



Centre for Environment
Fisheries & Aquaculture
Science



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C2496

Extension of the La Hurel Bivalve Mollusc Production Area – Review of Sampling Plans

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December 2015

Cefas Document Control

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Date submitted:	8 th December, 2015
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Approved by and date:	Ron Lee, 8 th December, 2015
Version:	V1.1

Version Control History			
Author	Date	Comment	Version
Ron Lee	18/11/15	Internal draft	0.1
Ron Lee & Michelle Price-Hayward	19/11/15	Final version	1.0
Ron Lee & Michelle Price-Hayward	08/12/15	Revised final version correcting a typographical error	1.1

Introduction

Cefas undertook a sanitary survey for the States of Jersey Department of the Environment in 2012. This included recommendations for the bivalve mollusc production area boundaries and associated representative monitoring points for St Clement's and Grouville Bays. Three production areas were recommended for the La Hurel area: La Hurel Main Bed North (*Crassostrea gigas* & *Mytilus edulis*), La Hurel Main Bed South (*C. gigas*) and La Hurel Holding Bed (*C. gigas* and *M. edulis*). The recommended RMPs for those production areas are listed in Table 1.

Table 1: Recommended monitoring points for the La Hurel area from the 2012 sanitary survey

Production Area	Location (WGS84)	Species
La Hurel Holding Bed	49° 10'.21 N 2° 1'.44 W	<i>C. gigas</i>
	49° 10'.35 N 2° 1'.49 W ¹	<i>M. edulis</i>
La Hurel Main Bed North	49° 10'.50 N 2° 1'.07 W	<i>C. gigas</i>
		<i>M. edulis</i>
La Hurel Main Bed South	49° 10'.02 N 2° 0'.83 W	<i>C. gigas</i>

Note: ¹A location on Area 27 was proposed as there were no mussels at Area 6. It was recommended that, if this situation changed, the RMP should be moved to coincide with that of oysters at Area 6.

In August 2015, the Department of the Environment requested that Cefas review the recommendations of the sanitary survey relating to the La Hurel area, as it was proposed to approve a larger concession area at that location, with potential use for bivalve aquaculture in any part of the enlarged area. The species of interest were *C. gigas*, *Ostrea edulis* and *M. edulis*.

The extended area is shown in Figure 1 relative to the present classified production areas, lease areas and representative monitoring points (RMPs).

The review takes into account:

- Information presented in the sanitary survey report (no new information was sought)
- The boundaries for the extended concession area
- *E. coli* monitoring results since January 2013

Conclusions of the 2012 sanitary survey

The conclusions of the 2012 sanitary survey are given in Appendix 1. With respect to the La Hurel area, the sanitary survey identified that there could be potential impact from sources located to the west of the area on the southern coast of the island, to the north of La Hurel in the vicinity of Gorey and from discharges from boats. Contamination from seabirds was also identified as a possible source. However, the principal impacts were likely to be from combined overflows and surface water overflows located at the coast in the vicinity of the beds. These were considered likely to have a greater impact at the La Hurel Holding Bed than at either of

the La Hurel Main Bed production areas, as the former was closer to the shore. Analysis of the historical *E. coli* data from the classification monitoring programmes showed a tendency for higher results in Grouville Bay than in St Clements Bay and, within Grouville Bay for higher results nearer to shore and also on the northern part of the La Hurel Main bed.

