



May 17, 2002

25-03

Mr. Mark Henson
Burns Philp Foods, Inc.
240 Larkin Williams Industrial Court
Fenton, MO 63026

UST and AST Removal and
Voluntary Cleanup Action Report
1115 Zehnder Street
Sumner, Washington
URS Job No. 53-32160006.00

Dear Mr. Henson:

URS Corporation (URS) is pleased to present our final report for the above-referenced project. This work was completed in accordance with our proposal dated August 12, 1999, and change order dated November 14, 2000 and authorized by Burns Philp.

Please do not hesitate to contact us if you have any questions regarding this report or require additional information.

Very truly yours,
URS CORPORATION

Vance Atkins
Project Hydrogeologist

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Senior Hydrogeologist

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This report presents the results of a voluntary cleanup actions performed at the Fleischmann's Yeast Production Plant located at 1115 Zehnder Street in Sumner, Washington (Figure 1). Two 15,000-gallon underground storage tanks (USTs) and one 500-gallon (above-ground storage tank AST), associated concrete pads, vaults, plumbing, and associated soils affected by elevated levels of petroleum hydrocarbons were removed during this cleanup action. The USTs were located adjacent to the east side of the facility power plant inside of a double-chambered concrete vault (Figure 2). The USTs reportedly stored heavy oil used to fuel boilers in a former building adjacent to the south side of the UST vault, which has been demolished. The USTs operated from approximately 1913 to the 1970s. The AST was located to the east of the former yeast production plant and was used to fuel a standby generator for fire control. Releases occurred from the UST and AST systems and a cleanup was performed under the voluntary cleanup program (VCP). The cleanup action was conducted consistent with the applicable requirements of the State of Washington Model Toxics Control Act (MTCA), WAC 173-340, and the Washington Department of Ecology (Ecology) "Guidance for Remediation of Petroleum Contaminated Soils" (Ecology, 1994). The USTs were located in subsurface vaults, and therefore were exempt from UST regulations and Ecology's UST site assessment requirements (Ecology, 1991).

1.1 SITE DESCRIPTION

The total area of the site is approximately 14 acres and is in the process of being subdivided into two parcels: (1) the Yeast Plant (YP) covering approximately 12 acres of land in the southern and eastern portions of the property, which includes the structures associated with the former yeast plant and the office building; and (2) the Vinegar Plant (VP) in the northeast corner of the property, which covers approximately 2 acres and is occupied by the operating vinegar plant. The yeast plant ceased production in 1995. The site is currently owned by Burns Philp Food, Inc. (Burns Philp).

1.2 TOPOGRAPHY

The subject property is situated approximately 60 feet above mean sea level (msl) and the surface conditions are generally flat (Figure 1). The White River is the nearest surface water and is located approximately 500 feet west of the subject property.

1.3 GEOLOGY AND HYDROGEOLOGY

The subject property is located within the Stuck/White River Valley and is underlain by Quaternary alluvium composed primarily of stratified clay, silt, sand, and gravels (Walters and Kimmel, 1968). Groundwater occurs at shallow depths within the White River Valley alluvium, typically occurring at 4 to 18 feet below ground surface (bgs). Monitor wells installed around the remediation area have a measured groundwater depth of approximately 5.8 feet to 6.6 feet bgs. The shallow groundwater flow direction at the site is southerly.

1.4 PREVIOUS INVESTIGATIONS

Three phases of investigation conducted in 1998 and 1999 in the vicinity of the USTs and AST identified petroleum hydrocarbon contamination (diesel-and heavy oil-range) of the soil and

groundwater at concentrations exceeding the MTCA Method A soil cleanup levels. The elevated concentrations of petroleum hydrocarbons were attributed to historic releases from the USTs and AST. The USTs were reported to have been previously cleaned and to contain only water. A summary of the results of these investigations is described below.

1.4.1 1998 Hart Crowser Investigation

Hart Crowser completed a Phase II Environmental Site Assessment, in June, 1998 (Hart Crowser, 1998). This assessment included results of a preliminary subsurface investigation in the vicinity of the UST vault and diesel AST. During the investigation, four borings (P-1, P-2, P-6, and P-14) (Figure 2) were advanced in the vicinity of the UST vault. Heavy oil- and diesel-range petroleum hydrocarbons were detected in soil samples from the four borings at concentrations ranging from 180 milligrams per kilogram (mg/kg) to 5,000 mg/kg (Table 1). Diesel and/or oil concentrations in three of these samples exceeded the MTCA Method A soil cleanup level (200 mg/kg). Diesel- and oil-range petroleum hydrocarbons were detected in groundwater samples from two of the borings (P-1 and P-2) at concentrations ranging from 1,500 micrograms per liter ($\mu\text{g/L}$) to 2,800 $\mu\text{g/L}$ (Table 2). The concentrations exceeded the MTCA Method A groundwater cleanup level for diesel and oil (1,000 $\mu\text{g/L}$). The horizontal and vertical extent of impact was not determined in this 1998 investigation.

1.4.2 1998 Dames & Moore Investigation

An additional soil and groundwater investigation was conducted by Dames & Moore in November 1998 to further evaluate the vertical and horizontal extent of petroleum impact south of the UST vault and adjacent to the diesel AST (Dames & Moore, 1999a). Selected soil and groundwater samples from the borings were analyzed using Washington State Method NWTPH-D Extended (NWTPH-Dx) to further assess the extent of impacted soil and groundwater. The sample locations are shown on Figure 2 and analytical results are summarized in Tables 1 and 2.

Seven of the nine soil samples analyzed did not contain detectable concentrations of petroleum hydrocarbons. Concentrations of heavy oil- and diesel-range hydrocarbons were detected in two samples from borings S-2 and S-4 at concentrations of 850 to 18,000 mg/kg, which exceeded the MTCA Method A soil cleanup level. In the affected area, evidence of impacted soil (e.g., staining and odor) was typically observed at depths of less than 7 feet bgs. Concentrations of heavy oil- and diesel-range petroleum hydrocarbons were not detected below depths of approximately 7 feet bgs. Heavy oil- and diesel-range petroleum hydrocarbons were detected in groundwater samples from three of the borings (S-1, S-2, and S-5) at concentrations ranging from 750 to 21,000 $\mu\text{g/L}$ (Table 2). Sample concentrations from borings S-1 and S-2 exceeded the MTCA Method A groundwater cleanup level for diesel and oil.

1.4.3 1999 Hart Crowser Investigation

Hart Crowser completed a Supplemental Phase II Environmental Site Assessment in April, 1999 (Hart Crowser, 1999). This investigation included further delineation of petroleum hydrocarbons in the vicinity of the UST vault and diesel AST. During the 1999 investigation, 10 borings were advanced in the vicinity of the UST vault (Figure 2). Based on field observations, samples from six of the borings (P-101, P-102, P-103, P-105, P-107 and P-114) were analyzed for petroleum

hydrocarbons. Heavy oil- and diesel-range petroleum hydrocarbons were not detected in soil samples from the six borings (Table 1). Soil samples from four borings adjacent to the north of the UST vault and south of the railroad tracks contained field evidence of hydrocarbon impact and were not analyzed. Three borings (P-108 through 110) were advanced to the west and south of the diesel AST. Samples from these borings were analyzed for petroleum hydrocarbons. Heavy oil- and diesel-range petroleum hydrocarbons were not detected in soil samples from borings P-108 and P-109 (Table 1). One sample from boring P-110 contained diesel-range petroleum hydrocarbon concentrations that exceeded the MTCA Method A soil cleanup level. Groundwater samples were not collected as part of this investigation.

Based on the presence of the USTs, ASTs, and the petroleum hydrocarbons in the soil and groundwater, Dames & Moore recommended that the tanks should be removed and the impacted soil should be cleaned up to meet MTCA requirements. The methods and procedures used during the cleanup were described in the Cleanup Action Plan (Dames & Moore, 1999b).

