Biological report for an off-site marine farm (MFL 99, No. 8393) located in Hikapu Reach, Pelorus Sound

Research, Survey and Monitoring Report Number 535

A report prepared for:

Pickering, Brownlee and Talley's
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By:

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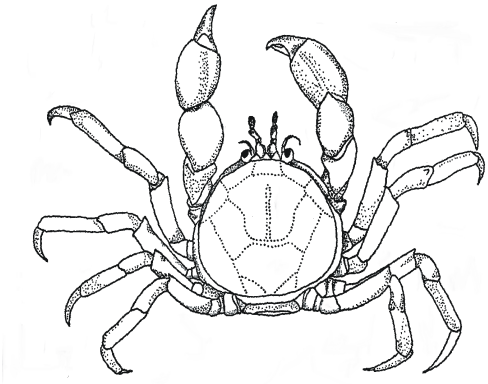
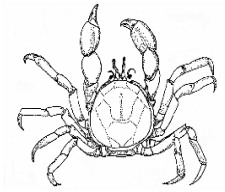
January 2007





DavidsonEnvironmental Ltd.

Bibliographic reference:

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1.0 Introduction

The aim of the present study is to describe biological habitats in relation to a 3 ha off-site marine farm licence (MFL 99) located in Hikapu Reach (Plates 1 and 2, Figure 1). The owners, Pickering, Brownlee and Talleys Fisheries Ltd, have commissioned the present report to provide information on the present location of surface structures and the biological issues related to potential adjustments of the consent area (Figure 1).

At present there are backbones, warps and anchors located outside the consent (Figure 2, Plate 2). The present study investigates habitats from the inshore unoccupied area of the original consent and also reports on the offshore areas occupied by farm structures but not located within the consent.

2.0 Study area

The present 3 ha site is located along the eastern shoreline of Hikapu Reach, in Little Nikau Bay (Plate 2). Hikapu Reach is a large bay in inner Pelorus Sound, situated on the western shore between Hikapu and Popoure Reaches. Hikapu Reach has a coastline length of approximately 21.9 km and covers an area of sea of approximately 845 ha. Hikapu Reach is roughly 6 km long and the mouth of the bay is 1200 m wide. Hikapu Reach is approximately 22.5 km by sea from Havelock.

Plate 1. MFL 99, looking southward along the inshore lines.

