

# **Hudson River Shallow Water Mapping**

## **Sediment Sampling**

- Final Report -

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## 1. Introduction

In order to support various programs in monitoring and management of the Hudson River Estuary, the New York State Department of Environmental Conservation (NYSDEC) wants to develop detailed bathymetric maps, acoustic reflectivity and acoustic character maps of the shallow portions of the Hudson River Estuary from the Verrazano Narrows north to the federal dam in Troy.

Sediment samples will provide information that is necessary for the verification of acoustic interpretations, classification of benthic environments, and identification of different depositional areas. This sampling includes of both surface grabs and sediment cores. These data will support the acoustic surveys (bathymetry and sidescan data) collected by Fugro Atlantic.

## 2. Field work

Based on the data of the acoustic surveys carried out in the late fall of 2009, which Fugro provided to us, we determined a sampling plan that would sample all major areas where the Fugro subbottom data suggested significant penetration, and thus soft sediments, but also retrieved representative samples from all major shallow water area of the study area, which is the Hudson River between Troy, NY, and Saugerties, NY.

### 2.1 Platform and navigation

As platform for the sediment sampling we used the *DP Prichard*, a Stony Brook boat (Fig. 1).



Figure 1: *DP Prichard* at the marina in New Baltimore with upright core liners in back.

The ship's boom was used to deploy both the coring and grabbing devices. The boat was equipped with differential GPS for navigation. We used real-time display of the ship position on top of the new bathymetry and sidescan data for locating sample sites and identifying alternatives, if we couldn't get a good core at one site (Fig. 2). The new

shallow water bathymetry helped as guidance for navigating the boat as well, since these data are more accurate as the available official charts from NOAA.

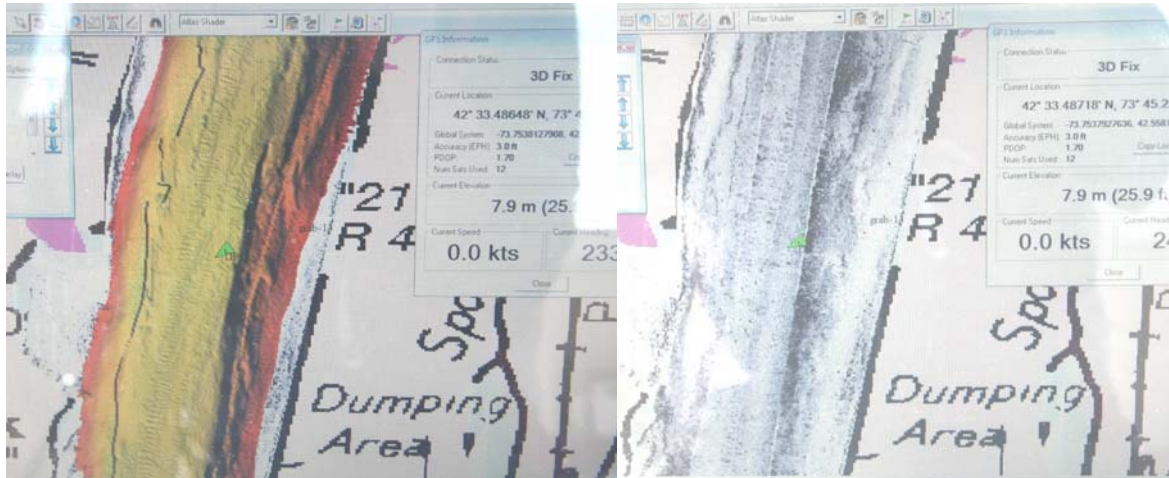


Figure 2: Bathymetry and sidescan real-time display with GPS data and boat position (green triangle). Left side shows a preliminary mix of previous and new bathymetry data.

## 2.2. Sediment coring

For the sediment coring we used the Lamont coring system with 4" and 2.5" clear PVC liner, which allowed us to visually inspect the length and quality of each sediment core. This was essential for deciding to retry to take another core at a core location and to determine, if the surface of the sediment core was intact. We used varying weight between 60 and 150 kg of weights for the core head.

The cores were capped as soon as they are coming out of the water and sealed with tape. They are always stored and handled in an upright position to keep their internal structure intact.



Figure 3: Lamont shallow water gravity corer system.



*Figure 4: Probing to identify the bottom type and find good core locations.*

Prior to sediment coring, we tested the sediment type to distinguish soft from hard bottoms using a simple probe (Fig. 4). If necessary we repeated probing at alternate spots before deciding to core. If we couldn't find indications of sufficient soft sediments we marked the spot for taking a sediment grab.

For almost all location where we took a sediment core we also collected grab samples. This will provide additional materials for verifying / Quality Assessment of the analysis, if necessary.



### 2.3. Grab samples

For the grab sampling we used a modified van Veen Grab (Fig. 5). The grab was lowered over the side of the boat. After bringing the grab up, we photographed one side of the grab. If the grab contained enough sample material, we took a surface sample for radionuclide (especially  $^7\text{Be}$ ) analysis. Then we took a second, larger sample for future grain size analysis. While and after taking the samples we did a detailed description of the grab sample recording presence and abundance of mud, sand, gravel, pebbles, plant material, wood, shells, mussels, oysters, zebra mussels, and anthropogenic material as well stiffness, oxidized top and other noteworthy comments.



*Figure 5: modified van Veen grab used in this project.*



*Figure 6: grab sampling.*

## **2.4 Schedule of field operations**

The field operations took place between April 5 and April 12 of 2010 with the following detailed schedule:

5. April 2010

Mobilization of equipment, people and boat to New Baltimore, NY.

6. April 2010

Collecting sediment cores and grabs between Albany and Troy

7. April 2010

Collecting sediment cores and grabs between New Baltimore and Albany

8. April 2010

Collecting sediment cores and grabs between New Baltimore and Catskill

9. April 2010

Collecting sediment cores and grabs between New Baltimore and Catskill

10. April 2010

Collecting sediment cores and grabs between Catskill and Saugerties

11. April 2010

De-mobilization. The boat returns and bringing the cores and grab samples to Lamont-Doherty.

12. April 2010

Organizing of sediment cores and grabs in core repository in Lamont.

## 2.5. Field Work Results

As result of the sampling activities we collected 37 sediment cores and 69 grab samples. The locations are shown in the following map:

**Table 1: Location and length of collected sediment cores.**

Label	Latitude	Longitude	Water depth /m	Core length /m
DP10-01	42.59368	-73.7606	12.2	0.2
DP10-02	42.62322	-73.7532	9.8	1.03
DP10-03	42.7079	-73.7052	4.4	0.62
DP10-04	42.47908	-73.7887	2.5	0.51
DP10-05	42.50348	-73.7756	4.9	0.19
DP10-06	42.53281	-73.7569	3.1	0.3
DP10-07	42.5443	-73.7584	4.5	0.32
DP10-08	42.48952	-73.7865	11.8	0.36
DP10-09	42.4574	-73.7741	3.4	0.53
DP10-10	42.46765	-73.7735	2.4	1.04
DP10-11	42.43443	-73.7843	2.2	0.47
DP10-12	42.42399	-73.7782	8.8	1.21
DP10-13	42.38662	-73.7936	2.4	0.31
DP10-14	42.38591	-73.7891	2.9	0.28
DP10-15	42.36907	-73.7964	5.4	0.62
DP10-16	42.37647	-73.7981	3.2	1.36
DP10-17	42.35904	-73.7957	2.7	0.47
DP10-18	42.33325	-73.7821	6.3	0.23
DP10-19	42.32513	-73.7756	2.3	1
DP10-20	42.31657	-73.7745	3.5	0.17
DP10-21	42.27467	-73.7878	3.1	0.19
DP10-22	42.28153	-73.793	7.5	0.24
DP10-23	42.27078	-73.8013	6.4	0.25
DP10-24	42.2495	-73.8204	5.6	0.26
DP10-25	42.24361	-73.8374	2.5	1.01
DP10-26	42.2229	-73.8494	2.1	0.26
DP10-27	42.21693	-73.8467	2.4	0.24
DP10-28	42.17063	-73.8733	2.2	0.17
DP10-29	42.16902	-73.8854	2.5	0.36
DP10-30	42.15585	-73.8982	4.7	0.28
DP10-31	42.15643	-73.9014	2.1	1.03
DP10-32	42.12248	-73.9094	2.2	0.1
DP10-33	42.11707	-73.9137	2.1	0.38
DP10-34	42.10797	-73.9175	2.7	0.31
DP10-35	42.08643	-73.923	3.4	0.43
DP10-36	42.08778	-73.9333	2.1	0.08
DP10-37	42.07582	-73.9223	2.3	0.23



**Table 2: Location and water depth of grab samples**

Label	Latitude	Longitude	Water depth /m
DP10-G01	42.74319	-73.6881	7.4
DP10-G02	42.73168	-73.6959	4.7
DP10-G03	42.71676	-73.6999	5
DP10-G04	42.67176	-73.7228	6
DP10-G05	42.6575	-73.7391	9.5
DP10-G06	42.63502	-73.7533	5.4
DP10-G07	42.5817	-73.7552	11.9
DP10-G08	42.55823	-73.7524	3.8
DP10-G09	42.5451	-73.7585	3.7
DP10-G10	42.54205	-73.7588	3.6
DP10-G11	42.53936	-73.7556	7.6
DP10-G12	42.53269	-73.7571	3.1
DP10-G13	42.51749	-73.7654	8.8
DP10-G14	42.50346	-73.7751	5.3
DP10-G15	42.49997	-73.7812	2.9
DP10-G16	42.48953	-73.7866	11.9
DP10-G17	42.49228	-73.7814	3.3
DP10-G18	42.47894	-73.7887	2.4
DP10-G19	42.47075	-73.7863	9.8
DP10-G20	42.46851	-73.7732	2
DP10-G21	42.45798	-73.7746	3.1
DP10-G22	42.44637	-73.7735	3.5
DP10-G23	42.43278	-73.7752	4.1
DP10-G24	42.42392	-73.7782	8.2
DP10-G25	42.42153	-73.7822	2.5
DP10-G26	42.40343	-73.7856	2.8
DP10-G27	42.43423	-73.7843	2.5
DP10-G28	42.41612	-73.7774	2.5
DP10-G29	42.3868	-73.7935	2.4
DP10-G30	42.38141	-73.7915	2.4
DP10-G31	42.37043	-73.7959	7.4
DP10-G32	42.37639	-73.7982	3.2
DP10-G33	42.35908	-73.7957	2.5
DP10-G34	42.33784	-73.7848	2.8
DP10-G35	42.32384	-73.782	4.8
DP10-G36	42.31676	-73.7745	4.3
DP10-G37	42.32516	-73.7756	2.1
DP10-G38	42.29189	-73.7805	2.5
DP10-G39	42.28131	-73.7933	7.5
DP10-G40	42.271	-73.8013	6.5
DP10-G41	42.25096	-73.8187	2.7
DP10-G42	42.24366	-73.8375	2.5
DP10-G43	42.22244	-73.8499	3.1
DP10-G44	42.23702	-73.8448	3.2
DP10-G45	42.24404	-73.8249	2.4
DP10-G46	42.27478	-73.7877	2.9
DP10-G47	42.28398	-73.7854	5.6
DP10-G48	42.30991	-73.7842	2.1

Label	Latitude	Longitude	Water depth /m
DP10-G49	42.3333	-73.7821	5.7
DP10-G50	42.34974	-73.7918	5.86
DP10-G51	42.36468	-73.7895	2.2
DP10-G52	42.38587	-73.7892	2.4
DP10-G53	42.39255	-73.7857	2.7
DP10-G54	42.20472	-73.8523	10.3
DP10-G55	42.18859	-73.8556	2.9
DP10-G56	42.17949	-73.8725	2.7
DP10-G57	42.17061	-73.8734	2.3
DP10-G58	42.16867	-73.8856	2.5
DP10-G59	42.07585	-73.9224	2.1
DP10-G60	42.08299	-73.9315	2.6
DP10-G61	42.10018	-73.9235	2.2
DP10-G62	42.10832	-73.9276	3.1
DP10-G63	42.11802	-73.9167	2.4
DP10-G64	42.1266	-73.918	2.7
DP10-G65	42.13283	-73.9062	2.5
DP10-G66	42.14393	-73.9033	2.5
DP10-G67	42.14863	-73.899	4.2
DP10-G68	42.15393	-73.8903	2.3
DP10-G69	42.20711	-73.848	3.5

The distribution of the core and grab site is also shown on the following maps (Figures 7a-d).

In many areas we found only a thin cover of <0.5 m soft sediments that we could core, which is still thicker than previous work has recovered in the much of the main channel.

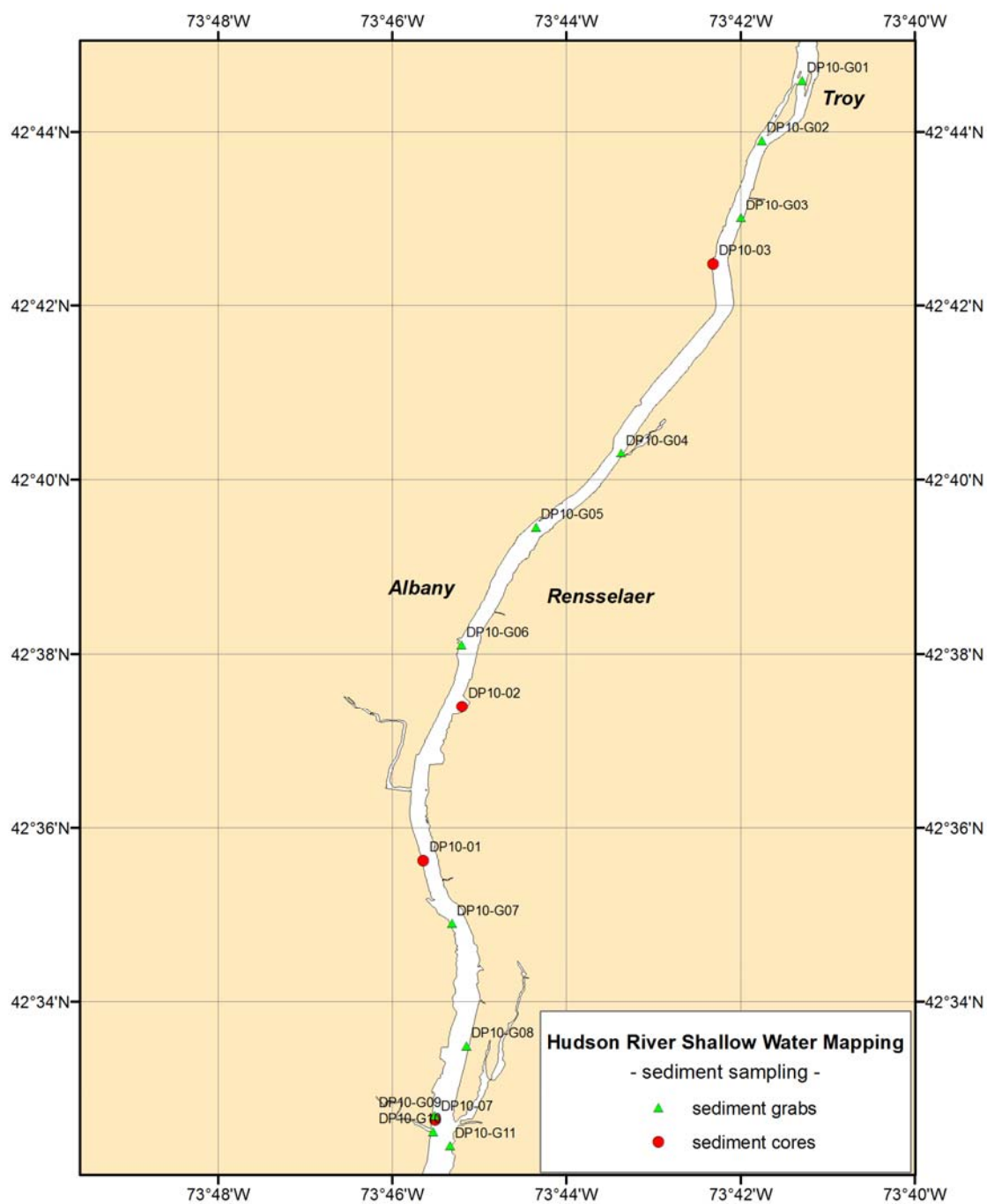


Figure 7a: Locations of sediment grabs (green triangle) and cores (red dots) collected during this field program.

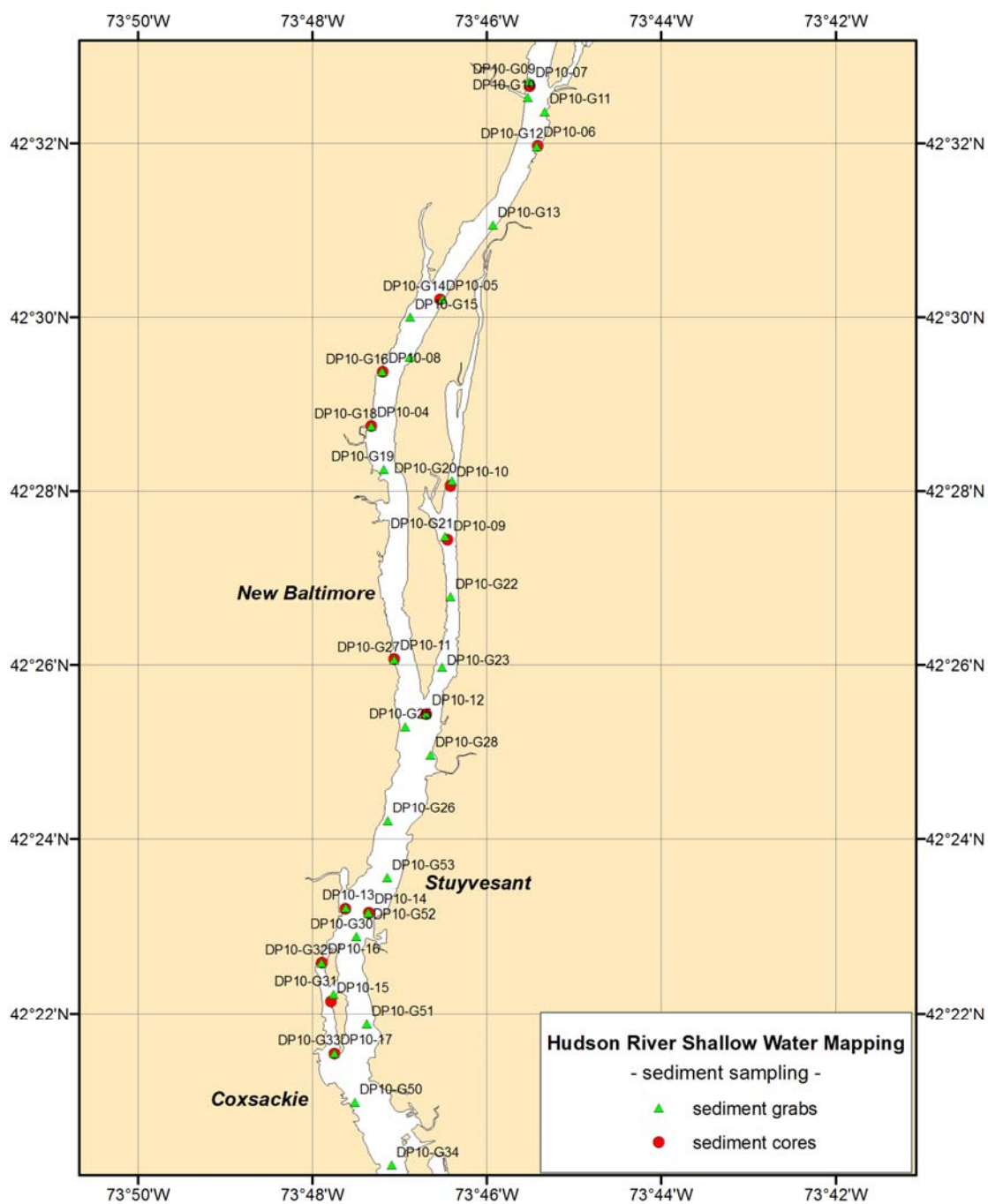


Figure 7b: Locations of sediment grabs (green triangle) and cores (red dots) collected during this field program.

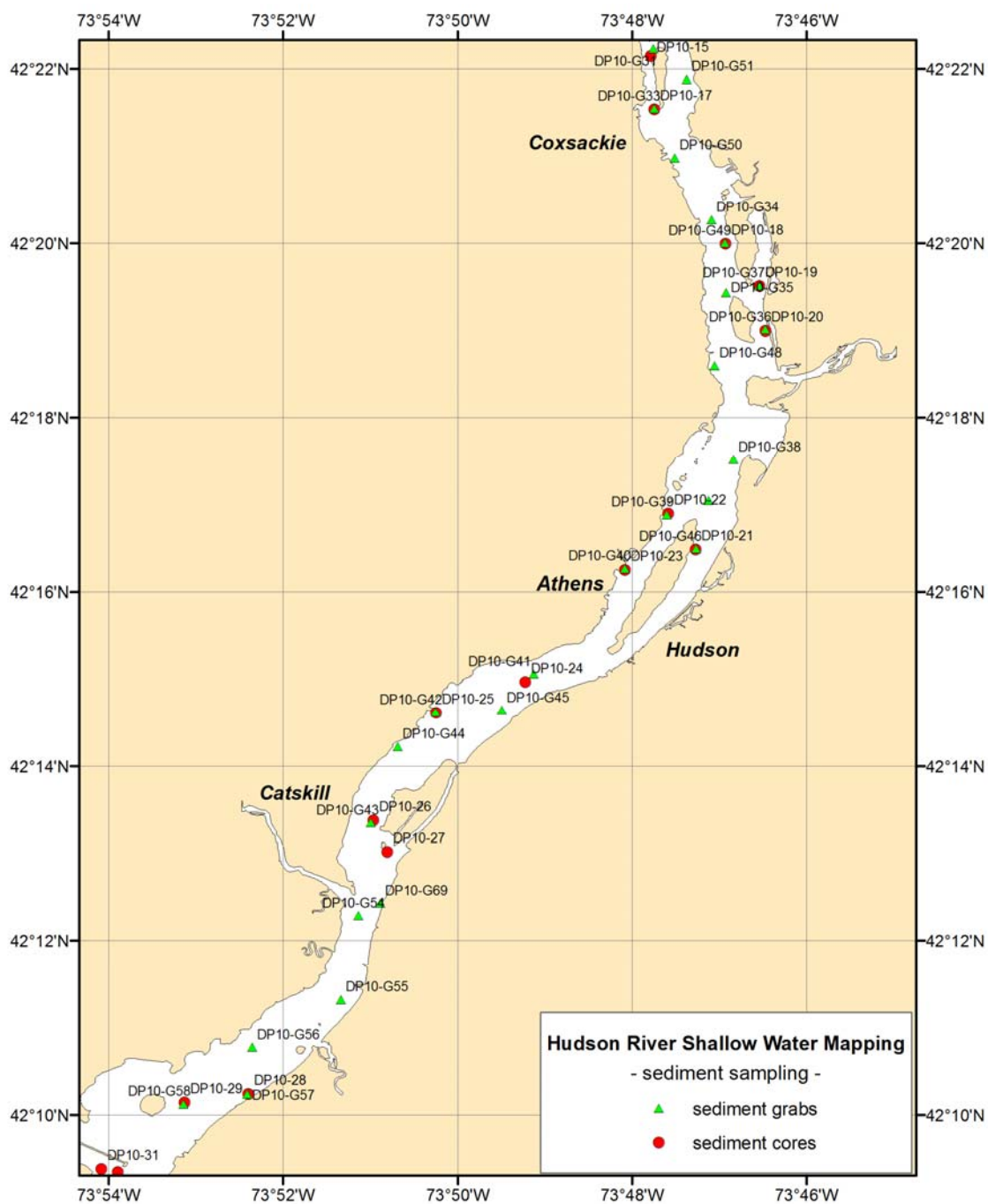
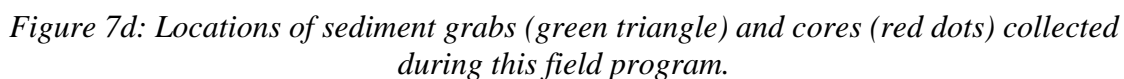


Figure 7c: Locations of sediment grabs (green triangle) and cores (red dots) collected during this field program.





### 3. Sediment Core Analysis

#### 3.1 Sediment core storage and basic handling

All sediment cores are stored in the refrigerated NSF-funded Core Repository at Lamont-Doherty Earth Observatory, where the cores will be stored in refrigerated rooms at 4°C. All cores were stored upright until they were de-watered and cut to length to avoid disturbing and mixing of the sediment layers.

#### 3.2 Physical property analysis

After they were cut to length we measured physical properties on all the cores. This included wet bulk density, magnetic susceptibility and p-wave velocity measurements on each unsplit core using the GeoTEK multisensor track core logger at the LDEO Core Laboratory. A description of the calibration and measurement process follows. Both P-wave velocity and magnetic susceptibility measurements are sensitive to temperature, so cores were maintained at room temperature for the duration of data collection. Prior and during the logging work, we run calibration standards through system to ensure accurate measurements and provide quality control.

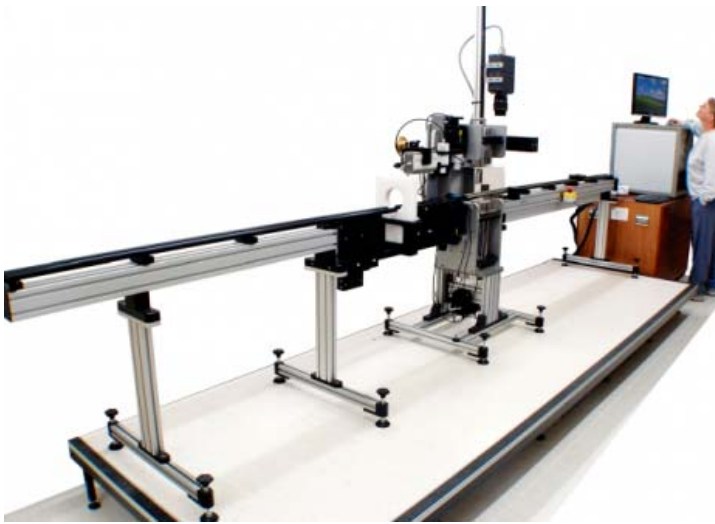


Figure 8: Image of the Geotek MSCL core logger.

#### *Wet bulk density measurements*

Measurements were obtained using a  $^{137}\text{Cs}$  gamma source and gamma detector. Calibration of the logger was conducted on an empty core liner. The internal diameter and wall thickness of the empty core liner were measured. The liner was cleaned and two calibrations conducted. During the first calibration the liner was filled with distilled water, and for the second calibration the liner was filled with an aluminum standard, a piece of aluminum of known thickness. Readings of gamma attenuation counts were recorded for the liner with water and each thickness of aluminum. The numbers were inserted into a calibration spreadsheet. A gamma calibration curve was created in a

standard spreadsheet, and the slope and intercept was used in the core logger program to correct for liner diameter and wall thickness. After this calibration procedure wet bulk density was calculated for each core taking into account sediment thickness, Compton attenuation coefficient, gamma source intensity and measured intensity through the sample. The gamma-ray attenuation porosity instrument measured wet bulk density at 1-cm intervals. The data was recorded as gm/cc ( $=10^3 \text{ kg/m}^3$ ).

### ***Magnetic susceptibility***

Magnetic susceptibility was measured using a Bartington loop sensor. The sensor measures absolute magnetic susceptibility and these values are then corrected for the size of the core and the size of the sensor. Prior to logging, operation of the sensor is validated with a calibration sample of known magnetic susceptibility. The calibration measurements recorded did not deviate by more than 5% of known value. The loop diameter of 125 mm was used for the cores. The exact fit of our cores into this loop minimized the instrumentation error. The operating frequency of the coil was .565kHz and the magnetic field strength was 80 amperes/meter. The magnetic susceptibility measurements are recorded in SI units.

The field that is measured by the loop might integrate over a wider area, which causes the values at top and bottom of the core to drop, because it integrates partially over the air outside of the core liner.

### ***P-wave velocities***

Measured with ceramic piezo-electric transducers spring-loaded against the core, P-wave velocities were used to detect the travel time of an ultrasonic pulse through the sediments. The calculation of P-wave velocity was based on the measured thickness of sediments in the core liner as well as the total measured travel time of the pulse.

The system also measures the amplitude of the p-wave signal. Weak signals (below 70-80) indicate less reliable velocity values. In cases where the sediment contains significant amount of gas, gas bubbles can deteriorate the signal strength and cause unrealistic p-velocity values.

The results of the physical property data are shown in Appendix 1. The sediment core DP10-36 was not analyzed, because it was too short and consisted mostly soft sediments.

## **3.3 Sediment core splitting, photographing and archiving**

After the physical properties measurements the cores were split in two halves. Immediately after the core was split both halves were photographed using a digital SLR camera to avoid color changes related to oxidation with time. The resulting images are included in appendix 1.

Each half is stored in a sealed D-tube to prevent it from drying out. All cores are available for further analysis at the Lamont core repository.

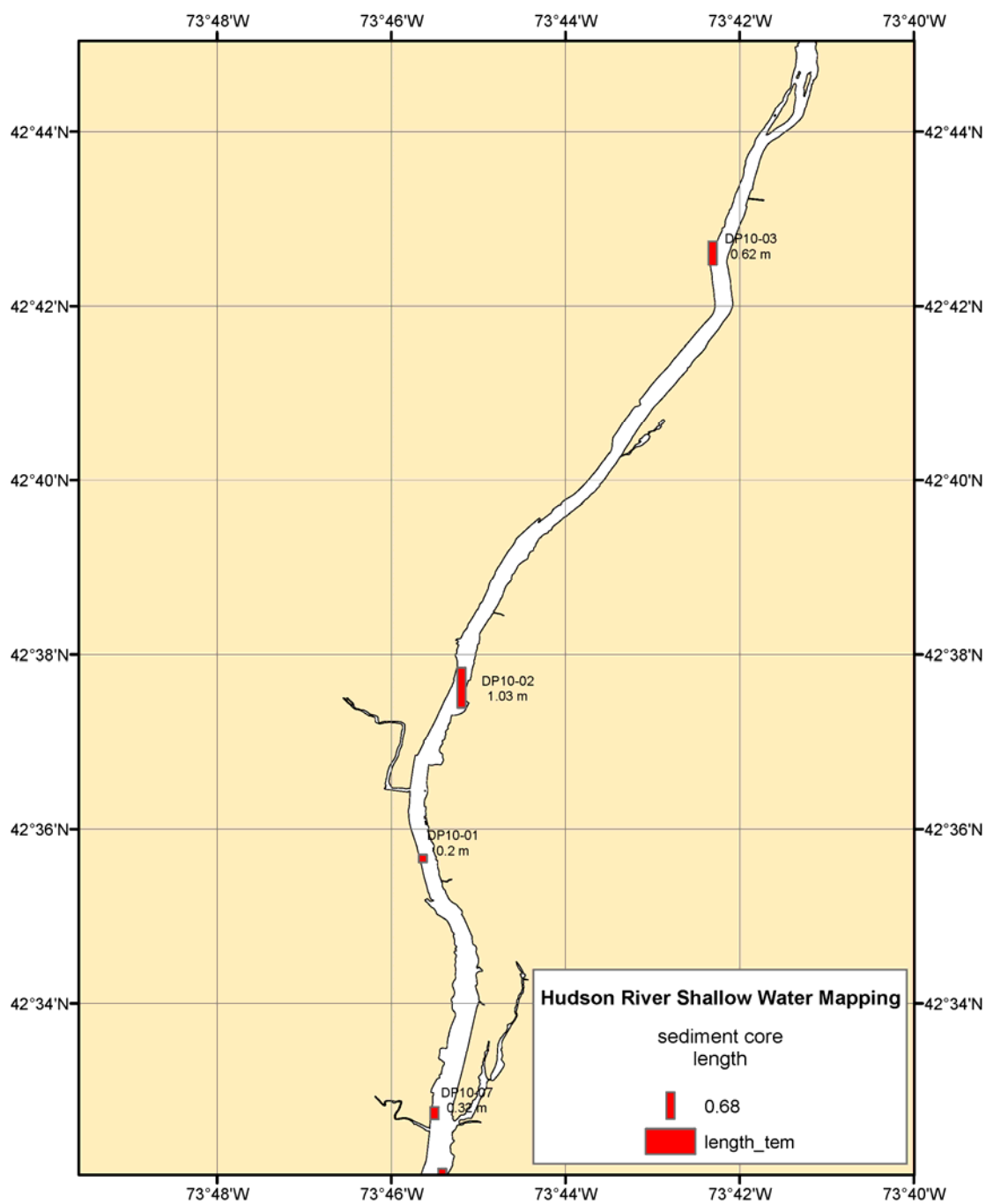


Figure 8a: Locations of sediment cores with relative length showing as red bar.

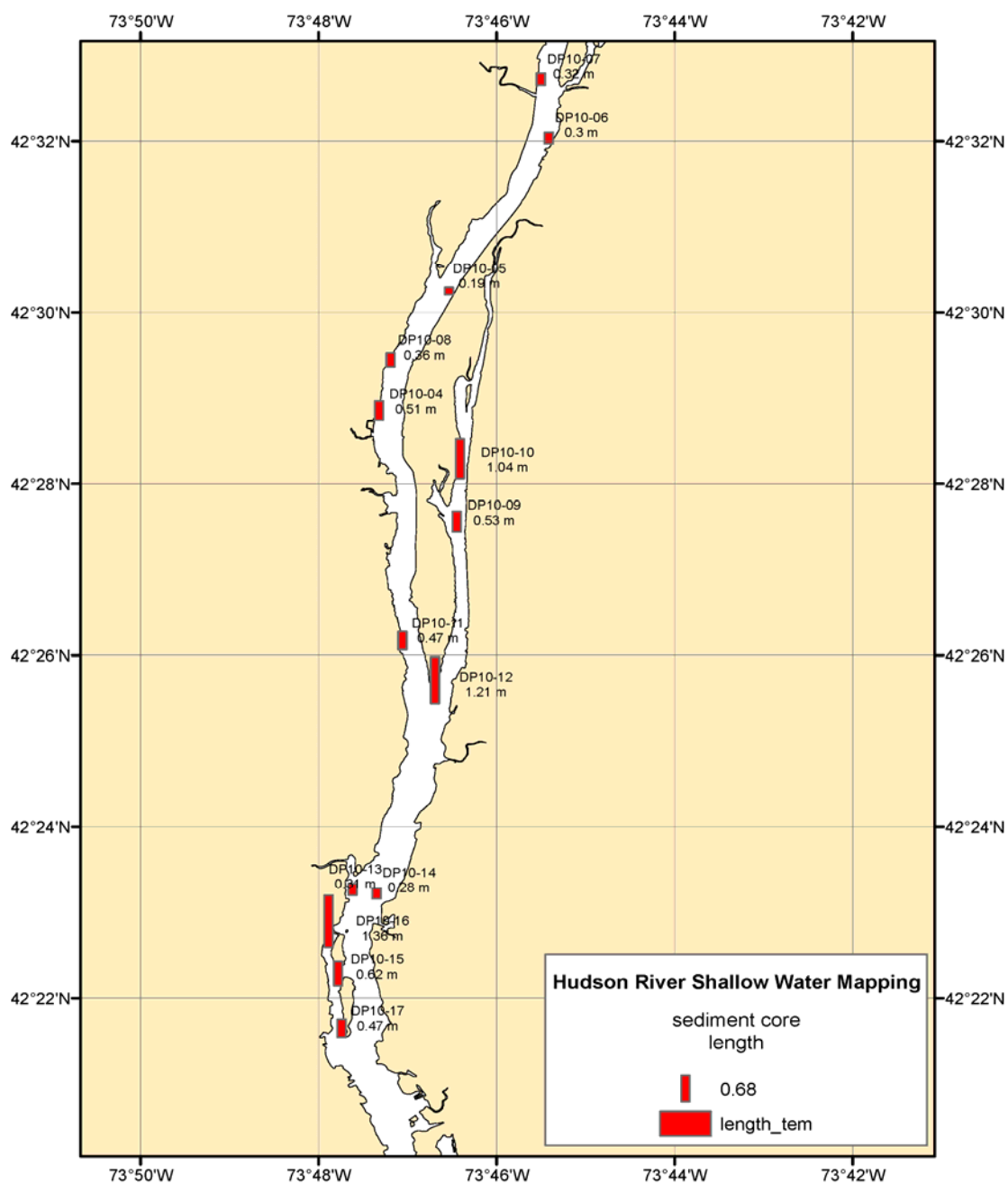


Figure 8b: Locations of sediment cores with relative length showing as red bar.

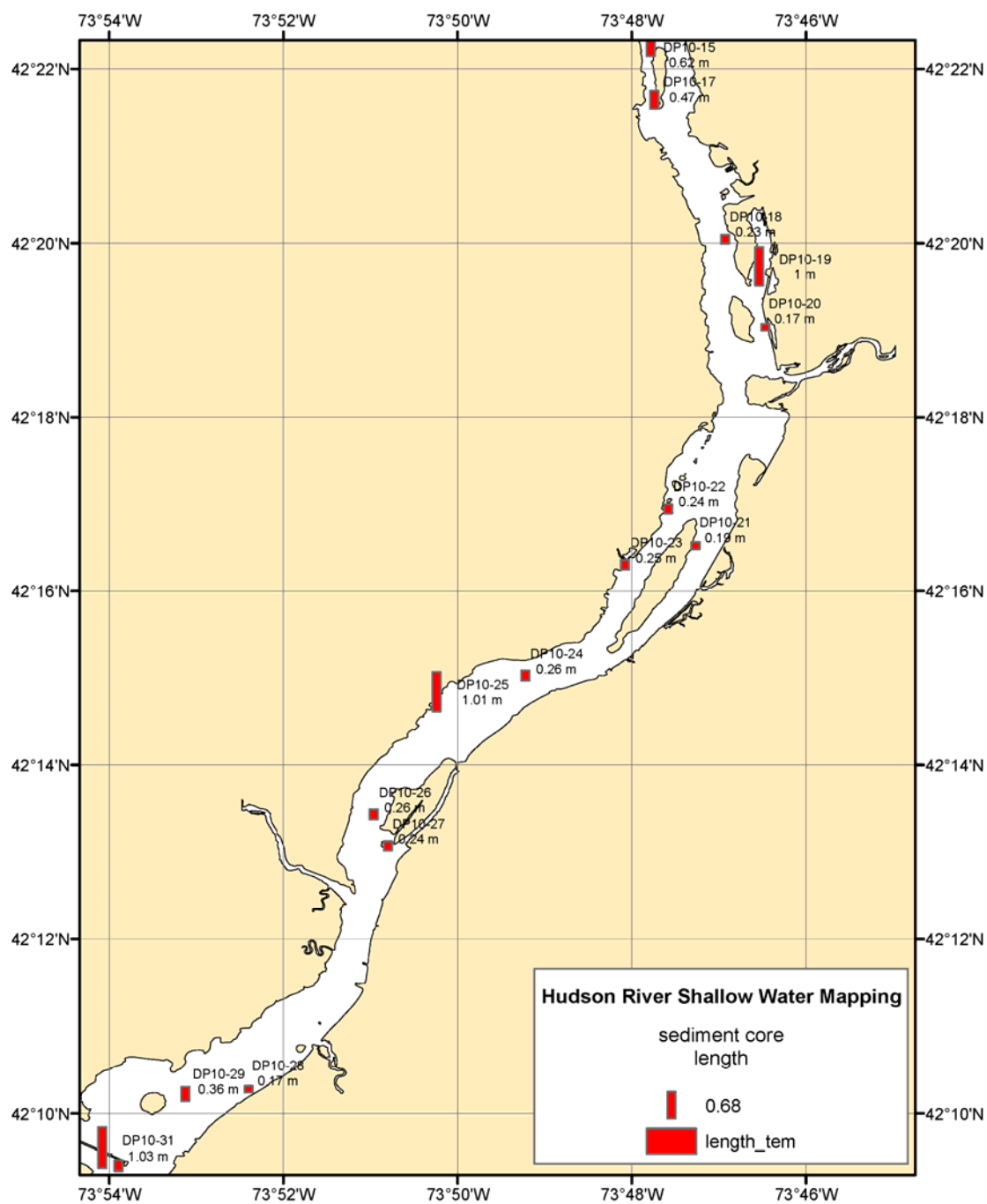


Figure 8c: Locations of sediment cores with relative length showing as red bar.

