

GEOLOGIC LOG FOR SC-1

<u>Depth (feet)</u>	<u>Description</u>
0-15	Fill. Brown uncemented silt, clay, and fine to medium sand with some subrounded to rounded pebbles.
15-40	Gravelly sand. Brown uncemented coarse sand and gravel, poorly sorted, with silt and subrounded to rounded pebbles.
40-45	Gravel and sand with pebbles and cobbles. Red brown uncemented gravel and medium to coarse sand with pebbles and cobbles. Pebbles and cobbles are primarily pyroclastic and volcanic rocks.
45-50	Sand and gravel. Red brown uncemented subangular gravel with medium to coarse sand.
50-110	Gravel and sand with pebbles and cobbles. Red brown to gray uncemented gravel and medium to coarse sand with pebbles and gravel. Pebbles and cobbles are primarily volcanic rocks and well rounded.
110-120	Pebbly sand. Red brown uncemented sand with pebbles. Pebbles are primarily volcanic rocks and are well rounded.
120-130	Gravel and sand with pebbles and cobbles. Red brown uncemented gravel and medium to coarse sand with pebbles and cobbles.
130-154	Pebbly sand. Red brown uncemented well sorted medium to coarse sand and pebbles.

PW-1 (SC #1)

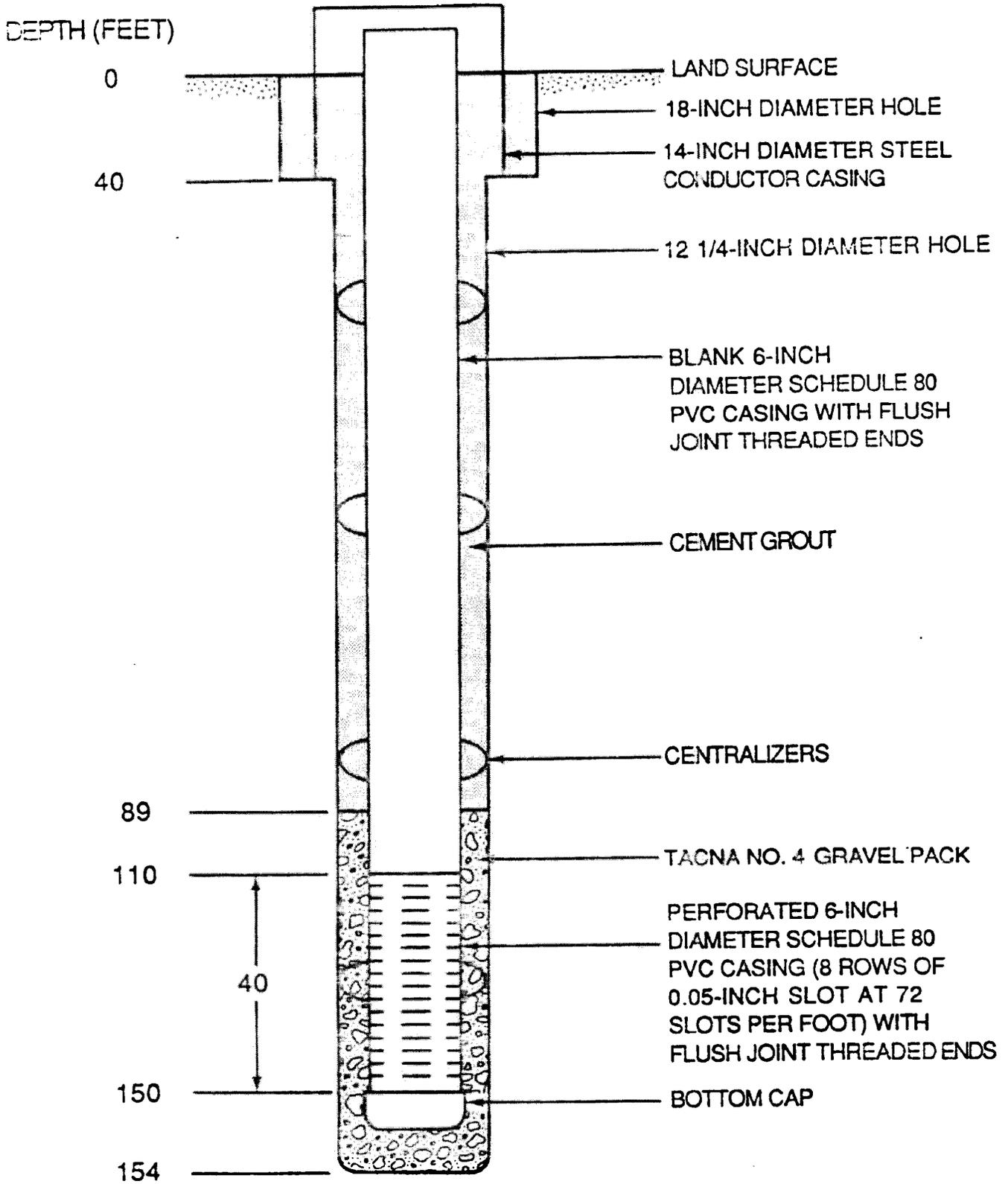
Augering samples for intervals 10' 50 15' and 20' to 25' were only sample retained for pre-wash description.

10'to 15' Dark brown well sorted fine grained sandy silty loam
Minor humic clay build-up in soil gives interval a
somewhat blocky texture. Strong acid reaction. Santa
Cruz River flood plain deposits.

20'to25' Dark brown silty sandy loam with rounded volcanic
gravel and minor dark humic clay. Strong acid
reaction. Santa Cruz River flood plain deposits.

Notes: Sample were dried, thus no notes on moisture
content are made.

Hyd/augering



**SCHEMATIC DIAGRAM OF SHALLOW
MONITOR WELL SC-1**

GEOLOGIC LOG FOR SC-2

<u>Depth (feet)</u>	<u>Description</u>
0-5	Silty sand. Brown fine uncemented sand with a few subrounded pebbles. Pebbles are volcanic rocks.
5-15	Sand, silt and clay. Brown fine uncemented sand with silt and clay, and some subrounded pebbles.
15-33	Sandy gravel with pebbles and cobbles. Medium to coarse uncemented sand with subrounded to rounded pebbles and cobbles.
33-39	Sand and gravel with some pebbles. Red brown uncemented, coarse sand and subangular to subrounded gravel with pebbles. Gravel and pebbles are volcanic rocks.
39-45	Sand and gravel with some pebbles. Red brown medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles are primarily volcanic rocks with some sedimentary rocks.
45-140	Sand and pebbly gravel. Red brown medium to coarse sand and gravel with pebbles. Gravel and pebbles are primarily volcanic rocks with increasing percentage of sedimentary rocks.

Note: Description of Auger Sample of MW-1 not performed due to washing of samples 0' to 30'.

PIMA COUNTY MONITOR WELL

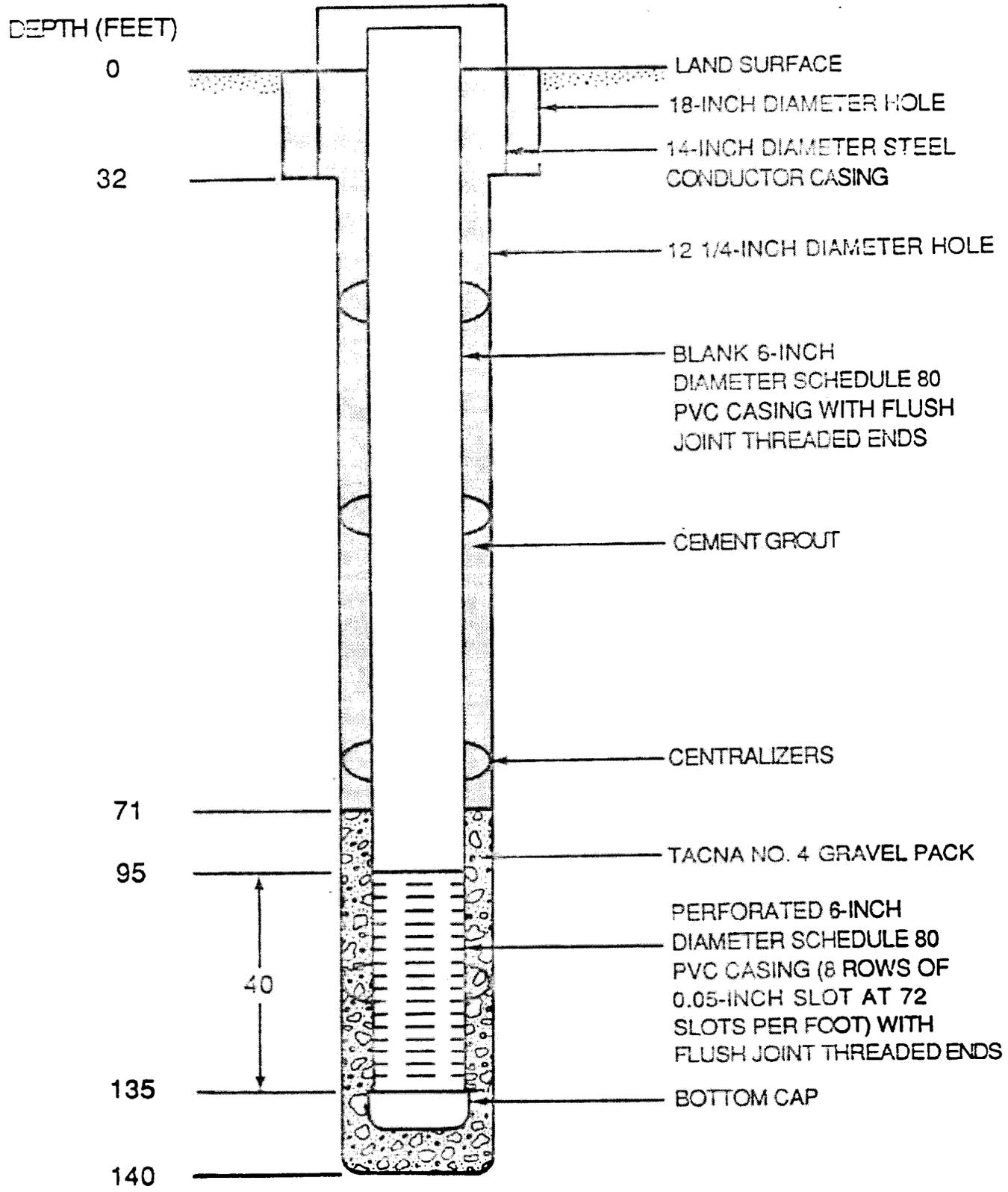
PW-2 (SC-2)

- 0'- 5' Dry, light brown loamy fine sand. Very strong acid reaction. Slightly blocky soil structure due to minor organic rich clay. Santa Cruz River Flood Plain Deposits.
- 5'- 10' Moist dark brown clayey sand with minor rounded volcanic and gneissic gravel. Moderately well developed blocky soil structure. Strong acid reaction. Santa Cruz River overbank deposits.
- 10'-15' Damp brown rounded gravelly sand with minor clay. Weak acid reaction. Santa Cruz channel deposits.
- 15'-20' Medium brown rounded volcanic with minor gneissic sandy gravel and occasional cobbles. No acid reaction. Santa Cruz river channel deposits.