The purpose of the cleanup action was: (1) to remove and dispose of the two 15,000-gallon USTs, one 500-gallon AST, associated plumbing and concrete pads and vaults from the site in accordance with applicable local, state, and federal regulations; (2) to remove and properly dispose of potentially impacted groundwater from the excavation associated with the USTs as well as from within the USTs; (3) to excavate impacted soil at the site and; transport it off-site to a facility treatment and disposal (4) to install and groundwater monitoring wells in positions inferred to be upgradient and downgradient of the former USTs to assess whether the release of hydrocarbons had impacted groundwater; and (5) to provide documentation of the UST closure and cleanup action consistent with Ecology reporting requirements (Ecology, 1992).

The specific scope of work for this project included:

- Preparing a site health and safety plan that addressed potential site hazards
- Subcontracting a utility locator to identify sub-grade utilities
- Obtaining required permits and approvals from local agencies
- Retaining a licensed UST decommissioning contractor to remove the UST and affected soils
- Pumping unaffected groundwater from the UST vault to an onsite containment pond connected to City of Sumner sanitary sewer
- Observing the removal of two 15,000-gallon USTs and one 500-gallon AST
- Directing the excavation of approximately 1,226 tons of petroleum-affected soils in the vicinity of the former USTs
- Transporting the petroleum-affected soils offsite for treatment by thermal desorption
- Pumping approximately 20,600 gallons of petroleum-affected water from the UST excavation and transporting the water offsite for treatment and disposal
- Collecting soil samples from the excavation and analyzing the samples using Washington Method NWTPH-Dx to assess the presence and concentration of residual petroleum hydrocarbons in the soil following excavation
- Backfilling and compacting the excavation with clean imported fill to ground level
- Retaining a drilling subcontractor to complete five groundwater monitoring wells at locations surrounding the former USTs and former AST, for the purpose of assessing the groundwater quality in areas containing residual petroleum-affected soils
- Analyzing groundwater samples from the monitoring wells for diesel- and oil-range petroleum hydrocarbons by Washington Method NWTPH-Dx
- Preparing this report to document the findings of the investigation and remediation

3.1 UST REMOVAL AND SOIL EXCAVATION

Between October 23, 2000, and November 6, 2000, the UST/AST removal and soil excavation activities were performed by URS Construction Services, a licensed UST decommissioning contractor. The work was conducted under the direction of a URS field representative. The URS representative monitored the removal of the USTs, associated piping, and petroleum-affected soils. The URS representative also documented the conditions of the USTs, concrete vaults and piping, and soils exposed in the sidewalls and floor of the excavation. The existing USTs were removed and disposed/recycled in accordance with applicable Washington State UST regulations (Chapter 173-360 WAC). The locations of the former USTs and AST are shown on Figure 2.

3.1.1 Site Preparation and Agency Coordination

Prior to removing the USTs, underground utilities were located in the area where excavation activities were performed. URS retained Applied Professional Services, Inc. (APS) to locate underground electrical and water supply lines. An onsite representative from Burns Philp was further able to identify underground utilities that APS' equipment was unable to locate and also assisted in locating sanitary sewer lines and catch basins.

Sediment traps constructed of plastic liners and absorbent pads were placed in stormwater catch basins to the north and south of the UST work site to prevent a sediment discharge into the stormwater system. The sediment traps removed following placement of the final backfill in the excavation area.

A URS representative met with Tacoma-Pierce County Health Department (TPCHD) representatives prior to removal of the USTs and during the excavation process. The TPCHD representatives indicated to URS that the sampling methods being employed by URS, the sediment traps in the work area, and the overall operation of the remediation process were satisfactory.

3.1.2 UST Removal

URS Construction Services used a track-mounted excavator to remove the top of the concrete vault and uncover the two 15,000-gallon USTs. Once the top of the vault was removed, a very slight sheen was visible on the surface of the water in the vault. An estimated 45,000 gallons of water were contained within the vault. Prior to removal of the USTs, approximately 32,000 gallons of water were pumped from the vault into the non-contact water catch basins from the Vinegar Production Plant. The water was then transferred to a sump pit near the main entrance to the property and finally to the containment pond. The pump intake was placed near the bottom of the vault to minimize the potential of transferring phase-separated petroleum hydrocarbons from the vault to the containment pond. An absorbent boom was placed in the containment pond at the discharge location to absorb any petroleum hydrocarbons that could have been transferred to the pond. City of Sumner wastewater officials inspected the site and gave verbal approval to discharge the water into the containment pond which is connected to the City of Sumner wastewater system. Staff from the City of Sumner wastewater took a water sample from the containment pond to test for biological oxygen demand (BOD). The water level

in the containment pond did not reach the level to overflow into the City of Sumner wastewater system during the pumping activities and remained in the contaminant pond.

The two 15,000-gallon USTs were partially filled with water. The water was drained out of the tanks and back into the vault as the tanks were raised out of the vault. There was no evidence of heavy oil remaining inside of the tanks after they were inspected. URS Construction Services cut openings in both ends and then cut the tanks in half for transportation to disposal facility. The tanks were pressure cleaned to remove any petroleum residue. Cleaning certificates for the USTs are included in Appendix A.

The vault was examined for fractures, cracks, and potential preferential paths of migration for petroleum hydrocarbons. Fractures and cracks were not noted. Piping ports were observed in the vault walls. The interior walls of the vault were slightly stained with petroleum hydrocarbons. It was not possible to examine the floor of the vault, due to the turbidity of the remaining water in the vault. URS Construction Services used the excavator to break two holes through the bottom of the vault and to collect soil samples from beneath the vault. The floor of the vault was not removed because the two soil samples collected below the base of the vault (PEX-46-13 and PEX-47-12) did not contain detectable concentrations of petroleum hydrocarbons (See Section 4 and Figure 3). The eastern wall of the vault was removed. The western wall and portions of the northern and southern walls were left in place to provide adequate shoring to support the adjacent power plant building and transformer pad.

3.1.3 Soil Excavation

Excavation of the affected soils began to the south side of the vault and continued around to the east side of the vault. The southern limit of excavation was limited by a subsurface concrete pad measuring approximately 18 feet by 20 feet by 6 feet thick. Test pits were excavated to the south, east, and west of the pad to determine if petroleum hydrocarbons extended beyond the pad. Based on field evidence including visual observations and sheen tests, and analytical results, additional excavation was completed west of the concrete pad until analytical results indicated that soil containing petroleum hydrocarbons at concentrations above MTCA Method A soil cleanup levels had been removed (Figure 3).

Excavation south of the power plant building was limited due to the underground electrical utilities and a 10-inch fire hydrant supply line. Within this excavation area, it was not possible to remove all impacted soils, as continued excavation would have undermined the power plant and utilities (Figure 3).

Excavation took place along the entire length of the east side of the vault to approximately 20 feet out from the vault until field evidence and analytical results indicated that further excavation was not required (Figure 3).

Excavation along the north side of the vault extended outward as far as considered necessary and practicable to remove contaminated soils without placing underground utilities and structures at risk. Prior to excavation, approximately 60 feet of abandoned railroad track was removed north of the vault location (Figure 3). Due to physical obstructions (e.g., transformer pad, stormwater drain line), it was not possible to remove all of the affected soils located north of the vault. Excavation continued to the northeast side of the vault until field evidence and analytical results indicated that further excavation was not required (Table 3, Figure 3).

3.2 GROUNDWATER TREATMENT

Groundwater was encountered in the excavation outside of the vault at a depth of approximately 9 feet bgs. Due to the presence of water in the excavation, the excavator was unable to effectively remove impacted soils below 9 feet. Phillips Services was subcontracted to provide a vacuum truck and removed approximately 6,000 gallons of water. A heavy oil sheen was evident on the surface of the groundwater and appeared to be migrating from the north side of the concrete vault pad. Petroleum absorbent pads were placed on the surface of the water and the vacuum hose intake was placed at the groundwater surface to remove floating petroleum hydrocarbons.

Following removal of all of the readily accessible soils from the UST area, and prior to backfilling the excavation, Phillips Services pumped an additional approximately 14,600 gallons of water from the excavation. The water was disposed of in accordance with applicable Washington State regulations. Documents confirming treatment or disposal of water are included in Appendix A.