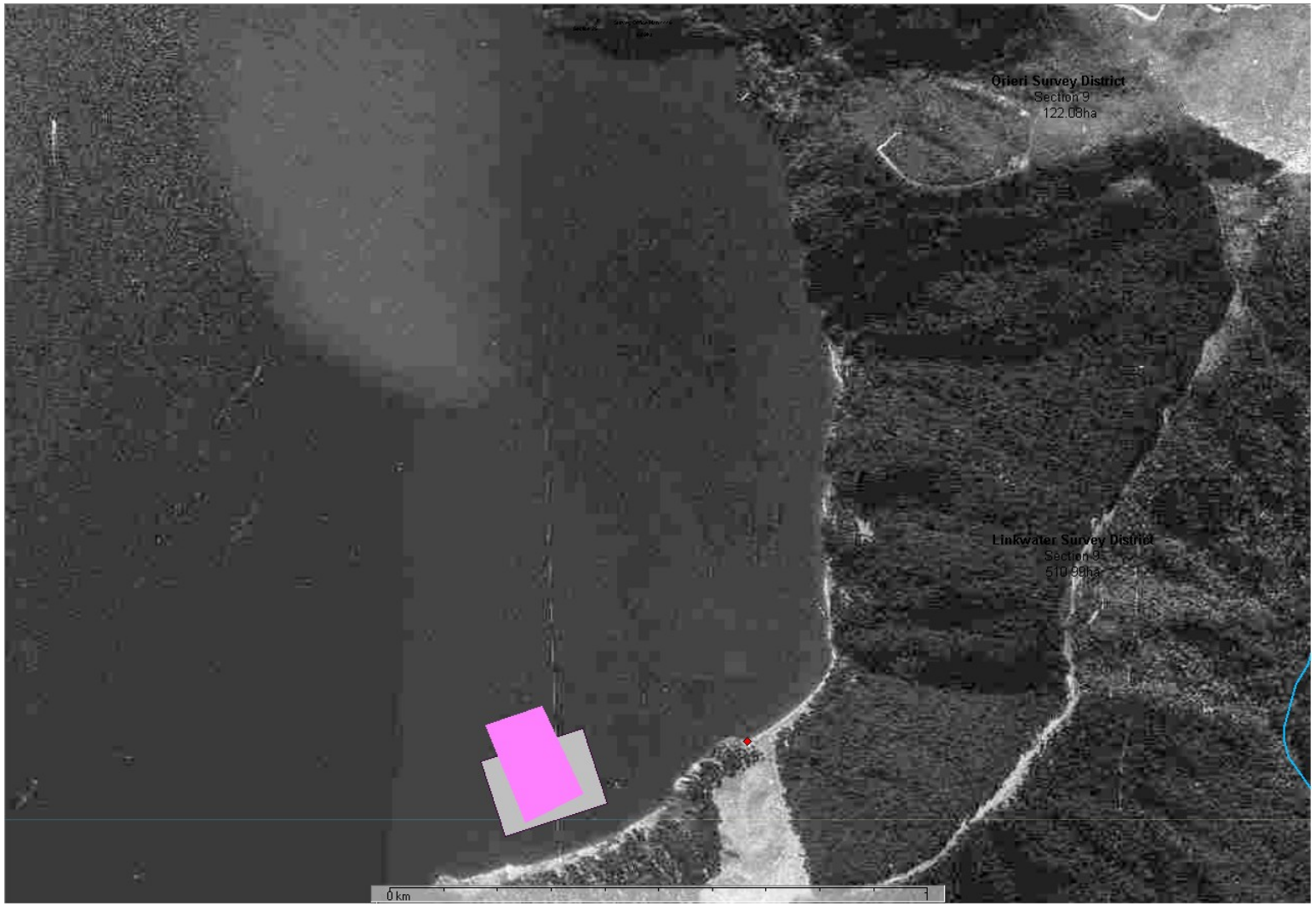

Plate 2. Location of consent (grey) and approximate location of surface structures of MFL 99 (pink).

3.0 Background

No historical biological information was found regarding this marine farm site.

4.0 Methods

The site was sampled on 15th December 2006. Prior to fieldwork, the existing consent boundaries were plotted onto mapping software (TUMONZ 2.19). The laptop running the mapping software was linked to a Lowrance LC X-15MT GPS receiver allowing real-time plotting of the corners of surface marine farm structures and to pinpoint drop camera stations in the field. This GPS system has a maximum error of 10 m distance.

The corners of the existing marine farm surface structures were surveyed by positioning the survey vessel immediately adjacent to the corner floats and their position plotted. It should be noted that surface structures can move due to environmental variables such as tidal current and wind. The plot of surface structures is therefore variable from day to day and over the duration of tidal cycles. These data should not therefore be regarded as a precise measurement of the position of surface structures, but rather an approximate position.

Depths adjusted to datum were collected from the structure corners and the existing consent corners. The tide on the survey day was 2.5 m high tide at 6.07 pm and low tide of 1.27 m at 10.45 am. The tide was outgoing during the survey.

Drop camera stations

A total of 11 drop camera photographs were collected from MFL 99 – five from the areas inshore of the existing structures, but inside the consent and size from areas offshore of the consent (four under backbones and two under warps) (Figure 1).

At each site, an IKELITE underwater splash camera fixed to a aluminium shaft was lowered to the benthos and an oblique still photograph collected where the shaft landed on the benthos. The location of photograph stations within the inshore and offshore areas were selected in an effort to obtain a representative range of stations within these areas. All photographs collected during the survey have been included in Appendix 1.

Figure 2. MFL 99. Location of existing consent area (grey), existing surface structures (pink), and location of drop camera photographs (triangles) with photo number and depth (m).

5.0 Results

Depths of the consent area were between 7.9 m to 24.7 m (Figure 1, Table 1). The approximate coordinates for the marine farm surface structures have also been displayed in Table 1 and have been depicted in relation to the consent area in Figure 1. The coordinates, depths, substratum and mussel shell debris for each drop camera station have been displayed in Table 2.

Table 1. Depths (adjusted to low tide) and coordinates for consent area and the approximate location of corner surface structures for MFL 99.

Type	No. & Depth (m)	Coordinates
Structure corner	25.5m	2583754.2,6001179.3
Structure corner	10.9m	2583828.7,6000996.1
Structure corner	12.5m	2583935.4,6001051.3
Structure corner	13.7m	2583860.3,6001215.4
Original consent corner	8.5m	2583792.03, 6000969.36
Original consent corner	24.7m	2583745.34, 6001111.89
Original consent corner	12.2m	2583935.38, 6001174.15
Original consent corner	7.9m	2583982.08, 6001031.62

Table 2. Substratum and mussel debris observed from drop camera stations from MFL 99.