Hyd/augering

- 20'-25' Medium brown clayey rounded predominately volcanic sandy gravel. Minor Mn-oxide staining on some gravel. No soil structure or acid reaction. Santa Cruz river channel deposits.
- 25'-30' Medium brown coarse rounded predominately volcanic sandy gravel with cobbles and very minor dark brown clay. Mn-oxide staining on some gravel. Santa Cruz river channel deposits.
- 30'-32' Medium Brown coarse rounded sand and gravel with minor clay. Santa Cruz river deposits. (Reverse Rotary drilled samples)
- 32'-33' Medium brown rounded sandy gravel with minor clay. (Reverse Rotary drilled samples)
- 33'-TD Multi colored angular sand and gravel with minor clay.
(140') Basin fill deposits from Tucson Mountains. (Reverse Rotary drilled samples)

Hyd/augering



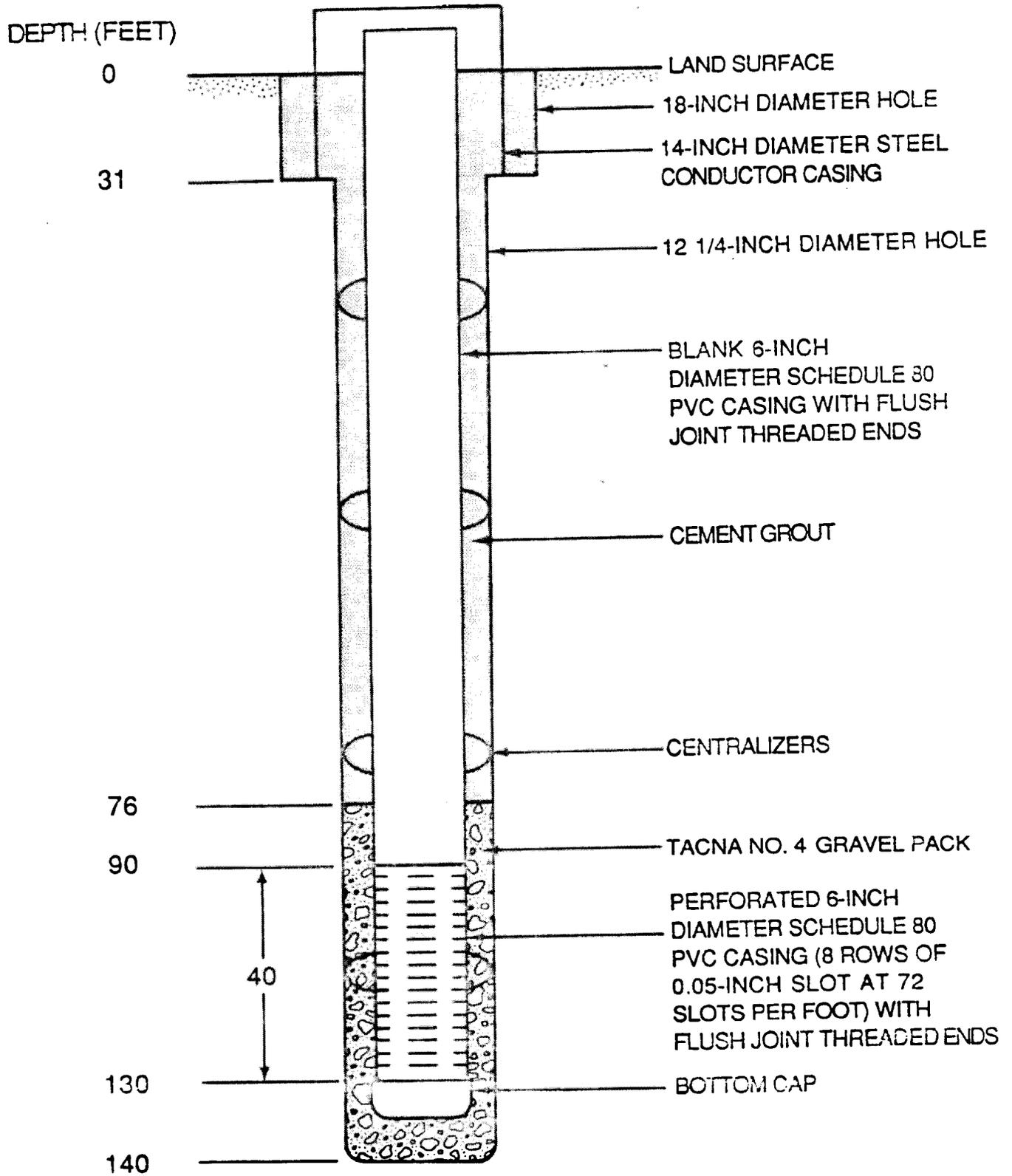
SCHEMATIC DIAGRAM OF SHALLOW MONITOR WELL SC-2

GEOLOGIC LOG FOR SC-3
GEOLOGIC LOG FOR SC-3

<u>Depth</u> <u>(feet)</u>	<u>Description</u>
0-5	Fill. Pale yellow brown fine sand and silt.
5-10	Sand with some pebbles. Light brown medium to coarse sand uncemented with subrounded pebbles.
10-15	Sand. Light brown uncemented fine to medium sand.
15-20	Sand and gravel with some pebbles. Pale brown uncemented medium to coarse sand and gravel. Pebbles subrounded to rounded and primarily volcanic rocks.
20-40	Sand and pebbly gravel. Pale brown medium to coarse sand and gravel with subrounded to rounded pebbles.
40-50	Sand and pebbly gravel. Yellow brown medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles are primarily volcanic rocks, but also metamorphic and sedimentary rocks are present. Pebbles are subangular to well rounded.
50-60	Clayey, silty sand with pebbly, cobbly gravel. Brown fine to medium uncemented sand and gravel with silt, clay, and cobbles. Gravel, pebbles, and cobbles are volcanic, metamorphic, and sedimentary rocks, fairly evenly distributed.

GEOLOGIC LOG FOR SC-3 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
60-85	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles are primarily volcanic rocks.
85-90	Silty sand and pebbly, cobbly gravel. Brown fine to medium uncemented sand and gravel with silt, pebbles, and cobbles. Gravel, pebbles and cobbles are primarily volcanic rocks.
90-110	Sand with some pebbles and cobbles. Brown medium to coarse uncemented well sorted sand with some pebbles and cobbles. Pebbles and cobbles are primarily volcanic rocks.
110-125	Clayey, silty sand. Brown fine to medium sand uncemented with silt and clay and some pebbles and cobbles.
125-140	Sand and pebbly, cobbly gravel. Brown medium to coarse uncemented sand and gravel, with pebbles and cobbles. Gravel, pebbles, and cobbles are both volcanic and sedimentary rocks.



**SCHEMATIC DIAGRAM OF SHALLOW
MONITOR WELL SC-3**

GEOLOGIC LOG FOR SC-4

<u>Depth (feet)</u>	<u>Description</u>
0-5	Silty sand and pebbly gravel. Yellow brown fine to medium uncemented sand with silt and subangular to subrounded pebbles. Gravel and pebbles are primarily volcanic rocks.
5-10	Sandy, pebbly gravel. Medium to coarse sand and gravel with many subangular to subrounded pebbles. Gravel and pebbles are primarily volcanic rocks and quartz.
10-15	Clayey silt and sand with pebbly gravel. Yellow brown fine to medium slightly cemented sand and gravel with silt, clay and pebbles. Gravel and pebbles are volcanic rocks.
15-20	Sandy, pebbly, cobbly gravel. Very fine to coarse uncemented sand and gravel with numerous subangular to subrounded pebbles and small cobbles.
20-25	Clayey silt and sand. Very fine to fine sand with silt and clay and a few subangular pebbles. Pebbles are volcanic and granitic rocks.
25-33	Sandy clay and pebbly gravel. Yellow brown clay and fine to coarse sand and gravel, with subangular to subrounded pebbles. Gravel and pebbles are granitic and volcanic rocks.