3.3 SOIL TREATMENT

The contaminated soil was loaded into trucks using a loader and excavator and transported under a non-hazardous waste manifest. Approximately 1,226 tons of contaminated soils were removed from the excavations surrounding the UST vault. All of the soils were loaded directly into trucks for transportation to TPS Technologies Inc. (TPS) of Tacoma, Washington, a certified disposal facility for the treatment of contaminated soils. The soil was treated by TPS using thermal desorption methods. Documents confirming treatment on disposal of soils are included in Appendix A. Documents confirming disposal are included in Appendix A.

3.4 UST AND CONSTRUCTION DEBRIS DISPOSAL

The excavated USTs were transported to Schnitder Steel in Tacoma, Washington for recycling. The concrete rubble, rebar, and miscellaneous debris that were removed from the excavation were transported by Nor-Pac Trucking to Woodworth & Company located in Tacoma, Washington. Documents confirming disposal of those materials are included in Appendix A.

3.5 BACKFILLING

The excavation site was backfilled with clean imported fill consisting of 4- to 8-inch quarry spalls below, the water table and a combination of 2-inch pit run gravel and treated soil from TPS Technologies between groundwater and 2 feet bgs depth. The top 2 feet were filled with 1/4-inch minus gravel, and the area was capped with 5/8-inch minus gravel.

3.6 AST REMOVAL

The diesel AST and containment vault were located adjacent west of the pump house (Figure 4). Prior to investigating the area, the AST and containment vault were moved to the Vinegar plant for use with a standby generator.

SECTION THREE

UST/AST Removal and Excavation

Due to underground utilities and aboveground structures adjacent to the former AST location, the soils were not readily accessible for excavation without placing the above-mentioned utilities and structures at risk (Figure 4). Therefore, soil excavation was not conducted in this area.

4.1 SOIL SAMPLE COLLECTION

Fifty-eight soil samples were collected from the UST and AST locations between October 26, 2000, and November 23, 2000. Samples were collected from the base of the excavation (approximately one sample for every 600 square feet) and from the sidewalls of the excavation (approximately one sample for every 15 linear feet of sidewall). The soil sampling activities were conducted by a URS field geologist. The soils were field screened with an organic vapor monitor (OVM). Sample locations are shown on Figures 3 and 4. The soil samples were either collected directly with a disposable plastic sampling scoop or retrieved using the excavator, and the samples were collected from the center of the excavator bucket with a disposable plastic scoop. Where excavation base samples were collected below the surface of the groundwater, the excavation bucket was pushed into relatively undisturbed soils at the base of the excavation for sample collection.

All soil samples were placed in laboratory-supplied glass jars and securely fitted with Teflon-lined plastic lids. Sample labels were fixed to all sample jars and contained the following information: sample number, owner name, date and time of collection, and sampler's initials. Sealed samples were stored in an ice chest containing blue ice and were maintained in a cooled condition until delivery to the laboratory for analytical testing. Complete chain-of-custody records were transferred with the samples to the laboratory. Chain-of-custody records and analytical results are listed in Appendix B.

During soil excavation and post-excavation sampling, soil samples were field screened using sheen test and OVM headspace techniques. Elevated OVM readings were not encountered throughout the course of the excavation activities. No elevated OVM readings were obtained during work zone air monitoring.

4.2 SUBSURFACE CONDITIONS

Soils encountered around the UST consisted primarily of a brown to gray silty sand with gravel fill to a depth of approximately 3 feet bgs. The only visual evidence of hydrocarbon staining observed within the top 3 feet was from oil applied to the road surface. From approximately 3 to 12 feet bgs, the soil was brown to gray sandy silt with some gravels. Hydrocarbon stained soil observed at this depth, but the staining was not continuous around the entire excavation area. From 12 to 15 feet bgs, the soils consisted of a gray silty clay with some peat. The clay contained some hydrocarbon staining and odor. Groundwater was encountered at depths ranging from 6.5 to 9 feet bgs during excavation activities.

4.3 UST ANALYTICAL RESULTS

Analytical testing was performed by Transglobal Environmental Geosciences Northwest (TEG), an Ecology-accredited laboratory located in Bellevue, Washington. Soil samples were analyzed for diesel- and oil-range hydrocarbons by NWTPH-DX method. The analytical results are summarized in Table 3 and Figure 3. The laboratory reports and chain-of-custody documentation are presented in Appendix B.

Fifty-three soil samples were collected from the base and of the sidewalls UST excavation. Samples taken came back with petroleum hydrocarbon concentrations above the MTCA Method A levels.

Petroleum hydrocarbon concentrations in sidewall samples collected from the east wall of the excavation were below MTCA Method A soil cleanup levels and laboratory reporting levels.

Initial soil samples collected south of the vault and in the test pits contained concentrations of petroleum hydrocarbons exceeding MTCA Method A soil sampling levels. Samples collected after further excavation of these areas contained petroleum hydrocarbons below the MTCA levels except at the location of soil sample PEX-20-9.5, where oil-range petroleum hydrocarbons exceeded cleanup levels. The presence of groundwater and soil sloughing precluded additional excavation in this area.

Post-excavation samples were collected from the excavation south of the power plant after the excavation was halted due to potential risk to structures and underground utilities. Two post-excavation samples (TP-12-3 and PEX-37-9.0) contained petroleum hydrocarbons exceeding MTCA Method A soil cleanup levels. The remaining post-excavation samples in this area did not contain detectable levels of petroleum hydrocarbons.

To the north and northeast of the vault, most of the post-excavation samples contained petroleum hydrocarbons less than MTCA Method A soil cleanup levels, with the exception of samples PEX-24-5.0, PEX-42-7.0 and PEX-52-7.0. Further excavation in a northerly direction from the vault was not possible without placing a stormwater drain and a 10-inch fire hydrant supply line at risk (Figure 3).

A test pit excavated adjacent to the west of the power plant contained petroleum hydrocarbons exceeding MTCA Method A soil cleanup levels (Figure 3). This area is in the location of the former power plant for the Yeast Production Facility. The subsurface in this area contains significant amounts of concrete foundations and footings from the old building. Samples collected from other test pits excavated to the west and south of the UST excavation area contained petroleum hydrocarbon concentrations below MTCA Method A soil cleanup levels or did not contain detectable levels of petroleum hydrocarbons (Table 3 and Figure 3).

4.4 AST ANALYTICAL RESULTS

Soil samples were collected from two test pits excavated adjacent north of the former diesel AST (Table 4 and Figure 4). Petroleum hydrocarbon concentrations in one test pit sample (PEX-27-6) exceeded MTCA Method A soil cleanup levels. A second test pit was excavated adjacent to the west of the former diesel AST. One soil sample (PEX-32-07) contained petroleum hydrocarbons exceeding MTCA Method A soil cleanup levels. Excavation in this area would have placed underground utilities and aboveground structures substantially at risk, and further excavation or sampling was not completed (Figure 4).

5.1 MONITORING WELL INSTALLATION

To assess whether the release of hydrocarbons had impacted groundwater, five groundwater monitoring wells were installed between November 9, 2000, and December 15, 2000. Prior to completing the monitoring well borings, each boring location was checked for underground utilities by APS. The soil borings and monitoring wells were completed by Cascade Drilling Inc., of Woodinville, Washington. Coordination and monitoring of soil borings and groundwater sampling activities were performed by a qualified URS geologist. Relative elevations of the five monitoring wells were surveyed by Baseline Engineering of Tacoma, Washington, after completion.

Soils were classified in accordance with the Unified Soil Classification System, and evidence of soil contamination such as soil staining, discoloration, or odors was recorded. Detailed logs of the subsurface soils were maintained by a URS geologist.

The monitoring wells were completed to a depth of 15 feet bgs. The wells were screened between 5 and 15 feet bgs. Upon completion of the well installation, all monitoring wells were developed by surging and pumping by Cascade Drilling under the supervision of the URS geologist. Logs of the borings are provided in Appendix C.

