

Seabed Video and Photographic Survey — Berth “C” and Cable Route

Minas Passage Tidal Energy Study Site

Based on Surveys on
February 2, March 10, June 18 and July 2-3, 2009

Submitted to:

Fundy Ocean Research Centre for Energy (FORCE)

Submitted by:

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MARINE SURVEY REPORT
FUNDY TIDAL POWER RESEARCH AND DEVELOPMENT PROJECT

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EXECUTIVE SUMMARY

In 2008-2009, the Province of Nova Scotia through Minas Basin Pulp and Power Limited established a Tidal Energy Demonstration Facility and a management organization, the Fundy Ocean Research Centre for Energy (FORCE), to provide test facilities for tidal energy technologies in Nova Scotia’s Bay of Fundy. This report contains video images and still photographs of the seabed obtained in 2009 at Berth “C”, the first in which a tidal device was deployed (by the NSPI/Open Hydro team on November 12, 2009), and its proposed cable route to shore. The site is one of three locations designated for tidal device installations at the test facility in northern Minas Passage, west of Cape Sharp. Surveys encompassing Berth “C” were carried out on February 2, March 10, June 18 and July 2, 2009 and provided input to the site selection process for the turbine deployment. Seabed surficial geology and biological communities observed at the site were representative of the major types observed in previous baseline studies (2008) over the broader extent of the tidal demonstration site.

INTRODUCTION

In 2007, the Province of Nova Scotia initiated a process aimed at developing tidal energy resources of the Bay of Fundy, as part of its strategy to meet Provincial renewable energy goals. The process resulted in the completion of a Strategic Environmental Assessment (SEA) in early 2008, which assessed the Bay of Fundy environment and potential impacts of various tidal energy technologies, and subsequently resulted in the award of initial funding to support the creation of a tidal energy demonstration facility in the Bay. The concept for the Tidal Energy Demonstration Facility was developed by Minas Basin Pulp and Power Company Limited, the successful contractor in the process; necessary background geophysical surveys and seabed photographic surveys were done and assessed; public consultation, a review of shipping traffic and local lobster fisheries were carried out; and a suitable demonstration site was chosen in northern Minas Passage slightly west of Cape Sharp in 2008. Subsequently, three berths (circular areas of the seabed 200 m in diameter) and associated cable routes to shore were selected for use by tidal device providers/consortia initially expressing interest, including the teams of Minas Basin Pulp and Power/Marine Current Turbines; Nova Scotia Power Inc (NSPI)/OpenHydro; and Clean Current/Alstom. The oversight body for the facility, the Fundy Ocean Research Centre for Energy (FORCE) was duly established in late 2009.

The tidal energy research facility includes three installation berths (A, B, & C) to be occupied by tidal energy device providers, each of which has an associated cable route to shore (International Telecom 2009), and an associated shore facility to provide a connection to the power grid. Berth “C” was the first scheduled to be occupied, proposed for a deployment of the NSPI/OpenHydro turbine¹. Video to assess seabed geology and bottom characteristics was obtained at Berth “C” in February, March, June and July 2009, to give both broad coverage and more intensive localized coverage on promising locations within the installation site. This report summarizes information on geology and benthic communities obtained in seabed imagery obtained at Berth “C” and the associated cable route.²

METHODS

The present study was carried out to obtain detailed site-specific information from Berth “C” and for the cable route to Berth “C”, areas which were not covered in the 2008 baseline video and photographic survey. Surveys at Berth “C” took place on February 2, March 10, June 18 and July 2-3, 2009. Except for the March survey, all were done from *Tide Force*, a 50’ lobster boat operated by Mr. Mark Taylor out of Halls Harbour, Nova Scotia. In March, the 40’ lobster boat *Eric Junior* skippered by Mr. Robert Vaughan, was used for the survey. Differential global positioning systems (DGPS)(<1 m accuracy) were used, except in March when a global positioning system (GPS)(5 m accuracy) was used. For the June, July and August surveys, a DGPS (Hemisphere, VS100 GPS Compass receiver, 0.6 m accuracy) and computer navigation software (WinFrog Integrated Navigation System, Fugro Pelagos Inc.) operated by Seaforth Geosurveys, Dartmouth, Nova Scotia, was used to both acquire and log position information.

A Sony Hi-8 handycam in an Amphibico® underwater housing (field of view of about 52.5 cm wide and 40 cm high (0.2 m^2)) and SLD10 underwater light, both mounted in a protective aluminum frame (all surveys), and a Benthos® deep-sea 35 mm camera with strobe, mounted on a 225 kg steel frame (July only)(1 m^2 area at the typical distance of 1 m above the bottom) were deployed from the vessel

¹ Deployed on November 12, 2009.

² Separate reports are available for Berths “A” and “B” and their associated cable routes.

30 minutes to up to 1 hour before and after slack tide, at current speeds from zero to moderate (up to about 3-4 kts).

Six locations at Berth “C” were pre-selected by the marine geological consultant (G. Fader, Atlantic Marine Geological Consulting, Halifax) to give broad coverage of the site, a 200 m diameter circle centred on 45° 21' 59.0616" N, 64° 25' 28.8156" W, to assist in geological interpretation both locally and for the demonstration project area as a whole; however additional coverage was obtained of specific locations identified for turbine installation, and in other areas sampled incidentally. As well, video was obtained along the centerline of the proposed cable route for Berth “C”. Following the survey, the video was digitized and still frame images as well as video from the sites were captured using video editing software (Barra Video, Halifax). Seaforth Geosurveys extracted several cross sections of seabed features inside Berth “C” from the digital elevation model for the seabed at the site.

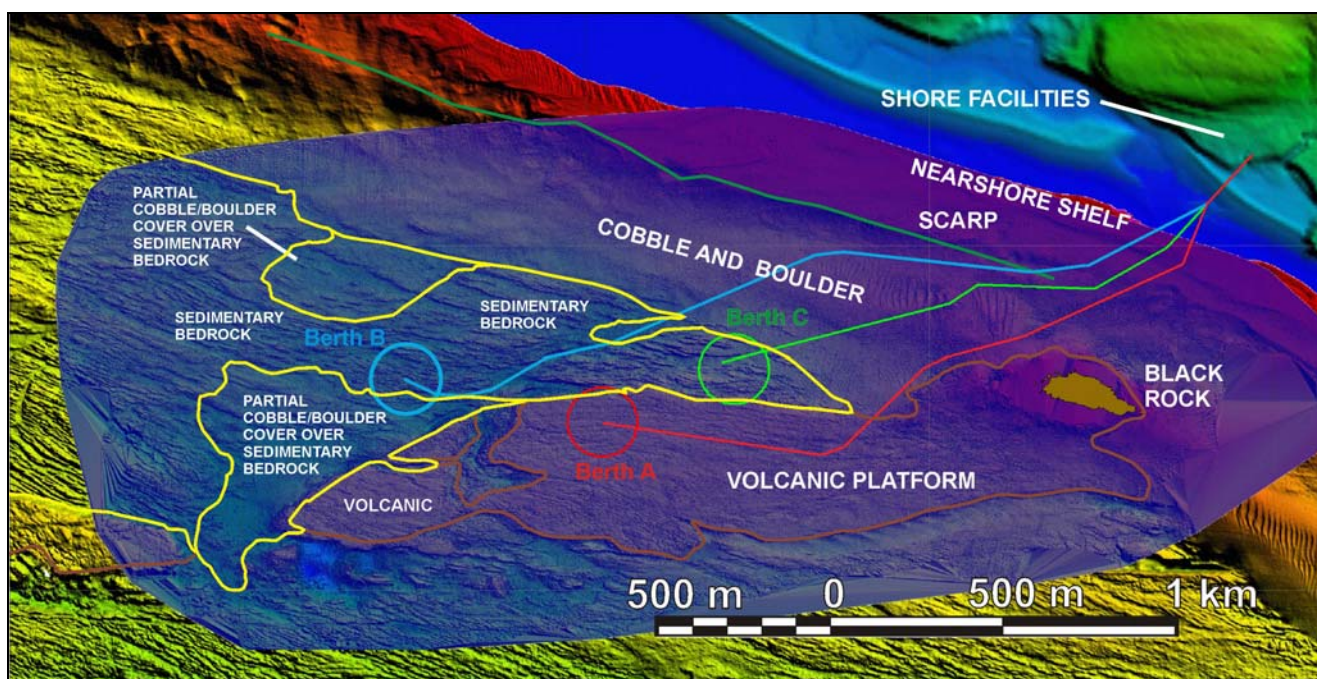


Figure 1. Surficial geology interpretation and locations of tidal turbine berths and proposed, cable routes, December 2009. Geology interpretation based on AMGC (2009).

RESULTS AND DISCUSSION

General

Maps of station locations, image captures and bottom photographs, as well as a DVD of the video for each survey are presented in Appendices 1 to 6. Berth “C” is the closest of the turbine sites to shore and occurs in a transitional area between a basalt platform to the south, sandstone/siltstone bedrock outcrops on site and to the west, and cobble/boulder bottom as characterized by AMGC (2009) (Figure 1). The seabed over most of the berth site is about 40 m below MLW (Figure 2), and mostly gradually slopes upward to the northeast, with bands of protruding outcrops of sandstone

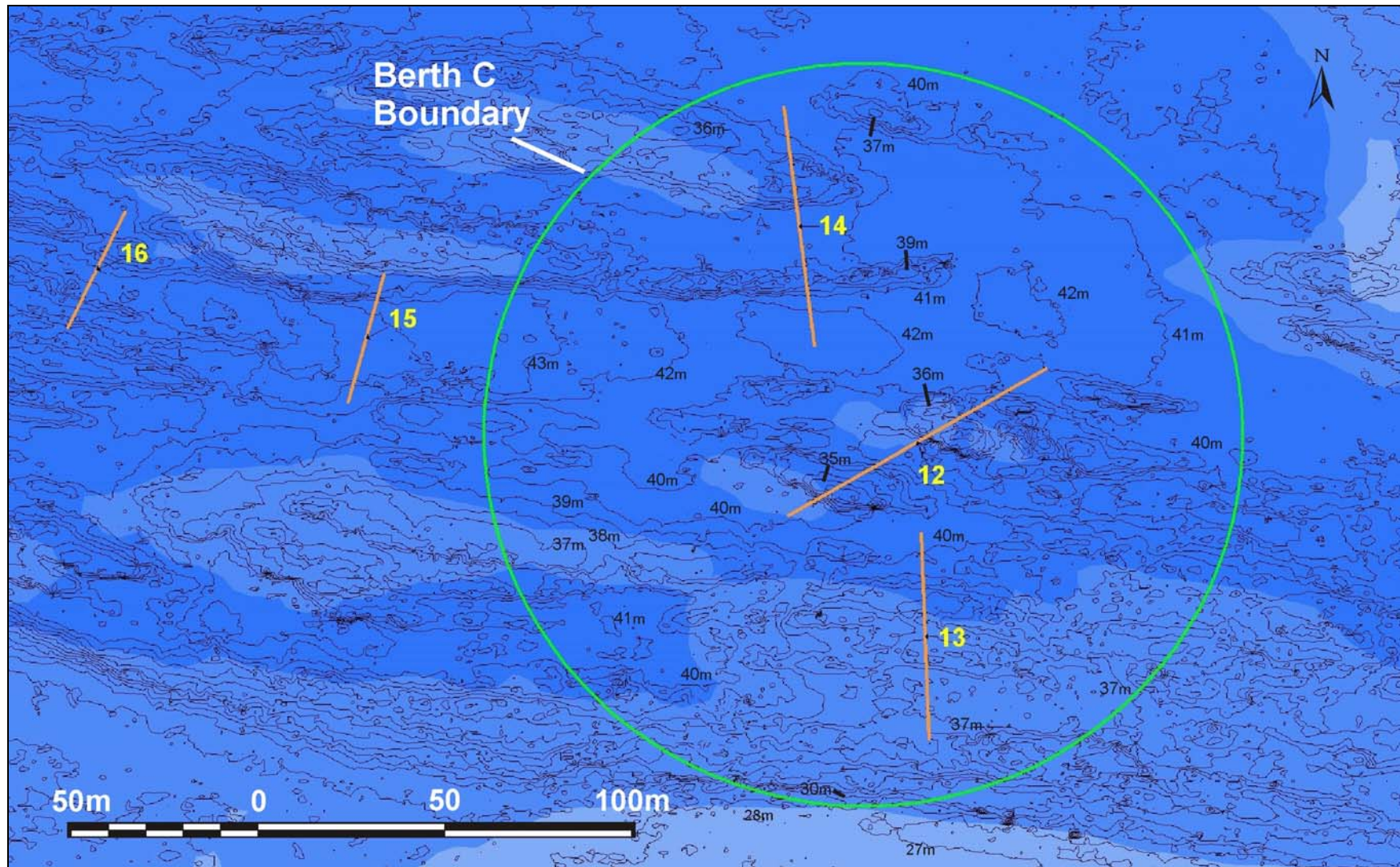


Figure 2. Bottom contours and locations of cross-sectional profiles from Berth C.

bedrock separated by level areas floored by cobble & boulder. On the southern border of the site, bottom rises steeply onto the adjacent basalt bedrock platform (Figures 1 & 2). Average depth determined from the digital elevation model is 39.6 m below MLW (maximum and minimum depth of 44.3 and 27.8 m respectively) (Seaforth Geosurveys, personal communication). The cable route to shore (Figure 1) extends over a relatively level cobble and boulder bottom, which gradually slopes shoreward, and supports occasional mobile gravel and cobble waves. Near shore the route rises abruptly onto a gravel shelf, which borders the shore in the vicinity of the proposed cable landfall (Figure 1).

Berth Site

Bottom Type—The center of the 200 m diameter circle, which delineates Berth “C”, is approximately 900 m west of Black Rock. Berth “C” is located in a transitional area between a platform of basalt bedrock on the south, sedimentary (siltstone/sandstone) bedrock outcrops and ridges which occupy most of the site and occur to the west, and a zone of comparatively level bottom to the north/northeast dominated by typically rounded cobbles and boulders derived from rock types in the area. Cobble and boulder bottom also fills several level ‘valleys’ in the troughs between sedimentary bedrock ridges through the Berth area. The topography is quite irregular in the vicinity of sedimentary bedrock outcrops and level on the basalt bedrock platform and in the cobble area (Figures 2 & 3). These bottom types appear to be the same as determined for the demonstration site study area as a whole (AMGC 2009), and likely have the same geological origin.

Video and still photographic images were obtained in all the major seabed types at Berth “C”. Sedimentary bedrock ridges, particularly sandstone, tended to have rough and irregular surfaces, occasionally showing layering (Figures 4 & 5). Occasional exposures of red mudstone bedrock, with grey layering, occurred in troughs (Figure 6). Areas of cobble and boulder within the site in troughs showed differences in character to those in more open areas outside, with those occurring in troughs between bedrock ridges tending to be more angular (e.g. Stations 3-1 to 3-3, February 2009, Appendix A) and often had biological surface growth of biolayer (tubes and other biological structures on a surface) and small surface dwelling organisms (Figure 7); cobble and boulder areas around the northeast margin of Berth “C” and to the northeast, were generally cleaner, typically without surface growth and occasionally with patchy growth of breadcrumb sponge on boulders (Figures 8 & 9). Overall, areas of cobble and boulder were comparable in character to open areas of cobble and boulder bottom identified in earlier studies at the site and confirm they are extensions of the types observed in the earlier study (e.g. AMGC 2009). The basalt platform on the south side of Berth “C” (Figure 10) showed predominantly boulders encrusted with sponges, similar to those found in earlier studies, although exposed basalt bedrock was not captured in video coverage. The steep escarpment between the volcanic platform and the sedimentary bedrock below was not surveyed in the present study.

Biological Communities—Biological communities resembled those sampled in the 2008 survey, and corresponded to the major bottom types: sedimentary bedrock outcrops, basalt bedrock platform, and areas containing predominantly cobble & boulder (Table 1). Communities were qualitatively less diverse than in the 2008 video survey, although some of the major dominants, the Northern Red Anemone (*Urticina felina*), the yellow, encrusting breadcrumb sponge (*Halichondria panicea*) and the red, blood star (*Henricia sanguinolenta*) occurred here, as in the broader study area. Fewer taxa were observed than previously (Table 1), in part because image quality was not as good as in the earlier surveys. One species, the toad crab, *Hyas* sp, which occurred in video and still photography,

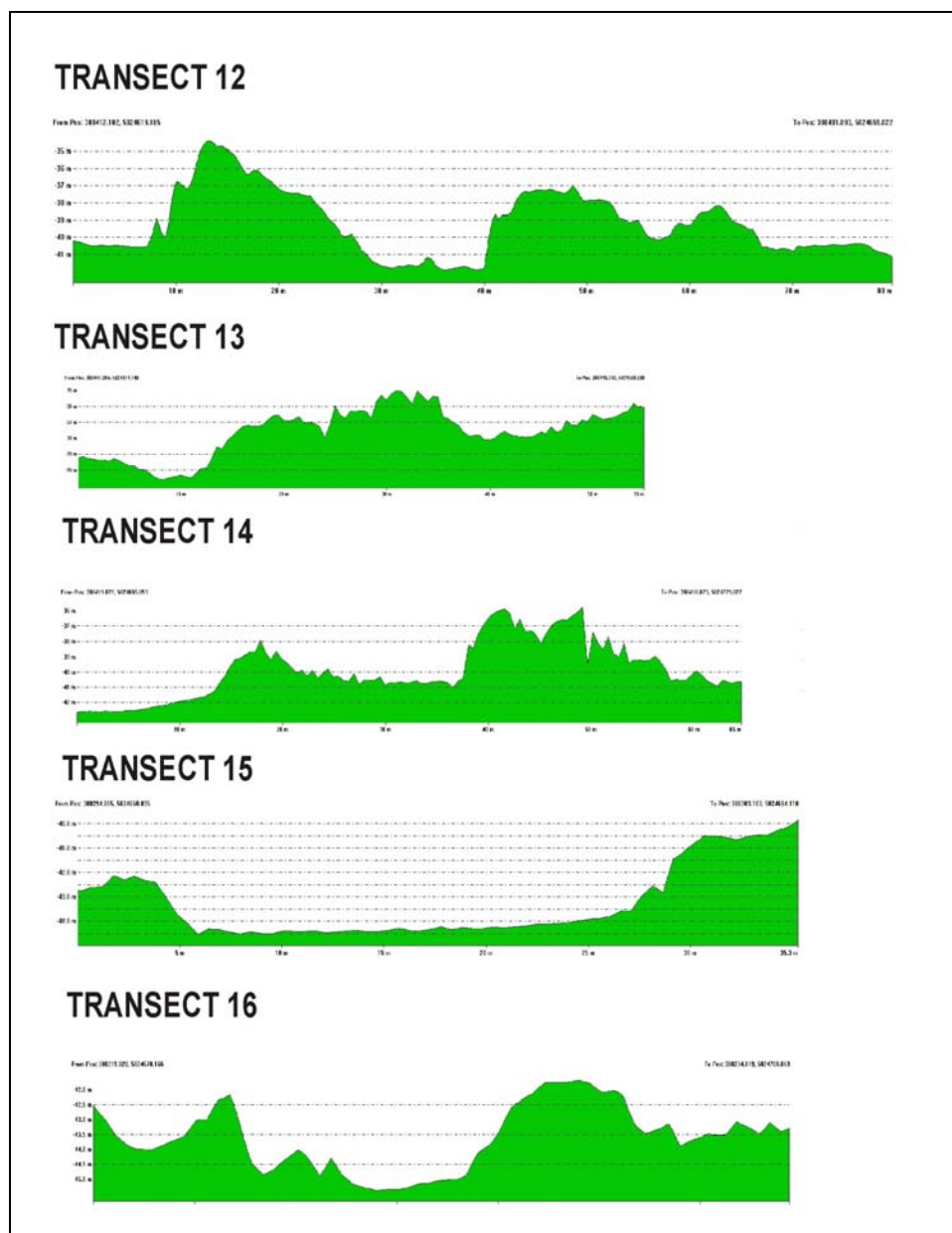


Figure 3. Cross sections in the vicinity of Berth “C”. For locations, see Figure 2.

had not been seen in the earlier surveys, but is a common species in Nova Scotia coastal waters. Abundance and diversity appears to be highest in sandstone bedrock areas and in areas of cobble and boulder located in troughs between bedrock ridges at the site, where a surface biolayer as well as tube-building organisms on the edges of rocks were observed, and resembles that in other parts of the study site on similar substrate as shown in the previous surveys. Reduced current speeds in the near bottom boundary layer in the presence of outcrops and boulders may assist in the attachment of organisms, and possibly provides an enhanced food regime (i.e. trapping particles); while the cobble and boulder bottoms on the margin of the site are generally free of organisms and the surfaces are clean, reflecting stronger currents and abrasion of surfaces by bedload.



Figure 4. Sandstone bedrock outcrop with northern red sea anemones, blood star, breadcrumb sponge, and toad crab (*Hyas* sp) (lower left). Location BEN C10-3 (C10-3 (BE)), Appendix E.



Figure 5. Bedrock ridge surrounded by cobble and bedrock bottom, Station C9-1, Appendix E, March 10, 2009.



Figure 6. Cobble and boulder over mudstone bedrock exposure, showing layering (Station BEN C-5 (C-5 (BE)), July 2, 2009, Appendix E).



Figure 7. Biolayer on boulder, Station C1-3, February 2009.



Figure 8. Breadcrumb sponge on boulder, Station BEN 6-2 (6-2 (BE)), Appendix E. July, 2009. Bedload movement prevents sponge from covering lower parts of rock.



Figure 9. Clean cobble and boulder. Station BEN 6-4 (6-4 (BE)), Appendix E, July 2009.



Figure 10. Breadcrumb sponge on volcanic bedrock southeast of Berth C (Station C5-1), February 2009.

Cable Route

Bottom Type—The proposed cable route (Figure 1; Appendix F, Figure F1) runs roughly from west to east from Berth “C” across the zone of predominantly level cobble and boulder occurring west of Black Rock, to the proposed cable landfall. From Berth “C”, the route first passes across an area of occasional bedrock outcrops/ridges jutting out of the cobble/ boulder surface, and then passes through an extended zone of cobble to boulder, including occasional gravel waves, which occur west of Black Rock (Figure 1). Approaching shore, it rises up the slope of a near shore shelf, dominated by boulder and cobble on the slope and gravel and cobble on the gradually sloping plateau of the shelf. The shelf is described in baseline studies from 2008 (AMGC 2009; EnviroSphere Consultants Ltd. 2009; Stewart (2009))³. Bottom types resemble the zone of cobble and boulder, as well as gravel/cobble waves and shelf features, which were encountered in the earlier surveys (AMGC 2009).

Biological Communities—Few biological organisms were observed along the cable route where it crosses the cobble/boulder bottom, but the biological community was similar to that observed in earlier surveys, including occasional breadcrumb sponges on the tops of rocks (also observed in the earlier surveys, where bedload hindered development lower on the rocks), barnacles, the occasional occurrence of mobile species such as hermit crabs (Table 1) and a lobster (Station CC-9). Sandstone

³ As of November 2009, the landing point of the cables for the project will be further to the east by about 400 m. Additional video taken in the summer of 2009 of a transect crossing the shelf in the vicinity of the now-proposed cable landfall is presented in a separate report.



Figure 11. Cobble to boulder bottom, Berth “C” cable route, Station CC16A-1, July 2009.



Figure 12. Well sorted cobble, Berth “C” cable route in the vicinity of the bottom shown in Figure (Station CC16A-2, July 2009.

outcrops, which occur as the cable route leaves Berth “C”, showed some biological development including occurrence of patchy cover of sponges and a biolayer (visible growth of fine tube-building organisms). On the near shore shelf, a zone of *Fucus* (rockweed), and *Palmaria* (dulse) occurs on gravel to cobble bottom at the outer edge of the shelf, but the closest approach to shore (Station AC1, Appendix F) includes a sparsely populated kelp bed, dominated by *Laminaria longicuris* (including possibly *L. digitata*) as well as clumps of *Fucus*, *Palmaria* and encrusting coralline algae. The slope of the near shore shelf did not support seaweeds.

CONCLUSIONS

In general, the same seabed types were observed at Berth “C” as occurred in the overall tidal demonstration project area for which baseline studies were carried out in 2008 (AMGC 2009). Bottom communities were likewise similar to those observed earlier, and reflected a similar relationship to the major seabed types (Envirosphere Consultants Limited 2009; Stewart 2009).