GEOLOGIC LOG FOR SC-4 (Continued)

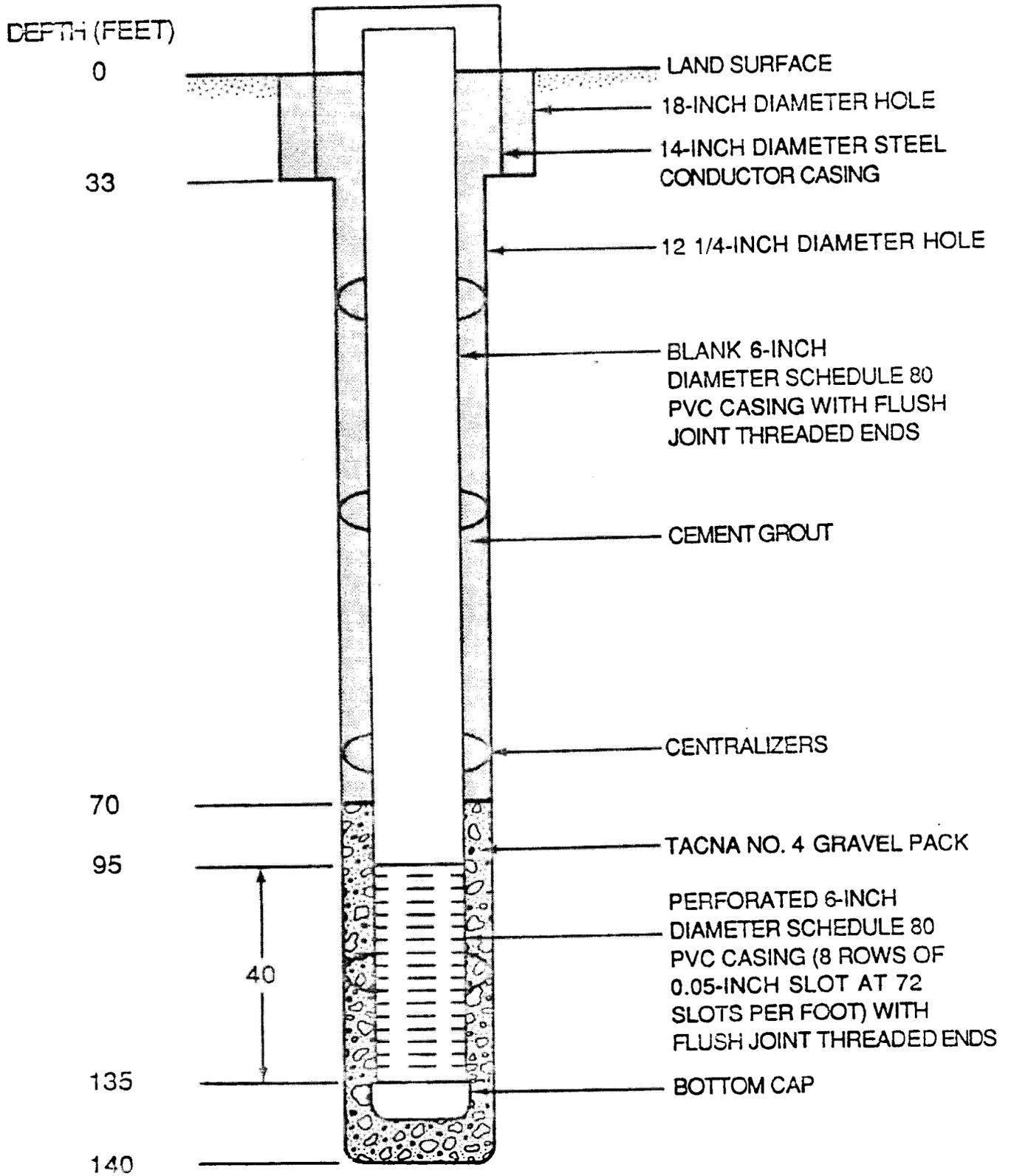
Depth
(feet)

Description

- 3-35 Silty sand and pebbly gravel. Yellow brown very fine to coarse uncemented sand, silt, and gravel. Gravel and pebbles are angular to subangular and primarily volcanic rocks with some granitic and sedimentary rocks.
- 35-55 Clayey silt and sand with pebbly gravel. Very fine to coarse uncemented sand, silt, clay, and gravel, with some subangular to subrounded pebbles. Gravel and pebbles are a wide range of rock types.
- 55-60 Silty sand and pebbly gravel. Fine to medium sand and gravel with silt and pebbles. Angular to subangular quartz gravel and pebbles are common. Gravel and pebbles are primarily granitic rocks.
- 60-70 Silty sand and pebbly gravel. Fine to coarse sand with angular silt and angular gravel and subangular to well rounded pebbles. Gravel and pebbles are primarily volcanic rocks.
- 70-120 Silty sand and pebbly gravel. Brown fine to medium uncemented sand and gravel with silt and pebbles. Gravel and pebbles are primarily granitic and metamorphic rocks.

GEOLOGIC LOG FOR SC-4 (Continued)

<u>Depth</u> <u>(feet)</u>	<u>Description</u>
120-130	Silty sand and pebbly gravel. Brown uncemented fine to medium sand and gravel with silt and pebbles. Gravel and pebbles are primarily volcanic rocks.
130-135	Sand with some gravel. Brown fine to coarse sand with some gravel.
135-140	Silty sand and pebbly gravel. Fine to medium uncemented sand and gravel with silt and pebbles. Gravel and pebbles are granitic, metamorphic, and volcanic rocks.



**SCHEMATIC DIAGRAM OF SHALLOW
MONITOR WELL SC-4**

GEOLOGIC LOG FOR SC-5

<u>Depth (feet)</u>	<u>Description</u>
0-5	Silty sand. Pale yellow brown fine to medium uncemented sand with minor gravel and pebbles, which are primarily volcanic rocks and quartz.
5-10	Clayey, silty sand. Yellow brown unconsolidated fine to coarse sand with silt and clay.
10-30	Clayey, silty sand and pebbly gravel. Fine to coarse sand and gravel with clay, silt, and pebbles. Gravel and pebbles are well rounded volcanic and granitic rocks.
30-39	Pebbly gravel and clayey, silty sand. Brown uncemented sand, gravel, and pebbles with some silt and clay. Some pebbles are well rounded and others are flat. Gravel and pebbles are volcanic, granitic, and sedimentary rocks.
39-50	Sand and pebbly gravel. Yellow brown uncemented medium to coarse quartz sand and gravel with subrounded to well rounded pebbles. Gravel and pebbles are primarily volcanic and granitic rocks.
50-55	Clayey, silty sand. Slightly cohesive fine to medium sand with silt and clay. Some pebbles and gravel are primarily volcanic rocks.

GEOLOGIC LOG FOR SC-5 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
55-60	Silty sand. Clean medium to coarse uncemented sand with some gravel and pebbles. Gravel and pebbles are primarily granitic rocks.
60-65	Sand and pebbly gravel. Medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles are primarily well rounded and suite of mixed types sedimentary and granitic rocks.
65-70	Sand and gravel with some clayey silt. Medium to coarse uncemented sand and gravel with some silt and clay.
70-80	Sand with some gravel. Medium to coarse sand with gravel. Gravel is of a wide range of rock types.
80-85	Sand. Medium to coarse uncemented sand with some subangular quartz pebbles.
85-115	Sand and gravel. Medium to coarse uncemented sand with some angular pebbles.
115-125	Sand, gravel and pebbles. Medium to coarse uncemented sand, gravel, and pebbles.
125-140	Clayey, silty sand and pebbly gravel. Fine to medium sand and gravel with cohesive silt and clay and pebbles.

GEOLOGIC LOG FOR SC-5 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
140-145	Silty clay and sand. Pale yellow brown sticky silty clay and medium to coarse unconsolidated sand with some pebbles.
145-150	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles primarily are granitic and volcanic rocks.
150-155	Silty, clayey sand and gravel. Fine to medium sand and gravel with some cohesive clay and silt.
155-160	Sand and pebbly gravel. Brown medium to coarse sand and gravel with pebbles. Gravel and pebbles are primarily granitic and volcanic rocks.
160-165	Silty sand and pebbly gravel. Brown fine to coarse sand and gravel, with silt and pebbles.
165-170	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with pebbles.

AUGER SAMPLES

(Unwashed)

Pima County PW-5 (SC-5)

- 0'-5' Brown, medium sand. Strong acid reaction. Moist.
Santa Cruz River flood plain deposits.
- 5'-15' Dark brown, coarse rounded sand with minor gravel and
dark reactive clay. Damp. Santa Cruz River flood
plain deposits.
- 15'-33' Brown, rounded medium volcanic to coarse sand and
gravel with minor clay. 20' to 25' interval displays a
slight increase in sticky salmon colored clay. Also,
interval is moist; and with the occurrence of manganese
oxide staining. Zero to weak acid reaction. Santa
Cruz River channel deposits.
- 33'-39' Dark chocolate brown 5' to 15' grading to a medium
brown 15 to 39' medium sand and gravel with minor clay.
Gravel is about 25% gneissic and 75% volcanic. Zero to
weak acid reaction. Gneissic material exhibits a weak
rust staining giving interval an overall somewhat rust
reddish hue. Interval possibly represents a transition
zone grading between basin fill material and Santa Cruz
River flood plain deposits.

Hyd/augering

DEPTH (FEET)

0

40

85

105

165

170

LAND SURFACE

18-INCH DIAMETER HOLE

14-INCH DIAMETER STEEL
CONDUCTOR CASING

12 1/4-INCH DIAMETER HOLE

BLANK 6-INCH
DIAMETER STEEL CASING

CEMENT GROUT

CENTRALIZERS

TACNA NO. 4 GRAVEL PACK

PERFORATED 6-INCH
DIAMETER SCHEDULE 80
PVC CASING (8 ROWS OF
0.05-INCH SLOT AT 72
SLOTS PER FOOT) WITH
FLUSH JOINT THREADED ENDS

BOTTOM CAP

*1.5 hp 3 phase
set at 149.5
2' galvanized
discharge pipe*

60

**SCHEMATIC DIAGRAM OF SHALLOW
MONITOR WELL SC-5**

GEOLOGIC LOG FOR SC-6

<u>Depth (feet)</u>	<u>Description</u>
0-10	Fill. Silty sand with some subrounded to well-rounded pebbles.
10-25	Silty sand and pebbly gravel. Brown fine to medium uncemented sand and gravel with silt and subrounded to rounded pebbles. Gravel and pebbles are primarily volcanic rocks, with some granitic rocks.
25-39	Clayey, silty sand and pebbly, cobbly gravel. Brown fine to coarse uncemented sand and gravel with clay, silt, cobbles and pebbles.
39-56	Sand and pebbly gravel. Brown clean well sorted medium to coarse sand and gravel with subangular to well rounded pebbles. Gravel, pebble, and cobbles are a wide range of rocks.
56-77	Silty, clayey sand and gravel. Yellow brown fine to coarse uncemented sand and gravel with silt, and clay.
77-108	Sand and pebbly gravel. Yellow brown medium to coarse sand and gravel with subangular to subrounded pebbles. Gravel and pebbles are primarily volcanic and granitic rocks.