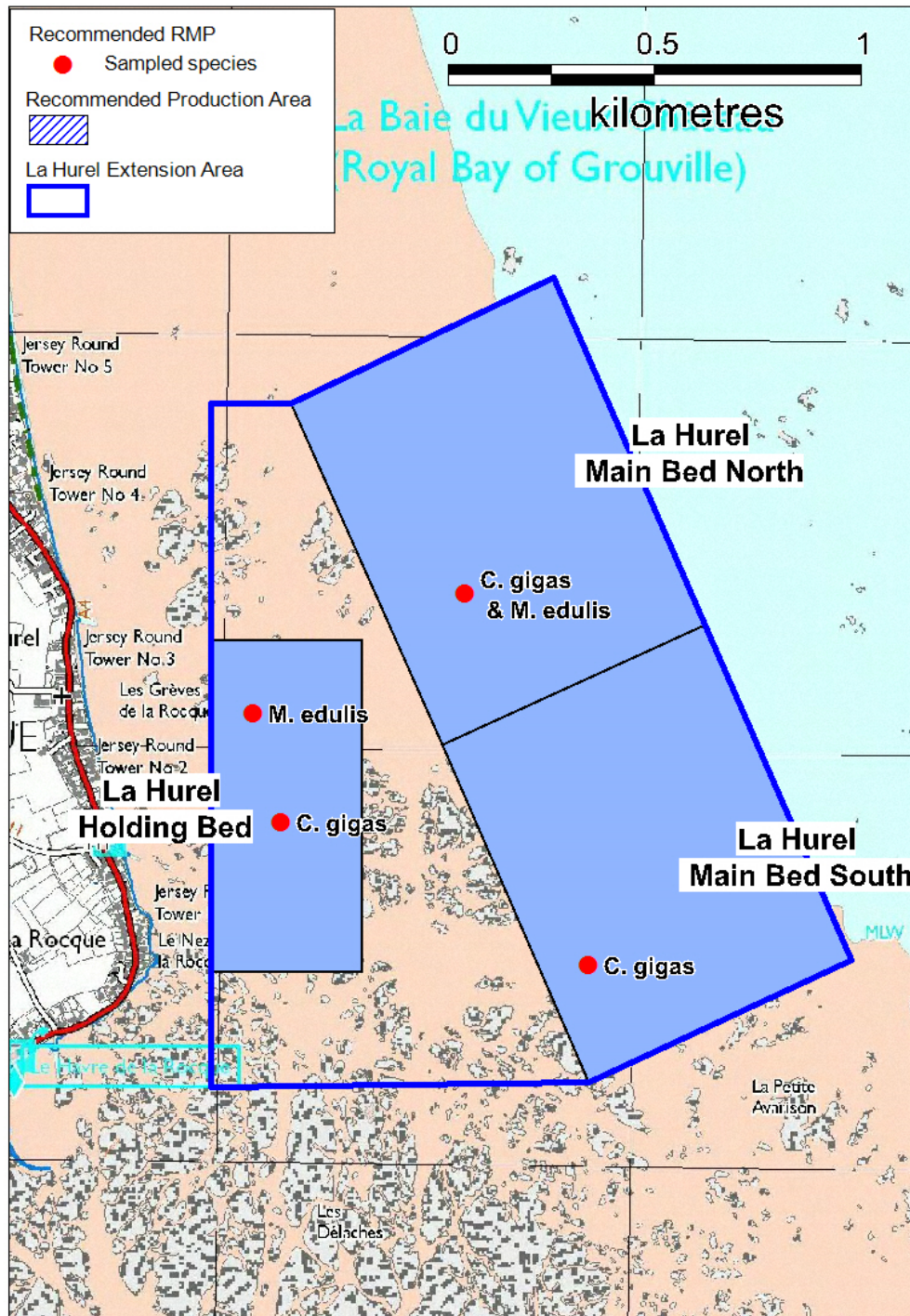


Figure 1. Location of the La Hurel Extension Area in relation to the production areas and RMPs recommended in the 2012 sanitary survey report

Analysis of *E. coli* data

States of Jersey Environment Department supplied the *E. coli* monitoring data for the La Hurel area RMPs for the period from January 2013 to October 2015 inclusive. The data for each production area/species combination is shown in the boxplots¹ in Figure 2.

For the purpose of comparison of results between production areas and species, a subset of the data was extracted which contained only the results where all of the production areas/species combinations for the La Hurel area had been sampled on the same date. This was done in order to reduce potential variability due to temporal effects. Descriptive statistics for the resulting data are presented in Table 2.

The highest result overall was seen in the Pacific oysters at La Hurel Holding Bed, although the geometric mean for the mussels in that area was higher than that for the Pacific oysters. The maximum result seen in the Pacific oysters at La Hurel Main Bed North was also higher than that in the mussels. However, in both production areas, the proportion of results greater than 230 *E. coli*/100 g was greater in mussels than in Pacific oysters. Although there appears to be some tendency towards higher results nearer the shore, and to the north within the Main Bed, analysis of the effect of factors on (\log_{10} -transformed) *E. coli* results showed no significant difference between production areas or species.