REFERENCES

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Tables

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. .Depths below mean low water (MLW) were obtained from the digital terrain model for the site.					
Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
BERTH “C”					
Feb. 2, 2009	C 1-1	52.0	video	No view	No view
	C 1-2	52.2	video	cobble and boulder	none visible
	C 1-3	46.7	video	cobble to boulder	biolayer
	C 2-1	54.2	video	gravel & cobble to boulder	drift <i>Ascophyllum</i>
	C 2-2	53.6	video	mixed coarse sand to gravel to large cobble	none
	C 2-3	53.6	video	cobble to gravel	none
	C 3-1	53.8	video	sandstone boulder/bedrock	biolayer, edge fauna, possible barnacles
	C 3-2	51.2	video	predominantly large cobble	none
	C 3-3	50.3	video	sandstone boulder/bedrock	biolayer, edge fauna
	C 4-1	51.2	video	cobble to boulder	hermit crab in whelk shell
	C 4-2	48.5	video	boulder to bedrock	none
	C 4-3	45.2	video	boulder to bedrock	anemone
	C 5-1	43.0	video	boulder (basalt)	yellow encrusting breadcrumb sponge 95%
	C 5-2	42.5	video	bedrock/boulder	yellow encrusting breadcrumb sponge, 80%, red anemone (~2)
	C 5-3	42.3	video	basalt bedrock	patchy yellow encrusting breadcrumb sponge, northern red anemone (~3)
	C 6-1		video	sand/gravel to cobble & boulder	no biota noted
	C 6-2	35.7	video	sand and gravel to cobble	none, shell debris
	C 6-3	31.3	video	sand and gravel to cobble & boulder	none, shell debris
	C 7-1	55.3	video	gravel to cobble & boulder	no biota noted
	C 7-2	54.2	video	gravel to cobble & embedded boulder	no biota noted
	C 7-3	52.5	video	cobble & boulder	encrusting yellow breadcrumb sponge on some large cobbles.
March 10, 2009	C 8-1	41.4	video	large cobble to boulder	biolayer, edge fauna including <i>Boltenia</i> , polychaete tubes
	C 8-2	40.7	video	boulder	biolayer 100%, whelk, barnacles? hermit crab
	C 8-3	40.5	video	boulder/bedrock	none noted
	C 9-1	39.4	video	sandstone bedrock outcrop	possible biolayer
	C 9-2	40.9	video	gravel to boulder, siltstone mudstone	none
	C 9-3	41.0	video	gravel to large cobble	no biota noted
	C10-1	39.8	video	gravel to large cobble	no biota noted

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	C10-2	40.2	video	sandstone bedrock ridge	yellow encrusting breadcrumb sponge, erect form in small patch, occasional barnacles, biolayer; occasional red anemone
	C10-3	40.4	video	gravel to large cobble	yellow encrusting breadcrumb sponge in small patches on large cobble, 15% cover
	C10-4	40.7	video	cobble and bedrock? faint	no biota noted
	C10-5	41.1	video	cobble to boulder faint	no biota noted
	C10-6	41.4	video	indeterminate	no biota noted
	C10-7	40.1	video	indeterminate	indeterminate
	C10-8	39.4	video	red mudstone boulder/bedrock, smooth with white stripes; embedded, surrounded by gravel to cobble	no biota noted
	C10-9	40.1	video	sandstone bedrock/ boulder	dense <i>Flustra</i> development; biolayer?, barnacles, <i>Henricia?</i> and possible hermit crabs
	C11-1	38.0	video	sandstone bedrock	biolayer, barnacles?, edge fauna?
	C11-2	36.1	video	indeterminate	no biota noted
June 18, 2009	C 8-repeat-1	40.1	video	gravel to cobble & boulder	hermit crab?
	C 8-repeat-2	39.9	video	sandstone boulder/gecrock	biolayer, barnacles, edge fauna
	C 8-repeat-3	39.9	video	bedrock (siltstone?)	patchy biolayer, seastar (<i>Henricia?</i>)
	C 9-repeat-1	40.4	video	large cobble to boulder with coarse sand to granule over red mudstone outcrop	no biota noted
	C 9-repeat-2	40.7	video	red mudstone outcrop with white striations	barnacles on sandstone boulder, hermit crab?
	C 9-repeat-3	41.3	video	red mudstone bedrock	no biota noted
	C 8a-1	39.9	video	sandstone bedrock outcrop	barnacles, biolayer
	C 8a-2	39.9	video	sandstone bedrock/boulder	continuous biolayer, barnacles
	C 8a-3	39.7	video	sandstone bedrock outcrop	biolayer, <i>Asterias</i> , edge fauna
	C 8a-4	39.5	video	sandstone bedrock outcrop, adjacent to small boulders	barnacles, biolayer
	C 8a-5	36.7	video	no image	no image
	C 8a-6	37.3	video	boulders	biolayer, barnacles?
	C 8a-7	38.3	video	sandstone boulders over hollowed mudstone bedrock	biolayer, barnacles on sandstone, hermit crab
	C 9a-1	41.6	video	clean cobble with gravel	no biota noted
	C 9a-2	41.1	video	clean gravel to cobble	no biota noted
	C 9a-3	39.8	video	sandstone boulder/bedrock, red mudstone bedrock	biolayer, edge fauna, <i>Flustra</i> , <i>Henricia</i> (2)

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	C 9a-4	37.9	video	sandstone boulder/bedrock	biolayer, barnacles, <i>Flustra</i> , crab? unid
	C 9a-5	37.0	video	sandstone bedrock	toad crab (<i>Hyas</i>) , patches of breadcrumb sponge, biolayer, barnacles
	C 9a-6	36.6	video	sandstone boulders	biolayer, edge fauna, <i>Henricia</i> , barnacles
	C 9a-7	37.9	video	no image	no image
	C10-repeat- 1	40.2	video	no image	no image
	C10-repeat- 2	40.5	video	sandstone bedrock	biolayer
	C10-repeat- 3	40.5	video	cobble to boulder	patchy biolayer, edge fauna, <i>Henricia</i> , <i>Asterias</i> (2), barnacle?, hermit crab
	C10-repeat- 4	41.0	video	cobble to boulder	hermit crab (2)
	C10-repeat- 5	40.3	video	cobble to boulder	no biota noted
	C10-repeat- 6	40.8	video	cobble to boulder	no biota noted
	C10-repeat- 7	40.9	video	cobble to boulder	occasional barnacles
	C10-repeat- 8	41.0	video	cobble to boulder	no biota noted
	C10-repeat- 9	41.6	video	large cobble, boulder	breadcrumb sponge patch on one boulder, hermit crab?
	C10-repeat-10	41.4	video	cobble to boulder	patch of breadcrumb sponge on boulder
	C10-repeat-11	41.5	video	cobble to boulder	encrusting sponge on boulder
	C13-1	41.5	video	cobble to boulder	no biota noted
	C13-2	41.4	video	cobble to boulder	no biota noted
	C13-3	41.3	video	cobble to boulder	hermit crab
	C12-1	42.0	video	cobble to boulder (sheltered)	<i>Henricia</i> , patchy biolayer, edge fauna, <i>Flustra</i> , hermit crabs?
	C12-2	42.0	video	cobble to boulder (sheltered)	patchy biolayer, hermit crabs (2)
	C12-3	41.7	video	cobble to boulder	hermit crabs?, biolayer
	C12-4	41.8	video	cobble to boulder	biolayer on some rocks, edge fauna
	C12-5	42.0	video	sandstone boulder	small spots of biolayer, barnacles, possible <i>Boltenia</i>
	C12-6	41.8	video	clean cobble to boulder	no biota noted
	C14-1	40.1	video	cobble to boulder	encrusting breadcrumb sponge
	C14-2	39.5	video	cobble to boulder with mudstone bedrock	encrusting breadcrumb sponge
	C14-3	39.5	video	cobble to boulder, mudstone bedrock	encrusting breadcrumb sponge on boulder
	C14-4	39.5	video	boulder	near complete cover, breadcrumb sponge
	C16-1	39.2	video	clean cobble to boulder	no biota noted
	C16-2	39.2	video	clean cobble to boulder	no biota noted

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Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	C16-3	39.5	video	clean cobble to boulder	no biota noted
	C16-4	39.3	video	cobble to boulder	no biota noted
	C16-5	39.1	video	cobble to boulder	no biota noted
	C15-1	39.7	video	no image	no image
	C15-2	39.6	video	cobble to boulder	no biota noted
	C15-3	39.7	video	cobble to boulder with pea gravel	no biota noted
July 2-3, 2009	CJ 8-1	39.5	video	sandstone bedrock	<i>Henricia</i> , biolayer, edge fauna, seastar unidentified (2)
	CJ 8-2	40.6	video	sandstone bedrock	edge fauna, biolayer, <i>Boltenia</i> ?
	CJ 8-3	40.7	video	sandstone bedrock/boulders	edge fauna, seastar unid.
	CJ 8-4	41.4	video	no view	no view
	CJ 8-5	42.2	video	clean cobble to boulder	small whelks, barnacles occasional.
	CJ 8-6	41.8	video	cobble to boulder	small to large patches of biolayer, hermit crabs (2), barnacles?
	CJ 9-1	40.0	video	no image	no image
	CJ 9-2	41.5	video	no image	no image
	CJ 9-3	41.5	video	cobble to boulder with some granule & gravel	occasional barnacle
	CJ 9-4	41.7	video	cobble to boulder	none visible
	CJ10-1	40.6	video	sandstone boulder plus interboulder spaces	edge fauna, <i>Boltenia</i> , erect branching sponge/hydroid, biolayer
	CJ10-2	41.3	video	gravel, cobble and boulder	<i>Henricia</i> (1), encrusting breadcrumb sponge on boulder
	CJ10-3	41.4	video	gravel, cobble and boulder	hermit crab
	CJ10-4	40.0	video	cobble to boulder & bedrock	<i>Henricia</i> (1), seastar unid, barnacles?, edge fauna
	CJ10-5	41.5	video	sandstone bedrock	biolayer, <i>Henricia</i> , hermit crab?
	CJ10-6	41.7	video	clean cobble to boulder	none
	CJ10-7	38.0	video	cobble to boulder, mudstone boulder/bedrock	none visible
	CJ10a-1	41.4	video	cobble to boulder	<i>Henricia</i> (1), edge fauna, northern red anemone, patchy biolayer, barnacles? (occasional)
	CJ10a-2	42.0	video	sandstone bedrock	biolayer, barnacles?
	CJ10a-3	42.1	video	sandstone boulder/bedrock	biolayer, <i>Henricia</i> (1), northern red anemones (several), patches of breadcrumb sponge (erect form), edge fauna
	CJ10a-4	41.8	video	cobble to boulder	biolayer, edge fauna, barnacles?
	CJ10a-5	41.2	video	clean cobble to boulder	none

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	CJ10a-6	35.3	video	clean cobble to boulder	none visible
BERTH “C” CABLE ROUTE					
June 18, 2009	CC 1-1	4.7	video	level gravel to cobble	kelp bed, <i>Laminaria longicruris</i> , <i>Fucus</i>
	CC 1-2	4.9	video	gravel to cobble	patchy <i>Fucus</i> , corallines
	CC 1-3	5.4	video	level gravel to cobble	<i>Fucus</i> , <i>Palmaria</i> , sea star unidentified
	CC 2-1	6.7	video	gravel to cobble	patchy <i>Fucus</i> , <i>Corallina</i> , occasional shell debris
	CC 2-2	6.7	video	gravel to cobble	patchy <i>Fucus</i> , corallines, <i>Palmaria</i> ?
	CC 2-3	6.8	video	gravel to cobble	patchy <i>Fucus</i> , <i>Palmaria</i> ?, occasional shells
	CC 3-1	8.1	video	gravel to cobble with occasional boulder	<i>Fucus</i> , <i>Palmaria</i>
	CC 3-2	7.7	video	gravel to cobble with occasional embedded boulder	patchy <i>Fucus</i> , <i>Palmaria</i>
	CC 3-3	8.1	video	gravel to cobble with occasional boulder	patchy <i>Fucus</i> , <i>Palmaria</i> ?, shell debris
	CC 4-1	8.2	video	gravel to cobble with embedded boulder	no plants, occasional shells
	CC 4-2	8.4	video	gravel to cobble	no vegetation, no biota noted
	CC 4-3	8.7	video	gravel predominantly with occasional cobble to boulder	no biota noted
	CC 5-1	12.7	video	bedrock outcrop, cobble, sedimentary	biolayer
	CC 5-2	12.2	video	gravel to cobble and boulder	biolayer, edge fauna
	CC 5-3	11.5	video	cobble to boulder	seastar, edge fauna, biolayer
	CC 6-1	11.5	video	gravel to cobble and boulder	whelk, edge fauna, biolayer
	CC 6-2	11.3	video	gravel to cobble and boulder	biolayer, toad crab (<i>Hyas</i>)
	CC 6-3	11.6	video	cobble and boulder	biolayer
	CC 7-1	13.0	video	cobble to boulder	biolayer, whelk, barnacles?
	CC 7-2	12.9	video	cobble to boulder	biolayer, edge fauna, hermit crabs/snails
	CC 7-3	13.2	video	mainly boulder	biolayer, edge fauna
	CC 8-1	13.8	video	gravel to cobble and boulder	biolayer, edge fauna with <i>Flustra</i>
	CC 8-2	13.7	video	gravel to cobble & boulder	biolayer, whelk
	CC 8-3	13.8	video	gravel to cobble & boulder	biolayer edge fauna (<i>Flustra</i>)
	CC 9-1	17.5	video	cobble to boulder	biolayer, edge fauna, lobster
	CC 9-2	17.8	video	cobble to boulder,	biolayer, edge fauna (<i>Flustra</i>), occasional shell, patch of breadcrumb sponge.

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	CC 9-3	18.0	video	cobble to boulder	biolayer, edge fauna (including <i>Flustra</i>), patch of breadcrumb sponge.
	CC10-1	19.8	video	clean gravel to cobble	no biota noted
	CC10-2	19.9	video	clean gravel to cobble	no biota noted
	CC10-3	17.8	video	clean gravel	no biota noted
	CC11-1	16.3	video	cobble to boulder	no biota noted
	CC11-2	16.2	video	large cobble to boulder	occasional shells, hermit crab/snail?
	CC11-3	16.2	video	cobble to boulder	small patches of biolayer
	CC12-1	17.2	video	clean gravel	none noted
	CC12-2	16.4	video	clean gravel and occasional cobble	no biota noted
	CC12-3	16.4	video	clean gravel	no biota noted
	CC13-1	15.7	video	clean gravel (coarse) with cobble	no biota noted
	CC13-2	16.8	video	clean gravel to cobble	little biota (one barnacle)
	CC13-3	17.1	video	coarse gravel to cobble	no biota noted
	CC14-1	14.9	video	cobble to boulder	no biota noted
	CC14-2	15.1	video	coarse gravel to cobble (gravel wave)	no biota noted
	CC14-3	15.3	video	coarse gravel to cobble (gravel wave)	no biota noted
	CC15-1	20.0	video	coarse gravel to cobble (gravel wave)	no biota noted
	CC15-2	21.1	video	coarse gravel to cobble (gravel wave)	no biota noted
	CC15-3	20.5	video	coarse gravel to cobble (gravel wave)	no biota noted
	CC16-1	20.4	video	coarse gravel to cobble	no biota noted
	CC16-2	21.6	video	cobble to boulder	whelk?, patch of breadcrumb sponge
	CC16-3	22.0	video	cobble to boulder (occasional sand)	small seastar
July 2, 2009	CC16a-1	19.1	video	cobble to boulder	boulder with covering of breadcrumb sponge, occasional small snails
	CC16a-2	19.3	video	clean coarse gravel and cobble	no biota noted
	CC16a-3	19.0	video	coarse gravel to cobble	no biota noted
	CC18-1	24.2	video	cobble to boulder	barnacles, edge fauna
	CC18-2	24.5	video	cobble to boulder	occasional snail shell
	CC18-3	24.8	video	cobble to boulder	no biota noted
	CC18-4	24.7	video	gravel to cobble and boulder	linear biolayer, <i>Henricia</i> , patch of breadcrumb sponge

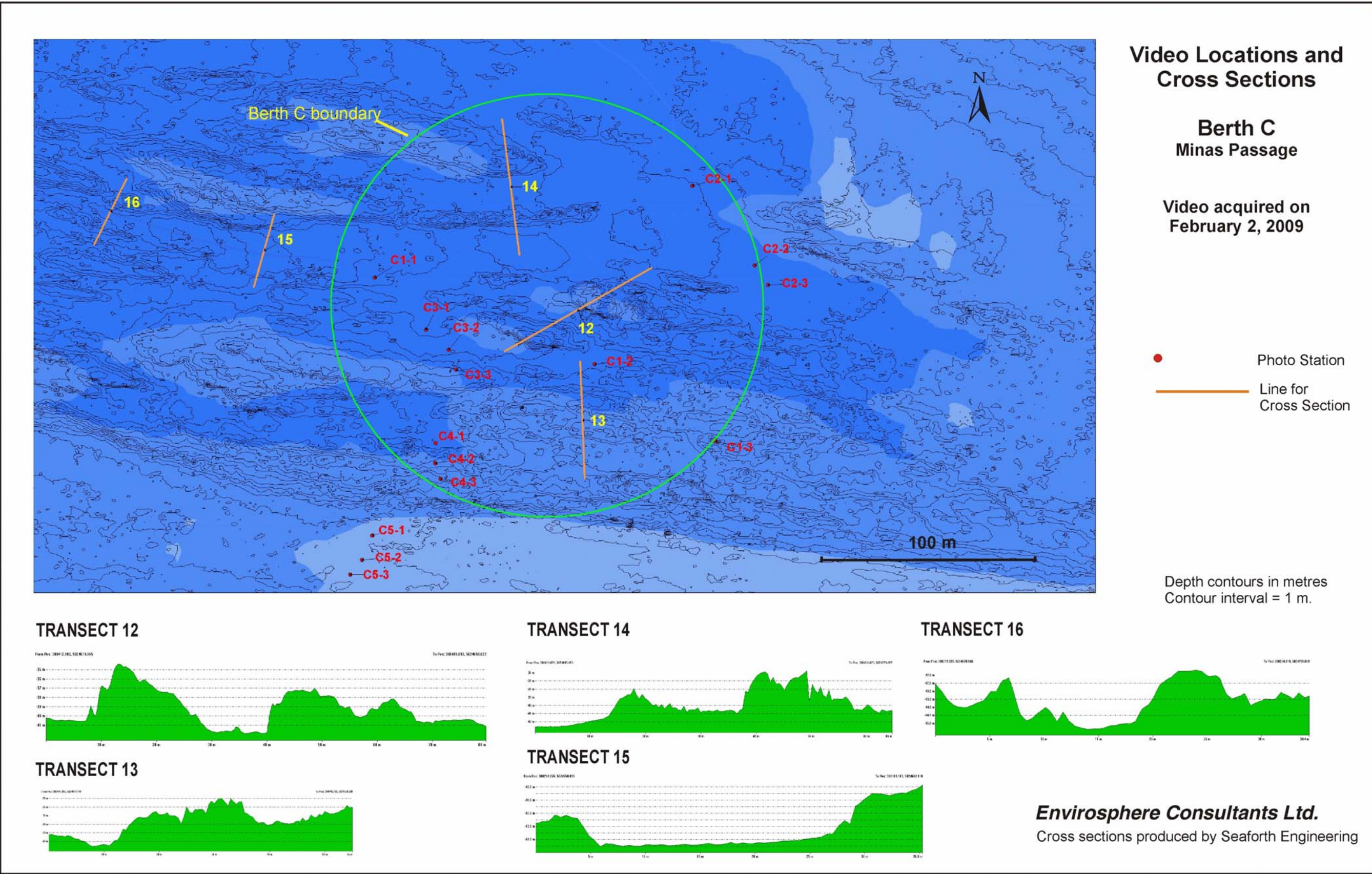
Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	CC19-1	27.0	video	cobble to boulder	seastar (<i>Asterias</i>)(2), hermit crab, biolayer, occasional barnacles, edge fauna
	CC19-2	27.0	video	cobble to boulder	biolayer, edge fauna, <i>Flustra</i> , <i>Henricia</i>
	CC19-3	27.3	video	cobble to boulder	biolayer, occasional hermit crab, <i>Asterias</i> ?
	CC20-1	29.5	video	cobble to boulder	none
	CC20-2	30.1	video	cobble to boulder	barnacles?
	CC20-3	30.4	video	cobble to boulder	patchy biolayer
	CC20-4	30.4	video	cobble to boulder	no biota noted
	CC20-5	30.4	video	cobble to boulder	occasional barnacles
	CC21-1	32.8	video	cobble with coarse sand to granule	no biota noted
	CC21-2	33.3	video	cobble with coarse sand to granule	no biota noted
	CC21-3	34.0	video	cobble with coarse sand to granule	no biota noted
	CC21-4	34.3	video	cobble with coarse sand to granule	no biota noted, patch of breadcrumb sponge
	CC22-1	36.5	video	boulders including mudstone, sandstone bedrock, cobble	breadcrumb sponge
	CC22-2	36.8	video	cobble to boulder	no biota noted
	CC22-3	36.7	video	cobble to boulder	seastar (<i>Asterias</i>)
	CC22-4	36.9	video	cobble	no biota noted
	CC23-1	38.8	video	large cobble	breadcrumb sponge
	CC23-2	38.9	video	large cobble	patch of breadcrumb sponge
	CC23-3	39.0	video	cobble to boulder	large patch breadcrumb sponge
	CC24-1	35.3	video	sandstone bedrock outcrop	biolayer, <i>Henricia</i> , patches of breadcrumb sponge, biolayer, edge fauna.
	CC24-2	35.5	video	boulders	biolayer, northern red anemone, <i>Henricia</i> (1), barnacles, patches of encrusting breadcrumb sponge
	CC24-3	36.3	video	large cobble to boulder	hermit crab?
	CC24-4	36.1	video	cobble to large boulder	biolayer, small crab, edge fauna
	CC24-5	36.3	video	sandstone boulder in field of cobble	biolayer
July 2-3, 2009	BEN C 6-1	41.4	35mm photo	clean cobble and boulder with gravel over mudstone bedrock	whelk, hermit crab
	BEN C 6-2	41.7	35mm photo	clean cobble and boulder with some gravel	breadcrumb sponge on boulder
	BEN C 6-3	41.2	35mm photo	clean cobble and boulder with some gravel	no biota noted

Table 1. Surficial geology observations and biological information obtained in seabed video and still photography surveys, Berth “C” and associated cable route, February to July, 2009. .Depths below mean low water (MLW) were obtained from the digital terrain model for the site.

Cruise Date	Station	Depth (m)	Image Type	Bottom Type	Biological Component
	BEN C 6-4	41.2	35mm photo	clean cobble and boulder with some gravel	no biota noted
	BEN C 6-5	40.7	35mm photo	clean gravel to cobble over mudstone bedrock	no biota noted
	BEN C 6-6	40.1	35mm photo	cobble to boulder	biolayer on boulder
	BEN C 6-7	39.1	35mm photo	clean cobble/ boulder with gravel	occasional barnacle, small individual hermit crab/snail
	BEN C 8-1	41.8	35mm photo	sandstone bedrock outcrop	barnacles, northern red anemone (3), breadcrumb sponge patches, toad crab (1), unidentified. Crab (1), hermit crab(1), patchy biolayer.
	BEN C 8-2	39.8	35mm photo	sandstone bedrock outcrop	breadcrumb sponge patches, northern red anemone, biolayer, barnacles.
	BEN C 8-3	41.4	35mm photo	no image	--
	BEN C 8-4	41.5	35mm photo	no image	--
	BEN C 8-5	40.8	35mm photo	no image	--
	BEN C 8-6	40.5	35mm photo	no image	--
	BEN C10-1	41.7	35mm photo	sandstone bedrock	biolayer
	BEN C10-2	41.2	35mm photo	no image	--
	BEN C10-3	40.6	35mm photo	sandstone bedrock	breadcrumb sponge patches, northern red anemone (2), hermit crabs (3), <i>Henricia</i> (3), toad crab, barnacles, edge fauna.
	BEN C10-4	41.0	35mm photo	cobble to boulder	no biota noted.
	BEN C10-5	40.3	35mm photo	clean cobble to boulder	no biota noted
	BEN C10-6	40.4	35mm photo	clean cobble to boulder	no biota noted

APPENDIX A- FEBRUARY VIDEO SURVEY, BERTH “C”, FEBRUARY 2, 2009



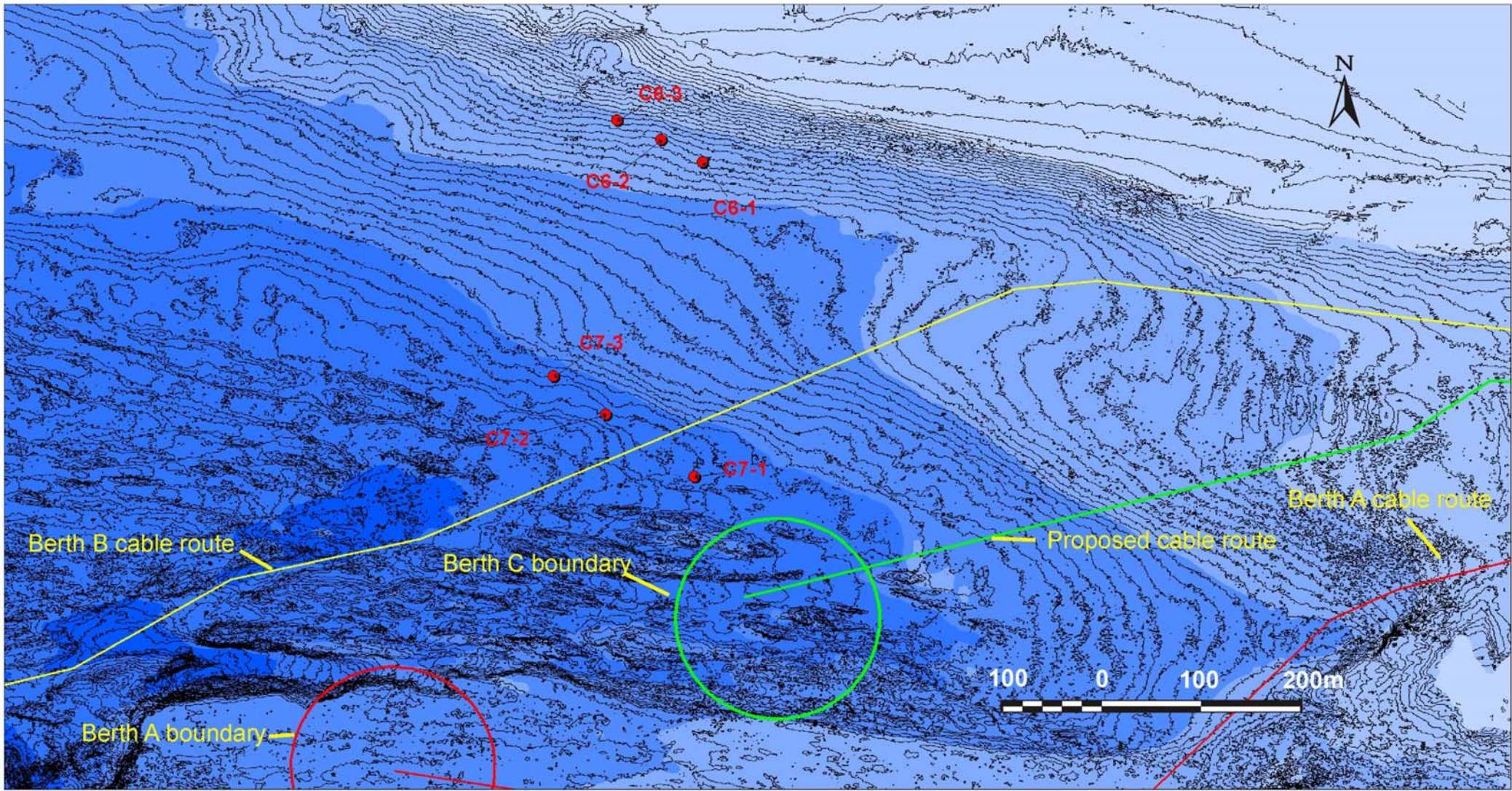
Video Locations
(Miscellaneous
Stations)

Berth “C”
Minas Passage

Video acquired on
February 2, 2009

● Photo Station

Depth contours in metres
Contour interval = 1 m.



Envirosphere Consultants Ltd.