No. & Depth (m)	Coordinates	Location	Substratum	Shell debris
1, 12.5m	2583884.2,6001217.5	Offshore of consent, under warps	Silt and clay	None
2, 15.8m	2583836.0,6001193.3	Offshore of consent, under backbones	Silt and clay	None
3, 19.8m	2583793.0,6001176.5	Offshore of consent, under backbones	Silt and clay	None
4, 24.8m	2583747.8,6001154.4	Offshore of consent, under warps	Silt and clay	None
5, 19.7m	2583791.4,6001149.5	Offshore of consent, under backbones	Silt and clay	None
6, 15.5m	2583845.4,6001175.5	Offshore of consent, under backbones	Silt and clay	None
7, 11.2m	2583847.9,6000999.6	In consent, inshore of structures	Silt and clay, mussel debris	High
8, 12.6m	2583874.3,6001015.8	In consent, inshore of structures	Silt and clay, mussel debris	High
9, 12.9m	2583900.7,6001027.7	In consent, inshore of structures	Silt and clay, mussel debris	Low
10, 12.2m	2583932.6,6001035.3	In consent, inshore of structures	Silt and clay, mussel debris	Low
11, 12.4m	2583957.3,6001047.2	In consent, inshore of structures	Silt and clay	None

Substratum

Substratum type is based on drop camera images (see photographs in Appendix 1). All areas photographed within the consent and offshore of the consent area were characterised by soft substratum (i.e. silt and clay). Mussel debris was observed from photographs collected directly inshore of the marine farm structures (photos 3 and 4, Table 2, Appendix 1).

Conclusions

Based on the position of surface structures recorded during the present survey, part of the existing marine farm (i.e. surface lines and associated warps and anchors) were located offshore of the consent area. An area of the inshore consent is presently not occupied by structures.

All of the benthos within the consent and offshore of the consent are suitable for marine farming activities. It is recommended that the inshore unoccupied part of the consent be relinquished and added to the offshore area to accommodate some of the offshore structures.

Appendix 1. Drop camera photographs (8393).

