

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-01

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Courtney Savoie, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-15.1**
 Northing
 Easting
 Hole Depth **8.8-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Sample Data | | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|-------------|------------------|-------------------|--------|----------|-------------------|--|
| | | Interval | Percent Recovery | Collection Method | Number | | | |
| 1 | | | | | | | | 0.0 to 1.3 feet: SILT (ML); very dark gray; 95% fines, low plasticity; 5% sand; wet. @ 0.9 feet: minor wood fragments. |
| 2 | | | | | | | | 1.3 to 2.3 feet: SILT (ML); very dark gray; 95% fines, low plasticity; 5% sand; wet; trace mica. @ 1.9 feet: minor wood fragments. |
| 3 | | | | | | | | 2.3 to 2.9 feet: SILT WITH SAND (ML); very dark gray; 85% fines, low plasticity; 15% sand, very fine to fine; wet; trace mica. |
| 4 | | | | | | | | 2.9 to 5.2 feet: SILT (ML); very dark gray; 95% fines, low plasticity; 5% sand, very fine, wet; trace mica. @ 3.3 feet: brown wood fragments. Jar method sheen test produced no sheen or odor. |
| 5 | | | | | | | | |
| 6 | | | | | | | | 5.2 to 8.65 feet: SILT (ML); very dark gray; 95% fines, low plasticity; 5% sand, very fine, moist; trace mica. @ 5.4 feet: approximately 1-inch of mottled black and brown wood fragments, with mild to moderate hydrocarbon-like odor. Sheen test produced moderate sheen. |
| 7 | | | | | | | | @ 5.9 feet: approximately 1-inch of mottled black and brown wood fragments, with mild to moderate hydrocarbon-like odor. |
| 8 | | | | | | | | @ 6.7 feet: approximately 0.5-inch of black wood fragments, mild to moderate hydrocarbon-like odor. Sheen test produced moderate sheen. @ 7.5 feet: approximately 1-inch of black wood fragments, with mild to moderate hydrocarbon-like odor. Sheen test produced moderate to heavy sheen, with visible blebs of brown NAPL approximately 0.3 mm in diameter. @ 8.0 feet: approximately 1-inch of black wood fragments, mild to moderate hydrocarbon-like odor. |
| | | | | | | | | 8.65 to 8.8 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be tan silt with fine sand; hydrocarbon-like odor and black staining in shoe. |
| | | | | | | | | Length Recovered: 8.8 feet Total Drive Length: 9.5 feet Recovery: 92.6% |

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 4.65 feet, and 4.65 to 8.65 feet. 4. Sediment core was processed on 10/9/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. NAPL = nonaqueous-phase liquid. 7. mm = millimeter. 8. Surface elevation (mudline) vertical datum is NGVD29. 9. Location of sediment core collection: Latitude 45.57827170; Longitude -122.75338030.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-02

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Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-4.4**
 Northing
 Easting
 Hole Depth **8.3-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Sample Data | | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|--------|-----------------------|--|----------|--|------------------|
| | | | | Collection Method | Number | Name (Type) | | | | |
| 1 | | | | | | SED-02-SB-2.0 | | | 0.0 to 0.5 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 40% fines; 60% sand, very fine to fine; very loose; trace mica; wet. Soupy at the top of the core. @ 0.4 feet: one-half of a bivalve shell. | |
| 2 | | | | | | SED-02-SB-3.0 | | | 0.5 to 3.1 feet: SANDY SILT TO SILT (ML); very dark gray (10YR 3/1); 60-80% fines, nonplastic to low plasticity; 20-40% sand; soft; trace mica; wet. Sand and fines percentages vary with depth. | |
| 3 | | | | | | SED-02-SB-5.0 | | | @ 1.0 to 2.0 feet: trace wood fragments. @ 1.55 feet: one piece of gravel, medium, subrounded. @ 1.9 feet: one piece of gravel, 0.15 ft x 0.1 ft, subangular. | |
| 4 | | | | | | | | | 3.1 to 3.2 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1); 5-10% fines; 90-95% sand, very fine to fine; loose; trace mica; moist. | |
| 5 | | | | | | SED-02-SB-6.25 | | | 3.2 to 4.4 feet: SILT (ML); very dark gray (10YR 3/1); 95-100% fines, low plasticity; 0-5% sand, very fine; firm; trace mica, rootlets, and small wood and plant fragments; moist. | |
| 6 | | | | | | SED-02-SB-8.25 | | | 4.4 to 4.8 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60% fines; 40% sand, very fine to fine; soft; trace wood fragments and gravel, fine to subangular; moist to wet. | |
| 7 | | | | | | | | | @ 4.7 feet: color change to dark yellowish brown (10YR 4/4); firm. 4.8 to 4.9 feet: SAND (SP); very dark gray (10YR 3/1); trace mica, white sand grains, coarse sand, and wood fragments; moist to wet. | |
| 8 | | | | | | | | | 4.9 to 8.25 feet: SILT (ML); very dark gray (10YR 3/1); 90% fines, low plasticity to medium plasticity; 10% sand; soft, spongy texture becoming firm to stiff with depth; trace mica, rootlets, and wood fragments; wet, becoming moist with depth. @ 6.8 to 7.2 feet: approximately 10-20% wood fragments in sediment. | |