Table A1. List of video and still photo sampling stations, Minas Passage study site, Nova Scotia, Berth "C", February 2, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
C 1 - 1	2/2/2009	1710	45 21.9901	64 25.5430	52.0 m	video
C 1 - 2	2/2/2009	1713	45 21.969	64 25.4631	52.2 m	video
C 1 - 3	2/2/2009	1714	45 21.9499	64 25.4139	46.7 m	video
C 2 - 1	2/2/2009	1717	45 22.0020	64 25.4131	54.2 m	video
C 2 - 2	2/2/2009	1719	45 21.9950	64 25.4061	53.6 m	video
C 2 - 3	2/2/2009	1720	45 21.9901	64 25.4012	53.6 m	video
C 3 - 1	2/2/2009	1722	45 21.9770	64 25.5241	53.8 m	video
C 3 - 2	2/2/2009	1725	45 21.9720	64 25.5159	51.2 m	video
C 3 - 3	2/2/2009	1726	45 21.9669	64 25.5131	50.3 m	video
C 4 - 1	2/2/2009	1730	45 21.9481	64 25.5200	51.2 m	video
C 4 - 2	2/2/2009	1731	45 21.9429	64 25.5200	48.5 m	video
C 4 - 3	2/2/2009	1732	45 21.9390	64 25.5180	45.2 m	video
C 5 - 1	2/2/2009	1740	45 21.9241	64 25.5422	43.0 m	video
C 5 - 2	2/2/2009	1741	45 21.9179	64 25.5458	42.5 m	video
C 5 - 3	2/2/2009	1742	45 21.9140	64 25.5499	42.3 m	video
C 6 - 1	2/2/2009	1752	45 22.2288	64 25.5479	-- m	video
C 6 - 2	2/2/2009	1753	45 22.2401	64 25.5799	35.7 m	video
C 6 - 3	2/2/2009	1754	45 22.2501	64 25.6139	31.3 m	video
C 7 - 1	2/2/2009	1804	45 22.0589	64 25.5471	55.3 m	video
C 7 - 2	2/2/2009	1805	45 22.0911	64 25.6159	54.2 m	video
C 7 - 3	2/2/2009	1806	45 22.1110	64 25.6569	52.5 m	video



Figure A1. C1-2-D



Figure A4. C1-3-E



Figure A7. C1-3-H



Figure A2. C1-3-A



Figure A5. C1-3-F



Figure A8. C2-1-C

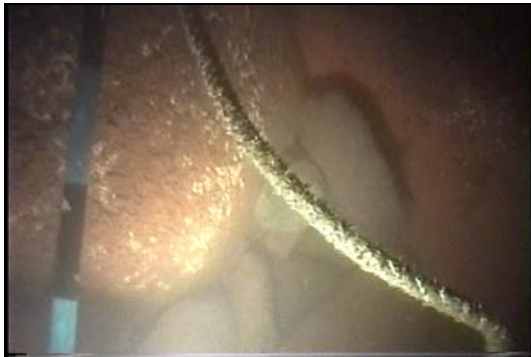


Figure A3. C1-3-D



Figure A6. C1-3-G



Figure A9. C2-2-C



Figure A10. C2-2-D



Figure A13. C2-3-B



Figure A16. C2-3-F



Figure A11. C2-2-E



Figure A14. C2-3-D



Figure A17. C2-3-G



Figure A12. C2-2-G



Figure A15. C2-3-E



Figure A18. C2-3-H



Figure A19. C2-3-I



Figure A22. C3-1-C



Figure A25. C3-2-B



Figure A20. C3-1-A



Figure A23. C3-1-D



Figure A26. C3-2-C



Figure A21. C3-1-B



Figure A24. C3-1-E



Figure A27. C3-3-A



Figure A28. C3-3-B



Figure A31. C3-3 Hx



Figure A34. C4-2-A



Figure A29. C3-3-E



Figure A32. C4-1-A



Figure A35. C4-3-B



Figure A30. C3-3-G



Figure A33. C4-1-B



Figure A36. C4-3-C



Figure A37. C4-3-D



Figure A40. C5-1-C



Figure A43. C5-1-H



Figure A38. C5-1-A



Figure A41. C5-1-F



Figure A44. C5-2-E



Figure A39. C5-1-B



Figure A42. C5-1-G



Figure A45. C5-2-F



Figure A46. C5-3-B



Figure A49. C6-1-B



Figure A52. C6-2-F



Figure A47. C5-3-C



Figure A50. C6-2-A



Figure A53. C6-3-A



Figure A48. C5-3-D



Figure A51. C6-2-E



Figure A54. C6-3-B



Figure A55. C6-3-C



Figure A58. C7-2-E



Figure A61. C7-3-C



Figure A56. C7-1-B



Figure A59. C7-3-A



Figure A62. C7-3-E



Figure A57. C7-2-D



Figure A60. C7-3-B



Figure A63. C7-3-F



Figure A64. CC-24-5-M, July 2009



Figure A65. CC-24-5-N, July 2009



Figure A66. CC-24-5-O, July 2009

APPENDIX B- MARCH VIDEO SURVEY, BERTH “C”, MARCH 10, 2009.

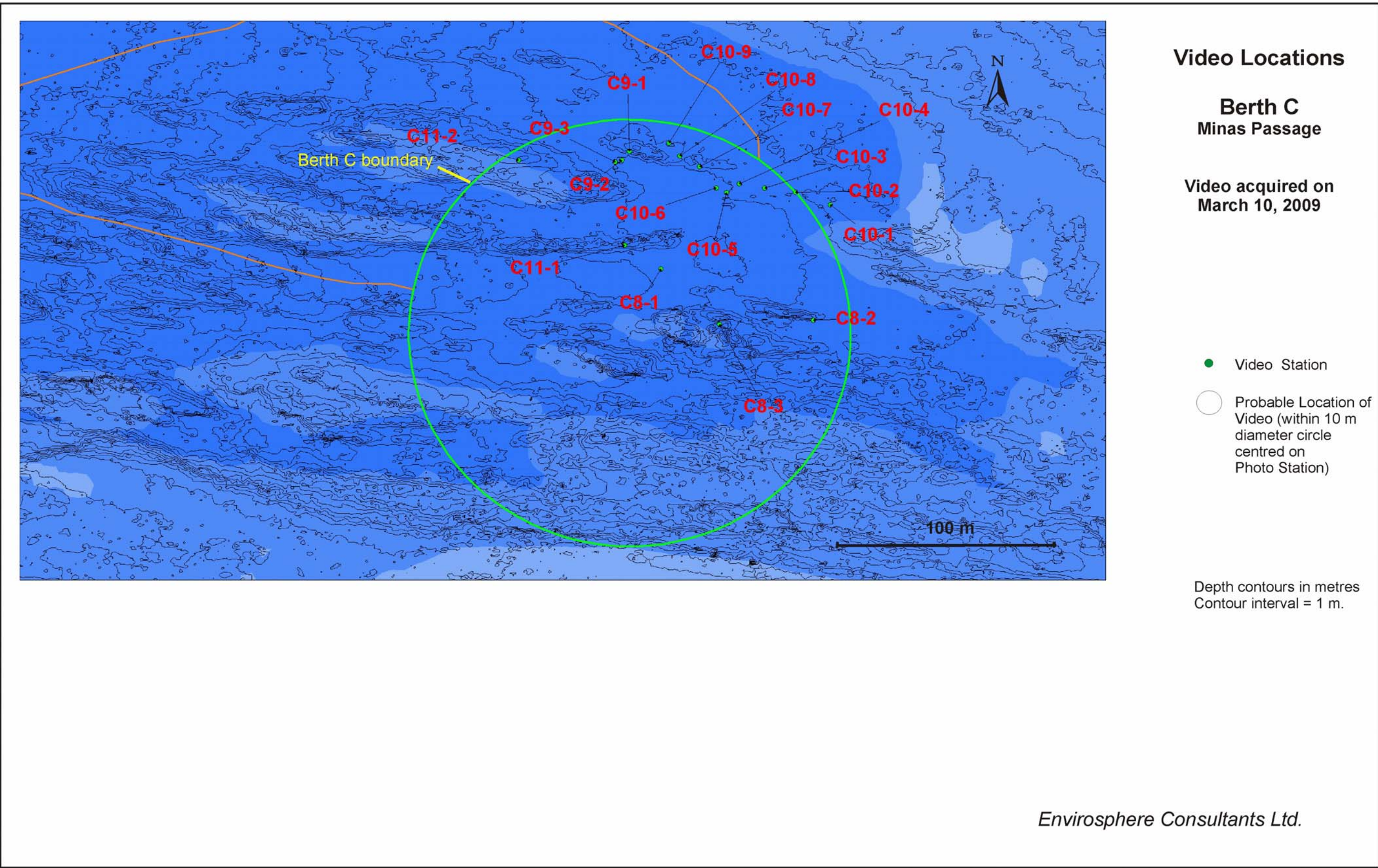


Table B1. List of video and still photo sampling stations, Minas Passage study site, Berth "C", March 10, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
C 8 - 1	3/10/2009	1309	45 22.0000	64 25.4700	41.4 m	video
C 8 - 2	3/10/2009	1310	45 21.9880	64 25.4160	40.7 m	video
C 8 - 3	3/10/2009	1311	45 21.9862	64 25.4490	40.5 m	video
C 9 - 1	3/10/2009	1314	45 22.0296	64 25.4819	39.4 m	video
C 9 - 2	3/10/2009	1315	45 22.0278	64 25.4844	40.9 m	video
C 9 - 3	3/10/2009	1316	45 22.0269	64 25.4869	41 m	video
C10 - 1	3/10/2009	1323	45 22.0165	64 25.4102	39.8 m	video
C10 - 2	3/10/2009	1324	45 22.0204	64 25.4229	40.2 m	video
C10 - 3	3/10/2009	13:24:	45 22.0208	64 25.4340	40.4 m	video
C10 - 4	3/10/2009	13:25	45 22.0222	64 25.4434	40.7 m	video
C10 - 5	3/10/2009	13:26	45 22.0204	64 25.4479	41.1 m	video
C10 - 6	3/10/2009	13:27	45 22.0208	64 25.4508	41.4 m	video
C10 - 7	3/10/2009	13:27:	45 22.0261	64 25.4890	40.1 m	video
C10 - 8	3/10/2009	13:28	45 22.0290	64 25.4621	39.4 m	video
C10 - 9	3/10/2009	13:28:	45 22.0235	64 25.4680	40.1 m	video
C11 - 1	3/10/2009	13:32	45 22.0063	64 25.4832	38 m	video
C11 - 2	3/10/2009	13:33	45 22.0272	64 25.5213	36.1 m	video



Figure B1. C8-1-A



Figure B2. C8-1-B



Figure B3. C8-1-D



Figure B4. C8-1-E



Figure B5. C8-1-F



Figure B6. C8-1-H



Figure B7. C8-2-B



Figure B8. C8-2-C



Figure B9. C8-2-G



Figure B10. C8-2-H



Figure B13. C9-1-G



Figure B16. C9-1-K



Figure B11. C9-1-C



Figure B14. C9-1-H



Figure B17. C9-1-L



Figure B12. C9-1-D



Figure B15. C9-1-I



Figure B18. C9-1-N



Figure B19. C9-2-B



Figure B22. C9-3-A



Figure B25. C9-3-E



Figure B20. C9-2-D



Figure B23. C9-3-B



Figure B26. C10-1-C



Figure B21. C9-2-E



Figure B24. C9-3-D



Figure B27. C10-1-D



Figure B28. C10-1-F



Figure B31. C10-2-A



Figure B34. C10-2-F



Figure B29. C10-1-G



Figure B32. C10-2-C



Figure B35. C10-2-G



Figure B30. C10-1-H



Figure B33. C10-2-D



Figure B36. C10-3-D



Figure B37. C10-3-E



Figure B40. C10-9-D



Figure B43. C10-9-J



Figure B38. C10-8-A



Figure B41. C10-9-F



Figure B44. C10-9-K



Figure B39. C10-8-B



Figure B42. C10-9-G



Figure B45. C10-9-N



Figure B46. C10-9-O



Figure B49. C11-1-C



Figure B47. C10-9-P



Figure B50. C11-1-E



Figure B48. C10-9-Q



Figure B51. C11-1-F

APPENDIX C- JUNE VIDEO SURVEY, BERTH “C”, JUNE 18, 2009

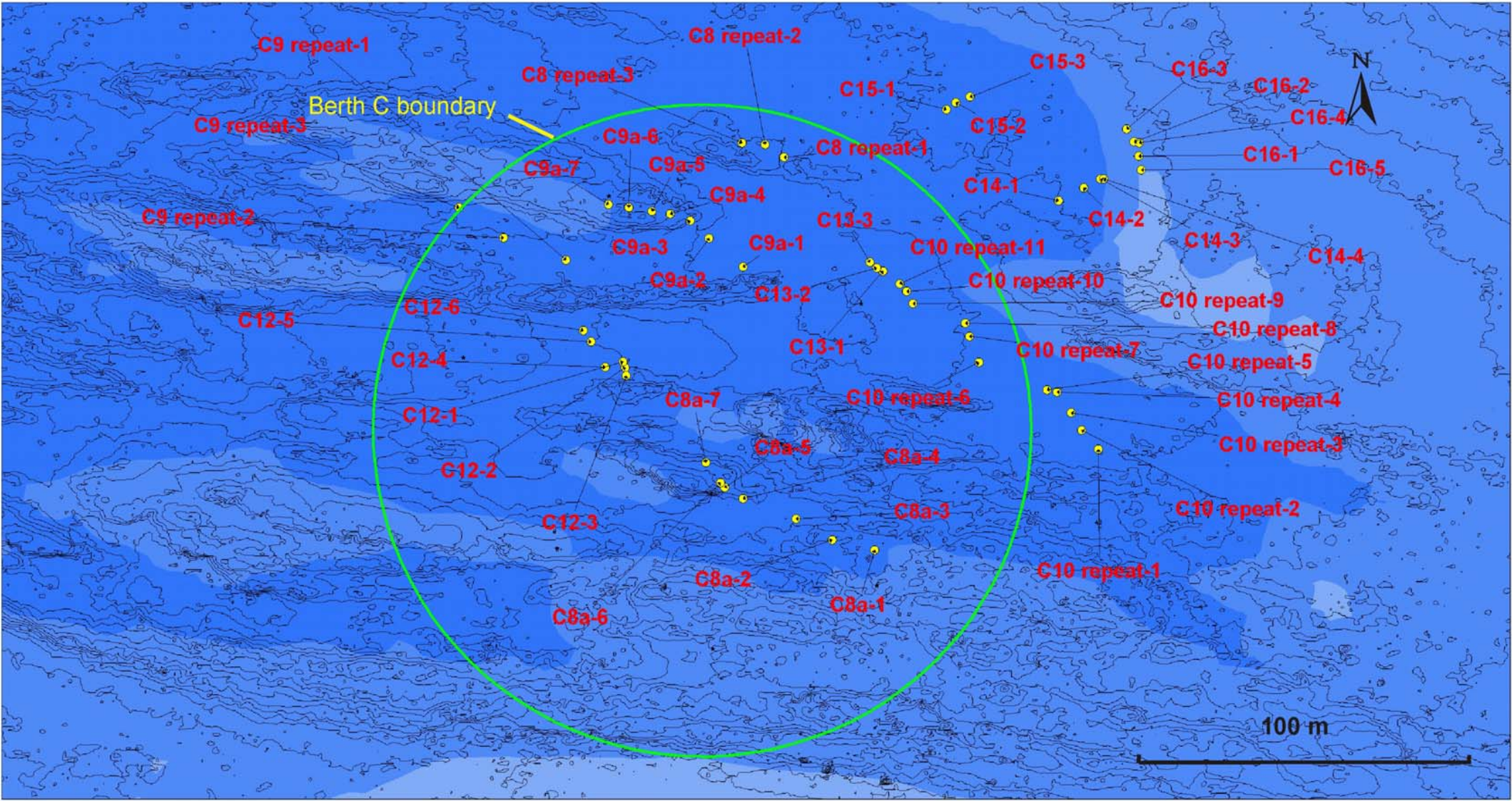
Video Locations

Berth C
Minas Passage

Video acquired on
June 18, 2009

● Video Station

Depth contours in metres
Contour interval = 1 m.



Envirosphere Consultants Limited

Table C1. List of video sampling stations, Minas Passage study site, Berth "C", June, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
C 8-repeat - 1	6/18/2009	13:56	45 22.0294	64 25.4623	40.1 m	video
C 8-repeat - 2	6/18/2009	13:56	45 22.0314	64 25.4669	39.9 m	video
C 8-repeat - 3	6/18/2009	13:57	45 22.0316	64 25.4723	39.9 m	video
C 9a - 1	6/18/2009	14:14	45 22.0110	64 25.4715	41.6 m	video
C 9a - 2	6/18/2009	14:14	45 22.0157	64 25.4798	41.1 m	video
C 9a - 3	6/18/2009	14:14	45 22.0185	64 25.4843	39.8 m	video
C 9a - 4	6/18/2009	14:15	45 22.0196	64 25.4890	37.9 m	video
C 9a - 5	6/18/2009	14:15	45 22.0200	64 25.4934	37.0 m	video
C 9a - 6	6/18/2009	14:15	45 22.0205	64 25.4989	36.6 m	video
C 9a - 7	6/18/2009	14:16	45 22.0210	64 25.5037	37.9 m	video
C 9-repeat - 1	6/18/2009	14:00	45 22.0116	64 25.5135	40.4 m	video
C 9-repeat - 2	6/18/2009	14:01	45 22.0151	64 25.5284	40.7 m	video
C 9-repeat - 3	6/18/2009	14:01	45 22.0200	64 25.5391	41.3 m	video
C10-repeat - 1	6/18/2009	14:19	45 27.9819	64 25.3867	40.2 m	video
C10-repeat - 2	6/18/2009	14:20	45 21.9850	64 25.3907	40.5 m	video
C10-repeat - 3	6/18/2009	14:20	45 21.9879	64 25.3933	40.5 m	video
C10-repeat - 4	6/18/2009	14:21	45 21.9913	64 25.3967	41.0 m	video
C10-repeat - 5	6/18/2009	14:21	45 21.9916	64 25.3991	40.3 m	video
C10-repeat - 6	6/18/2009	14:23	45 21.9959	64 25.4153	40.8 m	video
C10-repeat - 7	6/18/2009	14:23	45 22.0002	64 25.4177	40.9 m	video
C10-repeat - 8	6/18/2009	14:23	45 22.0024	64 25.4187	41.0 m	video
C10-repeat - 9	6/18/2009	14:25	45 22.0055	64 25.4312	41.6 m	video
C10-repeat - 10	6/18/2009	14:26	45 22.0075	64 25.4327	41.4 m	video
C10-repeat - 11	6/18/2009	14:26	45 22.0087	64 25.4344	41.5 m	video
C12 - 1	6/18/2009	14:32	45 21.9949	64 25.4996	42.0 m	video
C12 - 2	6/18/2009	14:32	45 21.9940	64 25.4991	42.0 m	video
C12 - 3	6/18/2009	14:32	45 21.9926	64 25.4988	41.7 m	video
C12 - 4	6/18/2009	14:33	45 21.9940	64 25.5038	41.8 m	video
C12 - 5	6/18/2009	14:33	45 21.9982	64 25.5072	42.0 m	video

Table C1 (cont.). List of video sampling stations, Minas Passage study site, Berth "C", June, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
C12 - 6	6/18/2009	14:33	45 22.0000	64 25.5092	41.8 m	video
C13 - 1	6/18/2009	14:27	45 22.0108	64 25.4384	41.5 m	video
C13 - 2	6/18/2009	14:27	45 22.0113	64 25.4399	41.4 m	video
C13 - 3	6/18/2009	14:27	45 22.0122	64 25.4415	41.3 m	video
C14 - 1	6/18/2009	14:41	45 22.0230	64 25.3971	40.1 m	video
C14 - 2	6/18/2009	14:41	45 25.3912	64 25.3912	39.5 m	video
C14 - 3	6/18/2009	14:42	45 22.0268	64 25.3873	39.5 m	video
C14 - 4	6/18/2009	14:42	45 22.0268	64 25.3866	39.5 m	video
C15 - 1	6/18/2009	14:51	45 22.0378	64 25.4240	39.7 m	video
C15 - 2	6/18/2009	14:51	45 22.0390	64 25.4218	39.6 m	video
C15 - 3	6/18/2009	14:52	45 22.0400	64 25.4185	39.7 m	video
C16 - 1	6/18/2009	14:47	45 22.0307	64 25.3783	39.2 m	video
C16 - 2	6/18/2009	14:47	45 22.0330	64 25.3795	39.2 m	video
C16 - 3	6/18/2009	14:48	45 22.0351	64 25.3813	39.5 m	video
C16 - 4	6/18/2009	14:48	45 22.0329	64 25.3783	39.3 m	video
C16 - 5	6/18/2009	14:48	45 22.0284	64 25.3776	39.1 m	video