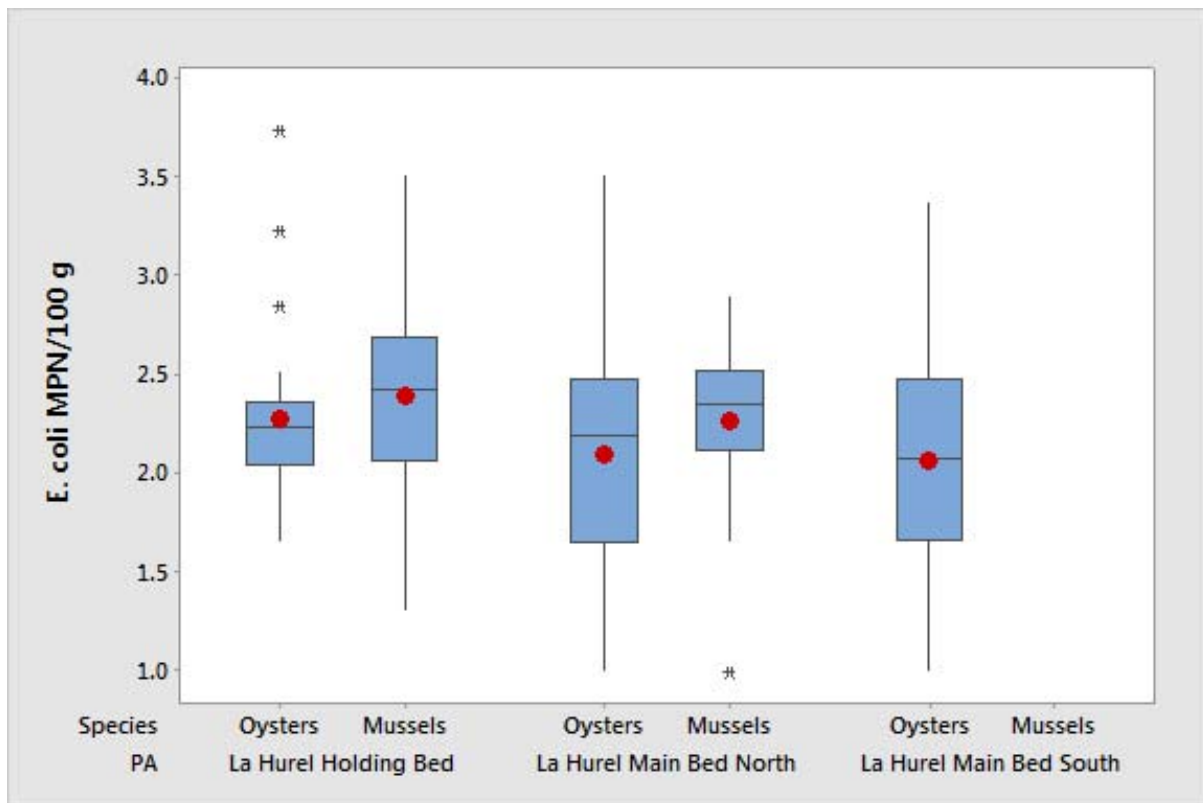


Figure 2. Boxplots of *E. coli* results for the RMPs at La Hurel

¹ For each group, the vertical boxes represent approximately 50% of the observations, lines (called "whiskers") extend from each box to roughly represent the upper and lower 25% of the distribution, and asterisks beyond the whiskers represent outliers. The lines across the boxes represent the median of each group of observations and the red dots represent the geometric means.

Table 2. Descriptive statistics for La Hurel *E. coli* data (Jan 2013 – Oct 2015 inclusive)

Table 2. Descriptive statistics for La Hurel <i>E. coli</i> data (Jan 2013 – Oct 2015 inclusive)	E. coli MPN/100 g				
	La Hurel Holding Area		La Hurel Main Bed North		La Hurel Main Bed South
	Area 6	Area 27	Area 24		Area 21
	Pacific oysters	Mussels	Pacific oysters	Mussels	Pacific oysters
No. of samples	32	32	32	32	32
Minimum	45	20	<20	<20	<20
Maximum	5400	3300	3300	790	2400
Median	170	270	155	225	120
Geometric mean	188	245	126	183	117
90%ile	589	787	645	490	700
No of results >230 <i>E. coli</i>/100 g	6	16	9	13	8
No of results >4600 <i>E. coli</i>/100 g	1	0	0	0	0

Conclusions

Although the analysis of the *E. coli* data obtained from January 2013 on did not show a significant difference in average \log^{10} -transformed *E. coli* results in shellfish between the present production areas, it is assumed that there is still the potential for the parts of the extension area closer to the shore to be contaminated to a greater extent than those parts that are presently within the La Hurel North and South Main Bed production areas.

Recommendations

All coordinates are given as WGS84. A summary of the recommendations is shown in map form in Figure 3.

Production areas

The La Hurel North and South Main Bed production areas should be maintained as at present, with the present La Hurel Holding Bed production area subsumed into the rest of the Extension Area, to be termed La Hurel West.

