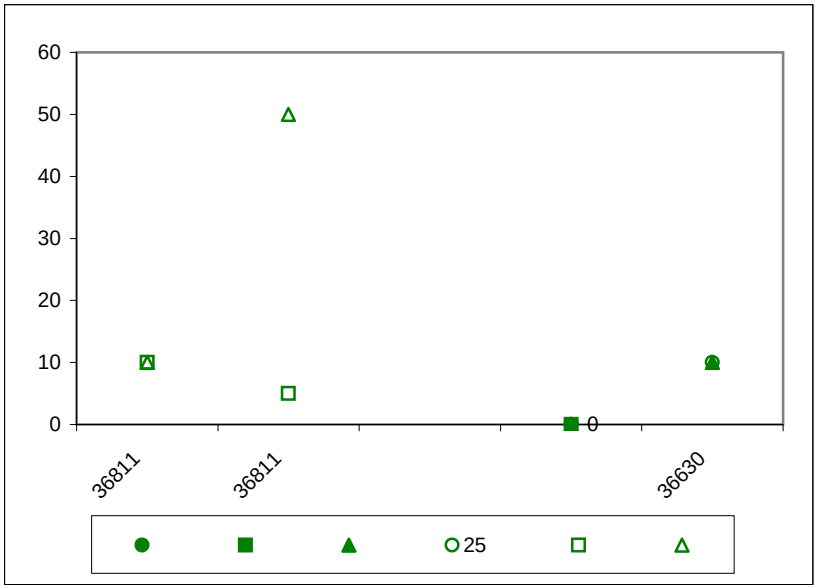
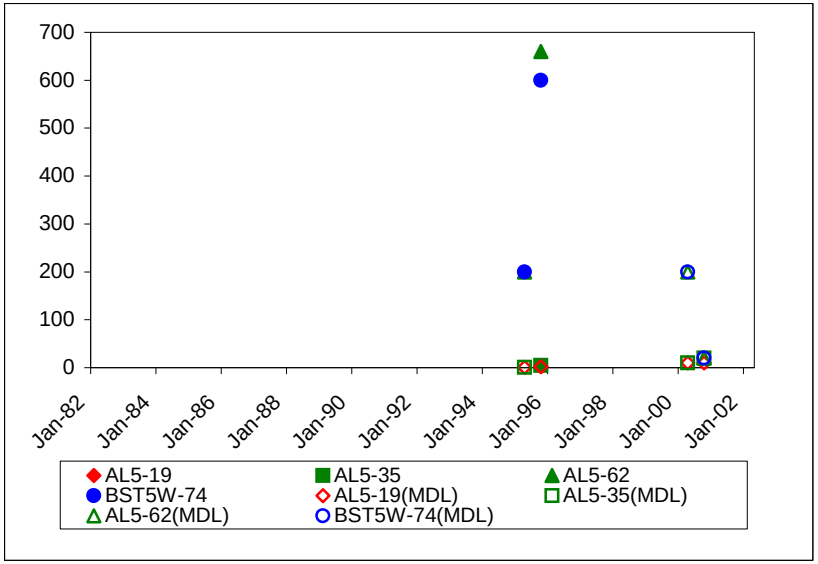
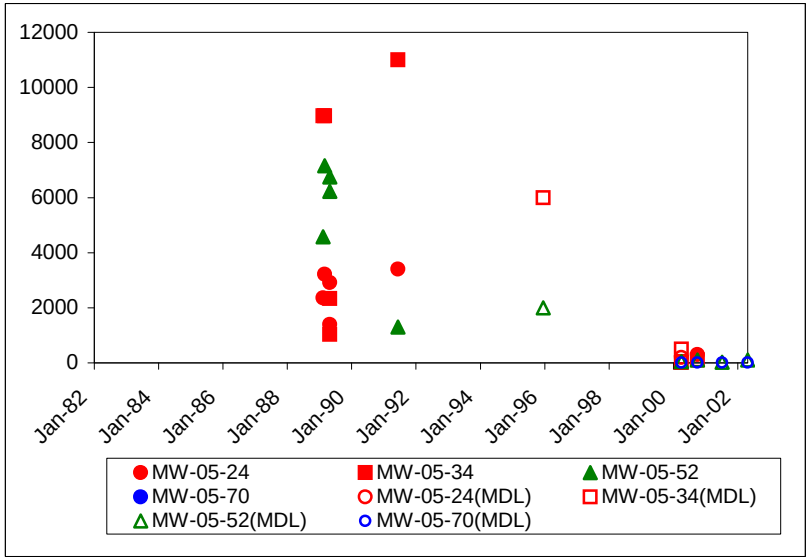
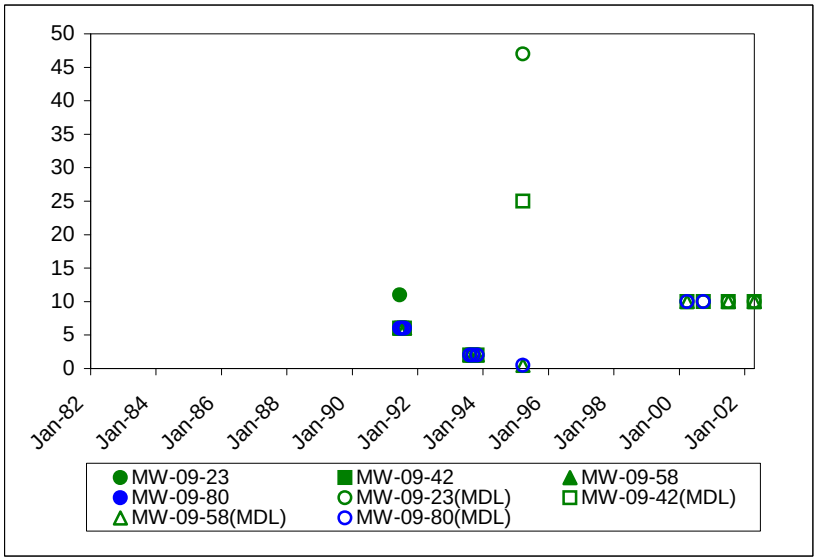


Figure D-17
Phenol
(Concentrations in µg/L)







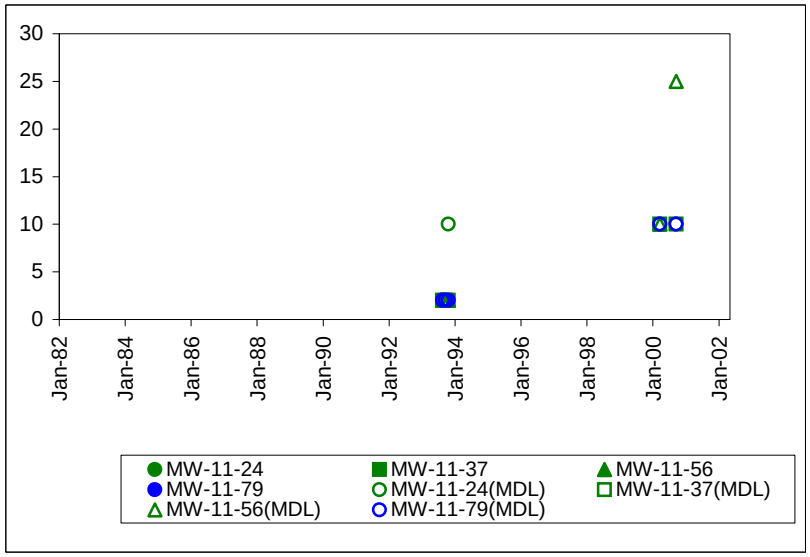
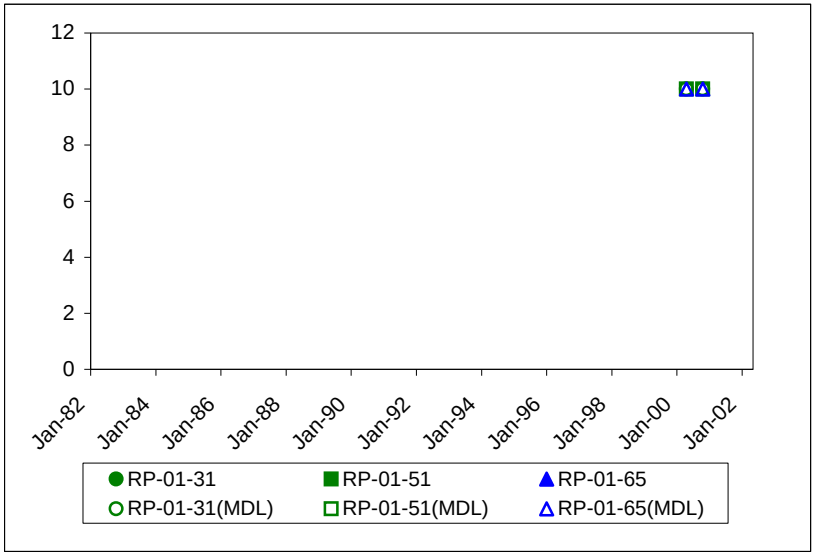
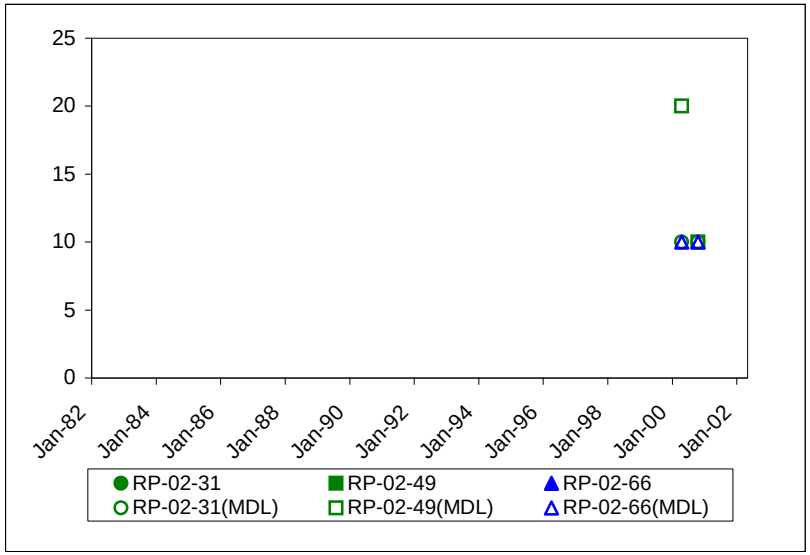
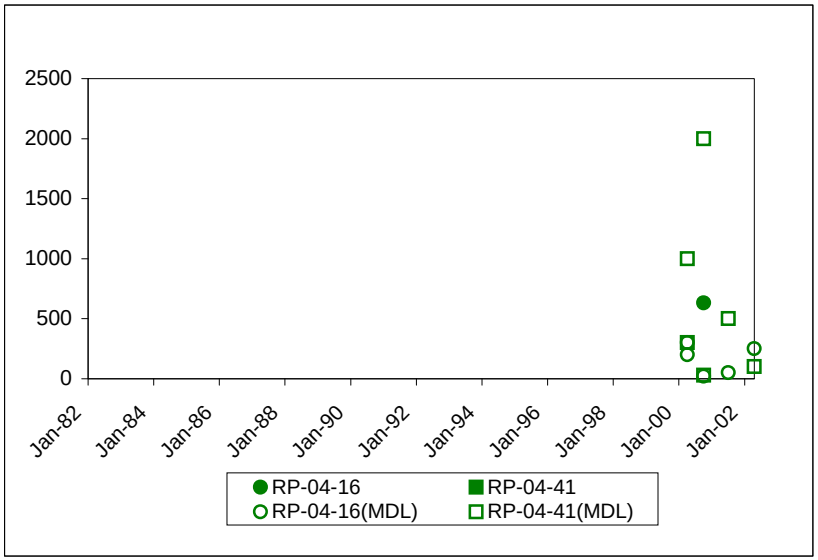


Figure D-18
Phenol
(Concentrations in µg/L)







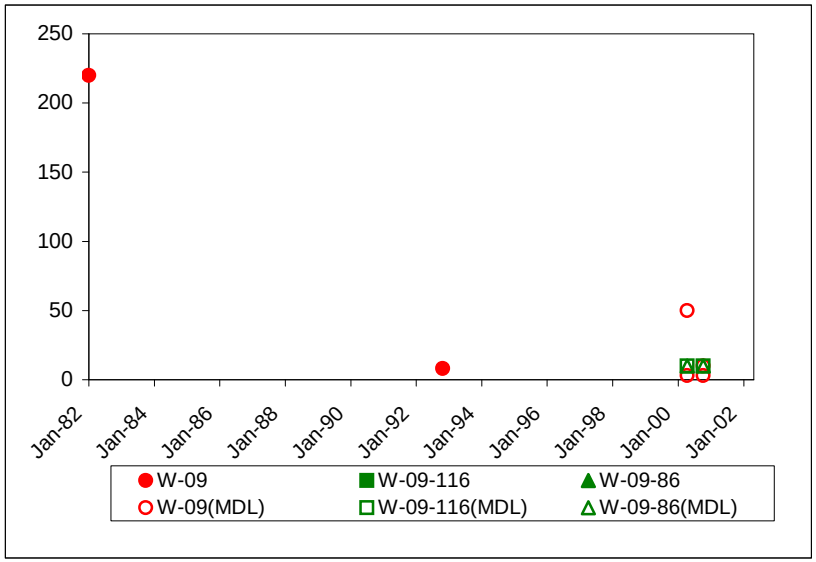
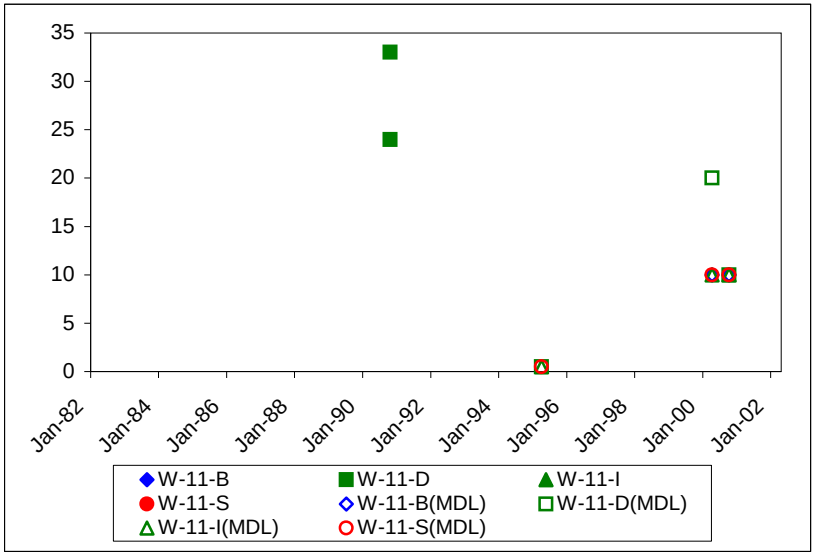
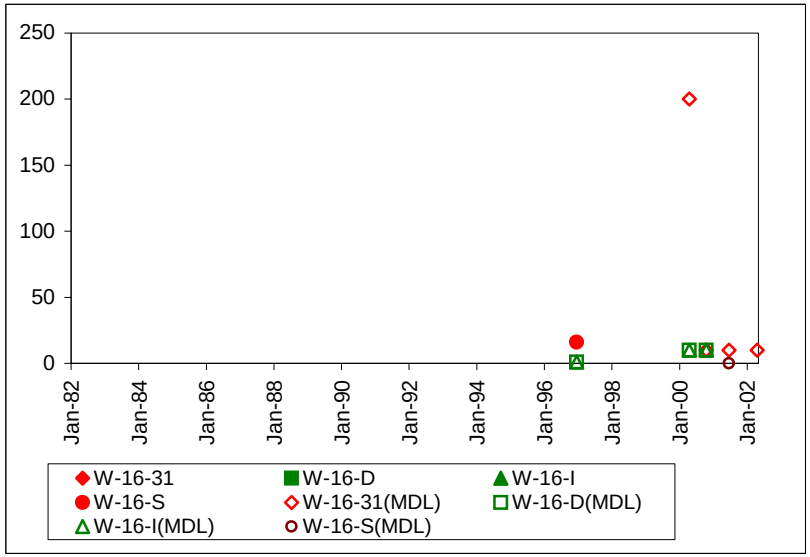
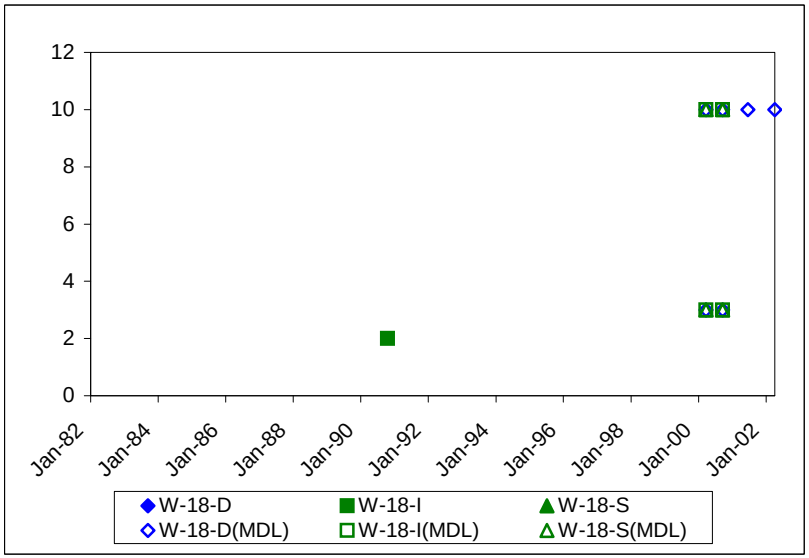


Figure D-19
Phenol
(Concentrations in µg/L)







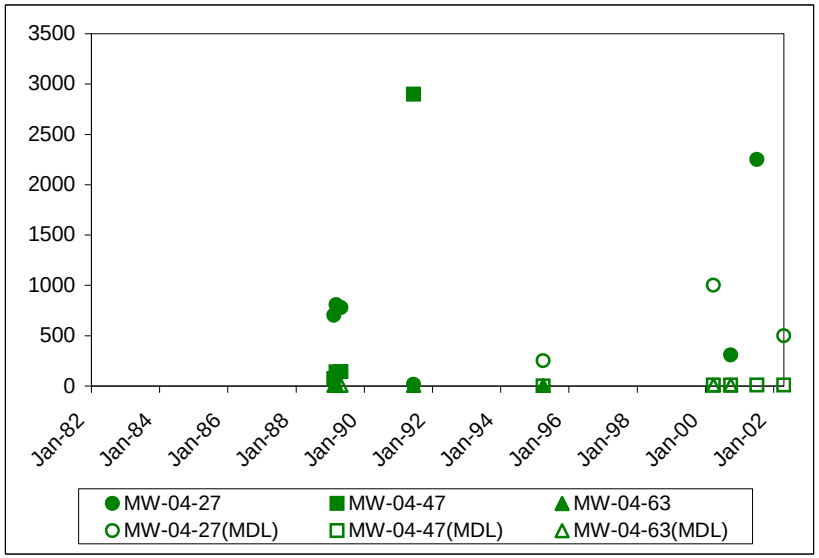
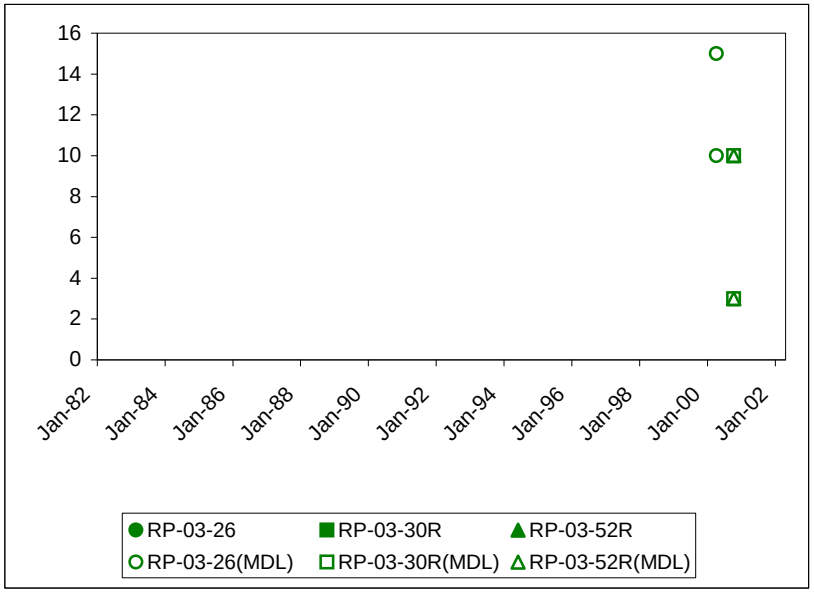
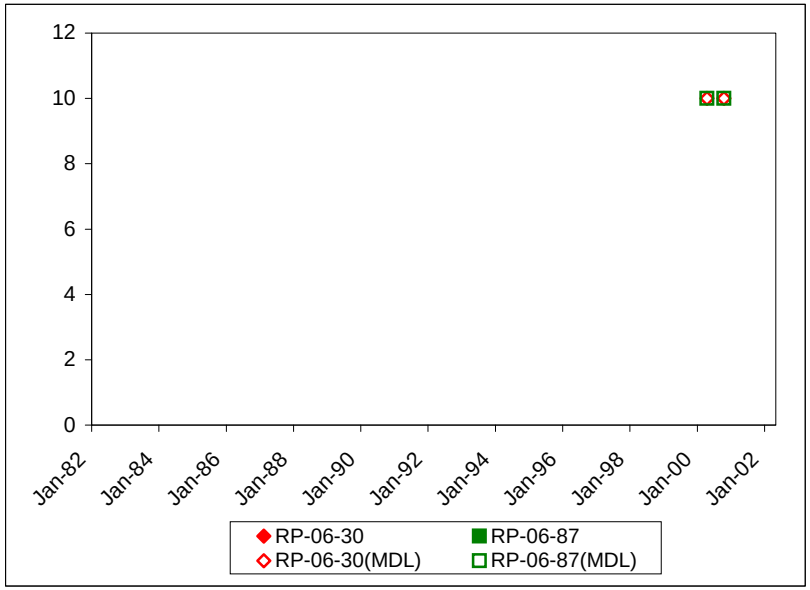


Figure D-20
Phenol
(Concentrations in µg/L)





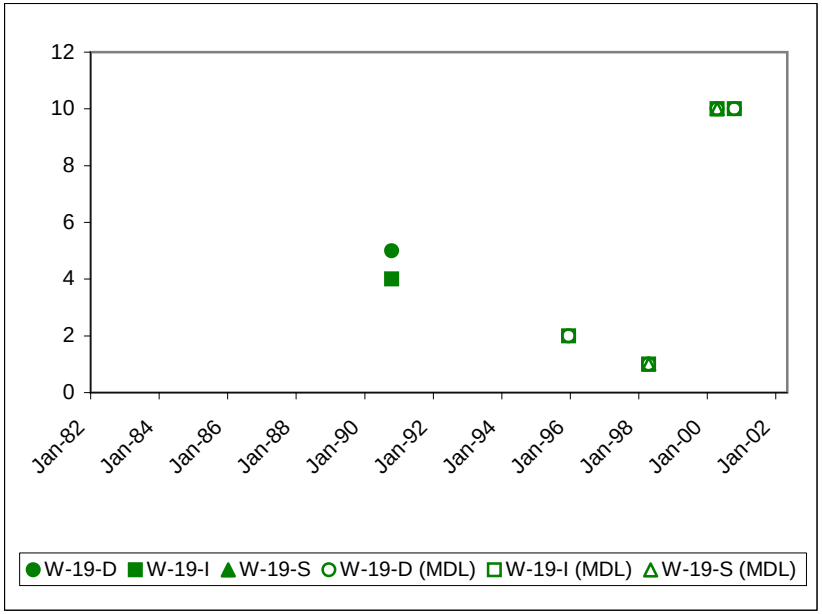
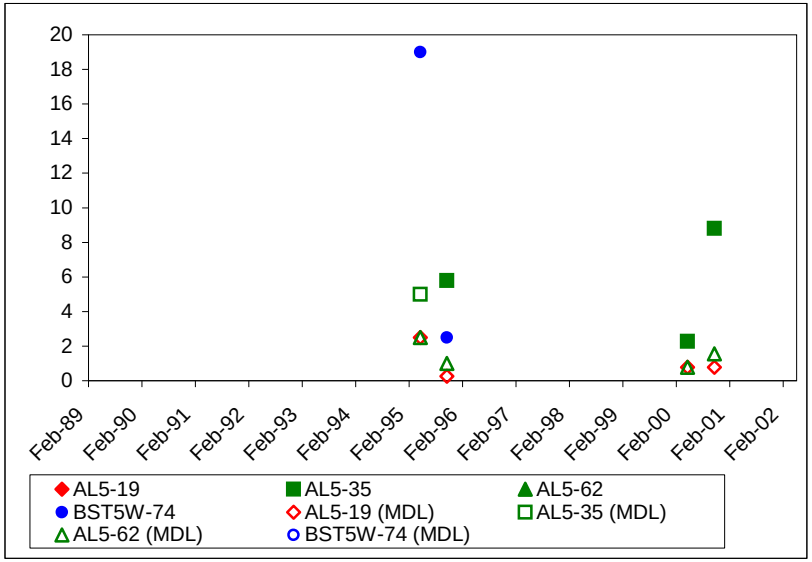
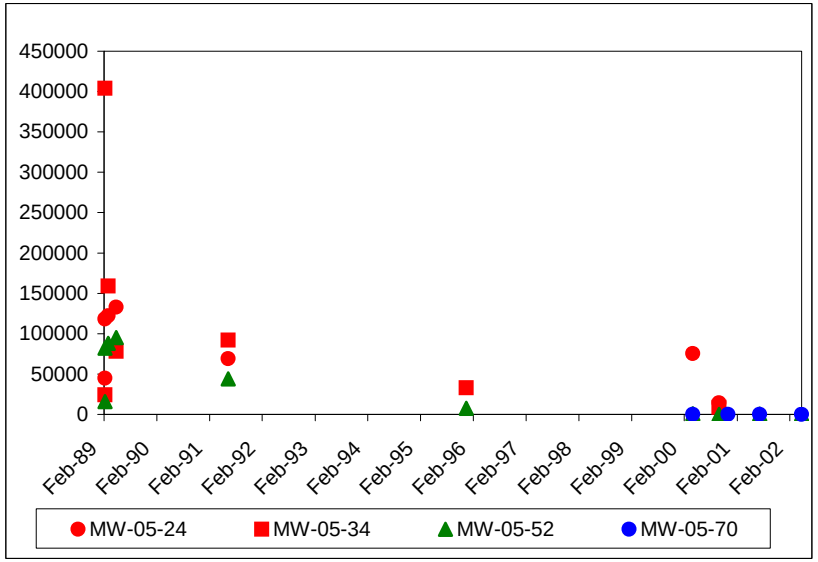
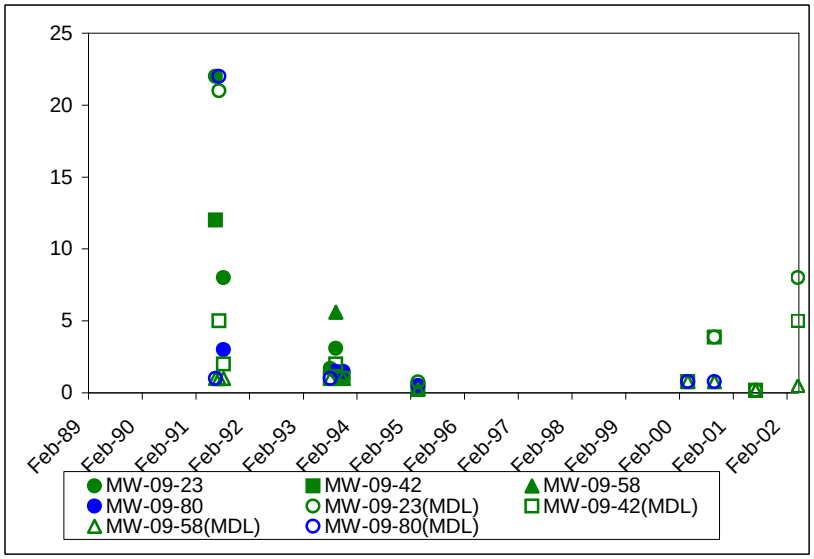


Figure D-21
2,4-D
(Concentrations in µg/L)







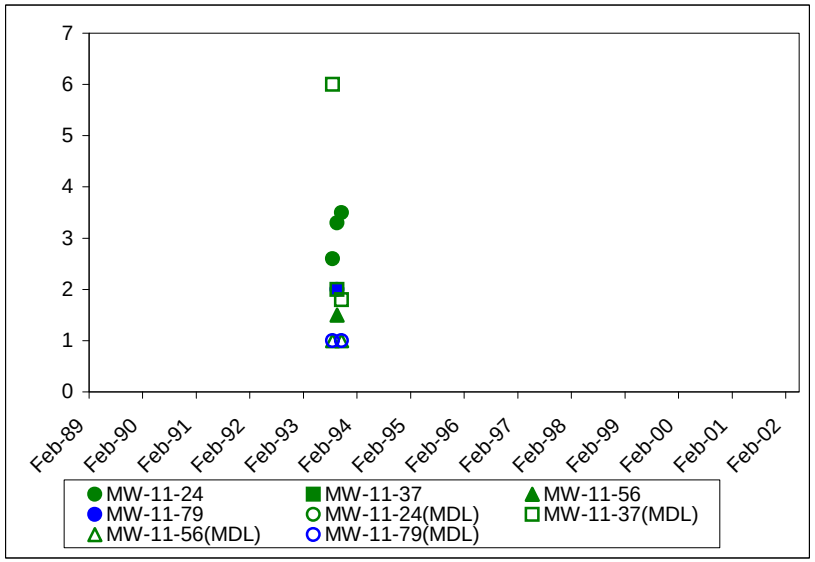
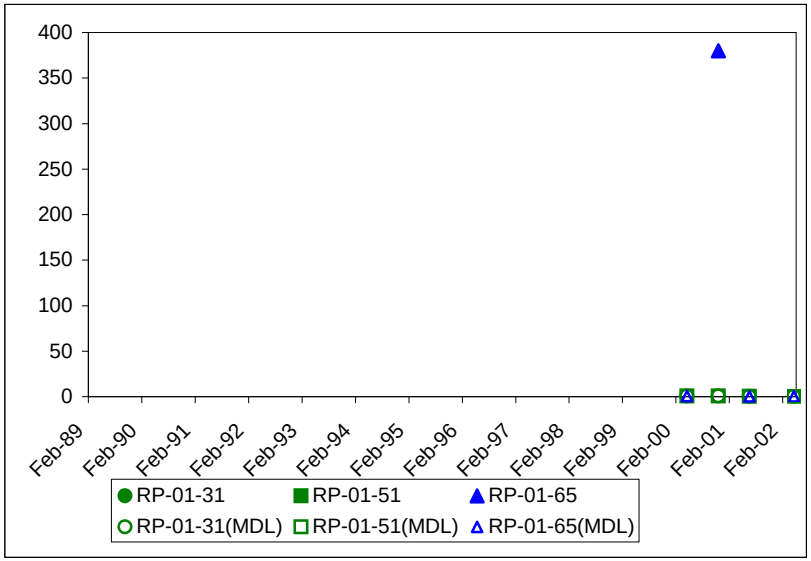
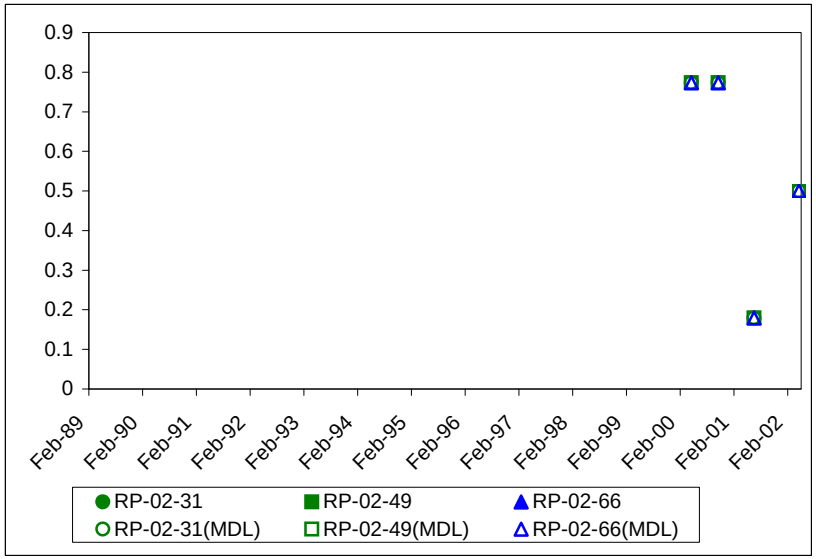
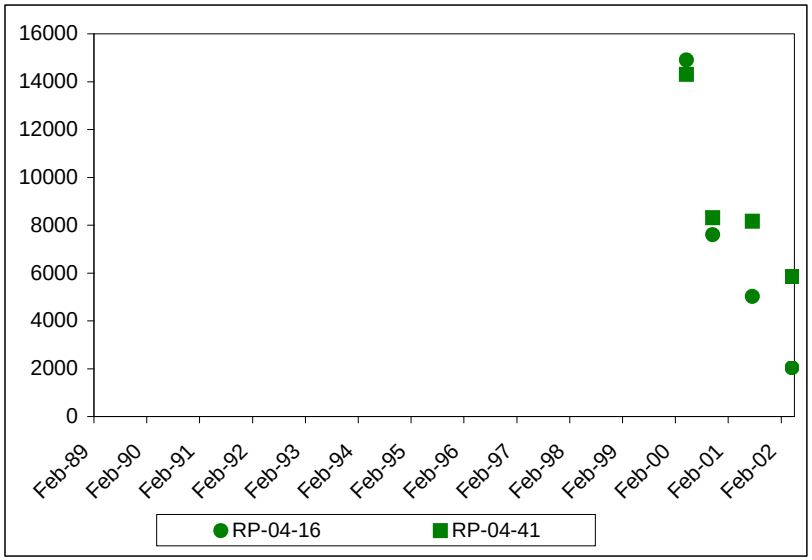


Figure D-22
2,4-D
(Concentrations in µg/L)







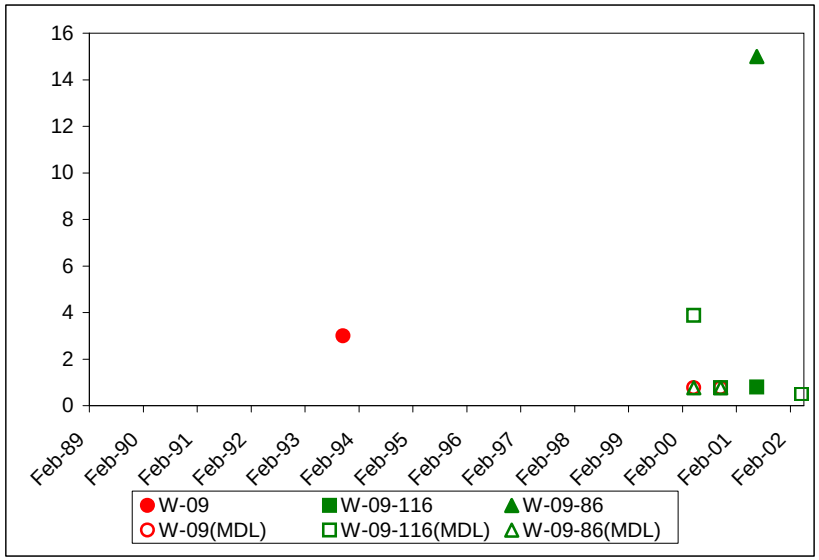
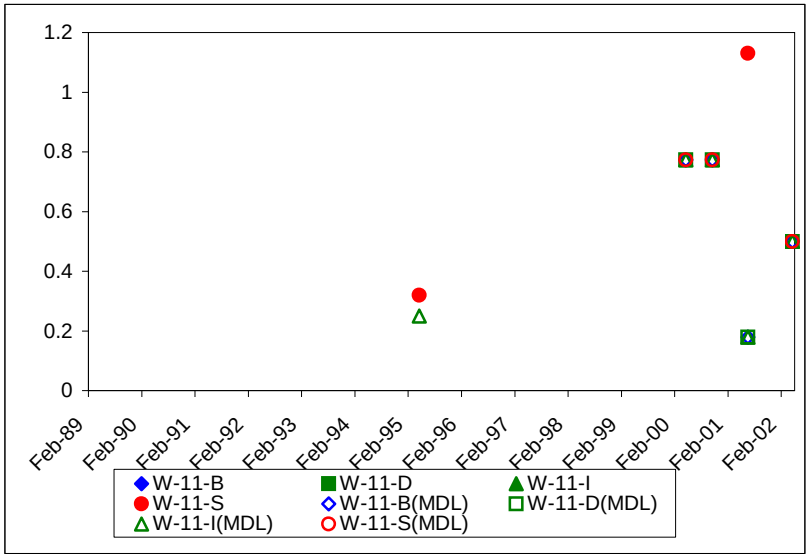
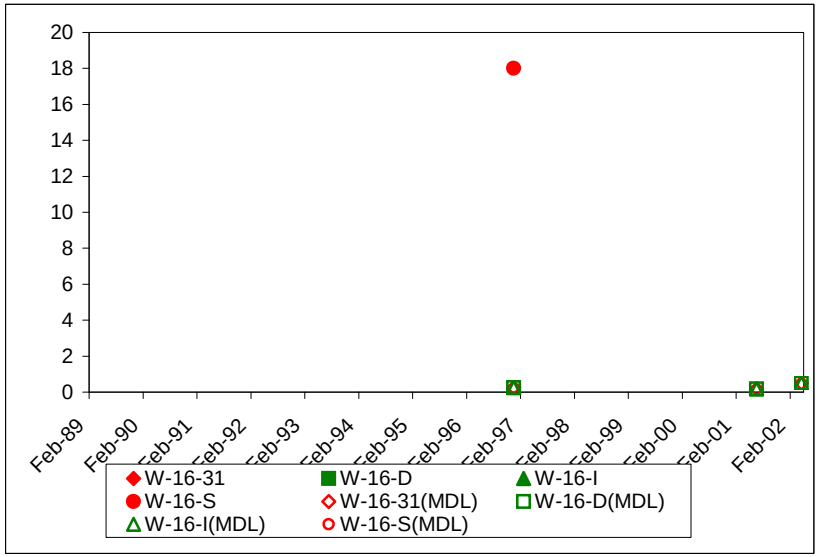
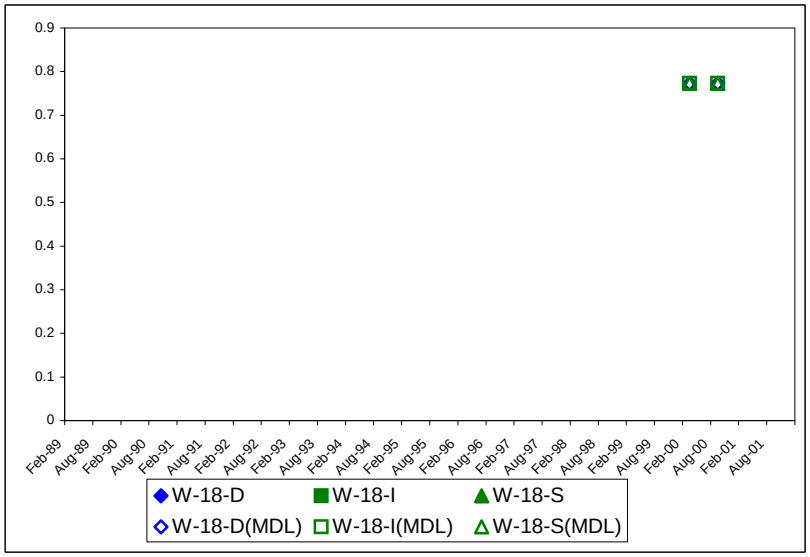


Figure D-23
2,4-D
(Concentrations in µg/L)







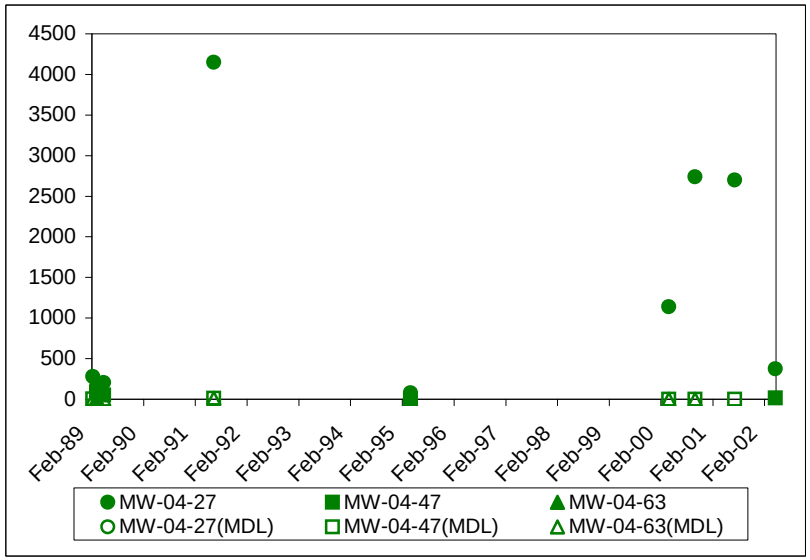
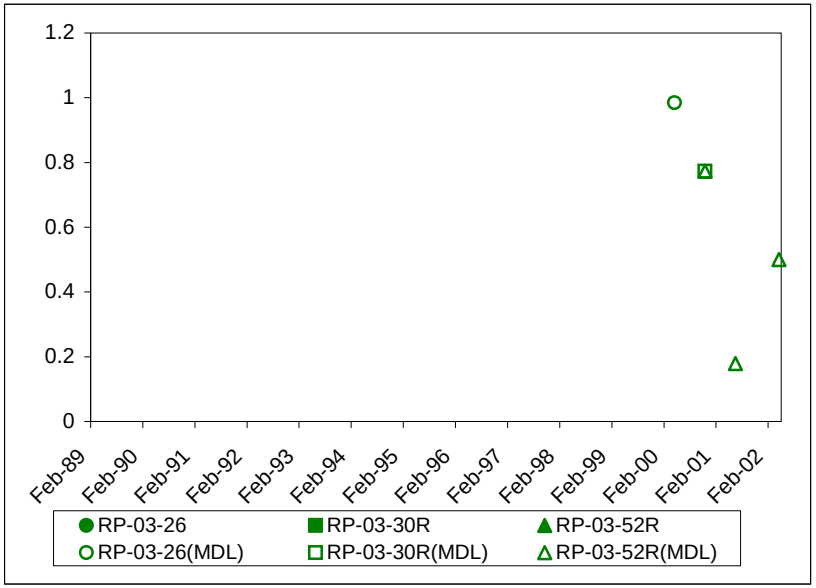
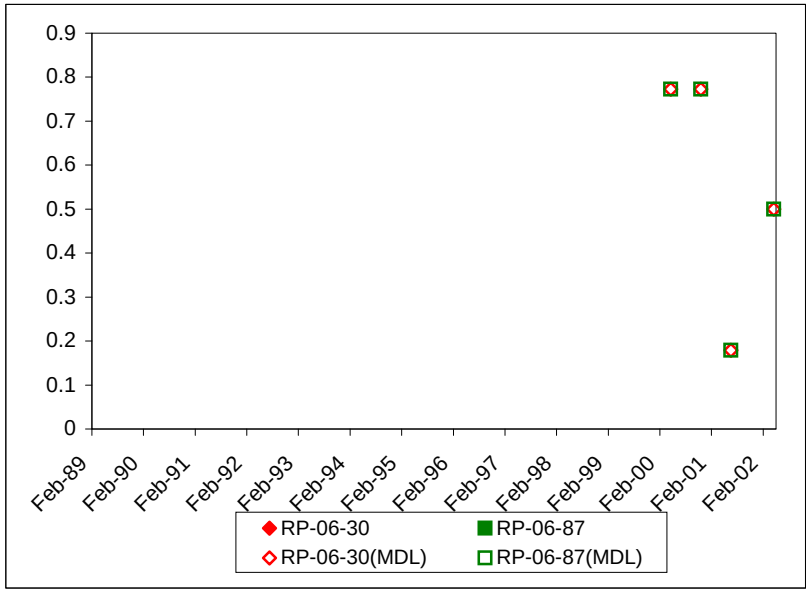


Figure D-24
2,4-D
(Concentrations in µg/L)





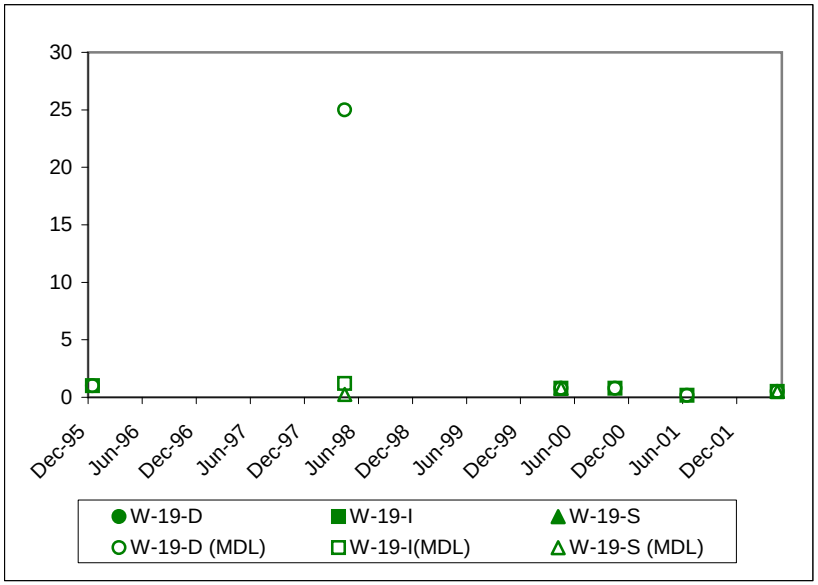
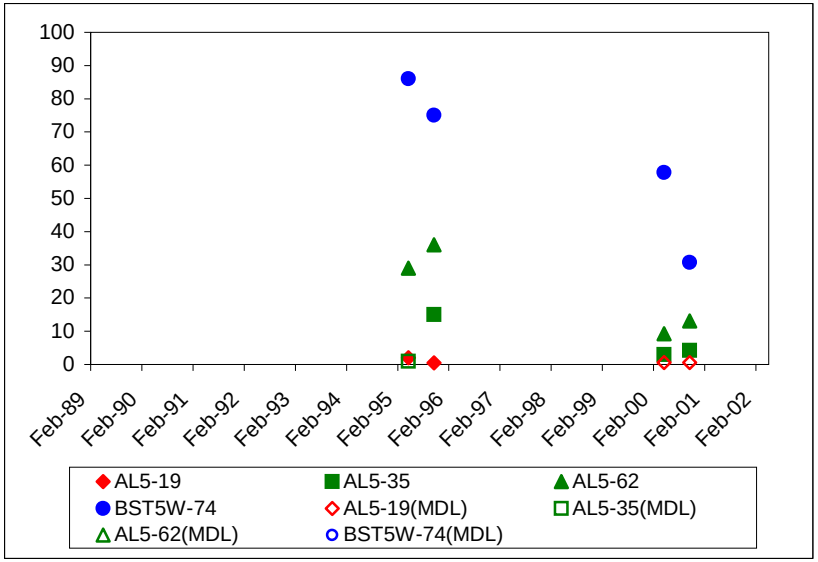
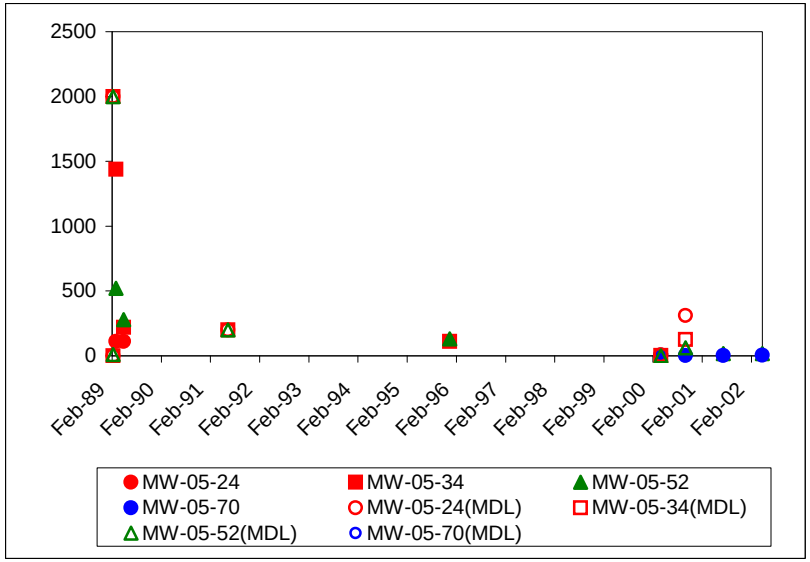
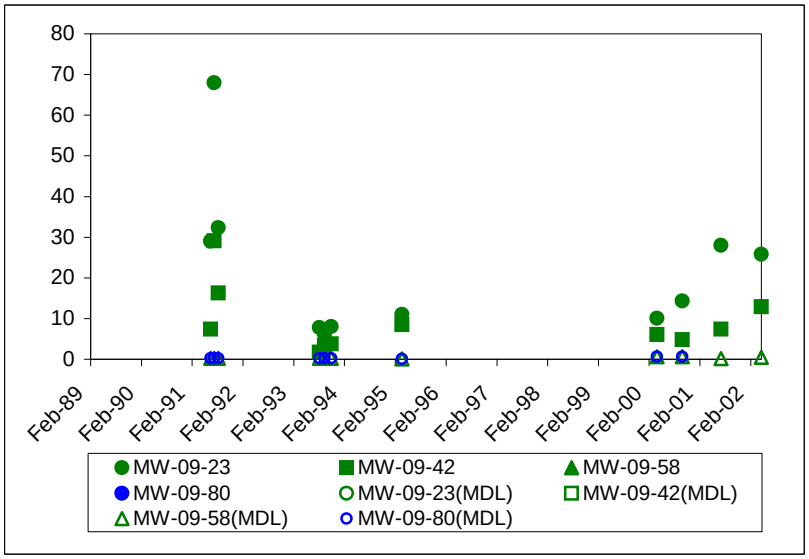


Figure D-25
2,4,5-TP (Silvex)
(Concentrations in µg/L)







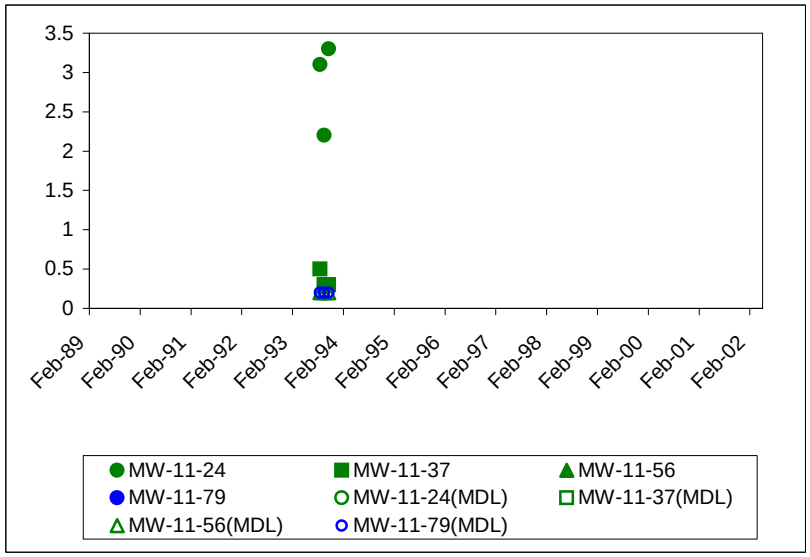
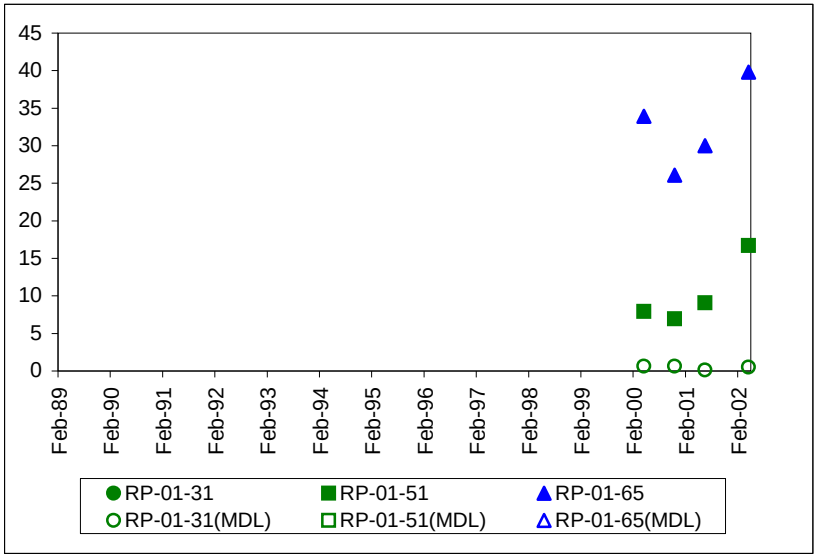
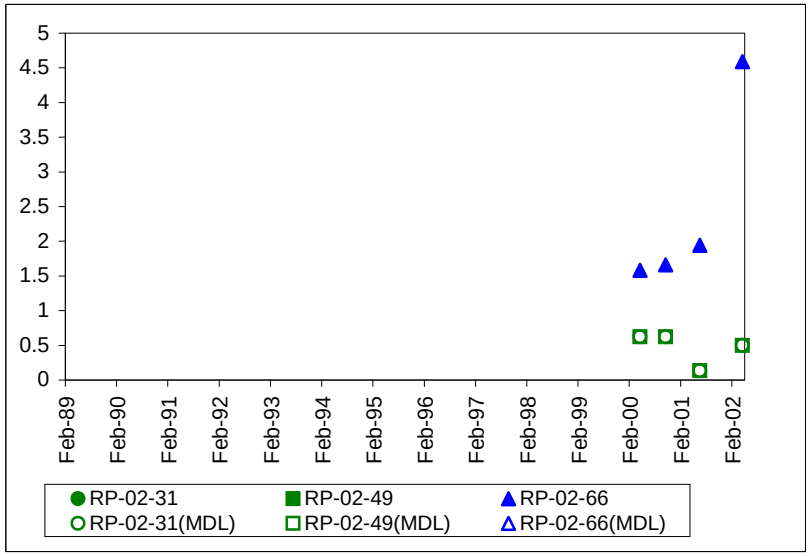
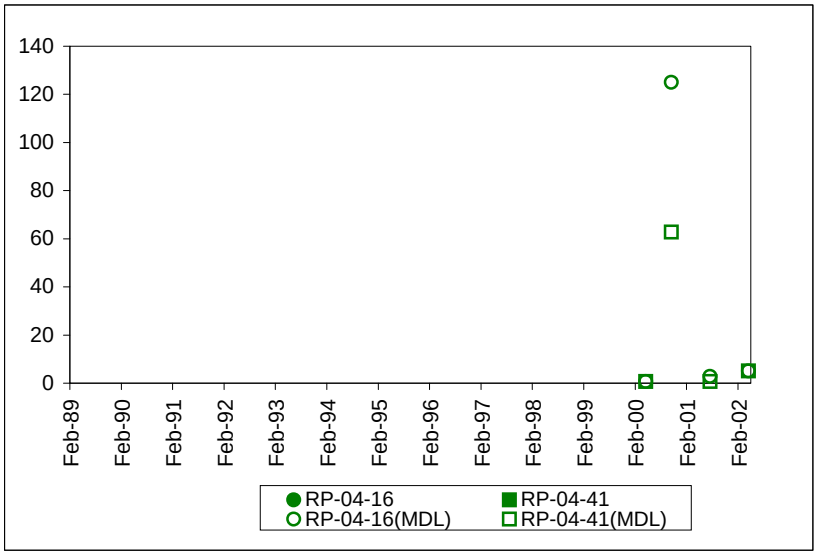


Figure D-26
2,4,5-TP (Silvex)
(Concentrations in µg/L)