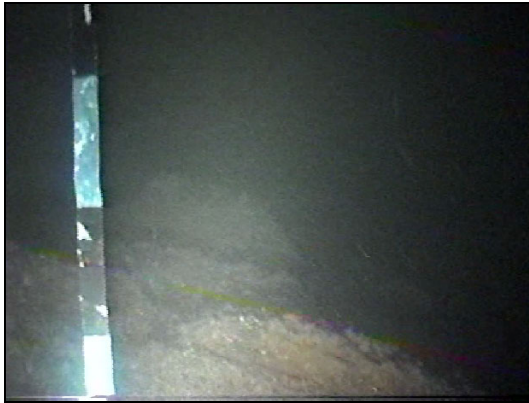


Figure C1. C8-A-1-A

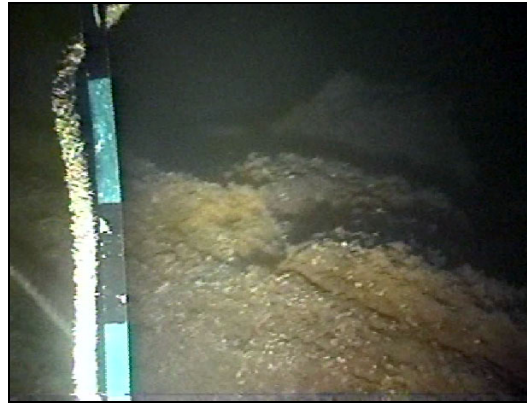


Figure C3. C8-A-1-C

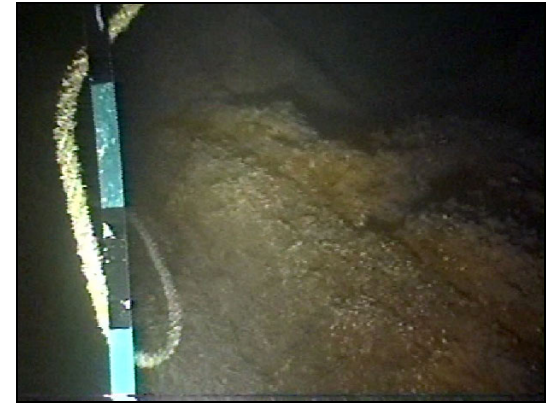


Figure C5. C8-A-1-F



Figure C2. C8-A-1-B

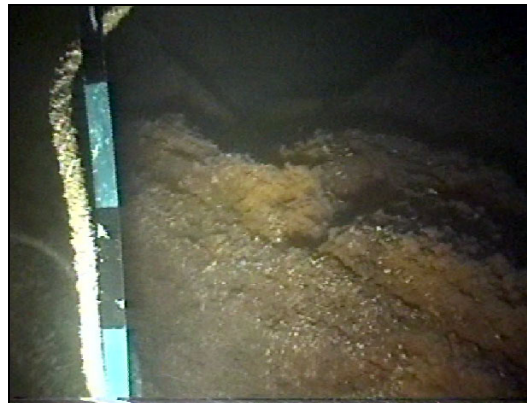


Figure C4. C8-A-1-E

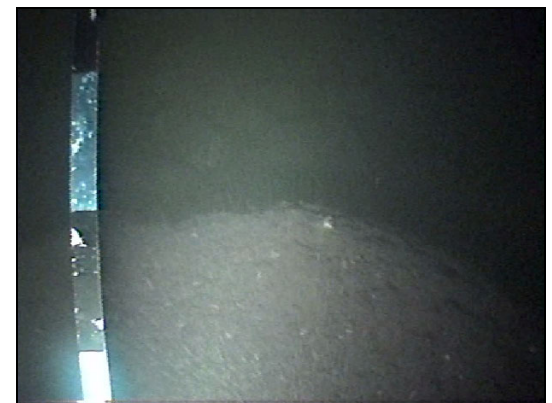


Figure C6. C8-A-2-B



Figure C7. C8-A-2-C



Figure C9. C8-A-2-F



Figure C11. C8-A-2-J



Figure C8. C8-A-2-E



Figure C10. C8-A-2-H



Figure C12. C8-A-2-K



Figure C13. C8-A-2-L



Figure C15. C8-A-2-O



Figure C17. C8-A-3-C



Figure C14. C8-A-2-N

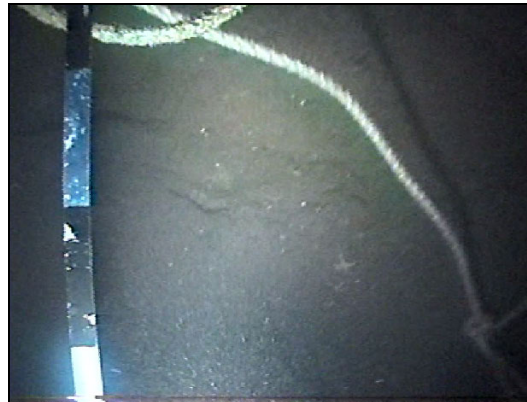


Figure C16. C8-A-3-B



Figure C18. C8-A-3-D



Figure C19. C8-A-3-F



Figure C21. C8-A-3-H



Figure C23. C8-A-4-B



Figure C20. C8-A-3-G



Figure C22. C8-A-4-A



Figure C24. C8-A-4-D



Figure C25. C8-A-4-F



Figure C27. C8-A-4-I



Figure C29. C8-A-4-M



Figure C26. C8-A-4-G



Figure C28. C8-A-4-J



Figure C30. C8-A-4-N

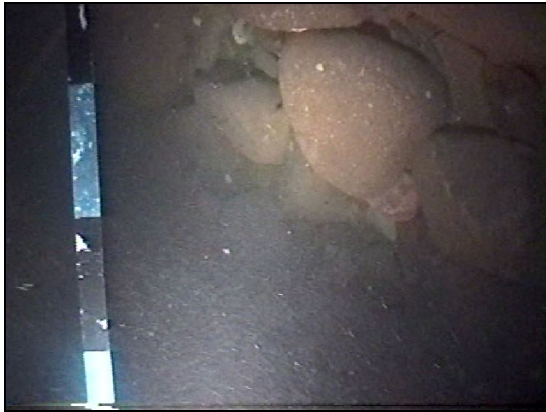


Figure C31. C8-A-4-O



Figure C33. C8-A-5-7-C



Figure C35. C8-A-5-7-G



Figure C32. C8-A-5-7-B



Figure C34. C8-A-5-7-E



Figure C36. C8-A-5-7-H



Figure C37. C8-A-5-7-I



Figure C39. C8-A-5-7-K



Figure C41. C8-A-5-7-N



Figure C38. C8-A-5-7-J



Figure C40. C8-A-5-7-M



Figure C42. C8-A-5-7-O



Figure C43. C8-A-5-7-Q

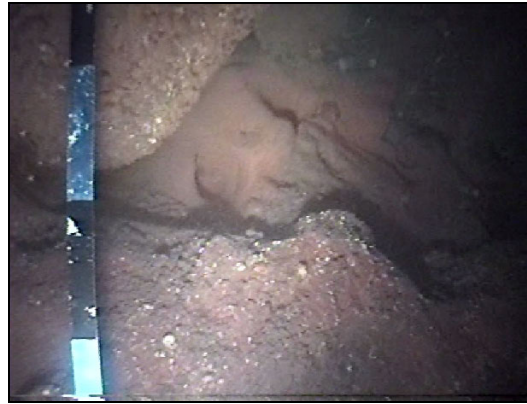


Figure C45. C8-A-5-7-S



Figure C47. C8-A-5-7-V



Figure C44. C8-A-5-7-R



Figure C46. C8-A-5-7-U



Figure C48. C8-REPEAT-1-A

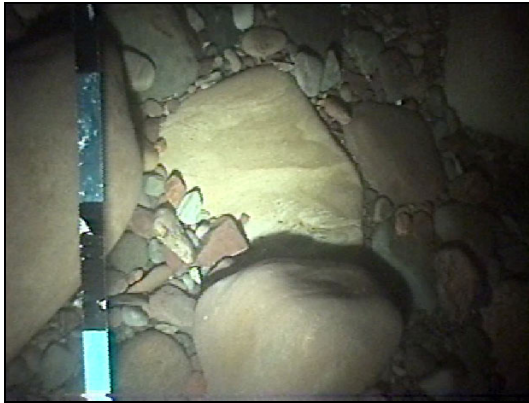


Figure C49. C8-REPEAT-1-B



Figure C51. C8-REPEAT-1-E



Figure C53. C8-REPEAT-2-B



Figure C50. C8-REPEAT-1-D



Figure C52. C8-REPEAT-1-F



Figure C54. C8-REPEAT-2-C



Figure C55. C8-Repeat-3-A



Figure C57. C8-Repeat-3-E



Figure C59. C8-Repeat-3-G



Figure C56. C8-Repeat-3-D



Figure C58. C8-Repeat-3-F



Figure C60. C8-Repeat-3-H



Figure C61. C8-Repeat-3-I



Figure C63. C8-Repeat-3-K



Figure C65. C8-Repeat-3-M



Figure C62. C8-Repeat-3-J

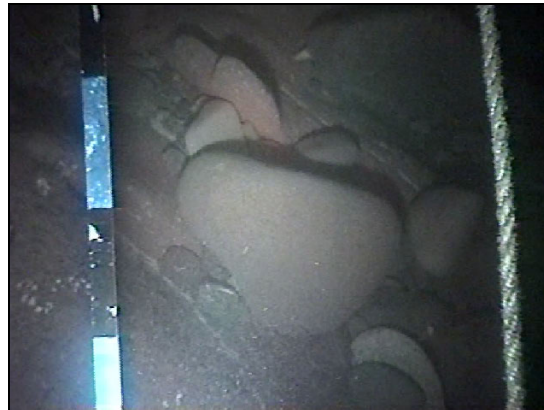


Figure C64. C8-Repeat-3-L

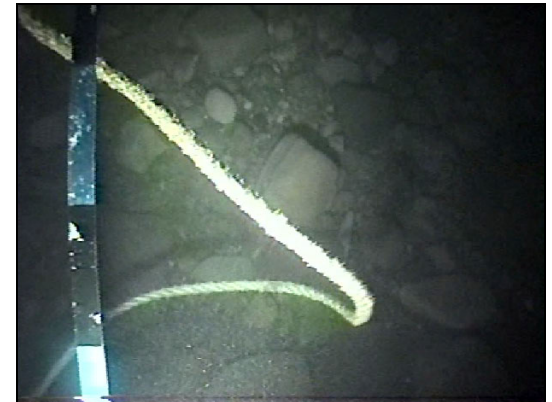


Figure C66. C9-A-2-B



Figure C67. C9-A-2-C

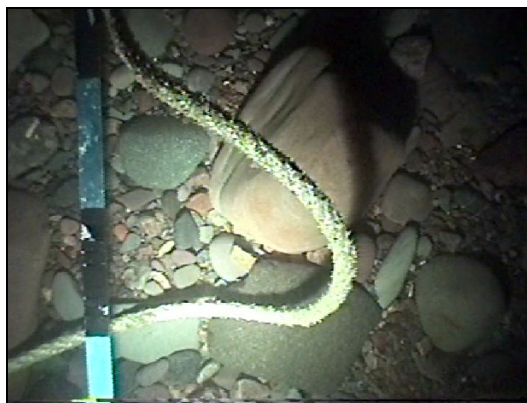


Figure C69. C9-A-2-F



Figure C71. C9-A-2-H



Figure C68. C9-A-2-D



Figure C70. C9-A-2-G

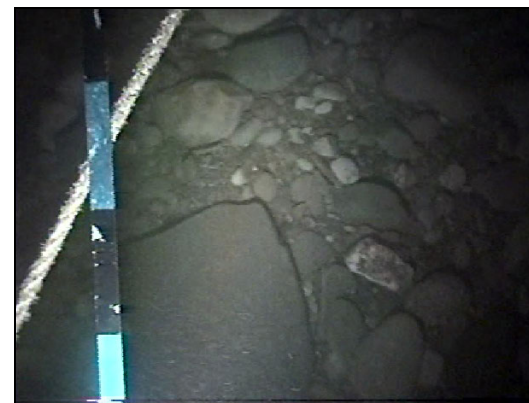


Figure C72. C9-A-2-I



Figure C73. C9-A-3-B



Figure C75. C9-A-3-E



Figure C77. C9-A-3-H



Figure C74. C9-A-3-C



Figure C76. C9-A-3-F



Figure C78. C9-A-3-I



Figure C79. C9-A-3-J



Figure C81. C9-A-3-M



Figure C83. C9-A-4-C



Figure C80. C9-A-3-L



Figure C82. C9-A-4-B



Figure C84. C9-A-4-D



Figure C85. C9-A-4-E



Figure C87. C9-A-4-J



Figure C89. C9-A-4-L



Figure C86. C9-A-4-H



Figure C88. C9-A-4-K



Figure C90. C9-A-4-M

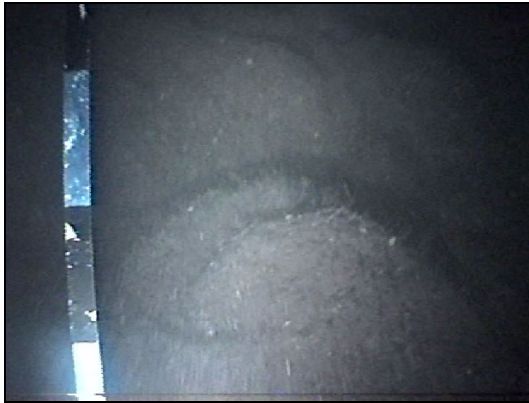


Figure C91. C9-A-5-A



Figure C93. C9-A-5-C



Figure C95. C9-A-5-E



Figure C92. C9-A-5-B



Figure C94. C9-A-5-D



Figure C96. C9-A-5-F



Figure C97. C9-A-5-I



Figure C99. C9-A-6-B



Figure C101. C9-A-6-D



Figure C98. C9-A-5-J



Figure C100. C9-A-6-C



Figure C102. C9-A-6-E



Figure C103. C9-A-6-G

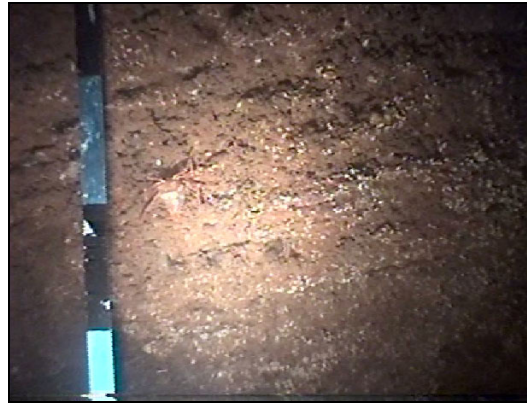


Figure C105. C9-A-6-L



Figure C107. C9-A-7-A



Figure C104. C9-A-6-I



Figure C106. C9-A-6-M



Figure C108. C9-A-7-C



Figure C109. C9-A-7-D



Figure C111. C9-A-7-H



Figure C113. C9-Repeat-1-C



Figure C110. C9-A-7-F



Figure C112. C9-Repeat-1-B

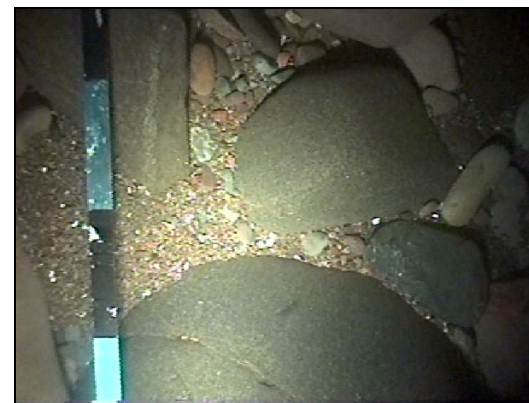


Figure C114. C9-Repeat-1-E



Figure C115. C9-Repeat-1-G

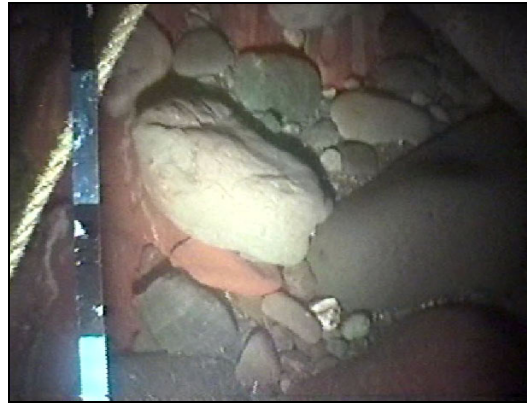


Figure C117. C9-Repeat-1-J

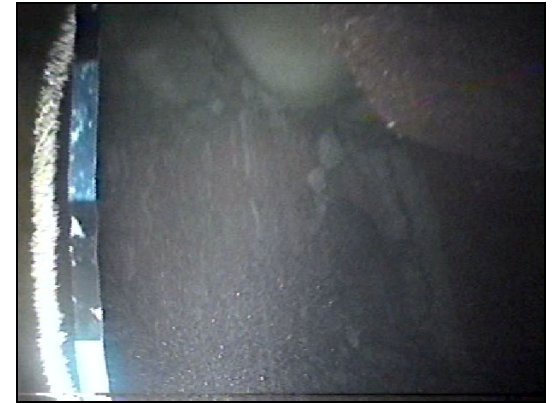


Figure C119. C9-Repeat-2-B



Figure C116. C9-Repeat-1-H



Figure C118. C9-Repeat-1-L



Figure C120. C9-Repeat-2-D



Figure C121. C9-Repeat-2-E



Figure C123. C9-Repeat-2-J

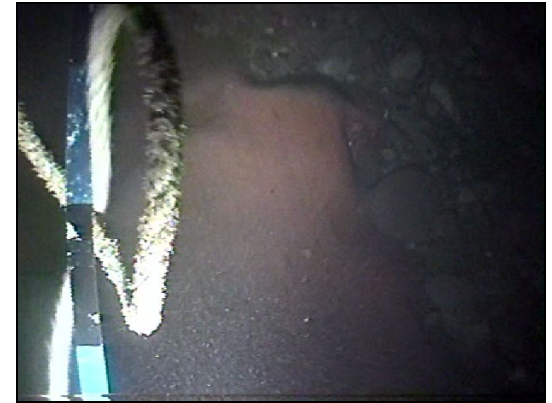


Figure C125. C9-Repeat-3-A

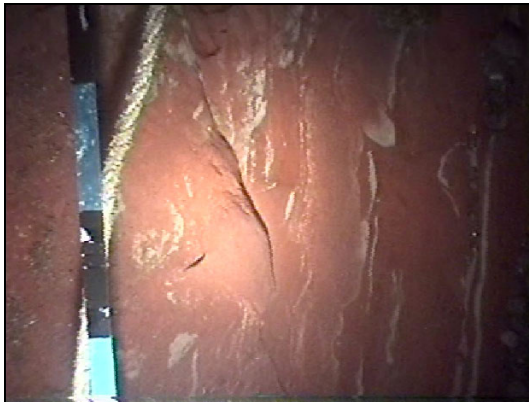


Figure C122. C9-Repeat-2-F



Figure C124. C9-Repeat-2-K



Figure C126. C9-Repeat-3-D



Figure C127. C9-Repeat-3-E



Figure C129. C10-REPEAT-1-B



Figure C131. C10-REPEAT-1-F



Figure C128. C9-Repeat-3-F



Figure C130. C10-REPEAT-1-D

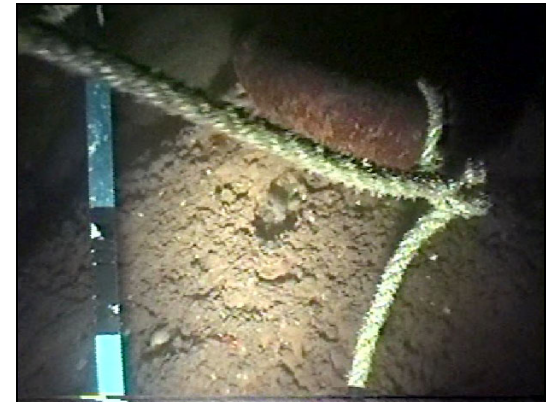


Figure C132. C10-REPEAT-1-G



Figure C133. C10-REPEAT-1-H



Figure C135. C10-REPEAT-2-C



Figure C137. C10-REPEAT-2-G



Figure C134. C10-REPEAT-2-B



Figure C136. C10-REPEAT-2-E



Figure C138. C10-REPEAT-2-I



Figure C139. C10-REPEAT-2-J

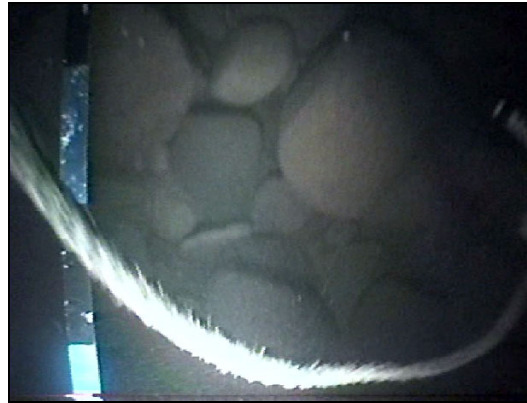


Figure C141. C10-REPEAT-3-A



Figure C143. C10-REPEAT-3-C



Figure C140. C10-REPEAT-2-K



Figure C142. C10-REPEAT-3-B

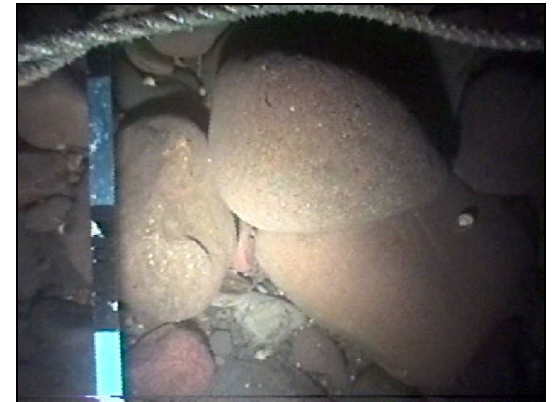


Figure C144. C10-REPEAT-3-F



Figure C145. C10-REPEAT-4-A



Figure C147. C10-REPEAT-4-C



Figure C149. C10-REPEAT-4-E



Figure C146. C10-REPEAT-4-B



Figure C148. C10-REPEAT-4-D

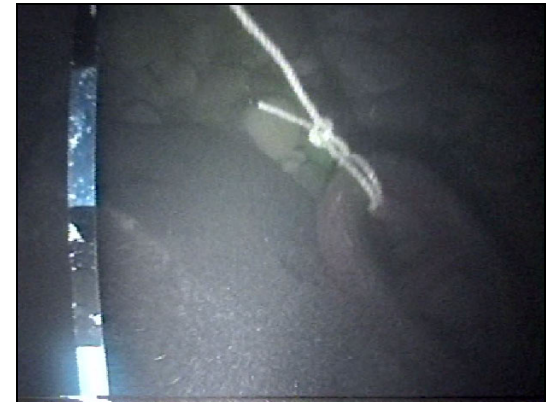


Figure C150. C10-REPEAT-6-A



Figure C151. C10-REPEAT-6-B



Figure C153. C10-REPEAT-7-A

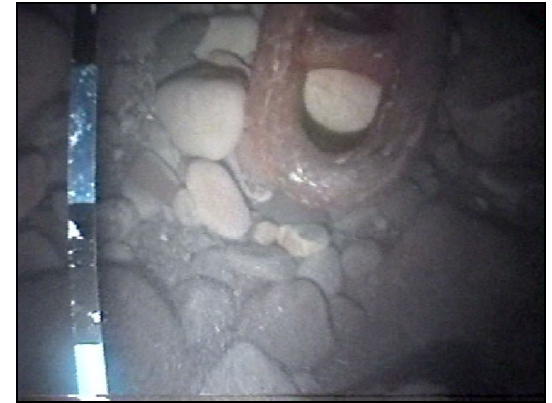


Figure C155. C10-REPEAT-7-C



Figure C152. C10-REPEAT-6-D

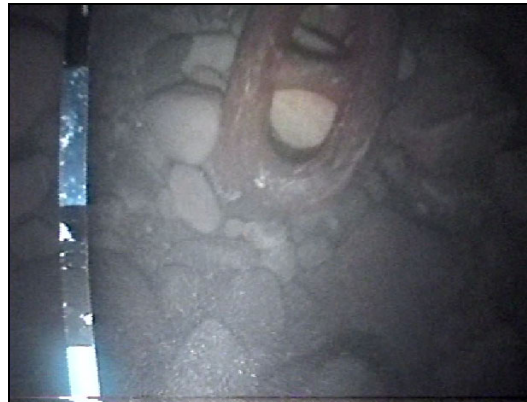


Figure C154. C10-REPEAT-7-B



Figure C156. C10-REPEAT-7-D



Figure C157. C10-REPEAT-7-F



Figure C159. C10-REPEAT-7-L



Figure C161. C10-REPEAT-8-A



Figure C158. C10-REPEAT-7-I



Figure C160. C10-REPEAT-7-M



Figure C162. C10-REPEAT-8-B