GEOLOGIC LOG FOR SC-6 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
108-112	Sand and pebbly gravel. Brown fine to medium uncemented sand, clay, and gravel, with pebbles and silt.
112-118	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with pebbles.
118-148	Clayey, silty sand and pebbly gravel. Brown fine to medium sand and gravel with clay, silt, and pebbles.
148-153	Sand with some silt and clay. Brown medium to coarse uncemented sand with some silt and clay.
153-180	Clayey, silty sand. Brown fine to medium uncemented sand with clay, silt and some occasional pebbles.
180-190	Clayey, silty sand and pebbly gravel. Brown fine to coarse uncemented sand and gravel, with clay, silt, and pebbles. Gravel and pebbles are primarily granitic rocks.

AUGER SAMPLES

(Unwashed)

Pima County PW-6 (SC-6)

0'-5' Light to medium brown, loamy fine sand with minor clay and rounded gneissic gravel. Slightly blocky soil structure. Strongly reactive. Dry. Santa Cruz River flood plain deposits.

5'-10' Dark brown, coarse rounded sand and gravel predominately gneissic and minor volcanic lithic material. Minor pale brown clay shows strong acid reaction. Dry. Santa Cruz River channel deposits.

10'-15' Brown, humic rich clayey sand and rounded volcanic coarse gravels. Gravel is predominately volcanic with minor gneiss. Manganese oxide staining on gravel. Moderate acid reaction. Moist. Santa Cruz River channel deposits.

15'-25' Brown, clayey, coarse sand with gravel predominately volcanic with some gneissic lithic material. 20-25' interval contains slightly more fines. No acid reaction. Moist. Santa Cruz River channel deposits.

Hyd/augering

25'-30' Brown, clayey, gravelly sand. Predominately gneissic lithic material with volcanics. Not reactive. Moist. Santa Cruz River channel deposits.

30'-39' Light reddish brown, sticky, clayey, coarse sand with rounded gravel. Manganese oxide staining on gravel. Fairly even mix of gneissic and volcanic gravel. No acid reaction. Moist. sticky clay is salmon color. 35-40' interval shows slight decrease in clay and slightly more gneissic lithic material. Interval possibly represents a transition zone grading between basin fill deposits and Santa Cruz River flood plain deposits.

DEPTH (FEET)

0

39

185

190

LAND SURFACE

18-INCH DIAMETER HOLE

14-INCH DIAMETER STEEL CONDUCTOR CASING

12 1/4-INCH DIAMETER HOLE

BLANK 6-INCH DIAMETER STEEL CASING

CEMENT GROUT

CENTRALIZERS

TACNA NO. 4 GRAVEL PACK

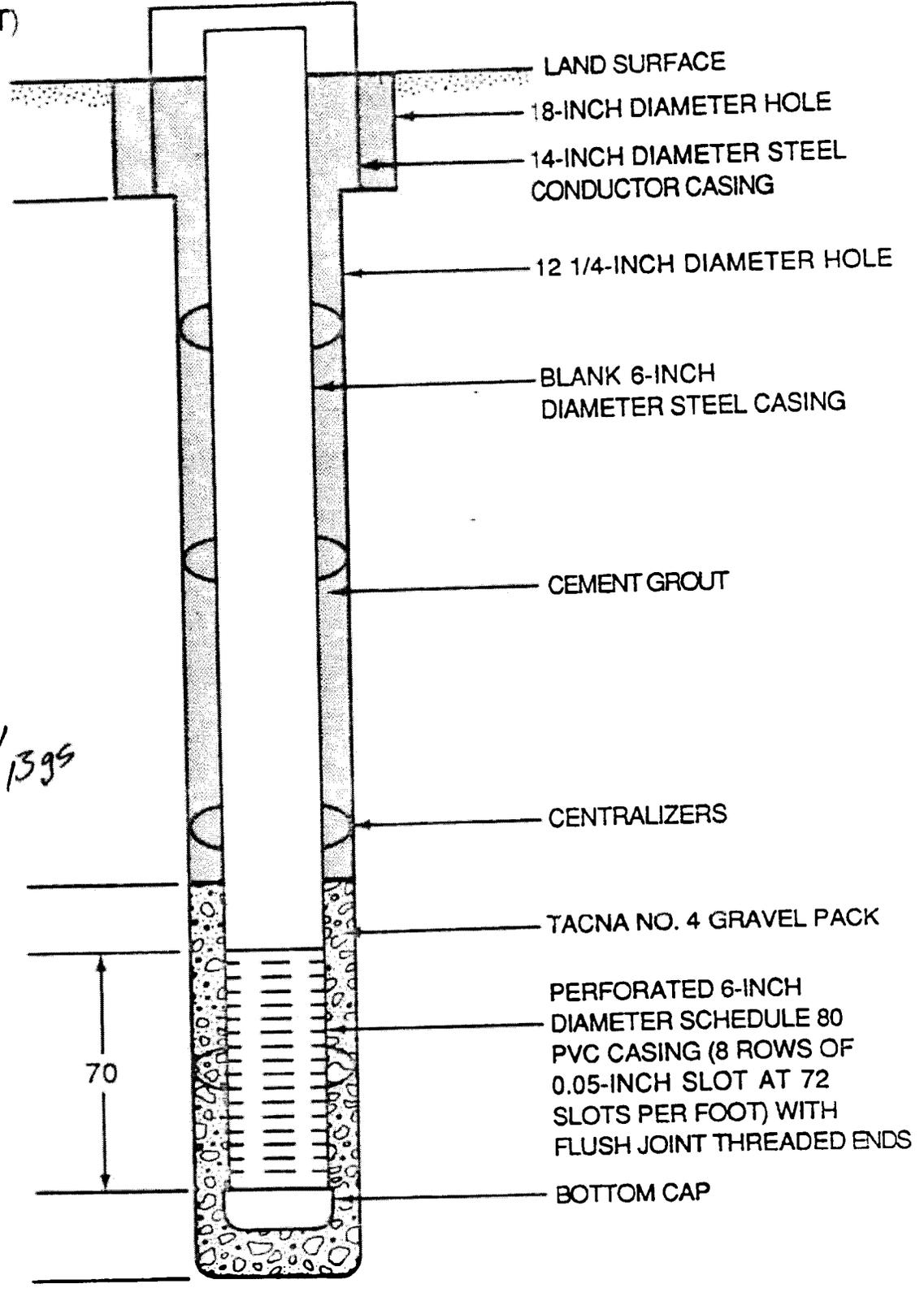
PERFORATED 6-INCH DIAMETER SCHEDULE 80 PVC CASING (8 ROWS OF 0.05-INCH SLOT AT 72 SLOTS PER FOOT) WITH FLUSH JOINT THREADED ENDS

BOTTOM CAP

70

pump set @ 170.5' 1395
2' galvanized discharge @ 115

SCHEMATIC DIAGRAM OF SHALLOW MONITOR WELL SC-6



GEOLOGIC LOG FOR SC-7

<u>Depth (feet)</u>	<u>Description</u>
0-10	Fill. Silty sand and generally subrounded to well rounded pebbles and small cobbles.
10-25	Silty sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with silt and pebbles. Gravel and pebbles generally subrounded to well rounded and of many rock types.
25-35	Clayey, silty sand and pebbly, cobbly gravel. Brown fine to medium uncemented sand and gravel with clay, silt, pebbles and cobbles. Gravel, pebbles, and cobbles are of diverse rock types.
35-45	Silty clay with sand and pebbly gravel. Brown clay and silt with uncemented sand, gravel, and pebbles.
45-60	Sand and pebbly gravel. Yellow brown clean fine to coarse sand and gravel with subangular to rounded pebbles. Gravel and pebbles are of diverse rock types.
60-92	Sand and pebbly gravel with silty clay. Brown medium to coarse uncemented sand and gravel with pebbles, silt, and some clay.

GEOLOGIC LOG FOR SC-7 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
92-119	Sand and pebbly, cobbly gravel. Brown medium to coarse sand and gravel with pebbles and cobbles. Pebbles range from subangular to well rounded. Gravel, pebbles, and cobbles are primarily volcanic and metamorphic rocks.
119-125	Silty clay. Brown soft clay and silt, with some sand, gravel, and pebbles.
125-140	Sand and pebbly gravel. Brown clean medium to coarse uncemented sand and gravel with pebbles. Pebbles are angular to well rounded and of diverse rock types.
140-173	Sand and pebbly gravel with some silty clay. Brown medium to coarse sand and gravel with pebbles and some silty clay.
173-184	Sandy clay. Yellow brown sticky sandy clay with some pebbles and gravel.
184-185	Sand and pebbly gravel. Brown medium to coarse sand and gravel with pebbles and some silt and clay.

AUGER SAMPLES

(Unwashed)

Pima County PW-7 (SC-7)

0'-10' Light to medium brown, fine sand with occasional rounded gravel predominately gneissic. Strong acid reaction. 5-10' interval contains slightly more coarse sand and less gravel. Dry. Santa Cruz River flood plain deposits.

10'-20' Brown to dark brown, coarse sand and rounded gravel. An even mix of volcanic and gneissic lithic material. no acid reaction. 15-20' becomes moist and dark brown due to slight increase in clay and contains somewhat more gneissic material. Santa Cruz River channel deposits.

20'-25' light brown, clayey, coarse sand and rounded gravel. Clay is salmon color. Lithic material is a mix of predominately volcanic and some gneissic and has occasional manganese oxide coating. Moist with minor accourance of salmon colored sticky clay. No acid reaction. Santa Cruz River channel deposits.