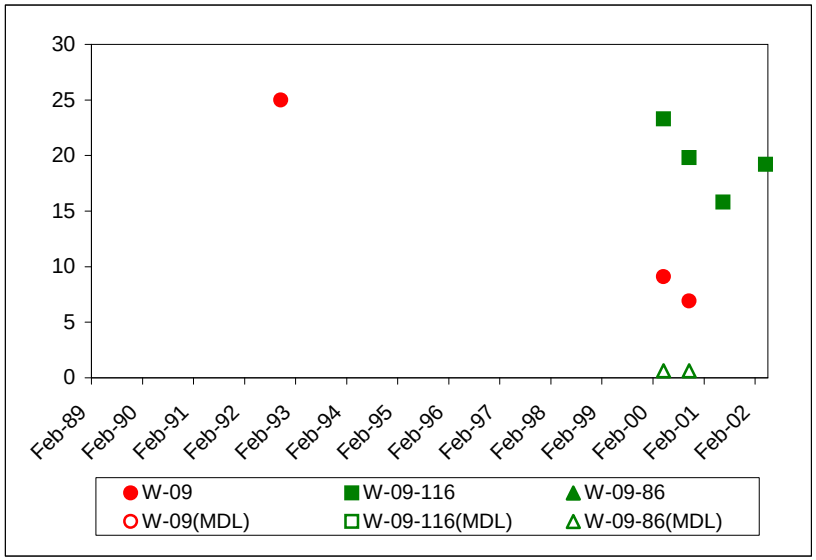
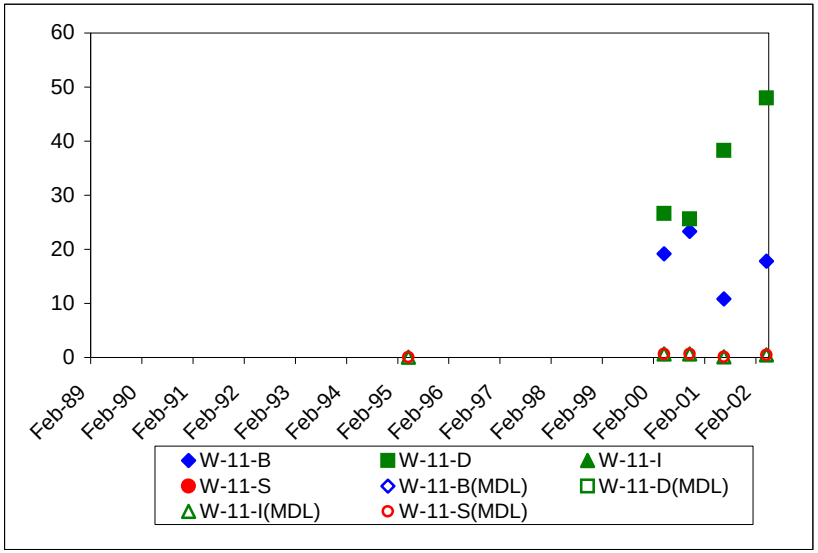
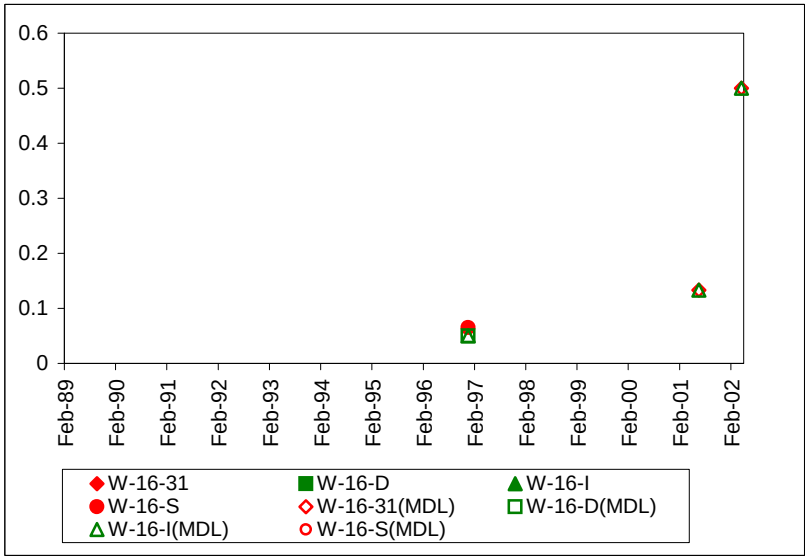
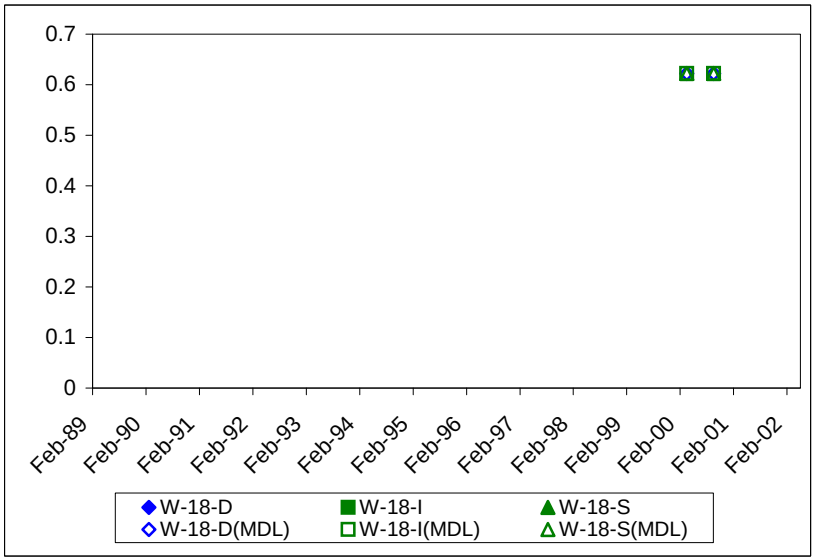


Figure D-27
2,4,5-TP (Silvex)
(Concentrations in µg/L)







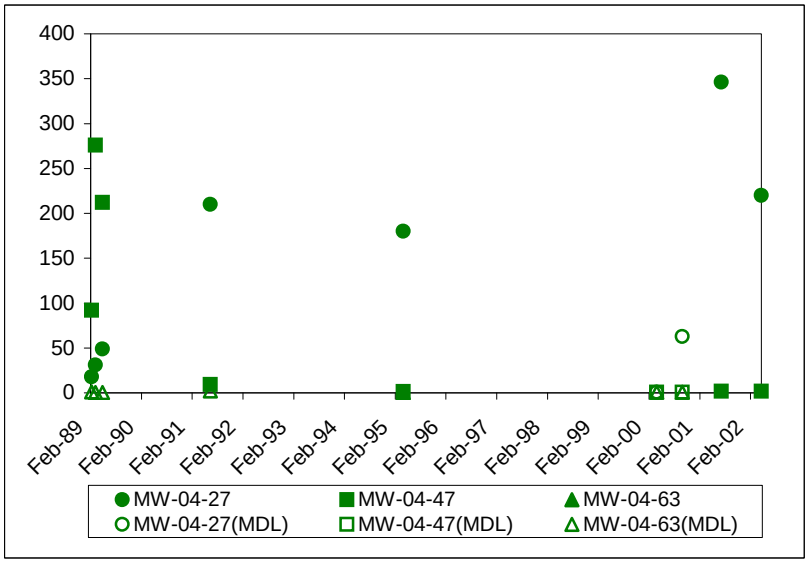
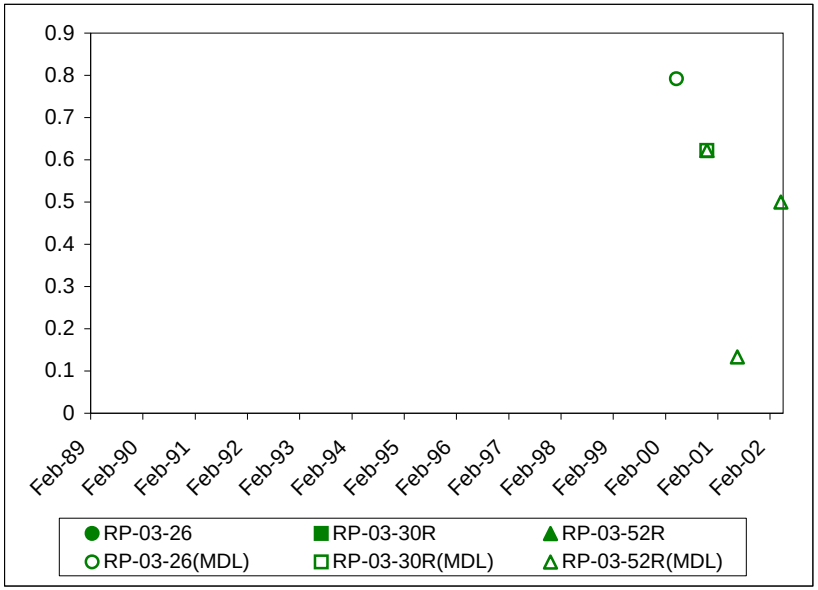
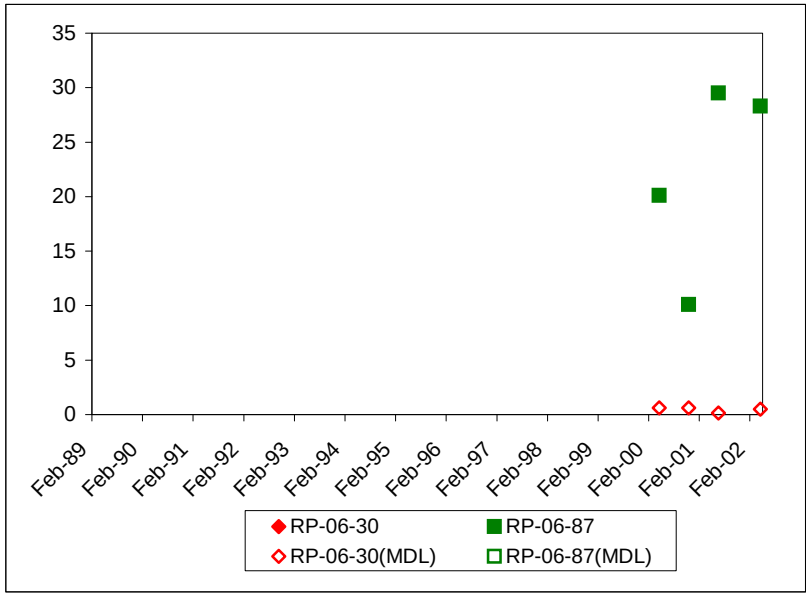


Figure D-28
2,4,5-TP (Silvex)
(Concentrations in µg/L)





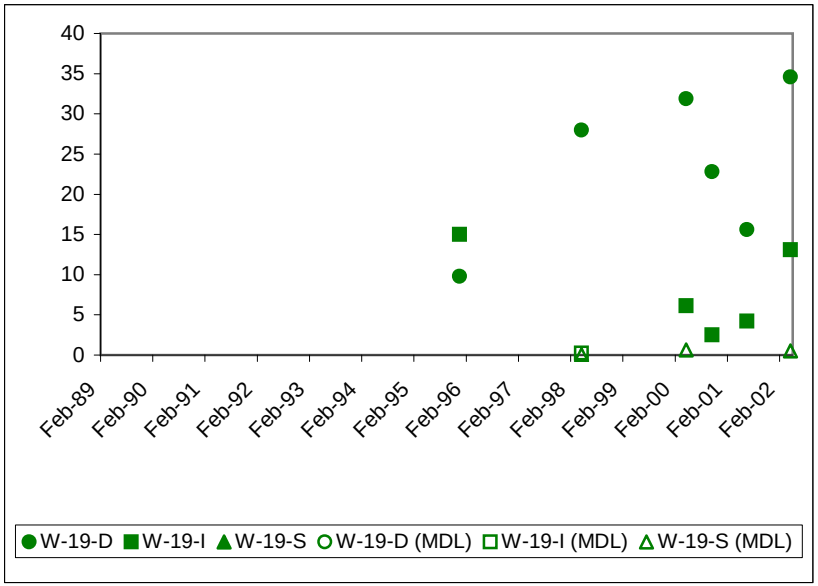
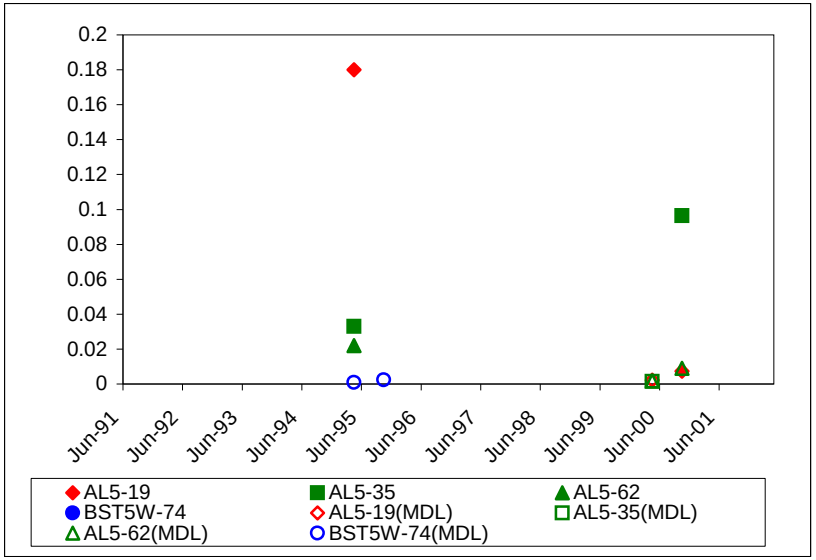
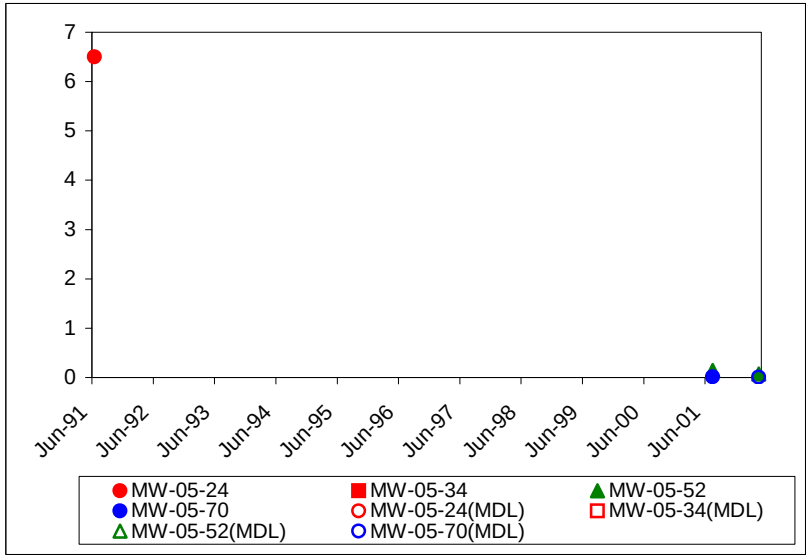
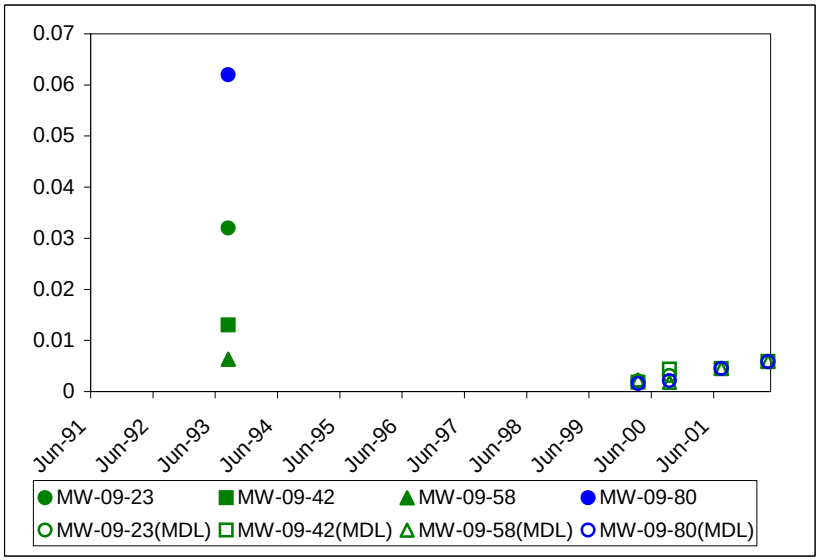


Figure D-29
2,3,7,8-TCDD
(Concentrations in ng/L)







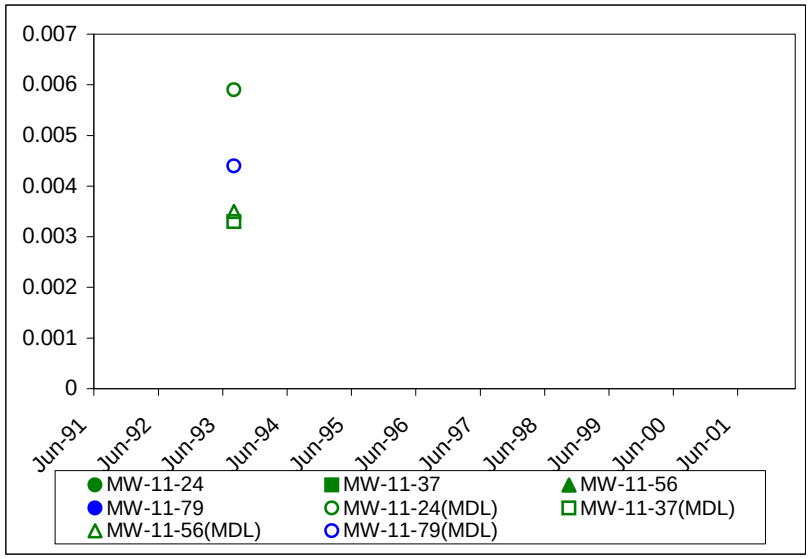
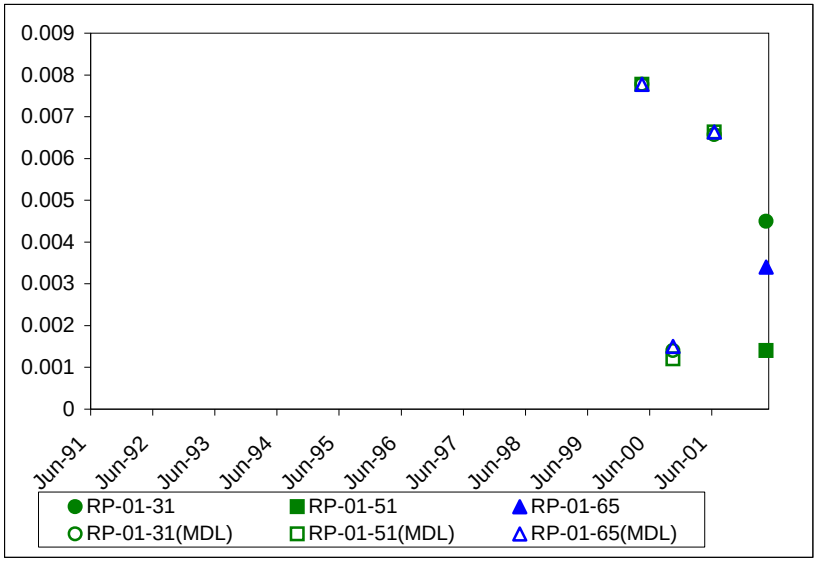
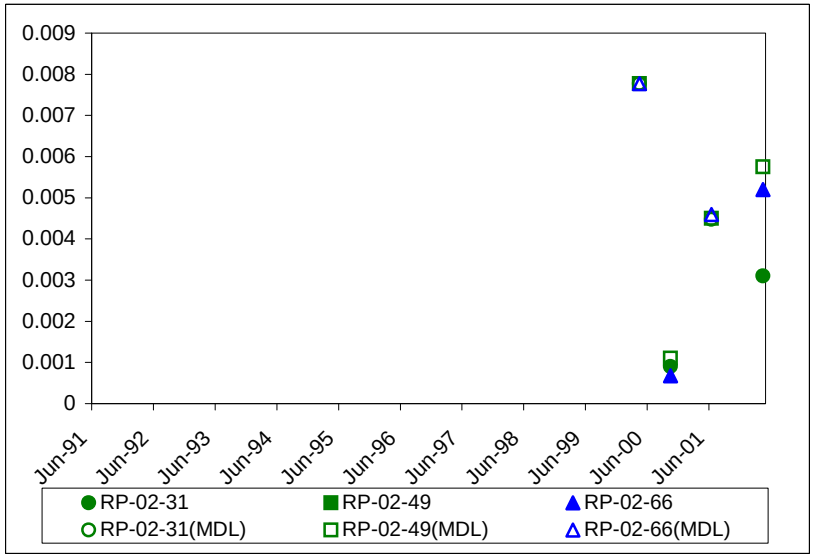
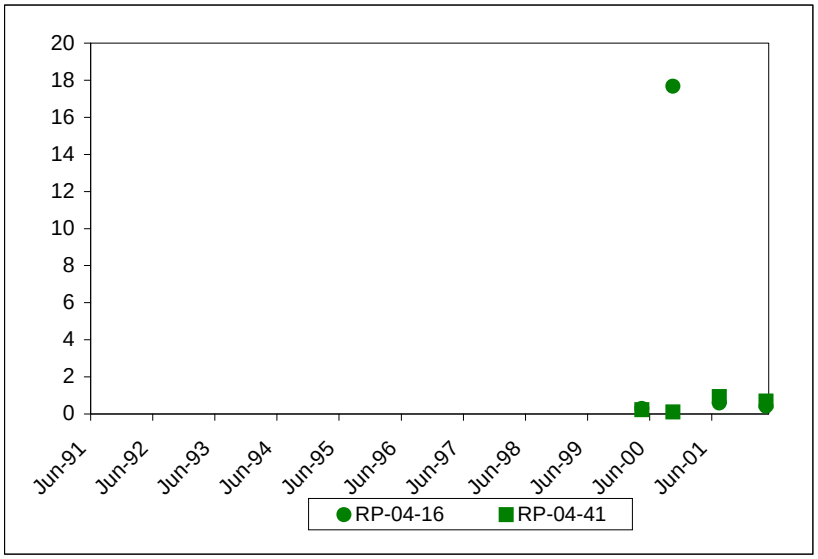


Figure D-30
2,3,7,8-TCDD
(Concentrations in ng/L)







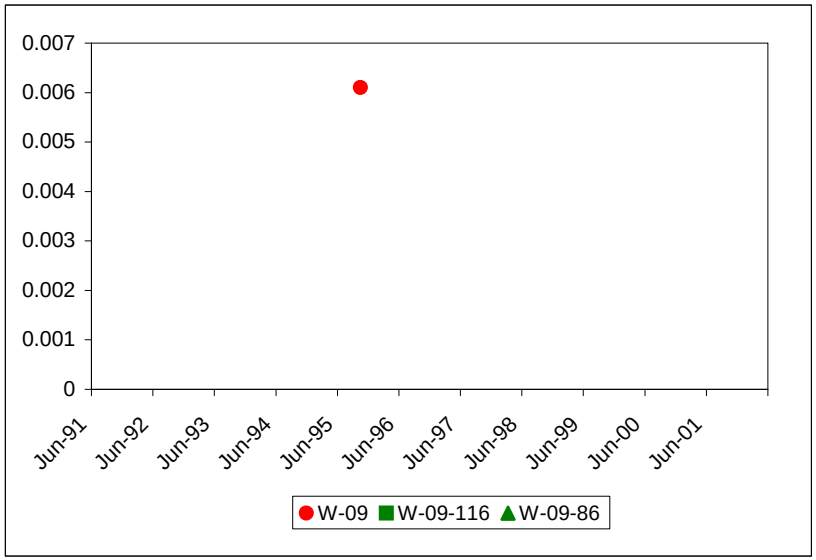
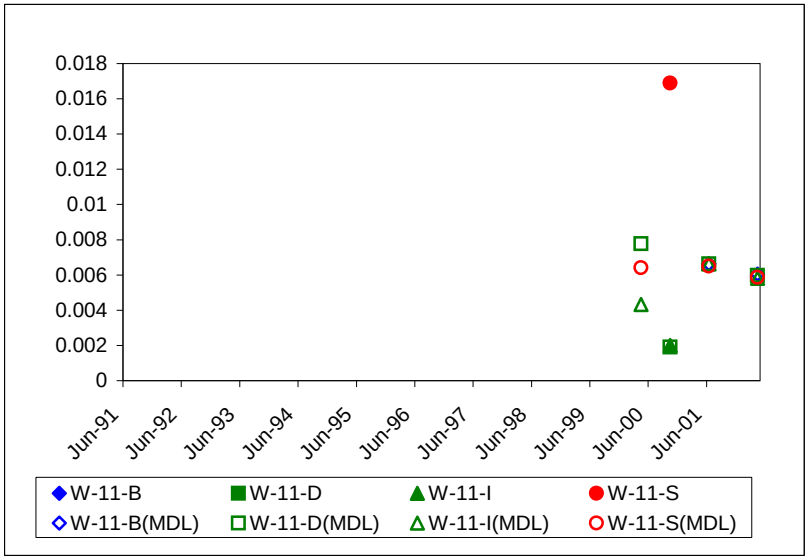
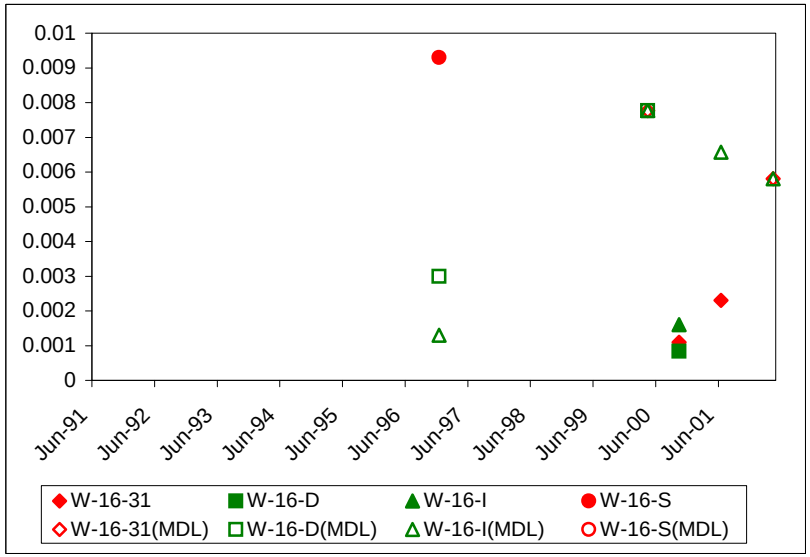
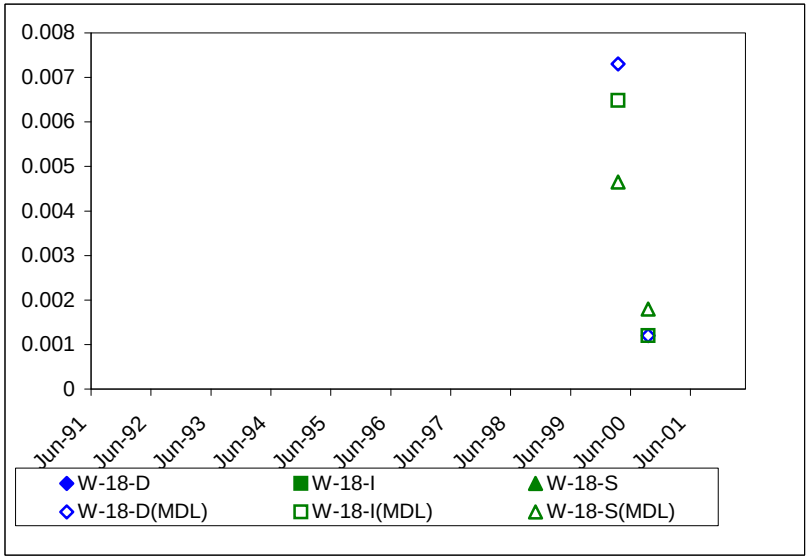


Figure D-31
2,3,7,8-TCDD
(Concentrations in ng/L)







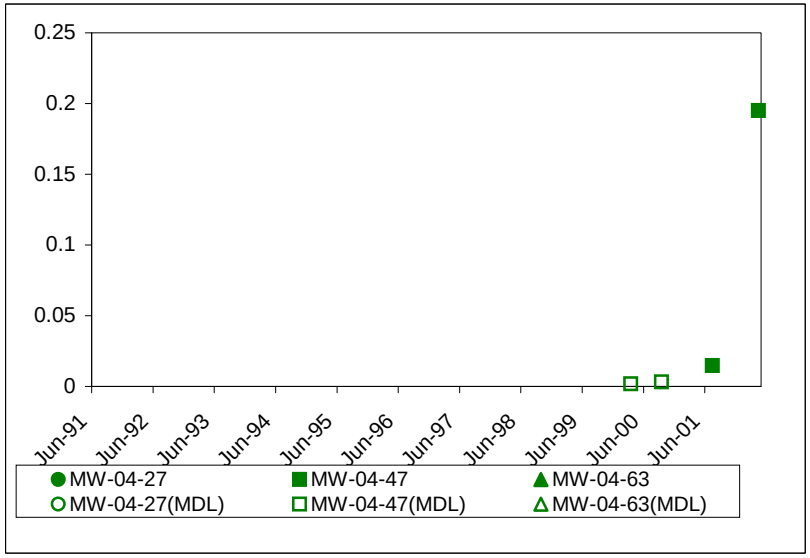
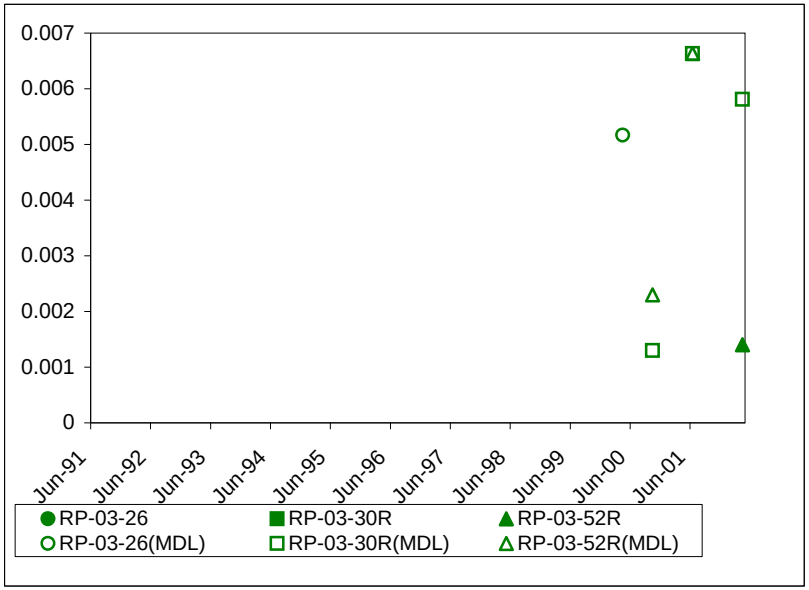
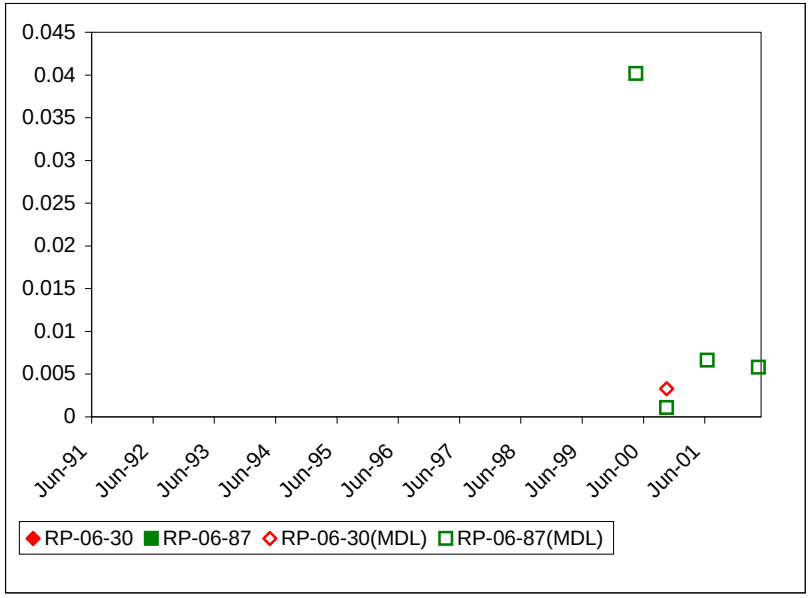


Figure D-32
2,3,7,8-TCDD
(Concentrations in ng/L)





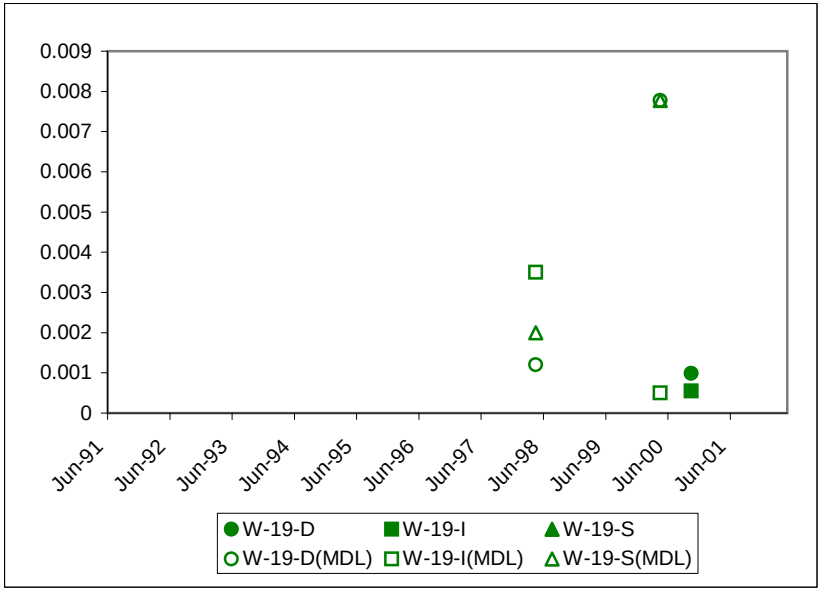
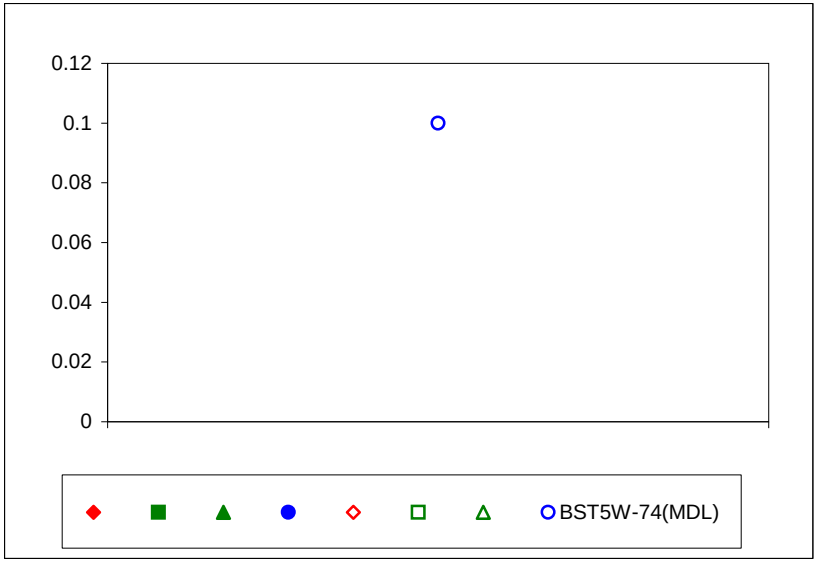
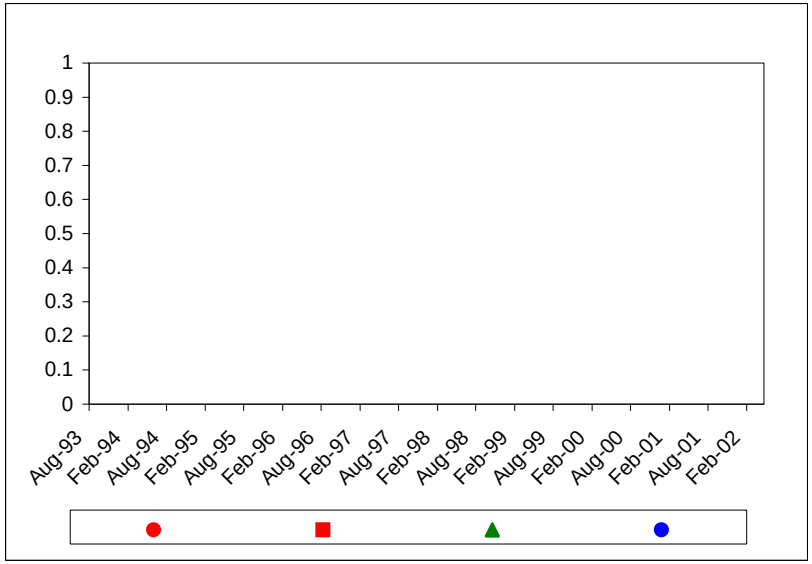
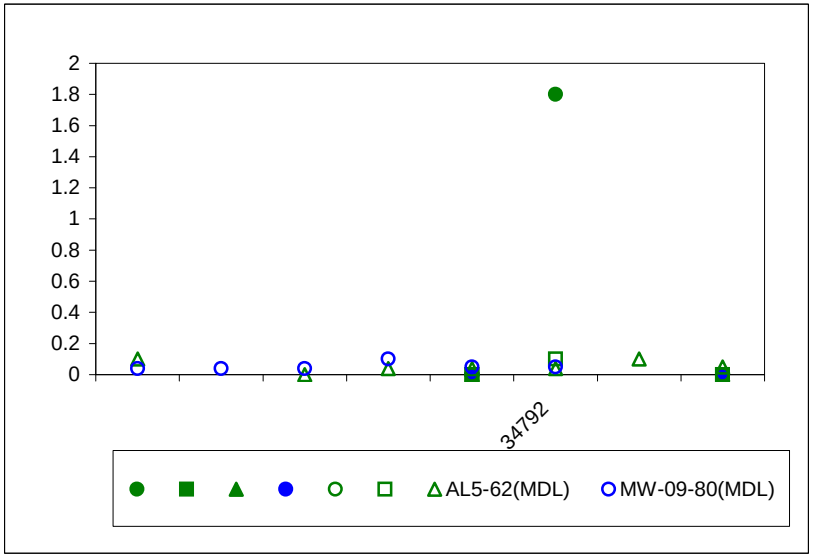


Figure D-33
4,4'-DDT
(Concentrations in µg/L)







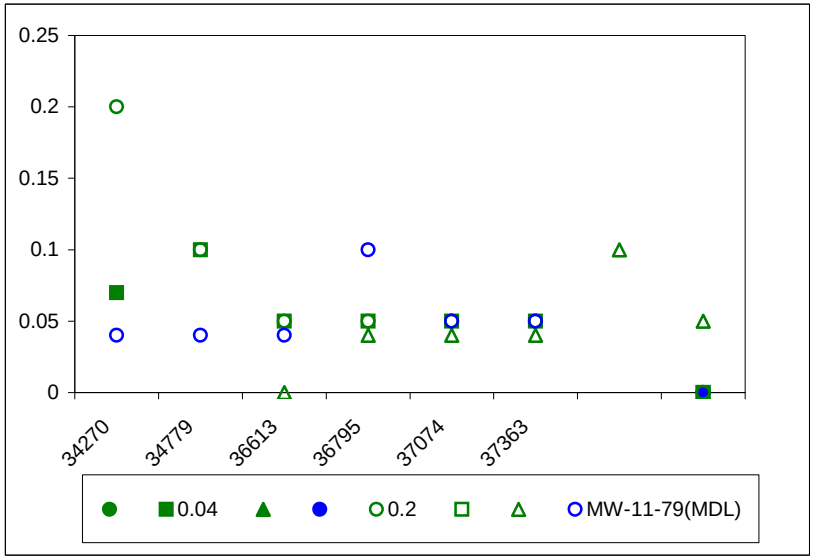
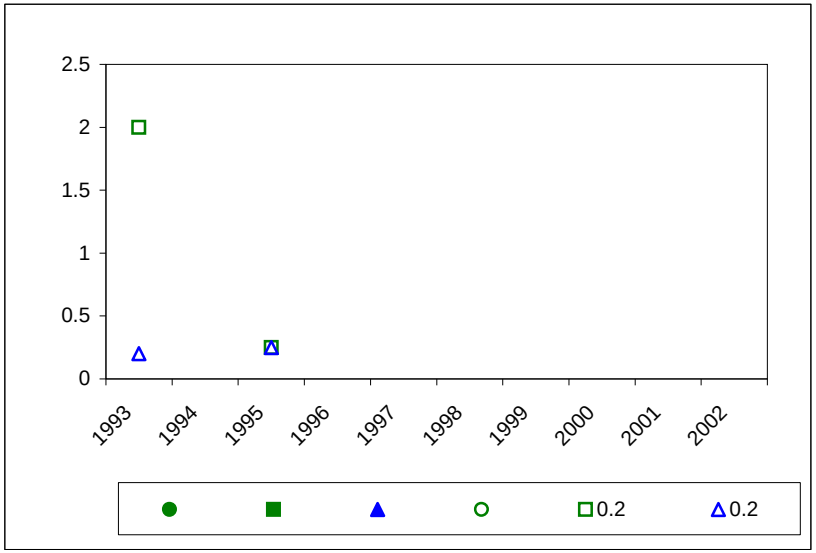
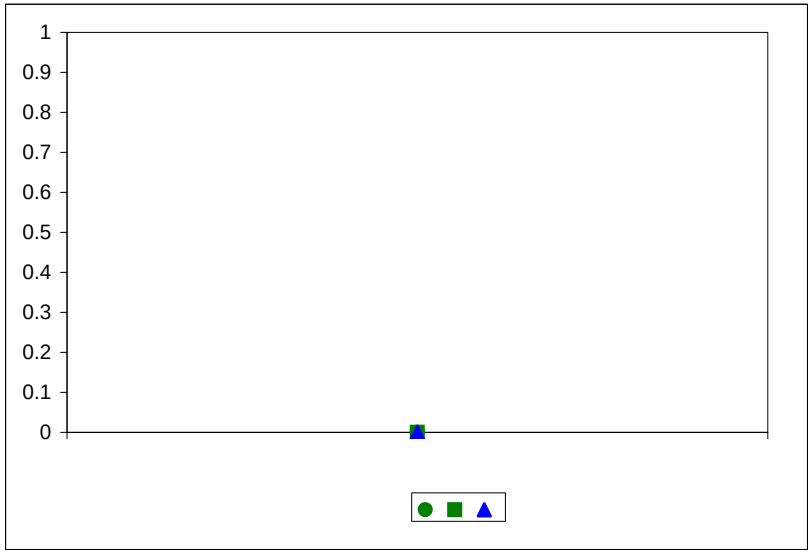


Figure D-34
4,4'-DDT
(Concentrations in µg/L)





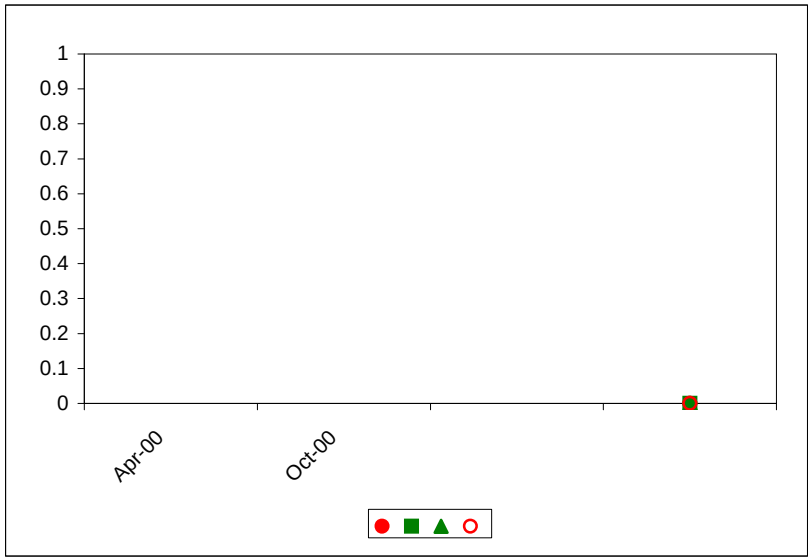
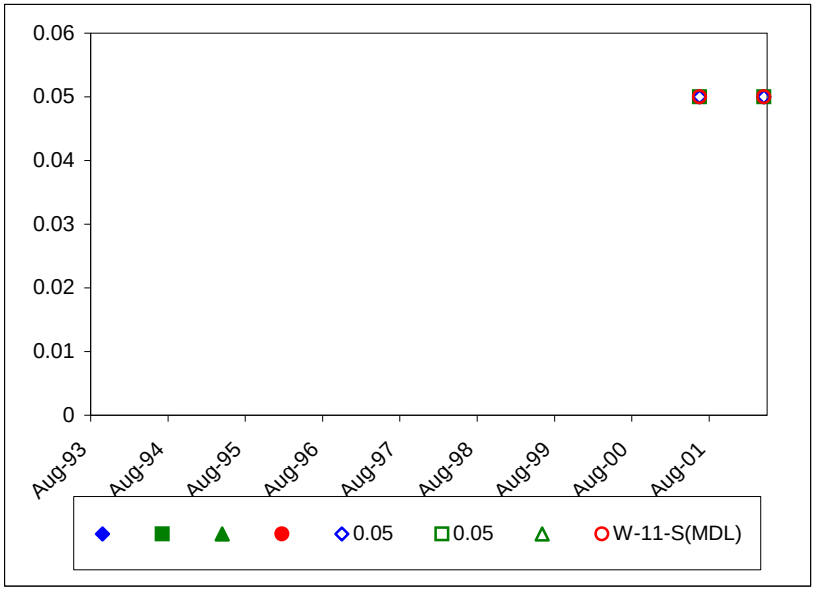
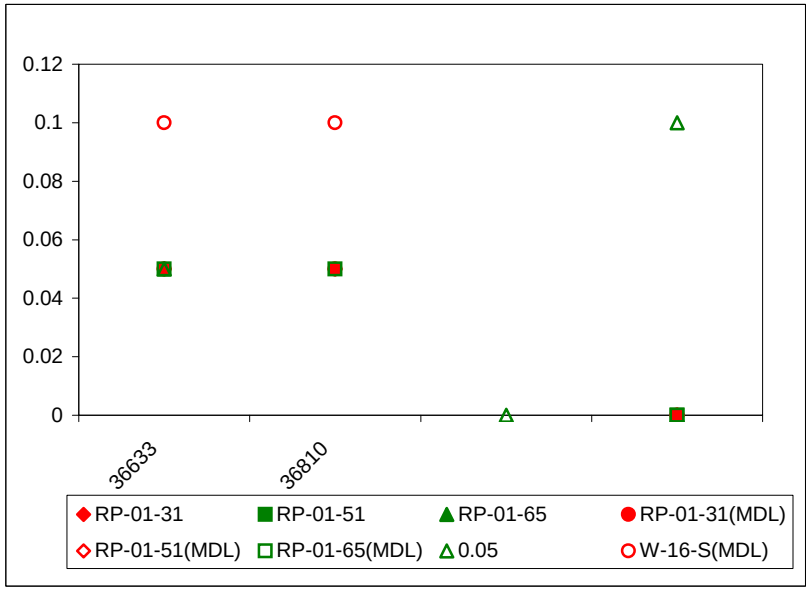
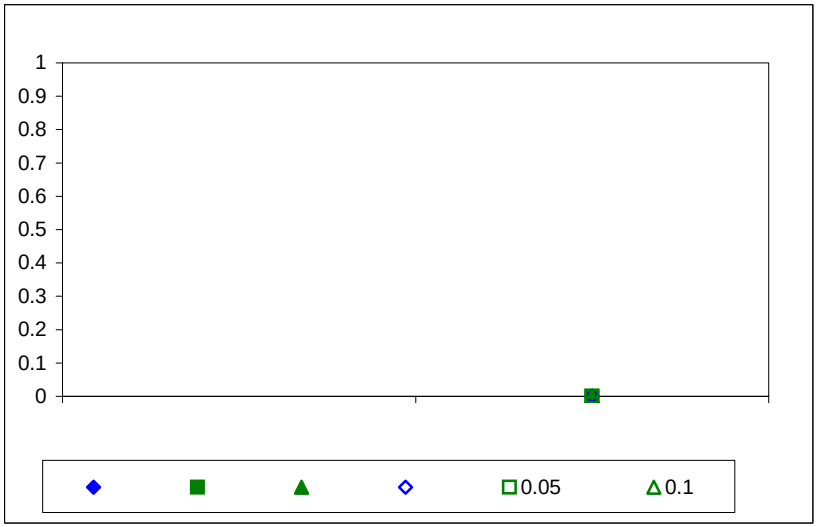


Figure D-35
4,4'-DDT
(Concentrations in µg/L)







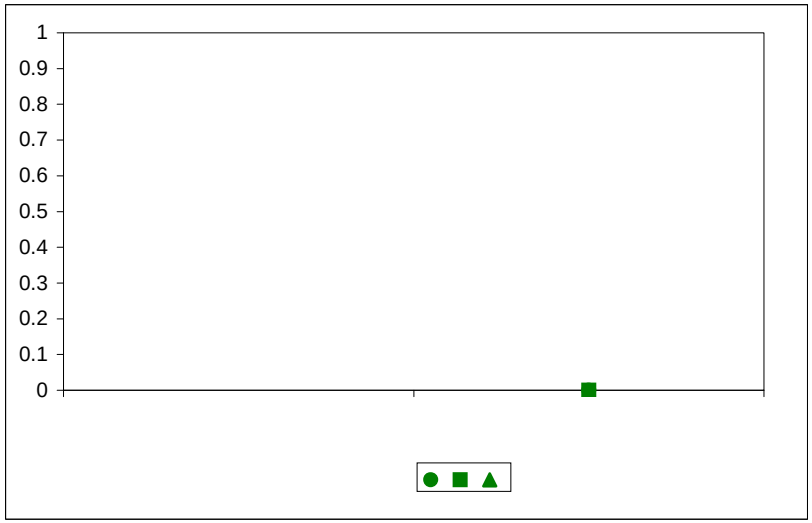
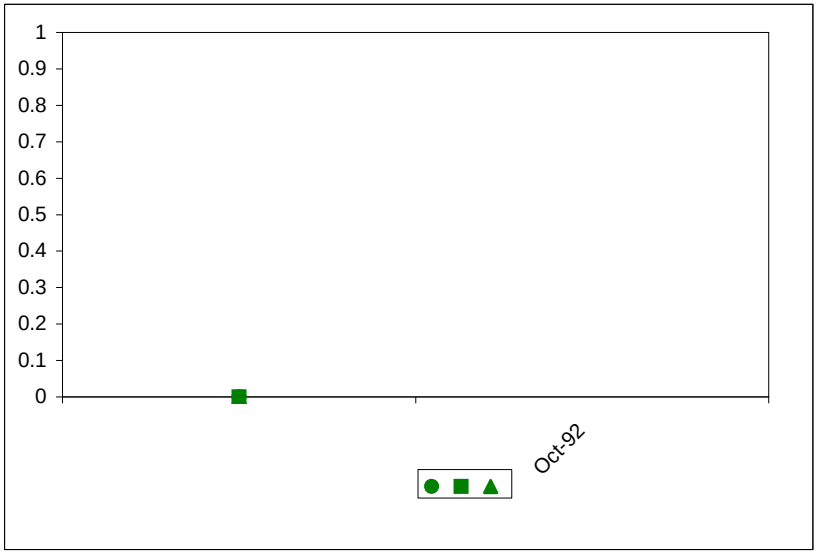
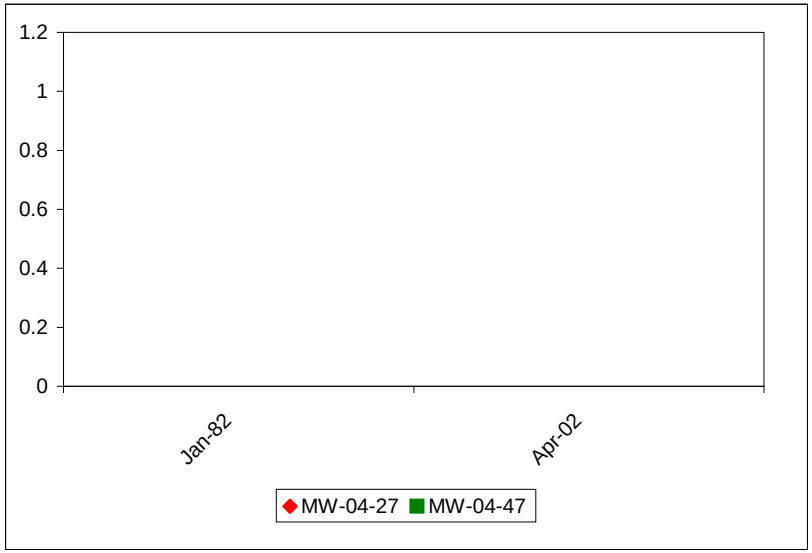


Figure D-36
4,4'-DDT
(Concentrations in µg/L)





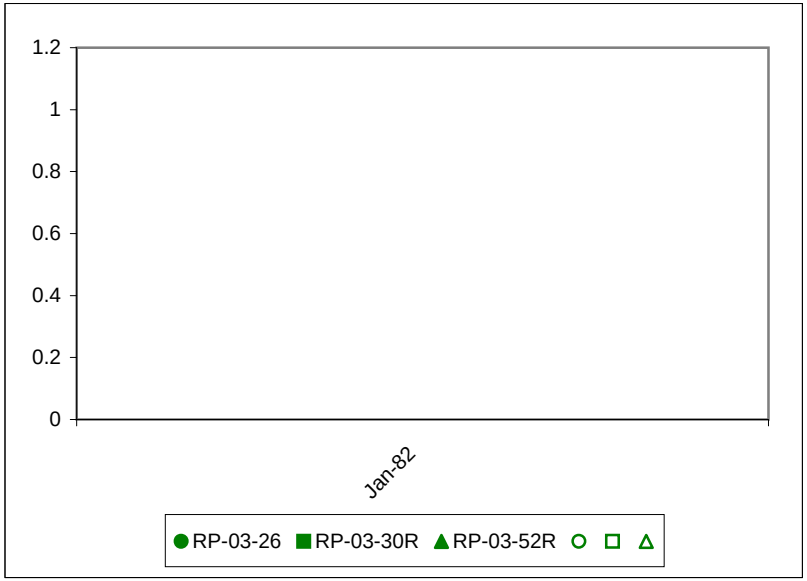
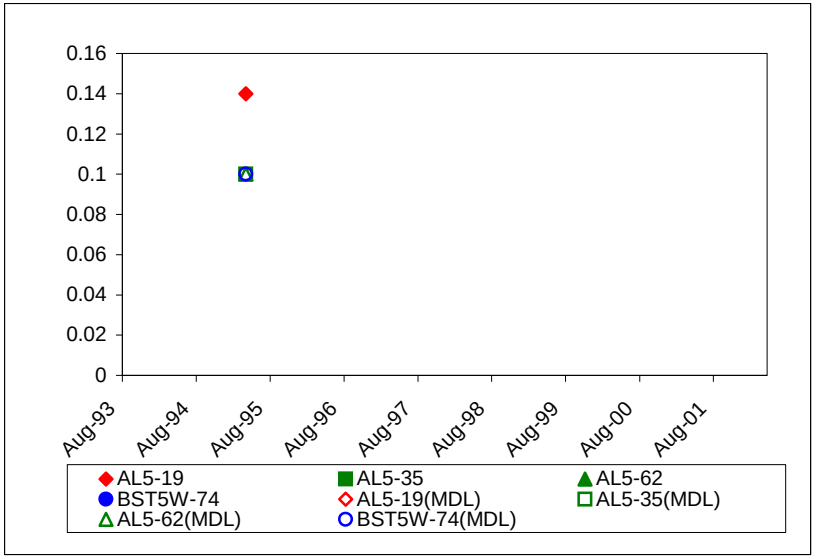
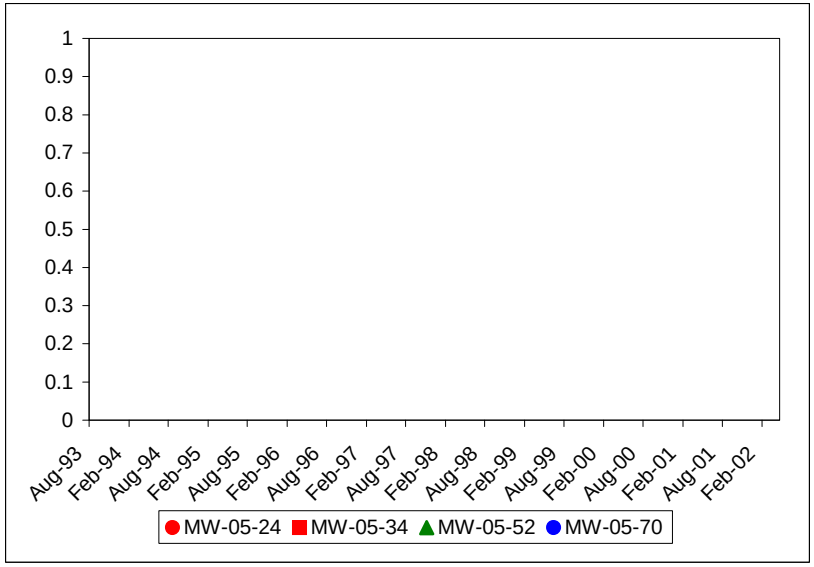
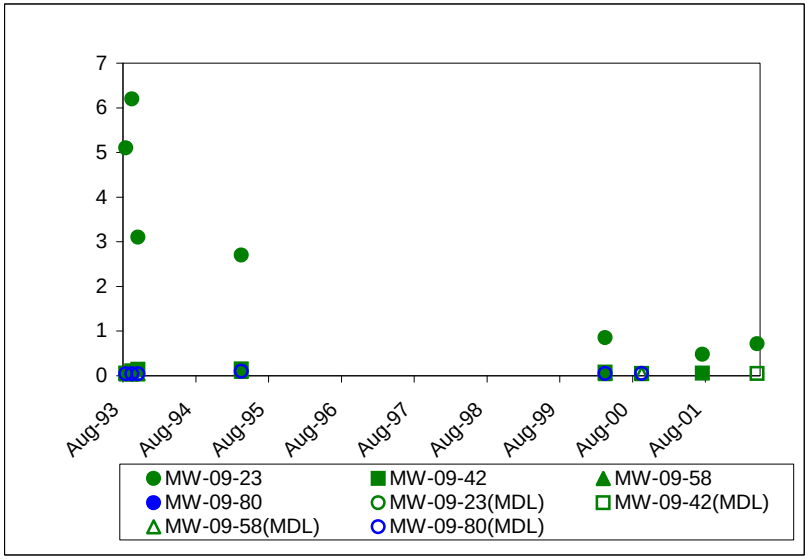


Figure D-37
Dieldrin
(Concentrations in µg/L)