Figure C163. C10-REPEAT-8-C

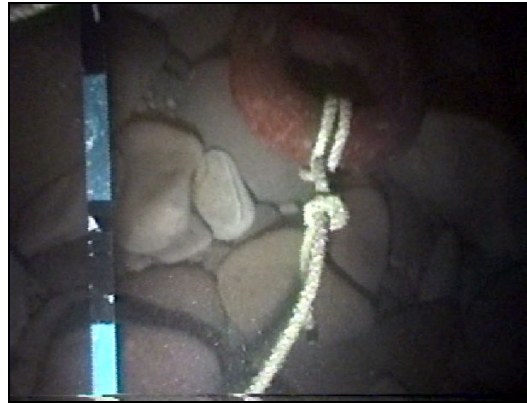


Figure C165. C10-REPEAT-8-F



Figure C167. C10-REPEAT-9-A

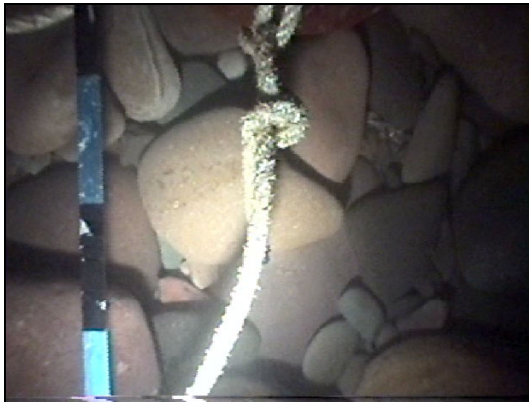


Figure C164. C10-REPEAT-8-E



Figure C166. C10-REPEAT-8-G



Figure C168. C10-REPEAT-9-B



Figure C169. C10-REPEAT-9-C

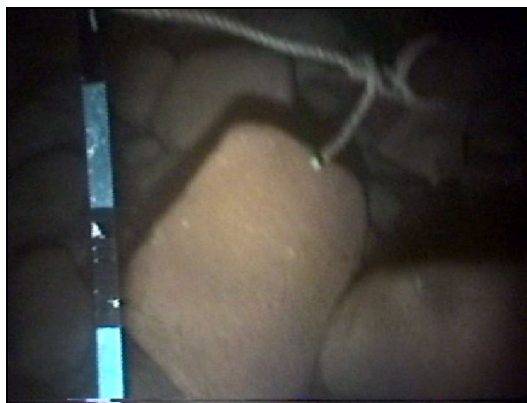


Figure C171. C 10-REPEAT-9-F



Figure C173. C10-REPEAT-10-B



Figure C170. C10-REPEAT-9-E



Figure C172. C10-REPEAT-10-A

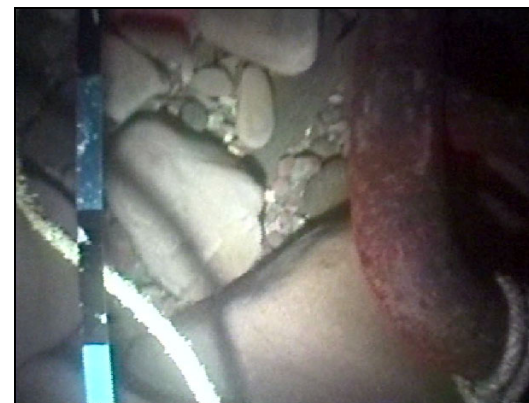


Figure C174. C10-REPEAT-10-C



Figure C175. C10-REPEAT-10-D



Figure C177. C10-Repeat-10-G



Figure C179. C10-REPEAT-11-A



Figure C176. C10-REPEAT-10-E



Figure C178. C10-REPEAT-10-H

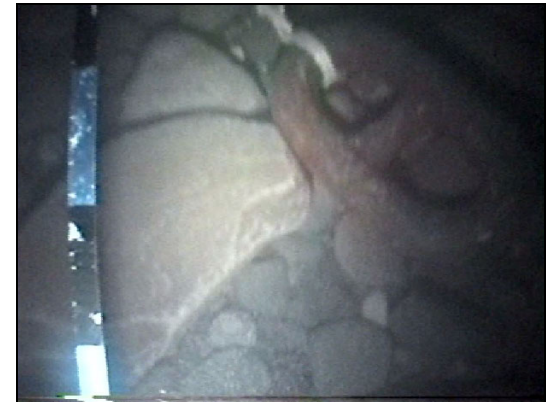


Figure C180. C10-REPEAT-11-B



Figure C181. C10-REPEAT-11-D

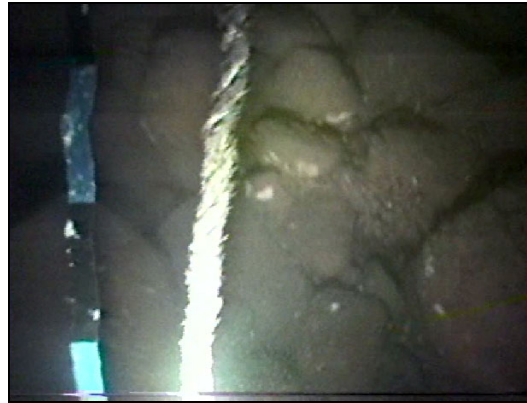


Figure C183. C12-1-B



Figure C185. C12-2-A



Figure C182. C10-REPEAT-11-E



Figure C184. C12-1-E

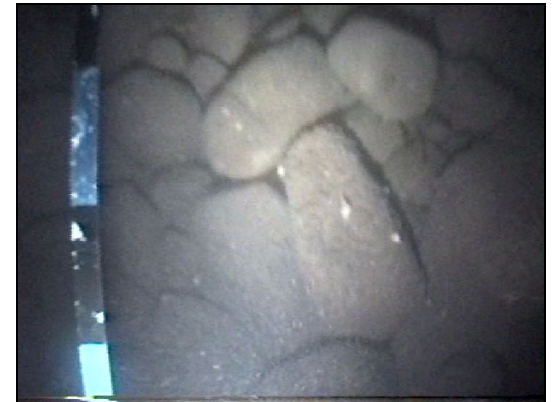


Figure C186. C12-2-B



Figure C187. C12-2-D



Figure C189. C12-3-C



Figure C191. C12-4-A



Figure C188. C12-2-E



Figure C190. C12-3-D



Figure C192. C12-4-B



Figure C193. C12-4-C



Figure C195. C12-4-E



Figure C197. C12-5-A



Figure C194. C12-4-D



Figure C196. C12-4-F

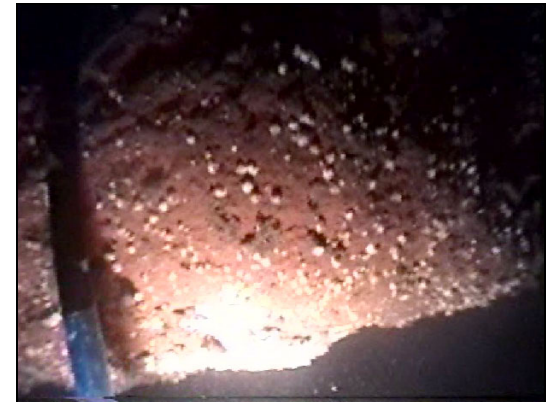


Figure C198. C12-5-C

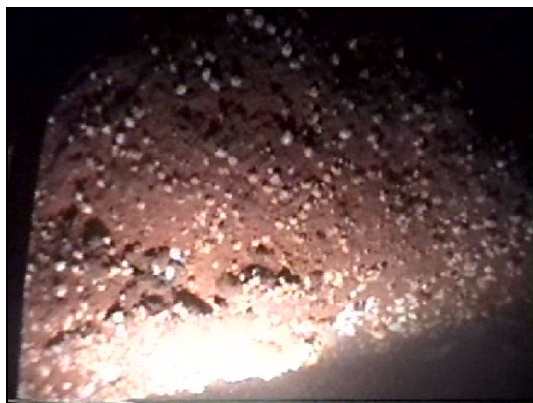


Figure C199. C12-5-D



Figure C201. C12-6-A



Figure C203. C12-6-D



Figure C200. C12-5-F



Figure C202. C12-6-B



Figure C204. C12-6-E



Figure C205. C13-1-A

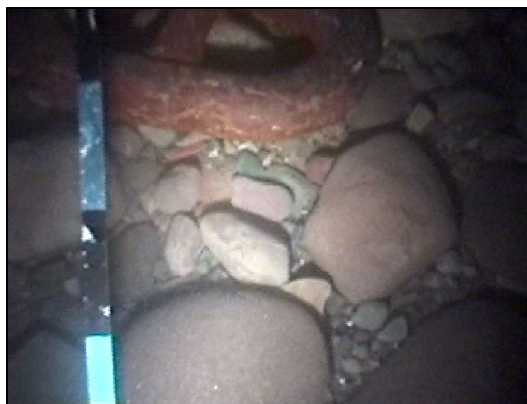


Figure C207. C13-1-C



Figure C209. C13-1-F



Figure C206. C13-1-B

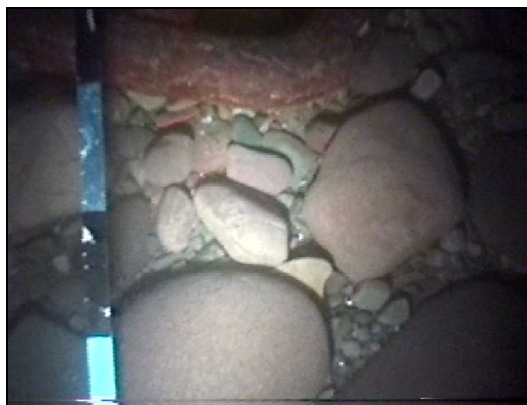


Figure C208. C13-1-D

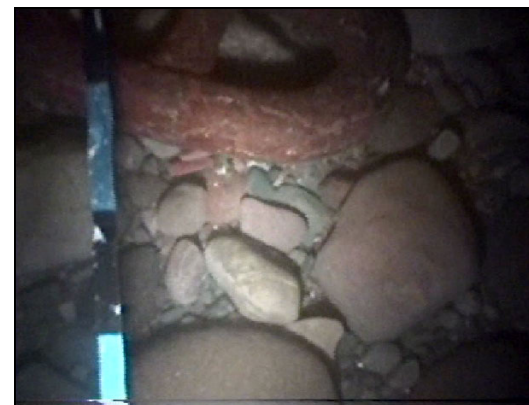


Figure C210. C13-1-G



Figure C211. C13-1-H



Figure C213. C13-2-C



Figure C215. C13-2-F



Figure C212. C13-2-B



Figure C214. C13-2-E



Figure C216. C13-2-H



Figure C217. C13-3-A



Figure C219. C13-3-C



Figure C221. C13-3-F



Figure C218. C13-3-B



Figure C220. C13-3-E

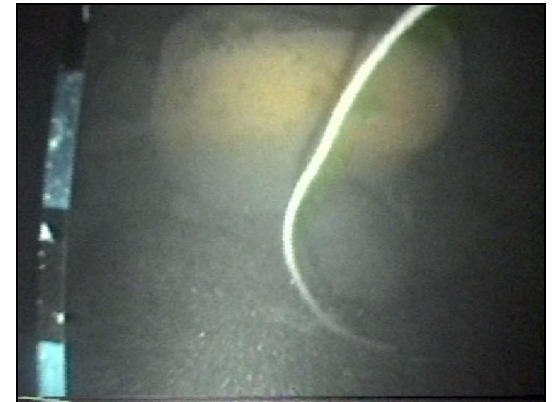


Figure C222. C14-1-B



Figure C223. C14-1-C

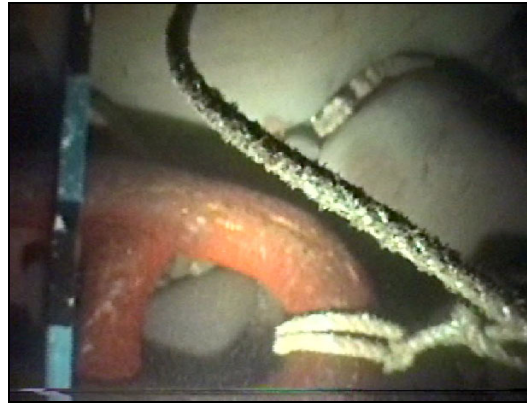


Figure C225. C14-1-E



Figure C227. C14-1-H



Figure C224. C14-1-D

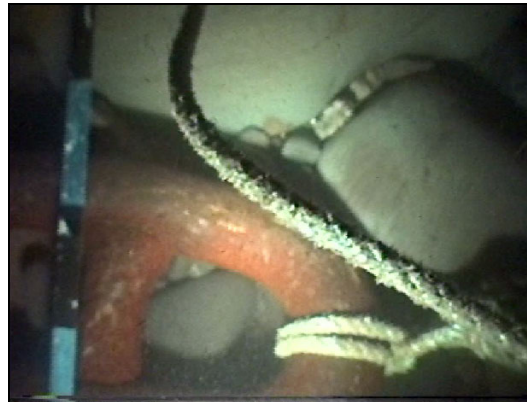


Figure C226. C14-1-F



Figure C228. C14-1-I

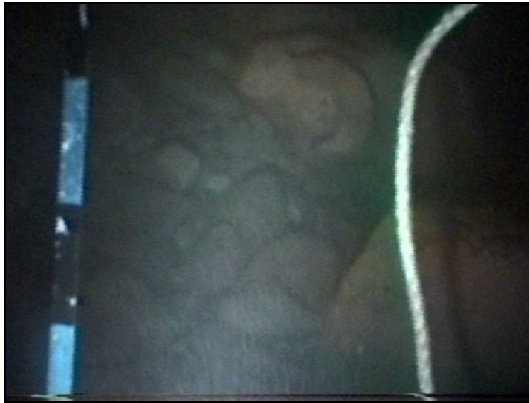


Figure C229. C14-1-J



Figure C231. C14-2-C



Figure C233. C14-2-E



Figure C230. C14-2-B



Figure C232. C14-2-D



Figure C234. C14-2-H



Figure C235. C14-3-B



Figure C237. C14-3-E

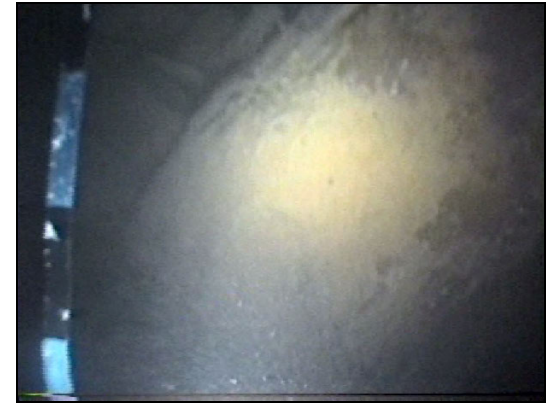


Figure C239. C14-4-B

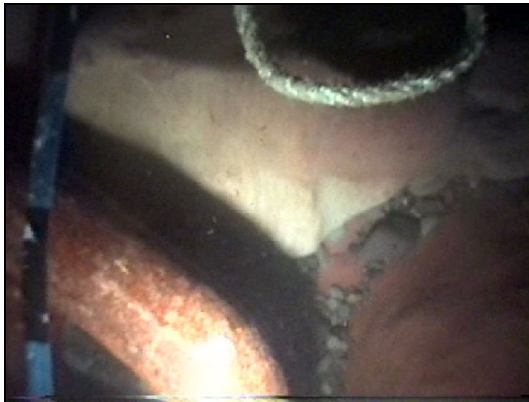


Figure C236. C14-3-D



Figure C238. C14-4-A



Figure C240. C14-4-C

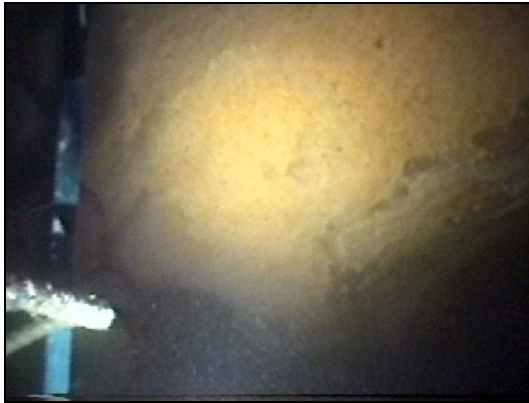


Figure C241. C14-4-D



Figure C243. C15-2-A



Figure C245. C15-2-D

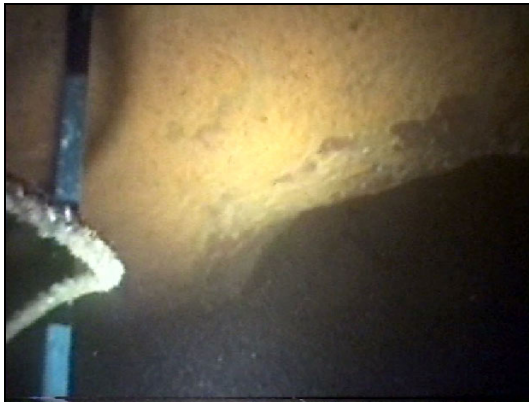


Figure C242. C14-4-E



Figure C244. C15-2-B



Figure C246. C15-2-E



Figure C247. C15-3-A



Figure C249. C15-3-C



Figure C251. C15-3-F



Figure C248. C15-3-B



Figure C250. C15-3-E



Figure C252. C16-1-A



Figure C253. C16-1-B

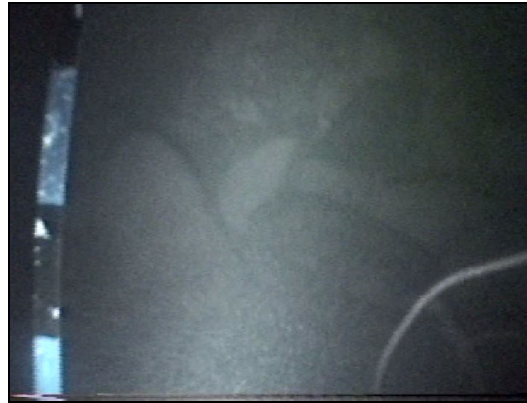


Figure C255. C16-2-A



Figure C257. C16-2-D



Figure C254. C16-1-C



Figure C256. C16-2-B

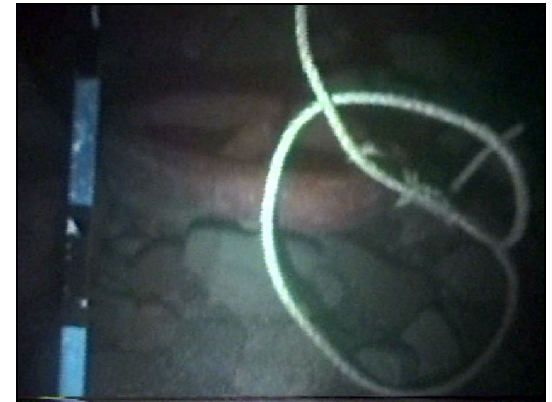


Figure C258. C16-2-F



Figure C259. C16-3-A

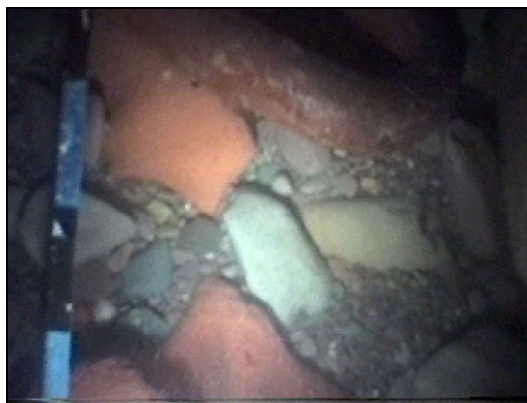


Figure C261. C16-3-C



Figure C263. C16-4-A

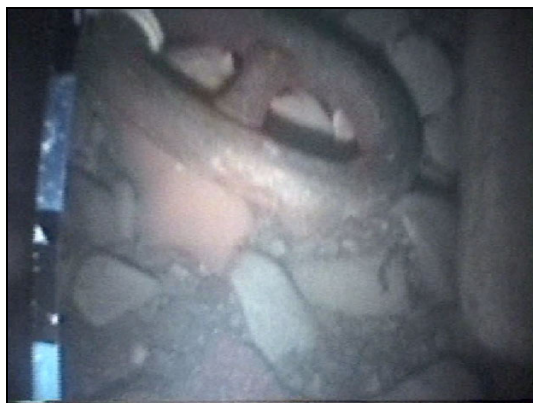


Figure C260. C16-3-B

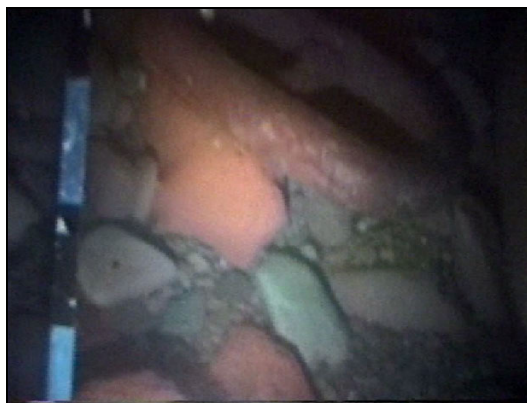


Figure C262. C16-3-D



Figure C264. C16-4-B



Figure C265. C16-4-C



Figure C267. C16-4-E



Figure C269. C16-5-B



Figure C266. C16-4-D



Figure C268. C16-5-A



Figure C270. C16-5-C



Figure C271. C16-5-D



Figure C273. C16-5-F



Figure C272. C16-5-E

APPENDIX D- JULY VIDEO SURVEY, BERTH “C”, JULY 2-3, 2009, IMAGE CAPTURES

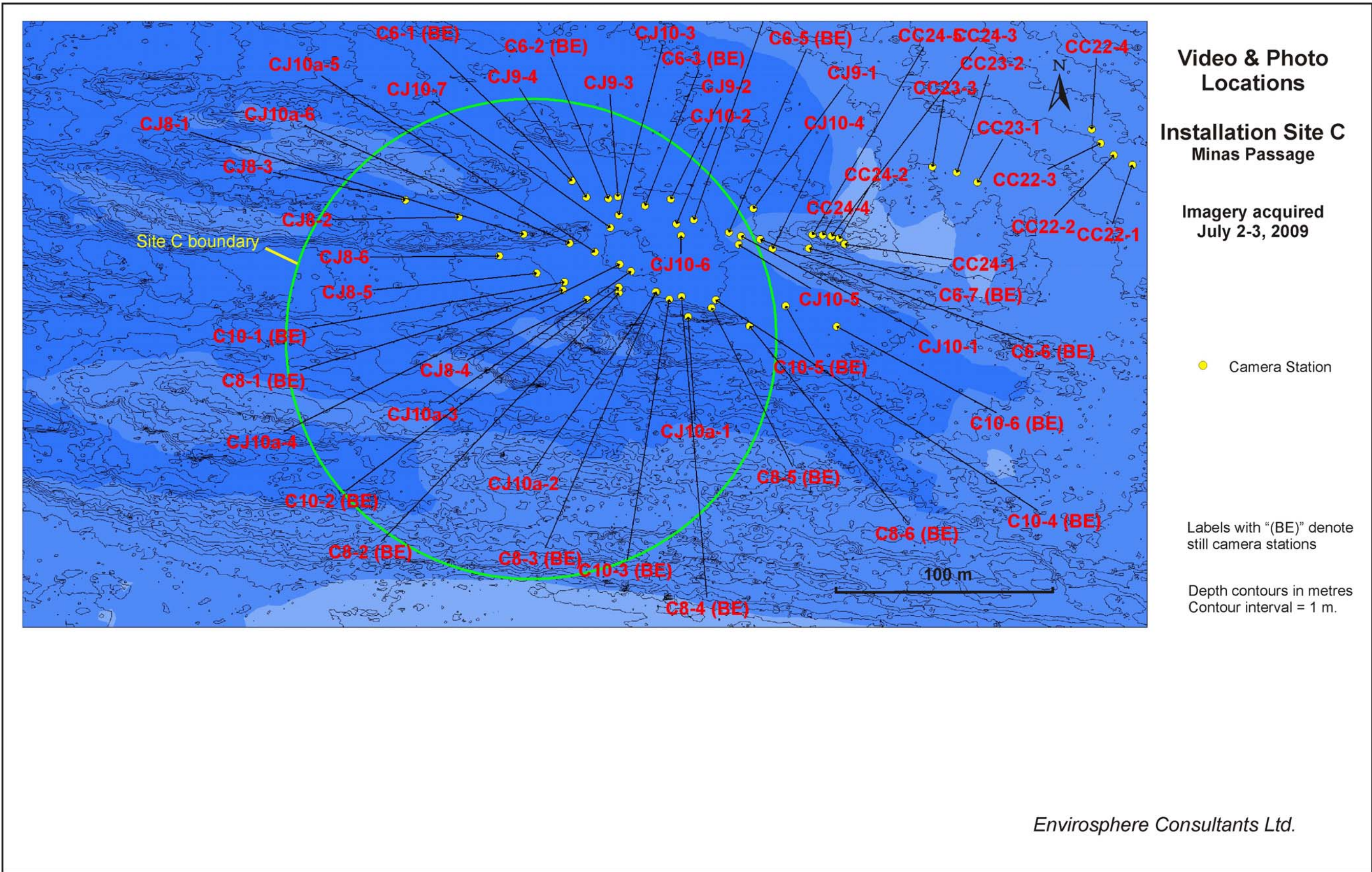


Table D1. List of video sampling stations, Minas Passage study site, Berth "C", July, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
CJ 8 - 1	7/2/2009	2:32:11	45 22.0073	64 25.4836	39.4 m	video
CJ 8 - 2	7/2/2009	2:32:34	45 22.0109	64 25.5043	40.6 m	video
CJ 8 - 3	7/2/2009	2:32:52	45 22.0145	64 25.5213	40.7 m	video
CJ 8 - 4	7/2/2009	2:37:25	45 21.9929	64 25.4632	41.4 m	video
CJ 8 - 5	7/2/2009	2:37:46	45 21.9986	64 25.4792	42.1 m	video
CJ 8 - 6	7/2/2009	2:38:04	45 22.0024	64 25.4913	41.8 m	video
CJ 9 - 1	7/2/2009	2:44:10	45 22.0141	64 25.4107	40.0 m	video
CJ 9 - 2	7/2/2009	2:44:43	45 22.0158	64 25.4370	41.5 m	video
CJ 9 - 3	7/2/2009	2:45:09	45 22.0162	64 25.4538	41.4 m	video
CJ 9 - 4	7/2/2009	2:45:26	45 22.0159	64 25.4639	41.7 m	video
CJ10 - 1	7/2/2009	2:49:02	45 22.0078	64 25.4144	40.6 m	video
CJ10 - 2	7/2/2009	2:49:28	45 22.0103	64 25.4351	41.3 m	video
CJ10 - 3	7/2/2009	2:49:54	45 22.0120	64 25.4534	41.4 m	video
CJ10 - 4	7/2/2009	2:54:34	45 22.0051	64 25.4045	40.0 m	video
CJ10 - 5	7/2/2009	2:54:54	45 22.0059	64 25.4151	40.7 m	video
CJ10 - 6	7/2/2009	2:55:22	45 22.0077	64 25.4335	41.5 m	video
CJ10 - 7	7/2/2009	2:55:51	45 22.0092	64 25.4561	41.7 m	video
CJ10a - 1	7/2/2009	3:00:19	45 21.9894	64 25.4308	38 m	video
CJ10a - 2	7/2/2009	3:00:45	45 21.9949	64 25.4410	41.4 m	video
CJ10a - 3	7/2/2009	3:01:05	45 21.9994	64 25.4493	42.0 m	video
CJ10a - 4	7/2/2009	3:01:15	45 22.0010	64 25.4529	42.1 m	video
CJ10a - 5	7/2/2009	3:01:34	45 22.0036	64 25.4608	41.8 m	video