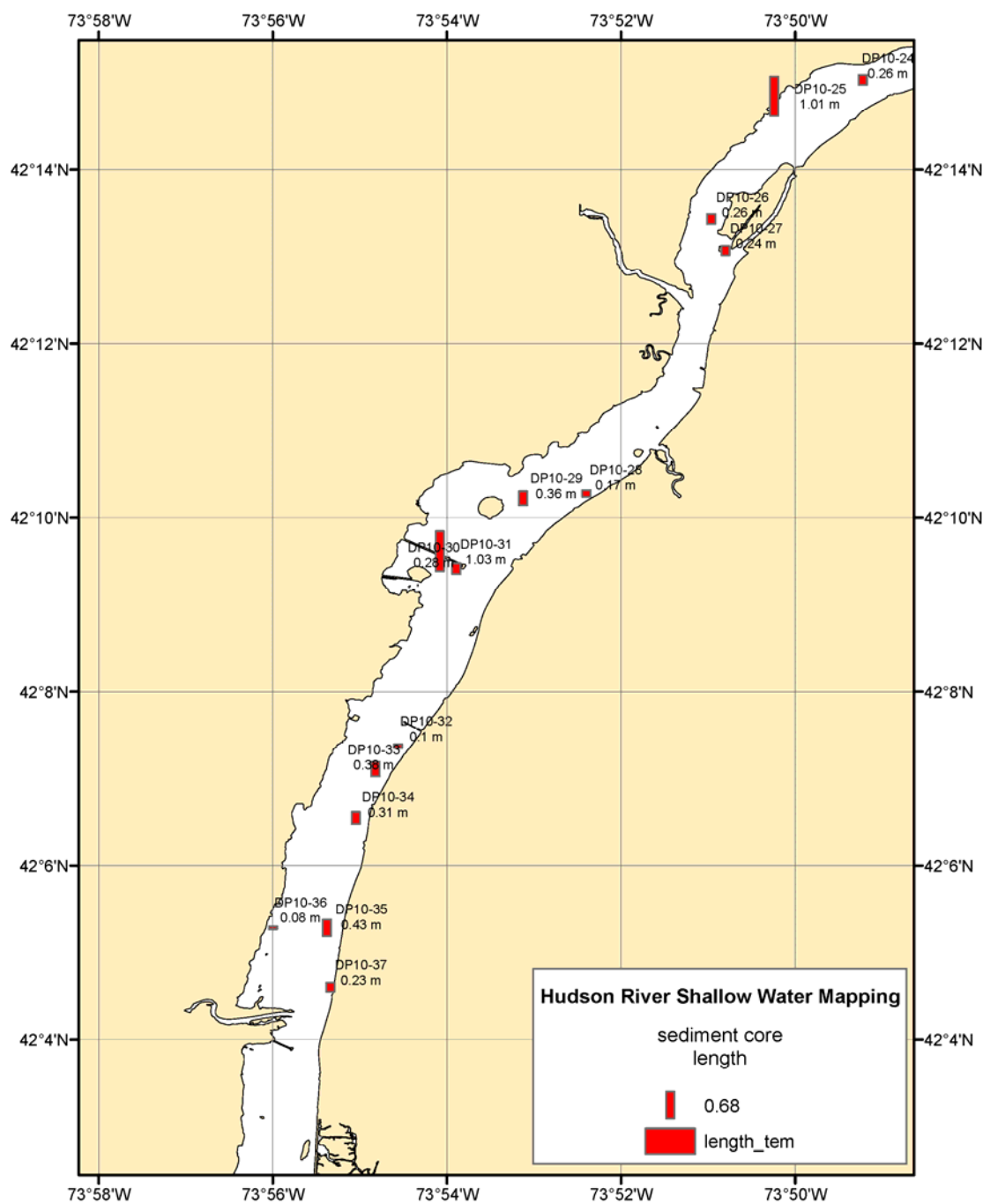


Figure 8d: Locations of sediment cores with relative length showing as red bar.



### 3.4 Sediment core description

Each core was visually described including lithology, color, deformation, accessories and physical structures. Digital photos of all cores, with reference color bars, were obtained at 30 cm-long intervals. The descriptions was based on macro and micro analysis.

#### *Macro Analysis*

*The macro analysis* describes the overall appearance of the core including color, texture, lithology, structures, deformations, accessories (shells, pebbles, ...). The lithology is broken down into 'units' based on color and/or texture (grain size); these are based on Munsell color chart and Wentworth scale, respectively. 1cc samples and smear slides are taken from each 'unit'. 1cc samples are dried, weighed, washed thru 63um sieve, dried and reweighed to get percent of coarse fracture.

#### *Micro Analysis*

*For the micro-analysis smear slide* are taken from each unit and looked at with petrographic scope and c.f. looked at with binocular scope to determine mineralogy. 'Name' (i.e. Biocalcareous Clay) based on mineralogy / microfossil assemblage (most abundant component makes up first part of name) and percent of coarse fracture (clay or sand). (If sedigraph analysis done, include silt as option.) Secondary descriptor (i.e. Biocalcareous (Terrigenous) Clay) based on second most abundant component. More specific name (i.e. [Foram Ooze]) found under broader name.

The core descriptions are listed in Appendix 2.

### 4. Sediment Grabs

A sub-sample was taken from each grab for radionuclide analysis (s. chapter 5). No further analysis of the grab samples has been performed besides the initial description in the field. Results of the initial descriptions are shown in the map series 9 and 10.

In addition, samples of the of the sediment grabs are archived and stored in the core repository at Lamont-Doherty Earth Observatory in refrigerated rooms at 4°C next to the cores. These samples are available for future analysis including grain size measurements.

The results of the field descriptions are listed in appendix 3.

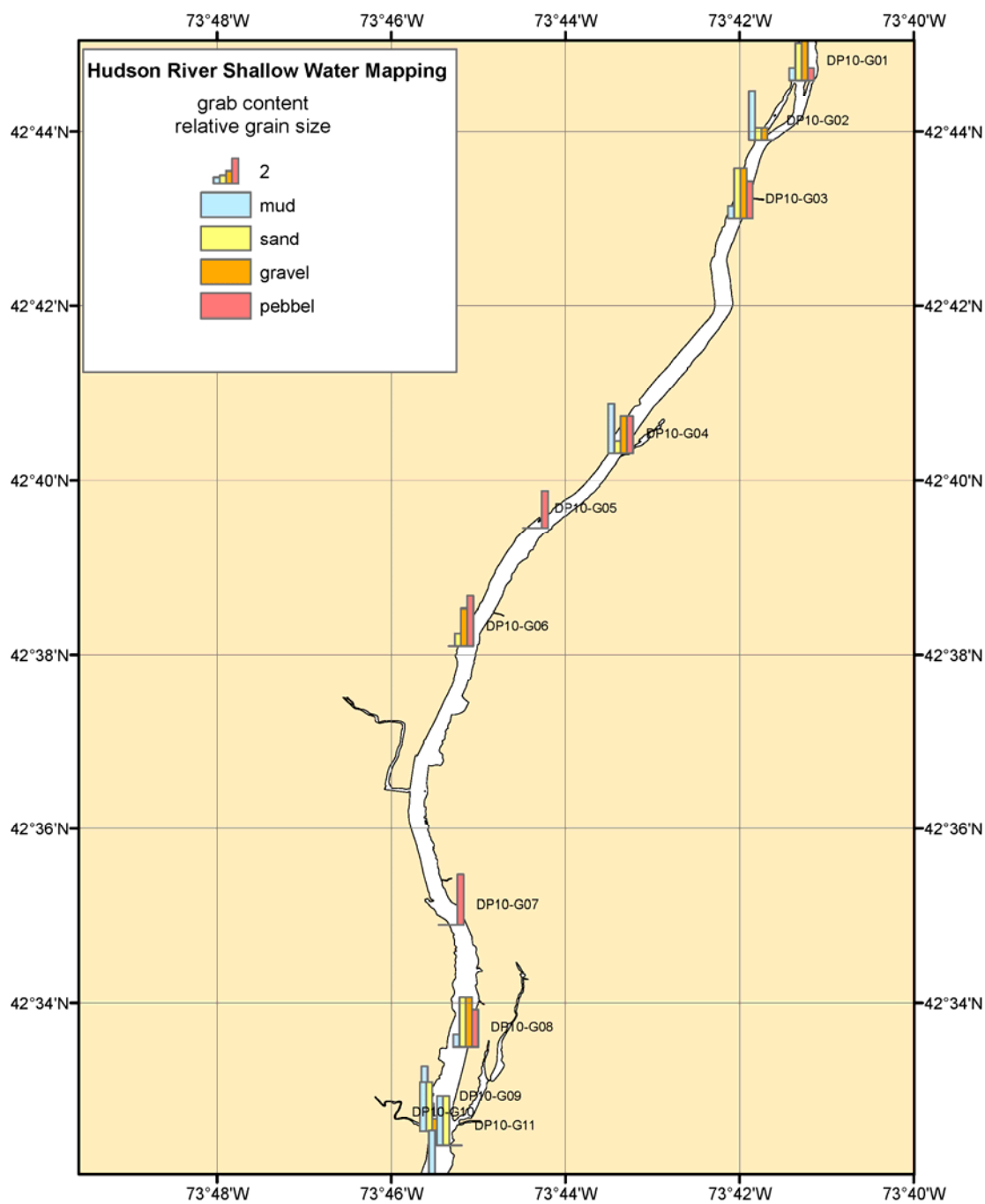


Figure 9a: Relative abundance of grain size classes are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

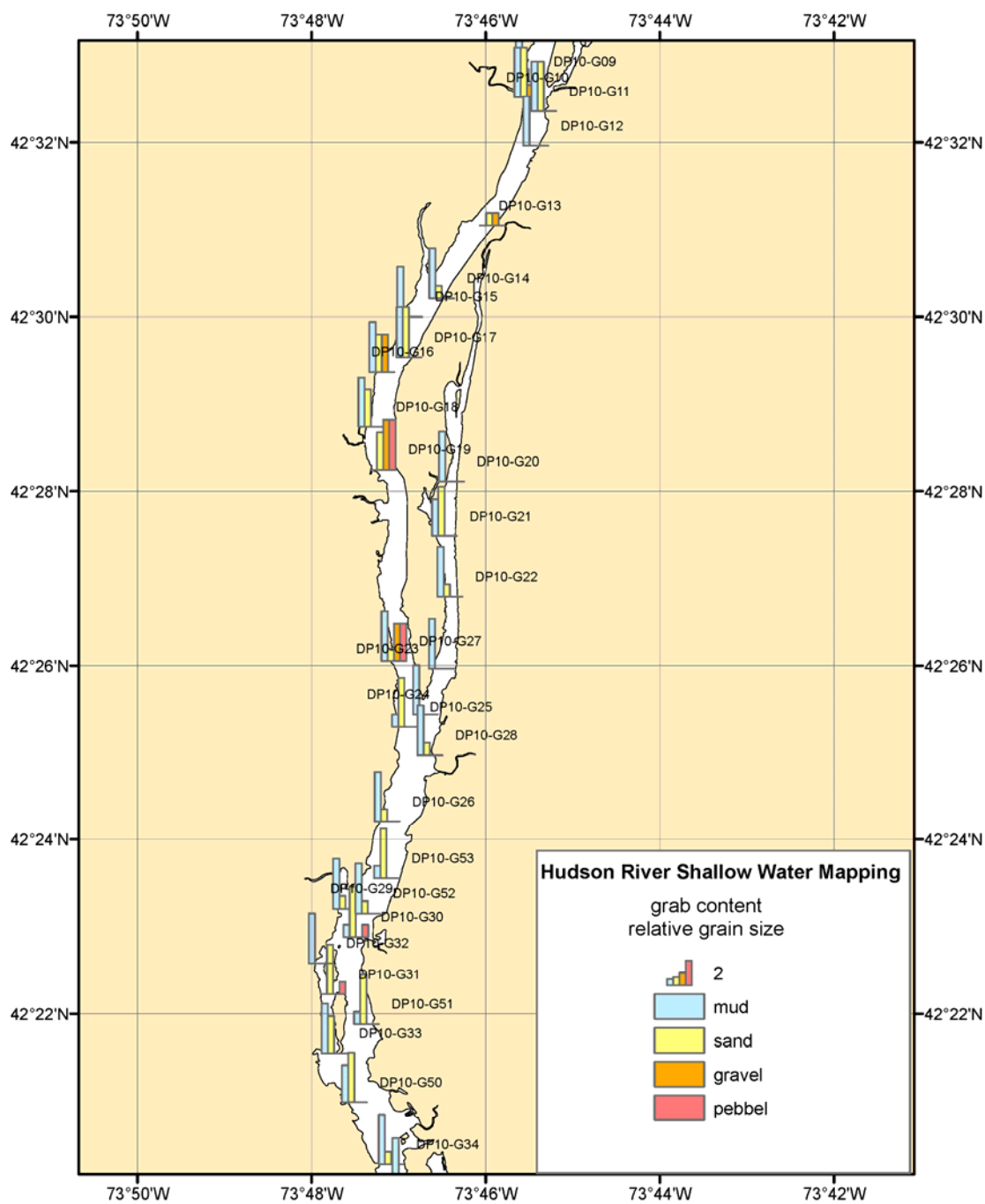


Figure 9b: Relative abundance of grain size classes are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

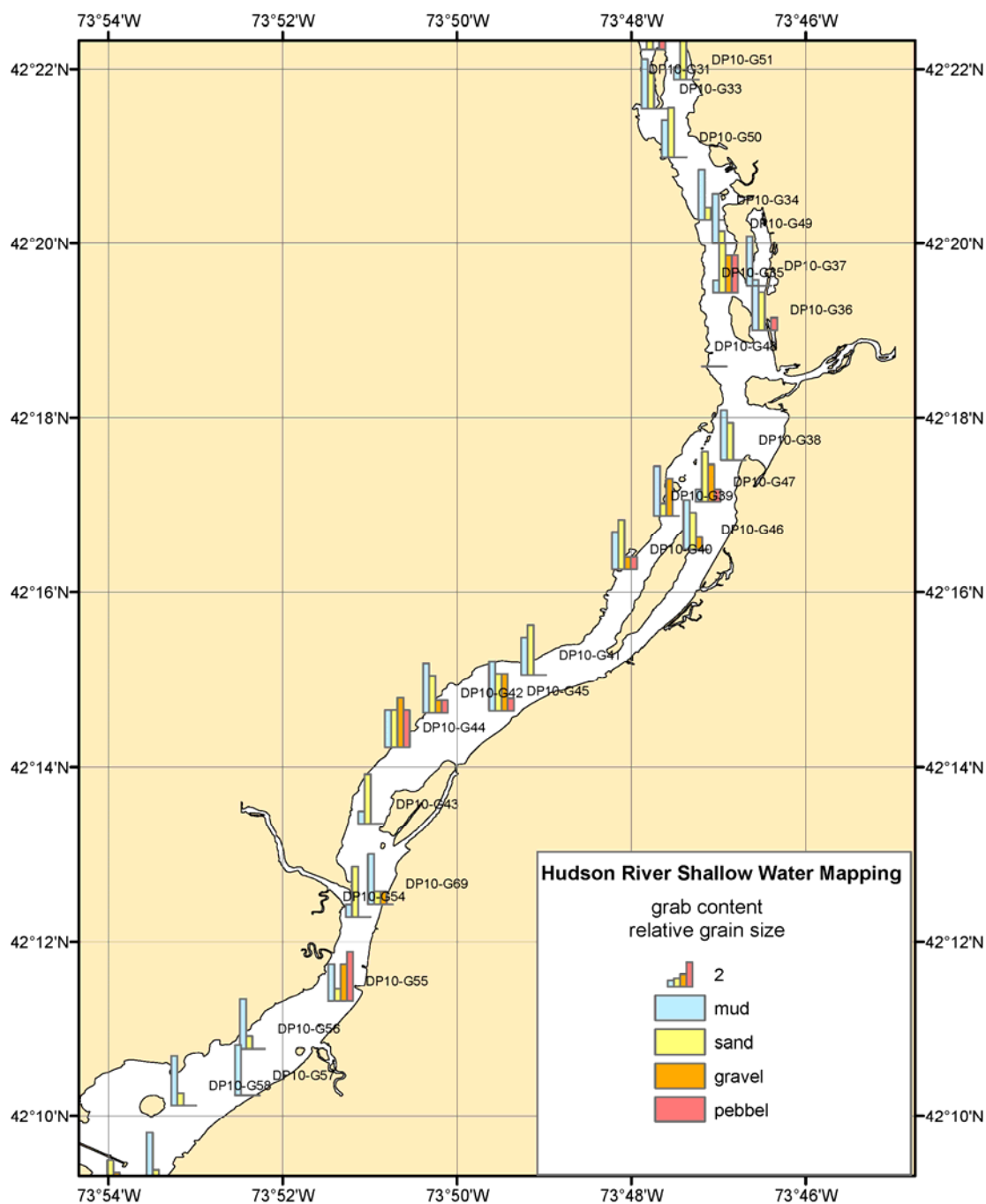


Figure 9c: Relative abundance of grain size classes are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

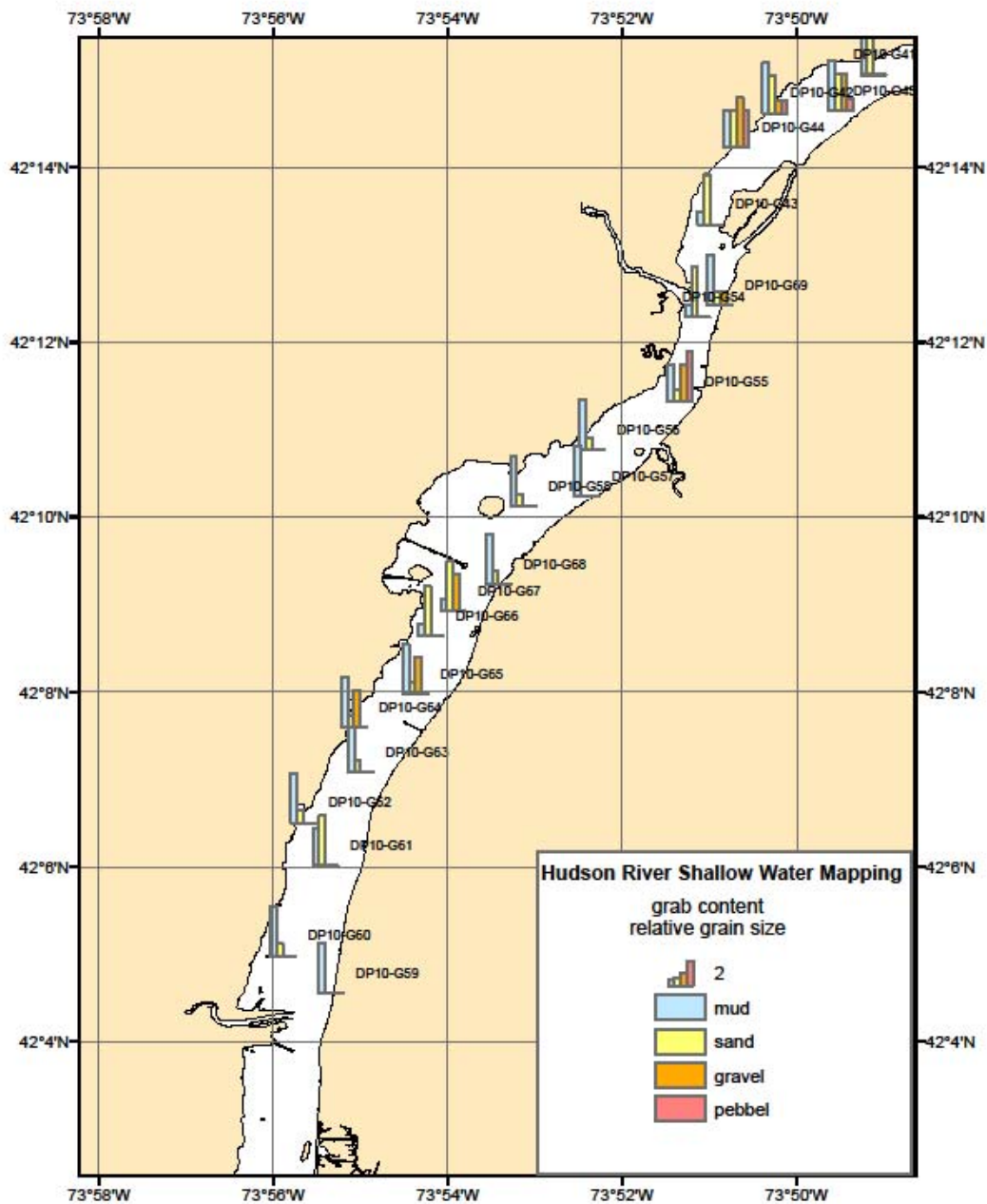


Figure 9d: Relative abundance of grain size classes are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

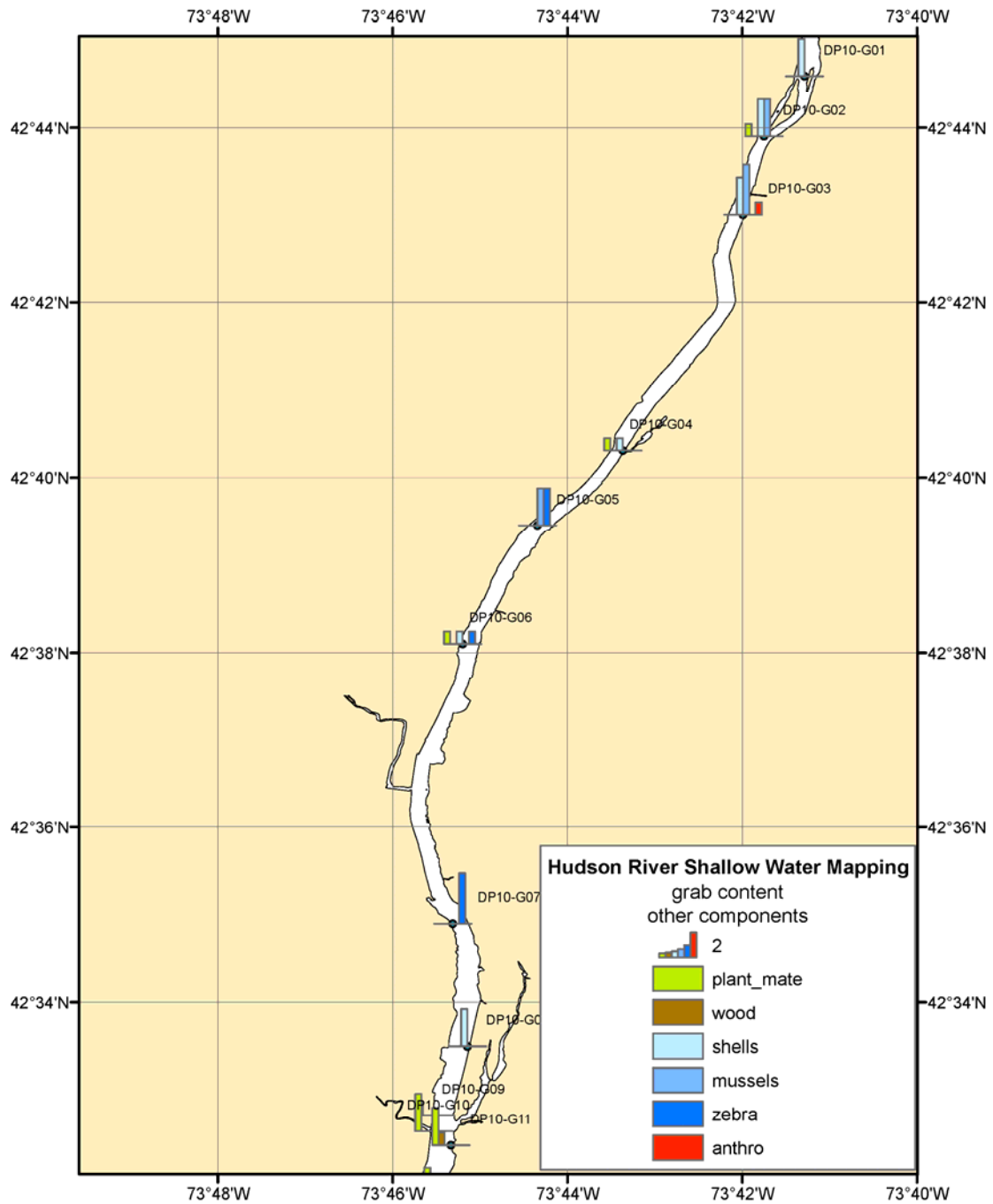


Figure 10a: Relative abundance of plant material, wood, various shells, and anthropogenic materials are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.



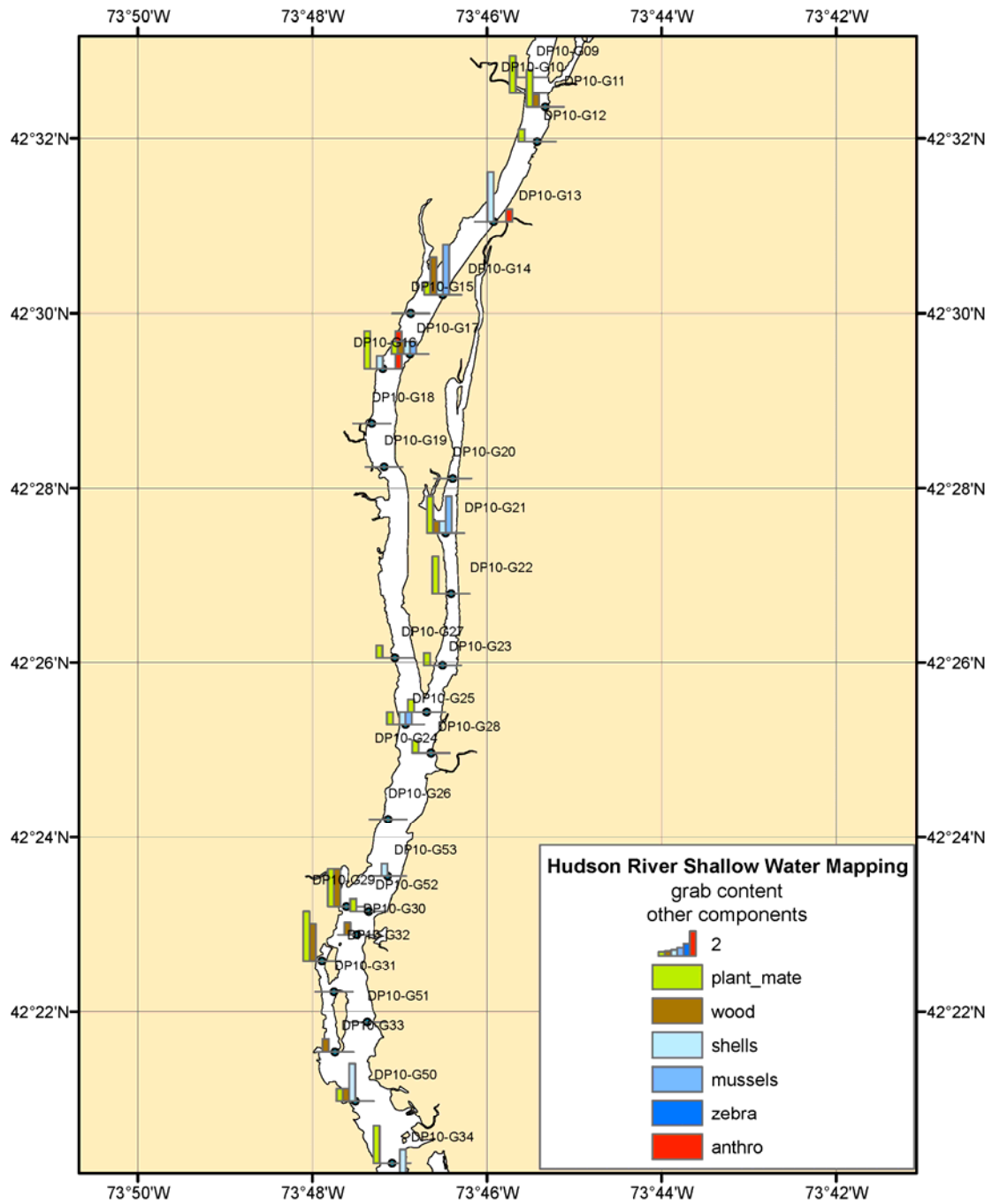


Figure 10b: Relative abundance of plant material, wood, various shells, and anthropogenic materials are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

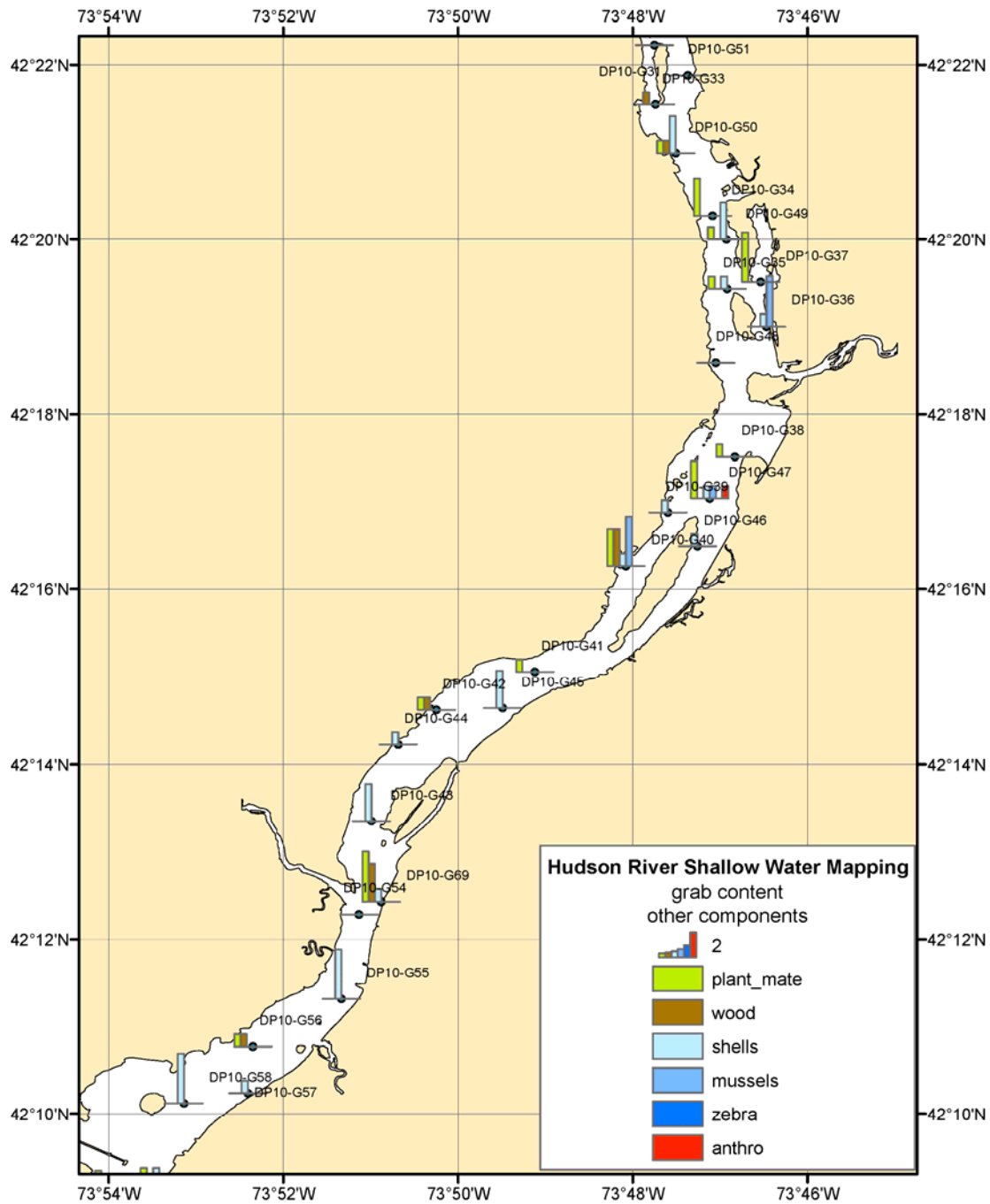


Figure 10c: Relative abundance of plant material, wood, various shells, and anthropogenic materials are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

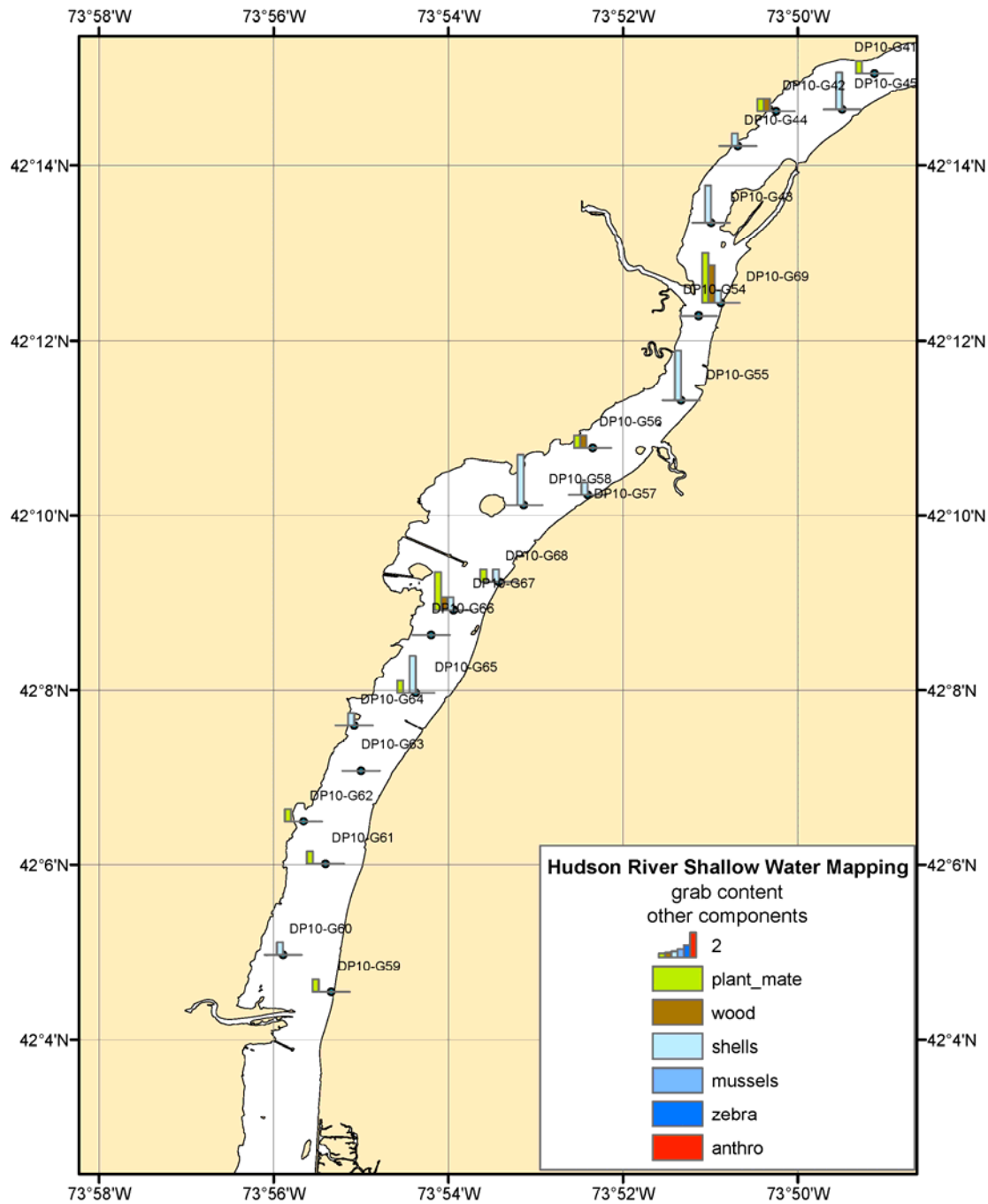


Figure 10d: Relative abundance of plant material, wood, various shells, and anthropogenic materials are indicated by bar graphs based on visual inspection in the field. The bar lengths represent abundant, common, rare, and absent.

## 5. Radionuclide analysis of sediment samples

### 5.1 Sampling

Upon retrieval of a grab sample to the surface and after photographing, the surface sediments (0-1 cm) were sampled directly into pre-weighed counting jars and the jar was then sealed and placed in a cooler on ice. Sampling tools were cleaned and dried between samples. Upon returning to the lab, samples were weighed to determine net sample weight, leveled by gently tapping and measured for sample height to determine sample geometry. Samples were stored at 4°C to await gamma analysis. Samples currently remain in cold storage awaiting additional analyses, if they are desired or become necessary.

### 5.2 Gamma spectrometry

Sediment grab samples were analyzed for selected gamma emitting radionuclides  $^7\text{Be}$  and  $^{137}\text{Cs}$ . Radionuclide activity levels were determined on wet, un-ground sediments. The presence or absence of  $^7\text{Be}$  ( $t_{1/2} = 53$  days) and  $^{137}\text{Cs}$  (30.07 years) was determined by direct gamma counting for using one of two HpGe detectors (PGT IGP2016 or Canberra GX2020).  $^7\text{Be}$  and  $^{137}\text{Cs}$  activities were quantified by monitoring their characteristic emissions at 478 keV and 662 keV, respectively for a counting period of 24 h. Detector efficiencies were determined by counting an International Atomic Energy Agency standard (IAEA-375) as well U.S. a U.S. Department of Energy New Brunswick Laboratory pitchblende ore-silica Mixture (CRM-101a) in the same geometry as the samples. Blanks were determined on empty sample containers. Corrections to the measured radionuclide counts included background, counting efficiency, geometry, branching ratio, and wet sample mass to obtain activity on a wet weight basis. Activities were decay-corrected to core collection date. Typically, the precision of the measurements is  $\pm 2$ -10 percent, and the background levels are  $<0.05$  cpm for the nuclides of interest. For both  $^7\text{Be}$  and  $^{137}\text{Cs}$ , if a sample contained an activity level in excess of three times the calculated uncertainty it was considered to be present, while levels below three times the calculated uncertainty were considered below detection or absent.