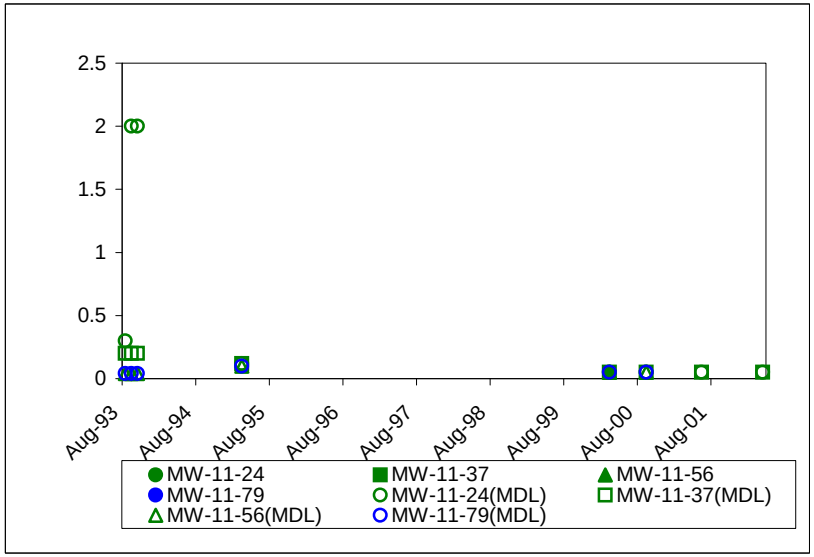
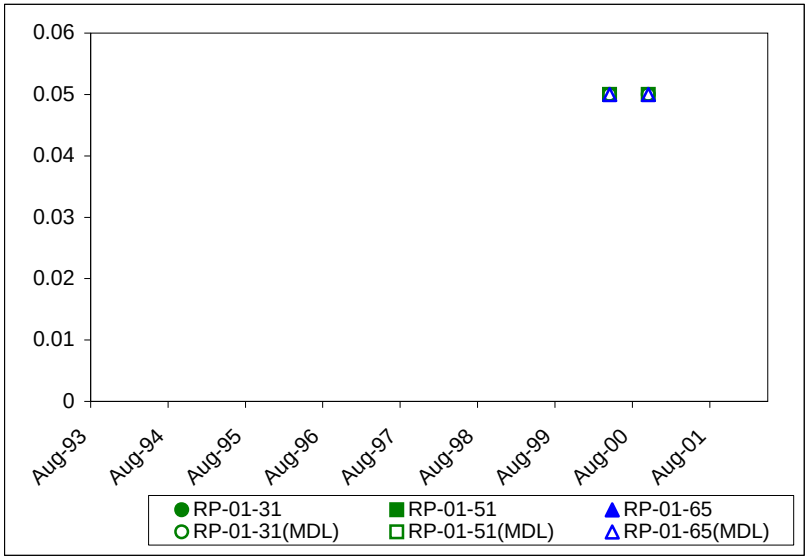
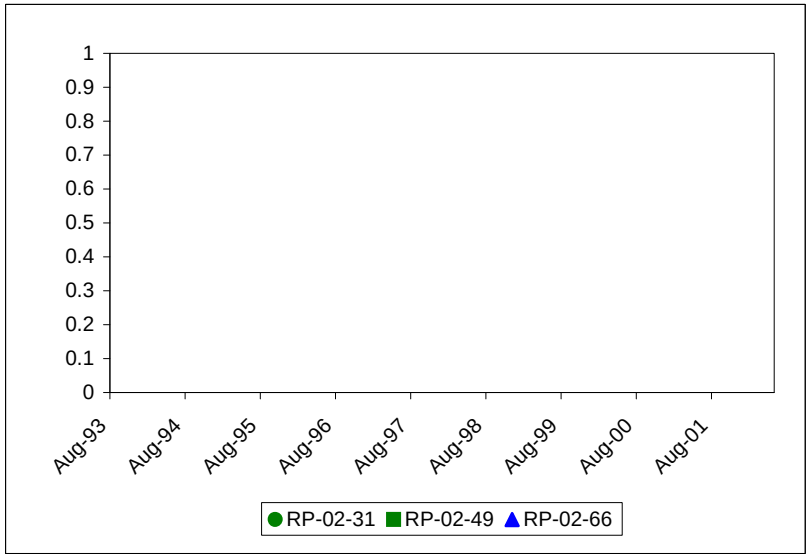
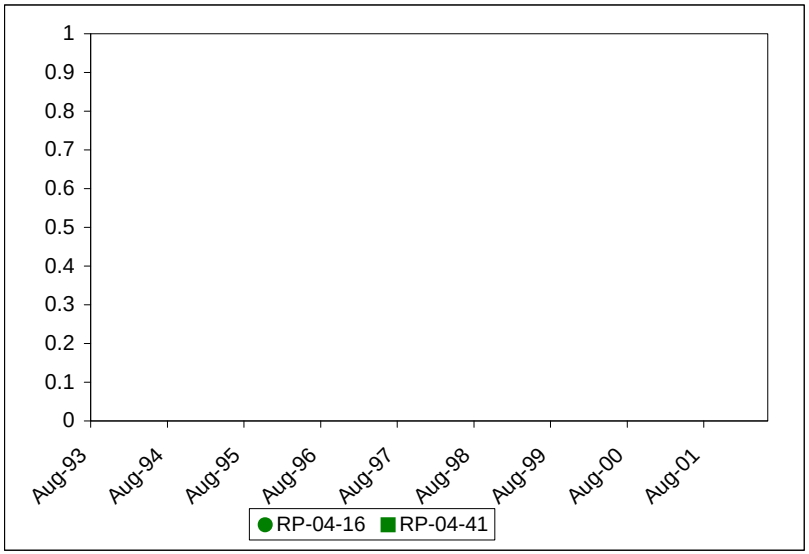


Figure D-38
Dieldrin
(Concentrations in µg/L)







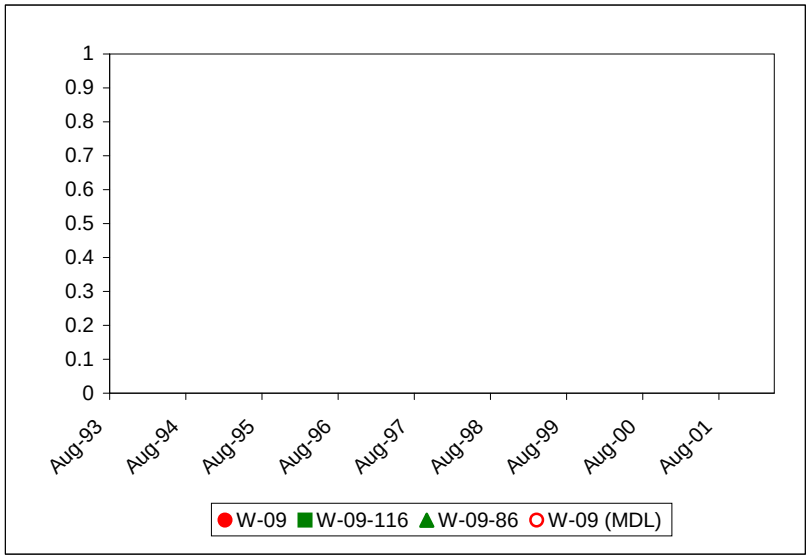
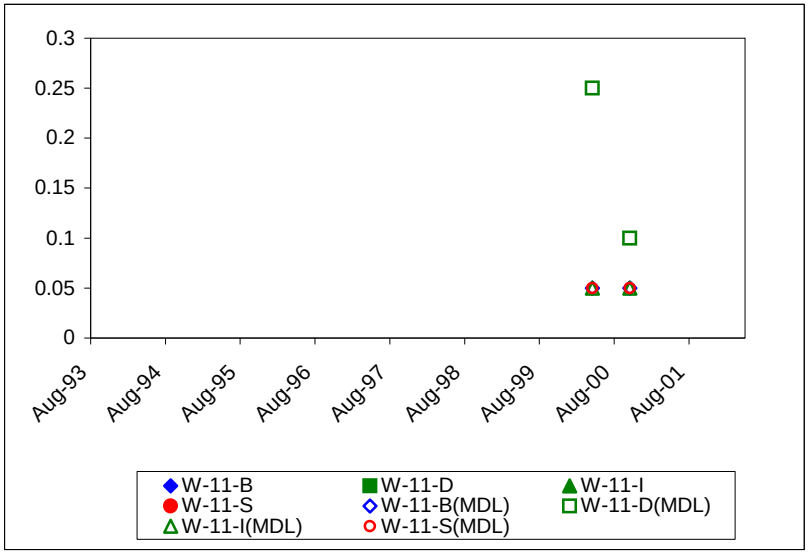
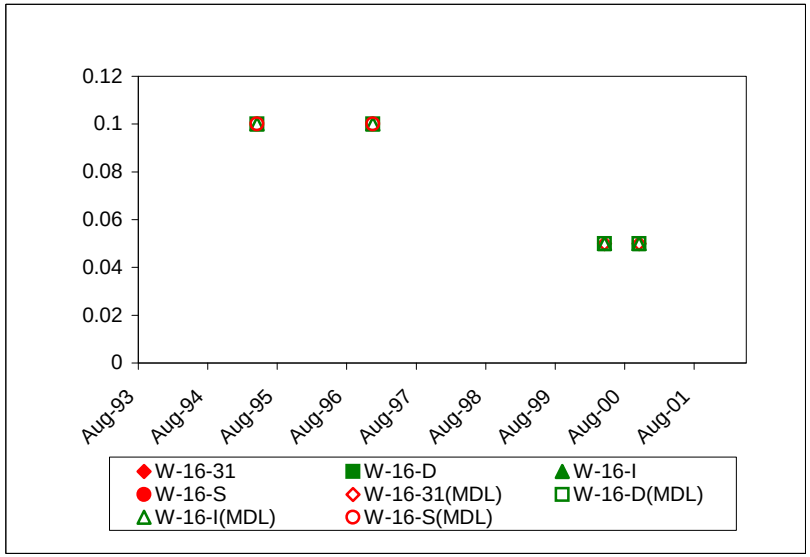
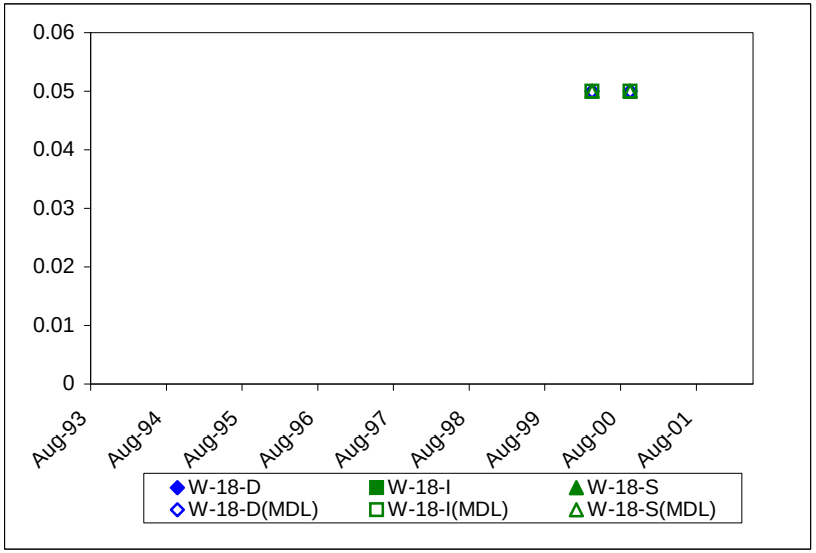


Figure D-39
Dieldrin
(Concentrations in µg/L)







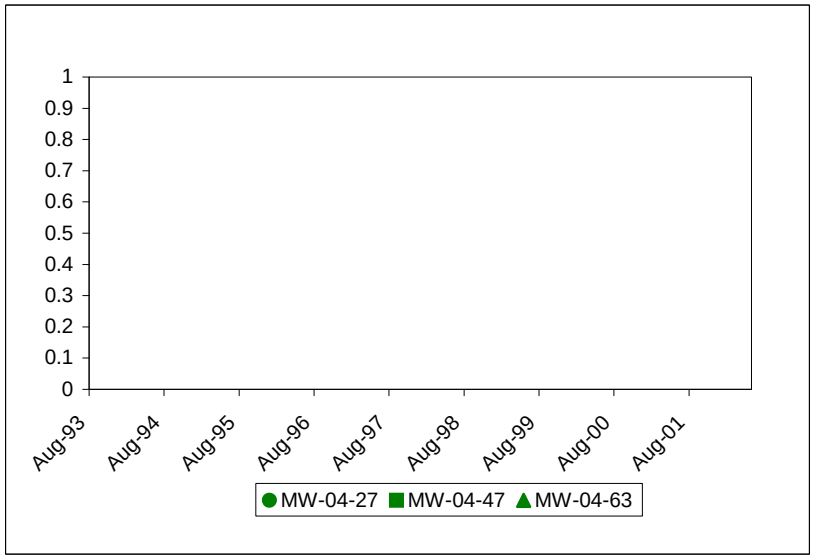
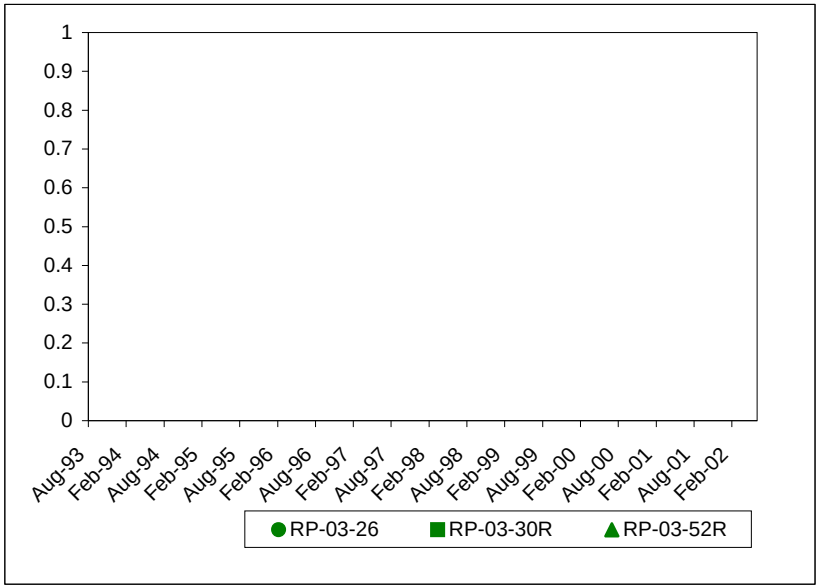
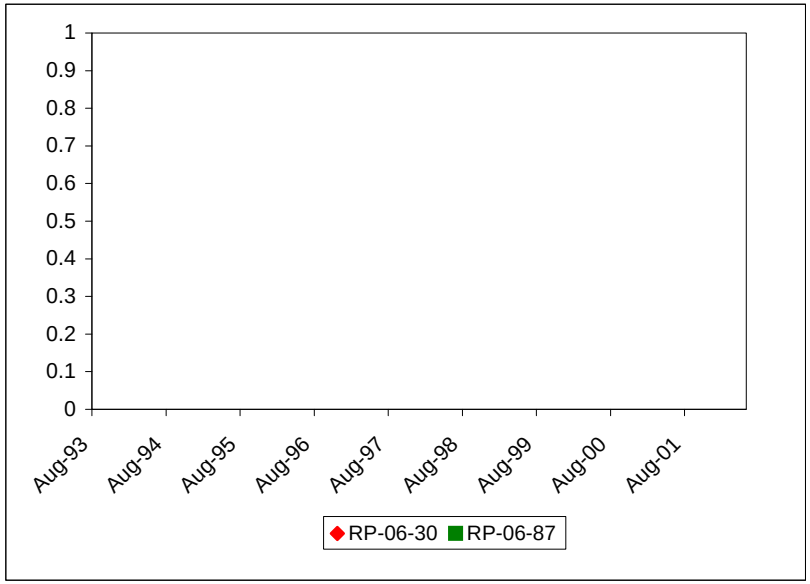


Figure D-40
Dieldrin
(Concentrations in µg/L)





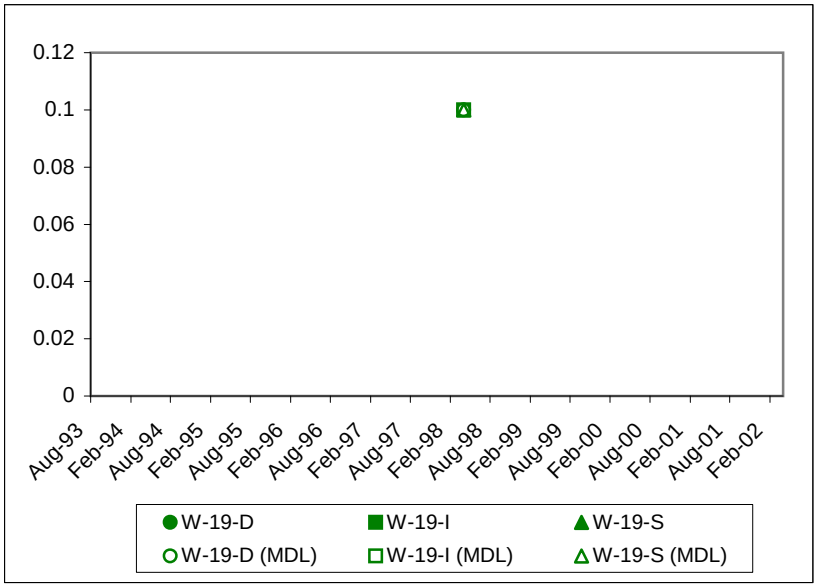
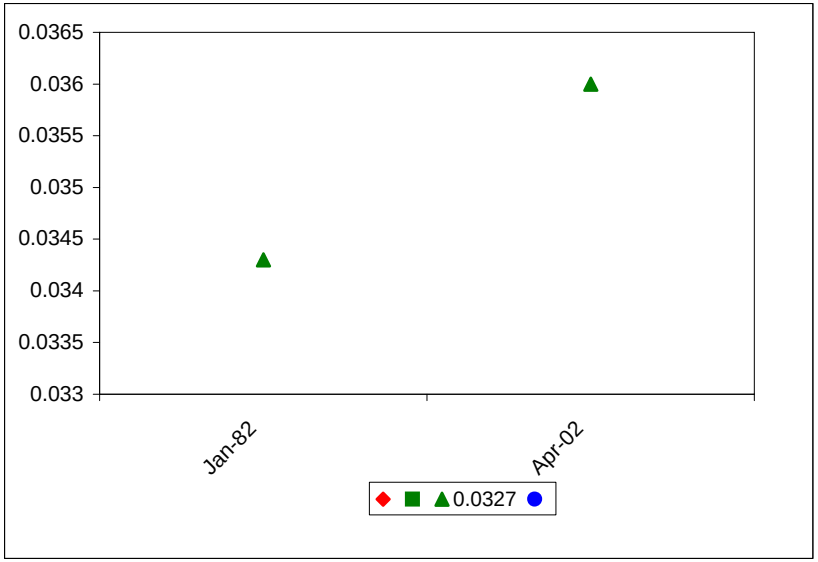
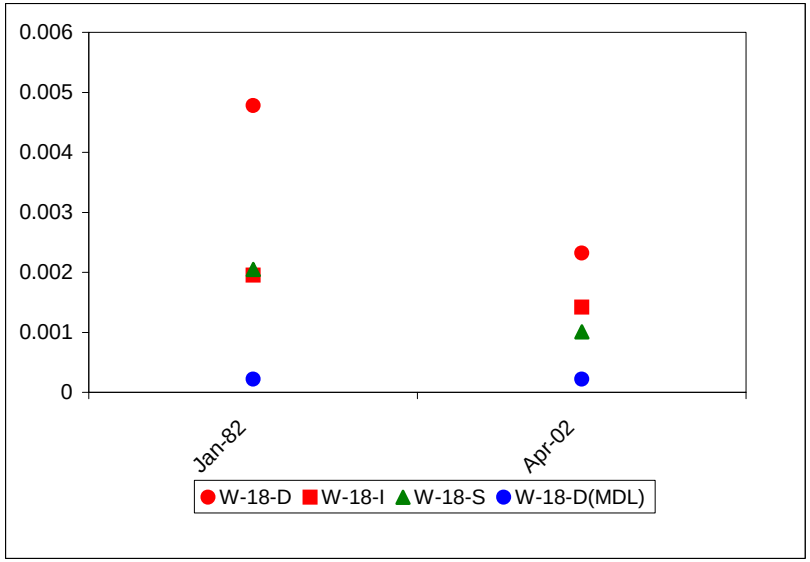
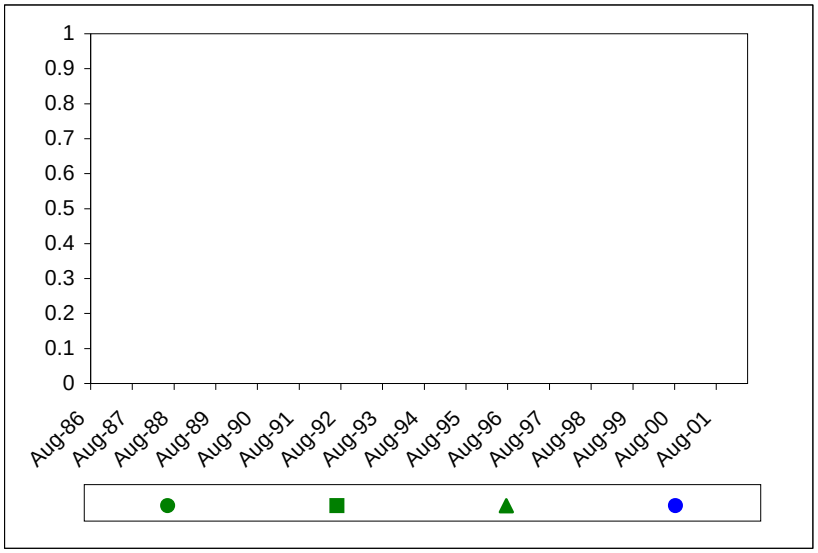


Figure D-41
Dissolved Arsenic
(Concentrations in mg/L)







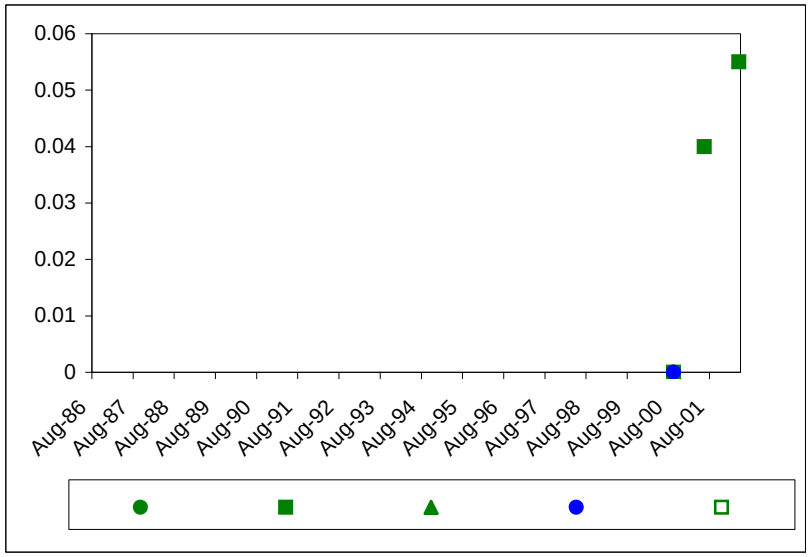
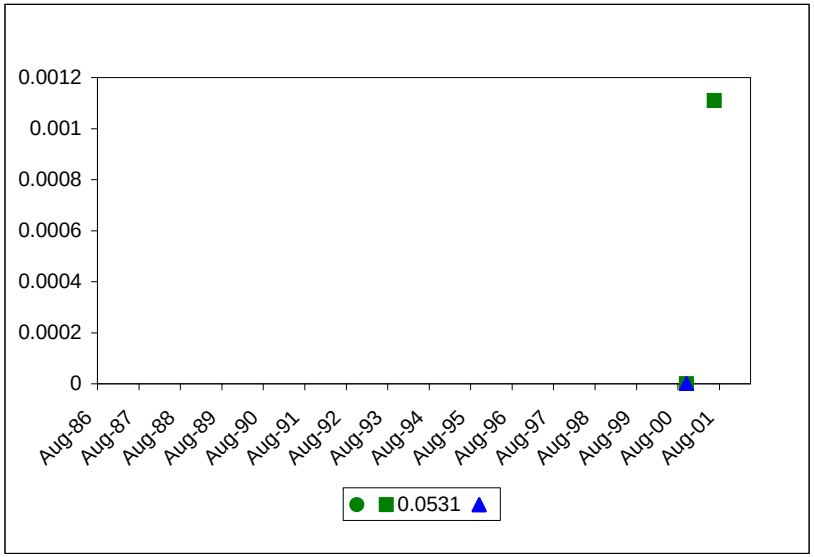
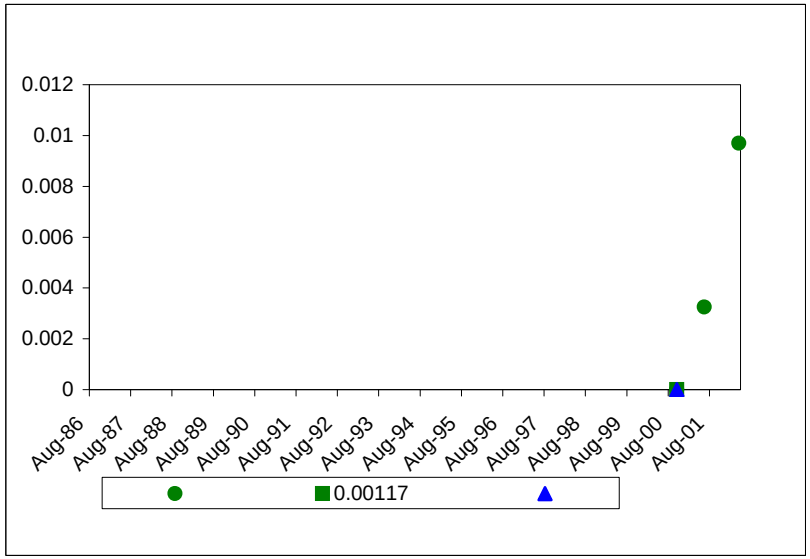
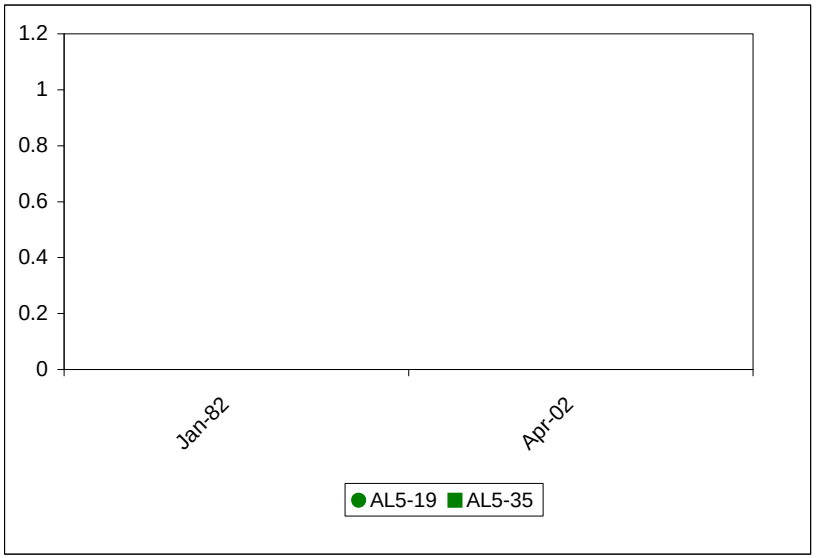


Figure D-42
Dissolved Arsenic
(Concentrations in mg/L)







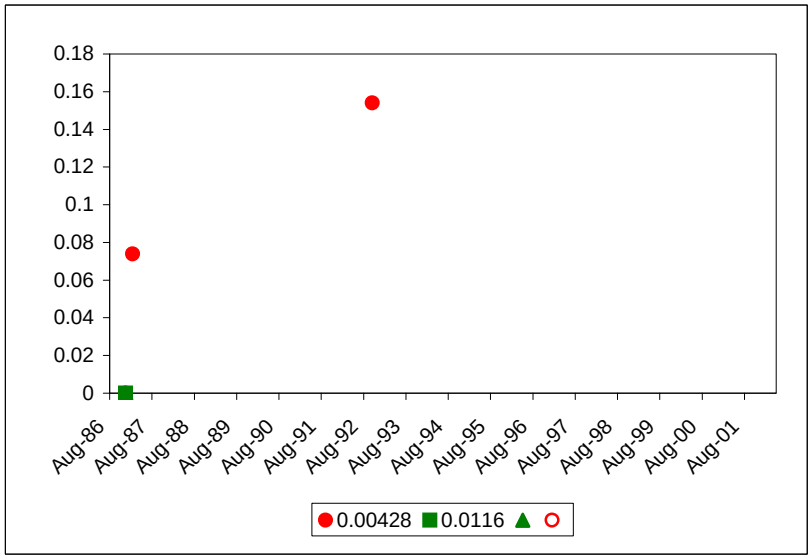
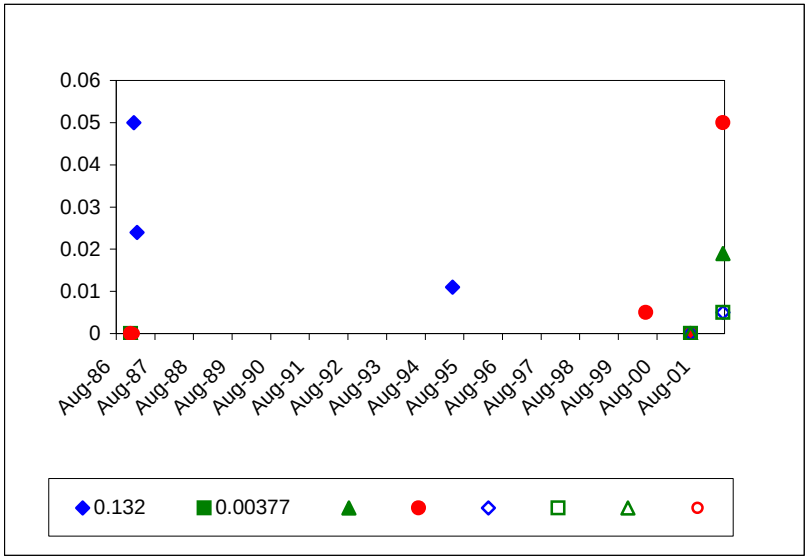
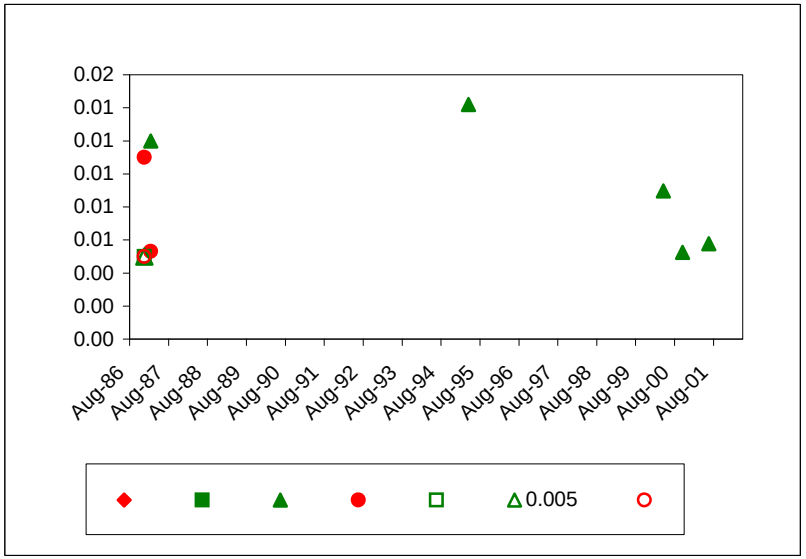
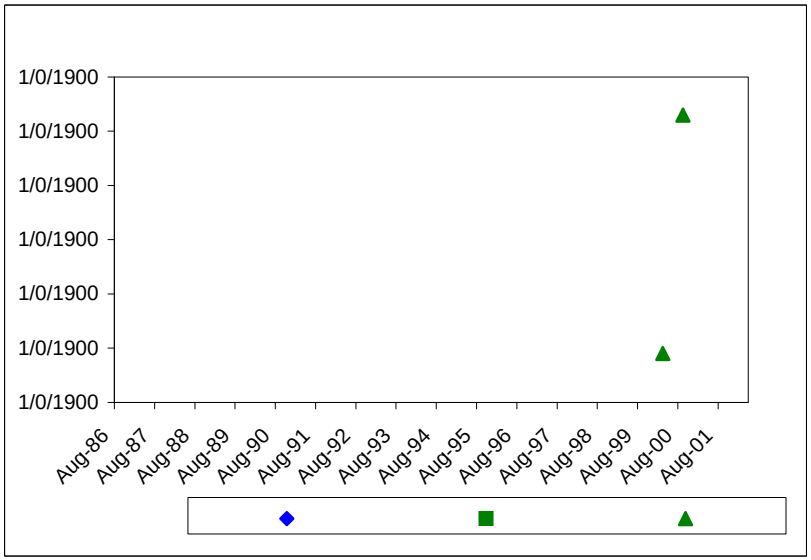


Figure D-43
Dissolved Arsenic
(Concentrations in mg/L)







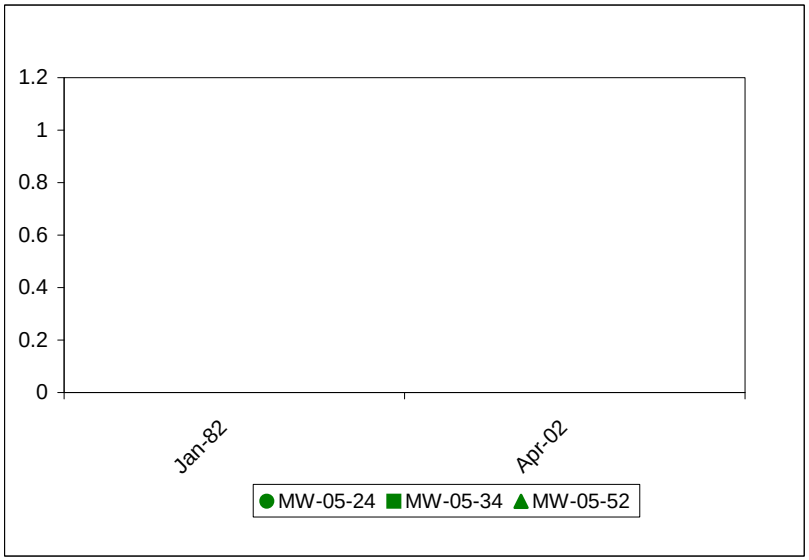
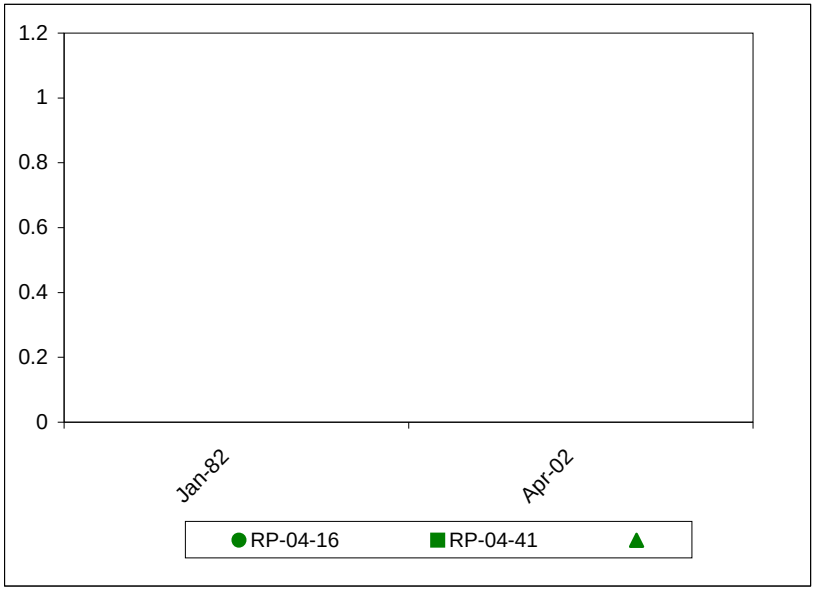
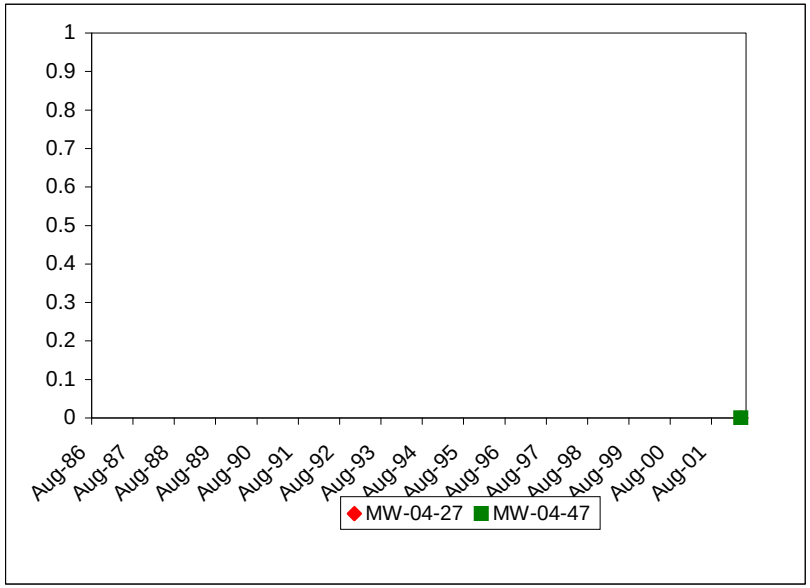


Figure D-44
Dissolved Arsenic
(Concentrations in mg/L)





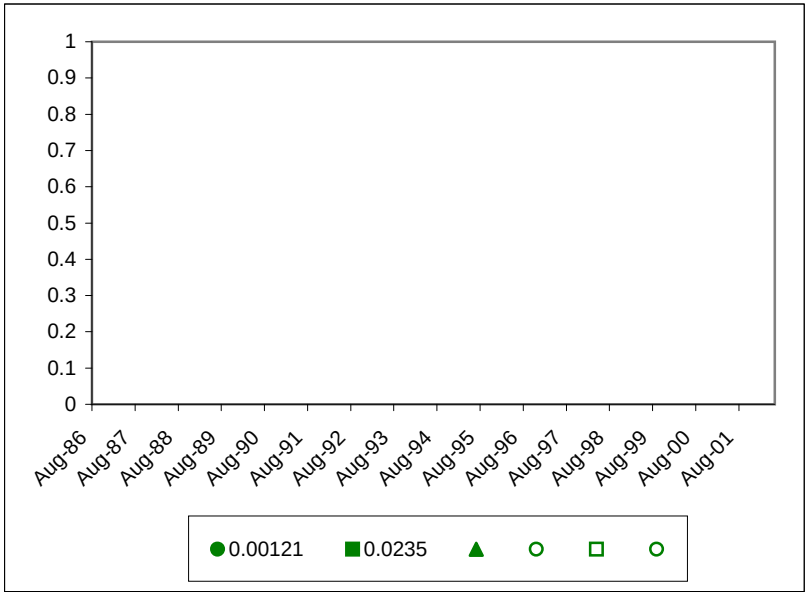
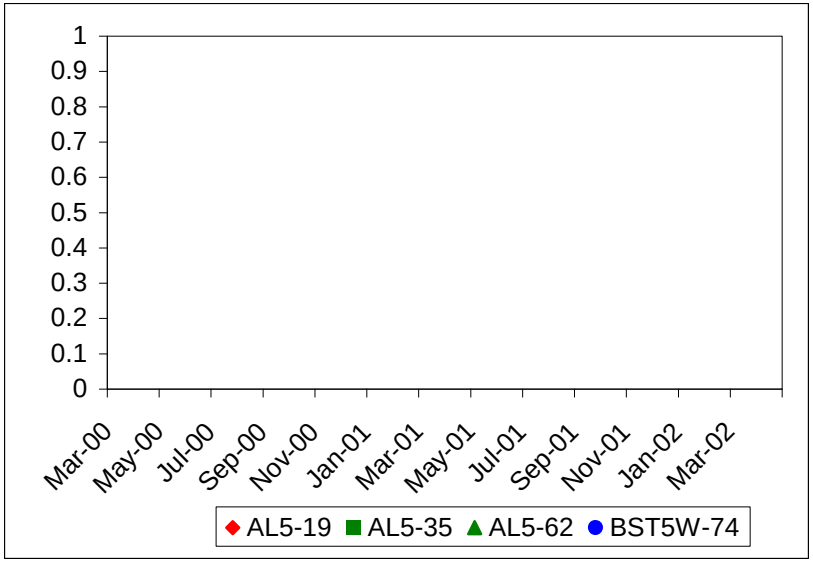
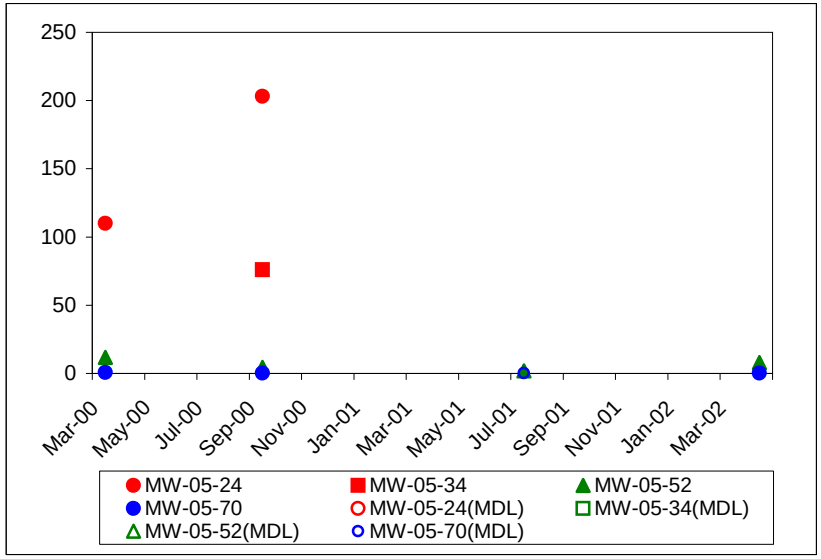
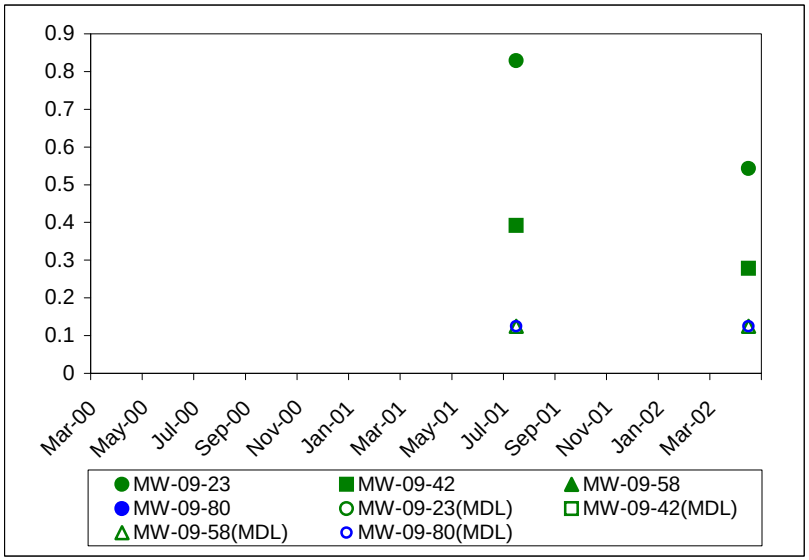


Figure D-45
Diesel Range Organics
(Concentrations in mg/L)







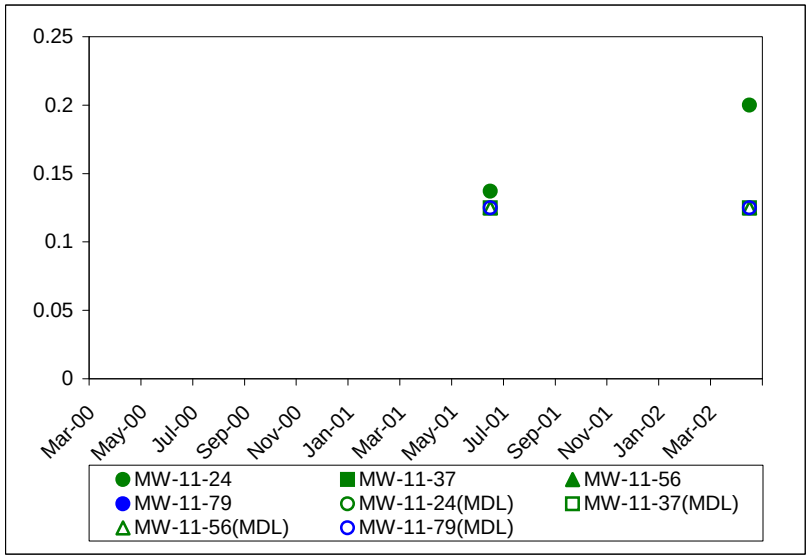
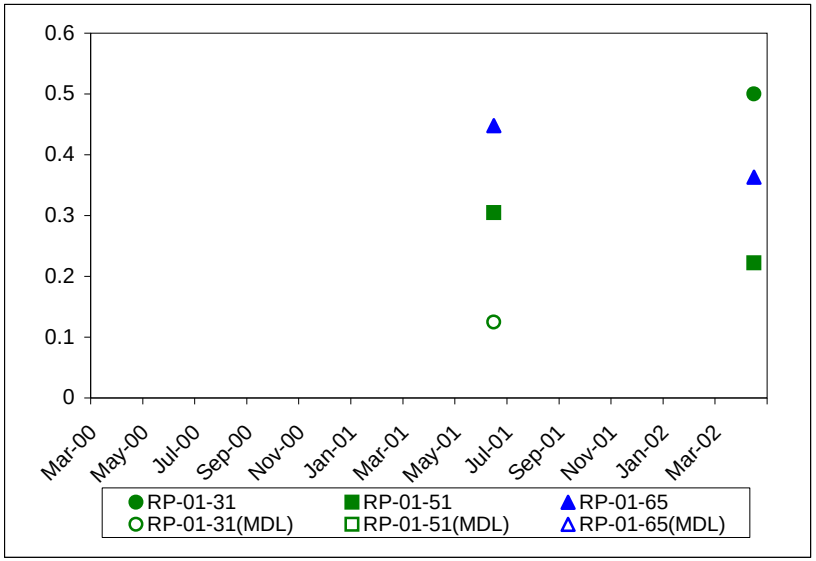
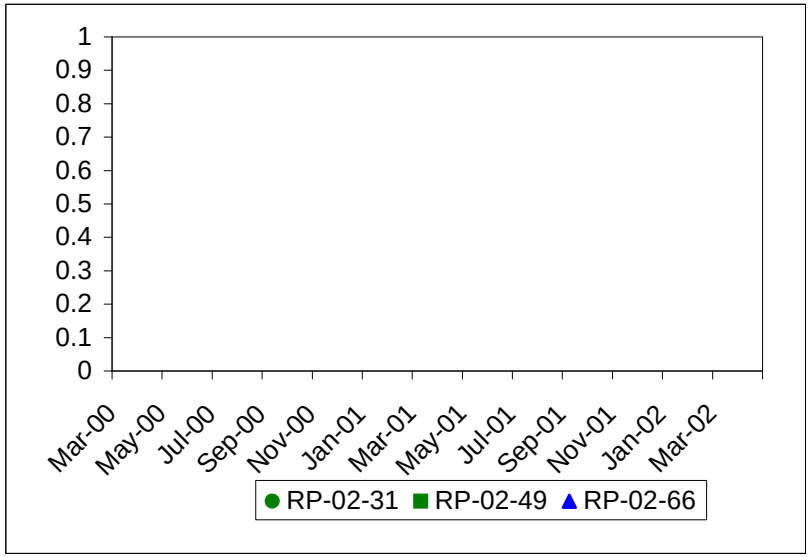
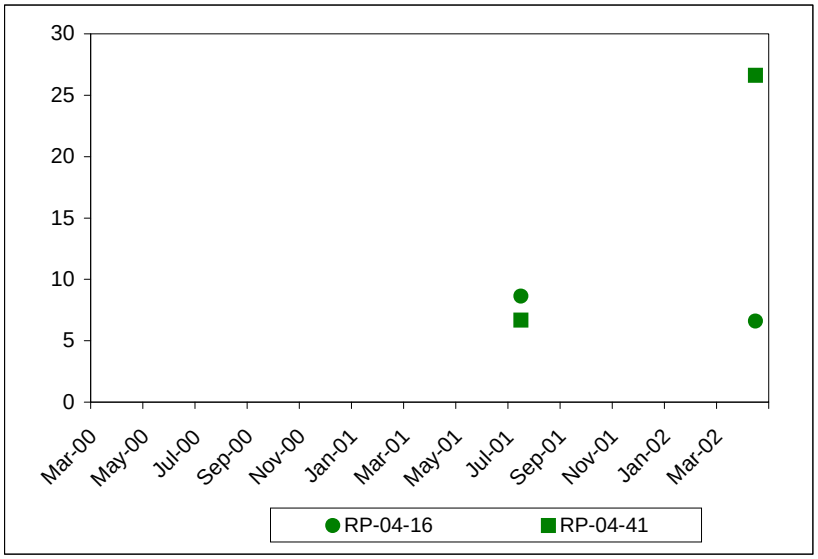


Figure D-46
Diesel Range Organics
(Concentrations in mg/L)







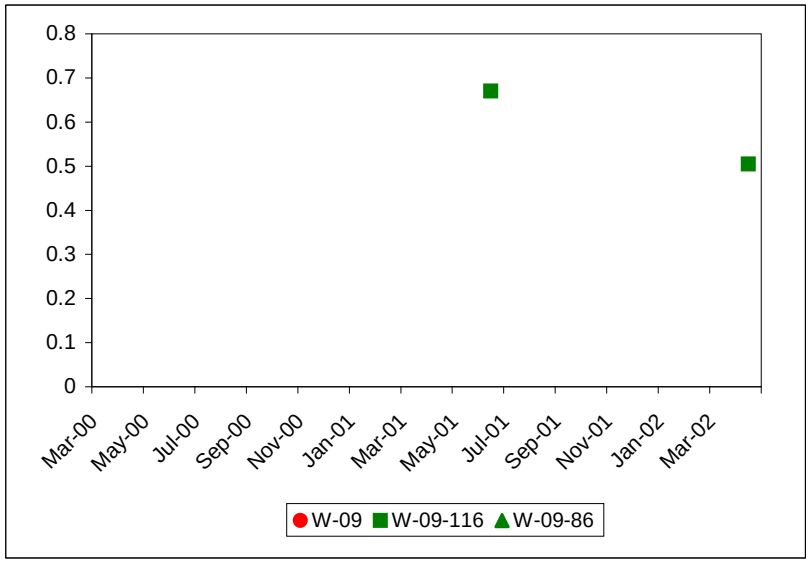
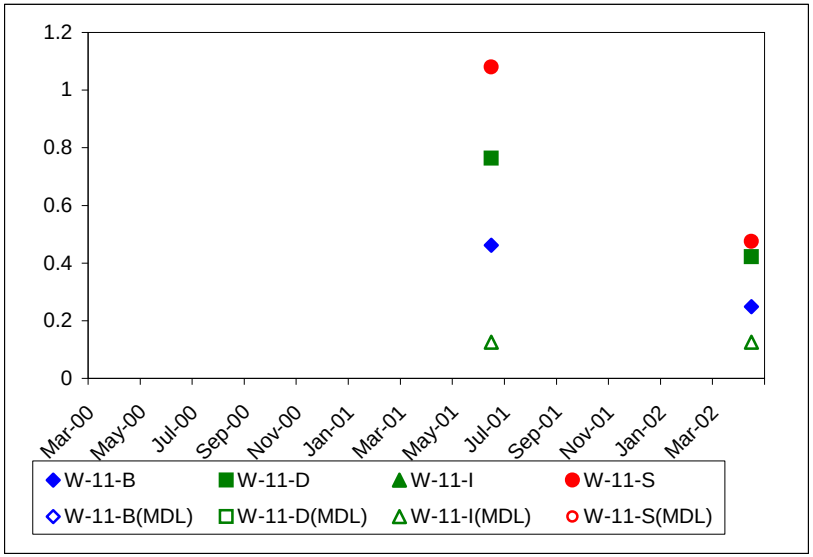
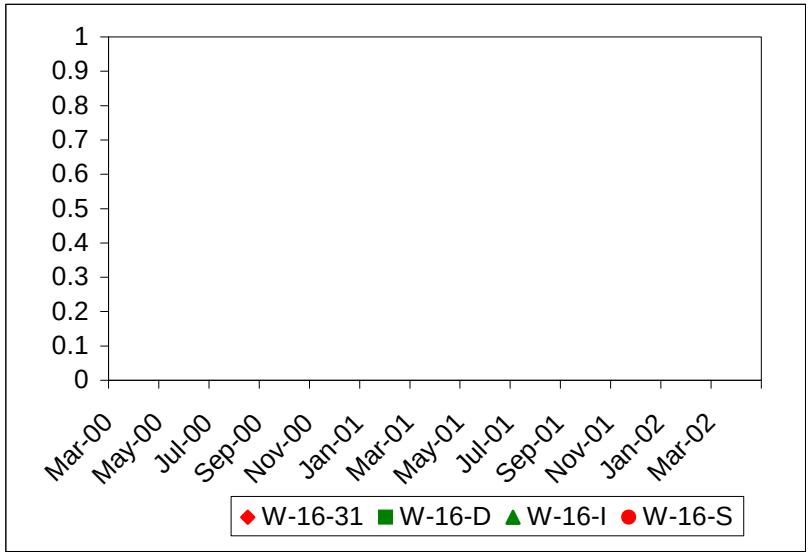
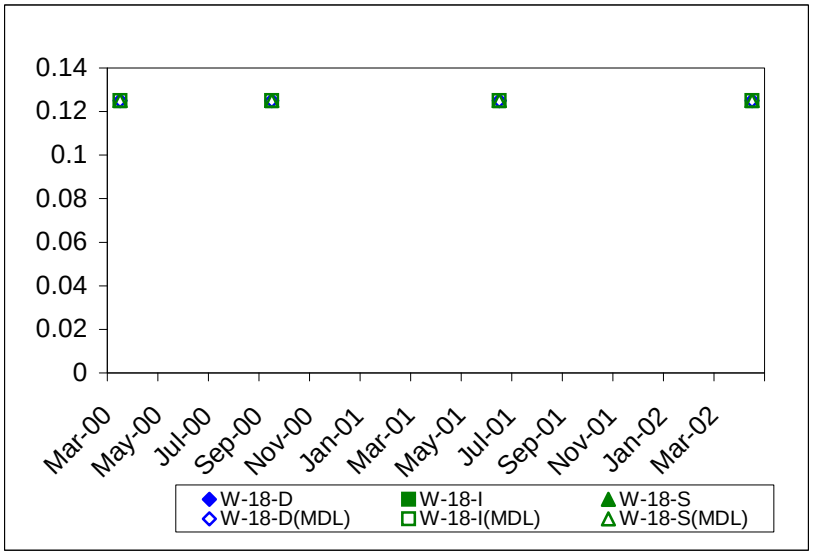


Figure D-47
Diesel Range Organics
(Concentrations in mg/L)