Figure D1. CJ-8-1-B



Figure D4. CJ-8-1-F



Figure D7. CJ-8-3-C



Figure D2. CJ 8-1-D



Figure D5. CJ-8-3-A



Figure D8. CJ-8-3-D



Figure D3. CJ-8-1-E



Figure D6. CJ-8-3-B



Figure D9. CJ-8-3-E



Figure D10. CJ-8-5-A



Figure D13. CJ-8-6-A



Figure D16. CJ-8-6-E



Figure D11. CJ-8-5-B



Figure D14. CJ-8-6-B



Figure D17. CJ-9-3-A



Figure D12. CJ-8-5-C



Figure D15. CJ-8-6-C



Figure D18. CJ-9-3-B



Figure D19. CJ-9-3-D



Figure D22. CJ-9-4-B



Figure D25. CJ-10-1-C



Figure D20. CJ-9-3-E



Figure D23. CJ-9-4-D



Figure D26. CJ-10-1-D



Figure D21. CJ-9-4-A



Figure D24. CJ-10-1-B



Figure D27. CJ-10-1-E



Figure D28. CJ-10-1-G



Figure D31. CJ-10-1-K



Figure D34. CJ-10-2-C



Figure D29. CJ-10-1-H



Figure D32. CJ-10-2-A



Figure D35. CJ-10-2-D



Figure D30. CJ-10-1-J



Figure D33. CJ-10-2-B



Figure D36. CJ-10-2-F



Figure D37. CJ-10-2-G



Figure D40. CJ-10-3-E



Figure D43. CJ-10-3-H



Figure D38. CJ-10-3-B



Figure D41. CJ-10-3-F



Figure D44. CJ-10-3-I



Figure D39. CJ-10-3-C



Figure D42. CJ-10-3-G



Figure D45. CJ-10-3-J



Figure D46. CJ-10-4-B



Figure D49. CJ-10-4-F



Figure D52. CJ-10-5-B



Figure D47. CJ-10-4-C



Figure D50. CJ-10-4-G



Figure D53. CJ-10-5-D



Figure D48. CJ-10-4-D



Figure D51. CJ-10-5-A

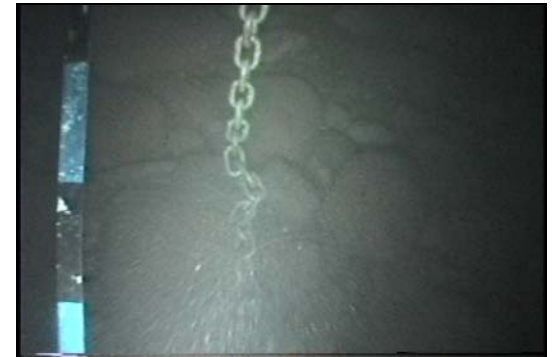


Figure D54. CJ-10-6-A



Figure D55. CJ-10-6-B



Figure D58. CJ-10-6-F



Figure D61. CJ-10-6-I



Figure D56. CJ-10-6-C



Figure D59. CJ-10-6-G



Figure D62. CJ-10-6-J



Figure D57. CJ-10-6-E



Figure D60. CJ-10-6-H

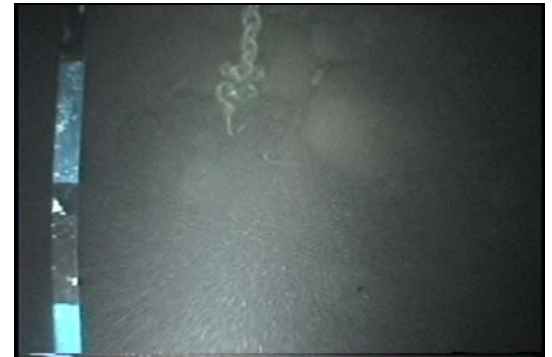


Figure D63. CJ-10-7-A



Figure D64. CJ-10-7-B



Figure D67. CJ-10-7-F



Figure D70. CJ-10-7-I



Figure D65. CJ-10-7-C



Figure D68. CJ-10-7-G



Figure D71. CJ-10A-1-A



Figure D66. CJ-10-7-D



Figure D69. CJ-10-7-H



Figure D72. CJ-10A-1-B



Figure D73. CJ-10A-1-C



Figure D76. CJ-10A-1-G



Figure D79. CJ-10A-2-D



Figure D74. CJ-10A-1-D



Figure D77. CJ-10A-2-A



Figure D80. CJ-10A-2-G



Figure D75. CJ-10A-1-F



Figure D78. CJ-10A-2-B



Figure D81. CJ-10A-2-I



Figure D82. CJ-10A-2-J



Figure D85. CJ-10A-3-C



Figure D88. CJ-10A-3-F



Figure D83. CJ-10A-3-A



Figure D86. CJ-10A-3-D



Figure D89. CJ-10A-3-G



Figure D84. CJ-10A-3-B



Figure D87. CJ-10A-3-E



Figure D90. CJ-10A-3-H



Figure D91. CJ-10A-4-A



Figure D94. CJ-10A-4-D



Figure D97. CJ-10A-4-I



Figure D92. CJ-10A-4-B



Figure D95. CJ-10A-4-F



Figure D98. CJ-10A-4-J



Figure D93. CJ-10A-4-C



Figure D96. CJ-10A-4-H



Figure D99. CJ-10A-4-K



Figure D100. CJ-10A-4-L



Figure D103. CJ-10A-5-E



Figure D106. CJ-10A-6-B



Figure D101. CJ-10A-5-B



Figure D104. CJ-10A-5-G



Figure D107. CJ-10A-6-C



Figure D102. CJ-10A-5-C



Figure D105. CJ-10A-5-H

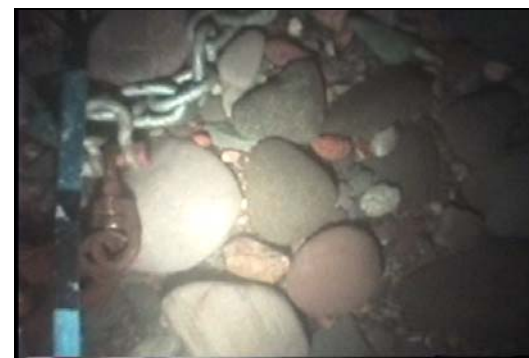


Figure D108. CJ-10A-6-D



Figure D109. CJ-10A-6-F



Figure D110. CJ-10A-6-G



Figure D111. CJ-10A-6-H

APPENDIX E- JULY VIDEO AND PHOTOGRAPHIC SURVEY, BERTH “C”, JULY 2-3, 2009, Still Photos

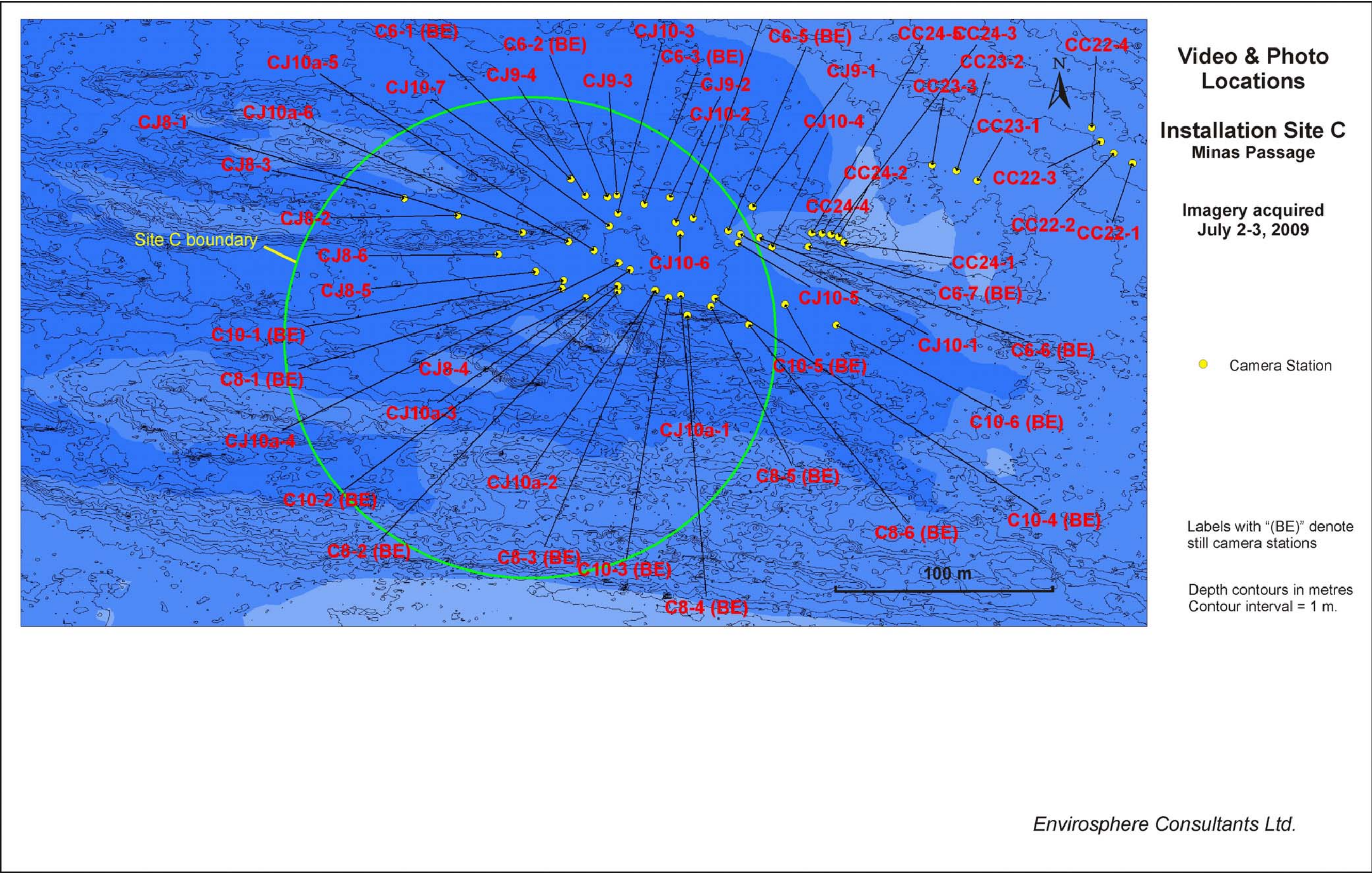


Table E1. List of still photo sampling stations, Minas Passage study site, Berth "C", July, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
BEN C 6 - 1	7/3/2009	4:52:31	45 22.0195	64 25.4685	41.4 m	photo
BEN C 6 - 2	7/3/2009	4:52:53	45 22.0157	64 25.4569	41.7 m	photo
BEN C 6 - 3	7/3/2009	4:53:18	45 22.0143	64 25.4452	41.1 m	photo
BEN C 6 - 4	7/3/2009	4:53:49	45 22.0113	64 25.4297	41.1 m	photo
BEN C 6 - 5	7/3/2009	4:54:11	45 22.0086	64 25.4184	40.6 m	photo
BEN C 6 - 6	7/3/2009	4:54:31	45 22.0071	64 25.4084	40.0 m	photo
BEN C 6 - 7	7/3/2009	4:55:00	45 22.0053	64 25.3928	39.1 m	photo
BEN C 8 - 1	7/3/2009	4:45:23	45 21.9949	64 25.4707	41.8 m	photo
BEN C 8 - 2	7/3/2009	4:46:05	45 21.9945	64 25.4530	39.7 m	photo
BEN C 8 - 3	7/3/2009	4:46:27	45 21.9949	64 25.4412	41.4 m	photo
BEN C 8 - 4	7/3/2009	4:46:45	45 21.9939	64 25.4330	41.5 m	photo
BEN C 8 - 5	7/3/2009	4:47:07	45 21.9915	64 25.4235	40.8 m	photo
BEN C 8 - 6	7/3/2009	4:47:38	45 21.9876	64 25.4113	40.5 m	photo
BEN C10 - 1	7/3/2009	4:59:48	45 21.9967	64 25.4703	41.7 m	photo
BEN C10 - 2	7/3/2009	5:00:11	45 21.9958	64 25.4530	41.2 m	photo
BEN C10 - 3	7/3/2009	5:00:36	45 21.9932	64 25.4369	40.5 m	photo
BEN C10 - 4	7/3/2009	5:00:57	45 21.9933	64 25.4221	40.9 m	photo
BEN C10 - 5	7/3/2009	5:01:27	45 21.9923	64 25.4000	40.2 m	photo
BEN C10 - 6	7/3/2009	5:01:54	45 21.9878	64 25.3836	40.3 m	photo



Figure E1. Station BEN C6-1, July 2009



Figure E4. Station BEN C6-4.



Figure E7. Station BEN-C6-7, July 2009



Figure E2. Station BEN C6-2, July 2009



Figure E5. Station BEN-C6-5, July 2009.



Figure E8. Station BEN-C8-1, July 2009



Figure E3. Station Ben C6-3, July 2009.



Figure E6. Station BEN-C6-6, July 2009.



Figure E9. Station BEN-C8-2, July 2009.

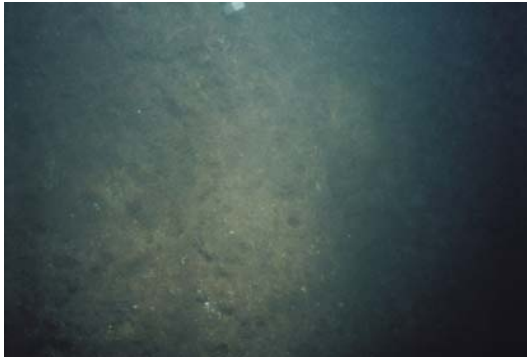


Figure E10. Station BEN-C10-1, July 2009.



Figure E13. Station BEN-C10-5, July 2009.



Figure E11. Station BEN-C10-3, July 2009.



Figure E14. Station BEN-C10-6



Figure E12. Station BEN-C10-4, July 2009.

APPENDIX F – CABLE ROUTE VIDEO SURVEY, BERTH “C”, JUNE 18 AND JULY 2-3, 2009

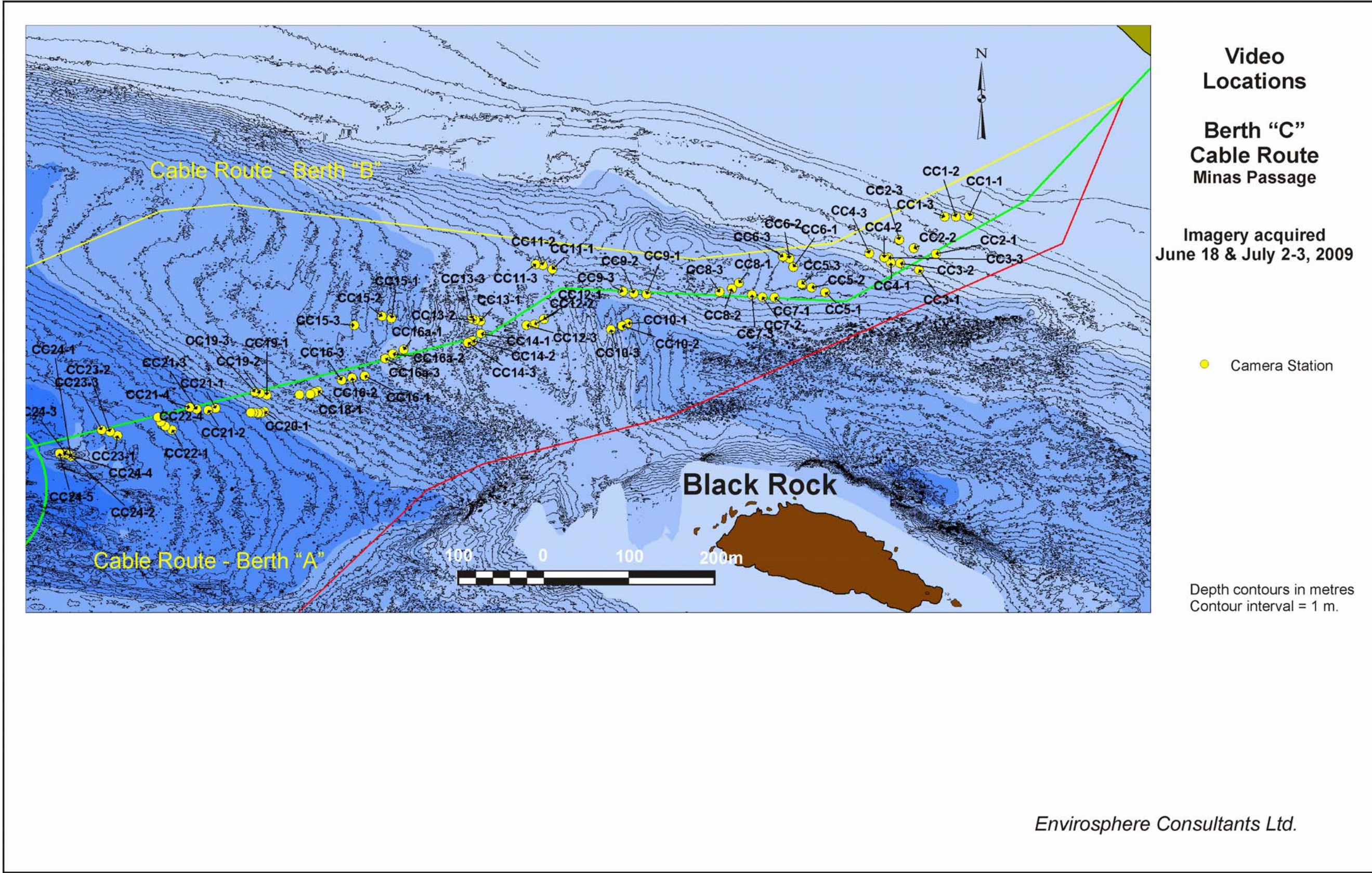


Table F1. List of video sampling stations, Minas Passage study site, Berth "C"
Cable Route, June and July, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE
CC 1 - 1	6/18/2009	9:11	45 22.1765	64 24.5727	4.7 m	video
CC 1 - 2	6/18/2009	9:11	45 22.1757	64 24.5845	4.9 m	video
CC 1 - 3	6/18/2009	9:12	45 22.1755	64 24.5948	5.4 m	video
CC 2 - 1	6/18/2009	9:19	45 22.1515	64 24.6020	6.7 m	video
CC 2 - 2	6/18/2009	9:20	45 22.1547	64 24.6219	6.7 m	video
CC 2 - 3	6/18/2009	9:20	45 22.1598	64 24.6354	6.8 m	video
CC 3 - 1	6/18/2009	9:25	45 22.1410	64 24.6168	8.1 m	video
CC 3 - 2	6/18/2009	9:26	45 22.1448	64 24.6337	7.7 m	video
CC 3 - 3	6/18/2009	9:26	45 22.1483	64 24.6445	8.1 m	video
CC 4 - 1	6/18/2009	9:28	45 22.1451	64 24.6423	8.2 m	video
CC 4 - 2	6/18/2009	9:29	45 22.1482	64 24.6483	8.4 m	video
CC 4 - 3	6/18/2009	9:29	45 22.1506	64 24.6621	8.7 m	video
CC 5 - 1	6/18/2009	9:32	45 22.1251	64 24.7010	12.7 m	video
CC 5 - 2	6/18/2009	9:33	45 22.1277	64 24.7137	12.2 m	video
CC 5 - 3	6/18/2009	9:33	45 22.1299	64 24.7226	11.5 m	video
CC 6 - 1	6/18/2009	9:40	45 22.1406	64 24.7307	11.5 m	video
CC 6 - 2	6/18/2009	9:40	45 22.1461	64 24.7345	11.3 m	video
CC 6 - 3	6/18/2009	9:40	45 22.1471	64 24.7404	11.6 m	video
CC 7 - 1	6/18/2009	9:46	45 22.1207	64 24.7468	13.0 m	video
CC 7 - 2	6/18/2009	9:46	45 22.1210	64 24 7580	12.9 m	video
CC 7 - 3	6/18/2009	9:47	45 22.1221	64 24.7674	13.2 m	video
CC 8 - 1	6/18/2009	9:49	45 22.1294	64 24.7798	13.8 m	video
CC 8 - 2	6/18/2009	9:50	45 22.1257	64 24.8040	13.7 m	video
CC 8 - 3	6/18/2009	9:50	45 22.1234	64 24.7968	13.8 m	video
CC 9 - 1	6/18/2009	9:54	45 22.1205	64 24.8634	17.5 m	video
CC 9 - 2	6/18/2009	9:55	45 22.1211	64 24.8749	17.8 m	video
CC 9 - 3	6/18/2009	9:55	45 22.1219	64 24.8845	18.0 m	video
CC10 - 1	6/18/2009	9:57	45 22.1017	64 24 8796	19.8 m	video
CC10 - 2	6/18/2009	9:57	45 22.1000	64 24.8846	19.9 m	video

Table F2. List of video sampling stations, Minas Passage study site, Berth "C"
Cable Route, June and July, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE	COMMEN
CC10 - 3	6/18/2009	9:58	45 22.0974	64 24 8948	17.8 m	video	
CC11 - 1	6/18/2009	10:01	45 22.1348	64 24 9496	16.3 m	video	
CC11 - 2	6/18/2009	10:01	45 22.1374	64 24 9581	16.2 m	video	
CC11 - 3	6/18/2009	10:02	45 22.1378	64 24 9645	16.2 m	video	
CC12 - 1	6/18/2009	10:03	45 22.1030	64 24 9559	17.2 m	video	
CC12 - 2	6/18/2009	10:04	45 22.0995	64 24.9641	16.4 m	video	
CC12 - 3	6/18/2009	10:04	45 22.0987	64 24.9715	16.4 m	video	
CC13 - 1	6/18/2009	10:06	45 22.1004	64 25.0134	15.7 m	video	
CC13 - 2	6/18/2009	10:07	45 22.1011	64 25.0181	16.8 m	video	
CC13 - 3	6/18/2009	10:07	45 22.1020	64 25.0208	17.1 m	video	
CC14 - 1	6/18/2009	10:11	45 22.0925	64 25.0125	14.9 m	video	
CC14 - 2	6/18/2009	10:12	45 22.0878	64 25.0198	15.1 m	video	
CC14 - 3	6/18/2009	10:12	45 22.0865	64 25.0241	15.3 m	video	
CC15 - 1	6/18/2009	10:15	45 22.1009	64 25.0942	20.0 m	video	
CC15 - 2	6/18/2009	10:15	45 22.1018	64 25.1028	21.1 m	video	
CC15 - 3	6/18/2009	10:15	45 22.0957	64 25.1278	20.5 m	video	
CC16 - 1	6/18/2009	10:20	45 22.0633	64 25.1168	20.4 m	video	
CC16 - 2	6/18/2009	10:20	45 22.0618	64 25.1282	21.6 m	video	
CC16 - 3	6/18/2009	10:21	45 22.0603	64 25.1378	22.0 m	video	
CC16a - 1	7/2/2009	3:36:59	45 22.0810	64 25.0824	19.0 m	video	
CC16a - 2	7/2/2009	3:37:36	45 22.0779	64 25.0919	19.3 m	video	
CC16a - 3	7/2/2009	3:38:07	45 22.0749	64 25.0986	19.0 m	video	
CC18 - 1	7/2/2009	3:30:15	45 22.0529	64 25.1589	24.2 m	video	
CC18 - 2	7/2/2009	3:30:34	45 22.0519	64 25.1618	24.5 m	video	
CC18 - 3	7/2/2009	3:31:01	45 22.0508	64 25.1656	24.7 m	video	
CC18 - 4	7/2/2009	3:31:31	45 22.0503	64 25.1755	24.7 m	video	
CC19 - 1	7/2/2009	3:26:26	45 22.0493	64 25.2053	27.0 m	video	
CC19 - 2	7/2/2009	3:26:54	45 22.0503	64 25.2115	27.0 m	video	
CC19 - 3	7/2/2009	3:27:23	45 22.0511	64 25.2161	27.2 m	video	

Table F3. List of video sampling stations, Minas Passage study site, Berth "C" Cable Route, June and July, 2009.

STATION NUMBER	DATE	TIME (ADT)	LATITUDE	LONGITUDE	DEPTH (m)	TYPE OF SAMPLE	COMMEN
CC20 - 1	7/2/2009	3:22:12	45 22.0386	64 25.2069	29.4 m	video	
CC20 - 2	7/2/2009	3:22:32	45 22.0379	64 25.2100	30.1 m	video	
CC20 - 3	7/2/2009	3:22:49	45 22.0378	64 25.2131	30.3 m	video	
CC20 - 4	7/2/2009	3:23:11	45 22.0379	64 25.2169	30.4 m	video	
CC20 - 5	7/2/2009	3:23:26	45 22.0378	64 25.2194	30.4 m	video	
CC21 - 1	7/2/2009	3:18:32	45 22.0399	64 25.2513	32.8 m	video	
CC21 - 2	7/2/2009	3:18:55	45 22.0387	64 25.2582	33.3 m	video	
CC21 - 3	7/2/2009	3:19:20	45 22.0390	64 25.2685	34.0 m	video	
CC21 - 4	7/2/2009	3:19:36	45 22.0402	64 25.2750	34.3 m	video	
CC22 - 1	7/2/2009	3:15:10	45 22.0255	64 25.2905	36.5 m	video	
CC22 - 2	7/2/2009	3:15:31	45 22.0276	64 25.2965	36.7 m	video	
CC22 - 3	7/2/2009	3:15:49	45 22.0302	64 25.3007	36.6 m	video	
CC22 - 4	7/2/2009	3:16:09	45 22.0333	64 25.3037	36.8 m	video	
CC23 - 1	7/2/2009	3:10:56	45 22.0209	64 25.3398	38.8 m	video	
CC23 - 2	7/2/2009	3:11:23	45 22.0231	64 25.3464	38.8 m	video	
CC23 - 3	7/2/2009	3:11:49	45 22.0242	64 25.3541	39.0 m	video	
CC24 - 1	7/2/2009	3:06:23	45 22.0065	64 25.3815	35.3 m	video	
CC24 - 2	7/2/2009	3:06:44	45 22.0077	64 25.3834	35.4 m	video	
CC24 - 3	7/2/2009	3:07:06	45 22.0082	64 25.3858	36.3 m	video	
CC24 - 4	7/2/2009	3:07:23	45 22.0084	64 25.3885	36.0 m	video	
CC24 - 5	7/2/2009	3:07:41	45 22.0084	64 25.3919	36.3 m	video	