### 5.3 Results

The  $^7\text{Be}$  and  $^{137}\text{Cs}$  activity levels measured in the grab samples are presented in Table 3. Out of the 69 grab samples, 5 were not suitable for the collection of a sample for gamma analysis. Using the presence/absence criterion described above, of the remaining 64 grab samples, 11 contained neither radionuclide, 24 contained  $^7\text{Be}$ , and 44 contained  $^{137}\text{Cs}$  with only 14 samples containing both  $^7\text{Be}$  and  $^{137}\text{Cs}$ .

Table 3. Radionuclide results

Sample	Mass(g) <sup>A</sup>	Be-7 corr. (pCi/kg) <sup>B</sup>	+/-	Cs-137 corr (pCi/Kg) <sup>B</sup>	+/-	Be-7 (P/A) <sup>C</sup>	Cs-137 (P/A) <sup>C</sup>
DP10-G01	144	B.D.	B.D.	278	43	A	P
DP10-G02	205	228	95	1257	96	A	P
DP10-G03	185	B.D.	B.D.	59	17	A	P
DP10-G04	227	1680	511	B.D.	B.D.	P	A
DP10-G05	-	-	-	-	-	No sample collected	
DP10-G06	175	104	39	3	7	A	A
DP10-G07	-	-	-	-	-	No sample collected	
DP10-G08	265	134	89	158	29	A	P
DP10-G09	191	B.D.	B.D.	607	122	A	P
DP10-G10	212	60	172	483	86	A	P
DP10-G11	236	359	215	345	51	A	P
DP10-G12	205	579	251	186	41	A	P
DP10-G13	-	-	-	-	-	No sample collected	
DP10-G14	220	476	141	B.D.	B.D.	P	A
DP10-G15	213	B.D.	B.D.	649	111	A	P
DP10-G16	218	1082	269	B.D.	B.D.	P	A
DP10-G17	230	B.D.	B.D.	165	44	A	P
DP10-G18	220	606	151	B.D.	B.D.	P	A
DP10-G19	-	-	-	-	-	No sample collected	
DP10-G20	197	820	462	415	104	A	P
DP10-G21	214	496	83	137	24	P	P
DP10-G22	200	734	414	460	81	A	P
DP10-G23	196	5429	548	B.D.	B.D.	P	A
DP10-G24	195	2738	370	282	60	P	P
DP10-G25	239	438	108	481	68	P	P
DP10-G26	228	1621	502	723	103	P	P
DP10-G27	163	762	75	136	13	P	P
DP10-G28	146	193	151	71	18	A	P
DP10-G29	167	499	73	112	13	P	P
DP10-G30	184	21	100	20	17	A	A
DP10-G31	199	59	32	B.D.	B.D.	A	A
DP10-G32	116	408	216	72	21	A	P
DP10-G33	186	201	79	111	13	A	P
DP10-G34	176	616	86	162	16	P	P
DP10-G35	182	92	92	10	15	A	A

<sup>A</sup>Sample masses and activity levels are reported on a wet basis.

<sup>B</sup>Reported activity levels are decay corrected to the date of sample collection

<sup>C</sup>P=Present; A=Absent; an activity must be in excess of three times the reported uncertainty to be considered present

B.D. indicates that the activity was below detectable levels

Table 3. Radionuclide results (cont.)

Sample	Mass(g) <sup>A</sup>	Be-7 corr. (pCi/kg) <sup>B</sup>	+/-	Cs-137 corr (pCi/Kg) <sup>B</sup>	+/-	Be-7 (P/A) <sup>C</sup>	Cs-137 (P/A) <sup>C</sup>
DP10-G36	156	454	129	66	19	P	P
DP10-G37	152	452	148	166	27	P	P
DP10-G38	160	370	111	58	17	P	P
DP10-G39	177	272	63	64	10	P	P
DP10-G40	185	B.D.	B.D.	103	17	A	P
DP10-G41	183	181	83	28	10	A	A
DP10-G42	164	179	192	118	22	A	P
DP10-G43	193	140	72	38	10	A	P
DP10-G44	168	67	150	140	19	A	P
DP10-G45	200	333	74	100	12	P	P
DP10-G46	200	0	0	82	19	A	P
DP10-G47	197	145	54	8	7	A	A
DP10-G48	-	-	-	-	-	No sample collected	
DP10-G49	185	26	155	68	18	A	P
DP10-G50	193	82	89	33	9	A	P
DP10-G51	194	349	118	53	16	A	P
DP10-G52	231	144	153	3671	343	A	P
DP10-G53	174	124	121	24	16	A	A
DP10-G54	278	796	249	B.D.	B.D.	P	A
DP10-G55	247	101	250	67	22	A	P
DP10-G56	264	1201	492	B.D.	B.D.	A	A
DP10-G57	185	554	181	82	21	P	P
DP10-G58	213	772	221	63	28	P	A
DP10-G59	230	1336	295	B.D.	B.D.	P	A
DP10-G60	200	70	196	26	26	A	A
DP10-G61	262	1526	562	B.D.	B.D.	A	A
DP10-G62	187	767	189	20	24	P	A
DP10-G63	178	461	92	217	13	P	P
DP10-G64	226	42	174	83	22	A	P
DP10-G65	143	232	89	26	7	A	P
DP10-G66	183	19	169	20	16	A	A
DP10-G67	251	300	213	154	35	A	P
DP10-G68	199	67	199	96	24	A	P
DP10-G69	172	1499	255	240	32	P	P

<sup>A</sup>Sample masses and activity levels are reported on a wet basis.

<sup>B</sup>Reported activity levels are decay corrected to the date of sample collection

<sup>C</sup>P=Present; A=Absent; an activity must be in excess of three times the reported uncertainty to be considered present

B.D. indicates that the activity was below detectable levels

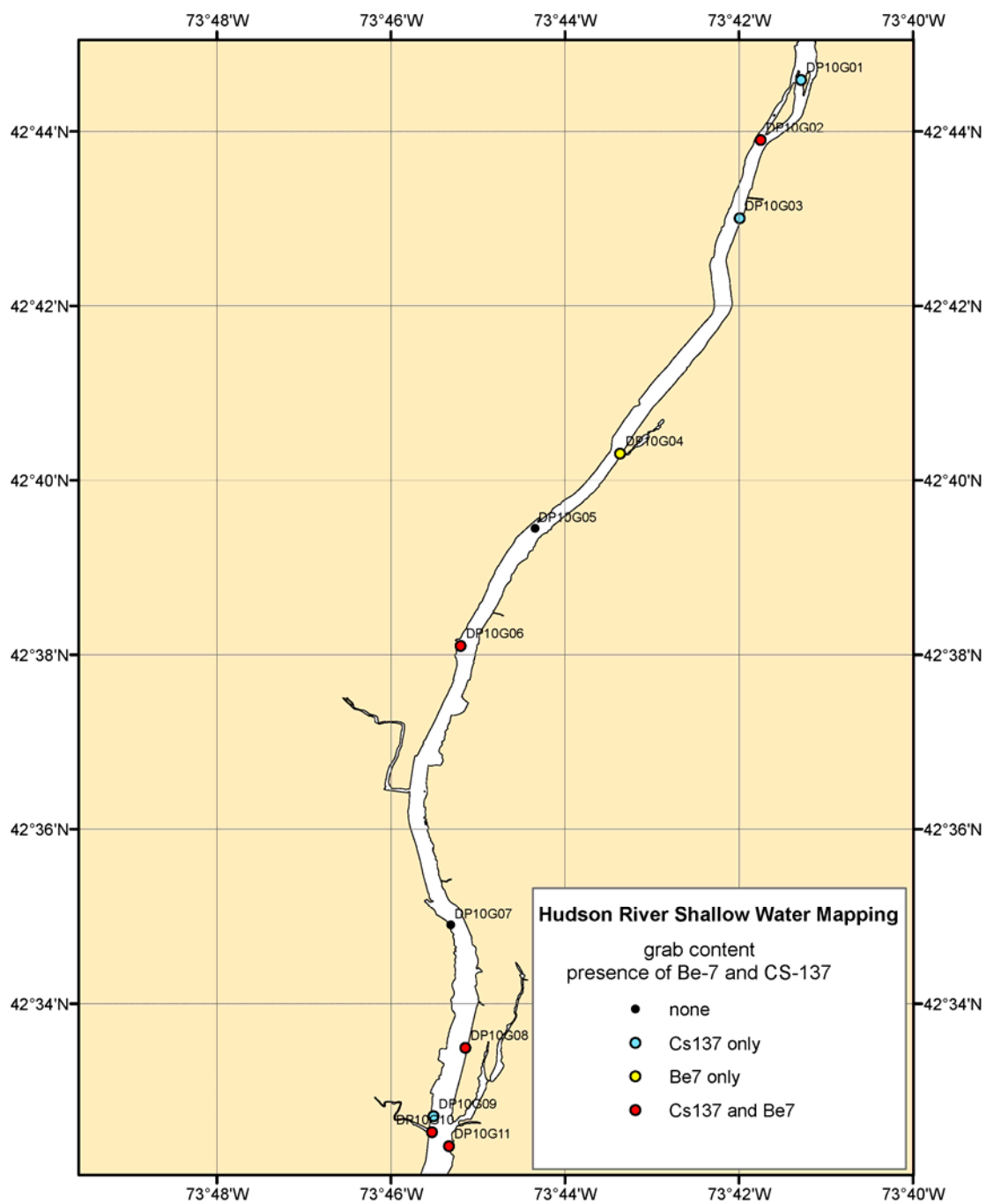


Figure 11a: Presents and absents (above background level) of  $^{137}\text{Cs}$  and  $^7\text{Be}$  in the analyzed grab samples.

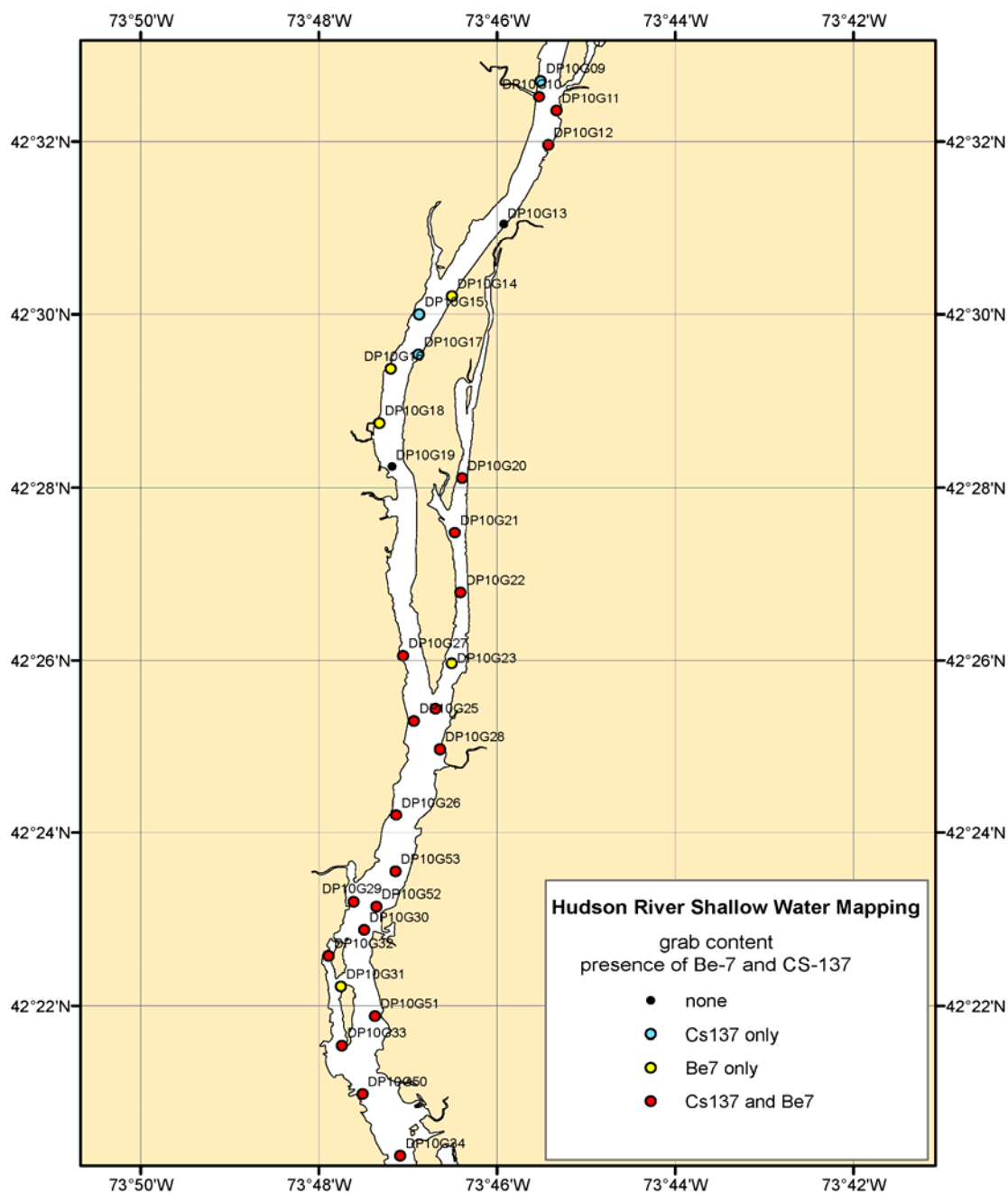


Figure 11b: Presents and absents (above background level) of  $^{137}\text{Cs}$  and  $^7\text{Be}$  in the analyzed grab samples



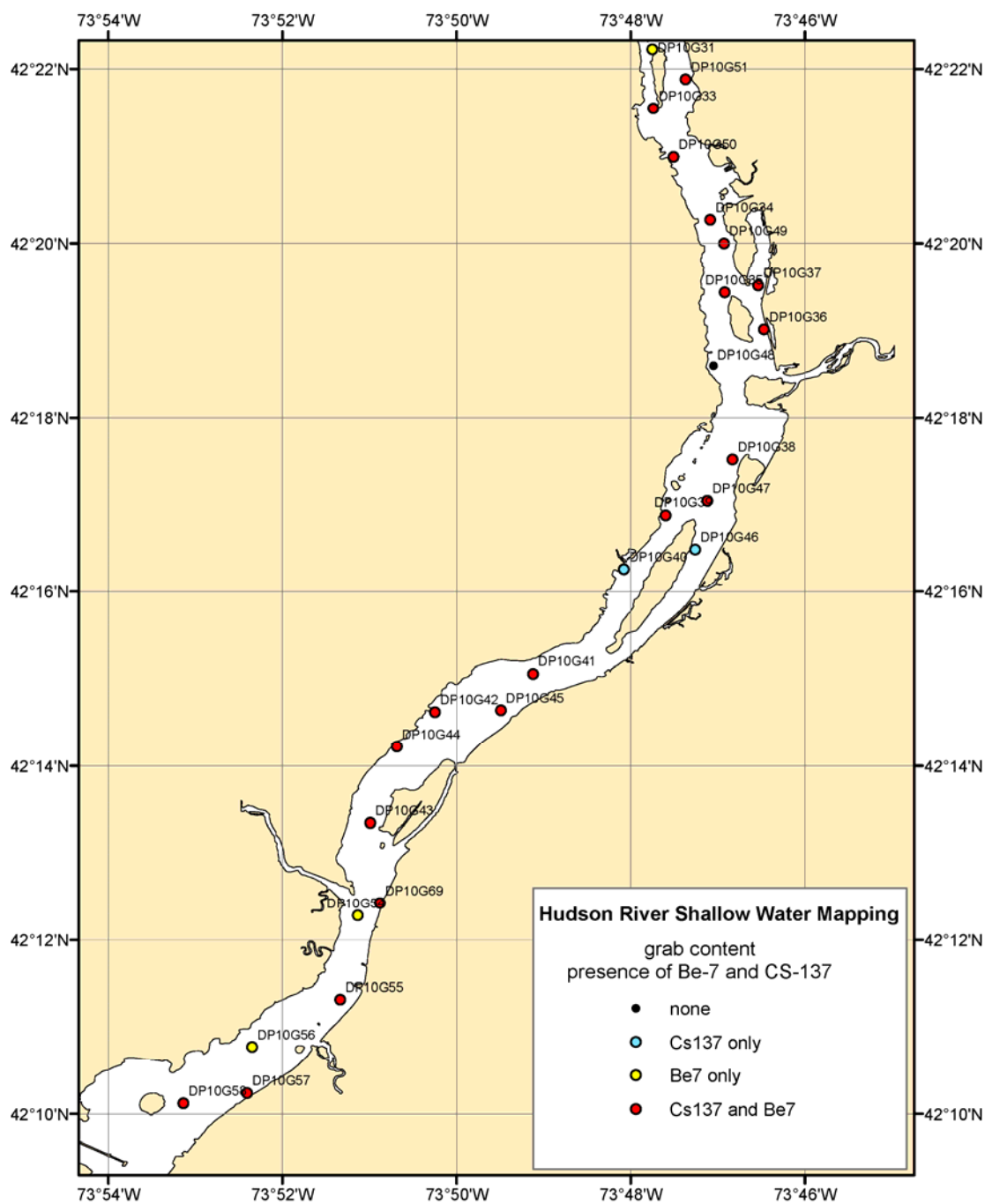


Figure 11c: Presents and absents (above background level) of  $^{137}\text{Cs}$  and  $^7\text{Be}$  in the analyzed grab samples

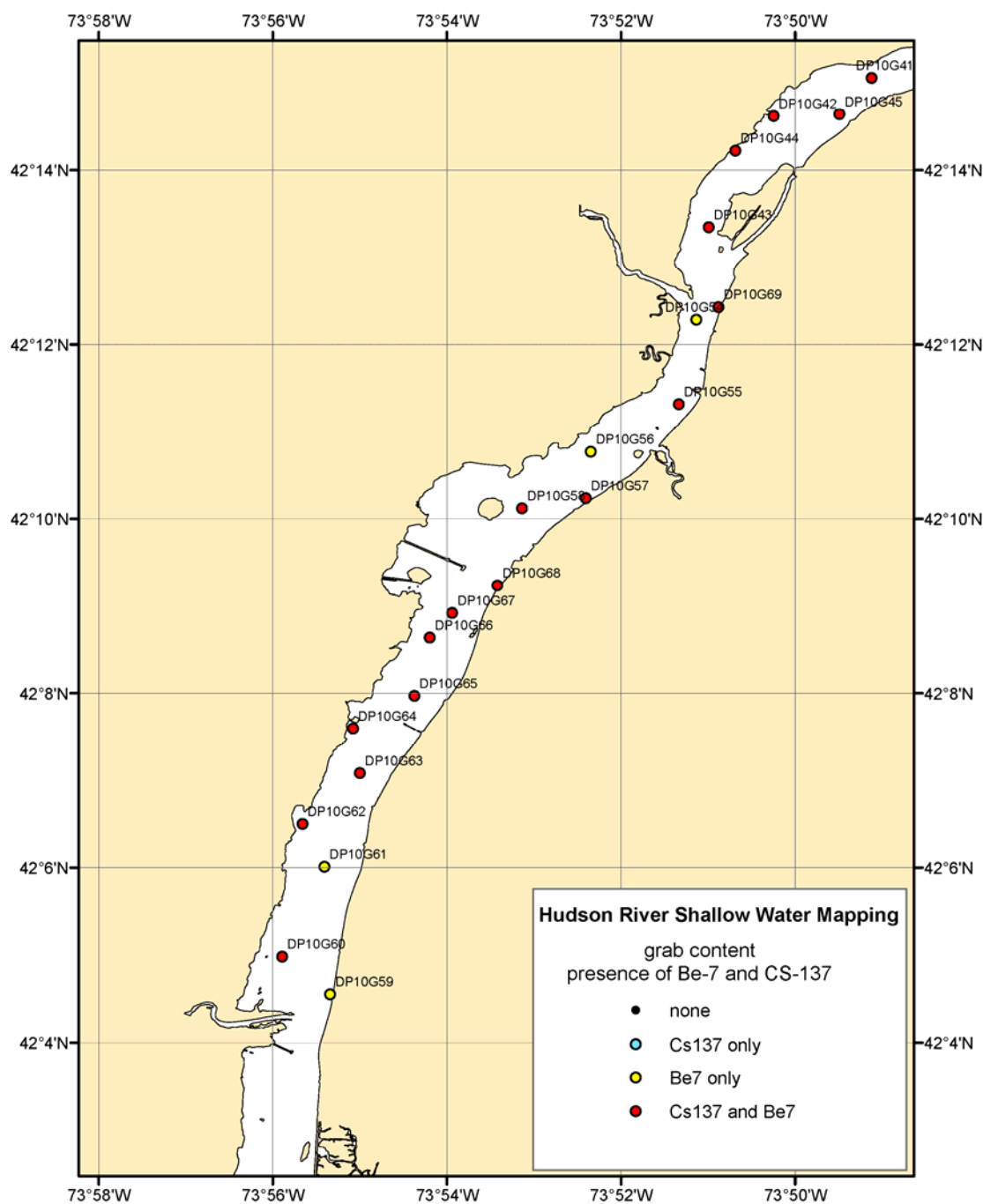


Figure 11d: Presents and absents (above background level) of  $^{137}\text{Cs}$  and  $^7\text{Be}$  in the analyzed grab samples

## 6. Deliverables

Together with this report we provide the following deliverables on the DVD in the data directory:

### *Sediment cores*

HR_ShallowWater_SedCores.xls	Excel sheet with locations and info
HR_ShallowWater_SedCores_PhysProperties.xls	Excel sheet of physical property data
HR_ShallowWater_cores.shp	shapefile with locations and info
hr_shallowwater_cores_metadata.html	metadata file
core_photos	Directory containing jpeg images of cores

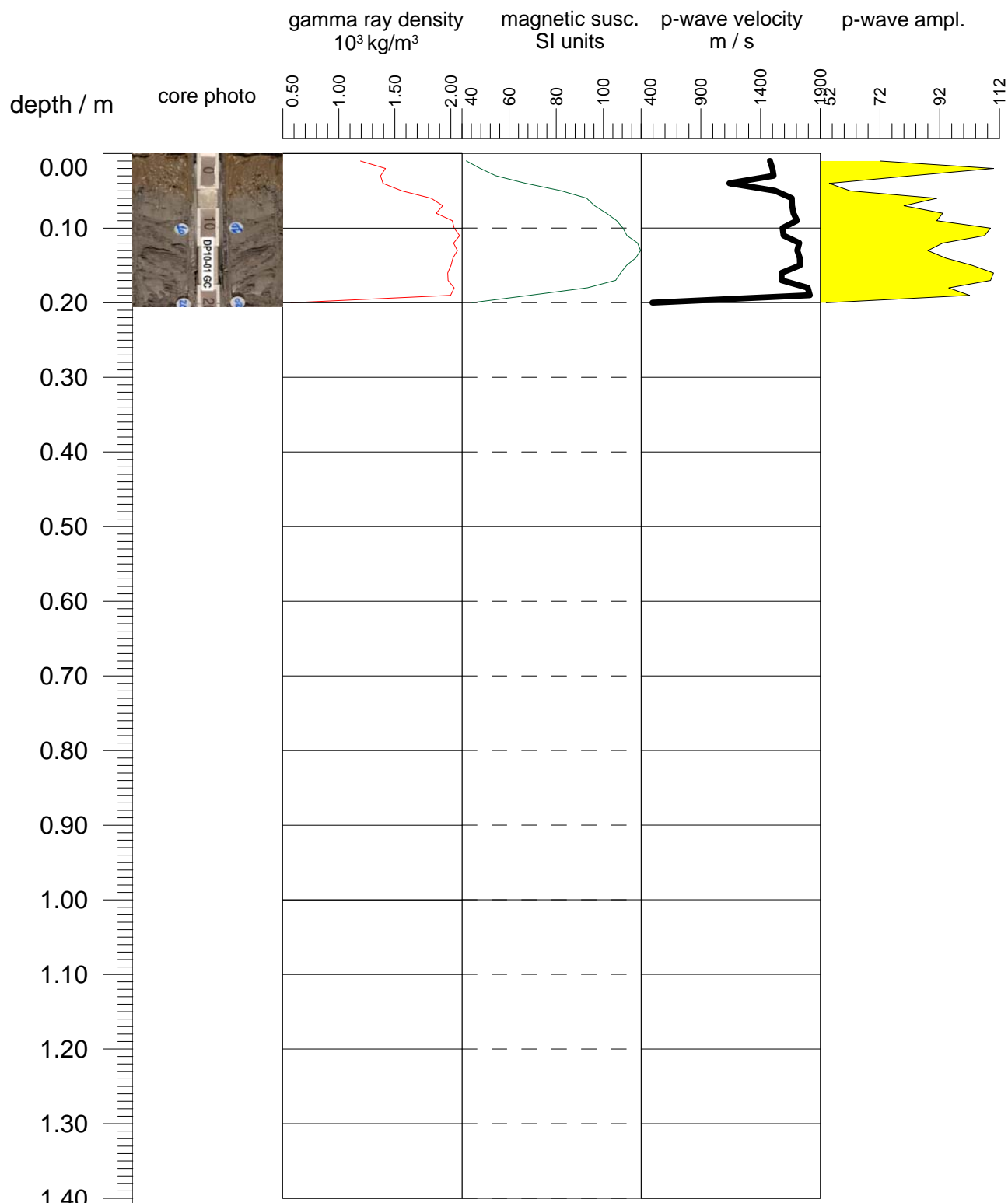
App. 1: physical property plots

App. 2: core descriptions

App. 3: grab descriptions

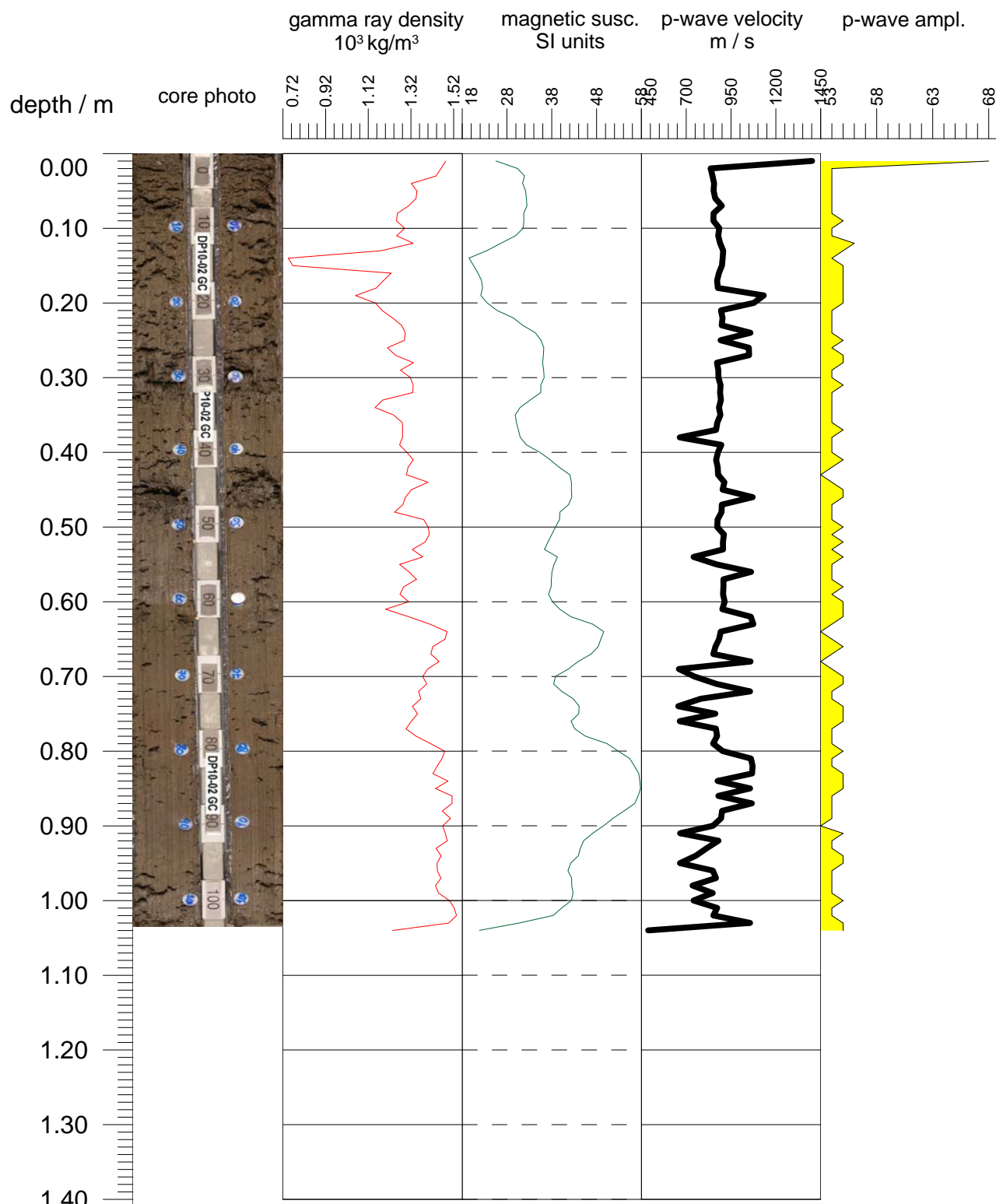
### *Sediment grab samples*

HR_ShallowWater_SedGrabs.xls	Excel sheet with locations and info
HR_ShallowWater_grabs.shp	shapefile with locations and info
hr_shallowwater_grabs_metadata.html	metadata file
HR_ShallowWater_radionuclides.xls	radionuclide analysis results

**Core: DP10-01**

**Project** Fugro Shallow Water  
Hudson River - south of Albany

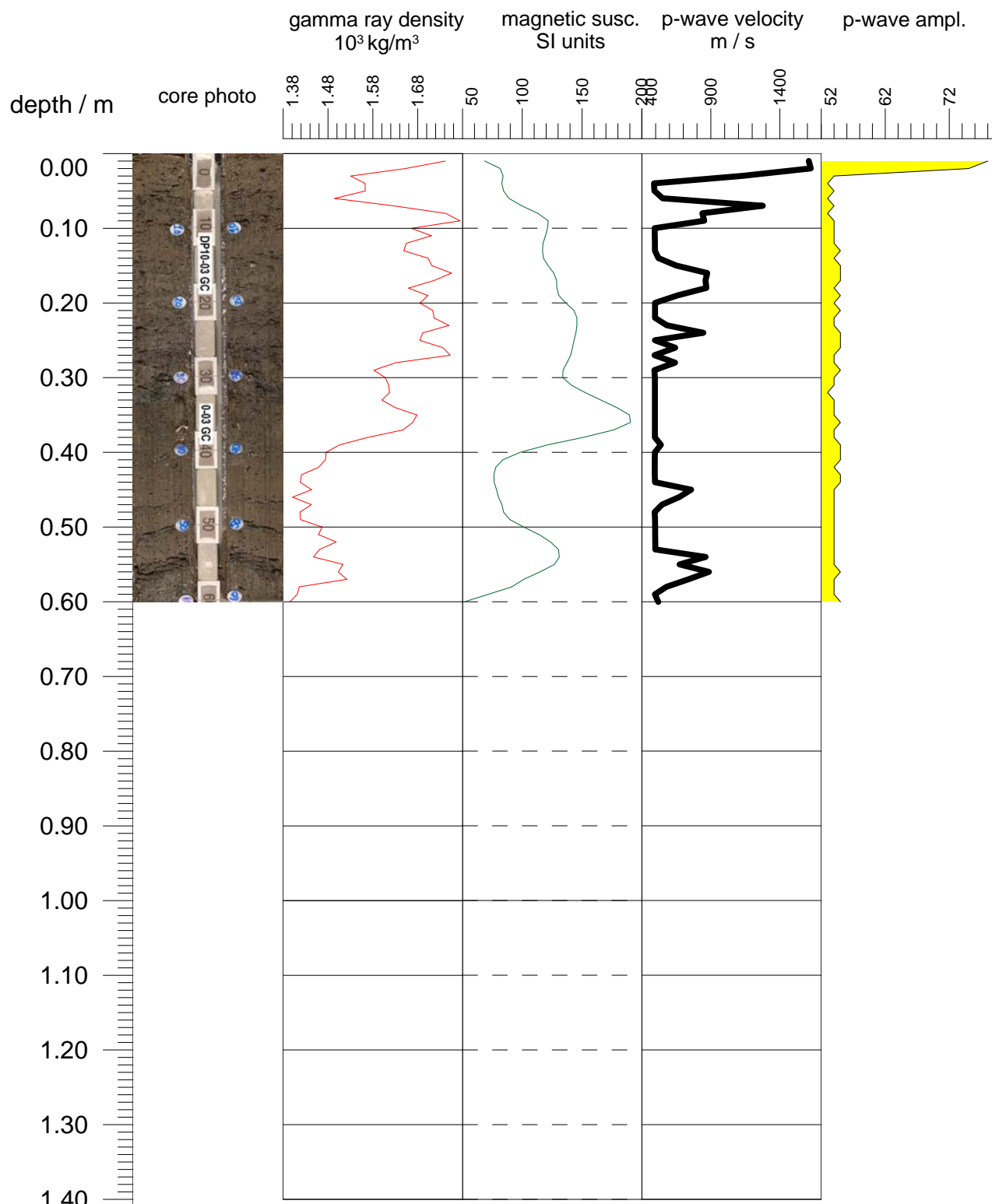
Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-02**

**Project** Fugro Shallow Water  
Hudson River - Albany turning basin

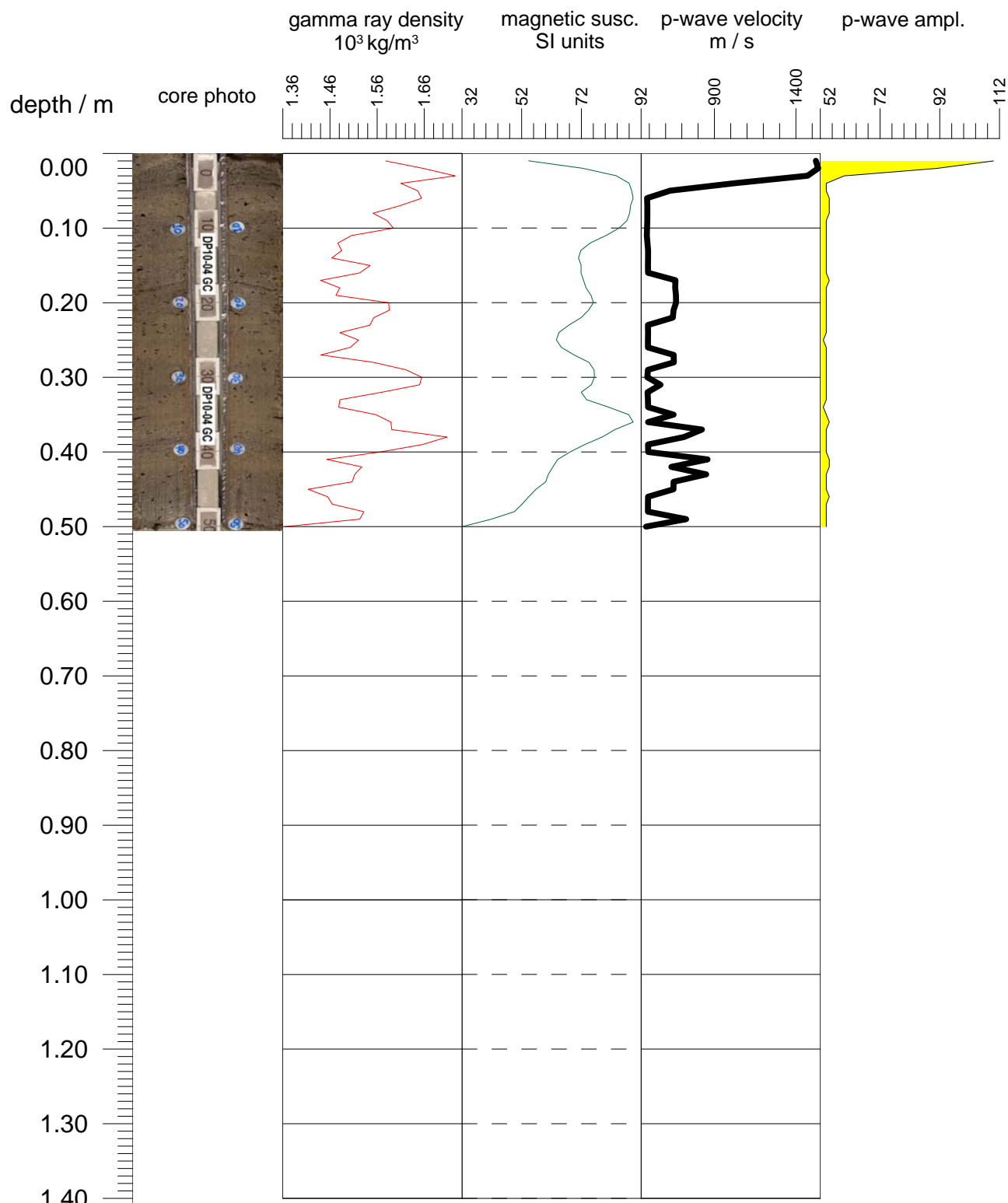
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-03**

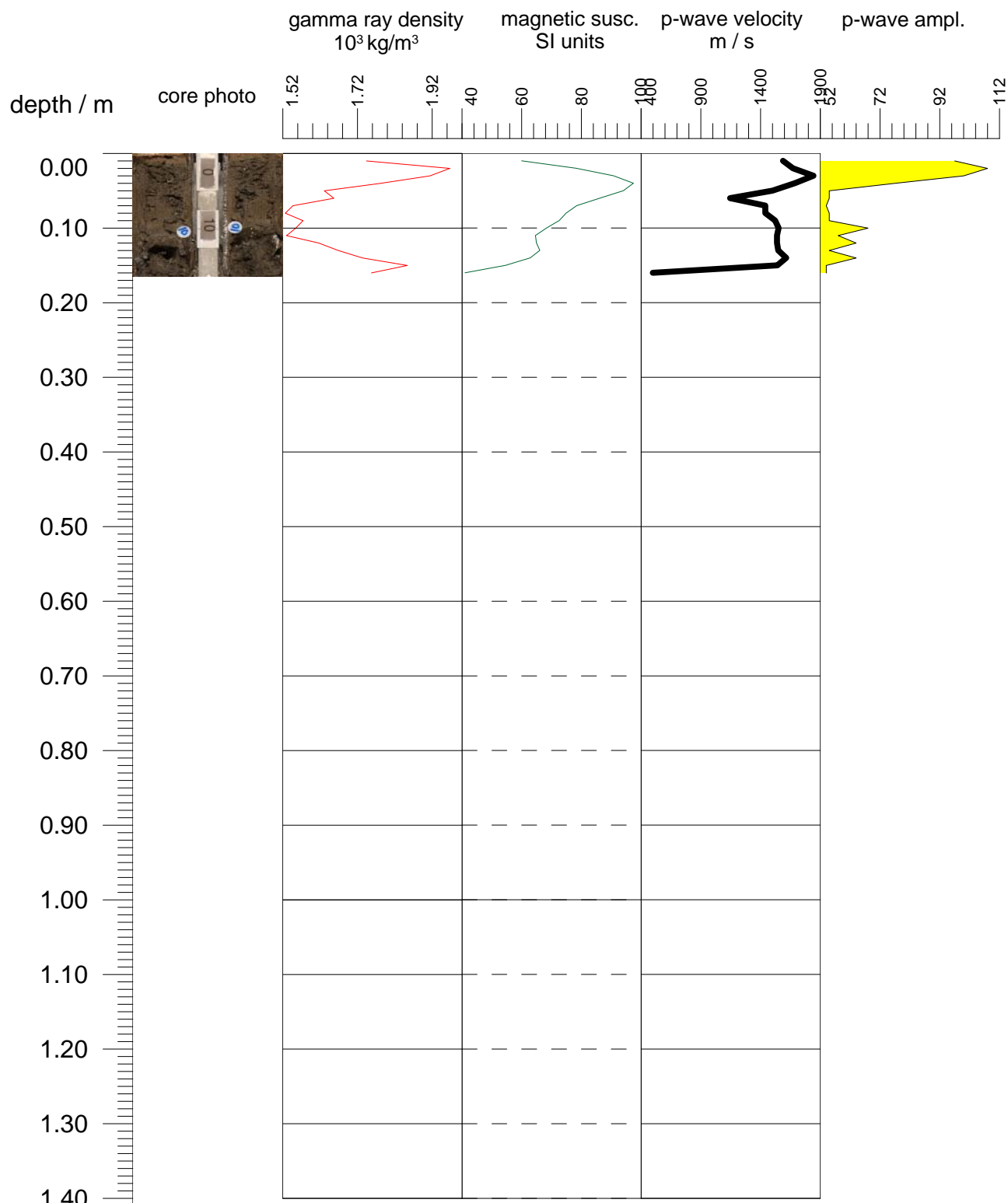
**Project** Fugro Shallow Water  
Hudson River - Albany - Troy

