STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

CERTIFIED MAIL

August 8, 2007

Ms. Jean Johnson
47 Wallace Street
Steilacoom, WA 98388

Re: Opinion under WAC 173-340-515(5) on Remedial Action(s) for the following Hazardous Waste Site:

- Name: Brinnon General Store
- Address: 306413 U.S. Highway 101, Brinnon, WA
- Facility/Site No.: 96498799
- VCP No.: SW0759

Dear Ms. Johnson:

Thank you for submitting your independent remedial action report(s) for the [SITE NAME] facility (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding whether the remedial action performed is sufficient to meet the specific substantive requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Documented release of gasoline-range petroleum hydrocarbons and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds in soil and groundwater.

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve a person's liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your remedial action(s):

1. Groundwater Well Monitoring Report, Brinnon General Store, dated May 18, 2007 (revised August 7, 2007) by Now Environmental Services, Inc.

The document listed above will be kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Appointments can be made by calling the SWRO resource contact at (360) 407-6365.

The Site is defined by the extent of contamination caused by the following release(s):

- Documented release of gasoline-range petroleum hydrocarbons and BTEX compounds in soil and groundwater.

The Site is more particularly described in Enclosure A to this letter, which includes a detailed Site diagram. The description of the Site is based solely on the information contained in the documents listed above.

Based on a review of the independent remedial action report and supporting documentation listed above, **Ecology has determined that the remedial action described in the report is not sufficient to meet the specific substantive requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:**

- Documented release of gasoline-range petroleum hydrocarbons and BTEX compounds in soil and groundwater.

On March 19, 2007, Ecology met with your current contractor, Mr. Randy Perkins. During that meeting, Mr. Perkins asked Ecology what needed to be done for the site to receive a No Further Action (NFA) determination. Ecology referred Mr. Perkins to the May 3, 2006 Opinion Letter that identifies the tasks needing to be completed for

the site to receive an NFA. Ecology then encouraged Mr. Perkins to submit a work plan for review and approval prior to conducting any additional work at the site to ensure that the proposed activities would meet the substantive requirements of MTCA. No work plan was ever received by Ecology. Upon review of the above-listed remedial investigation report, the substantive requirements of MTCA still have not been met for this site. Based on a review of the above-listed document, Ecology has the following comments:

- Ecology's May 3, 2006 Opinion Letter indicated the need for defining the extent of contamination in soil. This was not done. Limited information was presented to Ecology from Mickelson Construction following removal of the underground storage tanks (USTs) from the site in 1989. The limited data that was provided by Mickelson Construction indicated that concentrations of total petroleum hydrocarbons (TPH) (presumed to be gasoline-range) and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were present in soil above MTCA Method A cleanup levels in the area of the excavation north of the convenience store building; however, the exact locations and depths of these samples could not be deciphered from the information provided to Ecology by Mickelson Construction. Concentrations of TPH ranged from 37 milligrams per kilogram (mg/kg) to 2,916 mg/kg, which exceed the MTCA Method A cleanup level for gasoline in soil of 30 mg/kg. Benzene ranged from 0.891 mg/kg to 12.6 mg/kg (cleanup level is 0.03 mg/kg); toluene from 8.09 mg/kg to 35.8 mg/kg (cleanup level is 7 mg/kg); ethylbenzene from 13.6 mg/kg to 20.3 mg/kg (cleanup level is 6 mg/kg); and xylenes from 44.8 mg/kg to 110 mg/kg (cleanup level is 9 mg/kg).

  These concentrations were confirmed in 2002 by Stemen Environmental, Inc. Soil samples collected in the area of the former excavation (S-5 and S-6) and from the area to the east of the former excavation (S-1 and S-2) from about 7 to 12 feet below ground surface (bgs) contained concentrations of gasoline-range petroleum hydrocarbons (TPH-G), benzene, ethylbenzene, and xylenes above MTCA Method A cleanup levels. In the area of the former excavation, S-5 contained TPH-G (170 mg/kg) and benzene (1.6 mg/kg), and S-6 contained TPH-G (32 mg/kg) and xylenes (38 mg/kg). To the east, S-1 contained TPH-G (200 mg/kg) and benzene (1.7 mg/kg), and S-2 contained TPH-G (530 mg/kg), benzene (3 mg/kg), and ethylbenzene (6.3 mg/kg). Please refer to the attached figure for the estimated locations of these samples.