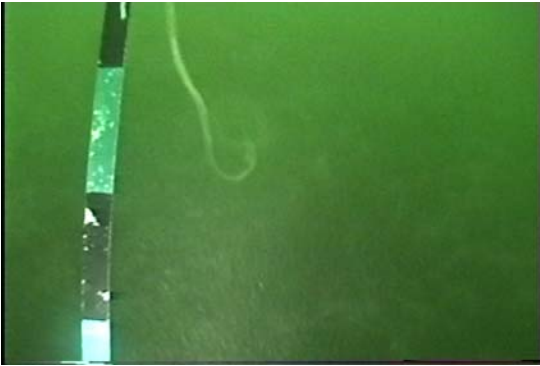


Figure 1. CC1-1-A, June 2009

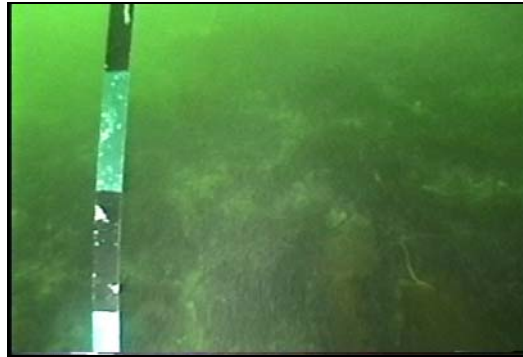


Figure 4. CC1-1-D, June 2009

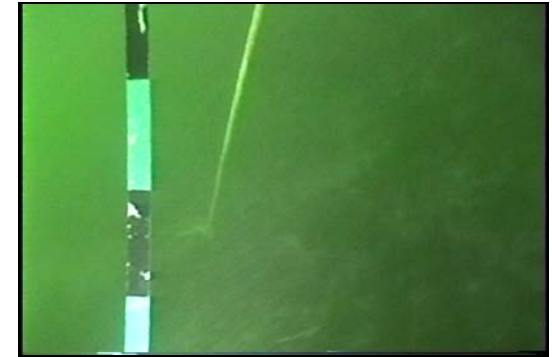


Figure 7. CC1-1-G, June 2009

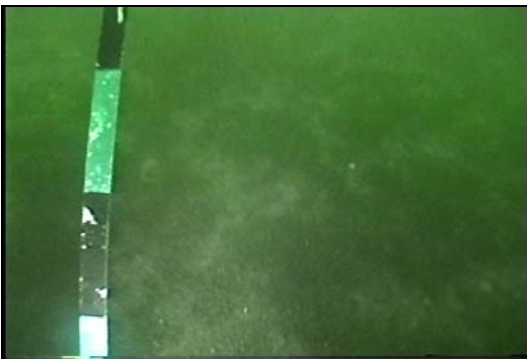


Figure 2. CC1-1-B, June 2009

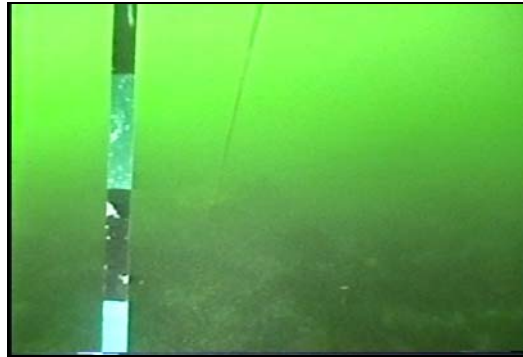


Figure 5. CC1-1-E, June 2009

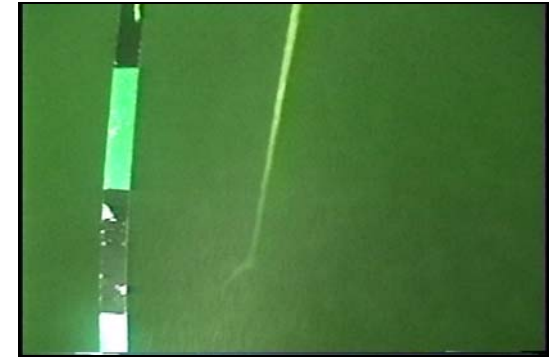


Figure 8. CC1-1-H, June 2009

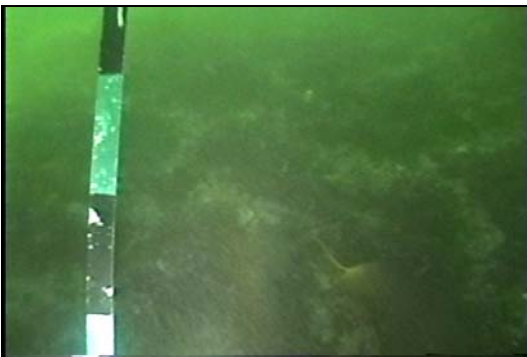


Figure 3. CC1-1-C, June 2009

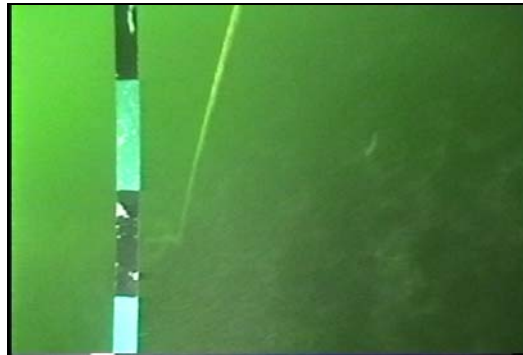


Figure 6. CC1-1-F, June 2009

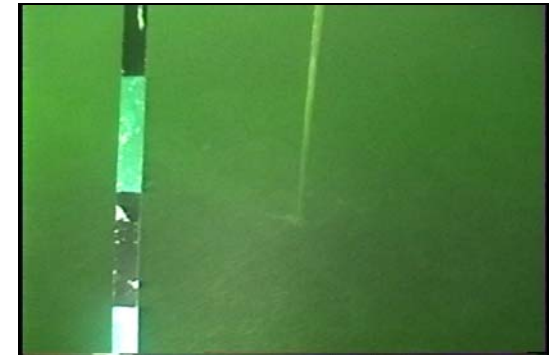


Figure 9. CC1-1-I, June 2009

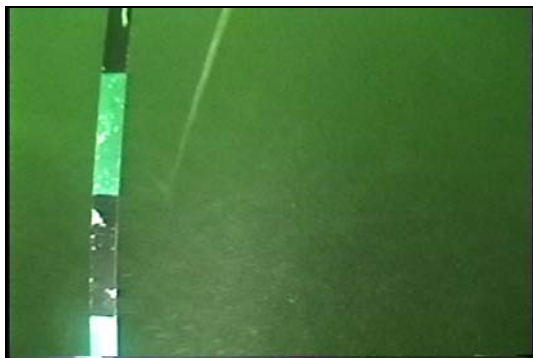


Figure 10. CC1-2-A, June 2009

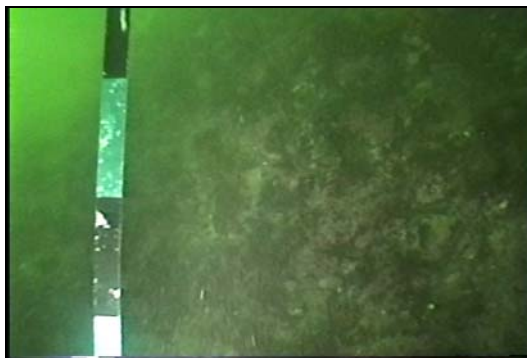


Figure 13. CC1-2-D, June 2009

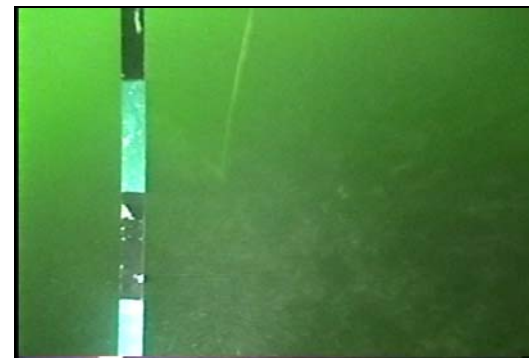


Figure 16. CC1-2-G, June 2009

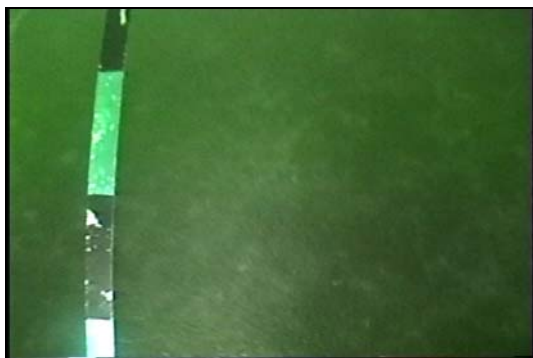


Figure 11. CC1-2-B, June 2009

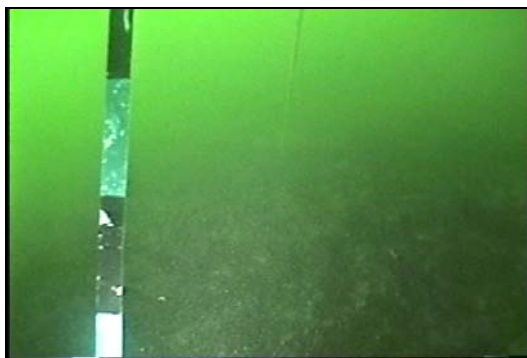


Figure 14. CC1-2-E, June 2009

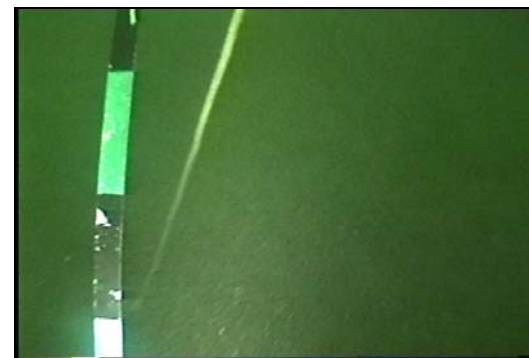


Figure 17. CC1-3-A, June 2009



Figure 12. CC-2-C, June 2009

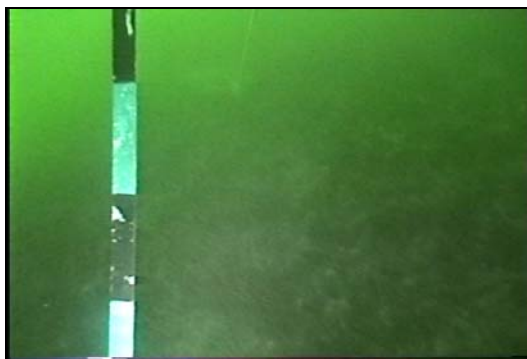


Figure 15. CC-2-F, June 2009

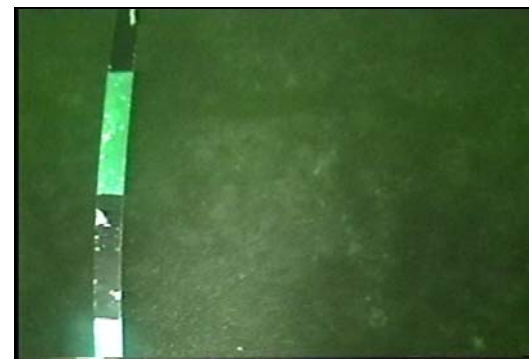


Figure 18. CC1-3-B, June 2009



Figure 19. CC1-3-C, June 2009

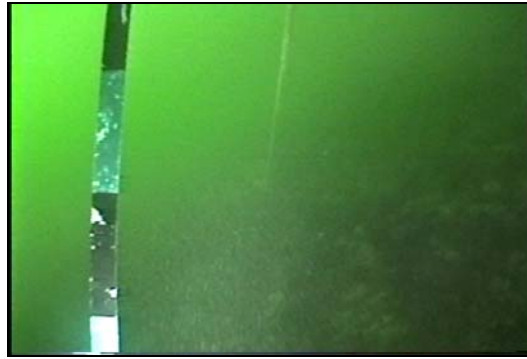


Figure 22. CC1-3-F, June 2009

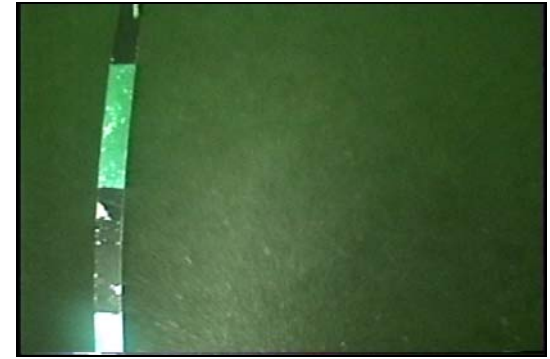


Figure 25. CC2-1-A, June 2009

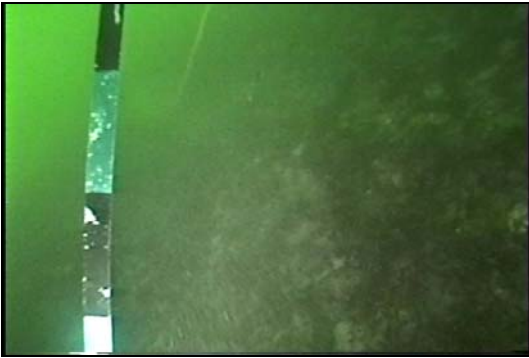


Figure 20. CC1-3-D, June 2009

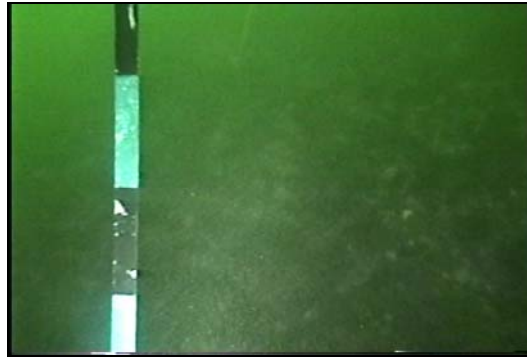


Figure 23. CC1-3-G, June 2009

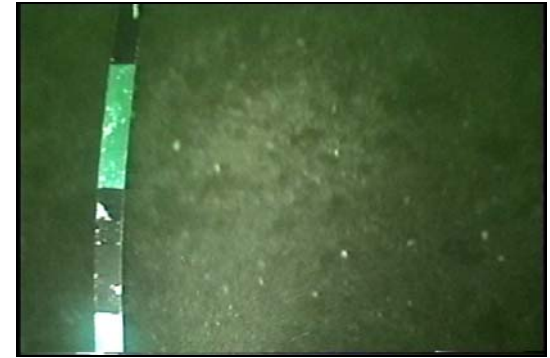


Figure 26. CC2-1-B, June 2009

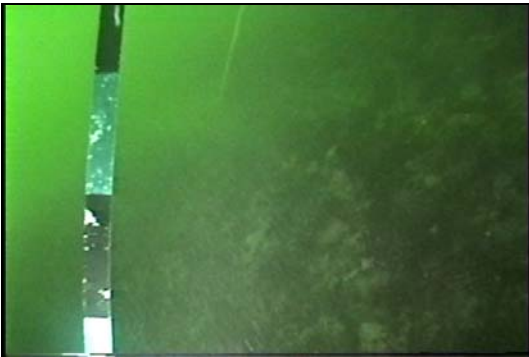


Figure 21. CC1-3-E, June 2009

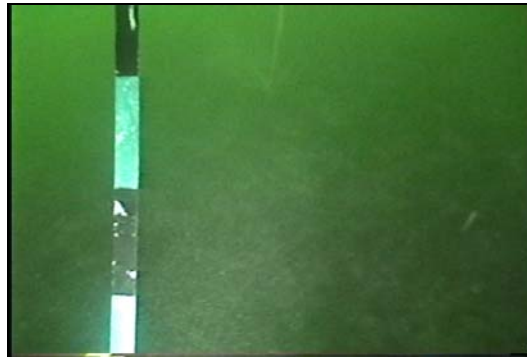


Figure 24. CC1-3-H, June 2009



Figure 27. CC2-1-C, June 2009



Figure 28. CC2-1-D, June 2009

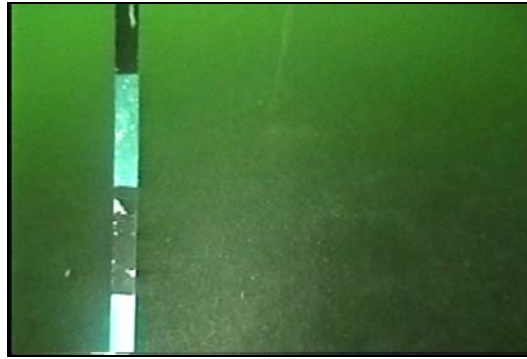


Figure 31. CC2-1-G, June 2009



Figure 34. CC2-2-C, June 2009

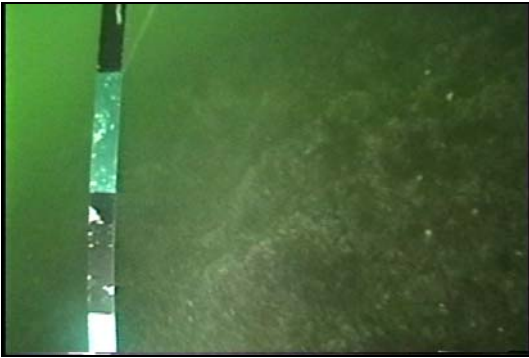


Figure 29. CC2-1-E, June 2009

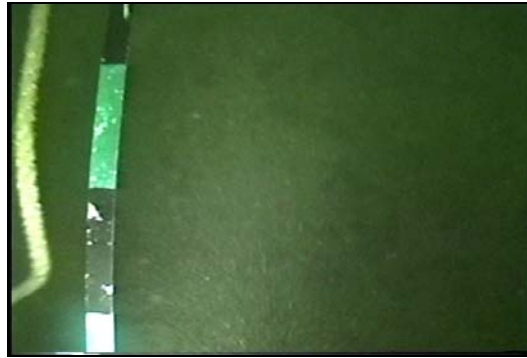


Figure 32. CC2-2-A, June 2009



Figure 35. CC2-2-D, June 2009

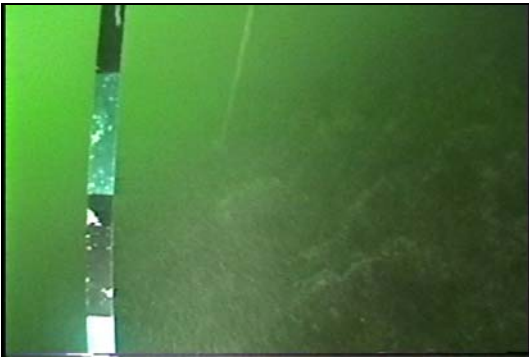


Figure 30. CC2-1-F, June 2009

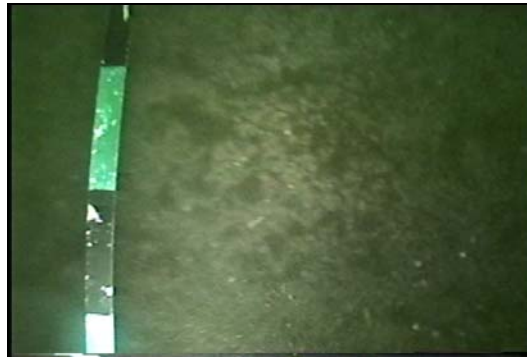


Figure 33. CC2-2-B, June 2009



Figure 36. CC2-2-E, June 2009



Figure 37. CC2-2-F, June 2009

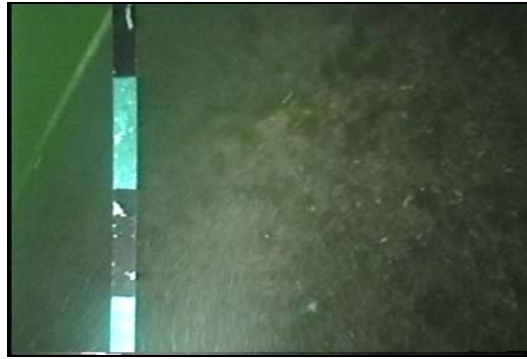


Figure 40. CC2-2-I, June 2009

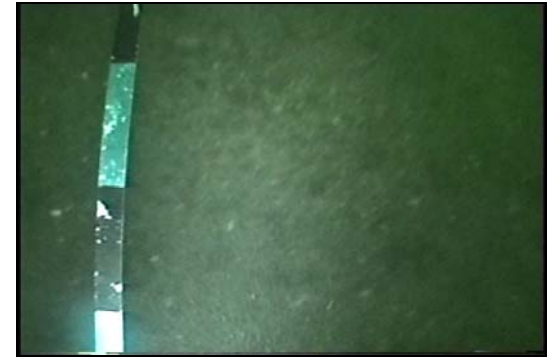


Figure 43. CC2-3-B, June 2009



Figure 38. CC2-2-G, June 2009

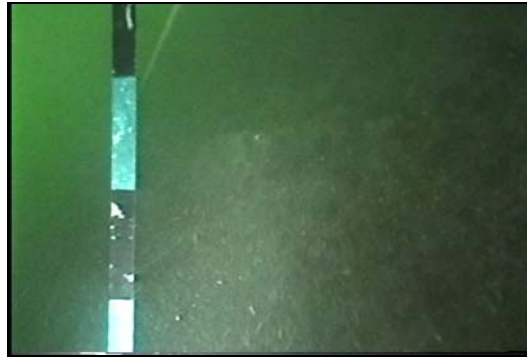


Figure 41. CC2-2-J, June 2009



Figure 44. CC2-3-C, June 2009



Figure 39. CC2-2-H, June 2009

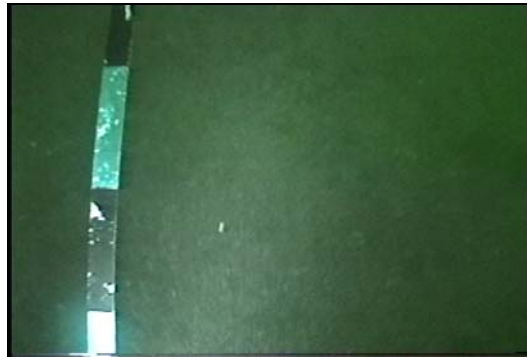


Figure 42. CC2-3-A, June 2009



Figure 45. CC2-3-D, June 2009



Figure 46. CC2-3-E, June 2009

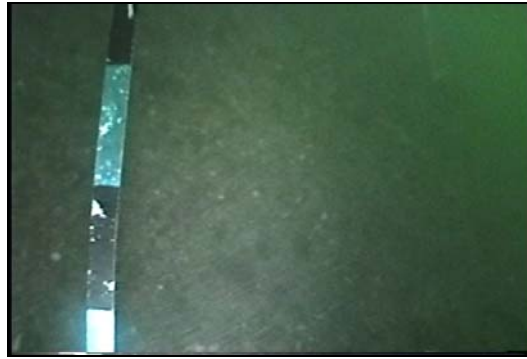


Figure 49. CC2-3-H, June 2009



Figure 52. CC3-1-B, June 2009



Figure 47. CC2-3-F, June 2009

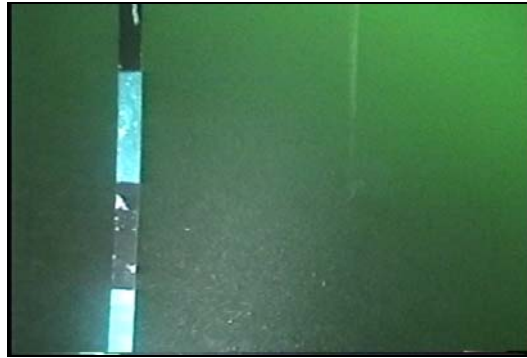


Figure 50. CC2-3-I, June 2009



Figure 53. CC3-1-C, June 2009



Figure 48. CC2-3-G, June 2009



Figure 51. CC3-1-A, June 2009



Figure 54. CC3-1-D, June 2009



Figure 55. CC3-1-E, June 2009

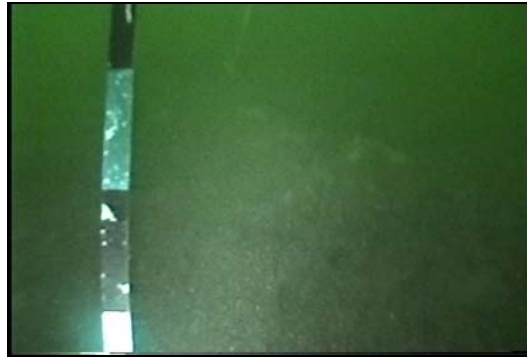


Figure 58. CC3-2-B, June 2009

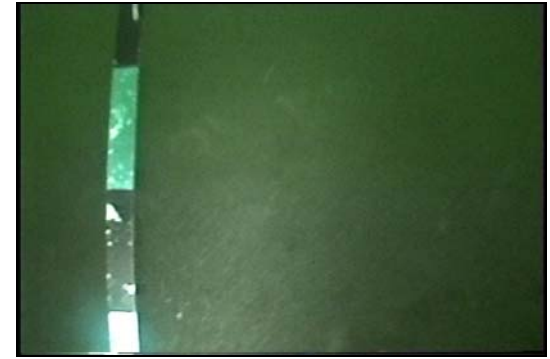


Figure 61. CC3-3-A, June 2009

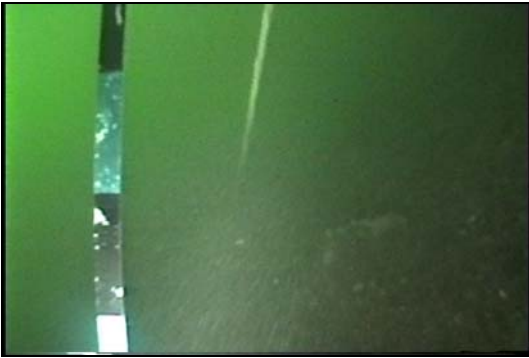


Figure 56. CC3-1-F, June 2009

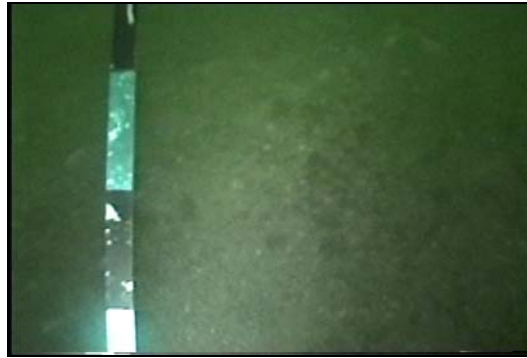


Figure 59. CC3-2-C, June 2009

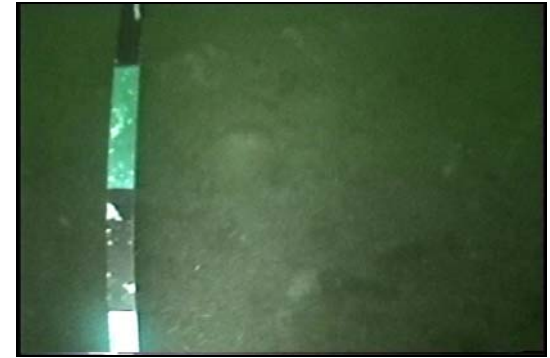


Figure 62. CC3-3-B, June 2009

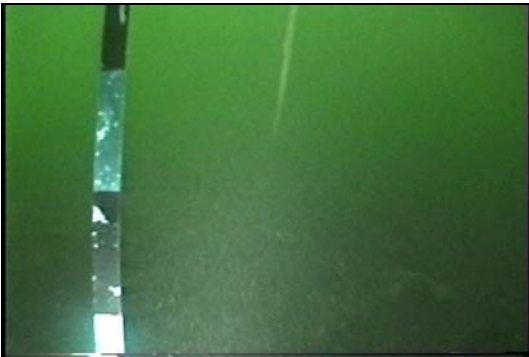


Figure 57. CC3-2-A, June 2009

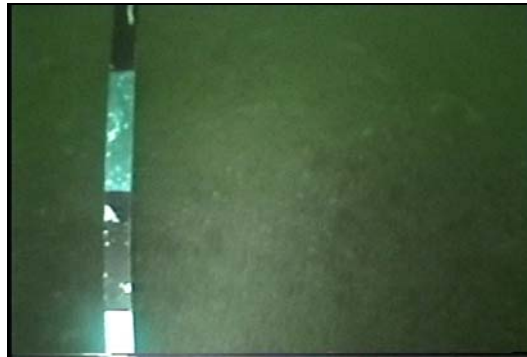


Figure 60. CC3-2-D, June 2009



Figure 63. CC3-3-C, June 2009



Figure 64. CC3-3-D, June 2009

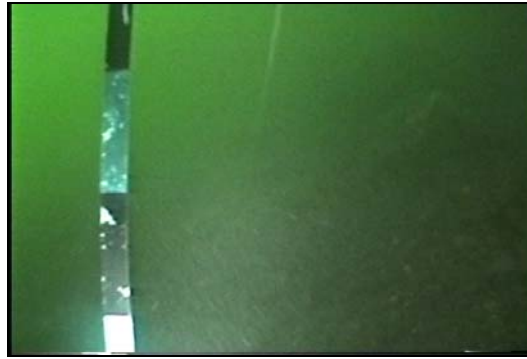


Figure 67. CC3-3-G, June 2009

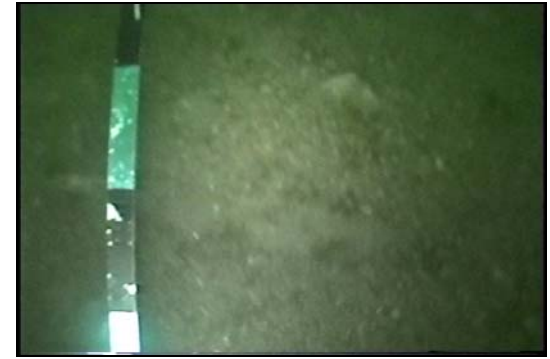


Figure 70. CC3-4-C, June 2009



Figure 65. CC3-3-E, June 2009

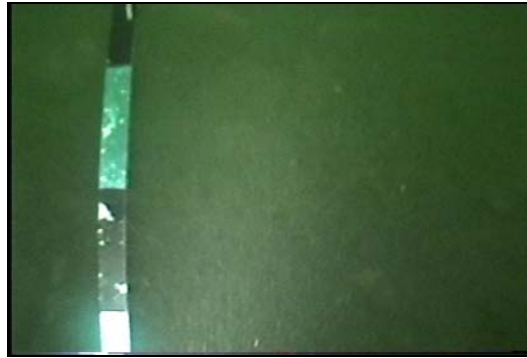


Figure 68. CC3-4-A, June 2009



Figure 71. CC3-4-D, June 2009

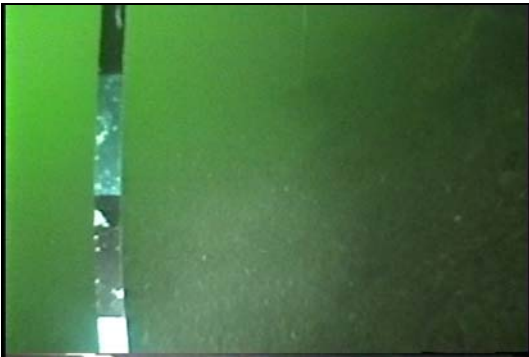


Figure 66. CC3-3-F, June 2009

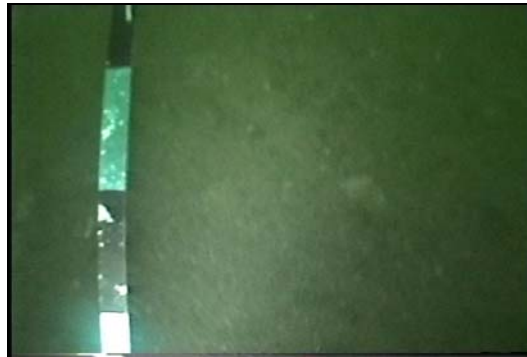


Figure 69. CC3-4-B, June 2009



Figure 72. CC3-4-E, June 2009

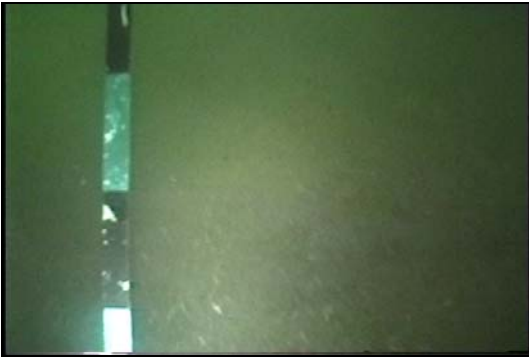


Figure 73. CC3-4-F, June 2009



Figure 76. CC4-1-C, June 2009



Figure 79. CC4-1-F, June 2009



Figure 74. CC4-1-A, June 2009



Figure 77. CC4-1-D, June 2009

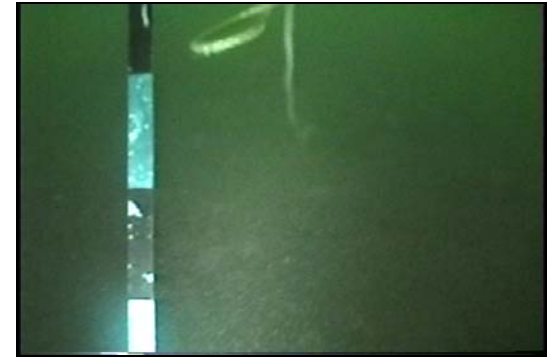


Figure 80. CC4-1-G, June 2009



Figure 75. CC4-1-B, June 2009



Figure 78. CC4-1-E, June 2009



Figure 81. CC4-2-A, June 2009



Figure 82. CC4-2-B, June 2009

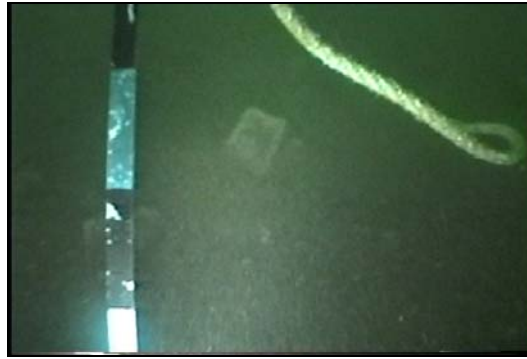


Figure 85. CC4-2-E, June 2009

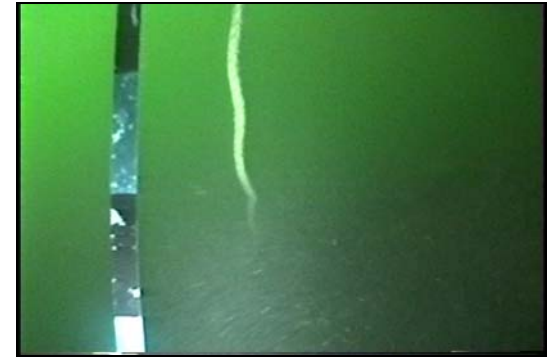


Figure 88. CC4-2-H, June 2009



Figure 83. CC4-2-C, June 2009



Figure 86. CC4-2-F, June 2009

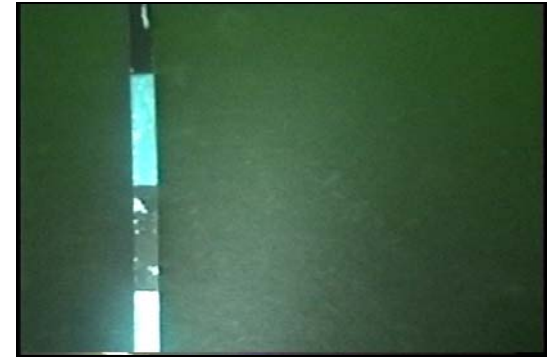


Figure 89. CC4-2-I, June 2009



Figure 84. CC4-2-D, June 2009



Figure 87. CC4-2-G, June 2009

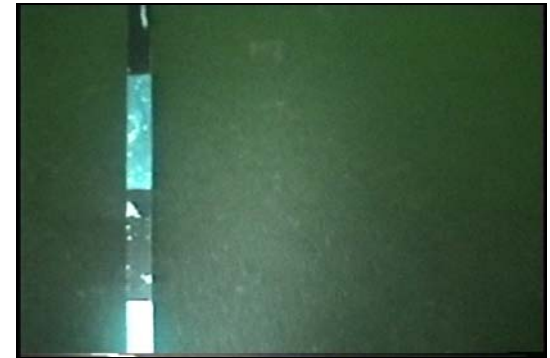


Figure 90. CC4-2-J, June 2009

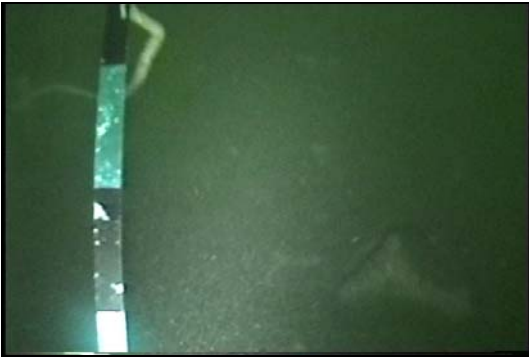


Figure 91. CC4-3-A, June 2009



Figure 94. CC4-3-D, June 2009



Figure 97. CC4-3-G, June 2009



Figure 92. CC4-3-B, June 2009



Figure 95. CC4-3-E, June 2009

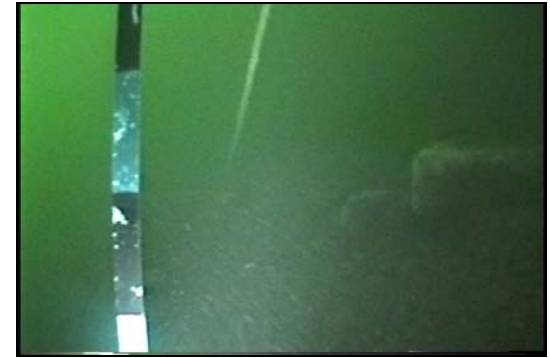


Figure 98. CC4-3-H, June 2009



Figure 93. CC4-3-C, June 2009



Figure 96. CC4-3-F, June 2009

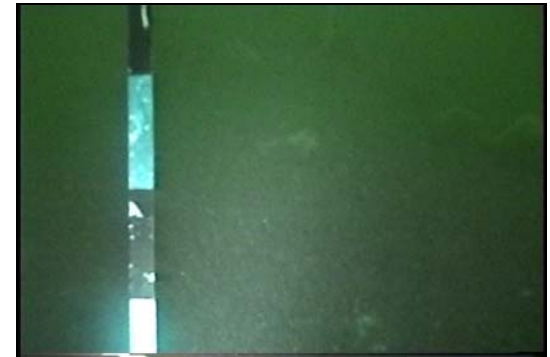


Figure 99. CC4-3-I, June 2009

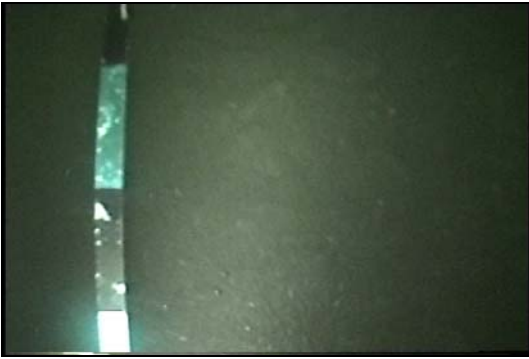


Figure 100. CC5-1-A, June 2009



Figure 103. CC5-1-D, June 2009



Figure 106. CC5-1-G, June 2009



Figure 101. CC5-1-B, June 2009



Figure 104. CC5-1-E, June 2009



Figure 107. CC5-1-H, June 2009



Figure 102. CC5-1-C, June 2009



Figure 105. CC5-1-F, June 2009



Figure 108. CC5-1-I, June 2009



Figure 109. CC5-1-J, June 2009

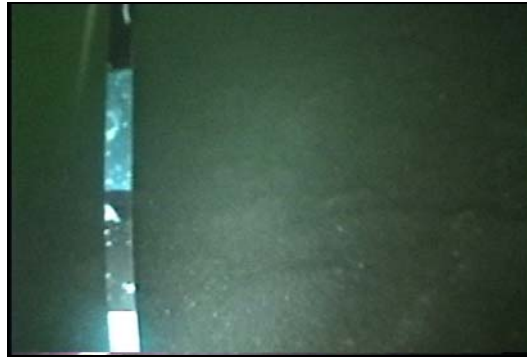


Figure 112. CC5-1-M, June 2009

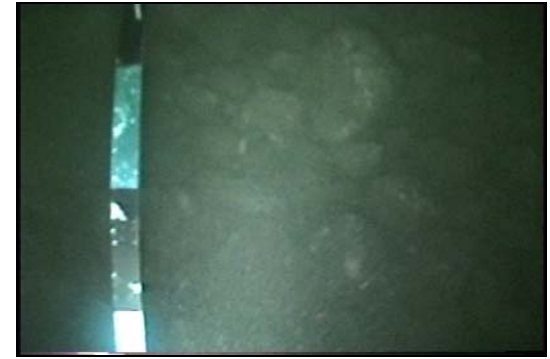


Figure 115. CC5-2-B, June 2009



Figure 110. CC5-1-K, June 2009



Figure 113. CC5-1-N, June 2009



Figure 116. CC5-2-C, June 2009



Figure 111. CC5-1-L, June 2009

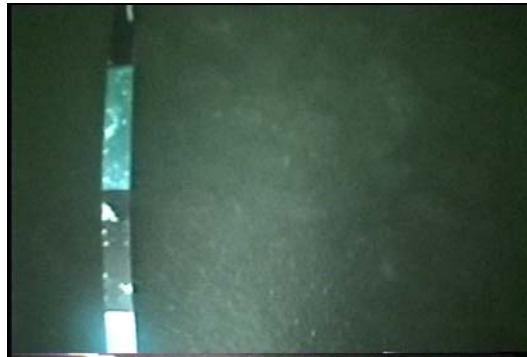


Figure 114. CC5-2-A, June 2009



Figure 117. CC5-2-D, June 2009



Figure 118. CC5-2-E, June 2009



Figure 121. CC5-2-I, June 2009



Figure 124. CC5-2-L, June 2009



Figure 119. CC5-2-F, June 2009



Figure 122. CC5-2-J, June 2009



Figure 125. CC5-2-M, June 2009



Figure 120. CC5-2-G, June 2009



Figure 123. CC5-2-K, June 2009

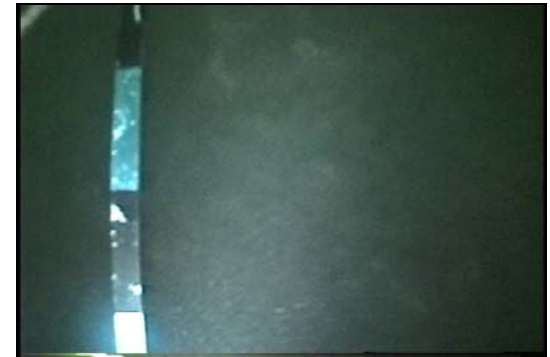


Figure 126. CC5-3-A, June 2009

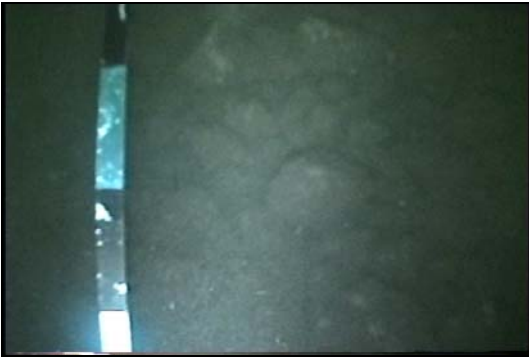


Figure 127. CC5-3-B, June 2009



Figure 130. CC5-3-E, June 2009



Figure 133. CC5-3-H, June 2009



Figure 128. CC5-3-C, June 2009



Figure 131. CC5-3-F, June 2009



Figure 134. CC5-3-I, June 2009



Figure 129. CC5-3-D, June 2009



Figure 132. CC5-3-G, June 2009



Figure 135. CC5-3-J, June 2009



Figure 136. CC5-3-K, June 2009



Figure 139. CC6-1-C, June 2009



Figure 142. CC6-1-F, June 2009



Figure 137. CC6-1-A, June 2009



Figure 140. CC6-1-D, June 2009



Figure 143. CC6-1-G, June 2009



Figure 138. CC6-1-B, June 2009



Figure 141. CC6-1-E, June 2009



Figure 144. CC6-1-H, June 2009



Figure 145. CC6-1-I, June 2009



Figure 148. CC6-1-L, June 2009



Figure 151. CC6-2-C, June 2009



Figure 146. CC6-1-J, June 2009



Figure 149. CC6-2-A, June 2009



Figure 152. CC6-5-D, June 2009



Figure 147. CC6-1-K, June 2009



Figure 150. CC6-2-B, June 2009



Figure 153. CC6-2-E, June 2009



Figure 154. CC6-2-F, June 2009



Figure 157. CC6-2-I, June 2009



Figure 160. CC6-2-L, June 2009



Figure 155. CC6-2-G, June 2009



Figure 158. CC6-2-J, June 2009



Figure 161. CC6-2-M, June 2009



Figure 156. CC6-2-H, June 2009



Figure 159. CC6-2-K, June 2009