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-04**

**Project** Fugro Shallow Water  
Hudson River - Coymans

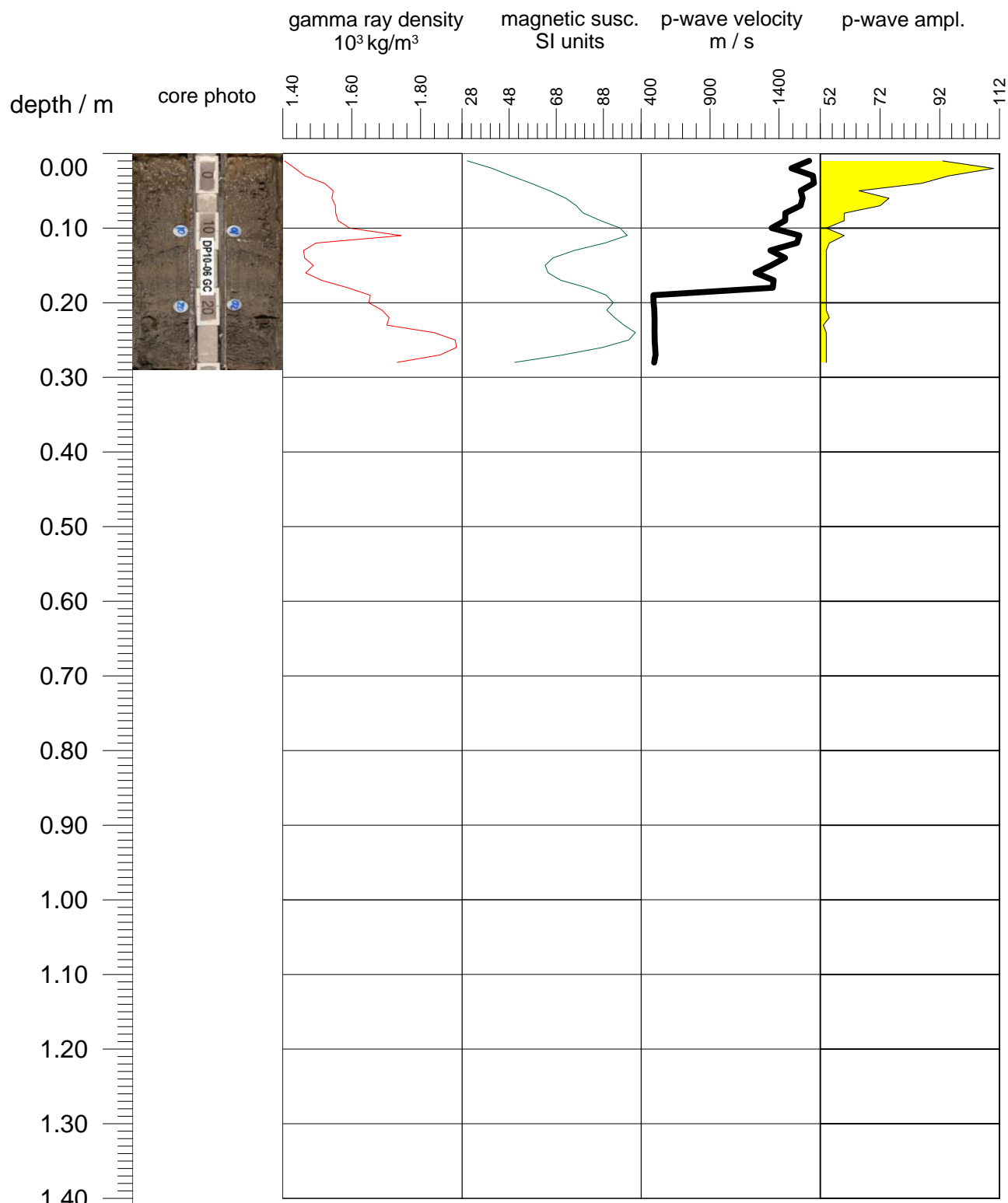
Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-05**

**Project** Fugro Shallow Water  
Hudson River - Binnen Kill

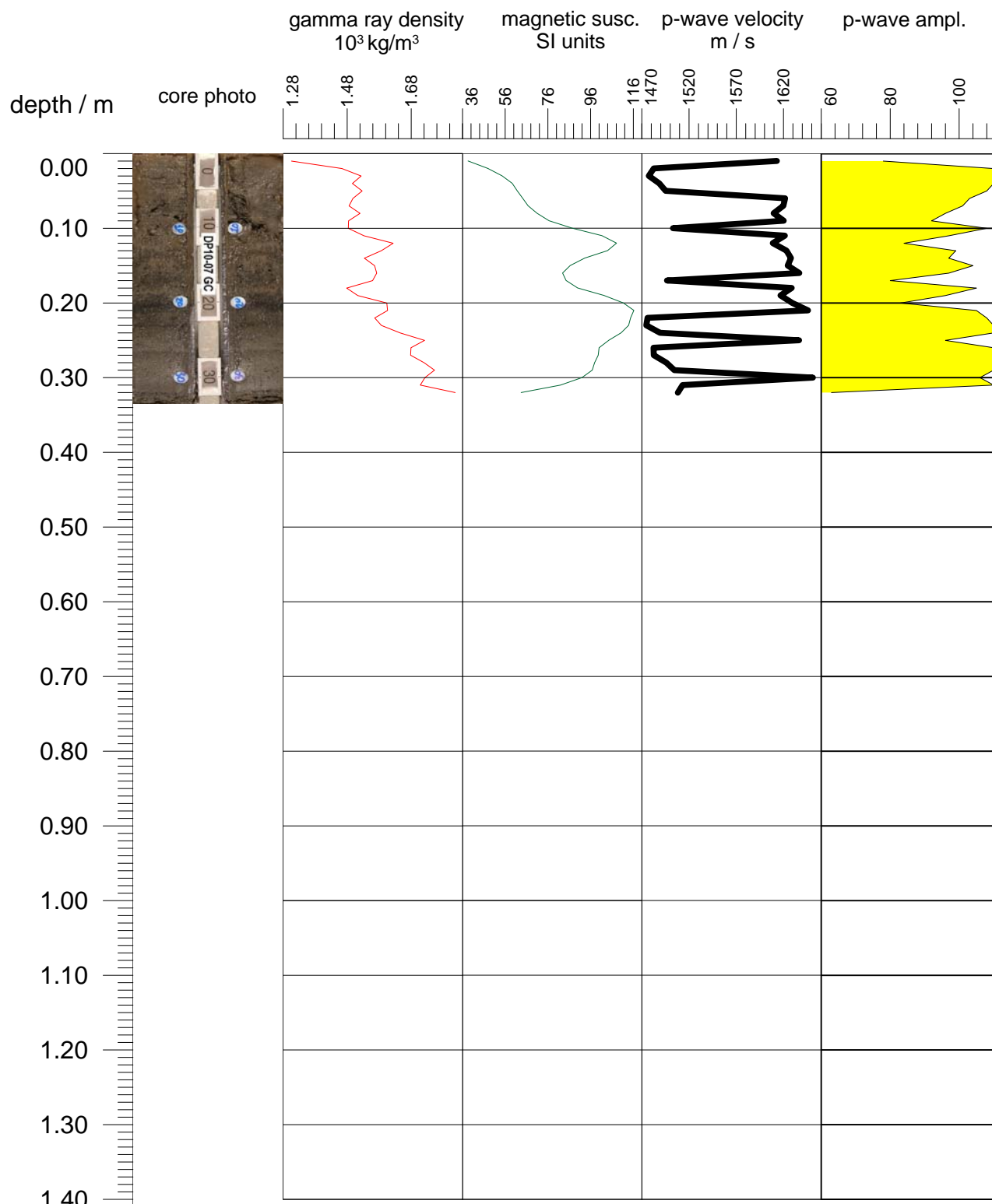
Physical property analysis  
GeoTec® Multi-core logger



**Core: DP10-06**

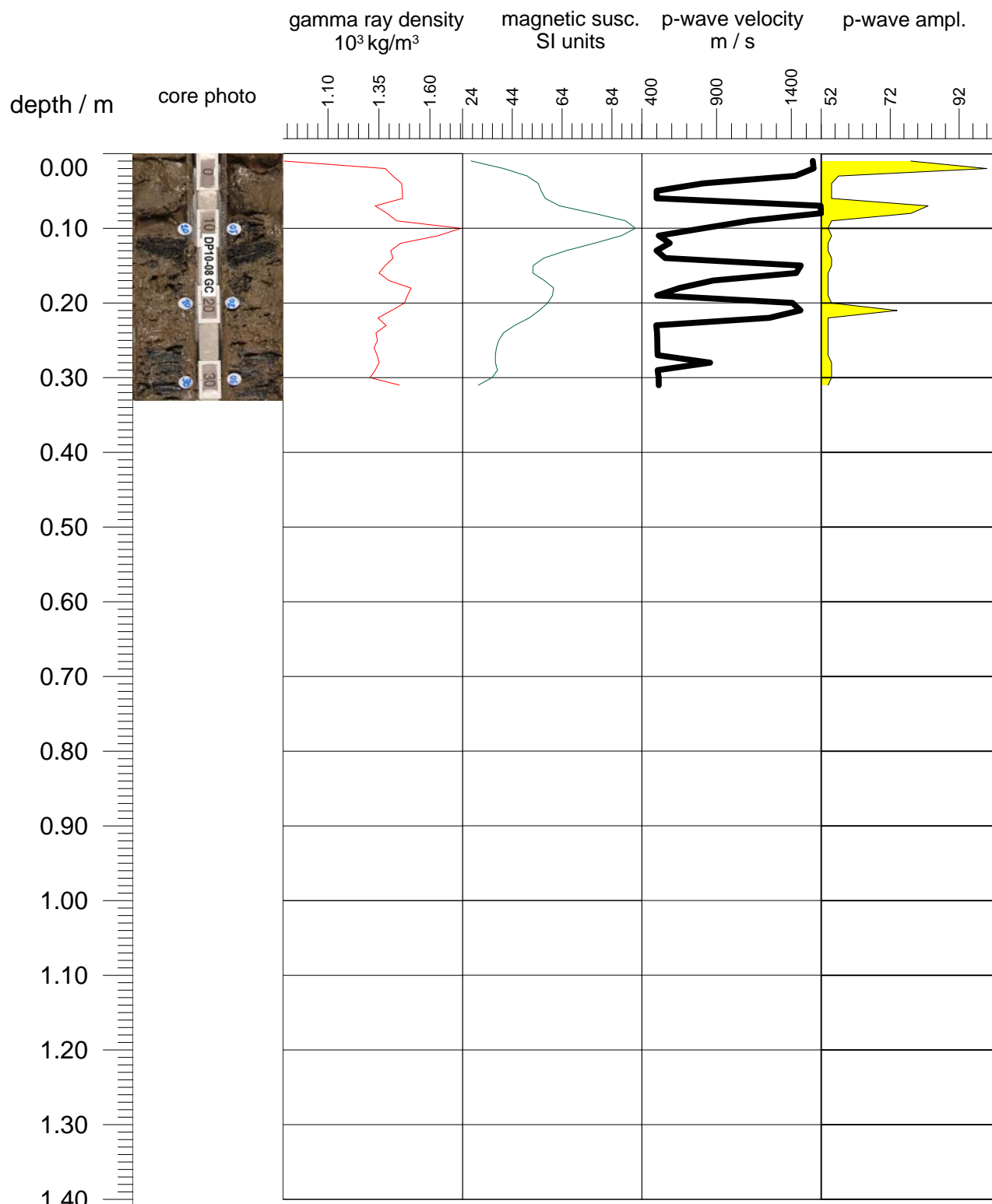
**Project** Fugro Shallow Water  
Hudson River - Castleton

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-07**

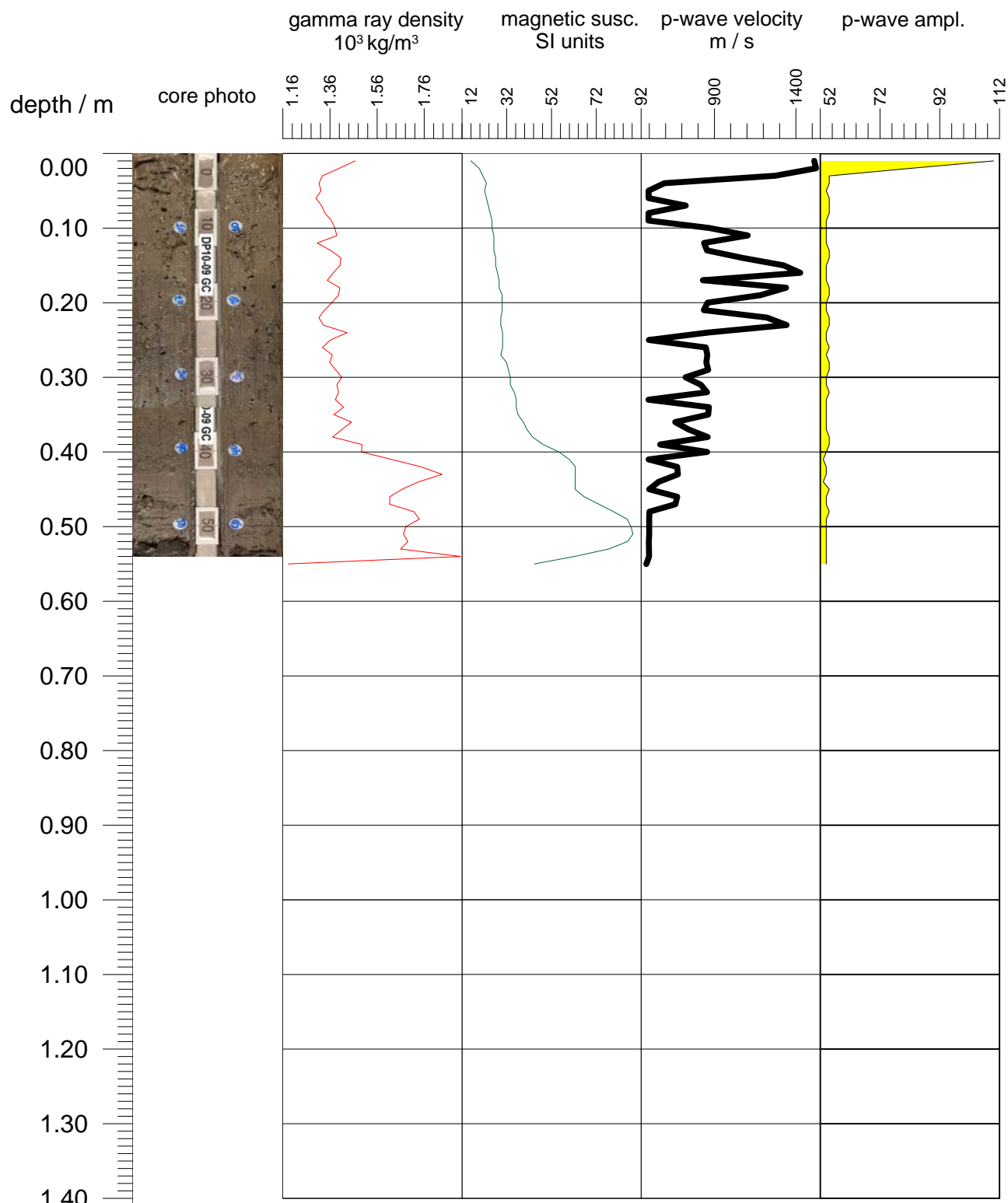
**Project** Fugro Shallow Water  
Hudson River - Castleton

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-08**

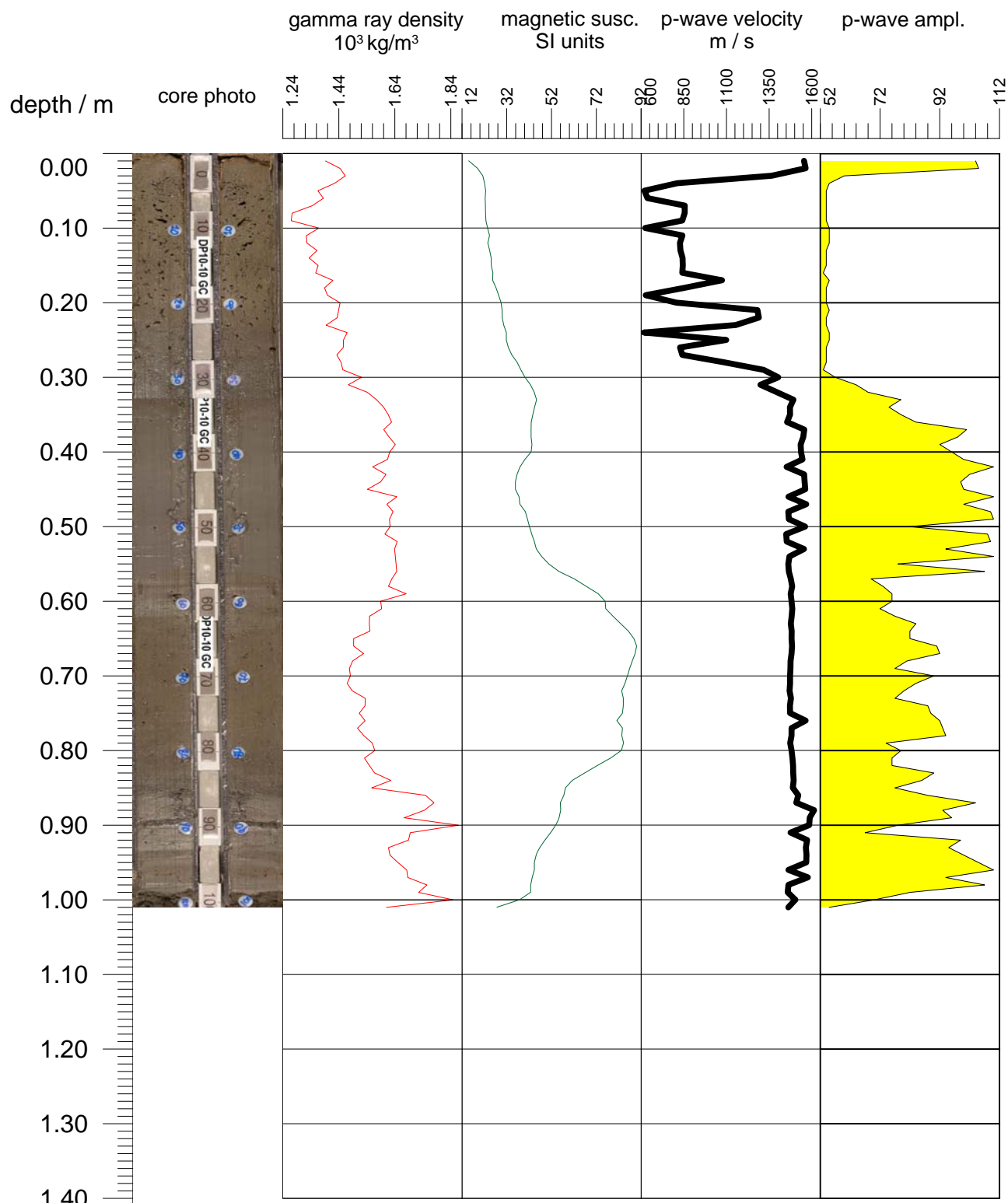
**Project** Fugro Shallow Water  
Hudson River - Coymans

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-09**

**Project** Fugro Shallow Water  
Hudson River - New Baltimore

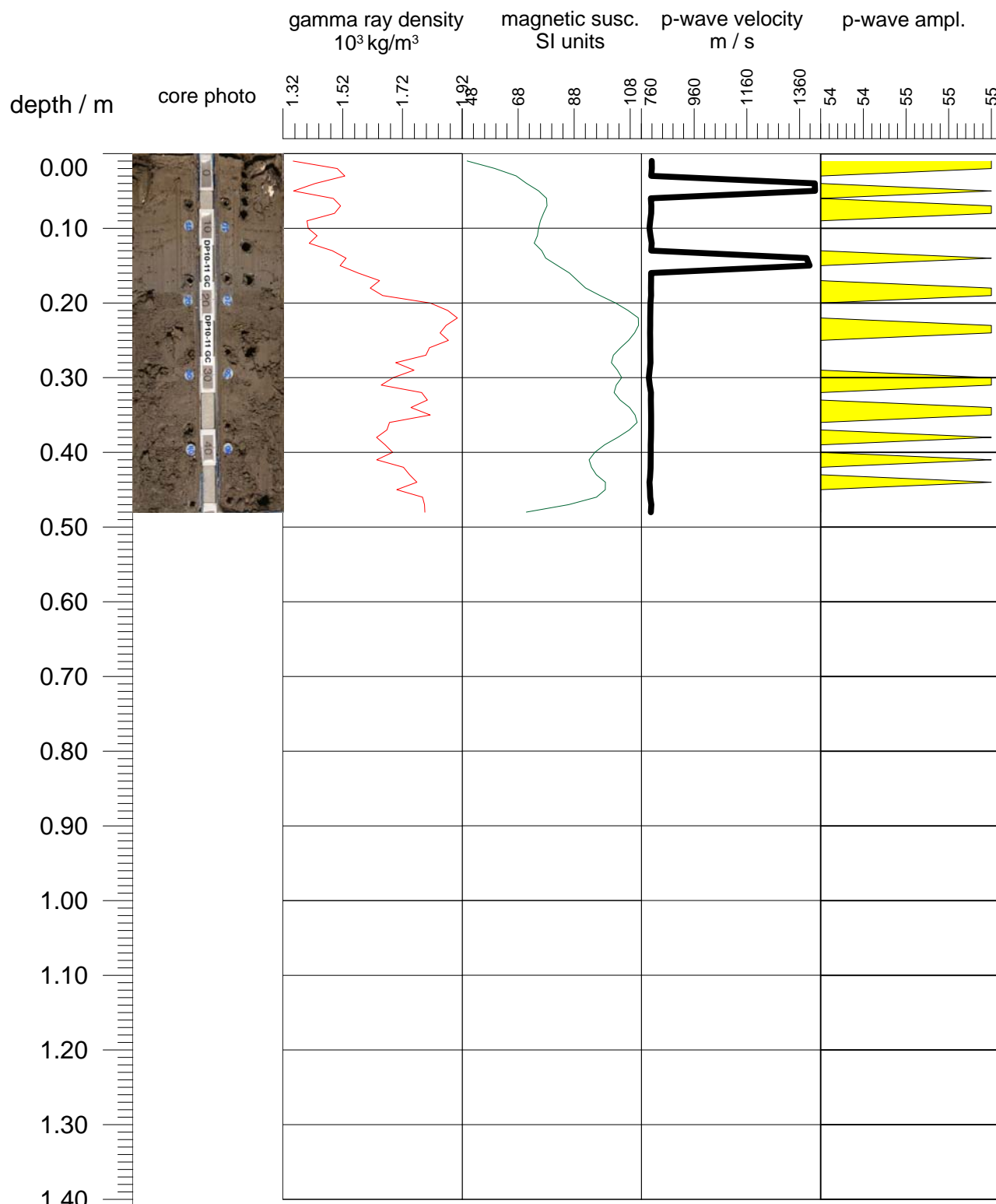
Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-10**

**Project** Fugro Shallow Water  
Hudson River - New Baltimore

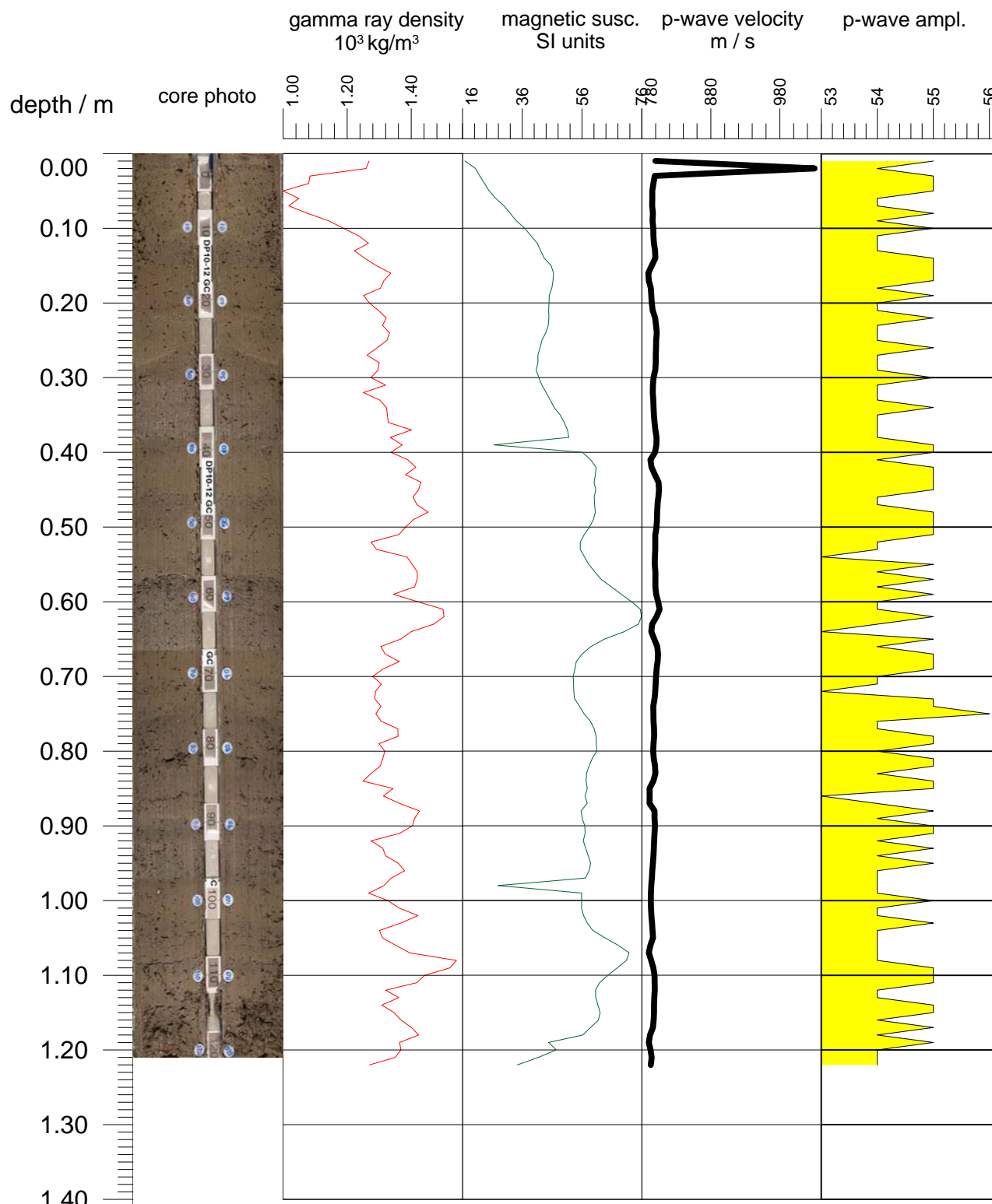
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-11**

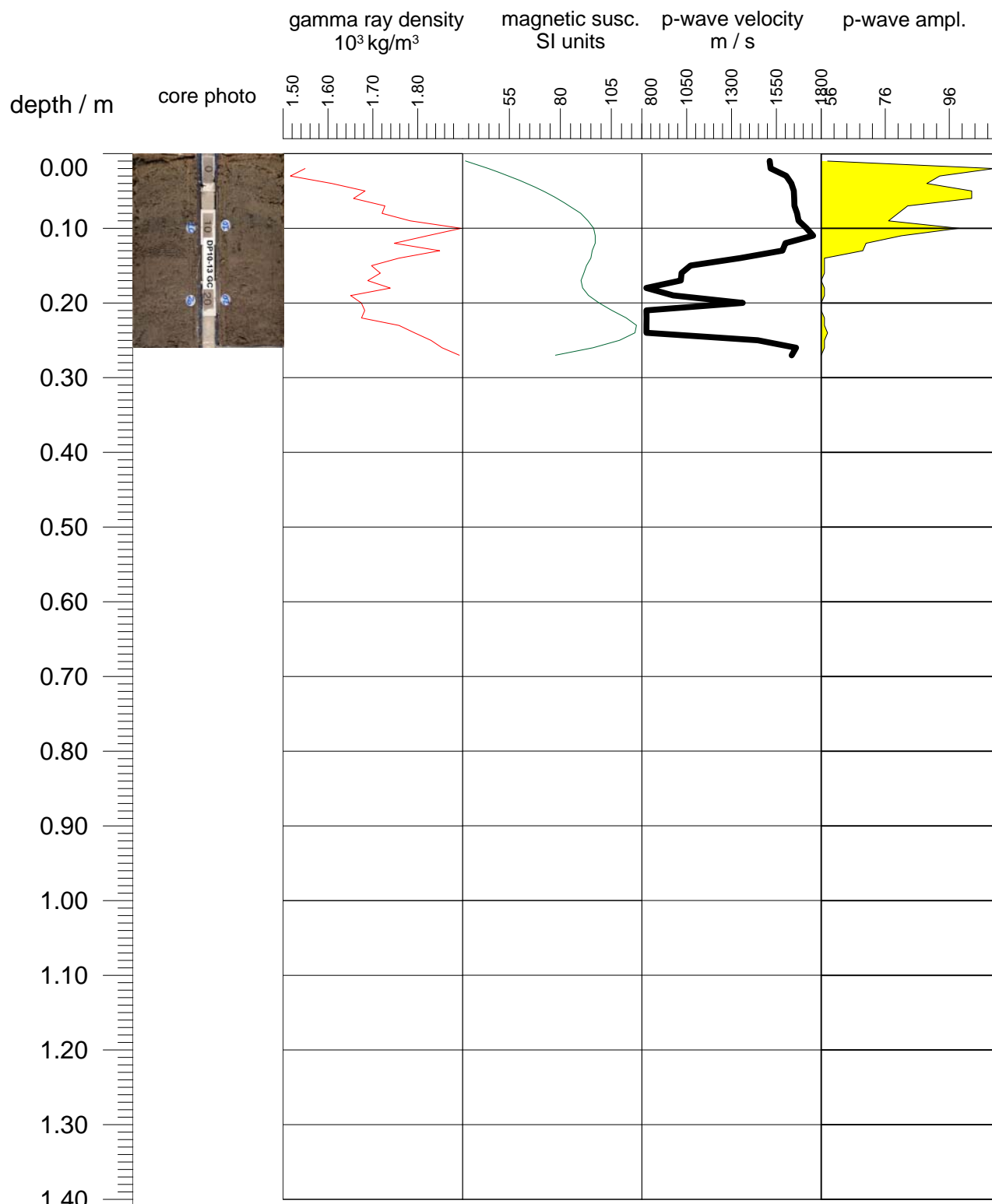
**Project** Fugro Shallow Water  
Hudson River - New Baltimore

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-12**

**Project** Fugro Shallow Water  
Hudson River - New Baltimore

Physical property analysis  
GeoTec® Multi-core logger

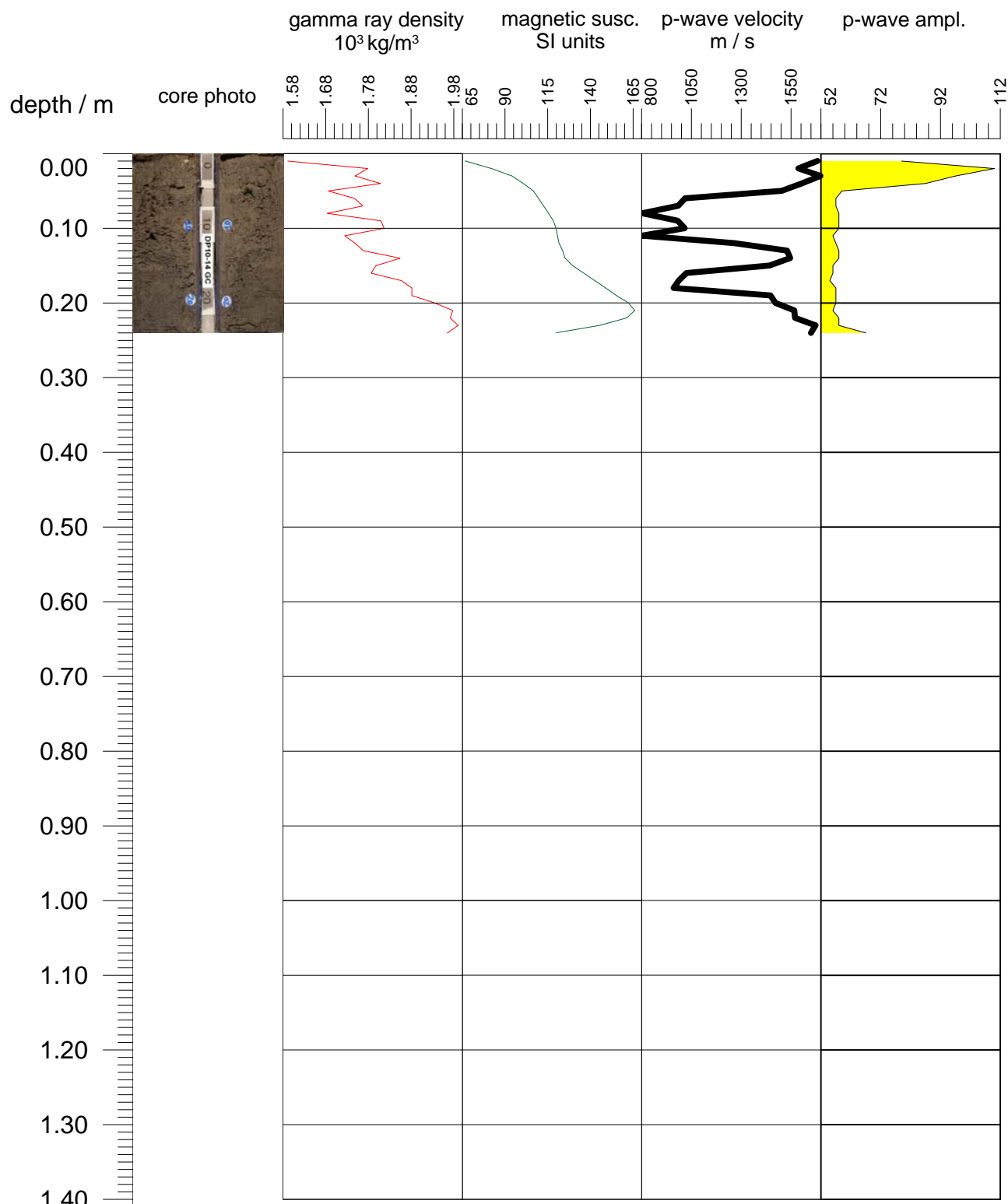
**Core: DP10-13**

**Project** Fugro Shallow Water  
Hudson River - Coxsackie

Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

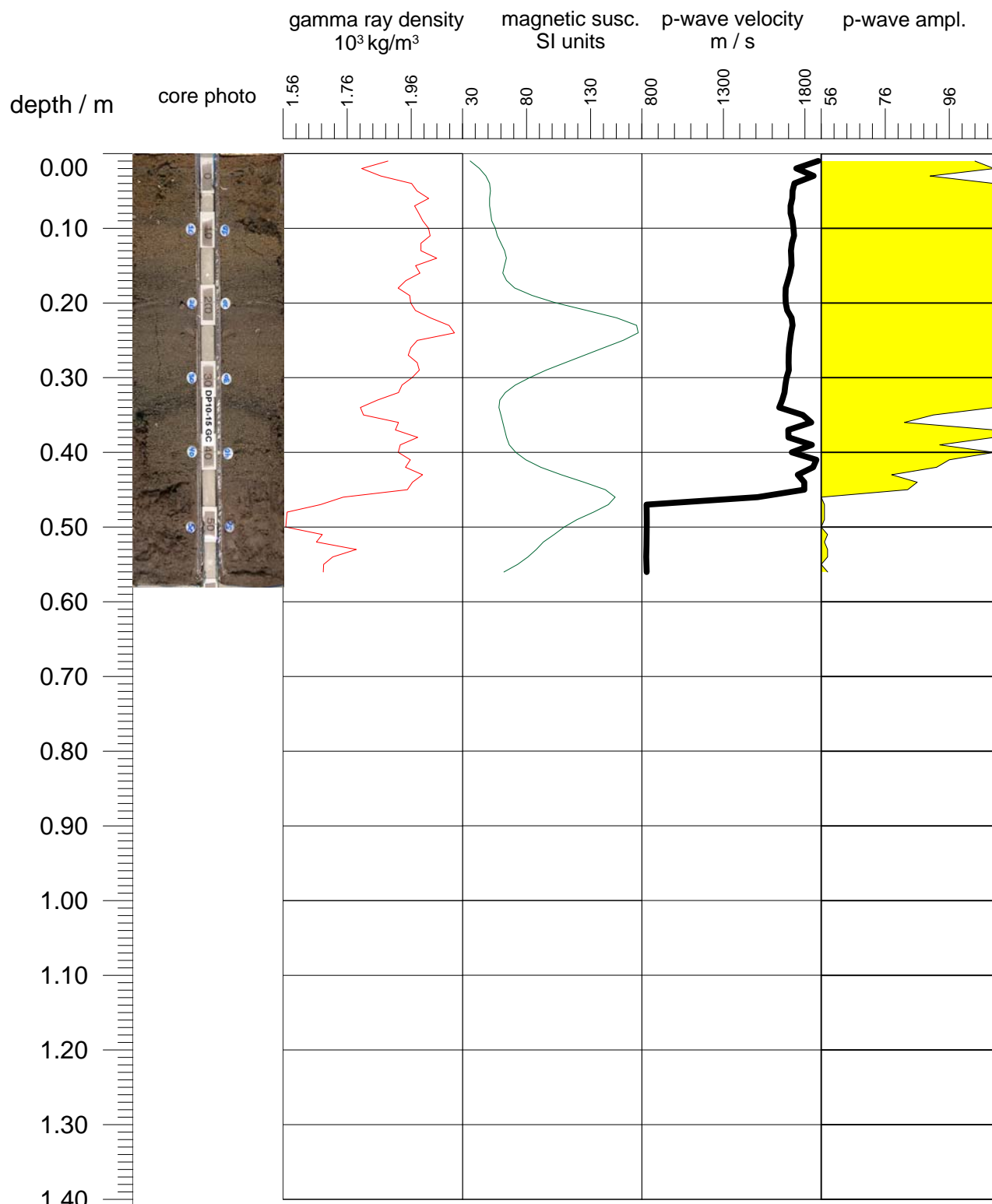


**Core: DP10-14**

**Project** Fugro Shallow Water  
Hudson River - Coxsackie

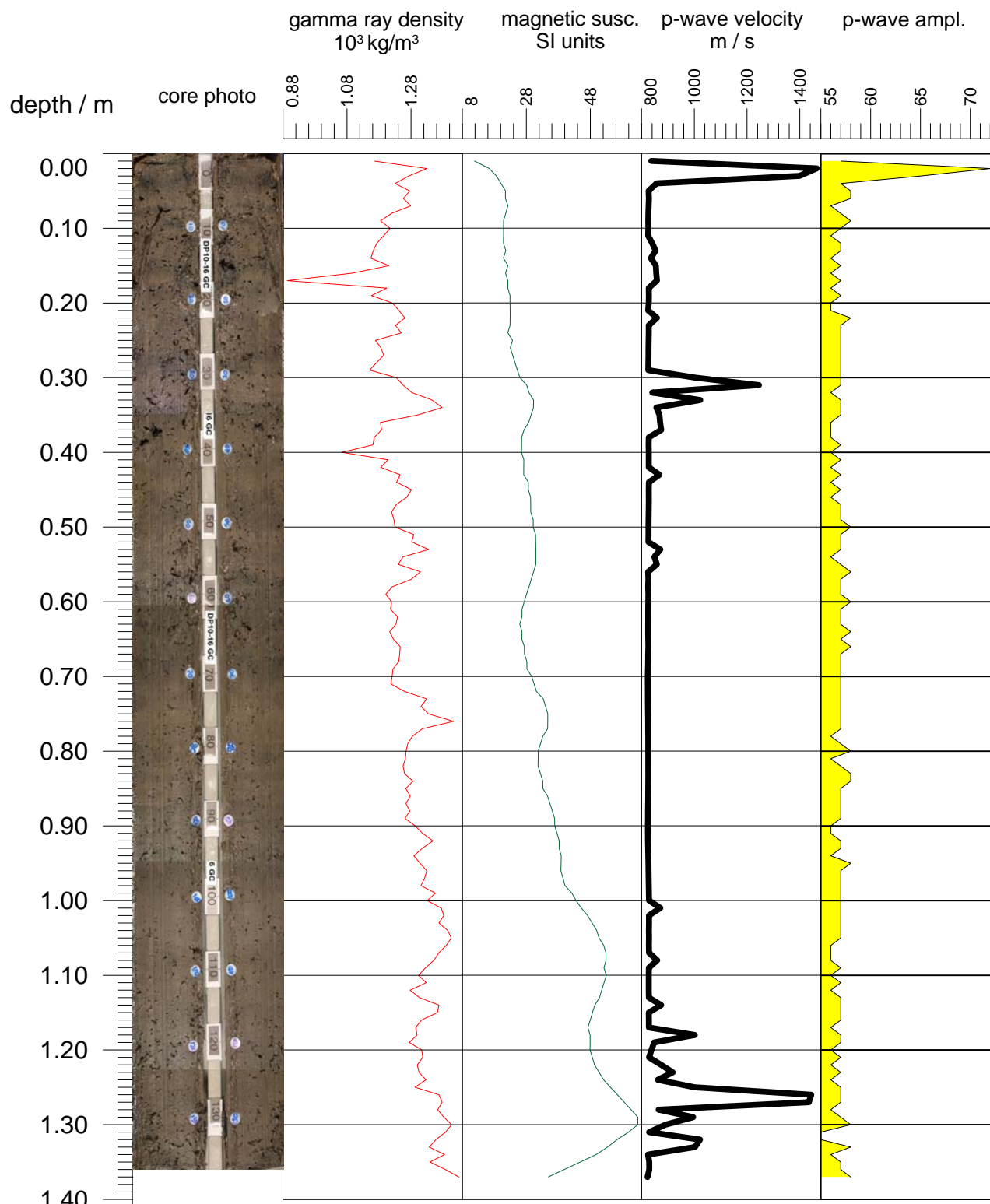
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-15**

