Groundwater Monitoring Laboratory
Field Trip Guide
Western Oregon University

May 4-5, 2023

WOU Campus Groundwater Laboratory Prospectus *(Draft 3 May 3, 2022)*

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Earth and Environmental Science Department
Western Oregon University

Water is an essential resource that forms the crux of numerous environmental conservation issues in the Pacific Northwest. Recent examples in the news media include dam breaching, salmon habitat, Portland Harbor superfund designation, water contamination, seasonal impacts to hydroelectric production, and water rights issues in the Klamath Basin. The ability to understand and analyze hydrologic systems is critical to the State of Oregon, and forms an important component of the Earth and Environmental Science program at Western Oregon University.

Proposed project action items include:

(1) Installation of well field at the northwest corner of campus, adjacent to Ash Creek drainage, near the existing disc golf course and cross-country track. WOU facilities has been contacted and the field site was visited, with tentative approval to proceed. There are no known underground utilities at the proposed site, and no plans for future building development.

(2) Drilling and installation of three (3) groundwater monitoring wells and three (3) piezometers in shallow alluvial aquifers on campus (anticipated total depths <30 m; inter-well spacing ~50 m) (Figure 2).

(3) Purchase of well materials and field equipment in support of undergraduate training, General Education, community outreach, and research in aquifer systems analysis.

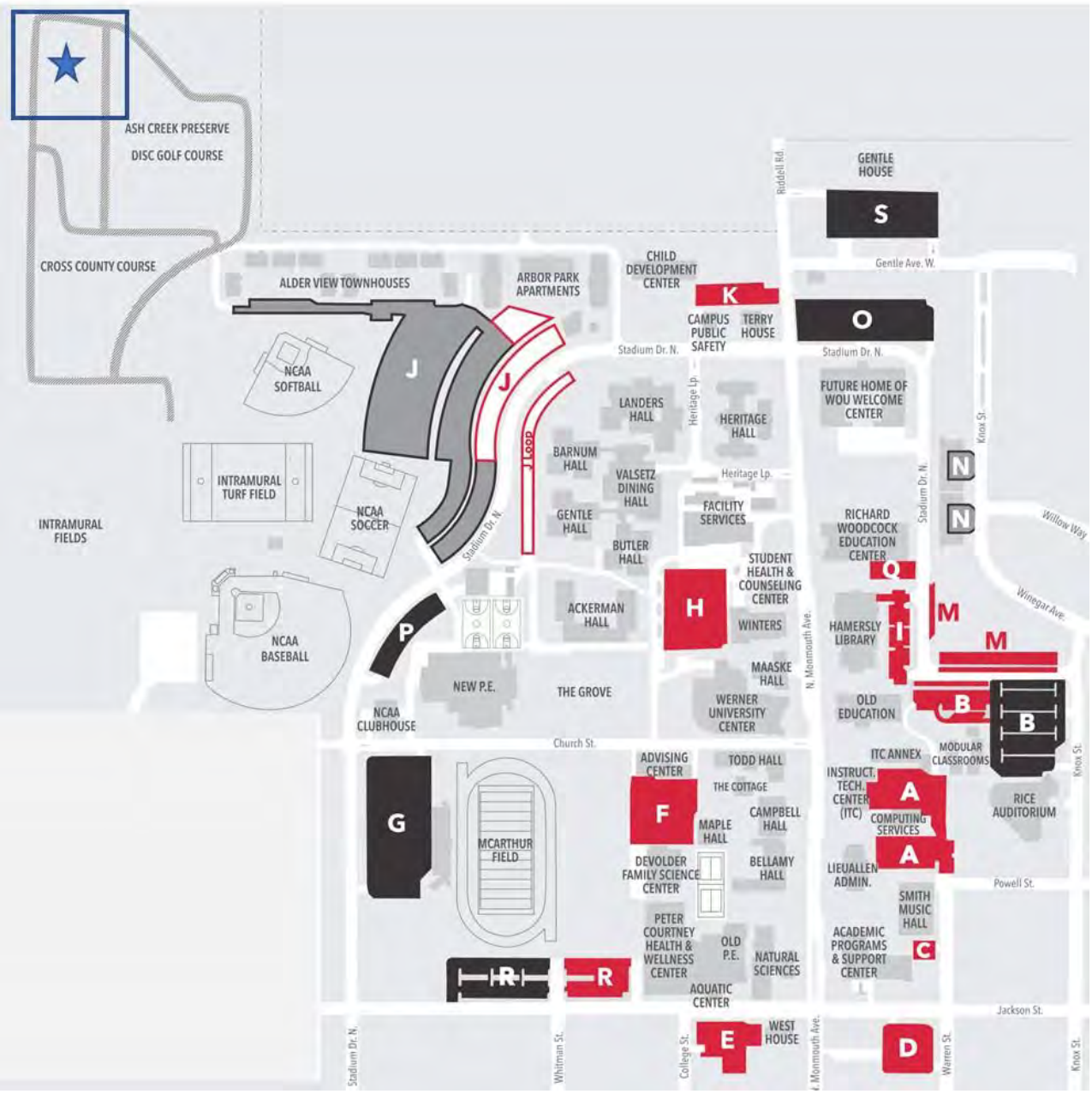
Budget Request

The following is an itemized list of equipment needs to establish the proposed groundwater laboratory:

A. Oregon Water Resources Dept. Well Permit Fees	$ 900.00
B. Campus Well-Field Construction Materials	
3 Wells x 100 ft x $20 / ft materials cost (approximate)	$6000.00
Total Estimate	**$6900.00**

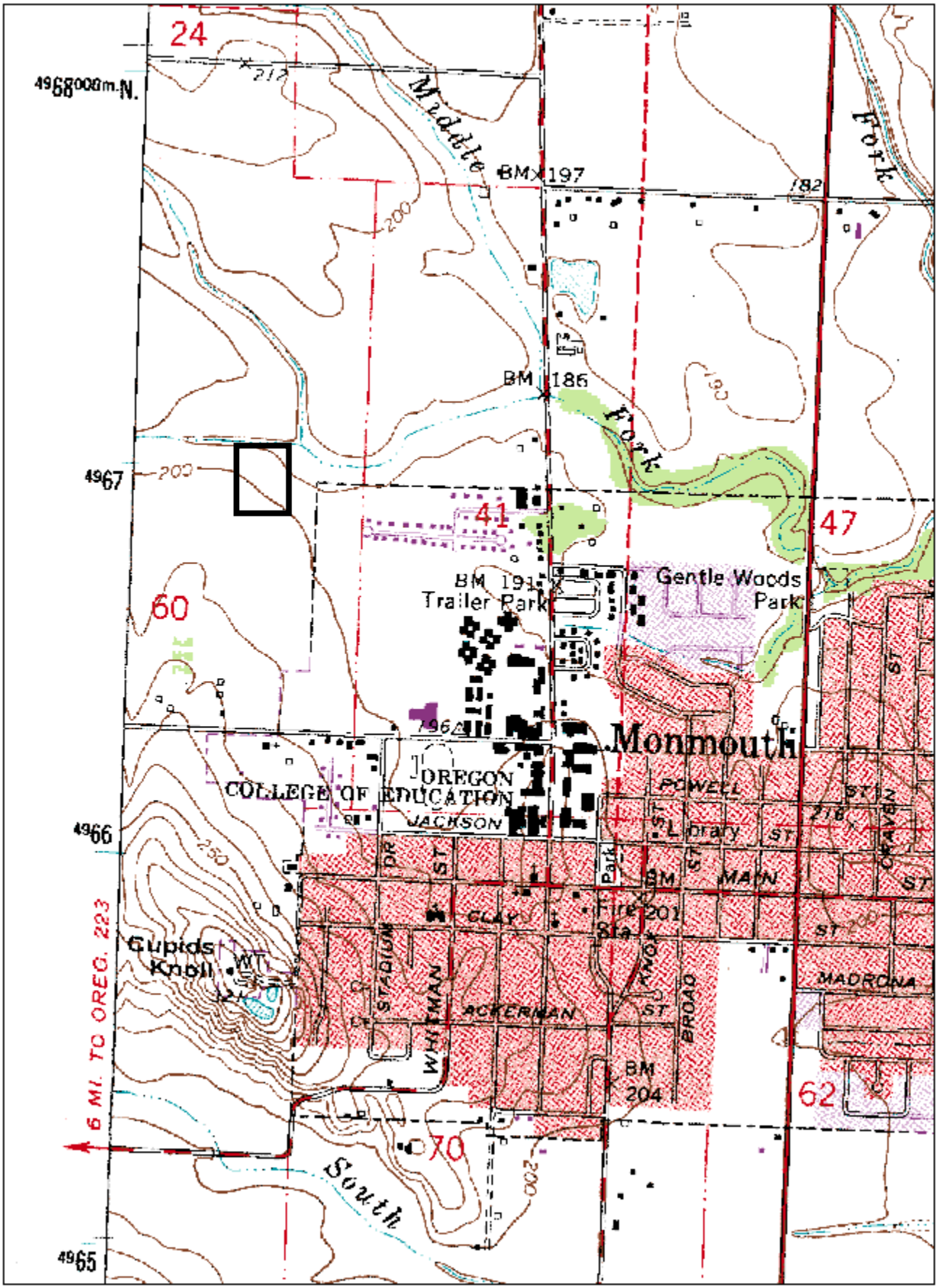
Based on a preliminary project feasibility assessment, drilling services (mobilization, rig time, drilling technician time ~$20,000) will be donated gratis via an alumni donation project being spearheaded by Matt Buche (B.S. Earth Science, 2009), president of the WOU Earth Science Alumni Society (https://wou.edu/alumni/affiliates/earth-science-affinity-group/). Matt is a Senior Project Geologist with Gannet Fleming, Inc. based in California. In addition to the donated drilling costs, WOU match funds are needed to purchase well construction materials. Well construction materials include PVC riser, screen, sand pack, cement/grout supplies, and flush-mount security covers. The Well Field Laboratory will be extensively utilized in support of the following courses: ES202 Principles of Geology, ES302 Quantitative Methods, ES322 Geomorphology, ES473/573 Environmental Geology, and ES476/576 Hydrology. The proposed investments will greatly advance our curricular infrastructure and provide student access to state-of-the-art training facilities. The total annual number of students impacted by this project (all courses) will average ~50-60. In addition to training future geoscience professionals and providing liberal arts education, the groundwater laboratory will also be used for community outreach events, professional development training opportunities and collaboration with local water resource professionals. In addition, faculty from the Division of Natural Science and Mathematics are long-term active community service partners with the Ash Creek Water Control District and Luckiamute Watershed Council. The close proximity of the WOU campus well field to the Ash Creek drainage will be leveraged for water resource evaluation and water quality monitoring in the Monmouth-Independence area. The project will provide valuable applied student training, research, and community internship experience in water resources management.