8.25 to 8.3 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be tan silt with fine sand; strong odor and sheen in shoe.
 Length Recovered: 8.3 feet
 Total Drive Length: 9.7 feet
 Recovery: 85.6%

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 4.4 feet, and 4.4 to 8.25 feet. 4. Sediment core was processed on 10/9/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm). 6. ft = feet. 7. Surface elevation (mudline) vertical datum is NGVD29. 8. Location of sediment core collection: Latitude 45.57805196; Longitude -122.75303345.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-03

Sheet
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Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Courtney Savoie, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-7.3**
 Northing
 Easting
 Hole Depth **8.6-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Collection Method | Sample Data | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|-------------|-------------|--|----------|-------------------|---|
| | | | | | Number | Name (Type) | | | | |
| 1 | | | | | | | | | | 0 to 0.5 feet: SILT (ML); very dark gray; 90% fines, low plasticity; 10% sand, very fine to fine; wet. 0.5 to 1.8 feet: SILT WITH SAND (ML); very dark gray; 80% fines, low plasticity; 20% sand, very fine to fine; wet; trace mica. |
| 2 | | | | | | | | | | 1.8 to 6.6 feet: SILT (ML); very dark gray; 95-97% fines, low plasticity; 3-5% sand, very fine; moist; trace mica. |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | @ 5.5 feet: approximately 0.5-inch thick layer of black discoloration with minor wood fragments and moderate hydrocarbon-like odor. @ 5.9 feet: approximately 1-inch thick layer of black discoloration, with moderate hydrocarbon-like odor. Sheen test produced heavy iridescent sheen. @ 6.3 feet: approximately 1-inch thick later of black discoloration, with moderate hydrocarbon-like odor. Sheen test produced heavy iridescent sheen. |
| 7 | | | | | | | | | | @ 7.0 to 7.2 feet: approximately 2-inch thick layer of wood fragments, with slight continuous sheen. Sheen test produced heavy iridescent sheen with blebs of brown NAPL approximately 0.5-1 mm in diameter. @ 7.7 feet: slight continuous sheen. Sheen test produced heavy iridescent sheen with brown NAPL blebs up to 0.5 mm in diameter. |
| 8 | | | | | | | | | | 8.45 to 8.6 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be tan silt. Sheen observed on outside of core and silt with woody fragments and slight sheen in shoe. |

SED-03-SB-2.0

SED-03-SB-3.0

SED-03-SB-5.0

SED-03-SB-6.45

PID = 2.4 ppm
 PID = 3.0 ppm
 PID = 2.1 ppm
 SED-03-SB-8.45
 PID = 1.5 ppm
 PID = 1.7 ppm

Length Recovered: 8.6 feet
 Total Drive Length: 9.5 feet

Recovery: 90.5%

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 4.45 feet, and 4.45 to 8.45 feet. 4. Sediment core was processed on 10/9/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. NAPL = nonaqueous-phase liquid. 7. mm = millimeter. 8. Surface elevation (mudline) vertical datum is NGVD29. 9. Location of sediment core collection: Latitude 45.57760915; Longitude -122.75186281.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-04