No additional soil data has been provided to Ecology from these areas since 2002. A substantive requirement of MTCA is to define the areal and vertical extent of contamination. Additional soil samples will need to be collected from the site define the area of residual soil contamination beneath the site.

- According to previously reviewed reports, an unknown quantity of soil was believed to have been left in place along the southern perimeter of the former excavation, and that any further excavation activities in this area could have had an adverse impact on the structural integrity of the convenience store building. Reportedly, the convenience store building did suffer some structural damage along the northern perimeter of the structure due to settling after completion of the excavation activities.

  In May 2007, three soils samples were collected from two locations along the northern perimeter of the convenience store building using a hand auger. Two samples were collected from 4 feet bgs and one sample from 5 feet bgs. Refusal with the hand auger occurred at 5 feet bgs due to a piece of wood and the boring was not advanced any deeper. No contaminants were detected in these samples.

  Ecology does not feel that these soil samples are adequate to show that residual soil contamination does not exist adjacent to and/or beneath the convenience store building. Contaminants detected in soil by Stemen Environmental, Inc. were encountered at depths of 7 to 12 feet bgs. An evaluation of the extent of soil contamination at the site should include deeper samples adjacent to the building and former excavation and, if possible, beneath the building.

- Grab groundwater samples collected by Stemen Environmental, Inc. in 2002 identified concentrations of TPH-G [1,700 micrograms per liter (µg/L)] and benzene (22 µg/L) in S-1 and TPH-G (12,000 µg/L) and benzene (66 µg/L) in S-2. The MTCA Method A cleanup levels for TPH-G and benzene are 800 µg/L and 5 µg/L, respectively. Please refer to the attached figure for the estimated locations of these samples.

  Later that year, five monitoring wells were installed at the site, including in the areas of S-1 and S-2. Groundwater samples collected from these wells in June 2002, September 2002, September 2004, and November 2004 did not contain concentrations of contaminants above MTCA Method A cleanup levels.

However, these groundwater samples were only analyzed for TPH-G and BTEX, and not the full suite of contaminants required under MTCA Table 830-1 (Required Testing for Petroleum Releases). Furthermore, Ecology's May 2006 Opinion Letter noted that four out of five of these wells were screened at least 3 feet below where the water table had been encountered, and that if petroleum contamination existed in groundwater, the highest concentrations would likely exist at the surface of the water table. It could not be discerned from the report which well did bracket the water table. As a result, Ecology requested that additional wells be installed at the site to bracket the water table in an effort to provide more reliable groundwater data. Based on well logs provided to Ecology's Water Resources Program, four new wells were installed in July 2006.

These four new wells were sampled in May 2007 and analyzed for the appropriate contaminants of concern required under MTCA Table 830-1. No contaminants were detected above MTCA Method A cleanup levels. Ecology requires that at least four rounds of quarterly groundwater sampling be conducted showing concentrations of contaminants below MTCA Method A cleanup levels to meet the substantive requirements of MTCA. The reason for this is to determine any seasonal variations in the contaminant concentrations, so that Ecology can determine whether the implemented remedy is permanent. At least three additional rounds of sampling needs to be conducted from the four new wells.

- The May 2007 report indicates that all nine monitoring wells were used at the site to determine the direction of groundwater flow. It should be noted that four of these wells are screened below the water table and if there was any component of vertical flow beneath the site, then the head elevations would not match up and the direction of groundwater flow would be off. Ecology suggests comparing the direction of groundwater flow using the four wells screened below the water table and the five wells bracketing the water table to see if a component of vertical flow exists for the site. Due to the proximity of the site to Hood Canal, some vertical flow may exist. Also, for each monitoring event, please provide Ecology with a potentiometric surface map of the site showing the measured groundwater elevations, equipotential lines, and the resulting direction of groundwater flow.