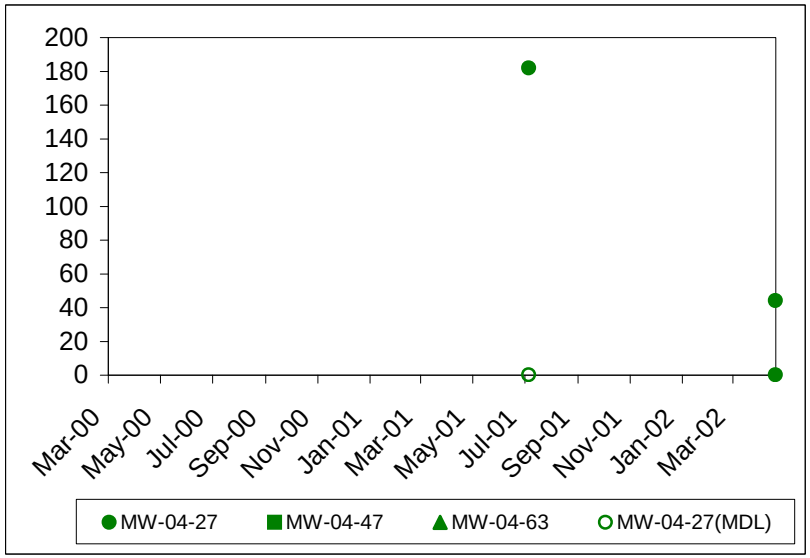
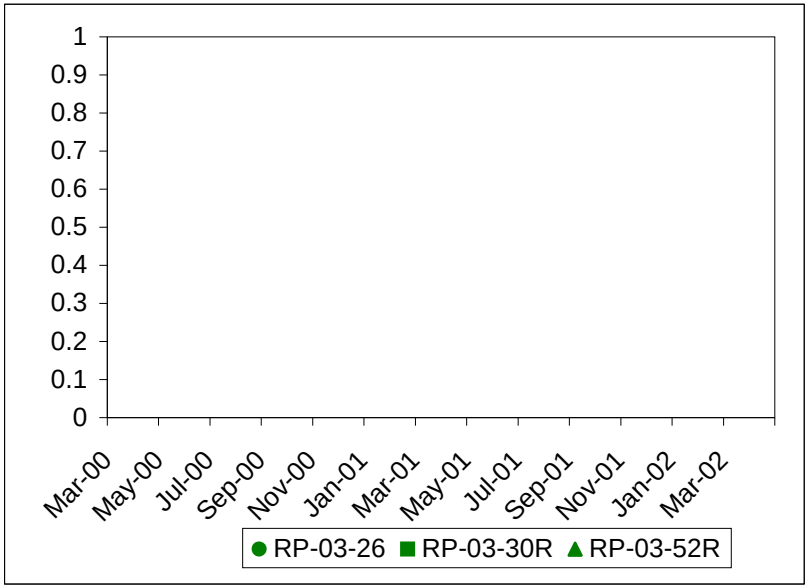
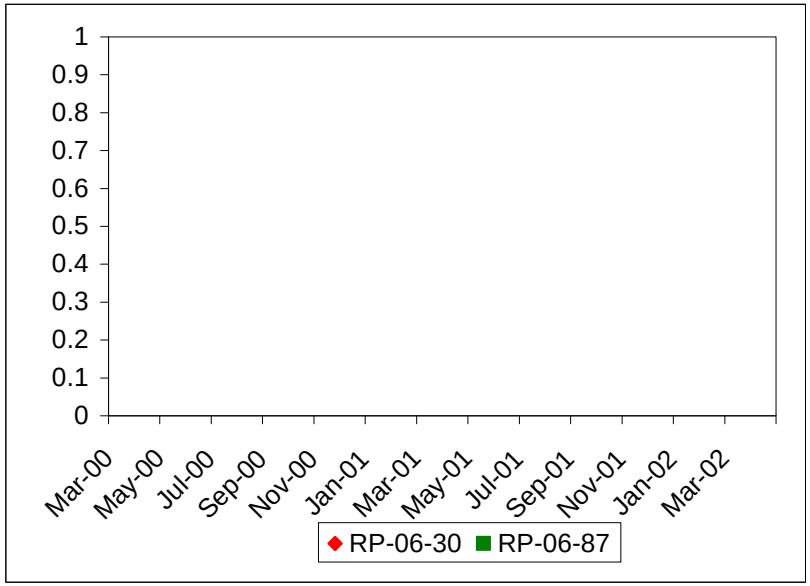


Figure D-48
Diesel Range Organics
(Concentrations in mg/L)





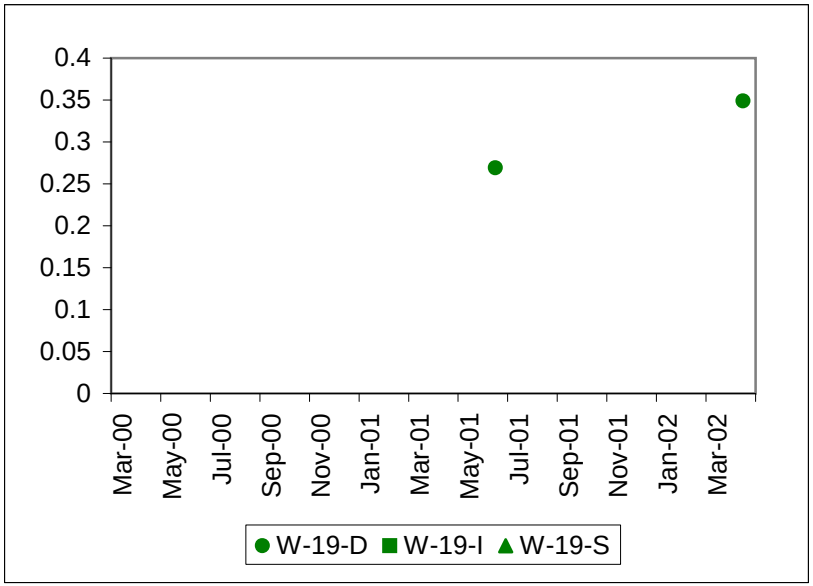
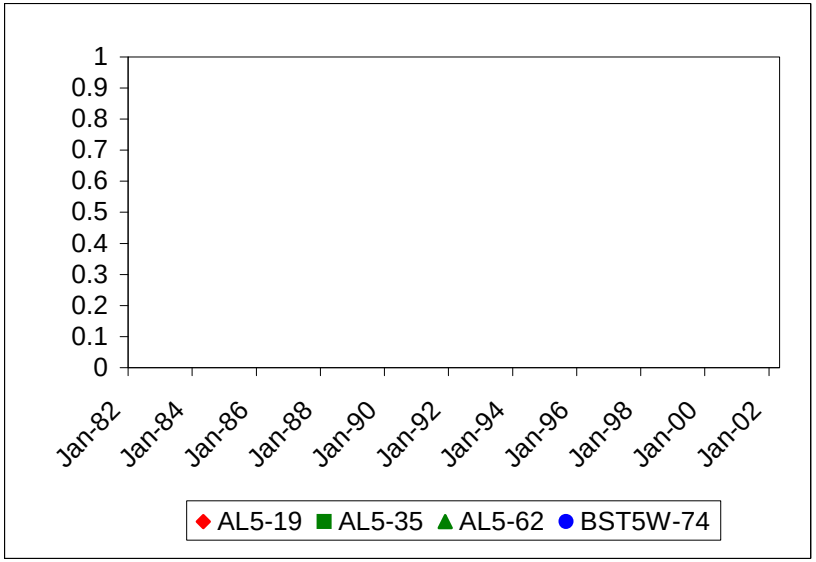
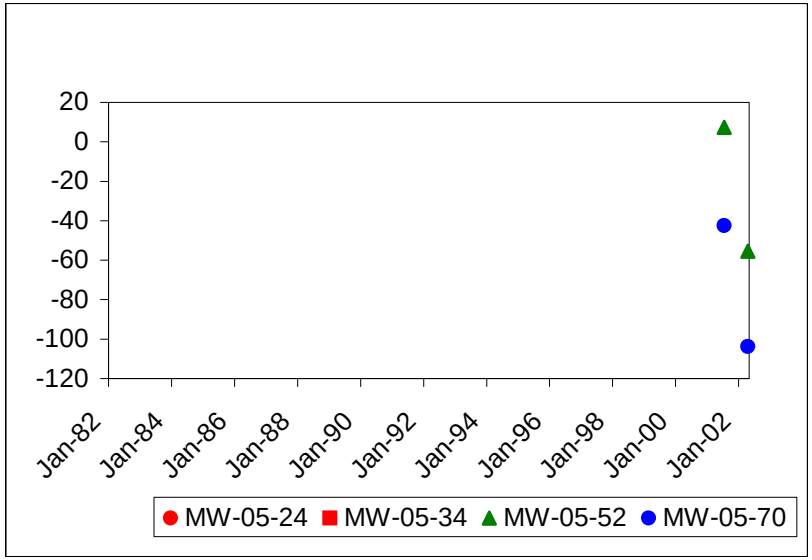
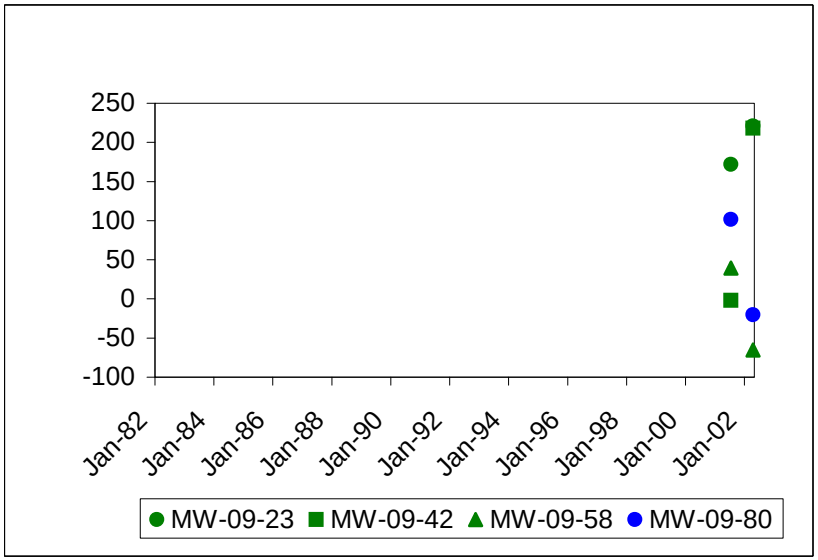


Figure D-49
Redox Potential
(Concentrations in mv)







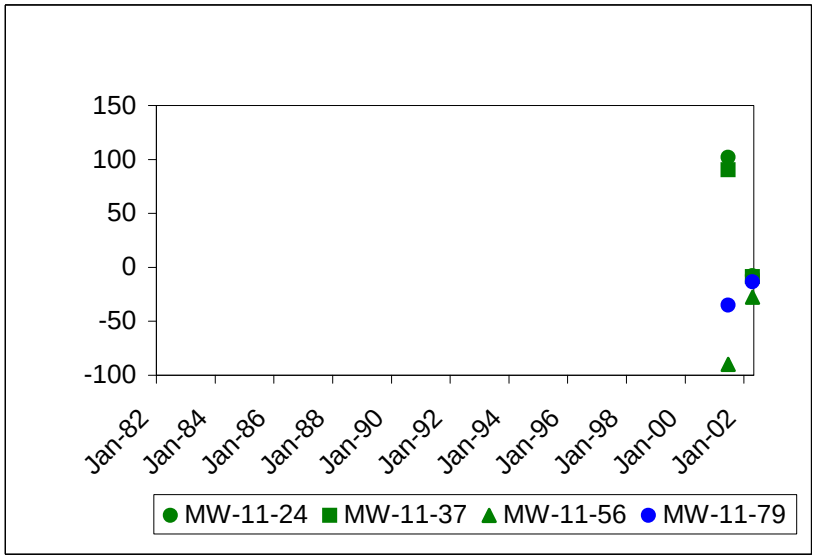
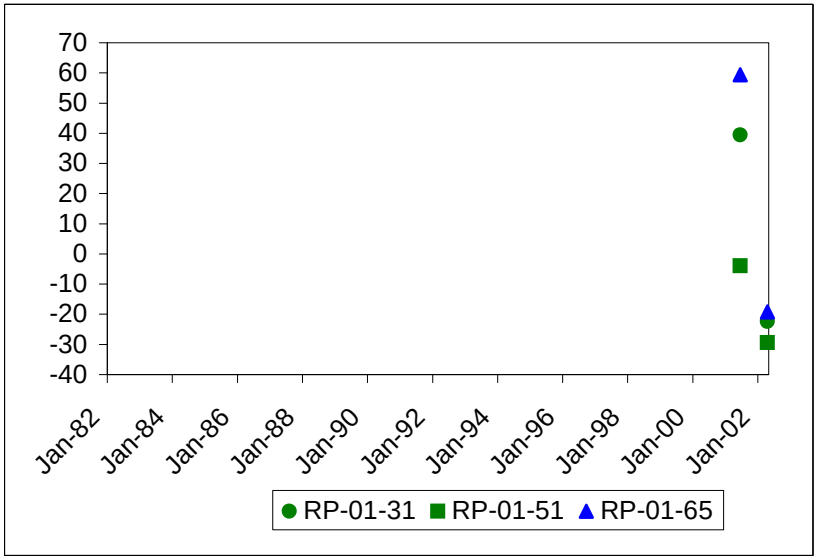
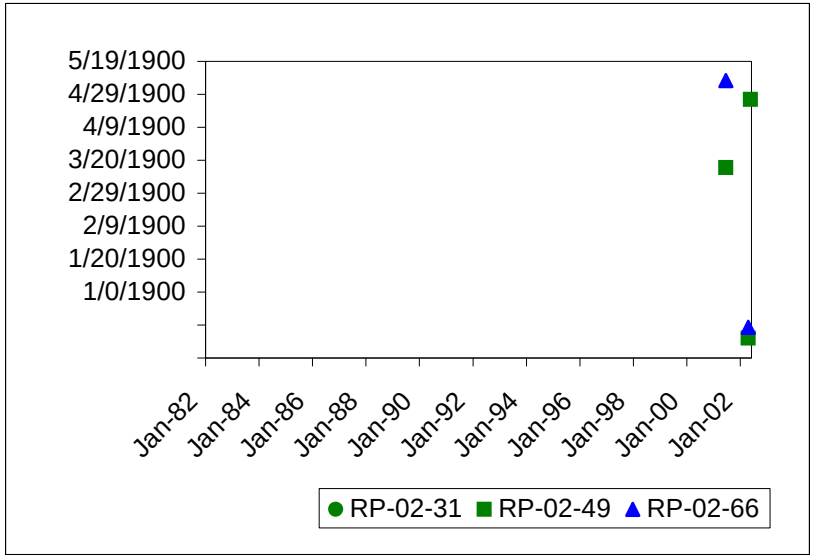
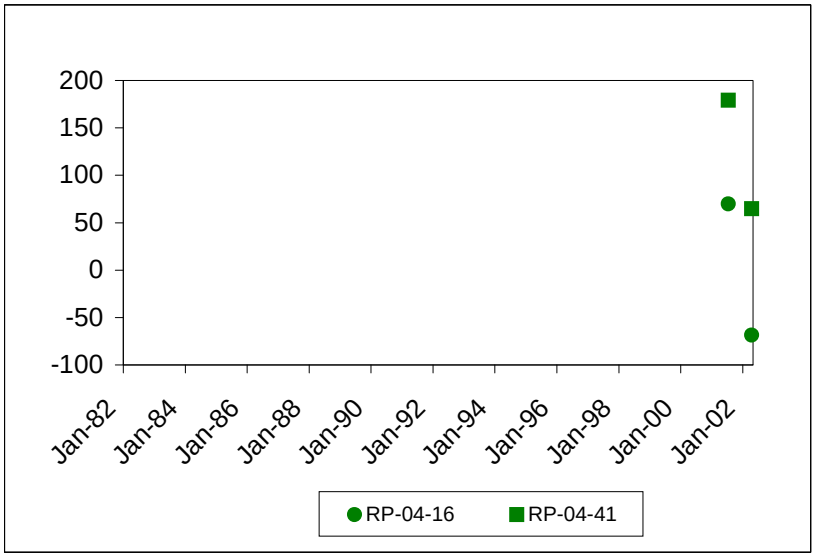


Figure D-50
Redox Potential
(Concentrations in mv)







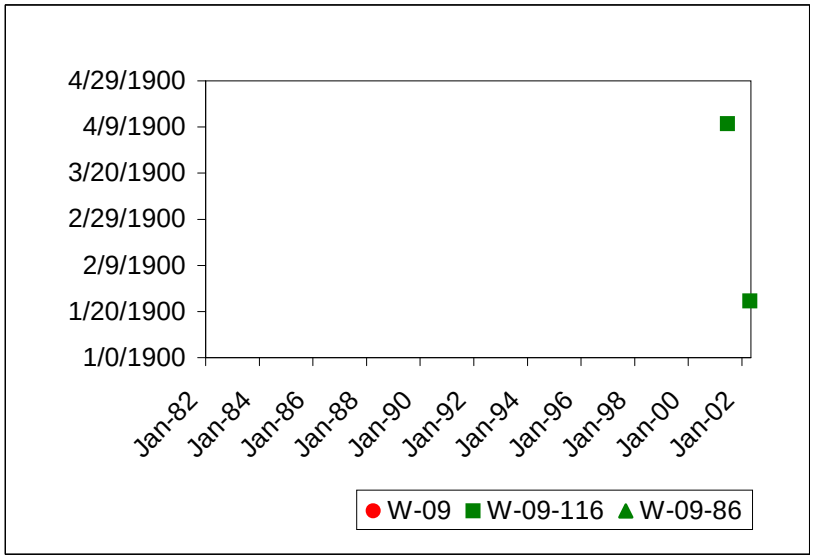
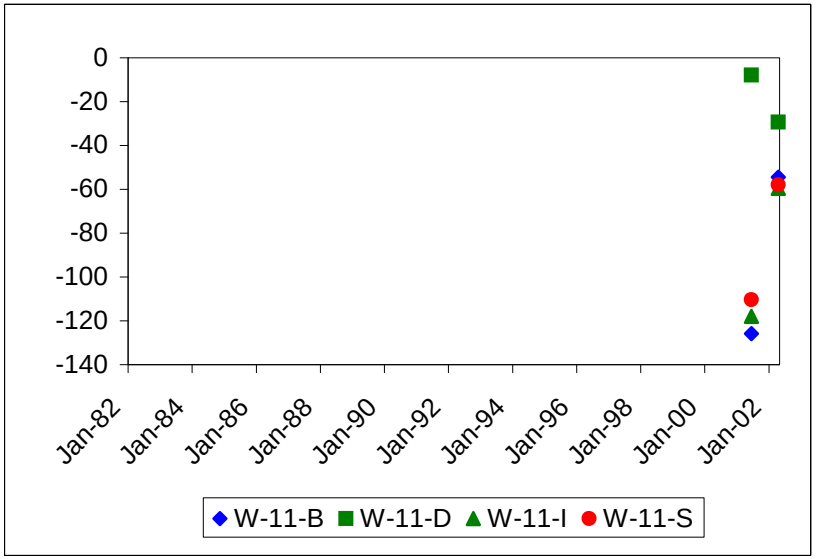
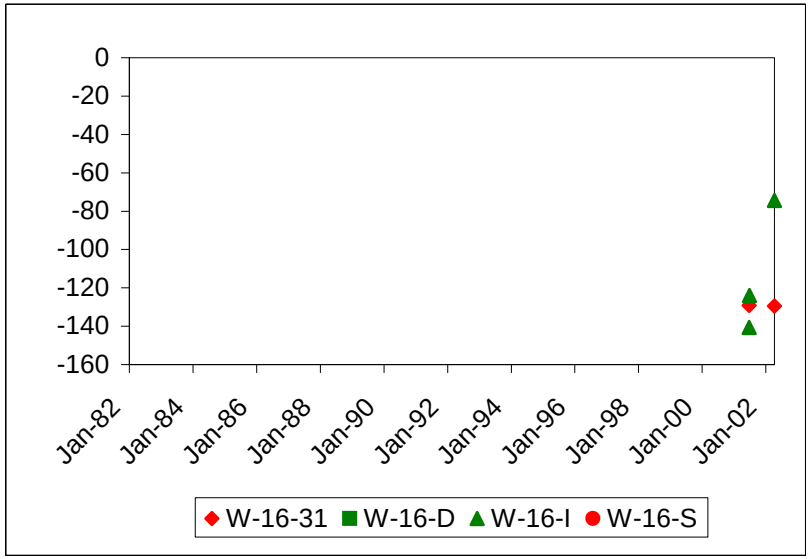
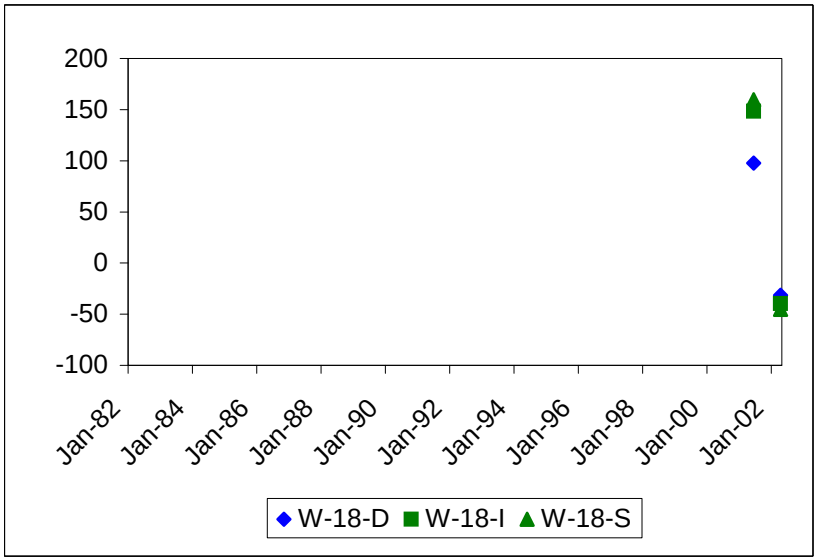


Figure D-51
Redox Potential
(Concentrations in mv)







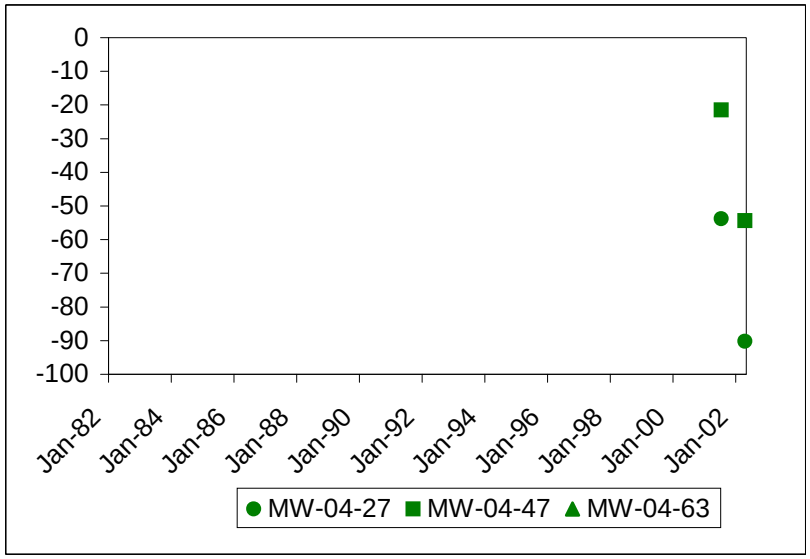
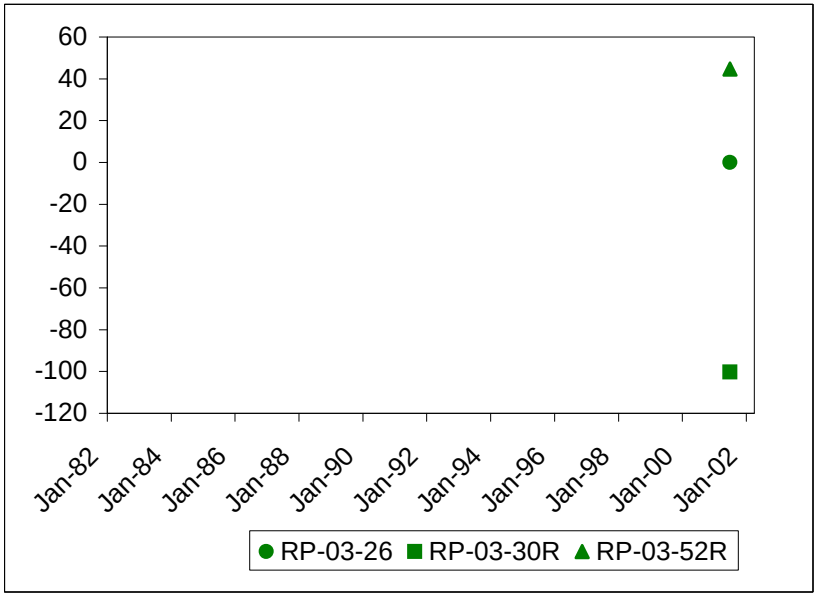
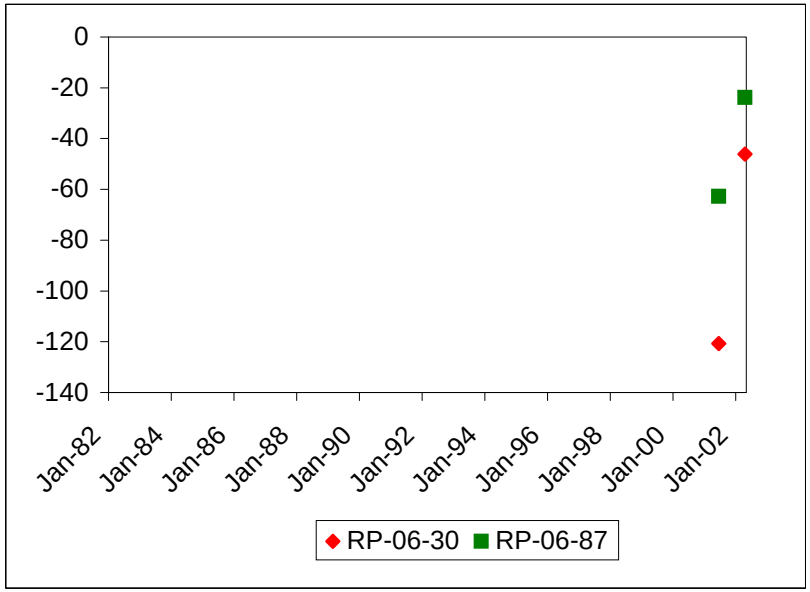


Figure D-52
Redox Potential
(Concentrations in mv)





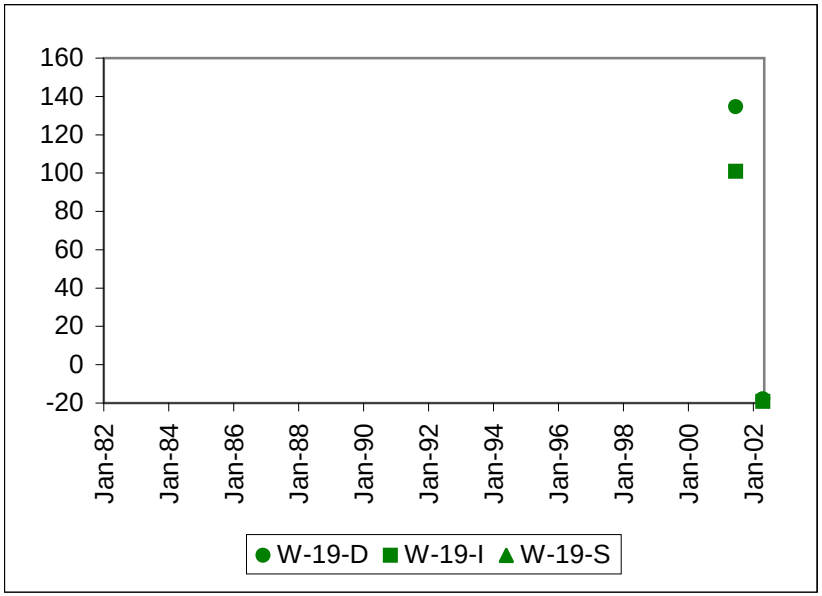
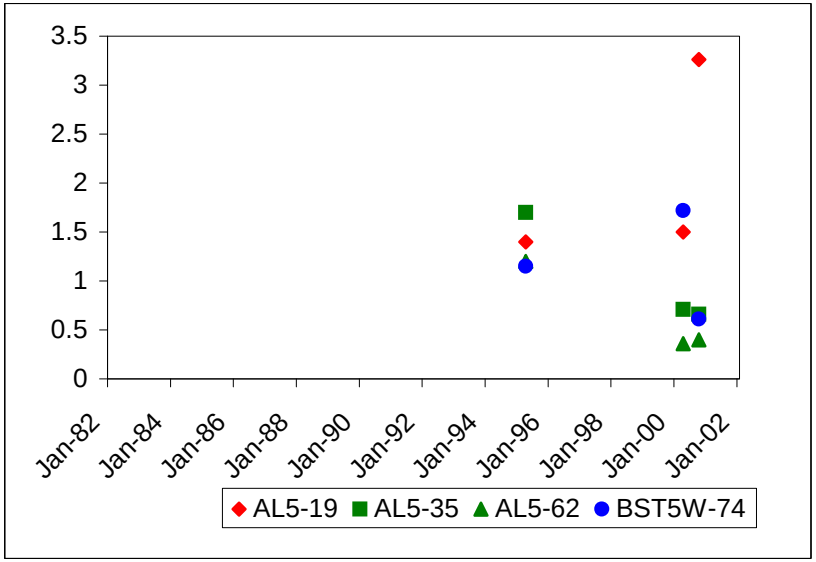
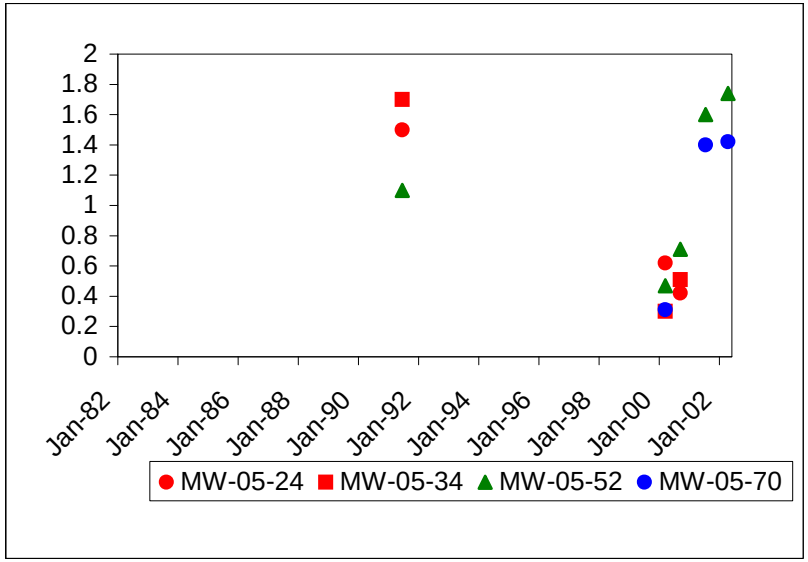
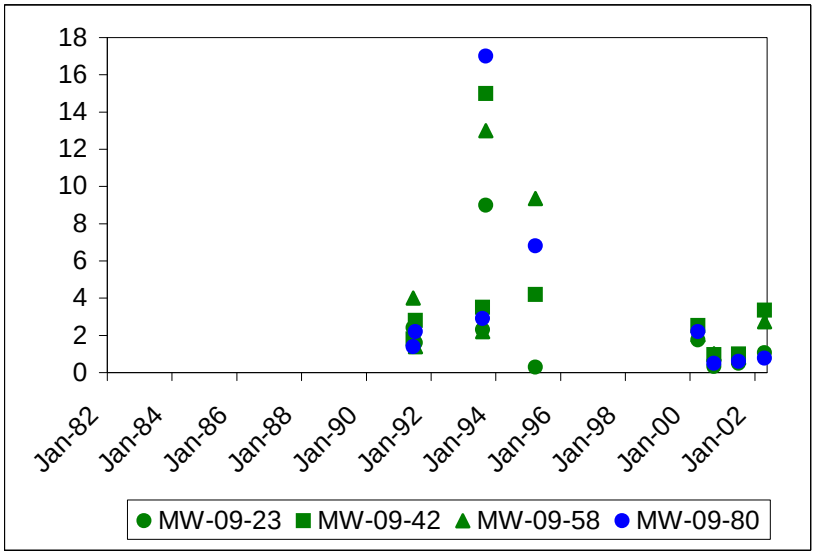


Figure D-53
Dissolved Oxygen
(Concentrations in mg/L)







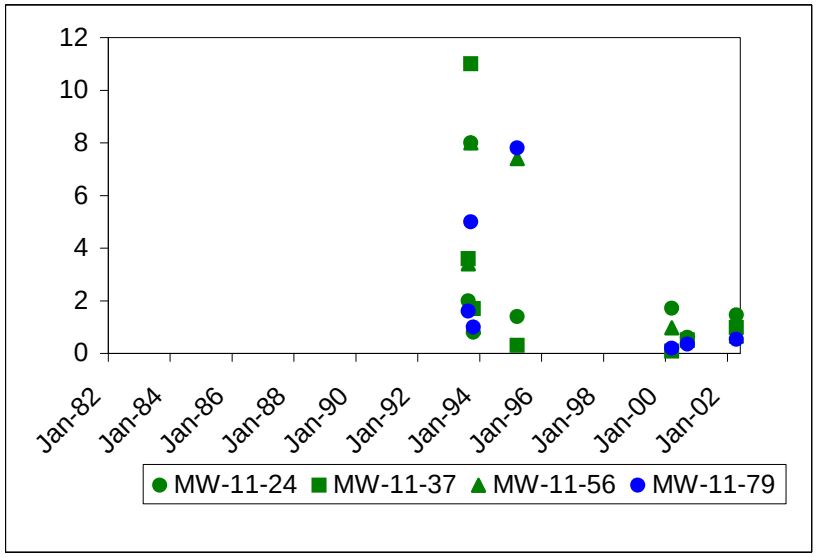
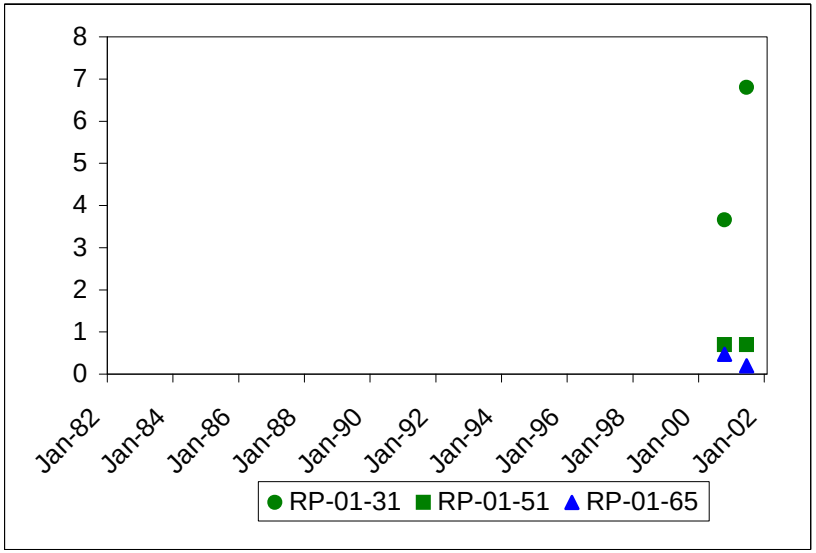
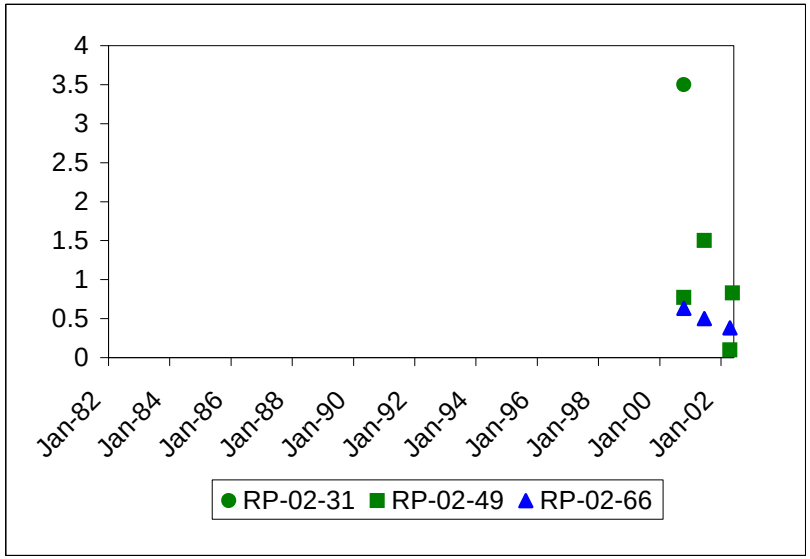
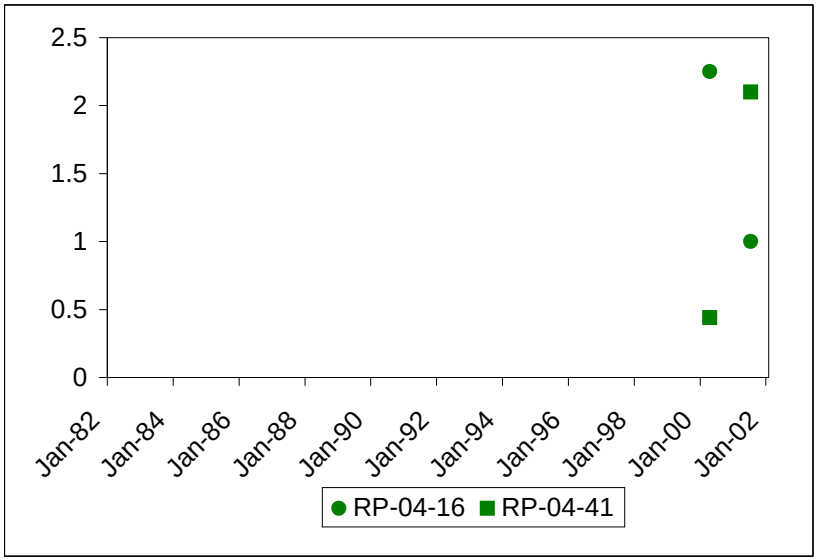


Figure D-54
Dissolved Oxygen
(Concentrations in mg/L)







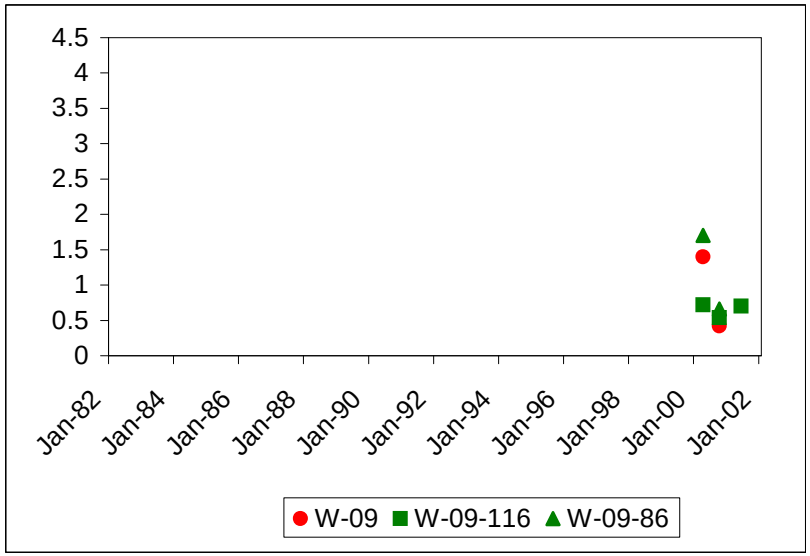
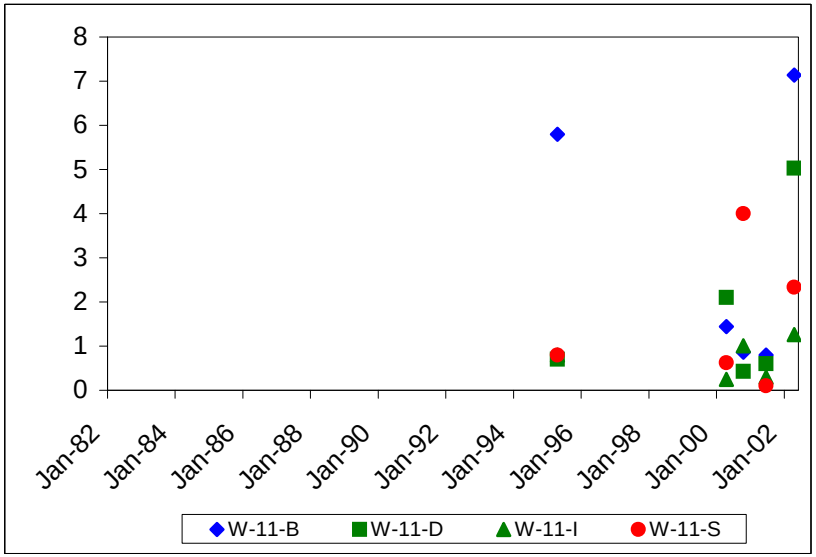
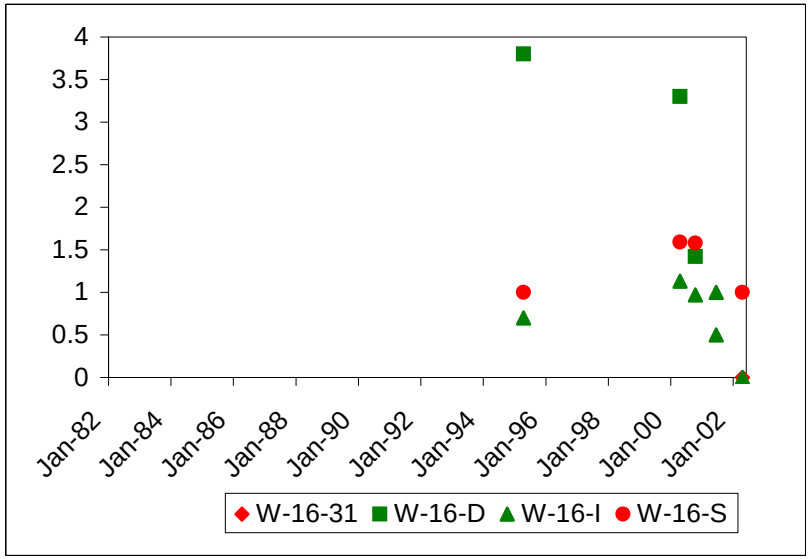
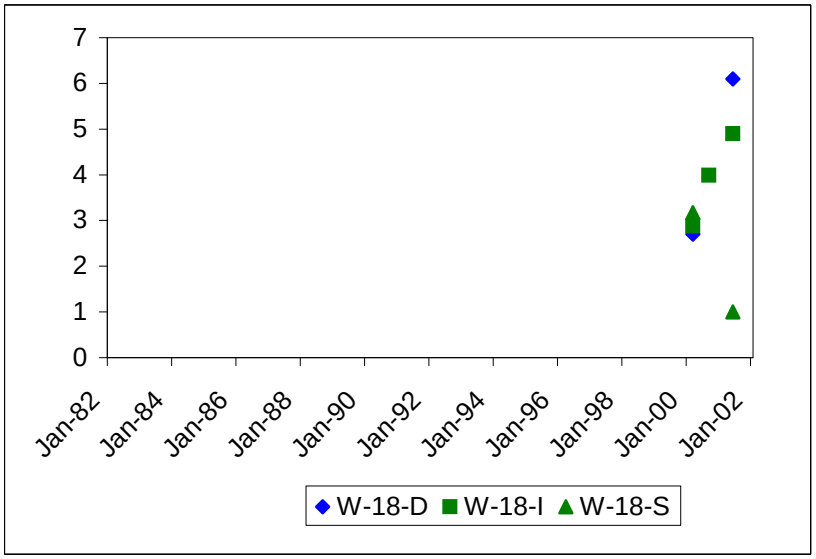


Figure D-55
Dissolved Oxygen
(Concentrations in mg/L)







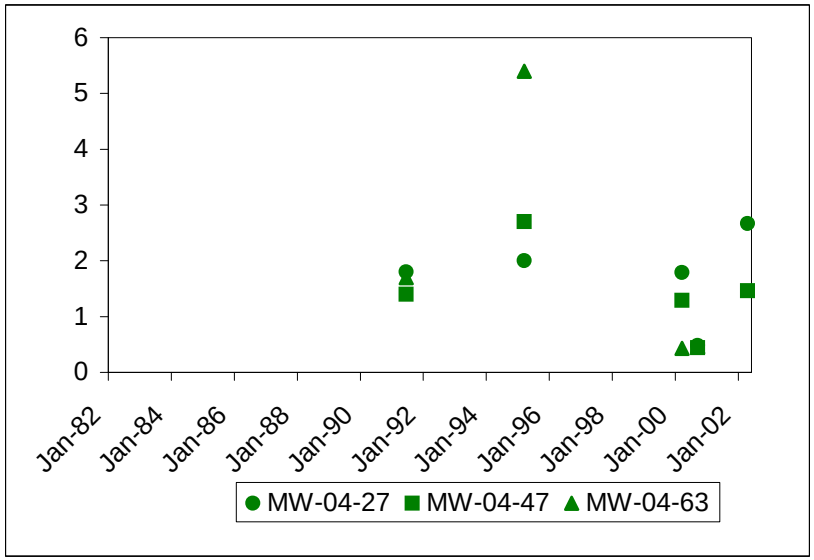
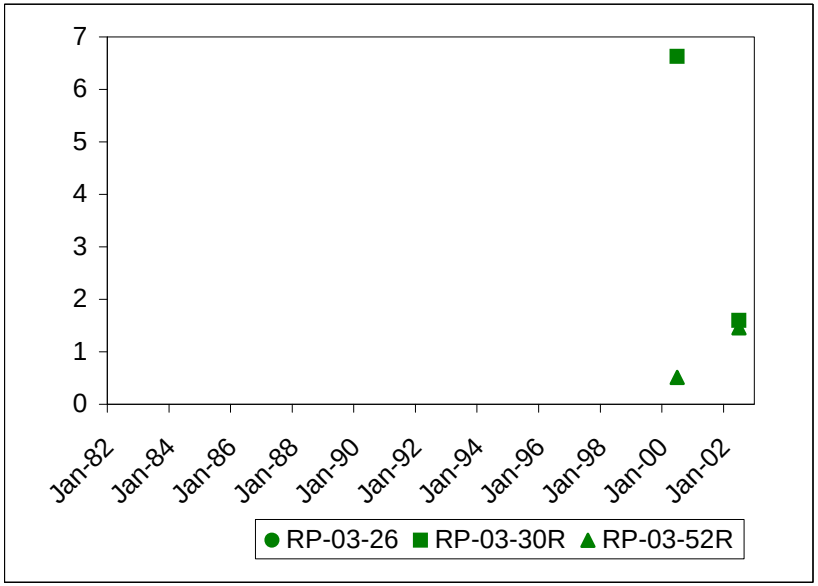
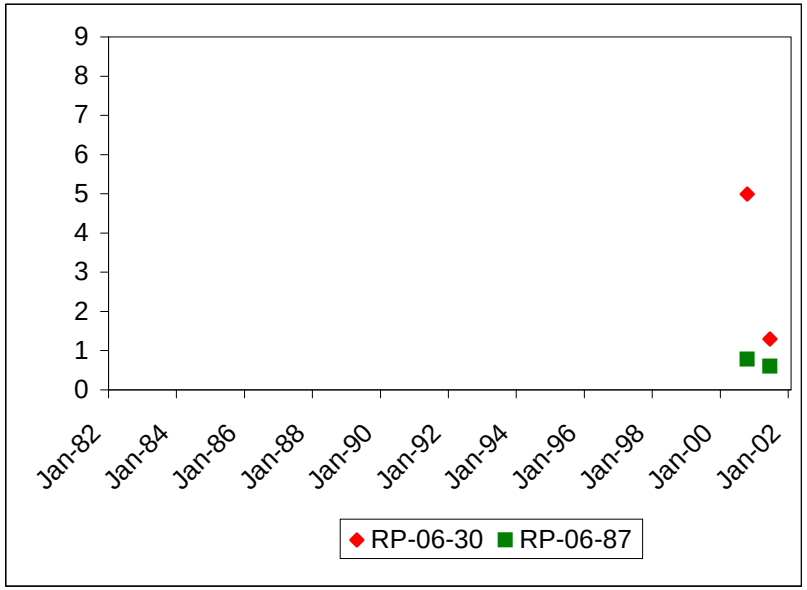


Figure D-56
Dissolved Oxygen
(Concentrations in mg/L)





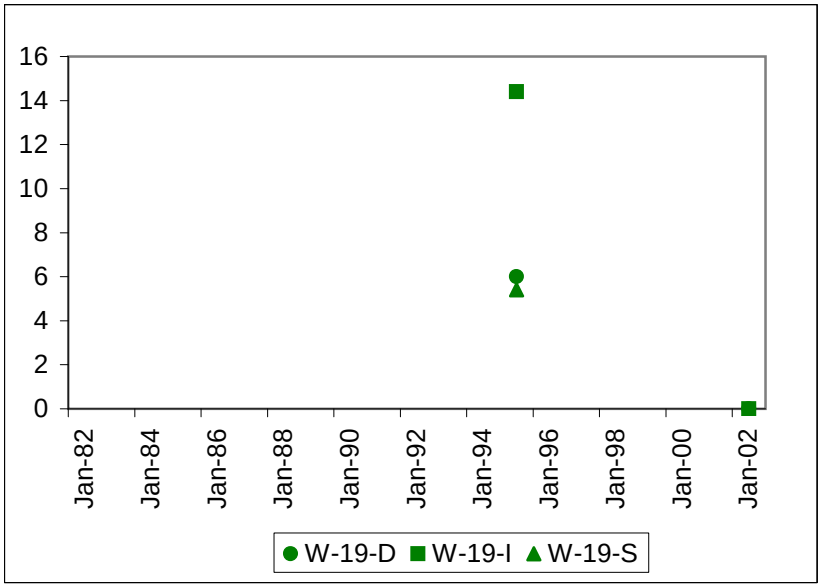
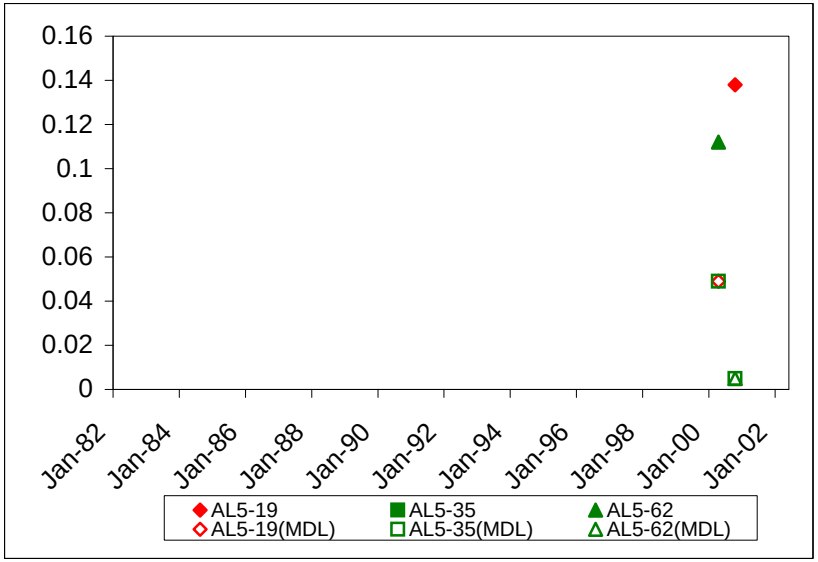
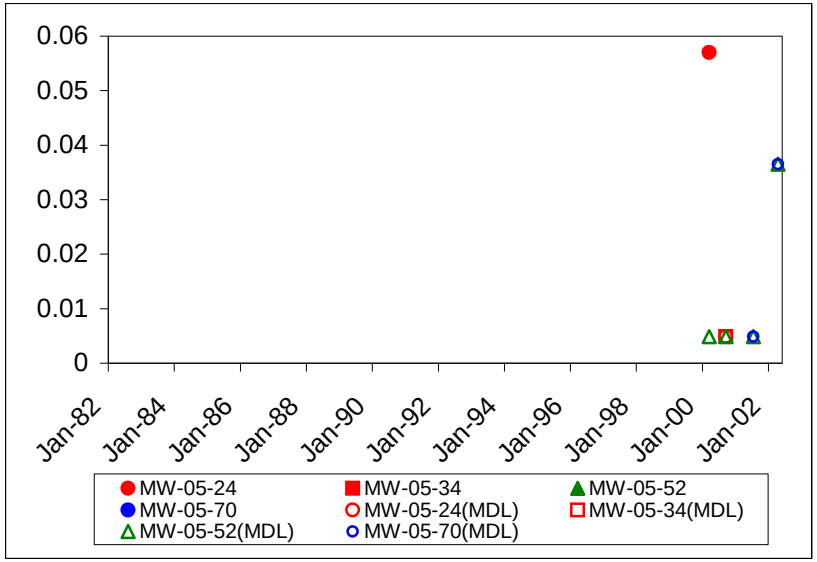
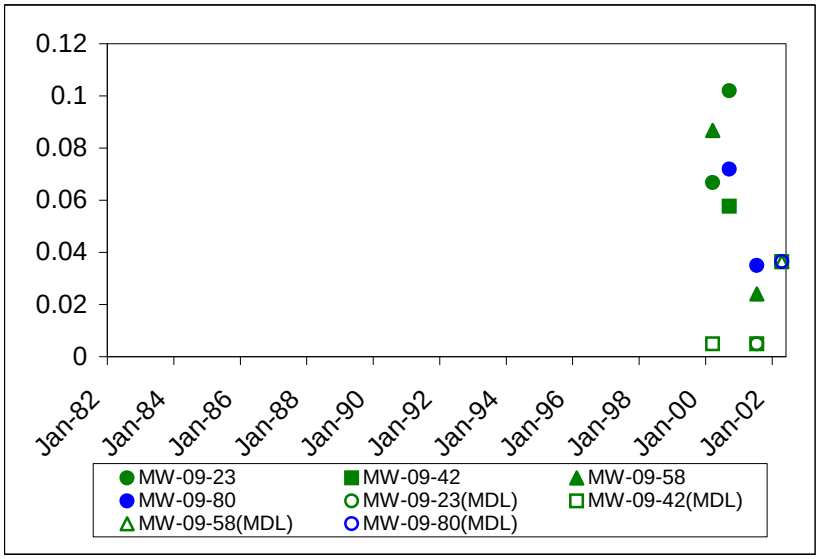


Figure D-57
Nitrate
(Concentrations in mg/L)







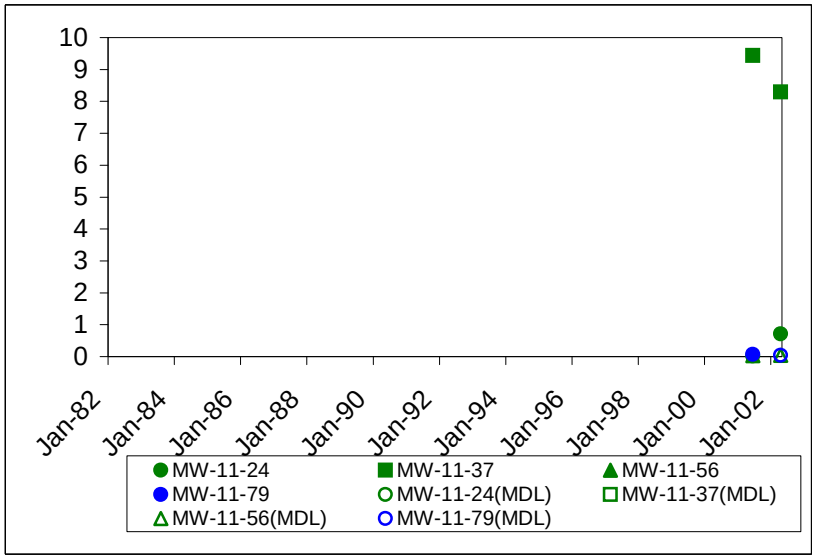
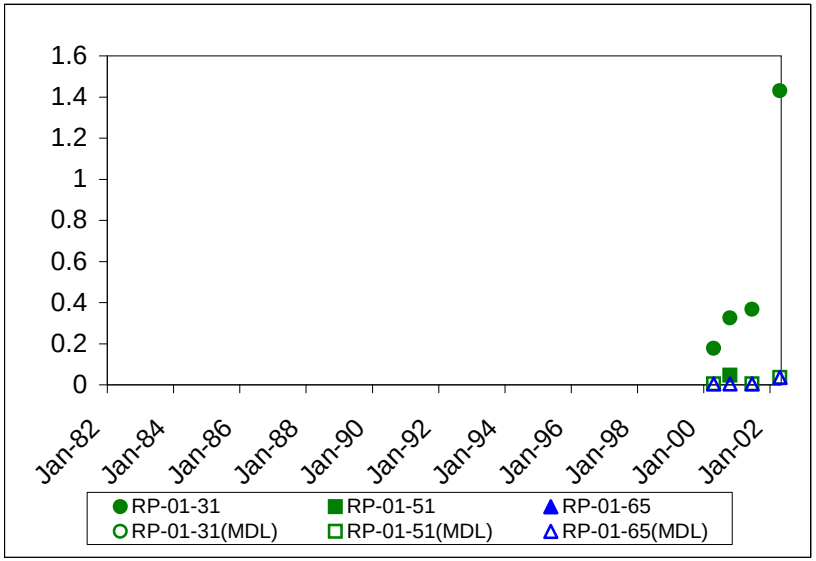
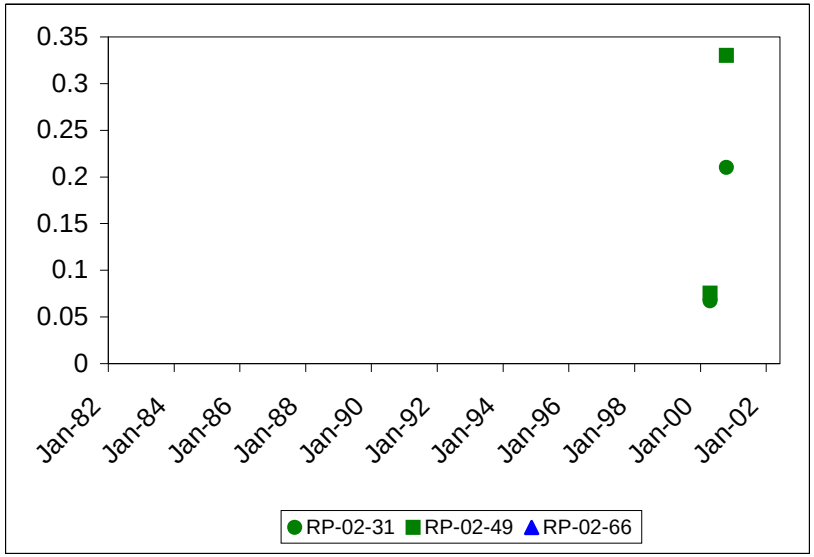
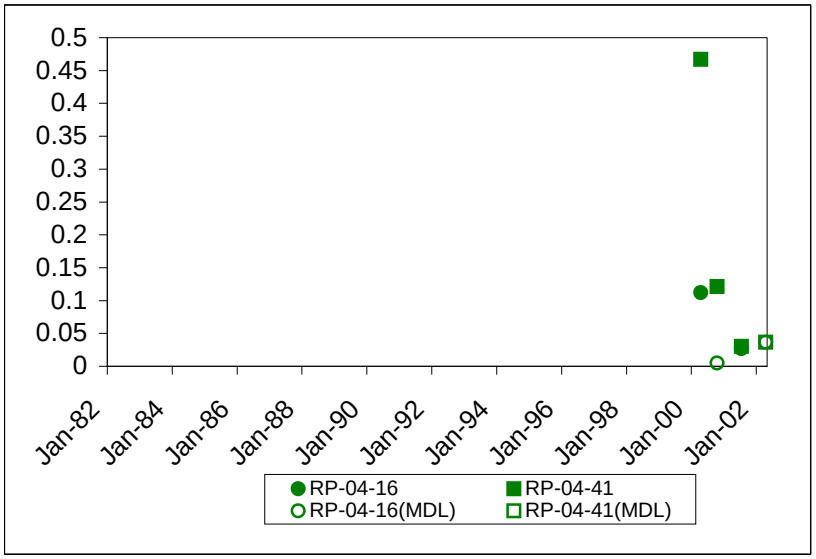