One monitoring well (MW-1-00) is located on the northeast side of the former UST vault in the inferred upgradient direction. One of the wells (MW-2-00) is located to the west of the power plant adjacent to a test pit location. Two wells (MW-3-00 and MW-4-00) are located south and southeast of the former UST vault and excavation in the inferred downgradient direction. The fifth well (MW-5-00) is located adjacent to the north of the former diesel AST location.

Groundwater samples were collected on November 13, 2000, and December 22, 2000, to assess groundwater conditions in the vicinity of the former UST and AST locations. The samples were taken from mid-screen at a depth of approximately 10 feet, using low-flow groundwater sampling methods. Clean, dedicated polyethylene tubing was inserted into the monitor well, and water was collected with a peristaltic pump. The water was discharged directly to pre-cleaned, laboratory-prepared glassware. All samples were placed in a cooler with frozen ice substitute and transferred to the laboratory under standard chain-of-custody protocols.

5.2 ANALYTICAL RESULTS

The groundwater samples were analyzed for heavy oil- and diesel-range petroleum hydrocarbons using Washington Method NWTPH-Dx. Petroleum hydrocarbons were not detected in any of the five groundwater samples. The laboratory results for the groundwater samples are summarized in Table 5. The analytical laboratory reports are included in Appendix B.

5.3 GROUNDWATER ELEVATION

Water level elevations were measured in the five wells prior to sampling (Table 6). A water level contour map based on these measurements indicates that shallow groundwater flow at the site is to the south (Figure 5).

A UST/AST removal and independent remedial action project was conducted to permanently close and remove two 15,000-gallon heavy oil USTs and one 500-gallon diesel AST associated with the former Fleischmann's Yeast Production Plant, located in Sumner, Washington. URS removed the USTs, AST, and subsurface soils containing concentrations of TPH above the MTCA Method A soil cleanup levels in accessible areas adjacent to the former UST and AST locations. A summary and conclusion of the investigation and assessment are outlined below:

- A total of 1,226.63 tons of contaminated soils were removed from the UST area and transported to TPS Technologies for treatment by thermal desorption. Removal of impacted soils took place to the extent that underground utilities or aboveground structures were not placed at risk. During excavation and backfill, 32,000 gallons of water were pumped from the former UST vault to the containment pond located on subject property and 20,600 gallons of impacted groundwater were pumped from the excavation and disposed of by Philip Services, Inc.
- A limited number of soil samples with petroleum hydrocarbon concentrations exceeding MTCA Method A soil cleanup levels remain in place at the former UST location. A comparison of the NWTPH-Dx soil data using Ecology's Revised MTCA Method A soil cleanup levels for soils indicated that three final post-excavation soil samples (TP-12-03, PEX-37-09, and PEX-52-7), exceeded the revised cleanup level of 2,000 mg/kg. Four monitoring wells were installed adjacent to the UST excavation in upgradient and downgradient groundwater flow directions. Analytical results indicate that groundwater quality has not been affected by releases from the UST.
- A test pit completed west of the power plant building detected petroleum hydrocarbons in soils at levels exceeding the MTCA Method A soil cleanup levels (PEX-44-04 and PEX-45-08, shown on Figure 3). Excavation of impacted soils was not completed in this area due to the presence of footings and concrete debris in the area. A monitoring well was installed adjacent to the test pit location. Analytical results indicate that groundwater quality has not been affected by releases in the vicinity of the test pit.
- Investigation at the AST detected petroleum hydrocarbons in soils at levels exceeding the MTCA Method A soil cleanup levels at two sample locations (PEX-27-05 and PEX-32-07). Excavation of impacted soils was not completed in this area due to the presence of underground utilities. A monitoring well was installed adjacent to the AST location. Analytical results indicate that groundwater quality has not been affected by releases from the AST.

Given that: (1) the hydrocarbon sources and accessible soil affected by the UST release have been removed; (2) impacts to groundwater were not detected immediately adjacent to the former UST and AST locations; and (3) the releases are believed to have occurred many years ago when the facility and USTs were operational, there is a low potential for significant future migration of residual petroleum hydrocarbons (TPH) that may be present at the excavation locations.

Consequently, it is URS' professional opinion that further investigation or monitoring is not warranted at this time. If soil containing concentrations of petroleum hydrocarbons is disturbed as part of site redevelopment, the soil should be managed in accordance with Ecology's End Use Criteria for Petroleum Contaminated Soils (Ecology, 1994).

SECTION SEVEN

Warranty and Liability

The conclusions presented in this report are professional opinions based upon our visual observations of the site and vicinity, our interpretation of the available historical information and documents reviewed, and the results of the subsurface investigation and soil remediation as described in this report. Opinions and conclusions presented herein apply to site conditions existing at the time of our investigation and remediation at the site and do not necessarily apply to future conditions or other prior conditions of which URS was not aware and did not have the opportunity to evaluate.

This report is intended for the sole use of Burns Philp Food, Inc. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this document or the findings, conclusions, or recommendations presented is at the sole risk of the user.

URS' objective is to perform our work with care, exercising the customary thoroughness and competence of environmental and engineering consulting professionals in the relevant disciplines, in accordance with the standard for professional services by a national consulting firm at the time those services are rendered. It is important to recognize that even the most comprehensive scope of services may fail to detect environmental liability on a particular site. Therefore, URS cannot act as insurers and cannot "certify or underwrite" that a site is free of environmental contamination, and no expressed or implied representation or warranty is included or intended in our reports except that our work was performed, within the limits prescribed by our client, with the customary thoroughness and competence of our profession.

- Dames & Moore, 1999a. Environmental Update, Fleischmann's Yeast Facility, Sumner, Washington, D&M Job No. 34848-006-005, January 8.
- Dames & Moore, 1999b. Cleanup Action Plan, Fleischmann's Yeast and Vinegar Plant, 1115 Zehnder Street, Sumner, Washington, D&M Job No. 32160-006-005, October 21.
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Table 1
 Summary of Previous Soil Analytical Results
 Fleischmann's Yeast Project
 Sumner, Washington

Sample ID	Sample Date	Depth (ft bgs)	Total Petroleum Hydrocarbons (mg/kg)		
			Gasoline- Range Hydrocarbon s	Diesel-Range Hydrocarbon s	Oil-Range Hydrocarbon s
Hart Crowser					
P1-S1	1/16/98	0-4	10 U	2,800	5,000
P2-S1	1/16/98	0-4	10 U	20 U	1,800
P6-S1	1/16/98	0-5	10 U	20 U	230
P14-S1	1/16/98	0-4	10 U	20 U	180
P-101-S2	3/24/99	2-4	NA	20 U	50 U
P-102-S1	3/24/99	0-2	NA	20 U	50 U
P-103-S2	3/24/99	2-4	NA	20 U	50 U
P-105-S2	3/24/99	2-4	NA	20 U	50 U
P-107-S2	3/24/99	2-4	NA	20 U	50 U
P-108-S2	3/24/99	2-4	NA	20 U	50 U
P-109-S1	3/24/99	0-2	NA	20 U	50 U
P-109-S2	3/24/99	2-4	NA	20 U	50 U
P-110-S2	3/24/99	2-4	NA	220	50 U
P-114-S2	3/24/99	2-4	NA	20 U	50 U
Dames & Moore					
S-1-9	11/13/98	9	NA	20 U	40 U
S-1-9 (DUP)	11/13/98	9	NA	20 U	40 U
S-2-1	11/13/98	1-4	NA	18,000	6,600
S-2-10	11/13/98	10-13	NA	20 U	40 U
S-3-8	11/13/98	8-11	NA	20 U	40 U
S-4-4	11/13/98	4-7	NA	850	40 U
S-5-1	11/13/98	1-4	NA	20 U	40 U
S-19-7	11/13/98	7-10	NA	20 U	40 U
S-20-7	11/13/98	7-10	NA	20 U	40 U
MTCA Method A Soil Cleanup Level ¹			100	200	200
Revised MTCA Method A Soil Cleanup Level ²			100	2,000	2,000

Notes:

mg/kg - milligrams per kilogram

(DUP) - Duplicate field sample

MTCA - Model Toxics Control Act

bgs - below ground surface

U - Sample was analyzed for, but not detected above the reporting limit shown.