- Ecology's May 3, 2006 Opinion Letter indicated the need for the collection of a drinking water sample from the on-site water supply well for analysis for the constituents required in MTCA Table 830-1. The May 2007 report presents data for a drinking water sample collected by you that was only analyzed for TPH-G. No other information was presented regarding the sampling protocols used, the location of the sample, use of appropriate bottleware, etc. This sample should be re-collected by a qualified professional for the contaminants required in MTCA Table 830-1 as originally requested by Ecology.

- Please provide Ecology with a Work Plan for the above-listed site activities to ensure that proposed activities will likely meet the substantive requirements of MTCA.

- In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted in both a written and electronic format. For additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim. Please ensure that data generated during on site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Please be sure to submit the May 2007 soil and groundwater data, as well as any future data, in this format.

- MTCA requires that work completed for review by Ecology be done under the oversight of a licensed professional. Any reports submitted for review must be reviewed and stamped by a licensed geologist, hydrogeologist, or engineer as outlined in Chapter 18.220 RCW and Chapter 18.43.130 RCW. Ecology does not make any distinction between sites addressed under an independent cleanup action and formal sites addressed under an Agreed Order. Both are considered cleanup sites and the technical expertise required for evaluation of these sites is the same. Remedial investigation and cleanup reports submitted to Ecology that are not stamped will not be reviewed.

Please note that this letter does not provide an opinion on the sufficiency of any other remedial actions conducted at the Site or whether further remedial action is necessary to characterize and address all contamination at the Site. To obtain such an opinion, you must submit an independent remedial action report to Ecology upon completion of the cleanup action for the Site and request such an opinion under the VCP.

Please also note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting an independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (360) 407-6347.

Sincerely,

Scott Rose, L.G.
Site Manager
SWRO Toxics Cleanup Program

SR/ksc:Brinnon General Store Opinion on Completed Remedial Action

Enclosures: Site Summary
Figure 1 – Soil Sample Location Sketch
Figure 2 – Monitoring Well Location Sketch
Figure 3 – Site Sketch B – Well Locations, Well Number, etc.

Cc: Randy Perkins – Pacific Environmental Restoration
Bob Simons – Now Environmental, Inc
Mike McNickle – Environmental Health Director
Carol Johnston – Ecology
Bob Warren – Ecology
Chuck Cline – Ecology

Enclosure A

Site Summary

The Brinnon General Store site is located at 306413 U.S. Highway 101 in Brinnon, Jefferson County, Washington (WA). The 2.1-acre site is located in an area of light commercial and rural residential properties. The site currently consists of a combination convenience store/self service vehicle fueling station, a manufactured home, and two storage sheds. The convenience store building is an approximately 3,000-square-foot rectangular-shaped structure. Two 8,000-gallon dual compartment (5,000/3,000) coated steel underground storage tanks (USTs) are located on site. Three of the tank compartments are used for the storage of various grades of unleaded gasoline, while the other compartment is used for the storage of diesel fuel. The USTs are serviced by submersible pumps and remote fuel dispensers. The fuel dispensing/pump island is located directly west of the convenience store, and the USTs are located directly north of the pump island.

In 1989, three 1,000-gallon USTs containing leaded and unleaded gasoline were excavated and removed from the site by Mickelson Construction of Olympia, WA. A limited amount of information is available regarding the UST removal activities. It is known that a confirmed release of gasoline to soil and groundwater on site had taken place, and that an unknown quantity of gasoline-impacted soil was excavated and stockpiled on a vacant parcel located directly west of the site, across Highway 101. This parcel is also owned by the site owner. Based on available information, all accessible petroleum-impacted soils were allegedly excavated and removed from the UST excavation area.

It is believed that an unknown quantity of soil was left in place along the southern perimeter of the excavation. Any further excavation in this area could have had adverse impacts on the structural integrity of the convenience store building. However, the building did suffer some structural damage, due to settling, along the northern perimeter of the structure after completion of UST removal activities.

Soils beneath the site to a depth of approximately 12 feet below ground surface (bgs) consist of sandy gravels. Groundwater was encountered at approximately 7 feet bgs, and the direction of groundwater flow is presumed to be to the east toward Puget Sound.