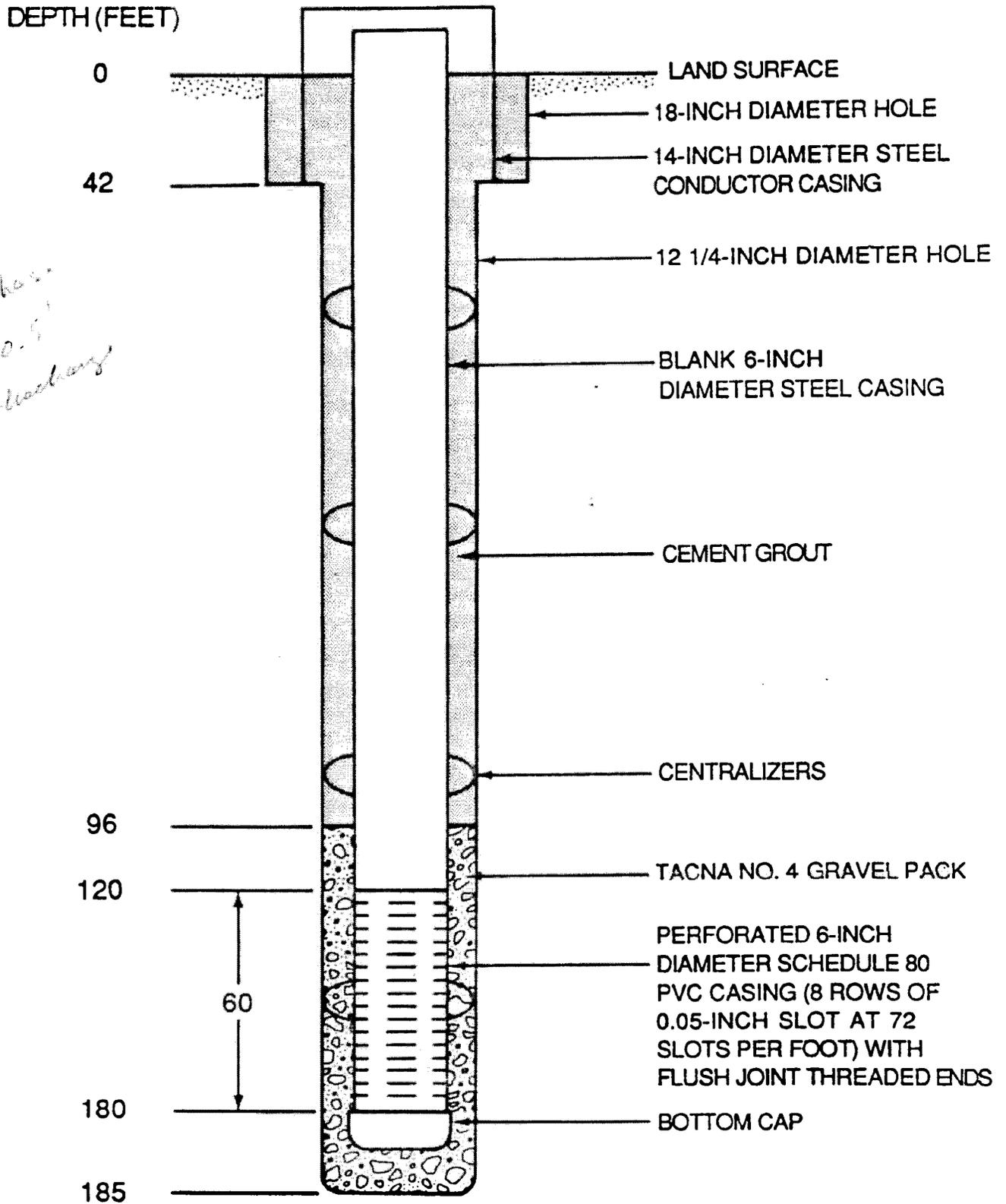
Hyd/augering

25'-30' Light, reddish brown, sticky, clayey, rounded volcanic and gneissic gravel. Gravel has some manganese oxide coating. Very moist, no acid reaction. Clay has a pale reddish hue. Interval possibly represents a transition zone grading between basin fill deposits and Santa Cruz River flood plain deposits.

30'-42' Brown, clayey, sandy rounded gravel. Very Moist. Lithic material both volcanic and gneissic. Moderate Acid reaction. Interval possibly represents a transition zone grading between basin fill and Santa Cruz River flood plain deposits.

hyd/augering

*1.5 hp phase
with 70.5'
2' gal discharge*



**SCHEMATIC DIAGRAM OF SHALLOW
MONITOR WELL SC-7**

GEOLOGIC LOG FOR SC-8

<u>Depth (feet)</u>	<u>Description</u>
0-10	Fill. Yellow brown very fine to fine sand and silt with some small pebbles.
10-20	Sand with gravel. Brown clean fine to coarse uncemented sand with gravel and a few small pebbles.
20-30	Clayey, silty sand and pebbly gravel. Brown fine to coarse sand and gravel, with clay, silt, and pebbles. Gravel and pebbles are primarily volcanic and granitic rocks.
30-35	Sandy, clayey gravel. Brown gravel with uncemented fine to medium sand and sticky clay.
35-55	Sand and pebbly gravel. Brown fine to medium sand and gravel with pebbles.
55-85	Clayey, sandy, pebbly gravel. Brown gravel with medium to coarse uncemented sand, clay, and pebbles.
85-107	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with silt and clay.
107-116	Clayey, silty sand and pebbly gravel. Brown fine to coarse sand and gravel, with clay, silt, and pebbles.
116-134	Sand and pebbly gravel. Brown medium to coarse uncemented sand and gravel with pebbles. Gravel and pebbles are primarily granitic rocks.

GEOLOGIC LOG FOR SC-8

GEOLOGIC LOG FOR SC-8 (Continued)

Date:
(1950)

Description

<u>Depth (feet)</u>	<u>Description</u>
0-134	Fill. Yellow brown very fine to fine sand and silt with some small pebbles.
134-177	Sand and pebbly gravel with clay. Brown medium to coarse uncemented sand and gravel with pebbles and clay.
177-196	Clayey sand and pebbly gravel. Brown fine to medium sand, clay, and gravel with some pebbles.
196-204	Sand and pebbly gravel. Brown uncemented medium to coarse sand and gravel with pebbles. Gravel and pebbles are volcanic and granitic rocks.
204-209	Sand and pebbly gravel with clay. Brown uncemented fine to medium sand and gravel with pebbles and clay.
209-223	Sand and pebbly gravel. Brown uncemented fine to coarse sand and gravel with pebbles.
223-254	Sand and pebbly gravel with some clay. Brown very fine to coarse sand and gravel, with pebbles and some clay.
254-263	Sand and pebbly gravel. Brown slightly cemented medium to coarse clean sand and gravel with pebbles. Gravel and pebbles are granitic and volcanic rocks.
263-285	Clayey sand and pebbly gravel. Yellow brown fine to medium sand and gravel with clay and pebbles. Clay is soft and plastic.

GEOLOGIC LOG SECTION SC-8 - (Continued)

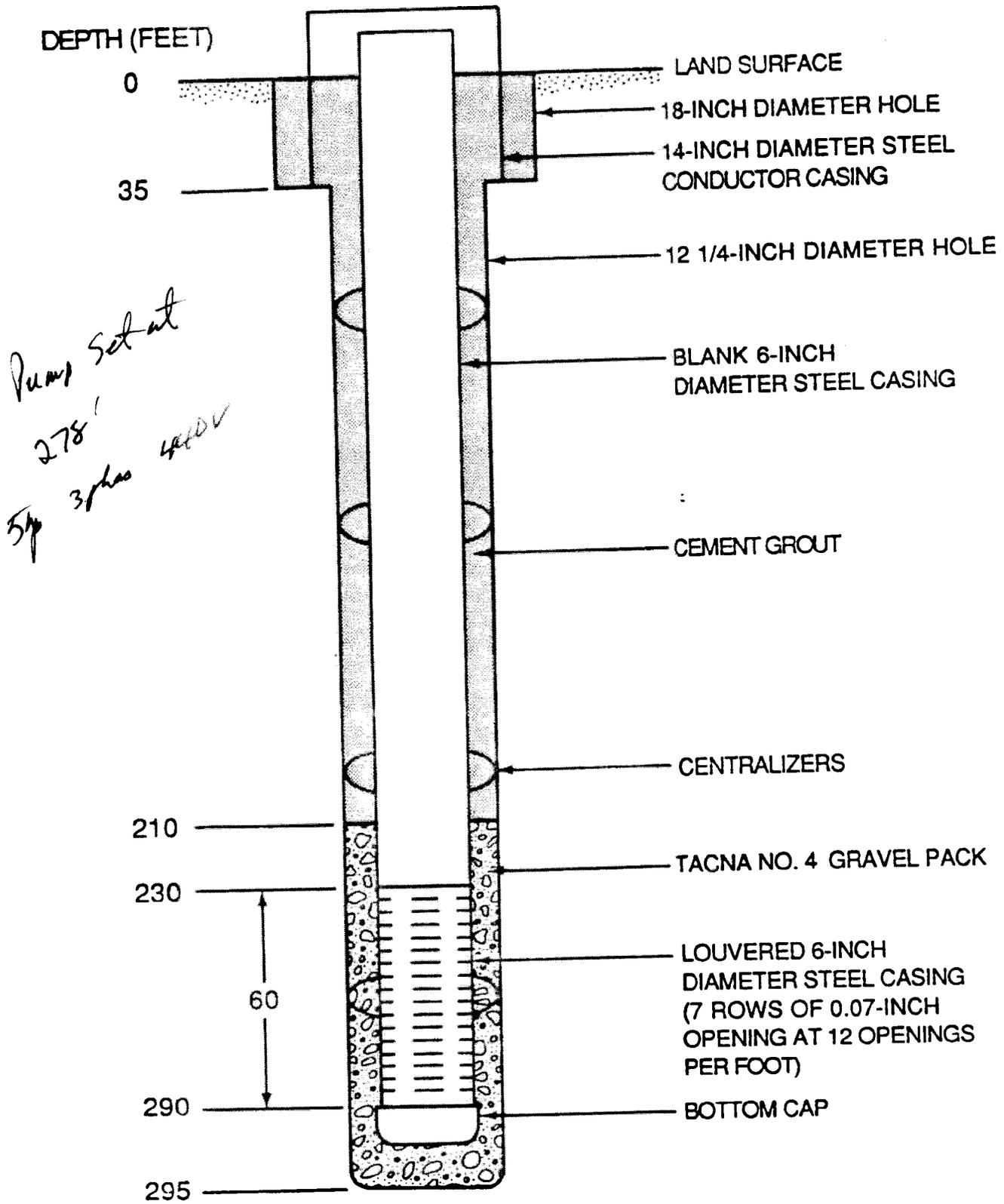
<u>Depth (feet)</u>	<u>Description</u>
285-295	Sand and pebbly gravel. Brown-medium to coarse, uncemented sand and gravel with pebbles. Some minor clay and fine sand present.
295-305	Coarser sand and pebbly gravel. Medium sand, clay, and gravel with some pebbles.
305-315	Sand and pebbly gravel. Brown uncemented medium to coarse sand and gravel with pebbles. Some minor clay and fine sand present.
315-325	Sand and pebbly gravel. Brown uncemented medium sand and gravel with pebbles.
325-335	Sand and pebbly gravel. Brown uncemented coarse sand and gravel with pebbles.
335-345	Sand and pebbly gravel with some fine to coarse sand and gravel. With pebbles.
345-355	Sand and pebbly gravel. Brown slight to medium sand and gravel with pebbles.

