



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Bid Receiving - PWGSC / Réception des
soumissions - TPSGC

11 Laurier St. / 11, rue Laurier

Place du Portage, Phase III

Core 0B2 / Noyau 0B2

Gatineau

Québec

K1A 0S5

Bid Fax: (819) 997-9776

LETTER OF INTEREST

LETTRE D'INTÉRÊT

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du

fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Ship Construction, Refit and Related

Services/Construction navale, Radoubs et services
connexes

11 Laurier St. / 11, rue Laurier

6C2, Place du Portage

Gatineau

Québec

K1A 0S5

Title - Sujet LOI/RFI - In water vessel cleaning	
Solicitation No. - N° de l'invitation EN600-19LOI1/A	Date 2019-10-28
Client Reference No. - N° de référence du client EN600-19LOI1	GETS Ref. No. - N° de réf. de SEAG PW-\$\$MC-044-27486
File No. - N° de dossier 044mc.EN600-19LOI1	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2019-12-10	
Time Zone Fuseau horaire Eastern Daylight Saving Time EDT	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Remillard, Michele	Buyer Id - Id de l'acheteur 044mc
Telephone No. - N° de téléphone (613) 850-1431 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Specified Herein Précisé dans les présentes	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

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1. Background

The Department of Public Works and Government Services Canada (PWGSC) Marine Services and Small Vessel Sector (MSSVS) in cooperation with, The Canadian Coast Guard (CCG), The Department of National Defence (DND) and Transport Canada, is issuing this Request for Information (RFI) to solicit details on technical availability for in-water vessel cleaning services in Canada and abroad.

1.1 Purpose of Request for Information

The purpose of this Request for information is to develop an understanding of current and emerging technologies for in-water cleaning and grooming so that general operating procedures, standards and guidelines can be and developed for Government of Canada use. The intent of gathering this information is to collaboratively explore and modernize the current way in which vessel cleaning is undertaken, and to shape a national strategy for vessel cleaning services that better meet the needs of government and preserves the marine environment. In order to deliver the future services as described in the section entitled “Statement of Requirement” Canada is seeking information on current in-water vessel cleaning services and solutions.

Introduction and Scope

Vessel biofouling is a vector for the introduction of non-indigenous species into marine ecosystems. In-water cleaning and grooming is an important tool for reducing the biosecurity risks associated with the biofouling-vector during the in-service period of vessels. In-water cleaning and grooming can form part of a proactive biofouling management program to reduce the accumulation of organisms on the vessel or it can be applied to remove biofouling growth from unmanaged or in-service vessels. In-water cleaning and grooming can also be a source of introduction, increasing biosecurity risk.

1.2 The Main Objectives of this Request for Information (RFI) are as follows:

- 1) Provide industry with an early opportunity to assess and comment on the requirement in order to maximize best value to Canada if a request for proposal (RFP), Request for Standing Offer (RFSO), or Request for Supply Arrangement (RFSa) is posted;
- 2) Determine the capability of suppliers to provide services described in this Request for Information (RFI);
- 3) Solicit feedback and recommendations on any issues that would impact a suppliers ability to fulfill the requirement; and

- 4) Solicit industry knowledge and expertise with regard to best practices that would increase the likelihood of a successful outcome for decreasing invasive risk potential of the hull-borne and niche-area vessel vectors.

1.2.1 Nature of Request for Information

This is not a bid solicitation. This RFI will not result in the award of any contract. Therefore, potential suppliers of any goods or services described in this RFI should not reserve stock or facilities, nor allocate resources, as a result of any information contained in this RFI. Nor will this RFI result in the creation of any source list. Therefore, whether or not any potential supplier responds to this RFI will not preclude that supplier from participating in any future requirements. Also, the procurement of any of the goods or services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit feedback from industry with respect to its contents.

Nothing in this RFI shall be construed as a commitment from Canada to issue any solicitation for this project. Canada may use any non-proprietary information obtained as part of this review or while preparing a future official solicitation document.

Canada shall not be bound by anything stated in this document. Canada reserves the right to change at any time any or all parts of the requirement, as it deems necessary. Canada also reserves the right to revise its procurement approach, as it considers appropriate, either based on information submitted in response to this RFI or for any other reason it deems appropriate.

2. Instructions for responding to RFI

Terminology

Respondent:	Supplier responding to the RFI
Client:	Public Works and Government Services Canada
Contracting Authority:	The Contracting Authority is responsible for the management of the RFI and any changes to the RFI.

2.1 Nature and Format of Responses Requested

Respondents are invited to provide comments regarding the content of the "Statement of Requirement" section included in this RFI. This includes explaining any assumptions Respondent's make in their interpretation of the requirement.

2.2 Response Costs

Canada will not reimburse any respondent for expenses incurred in responding to this RFI. Respondents will have no claim for damages, compensation, loss of

profit, or allowance arising out of providing answers and comments to section 4. “Statement of Requirement”.