Photo 1

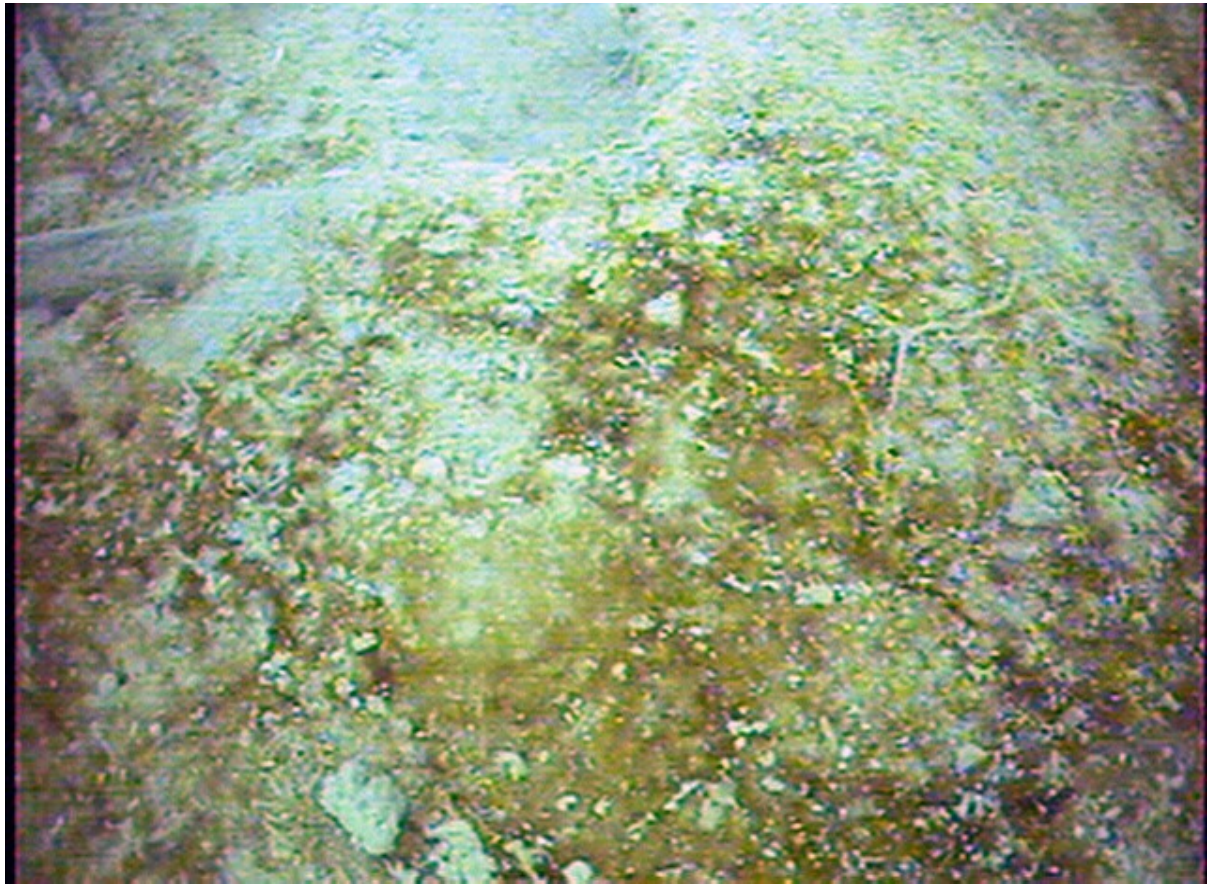

Photo 2