Figure 1. Proposed WOU Campus Well Field Location (Starred Location - TBD).




WESTERN OREGON UNIVERSITY
PROPOSED GROUNDWATER
LABORATORY
10040 Hoffman Rd [Polk 530]
4980 Riddell Rd [Polk 419]
5000 Riddell Rd
PROPOSED
WELL FIELD
5235 Riddell Rd [Polk 3365]
WOU B-2
[Polk 52047]
879 N. Monmouth Ave. [Polk 3361]
141 N. Monmouth Ave. [Polk 248]
Griffin Drive [Polk 50552]
0
1000 ft
Google
Imagery ©2022 Maxar Technologies, State of Oregon, Map data ©2022
United States
3D Earth view

Monmouth 7.5-minute Quadrangle Topographic Map of the Field Area

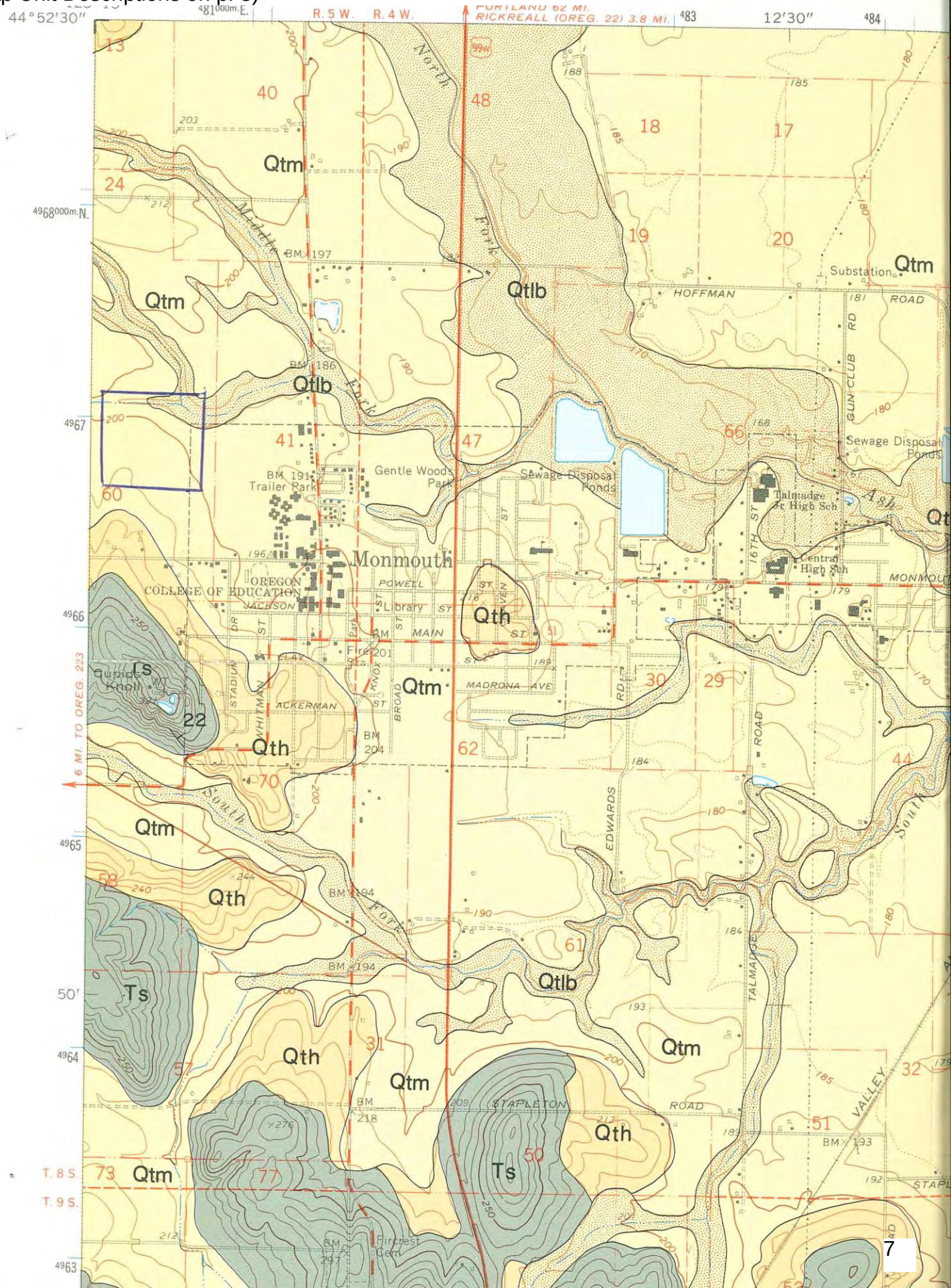


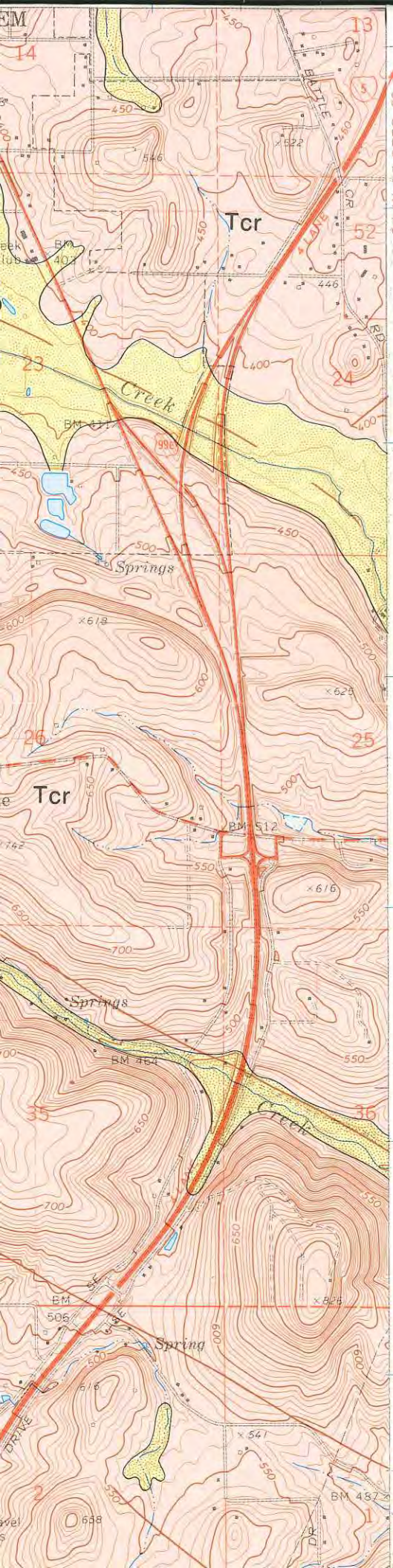
Monmouth 7.5-minute Digital Orthophoto Quad, USGS

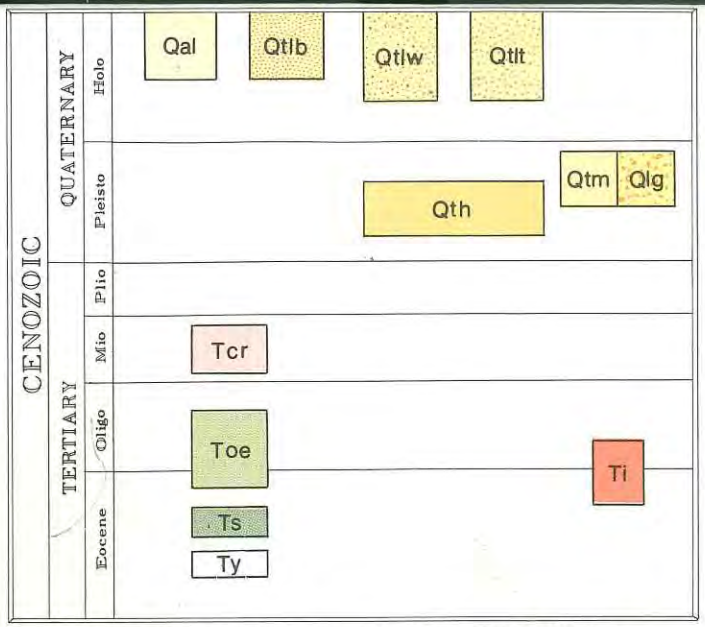
LiDAR-Based Hillshade Model of the WOU Field Site (1-m resolution)

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
DONALD A. HULL, STATE GEOLOGIST

1:24,000 Geologic Map of the Monmouth Field Site
(Map Unit Descriptions on p. 8)







Reflects traditional usage in Western Oregon, after: Gonthier, 1980; Bela, 1979; Helm and Leonard, 1977; Beaulieu, 1974; Hickman, 1969; Baldwin and others, 1955; Vokes and others, 1954.