**Project** Fugro Shallow Water  
Hudson River - Cocksackie

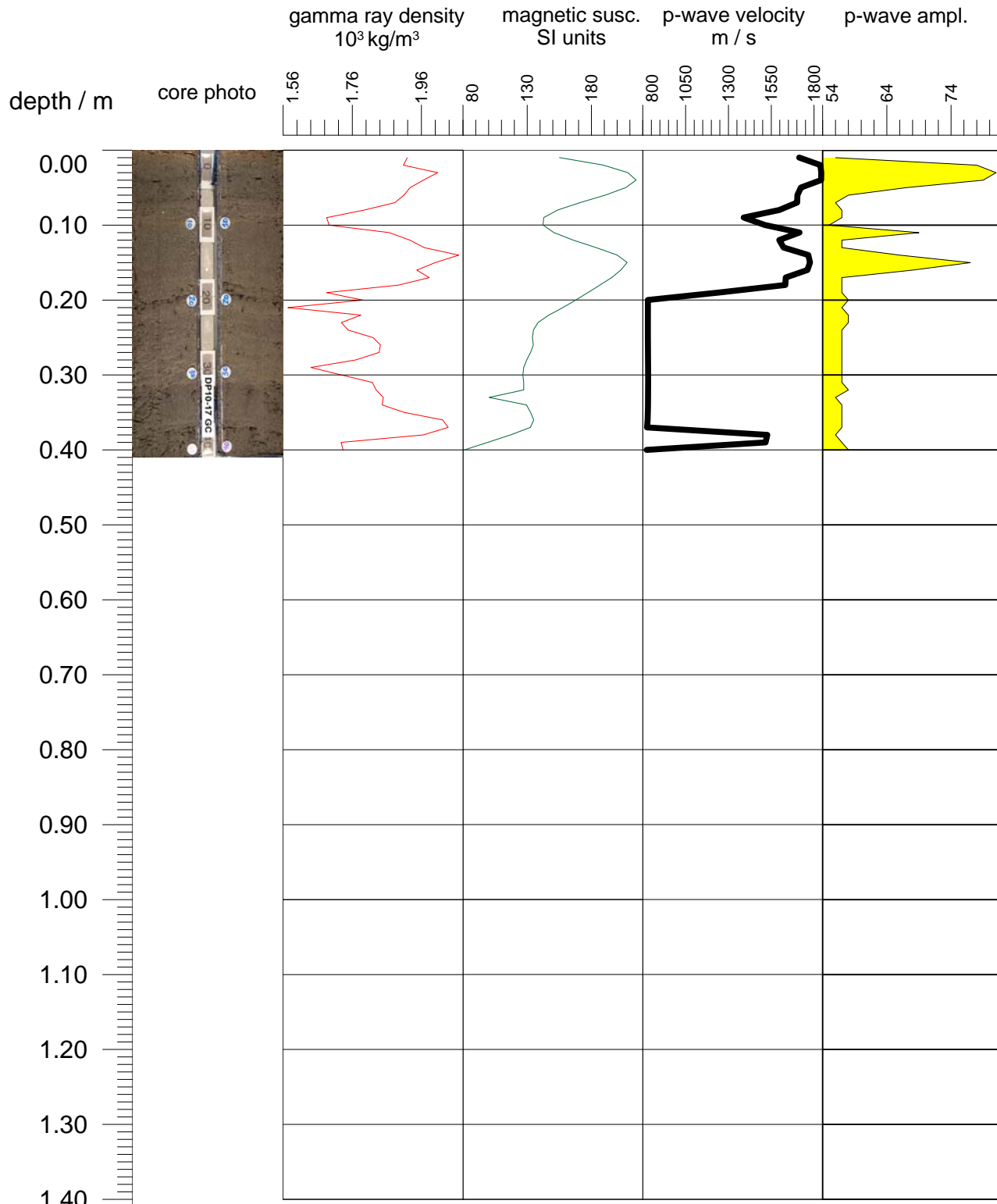
Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-16**

**Project** Fugro Shallow Water  
Hudson River - Cocksackie

Physical property analysis  
GeoTec® Multi-core logger

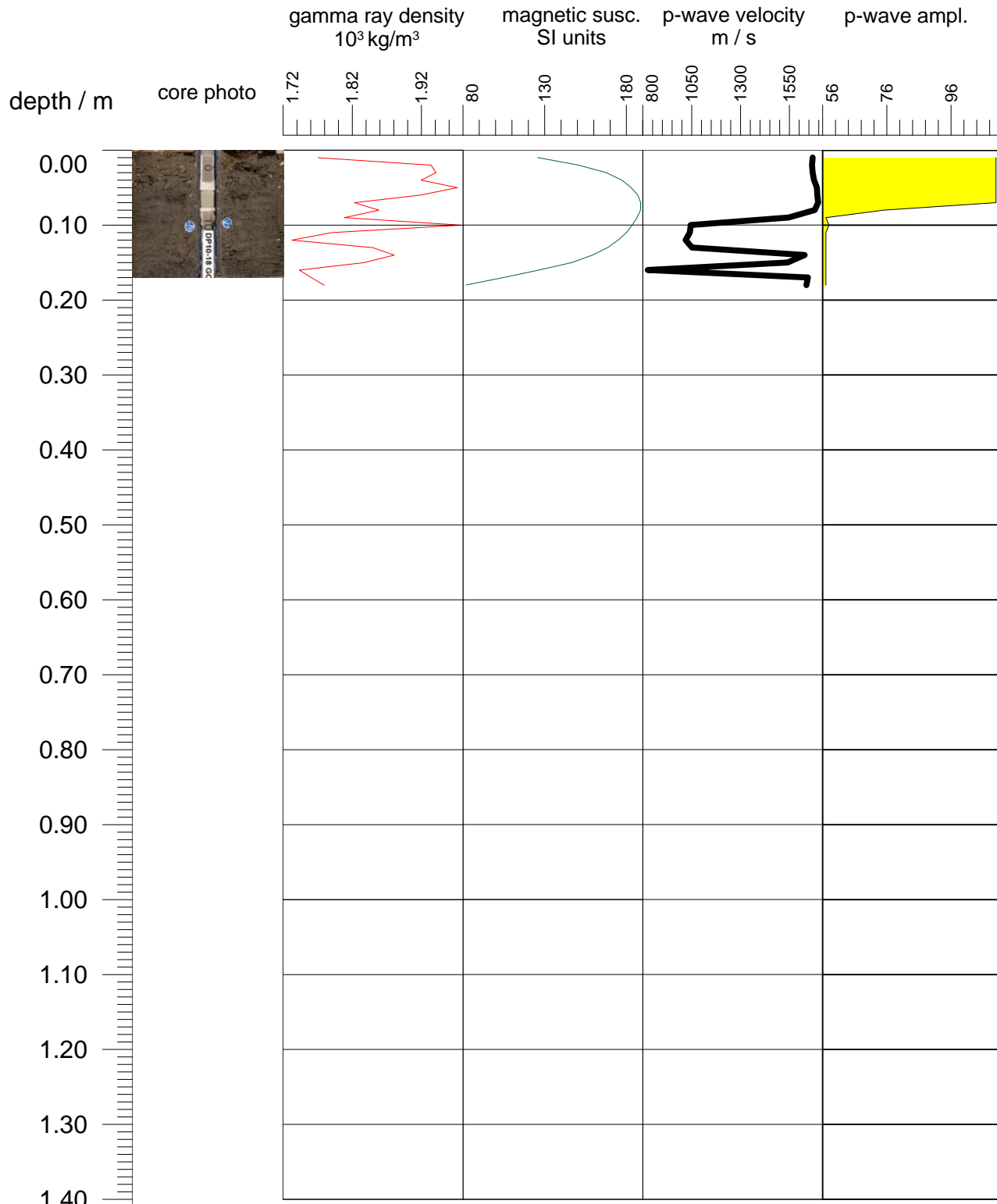
Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-17**

**Project** Fugro Shallow Water  
Hudson River - Coxsackie

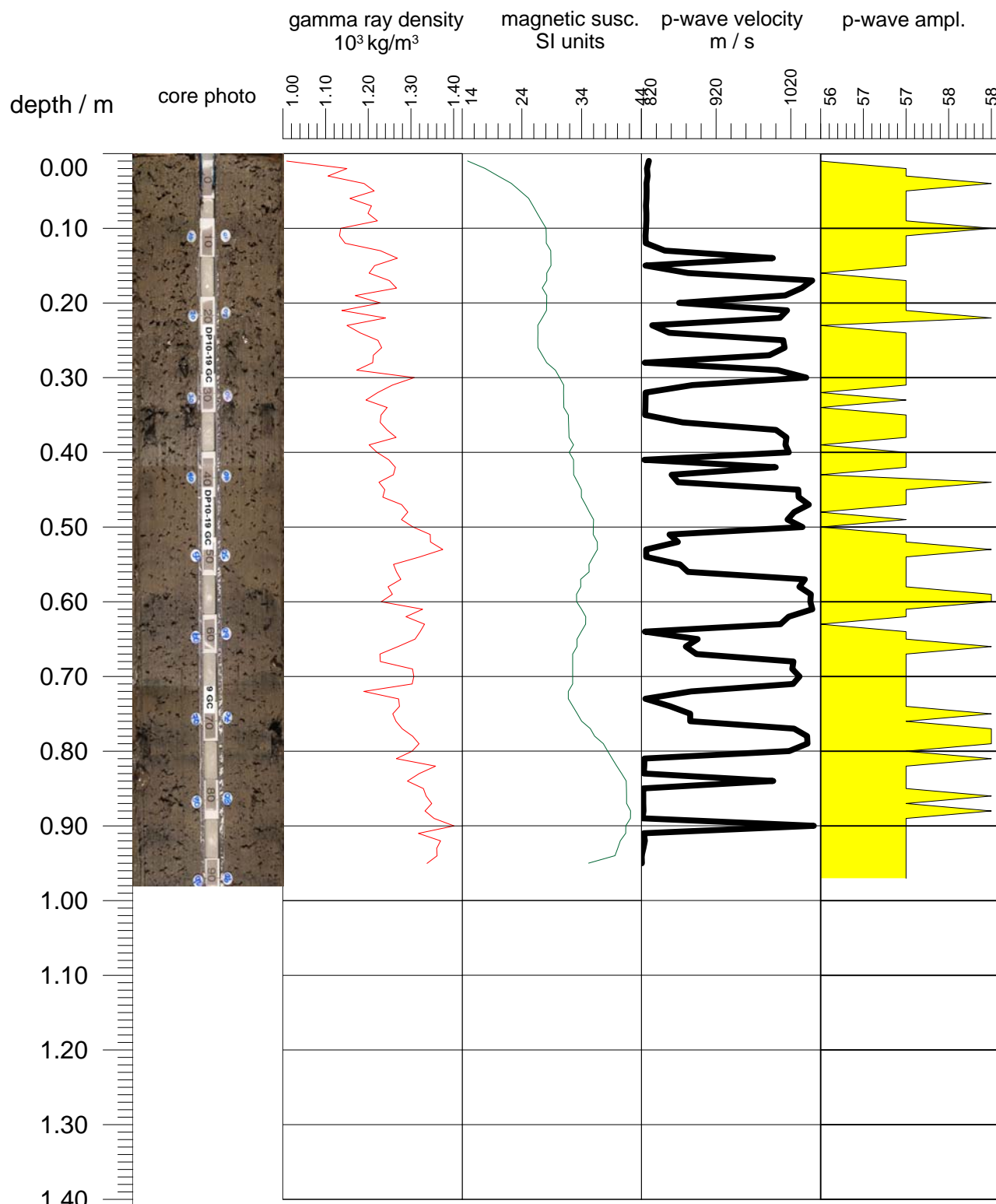
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-18**

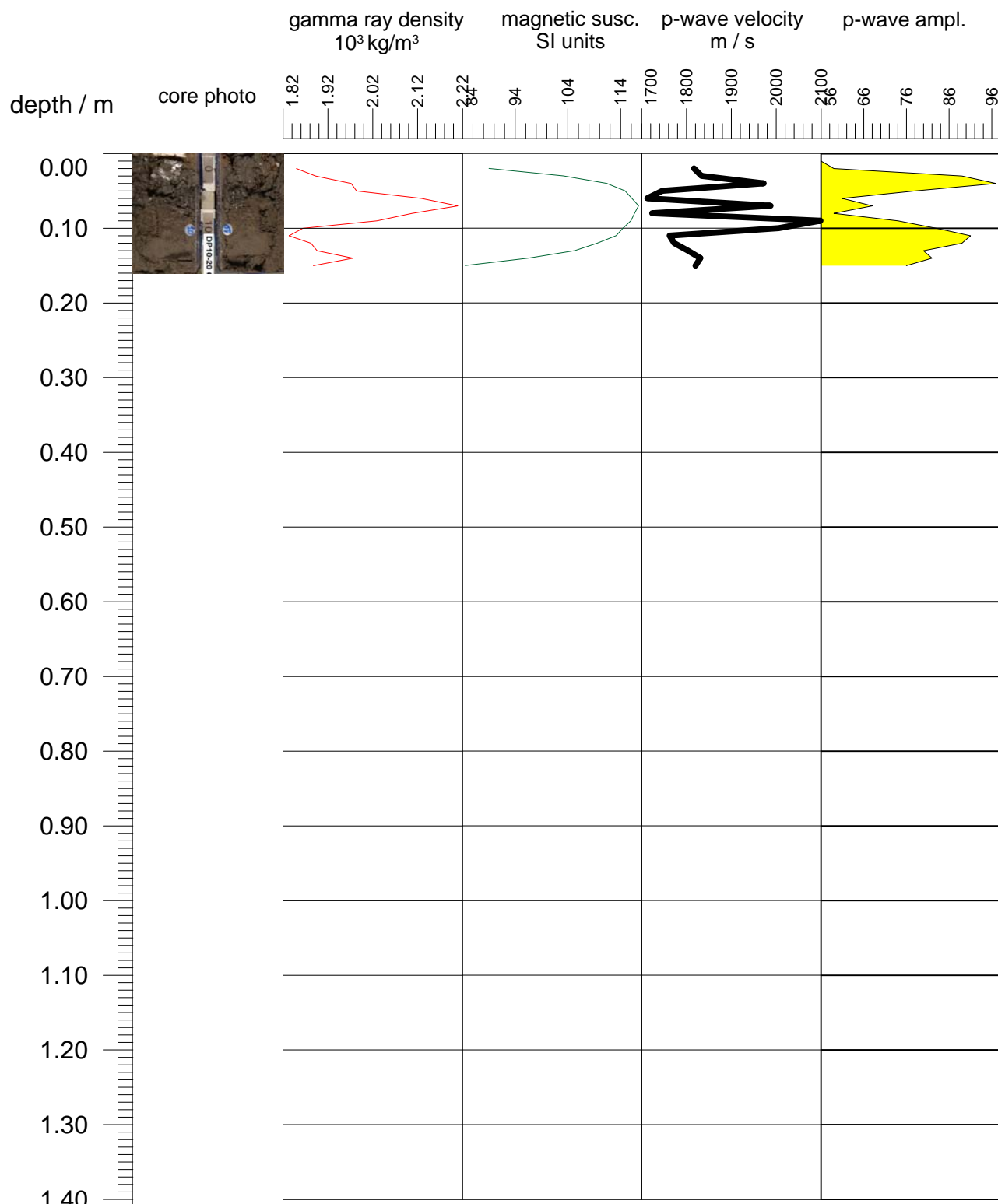
**Project** Fugro Shallow Water  
Hudson River - Stockport

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-19**

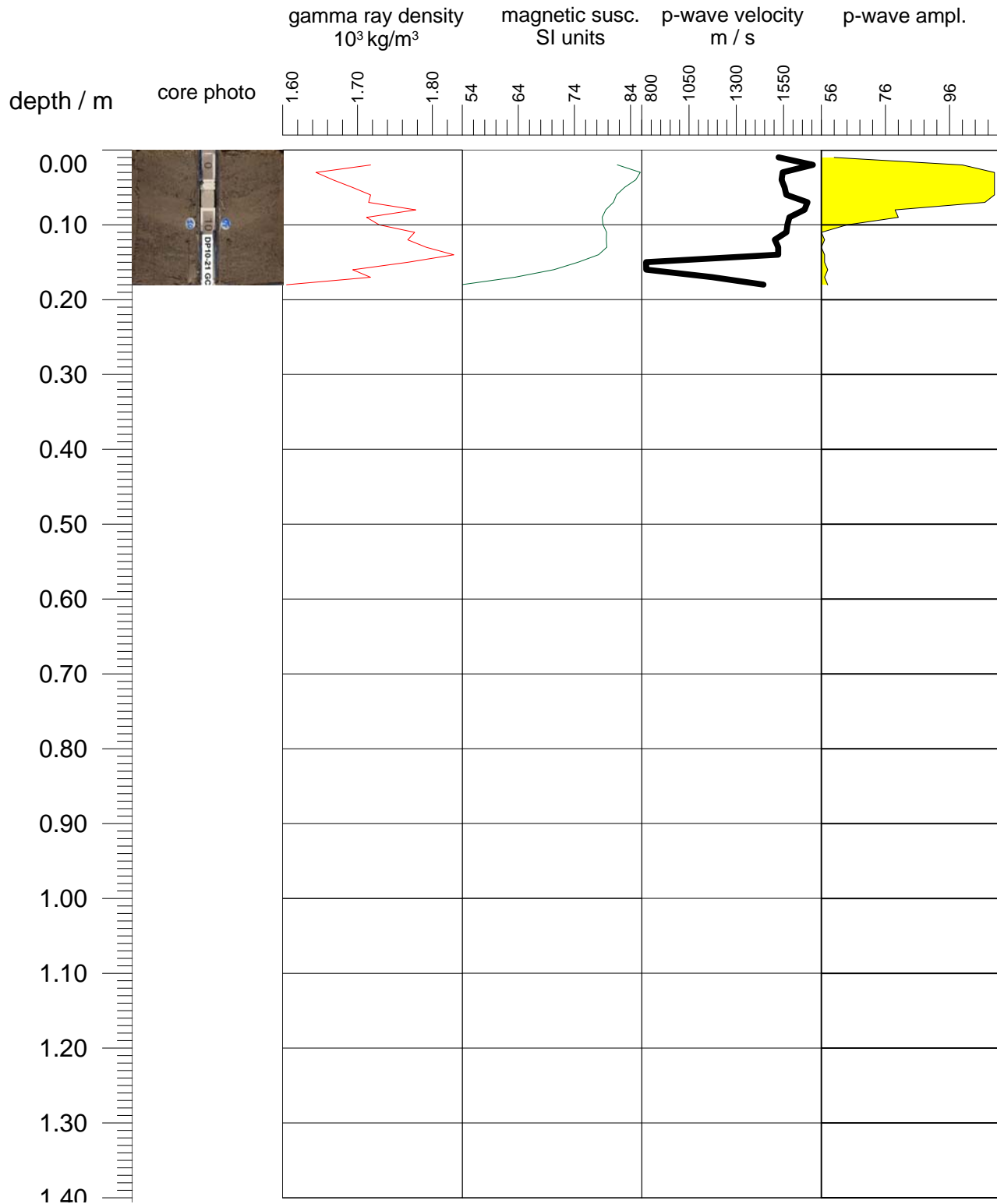
**Project** Fugro Shallow Water  
Hudson River - Stockport

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-20**

**Project** Fugro Shallow Water  
Hudson River - Stockport

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-21**

**Project** Fugro Shallow Water  
Hudson River - Hudson

Physical property analysis  
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**Core: DP10-22**

**Project** Fugro Shallow Water  
Hudson River - Hudson

Physical property analysis  
GeoTec® Multi-core logger

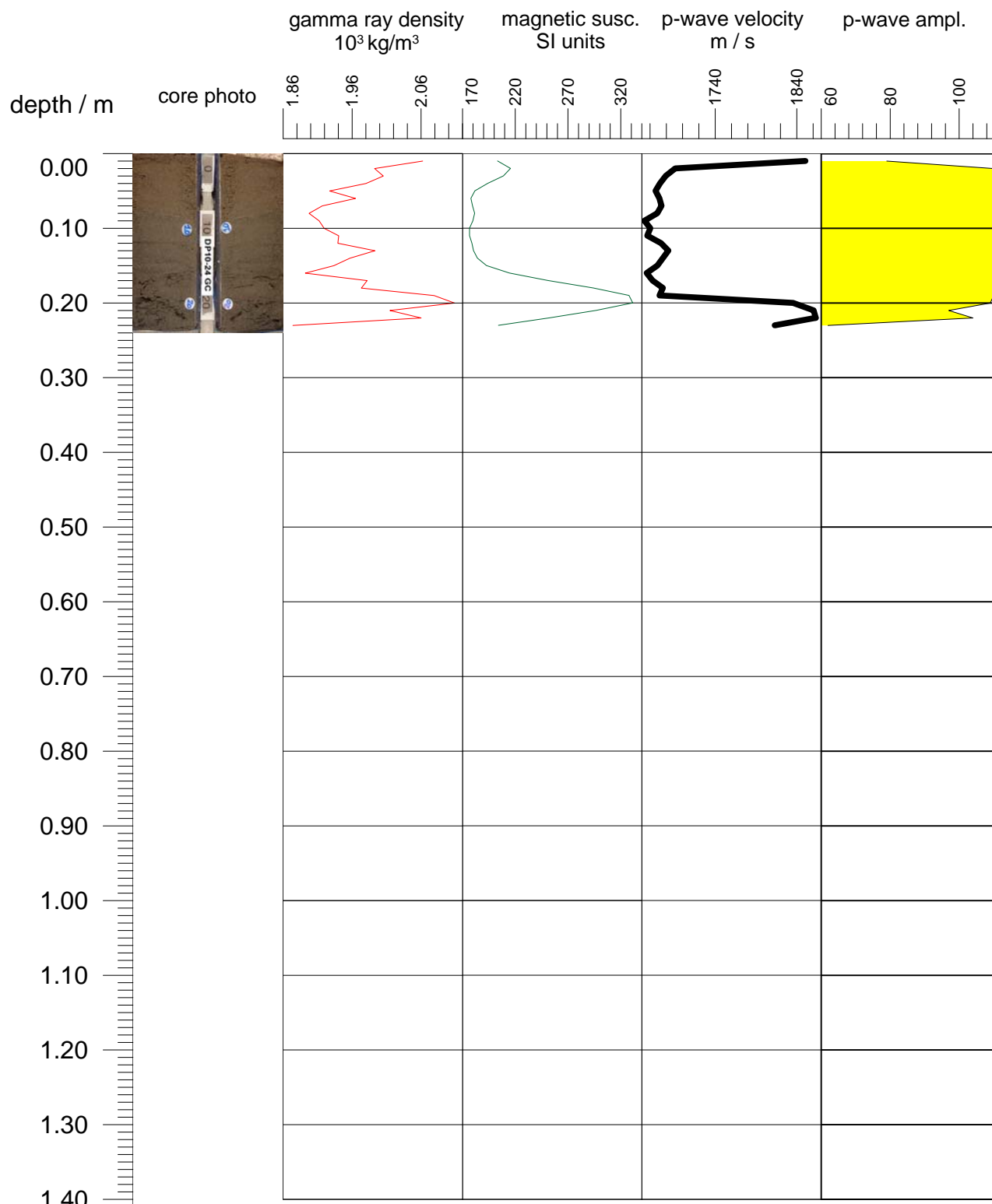
Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-23**

**Project** Fugro Shallow Water  
Hudson River - Hudson

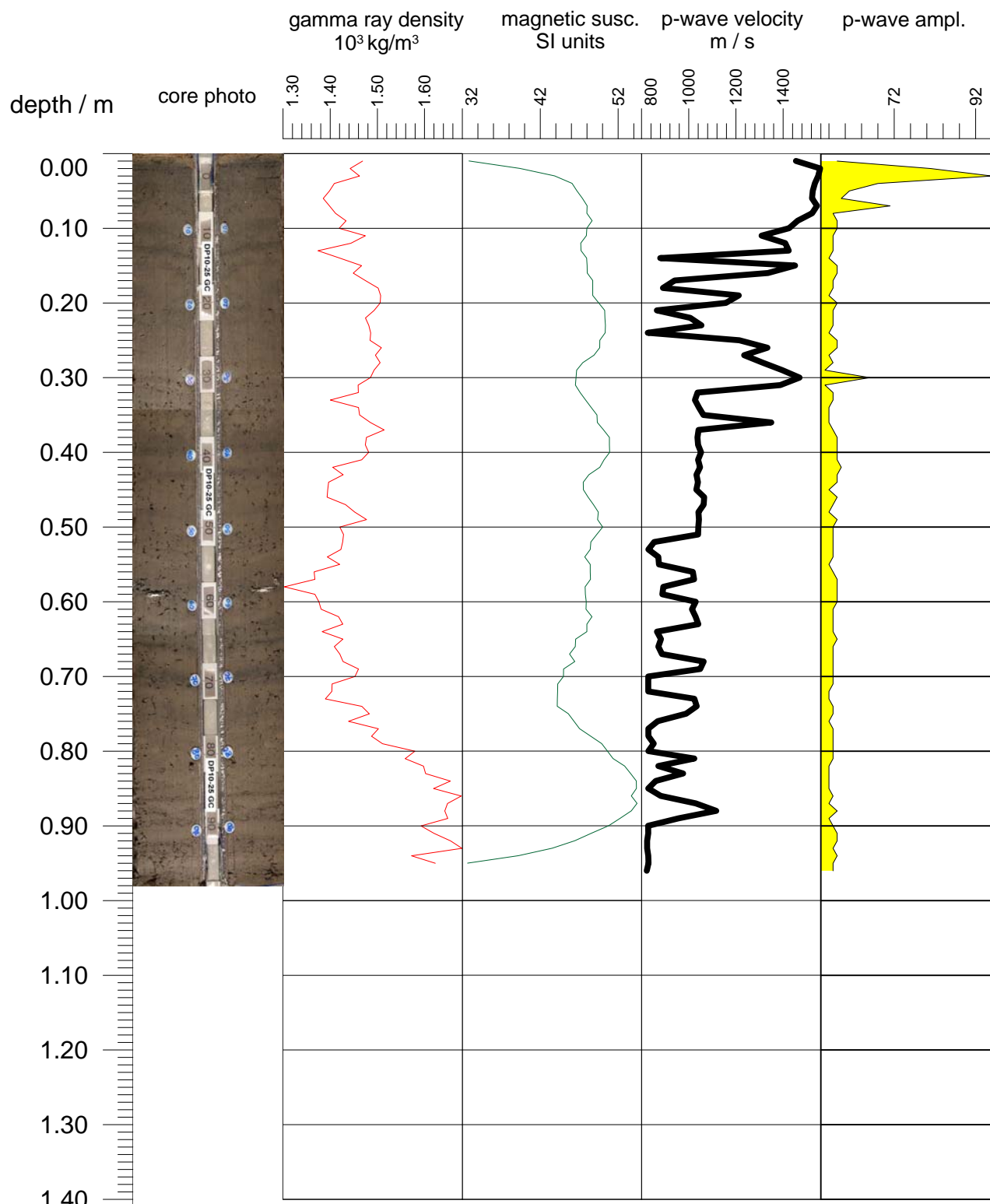
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-24**

**Project** Fugro Shallow Water  
Hudson River - Athens

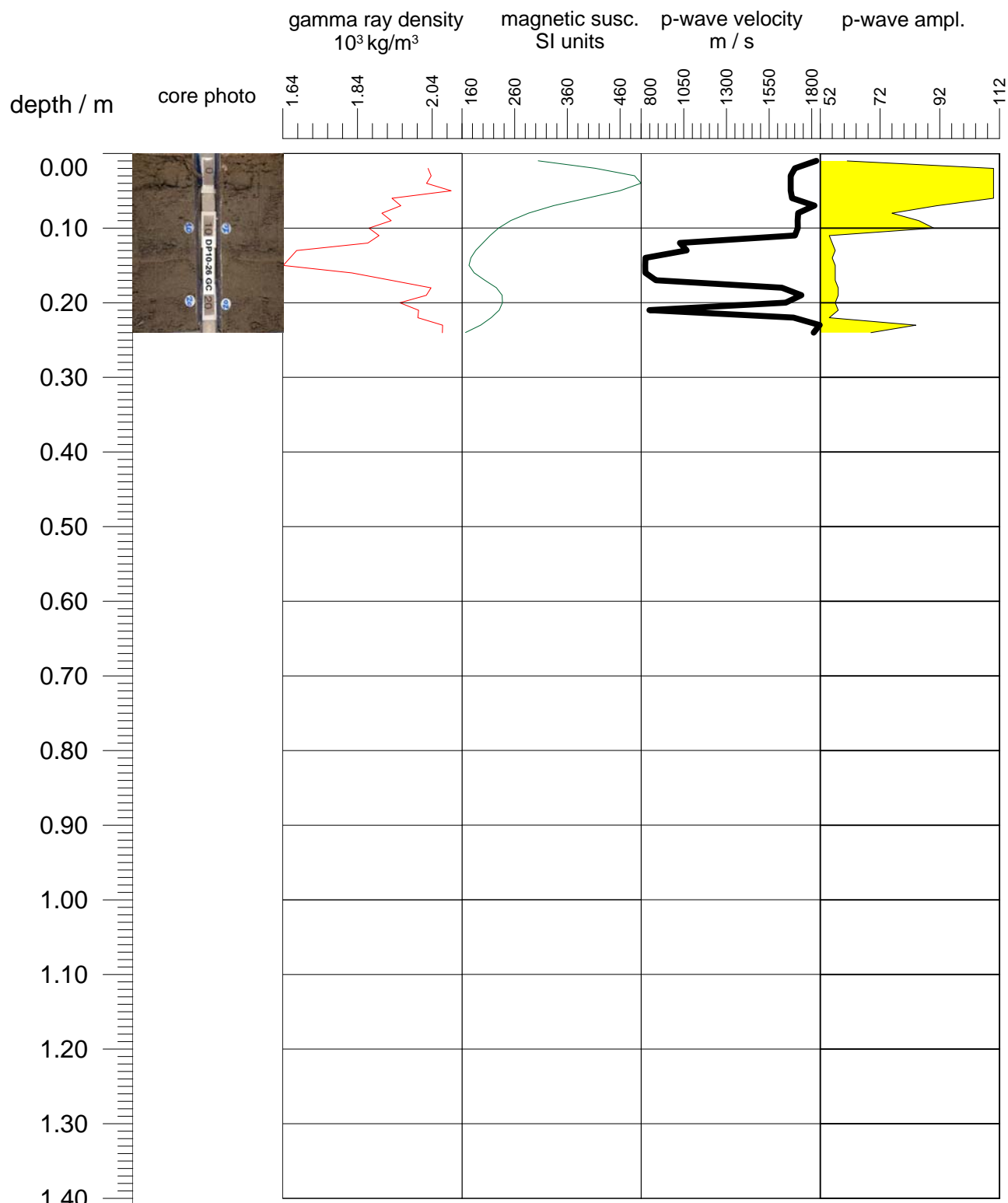
Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-25**

**Project** Fugro Shallow Water  
Hudson River - Athens

Physical property analysis  
GeoTec® Multi-core logger

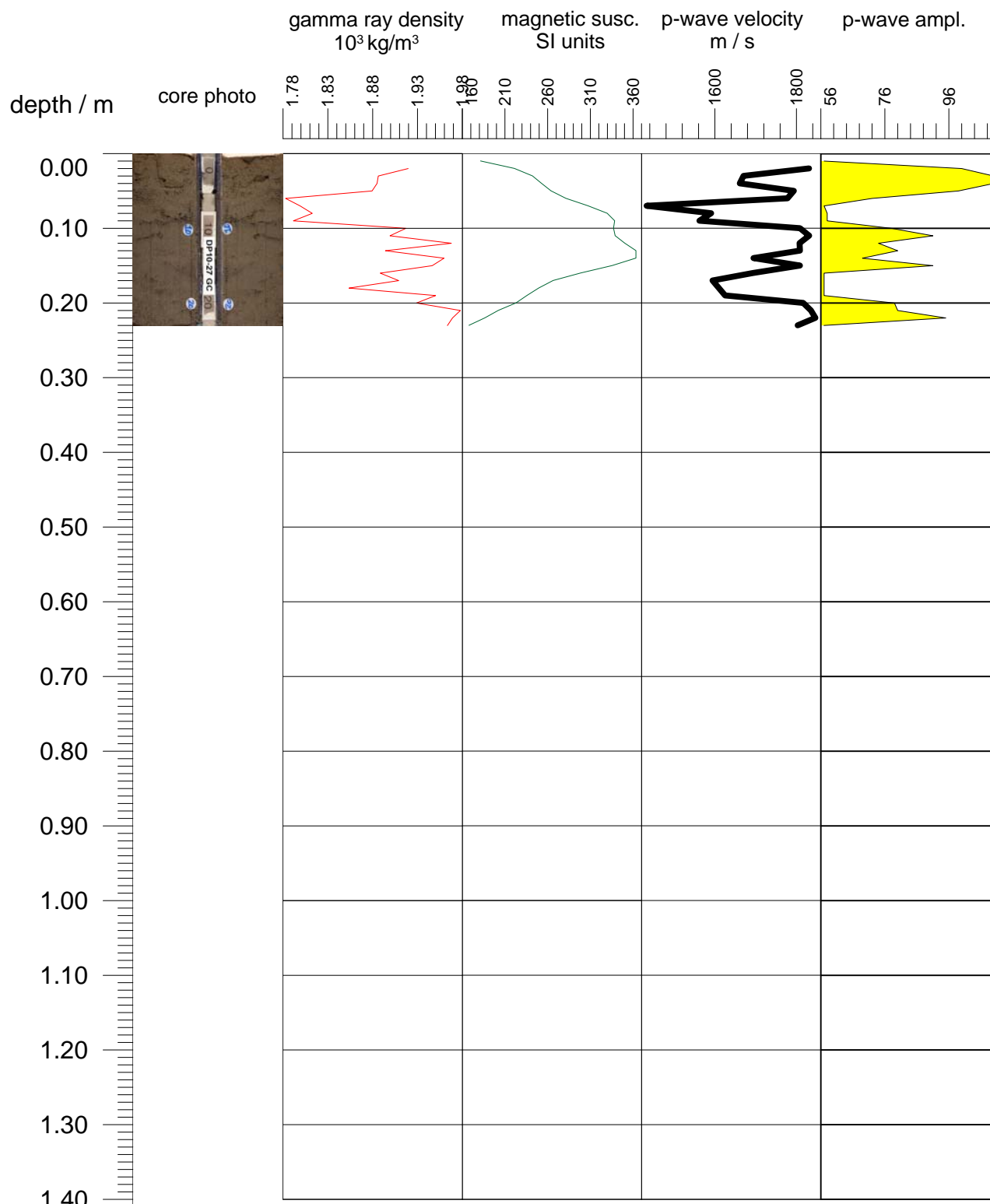
Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-26**