The definitions for the three areas would then be:

La Hurel West: The area bounded by a line drawn from 49° 10'.75 N 2° 1'.58 W to 49° 10'.75 N 2° 1'.42 W to 49° 9'.87 N 2° 0'.83 W to 49° 9'.87 N 2° 1'.58 W and back to 49° 10'.75 N 2° 1'.58 W.

La Hurel Main Bed North: The area bounded by a line drawn from 49° 10'.75 N 2° 1'.42 W to 49° 10'.92 N 2° 0'.89W to 49° 10'.46 N 2° 0'.59 W to 49° 10'.31 N 2° 1'.12W and back to 49° 10'.75 N 2° 1'.42 W.

La Hurel Main Bed South: The area bounded by a line drawn from 49° 10'.31 N 2° 1'.12 W to 49° 10'.46 N 2° 0'.59 W to 49° 10'.02 N 2° 0'.30 W to 49° 9'.87 N 2° 0'.83 W and back to 49° 10'.31 N 2° 1'.12 W.

RMPs

It is recommended that the present RMPs be maintained for La Hurel North and South Main Bed production areas. The species to be sampled at those RMPs should be amended if the species to be harvested from those production areas change (i.e. the species to be sampled should reflect the species to be harvested).

It is recommended that the RMP for La Hurel West be located at 49° 10'.35 N 2° 1'.49W: this location will reflect the local sources of contamination. The species sampled at that RMP should reflect the species in place when the extended area is brought into use and should then be changed, as necessary, to reflect any changes in species to be harvested from the area.

The RMP locations are summarized in Table 3.

Tolerance

It is proposed that a maximum tolerance of 20 m around the designated RMP location be applied.

Depth of sampling

Not applicable.

Maintenance of present sampling arrangements

The existing production area boundaries and RMPs locations should be maintained until the use of the additional area is confirmed and equipment and stock put in place. Monitoring towards classification of the extended area at La Hurel West would ideally begin approximately twelve months prior to first anticipated harvest. However, as monitoring data is available from within the area, initial classification could be based on the data from the La Hurel Holding Bed and the new RMP instituted nearer the time of first anticipated harvest. If appropriate species are not available within the defined tolerance of the recommended RMP, specific bags for the purpose of sampling should be placed at that location. If that approach is taken, the shellfish should be *in situ* for at least two weeks prior to sampling in order that they equilibrate to the microbiological quality of the location.

Table 3. Recommended RMP locations

Production Area	RMP location
La Hurel West	49° 10'.35 N 2° 1'.49W
La Hurel Main Bed North	49° 10'.50 N 2° 1'.07 W
La Hurel Main Bed South	49° 10'.02 N 2° 0'.83 W