Figure 162. CC6-2-N, June 2009



Figure 163. CC6-2-O, June 2009



Figure 166. CC6-3-C, June 2009



Figure 169. CC6-3-F, June 2009



Figure 164. CC6-3-A, June 2009



Figure 167. CC6-3-D, June 2009



Figure 170. CC6-3-F, June 2009

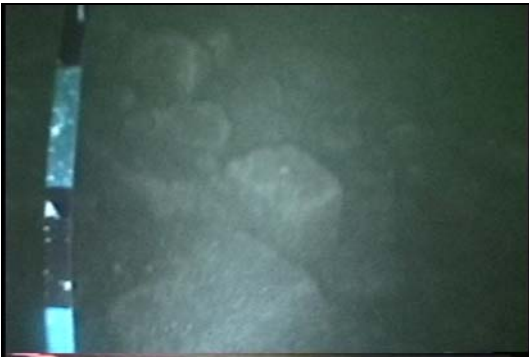


Figure 165. CC6-3-B, June 2009



Figure 168. CC6-3-E, June 2009



Figure 171. CC6-3-G, June 2009



Figure 172. CC6-3-H, June 2009



Figure 175. CC7-1-C, June 2009



Figure 178. CC7-1-F, June 2009



Figure 173. CC7-1-A, June 2009



Figure 176. CC7-1-D, June 2009



Figure 179. CC7-1-G, June 2009



Figure 174. CC7-1-B, June 2009



Figure 177. CC7-1-E, June 2009



Figure 180. CC7-1-H, June 2009



Figure 181. CC7-2-A, June 2009



Figure 184. CC7-2-D, June 2009



Figure 187. CC7-2-G, June 2009



Figure 182. CC7-2-B, June 2009



Figure 185. CC7-2-E, June 2009



Figure 188. CC7-2-H, June 2009



Figure 183. CC7-2-C, June 2009



Figure 186. CC7-2-F, June 2009



Figure 189. CC7-3-A, June 2009



Figure 190. CC7-3-B, June 2009



Figure 193. CC7-3-E, June 2009



Figure 196. CC7-3-H, June 2009



Figure 191. CC7-3-C, June 2009



Figure 194. CC7-3-F, June 2009



Figure 197. CC7-3-I, June 2009



Figure 192. CC7-3-D, June 2009



Figure 195. CC7-3-G, June 2009



Figure 198. CC7-3-J, June 2009



Figure 199. CC7-3-K, June 2009



Figure 202. CC7-3-N, June 2009



Figure 205. CC8-1-C, June 2009



Figure 200. C7-3-L, June 2009



Figure 203. CC8-1-A, June 2009



Figure 206. CC8-1-D, June 2009



Figure 201. CC7-3-M, June 2009



Figure 204. CC8-1-B, June 2009



Figure 207. CC8-1-E, June 2009



Figure 208. CC8-1-F, June 2009



Figure 211. CC8-1-I, June 2009



Figure 214. CC8-2-C, June 2009



Figure 209. CC8-1-G, June 2009



Figure 212. CC8-2-A, June 2009



Figure 215. CC8-2-D, June 2009



Figure 210. CC8-1-H, June 2009



Figure 213. CC8-2-B, June 2009



Figure 216. CC8-2-E, June 2009



Figure 217. CC8-2-F, June 2009



Figure 220. CC8-2-I, June 2009



Figure 223. CC8-3-A, June 2009



Figure 218. CC8-2-G, June 2009



Figure 221. CC8-2-J, June 2009



Figure 224. CC8-3-B, June 2009



Figure 219. CC8-2-H, June 2009



Figure 222. CC8-2-K, June 2009



Figure 225. CC8-3-C, June 2009



Figure 226. CC8-3-D, June 2009



Figure 229. CC-16A-1-B, July 2009

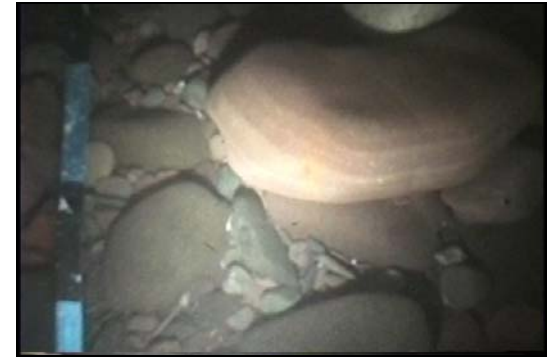


Figure 232. CC-16A-1-E, July 2009



Figure 227. CC8-3-E, June 2009



Figure 230. CC-16A-1-C, July 2009



Figure 233. CC-16A-1-G, July 2009

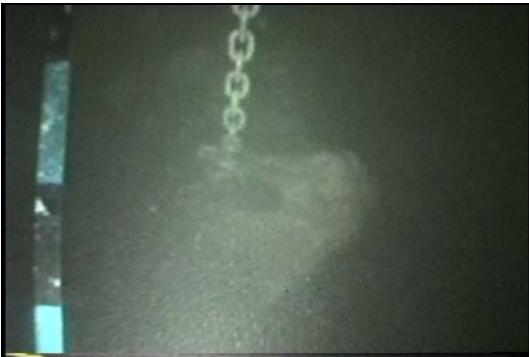


Figure 228. CC-16A-1-A, July 2009



Figure 231. CC-16A-1-D, July 2009



Figure 234. CC-16A-2-A, July 2009



Figure 235. CC-16A-2-B, July 2009



Figure 238. CC-16A-3-B, July 2009



Figure 241. CC-16A-3-E, July 2009



Figure 236. CC-16A-2-C, July 2009



Figure 239. CC-16A-3-C, July 2009



Figure 242. CC-16A-3-F, July 2009



Figure 237. CC-16A-2-D, July 2009



Figure 240. CC-16A-3-D, July 2009



Figure 243. CC-18-1-A, July 2009



Figure 244. CC-18-1-B, July 2009



Figure 247. CC-18-1-E, July 2009



Figure 250. CC-18-2-E, July 2009



Figure 245. CC-18-1-C, July 2009



Figure 248. CC-18-2-B, July 2009



Figure 251. CC-18-3-B, July 2009



Figure 246. CC-18-1-D, July 2009



Figure 249. CC-18-2-C, July 2009



Figure 252. CC-18-3-C, July 2009



Figure 253. CC-18-3-D, July 2009



Figure 256. CC-18-4-B, July 2009



Figure 259. CC-18-4-E, July 2009



Figure 254. CC-18-3-E, July 2009



Figure 257. CC-18-4-C, July 2009



Figure 260. CC-19-1-B, July 2009



Figure 255. CC-18-4-A, July 2009



Figure 258. CC-18-4-D, July 2009



Figure 261. CC-19-1-C, July 2009



Figure 262. CC-19-1-D, July 2009



Figure 265. CC-19-2-B, July 2009



Figure 268. CC-19-2-E, July 2009



Figure 263. CC-19-1-E, July 2009



Figure 266. CC-19-2-C, July 2009



Figure 269. CC-19-3-B, July 2009



Figure 264. CC-19-1-F, July 2009



Figure 267. CC-19-2-D, July 2009



Figure 270. CC-19-3-C, July 2009



Figure 271. CC-19-3-D, July 2009



Figure 274. CC-20-1-D, July 2009



Figure 277. CC-20-2-A, July 2009



Figure 272. CC-20-1-B, July 2009



Figure 275. CC-20-1-E, July 2009



Figure 278. CC-20-2-B, July 2009



Figure 273. CC-20-1-C, July 2009



Figure 276. CC-20-1-F, July 2009



Figure 279. CC-20-2-C, July 2009

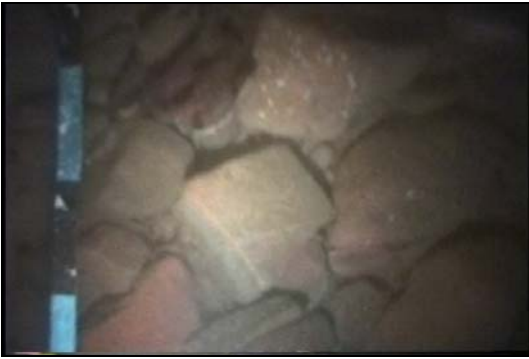


Figure 280. CC-20-2-D, July 2009



Figure 283. CC-20-3-C, July 2009



Figure 286. CC-20-4-B, July 2009



Figure 281. CC-20-2-E, July 2009



Figure 284. CC-20-3-D, July 2009



Figure 287. CC-20-4-C, July 2009



Figure 282. CC-20-3-B, July 2009



Figure 285. CC-20-3-E, July 2009



Figure 288. CC-20-4-D, July 2009



Figure 289. CC-20-4-E, July 2009



Figure 292. CC-20-5-D, July 2009



Figure 295. CC-21-1-C, July 2009



Figure 290. CC-20-5-B, July 2009



Figure 293. CC-21-1-A, July 2009



Figure 296. CC-21-1-E, July 2009



Figure 291. CC-20-5-C, July 2009



Figure 294. CC-21-1-B, July 2009



Figure 297. CC-21-1-F, July 2009



Figure 298. CC-21-2-B, July 2009



Figure 301. CC-21-3-C, July 2009



Figure 304. CC-21-4-A, July 2009



Figure 299. CC-21-2-C, July 2009



Figure 302. CC-21-3-D, July 2009



Figure 305. CC-21-4-B, July 2009



Figure 300. CC-21-3-B, July 2009



Figure 303. CC-21-3-E, July 2009



Figure 306. CC-21-4-C, July 2009



Figure 307. CC-21-4-D, July 2009



Figure 310. CC-21-4-G, July 2009



Figure 313. CC-22-1-F, July 2009



Figure 308. CC-21-4-E, July 2009



Figure 311. CC-22-1-C, July 2009



Figure 314. CC-22-1-H, July 2009



Figure 309. CC-21-4-F, July 2009



Figure 312. CC-22-1-E, July 2009



Figure 315. CC-22-2-B, July 2009



Figure 316. CC-22-2-C, July 2009



Figure 319. CC-22-3-A, July 2009



Figure 322. CC-22-3-E, July 2009



Figure 317. CC-22-2-D, July 2009



Figure 320. CC-22-3-B, July 2009



Figure 323. CC-22-4-B, July 2009



Figure 318. CC-22-2-F, July 2009



Figure 321. CC-22-3-C, July 2009



Figure 324. CC-22-4-C, July 2009



Figure 325. CC-22-4-D, July 2009



Figure 328. CC-23-1-B, July 2009



Figure 331. CC-23-1-G, July 2009



Figure 326. CC-22-4-E, July 2009



Figure 329. CC-23-1-E, July 2009



Figure 332. CC-23-2-A, July 2009



Figure 327. CC-23-1-A, July 2009



Figure 330. CC-23-1-F, July 2009



Figure 333. CC-23-2-B, July 2009



Figure 334. CC-23-2-C, July 2009



Figure 337. CC-23-2-G, July 2009



Figure 340. CC-23-3-C, July 2009



Figure 335. CC-23-2-E, July 2009



Figure 338. CC-23-3-A, July 2009



Figure 341. CC-23-3-D, July 2009



Figure 336. CC-23-2-F, July 2009



Figure 339. CC-23-3-B, July 2009



Figure 342. CC-23-3-F, July 2009



Figure 343. CC-23-3-G, July 2009



Figure 346. CC-24-1-C, July 2009



Figure 349. CC-24-1-G, July 2009



Figure 344. CC-23-3-H, July 2009



Figure 347. CC-24-1-D, July 2009



Figure 350. CC-24-1-I, July 2009



Figure 345. CC-24-1-B, July 2009



Figure 348. CC-24-1-E, July 2009



Figure 351. CC-24-2-A, July 2009



Figure 352. CC-24-2-B, July 2009



Figure 355. CC-24-2-E, July 2009



Figure 358. CC-24-3-B, July 2009



Figure 353. CC-24-2-C, July 2009



Figure 356. CC-24-2-F, July 2009



Figure 359. CC-24-3-C, July 2009



Figure 354. CC-24-2-D, July 2009



Figure 357. CC-24-2-G, July 2009



Figure 360. CC-24-3-D, July 2009



Figure 361. CC-24-3-F, July 2009



Figure 364. CC-24-4-B, July 2009



Figure 367. CC-24-4-E, July 2009



Figure 362. CC-24-3-G, July 2009



Figure 365. CC-24-4-C



Figure 368. CC-24-4-G, July 2009



Figure 363. CC-24-3-H, July 2009



Figure 366. CC-24-4-D, July 2009



Figure 369. CC-24-4-H, July 2009



Figure 370. CC-24-4-J, July 2009



Figure 373. CC-24-5-B, July 2009



Figure 376. CC-24-5-I, July 2009



Figure 371. CC-24-4-L, July 2009



Figure 374. CC-24-5-C, July 2009



Figure 377. CC-24-5-L, July 2009



Figure 372. CC-24-4-M, July 2009



Figure 375. CC-24-5-E, July 2009



Figure 378. CC-24-5-M, July 2009



Figure 379. CC-24-5-N, July 2009



Figure 380. CC-24-5-O, July 2009