# *Appendix E*
## *Well Construction Logs*

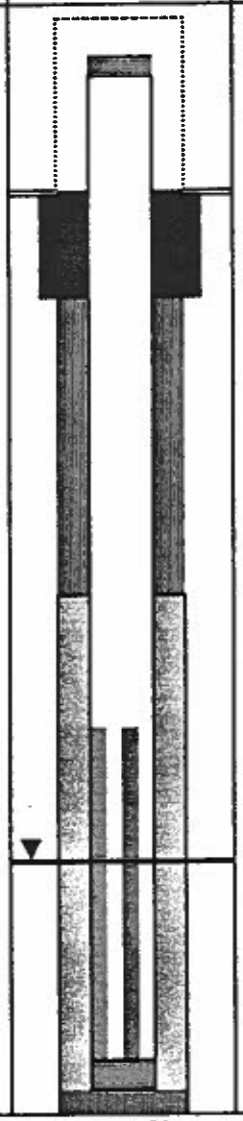
# AMAI

611 Broadway Suite 907 G
New York, New York 10012

## Well Log

**Northeast Refinery Area**

| Well ID: | Client: | Project: | Location: |
|---|---|---|---|
| 40-09 | Puerto Rico Sun Oil Company | RCRA Facility Investigation | Yabucoa, Puerto Rico |
| **Project No.:** | **AMAI Geologist/Engineer:** | **Driller:** | **Drilling contractor:** |
| | Gustavo Felipe | Constancio Olivo | Jaca & Sierra |
| **Date Started:** | **Date Completed:** | **Drilling Method:** | **Fluid:** |
| 6/26/96 | 6/26/96 | 3.25" ID-6.0" OD Hollow Stem Auger | None |



| Depth bgl ft | Well Construction | USCS symbol | Recovery (per 24 ") | Blow Counts (6" ea) | PID (ppm) | Soil Description (Descriptions made from auger cuttings unless otherwise noted (grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|---|
| 0 | | OL | | | 0.0 | 0-2 ft Sandy silt little or no gravel, no rock fragments, Organic rich soil. No visible contamination, Dry. Hue 7.5 YR 3/3 Very dark brown |
| 1 | | | | | | |
| 2 | | OL | | | 3.7 | 2-4 ft Silt and clay - dense high plasticity. Little or no gravel. strong product odor- visible free product, Dry Hue 7.5 YR 2.5/1 Black |
| 3 | | | | | | |
| 4 | | OL | | | 7.5 | 4-6 ft Same as above |
| 5 | | | | | | |
| 6 | | CH | | | 78.6 | 6-8 ft Clay dense high plasticity. Little or no gravel, or sand. Visible contamination. Gray Saturated at approximately 8 ft. |
| 7 | | | | | | Drill to 13 ft and install 2" PVC Monitoring well. |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | Auger tip has dense gray clay at tip (13 ft) |
| 13 | | | | | | |

**Key to well construction**

| | | | | | |
|---|---|---|---|---|---|
| ▼ | Standing W.L. | | Bottom of borehole | | |
| ═ | Land surface | | End cap | | Well casing |
| ..... | Security casing | | Bentonite slurry | | Screened interval |
| | | | Concrete | | Filter pack |

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## Well Log (continued)

**Northeast Refinery Area**

| Location | Client: | Project: | Project number |
|---|---|---|---|
| | Puerto Rico Sun Oil Company | RCRA Facility Investigation | |

| Depth bgl (ft) | USCS Symbol (ppm) | Reco-very (per 24") | Blow Counts (6"ea) | PID (ppm) | Soil Description<br>Descriptions made from auger cuttings unless otherwise noted<br>(grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|
| | | | | | |

### Well Construction Details

| Casing material | Screen slot size | Filter pack | Screen Interval | Bottom |
|---|---|---|---|---|
| 2" schedule 40 PVC | 0.020 inch | No. 2 Silica Sand | 8.0-13.0 ft | Well point |

| Security casing/manhole: | Lock type: |
|---|---|
| Above ground 36" galvanized steel protective casing | American |

Notes: Watertight cap

### Well Development Data

| Date: | Technique: | Volume purged: |
|---|---|---|
| 7/22/96 | Centrifugal pump using 5/8" high density polyethylene hose. | 40 gallons |

| | Temp (c) | SC (µS/cm) | pH | Notes: SC- specific conductance |
|---|---|---|---|---|
| Initial: | 25 | 239 | 6.44 | Pumping rate 1.5 gpm |
| Final: | 25 | 220 | 6.49 | Viscous black product in well |

### *Soil Descriptions

| Type | Size (mm) | | | Gravel | Sym | | Silt & Clay | Sym | |
|---|---|---|---|---|---|---|---|---|---|
| | *Coarse* | *Medium* | *Fine* | no fines | GW | well graded gravel | *Inorganic* | | |
| Gravel | 19-75 | | 4.8-19 | little fines | GP | poorly graded gravel | low plast. | ML | silts and very fine sand |
| Sand | 2.0-4.8 | .43-2.0 | .08-.043 | some fines | GM | sand,silt,gravel mix | low plast. | CL | gravelly,sandy,silty clay |
| Silt & clay | | | <.08 | some fines | GC | sand,clay,gravel,mix | high plast. | MH | micaceous/diatomaceous |
| Soil density | very loose | loose | med. dense | Sand | | | high plast. | CH | high plasticity clay |
| | dense | very dense | | no fines | SW | well graded gravelly | *Organic* | | |
| Angularity | very ang. | angular | sub angular | little fines | SP | poorly graded gravelly | low plast. | OL | silty clay low plasticity |
| | sub round | rounded | well round | some fines | SM | silty-sand sandy-silt | high plast. | OH | clay med. to high plasticity |
| Note - density also in blows/foot above | | | | some fines | SC | sand clay mixture | Peat | PT | humus,swamp soils, organic |

* Source Unified Soil Classification System. **Hue and color based on MUNSELL Soil color charts

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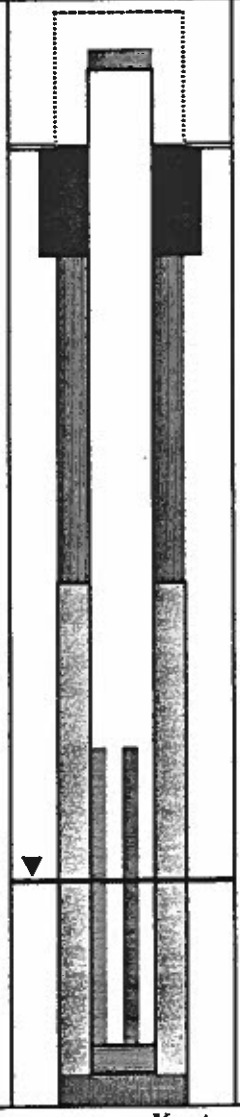
New York, New York 10012