EXPLANATION

SURFICIAL GEOLOGIC UNITS

Qal

Recent river alluvium: *Unconsolidated cobbles, coarse gravel, sand, and some silt and clay within active channels of Willamette River. Generally 15-45 ft thick, consisting of stratified sands and well-rounded pebbles, gravels, and cobbles of primarily basaltic and andesitic composition; often overlain by 3-15 ft of light-brown sand and silt overburden. Characterized by low relief, point-bar and channel-bar deposits; many areas unvegetated, others support dense stands of brush and phreatophytes, such as willows and cottonwoods. Subject to major flooding, critical stream-bank erosion, and lateral channel migration; includes many areas located between 1852 meander line and present channel that illustrate possible extent of future changes*

Qtlw

Lower terrace deposits of the Willamette River (Quaternary): *Unconsolidated to semiconsolidated cobbles, gravel, sand, silt, clay, muck, and organic matter of variable thickness (30-50 ft) on the flood plain and lowland terraces immediately above the Recent river alluvium* (**Qal**)*; typically 5-20 ft of light-brown silt and clay or very fine sand overlying 10-45 ft of moderately well-sorted sand and locally cemented gravel. Surface topography characterized by a low, undulating, fluvial surface with abandoned channels, meander scrolls, oxbow lakes, and sloughs; subject to major and local flooding, some catastrophic channel migration of major scale, ponding, and high ground water. Flood-plain soils are predominantly well drained and somewhat excessively drained silty clay loams, silt loams, and sandy loams; good ground-water yields generally of 100-500 gallons per minute*

Qtlt

Lower terrace deposits of tributary rivers and streams (Quaternary): *Unconsolidated to semiconsolidated gravel, sand, silt, clay, and organic matter generally 15-30 ft thick on lowland terraces and flood plains immediately above major tributary rivers of the Willamette River. Gravel deposits are very thin to variable in thickness, according to tributary drainage source, generally limited to active stream beds or former meander channels, and located at or near bed rock beneath 20-30 ft of sand, silt, and clay. Somewhat tortuous meandering streams entrenched 15-45 ft, often flowing on Tertiary sedimentary bed rock or semiconsolidated older valley-fill alluvium. Surface topography characterized by a low, undulating fluvial surface of swell and swale relief, abandoned meander loops, and oxbow lakes; subject to high ground water and ponding and major and local flooding; flood-plain soils are predominantly well drained and somewhat excessively drained silty clay loams, silt loams, and sandy loams. Some soft, compressible organic soils of low shear strength may occur locally, particularly within abandoned channels and oxbows. Major stream-bank erosion commonly occurs at outer bends of meander loops by shallow earthflow and slump due to undercutting. Ground-water yields generally small*

Qtlb

Lower terrace deposits of alluvial bottomlands (Quaternary): *Flat, moderately to poorly drained areas with soft, organic compressible soils of low shear strength locally; characterized by low relief, ponding, and high ground water. Deposits typically consist of somewhat stratified very fine sands, silty sandy clays, silty clays, and silty clay loams, with slight to moderate plasticity (ML-CL); 4-12 ft thick along bottomlands of interior drainages of low, rolling sedimentary bedrock units. Deposits locally may represent somewhat thicker accumulations of silt and silty clay materials of fluviatile and/or loessal origin derived in part from Willamette Silts. Similar deposits along creeks are associated with deposits of units* **Qtm** *and* **Qth** *and are often modified by ditching and field drainage for agriculture; typical examples are deep (more than 60 in.) clay (CH), silty clay (CH), and silty clay loam (CL or ML) black Bashaw clay soils of Baskett Slough (Rickreall quadrangle). Similar thicknesses of reddish-brown sandy silty material (ML-CH) in basaltic terrain* (**Tcr**)

Qtm

Middle terrace deposits (Quaternary): *Semiconsolidated gravel, sand, silt, and clay forming very flat terraces of major extent along the Willamette River. Generally 10-30 ft of light-brown silty clay and interbedded very fine sand and silt (ML or CL-CH) surficial material; believed primarily related to Willamette Silts, including associated glacial erratics consisting of tiny fragments and pebbles up to boulders greater than 4 ft in diameter. Soils somewhat poorly drained and poorly drained silt loams and silty clay loams to moderately well-drained and well-drained silt loams subject to seasonal high ground water and ponding. Sand and gravel (GP, SM), where present, usually occur below 30 ft depth; locally more abundant near Monmouth-Independence and in the lower part of Ash Creek. Total thickness 0-85 ft, but often only 40-50 ft; within Rickreall 7½-minute quadrangle, 15-35 ft of brown clay or silt generally occurs above several to 30 ft of gravelly clay, black sands, and gravels. Generally small ground-water yields, except near Monmouth-Independence, where sand and gravel may yield up to 300 gallons per minute*

Qlg

Linn gravel (Quaternary-upper Pleistocene): *Stratified fine to coarse fluvial gravels deposited as an alluvial fan in the Stayton-Turner-Salem areas during an early stage of the Santiam River; of limited extent within the map area; uppermost few feet of gravels extensively oxidized and weathered, often chalky; thickness ranges from 30-40 ft to possibly as much as 300 ft. Regionally, the upper foot or so of gravel is cemented by an impermeable clay pan locally, which restricts drainage. Composition of gravels (mostly basalt, but also andesite, dacite, rhyolite, quartz, and diorite) essentially uniform. Within map area near Salem, soils are well drained and somewhat poorly drained gravelly silt loam and gravelly loam. Extensively utilized as source of sand and gravel. Good ground-water yields greater than 100 gallons per minute*

Qth

Higher terrace deposits (Quaternary-middle Pleistocene): *Generally semiconsolidated light-brown sand, silt, and clay of variable thickness (3-15 ft) on higher terraces and remnants of old higher terraces adjacent to sedimentary bedrock foothills; mantled by moderately well-drained and well-drained silt loam soils. Includes colluvium, slope wash, and alluvial fan deposits near sedimentary bedrock foothills; deposits thin where transitional with pediments. Material generally similar to unit* **Qtm,** *particularly in West Salem, containing glacial erratics related to Willamette Silt but also some gravelly alluvium. Some higher terrace deposits on west*