NA - not analyzed

Analyses performed by using Washington methods NWTPH-Dx and NWTPH-Gx.

¹ MTCA Cleanup Levels - Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA), WAC 173-340, Amended January 1996

² Revised MTCA Method A Cleanup levels effective August 2001

Method A - Method A cleanup levels for unrestricted use

Numbers in **bold** font indicate that the result reported exceeds a MTCA cleanup level.

Source: Hart Crowser, 1998, 1999, Dames & Moore 1999a.

Job No. 53-32160006.00

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11/7/01

Table 2
 Summary of Previous Groundwater Analytical Results
 Fleischmann's Yeast Project
 Sumner, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons (ug/L)		
		Gasoline-Range Hydrocarbons	Diesel-Range Hydrocarbons	Oil-Range Hydrocarbons
Hart Crowser				
P-1	1/16/98	200 U	1,600	2,000 U
P-2	1/16/98	200 U	1,500	2,800
Dames & Moore				
S-1-W	11/13/98	NA	21,000	16,000
S-2-W	11/13/98	NA	18,000	11,000
S-3-W	11/13/98	NA	200 U	400 U
S-4-W	11/13/98	NA	200 U	400 U
S-5-W	11/13/98	NA	750	400 U
S-19-W	11/13/98	NA	200 U	400 U
S-19-W (DUP)	11/13/98	NA	200 U	400 U
S-20-W	11/13/98	NA	200 U	400 U
MTCA Method A Groundwater Cleanup Level ¹		1,000	1,000	1,000
Revised MTCA Method A Groundwater Cleanup Level ²		1,000	500	500

Notes:

ug/L - micrograms per liter

(DUP) - Duplicate field sample

U - Sample was analyzed for, but not detected above the reporting limit shown.

NA- not analyzed

Analyses performed by using Washington methods NWTPH-Dx and NWTPH-Gx.

¹ MTCA Cleanup Levels - Washington State Department of Ecology (Ecology). Model Toxics Control Act (MTCA), WAC 173-340, Amended January 1996

² Revised MTCA Method A Cleanup Levels effective August 2001

Method A - Method A cleanup levels for unrestricted use

Numbers in bold font indicate that the result reported exceeds a MTCA cleanup level.

Source: Hart Crowser, 1998, 1999, Dames & Moore 1999a.

TABLE 3
 Summary of UST Post-excavation and Test Pit Soil Analytical Results
 Fleischmann's Yeast Project
 Sumner, Washington

Sample #	Sample Depth (ft bgs)	Date Collected	Fuel Hydrocarbons	
			Total Petroleum Hydrocarbons-Diesel Range (mg/kg)	Total Petroleum Hydrocarbons-Heavy Oil Range (mg/kg)
PEX-1-7.5	7.5	10/26/00	91	ND
PEX-2-7	7	10/26/00	250	120
PEX-3-7	7	10/26/00	ND	ND
PEX-4-10	10	10/26/00	ND	ND
PEX-5-10	10	10/26/00	ND	ND
PEX-6-7	7	10/26/00	ND	ND
PEX-7-6	6	10/27/00	ND	ND
PEX-8-5	5	10/27/00	ND	ND
PEX-11-9	9	10/27/00	ND	ND
PEX-14-5	5	10/27/00	ND	ND
PEX-15-4.5	4.5	10/27/00	ND	ND
PEX-16-4	4	10/27/00	ND	ND
PEX-17-3.5	3.5	10/27/00	ND	ND
PEX-18-5.5	5.5	10/27/00	ND	950
PEX-19-8.5	8.5	10/27/00	ND	ND
PEX-20-9.5	9.5	10/27/00	ND	430
PEX-21-6	6	10/27/00	ND	ND
PEX-22-4	4	10/27/00	ND	ND
PEX-23-12	12	10/31/00	1700	880
PEX-24-5	5	10/31/00	920	ND
PEX-25-5	5	10/31/00	360	ND
PEX-28-6	6	10/31/00	ND	ND
PEX-29-6	6	10/31/00	950	ND
PEX-30-8	8	10/31/00	ND	ND
PEX-33-8	8	11/01/00	ND	ND
PEX-34-7	7	11/01/00	ND	ND
PEX-35-2	2	11/01/00	ND	ND
PEX-36-9	9	11/01/00	26	ND
PEX-37-9	9	11/02/00	2200	1200
PEX-38-4	4	11/01/00	ND	ND
PEX-39-5	5	11/01/00	ND	ND
PEX-40-12	12	11/02/00	5900	2900
PEX-41-7	7	11/02/00	5900	2300
PEX-42-7	7	11/02/00	2100	1500
PEX-43-2.5	2.5	11/01/00	ND	ND
PEX-44-4	4	11/02/00	ND	880
PEX-45-8	8	11/01/00	ND	610
PEX-46-13	13	11/06/00	ND	ND
PEX-47-12	12	11/06/00	ND	ND
PEX-48-06	6	11/06/00	ND	ND
PEX-49-05	5	11/07/00	ND	ND
PEX-50-05	5	11/07/00	ND	ND
PEX-51-12	12	11/07/00	ND	ND

TABLE 3
 Summary of UST Post-excavation and Test Pit Soil Analytical Results
 Fleischmann's Yeast Project
 Sumner, Washington

Sample #	Sample Depth (ft bgs)	Date Collected	Fuel Hydrocarbons	
			Total Petroleum Hydrocarbons-Diesel Range (mg/kg)	Total Petroleum Hydrocarbons-Heavy Oil Range (mg/kg)
PEX-52-07	7	11/23/00	1800	4900
PEX-53-07	7	11/23/00	ND	ND
TP-3-6	6	10/27/00	ND	ND
TP-4-2.5	2.5	10/27/00	ND	ND
TP-4-2.5 (Dup.)	2.5	10/27/00	ND	ND
TP-5-3.5	3.5	10/27/00	ND	ND
TP-6-5.5	5.5	10/27/00	ND	ND
TP-7-2.5	2.5	10/27/00	ND	ND
TP-8-5.5	5.5	10/27/00	ND	ND
TP-10-1.5	1.5	10/27/00	ND	1,800
TP-12-03	3	11/16/00	6,600	ND
Laboratory Detection Limits			20	40
MTCA Method A Soil Cleanup Level ¹			200	200
Revised MTCA Method A Soil Cleanup Level ²			2,000	2,000

Notes:

ND - Not Detected

Bold - exceeds MTCA Method A soil cleanup levels

~~TP-10-1.5~~ - soils removed during subsequent excavation

¹ MTCA Cleanup Levels - Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA), WAC 173-340, Amended January 1996

² Revised MTCA Method A Cleanup levels effective August 2001
 Method A - Method A cleanup levels for unrestricted use

TABLE 4
 Summary of AST Test Pit Soil Analytical Results
 Fleischmann's Yeast Project
 Summer, Washington

Sample #	Sample Depth (ft bgs)	Date Collected	Fuel Hydrocarbons	
			Total Petroleum Hydrocarbons-Diesel Range (mg/kg)	Total Petroleum Hydrocarbons-Heavy Oil (mg/kg)
PEX-26-6	6	10/31/00	43	ND
PEX-27-6	6	10/31/00	330	ND
PEX-31-5	5	11/01/00	ND	ND
PEX-32-7	7	11/01/00	ND	730
Laboratory Detection Limits			20	40
MTCA Method A Soil Cleanup Level ¹			200	200
Revised MTCA Method A Soil Cleanup Level ²			2,000	2,000

Notes:

mg/kg - milligrams per kilogram

ND = Not Detected

Bold - exceeds MTCA Method A soil cleanup levels

¹ MTCA Cleanup Levels - Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA), WAC 173-340, Amended January 1996

² Revised MTCA Method A Cleanup levels effective August 2001
 Method A - Method A cleanup levels for unrestricted use