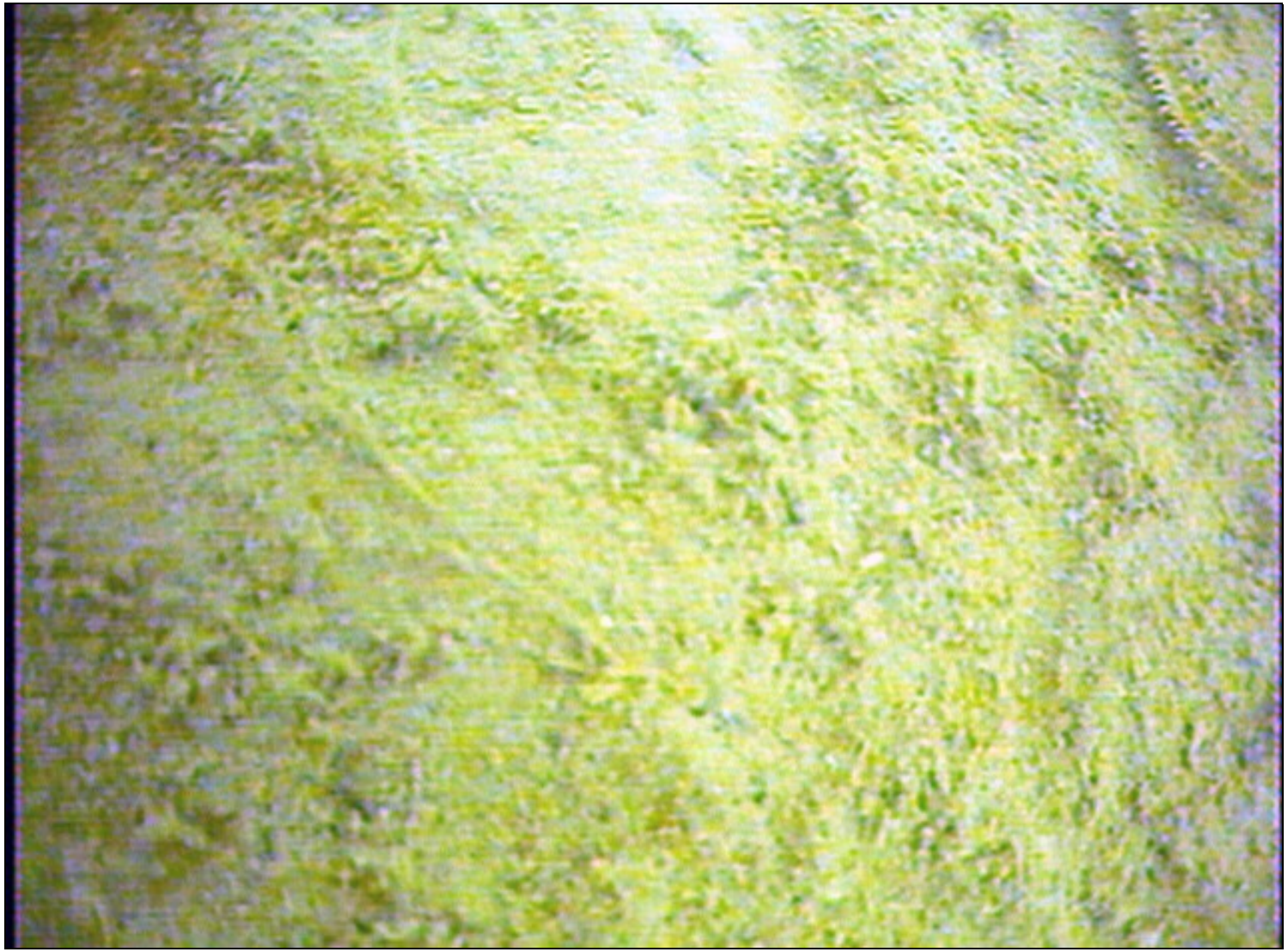

Photo 3

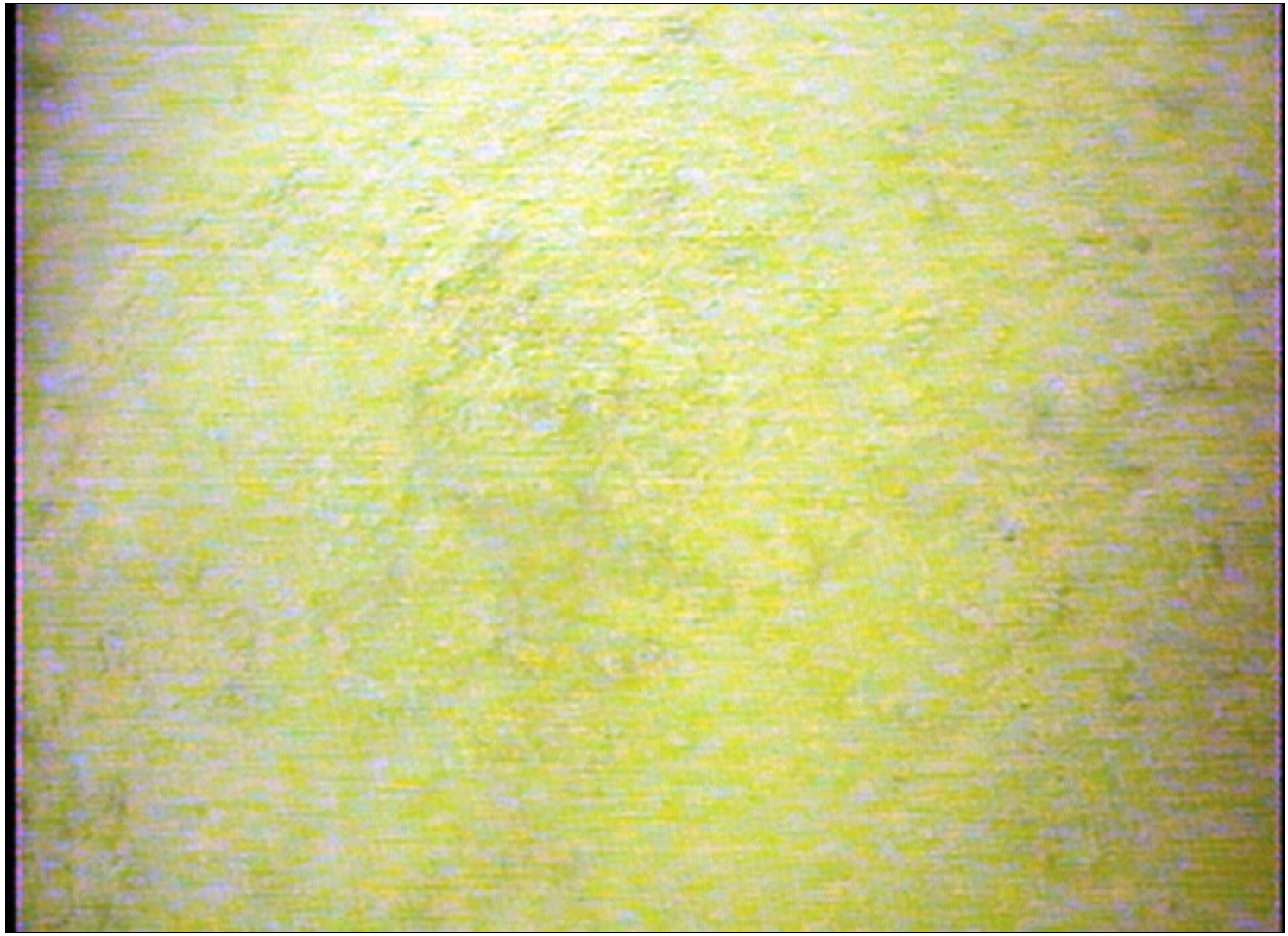