Figure D-58
Nitrate
(Concentrations in mg/L)







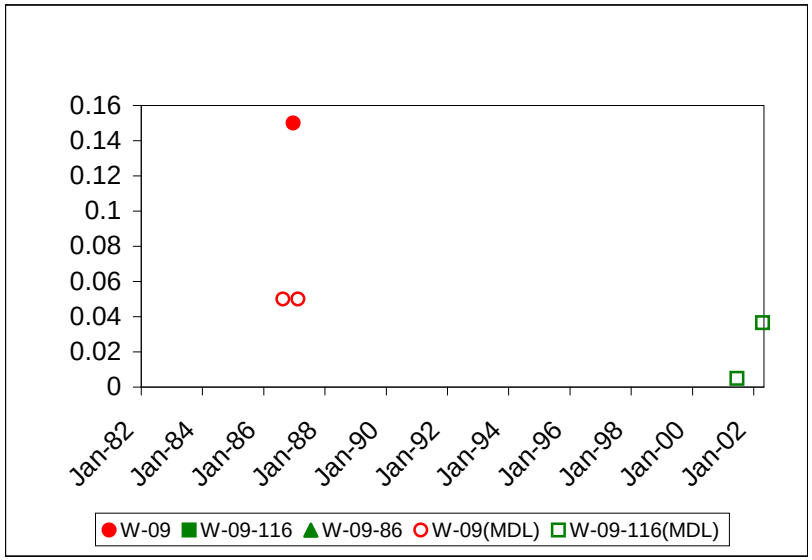
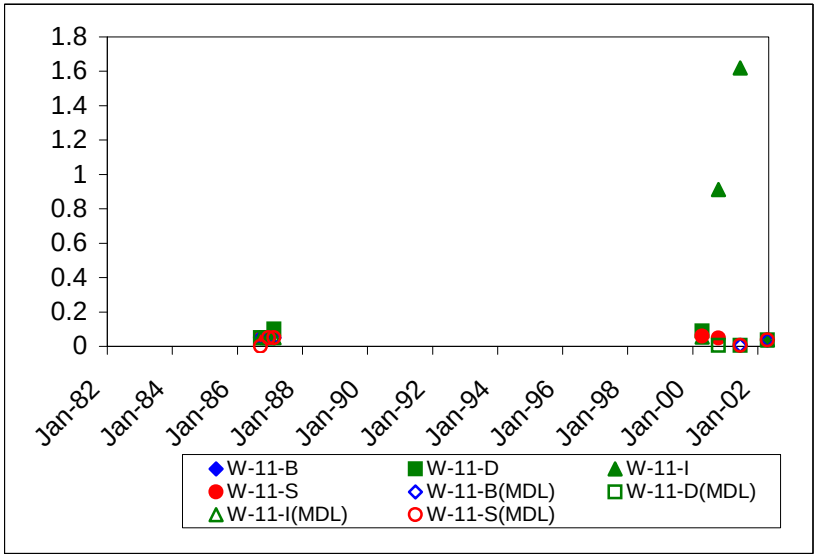
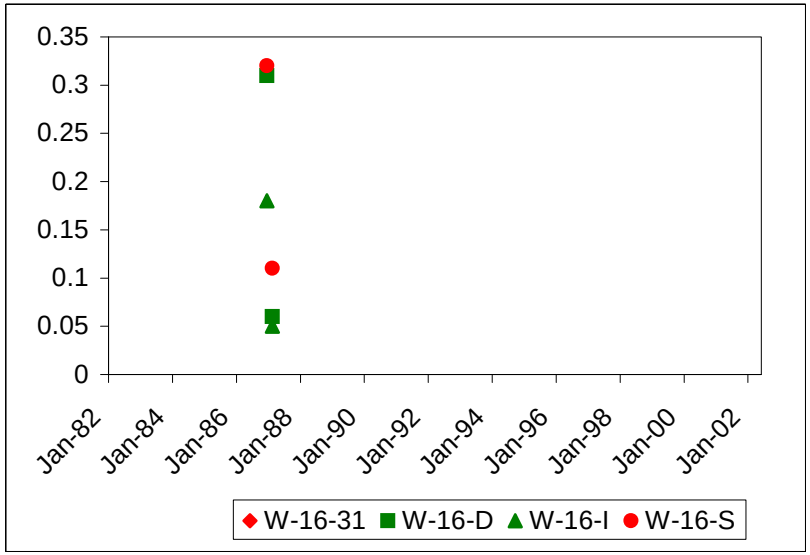
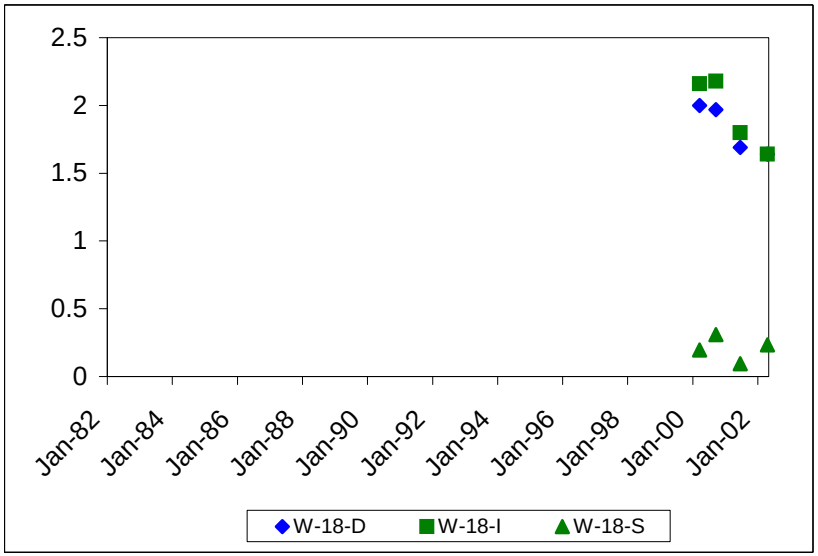


Figure D-59
Nitrate
(Concentrations in mg/L)







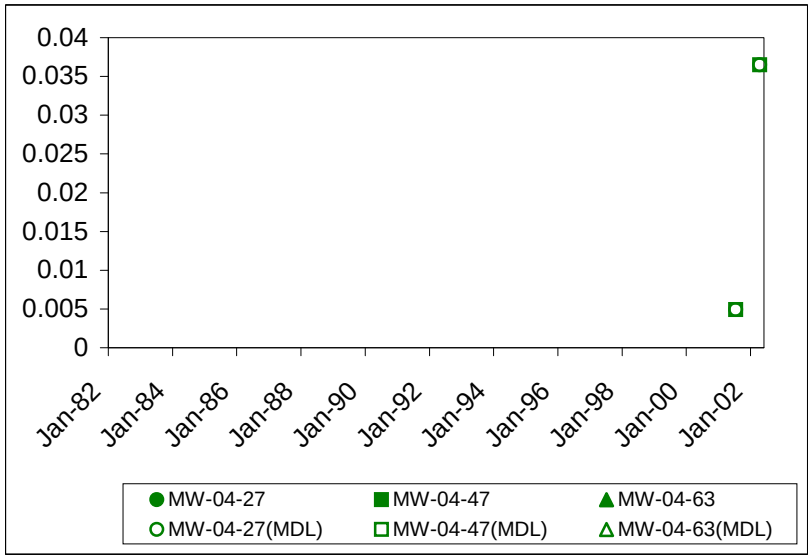
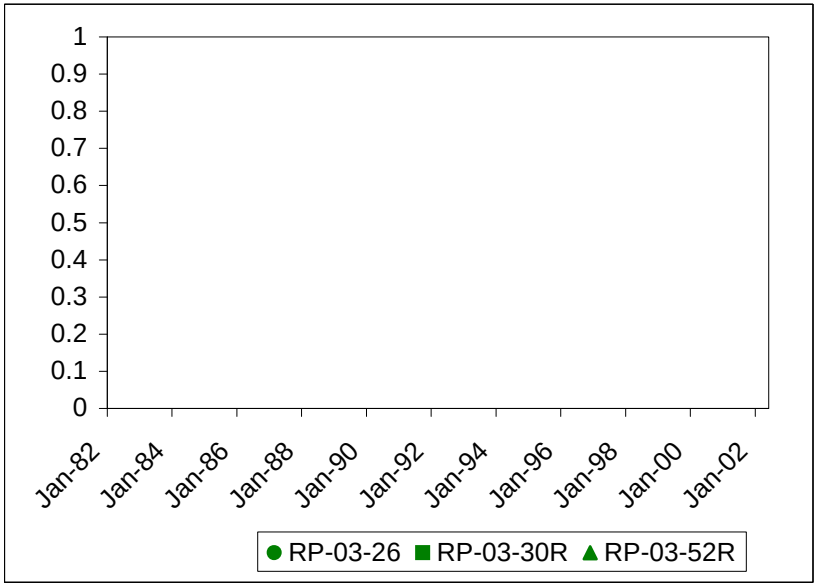
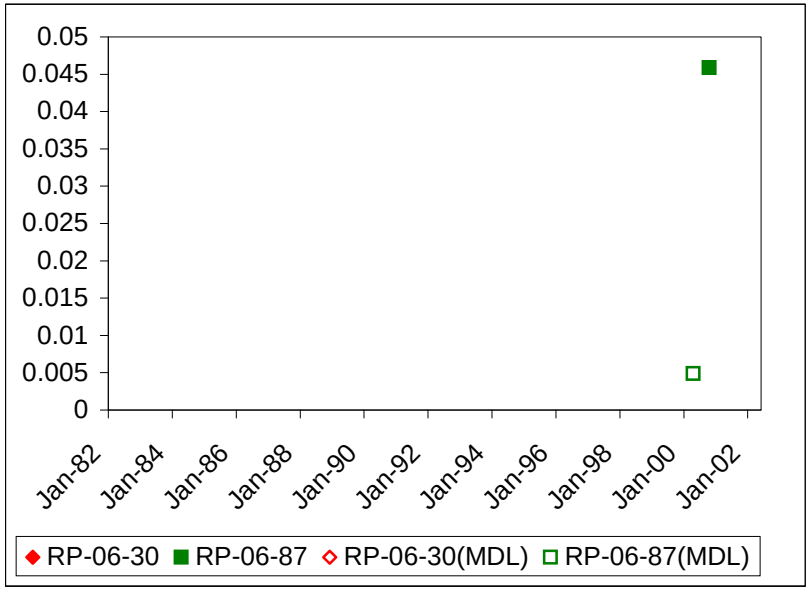


Figure D-60
Nitrate
(Concentrations in mg/L)





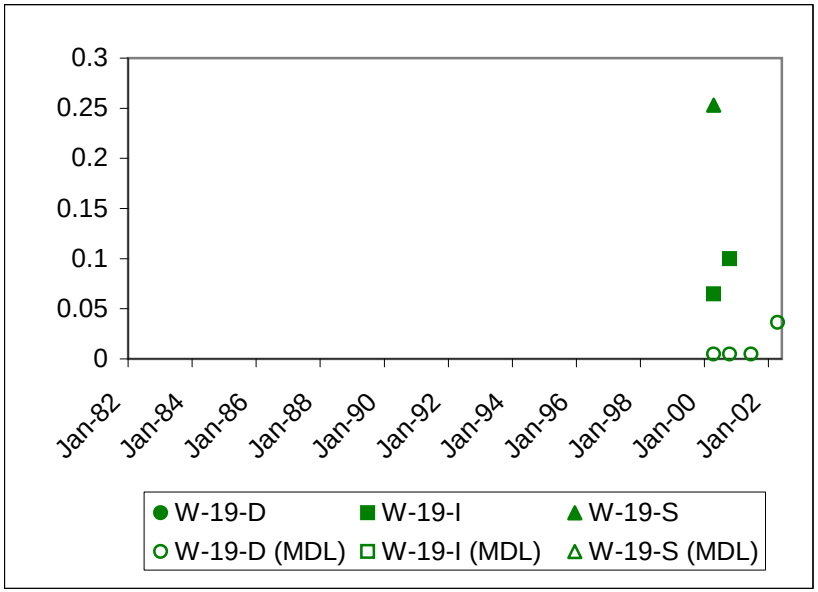
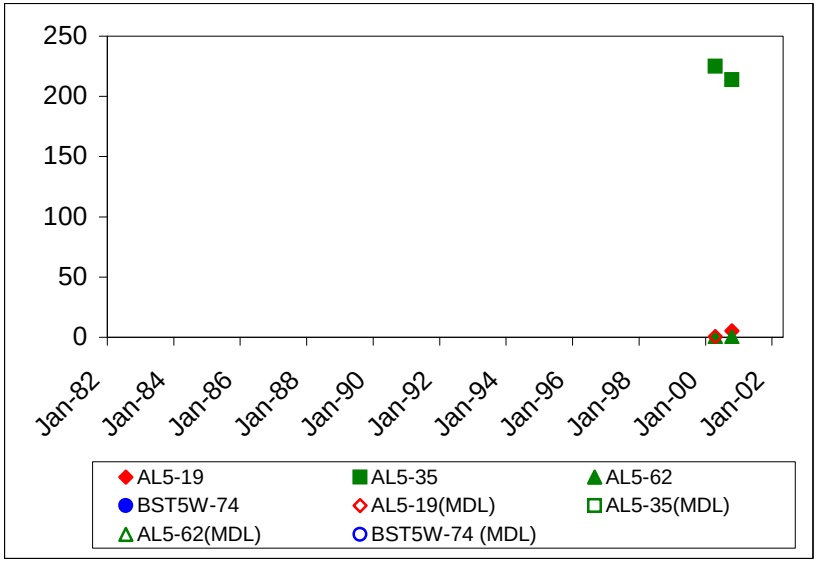
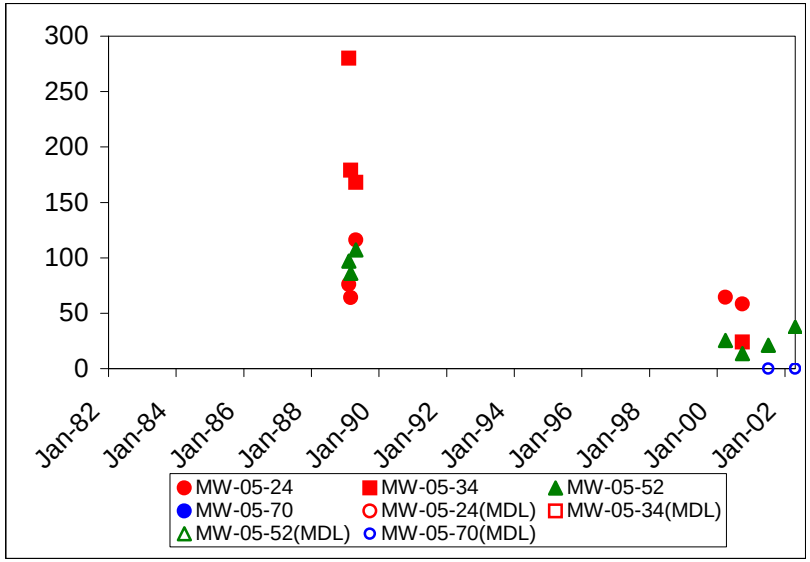
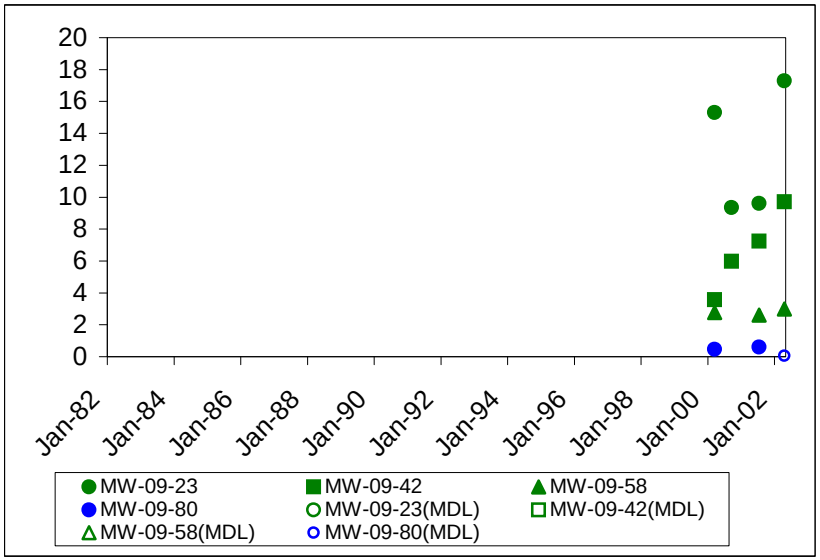


Figure D-61
Sulfate
(Concentrations in mg/L)







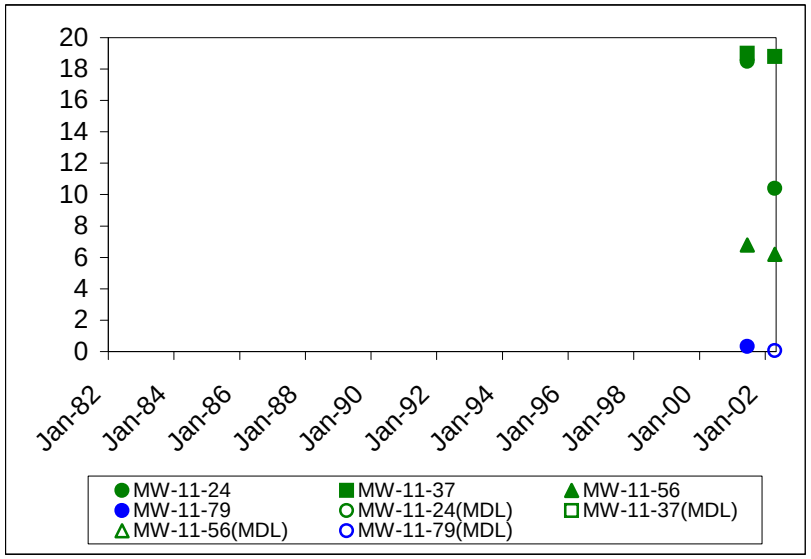
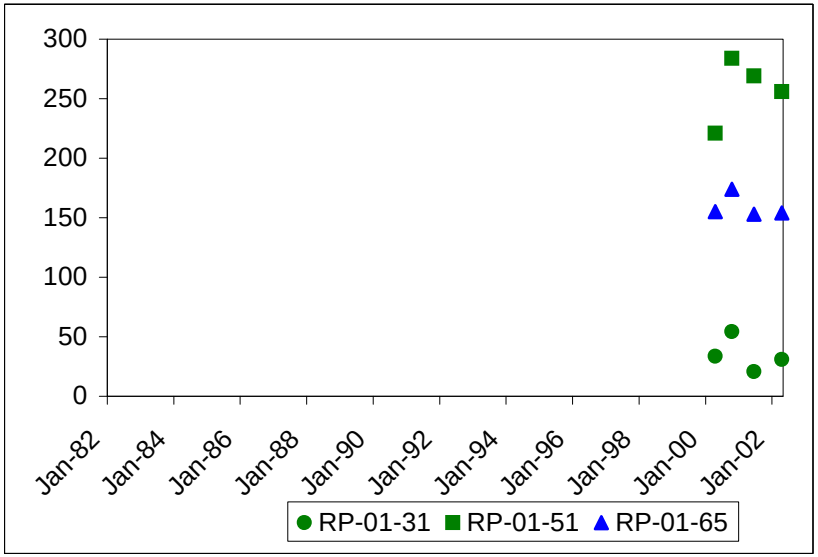
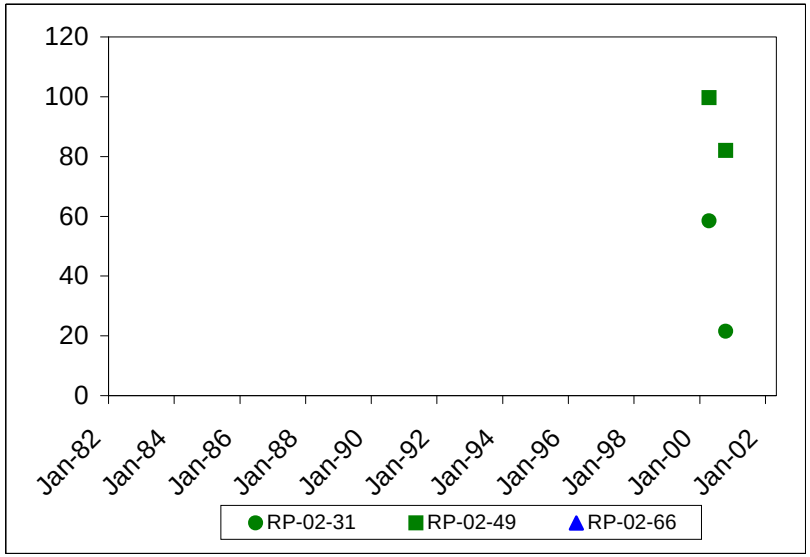
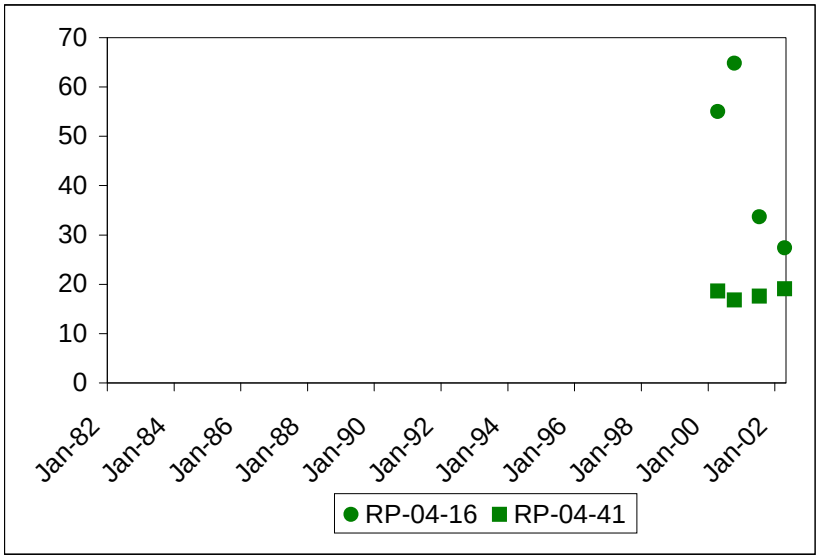


Figure D-62
Sulfate
(Concentrations in mg/L)







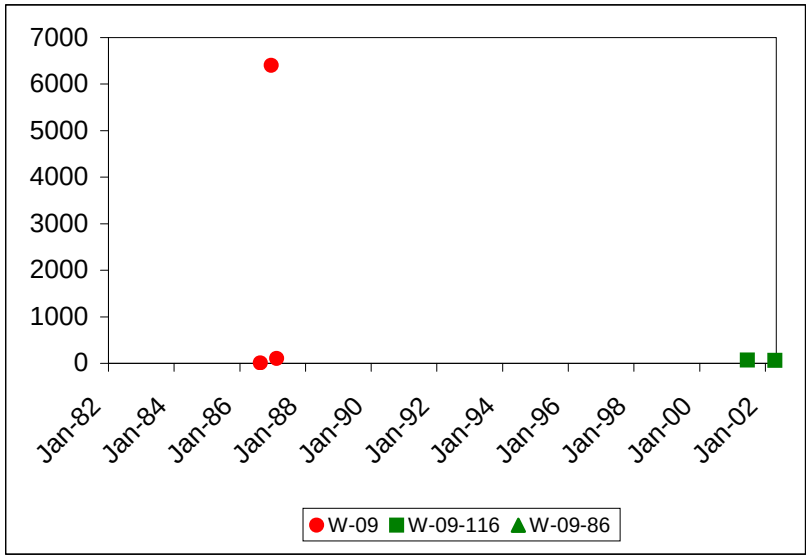
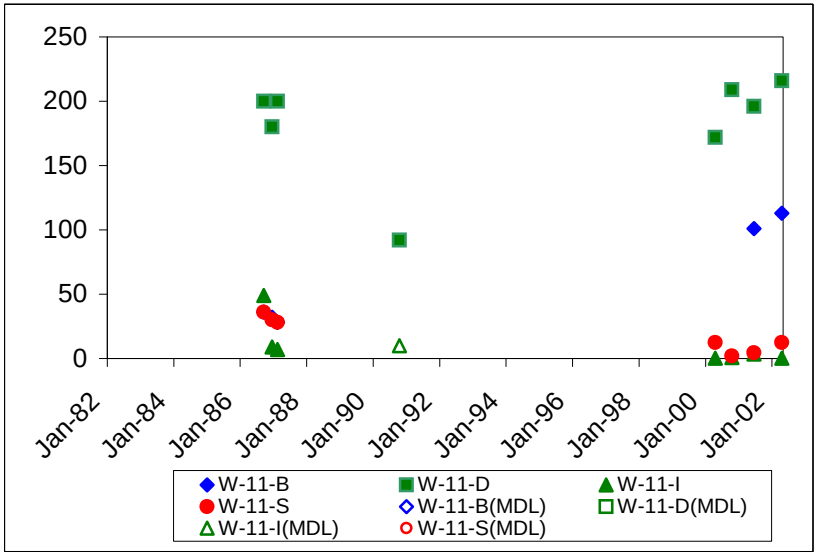
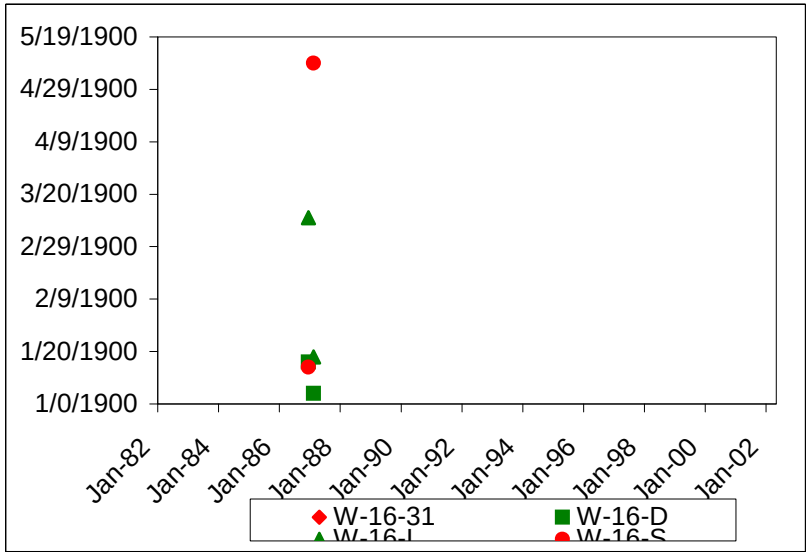
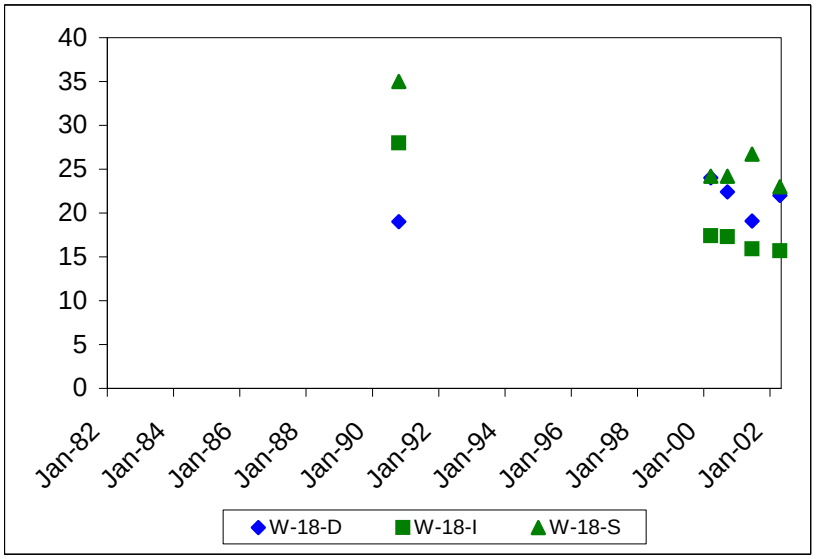


Figure D-63
Sulfate
(Concentrations in mg/L)







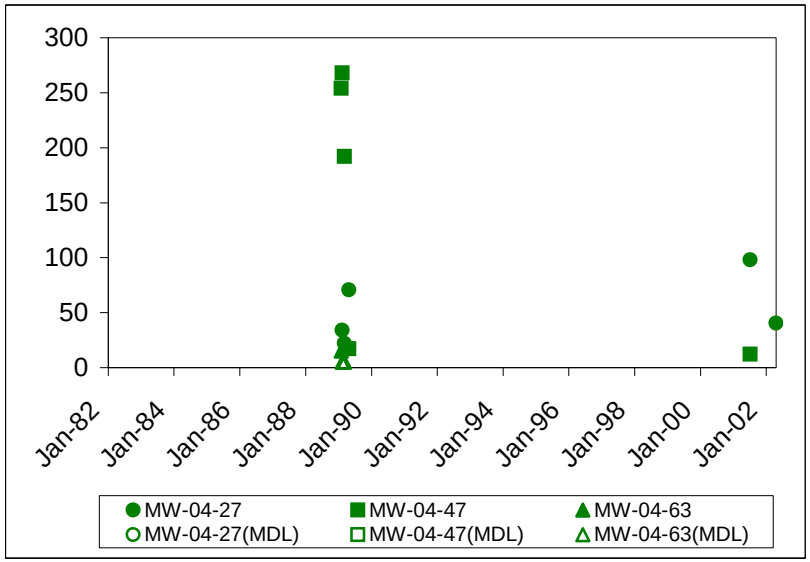
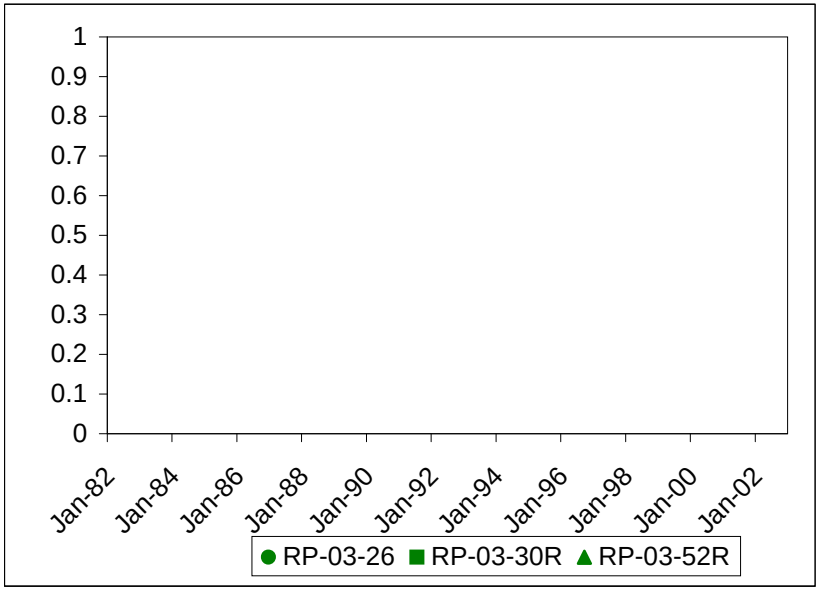
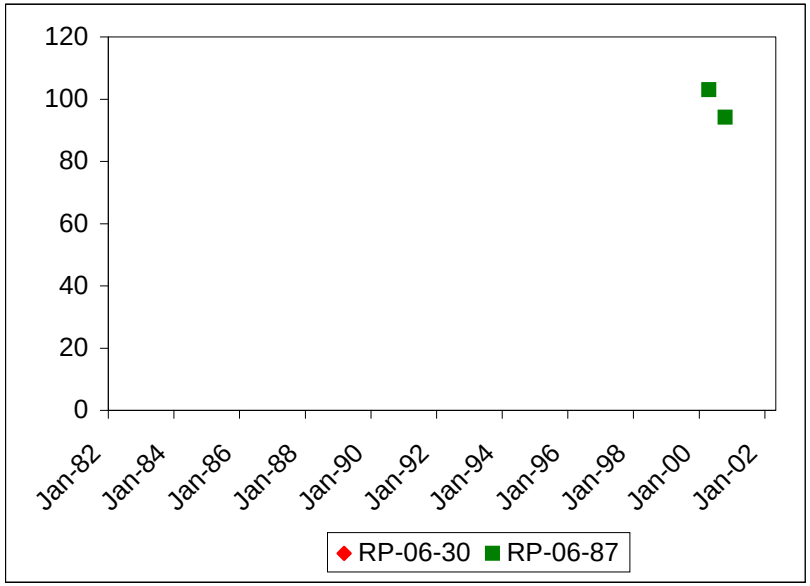


Figure D-64
Sulfate
(Concentrations in mg/L)





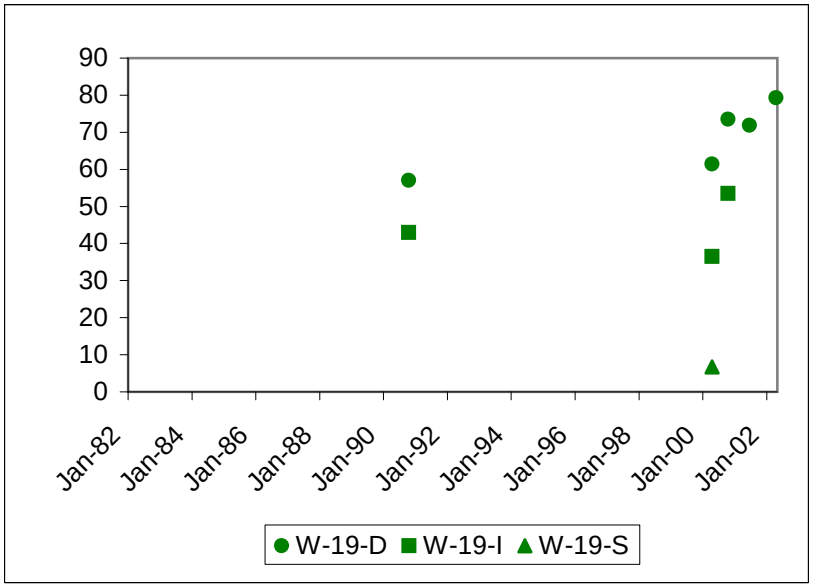
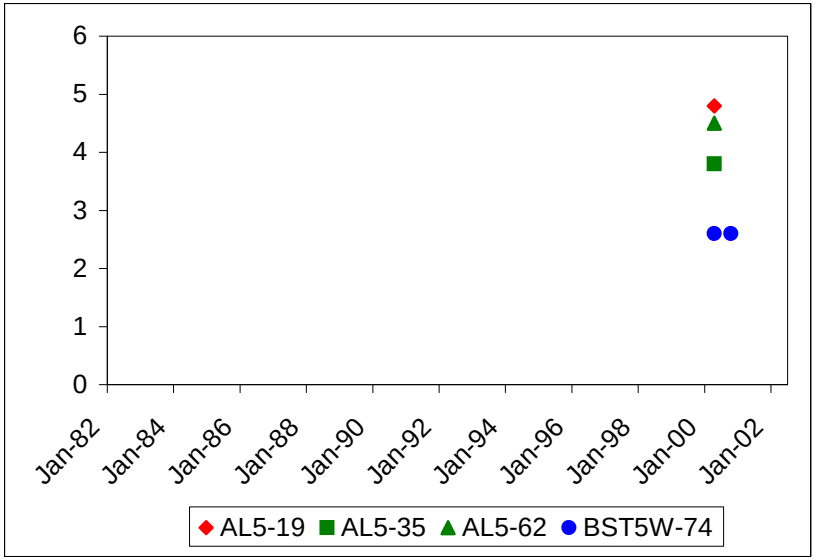
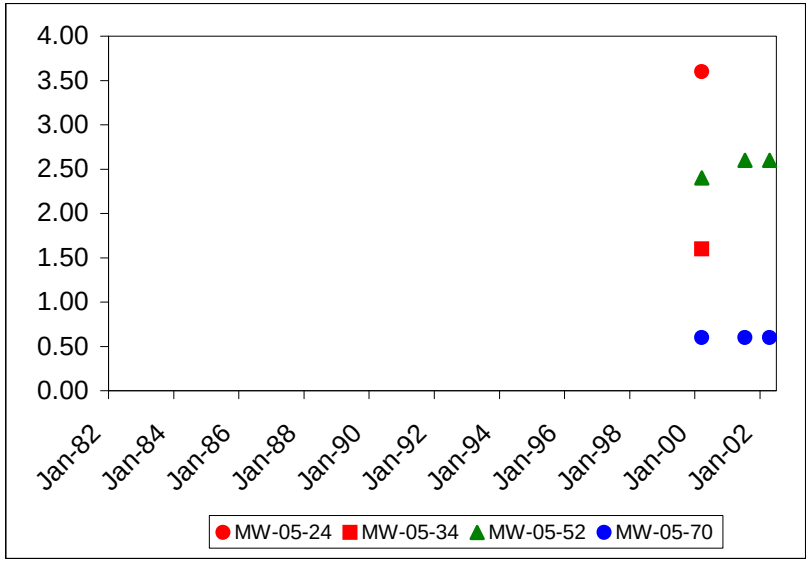
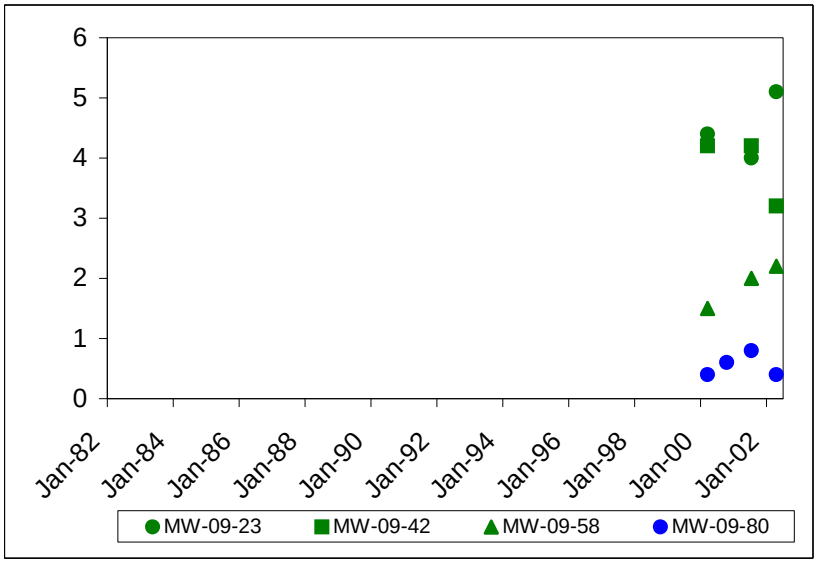


Figure D-65
Ferrous Iron
(Concentrations in mg/L)







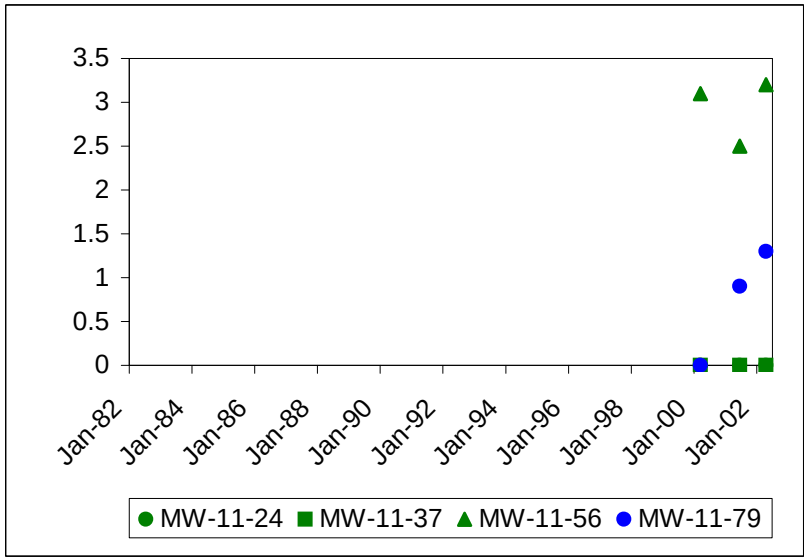
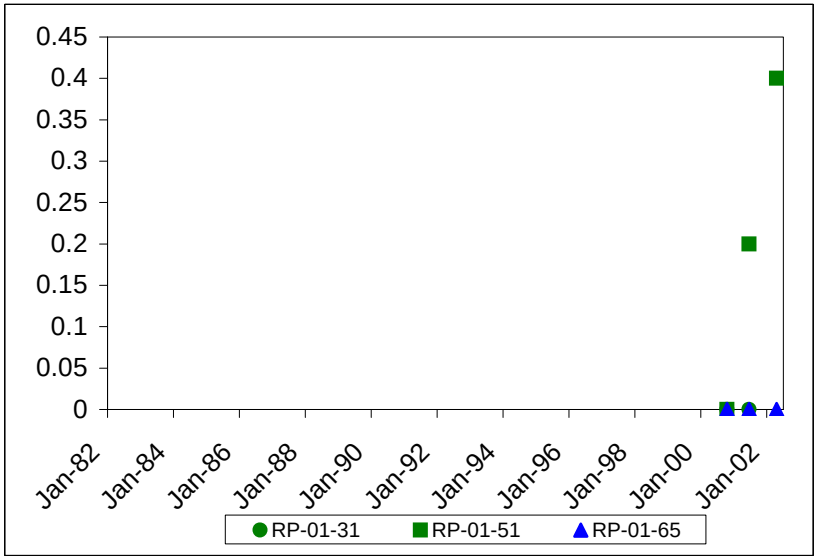
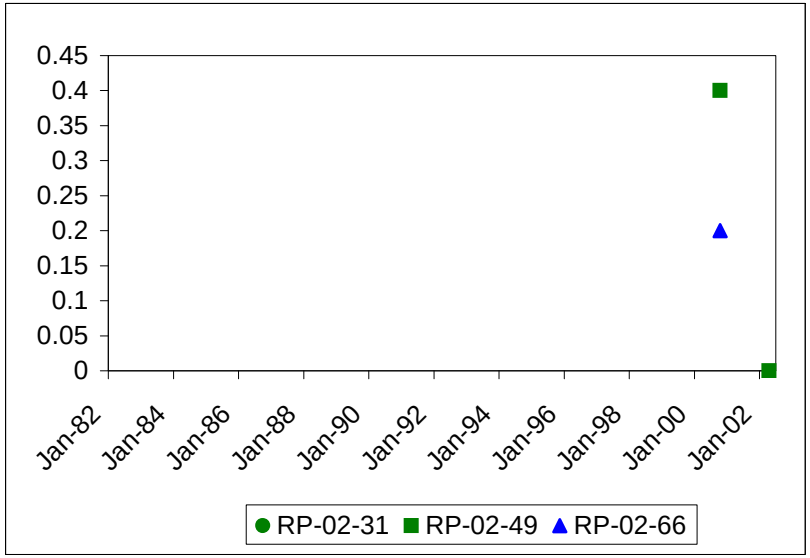
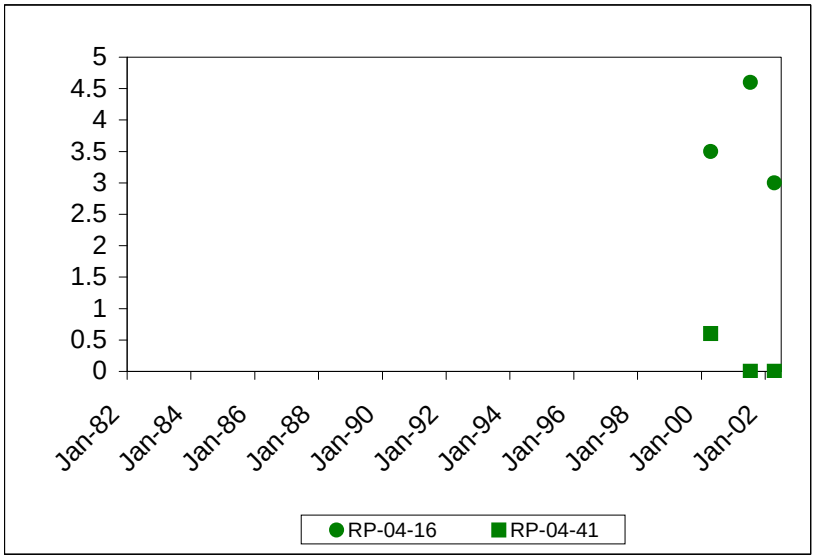


Figure D-66
Ferrous Iron
(Concentrations in mg/L)







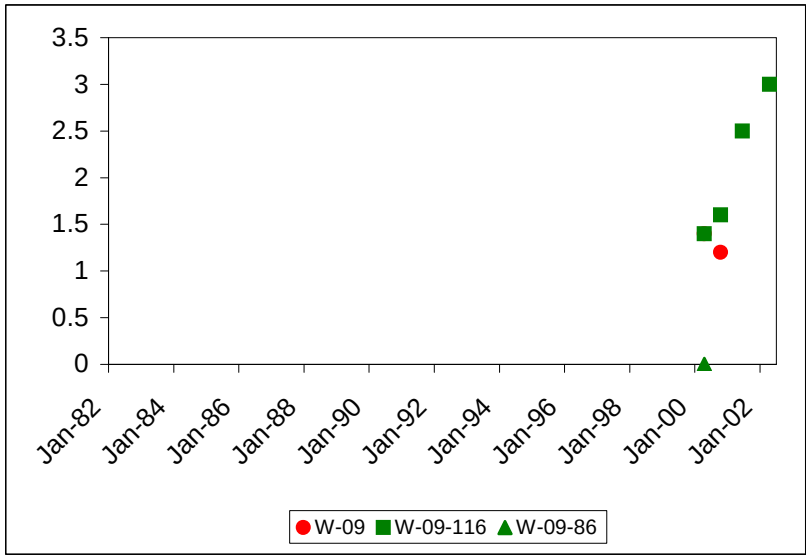
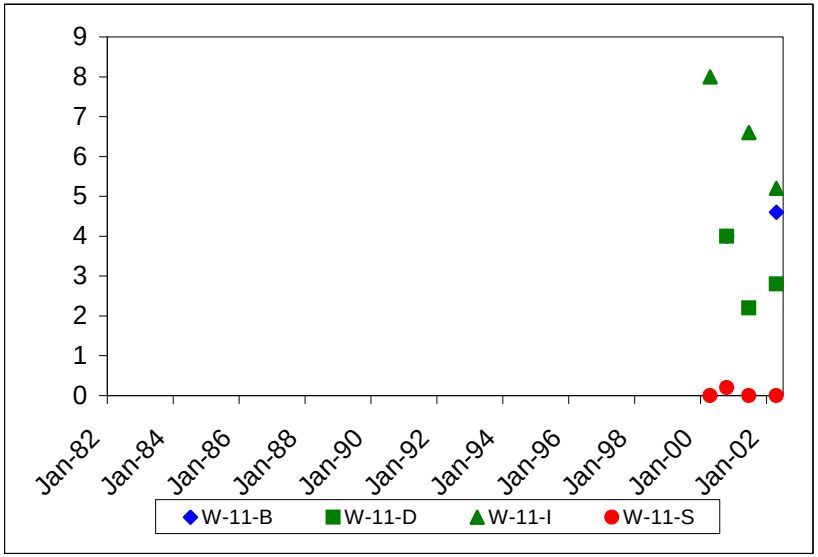
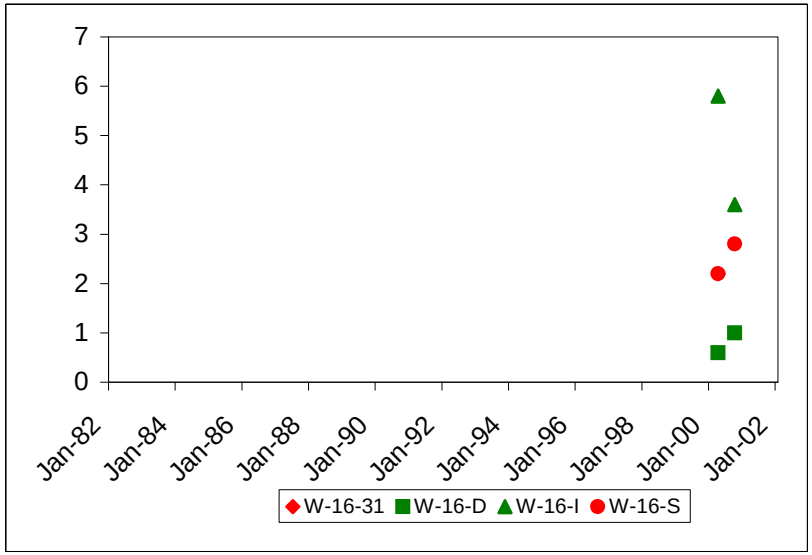
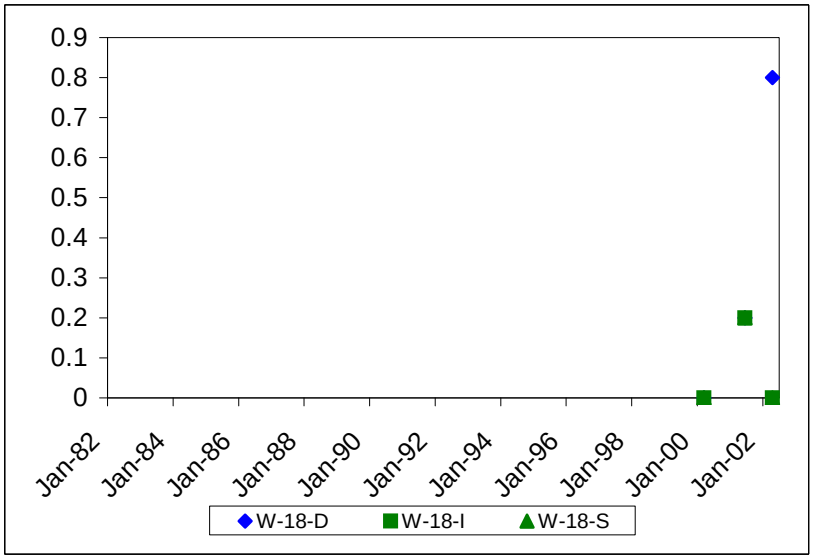


Figure D-67
Ferrous Iron
(Concentrations in mg/L)







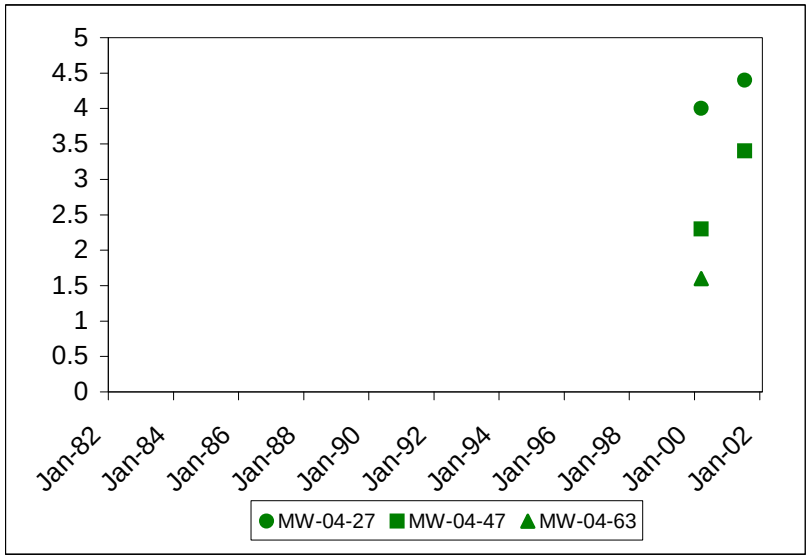
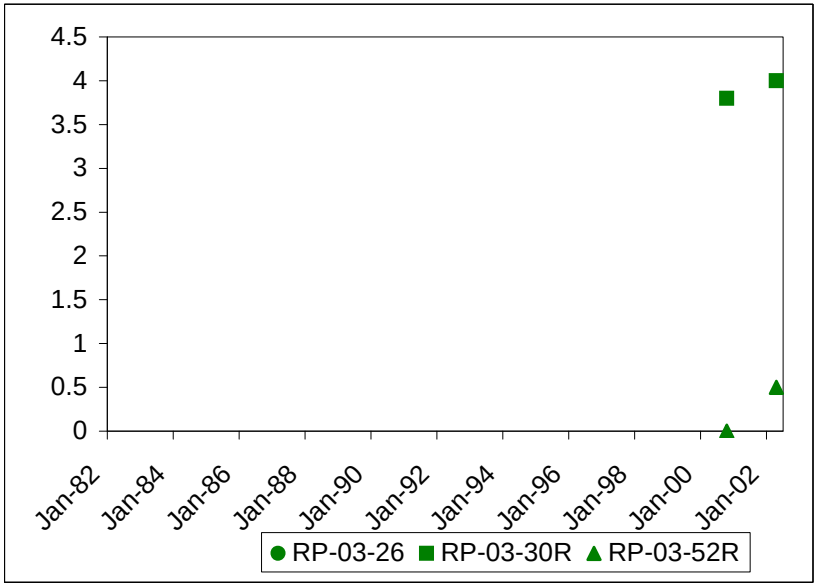
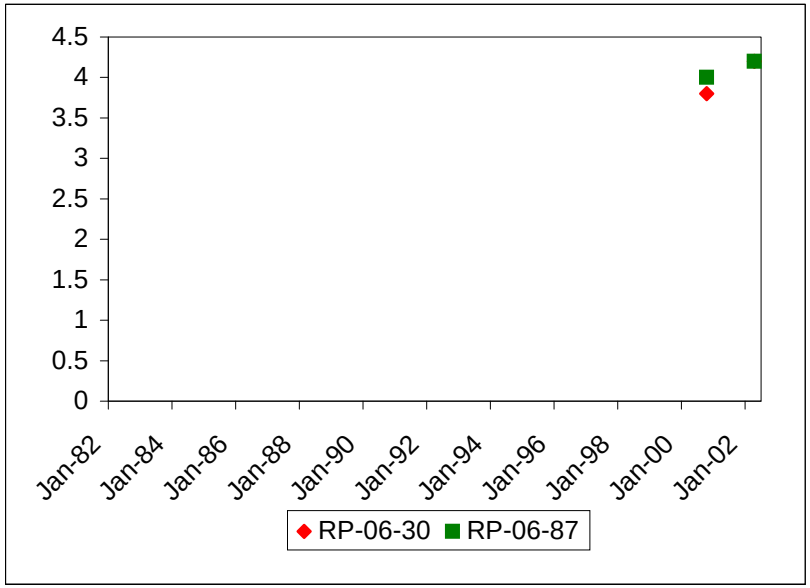


Figure D-68
Ferrous Iron
(Concentrations in mg/L)