TABLE 5
Summary of Groundwater Analytical Results
Fleischmann's Yeast Project
Sumner, Washington

Monitoring Well	Date Collected	Fuel Hydrocarbons	
		Total Petroleum Hydrocarbons-Diesel Range (ug/l)	Total Petroleum Hydrocarbons-Heavy Oil (ug/l)
MW-1-00	11/13/00	ND	ND
MW-2-00	11/13/00	ND	ND
MW-3-00	11/13/00	ND	ND
MW-4-00	12/22/00	ND	ND
MW-5-00	12/22/00	ND	ND
Laboratory Detection Limits		200	400
MTCA Method A Groundwater Cleanup Level ¹		1000	1000
Revised MTCA Method A Groundwater Cleanup Level ²		500	500

Notes:

ug/L - micrograms per liter

ND - not detected

¹ MTCA Cleanup Levels - Washington State Department of Ecology (Ecology). Model Toxics Control Act (MTCA), WAC 173-340, Amended January 1996

² Revised MTCA Method A Cleanup Levels effective August 2001

Method A - Method A cleanup levels for unrestricted use

Table 6
 Summary of Groundwater Level Measurements
 Fleischmann's Yeast Project
 Sumner, Washington

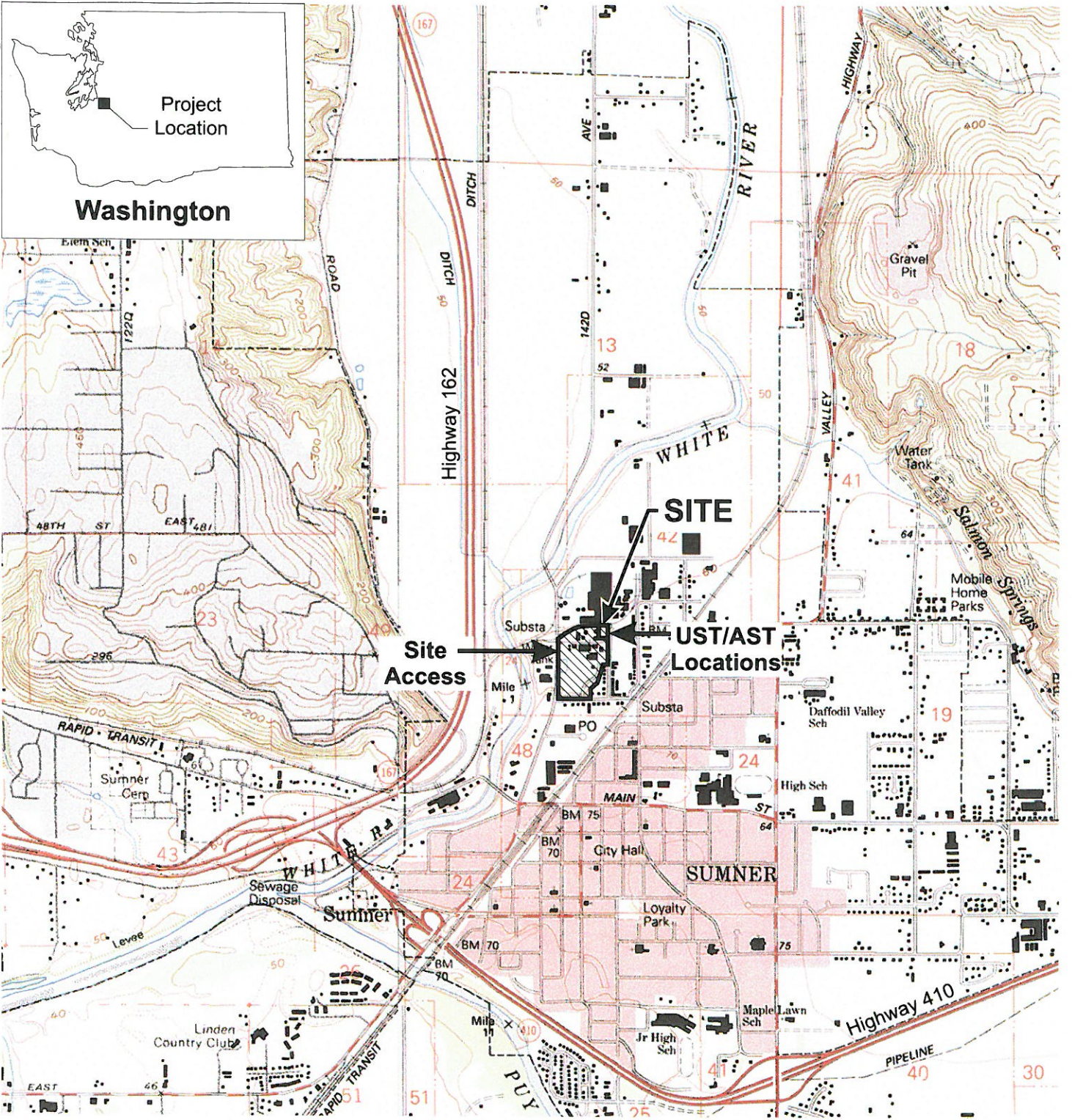
Monitoring Well	Screen Interval (ft bgs)	Reference Elevation ¹	Depth to Water (ft bgs)			Groundwater Elevation (feet)		
			11/13/00	11/21/00	12/22/00	11/13/00	11/21/00	12/22/00
MW-1-00	15-5	98.83	5.80	6.52	3.40	93.03	92.31	95.43
MW-2-00	15-5	98.47	5.00	5.87	2.70	93.47	92.60	95.77
MW-3-00	15-5	98.31	5.90	6.60	5.30	92.41	91.71	93.01
MW-4-00	15-5	98.72	NA	NA	5.50	NA	NA	93.22
MW-5-00	15-5	97.65	NA	NA	3.10	NA	NA	94.55

Notes:

ft bgs = Feet Below Ground Surface

NA = Not applicable

¹ Relative elevations measured by Baseline Engineering



Map created with TOPO!™ © 1997 Wildflower Productions, www.topo.com

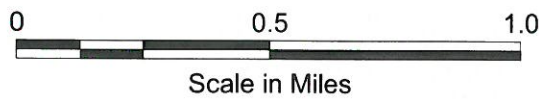
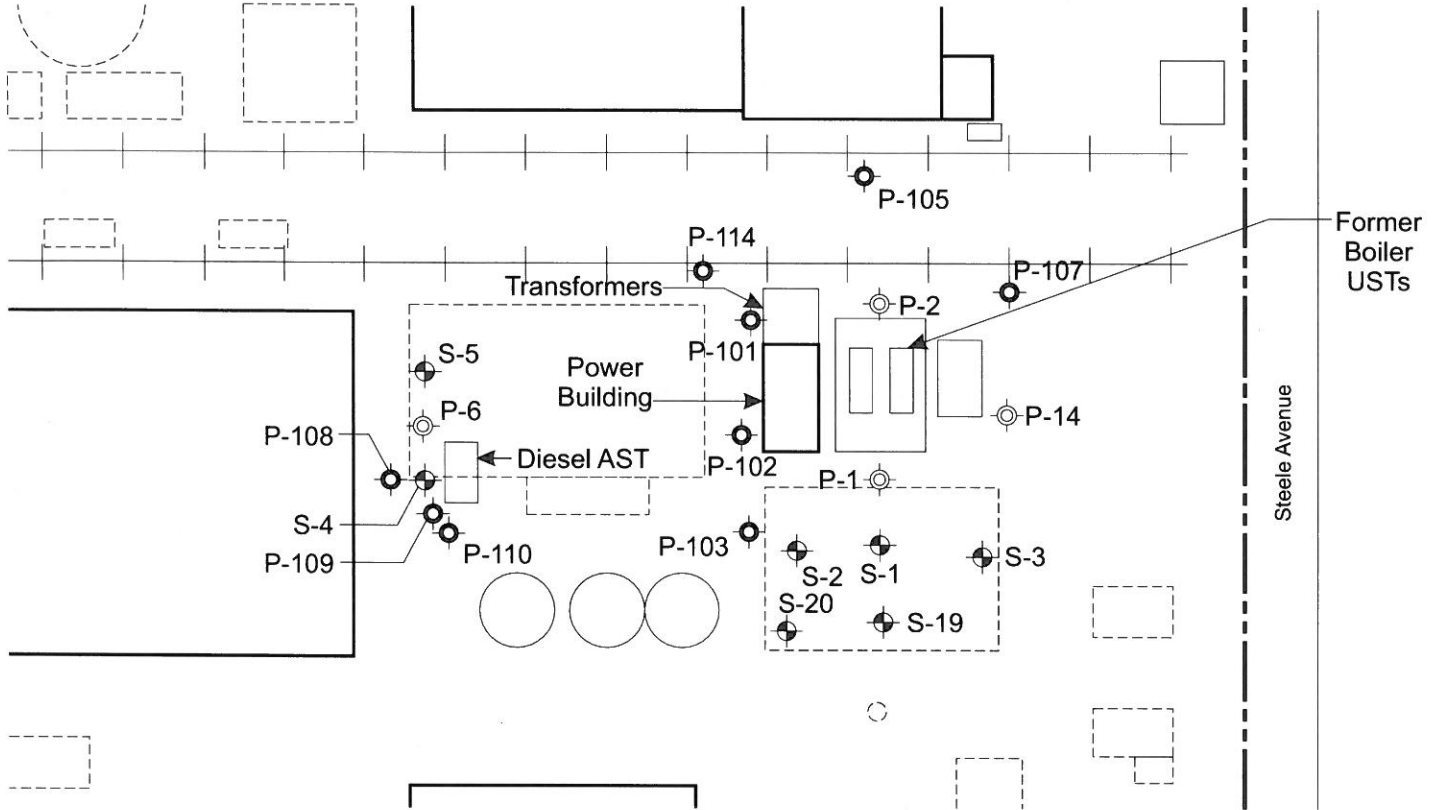





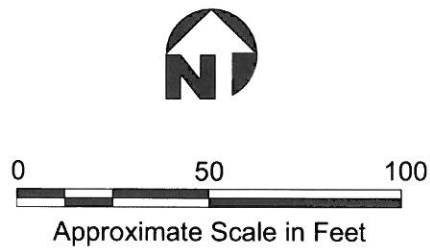


Figure 1
SITE LOCATION MAP



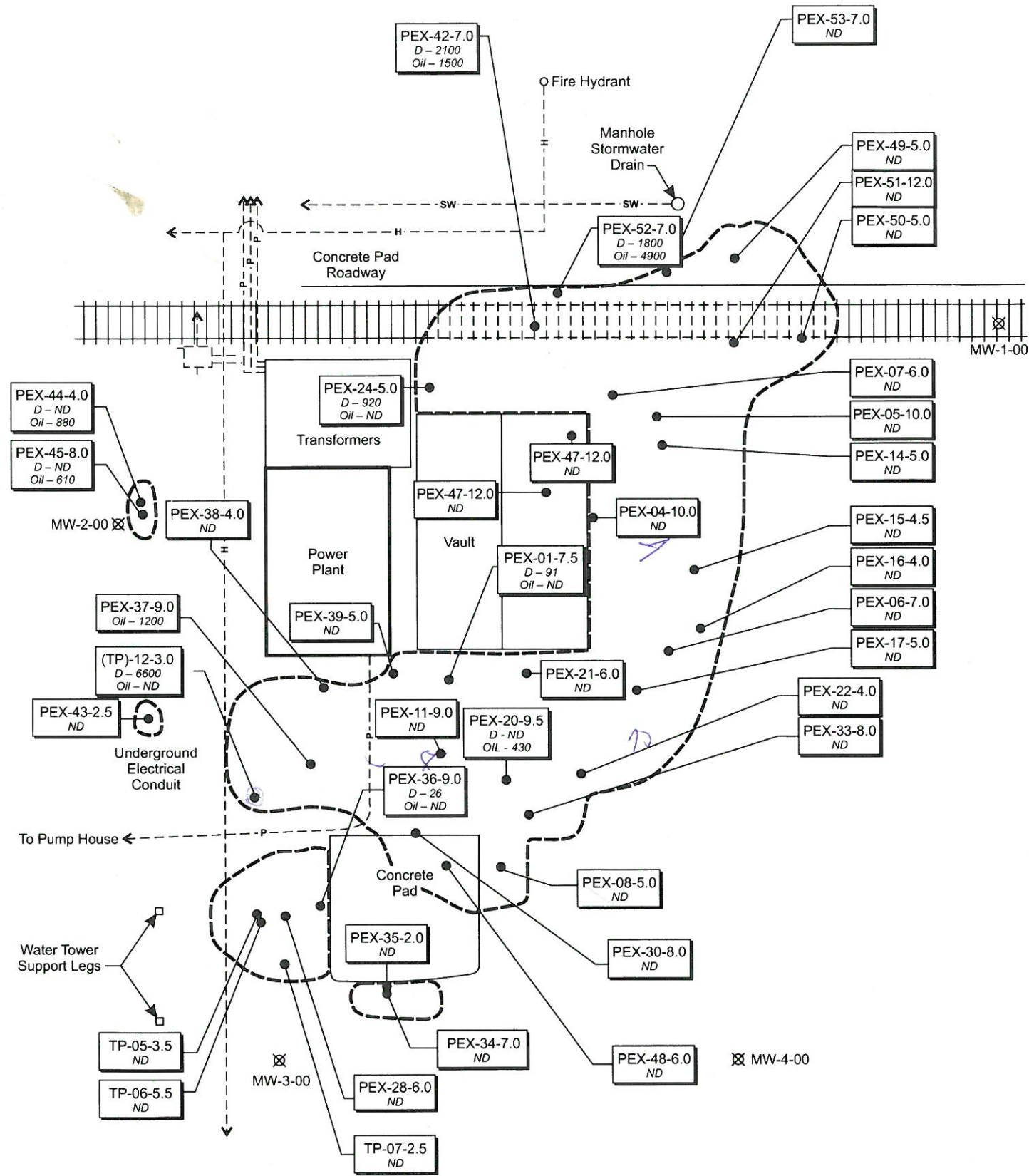
LEGEND

-  Property boundary
-  Hart Crowser GeoProbe location (January 1998)
-  Hart Crowser GeoProbe location (March 1999)
-  Dames & Moore StrataProbe location, November 1998
-  Former structure