## Well Log

**Northeast Refinery Area**

| Well ID: | Client: | Project: | Location: |
|---|---|---|---|
| 40-10 | Puerto Rico Sun Oil Company | RCRA Facility Investigation | Yabucoa, Puerto Rico |
| **Project No.:** | **AMAI Geologist/Engineer:** | **Driller:** | **Drilling contractor:** |
| | Gustavo Felipe | Constancio Olivo | Jaca & Sierra |
| **Date Started:** | **Date Completed:** | **Drilling Method:** | **Fluid:** |
| 6/27/96 | 6/27/96 | 3.25" ID-6.0" OD Hollow Stem Auger | None |

| Depth bgl ft | Well Construction | USCS symbol | Recovery (per 24 ") | Blow Counts (6" ea) | PID (ppm) | Soil Description (Descriptions made from auger cuttings unless otherwise noted (grain size, ** hue/color, moisture, sorting etc.)) |
|---|---|---|---|---|---|---|
| 0 |  | SM | | | 0.0 | 0-2 ft Sandy silt little or no gravel, no rock fragments, Organic rich soil. No visible contamination, Dry. Hue 7.5 YR 3/3 Very dark brown |
| 1 | | | | | | |
| 2 | | SM | | | 0.0 | 2-3 ft Same as above |
| 3 | | | | | | 3-4 ft Same grain size as above color change at 3 ft perhaps due to product in soil. Dry Hue 7.5 YR 2.5/1 Black |
| 4 | | ML | | | 78.9 | 4-6 ft Fine sand and silt mix, little or no gravel, visible free product in soil. Saturated at 6 ft bgl, Hue 7.5 YR 2.5/1 Black |
| 5 | | | | | | |
| 6 | | CH | | | 78.6 | 6-14 ft Drill to 14 ft and install 2" PVC monitoring well 40-10. |
| 7 | | | | | | |
| 8 | | | | | | Clay appears in cuttings at approximately 8 ft bgl. |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | Auger tip has dense gray clay at tip (13 ft) |
| 14 | | | | | | |

**Key to well construction**

| | | | | | |
|---|---|---|---|---|---|
| ▼ | Standing W.L. | | Bottom of borehole | | |
| ═ | Land surface | | End cap | | Well casing |
| ····· | Security casing | | Bentonite slurry | | Screened interval |
| | | | Concrete | | Filter pack |

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## Well Log (continued)

**Northeast Refinery Area**

| Location | Client: | Project: | Project number |
|---|---|---|---|
| Yabucoa, P.R. | Puerto Rico Sun Oil Company | RCRA Facility Investigation | |

| Depth bgl (ft) | USCS Symbol (ppm) | Reco-very (per 24") | Blow Counts (6"ea) | PID (ppm) | Soil Description<br>Descriptions made from auger cuttings unless otherwise noted<br>(grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|
| | | | | | |

### Well Construction Details

| Casing material | Screen slot size | Filter pack | Screen Interval | Bottom |
|---|---|---|---|---|
| 2" schedule 40 PVC | 0.020 inch | No. 2 Silica Sand | 9.0-14.0 ft | Well point |

| Security casing/manhole: | Lock type: |
|---|---|
| Above ground 36" galvanized steel protective casing | American keyed-alike (aluminum body) |

Notes: Watertight cap

### Well Development Data

| Date: | Technique: | Volume purged: |
|---|---|---|
| 7/22/96 | Centrifugal pump using 5/8" high density polyethylene hose. | 35 gallons |

| | Temp (c) | SC (µS/cm) | pH | Notes: SC- specific conductance |
|---|---|---|---|---|
| Initial: | 25 | 1600 | 5.33 | Pumping rate 1.0 gpm |
| Final: | 25 | 1640 | 5.31 | Viscous black product in well |

### *Soil Descriptions

| Type | Size (mm) | | | Gravel | Sym | | Silt & Clay | Sym | |
|---|---|---|---|---|---|---|---|---|---|
| | *Coarse* | *Medium* | *Fine* | no fines | GW | well graded gravel | *Inorganic* | | |
| Gravel | 19-75 | | 4.8-19 | little fines | GP | poorly graded gravel | low plast. | ML | silts and very fine sand |
| Sand | 2.0-4.8 | .43-2.0 | .08-.043 | some fines | GM | sand,silt,gravel mix | low plast. | CL | gravelly,sandy,silty clay |
| Silt & clay | | | <.08 | some fines | GC | sand,clay,gravel,mix | high plast. | MH | micaceous/diatomaceous |
| Soil density | very loose | loose | med. dense | Sand | | | high plast. | CH | high plasticity clay |
| | dense | very dense | | no fines | SW | well graded gravelly | *Organic* | | |
| Angularity | very ang. | angular | sub angular | little fines | SP | poorly graded gravelly | low plast. | OL | silty clay low plasticity |
| | sub round | rounded | well round | some fines | SM | silty-sand sandy-silt | high plast. | OH | clay med. to high plasticity |
| Note - density also in blows/foot above | | | | some fines | SC | sand clay mixture | Peat | PT | humus,swamp soils, organic |

* Source Unified Soil Classification System. **Hue and color based on MUNSELL Soil color charts

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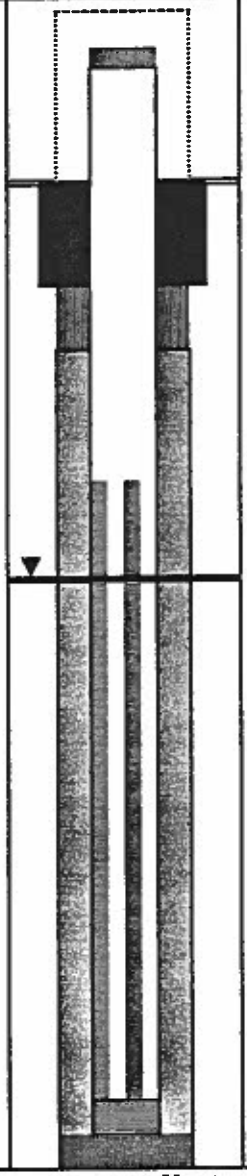
## Monitoring Well Construction Log

Upgradient Well

| Well ID: | Client: | Project: | Location: |
|---|---|---|---|
| MW-RA8 | Puerto Rico Sun Oil Company | RCRA Facility Investigation | Yabucoa Puerto Rico |
| **Project No.:** | **AMAI Geologist/Engineer:** | **Driller:** | **Drilling contractor:** |
| | Gustavo Felipe | Constancio Olivo | Jaca & Sierra |
| **Date Started:** | **Date Completed:** | **Drilling Method:** | **Fluid:** |
| 7/11/96 | 7/11/96 | 3.25" ID - 6.00" OD Hollow Stem Auger | None |



| Depth bgl ft. | Well Construction | *USCS symbol | Recovery (per 24 ") | Blow Counts (6" ea.) | PID (ppm) / Time | Soil Description (Descriptions made from auger cuttings unless otherwise noted (grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|---|
| 1 | | SC | | | 0.0 | 0-2 ft - Top soil - fine organic rich sand and silt mix. Little or no rock fragment or gravel. Poorly sorted loose, no visible contamination. Dry Hue 7.5 YR 4/2 Brown |
| 2 | | SC | | | 0.0 | 2-4 ft - Same as above color change at approximately 3 ft Hue 5 Y 4/2 Olive gray |
| 3 | | | | | | |
| 4 | | CH | | | 0.0 | 4-6 ft - Clay - dense low plasticity inorganic clay little or no sand or gravel. No visible contamination Dry Hue 2.5 YR 4/8 Red |
| 5 | | | | | | |
| 6 | | CH | | | 0.0 | 6-8 ft - Same as above very dense and dry. SWL = 6.25 |
| 7 | | | | | | |
| 8 | | CH | | | 0.0 | 8-13 ft - Diorite weathered - Thin bands of silt and sand appears moist to touch. |
| 9 | | | | | | Cuttings appear to be dry continue to 13 ft and take splitspoon sample |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | CH | 24" | 9/14 14/23 | 0.0 | 13-15 ft - Fine silt and weathered diorite. very densely packed poorly sorted, moist, Hue 10 YR 5/4 Light yellowish brown |
| 14 | | | | 12/25 | | |
| 15 | | ML | 24" | 31/74 | 0.0 | 15-17 ft - Weathered diorite and silt well packed spoon. Very dense Saturated throughout. Hue 10 YR 5/4 Light yellowish brown End drilling and install permanent monitoring well at 15 feet bls. |