Photo 4

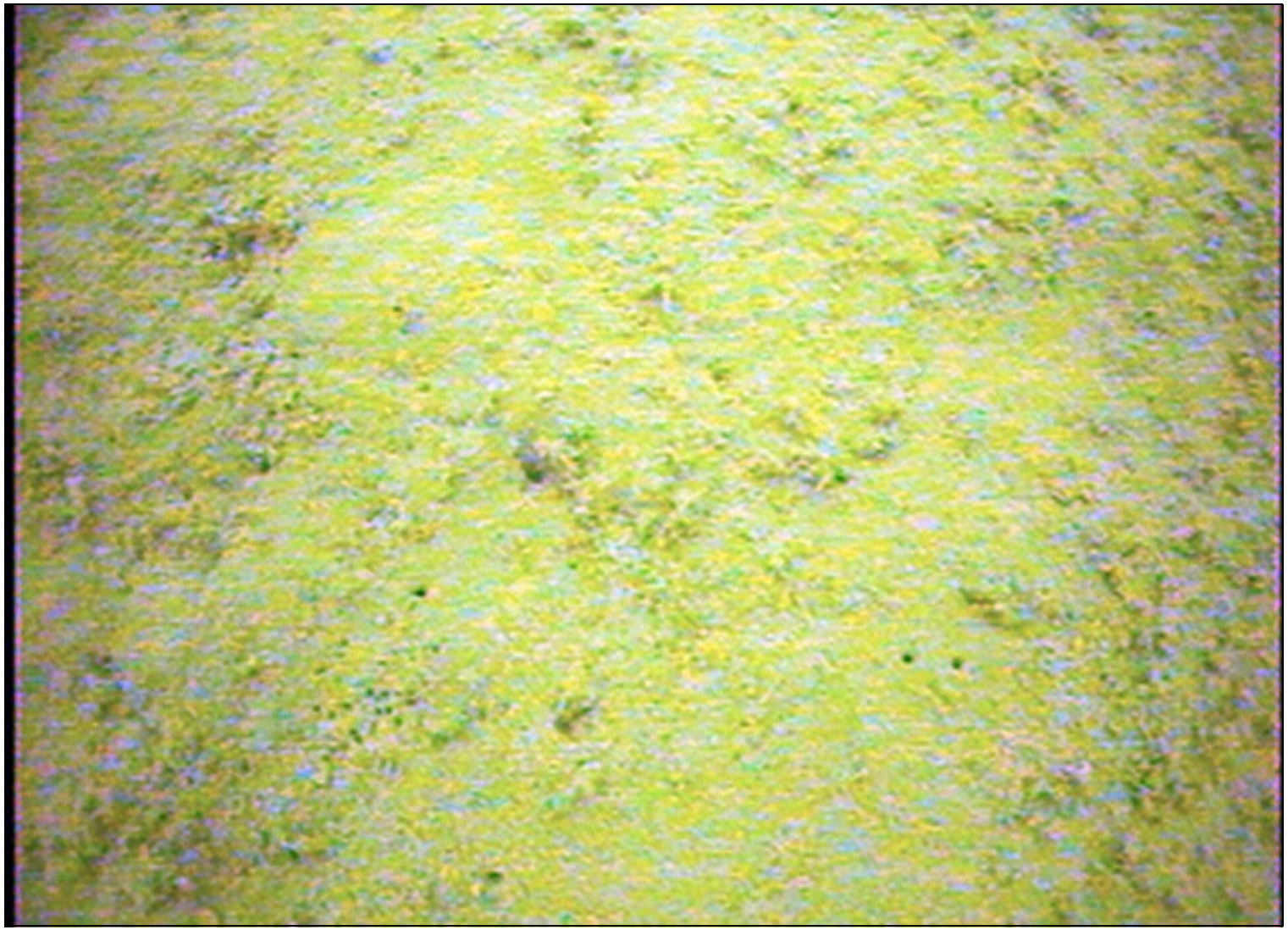

Photo 5

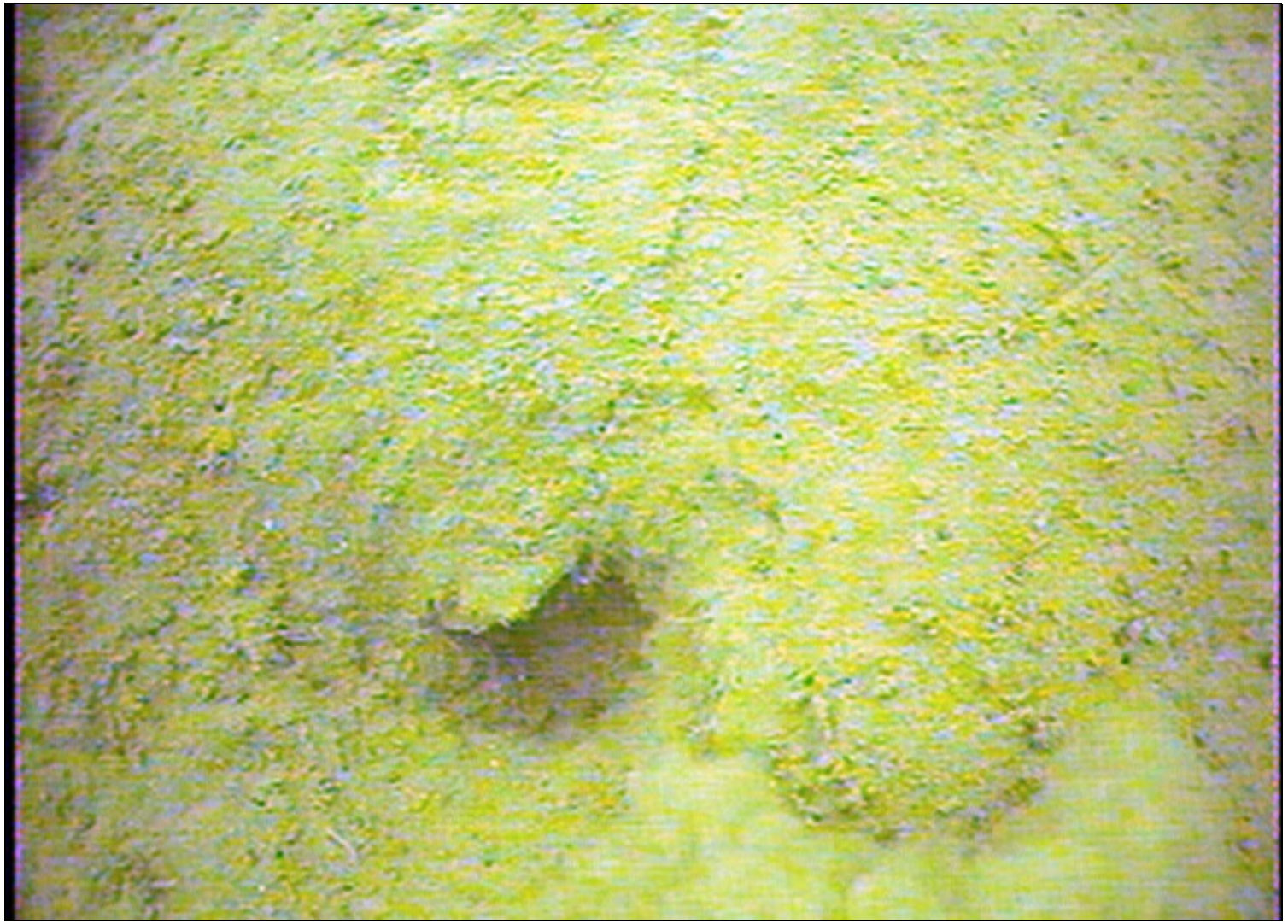