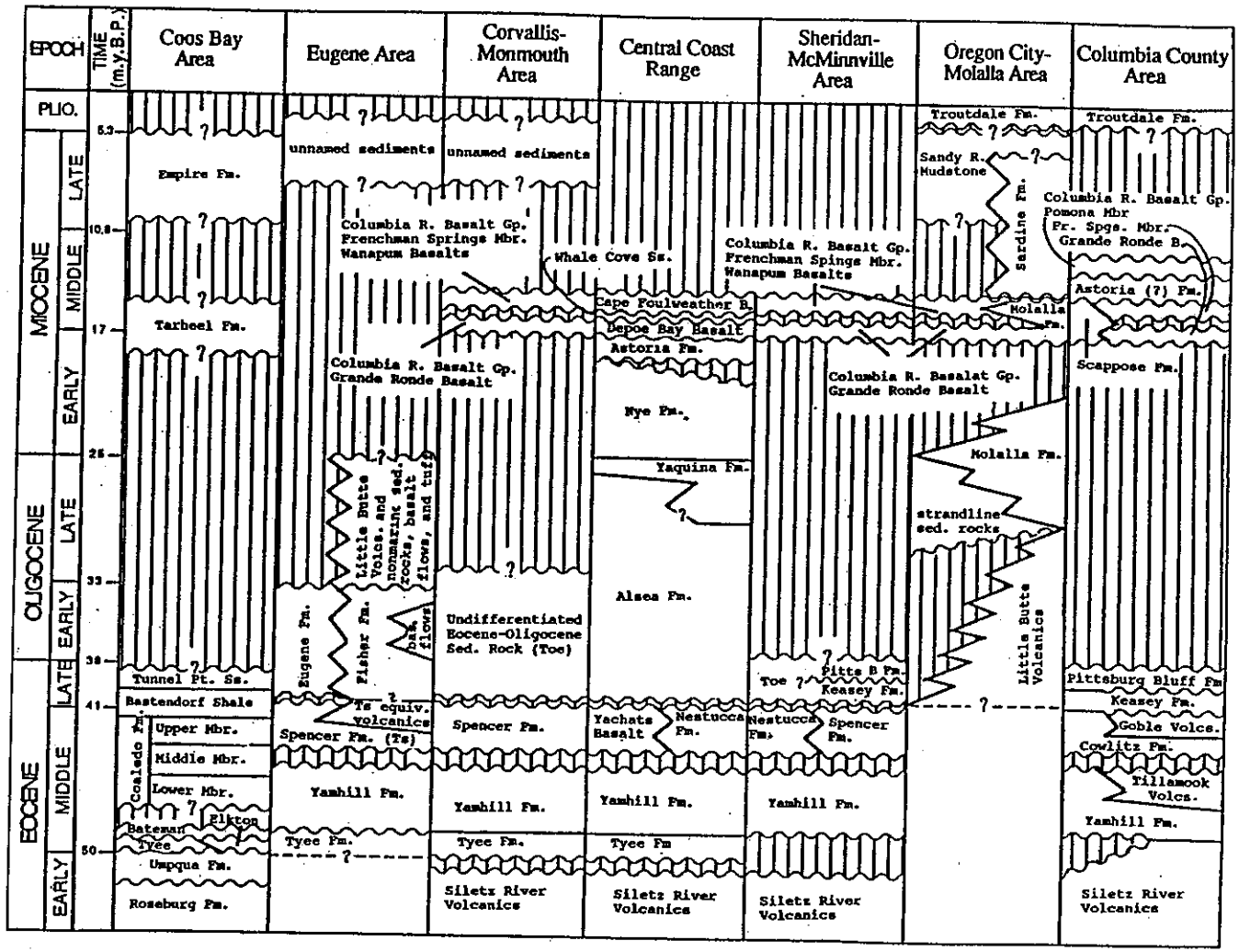


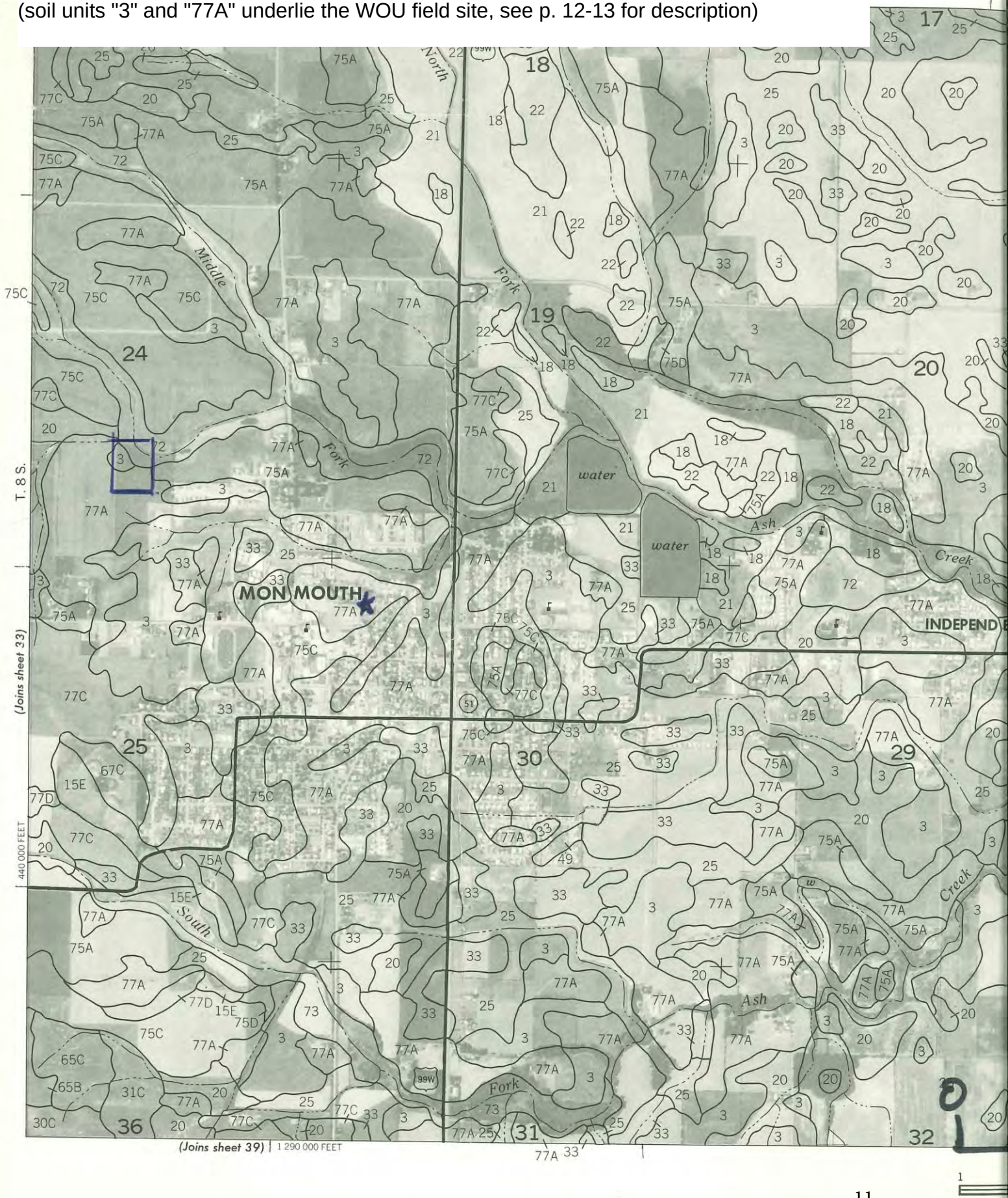
Figure 3. Stratigraphic correlation chart for Tertiary rocks of western Oregon (modified from Yeats and others, 1991).

TABLE I

MINERALOGY OF THE BEDROCK UNITS

UNIT	MINERALOGY	REFERENCES
Columbia River Basalt (Tcr)	Primary: Ca–Na plagioclase, augite, magnetite, ilmenite Secondary: chlorophaeite	Beaulieu (1971)
Intrusive Rocks (Ti)	Primary: plagioclase (varied), magnetite, olivine, augite, apatite, biotite, quartz Secondary: chlorite, calcite, zeolites, nontronitic clay minerals	Brownfield (1982), Bela (1981), MacLeod (1981)
Undif. Eocene–Olig. Sed. Rock (Toe)	No analysis	
Spencer Fm. (Ts)	Primary: plagioclase (oligoclase to calc–andesine), quartz, K–feldspar (orthoclase, with minor microcline and perthite), with lesser amounts of muscovite, biotite, green hornblende, magnetite, pyroxene, chert, zircon, sphene, glauconite Secondary: smectite, zeolites, calcite, quartz, chlorite, K–feldspar, Fe–oxides	Gandera (1977), Cunderla (1986), Al–Azzaby (1980)
Yamhill Fm. (Ty)	Primary: plagioclase (oligoclase and andesine), hornblende, quartz, glauconite, chlorite, limonite, biotite, muscovite Secondary: calcite, glauconite	Baldwin and others, (1955), Al–Azzaby (1980)
Rickreall Limestone Mbr.	Primary: calcite, quartz, augite, mica, feldspar Secondary: heulandite, chert, quartz, pyrite, mixed layer clays	Boggs and others, (1973)
Tyee Fm. (Tt)	Primary: plagioclase, quartz, biotite, muscovite, chert Secondary: calcite	Baldwin (1964)
Siletz River Volcs. (Tsr)	Primary: plagioclase (mostly labradorite), augite, magnetite, olivine Secondary: smectite, pyrite, palagonite, thomsonite, calcite, chlorite, natrolite, analcime, scolecite, mesolite, heulandite, apophyllite, chabazite, mordenite, stilbite, laumonite, amethystine quartz	Baldwin (1964), Snavely and others, (1968), Beaulieu (1971), Keith and Staples (1985)

Soil Survey of the Monmouth-Independence Area, Polk County, Oregon
(soil units "3" and "77A" underlie the WOU field site, see p. 12-13 for description)



areas that are close to water. Grouse, band-tailed pigeons, and mountain quail are not common. Gophers, ground squirrels, moles, nutria, and opossum are common pests. Planting along roadways, using grassed waterways, and preserving fence row, woodlots, and brushy areas improve the cover and food for wildlife.

This soil is limited for use as homesites and commercial buildings because of low strength and shrink-swell potential. It is limited for septic tank absorption fields because of the moderately slow permeability. Local roads and streets are limited by low strength. Some areas of this soil are connected to community water and sewage systems. The hazard of flooding is a major limitation.

This soil is in capability subclass IIw.

3—Amity silt loam. This somewhat poorly drained soil is on terraces of the Willamette River and its major tributaries. It formed in mixed silty alluvium. Slopes are 0 to 3 percent and average about 2 percent. Elevation is 170 to 300 feet. The average annual precipitation is 40 to 45 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

In a representative profile, the surface layer is dark brown silt loam about 16 inches thick. The subsurface layer is dark grayish brown, mottled heavy silt loam about 9 inches thick. The subsoil is brown and dark grayish brown, mottled silty clay loam about 23 inches thick. The substratum is olive brown, mottled silty clay loam that extends to a depth of 63 inches or more.