**Key to well construction**

- Standing W.L.
- Land surface
- Security casing
- Bottom of borehole
- End cap
- Bentonite
- Concrete
- Well casing
- Scrn interval
- Filter pack

# AMAI

611 Broadway Suite 907G
New York, New York 10012

## Monitoring Well Construction Log

(continued) Upgradient Well

| Location | Client: | Project: | Project number |
|---|---|---|---|
| MW-RA8 | Puerto Rico Sun Oil Company | RCRA Facility Investigation | |

| Depth bgl (ft.) | USCS Symbol (ppm) | Reco-very (per 24") | Blow Counts (6"ea.) | PID (ppm) Time | Soil Description Descriptions made from auger cuttings unless otherwise noted (grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|
| | | | | | |

### Well Construction Details

| Casing material | Screen slot size | Filter pack | Screen interval | Bottom |
|---|---|---|---|---|
| 2" X schedule 40 PVC | 0.020 | No. 2 Silica Sand | 5-15 ft bls | Well point |

| Security casing/manhole: | Lock type: |
|---|---|
| 4" X 36" galvanized steel security casing | American keyed-alike (aluminum body) |

Notes:

### Well Development Data

| Date: | Technique: | Volume puged: |
|---|---|---|
| 7/22/96 | Centrifugal pump using 5/8" high density polyethylene hose. | 55 gallons |

| | Temp (c) | Specific conductivity | PH | Notes: |
|---|---|---|---|---|
| Initial: | N/R | 0.92 | 7.05 | Ending volume clear no product odor. |
| Final: | N/R | 0.92 | 6.87 | |

### Soil Descriptions*

| Type | Size (mm) | | | Gravel | Sym | | Silt & Clay | Sym | |
|---|---|---|---|---|---|---|---|---|---|
| | *Coarse* | *Medium* | *Fine* | no fines | GW | well graded gravel | *Inorganic* | | |
| Gravel | 19-75 | | 4.8-19 | little fines | GP | poorly graded gravel | low plast. | ML | silts and very fine sand |
| Sand | 2.0-4.8 | .43-2.0 | .08-.043 | some fines | GM | sand,silt,gravel mix | low plast. | CL | gravelly,sandy,silty clay |
| Silt & clay | | | < 08 | some fines | GC | sand,clay,gravel,mix | high plast. | MH | micaceous/diatomaceous |
| Soil density | very loose | loose | med. dense | Sand | | | high plast. | CH | high plasticity clay |
| | dense | very dense | | no fines | SW | well graded gravelly | *Organic* | | |
| Angularity | very ang. | angular | sub angular | little fines | SP | poorly graded gravelly | low plast. | OL | silty clay low plasticity |
| | sub round | rounded | well round | some fines | SM | silty-sand sandy-silt | high plast. | OH | clay med. to high plasticity |
| Note - density also in blows/foot above | | | | some fines | SC | sand clay mixture | Peat | PT | humus,swamp soils, organic |

* Source Unified Soil Classification System ** Hue and color based on MUNSELL soil color charts

# AMAI

611 Broadway Suite 907 G
New York, New York 10012

## Geologic Boring Log

**Upgradient Well DA-1**

| Boring ID | Client: | Project: | Location |
|---|---|---|---|
| DA-1 | Puerto Rico Sun Oil Co. | RCRA Facility Investigation | Yabucoa, Puerto Rico |
| **Project No.** | **AMAI Geologist/Engineer** | **Driller** | **Drilling Contractor** |
| | Gustavo Felipe | Constancio Olivo | Jaca & Sierra |
| **Date Started** | **Date Completed** | **Drilling Method** | **Sampler type** |
| 7/02/96 | 7/02/96 | 3.25" ID - 6.00" OD Hollow Stem | 2"x 24" Carbon Steel Split Spoon |

| Depth bgl (ft.) | USCS Symbol | Reco-very (per 24") | Blow Counts (6" each) | PID (ppm) Time | Soil Description<br>Descriptions made from auger cuttings unless otherwise noted<br>(grain size, ** hue/color, moisture, sorting etc.) |
|---|---|---|---|---|---|
| 0 | SM | | | 0.0<br>11:15 | **0-2 ft Fine sand and silt mix, little or no gravel, or rock fragments,**<br>Dry, No visible contamination, Hue 10 YR 5/3 brown |
| 1 | | | | | |
| 2 | SM | | | 0.0<br>11:25 | **2-4 ft** Same as above, no visible contamination |
| 3 | | | | | |
| 4 | SM | | | 0.0<br>11:30 | **4-6 ft** - Same as above, no visible contamination. |
| 5 | | | | | |
| 6 | SM | | | 0.0<br>11:35 | **6-8 ft** - Same as above, Slightly finer grains, no visible contamination |
| 7 | | | | | |
| 8 | SM | | | 0.0<br>11:41 | **8-10 ft** - Fine sand and silt (micaceous) no larger grains, no visible conamination,<br>Saturated, Hue chart #1 for gley 10 Y 4/1 dark grenish gray |
| 9 | | ▼ | | | Drill to 17 ft and install temporary monitoring well point at 17 ft<br>screen 7-17 ft |
| ↓ | | | | | |
| 17 | | | | | End boring |

### Well Construction Details

| Casing material | Screen slot size | Screen Interval | Filter Pack | Cap Type |
|---|---|---|---|---|
| 2" X Schedule 40 PVC | 0.020 | 7-17 ft | No. 2 Silica sand | Vacuum |

| Security casing/manhole: | Lock type: |
|---|---|
| 36" standing galvanized steel casing | American Alluminum (key-alike) |

**Notes:**

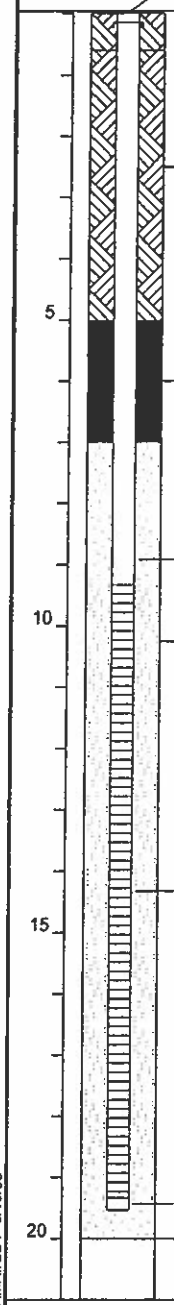
### Well Development Data

| Date: | Technique: | Volume purged: |
|---|---|---|
| 7/19/96 | Centrifugal pump using 5/8" high density polyethylene hose. | 55 gal |

| | Temp ( °C) | Specific cond. | PH | Notes: |
|---|---|---|---|---|
| Initial: | 25 | 1.05 | 6.17 | Water clear after purging |
| Final: | 25 | 1.09 | 6.75 | Well dries at 5 gpm |

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 2-09 Pg. 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/7/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/7/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 18.39 ft above MSL | Meas. Pt. Elev: | 18.39 ft above MSL | Reviewed by: | M. Stein |