2.3 Treatment of Responses

a) Use of responses

Responses will not be formally evaluated. However, the responses received may be used by Canada to develop or modify procurement strategies. Canada will review all responses received by the RFI closing date. Canada may, in its discretion, review responses received after the RFI closing date.

b) Review Team

A review team consisting of representative of the client (where applicable) and PWGSC will review the responses. Canada reserves the right to hire any independent consultant or use any Government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.

c) Confidentiality

Respondents should clearly mark any portions of their response that they consider proprietary or confidential. Canada will handle these portions of the response in accordance with the *Access to information Act*.

d) Follow-up Activity

Canada may, at its discretion, contact respondents to follow up with additional questions or for clarification of any aspect of a response. At its discretion, Canada may agree to meet with respondents to provide respondents with the opportunity to present and/or demonstrate their capabilities in relation to this RFI. Respondents' presentations shall be at no obligation to Canada and respondents will be responsible for all costs associated with Canada's invitation to make a presentation. However, respondents are not obliged to make a presentation.

e) Industry Day

Canada will hold an information session on November 25, 2019 to respond to questions and provide a presentation of the proposed solicitation options available to fulfil this requirement. It is PWGSC's intention to capitalize on this opportunity to engage with industry in a manner consistent with the principles of smart procurement (early engagement), effective governance, independent advice, and benefits for Canadians) and to offer advance notice and information of this procurement instrument and requirement. This opportunity should be of particular interest to small and medium marine focused enterprises wishing to provide Commercial Diving Services to the Government of Canada.

Two (identical) presentations will be delivered to provide ample opportunity for all vendors to participate. Interested parties are invited to follow the instructions below to join either presentation scheduled for 08:00 and 14:00 Eastern Standard Time:

To join the online meeting:

1. go to <https://gts-ee.webex.com/gts-ee/j.php?MTID=me3844e4442bf1e209d3fc9769b849915>
2. If requested, enter your name and email address
3. If a password is required, enter the meeting password: updy2j65
4. Click "join"

To join the teleconference only:

Provide your phone number when you join the meeting to receive a call back.

Alternatively, you can call:

Call-in toll free number: 1-877-413-4791 (Canada)

Call-in number: 1-613-960-7516 (Canada)

Attendee access code: 8395722

2.4 Contents of the RFI

This RFI contains a draft Statement of Requirement. This document remains a work in progress and respondents should not assume that new clauses or requirements will not be added to any solicitation that is ultimately published by Canada. Nor should respondents assume that none of the clauses or requirements will be deleted or revised. Comments regarding any aspect of this RFI, Statement of Requirement and supplier requirements are welcome. This also contains specific questions addressed to the industry.

2.5 Format of Responses

1) Cover page

If the response includes multiple volumes, respondents are requested to indicate on the front cover page of each volume the title of the response, the solicitation number, the volume number and the full legal name of the respondent.

2) Title Page

The first page of each volume of the response, after the cover page, should be the title page, which should contain:

- i) The title of the respondent's response and the volume number;
- ii) The respondent's name and address;
- iii) A contact name, address, telephone number, and email address
- iv) The due date; and
- v) The RFI number.

3) Number of copies

Canada requests that respondents provide three (3) hard copies of the response,

or

4) Electronic Submissions

a. Unless specified otherwise in the RFI, responses may be submitted by using the epost Connect service provided by Canada Post Corporation.

1. PWGSC, National Capital Region: The only acceptable email address to use with epost Connect for responses to RFIs issued by PWGSC headquarters is: tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca, or if applicable, the email address identified in the RFI.

2. PWGSC regional offices: The only acceptable email address to use with epost Connect for responses to RFI s issued by PWGSC regional offices is identified in the RFI.

b. To submit a response using epost Connect service, the Response must either:

1. send directly its response only to the specified PWGSC Bid Receiving Unit using its own licensing agreement for epost Connect provided by Canada Post Corporation; or

2. send as early as possible, and in any case, at least six business days prior to the RFI closing date and time, (in order to ensure a response), an email that includes the RFI number to the specified PWGSC Bid Receiving Unit requesting to open an epost Connect conversation. Requests to open an epost Connect conversation received after that time may not be answered.

c. If the Respondent sends an email requesting epost Connect service to the specified Bid Receiving Unit in the RFI, an officer of the Bid Receiving Unit will then initiate an epost Connect conversation. The epost Connect conversation will create an email notification from Canada Post Corporation prompting the response to access and action the message within the conversation. The response will then be able to transmit its response afterward at any time prior to the RFI closing date and time.

d. If the respondent is using its own licensing agreement to send its response, the respondent must keep the epost Connect conversation open until at least 30 business days after the RFI closing date and time.

e. The RFI number should be identified in the epost Connect message field of all electronic transfers.

f. It should be noted that the use of epost Connect service requires a Canadian mailing address. Should a response not have a Canadian mailing address, they may use the Bid Receiving Unit address specified in the RFI in order to register for the epost Connect service.

g. For responses transmitted by epost Connect service, Canada will not be responsible for any failure attributable to the transmission or receipt of the response including, but not limited to, the following:

- i. receipt of a garbled, corrupted or incomplete response;
- ii. availability or condition of the epost Connect service;
- iii. incompatibility between the sending and receiving equipment;
- iv. delay in transmission or receipt of the response;
- v. failure of the Responder to properly identify the response;
- vi. illegibility of the response;
- vii. security of response data; or,
- viii. inability to create an electronic conversation through the epost Connect service.