Sheet
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Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/7/2019 to 10/7/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-13.3**
 Northing
 Easting
 Hole Depth **8.2-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Sample Data | | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|--------|-----------------------|--|----------|--|------------------|
| | | | | Collection Method | Number | Name (Type) | | | | |
| 1 | | | | | | SED-04-SB-2.0 | | | 0.0 to 1.1 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60% fines; 40% sand, fine; slight discontinuous (spotty) sheen on water at top of core; wet; soupy. | |
| 2 | | | | | | PID = 1.7 ppm | | | @ 0.5 to 0.7 feet: sand lens. @ 1.0 to 1.5 feet: slight sheen in sediment. | |
| 3 | | | | | | SED-04-SB-2.75 | | | 1.1 to 2.0 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1) with slightly darker, irregular areas of discoloration; 10-15% fines; 85-90% sand, very fine to fine; trace mica; wet. | |
| 4 | | | | | | SED-04-SB-4.75 | | | @ 1.4 feet: jar method sheen test of discolored area showed slight discontinuous (spotty) sheen. | |
| 5 | | | | | | PID = 1.3 ppm | | | 2.0 to 2.4 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 70% fines, nonplastic to low plasticity; 30% sand, very fine to fine; trace mica; wet. | |
| 6 | | | | | | SED-04-SB-5.75 | | | 2.4 to 2.6 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30% fines; 70% sand, very fine to fine; wet. | |
| 7 | | | | | | SED-04-SB-7.75 | | | 2.6 to 2.8 feet: SILT (ML); very dark gray (10YR 3/1); 100% fines; trace mica and very fine sand; sticky texture; wet to moist. @ 2.8 feet: one piece of gravel, medium, subrounded. | |
| 8 | | | | | | | | | 2.8 to 3.0 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 45% fines; 55% sand, fine; trace wood fragments; wet. 3.0 to 3.3 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60% fines, nonplastic to low plasticity; 40% sand, very fine to fine; wet. | |
| | | | | | | | | | 3.3 to 3.4 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1); 10% fines; 90% sand, very fine to fine; trace mica and white sand grains; wet. | |
| | | | | | | | | | 3.4 to 3.6 feet: SILTY SAND to SANDY SILT (SM-ML); very dark gray (10YR 3/1); 50% fines; 50% sand, very fine to fine; medium to dense; trace mica and wood fragments; moist. | |
| | | | | | | | | | 3.6 to 4.4 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30% fines; 70% sand, very fine to fine; approximately 50% wood fragments; loose; trace mica; wet. @ 3.6 feet: trace sheen on wood fragments. Jar method sheen test produced no sheen. Trace white/colorless material observed floating on top of water in sheen test jar. @ 4.3 feet: sheen on water at top of second core. | |
| | | | | | | | | | 4.4 to 4.6 feet: SILT (ML); very dark gray (10YR 3/1) with black mottling; 100% fines; soft; trace mica and very fine sand; wet. @ 4.4 feet: jar method sheen test shows slight discontinuous (spotty) sheen. | |
| | | | | | | | | | 4.6 to 5.1 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30-40% fines; 60-70% sand, fine; wet. @ 4.7 feet: wood fragments, including one large fragment 0.3' x 0.15'. @ 4.9 to 5.0 feet: trace fine subrounded gravel. | |
| | | | | | | | | | 5.1 to 7.75 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 55-70% fines; 30-45% sand, very fine to fine; trace mica; wet. @ 6.6 feet: color change to dark yellowish brown (10YR 3/4). | |
| | | | | | | | | | 7.75 to 8.2 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be silt with sand; tan sandy silt in shoe; no odor observed. | |

Length Recovered: 8.2 feet
 Total Drive Length: 9.5 feet

Recovery: 86.3%

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 3.95 feet, and 3.95 to 7.75 feet. 4. Sediment core was processed on 10/8/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening: results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. During homogenization of the sample collected from 2.75 to 4.75 feet, a 0.2' nail was found in the sediment. 7. Surface elevation (mudline) vertical datum is NGVD29. 8. Location of sediment core collection: Latitude 45.57721757; Longitude -122.75085545