Included with this soil in mapping are areas of Woodburn, Holcomb, Concord, and Dayton soils, which make up about 15 percent of this map unit.

Permeability is moderately slow. Effective rooting depth is 60 inches or more. Available water capacity is 9 to 12 inches, and the water-supplying capacity is 20 to 26 inches. Runoff is slow, and the hazard of erosion is slight. A seasonal high water table is at a depth of 6 to 18 inches in winter and spring.

This soil is used for small grain, hay, pasture, and grass seed. Drained areas are suited to a wider range of crops. Irrigated areas are used for pole beans, corn, and other row crops. Returning all crop residues to the soil and using a cropping system in which grasses, legumes, or grass and legume mixtures are grown at least 25 percent of the time help to maintain fertility and tilth. Small grain and grasses respond to nitrogen; row crops commonly respond to nitrogen; and phosphorus and legumes respond to phosphorus, sulfur, and lime.

The soil is irrigated by sprinkler, furrow, or border irrigation, and sprinklers mainly are used. Irrigation water needs to be applied carefully at rates low enough to prevent runoff. Adequate water for irrigation can generally be obtained from wells.

Drainage is the major concern, but if outlets are available the soil responds readily to open or closed drainage systems. The soil generally requires improved outlets to increase the subsurface drainage and lower the seasonal high water table. For maximum use and production, the soil needs a drainage pattern.

This soil is poorly suited to commercial timber production.

The natural vegetation is grass, shrubs, and scattered Oregon white oak. A seasonal high water table limits the use of this soil to ducks and geese late in fall, in winter, and early in spring. Seeds and tubers from water plants and crop residues are food for waterfowl. The rest of the year, ring-necked pheasant, valley quail, bobwhite quail, mourning doves, and black-tailed deer move into this area for food and cover. This soil is used by some furbearing animals.

This soil has some limitations for roads and streets and major limitations for homesites, commercial buildings, and other community uses because of the seasonal high water table.

This soil is in capability subclass IIw.

4D—Apt silty clay loam, 3 to 25 percent slopes. This well drained soil is on mountainous, lower side slopes of the Coast Range. It formed in residuum and colluvium weathered from sedimentary rock. Slopes average about 15 percent. Elevation is 700 to 1,400 feet. The average annual precipitation is 60 to 120 inches, the average annual air temperature is 48 to 52 degrees F, and the frost-free period is 160 to 190 days.

In a representative profile, the surface layer is very dark grayish brown silty clay loam about 8 inches thick. The subsoil is dark yellowish brown silty clay about 58 inches thick. Fractured siltstone is at a depth of 66 inches.

Included with this soil in mapping are areas of Honeygrove, Peavine, Cumley, and Astoria soils, which make up about 15 percent of this map unit.

Permeability is moderately slow. Effective rooting depth is 60 inches or more. Available water capacity is 7.5 to 10 inches, and the water-supplying capacity is 20 to 26 inches. Runoff is medium, and the hazard of erosion is moderate.

Most areas of this soil are used for timber production. Other uses are water supply and wildlife habitat. The soil is well suited to the production of Douglas-fir. Red alder is common. The site index for Douglas-fir on this soil ranges from 155 to 180, and the average site index is about 165. Based on the average site index, this soil is capable of producing about 13,300 cubic feet, or 74,200 board feet (International rule, one-fourth inch kerf), of merchantable timber from a fully stocked, even-aged stand of 80-year old trees.

Limitations to the use of equipment are major. When wet, this soil is sticky and plastic; this limits trafficability. It is severely compacted by equipment. Cable logging is desirable because tractor logging causes excessive disturbance. Roads and landings may need to be protected

mingled with cultivated soils. In wooded areas of Douglas-fir, Oregon white oak, snowberry, poison-oak, and grass, common birds include ruffed grouse, mountain quail, and band-tailed pigeons. These birds feed on the fruit and seeds of trees and shrubs. Black-tailed deer are common. Planting along roadsides, using grassed waterways, and maintaining fence rows and brushy areas improve the cover and food supply for wildlife.

This soil has major limitations for all community uses because of the shallow depth to bedrock and the slope.

This soil is in capability subclass VIIs.

77A—Woodburn silt loam, 0 to 3 percent slopes. This moderately well drained soil is on broad terraces above the flood plain in the Willamette Valley. It formed in silty alluvial deposit. Slopes average about 2 percent. Elevation is 150 to 300 feet. The average annual precipitation is 40 to 45 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

In a representative profile, the surface layer is very dark grayish brown and dark brown silt loam about 17 inches thick. The upper 6 inches of the subsoil is dark brown silt loam, and the lower part is dark brown and brown silty clay loam that extends to a depth of 65 inches or more. Mottles are common in the lower part of the subsoil.

Included with this soil in mapping are areas of Willamette soils, which make up about 10 percent of this map unit, and Amity soils, which make up 5 percent.

Permeability is slow. Effective rooting depth is greater than 60 inches. Available water capacity is 11 to 13 inches, and the water-supplying capacity is 20 to 26 inches. Runoff is slow, and the hazard of erosion is none to slight. A seasonal high water table is at a depth of 24 to 36 inches in winter and spring.

This soil is well suited to pasture, hay, small grain, grass seed, and vegetable crops. Long-lived, deep-rooted deciduous fruit and nut trees, strawberries, caneberries, and alfalfa are adversely affected by the seasonal high water table unless the soil is drained. Properly managing crop residue and using a cropping system in which grasses and legumes or a grass and legume mixture are grown at least 25 percent of the time help to maintain fertility and workability.

Small grains and grasses respond to nitrogen; row crops respond to nitrogen and phosphorus; and legumes respond to phosphorus, sulfur, and, in many places, to lime. If residues are used, additional nitrogen generally is needed to prevent a decrease in yields.

The soil may be irrigated by sprinkler, furrow, or border irrigation; sprinkler irrigation is the most common and is very satisfactory. Irrigation water should be applied carefully at rates low enough to prevent runoff. Water for irrigation may be from reservoirs or streams.

The soil has moderate drainage concerns which respond to pattern drainage. Drainage is needed for maximum use and production. Seepage from higher soils can be controlled by interception and random drains. Runoff may be controlled by grassed waterways and vegetative cover.

No commercial stands of timber grow on this soil. It is well suited to Christmas tree production.

Native vegetation is grass, hazel, poison-oak, wild blackberry, Douglas-fir, and Oregon white oak, which furnish good food and cover for ring-necked pheasant, California quail, bobwhite quail, and mourning dove. Black-tailed deer are permanent residents, and ducks and geese also feed in areas that are near water. Gopher, ground squirrel, mole, nutria, and opossum are common pests. Planting along streambanks and roadways, using grassed waterways, and preserving fence rows, woodlots, and brushy areas improve cover for wildlife.

This soil has some limitations for homesites, commercial buildings, and local roads and streets because of wetness. It has major limitations for septic tank absorption fields because of slow permeability and the high seasonal water table.

This soil is in capability subclass IIw.

77C—Woodburn silt loam, 3 to 12 percent slopes. This moderately well drained soil is on broad terraces above the flood plain in the Willamette Valley. It formed in silty alluvial deposits. Slopes average about 7 percent. Elevation is 170 to 300 feet. The average annual precipitation is 40 to 45 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

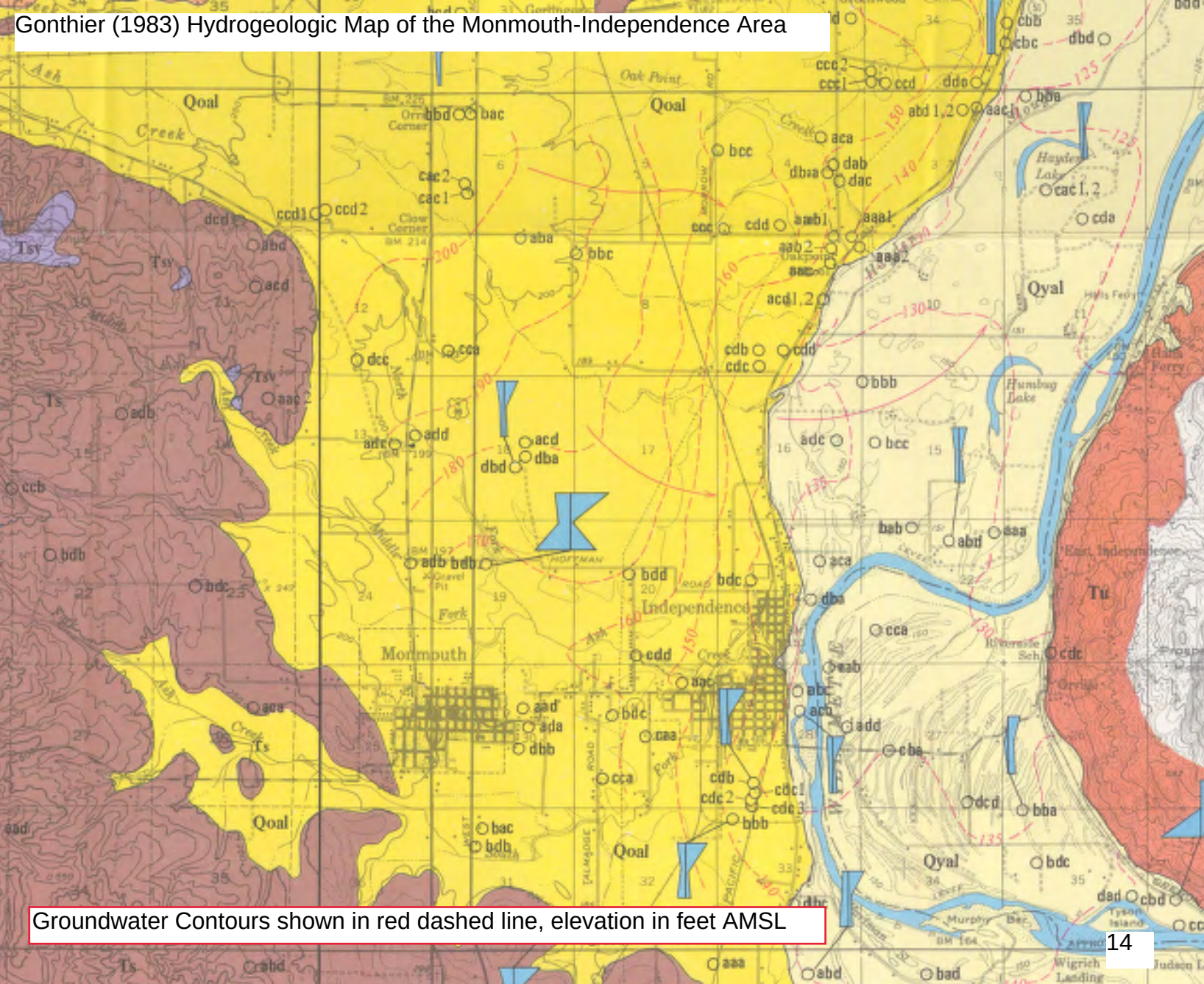
In a representative profile, the surface layer is very dark grayish brown and dark brown silt loam about 17 inches thick. The upper 6 inches of the subsoil is dark brown silt loam, and the lower part is dark brown silty clay loam that extends to a depth of 60 inches or more. Mottles are common in the lower part of the subsoil.