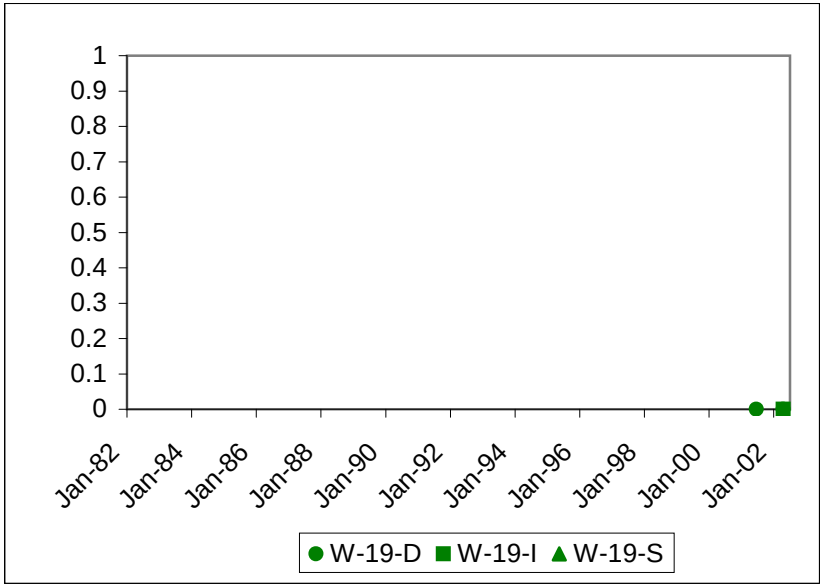
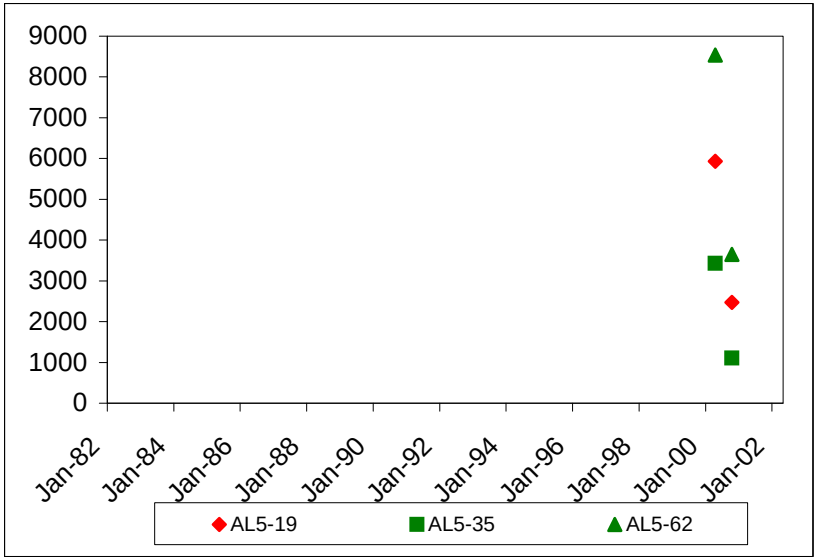
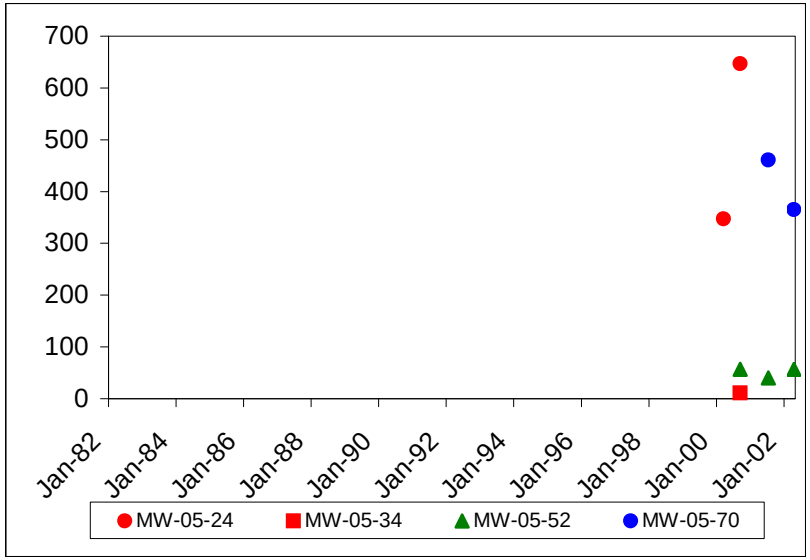
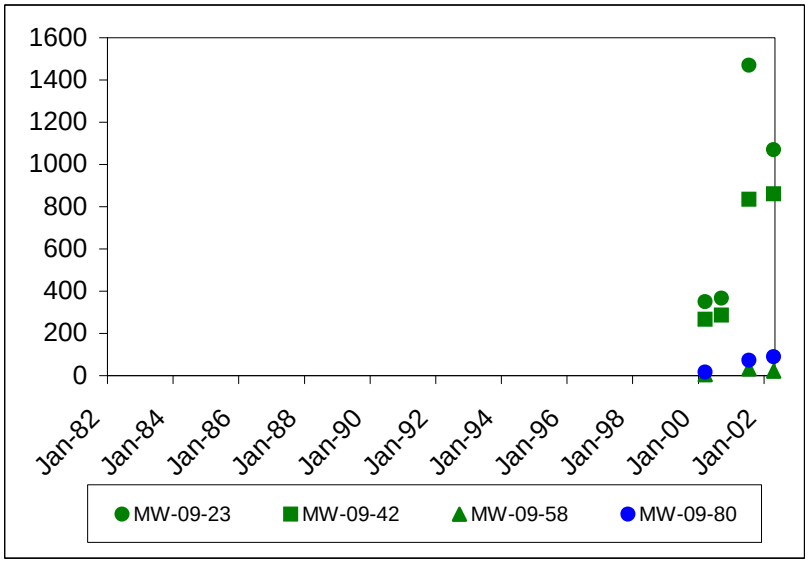


Figure D-69
Methane
(Concentrations in µg/L)







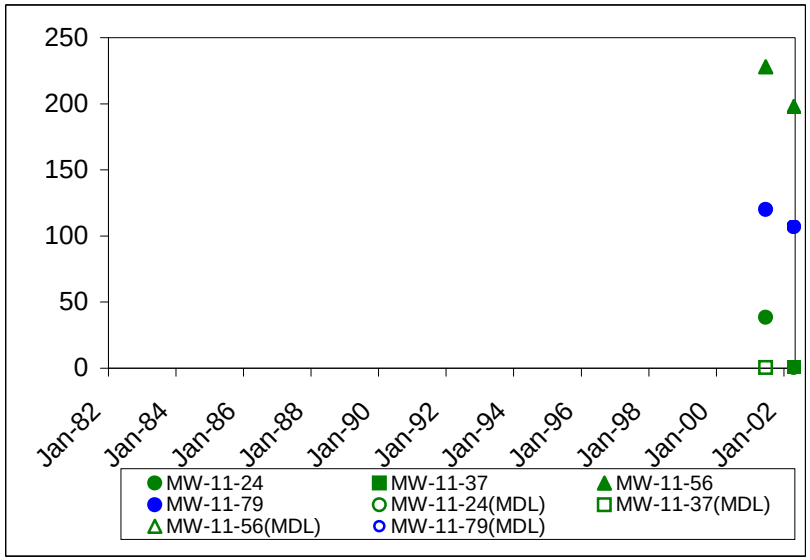
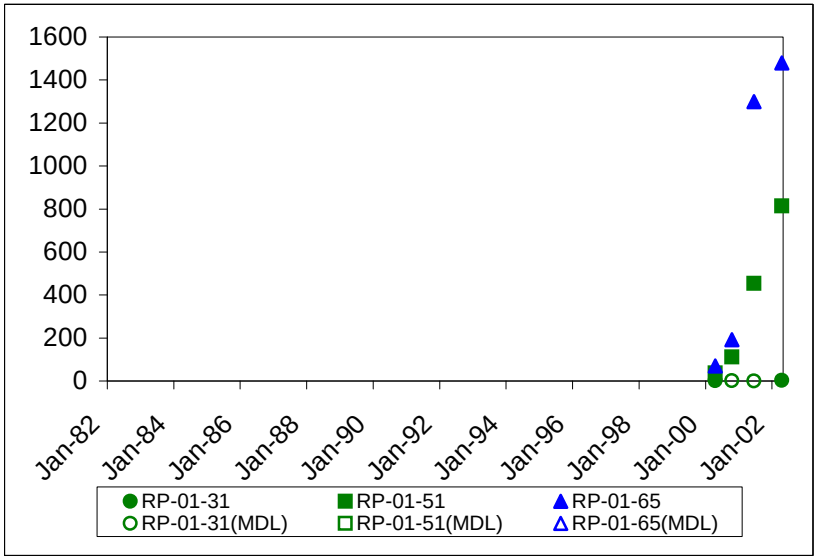
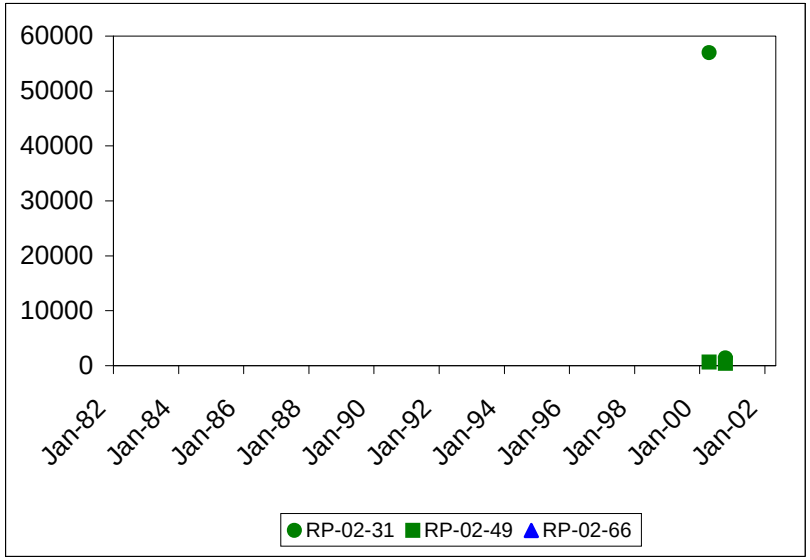
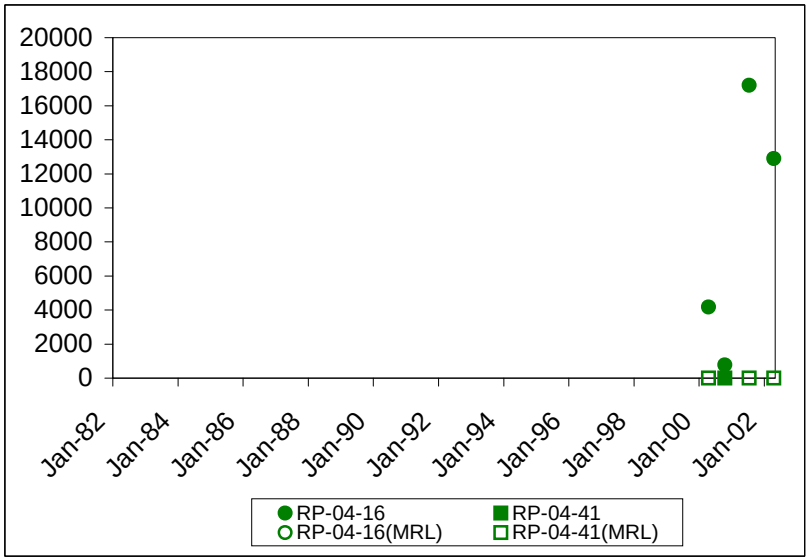


Figure D-70
Methane
(Concentrations in µg/L)







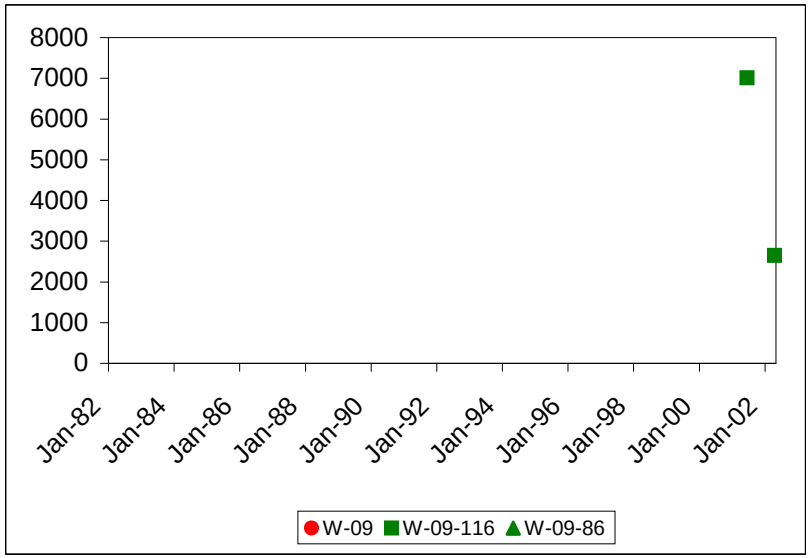
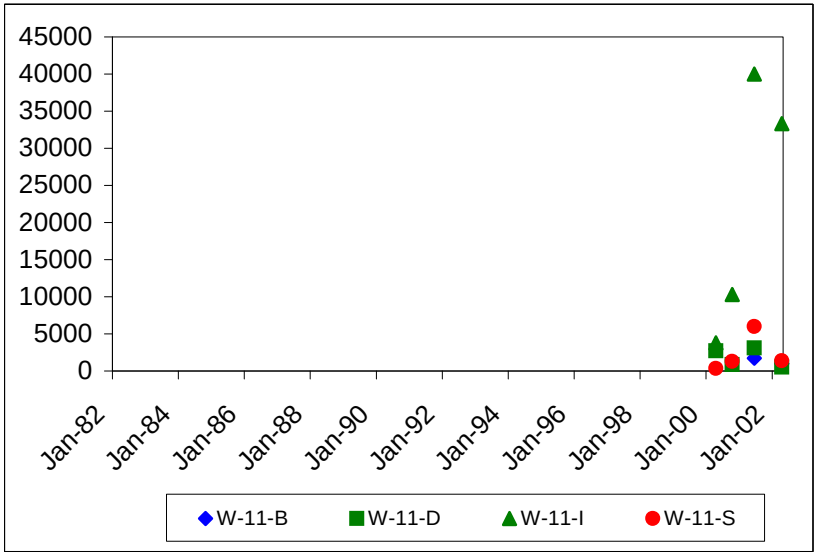
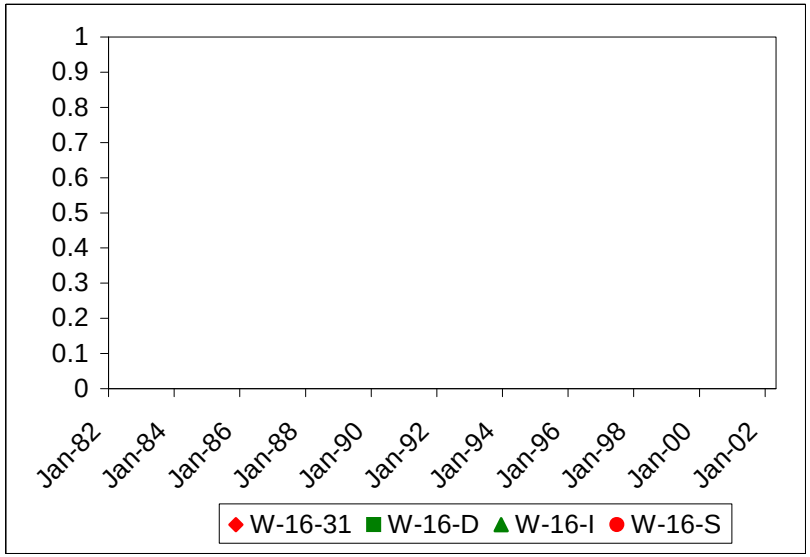
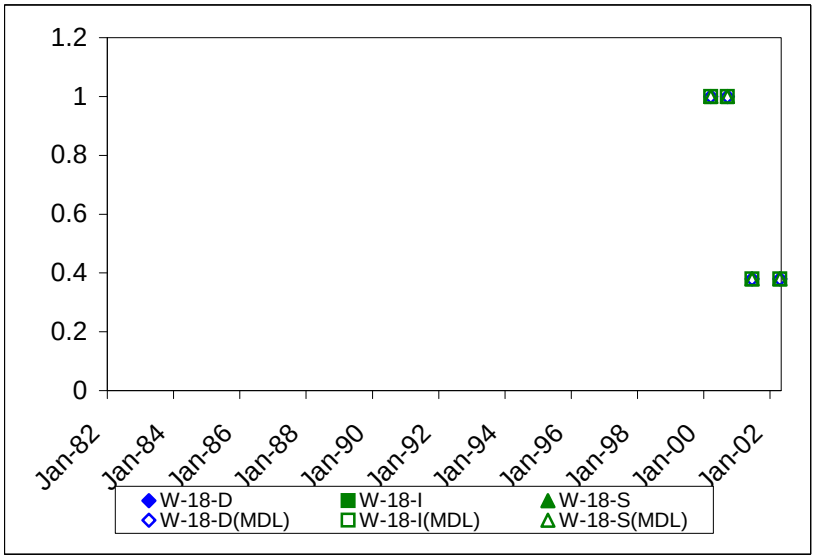


Figure D-71
Methane
(Concentrations in µg/L)







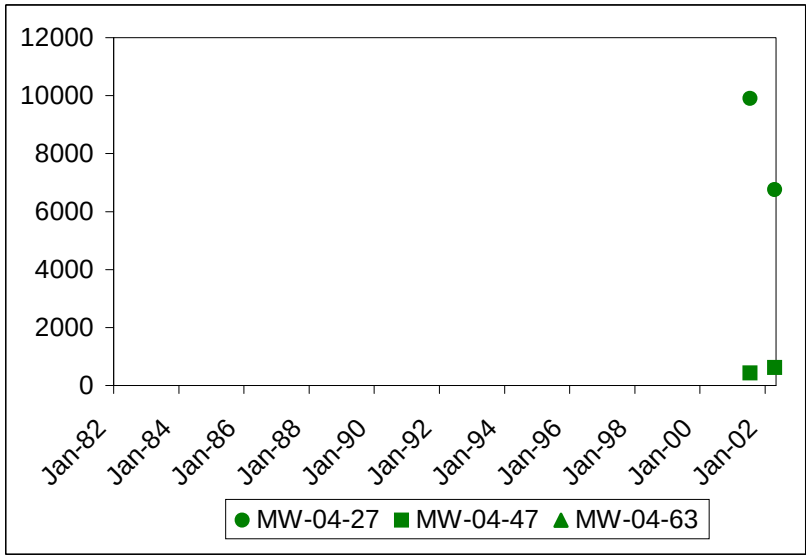
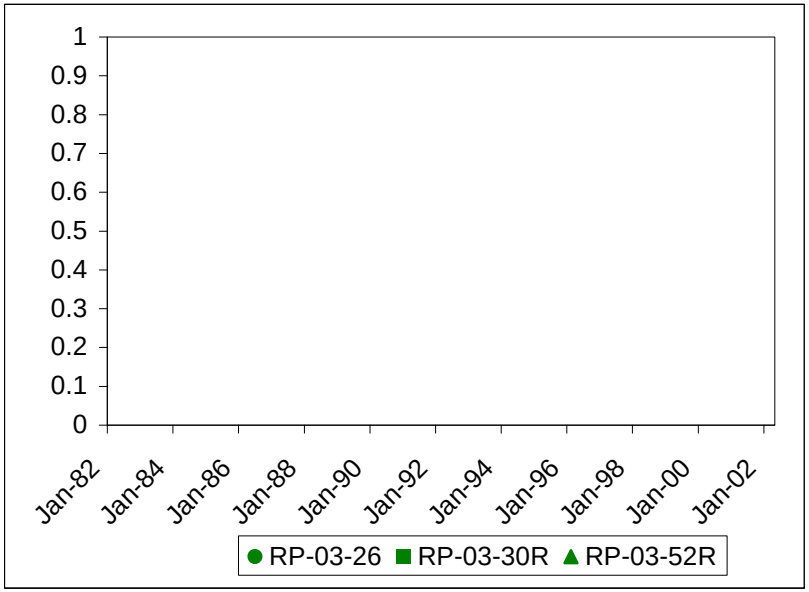
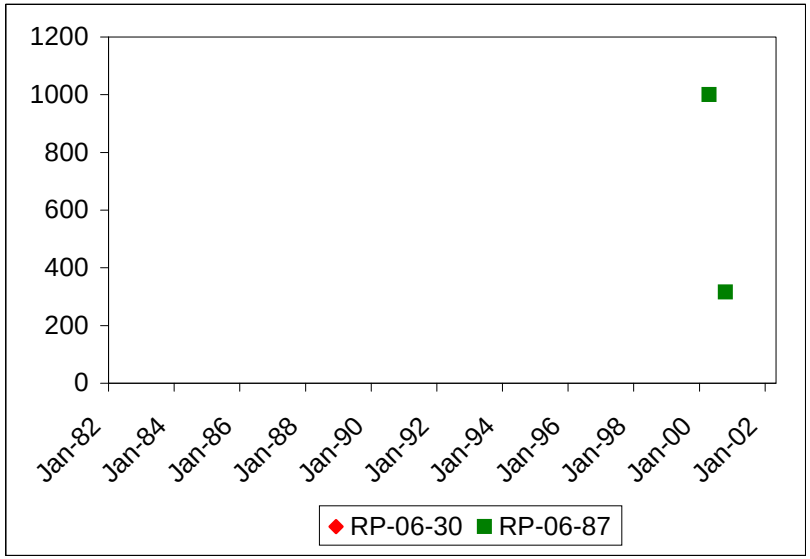


Figure D-72
Methane
(Concentrations in µg/L)





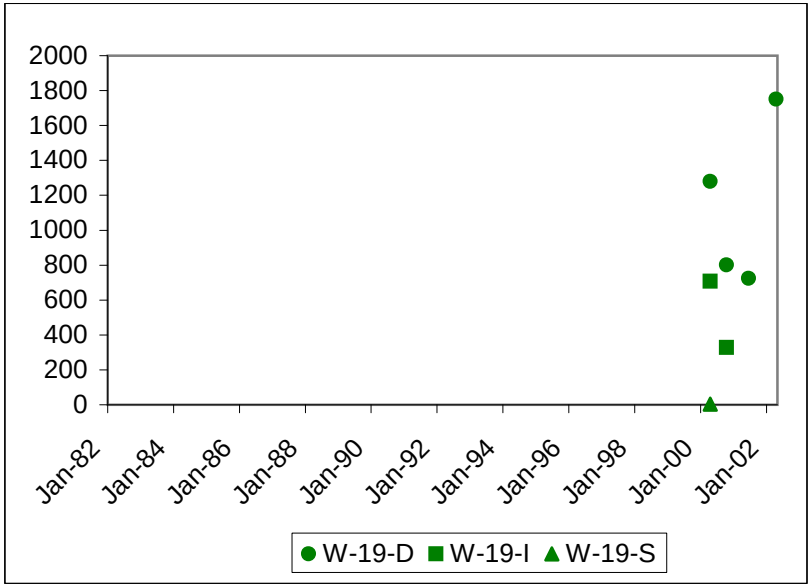
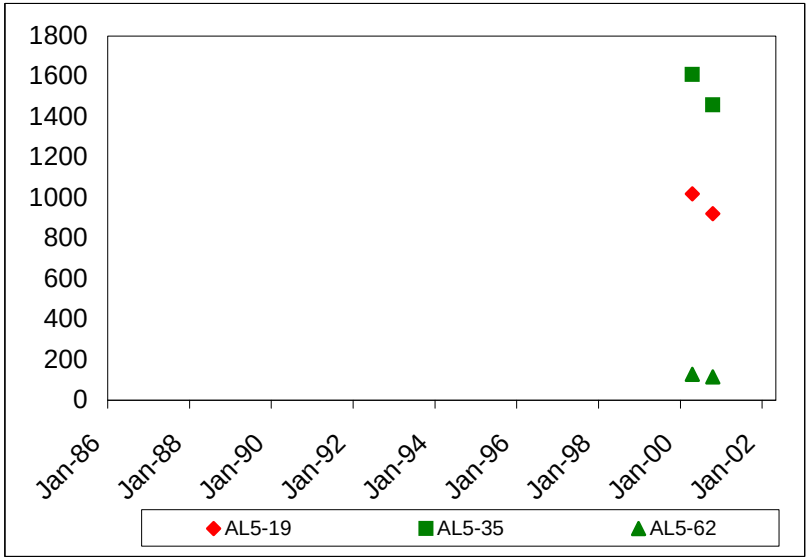
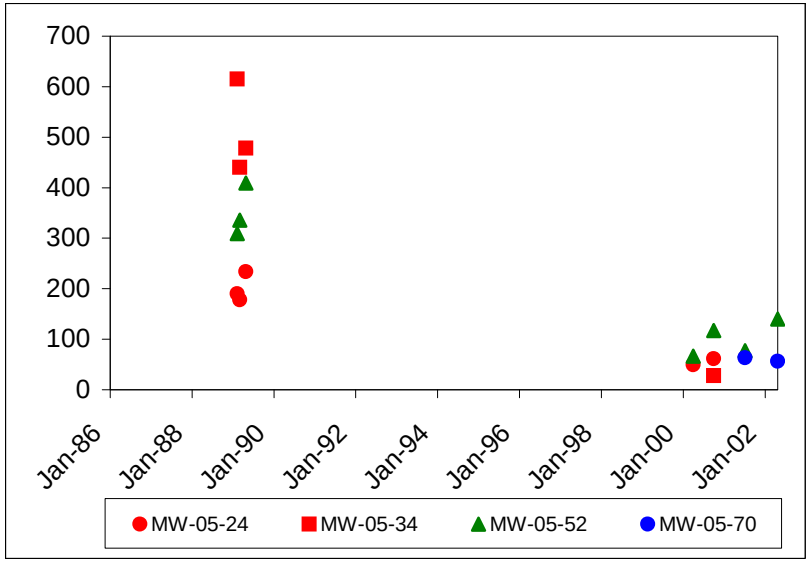
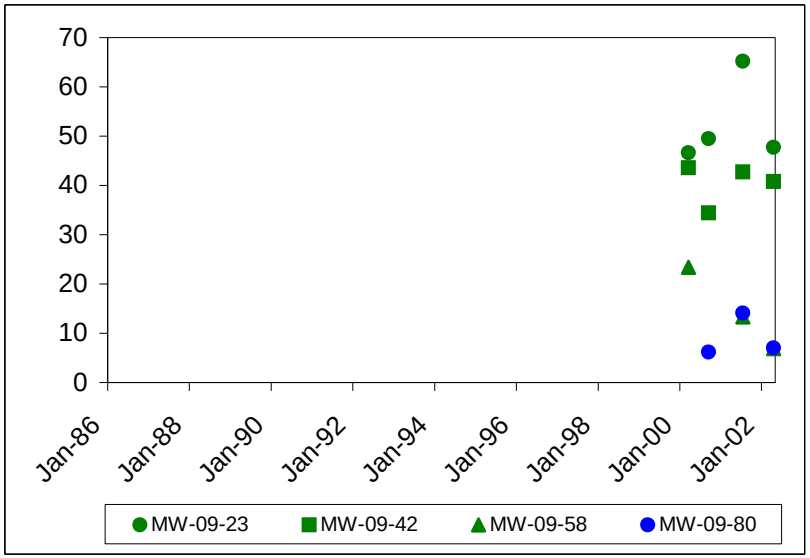


Figure D-73
Chloride
(Concentrations in mg/L)







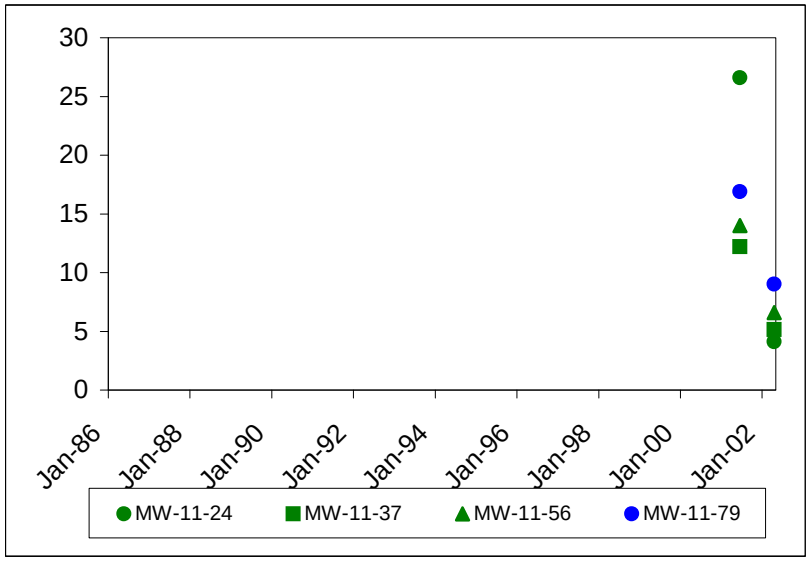
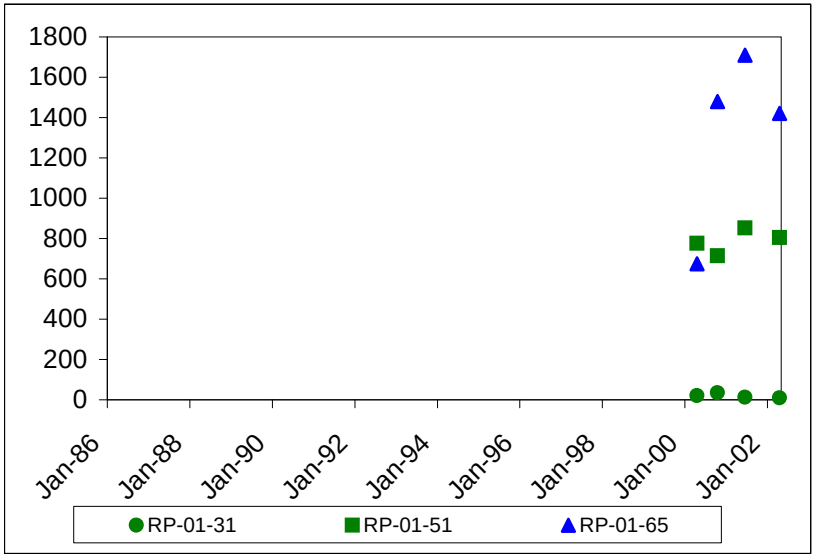
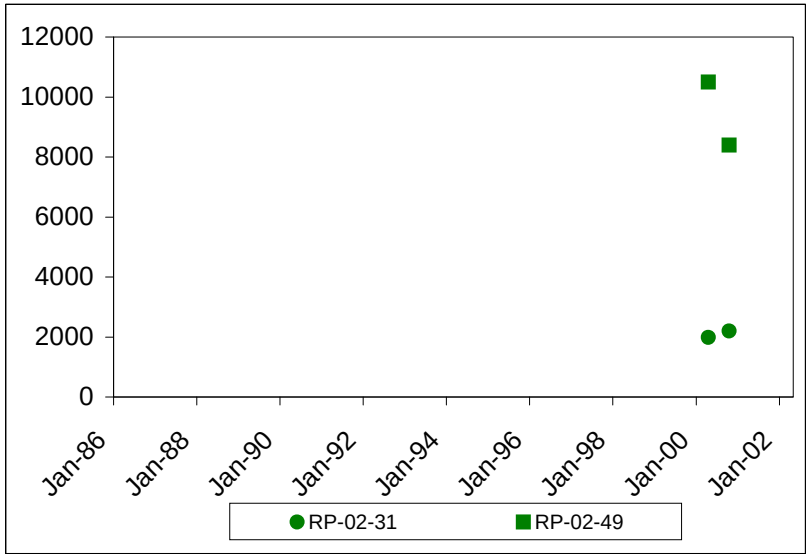
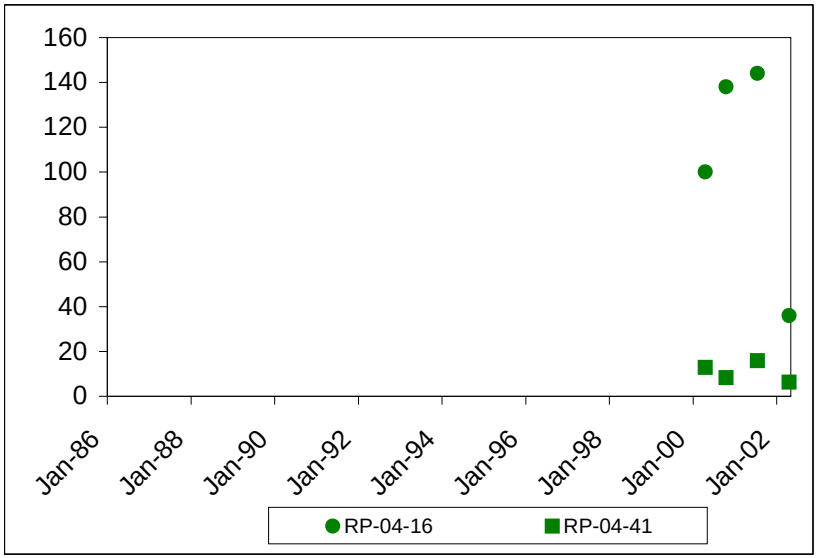


Figure D-74
Chloride
(Concentrations in mg/L)







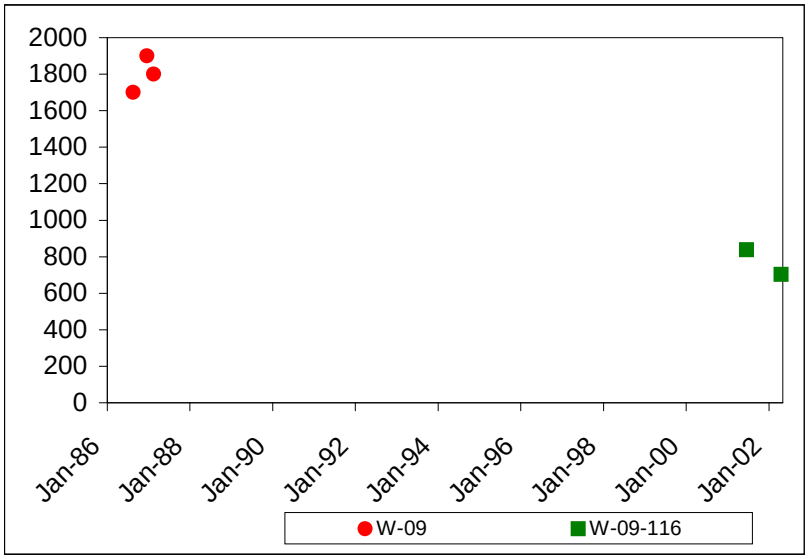
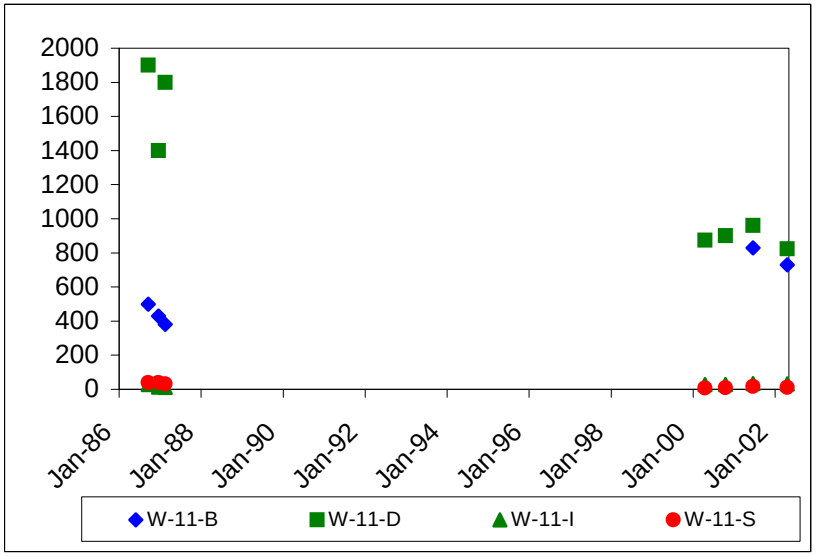
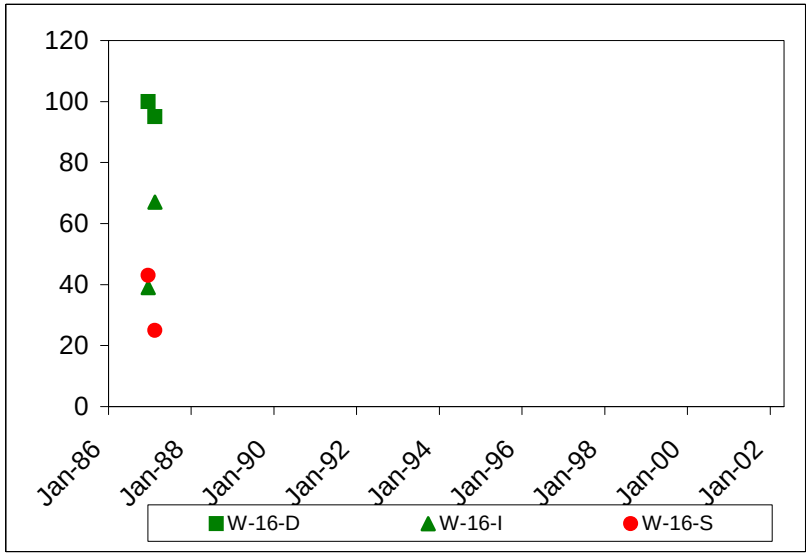
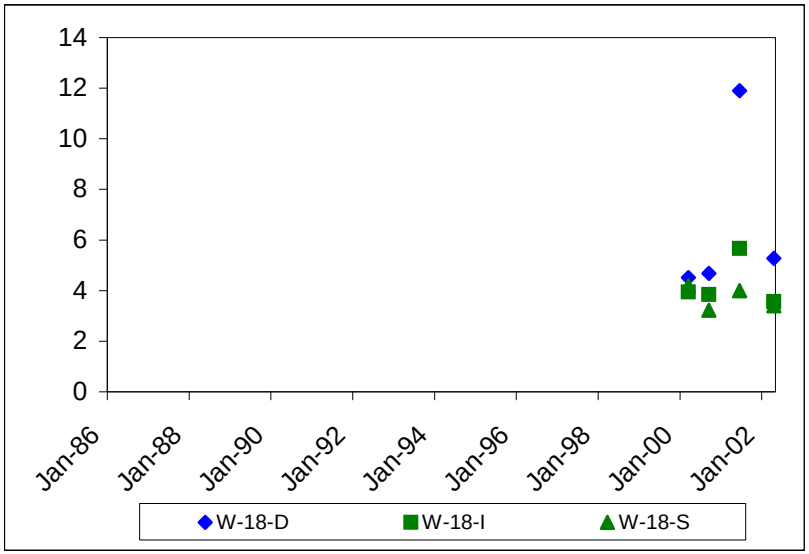


Figure D-75
Chloride
(Concentrations in mg/L)







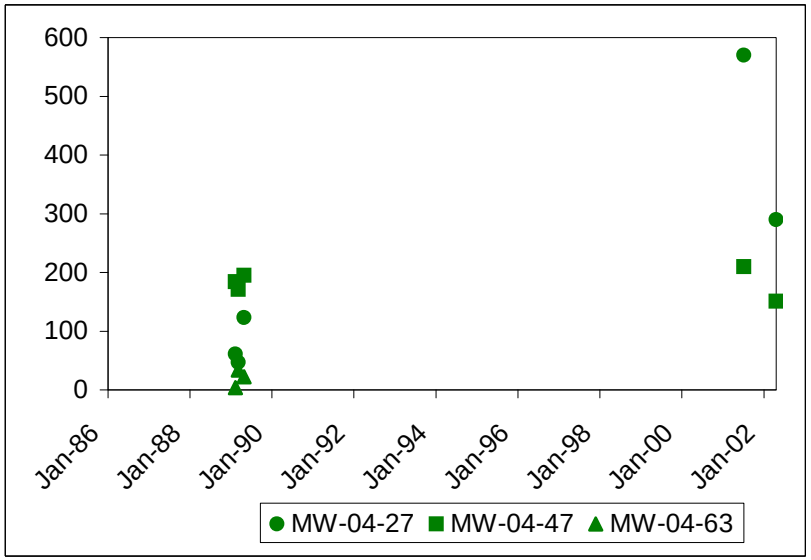
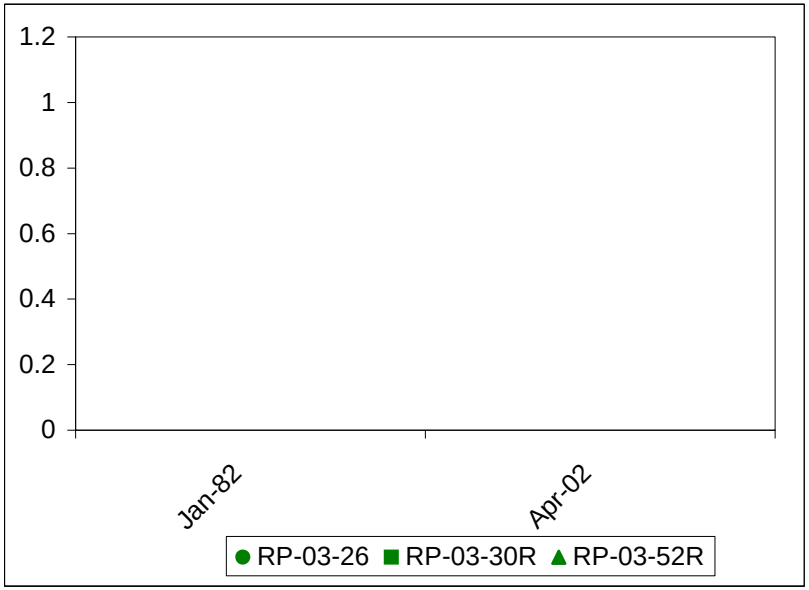
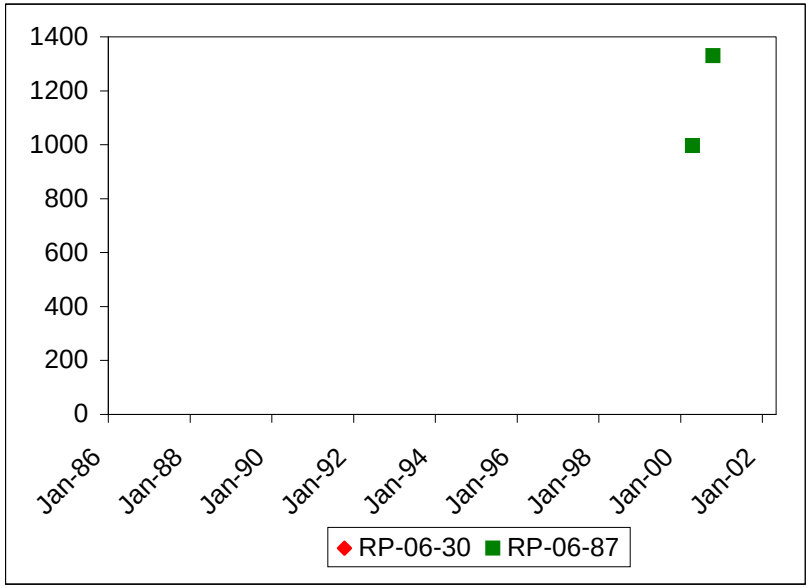
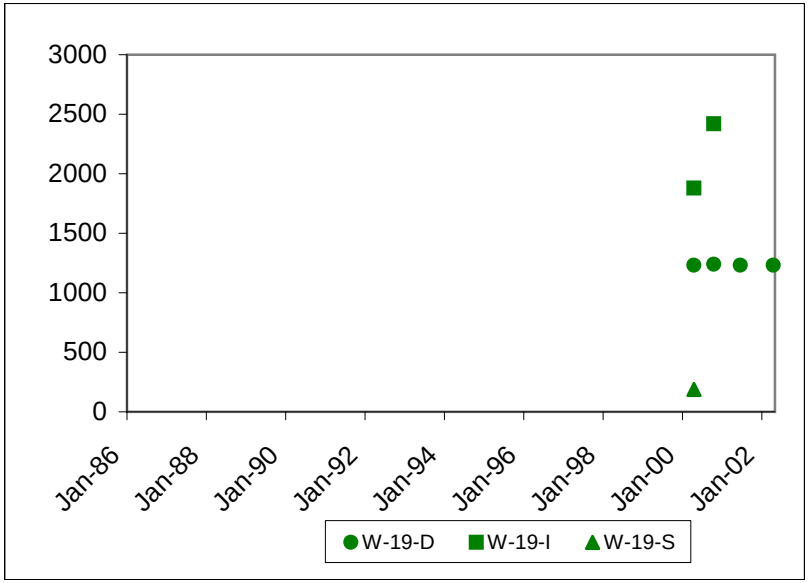


Figure D-76
Chloride
(Concentrations in mg/L)







APPENDIX D

Temporal Changes Figure List
RPAC - Portland Site

Figure Numbers	Chemical Class	Constituent
D-1 through D-4	VOCs	1,2-Dichlorobenzene
D-5 through D-8	VOCs	Benzene
D-9 through D-12	VOCs	Trichloroethene
D-13 through D-16	Phenols	2,4-Dichlorophenol
D-17 through D-20	Phenols	Phenol
D-21 through D-24	Herbicides	2,4-D
D-25 through D-28	Herbicides	2,4,5-TP (Silvex)
D-29 through D-32	Insecticides	2,3,7,8-TCDD
D-33 through D-36	Insecticides	4,4'-DDT
D-37 through D-40	Insecticides	Dieldrin
D-41 through D-44	Metals	Dissolved Arsenic
D-45 through D-48	NAP	Diesel Range Organics
D-49 through D-52	NAP	Redox Potential
D-53 through D-56	NAP	Dissolved Oxygen
D-57 through D-60	NAP	Nitrate
D-61 through D-64	NAP	Sulfate
D-65 through D-68	NAP	Ferrous Iron
D-69 through D-72	NAP	Methane
D-73 through D-76	NAP	Chloride

VOCs	volatile organic compounds
DDE	1,1-dichloro-2,2-bis(p-dichlorodiphenyl)ethylene
DDT	dichlorodiphenyltrichloroethane
D	dichlorophenoxyacetic acid
TCDD	tetrachlorodibenzo-p-dioxin
NAP	Natural Attenuation Parameter

APPENDIX E

Selected Natural Attenuation Evaluation
Parameter Groundwater Figures

APPENDIX E

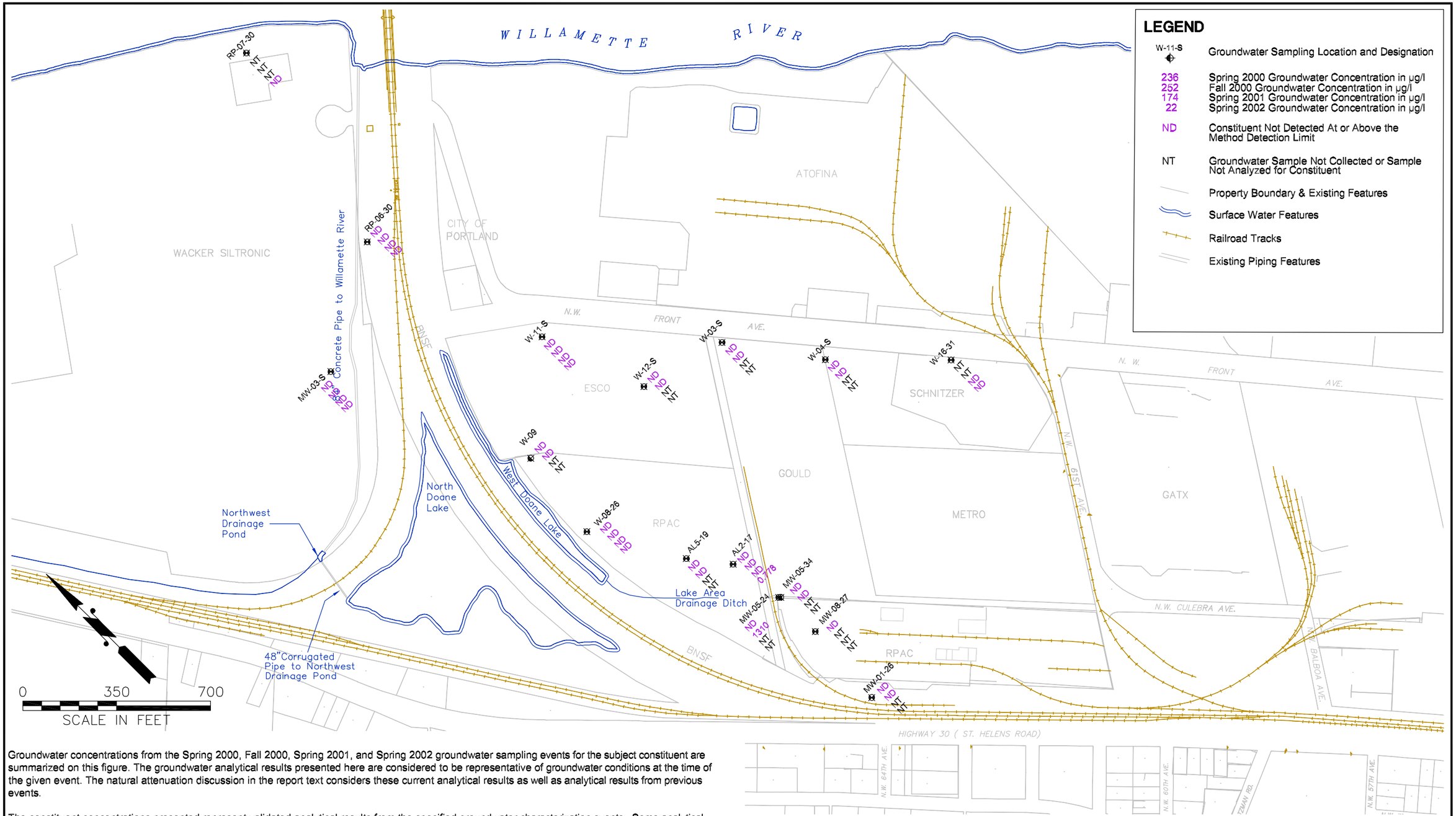
Natural Attenuation Parameter
RPAC - Portland Site

Figure Numbers	Constituent
E-1 through E-3	2,4,5-T
E-4 through E-6	Dichlorprop (2,4-DP)
E-7 through E-9	Diesel Range Organics
E-10 through E-12	Redox Potential
E-13 through E-15	Dissolved Oxygen
E-16 through E-18	Nitrate
E-19 through E-21	Sulfate
E-22 through E-24	Sulfide
E-25 through E-27	Ferrous Iron
E-28 through E-30	Methane
E-31 through E-33	Chloride

APPENDIX E

Natural Attenuation Parameter
RPAC - Portland Site

Figure Numbers	Constituent
E-1 through E-3	2,4,5-T
E-4 through E-6	Dichlorprop (2,4-DP)
E-7 through E-9	Diesel Range Organics
E-10 through E-12	Redox Potential
E-13 through E-15	Dissolved Oxygen
E-16 through E-18	Nitrate
E-19 through E-21	Sulfate
E-22 through E-24	Sulfide
E-25 through E-27	Ferrous Iron
E-28 through E-30	Methane
E-31 through E-33	Chloride



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

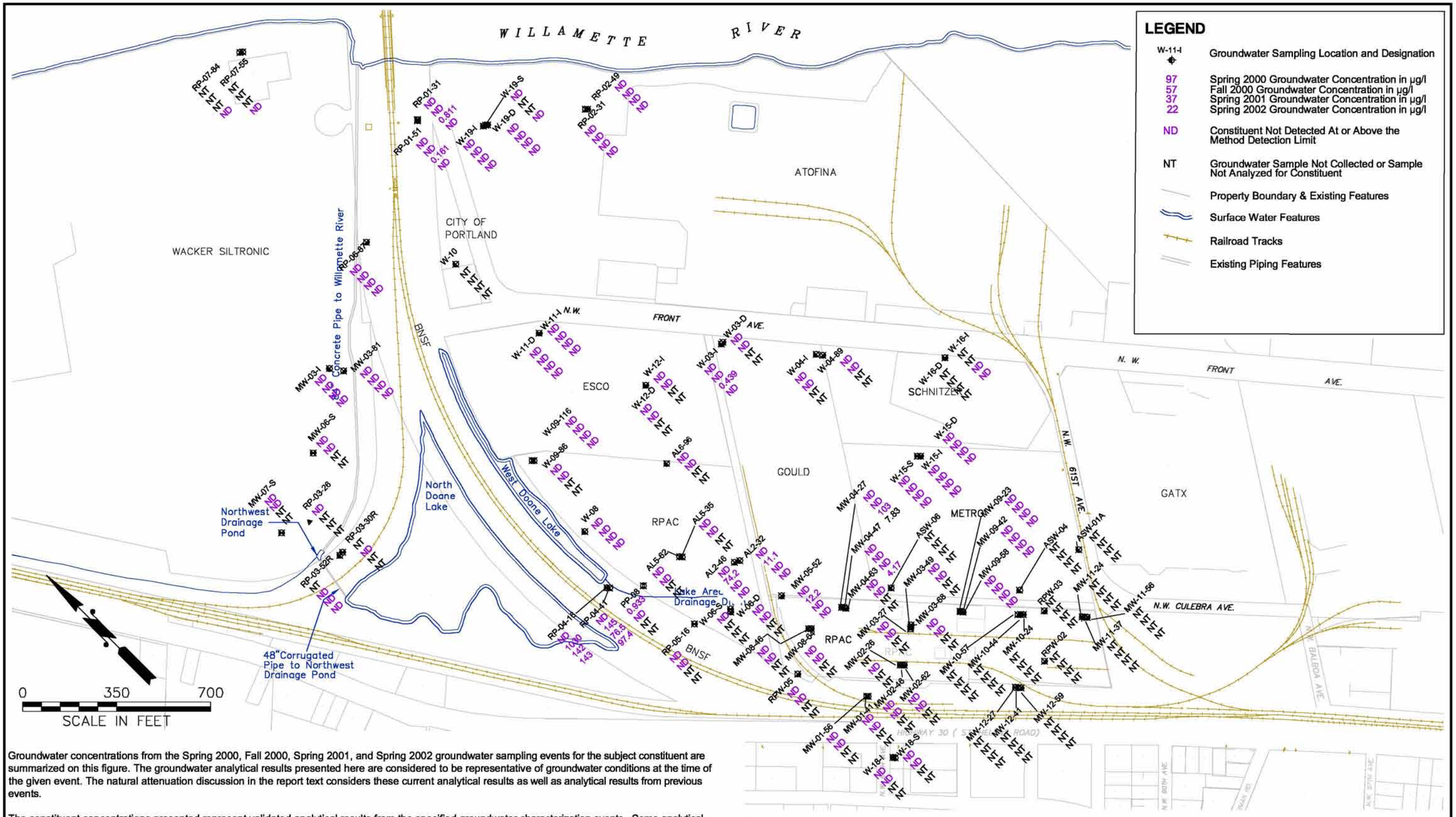
amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-1
2,4,5-T
DISTRIBUTION IN GROUNDWATER
SPRING 2000 - SPRING 2002
FILL / SHALLOW ALLUVIUM ZONE
RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-01_2-4-5-T.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

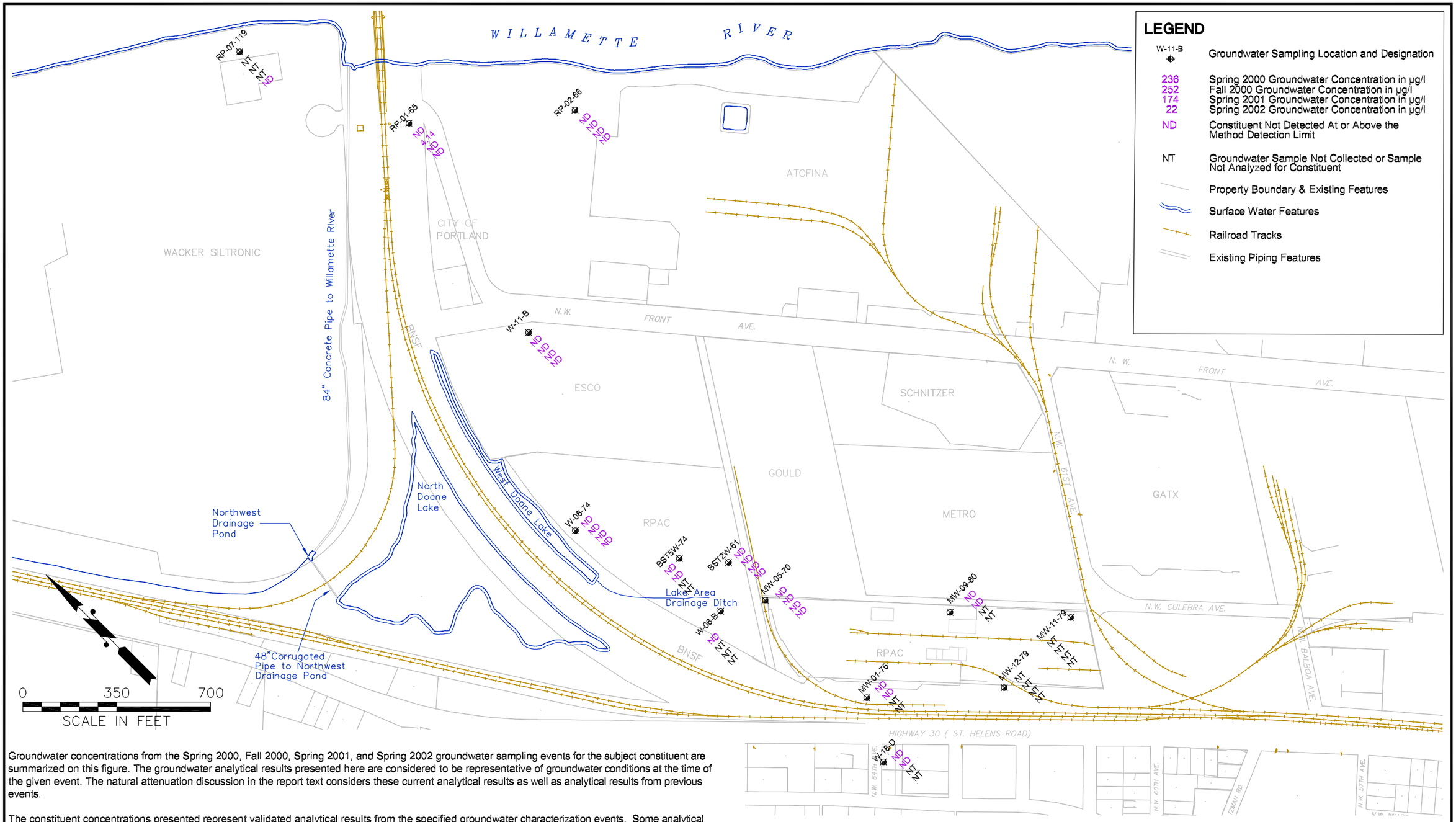
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-2
2,4,5-T
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-02_2-4-5-T.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