PW-8 (SC-8)

Augered, Unwashed Samples, Formation Description

- 0'-10' Light reddish brown to medium brown, silty fine sandy loam. Moderately blocky nature esp. at 5' to 10' interval. Strong acid reaction. Santa Cruz River flood plain deposit.
- 10'-15' Brown, very coarse rounded sand and gravel with cobbles. Lithic material is a mix of volcanic and gneiss. Little or no acid reaction. Santa Cruz River channel deposit.
- 15'-20' Sample Missing
- 20'-35' Brown, very coarse rounded sand and gravel with cobbles in a matrix of reddish salmon colored sticky clay. No acid reaction. Lithic material is primarily volcanic with some gneissic. Minor Mn-oxide coating on some gravel fragments. Santa Cruz River Channel deposits.
- 35'-40' Clean coarse rounded volcanic sand with gravel and almost no fines. Minor Mn-oxide coating on gravel. Minor gneissic material no acid reaction. Santa Cruz River Channel deposits.

Notes: Samples were dried, thus no notes on moisture content are made.



SCHEMATIC DIAGRAM OF INTERMEDIATE MONITOR WELL SC-8

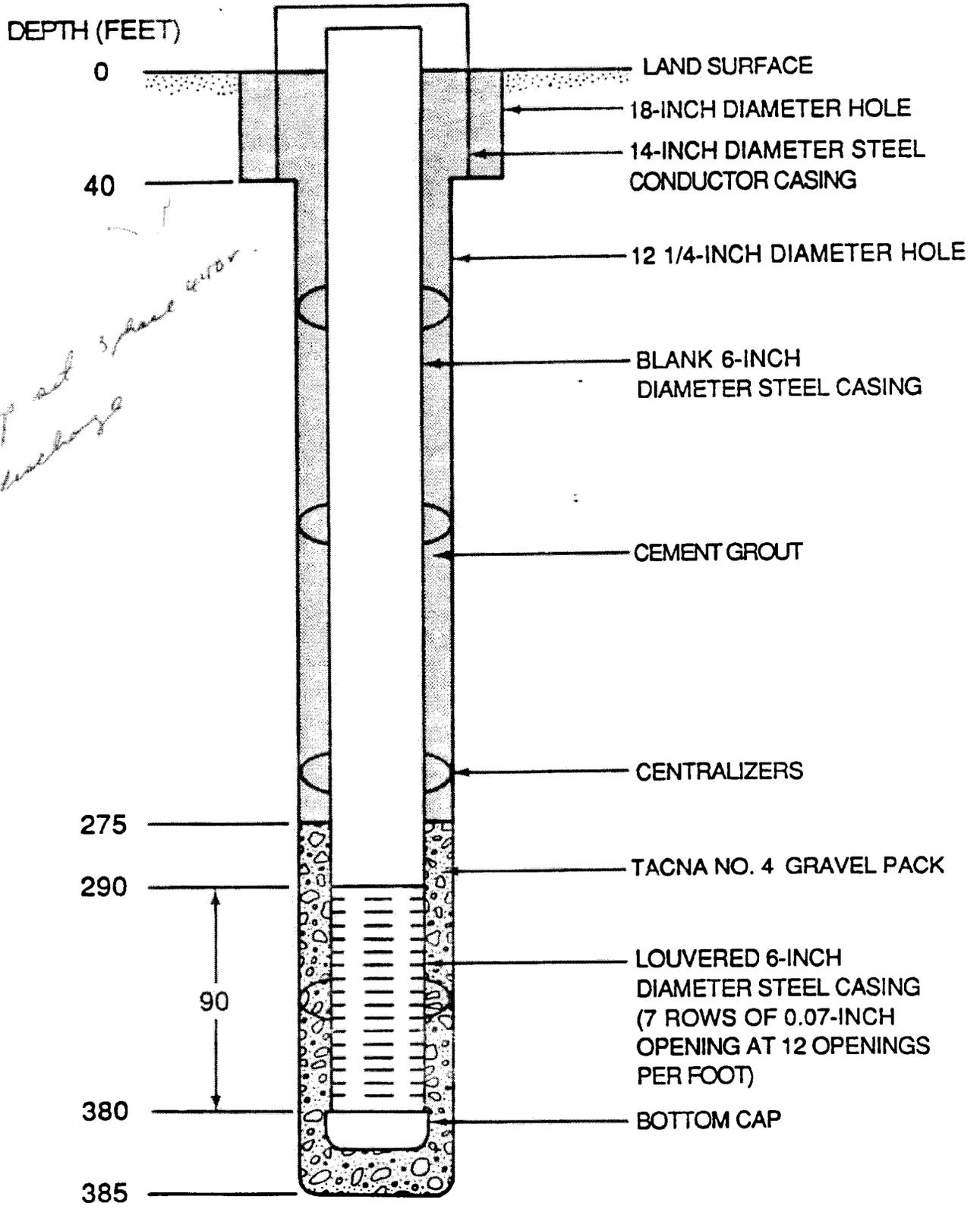
GEOLOGIC LOG FOR SC-9

<u>Depth (feet)</u>	<u>Description</u>
35-70	Sandy gravel with some pebbles. Brown medium to coarse sand and subangular to subrounded gravel with pebbles. Gravel and pebbles are primarily volcanic and metamorphic rocks.
70-90	Sand. Brown clean uncemented medium to coarse sand.
90-101	Gravelly sand. Brown medium to coarse clean uncemented sand and gravel and some pebbles. Gravel and pebbles are primarily granitic and volcanic rocks.
101-108	Sand with some clay. Brown medium to coarse sand with some clay.
108-157	Sand and gravel. Brown medium to coarse clean sand and gravel. Gravel is primarily granitic and volcanic rocks.
157-174	Clayey sand. Brown medium to coarse uncemented sand with clay.
174-182	Gravelly sand. Brown medium to coarse clean uncemented sand and gravel. Gravel is primarily volcanic rocks.
182-233	Silty, clayey sand. Brown medium to coarse uncemented sand with silt and clay, and minor gravel. Gravel is primarily volcanic rocks.

GEOLOGIC LOG FOR SC-9 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
233-236	Clayey sand. Brown medium to coarse sand with clay.
236-244	Gravelly sand. Brown fine to coarse sand with gravel and some pebbles.
244-272	Sandy clay. Brown clay and very fine to fine sand.
272-276	Clayey sand and gravel. Brown medium to coarse uncemented sand and gravel with soft plastic clay.
276-284	Clay. Light brown moderately soft, plastic clay.
284-320	Sand. Pinkish gray fine to very coarse, free-flowing quartz/feldspar sand with some gravel and pebbles. Gravel and pebbles are volcanic rocks.
320-344	Clayey sand. Brown fine to medium sand with clay.
344-372	Sand. Brown fine to coarse uncemented sand, with some gravel and pebbles.
372-385	Clayey sand. Brown very fine to medium sand with clay.

*5 HP pump set 3 phase motor
at 302
2" gal discharge*



SCHEMATIC DIAGRAM OF INTERMEDIATE MONITOR WELL SC-9

GEOLOGIC LOG FOR SC-10

<u>Depth (feet)</u>	<u>Description</u>
0-15	Silty sand. Yellow brown fine to medium sand and silt. At least partly fill. Contains some gravel and pebbles.
15-20	Clayey, silty sand. Brown fine to coarse sand and clay with silt.
20-30	Silty sand and pebbly gravel. Brown fine to coarse uncemented sand and gravel with silt and pebbles.
30-45	Clayey, silty sand and pebbly gravel. Light brown fine to medium sand and gravel with clay, silt, and pebbles.
45-50	Sand. Brown clean, medium to coarse sand with a few subangular to subrounded pebbles. Pebbles are primarily volcanic rocks.
50-86	Clayey, silty sand. Brown to reddish orange medium to coarse sand and clay with silt and a few small, subangular to rounded pebbles of quartz/ feldspar and volcanic rocks.
86-96	Sandy clay and pebbly, cobbly gravel. Light brown fine to coarse uncemented sand and gravel with pebbles and cobbles.
96-114	Sand. Brown medium to coarse sand with gravel and pebbles.

GEOLOGIC LOG FOR SC-10 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
114-120	Silty, sandy clay and pebbly gravel. Sticky clay and gravel with fine to medium sand, silt, and pebbles. Gravel and pebbles are primarily volcanic rocks.
120-146	Sand and pebbly gravel. Brown medium to coarse clean uncemented sand and gravel with pebbles. Gravel and pebbles are various rock types.
146-152	Silty, sandy clay and pebbly gravel. Light brown clay and gravel with fine to coarse sand, silt, and pebbles.
152-161	Silty sand and pebbly gravel. Brown fine to coarse sand and gravel with silt and pebbles.
161-176	Sand with clayey silt and pebbly gravel. Brown medium to coarse and gravel with silt, clay and pebbles.
176-186	Silty sand. Brown fine to coarse uncemented sand and silt.
186-206	Sand and pebbly gravel. Brown medium to coarse sand and gravel with pebbles.
206-229	Clay with sand and pebbly gravel. Brown heavy plastic clay with fine to medium sand, gravel and pebbles.