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 9, 7, 10 | 18 | 0.0 | | | | (0-18") Fill Material: gravelly, sandy, silty CLAY/gravelly, silty, clayey SAND, brown, slightly moist, lithic, quartz, mica, pyrite. | CL |
| 8, 5, 4 | 20 | 0.0 | | | | (24-44") Fill Material: SAND/silty SAND, brown/light brown, gray, slightly moist, lithic, quartz, mica, granodiorite fragments, Fe oxide. | CL |
| 4, 8, 12 | 20 | 0.0 | | 5 | | (48-68") Fill Material: gravelly, silty, clayey SAND, brown/light brown, slightly moist, lithic, quartz, mica, pyrite. | SW |
| 22, 26, 14 | 21 | 0.0 | | | | (72-93") SAND, fine to medium grained, light brown, slightly moist, loose, quartz, lithic, mica, pyrite, shell fragments. | SW |
| 20, 16, 17 | 13 | 0.0 | | | | (96-106") SAND, fine to medium grained, light brown, saturated, loose, quartz, lithic, mica, pyrite, shell fragments. | SW |
| 8, 9, 8 | | 0.0 | | | | (106-109") SAND, fine grained, light gray, saturated,loose, lithic, quartz, mica, pyrite. | SP |
| 8, 7, 8 | 22 | 0.0 | | 10 | | (120-132") Same as above. | SP |
| 4, 6, 3 | 12 | 0.0 | | | | (132-142") sandy, silty CLAY, gray, green, stiff, wood fragments. | CL |
| 1, 3, 3 | | 0.0 | | | | (144-145") Same as above. | CL |
| 1, 1, 2 | 12 | 0.0 | | | | (145-153") SAND, fine grained, dark gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SP |
| 3, 2, 3 | 24 | 0.0 | | 15 | | (153-156") sandy, silty CLAY, gray/green, moist, soft, lithic, quartz, mica. | CL |
| 5, 6, 0 | 12 | 0.0 | | | | (168-190") Same as above. Color is dark brown, gray/green. | CL |
| 1, 2, 3 | | 0.0 | | 20 | | (192-207") sandy, silty CLAY, light brown/gray, slightly moist, stiff, quartz. | CL |
| | | | | | | (207-216") SAND, fine to coarse grained, gray, light brown, saturated, lithic, quartz, mica, pyrite. | SW |
| | | | | | | (216-228") SAND, medium to coarse grained, brown to gray, saturated, loose, quartz, lithic, pyrite, mica. | SW |
| | | | | | | Bottom of boring @ 20 feet. | |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Environmental Consultants
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White Plains, NY 10604
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FAX: 914-251-1286
AMAI


**LEGEND**

☒ Sample Interval

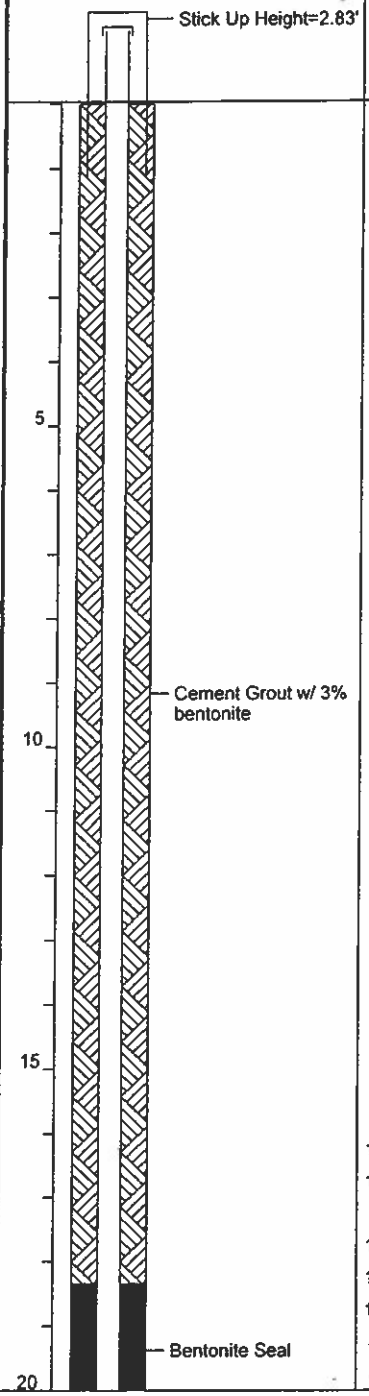
Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 3-10B Pg. 1 of 2

Drilling Co: Jaca & Sierra
Drilling Method: 8-inch OD hollow stem auger
Date Started: 2/10/03
Location: SCYI
Sampler / Drop: 2" OD Split Spoon/30"
Date Completed: 2/11/03
Yabucoa, Puerto Rico
Desc. of Meas Pt: Top of PVC Casing
Logged by: N. Rivera
Surface Elev.: 11.82 ft above MSL
Meas. Pt. Elev: 14.31 ft above MSL
Reviewed by: M. Stein




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 5, 10, 6, 4 | 18 | 0.0 | | | | (0-10") Fill Material: gravelly, silty, clayey SAND, fine to coarse grained, light brown, white, slightly moist, loose, quartz, mica, rock fragments. | SW |
| | | 0.0 | | | | (10-18") SAND/silty SAND, fine to coarse grained, light brown, slightly moist, loose, lithic, mica, pyrite, quartz, shell fragments. | SW |
| 4, 4, 2, 3, 4 | 14 | 0.0 | | | | (24-39") gravelly, sandy, silty CLAY, slightly moist, soft, pinkish rock fragments. | CL |
| | | 0.0 | | | | | |
| | | | | | | (48-60") Not Sampled. Offset boring to a distance of approximately 1 to 2 feet to avoid rock. | |
| 7, 5, 2, 2 | 14 | 0.0 | | 5 | | (60-74") gravelly, sandy, silty CLAY, brown, light brown, slightly moist, soft, quartz, lithic, mica, pyrite. | CL |
| | | 0.0 | | | | | |
| 2, 1, 1, 2 | 12 | 0.0 | | | | (84-96") sandy, silty CLAY/silty SAND, brown, gray, moist, wood fragments. | CL |
| 0, 2, 5, 4 | 10 | 0.0 | | | | (108-115") Same as above. | CL |
| | | | | 10 | | (115-118") silty SAND/SAND, fine to coarse grained, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SM |
| 2, 3, 1 | 16 | 0.0 | | | | (132-145") SAND, dark gray, gray, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | 0.0 | | | | (145-145.5") sandy CLAY, saturated, soft. | CL |
| 7, 3, 4, 4 | 24 | 0.0 | | | | (145.5-148") SAND, light gray/green, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | | | | | (156-174") Same as above. | SW |
| | | 0.0 | | | | (174-180") SAND, fine to medium grained, dark gray, saturated, lithic, quartz, mica, pyrite, shell fragments. | SW |
| 7, 2, 3, 10 | 8 | 0.0 | | 15 | | (180-184.5") SAND, fine to coarse grained, dark gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | | | | | (184.5-188") SAND, fine grained, dark gray, saturated, lithic, quartz, pyrite, mica, shell fragments. | SP |
| 14, 9, 10, 10 | 14 | 0.0 | | | | (204-218") SAND, fine to coarse grained, dark gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | 0.0 | | | | | |
| 10, 4, 8 | 13 | 0.0 | | 20 | | (228-241") SAND, fine to coarse grained, dark gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |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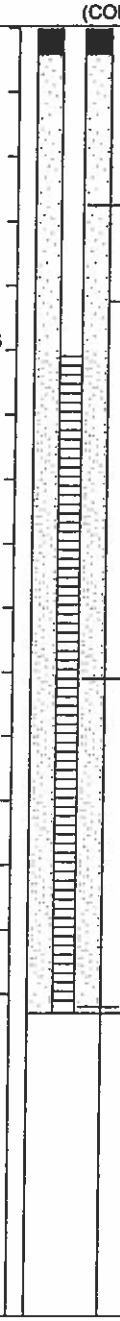
☒ Sample Interval