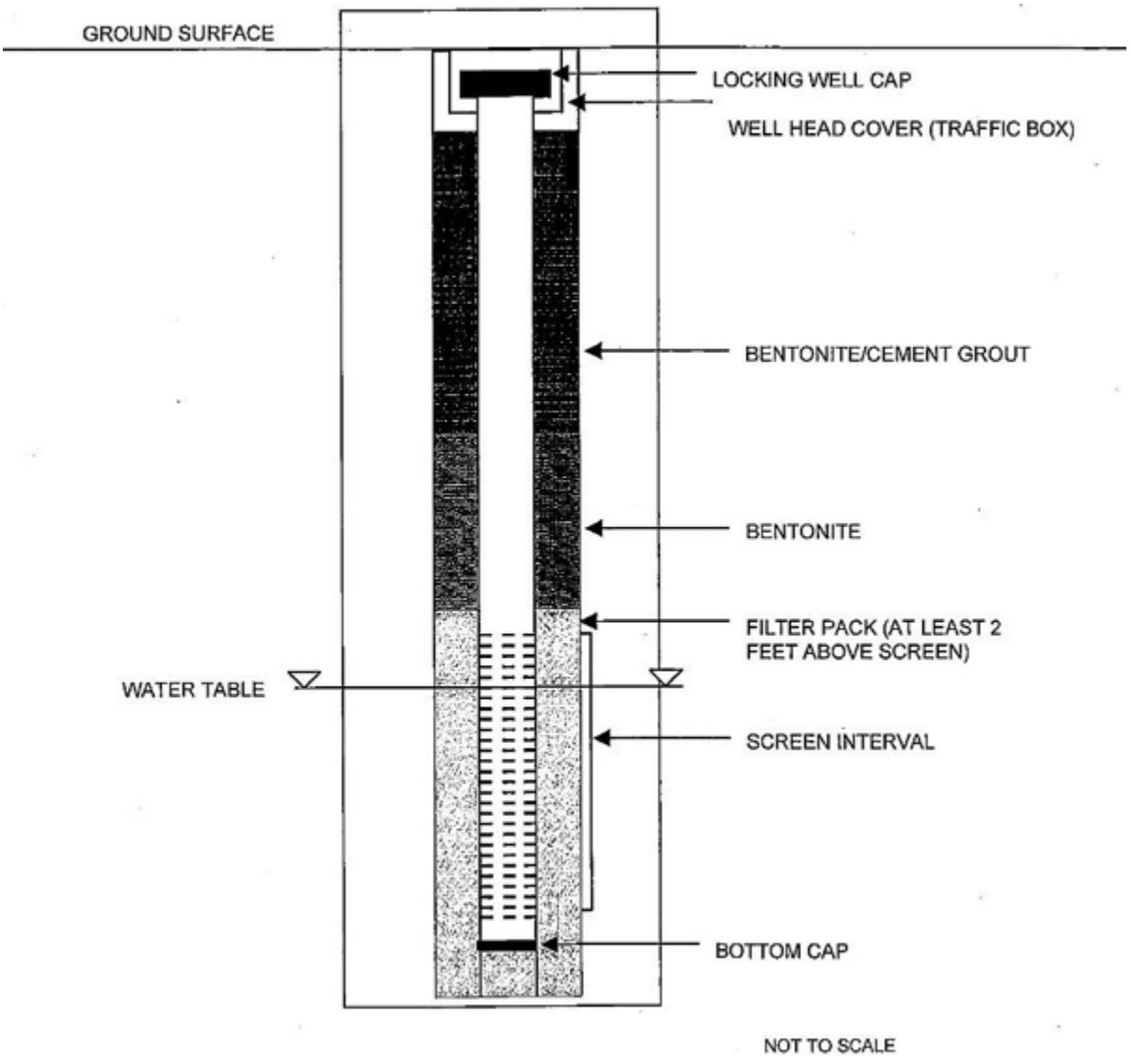
Included with this soil are areas of Willamette soils, which make up 10 percent of this map unit, and Amity soils, which make up 5 percent.

Permeability is slow. Effective rooting depth is restricted by the seasonal high water table. Available water capacity is 11 to 13 inches, and the water-supplying capacity is 20 to 26 inches. Runoff is medium, and the hazard of erosion is moderate (fig. 14). A seasonal high water table is at a depth of 24 to 36 inches in winter and spring.

This soil is best suited to small grain, grass seed, hay, and pasture. Long-lived, deep-rooted deciduous fruit and nut trees, strawberries, raspberries, and alfalfa may be adversely affected by the seasonal high water table unless this soil is drained. Properly managing crop residue and using a cropping system in which grasses and legumes or a grass and legume mixture are grown at least 50 percent of the time help to reduce runoff and erosion and to maintain fertility and workability.

Gonthier (1983) Hydrogeologic Map of the Monmouth-Independence Area





Proposed monitoring well design, WOU Campus Groundwater Laboratory.

16

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

POLK 530

08/5W/24C6

(START CARD) # 29079

(1) OWNER: Well Number
Name Don Pike
Address 12380 Meyers Rd.
City Dallas State Ore Zip 97338

(2) TYPE OF WORK:
☑ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☑ Cable
☐ Other

(4) PROPOSED USE:
☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☑ No Depth of Completed Well 113 ft.
Explosives used ☐ Yes ☑ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10"	0	55	cement	0	55	20
6"	55	113				

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E
☐ Other
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1.5	55	.250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☑	☐
					☐	☐	☐	☐
Liner:	4"	13	113	#160	☐	☑	☑	☐
					☐	☐	☐	☐

Final location of shoe(s) 55'

(7) PERFORATIONS/SCREENS:
☑ Perforations Method SKilsaw
☐ Screens Type slot Material pvc

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
55	113	8"	60	1/8"	4"	☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☑ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
5	82'	113	1 hr.

Temperature of Water 53° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Polk Latitude Longitude
Township 8 N or (S) Range 5 E or (W) WM.
Section 24 NW ¼ SW ¼
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address) 10040 Hoffman Rd. Monmouth, Ore. 97361

(10) STATIC WATER LEVEL:
31 ft. below land surface. Date 9/7/92
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 27'

From	To	Estimated Flow Rate	SWL
27	29	1 gpm	—
62	63	3	31
81	83	2	31

(12) WELL LOG:
Ground elevation

Material	From	To	SWL
Topsoil	0	1	—
dark brown clay	1	11	—
light brown clay	11	23	—
Gray Clay	23	33	—
Gray Clay w/ pea gravel	33	39	—
Brown Clay w/ medium gravel	39	45	—
Gray Clay	45	48	—
Gray Claystone (Hard)	48	113	31

RECEIVED
SEP 29 1992
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8/27/92 Completed 9/7/92

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.
pH# 623-2669
WWC Number
Signed Dickerson Well Drilling, Inc. Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1571
Signed William A. Blair Date 9/7/92

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 10/91

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

MAR 2 3 1992
WATER RESOURCES DEPT
SALEM, OREGON

POLK 419

(START CARD) # 26337

OU/5W/24da

(1) OWNER: Well Number
Name LILA WILSON
Address 4980 RIDDELL RD.
City MONMOUTH State OR Zip 97361

(2) TYPE OF WORK:
☐ New Well ☑ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☑ Cable
☐ Other

(4) PROPOSED USE:
☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☐ No Depth of Completed Well 107 ft.
Explosives used ☐ Yes ☑ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10"	0'	48'	CEMENT	0'	48'	24 SACKS
6"	48'	107'				

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E
☐ Other
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	53'	.250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4½"	-2'	107'	160#	☐	☑	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 53'

(7) PERFORATIONS/SCREENS:
☑ Perforations Method SKILL SAW
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
82'	106'	3/16" x 1"				☐	☐
			35			☐	☑
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20 GPM	69'		~~1 hr~~ 6 HRS.