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-05

Sheet
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Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/7/2019 to 10/7/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-11.9**
 Northing
 Easting
 Hole Depth **7.1-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Collection Method | Sample Data | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|-------------|-------------|--|----------|-------------------|--|
| | | | | | Number | Name (Type) | | | | |
| 1 | | | | | | | | | | 0.0 to 0.3 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 40% fines; 60% sand, very fine to fine; trace mica; wet. Soupy at the top of the core. |
| 2 | | | | | | | | | | @ 0.0 to 0.4 feet: slight sheen on top of core. Jar method sheen test produced slight discontinuous (spotty) sheen. |
| 3 | | | | | | | | | | 0.3 to 0.8 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 70% fines; 30% sand, very fine; spongy texture; soft; trace mica; wet. @ 0.6 feet: trace wood fragments up to 0.25' x 0.5". |
| 4 | | | | | | | | | | 0.8 to 1.0 feet: SAND (SP); very dark gray (10YR 3/1); 100% sand, fine; loose to medium; trace mica, fines, and white sand grains; wet. |
| 5 | | | | | | | | | | 1.0 to 1.6 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60% fines; 40% sand, very fine to fine; soft to firm; trace mica, rootlets, and possible plant material; wet. |
| 6 | | | | | | | | | | 1.6 to 2.0 feet: SAND (SP); very dark gray (10YR 3/1); 100% sand, fine; loose to medium; trace mica, fines, white sand grains, and fine angular gravel; moist to wet. |
| 7 | | | | | | | | | | 2.0 to 4.6 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60-70% fines; 30-40% sand, very fine to fine; soft to firm; trace mica, rootlets, possible plant material, and fine to medium angular to rounded gravel; moist. Increasing sand content with depth. |
| | | | | | | | | | | @ 2.75 feet: 1/4-inch thick sand lamination. |
| | | | | | | | | | | @ 3.6 to 3.8 feet: sand lens; very dark gray (10YR 3/1); fine sand; becoming firm with depth. |
| | | | | | | | | | | 4.6 to 5.3 feet: SAND (SP); very dark gray (10YR 3/1); 100% sand, fine; medium density; trace mica, fines, white sand grains, medium to coarse sand, fine to medium subrounded gravel; moist. |
| | | | | | | | | | | @ 5.05 feet: 1/4-inch thick SILT (ML) lamination; very dark gray (10YR 3/1). |
| | | | | | | | | | | 5.3 to 6.4 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60-70% fines; 30-40% sand, very fine; firm; trace mica; moist. SAND laminations up to 1/2-inch thick. |
| | | | | | | | | | | @ 5.4 feet: wood fragment; approximately 2 mm x 5 mm x 1 mm small thin white flecks. |
| | | | | | | | | | | 6.4 to 7.1 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30% fines; 70% sand, very fine; medium to dense; trace mica and fine subangular gravel; moist. |
| | | | | | | | | | | @ 6.6 feet: wood fragment. |
| | | | | | | | | | | @ 6.8 feet: silt nodules. |

Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be sand; Vibracore run into compacted sand until refusal.
 Length Recovered: 7.1 feet
 Total Drive Length: 8.8 feet

Recovery: 80.7%

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was processed on 10/7/2019. 4. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm). 5. mm = millimeter. 6. Surface elevation (mudline) vertical datum is NGVD29. 7. Locations of sediment core collection: Latitude 45.57702222; Longitude -122.75057069.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-06