In April 2002, seven discreet soil samples and five discreet groundwater samples were collected from locations throughout the site. The soil samples were collected

from depths ranging from 6 to 12 feet bgs. In addition, six composite soil samples and one discreet groundwater sample were collected from the parcel west of the site where the excavated soils were stockpiled and graded. The composite soil samples were collected from depths ranging from 9 to 36 inches bgs. All samples were submitted for laboratory analysis for gasoline-range petroleum hydrocarbons (TPH-G) by Ecology Method NWTPH-Gx and for benzene, toluene, ethylbenzene, and xylene (BTEX) compounds by EPA Method 8021B.

Analytical results of the discreet soil samples indicated the presence of TPH-G, benzene, ethylbenzene, and xylenes at concentrations in excess of their respective Model Toxics Control Act (MTCA) Method A cleanup levels of 30 milligrams per kilogram (mg/kg), 0.03 mg/kg, 6 mg/kg, and 9 mg/kg. Concentrations of TPH-G ranged from 32 mg/kg to 530 mg/kg; benzene ranged from 1.6 mg/kg to 3 mg/kg; and ethylbenzene and xylenes were detected at 6.3 mg/kg and 38 mg/kg, respectively. The highest concentrations were detected at locations S-1 and S-2, which are located downgradient of the former excavation.

Analytical results of the groundwater samples indicated the presence of TPH-G and benzene in excess of their respective MTCA Method A cleanup levels of 800 micrograms per liter (µg/L) and 5 µg/L. The exceedances occurred in S-1 [TPH-G (1,700 µg/L) and benzene (22 µg/L)] and S-2 [TPH-G (12,000 µg/L) and benzene (66 µg/L)].

No contaminants were detected in the composite soil samples or discreet groundwater sample collected from the soil stockpile area above laboratory detection limits.

In June 2002, five permanent monitoring wells (MW-1 through MW-5) were installed throughout the site. The wells were screened from 10 to 20 feet bgs, except for MW-1, which was screened from 4.5 to 14.5 feet bgs. The depth to groundwater in the wells ranged from 6.29 feet bgs in MW-1 to 8.0 feet bgs in MW-2. Groundwater samples were collected from MW-1 through MW-4 using disposable polyvinyl chloride (PVC) bailers and submitted for laboratory analysis for TPH-G by Ecology Method NWTPH-Gx and BTEX compounds by EPA Method 8021B. MW-5 could not be sampled due to a parked vehicle restricting access.

Analytical results did not detect the presence of any contaminants above laboratory detection limits. *It should be noted that due to the installation of the well screens below the water table in four out of five of the wells, any light non-aqueous phase liquid (LNAPL) floating near the surface of the water table is not likely to show up in these wells.*

The monitoring wells, including MW-5, were sampled again in September 2002, September 2004, and November 2004, and submitted for analysis for the constituents analyzed for previously. For all rounds of sampling, no contaminants were detected in the groundwater samples above laboratory detection limits.

At an unknown date, in response to Ecology's 5/3/06 Opinion Letter, four additional monitoring wells were installed on site and allegedly screened to bracket the water table. It is presumed that soil and groundwater samples were also collected as part of the well installation activities as requested by Ecology. However, this information was not provided to Ecology because for reasons unknown, the site owner fired the consultant and denied payment before he could provide the sampling data.

In July 2007, Ecology received a remedial investigation report from the site owner's new consultant. As part of this investigation, the four new monitoring wells were sampled and three soil samples were collected from two locations along the northern side of the convenience store building. The soil and groundwater samples were analyzed for TPH-G by Ecology Method NWTPH-Gx, volatile organic compounds (VOCs) by EPA Method 8260, 1,2-dibromoethane (EDB) by EPA Method 8011, and lead by EPA Method 7420 (soil) and 239.2 (groundwater). No contaminants were detected in the samples at concentrations above MTCA Method A cleanup levels.

In addition, a drinking water sample was collected from the on-site water supply well by the site owner. The sample was analyzed fro TPH-G by Ecology Method NWTPH-G. TPH-G was not detected.