Water Level ATD _____ ft bgl ▽
Water Level _____ ft bgl ▼
Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 3-10B Pg. 2 of 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/10/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/11/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 11.82 ft above MSL | Meas. Pt. Elev: | 14.31 ft above MSL | Reviewed by: | M. Stein |

(CONTINUED)




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 11, 15, 9, 9 | 17 | 0.0 | | | | (252-269") Same as above. | SW |
| 14, 14, 5, 8 | 17 | 0.0 | | | | (276-293") Same as above. Sand is fine to medium grained. | SW |
| 12, 12, 5, 6 | 16 | 0.0 | | 25 | | (300-316") Same as above. Sand is fine to coarse grained. | SW |
| 8, 8, 7, 7 | 24 | 0.0 | | | | (324-348") Same as above. | SW |
| 8, 8, 7, 8 | 24 | 0.0 | | | | (348-372") Same as above. | SW |
| 7, 6, 4, 5 | 10 | 0.0 | | 30 | | (372-382") Same as above. | SW |
| 8, 6, 4, 3 | 18 | 0.0 | | | | (396-404") Same as above. | SW |
| 5, 9 | | 0.0 | | 35 | | (404-405.5") sandy, silty CLAY, gray/brown, slightly moist, soft, gravel fragments. | CL |
| | | | | | | (405.5-407.5") SAND, fine to coarse grained, gray/dark gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | | | | | (407.5-414") sandy, silty CLAY, brown, yellowish, slightly moist hard, gravel fragments, Fe oxide. | CL |
| | | | | | | Bottom of boring @ 35 feet. | |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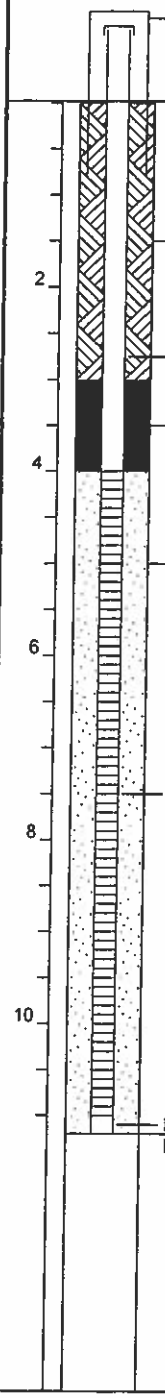
Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 3-11 Pg. 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | On Site | Drilling Method: | Direct-push | Date Started: | 2/12/03 |
| Location: | SCYI | Sampler / Drop: | 2-inch macrocore | Date Completed: | 2/12/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 10.33 ft above MSL | Meas. Pt. Elev: | 12.82 ft above MSL | Reviewed by: | M. Stein |




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| | 42 | 0.0 | | | | (0-2") Fill Material: Top soil, vegetation. | |
| | | | | | | (2-42") SAND, fine to coarse grained, light brown/brown, slightly moist, loose, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | 0.0 | | | | | |
| | | 0.0 | | 2 | | | |
| | | 0.0 | | | | | |
| | 44 | 0.0 | | 4 | | (48-60") Same as above. | SW |
| | | 0.0 | | | | (60-73") SAND, fine to medium grained, gray, slightly moist, lithic, quartz, mica, pyrite, shell fragments. | SW |
| | | 0.0 | | 6 | | (73-92") SAND, fine to coarse grained, dark gray, moist, loose, roots, lithic, quartz, mica, pyrite. Sand is saturated at bottom 3 inches. | SW |
| | | 0.0 | | | | | |
| | 33 | 0.0 | | 8 | | (96-129") SAND, fine to coarse grained, dark gray, gray, saturated, loose, lithic, quartz, mica, pyrite. | SW |
| | | 0.0 | | | | | |
| | | 0.0 | | 10 | | | |
| | | | | | | Bottom of boring @ 11 feet. | |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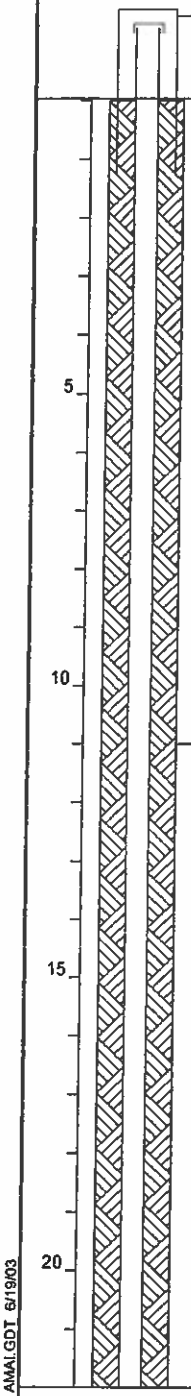
Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 40-14B Pg. 1 of 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/13/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/13/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 17.69 ft above MSL | Meas. Pt. Elev: | 19.09 ft above MSL | Reviewed by: | M. Stein |




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 4 4 4 | 10 | 0.0 | | | | (0-10") sandy, silty CLAY, dark brown, slightly moist, hard, roots. | CL |
| 5 6 9 | 18 | 0.0 | | | | (24-42") Same as above. | CL |
| 8 10 | | 0.0 | | | | | |
| 5 5 4 | 24 | 0.0 | | 5 | | (48-72") sandy, silty CLAY, brown, dark brown mottles, slightly moist, stiff, Fe oxide. | CL |
| 6 3 4 | 18 | 0.0 | | | | (72-90") sandy, silty CLAY, brown, dark brown, brick red, slightly moist, hard. | CL |
| 4 5 3 | 18 | 0.0 | | | | (96-114") silty CLAY, brown, gray, brick red, slightly moist, stiff. Sand observed from 110 to 114 inches. | CL |
| 4 5 2 | 18 | 0.0 | | 10 | | (120-126") silty SAND, light brown, light gray, saturated, soft. | SM |
| 2 3 | | 0.0 | | | | (126-136") SAND, fine to medium grained, gray, light brown, saturated, loose, roots. | SW |
| 2 1 | 21 | 0.0 | | | | (136-138") sandy, silty CLAY, dark gray, brown, brick red mottles, moist, soft, roots. | CL |
| 2 1 | | 0.0 | | | | (144-165") sandy, silty CLAY, gray, brown, green, slightly moist, lithic, quartz, mica, pyrite fragments, roots. | CL |
| 2 1 | 24 | 0.0 | | | | (168-171.5") Same as above. | CL |
| 2 2 | | 0.0 | | 15 | | (171.5-187") silty CLAY, dark gray, gray, soft, sand observed. | CL |
| 3 2 | 24 | 0.0 | | | | (187-192") silty CLAY, brown, gray, brick red, slightly moist, stiff, sand observed. | CL |
| 2 3 | | 0.0 | | | | (192-216") sandy, silty CLAY, brown, gray, red, slightly moist, stiff. | CL |
| 4 2 | 24 | 0.0 | | | | (216-221") SAND, medium to coarse grained, gray, saturated, loose, lithic, quartz, mica, pyrite. | SW |
| 5 5 | | 0.0 | | | | (221-223") sandy, silty CLAY, gray,moist,soft. | CL SW |
| 7 0 | 6 | 0.0 | | 20 | | (223-240") SAND, fine to coarse grained, gray, saturated, loose, lithic, quartz, mica, pyrite. | |
| 0 1 0 | | | | | | (240-246") Same as above. | SW |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Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** 40-14B 