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/7/2019 to 10/7/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-7.8**
 Northing
 Easting
 Hole Depth **9.0-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Sample Data | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|--------|--|----------|--|------------------|
| | | | | Collection Method | Number | Name (Type) | | | |
| 1 | | | | | | SED-06-SB-2.0 | | 0.0 to 0.7 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 55% fines; 45% sand, very fine; very soft; trace rootlets, twigs, and wood fragments; wet/soupy. Sheen near top of core observed through core liner prior to opening. Top 0.6 ft of sediment core was only approximately 1/2- to 2/3- full. | |
| 2 | | | | | | PID = 0.4 ppm SED-06-SB-3.5 | | @ 0.4 feet: 0.3-ft long twig. 0.7 to 1.0 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1); 5-10% fines; 90-95% sand, fine; soft/loose; trace white sand grains and rootlets; wet. | |
| 3 | | | | | | | | | |
| 4 | | | | | | PID = 1.6 ppm SED-06-SB-5.5 | | 1.0 to 1.2 feet: SILT (ML); very dark gray (10YR 3/1); 100% fines, low plasticity; soft; trace mica, very fine sand, and wood fragments; wet. @ 1.2 feet: 0.25-ft long twig. | |
| 5 | | | | | | | | 1.2 to 1.6 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30% fines; 70% sand, very fine to fine; trace mica, white sand grains, coarse red sand grains, and wood fragments; wet. | |
| 6 | | | | | | PID = 0.7 ppm SED-06-SB-6.5 | | 1.6 to 1.9 feet: SANDY SILT (ML); very dark gray (10YR 3/1); 60-70% fines; 30-40% sand; trace mica; wet. | |
| 7 | | | | | | SED-06-SB-8.5 | | @ 1.6 to 2.0 feet: mild hydrocarbon-like odor; slight sheen. Jar method sheen test produced slight discontinuous (spotty) sheen. 1.9 to 3.3 feet: SAND (SP); very dark gray (10YR 3/1); 5% fines; 95% sand, fine; wet, trace mica, white sand grains, coarse sand, fine subrounded gravel, and wood fragments; wet, becoming moist with depth. | |
| 8 | | | | | | | | @ 1.9 to 2.3 feet: slight/trace sheen. Jar method sheen test produced slight discontinuous (spotty) sheen. @ 2.7 feet: one piece of gravel, 0.2-ft x 0.1-ft, angular. | |
| 9 | | | | | | | | 3.3 to 3.8 feet: SILT WITH SAND (ML); very dark gray (10YR 3/1); 70-80% fines, low plasticity; 20-30% sand, very fine to fine; trace wood fragments; moist. SAND laminations. Wood fragments have hydrocarbon-like odor. Jar method sheen test produced slight discontinuous (spotty) sheen. @ 3.3 to 3.6 feet: 1/4-inch thick vertical lamination of small wood fragments. 3.8 to 5.3 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1); 5-10% fines; 90-95% sand, fine; medium density; trace mica and wood fragments; moist. 5.3 to 8.6 feet: ALTERNATING LAYERS OF SAND (SP) AND SANDY SILT (ML). SAND (SP); very dark gray (10YR 3/1); 5% fines; 95% sand, fine; medium density; trace mica; moist. SANDY SILT (ML); very dark gray (10YR 3/1); 70% fines; low plasticity; 30% sand, very fine to fine; firm; trace mica; moist. @ 8.1 feet: one half of a peanut shell. 8.6 to 9.0 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates hardpacked sand encountered at depth; Vibracore refusal at 13.0 feet drive depth. | |

Length Recovered: 9.0 feet
 Total Drive Length: 13.0 feet

Recovery: 69.2%

Best recovery of three attempts. Hardpack sand and Vibracore refusal encountered at 13 feet drive depth.

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 5.2 feet, and 5.2 to 8.6 feet. 4. Sediment core was processed on 10/8/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. ft = feet. 7. Surface elevation (mudline) vertical datum is NGVD29. 8. Location of sediment core collection: Latitude 45.57677333; Longitude -122.75016265.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-07