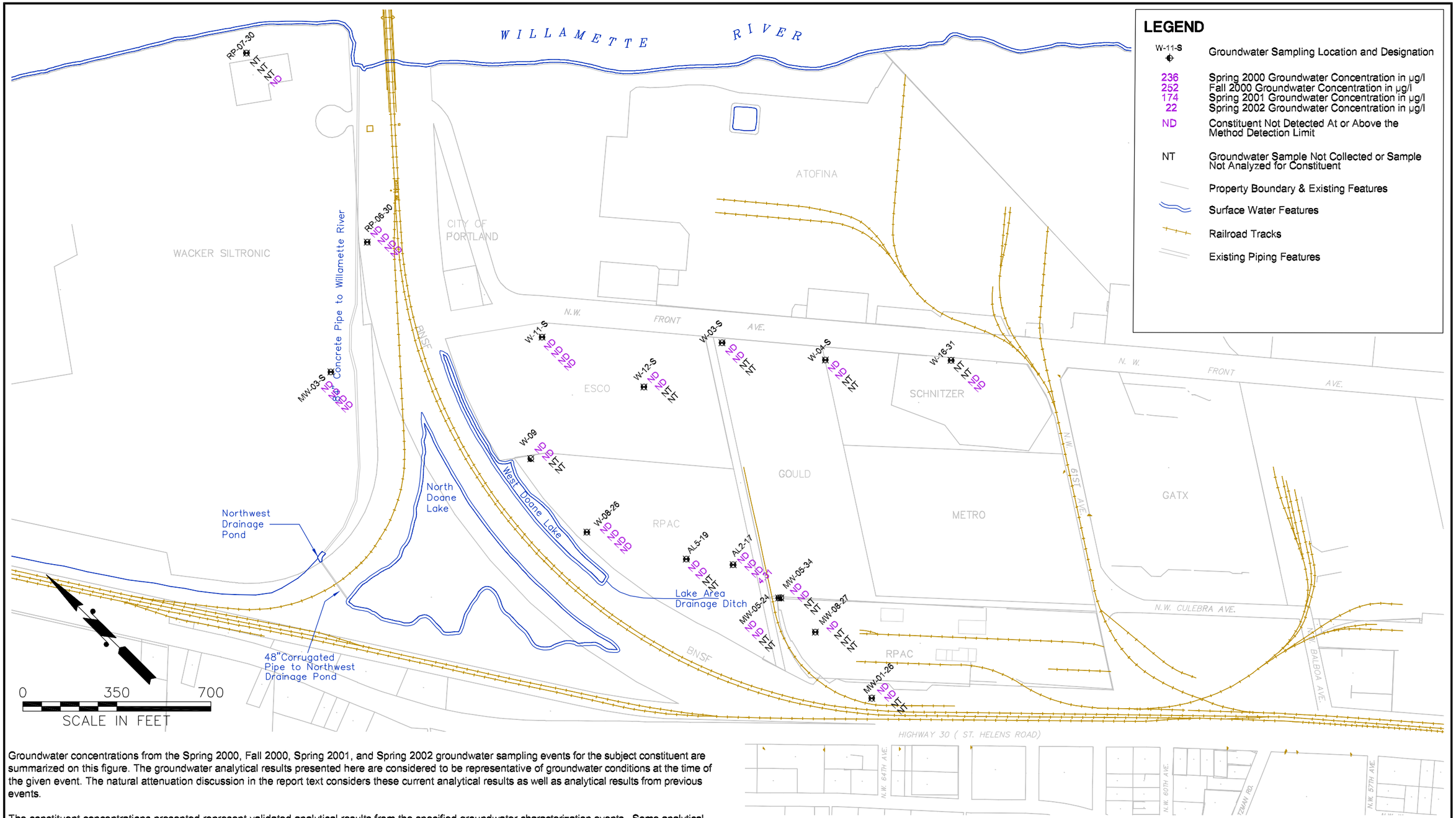
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-3
2,4,5-T
IN GROUNDWATER
BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-03_2-4-5-T.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

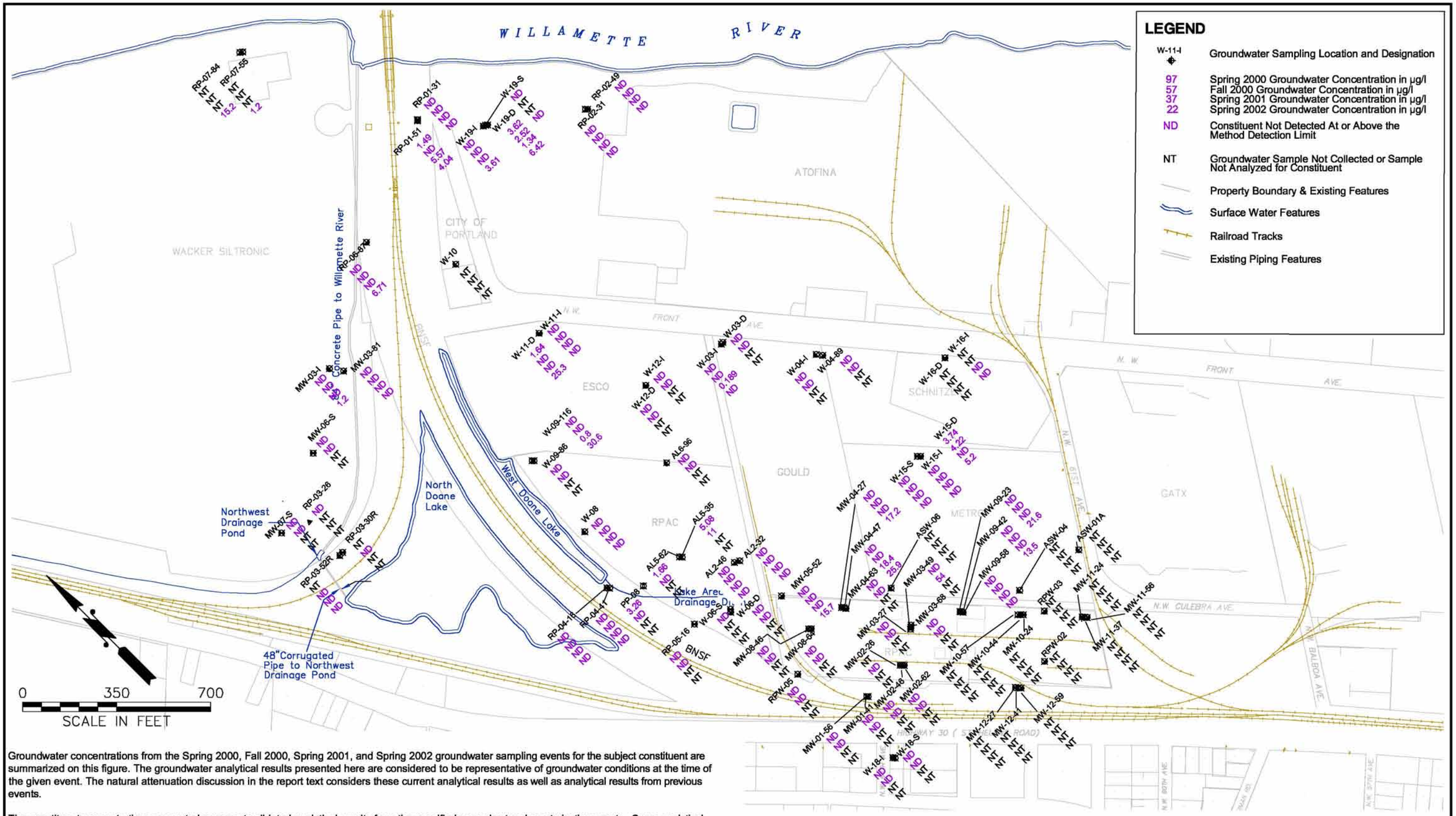
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-4
DICHLOROPROP
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-04_DICHLOROPROP.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

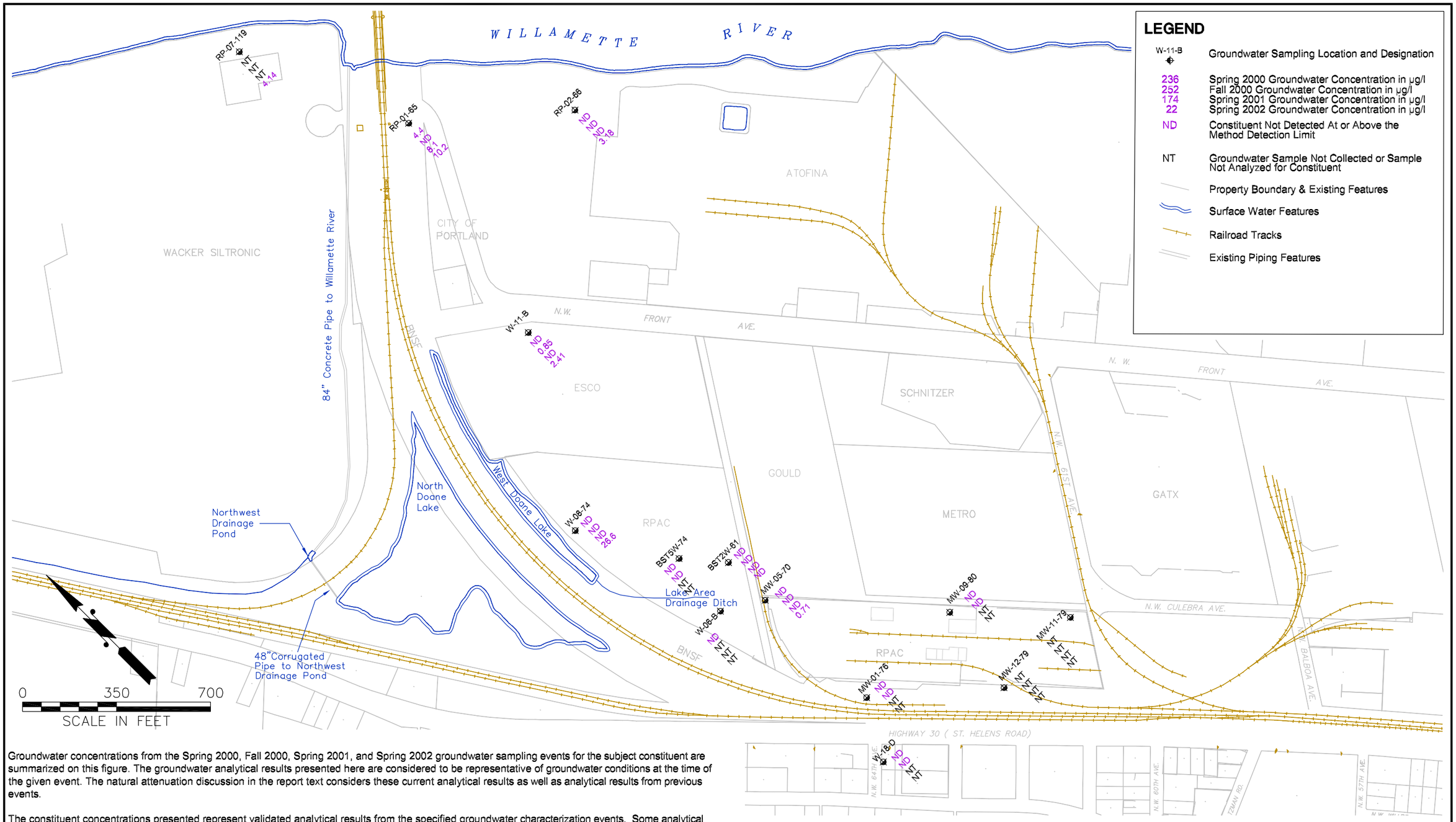
7375 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-5
DICHLORPROP
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-05_DICHLORPROP.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Some analytical results may be qualified as estimated or may be reported from a dilution; qualifiers are not indicated on the figures.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

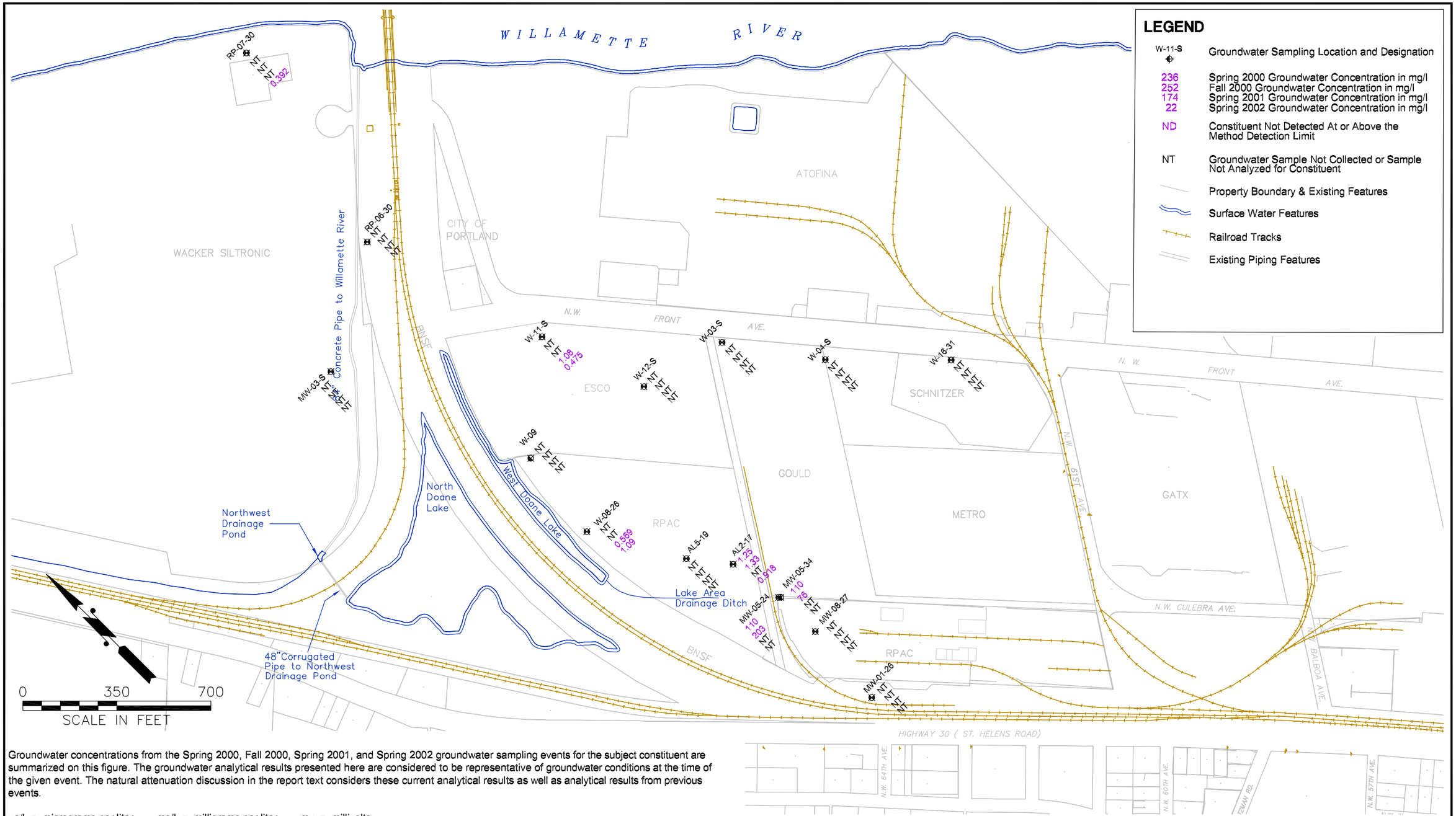
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-6
DICHLORPROP IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-06_DICHLORPROP.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

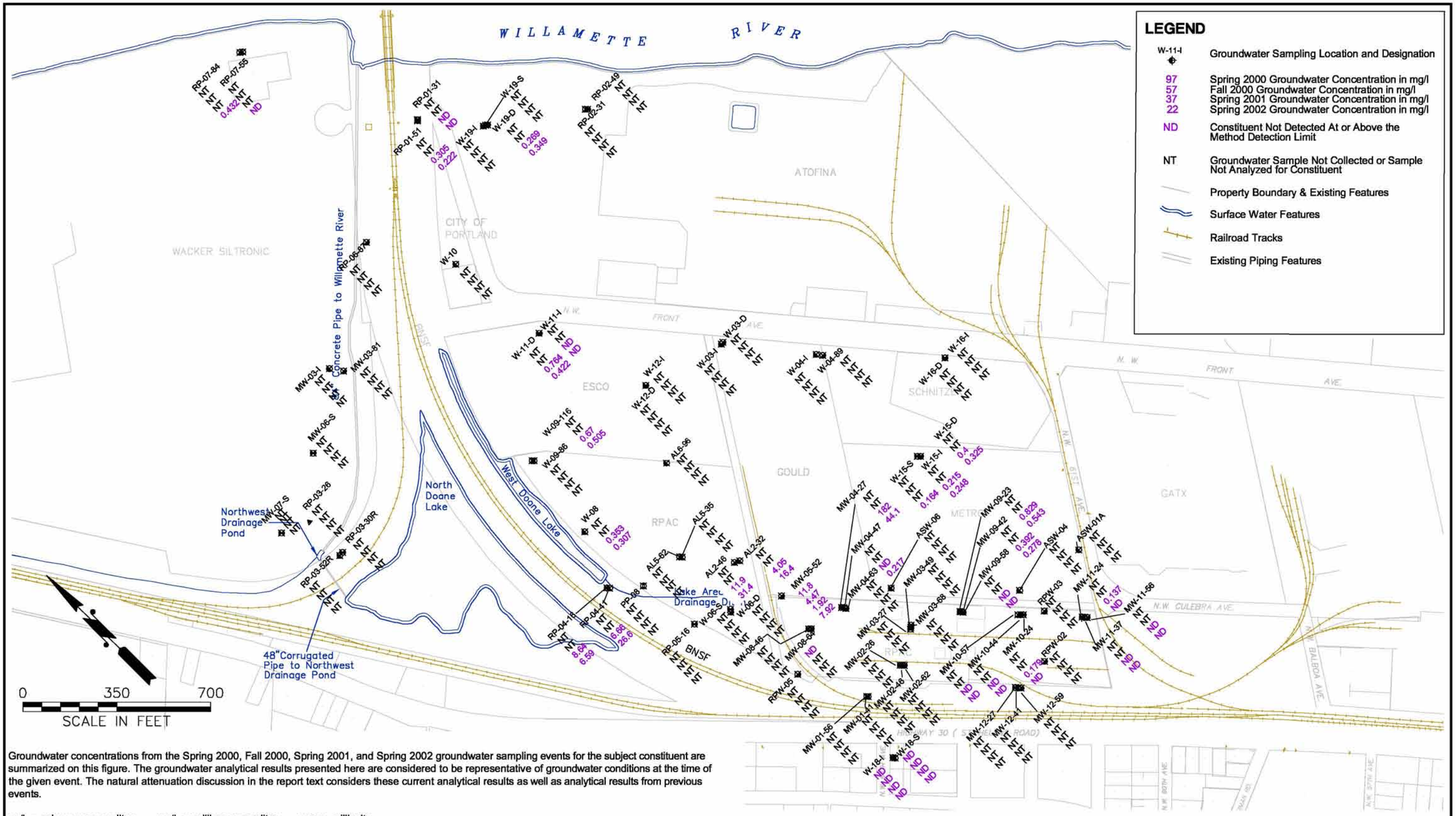
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-7
DIESEL RANGE ORGANICS IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-07_DIESEL.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

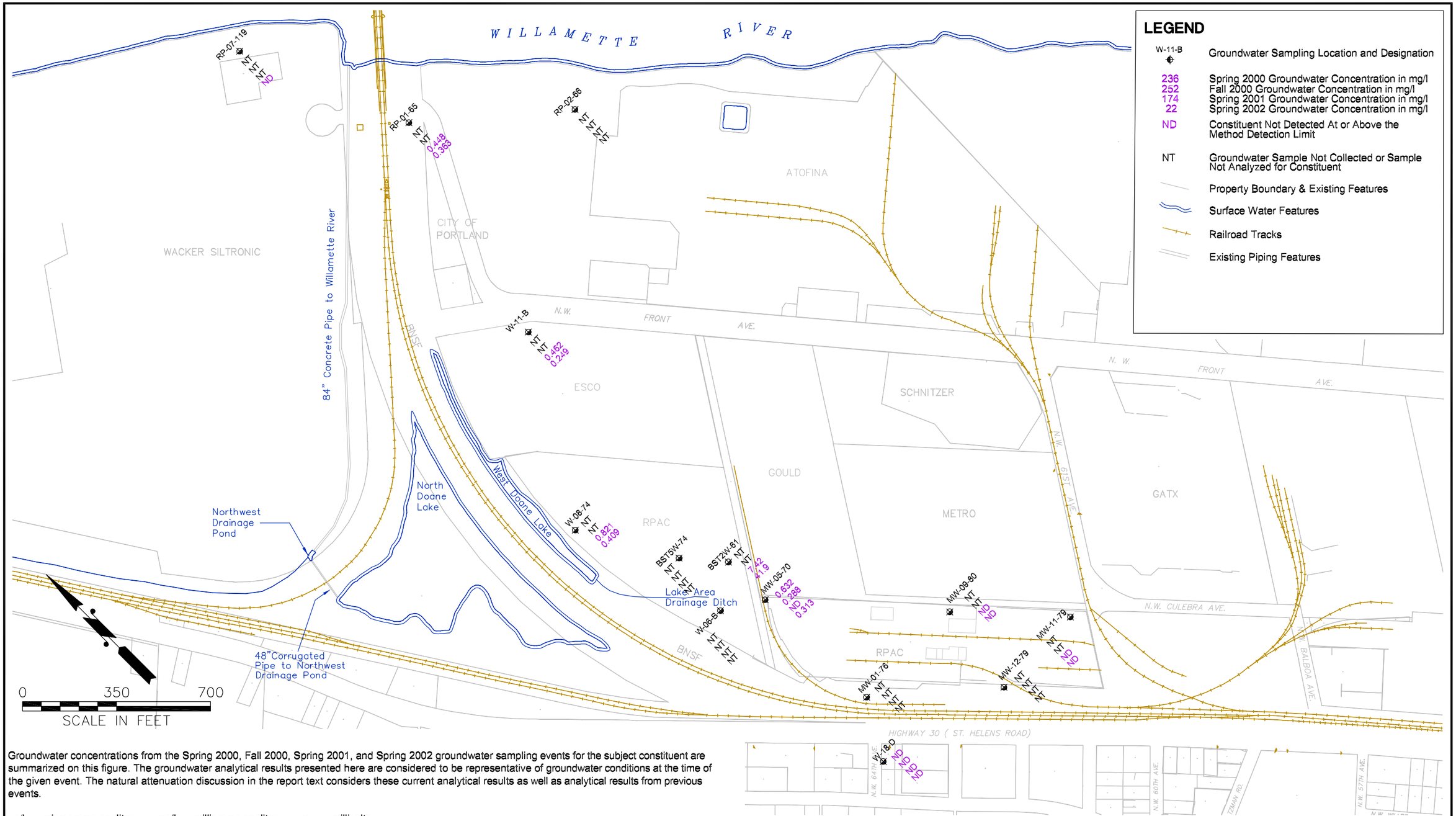
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-8
DIESEL RANGE ORGANICS IN GROUNDWATER ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-08_DIESEL.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

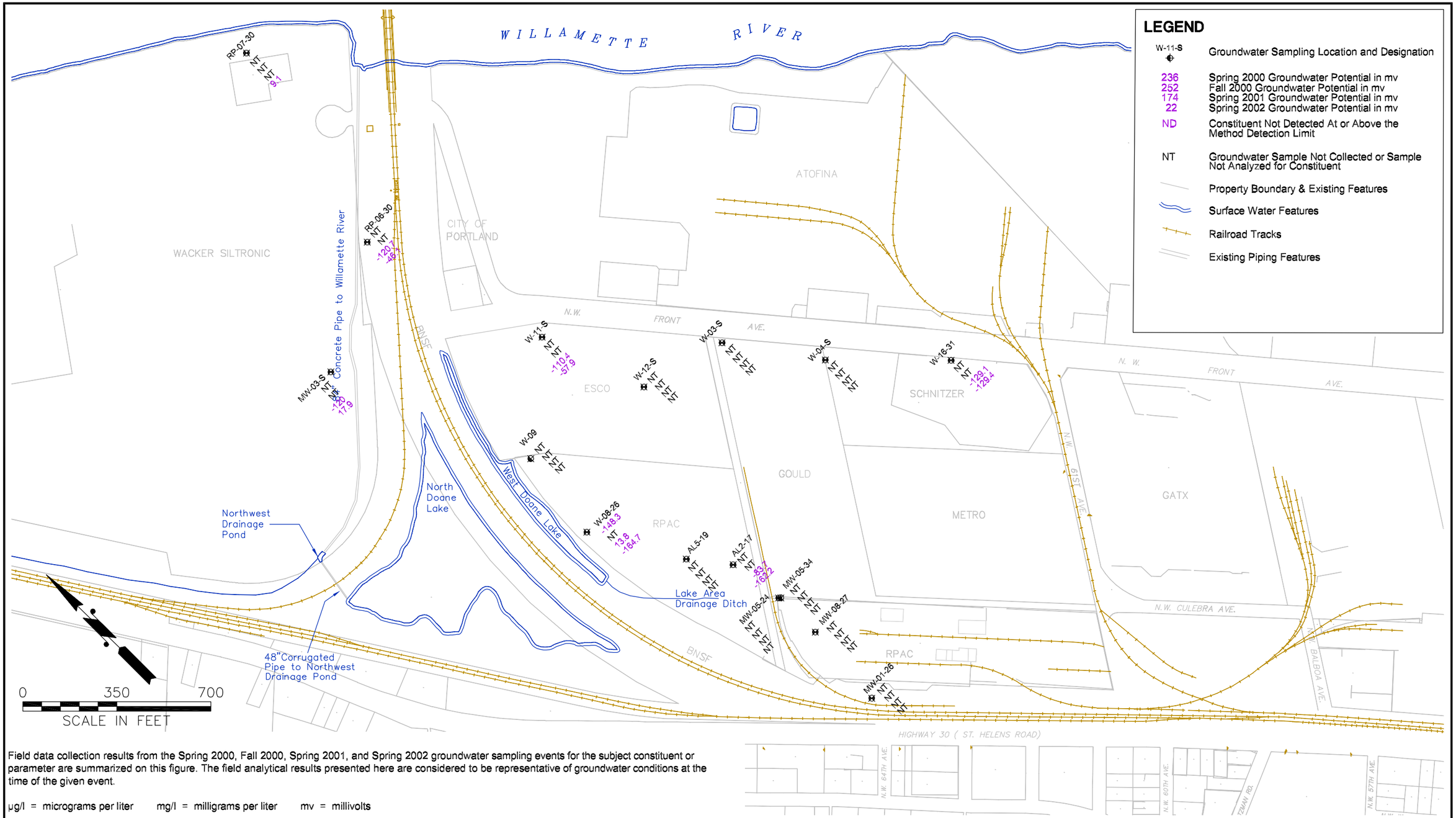
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-9
DIESEL RANGE ORGANICS IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-09_DIESEL.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

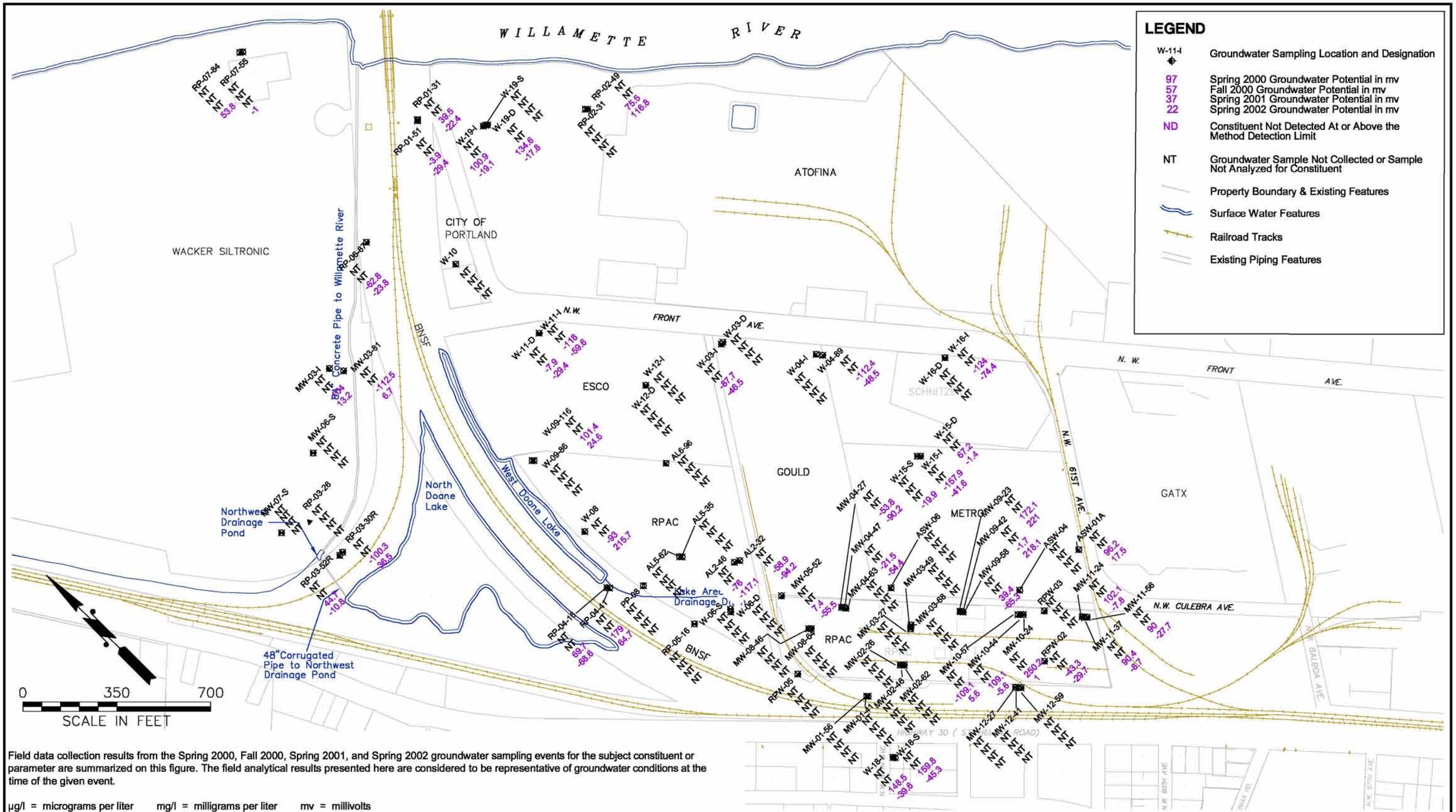
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-10
REDOX POTENTIAL IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-10_ORP.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

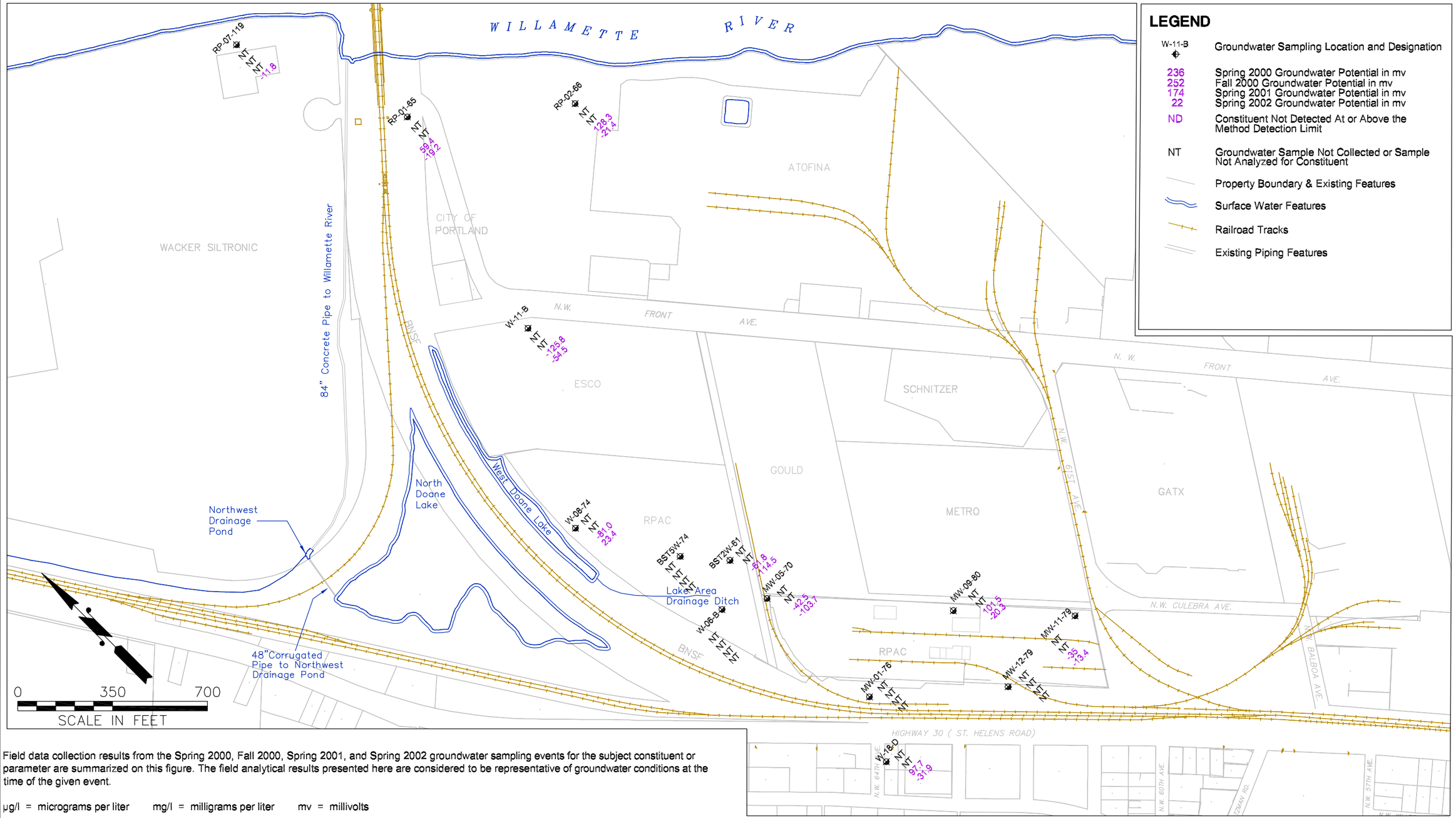
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-11
REDOX POTENTIAL IN GROUNDWATER ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-11_ORP.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

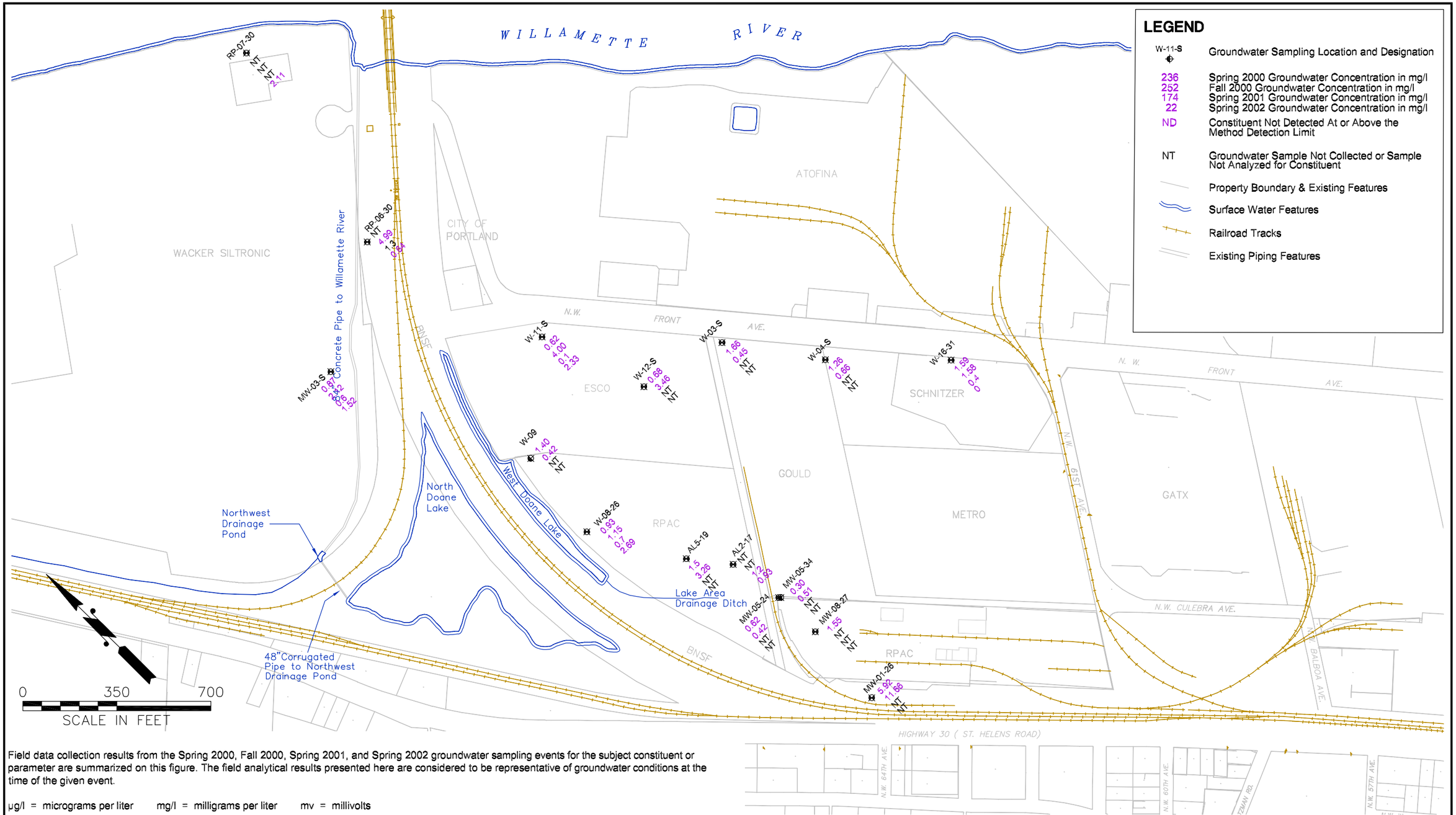
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-12
REDOX POTENTIAL IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-12_ORP.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

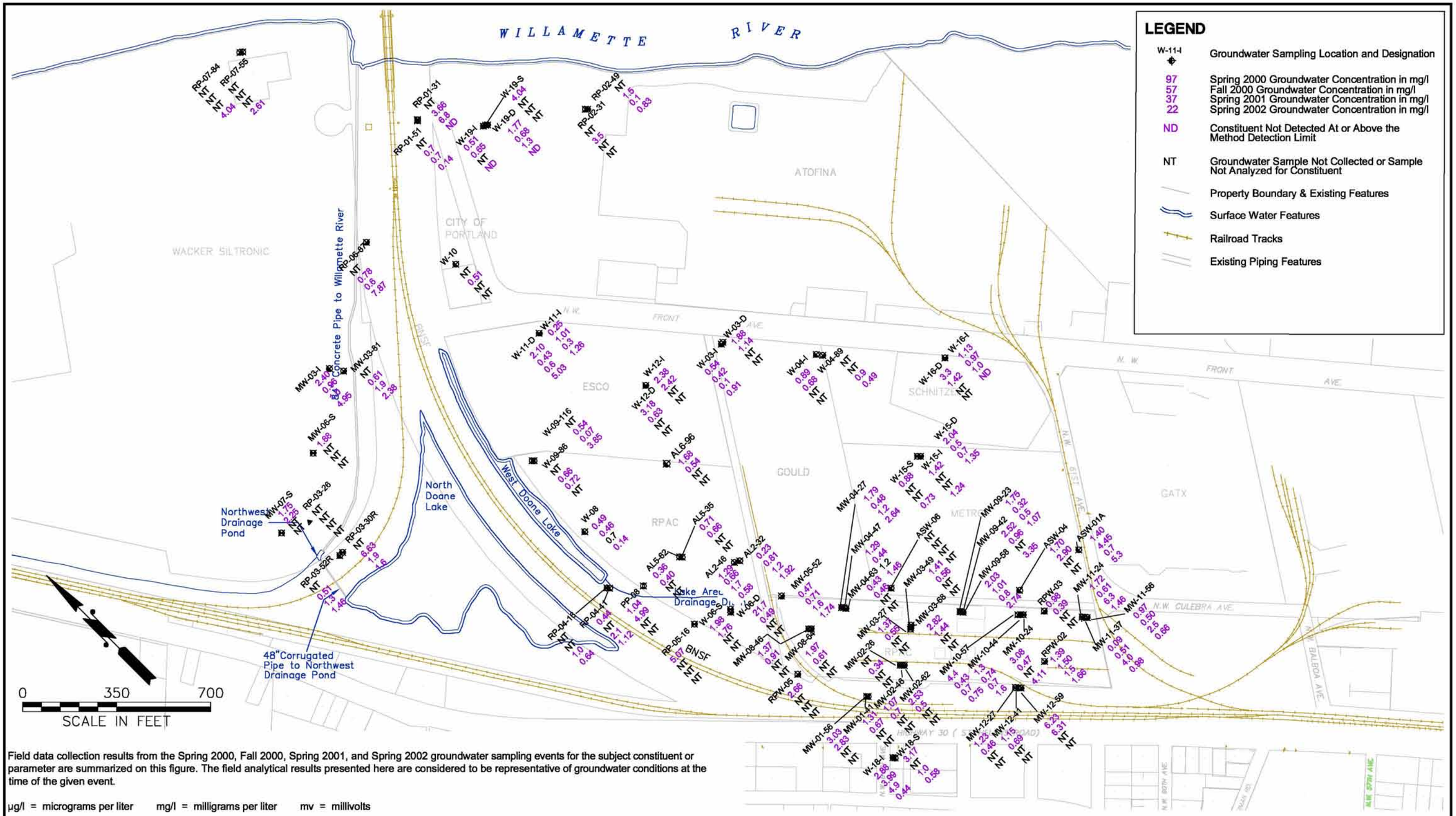
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-13
DISSOLVED OXYGEN IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-13_DO.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

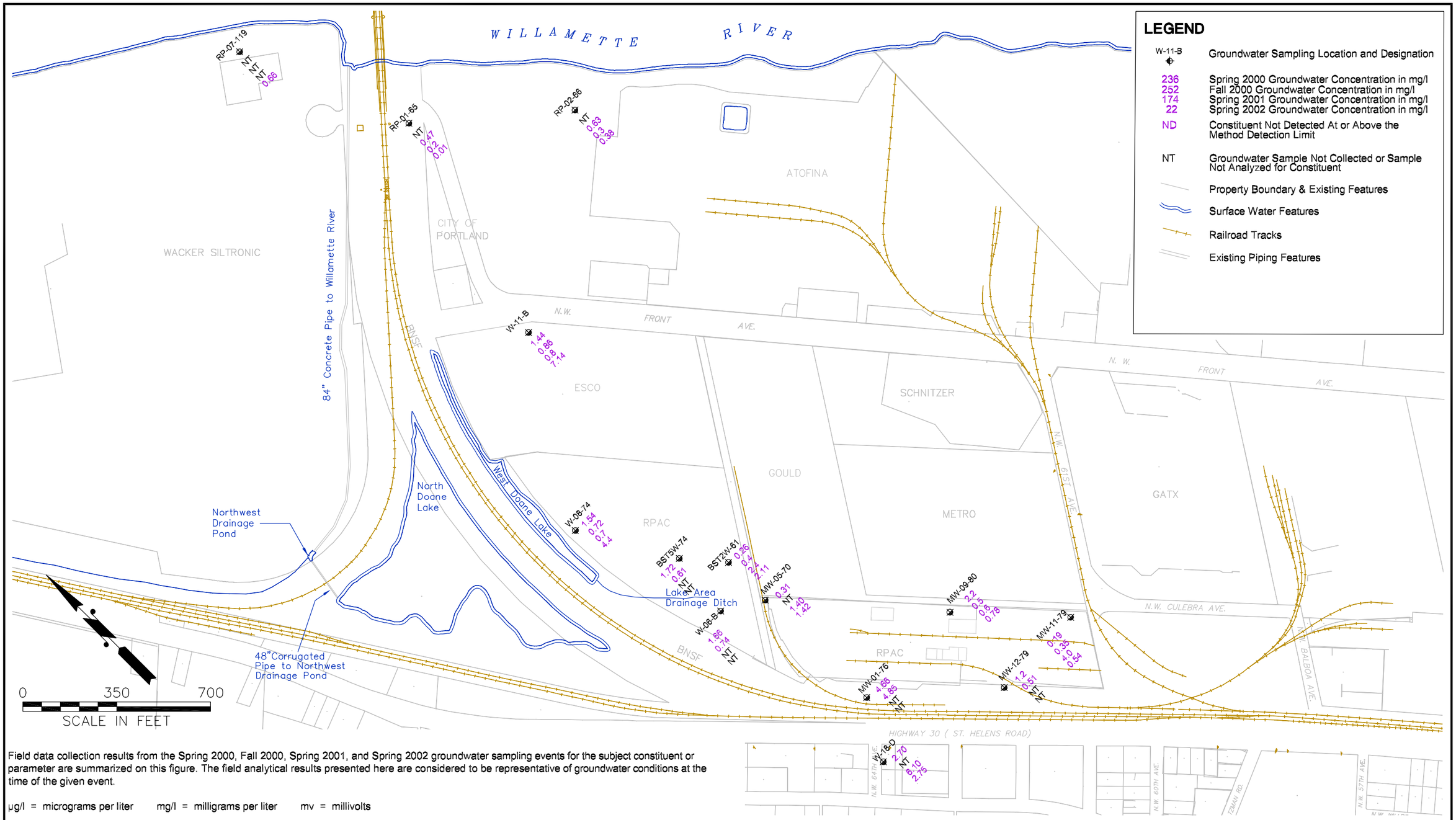
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-14
DISSOLVED OXYGEN IN GROUNDWATER ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-14_DO.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

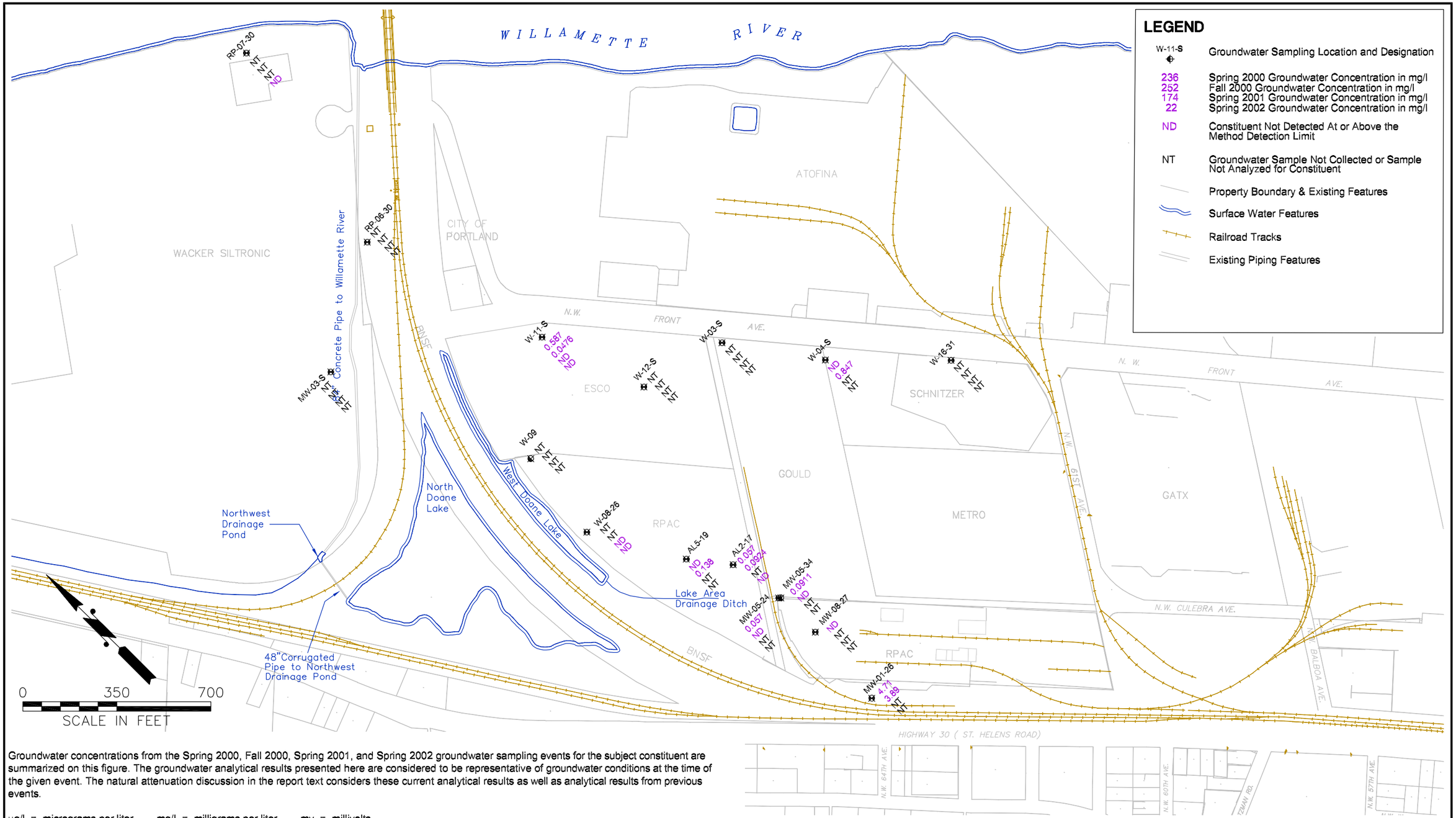
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-15
DISSOLVED OXYGEN IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-15_DO.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

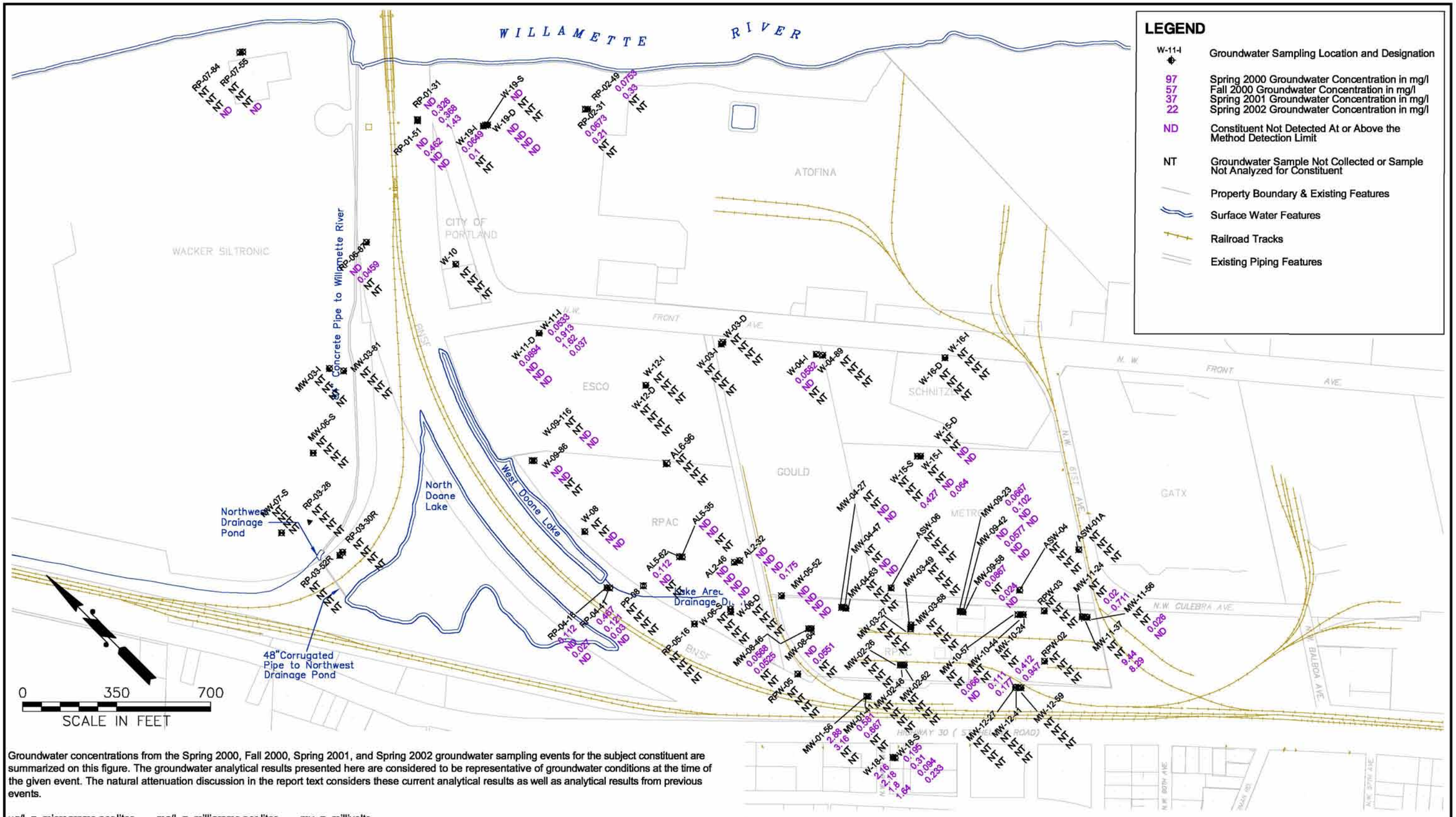
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-16
NITRATE
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-16_NITRATE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

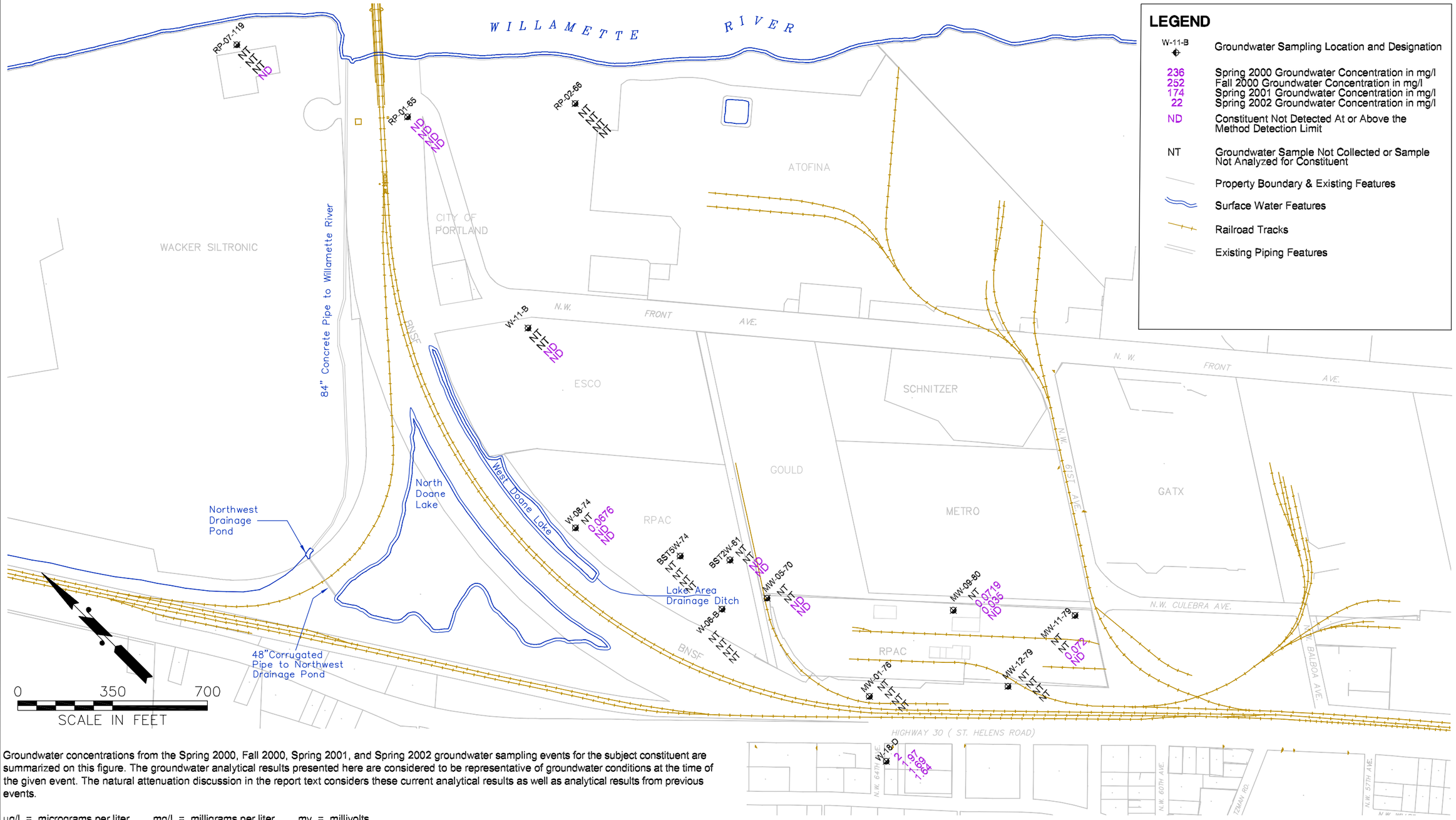
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-17
NITRATE
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-17_NITRATE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