Figure 1
Soil Sample Location
Sketch

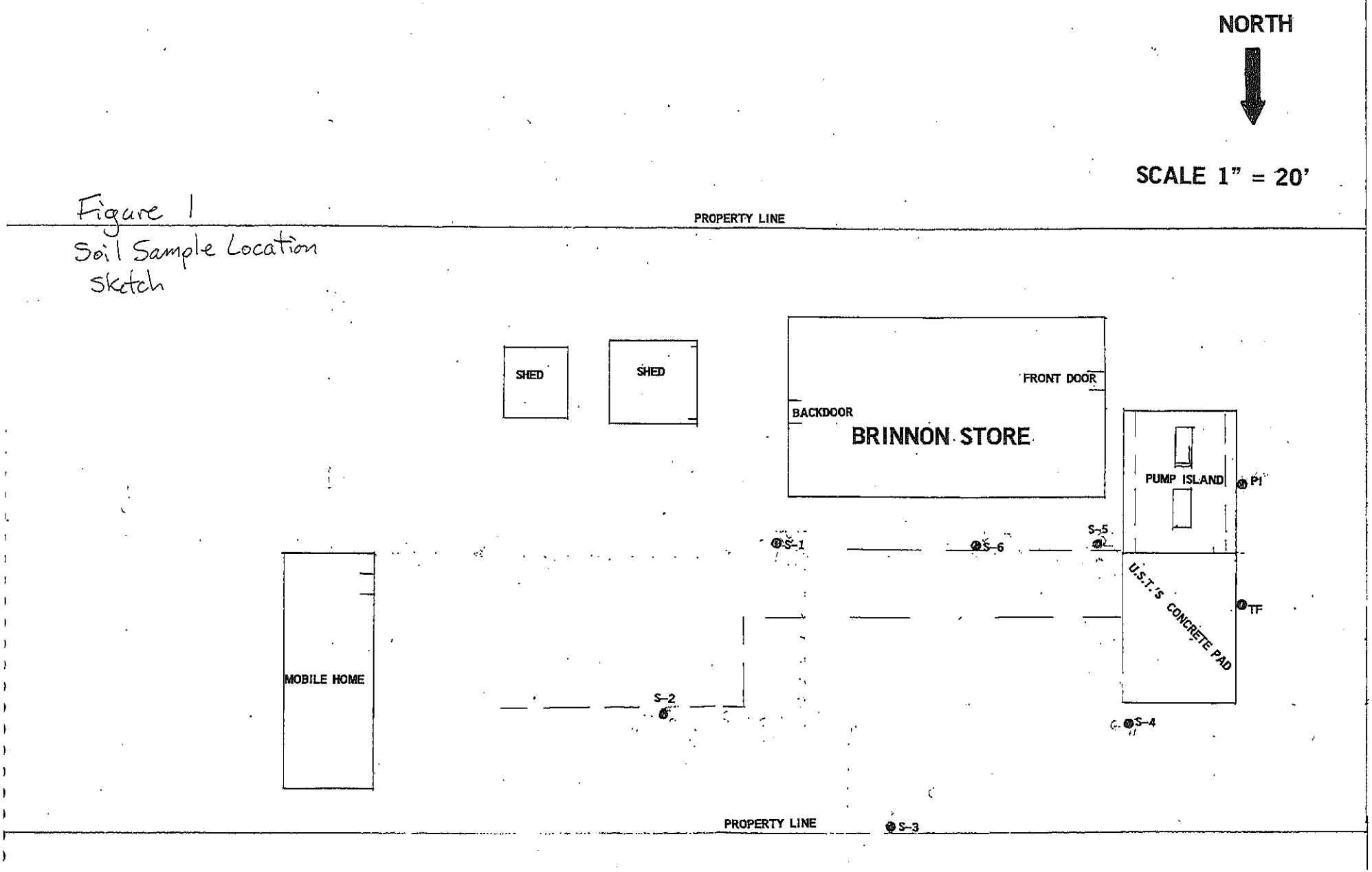

Figure 2
Monitoring Well Location sketch

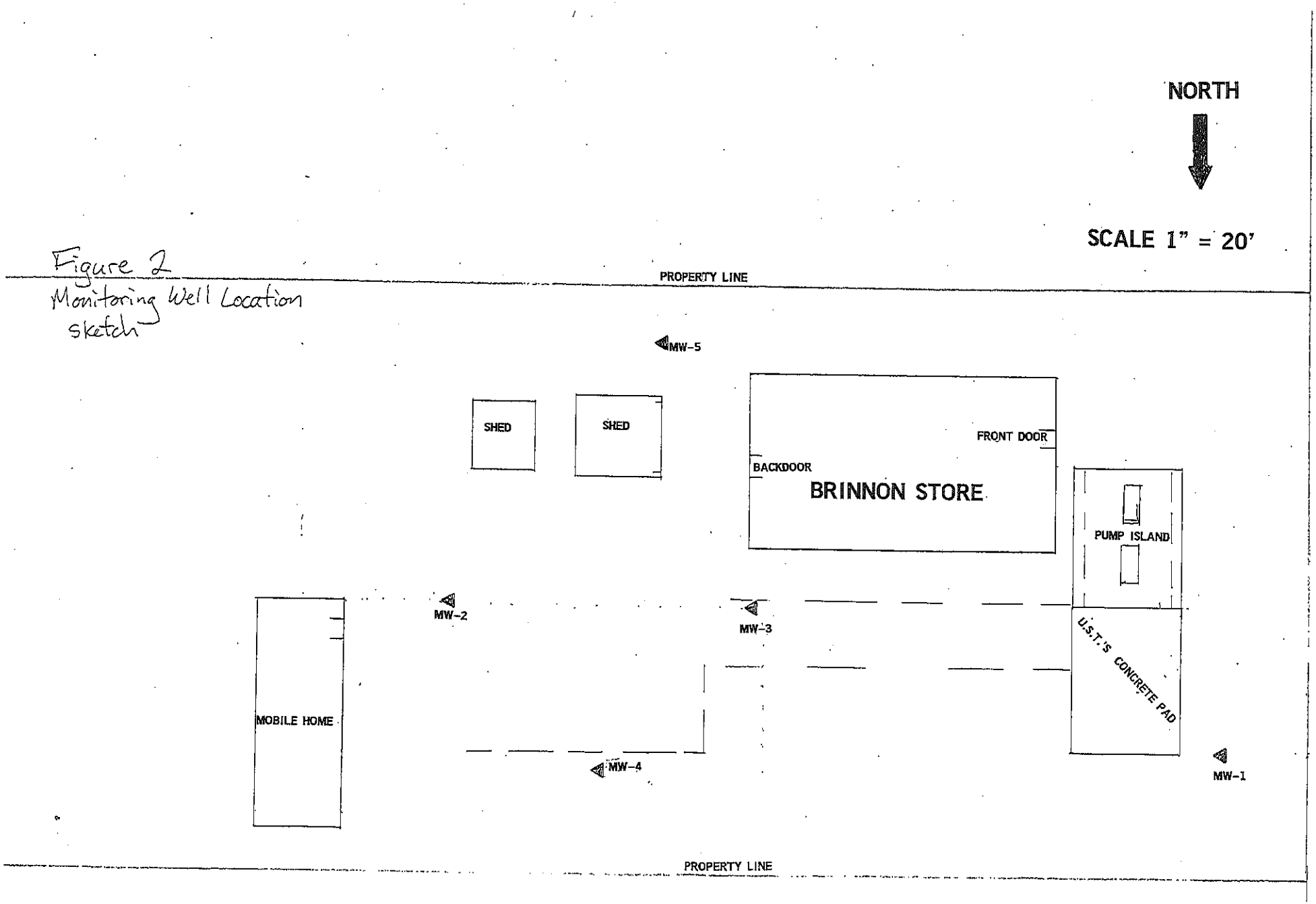

Figure 3

Brinnon General Store
Well Monitoring Report
May 7, 2007

Site Sketch B

Well Locations, Well Number, Well Diameter,
Soil Boring Locations, Sample Numbers (#1,2,3,4)
Original Excavation Location (estimated)