**Project** Fugro Shallow Water  
Hudson River - Catskill

Physical property analysis  
GeoTec® Multi-core logger

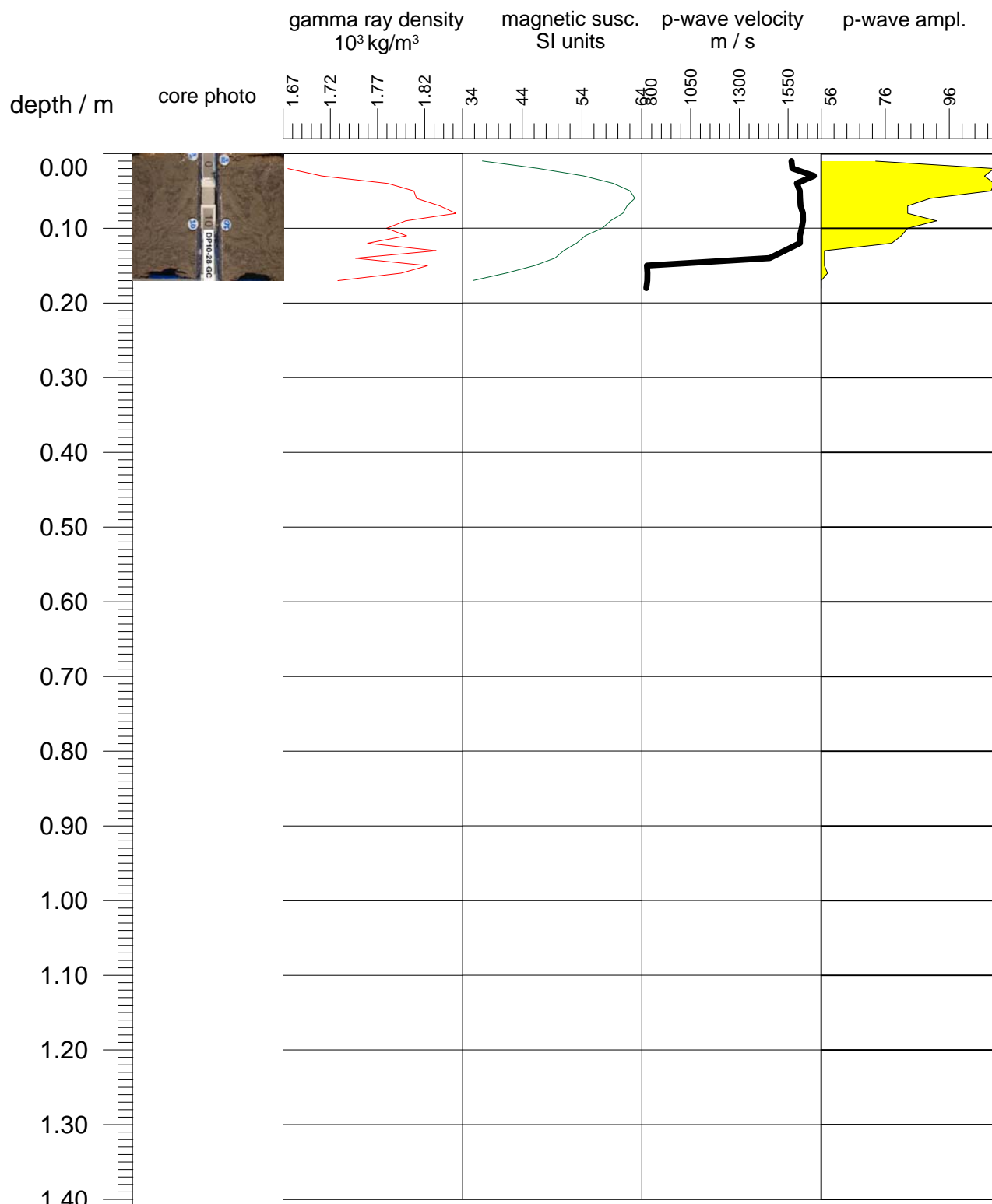
Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-27**

**Project** Fugro Shallow Water  
Hudson River - Catskill

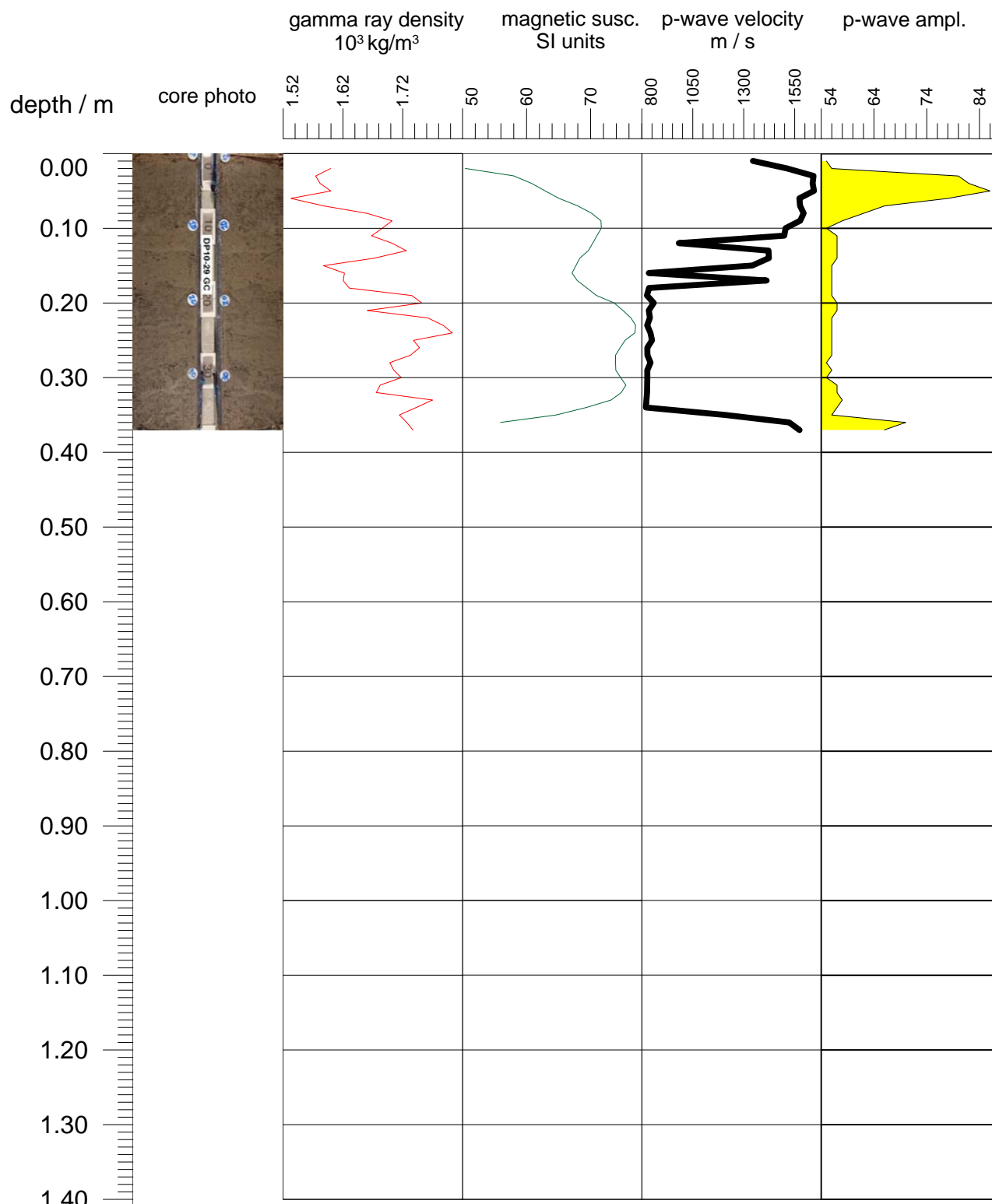
Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
COLUMBIA UNIVERSITY | EARTH INSTITUTE

**Core: DP10-28**

**Project** Fugro Shallow Water  
Hudson River - Catskill

Physical property analysis  
GeoTec® Multi-core logger

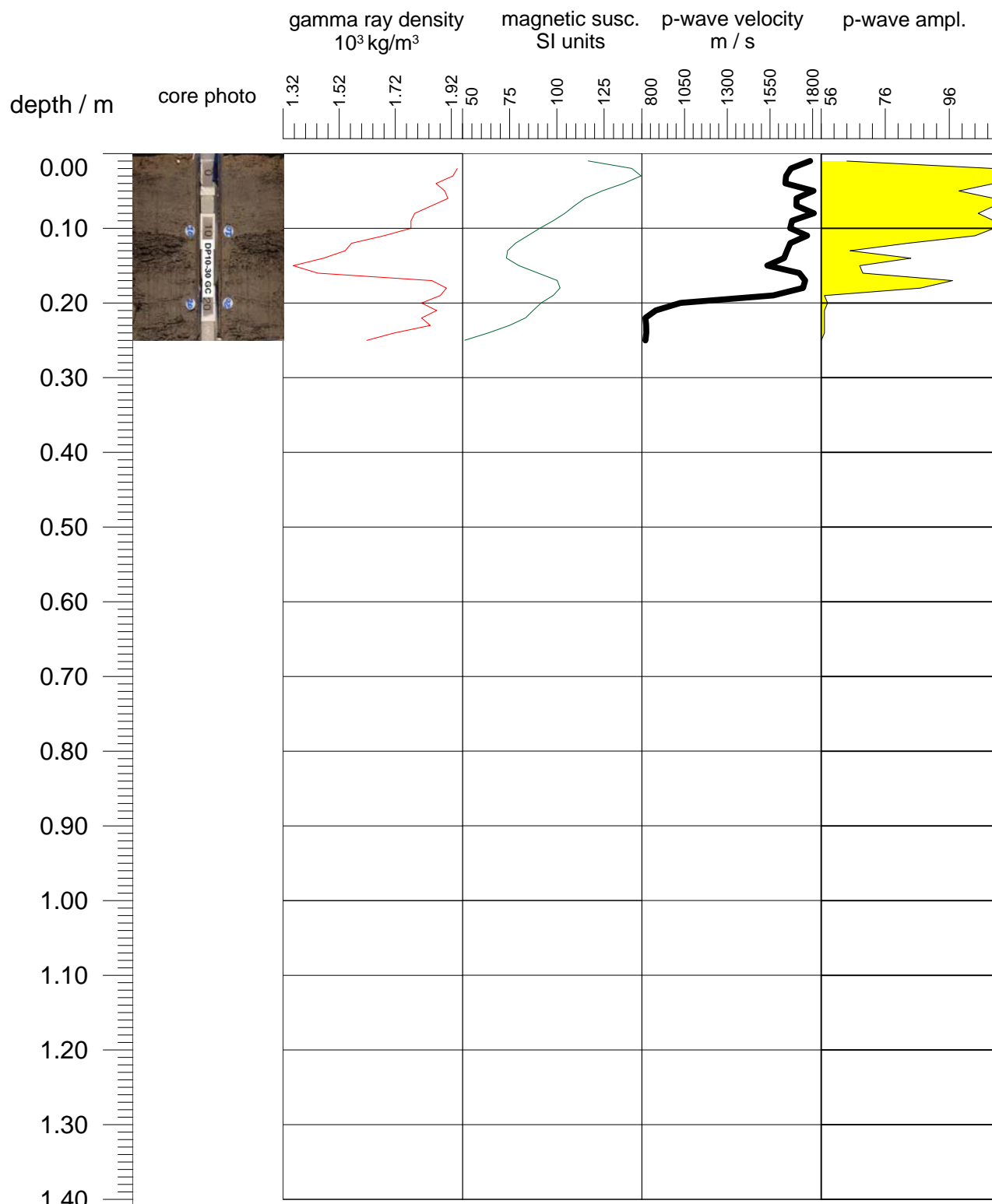
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**Project** Fugro Shallow Water  
Hudson River - Inbocht Bay

Physical property analysis  
GeoTec® Multi-core logger

Lamont-Doherty Earth Observatory  
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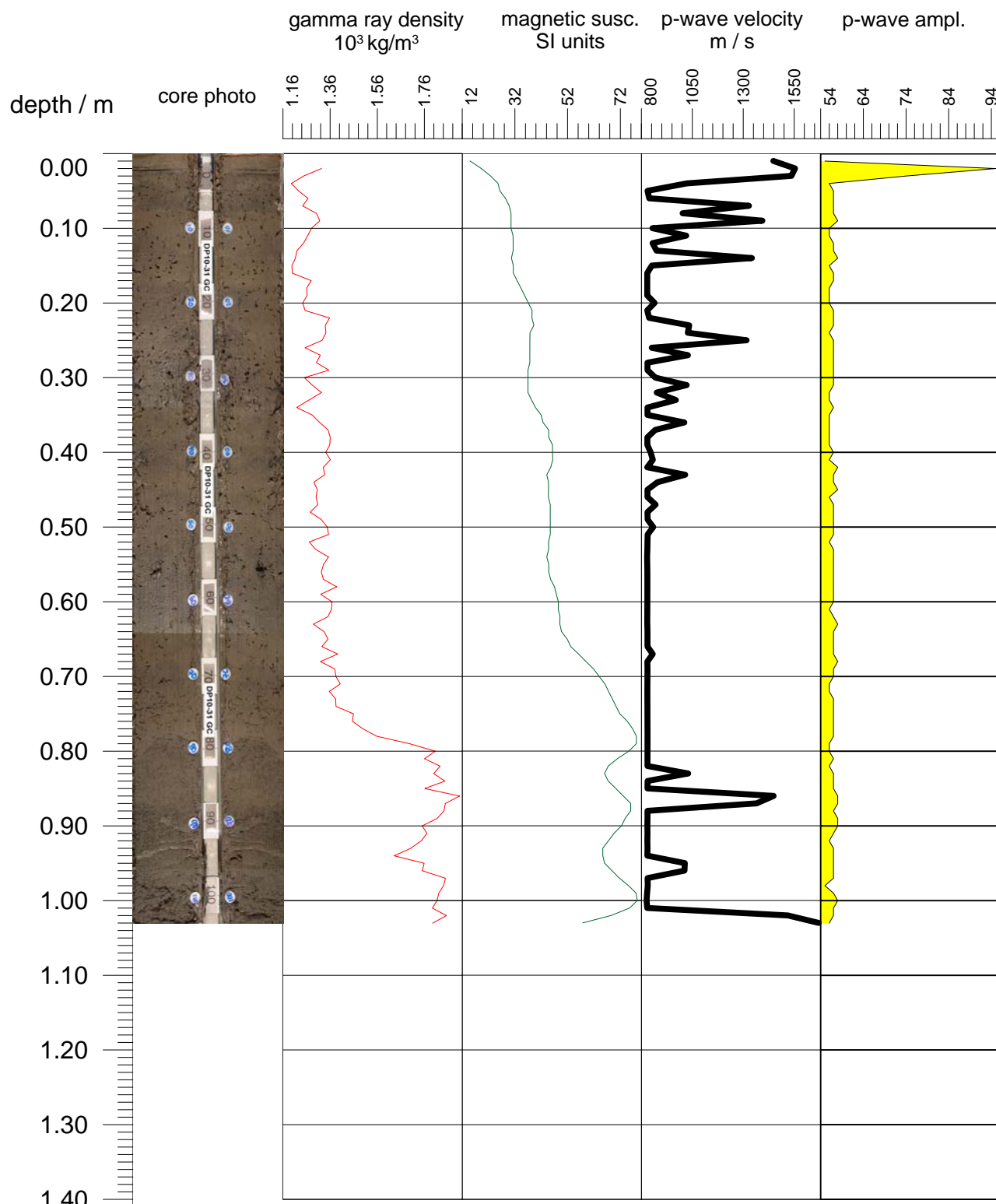


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**Project** Fugro Shallow Water  
Hudson River - Inbocht Bay

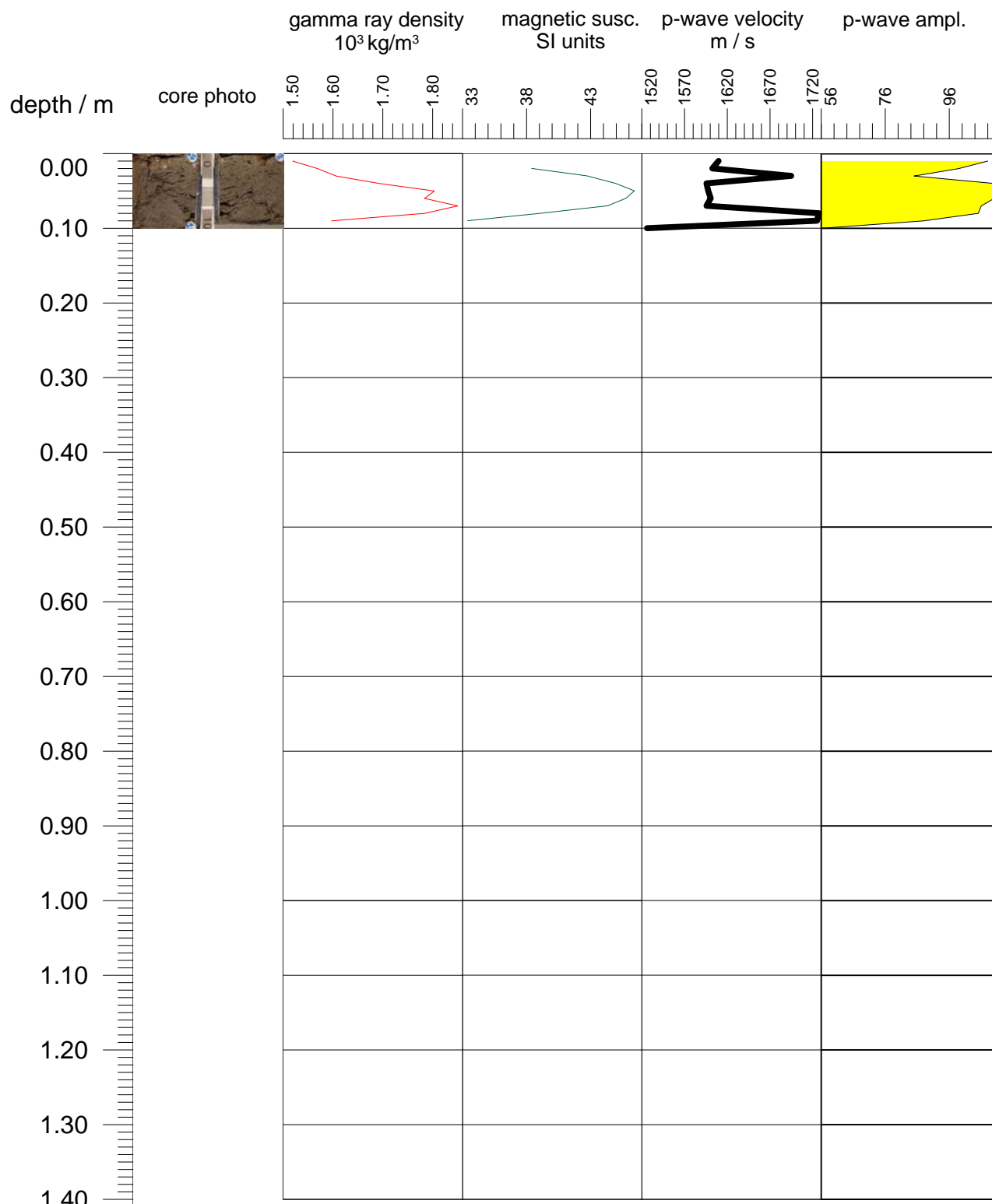
Physical property analysis  
GeoTec® Multi-core logger

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**Core: DP10-31**

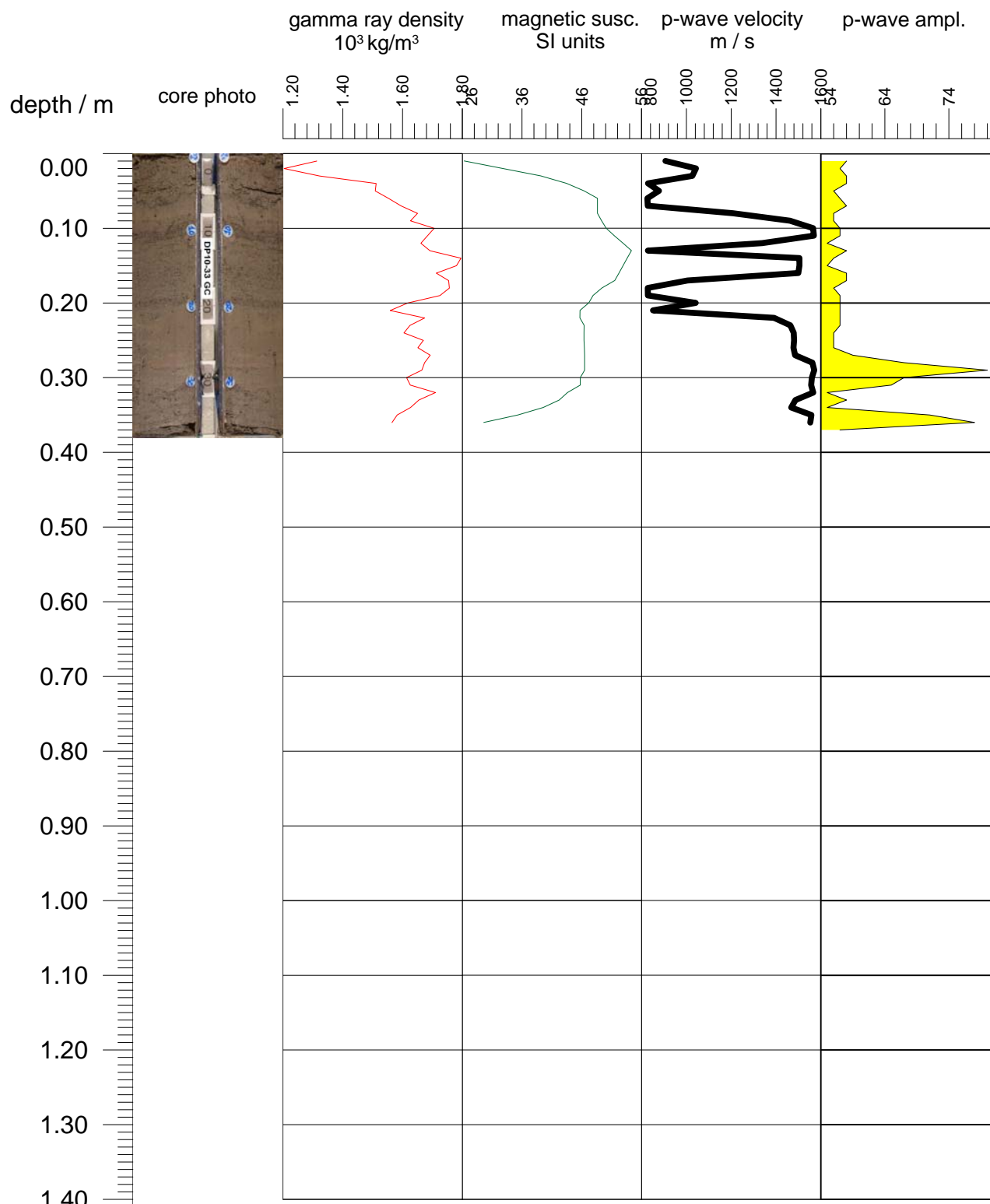
**Project** Fugro Shallow Water  
Hudson River - Inbocht Bay

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-32**

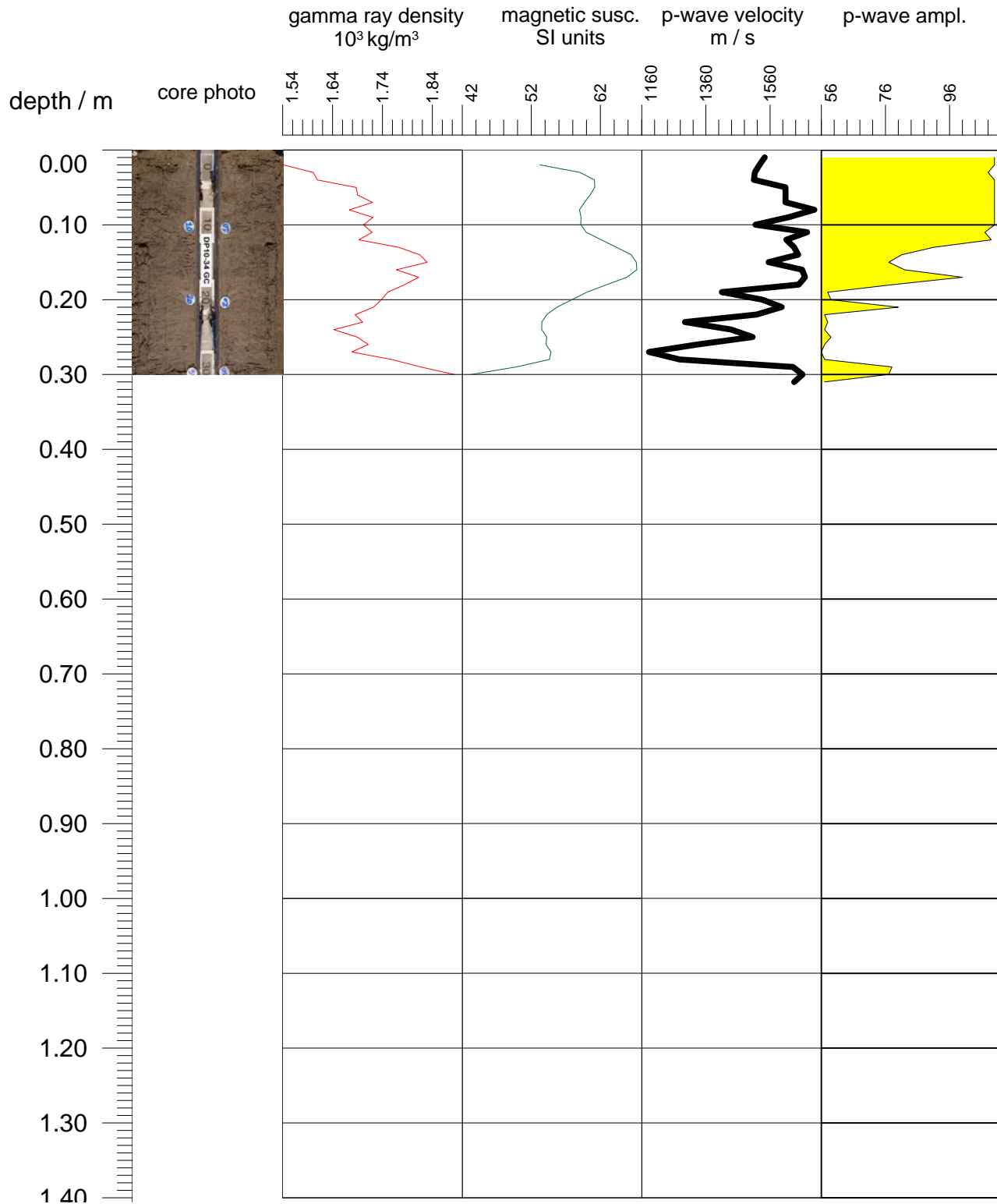
**Project** Fugro Shallow Water  
Hudson River - Saugerties

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-33**

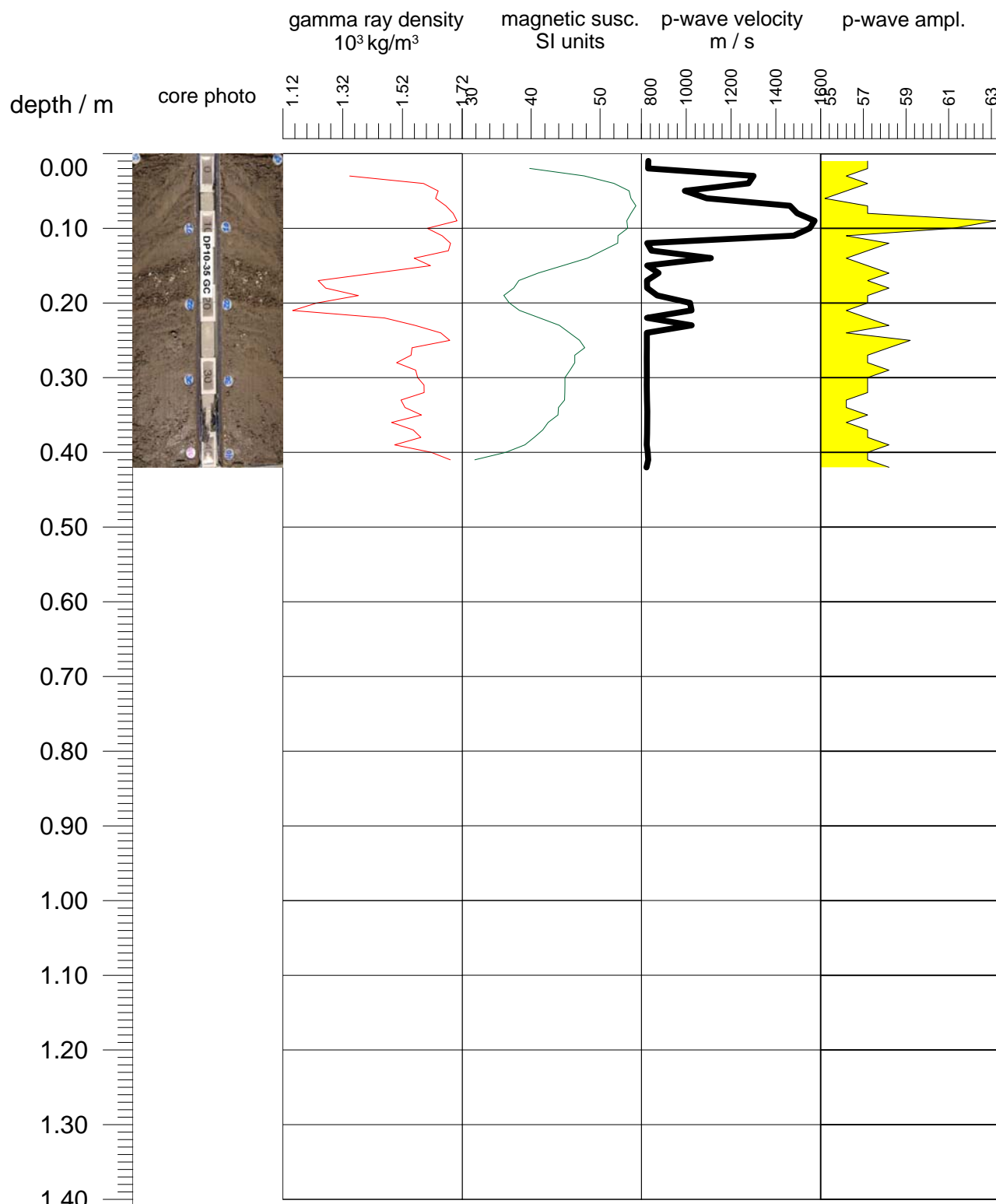
**Project** Fugro Shallow Water  
Hudson River - Saugerties

Physical property analysis  
GeoTec® Multi-core logger

**Core: DP10-34**

**Project** Fugro Shallow Water  
Hudson River - Saugerties

Physical property analysis  
GeoTec® Multi-core logger

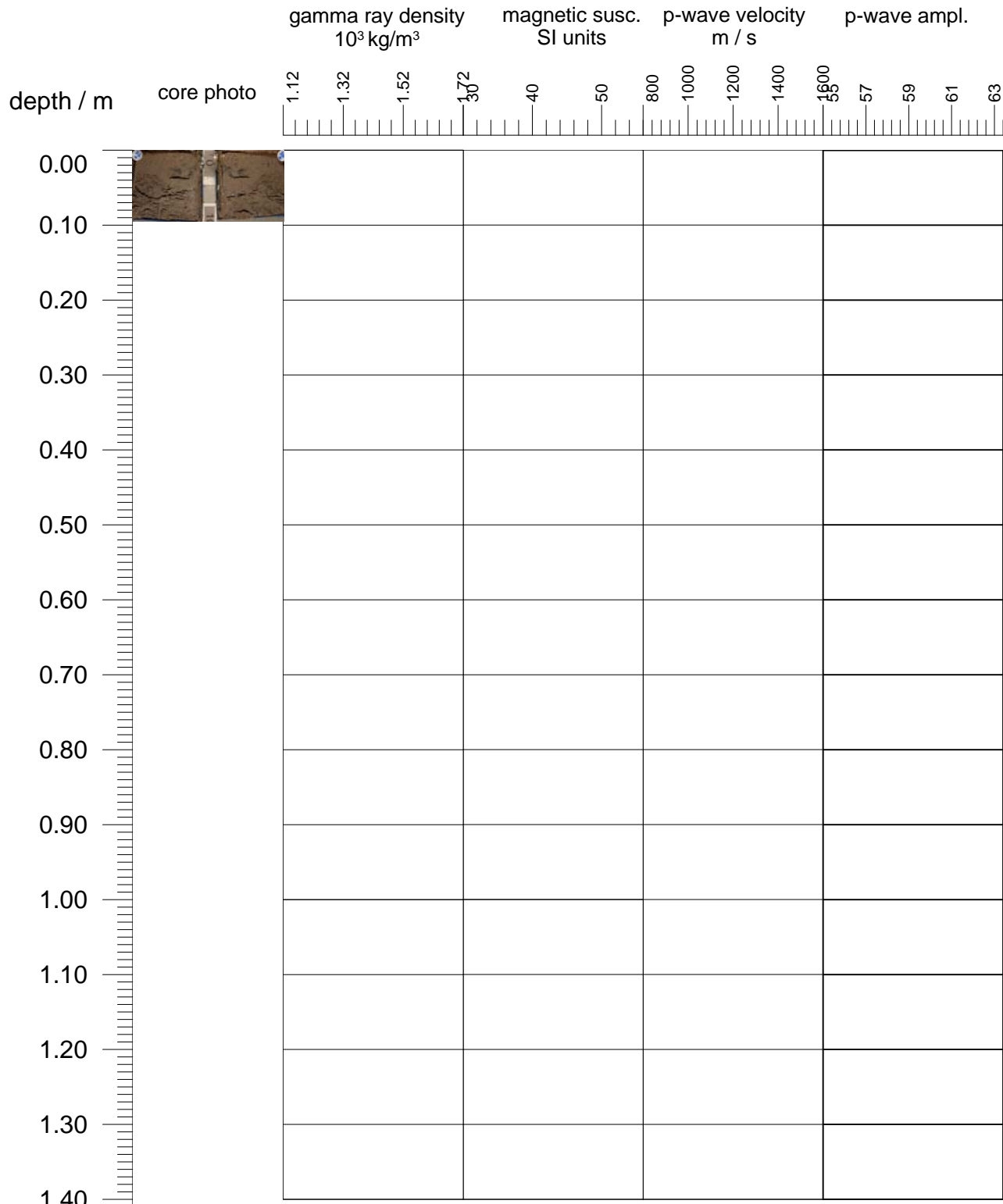
**Core: DP10-35**

**Project** Fugro Shallow Water  
Hudson River - Saugerties

Physical property analysis  
GeoTec® Multi-core logger

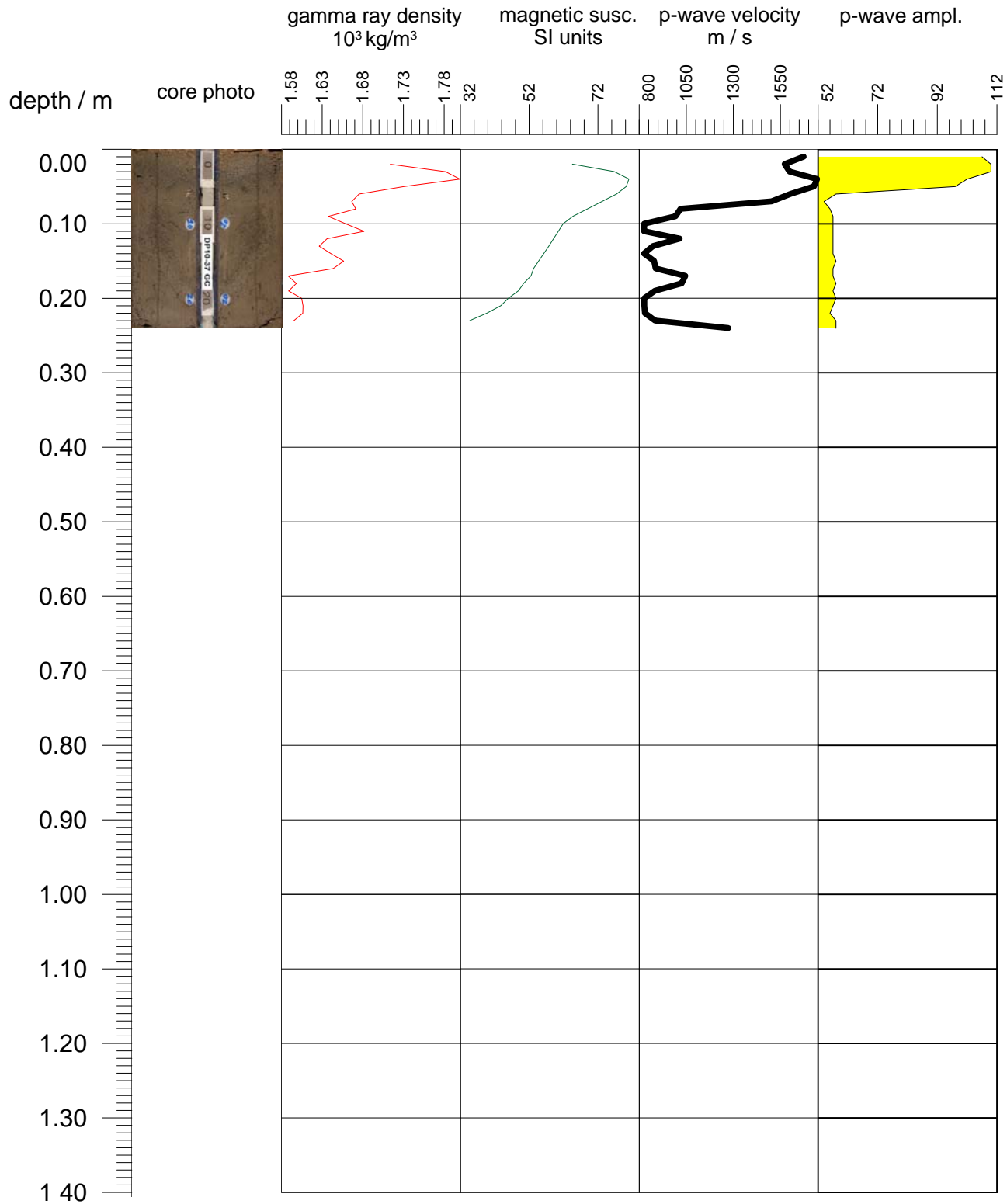
**Core: DP10-36**

no measurements - too short



**Project** Fugro Shallow Water  
 Hudson River - Saugerties

Physical property analysis  
 GeoTec® Multi-core logger

**Core: DP10-37**

**Project** Fugro Shallow Water  
Hudson River - Saugerties

Physical property analysis  
GeoTec® Multi-core logger



## Appendix 2: Sediment Core Descriptions

### DP10-01 GC - Megascopic Description

Latitude:	42° 35.6708' N	Longitude:	73° 43.638' W
Core length:	20.5 cm	Water Depth:	12.2 m
Date taken:	April 6, 2010	Date opened:	June 3, 2010
Date described:	July 7, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-5.5 cm                      TERRIGENOUS CLAY  
 [Clay], dark grayish brown (2.5Y3.5/2); wet and soupy. Carbonate content is low. Coarse fraction 4% consists of abundant quartz, plant debris; trace feldspar, mica, framboidal pyrite, garnet, iron oxide stained grains, planktonic foraminifera, shell fragments, hornblende, diatoms, monazite, epidote, opaque grains, volcanic glasses(?), tourmaline and zircon. Basal contact is an uneven, bioturbated, distinct color and texture change. Sampled at 3cm.