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/13/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/13/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 17.69 ft above MSL | Meas. Pt. Elev: | 19.09 ft above MSL | Reviewed by: | M. Stein |

(CONTINUED)

| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 1 | 13 | 0.0 | | | | (264-268") Same as above. | SW |
| 1 | | | | | | (268-277") silty CLAY, gray, green, moist, soft, sand lenses from 268 to 272 inches. | CL |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 1 | 18 | 0.0 | | | | (288-295") SAND, fine to coarse grained, saturated, loose, lithic, quartz, mica, pyrite. | SW |
| 0 | | | | 25 | | (295-303.5") silty CLAY, gray/green, moist, soft, sand observed. | CL |
| 2 | | 0.0 | | | | | |
| 11 | | | | | | (303.5-306") SAND, fine to coarse grained, saturated, loose, lithic, quartz, mica, pyrite. | SW |
| 2 | 24 | 0.0 | | | | (312-336") Same as above. Color is gray to gray/purple. | SW |
| 5 | | | | | | | |
| 10 | | 0.0 | | | | | |
| 12 | | | | | | | |
| 6 | 24 | 0.0 | | | | (336-360") Same as above. | SW |
| 12 | | | | | | | |
| 14 | | 0.0 | | | | | |
| 18 | | | | 30 | | | |
| 3 | 18 | 0.0 | | | | (360-378") Same as above. Igneous rock fragments. | SW |
| 7 | | | | | | | |
| 8 | | 0.0 | | | | | |
| 8 | | | | | | | |
| 1 | 24 | 0.0 | | | | (384-388") Same as above. | SW |
| 1 | | | | | | (388-402") sandy, silty CLAY, gray, black, moist, vegetation. | CL |
| 1 | | 0.0 | | | | | |
| 2 | | 0.0 | | | | | |
| 3 | | 0.0 | | | | (402-408") silty CLAY, dark gray, soft, quartz, lithic, mica, pyrite, sand observed. | CL |
| 1 | 21 | | | | | (408-415") SAND, fine to coarse grained, gray, saturated, loose, quartz, mica, pyrite, lithic. | SW |
| 0 | | 0.0 | | 35 | | (415-429") silty CLAY, gray/green, wet, soft, gravel fragments, vegetation. | CL |
| 2 | | | | | | | |
| 0 | | | | | | | |
| 2 | 24 | 0.0 | | | | (432-456") silty CLAY, gray/green/blueish/brown, wet, soft, vegetation. | CL |
| 1 | | | | | | | |
| 2 | | 0.0 | | | | | |
| 1 | | | | | | | |
| 3 | 24 | 0.0 | | | | (456-464") Same as above. | CL |
| 6 | | | | | | (464-480") silty CLAY, gray, brown, green/blueish, slightly moist, hard, Fe modules. | CL |
| 9 | | 0.0 | | | | | |
| 10 | | | | 40 | | Bottom of boring @ 40 feet. | |

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Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

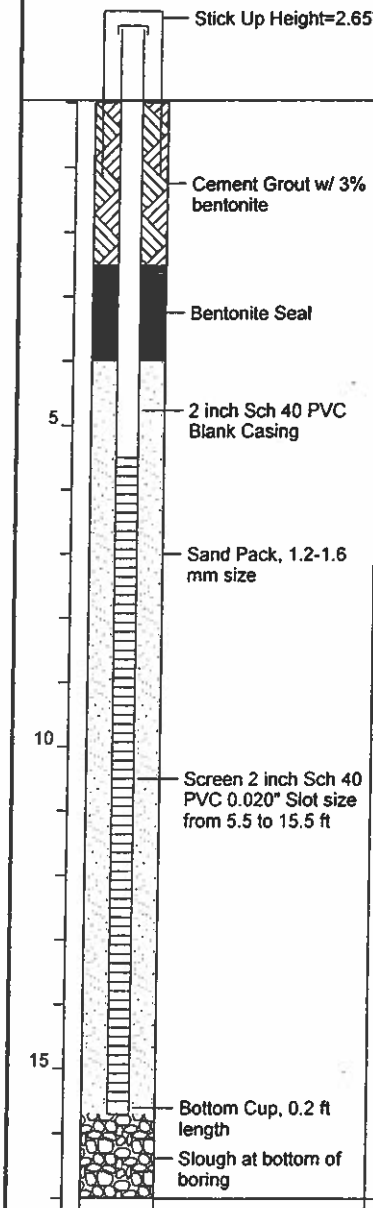
**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** WOS-4A Pg. 1 of 1

Drilling Co: Jaca & Sierra | Drilling Method: 8-inch OD hollow stem auger | Date Started: 2/4/03

Location: SCYI | Sampler / Drop: 2" OD Split Spoon/30" | Date Completed: 2/4/03

Yabucoa, Puerto Rico | Desc. of Meas Pt: Top of PVC Casing | Logged by: N. Rivera

Surface Elev.: 13.20 ft above MSL | Meas. Pt. Elev: 15.26 ft above MSL | Reviewed by: M. Stein




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 20, 18, 14 | 15 | 0.0 | | | | (0-10") Fill Material: gravelly, silty SAND, light brown to dark brown, lithic fragments, poorly sorted. | SW |
| | | 0.0 | | | | (10-15") SAND, fine to medium grained, slightly moist, loose, lithic, quartz, mica, pyrite fragments. | SW |
| 7, 6 | 18 | 0.0 | | | | (24-42") SAND, fine to medium grained, light brown, slightly moist, loose, lithic, quartz, mica, pyrite, coarse sized shell fragments and granodiorite fragments. | SW |
| 5, 4 | | 0.0 | | | | | |
| 8, 5 | 20 | 0.0 | | | | (48-68") SAND, fine to medium grained, light brown to brown, slightly moist, loose, lithic, quartz, pyrite, mica, coarse sized shell fragments and granodiorite fragments. | SW |
| 8, 12 | | 0.0 | | 5 | | | |
| 13, 8 | 21 | 0.0 | | | | (72-79.5") Same as above. | SW |
| 8, 3 | | 0.0 | | | | (79.5-89") SAND, fine to coarse grained, gray, moist to wet, loose to dense, quartz, lithic, mica, pyrite fragments. | SW |
| 4, 3 | 22 | 0.0 | | | | (89-89.5") CLAY, gray, wet, soft. | CL |
| | | | | | | (89.5-93") silty SAND, black to brown, wet to moist | SM |
| | | | | | | (96-118") SAND, fine to medium grained, black, dark gray, saturated, quartz, mica, pyrite, shells. | SW |
| 3, 4 | | 0.0 | | | | | |
| 5, 2 | 23 | 0.0 | | 10 | | (120-143") SAND, fine to coarse grained, gray, saturated, loose, lithic, quartz, mica, pyrite, rock fragments. | SW |
| 3, 3 | | 0.0 | | | | | |
| 5, 5 | 24 | 0.0 | | | | (144-168") Same as above. silty SAND lenses from 151-155 inches. | SW |
| 3, 19 | | 0.0 | | | | | |
| 20, 9 | 20 | 0.0 | | | | (168-188") SAND, fine to coarse grained, gray, saturated, loose, lithic, quartz, pyrite, mica, shell fragments. | SW |
| 12, 13 | | 0.0 | | 15 | | | |
| 16 | | | | | | (192-204") Not Analyzed. | |
| | | | | | | Bottom of boring @ 17 feet. | |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☒ Sample Interval