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/7/2019 to 10/7/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG / Allen Clements, GIT**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-15.0**
 Northing
 Easting
 Hole Depth **6.4-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Collection Method | Sample Data | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|-------------|-------------|--|----------|-------------------|---|
| | | | | | Number | Name (Type) | | | | |
| 1 | | | | | | | | | | 0.0 to 0.5 feet: SILT WITH SAND (ML); very dark gray (10YR 3/1); 70-80% fines; 20-30% sand, very fine; soft; trace wood fragments; wet. |
| 2 | | | | | | | | | | 0.5 to 0.7 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30-40% fines; 60-70% sand, very fine to fine; loose; trace mica; wet. |
| 3 | | | | | | | | | | 0.7 to 1.35 feet: SILT WITH SAND (ML); very dark gray (10YR 3/1); 80-90% fines, low to medium plasticity; 10-20% sand, very fine; firm; moist to wet. |
| 4 | | | | | | | | | | 1.35 to 3.0 feet: ALTERNATING LAYERS OF SILTY SAND (SM) AND SILT WITH SAND (ML). SILTY SAND (SM); very dark gray (10YR 3/1); 40% fines, low plasticity; 60% sand, fine to medium; loose; trace rootlets; up to 50% wood fragments; wet. SILT WITH SAND (ML); very dark gray (10YR 3/1); 80% fines, low plasticity; 20% sand; soft; trace rootlets; up to 50% wood fragments; wet. |
| 5 | | | | | | | | | | 3.0 to 5.9 feet: SAND (SP); very dark gray (10YR 3/1); 5% fines; 95% sand, fine to medium; loose; trace wood fragments; moist. |
| 6 | | | | | | | | | | 5.9 to 6.35 feet: SILT WITH SAND (ML); very dark gray (10YR 3/1); 80% fines, low plasticity; 20% sand, fine to medium; moist. |

6.35 to 6.4 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be gray fine sand.

Length Recovered: 6.4 feet
 Total Drive Length: 8.6 feet

Recovery: 74.4%

Best recovery of three attempts.

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 3.2 feet, and 3.2 to 6.35 feet. 4. Sediment core was processed on 10/8/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm). 6. Surface elevation (mudline) vertical datum is NGVD29. 7. Location of sediment core collection: Latitude 45.57637168; Longitude -122.74931401.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-08

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Courtney Savoie, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-21.4**
 Northing
 Easting
 Hole Depth **3.7-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Sample Data | | | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|-------------|------------------|-------------------|--------|-------------|----------|---|------------------|
| | | Interval | Percent Recovery | Collection Method | Number | Name (Type) | | | |
| 1 | | | | | | | | 0 to 1.2 feet: SAND (SP); very dark gray (10YR 3/1); 5% fines; 85% sand; fine to medium; 10% gravel, angular; few cobbles up to 2-inches in diameter; wet. | |
| 2 | | | | | | | | 1.2 to 3.25 feet: SAND (SP); very dark gray; 5% fines; 95% sand, fine to coarse; trace mica and angular gravel; moist. @ 1.75 to 3.25 feet: color change to very dark brown; few angular white fragments approximately 0.5-2 mm in diameter. | |
| 3 | | | | | | | | 3.25 to 3.7 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be gray fine to medium sand. | |

Length Recovered: 3.7 feet
 Total Drive Length: 5.0 feet

Recovery: 74.0%

Best recovery of three attempts.

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NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was processed on 10/9/2019. 4. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm). 5. During homogenization of the sample collected from 0.0 to 2.0 feet, an approximately 0.1-ft x 0.1-ft glass fragment with subrounded edges was found in the sediment. 6. mm = millimeter. 7. ft = feet. 8. Surface elevation (mudline) vertical datum is NGVD29. 9. Location of sediment core collection: Latitude 45.57609380; Longitude -122.74886741.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-09