GEOLOGIC LOG FOR SC-10 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
229-234	Silty clay and sand. Brown clay and fine to coarse sand with silt and pebbles.
234-252	Clay with sand and pebbly gravel. Brown heavy plastic clay with fine to medium sand, gravel, and pebbles.
252-258	Sand with some clayey silt. Brown medium to coarse quartz sand and silt and clay.
258-268	Silty, sandy clay with some gravel. Brown clay and sand with silt and some gravel.
268-294	Sand and gravel. Brown medium to coarse clean uncemented sand and gravel with some pebbles. Gravel and pebbles are primarily granitic rocks.
294-311	Silty, sandy clay and pebbles. Brown clay with fine to coarse sand, silt and pebbles.
311-318	Clay. Brown clay with some fine to medium sand and minor gravel.
318-344	Silty, sandy clay and pebbles. Brown clay and coarse sand, with silt and pebbles.
344-353	Clay with sand and pebbly gravel. Brown heavy stiff clay with medium to coarse sand, gravel, and pebbles.
353-362	Sand and silty clay. Brown medium to coarse sand and clay with silt.

GEOLOGIC LOG FOR SC-10 (Continued)

<u>Depth</u> <u>(feet)</u>	<u>Description</u>
362-375	Sand. Brown medium to coarse clean sand with some gravel. Gravel is primarily volcanic rocks.

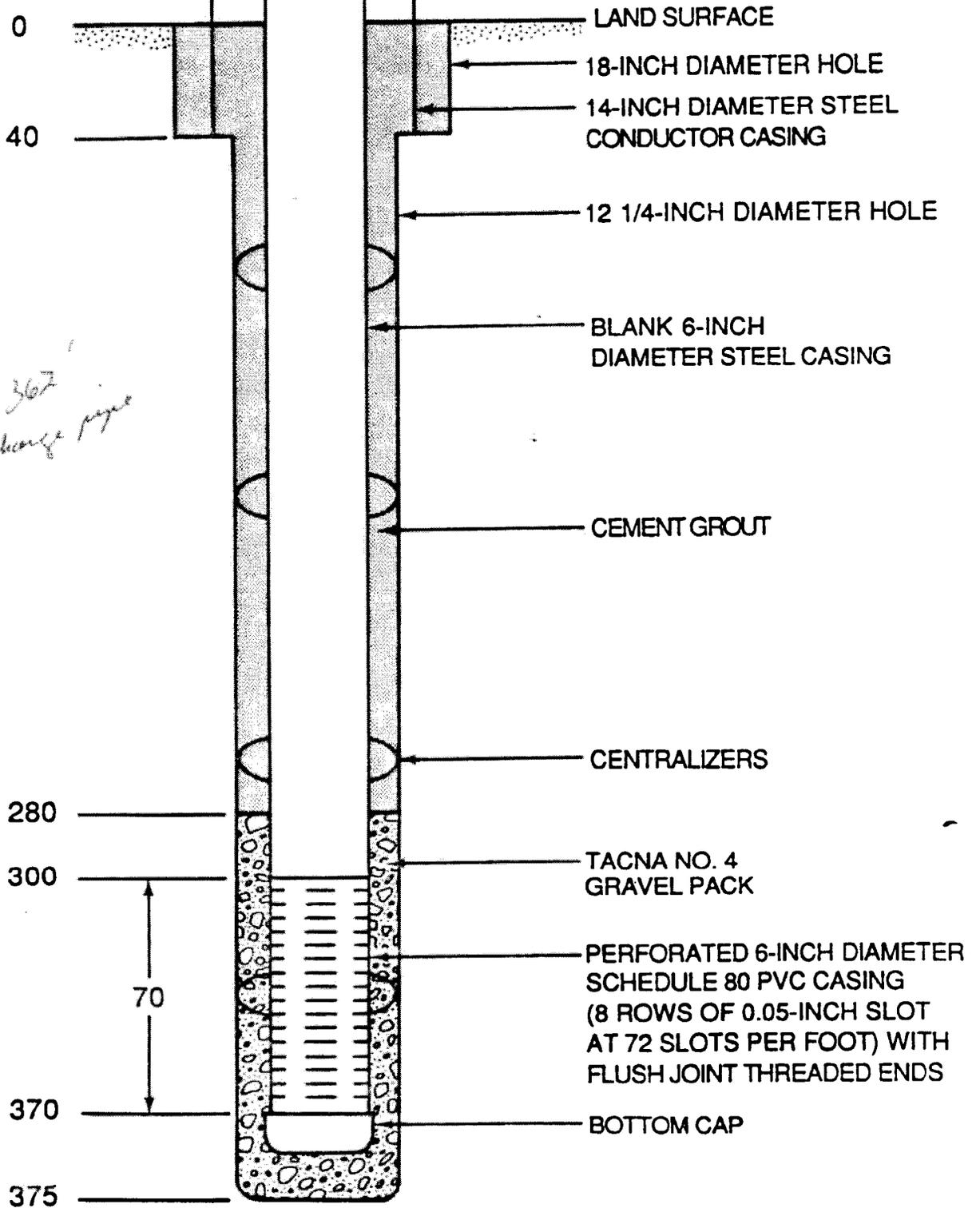
PW-10 (SC#10)

Augered, Unwashed Samples Formation Description

- 0' to 20' Medium to chocolate brown fine sandy silty loam with moderate to strong acid reaction. 5' to 10' interval is a fine to medium sand with minor rounded volcanic fine gravel and displays a weak acid reaction. 10' to 20' interval displays a somewhat blocky texture due to a moderate organic rich clay build-up esp as seen in 15' to 20' sample. Santa Cruz River flood plain deposits.
- 20'-30' Medium brown poorly sorted rounded volcanic sand and gravel with minor clay. 20' to 25' interval contains a minor amount of pale, very reactive clay while 25' to 30' interval contains minor amount of red-salmon sticky weakly reactive clay. Santa Cruz River channel deposits.
- 30' to 40' Red-brown coarse rounded sand and gravel in a matrix rich in red-salmon sticky clay. Moderate acid reaction. Santa Cruz River channel deposits.

Notes: Samples were dried, thus no notes on moisture content were made.

DEPTH (FEET)



**SCHEMATIC DIAGRAM OF INTERMEDIATE
MONITOR WELL SC-10**

GEOLOGIC LOG FOR SC-11

<u>Depth (feet)</u>	<u>Description</u>
0-5	Silty sand. Brown fine to medium sand and silt.
5-40	Silty sand and pebbly gravel. Brown fine to coarse sand and gravel with silt and pebbles. Gravel and pebbles are quartzose granules and small subangular to subrounded volcanic rocks.
40-82	Sand and gravel. Brown clean medium to coarse uniform sand. Gravel is primarily quartz.
82-88	Clayey, silty sand and gravel. Brown fine to medium sand and gravel with clay and silt.
88-95	Sandy clay. Yellow brown clay with fine sand and gravel, with clay and silt.
95-100	Clayey, silty sand and gravel. Brown medium to coarse sand and gravel, with clay and silt.
100-110	Sand and gravel. Brown fine to coarse clean sand and gravel.
110-148	Sandy clay. Yellow brown clay with fine sand and some gravel.
148-160	Sand with clay. Brown medium to coarse sand and stiff clay.
160-196	Clay. Yellow brown stiff clay with a trace of fine sand.

GEOLOGIC LOG FOR SC-11 (Continued)

<u>Depth (feet)</u>	<u>Description</u>
196-208	Clayey, silty sand and gravel. Brown medium to coarse quartz feldspar sand and subangular to subrounded gravel with clay and silt.
208-223	Sandy clay. Brown moderately stiff clay with very fine to medium sand.
223-226	Clayey, silty sand and gravel. Brown very fine to coarse sand and gravel with clay and silt.
226-236	Silty, sandy clay. Brown soft clay with silt and very fine to medium sand.
236-242	Sand, gravel and clay. Brown very fine to coarse sand, gravel and stiff clay.
242-258	Clay. Brown moderately stiff clay, with a minor content of very fine sand.
258-292	Sandy clay. Brown clay with very fine to fine sand.
292-300	Clayey, silty sand and pebbly gravel. Brown medium to coarse quartz feldspar sand and gravel with some subangular, small pebbles, in silt, and clay.
300-312	Sandy clay. Brown heavy, stiff clay with very fine to medium sand.
312-319	Sand, gravel, and clay. Brown medium to coarse sand, gravel, and clay.

GEOLOGIC LOG FOR SC-11 (Continued)

<u>Depth</u> <u>(feet)</u>	<u>Description</u>
319-325	Sandy clay. Brown stiff clay and fine sand.