Temperature of Water 54° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☑ Muddy ☐ Odor ☑ Colored ☑ Other PRESUMED CONTAMINATED
Depth of strata: 37' -41'

(9) LOCATION OF WELL by legal description:
County POLK Latitude Longitude
Township 8S N or S. Range 5W E or W. WM.
Section 24 NE ¼ SE ¼
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address) 4980 RIDDELL RD.

(10) STATIC WATER LEVEL:
11 ft. below land surface. Date 3/4/92
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 85'

From	To	Estimated Flow Rate	SWL
85'	99'	2GPM	11'

(12) WELL LOG:
Ground elevation

Material	From	To	SWL
- GRAY SHALE	46'	85	
- GRAY SHALE W/SEAMS OF CLAYSTONE	85'	99'	11'
- GRAY SANDY SHALE	99'	107'	

Date started FEB. 22, '92 Completed MARCH 2, '92

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 633
Signed Michael Waldron Date MARCH 14, 1992

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 10/91

16

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

POLK 352

RECEIVED
SEP 11 1991
WATER RESOURCES DEP.
SALEM, OREGON

8S/5W/24 dq

(START CARD) # 26331

(1) OWNER: Well Number:
Name LILA WILSON
Address 4980 RIDDELL RD.
City MONMOUTH State OR Zip 97361

(2) TYPE OF WORK:
☑ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD
☐ Rotary Air ☐ Rotary Mud ☑ Cable
☐ Other

(4) PROPOSED USE:
☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☐ No Depth of Completed Well 46 ft.
Explosives used ☐ Yes ☑ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10"	0'	19.5'	BENTONITE	0'	19.5'	14 SACKS
6"	19.5	46'				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☑ Other DRY PACK
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1.5'	47'	.250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 47'

(7) PERFORATIONS/SCREENS:
☑ Perforations Method MILLS KNIFE
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
38'	42'	3/8" X 1 1/4"	45			☑	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
10 GPM	14'		1 HR. 18 HRS.

Temperature of water 53° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County POLK Latitude Longitude
Township 8S N or S. Range 5W E or W. WM.
Section 24 NE ¼ SE ¼
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address) 4980 RIDDELL RD.

(10) STATIC WATER LEVEL:
14 ft. below land surface. Date 6/26/91
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 37'

From	To	Estimated Flow Rate	SWL
37'	41'	10 GPM	14'

(12) WELL LOG: Ground elevation

Material	From	To	SWL
BROWN CLAY	0'	6'	
BROWN SILTY CLAY	6'	18'	
BLUE CLAY	18'	30'	
BLUE CLAY W/ GRAVEL	30'	37'	
SMALL-MEDIUM GRAVEL			
W/ FINE-COARSE BLACK SD.	37'	38'	14'
GRAVEL W/ BROWN +			
BLACK SAND	38'	41'	14'
BLUE CLAY	41'	46'	

Date started 6-21-91 Completed 6-26-91

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 633
Signed Michael Waldroop Date June 30, 1991

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3/88

The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

Polk 3365

State Well No. 8S/5W-24

State Permit No.

(1) OWNER:
Name Mr & Mrs James Gordon
Address 5235 Riddle Rd, Monmouth

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED: Threaded ☐ Welded ☒
6" Diam. from +2 ft. to 48 ft. Gage .250
4" Diam. from 0 ft. to 78 ft. Gage PVC 160
" Diam. from ft. to ft. Gage

(6) PERFORATIONS: Perforated? ☒ Yes ☐ No.
Type of perforator used SAW
Size of perforations 1/8 in. by 7 in.
80 perforations from 40 ft. to 78 ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS: Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test 8 gal./min. with 57 ft. drawdown after 2 hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:
Well seal—Material used Cement Grout
Well sealed from land surface to 18 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 10 sacks
How was cement grout placed? Pumped thru 1" tremmie from bottom of annulas to Land Surface.
Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County Polk Driller's well number
¼ ¼ Section 24 T. 8S R. 5W W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found 70 ft.
Static level 15 ft. below land surface. Date 9/11/80
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 6
Depth drilled 78 ft. Depth of completed well 78 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top soil	0	2	
Brown clay	2	14	
Sticky Blue clay	14	33	
Brown clay	33	43	
Hard Grey Sandstone	43	78	

RECEIVED
SEP 22 1980
WATER RESOURCES DEPT
SALEM, OREGON

Work started 9/8 19 80 Completed 9/11 19 80
Date well drilling machine moved off of well 9/11 19 80

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] William D Hartley (Drilling Machine Operator) Date 9/15, 1980
Drilling Machine Operator's License No. 1376

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name AQUA-TECH Well Construction Inc. (Person, firm or corporation) (Type or print)
Address 868 Delta Dr. NE. Salem
[Signed] David Beach (Water Well Contractor)
Contractor's License No. 696 Date Sept 17, 1980

(USE ADDITIONAL SHEETS IF NECESSARY)

SP*45858-119

The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

POMC State Well No. 8s/5w-24
3362 State Permit No.

(1) OWNER:
Name Mr. James Gordon
Address 5235 Riddell Road
Monmouth, Oregon 97361

(2) TYPE OF WORK (check):
New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary [X] Driven [ ]
Cable [ ] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):
Domestic [X] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(5) CASING INSTALLED: Threaded [ ] Welded [X]
" Diam. from ft. to ft. Gage
6 " Diam. from +1 ft. to 52½ ft. Gage ¼"
5 " Diam. from 44 ft. to 180 ft. Gage .188

(6) PERFORATIONS: Perforated? [X] Yes [ ] No
Type of perforator used Cutting torch
Size of perforations ¼ in. by 8 in.
66 in liner ft. to ft.
perforations from 52 ft. to 178 ft.
perforations from ft. to ft.

(7) SCREENS: Well screen installed? [ ] Yes [X] No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Air test 20 gal./min. with 166 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water 52° Depth artesian flow encountered ft.

(9) CONSTRUCTION:
Well seal—Material used Cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 11 sacks
How was cement grout placed? Grout pump
Was a drive shoe used? [ ] Yes [X] No Plugs Size: location ft.
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? [ ] Yes [X] No Size of gravel: XXXXXXX
Gravel placed from XXXXXXXX ft. to XXXXXXXX ft.

(10) LOCATION OF WELL:
County Polk Driller's well number
¼ ¼ Section 24 T. 8 R. 5 W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found 160 ft.
Static level 10 ft. below land surface. Date 8-8-79
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 6"
Depth drilled 180 ft. Depth of completed well 180 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top soil	0	4	
Brown clay	4'	36	
Blue Clay	36'	48	
Blue shale	48'	140	
Blue sand stone (water bearing)	140'	180	

RECEIVED
AUG 20 1979
WATER RECOURCES DEPT.
SALEM, OREGON

Work started July 31, 1979 Completed August 10, 1979
Date well drilling machine moved off of well August 12, 1979

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Art Clinton (Drilling Machine Operator) Date Aug. 14, 1979
Drilling Machine Operator's License No. 34

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name CLINTON WELL DRILLING (Person, firm or corporation) (Type or print)
Address 6165 Corvallis Road
Independence Oregon 97351
[Signed] Art Clinton (Water Well Contractor)
Contractor's License No. 14 Date Aug. 14, 1979

(USE ADDITIONAL SHEETS IF NECESSARY) SP*45656-119

of this report are to be filed with the

STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

(248 Polk)

WATER WELL REPORT

STATE OF OREGON MAR 24 1975 State Well No. 8S/5W-24

(Please type or print) STATE ENGINEER State Permit No.

(Do not write above this line) SALEM, OREGON

(1) OWNER:

Name Mr. W. C. Kester

Address 141 N. Monmouth
Monmouth, Oregon 97361

(2) TYPE OF WORK (check):

New Well XX Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable XX Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic XX Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

CASING INSTALLED:

Threaded ☐ Welded XX

..... " Diam. from ..... ft. to ..... ft. Gage .....

6 " Diam. from 1 ft. above surface

..... " Diam. from to 44 ft. below surface

PERFORATIONS:

Perforated? ☐ Yes XX No.

Type of perforator used

Size of perforations in. by in.

..... perforations from ..... ft. to ..... ft.

..... perforations from ..... ft. to ..... ft.

..... perforations from ..... ft. to ..... ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name .....

Type ..... Model No. .....

Diam. ..... Slot size ..... Set from ..... ft. to ..... ft.

Diam. ..... Slot size ..... Set from ..... ft. to ..... ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

" " " "

" " " "

Bailer test 10 gal./min. with 79 ft. drawdown after 1 hrs.

Artesian flow g.p.m.

perature of water 52 Depth artesian flow encountered ..... ft.