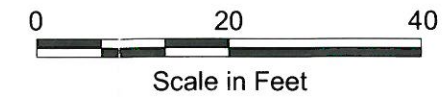
Source: Hart Crowser, 1998

Figure 2
SITE PLAN



LEGEND

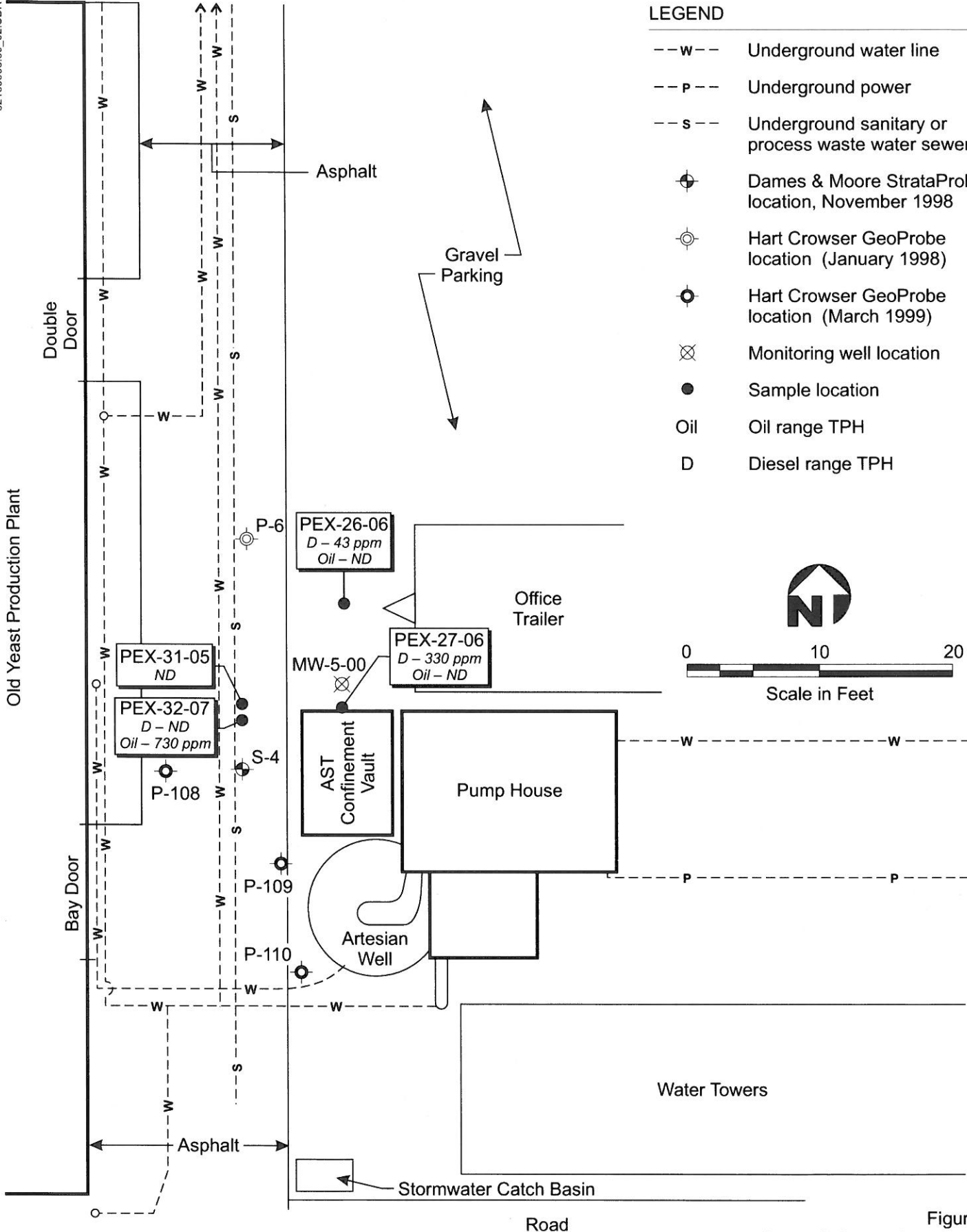
- W-- Underground water line
- P-- Underground power
- SW-- Underground stormwater line
- H-- Underground fire hydrant supply line
- [Railroad tracks symbol] Railroad tracks
- [Dashed railroad tracks symbol] Removed railroad tracks
- Limits of excavated area
- [Square with X symbol] Monitoring well location
- [Circle with dot symbol] Sample location
- ND Not detected
- D Diesel range TPH in mg/kg
- Oil Oil range TPH in mg/kg



*smelly soil - 13' W
78.5
[X] - concrete slab
78
[X] - 13'*

Figure 3
UST AND FINAL SAMPLE LOCATION MAP

Old Yeast Production Plant



LEGEND

- w-- Underground water line
- p-- Underground power
- s-- Underground sanitary or process waste water sewer
- ⊕ Dames & Moore StrataProbe location, November 1998
- ⊙ Hart Crowser GeoProbe location (January 1998)
- ⊙ Hart Crowser GeoProbe location (March 1999)
- ⊗ Monitoring well location
- Sample location
- Oil Oil range TPH
- D Diesel range TPH

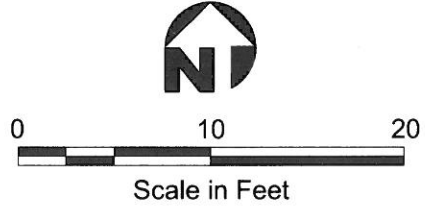
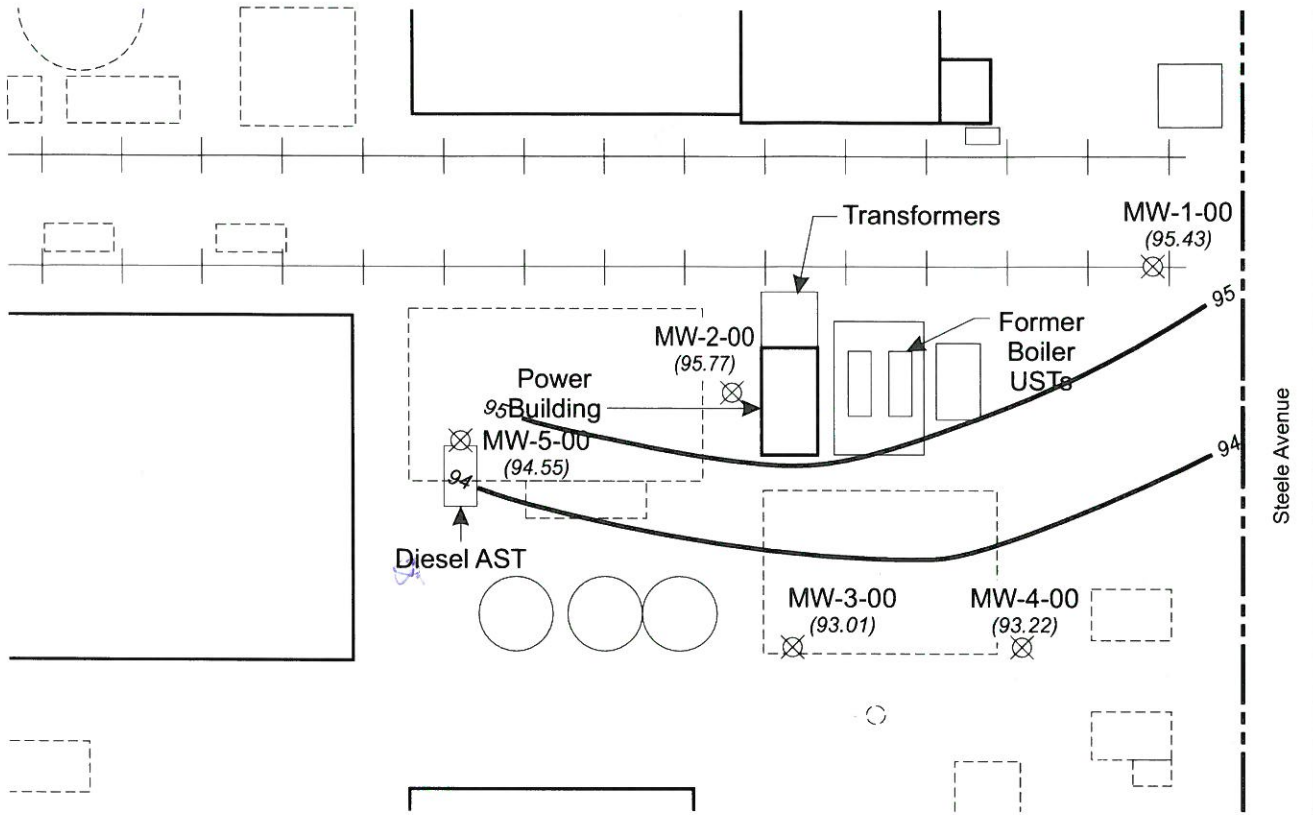



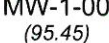



Figure 4
AST LOCATION MAP



LEGEND

-  Property boundary
-  Former structure
-  Monitoring well location and relative groundwater elevation (12/22/00)
-  MW-1-00 (95.45)
-  95 Groundwater elevation contour (feet)

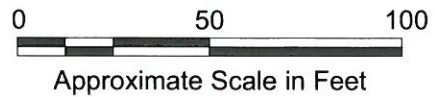


Figure 5
**MONITORING WELL LOCATIONS AND
GROUNDWATER CONTOUR MAP**