Photo 6

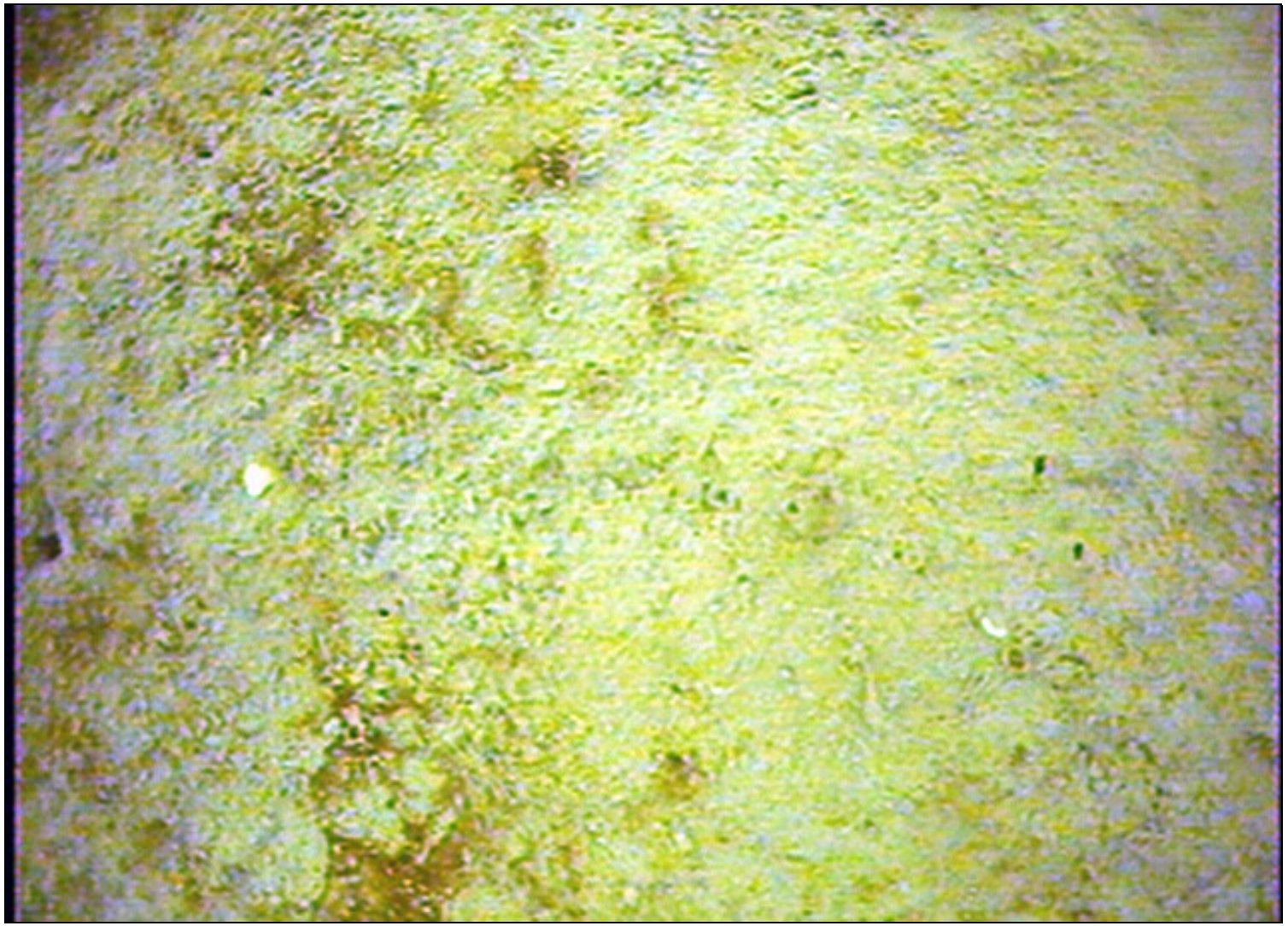

Photo 7