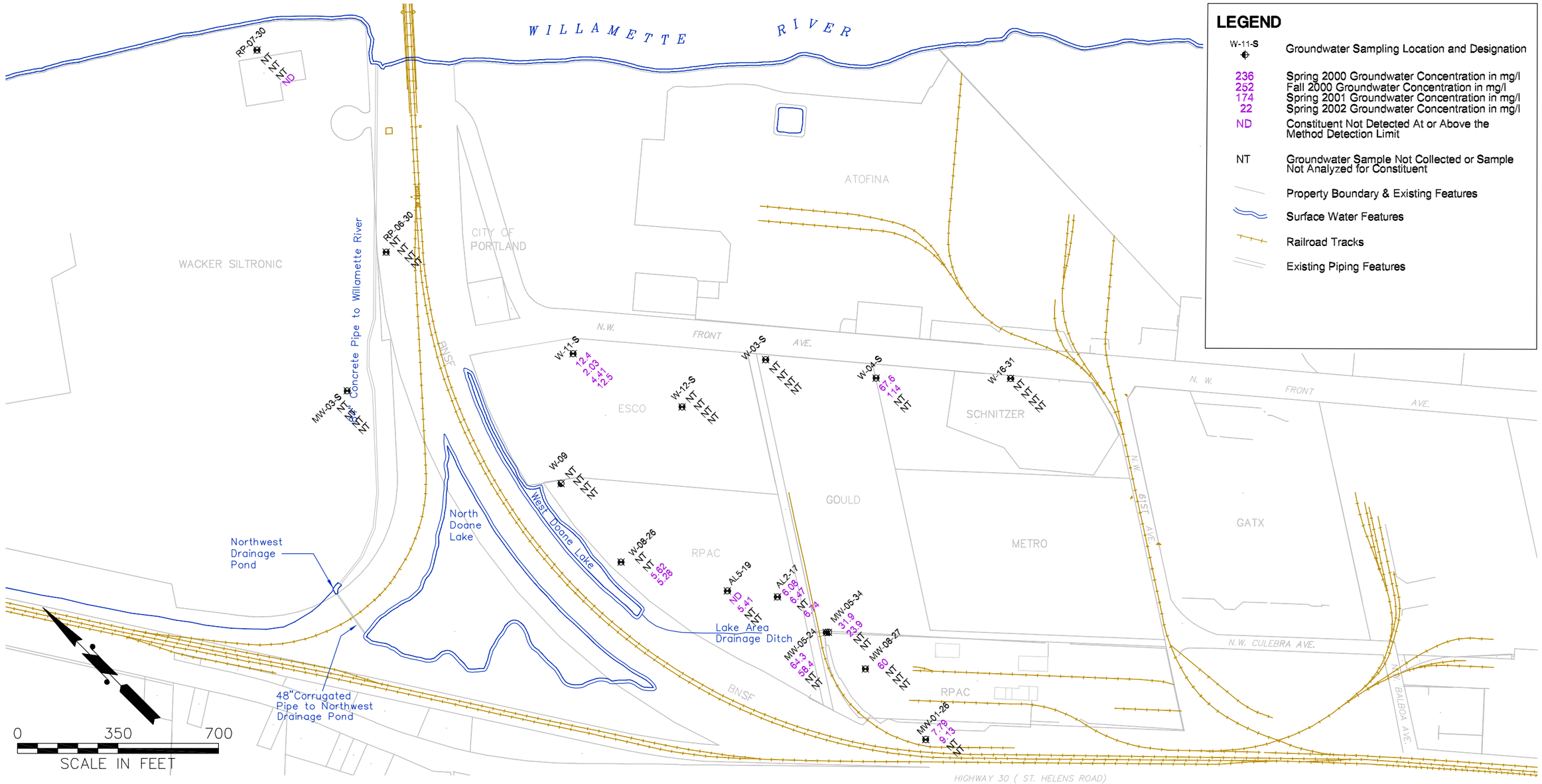
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-18
NITRATE
IN GROUNDWATER
BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-18_NITRATE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

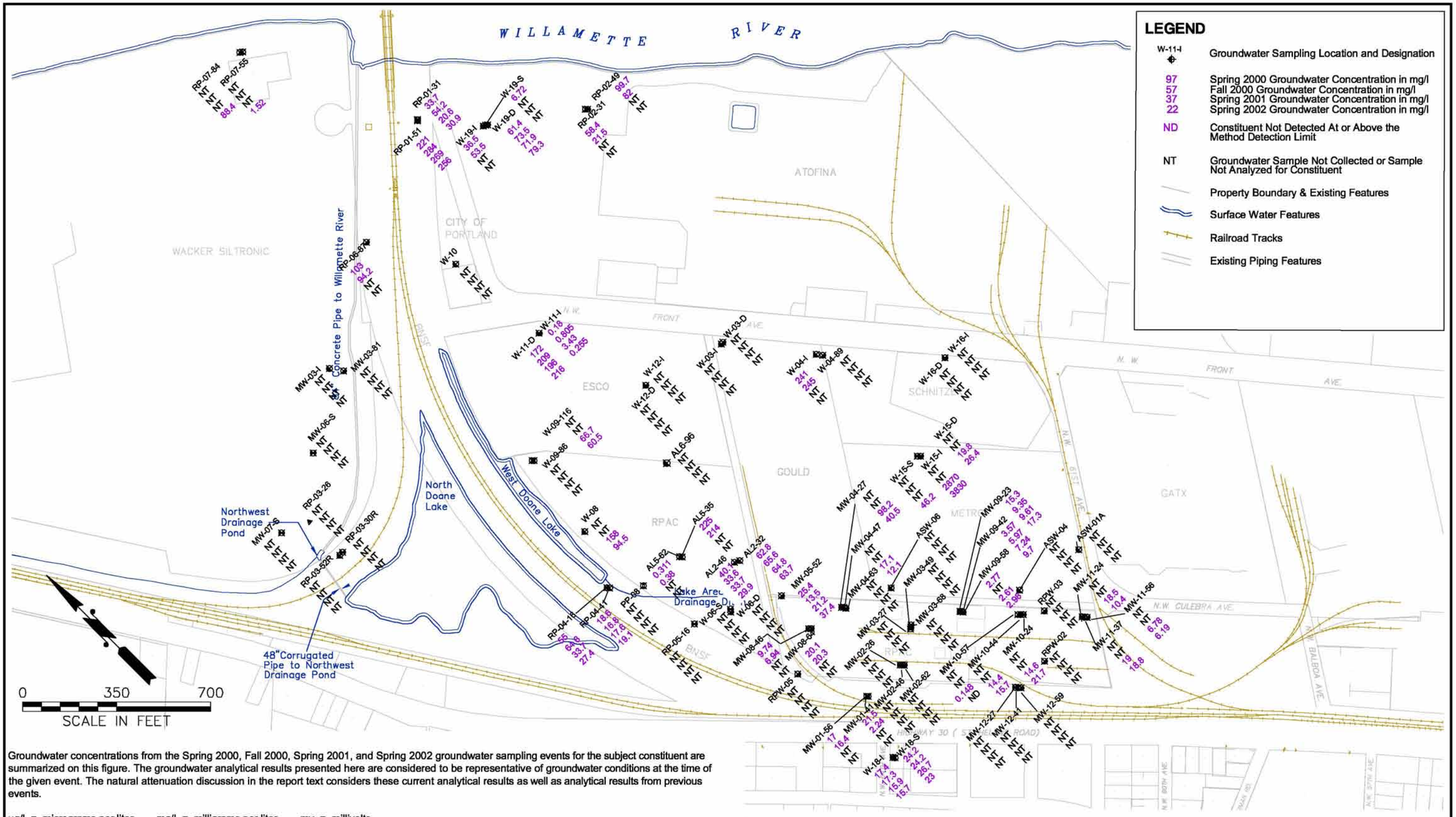
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-19
SULFATE
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX R\FIG_E-19_Sulfate.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

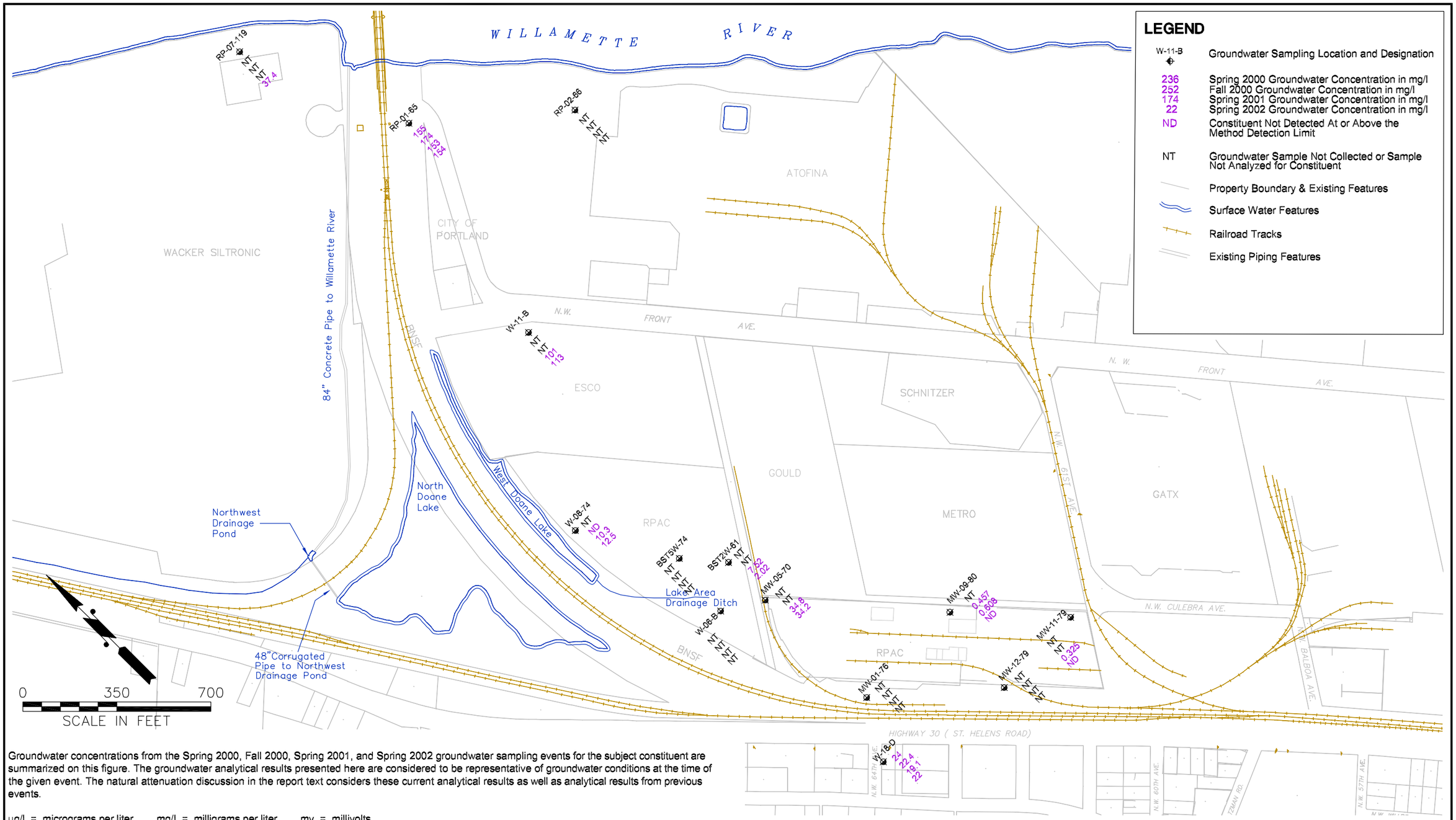
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-20
SULFATE
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-20_SULFATE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

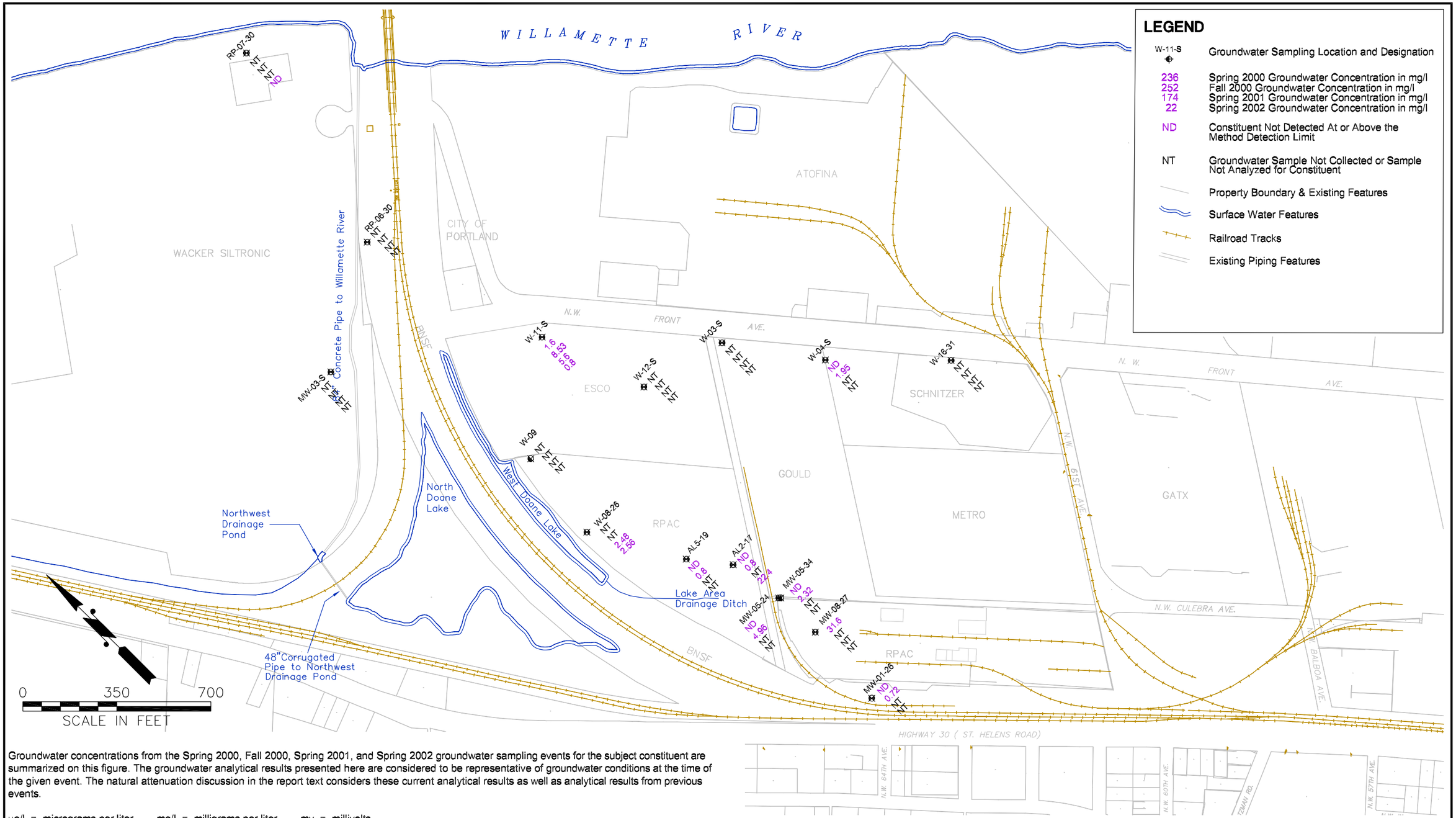
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-21
SULFATE
IN GROUNDWATER
BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-21_SULFATE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

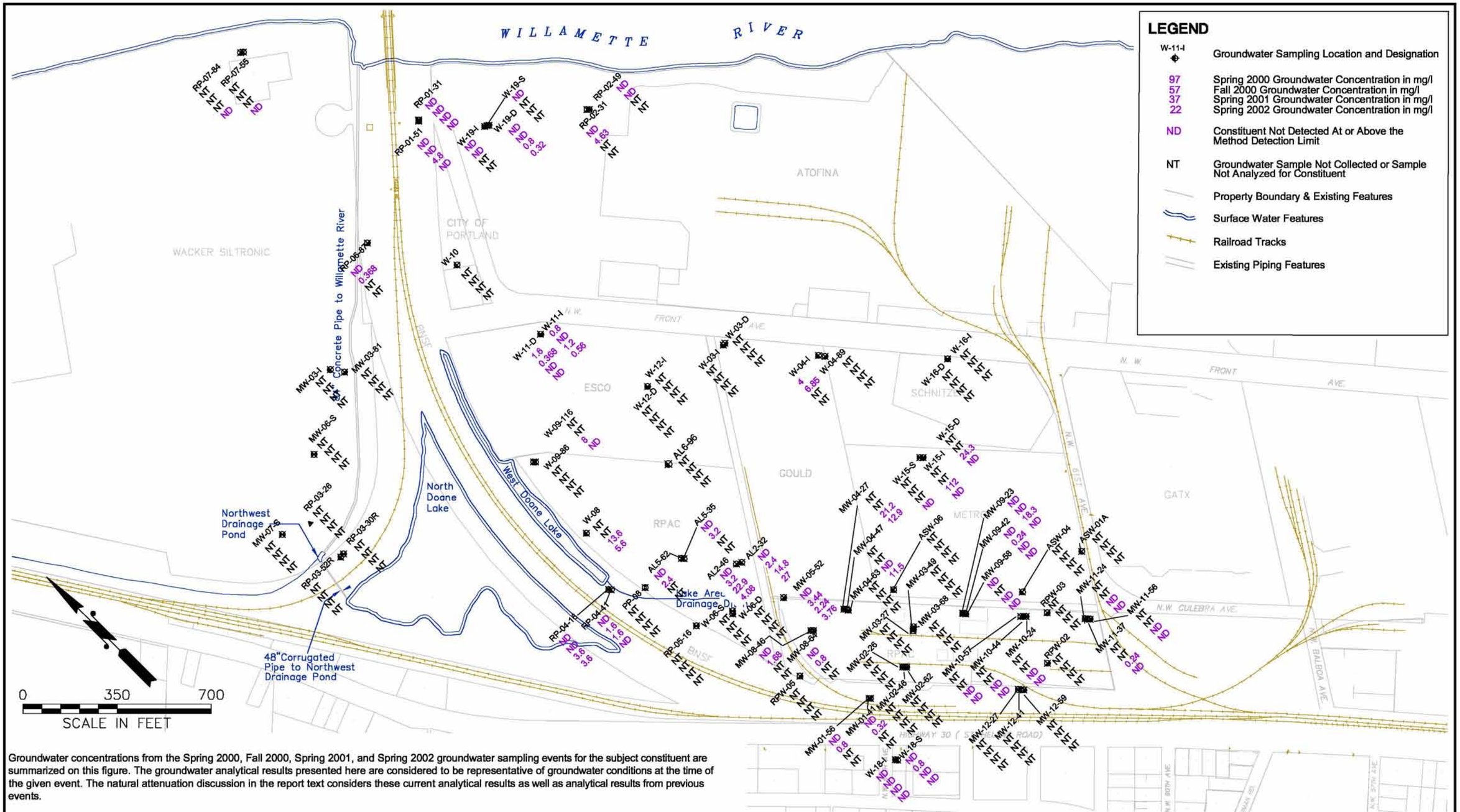
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-22
SULFIDE
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-22_SULFIDE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

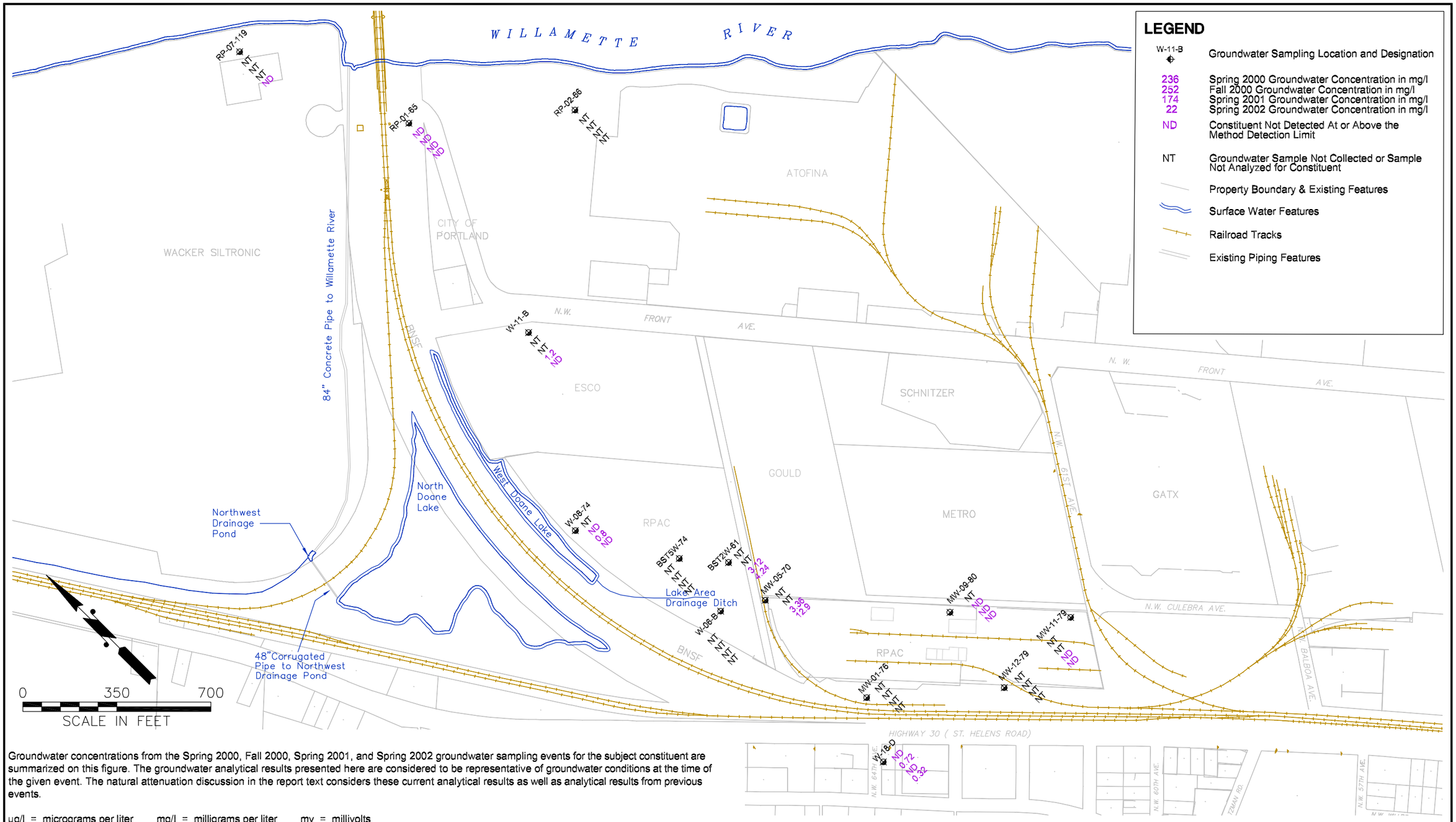
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-23
SULFIDE
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-23_SULFIDE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

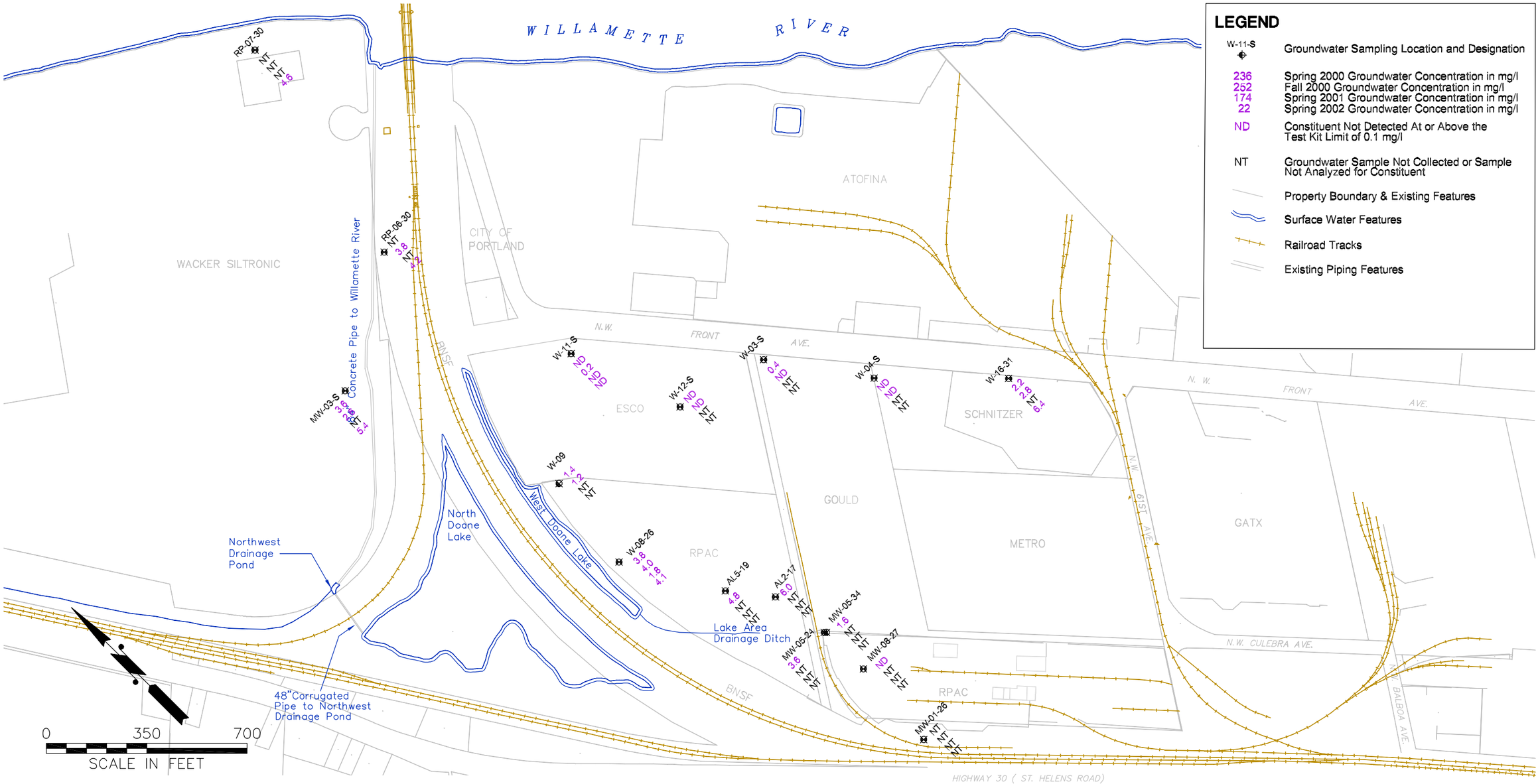
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-24
SULFIDE
IN GROUNDWATER
BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-24_SULFIDE.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

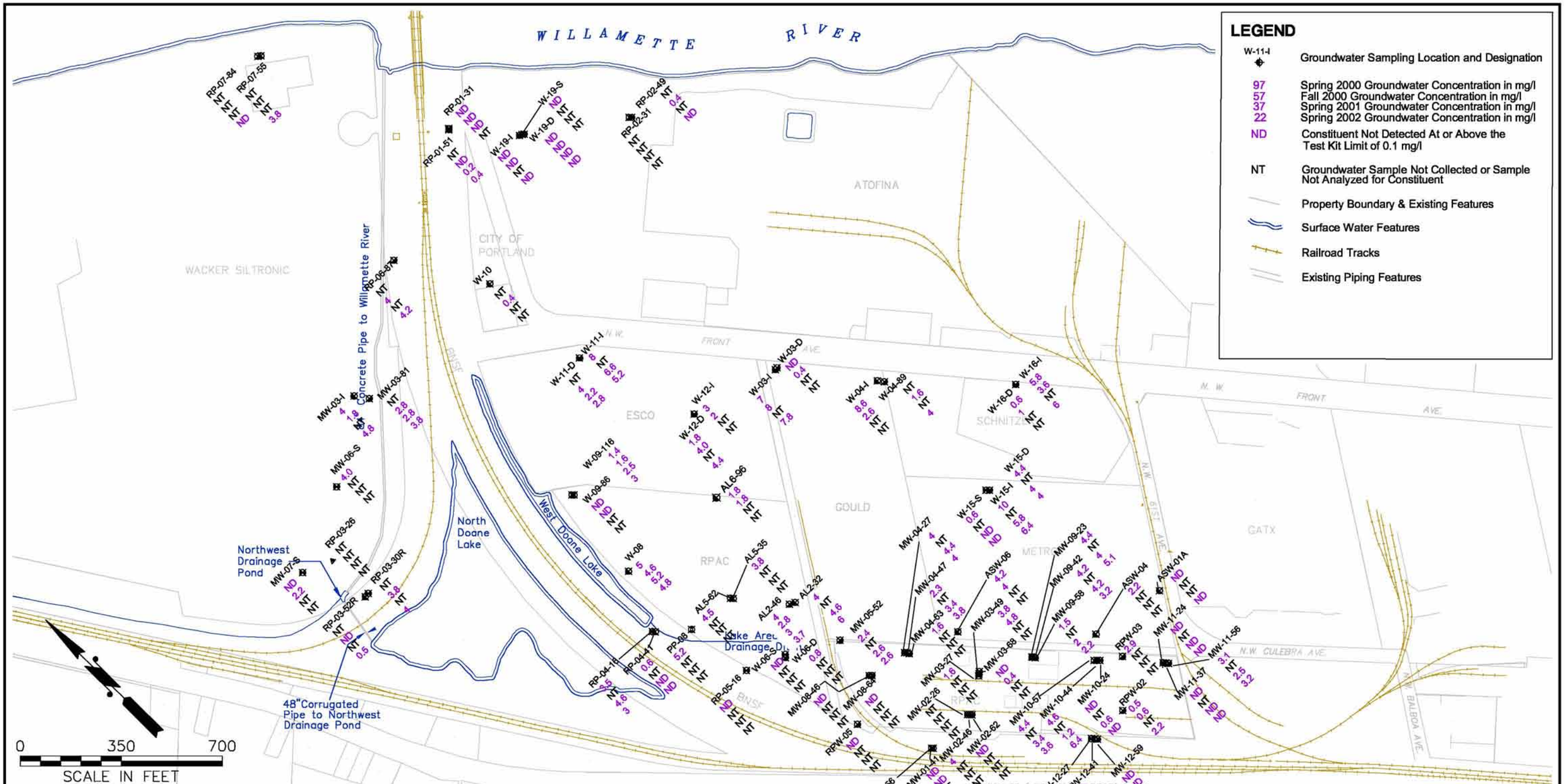
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-25
FERROUS IRON
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-25_FE.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

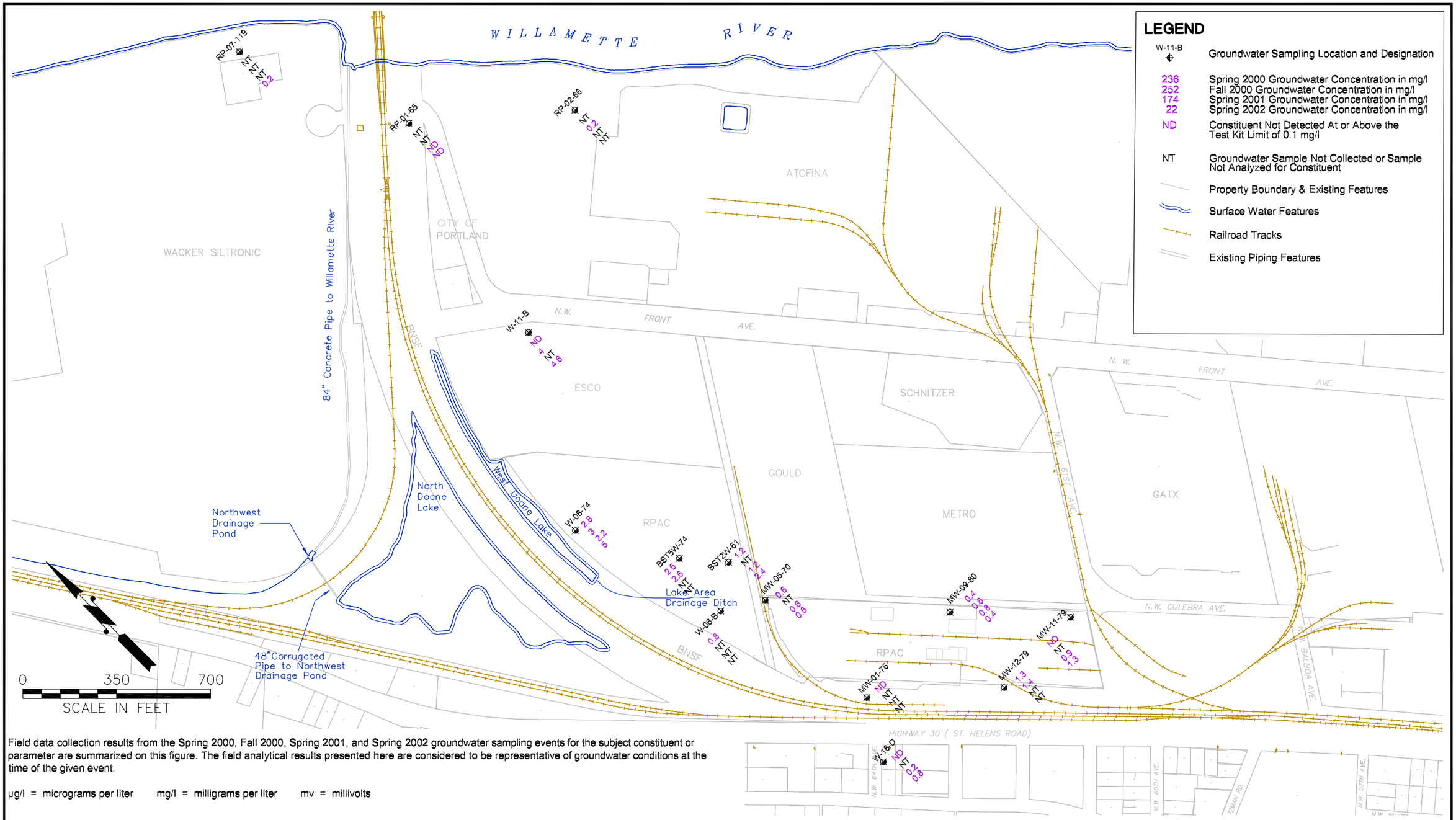
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-26
FERROUS IRON IN GROUNDWATER ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-26_FE.dwg



Field data collection results from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent or parameter are summarized on this figure. The field analytical results presented here are considered to be representative of groundwater conditions at the time of the given event.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

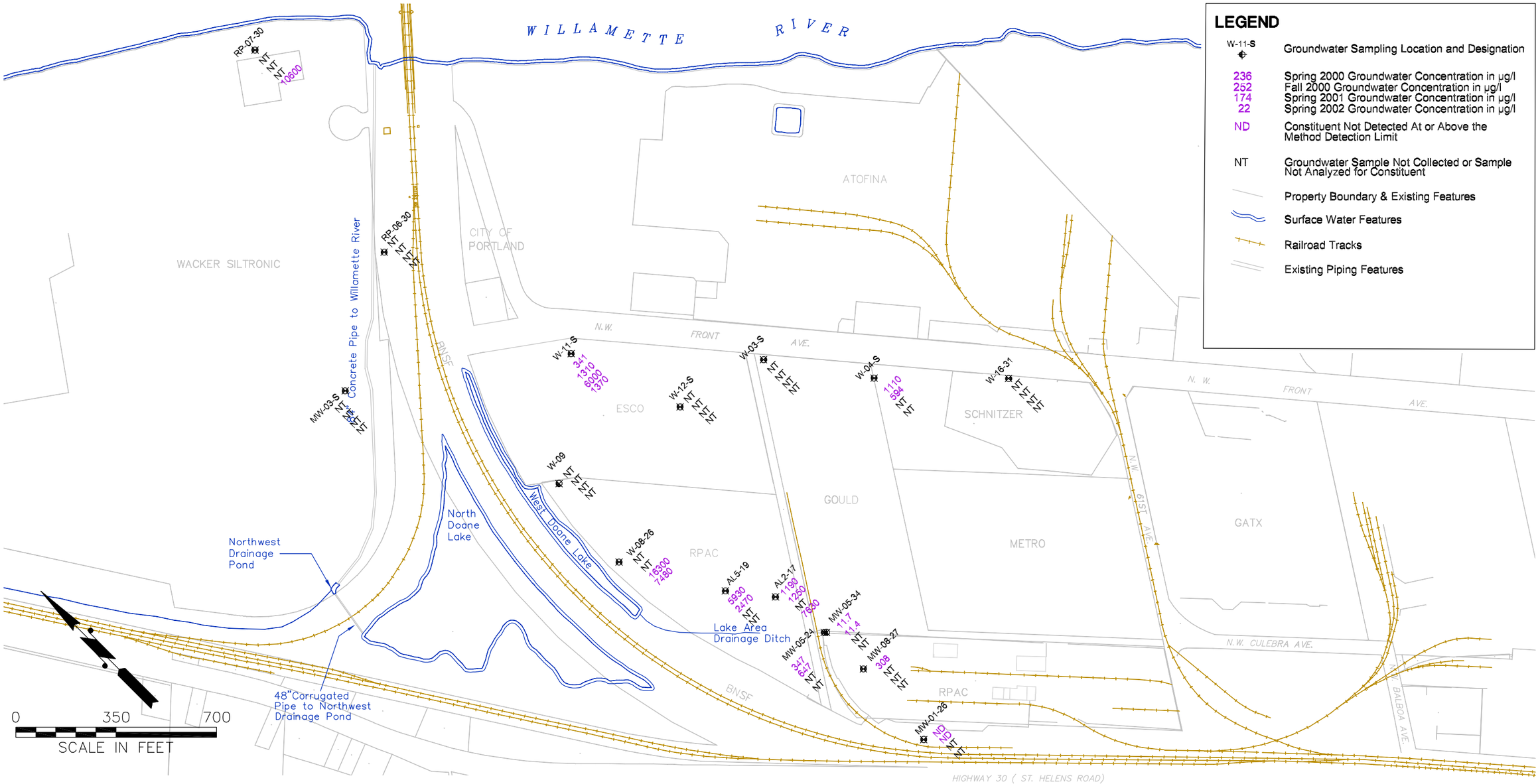
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-27
FERROUS IRON IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-27_FE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

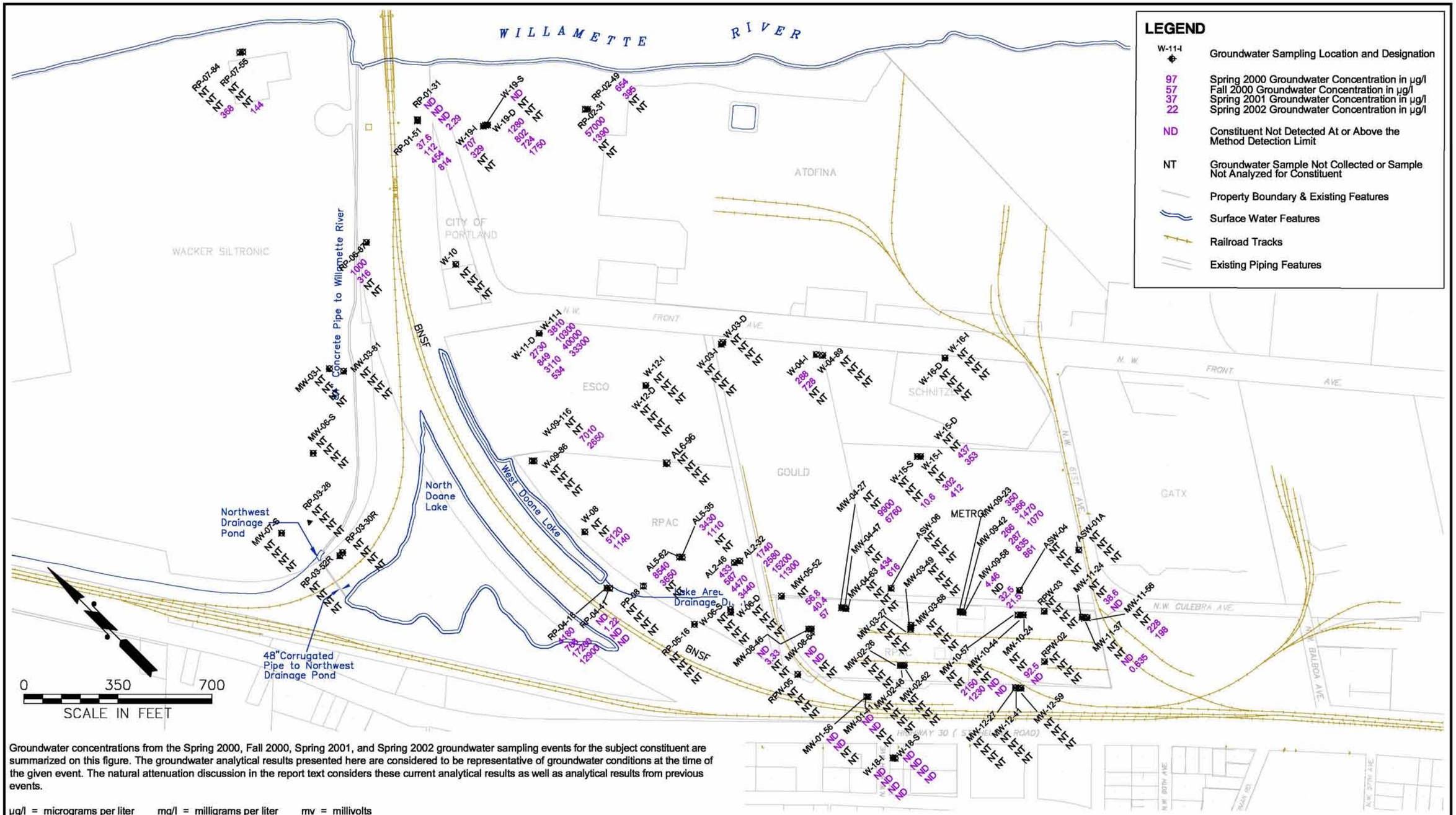
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-28
METHANE
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-28_METHANE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

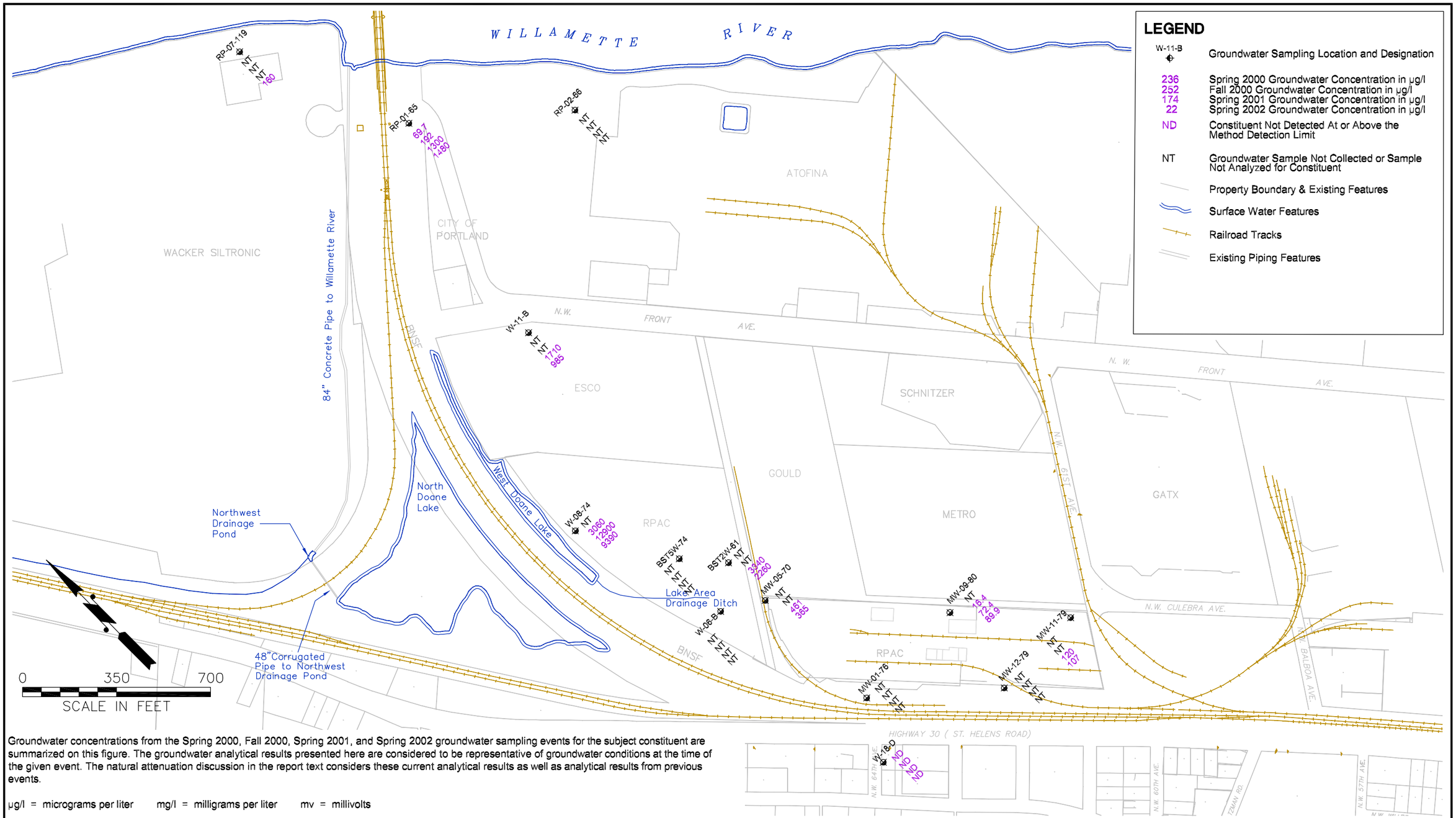
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-29
METHANE
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-29_METHANE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

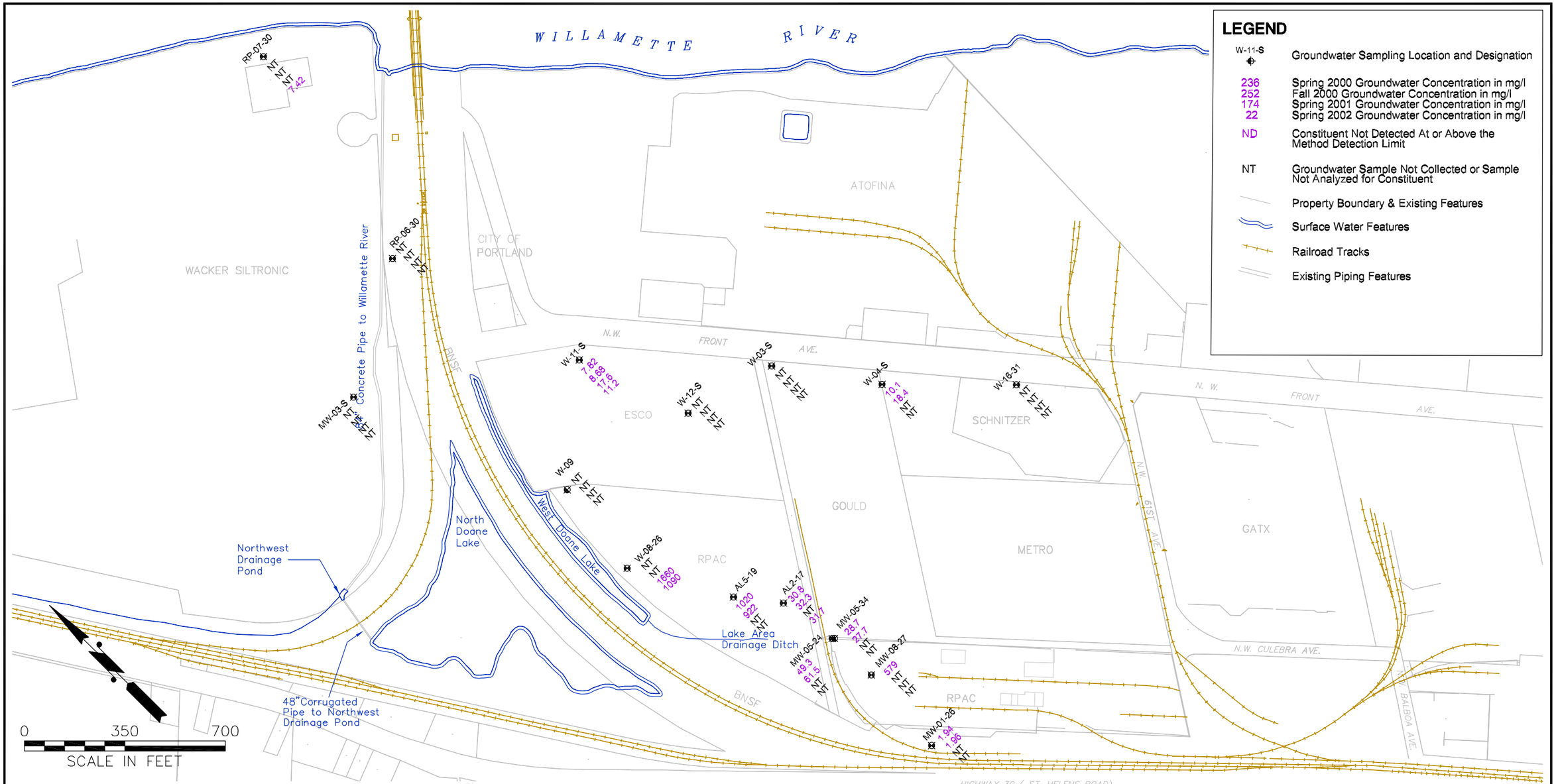
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-30
METHANE
IN GROUNDWATER
BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-30_METHANE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

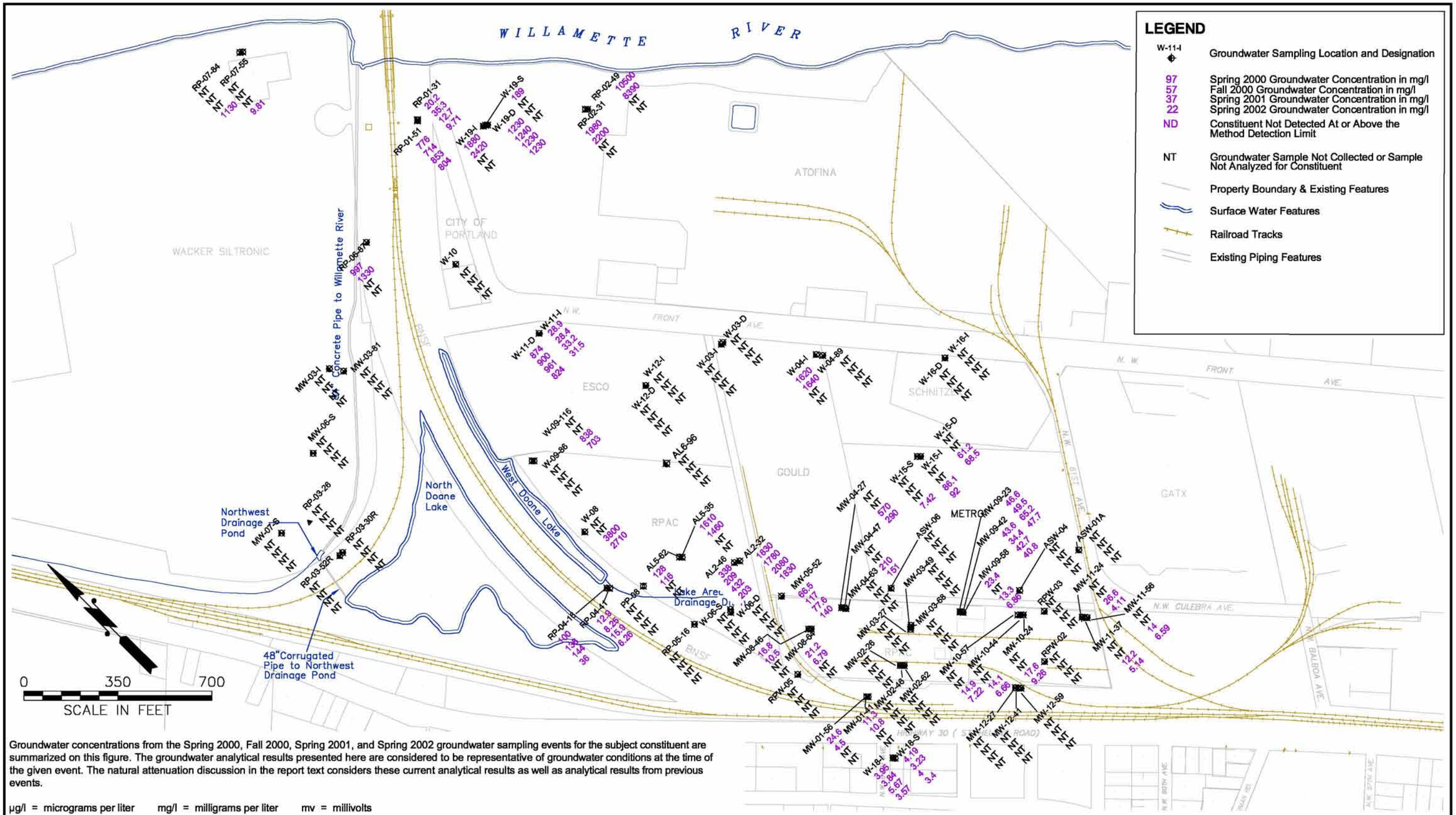
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-31
CHLORIDE
IN GROUNDWATER
FILL / SHALLOW ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-31_CHLORIDE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

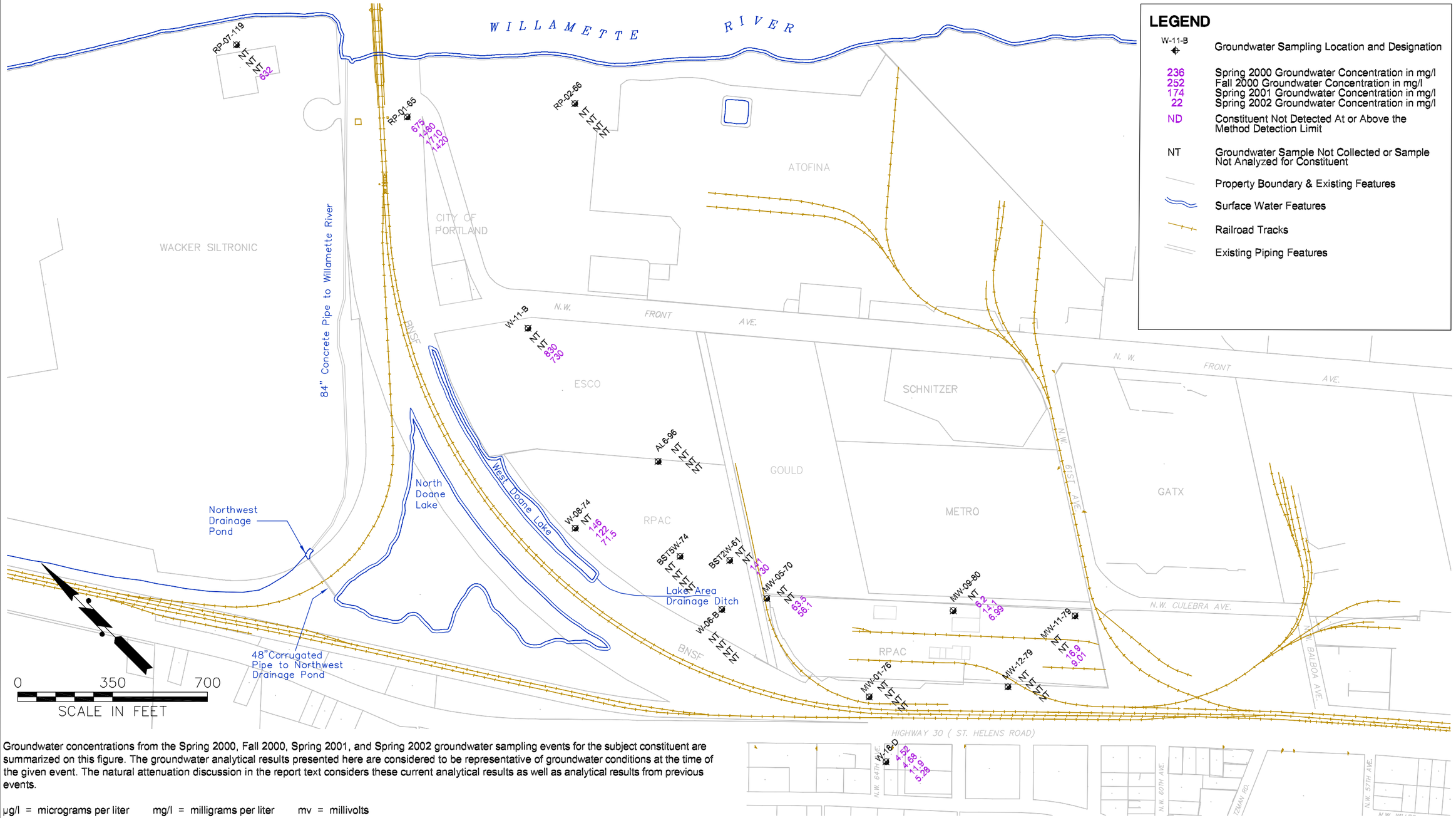
7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ\HWN\TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-32
CHLORIDE
IN GROUNDWATER
ALLUVIUM ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX \FIG_E-32_CHLORIDE.dwg



Groundwater concentrations from the Spring 2000, Fall 2000, Spring 2001, and Spring 2002 groundwater sampling events for the subject constituent are summarized on this figure. The groundwater analytical results presented here are considered to be representative of groundwater conditions at the time of the given event. The natural attenuation discussion in the report text considers these current analytical results as well as analytical results from previous events.

µg/l = micrograms per liter mg/l = milligrams per liter mv = millivolts

amec

7376 S.W. Durham Road
Portland, OR, U.S.A. 97224

W.O.	0-61M-10703T43
DESIGN	TARW
DRAWN	BRJ/HWN/TS
DATE	SEPTEMBER 2002
SCALE	1"=350'

FIGURE E-33
CHLORIDE IN GROUNDWATER BASALT ZONE

RPAC-PORTLAND SITE

AMEC DRAWING NO. K:\10000\10700\10703\Task 43 Groundwater Monitoring\GW Char Report\dwg\APPENDIX E\FIG_E-33_CHLORIDE.DWG