5.5-20.5 cm                      TERRIGENOUS CLAY  
 [Clay], dark gray (N3.5/0) with mottles of gray (N5/0) and inclined laminations of coarser sediment throughout interval; dark grayish brown (2.5Y3.5/2) bioturbations at 5.5-8cm; moist and pliable. Carbonate content is low. Coarse fraction 1% consists of trace quartz, planktonic foraminifera, iron oxide stained grains, plant debris, volcanic glasses(?), opaque grains, epidote, monazite, garnet, xenotime, zircon and rhombohedral grains. Sampled at 11cm.

End of core.

#### Original Colors:

0-5cm                      dark olive gray (5Y3/2)  
 5-20.5cm                      dark gray (N4/0), mottled

**DP10-02 GC - Megascopic Description**

Latitude:	42° 37.3932' N	Longitude:	73° 45.1938' W
Core length:	103.5 cm	Water Depth:	9.8 m
Date taken:	April 6, 2010	Date opened:	June 3, 2010
Date described:	July 7, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-103.5 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Clay], very dark gray (2.5Y3/2) with plant debris (mostly leaves) throughout interval; bed of plant debris at 44-48cm; very small shell fragments at 72.5cm; wet and soft. Carbonate content is low. Coarse fraction 10% at 15cm consists of abundant quartz, plant debris; trace iron oxide stained grains, mica, garnet, magnetite, diatoms, feldspar, zircon, opaque grains and epidote. Coarse fraction 7% at 95cm consists of abundant quartz, plant debris; trace mica, magnetite, framboidal pyrite, diatoms, feldspar, iron oxide stained grains, opaque grains, garnet, hornblende, epidote and echinoid spines. Sampled at 15cm and 95cm.

End of core.

Original Colors:

0-103.5cm

very dark gray (2.5Y3/1)

**DP10-03 GC - Megascopic Description**

Latitude:	42° 42.4737' N	Longitude:	73° 42.3114' W
Core length:	60.5 cm	Water Depth:	4.4 m
Date taken:	April 6, 2010	Date opened:	June 3, 2010
Date described:	July 7, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-36.5 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey Sand], black (5Y2.5/2) interbedded sand and sandy clay with shell fragments and plant debris throughout interval; wet and pliable. Carbonate content is low. Coarse fraction 55% consists of abundant quartz; common plant debris; trace feldspar, slag, iron oxide stained grains, shell fragments, mica, brick fragments, garnet, magnetite, opaque grains, epidote, pyroxene, monazite, diatoms, framboidal pyrite, tourmaline, zircon and rhombohedral grains. Basal contact is an inclined, distinct texture change. Sampled at 12cm.

36.5-60.5 cm                      TERRIGENOUS (BIOSILICIOUS) CLAY  
 [Clay], black (5Y2.5/2); shell fragments at 40-42cm and 46-48cm; sandy layer at 47cm, inclined beds of sand at 50cm and 53-55cm; mottle of black (N2.5/0) sand at 37.5cm; wet and soft. Carbonate content is low. Coarse fraction 6% consists of abundant quartz, plant debris; trace iron oxide stained grains, mica, framboidal pyrite, brick fragments, magnetite, garnet, opaque grains, diatoms, epidote, feldspar, pyroxene and hornblende. Sampled at 45cm.

End of core.

## Original Colors:

0-5cm	dark olive gray (5Y3/2)
5-23cm	black (5Y2.5/2)
23-60.5cm	black (5Y2.5/1)

**DP10-04 GC - Megascopic Description**

Latitude:	42° 28.7448' N	Longitude:	73° 47.3217' W
Core length:	50.5 cm	Water Depth:	2.5 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 7, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-22 cm

**TERRIGENOUS CLAY**

[Sandy clay], dark olive gray (5Y3/2) sand with sandy clay layers throughout interval; inclined layer of very dark grayish brown (2.5Y3/2) clay at 1cm, bed of same with some sand at 6-8cm; small pieces of wood at 22cm; wet and soft. Carbonate content is low. Coarse fraction 30% consists of abundant quartz; rare plant debris; trace garnet, brick fragments, magnetite, iron oxide stained grains, mica, framboidal pyrite, opaque grains, shell fragments, diatoms, feldspar, hornblende, rhombohedral grains, epidote and zircon. Basal contact is a distinct texture change. Sampled at 12cm.

22-50.5 cm

**TERRIGENOUS CLAY**

[Clay], dark olive gray (5Y3/2) with beds of coarser sediment at 28-32cm and 38-40cm; layer of very dark grayish brown (2.5Y3/2) clay at 35.5cm, laminations of same at 40.5cm and 41.5cm; wet and soft. Carbonate content is low. Coarse fraction 8% consists of abundant quartz, plant debris; trace garnet, brick fragments, mica, glauconite, magnetite, opaque grains, shell fragments, iron oxide stained grains and diatoms. Sampled at 33cm.

End of core.

Original Colors:

0-50.5cm

layered dark olive gray (5Y3/2), very dark gray (5Y3/1) and black (5Y2.5/1)

**DP10-05GC - Megascopic Description**

Latitude:	42° 30.2089' N	Longitude:	73° 46.5349' W
Core length:	16.5 cm	Water Depth:	4.9 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 7, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-16.5 cm

**TERRIGENOUS (BIOCALCAREOUS) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) interbedded sand and clay with shell fragments and plant debris throughout interval; large (7.5cm), intact bivalve at 10-14cm (bagged in d-tube); wet and soft. Carbonate content is moderate. Coarse fraction 35% consists of abundant quartz; common plant debris; rare lithic fragments; trace shell fragments, garnet, mica, diatoms, insect parts(?), magnetite, framboidal pyrite, epidote, feldspar, pyroxene, axinite(?) and rhombohedral grains. Sampled at 7cm.

End of core.

Original Colors:

0-16.5cm                      black (5Y2.5/1)

**DP10-06GC - Megascopic Description**

Latitude:	42° 31.9688' N	Longitude:	73° 45.4151' W
Core length:	29 cm	Water Depth:	3.1 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 8, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-25.5 cm                      TERRIGENOUS (BIOSILICIOUS) CLAY  
 [Sandy clay], very dark grayish brown (2.5Y3/2); plant debris throughout interval; bed of very dark grayish brown (2.5Y3/2) coarser sediment at 11cm; black (N2.5/0) wood at 22cm; wet and soupy becoming soft. Carbonate content is low. Coarse fraction 14% consists of abundant quartz, plant debris; trace mica, garnet, iron oxide stained grains, brick fragments, magnetite, opaque grains, diatoms, feldspar, hornblende, zircon and pyroxene. Basal contact is an inclined, distinct texture change. Sampled at 7cm.

21-29 cm                      TERRIGENOUS (BIOSILICIOUS) SAND  
 [Clayey sand], very dark grayish brown (2.5Y3/2); 0.5cm pebble at 29cm; wet and firm. Carbonate content is low. Coarse fraction 63% consists of abundant quartz; common plant debris, lithic fragments; trace garnet, mica, magnetite, feldspar, hornblende, diatoms, Scheelite, zircon and pyroxene. Sampled at 26cm.

End of core.

Original Colors:

0-29cm layered dark olive brown (5Y3/2) and black (5Y2.5/1)

**DP10-07 GC - Megascopic Description**

Latitude:	42° 32.6582' N	Longitude:	73° 45.5043' W
Core length:	33.5 cm	Water Depth:	4.5 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 8, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-13.5 cm	<p><b>TERRIGENOUS CLAY</b>  [Sandy clay], very dark grayish brown (2.5Y3/2); wet and soupy. Carbonate content is low. Coarse fraction 18% consists of abundant quartz; common plant debris; rare to trace magnetite; trace garnet, mica, lithic fragments, brick fragments, iron oxide stained grains, ferromagnesian minerals, opaque grains, diatoms, zircon, sphene(?) and feldspar. Basal contact is an indistinct color and texture change. Sampled at 7cm.</p>
13.5-19 cm	<p><b>TERRIGENOUS CLAY</b>  [Sandy clay], very dark grayish brown (2.5Y3/2); inclined lamination of coarser sediment at 17.5cm; bed of very dark grayish brown (2.5Y3.5/2) at 18-19cm; wet and soft. Carbonate content is low. Coarse fraction 33% consists of abundant quartz; rare lithic fragments; trace plant debris, garnet, magnetite, mica, iron oxide stained grains, framboidal pyrite, carbonate, diatoms, sphene(?), hornblende and feldspar. Basal contact is an indistinct color and texture change. Sampled at 16cm.</p>
19-24.5 cm	<p><b>TERRIGENOUS CLAY</b>  [Clay], very dark grayish brown (2.5Y3/2); lamination of coarser sediment at 24.5cm; wet and soft. Carbonate content is low. Coarse fraction 5% consists of abundant quartz; common plant debris; trace metal oxides/ opaque grains, lithic fragments, iron oxide stained grains, mica, magnetite, garnet, slag, microspherules (translucent, white), framboidal pyrite, diatoms, zircon, rhombohedral grains, monazite, feldspar and sphene(?). Basal contact is a gradual color change. Sampled at 22cm.</p>
24.5-33.5 cm	<p><b>TERRIGENOUS CLAY</b>  [Clay], dark olive gray (5Y3/2); bed of very dark grayish brown (2.5Y3/2) sand at 32.5-33.5cm; wet and soft. Carbonate content is low. Coarse fraction 2% consists of abundant quartz, plant debris; trace magnetite, metal oxides/ opaque grains, mica, iron oxide stained grains, slag, rhombohedral grains, feldspar, zircon, diatoms, detrital calcite(?), garnet and ferromagnesian minerals. Sampled at 31cm.</p> <p>End of core.</p>

Original Colors:

0-33.5cm      layered black (N2.5/0) and dark olive gray (5Y3/2)

**DP10-08 GC - Megascopic Description**

Latitude:	42° 29.3714' N	Longitude:	73° 47.1915' W
Core length:	33 cm	Water Depth:	11.8 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 8, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-11 cm

**TERRIGENOUS (AUTHIGENIC) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) with plant debris throughout interval; fragments (chunks) of semi-lithified layers from following interval buried in this one; wet and soupy. Carbonate content is moderate. Coarse fraction 36% consists of abundant quartz; common lithic fragments; rare calcite crystals (from following interval?); trace brick fragments, garnet, framboidal pyrite, metal oxides/opaque grains, plant debris, ostracodes, clay aggregates in microspherules and dumbbell shapes, annelid jaw parts, feldspar, slag, glauconite, magnetite, shiny black microspherule, iron oxide stained grains, Scheelite(?), ferromagnesian minerals, Prehnite(?), zircon and talc(?). Basal contact is a distinct color and texture change. Sampled at 5cm.

11-14 cm

**AUTHIGENIC (TERRIGENOUS) SAND**

[Evaporite], semi-lithified layers of light olive brown (2.5Y5/4), dark olive brown (2.5Y3/3) light olive brown (2.5Y3/3) and very dark gray (N3/0) [Layers broken and placement within core altered in B-half during opening of core; A-half appears mostly intact.]; wet and hard. Carbonate content is high. Coarse fraction 55% consists of abundant calcite crystals; trace plant debris, brick fragments, mica, garnet, lithic fragments, opaque grains, magnetite, insect parts, zircon, talc(?) and feldspar. Basal contact is a distinct color and texture change. Sampled at 13cm.

14-25.5 cm

**TERRIGENOUS (BIOCALCAREOUS) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) becoming dark grayish brown (2.5Y3.5/2); thin bed of coarse sand at 14.5cm; chunks of light olive brown (2.5Y5/4) semi-lithified layers at 14-20cm along one side of core and other fragments buried within section; sandy mottles at 21.5-22.5cm; some plant debris throughout interval; wet and soupy. Carbonate content is moderate to high. Coarse fraction 15% consists of abundant quartz; common shell fragments, plant debris; trace brick fragments, garnet, insect parts, magnetite, metal oxides/opaque grains, carbonate microspherules and crystals, lithic fragments, slag, ostracodes, mica, glauconite, feldspar, epidote, iron oxide stained grains, ferromagnesian minerals, zircon, diatoms and rhombohedral grains. Basal contact is a distinct color and texture change. Sampled at 21cm.

25.5-33 cm

**AUTHIGENIC (TERRIGENOUS) SAND**

[Evaporite], semi-lithified layers, approx. 1cm thick, of greenish gray (10Y5/1) and light olive gray (5Y6/2) within (surrounded by) dark grayish brown (2.5Y3.5/2) soupy mud; wet and hard. Carbonate content is high. Coarse fraction



47% consists of abundant aragonite; rare quartz; trace lithic fragments, metal oxides/ opaque grains, magnetite, garnet, brick fragments(?), plant debris, iron oxide stained grains, mica, shell fragments, feldspar and ferromagnesian minerals. Sampled at 29cm.

End of core.

Original Colors:

0-33cm      dark olive gray (5Y3/2) with black (N2.5/0) semi-lithified layers at 11-14cm and 25.5-33cm (looked like wood when first split!)

**DP10-09 GC - Megascopic Description**

Latitude:	42° 27.444' N	Longitude:	73° 46.4466' W
Core length:	54.5 cm	Water Depth:	3.4 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 8, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-43.5 cm                      TERRIGENOUS (BIOSILICIOUS) CLAY  
 [Clay], dark grayish brown (2.5Y4/2) becoming dark olive gray (5Y3/2), plant debris (leaves) throughout interval; sandy bed at 41-43.5cm; wet and soupy. Carbonate content is low. Coarse fraction 4% consists of common quartz; rare plant debris; trace magnetite, garnet, mica, diatoms, framboidal pyrite, metal oxides/ opaque grains, clay aggregate microspherules, iron oxide stained grains, lithic fragments, ferromagnesian minerals, zircon and sphene. Basal contact is an indistinct color and distinct texture change. Sampled at 25cm.

43.5-45.5 cm                      TERRIGENOUS (BIOSILICIOUS) CLAY  
 [Clay], layered dark gray (N4/0), dark olive gray (5Y3/2) and very dark grayish brown (2.5Y3/2) clays; wood fragments at 45cm; wet and soft. Carbonate content is low. Coarse fraction 1% consists of rare quartz; trace mica, metal oxides/ opaque grains, iron oxide stained grains, garnet, magnetite, diatoms, rhombohedral grains, zircon, tourmaline and sphene. Basal contact is a steeply inclined, uneven, indistinct color and texture change. Sampled at 45cm.

45-54.5 cm                      TERRIGENOUS CLAY  
 [Sandy clay], very dark grayish brown (2.5Y3/2); shells at 47cm and 53cm; laminations of coarser sediment throughout interval; bed of sand at 52.5-54.5cm; wet and soft. Carbonate content is low. Coarse fraction 46% consists of abundant quartz; common lithic fragments; trace garnet, plant debris, mica, glauconite, metal oxides/ opaque grains, magnetite, iron oxide stained grains, planktonic foraminifera, diatoms, feldspar and ferromagnesian minerals. Sampled at 51cm.

End of core.

## Original Colors:

0-54.5cm                      dark olive gray (5Y3/2) becoming black (5Y2.5/1)

**DP10-10 GC - Megascopic Description**

Latitude:	42° 28.0588' N	Longitude:	73° 46.412' W
Core length:	101 cm	Water Depth:	2.4 m
Date taken:	April 7, 2010	Date opened:	June 3, 2010
Date described:	July 9, 2010	Date photographed:	June 3, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-34 cm

**TERRIGENOUS CLAY**

[Clay], dark grayish brown (2.5Y4/2) with scattered plant debris and numerous air pockets throughout interval; wet and soft. Carbonate content is low. Coarse fraction 3% consists of abundant plant debris; common quartz; trace mica, metal oxides/ opaque grains, garnet, diatoms, magnetite, clay aggregate microspherules, iron oxide stained grains, feldspar, epidote, zircon and calcite(?). Basal contact is a gradual color and texture change. Sampled at 15cm.

34-55.5 cm

**TERRIGENOUS CLAY**

[Clay], dark gray (N4/0); wet and very soft. Carbonate content is low. Coarse fraction <1%

consists of trace plant debris, quartz, metal oxides/ opaque grains, calcite(?), xenotime(?) and

rhombohedral grains. Basal contact is a distinct color and texture change. Sampled at 45cm.

55.5-85 cm

**TERRIGENOUS CLAY**

[Clay], dark olive gray (5Y3/2) with some plant debris scattered throughout interval; wet and soft. Carbonate content is low. Coarse fraction 6% consists of abundant plant debris, metal oxides/ opaque grains; common quartz; trace mica, garnet, iron oxide stained grains, magnetite, framboidal pyrite, diatoms, zircon, gypsum crystals(?), feldspar, ferromagnesian minerals, xenotime and epidote. Basal contact is a distinct color and texture change. Sampled at 75cm.

85-101 cm

**TERRIGENOUS CLAY**

[Clay and Sandy Clay], layered and mottled dark gray (5Y4/1) clay and dark olive gray (5Y3/2) sandy clay; dark olive gray (5Y3/2) sand beds at 89cm and 99-101cm; moist and pliable. Carbonate content is low. Coarse fraction 5% consists of common plant debris, quartz, metal oxides/ opaque grains; rare lithics; trace magnetite, garnet, framboidal pyrite, iron oxide stained grains, mica, feldspar, ferromagnesian minerals, monazite, diatoms, xenotime(?), zircon and epidote. Sampled at 92cm.

End of core.

## Original Colors:

0-23cm	dark olive gray (5Y3/2)
23-34cm	black (5Y2.5/1)
34-56cm	dark gray (N4/0)
56-63cm	black (5Y2.5/2)
63-80cm	very dark gray (5Y3/1)
80-84cm	black (5Y2.5/1)
84-85.5cm	black (N2.5/0)
85.5-89cm	mottled dark gray (N4/0) or dark greenish gray (10Y4/1), and black (N2.5/0)
89-94cm	mottled dark gray (N4/0) or dark greenish gray (10Y4/1), and black (5Y2.5/1)
94-99cm	layered dark gray (N4/0) and very dark gray (5Y3/1)
99-101cm	black (5Y2.5/1)

**DP10-11 GC - Megascopic Description**

Latitude:	42° 26.0658' N	Longitude:	73° 47.0587' W
Core length:	48.5 cm	Water Depth:	2.2 m
Date taken:	April 9, 2010	Date opened:	May 12, 2010
Date described:	July 9, 2010	Date photographed:	May 12, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors.

- 0-8.5 cm                      TERRIGENOUS BIOCALCAREOUS CLAY  
[Sandy clay], very dark grayish brown (2.5Y3/2); very dark grayish brown (2.5Y3/2) bed at 0-2cm; curved bed of dark grayish brown (2.5Y3.5/2) at 5.5cm; large shell and fragments at 0-7cm; laminations of coarser sediment at 2cm and (curved) 5cm; wet and soft. Carbonate content is low. Coarse fraction 22% consists of abundant quartz; rare plant debris; trace lithics, garnet, metal oxides, magnetite, iron oxide stained grains, mica, diatoms, feldspar, ferromagnesian minerals, epidote and zircon. Basal contact is an uneven, distinct color change. Sampled at 4cm.
- 6-13 cm                      TERRIGENOUS CLAY  
[Clay], dark olive gray (5Y3/2); mottles of coarser sediment at 6-9cm, laminations of coarser sediment at 9cm and 10cm; wet and soft. Carbonate content is low. Coarse fraction 10% consists of abundant quartz, plant debris; trace metal oxides, lithics, mica, framboidal pyrite, garnet, magnetite, iron oxide stained grains, diatoms, feldspar, epidote and ferromagnesian minerals. Basal contact is an uneven, distinct color and texture change. Sampled at 9cm.
- 11.5-18.5 cm                      TERRIGENOUS CLAY  
[Clay], mottled dark gray (N4/0) and black (5Y2.5/2) at 11.5-15.5cm, dark gray (N4/0) at 15.5-18.5cm; uneven laminations of coarser sediment at 11.5cm and 15.5cm; wet and soft. Carbonate content is low. Coarse fraction 3% consists of common quartz, plant debris; trace mica, slag, iron oxide stained grains, metal oxides, magnetite, lithics, whitish microspherules, garnet, clay aggregates, ferromagnesian minerals, diatoms, carbonate rhombohedrals and talc(?). Basal contact is a distinct color and texture change. Sampled at 17cm.
- 18.5-48.5 cm                      TERRIGENOUS BIOCALCAREOUS SAND  
[Sand], black (5Y2.5/2); fragments of an olive (5Y4/3) semi-lithified, foliated rock at 24cm; rounded olive (5Y4/3) and black (5Y2.5/1) pebbles at 30cm; black (N2.5/0) wood fragment at 39cm; shell at 47cm, very small shell fragments at 30-48.5cm; wet and compact. Carbonate content is low. Coarse fraction 79% consists of abundant quartz; rare plant debris, lithics, metal oxides; trace magnetite, mica, iron oxide stained grains, shell fragments, slag, ferromagnesian minerals, feldspar, zircon and diatoms. Sampled at 35cm.  
End of core.

**DP10-12-GC - Megascopic Description**

Latitude:	42° 25.4395' N	Longitude:	73° 46.6921' W
Core length:	121 cm	Water Depth:	8.8 m
Date taken:	April 9, 2010	Date opened:	June 23, 2010
Date described:	July 9, 2010	Date photographed:	June 23, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-121 cm

**TERRIGENOUS BIOCALCAREOUS CLAY**

[Sandy clay], banded dark olive grays (5Y3/2) with laminations and beds of coarser sediment and numerous air pockets throughout; bed of black (5Y2.5/1) sand at 57-62cm; bed of dark olive gray (5Y3/2) to very dark grayish brown (2.5Y3/2) at 23-28cm, bounded by laminations of dark grayish brown (2.5Y4/2) at 23cm and 28cm, bottom contact and lamination inclined; mottles of dark yellowish brown (10YR3/4) lining air holes at 3-8cm and coating top of sediment at 0cm; plant debris scattered throughout core; very small shell fragments at 43-50cm, 57-60cm and 83cm; very small pebbles at 83cm, 102cm and 108cm; wet and pliable. Carbonate content is low. Coarse fraction at 15cm, 33% and at 105cm, 37% consists of abundant quartz; common plant debris; rare metal oxides; trace mica, iron oxide stained grains, magnetite, ostracodes, clay aggregates, lithics, shell fragments, diatoms, slag, garnet, feldspar, sillimanite, epidote, rhombohedral grains, zircon and ferromagnesian minerals. (Sample at 105cm differs from 15cm in that it has slightly more lithics and considerably less diatoms.) Sampled at 15cm and 105cm.

End of core.

**Original Colors:**

0-58cm      dark olive gray (5Y3/2) with very dark gray (5Y3/1) layers  
 58-121cm    black (5Y2.5/2) with black (5Y2.5/1) layers

**DP10-13 GC - Megascopic Description**

Latitude:	42° 23.1973' N	Longitude:	73° 47.6188' W
Core length:	26.5 cm	Water Depth:	2.4 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-10.5 cm	<p><b>TERRIGENOUS (BIOCALCAREOUS) SAND</b></p> <p>[Clayey sand], undulating beds of black (5Y2.5/2) with plant debris – 0-1cm, 1-2cm, 2-5cm and 5-8cm; very dark gray (2.5Y3/1) sand with plant debris at 7.5-9.5cm; very dark grayish brown (2.5Y3/2) bed at 9.5-10.5cm; moist and pliable. Carbonate content is low. Coarse fraction 64% consists of abundant quartz; common plant debris; trace mica, opaque grains/ metal oxides, iron oxide stained grains, magnetite, feldspar, garnet, brick(?), diatoms, shell fragments, sphalerite, ferromagnesian minerals, Scheelite and zircon. Basal contact is a distinct color and texture change. Sampled at 5cm.</p>
10.5-14.5 cm	<p><b>TERRIGENOUS SAND</b></p> <p>[Clayey sand], very dark gray (2.5Y3/1); moist and firm. Carbonate content is low. Coarse fraction 67% consists of abundant quartz; common plant debris; trace mica, opaque grains/ metal oxides, iron oxide stained grains, magnetite, garnet, feldspar, ferromagnesian minerals, zircon and diatoms. Basal contact is an indistinct color and texture change. Sampled at 13cm.</p>
14.5-26.5 cm	<p><b>TERRIGENOUS SAND</b></p> <p>[Clayey sand], black (10YR2/1) with mottles of finer sediment; bed of finer sediment at 14.5-15cm; plant debris throughout interval; moist and firm. Carbonate content is low. Coarse fraction 71% consists of abundant quartz; common plant debris; trace mica, opaque grains/ metal oxides, iron oxide stained grains, garnet, magnetite, brick(?), feldspar, ferromagnesian minerals, zircon and diatoms. Sampled at 22cm.</p>

End of core.

## Original Colors:

0-10cm	black (5Y2.5/2) and very dark gray (5Y3/1)
10-26.5cm	very dark gray (2.5Y3/1)

**DP10-14 GC - Megascopic Description**

Latitude:	42° 23.1548' N	Longitude:	73° 47.3488' W
Core length:	24 cm	Water Depth:	2.4 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-5.5 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey sand], very dark grayish brown (2.5Y3/2) with plant debris throughout interval; moist and pliable. Carbonate content is low. Coarse fraction 83% consists of abundant quartz; common opaque grains/ metal oxides; trace magnetite, iron oxide stained grains, mica, garnet, shell fragments, plant debris, brick fragments, slag, ferromagnesian minerals, diatoms, zircon and feldspar. Basal contact is an uneven, distinct texture and indistinct color change. Sampled at 3cm.

5.5-16 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey sand], black (5Y2.5/2) with very dark grayish brown (2.5Y3/2) mottles, occasional pebbles and plant debris throughout interval; moist and pliable. Carbonate content is low. Coarse fraction 83% consists of abundant quartz; common plant debris, opaque grains/ metal oxides; trace iron oxide stained grains, magnetite, mica, feldspar, ferromagnesian minerals, garnet, shell fragments, quartz micro-spherule, brookite(?), diatoms, sillimanite and zircon. Basal contact is an indistinct color and texture change. Sampled at 12cm.

16-24 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey sand], very dark gray (5Y3/1) with some plant debris throughout interval; shell fragments at 17cm; moist and firm. Carbonate content is low. Coarse fraction 87% consists of abundant quartz; common opaque grains/ metal oxides, plant debris; trace feldspar, magnetite, iron oxide stained grains, mica, brick fragments, shell fragments, garnet, slag, fluorite, diatoms, ferromagnesian minerals, zircon and rutile. Sampled at 22cm.

End of core.

## Original Colors:

0-5cm                      black (5Y2.5/2)  
 5-15cm                      very dark gray (2.5Y3/1)  
 15-24cm                      black (2.5Y2.5/1)



**DP10-15 GC - Megascopic Description**

Latitude:	42° 22.1439' N	Longitude:	73° 47.781' W
Core length:	58 cm	Water Depth:	5.4 m
Date taken:	April 9, 2010	Date opened:	June 24, 2010
Date described:	July 12, 2010	Date photographed:	June 24, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-43.5 cm

**TERRIGENOUS SAND**

[Sand], very dark gray (10YR3/1) becoming very dark grayish brown (2.5Y3/2); beds of very dark grayish brown (2.5Y3/2) clay at 1.5-3cm, (uneven at) 4cm, and 19-20cm; inclined bed of very dark gray (2.5Y3/1.5) coarser sand and clay at 12-14cm; laminations and beds of very dark gray (2.5Y3/1.5) sand throughout interval; shell fragments at 0-10cm; pebbles at 20-24cm; moist and compact. Carbonate content is low. Coarse fraction 100% consists of abundant quartz; common lithics; rare feldspar; trace mica, garnet, ferromagnesian minerals and magnetite. Basal contact is a distinct color and texture change. Sampled at 15cm.

43.5-58 cm

**TERRIGENOUS CLAY**

[Clay], very dark gray (10YR3/1) with bioturbations of very dark grayish brown (2.5Y3/2) sand at 43.5-48.5cm; beds of sandy clay at 50-53cm- bottom contact inclined, and 55-57cm, bottom contacts of both beds contain laminations of plant debris; moist and firm. Carbonate content is low. Coarse fraction 5% consists of abundant plant debris, quartz; trace mica, iron oxide stained grains, magnetite, sponge spicules, feldspar, ferromagnesian minerals, diatoms, garnet, carbonate rhombohedra, monazite and sillimanite. Sampled at 47cm.

End of core.

**Original Colors:**

0-10cm	very dark gray (2.5Y3/2) with very dark gray (5Y3/1) mottles and layers
10-44cm	dark olive gray (5Y3/2) with very dark gray (5Y3/1) layers
33cm	black (N2.5/0) inclined layer
44-58cm	very dark grayish brown (2.5Y3/2) but redder; almost very dark gray (10YR3/1)

**DP10-16 GC - Megascopic Description**

Latitude:	42° 22.5881' N	Longitude:	73° 47.887' W
Core length:	136.5 cm	Water Depth:	3.2 m
Date taken:	April 9, 2010	Date opened:	June 24, 2010
Date described:	July 12, 2010	Date photographed:	June 24, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-33.5 cm	<p><b>TERRIGENOUS BIOSILICIOUS CLAY</b>  [Clay], very dark grayish brown (2.5Y3/2) with plant debris and numerous air pockets throughout interval; wet and soft. Carbonate content is low. Coarse fraction 1% consists of abundant plant debris, quartz; rare diatoms; trace mica, iron oxide stained grains, framboidal pyrite, magnetite, feldspar, zircon and ferromagnesian minerals. Basal contact is an uneven, indistinct color change. Sampled at 5cm.</p>
33.5-136.5 cm	<p><b>TERRIGENOUS BIOSILICIOUS CLAY</b>  [Clay], dark olive gray (5Y3/2) with numerous air pockets throughout interval; scattered plant debris at 33.5-81cm; wet and soft. Carbonate content is low. Coarse fraction 1% consists of abundant plant debris; common to rare quartz; rare to trace diatoms; trace mica, opaque grains and ferromagnesian minerals. Sampled at 85cm.</p>

End of core.

Original Colors:

0-136.5cm      layered very dark gray (2.5Y3/1) and black (N2.5/0)

**DP10-17 GC - Megascopic Description**

Latitude:	42° 21.5425' N	Longitude:	73° 47.7409' W
Core length:	41 cm	Water Depth:	2.7 m
Date taken:	April 9, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

- 0-21 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Sand], black (5Y2.5/2); very dark grayish brown (2.5Y3/1.5) laminae of finer sediment at 7-10cm; very dark grayish brown (2.5Y3/2) oxidized top 0-1cm; shell fragments at 0cm, 2cm and 8cm; mottles of plant debris at 2-6.5cm and laminae at 6.5cm, 18.5cm and 19.5cm; slag(?) at 18.5cm; moist and firm. Carbonate content is low. Coarse fraction 98% consists of abundant quartz; common lithic fragments; rare opaque grains/ metal oxides, garnet; trace mica, magnetite, iron oxide stained grains, feldspar, diatoms, ferromagnesian minerals and plant debris. Basal contact is a distinct texture change. Sampled at 14cm.
- 21-31 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey sand], black (5Y2.5/2) with very dark grayish brown (2.5Y3/1.5) inclined beds; plant debris scattered throughout interval; moist and firm. Carbonate content is low. Coarse fraction 84% consists of abundant quartz; common lithic fragments; rare plant debris, opaque grains/ metal oxides; trace mica, magnetite, iron oxide stained grains, feldspar, shell fragments, garnet, slag, ferromagnesian minerals, diatoms, dolomite rhombs and epidote. Basal contact is a distinct texture change. Sampled at 24cm.
- 31-41 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Sand], black (5Y2.5/2) with inclined laminae of black (5Y2.5/2) finer sediment at 26-27cm; plant debris scattered throughout interval and in a layer at 28cm; moist and firm. Carbonate content is low. Coarse fraction 99% consists of abundant quartz; common garnet; rare lithic fragments, magnetite, mica, ferromagnesian minerals; trace iron oxide stained grains, feldspar, plant debris, shell fragments, olivine, sphalerite, diatoms and zircon. Sampled at 34cm.

End of core.

Original Colors:

- 0-41cm                      black (2.5Y2.5/1) with very dark gray (2.5Y3/1) beds at ~9, 21 and 32cm

**DP10-18 GC - Megascopic Description**

Latitude:	42° 19.9947' N	Longitude:	73° 46.9279' W
Core length:	17.5 cm	Water Depth:	6.3 m
Date taken:	April 9, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-6 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
[Sand], black (5Y2.5/2) with shell fragments throughout interval and plant debris at 3-5cm; moist and firm. Carbonate content is low. Coarse fraction 98% consists of abundant quartz; rare lithic fragments; trace shell fragments, mica, feldspar, iron oxide stained grains, garnet, opaque grains/ metal oxides and ferromagnesian minerals. Basal contact is an indistinct color change. Sampled at 3cm.

6-17.5 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
[Clayey sand], black (5Y2.5/1) with uneven beds of finer sediment throughout interval and layers of plant debris at 6cm and 15.5cm; moist and firm. Carbonate content is low. Coarse fraction 85% consists of abundant quartz; common plant debris; rare opaque grains/ metal oxides; trace mica, magnetite, feldspar, garnet, slag, iron oxide stained grains, shell fragments, lithic fragments, brick fragments, ferromagnesian minerals, diatoms and zircon. Sampled at 12cm.

End of core.

Original Colors:

0-5cm                      black (5Y2.5/2)  
5-17.5cm                      black (5Y2.5/1)

**DP10-19 GC - Megascopic Description**

Latitude:	42° 19.5079' N	Longitude:	73° 46.5377' W
Core length:	98 cm	Water Depth:	2.3 m
Date taken:	April 9, 2010	Date opened:	June 24, 2010
Date described:	July 12, 2010	Date photographed:	June 24, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-92.5 cm                      TERRIGENOUS BIOCALCAREOUS CLAY  
 [Clay], very dark grayish brown (2.5Y3/2) with plant debris and numerous air pockets throughout interval; shell fragments at 20cm, 24cm, 41cm, 44cm and 50-60cm; wet and soft. Carbonate content is low. Coarse fraction 8% consists of abundant quartz, plant debris; trace mica, garnet, diatoms, metal oxides, magnetite, iron oxide stained grains, glauconite, shell fragments, ferromagnesian minerals, epidote, zircon and feldspar. Basal contact is an indistinct color change. Sampled at 15cm.

92.5-98 cm                      TERRIGENOUS CLAY  
 [Sandy Clay], dark olive gray (5Y3/2); layer of plant debris at 95.5cm; moist and soft. Carbonate content is low. Coarse fraction 24% consists of abundant quartz, plant debris; trace metal oxides, mica, magnetite, iron oxide stained grains, slag, diatoms, ferromagnesian minerals, sponge spicules, feldspar, xenotime and garnet. Sampled at 96cm.

End of core.

Original Colors:

0-54cm                      black (5Y2.5/1) with black (N2.5/0) mottles  
 54-98cm                      black (5Y2.5/1) with black (N2.5/0) layers

**DP10-20 GC - Megascopic Description**

Latitude:	42° 18.9944' N	Longitude:	73° 46.4679' W
Core length:	16 cm	Water Depth:	3.5 m
Date taken:	April 9, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-16 cm

**TERRIGENOUS (BIOCALCAREOUS) SAND**

[Clayey sand], very dark gray (2.5Y3/1) with numerous shell fragments at 0-7.5cm; moist and pliable. Carbonate content is low to moderate. Coarse fraction 83% consists abundant quartz; rare shell fragments; trace mica, feldspar, opaque grains/ metal oxides, magnetite, garnet, iron oxide stained grains, lithic fragments, ferromagnesian minerals, plant debris, sphalerite, diatoms, zircon and an unknown grain: colorless or pale yellow/brown with rosettes of fibers/needles on the surface of a larger, bladed grain; blades/needles have near parallel extinction and pale yellow, whites, gray birefringence. Sampled at 7cm.

End of core.

**Original Colors:**

0-7cm	black (N2.5)
7-16cm	black (5Y2.5/1)

**DP10-21 GC - Megascopic Description**

Latitude:	42° 16.4801' N	Longitude:	73° 47.2681' W
Core length:	18 cm	Water Depth:	3.1 m
Date taken:	April 9, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-18 cm

**TERRIGENOUS SAND**

[Sandy clay], interbedded very dark gray (2.5Y3/1), very dark grayish brown (2.5Y3/2) and very dark gray (2.5Y3/1.5) sands and sandy clays; bottom surface (perpendicular to split surface) has an oily, dark reddish brown (2.5YR3/3) patina; moist and pliable. Carbonate content is low. Coarse fraction 28% consists of abundant quartz, plant debris; rare mica; trace opaque grains/ metal oxides, magnetite, iron oxide stained grains, feldspar, slag, garnet, ferromagnesian minerals, diatoms and zircon. Sampled at 7cm.

End of core.

Original Colors:

0-18cm

very dark gray (2.5Y3/1)

**DP10-22 GC - Megascopic Description**

Latitude:	42° 16.8915' N	Longitude:	73° 47.5825' W
Core length:	23 cm	Water Depth:	7.5 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-12 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Coarse sand], very dark gray (2.5Y3/1.5) with pebbles, plant debris, shell fragments and a large oyster shell; moist and pliable. Carbonate content is low. Coarse fraction 95% consists of abundant quartz; rare lithic fragments; trace mica, ferromagnesian minerals, magnetite, garnet, feldspar, slag, iron oxide stained grains, plant debris, opaque grains/ metal oxides, zircon, olivine, Cassiterite and diatoms. Basal contact is an uneven, bioturbated, distinct texture and color change. Sampled at 5cm.

10-16.5 cm                      TERRIGENOUS SAND  
 [Sand], very dark gray (2.5Y3/1); moist and firm. Carbonate content is low. Coarse fraction 96% consists of abundant quartz; common to rare lithic fragments; trace opaque grains/ metal oxides, mica, feldspar, iron oxide stained grains, magnetite, garnet, plant debris, ferromagnesian minerals, slag, olivine and diatoms. Basal contact is an uneven, bioturbated, distinct texture change. Sampled at 14cm.

15.5-23 cm                      TERRIGENOUS CLAY  
 [Clay], black (5Y2.5/2) with sandy mottles at 16-20cm and sandy laminae at 20-23cm; moist and pliable. Carbonate content is low. Coarse fraction 5% consists of abundant plant debris, quartz; trace opaque grains/ metal oxides, magnetite, iron oxide stained grains, mica, feldspar, diatoms, clay aggregates, ferromagnesian minerals, tourmaline, zircon and xenotime. Sampled at 19cm.

End of core.

## Original Colors:

0-1cm	very dark grayish brown (2.5Y3/2)
1-10cm	black (N2.5)
10-16cm	black (5Y2.5/1)
16-23cm	black (2.5Y2.5/1)



**DP10-23 GC - Megascopic Description**

Latitude:	42° 16.2468' N	Longitude:	73° 48.0776' W
Core length:	24.5 cm	Water Depth:	6.4 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-24.5 cm

**TERRIGENOUS (BIOCALCAREOUS) SAND**

[Sand], very dark gray (2.5Y3/1.5) with a few pebbles and plant debris scattered throughout interval; coal flake at 9.5cm; gold foil (?) at 8-12cm; moist and firm. Carbonate content is low. Coarse fraction 98% consists of abundant quartz; rare lithic fragments; trace iron oxide stained grains, mica, feldspar, garnet, ferromagnesian minerals, magnetite, opaque grains/ metal oxides, shell fragments, plant debris, olivine, diatoms, zircon and brown spinel. Sampled at 5cm.

End of core.