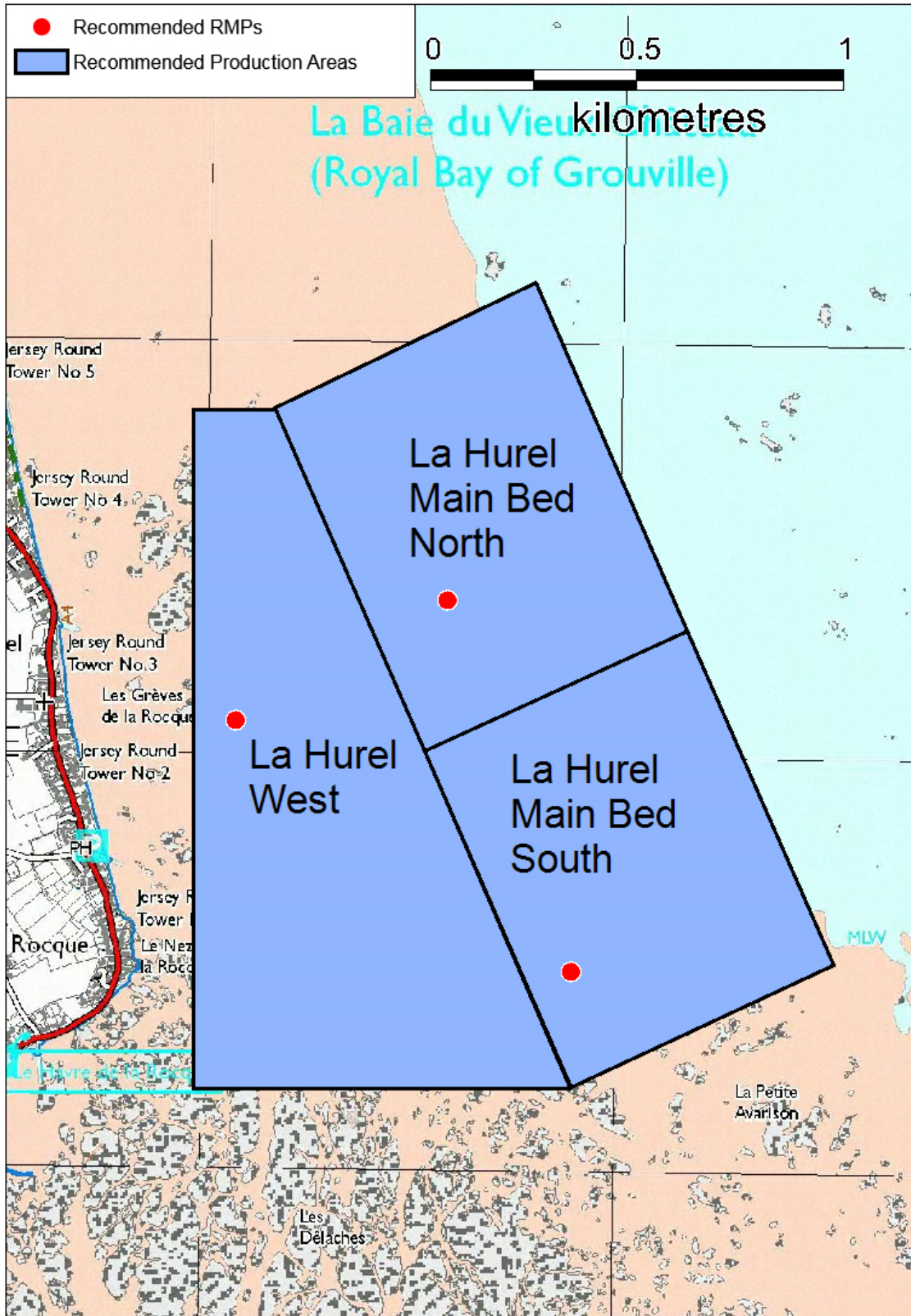


Figure 3. Summary of recommendations for La Hurel

Appendix 1: Conclusions of the 2012 sanitary survey

The main potential sources of faecal contamination come from three broad categories:

- i. Those arising in the immediate vicinity of the trestles which include wildlife sources and possible discharges from boats.
- ii. Those arising from the near shore, which include fresh water sources, surface water overflows and intermittent outfalls. These may contain a mix of point and diffuse source contamination of both human and animal origin.
- iii. Those arising from further afield, which would include discharges at Bellozanne as well as intermittent discharges from the Cavern and at Le Dicq outfall.

The mix of sources affecting the St. Clements Bay fishery differ from those likely to impact the Grouville Bay fishery.

From a geographical perspective, these can be further described as:

- i. To the west of St Clement's Bay, there is the continuous discharge at Bellozanne and the intermittent discharges from the Cavern and the Le Dicq outfall during heavy rainfall events and the stream outlets further up the shore at Le Dicq. There may also be contributions from boat activity in the vicinity of the harbour and marina at St Helier.
- ii. To the north of the shellfish sites in Grouville Bay there is the stream with intermittent discharge at Gorey slip and other intermittent outfalls between there and Fauvic. The main impacts from wildlife will be seen at the more northerly classified areas within Grouville Bay.

Low flows and some *E. coli* content have been seen at many of the observed outfalls/outlets during dry weather. This will increase during wet weather at those containing stream water, land run-off or road run-off even in the absence of sewerage overflow operation.

Dilution of contamination and mixing of seawater is generally high but this may be modified at the local level by the seawater running through the system of gutters and channels in the sand. Currents tend to flow southward in Grouville Bay much of the time. However, over the last half of the flood tide and the first half of the ebb tide the flow will be principally in a northerly direction. In St Clement's Bay the currents tend to flow eastward over the ebb tide and westward over the flood tide.

From the historical shellfish *E. coli* data obtained up to September 2011,

the western side of St Clement's Bay and the southern end of Grouville Bay showed the highest levels of contamination and the two oyster areas at Seymour Tower the lowest. Since September 2011, a number of high results have been obtained for the Pacific oyster sampling points in Grouville Bay and a very high result was seen in Area 26 at Seymour Tower.

Given the large population on the south-east side of the island of Jersey, and other potential sources of faecal contamination, it is presently unlikely that shellfisheries located relatively close to shore will consistently attain the quality required for an A classification. The associated water quality of an average (geometric mean) of <math><10 E. coli/100\text{ ml}</math> is very stringent compared to bathing water standards (e.g. a 90%ile of 250 *E. coli*/100 ml for the Excellent category under the 2006 Directive).



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