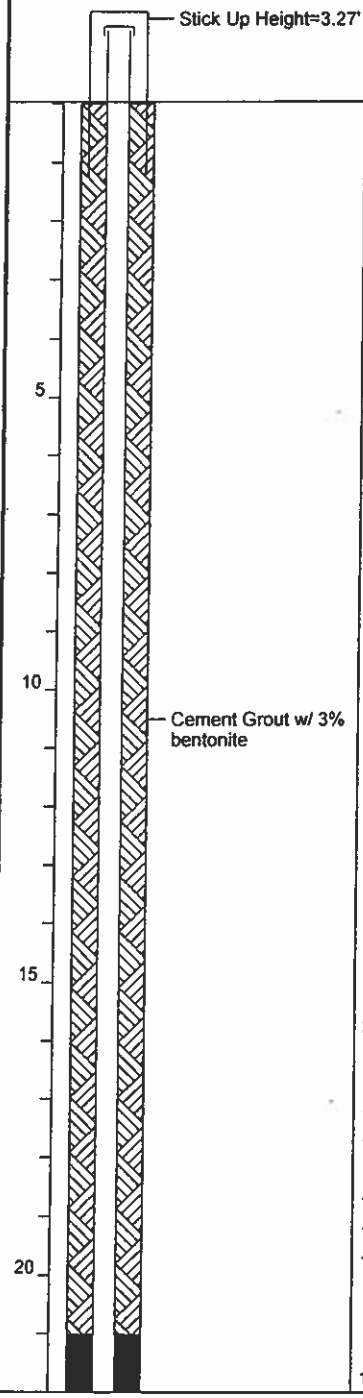
Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** WOS-4B **Pg.** 1 **of** 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/5/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/5/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 13.27 ft above MSL | Meas. Pt. Elev: | 15.76 ft above MSL | Reviewed by: | M. Stein |




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 8, 25 | 18 | 0.0 | | | | (0-13") Fill Material: sandy, silty GRAVEL to gravelly, sandy SILT, brown, gray, slightly moist, loose to stiff. | GW |
| 13, 10 | | 0.0 | | | | (13-18") SAND, fine to medium grained, light brown, slightly moist, loose, lithic, quartz, mica, pyrite. | SW |
| 7, 7 | 16 | 0.0 | | | | (24-40") SAND, fine to coarse grained, light brown and brown, slightly moist, loose, lithic, quartz, pyrite, mica, shell fragments. | SW |
| 7, 8 | | 0.0 | | | | | |
| 5, 7 | 24 | 0.0 | | 5 | | (48-72") SAND, fine to coarse grained,light brown, slightly moist, loose, quartz, lithic, mica, pyrite, shell fragments. | SW |
| 8, 9 | | 0.0 | | | | | |
| 5, 3 | 23 | 0.0 | | | | (72-77") SAND, fine to medium grained, gray, light brown, loose, slightly moist, lithic, quartz, mica, pyrite, shells. | SW |
| 2, 3 | | 0.0 | | | | (77-84.5") Same as above. Sand is fine to coarse grained. | |
| 3, 4 | 20 | 0.0 | | | | (84.5-84.75") CLAY, gray, moist, soft. | CL |
| 4, 4 | | 0.0 | | | | (84.75-95") silty SAND/sandy SILT, fine to coarse grained, black to brown, lithic, quartz, mica, pyrite. | SM |
| 2, 2 | 24 | 0.0 | | 10 | | (96-116") SAND, brown/black, some silt, lithic, quartz, micas, pyrite. | SM |
| 6, 4 | | 0.0 | | | | (120-144") SAND, fine to coarse grained, gray, saturated, loose, lithic, quartz, mica, pyrite, shells, some granodiorite fragments. | SW |
| 6, 10 | 24 | 0.0 | | | | (144-168") Same as above. No granodiorite observed. | SW |
| 12, 12 | | 0.0 | | | | | |
| 6, 8 | 24 | 0.0 | | 15 | | (168-191") Same as above. | SW |
| 16, 23 | | 0.0 | | | | | |
| 8, 18 | 12 | 0.0 | | | | (191-192") SAND, fine grained. | SP |
| 18, 16 | | | | | | (192-204") SAND, fine to medium grained, gray/light gray, saturated, loose, lithic, quartz, shells, pyrite, mica. | SW |
| 9, 12 | 12 | 0.0 | | | | (216-228") SAND, fine to coarse grained, light gray, saturated, loose, lithic, quartz, mica, pyrite, shells. | SW |
| 14, 12 | | | | | | | |
| 5, 7 | 15 | 0.0 | | 20 | | (240-247") Same as above. | SW |
| 9, 11 | | 0.0 | | | | (247-255") SAND, fine grained, gray/light gray, saturated, dense, lithic, quartz, mica, pyrite, shells. | SP |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Water Level ATD _____ ft bgl ▽

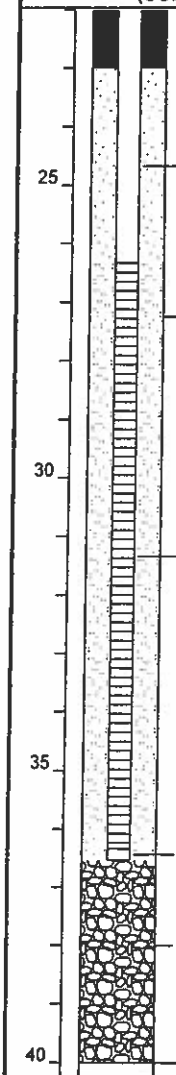
Water Level _____ ft bgl ▼

Notes:

**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI  Boring: **WOS-4B**  Pg. 2 of 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Co: | Jaca & Sierra | Drilling Method: | 8-inch OD hollow stem auger | Date Started: | 2/5/03 |
| Location: | SCYI | Sampler / Drop: | 2" OD Split Spoon/30" | Date Completed: | 2/5/03 |
| | Yabucoa, Puerto Rico | Desc. of Meas Pt: | Top of PVC Casing | Logged by: | N. Rivera |
| Surface Elev.: | 13.27 ft above MSL | Meas. Pt. Elev: | 15.76 ft above MSL | Reviewed by: | M. Stein |

(CONTINUED)




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 6, 10, 8, 14 | 13 | 0.0 | | | | (264-277") Same as above. | SP |
| 7, 8, 20, 12 | 18 | 0.0 | | 25 | | (288-306") Same as above. | SP |
| 7, 10, 14, 14 | 14 | 0.0 | | | | (312-326") Same as above. Sand is locally medium grained. | SP |
| 7, 9, 11, 12 | 20 | 0.0 | | | | (336-356") SAND, fine grained (locally medium grained), gray/light gray, saturated, dense, lithic, quartz, mica, pyrite, shells. Much water observed from 346 to 356 inches. | SP |
| 5, 5, 6, 9 | 24 | 0.0 | | 30 | | (360-384") SAND, fine grained, dark gray, saturated, dense, lithic, quartz, mica, pyrite, shell fragments. | SP |
| 8, 8, 8, 9 | 12 | 0.0 | | | | (384-396") Same as above. Sand is fine to medium grained. | SW |
| 7, 7, 7, 7 | 24 | 0.0 | | | | (408-414") SAND, fine grained, gray, saturated, dense, quartz, mica, pyrite, lithic, shell fragments. | SP |
| 6, 4, 3, 5 | 23 | 0.0 | | 35 | | (414-432") Same as above. Sand is fine to coarse grained. | SW |
| 9, 11, 14, 23 | 24 | 0.0 | | | | (432-449") Same as above. | SW |
| | | | | | | (449-455") gravelly, sandy, silty CLAY, gray, dark brown, slightly moist, stiff, quartz, lithic, rock fragments. | CL |
| | | | | 40 | | (456-480") Same as above. | CL |
| | | | | | | Bottom of boring @ 40 feet. | |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Water Level ATD _____ ft bgl ▽