(9) CONSTRUCTION:

Well seal—Material used Concrete

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Number of sacks of cement used in well seal 1½ sacks

Number of sacks of bentonite used in well seal -0- sacks

Brand name of bentonite -0-

Number of pounds of bentonite per 100 gallons of water -0- lbs./100 gals.

Was a drive shoe used XX Yes ☐ No Plugs ..... Size: location ..... ft.

Did any strata contain unusable water? ☐ Yes XX No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes XX No Size of gravel: .....

Gravel placed from ..... ft. to ..... ft.

(10) LOCATION OF WELL:

County Polk Driller's well number

¼ ¼ Section 24 T. 8 R. 5 W.M.

Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found 58 ft.

Static level 6 ft. below land surface. Date 2-26-75

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6"

Depth drilled 100 ft. Depth of completed well 100 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. *Report each change in position of Static Water Level and indicate principal water-bearing strata.*

MATERIAL	From	To	SWL
[redacted]			
Top soil	0	3'	
Brown clay	3'	32'	
Blue clay	32'	38'	
Brown clay & Med. gravel	38'	40'	
Blue shale	40'	58'	
Sandstone (water bearing)	58'	96'	
Blue shale	96'	100'	

Work started Feb. 24, 19 75 Completed Feb. 27, 1975

Date well drilling machine moved off of well Feb. 27, 1975

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Art Clinton Date 3-20-, 1975
(Drilling Machine Operator)

Drilling Machine Operator's License No. 34

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name ART CLINTON WELL DRILLING Co.
(Person, firm or corporation) (Type or print)

Address Rt. 1, Box 2, Independence, Oregon 97351

[Signed] Art Clinton
(Water Well Contractor)

Contractor's License No. 14 Date March 20, 19 75

(USE ADDITIONAL SHEETS IF NECESSARY)

SP*46856-119

Oregon Water Resources Department Well Log Record for WOU Campus Vicinity
(*Well log locations shown on site map, p. 3)

Up

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

Polk 523

RECEIVED
SEP - 9 1992
WATER RESOURCES DEPT.
SALEM, OREGON

8S/5W/24aa

(START CARD) # 39653

(1) OWNER: Well Number

Name Don Pike

Address 12380 Meyer Rd.

City Dallas State OR Zip 97338

(2) TYPE OF WORK:
☐ New Well ☐ Deepen ☐ Recondition ☑ Abandon

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☑ Cable
☐ Other

(4) PROPOSED USE:
☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☑ No Depth of Completed Well 0 ft.
Explosives used ☐ Yes ☑ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
6"	-1	110	cement	-1	110	27

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☐ Other tremie to bottom + pumped cement to top + perforated casing
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	44		☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☐ Perforations Method
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.

Temperature of Water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Polk Latitude Longitude
Township 8 N or S Range 5 E or W WM.
Section 24 NE ¼ SW ¼
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address) 141 N.
Monmouth, Monmouth, Ore 97361.

(10) STATIC WATER LEVEL:
0 ft. below land surface. Date 9/7/92
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found

From	To	Estimated Flow Rate	SWL

(12) WELL LOG:
Ground elevation

Material	From	To	SWL
clay soil			
cement			

cement seal disallowed pulling casing so perforated from 41 to 44' for total of 176 gallons + then pumped cement thru tremie from bottom to the top.

Date started 9/7/92 Completed 9/7/92

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number
Signed Dickenson Well Drilling, Inc Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1571
Signed William A Glaw Date 9/7/92

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POIR 50552

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DEC - 8 1997
WATER RESOURCES DEPT.
SALEM, OREGON

STATE OF OREGON GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-035)

(1) OWNER/PROJECT: Hole Number B-1

Name J.C. Green & Associates Inc.

Address 760 Commercial ST SE #302

City Salem State Oregon Zip 97031

(2) TYPE OF WORK

☒ New ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) CONSTRUCTION:

☐ Rotary Air ☐ Hand Auger ☒ Hollow Stem Auger

☐ Rotary Mud ☐ Cable Tool ☐ Push Probe ☐ Other

(4) TYPE OF HOLE:

☒ Uncased Temporary ☐ Cased Permanent

☐ Uncased Permanent ☐ Slope Stability ☐ Other

(5) USE OF HOLE: Geotechnical - SPT Sampling

(6) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Hole 36.5 ft.

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
6"	0	35'	N/A			
2"	35	36.5				

Backfill placed from ____ ft. to ____ ft. Material ____

Filter Pack placed from ____ ft. to ____ ft. Size of pack ____

(7) CASING/SCREEN: N/A

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Screen:					☐	☐	☐	☐
					☐	☐	☐	☐

Slot size ____

(8) WELL TEST: N/A

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Permeability ____ Yield ____ GPM ____

Conductivity ____ PH ____

Temperature of water ____ °F/C Depth artesian flow found ____ ft.

Was water analysis done? ☐ Yes ☐ No

By whom? ____

Depth of strata analyzed. From ____ ft. to ____ ft.

Remarks: ____

(9) LOCATION OF HOLE by legal description:

County Polk Latitude ____ Longitude ____

Township 8 South N or S Range 5 West E or (W) WM.

Section 25 SE 1/4 SE 1/4

Tax Lot ____ Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) Helmick Road, (1,000') South of Ewinn St, West side

Map with location indentified must be attached

(10) STATIC WATER LEVEL:

5'2" ft. below land surface. Date 11-13-97

Artesian pressure ____ lb. per square inch. Date ____

(11) SUBSURFACE LOG:

Ground Elevation ≈ 192'

Material Description	From	To	SWL
Brown clayey silt	0	25	5'2"
Green fine sand	25	31.5	
Brown clayey silt	31.5	35.5	
Weathered rock	35.5	36.0	
Grey fine sand	36.0	36.5	

Date Started 11-13-97 Date Completed 11-13-97

(12) ABANDONMENT LOG:

Material Description	From	To	Sacks or Pounds
Bentonite Chips	0	36.5	10 sacks

Date started 11-13-97 Date Completed 11-13-97

Professional Certification

(to be signed by a licensed water supply or monitoring well constructor, or registered geologist or civil engineer).

I accept responsibility for the construction, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon's geotechnical hole construction standards. This report is true to the best of my knowledge and belief. GE 1219 MWC 10074

License or Registration Number ____

Signed Paul W. [signature] Date 12-03-97

Affiliation Braun Intertec

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

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POLK 52047

STATE OF OREGON

GEOTECHNICAL HOLE REPORT

(as required by OAR 690-240-035)

WOU TESTING BORING

(1) OWNER/PROJECT: Hole Number **B-2**

Name **WESTERN OREGON UNIVERSITY**

Address **345 MONMOUTH AVE**

City **MONMOUTH** State **OREGON** Zip **97361**

(2) TYPE OF WORK

☑ New ☐ Deepening ☐ Alteration (repair/recondition) ☑ Abandonment

(3) CONSTRUCTION:

☐ Rotary Air ☐ Hand Auger ☐ Hollow Stem Auger

☑ Rotary Mud ☐ Cable Tool ☐ Push Probe ☐ Other

(4) TYPE OF HOLE:

☑ Uncased Temporary ☐ Cased Permanent

☐ Uncased Permanent ☐ Slope Stability ☐ Other

(5) USE OF HOLE: **GEOTECHNICAL**

(6) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☑ No Depth of Completed Hole **60** ft.

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
5	0	60	BENT GROUT	60	30	30 GAL
			BENT CHIPS	30	0	6 SKS

Backfill placed from ____ ft. to ____ ft. Material ____

Filter Pack placed from ____ ft. to ____ ft. Size of pack ____

(7) CASING/SCREEN:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	N/A				☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Screen:					☐	☐	☐	☐
					☐	☐	☐	☐

Slot size ____

(8) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Permeability ____ Yield ____ GPM ____

Conductivity ____ PH ____

Temperature of water **55** °F Depth artesian flow found ____ ft.

Was water analysis done? ☐ Yes ☑ No

By whom? ____

Depth of strata analyzed. From ____ ft. to ____ ft.

Remarks: ____

(9) LOCATION OF HOLE by legal description:

County **POLK** Latitude ____ Longitude ____

Township **8** S Range **5** W WM.

Section **25** **NE** 1/4 **NE** 1/4

Tax Lot **1800** Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) **SAME**

Map with location indentified must be attached

(10) STATIC WATER LEVEL:

10 ft. below land surface. Date **9/15/04**

Artesian pressure ____ lb. per square inch. Date ____

(11) SUBSURFACE LOG:

Ground Elevation ____

Material Description	From	To	SWL
BROWN SILT	0	10	10
BROWN CLAY	10	35	
GREY GRAVELLY SAND	35	50	
GREY CLAY	50	60	

Date Started **9/15/04** Date Completed **9/15/04**

(12) ABANDONMENT LOG:

Material Description	From	To	Sacks or Pounds
BENT GROUT	60	30	30 GAL
BENT CHIPS	30	0	6 SKS

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SALEM OREGON

Date started **9/15/04** Date Completed **9/15/04**

Professional Certification

(to be signed by a licensed water supply or monitoring well constructor, or registered geologist or civil engineer).

I accept responsibility for the construction, alteration, or abandonment work performed on during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.

License or Registration Number **10459**

Signed ____ Date 9/28/04

WARREN MCCANN

Affiliation **SUBSURFACE TECHNOLOGIES**

THIS REPORT MUST BE SUBMITTEO TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

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