**Original Colors:**

0-3cm	very dark grayish brown (2.5Y3/2)
3-6cm	very dark gray (5Y3/1)
6-14cm	black (2.5Y2.5/1)
14-24.5cm	black (2.5Y2.5/1)

**DP10-24 GC - Megascopic Description**

Latitude:	42° 14.9702' N	Longitude:	73° 49.2235' W
Core length:	23.5 cm	Water Depth:	5.6 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-23.5 cm

**TERRIGENOUS (BIOCALCAREOUS) SAND**

[Sand], very dark gray (2.5Y3/1.5) becoming black (5Y2.5/2); inclined lamination of dark grayish brown (2.5Y4/2) at 9cm; plant debris at 0cm and 20-23.5cm; pebble at 3cm; moist and firm. Carbonate content is low. Coarse fraction at 5cm, 99% consists of abundant quartz; rare iron oxide stained grains; trace lithic fragments, opaque grains/ metal oxides, magnetite, shell fragments, garnet, ferromagnesian minerals, feldspar, slag, scheelite and olivine. Coarse fraction at 19cm, 99% consists of the same components as 5cm except for the lack of shell fragments. Sampled at 5cm and 19cm.

End of core.

**Original Colors:**

0-7cm	very dark grayish brown (2.5Y3/2)
7-19cm	black (2.5Y2.5/1)
19-23.5cm	black (2.5Y2.5/1)

**DP10-25 GC - Megascopic Description**

Latitude:	42° 14.6165' N	Longitude:	73° 50.2417' W
Core length:	98 cm	Water Depth:	2.5m
Date taken:	April 9, 2010	Date opened:	June 24, 2010
Date described:	July 12, 2010	Date photographed:	June 24, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-30 cm

**TERRIGENOUS CLAY**

[Clay], black (5Y2.5/2) with very small fragments of plant debris and laminations of coarser sediment throughout interval; dark brown (7.5YR3/3) lining air pockets at 1-7cm; wet and soft. Carbonate content is low. Coarse fraction 5% consists of abundant plant debris, quartz; common metal oxides; trace mica, garnet, magnetite, iron oxide stained grains, framboidal pyrite, slag, diatoms and ferromagnesian minerals. Basal contact is an indistinct color change. Sampled at 15cm.

30-75 cm

**TERRIGENOUS BIOCALCAREOUS CLAY**

[Clay], very dark grayish brown (2.5Y3/2) with beds of (slightly lighter) very dark grayish brown (2.5Y3/2) throughout interval; numerous air pockets throughout interval; shell fragments at 56-59cm, 63cm, 68cm and 71cm; wood fragments at 30cm and 70cm; moist and soft. Carbonate content is low. Coarse fraction 6% consists of abundant plant debris, quartz; common shell fragments; rare metal oxides; trace vivianite, mica, brick fragments, garnet, diatoms, carbonate rhombohedra, ferromagnesian minerals, xenotime and feldspar. Basal contact is a gradual texture change. Sampled at 57cm.

75-98 cm

**TERRIGENOUS CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) with beds and laminations of coarser sediment throughout interval; beds of very dark grayish brown (10YR3/1.5) at (uneven) 77cm and 93.5-95cm, mottles of same at 77-84cm; very small wood fragments at 77cm and 79cm; moist and pliable. Carbonate content is low. Coarse fraction 10% consists of abundant quartz, feldspar, plant debris; trace lithics, mica, metal oxides, framboidal pyrite, magnetite, iron oxide stained grains, vivianite, ostracodes, diatoms, ferromagnesian minerals, siderite(?), epidote, monazite, zircon (very large grain) and garnet. Sampled at 85cm.

End of core.

**Original Colors:**

0-80cm            black (5Y2.5/2) and black (2.5Y2.5/1)  
80-98cm            very dark gray (2.5Y3/2)

**DP10-26 GC - Megascopic Description**

Latitude:	42° 13.3738' N	Longitude:	73° 50.9646' W
Core length:	24 cm	Water Depth:	2.1 m
Date taken:	April 9, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-4.5 cm	<p><b>TERRIGENOUS (BIOCALCAREOUS) SAND</b></p> <p>[Coarse sand], very dark gray (2.5Y3/1.5) with shell fragments, a pebble and plant debris; moist and firm. Carbonate content is low. Coarse fraction 99% consists of abundant quartz; common magnetite; rare to trace ferromagnesian minerals, garnet; trace iron oxide stained grains, mica, feldspar, olivine, serpentine(?) and diatoms. Basal contact is an indistinct color and texture change. Sampled at 3cm.</p>
4.5-10 cm	<p><b>TERRIGENOUS (BIOCALCAREOUS) SAND</b></p> <p>[Sand], black (5Y2.5/2) with a pebble and plant debris at 6cm; moist and firm. Carbonate content is low. Coarse fraction 92% consists of abundant quartz; rare metal oxides, mica; trace iron oxide stained grains, feldspar, ferromagnesian minerals, magnetite, plant debris, shell fragments, diatoms and zircon. Basal contact is an indistinct color and texture change. Sampled at 8cm.</p>
10-16 cm	<p><b>TERRIGENOUS SAND</b></p> <p>[Clayey sand], black (5Y2.5/2) sand to 12cm, gradually becoming very dark gray (2.5Y3/1.5) sandy clay; clay lamination at 14cm; plant debris at 12.5cm; moist and firm becoming pliable. Carbonate content is low. Coarse fraction 75% consists of abundant quartz; rare mica, metal oxides, plant debris; trace iron oxide stained grains, magnetite, feldspar, garnet, ostracodes, ferromagnesian minerals, diatoms and zircon. Basal contact is a gradual color and texture change. Sampled at 12cm.</p>
14-24 cm	<p><b>TERRIGENOUS (BIOCALCAREOUS) SAND</b></p> <p>[Sand], very dark gray (5Y3/1) with plant debris at 20-24cm; moist and firm. Carbonate content is low. Coarse fraction 93% consists of abundant quartz; rare mica, metal oxides; trace iron oxide stained grains, ferromagnesian minerals, plant debris, feldspar, garnet, magnetite, shell fragments, diatoms and zircon. Sampled at 22cm.</p>
	End of core.
Original Colors:	
0-5cm	very dark grayish brown (2.5Y3/2)
5-14.5cm	black (2.5Y2.5/1)
14.5-24cm	black (2.5Y2.5/1)

**DP10-27 GC - Megascopic Description**

Latitude:	42° 13.016' N	Longitude:	73° 50.801' W
Core length:	23 cm	Water Depth:	2.4 m
Date taken:	April 10, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-9 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Sand], very dark grayish brown (2.5Y3/1.5) with laminae of plant debris; moist and firm. Carbonate content is low. Coarse fraction 96% consists of abundant quartz; rare mica, metal oxides; trace iron oxide stained grains, feldspar, garnet, plant debris, shell fragments, ferromagnesian minerals, zircon, scheelite and diatoms. Basal contact is an uneven, inclined, indistinct color change. Sampled at 5cm.

5.5-23 cm                      TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Sand], very dark grayish brown (2.5Y3/1.5) with some plant debris scattered throughout interval; moist and firm. Carbonate content is low. Coarse fraction 98% consists of abundant quartz; common to rare mica, metal oxides; trace iron oxide stained grains, magnetite, feldspar, ferromagnesian minerals, plant debris, shell fragments, zircon, sphalerite, siderite and diatoms. Sampled at 15cm.

End of core.

## Original Colors:

0-2cm                      very dark grayish brown (2.5Y3/2)  
 2-9cm                      black (2.5Y2.5/1)  
 9-23cm                      black (2.5Y2.5/1)

**DP10-28 GC - Megascopic Description**

Latitude:	42° 10.238' N	Longitude:	73° 52.399' W
Core length:	17 cm	Water Depth:	7.7 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-17 cm

**TERRIGENOUS CLAY**

[Clay], mottled and bioturbated very dark gray (2.5Y3/1) sand and very dark grayish brown (2.5Y3/2) clay; bottom surface (perpendicular to split surface) has an oily, dark reddish brown (2.5YR3/3) patina; moist and pliable. Carbonate content is low. Coarse fraction 7% consists of abundant quartz, plant debris; trace mica, metal oxides, iron oxide stained grains, magnetite, feldspar, ferromagnesian minerals, diatoms and clinoptilolite. Sampled at 7cm.

End of core.

Original Colors:

0-17cm

very dark grayish brown (2.5Y3/2)

**DP10-29 GC - Megascopic Description**

Latitude:	42° 10.141' N	Longitude:	73° 53.126' W
Core length:	37.5 cm	Water Depth:	7.5 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-37.5 cm

**TERRIGENOUS (BIOCALCAREOUS) CLAY**

[Sandy clay], very dark gray (2.5Y3/1) sand with very dark grayish brown (2.5Y3/2) clay laminae and mottles; plant debris at 5-9cm; very dark grayish brown (10YR3/2) oxidized top 0-1cm; moist and firm. Carbonate content is low. Coarse fraction at 5cm, 36% consists of abundant plant debris, quartz; rare metal oxides; trace feldspar, iron oxide stained grains, mica, garnet, magnetite, shell fragments, ferromagnesian minerals, diatoms, zircon and clinoptilolite. Coarse fraction at 25cm, 36% consists of the same components as 5cm except it has less plant debris. Sampled at 5cm and 25cm.

End of core.

Original Colors:

0-37.5cm                      very dark gray (2.5Y3/1)

**DP10-30 GC - Megascopic Description**

Latitude:	42° 9.351' N	Longitude:	73° 53.893' W
Core length:	25 cm	Water Depth:	4.7 m
Date taken:	April 10, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-11 cm

**TERRIGENOUS SAND**

[Sand], black (5Y2.5/2) with laminae of coarser sediment and very dark grayish brown (2.5Y3/2) clay; very dark grayish brown (2.5Y3/2) oxidized top 0-2.5cm; very dark gray (5Y3/1) mottle with plant debris at 2-3.5cm; moist and pliable. Carbonate content is low. Coarse fraction 93% consists of abundant quartz; rare mica, metal oxides; trace plant debris, magnetite, iron oxide stained grains, feldspar, garnet, ferromagnesian minerals, zircon and diatoms. Basal contact is an inclined, distinct color and texture change. Sampled at 5cm.

11-15.5 cm

**TERRIGENOUS SAND**

[Clayey sand], plant debris with black (5Y2.5/2) sand; moist and pliable. Carbonate content is low. Coarse fraction 65% consists of abundant plant debris, quartz; rare mica, metal oxides, iron oxide stained grains; trace magnetite, feldspar, slag, ferromagnesian minerals, dolomite rhombs, diatoms and clinoptilolite. Basal contact is a gradual texture change. Sampled at 13cm.

15.5-25 cm

**TERRIGENOUS SAND**

[Clayey sand], black (5Y2.5/2) with laminae of plant debris; moist and firm. Carbonate content is low. Coarse fraction 82% consists of abundant quartz; rare mica, metal oxides, feldspar; trace iron oxide stained grains, plant debris, ferromagnesian minerals, magnetite, garnet, zircon and diatoms. Sampled at 21cm.

End of core.

Original Colors:

0-2cm	very dark grayish brown (2.5Y3/2)
2-25cm	black (2.5Y2.5/1)



**DP10-31 GC - Megascopic Description**

Latitude:	42° 9.386' N	Longitude:	73° 54.081' W
Core length:	103.5 cm	Water Depth:	2.1 m
Date taken:	April 10, 2010	Date opened:	June 24, 2010
Date described:	July 12, 2010	Date photographed:	June 24, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-5 cm                      TERRIGENOUS BIOCLASTIC CLAY  
[Clay], dark grayish brown (2.5Y3.5/2); wet and soupy. Carbonate content is low. Coarse fraction 5% consists of abundant quartz, plant debris, feldspar; trace mica, metal oxides, garnet, lithics, clay aggregates, shell fragments, magnetite, iron oxide stained grains, diatoms, ferromagnesian minerals and zircon. Basal contact is an uneven, distinct color change. Sampled at 2cm.

5-82 cm                    TERRIGENOUS BIOCLASTIC CLAY  
[Clay], very dark grayish brown (2.5Y3/2) becoming darker; plant debris at 30-35cm and 56cm; numerous air pockets throughout interval; bed of black (5Y2.5/2) coarser sediment at 71.5-77.5cm; wet and soft. Carbonate content is low. Coarse fraction 9% consists of abundant quartz, plant debris, feldspar; rare metal oxides; trace mica, clay aggregates, garnet, diatoms, shell fragments, vivianite, ferromagnesian minerals and zircon. Basal contact is a concave, distinct texture change. Sampled at 25cm.

79-103.5 cm              TERRIGENOUS SAND  
[Sand], black (5Y2.5/2); thin, bent bed of black (5Y2.5/2) clay at 94cm; wet and pliable. Carbonate content is low. Coarse fraction 88% consists of abundant quartz, feldspar; common to rare lithics; trace mica, metal oxides, iron oxide stained grains, ferromagnesian minerals, plant debris, garnet, vivianite, slag, brick fragments(?), olivine(?) and epidote. Sampled at 89cm.

End of core.

Original Colors:

0-103.5cm            layered dark olive gray (5Y3/2) and black (2.5Y2.5/1)

**DP10-32-GC - Megascopic Description**

Latitude:	42° 7.349' N	Longitude:	73° 54.561' W
Core length:	10 cm*	Water Depth:	2.2 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

\*A-half is 10cm, B-half is 9cm.

0-10 cm

**TERRIGENOUS (BIOCALCAREOUS) CLAY**

[Sandy clay], very dark gray (5Y3/1) with very dark grayish brown (2.5Y3/2) oxidized top 0-1.5cm; moist and firm. Carbonate content is low. Coarse fraction 41% consists of abundant quartz, plant debris; rare metal oxides, mica; trace iron oxide stained grains, feldspar, magnetite, shell fragments, diatoms and clinoptilolite. Sampled at 4cm.

End of core.

Original Colors:

0-10cm

very dark gray (2.5Y3/1)

**DP10-33 GC - Megascopic Description**

Latitude:	42° 7.024' N	Longitude:	73° 54.922' W
Core length:	37 cm	Water Depth:	2.1 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-7 cm

**TERRIGENOUS CLAY**

[Sandy clay], mixed very dark gray (2.5Y3/1) sand and very dark grayish brown (2.5Y3/2) clay; layer of plant debris(?) at 4cm; very small shell fragment at 5cm; moist and pliable. Carbonate content is low. Coarse fraction 30% consists of abundant quartz, plant debris; trace feldspar, mica, magnetite, iron oxide stained grains, shell fragments, slag, metal oxides, garnet, clinoptilolite, ferromagnesian minerals, diatoms and dolomite rhombs. Basal contact is a convex, distinct texture change. Sampled at 3cm.

5.5-10 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Clay], very dark grayish brown (2.5Y3/2) with laminae and mottles of coarser throughout interval; moist and pliable. Carbonate content is low. Coarse fraction 6% consists of abundant plant debris, quartz; trace mica, metal oxides, iron oxide stained grains, magnetite, garnet, feldspar, diatoms, ferromagnesian minerals and clinoptilolite. Basal contact is an uneven, distinct texture and color change. Sampled at 7cm.

9-20 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Sandy clay], laminated very dark gray (2.5Y3/1) sand and very dark grayish brown (2.5Y3/2) clay; plant debris scattered in the sand layers; moist and pliable. Carbonate content is low. Coarse fraction 41% consists of abundant quartz; common plant debris; trace mica, metal oxides, iron oxide stained grains, feldspar, magnetite, ferromagnesian minerals, sphalerite, epidote, scheelite, diatoms, clinoptilolite, zircon, garnet and dolomite rhombs. Basal contact is a distinct color and texture change. Sampled at 16cm.

20-28 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Clay], very dark grayish brown (2.5Y3/2) clay with very dark gray (2.5Y3/1) sand mottles; bed of very dark gray (10YR3/1) at 26-27.5cm bounded by dark grayish brown (10YR4/2) laminae; mottle of dark grayish brown (2.5Y3.5/2) at 23cm; moist and pliable. Carbonate content is low. Coarse fraction 9% consists of abundant plant debris; common quartz; trace mica, feldspar, metal oxides, iron

oxide stained grains, magnetite, diatoms, ferromagnesian minerals, clinoptilolite, zircon, tourmaline and epidote. Basal contact is a distinct texture and indistinct color change. Sampled at 24cm.

28-37 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) with laminae of very dark gray (2.5Y3/1) sand; moist and pliable. Carbonate content is low. Coarse fraction 10% consists of abundant plant debris, quartz; trace mica, iron oxide stained grains, feldspar, metal oxides, diatoms, magnetite, ferromagnesian minerals and dolomite rhombs. Sampled at 33cm.

End of core.

Original Colors:  
0-37cm

very dark gray (2.5Y3/1)

**DP10-34 GC - Megascopic Description**

Latitude:	42° 6.78' N	Longitude:	73° 55.047' W
Core length:	30 cm	Water Depth:	2.7 m
Date taken:	April 10, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-5 cm                      TERRIGENOUS (BIOCALCAREOUS) CLAY  
 [Sandy clay], very dark grayish brown (2.5Y3/2) with plant debris and shell fragments at 1-2.5cm; moist and pliable. Carbonate content is low. Coarse fraction 26% consists of abundant quartz, plant debris; trace mica, metal oxides, iron oxide stained grains, magnetite, feldspar, ferromagnesian minerals, diatoms, garnet, zircon and clinoptilolite. Basal contact is an uneven, distinct texture and indistinct color change. Sampled at 3cm.

2-30 cm                    TERRIGENOUS (BIOCALCAREOUS) SAND  
 [Clayey sand], very dark grayish brown (2.5Y3/2) laminated clay and sandy clay with plant debris scattered throughout interval; moist and pliable. Carbonate content is low. Coarse fraction 53% consists of abundant quartz; common plant debris; rare mica, metal oxides; trace feldspar, iron oxide stained grains, magnetite, ferromagnesian minerals, garnet, shell fragments, diatoms, clinoptilolite and zircon. Sampled at 15cm.

End of core.

Original Colors:

0-30cm                      very dark gray (2.5Y3/1) becoming darker

**DP10-35 GC - Megascopic Description**

Latitude:	42° 5.186' N	Longitude:	73° 55.379' W
Core length:	41.5 cm	Water Depth:	3.4 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-14 cm

**TERRIGENOUS CLAY**

[Sandy clay], black (5Y2.5/2) with inclined, disturbed beds of very dark grayish brown (2.5Y3/2) clay; plant debris scattered throughout interval, concentrated at 0-4cm; moist and firm. Carbonate content is low. Coarse fraction 24% consists of abundant quartz, plant debris; rare metal oxides; trace mica, iron oxide stained grains, shell fragments, magnetite, feldspar, ferromagnesian minerals, diatoms and zircon. Basal contact is an inclined, distinct color and texture change. Sampled at 7cm.

14-19.5 cm

**TERRIGENOUS (BIOCALCAREOUS) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) with abundant plant debris throughout interval, concentrated in layers at 14.5cm and 19cm; few shell fragments scattered throughout interval; moist and pliable. Carbonate content is low. Coarse fraction 32% consists of abundant plant debris, quartz; rare shell fragments, metal oxides; trace iron oxide stained grains, mica, ferromagnesian minerals, magnetite, feldspar, zircon, diatoms, garnet and rutile. Basal contact is a distinct texture change. Sampled at 17cm.

19.5-41.5 cm

**TERRIGENOUS (BIOSILICIOUS) CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) with uneven, alternating laminae of sand and clay at 19.5-27.5cm; inclined bed of clay at 36cm; few shell fragments and plant debris scattered throughout interval; mottles of very dark grayish brown (10YR3/2) at 25cm and 40cm; moist and soft. Carbonate content is low. Coarse fraction 47% consists of abundant quartz; common plant debris; trace metal oxides, mica, iron oxide stained grains, diatoms, ferromagnesian minerals, feldspar, shell fragments, magnetite, epidote and garnet. Sampled at 28cm.

End of core.

Original Colors:

0-41.5cm

very dark grayish brown (2.5Y3/2)

**DP10-36 GC - Megascopic Description**

Latitude:	42° 5.267' N	Longitude:	73° 55.998' W
Core length:	9.5 cm	Water Depth:	2.1 m
Date taken:	April 10, 2010	Date opened:	August 18, 2010
Date described:	August 30, 2010	Date photographed:	August 18, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-9.5 cm

**TERRIGENOUS CLAY**

[Sandy clay], very dark grayish brown (2.5Y3/2) becoming coarser down core; moist and firm. Carbonate content is low. Coarse fraction 17% consists of abundant quartz, plant debris; trace metal oxides, mica, iron oxide stained grains, ferromagnesian minerals, magnetite, garnet, feldspar, lithics, epidote, zircon and diatoms. Sampled at 5cm.

End of core.

Original Colors:

0-9.5cm

very dark gray (10YR3/1)

**DP10-37 GC - Megascopic Description**

Latitude:	42° 4.549' N	Longitude:	73° 55.338' W
Core length:	24 cm	Water Depth:	2.3 m
Date taken:	April 10, 2010	Date opened:	August 17, 2010
Date described:	August 31, 2010	Date photographed:	August 17, 2010
Described by:	N. Anest	Flow-in:	0cm

NOTE: Colors are oxidized colors. Original colors at the end of the description.

0-6 cm

**TERRIGENOUS SAND**

[Clayey sand], dark olive gray (5Y3/2) with very dark grayish brown (2.5Y3/2) oxidized top 0-1cm; moist and pliable. Carbonate content is low. Coarse fraction 77% consists of abundant quartz; rare to trace mica, metal oxides, plant debris; trace ferromagnesian minerals, iron oxide stained grains, slag, feldspar, magnetite, shell fragments, garnet, olivine, diatoms and zircon. Basal contact is an uneven, distinct texture and indistinct color change. Sampled at 3cm.

6-24 cm

**TERRIGENOUS CLAY**

[Clay], very dark grayish brown (2.5Y3/2) with large mottle (disturbed bed?) of sandy clay at 7-18.5cm; large 'C' shaped feature (possible burrow?) of very dark grayish brown (2.5Y3.5/2) at 6-20cm; shell fragments at 6cm; moist and pliable. Carbonate content is low. Coarse fraction 2% consists of abundant plant debris, quartz; rare metal oxides; trace mica, iron oxide stained grains, feldspar, magnetite, diatoms, garnet, ferromagnesian minerals and dolomite rhombs. Sampled at 12cm.


End of core.

**Original Colors:**

0-4cm	very dark gray (2.5Y3/1.5)
4-24cm	very dark gray (2.5Y3/1)




### Appendix 3 - Grab Sample Descriptions


<b>DP10-G01</b>		
<i>Location</i>	HR - Troy	
<i>latitude</i>	42.74319	
<i>longitude</i>	-73.6881	
<i>Depth (m)</i>	7.4	
<i>Date taken</i>	06.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	hard	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	common
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	abundant	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no


many shell fragments; some outwash occurred

<b>DP10-G2</b>		
<i>Location</i>	HR - Troy	
<i>latitude</i>	42.73168333	
<i>longitude</i>	-73.69586333	
<i>Depth (m)</i>	4.7	
<i>Date taken</i>	06.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	green-gray	<i>shells</i>	common
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	common (1 live)
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G3</b>		
<i>Location</i>	HR - Troy/Albany	
<i>latitude</i>	42.71676	
<i>longitude</i>	-73.6999	
<i>Depth (m)</i>	5.0	
<i>Date taken</i>	06.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	hard/loose	<i>wood</i>	no
<i>color</i>	braun-gray	<i>shells</i>	common
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	abundant
<i>gravel</i>	abundant	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	some slag and brig pieces


<b>DP10-G4</b>		
<i>Location</i>	HR - Troy/Albany	
<i>latitude</i>	42.67176	
<i>longitude</i>	-73.7228	
<i>Depth (m)</i>	6	
<i>Date taken</i>	06.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	green gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	no

<b>DP10-G5</b>		
<i>Location</i>	HR - Troy/Albany	
<i>latitude</i>	42.6575	
<i>longitude</i>	-73.7391	
<i>Depth (m)</i>	9.5	
<i>Date taken</i>	06.04.2010	


<i>oxidized top</i>	n	<i>plant material</i>	no
<i>stiffness</i>	n	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	no
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	common (1 live)
<i>gravel</i>	no	<i>zebra</i>	common
<i>pebble</i>	common	<i>anthropogenic material</i>	no

only pebbles and mussels, outwash

<b>DP10-G6</b>		
<i>Location</i>	HR - Albany	
<i>latitude</i>	42.63502	
<i>longitude</i>	-73.7533	
<i>Depth (m)</i>	5.4	
<i>Date taken</i>	06.04.2010	


<i>oxidized top</i>	n/a	<i>plant material</i>	rare
<i>stiffness</i>	hard	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	rare
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	rare
<i>pebble</i>	abundant	<i>anthropogenic material</i>	no

outwash

<b>DP10-G7</b>		
<i>Location</i>	HR - Albany	
<i>latitude</i>	42.5817	
<i>longitude</i>	-73.7552	
<i>Depth (m)</i>	11.9	
<i>Date taken</i>	06.04.2010	

<i>oxidized top</i>	n	<i>plant material</i>	no
<i>stiffness</i>	n	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	no
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	abundant
<i>pebble</i>	abundant	<i>anthropogenic material</i>	no

Two big pieces of rock covered with zebra mussels


<b>DP10-G8</b>		
<i>Location</i>	HR - van Veen Point	
<i>latitude</i>	42.55823	
<i>longitude</i>	-73.7524	
<i>Depth (m)</i>	3.8	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	no	<i>plant material</i>	no
<i>stiffness</i>	hard/loose	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	common
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	abundant	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	no




<b>DP10-G9</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.5451	
<i>longitude</i>	-73.7585	
<i>Depth (m)</i>	3.7	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G10</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.54205	
<i>longitude</i>	-73.7588	
<i>Depth (m)</i>	3.6	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	dark gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G11</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.53936	
<i>longitude</i>	-73.7556	
<i>Depth (m)</i>	7.6	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G12</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.53269	
<i>longitude</i>	-73.7571	
<i>Depth (m)</i>	3.1	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	brown-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G13</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.51749	
<i>longitude</i>	-73.7654	
<i>Depth (m)</i>	8.8	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	no	<i>plant material</i>	no
<i>stiffness</i>	n/a	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	abundant
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	piece of glass

outwash


<b>DP10-G14</b>		
<i>Location</i>	HR - Coymans	
<i>latitude</i>	42.50346	
<i>longitude</i>	-73.7751	
<i>Depth (m)</i>	5.3	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	common
<i>color</i>	braun-gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	abundant
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

big stick/branch caught in grab


<b>DP10-G15</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.49997	
<i>longitude</i>	-73.7812	
<i>Depth (m)</i>	2.9	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	yes	<i>plant material</i>	no
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G16</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.48953	
<i>longitude</i>	-73.7866	
<i>Depth (m)</i>	11.9	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	common




<b>DP10-G17</b>		
<i>Location</i>	HR - Castleton	
<i>latitude</i>	42.49228	
<i>longitude</i>	-73.7814	
<i>Depth (m)</i>	3.3	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	dark gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	rare
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

H2S smell

<b>DP10-G18</b>		
<i>Location</i>	HR - Coymans	
<i>latitude</i>	42.47894	
<i>longitude</i>	-73.7887	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	soft top/ stiff bottom	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G19</b>		
<i>Location</i>	HR - Coymans	
<i>latitude</i>	42.47075	
<i>longitude</i>	-73.7863	
<i>Depth (m)</i>	9.8	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	n/a	<i>plant material</i>	no
<i>stiffness</i>	hard	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	no
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	abundant	<i>zebra</i>	no
<i>pebble</i>	abundant	<i>anthropogenic material</i>	no

little outwash

<b>DP10-G20</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.46851	
<i>longitude</i>	-73.7732	
<i>Depth (m)</i>	2	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G21</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.45798	
<i>longitude</i>	-73.7746	
<i>Depth (m)</i>	3.1	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	very soft top	<i>wood</i>	rare
<i>color</i>	olive-gray	<i>shells</i>	rare
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	common
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


soft mud above sand

<b>DP10-G22</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.44637	
<i>longitude</i>	-73.7735	
<i>Depth (m)</i>	3.5	
<i>Date taken</i>	07.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G23</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.43278	
<i>longitude</i>	-73.7752	
<i>Depth (m)</i>	4.1	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G24</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.42392	
<i>longitude</i>	-73.7782	
<i>Depth (m)</i>	8.2	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

H2S smell



<b>DP10-G25</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.42153	
<i>longitude</i>	-73.7822	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very stiff	<i>wood</i>	no
<i>color</i>	dark gray	<i>shells</i>	rare
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	rare
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G26</b>		
<i>Location</i>	HR - Stuyvesant	
<i>latitude</i>	42.40343	
<i>longitude</i>	-73.7856	
<i>Depth (m)</i>	2.8	
<i>Date taken</i>	07.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G27</b>		
<i>Location</i>	HR - New Baltimore	
<i>latitude</i>	42.43423	
<i>longitude</i>	-73.7843	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	no

<b>DP10-G28</b>		
<i>Location</i>	HR - Stuyvesant	
<i>latitude</i>	42.41612	
<i>longitude</i>	-73.7774	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	gray black	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G29</b>		
<i>Location</i>	HR - Stuyvesant	
<i>latitude</i>	42.3868	
<i>longitude</i>	-73.7935	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	soft	<i>wood</i>	common
<i>color</i>	olive-gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G30</b>		
<i>Location</i>	HR - Stuyvesant	
<i>latitude</i>	42.38141	
<i>longitude</i>	-73.7915	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	brown	<i>shells</i>	no
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no


<b>DP10-G31</b>		
<i>Location</i>	HR - Cossackie	
<i>latitude</i>	42.37043	
<i>longitude</i>	-73.7959	
<i>Depth (m)</i>	7.4	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff /loose	<i>wood</i>	no
<i>color</i>	brown	<i>shells</i>	no
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no

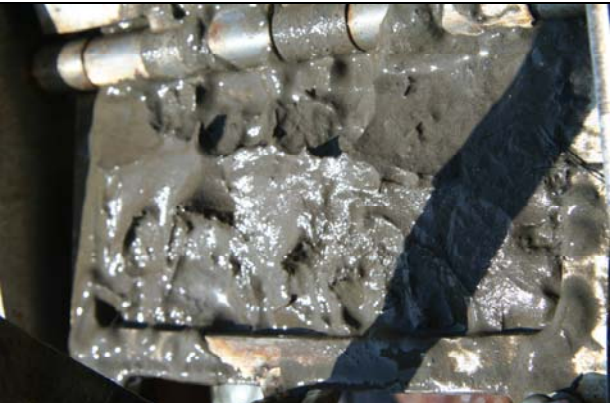
<b>DP10-G32</b>		
<i>Location</i>	HR - Cossackie	
<i>latitude</i>	42.37639	
<i>longitude</i>	-73.7982	
<i>Depth (m)</i>	3.2	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	abundant
<i>stiffness</i>	very soft	<i>wood</i>	common
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no




<b>DP10-G33</b>		
<i>Location</i>	HR - Cossackie	
<i>latitude</i>	42.35908	
<i>longitude</i>	-73.7957	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	dark gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G34</b>		
<i>Location</i>	HR - Cossackie	
<i>latitude</i>	42.33784	
<i>longitude</i>	-73.7848	
<i>Depth (m)</i>	2.8	
<i>Date taken</i>	08.04.2010	

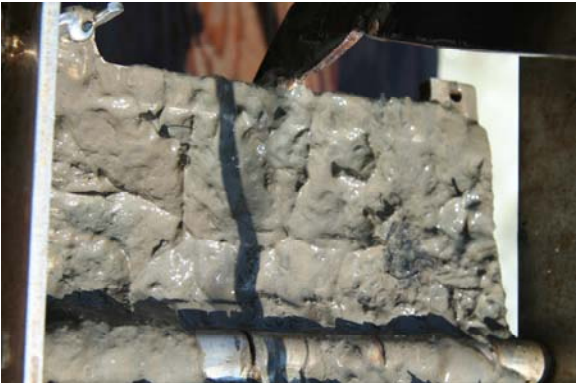
<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	stiff with soft top	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G35</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.32384	
<i>longitude</i>	-73.782	
<i>Depth (m)</i>	4.8	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	no

<b>DP10-G36</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.31676	
<i>longitude</i>	-73.7745	
<i>Depth (m)</i>	4.3	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	abundant
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no

<b>DP10-G37</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.32516	
<i>longitude</i>	-73.7756	
<i>Depth (m)</i>	2.1	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	abundant
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G38</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.29189	
<i>longitude</i>	-73.7805	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft top/ stiff bottom	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G39</b>		
Location	HR - Athens	
latitude	42.28131	
longitude	-73.7933	
Depth (m)	7.5	
Date taken	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G40</b>		
Location	HR - Athens	
latitude	42.271	
longitude	-73.8013	
Depth (m)	6.5	
Date taken	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	soft	<i>wood</i>	common
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	abundant
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no




<b>DP10-G41</b>		
<i>Location</i>	HR - Athens	
<i>latitude</i>	42.25096	
<i>longitude</i>	-73.8187	
<i>Depth (m)</i>	2.7	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	dark gray	<i>shells</i>	no
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G42</b>		
<i>Location</i>	HR - Athens	
<i>latitude</i>	42.24366	
<i>longitude</i>	-73.8375	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	olive gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no

<b>DP10-G43</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.22244	
<i>longitude</i>	-73.8499	
<i>Depth (m)</i>	3.1	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	common
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G44</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.23702	
<i>longitude</i>	-73.8448	
<i>Depth (m)</i>	3.2	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	n/a	<i>plant material</i>	no
<i>stiffness</i>	stiff/hard	<i>wood</i>	no
<i>color</i>	gray black	<i>shells</i>	rare
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	abundant	<i>zebra</i>	no
<i>pebble</i>	common	<i>anthropogenic material</i>	no

<b>DP10-G45</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.24404	
<i>longitude</i>	-73.8249	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	common
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	no


<b>DP10-G46</b>		
<i>Location</i>	HR - Hudson	
<i>latitude</i>	42.27478	
<i>longitude</i>	-73.7877	
<i>Depth (m)</i>	2.9	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	common	<i>mussels</i>	no
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G47</b>		
<i>Location</i>	HR - Hudson	
<i>latitude</i>	42.28398	
<i>longitude</i>	-73.7854	
<i>Depth (m)</i>	5.6	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	loose/hard	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	rare
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	rare	<i>anthropogenic material</i>	rare


piece of brick

<b>DP10-G48</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.30991	
<i>longitude</i>	-73.7842	
<i>Depth (m)</i>	2.1	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	n/a	<i>plant material</i>	no
<i>stiffness</i>	n	<i>wood</i>	no
<i>color</i>	n/a	<i>shells</i>	no
<i>mud</i>	no	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

very little sediment, not sampled




<b>DP10-G49</b>		
<i>Location</i>	HR - Stockport	
<i>latitude</i>	42.3333	
<i>longitude</i>	-73.7821	
<i>Depth (m)</i>	5.7	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	common
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G50</b>		
<i>Location</i>	HR - Cossackie	
<i>latitude</i>	42.34974	
<i>longitude</i>	-73.7918	
<i>Depth (m)</i>	5.9	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	olive brown	<i>shells</i>	common
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G51</b>		
<i>Location</i>	HR	
<i>latitude</i>	42.36468	
<i>longitude</i>	-73.7895	
<i>Depth (m)</i>	2.2	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff/loose	<i>wood</i>	no
<i>color</i>	brown	<i>shells</i>	no
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G52</b>		
<i>Location</i>	HR	
<i>latitude</i>	42.38587	
<i>longitude</i>	-73.7892	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	08.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


H2S smell

<b>DP10-G53</b>		
<i>Location</i>	HR - Stuyvesant	
<i>latitude</i>	42.39255	
<i>longitude</i>	-73.7857	
<i>Depth (m)</i>	2.7	
<i>Date taken</i>	08.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	brown	<i>shells</i>	rare
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G54</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.20472	
<i>longitude</i>	-73.8523	
<i>Depth (m)</i>	10.3	
<i>Date taken</i>	09.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G55</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.18859	
<i>longitude</i>	-73.8556	
<i>Depth (m)</i>	2.9	
<i>Date taken</i>	09.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	loose/hard	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	abundant
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	abundant	<i>anthropogenic material</i>	no

<b>DP10-G56</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.17949	
<i>longitude</i>	-73.8725	
<i>Depth (m)</i>	2.7	
<i>Date taken</i>	09.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	rare
<i>color</i>	olive gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G57</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.17061	
<i>longitude</i>	-73.8734	
<i>Depth (m)</i>	2.3	
<i>Date taken</i>	09.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	very stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G58</b>		
<i>Location</i>	HR - Inbocht Bay	
<i>latitude</i>	42.16867	
<i>longitude</i>	-73.8856	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	09.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	very soft	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	abundant
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no




<b>DP10-G59</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.07585	
<i>longitude</i>	-73.9224	
<i>Depth (m)</i>	2.1	
<i>Date taken</i>	10.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	dark gray	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	no	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G60</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.08299	
<i>longitude</i>	-73.9315	
<i>Depth (m)</i>	2.6	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	very stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no


<b>DP10-G61</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.10018	
<i>longitude</i>	-73.9235	
<i>Depth (m)</i>	2.2	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	no
<i>mud</i>	common	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G62</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.10832	
<i>longitude</i>	-73.9276	
<i>Depth (m)</i>	3.1	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	soft	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

water chestnut

<b>DP10-G63</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.11802	
<i>longitude</i>	-73.9167	
<i>Depth (m)</i>	2.4	
<i>Date taken</i>	10.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

very little recovery


<b>DP10-G64</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.1266	
<i>longitude</i>	-73.918	
<i>Depth (m)</i>	2.7	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no




<b>DP10-G65</b>		
<i>Location</i>	HR - Saugerties	
<i>latitude</i>	42.13283	
<i>longitude</i>	-73.9062	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	10.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	common
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G66</b>		
<i>Location</i>	HR - Inbocht Bay	
<i>latitude</i>	42.14393	
<i>longitude</i>	-73.9033	
<i>Depth (m)</i>	2.5	
<i>Date taken</i>	10.04.2010	


<i>oxidized top</i>	y	<i>plant material</i>	no
<i>stiffness</i>	stiff	<i>wood</i>	no
<i>color</i>	olive brown	<i>shells</i>	no
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G67</b>		
<i>Location</i>	HR - Inbocht Bay	
<i>latitude</i>	42.14863	
<i>longitude</i>	-73.899	
<i>Depth (m)</i>	4.2	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	common
<i>stiffness</i>	stiff/hard	<i>wood</i>	rare
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	rare	<i>oysters</i>	no
<i>sand</i>	abundant	<i>mussels</i>	no
<i>gravel</i>	common	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G68</b>		
<i>Location</i>	HR - Inbocht Bay	
<i>latitude</i>	42.15393	
<i>longitude</i>	-73.8903	
<i>Depth (m)</i>	2.3	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	rare
<i>stiffness</i>	very stiff	<i>wood</i>	no
<i>color</i>	olive gray	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	no	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no

<b>DP10-G69</b>		
<i>Location</i>	HR - Catskill	
<i>latitude</i>	42.20711	
<i>longitude</i>	-73.848	
<i>Depth (m)</i>	3.5	
<i>Date taken</i>	10.04.2010	

<i>oxidized top</i>	y	<i>plant material</i>	abundant
<i>stiffness</i>	very soft	<i>wood</i>	common
<i>color</i>	olive brown	<i>shells</i>	rare
<i>mud</i>	abundant	<i>oysters</i>	no
<i>sand</i>	rare	<i>mussels</i>	no
<i>gravel</i>	rare	<i>zebra</i>	no
<i>pebble</i>	no	<i>anthropogenic material</i>	no