Water Level _____ ft bgl ▼

Notes:

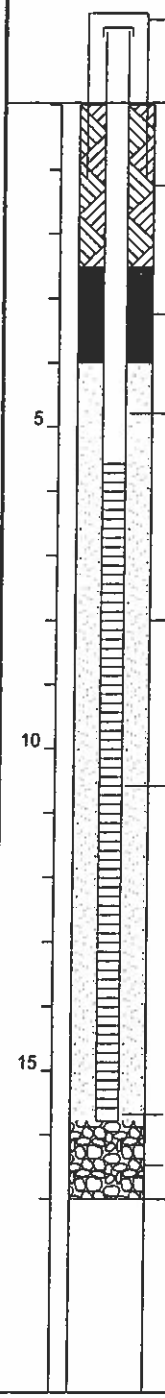
**Project:** Shell Chemical Yabucoa Inc. - Supplemental RFI **Boring:** WOS-5 Pg. 1 of 1

Drilling Co: Jaca & Sierra
Drilling Method: 8-inch OD hollow stem auger
Date Started: 2/3/03

Location: SCYI
Sampler / Drop: 2" OD Split Spoon/30"
Date Completed: 2/3/03

Yabucoa, Puerto Rico
Desc. of Meas Pt: Top of PVC Casing
Logged by: N. Rivera

Surface Elev.: 13.42 ft above MSL
Meas. Pt. Elev: 16.11 ft above MSL
Reviewed by: M. Stein




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 9, 18, 18, 17 | 18 | 0.0 | | | | (0-14") Fill Material: sandy, silty GRAVEL/gravelly, sandy SILT, light brown to dark brown, slightly moist, lithic, quartz, mica fragments, poorly sorted. | GM |
| | | 0.0 | | | | (14-18") SAND/silty SAND, fine to coarse grained, brown, gray, slightly moist, loose, lithic, quartz, mica, poorly sorted. | SW |
| 8, 9, 11, 14 | 15 | 0.0 | | | | (24-39") SAND, fine to coarse grained, light brown, slightly moist, loose, lithic, quartz, mica, poorly sorted. | SW |
| 7, 8, 7, 6 | 21 | 0.0 | | 5 | | (48-69") SAND, fine to coarse grained, light brown, slightly moist, loose, quartz, lithic, mica, shell fragments. | SW |
| 5, 4, 1, 6 | 24 | 0.0 | | | | (72-80") Same as above. | SW |
| | | 0.0 | | | | (80-90") SAND, fine to coarse grained, gray, moist to saturated, lithic, quartz, pyrite, mica, shell fragments, poorly sorted. | SW |
| | | | | | | (90-91") silty CLAY, gray, saturated, soft. | CL |
| 4, 6, 6, 8 | 18 | 0.0 | | | | (91-96") silty SAND, black to brown, moist, stiff, roots. | SW |
| | | 0.0 | | | | (96-116") SAND to silty SAND, fine to coarse grained, dark gray, moist to wet, lithic, quartz, mica, pyrite, shell fragments, poorly sorted. | SW |
| 3, 2, 7, 9 | 24 | 0.0 | | 10 | | (120-144") SAND, fine to coarse grained, light gray, saturated, loose, lithic, quartz, mica, pyrite, shell fragments, poorly sorted. | SW |
| 14, 16, 15, 14 | 24 | 0.0 | | | | (144-168") Same as above. | SW |
| 11, 17, 20, 25 | 24 | 0.0 | | 15 | | (168-192") Same as above. | SW |
| | | | | | | (192-204") Not Analyzed. | |
| | | | | | | Bottom of boring @ 17 feet. | |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AMAI


**LEGEND**

☒ Sample Interval

Water Level ATD _____ ft bgl ▽
Water Level _____ ft bgl ▼
Notes:

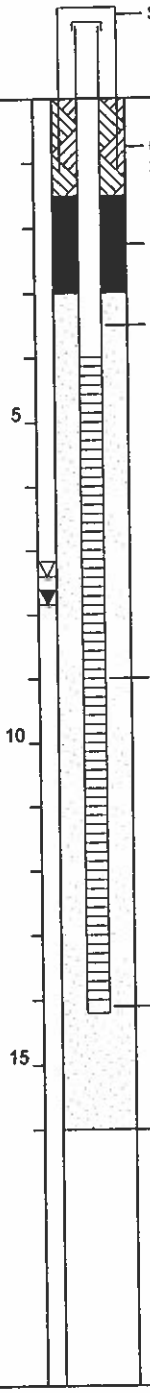
**Project:** Shell Chemical Yabucoa Inc. | Boring: **40-21** | Pg. 1 of 1

Drilling Co: Jaca & Sierra | Drilling Method: 8" OD hollow stem auger | Date Started: 2/1/05

Location: NRA area, between wells 40-11 and 40-12 near Las Lajas Creek | Sampler / Drop: 2"-OD split spoon /30" | Date Completed: 2/1/05

Desc. of Meas Pt: | Logged by: Nestor Rivera

Surface Elev.: | Meas. Pt. Elev: | Reviewed by: Joe Lysonski




| BLOWS/6 in. | RECOVERY (in) | PID (ppm) | SAMPLES | DEPTH (ft) | GRAPHIC LOG | DESCRIPTION | USCS SYMBOL |
|---|---|---|---|---|---|---|---|
| 1 2 2 | 24 | 0.0 | | | | (0-2') Sandy silt, locally sandier, dark brown, soft to stiff, clean, no HC odor or stains. | ML |
| 3 3 5 | 15 | 0.0 | | | | (2-3.25') Sandy silt, locally sandier, dark brown, soft to stiff, clean. | ML |
| 4 4 2 | 24 | 0.0 | | 5 | | (4-6') Same as above, except more sandy, dark brown with slight red brown, clean. | ML |
| 3 3 3 | 24 | 0.0 | | | | (6-7') Sandy silt, brown with some red brown, soft, very moist, clean. | ML |
| 2 3 3 | | | | | | (7-8') Silty clay, dark gray, HC staining. | CL |
| 4 1 2 | 24 | 0.0 | | | | (8-9') Same as above, HC staining and odor. | CL |
| 2 4 2 | 24 | 0.0 | | 10 | | (9-10') Fine sand with slight silt, dark gray, HC odor and staining, wet residual FPH (FPH sheen when the sample is put in water) | SM |
| 5 5 3 | 24 | 0.0 | | | | (10-12') Fine to medium sand, with slight silt, wet, HC odor and staining, residual FPH. | SM |
| 1 1 2 | | | | | | (12-12.3') Same as above, HC odor and staining, residual FPH. | SM |
| 3 3 3 | 20 | 0.0 | | | | (12.3-14') Silty clay, dark gray, plastic, moist, HC odor & staining, no residual FPH. | CL |
| | | | | | | (14-14.5') Same as above. | CL |
| | | | | 15 | | (14.5-15.25') Fine sand, slight silt, dark gray, wet, HC odor & staining, no FPH or sheen. | SM |
| | | | | | | (15.25-16') Sandy silt, brown with yellow brown streaks, moist, no HC odor or staining, clean. | MH |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**LEGEND**

☒ Sample Interval

Water Level ATD 7.41 ft bgl ▽

Water Level 7.84 ft bgl ▼

Notes:
**Water level as measured from the top of the PVC casing is 7.84 on 2/2/2005 at 11:59 AM**