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Courtney Savoie, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-7.8**
 Northing
 Easting
 Hole Depth **7.0-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Sample Data | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|--------|-----------------------|----------|---|------------------|
| | | | | Collection Method | Number | Name (Type) | | | |
| 1 | | | | | | SED-09-SB-2.0 | | 0 to 0.4 feet: SILTY SAND (SM); black; 20% fines; 80% sand, fine to medium; trace gravel and mica; wet. | |
| 2 | | | | | | PID = 1.4 ppm | | 0.4 to 1.2 feet: SILT WITH SAND (ML); black; 80% fines; 20% sand; trace mica and wood fragments; wet. | |
| 3 | | | | | | PID = 8.2 ppm | | @ 0.7 feet: dark black discoloration, mild organic-like odor; slight discontinuous (spotty) sheen. Jar method sheen test produced slight iridescent sheen. | |
| 4 | | | | | | SED-09-SB-2.85 | | @ 1.1 to 1.2 feet: wood fragments with moderate hydrocarbon-like odor. Sheen test produced slight metallic sheen. | |
| 5 | | | | | | PID = 1.4 ppm | | 1.2 to 3.15 feet: SILT (ML); black; 97% fines, low plasticity; 3% sand, very fine to fine; trace mica; wood fragments throughout, including pieces of wood up to 6 inches long; mild hydrocarbon-like odor and slight sheen; wet. | |
| 6 | | | | | | SED-09-SB-4.85 | | @ 2.4 feet: jar method sheen test produced slight to moderate metallic sheen. | |
| 7 | | | | | | SED-09-SB-6.85 | | 3.15 to 4.2 feet: SILTY SAND (SM); black; 25-35% fines; 65-75% sand, very fine to fine; trace mica; wet. | |
| | | | | | | PID = 1.4 ppm | | @ 3.6 feet: moist. | |
| | | | | | | | | 4.2 to 4.4 feet: SANDY SILT (ML); black; 65% fines, low plasticity; 35% sand, very fine to fine; trace mica; moist. | |
| | | | | | | | | 4.4 to 4.95 feet: SAND WITH SILT (SP-SM); black; 10% fines; 90% sand, fine; trace mica; moist. | |
| | | | | | | | | 4.95 to 5.1 feet: SILT (ML); black; 95% fines, low to medium plasticity; 5% sand; moist. | |
| | | | | | | | | 5.1 to 6.4 feet: SAND WITH SILT (SP-SM); black; 15% fines; 85% sand, very fine to fine; trace mica; no odor observed; moist. | |
| | | | | | | | | @ 5.45 - 5.9 feet: laminations of fine wood fragments up to 0.5-inches thick. | |
| | | | | | | | | @ 5.5 feet: Jar method sheen test produced no sheen. | |
| | | | | | | | | 6.4 to 6.85 feet: SILT (ML); black; 97% fines, low plasticity; 3% sand; trace mica; moist. | |
| | | | | | | | | 6.85 to 7.0 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be gray silty sand. | |

Length Recovered: 7.0 feet
 Total Drive Length: 9.7 feet

Recovery: 72.2%

Best recovery of three attempts.

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 3.5 feet, and 3.5 to 6.85 feet. 4. Sediment core was processed on 10/9/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening; results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. Surface elevation (mudline) vertical datum is NGVD29. 7. Location of sediment core collection: Latitude 45.57551593; Longitude -122.74834684.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
8128.02.19

Well Number
SED-10

Sheet
1 of 1

Project Name **Siltronic Corporation**
 Project Location **Willamette River, Portland, Oregon**
 Start/End Date **10/8/2019 to 10/8/2019**
 Driller/Equipment **Research Support Services, Inc. (RSS)/Vibracore Rosfelder**
 Geologist/Engineer **Kelly Titkemeier, RG**
 Sample Method **Vibracore**

TOC Elevation (feet)
 Surface Elevation (feet) **-28.2**
 Northing
 Easting
 Hole Depth **7.6-feet**
 Outer Hole Diam **4-inch**