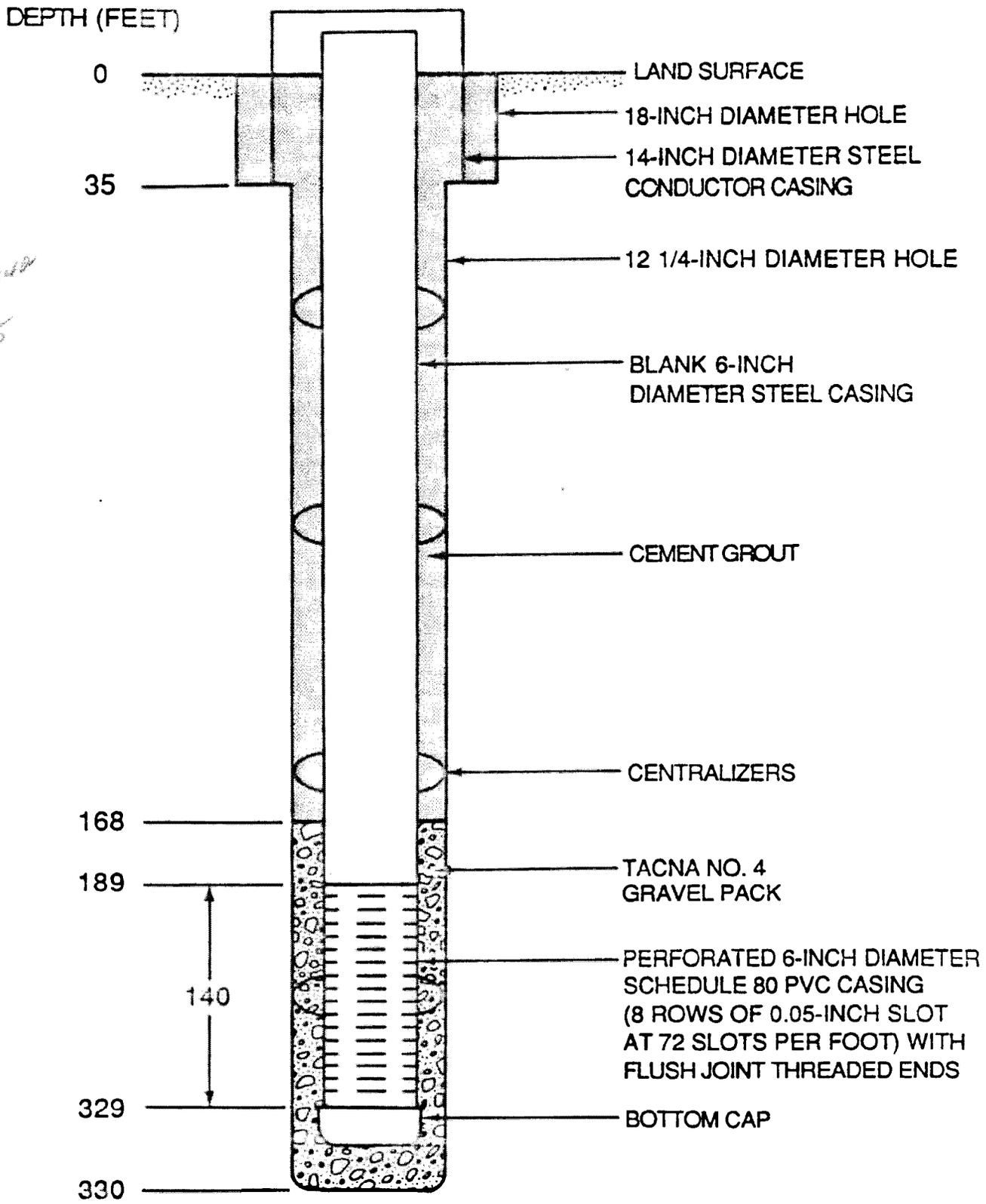
PW-11 (SC-#11)

Augered, Unwashed Samples Formation Description

- 0'-5' Medium brown fine sandy silty loam with very minor rounded volcanic gravel. Strong acid reaction. Santa Cruz River flood plain deposits.
- 5'-15' 5' to 10' is medium brown becoming dark brown (10' to 15') in color. A fine to coarse sand with rounded volcanic gravel esp. as seen at 10' to 15'. Strong acid reaction. Dark brown color possibly due to increase in organic matter in soil horizon. Santa Cruz River flood plain deposits.
- 15'-20' Light brown medium to coarse grained rounded sand and volcanic gravel. Minor occurrence of a very reactive pale gravelly gritty caliche like material in the formation matrix. Santa Cruz River flood plain deposits.
- 20'-25' Medium brown fine sand with moderate occurrence of rounded volcanic gravel. Moderate acid reaction. Santa Cruz flood plain deposits.
- 25'-35' Medium brown poorly sorted fine and coarse rounded volcanic gravel with a weak to moderate acid reaction. 25'-30' interval displays a weakly blocky texture possibly due to a slight increase in a reddish-salmon colored clay. Santa Cruz River channel deposits.

Notes: Samples were dried, thus no notes on moisture content are made.

*5hp pump
w/ 3/15*



SCHEMATIC DIAGRAM OF INTERMEDIATE MONITOR WELL SC-11

GEOLOGIC LOG FOR SC-12

<u>Depth (feet)</u>	<u>Description</u>
0-5	Silty sand. Yellow brown fine sand and silt. Probably fill.
5-20	Silty sand. Brown fine sand with silt and some subrounded to rounded pebbles.
20-25	Sand. Brown fine to medium clear sand, predominantly quartz.
25-82	Sand and pebbly gravel. Brown fine to coarse sand and gravel with subrounded pebbles. Gravel and pebbles are volcanic and granitic rocks.
82-132	Sandy clay. Brown clay with very fine to fine sand.
132-140	Sandy clay and gravel and pebbles. Brown clay and fine to coarse sand with gravel and pebbles.
140-151	Sandy clay. Brown clay with fine to medium sand.
151-154	Sandy clay and gravel and pebbles. Brown clay and fine to coarse sand, gravel and pebbles.
154-192	Sandy clay. Yellow brown stiff, nonplastic clay and fine sand.
192-195	Clayey sand. Brown medium to coarse sand with soft, plastic clay and a some gravel and pebbles.
195-203	Sand. Brown medium to coarse quartz feldspar sand.

GEOLOGIC LOG FOR SC-12 (Continued)

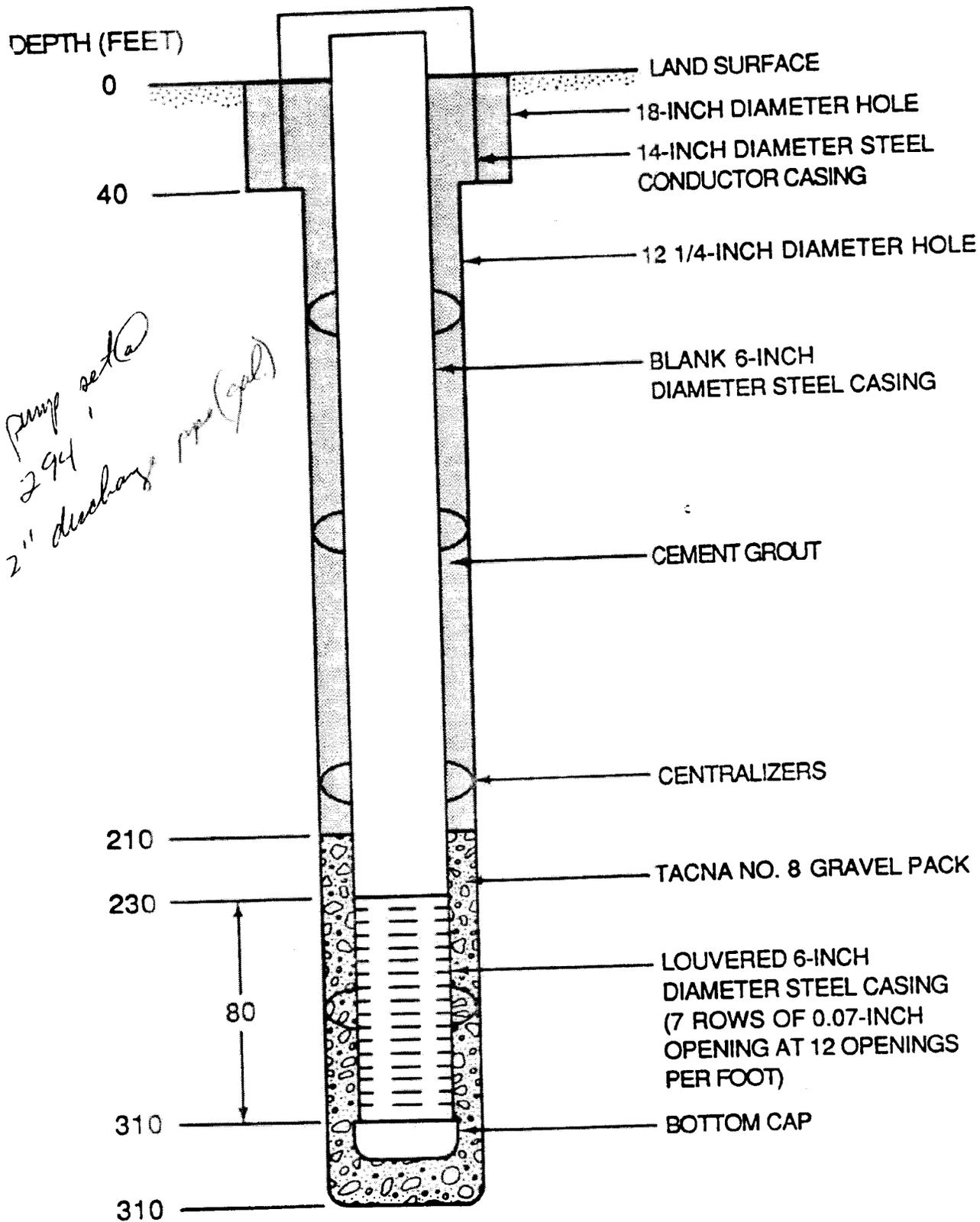
<u>Depth (feet)</u>	<u>Description</u>
203-236	Clay and sandy clay. Brown stiff clay with very fine to fine sand.
236-252	Sand and pebbly, cobbly gravel. Brown medium to coarse sand and gravel with pebbles and subangular to subrounded cobbles, primarily of volcanic rocks.
252-274	Sandy clay. Brown plastic clay with very fine to fine sand.
274-280	Sandy clay with gravel and pebbles. Brown clay with fine to medium sand and gravel.
280-290	Sandy clay. Brown plastic clay with fine sand.
290-296	Clayey sand. Brown fine to medium sand and clay.
296-310	Sandy clay. Brown stiff plastic clay with fine sand.

PW-12 (SC#12)

Augered, Unwashed Samples Formation Description.

- 0'-5' Light brown fine sandy silty loam, strong acid reaction. Minor black clayey organic rich soil exhibiting a blocky texture. Santa Cruz River flood plain deposit.
- 5'-25' Brown well sorted rounded medium sand with minor fine volcanic gravel. Minor blocky clayey organic material in 5' to 10' interval. Moderate acid reaction. Santa Cruz overbank deposits.
- 25'-40' medium to chocolate brown rounded medium to coarse volcanic sand and gravel with very minor amount of fines. 35' to 40' interval is more reddish salmon colored sticky clay. Moderate acid reaction at 25' to 30' becoming weak to zero reaction from 30' to 40'. Santa Cruz River channel deposits.

Note: Samples were dried, thus no notes on moisture contact were made.



SCHEMATIC DIAGRAM OF INTERMEDIATE MONITOR WELL SC-12