Photo 8

Photo 9

Photo 10

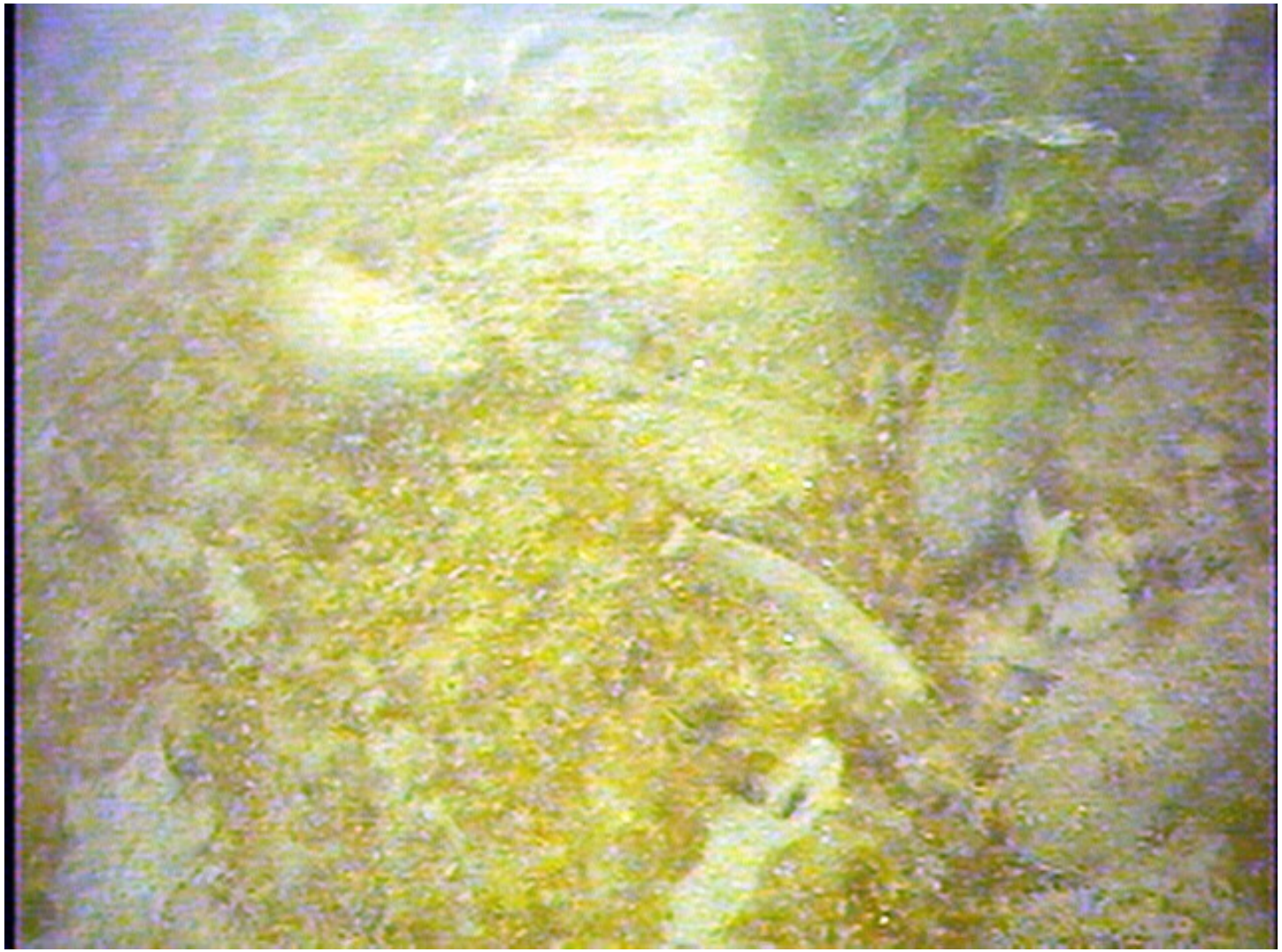

Photo 11