| Depth (feet, BGS) | Well Details | Interval | Percent Recovery | Sample Data | | | | Blows/6" | Lithologic Column | Soil Description |
|-------------------|--------------|----------|------------------|-------------------|--------|--|--|----------|--|------------------|
| | | | | Collection Method | Number | Name (Type) | | | | |
| 1 | | | | | | SED-10-SB-2.0 | | | 0.0 to 0.5 feet: WOOD FRAGMENTS; very dark brown (7.5YR 2.5/3) to very dark gray (10YR 3/1); mostly large fragments of wood up to 2.5 inches long; very loose; wet. Layer of water on top of wood. | |
| 2 | | | | | | PID = 4.9 ppm | | | 0.5 to 1.4 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30-45% fines; 55-70% sand, fine; loose; trace mica and white sand grains; wet. Laminations of SANDY SILT (ML); very dark gray (10YR 3/1); 60% fines; 40% sand, very fine to fine; soft; wet. | |
| 3 | | | | | | SED-10-SB-3.0 PID = 4.2 ppm SED-10-SB-5.2 PID = 2.7 ppm | | | @ 0.5 to 0.7 feet: wood fragments. @ 1.1 feet: one medium gravel-sized SILT nodule. @ 1.2 feet: one-half of a bivalve shell. | |
| 4 | | | | | | | | | 1.4 to 1.7 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 40% fines; 60% sand; loose; trace mica and rootlets; approximately 50-60% wood fragments; mild hydrocarbon-like odor; wet. Jar method sheen test produced several small brown NAPL globules at the top of the water in the jar. | |
| 5 | | | | | | PID = 1.4 ppm | | | | |
| 6 | | | | | | PID = 1.5 ppm SED-10-7.2 | | | 1.7 to 2.0 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 30% fines; 70% sand, fine; loose; trace mica and gravel, fine to medium rounded to subrounded; wet. | |
| 7 | | | | | | PID = 1.0 ppm | | | 2.0 to 4.1 feet: SILT (ML); very dark gray (10YR 3/1); 90-95% fines; 5-10% sand, very fine; trace wood fragments; hydrocarbon-like odor; wet. @ 2.2 feet: jar method sheen test produced 1 small brown NAPL globules. @ 2.5 to 2.7 feet: jar method sheen test produced 1 large brown NAPL globule, approximately 3 mm x 4 mm. @ 3.6 feet: slight sheen on water at top of second core. @ 3.6 to 4.1 feet: decrease in fines to 80-90%; increase in sand to 10-20%. | |
| | | | | | | | | | 4.1 to 4.7 feet: SAND WITH SILT (SP-SM); very dark gray (10YR 3/1) with areas of slightly darker discoloration; 15% fines; 85% sand, fine; trace mica and wood fragments; hydrocarbon-like odor; moist to wet. @ 4.3 to 4.55 feet: slight sheen on standing water in core. Jar method sheen test on sediment from 4.3 to 4.6 feet produced slight discontinuous (spotty) sheen. | |
| | | | | | | | | | 4.7 to 7.2 feet: SILTY SAND (SM); very dark gray (10YR 3/1); 15-45% fines; 55-85% sand, very fine to fine; loose to medium density; trace mica and wood fragments; wet, becoming moist with depth. Sand percentage and sediment density increases with depth. @ 4.7 to 5.0 feet: areas of slightly darker discoloration. @ 5.0 to 5.3 slight discoloration. Jar method sheen test produced slight discontinuous (spotty) sheen. @ 5.7 to 5.85 feet: silt lens; very dark gray (10YR 3/1); 90% fines; 10% sand; moist to wet. @ 5.85 feet: 0.25-ft wood fragment. @ 6.5 to 6.9 feet: large wood fragments up to 0.2-ft in the sediment. @ 6.75 to 6.95 feet: slight sheen between sediment core and core liner. Jar method sheen test produced numerous (approximately 50) small brown NAPL globules. | |
| | | | | | | | | | 7.2 to 7.6 feet: Material in cutting shoe not logged. Field sheet from Vibracore collection indicates bottom conditions to be tan hard pack fine sand or silt. | |

Length Recovered: 7.6 feet
 Total Drive Length: 9.5 feet

Recovery: 80.0%

NOTES: 1. Depths are relative to feet below mudline. 2. RSS Vessel: Carolyn Dow. 3. Sediment core was cut into two sections on the boat after collection: 0.0 to 3.6 feet, and 3.6 to 7.2 feet. 4. Sediment core was processed on 10/9/2019. 5. A photoionization detector (PID) was used over the entire sediment core immediately after opening: results were 0 parts per million (ppm), unless otherwise noted (headspace readings). 6. NAPL = nonaqueous-phase liquid. 7. mm = millimeter. 8. ft = feet. 9. Surface elevation (mudline) vertical datum is NGVD29. 10. Location of sediment core collection: Latitude 45.5758604; Longitude -122.74845149.