h. The Bid Receiving Unit will send an acknowledgement of the receipt of response document(s) via the epost Connect conversation, regardless of whether the conversation was initiated by the supplier using its own license or the Bid Receiving Unit. This acknowledgement will confirm only the receipt of response document(s) and will not confirm if the attachments may be opened nor if the content is readable.

i. Respondents must ensure that they are using the correct email address for the Bid Receiving Unit when initiating a conversation in epost Connect or communicating with the Bid Receiving Unit and should not rely on the accuracy of copying and pasting the email address into the epost Connect system.

j. A response transmitted by epost Connect service constitutes the formal response of the Responder and must be submitted in accordance with section 05.

2.6 Enquiries

Because this is not a bid solicitation, Canada will not necessarily respond to all enquiries in writing or by circulating answers to all potential suppliers. However, respondents with questions regarding this RFI may direct their enquiries to:

Contracting Authority: Michele Remillard

Address: PWGSC, Place du Portage III, 8B3-12
11 Laurier Street, Gatineau, Quebec K1A 0S5
Email: michele.remillard@tpsgc-pwgsc.gc.ca
Telephone: 613-850-1431

All communications regarding this request for information must be directed to the Contracting Authority to ensure fair and transparent treatment of all respondents.

2.7 Submission of Response

a) Time and Place for Submission of Responses

Suppliers interested in providing a response should deliver it to the Contracting Authority identified above following address, by the time and date indicated on Page 1 of this document.

PWGSC Bid Receiving Unit
11 rue Laurier
Place du Portage, Phase III
Core OA1
Gatineau, Quebec, J8X 4A6

b) Responsibility for Submitting Timely Responses

Each respondent is solely responsible for ensuring that its response is delivered on time to the correct location.

c) Identification of Responses

Each respondent should ensure that its name, return address, the RFI number and the closing date appear legibly on the outside of the response.

2.8 Security Requirement

There are no security requirements associated with responding to this RFI.

Any future procurement actions undertaken in support of this requirement may require suppliers to hold the following security clearance:

“ALL personnel requiring access to protected information, assets or sensitive work sites must EACH hold a valid ENHANCED RELIABILITY STATUS, granted or approved by the Canadian Industrial Security Directorate, Public Works and Government Services Canada. “

Any future procurement may also include expanded security requirements as mandatory criteria for contract award. For more information about security requirement governing contracts, visit the CISD website at: <http://ssi-iss.tpsgc-pwgsc.gc.ca/>

2.9 Official Languages

Responses to this RFI may be submitted in either of Canada's official languages

2.10 Comprehensive Land Claim Agreements

Since this requirement may operate anywhere within Canadian territorial waters, the location of where deployed maintenance services, if any, may be required is unknown at this time but could occur anywhere in Canadian waters or globally. Maintenance work required within Canadian territorial waters may be subject to the following Comprehensive Land Claims Agreements (CLCAs):

- ☐ Labrador Inuit Land Claims Agreement
- ☐ Nunavut Land Claims Agreement
- ☐ James Bay and Northern Quebec Agreement and the
- ☐ Inuvialuit Final Agreement

The Contractor who is awarded any contract within the boundaries noted above will be required to make its best efforts to use the applicable CLCA business lists to source and procure any goods and/or services necessary for maintenance work in the Arctic and will, to the extent possible, employ CLCA beneficiary people for the required labour.

3. Overview of Potential Solicitation Strategy

This section outlines the solicitation strategy that Canada is considering in order to fulfill its in-water vessel cleaning service requirements.

3.1 Request for Proposal

Once the industry feedback on the RFI has been considered, an RFP, may be published on <https://buyandsell.gc.ca/procurement-data/tenders>. The bidding period will be in accordance with Government of Canada policies on procurement and subject to applicable trade agreements.

3.1.2 Request for Supply Arrangement

Once the industry feedback on the RFI has been considered, a Request for Supply Arrangement may be published on <https://buyandsell.gc.ca/procurement-data/tenders>. The bidding period will be in accordance with Government of Canada policies on procurement and subject to applicable trade agreements.

3.1.3 Request for Standing Response

Once the industry feedback on the RFI has been considered, a Request for Standing Response may be published on <https://buyandsell.gc.ca/procurement-data/tenders>. The bidding period will be in accordance with Government of Canada policies on procurement and subject to applicable trade agreements.

3.2 Proposed Contract Strategy

The current requirement may ultimately be divided into several contracts, depending on the responses from potential suppliers about their capacity to provide the aforementioned services.

3.3 Estimated Schedule

If this RFI leads to a future solicitation, PWGSC proposes the following Schedule:

A) Issue Solicitation:	Winter 2020
B) Complete submission/bid evaluations:	Early/mid Spring 2020
C) Award Contracts / SOs / SAs:	Mid/late spring 2020
D) Commence delivery of Services:	End of spring 2020

4. Statement of Requirement

The Government of Canada requires the services of an innovative, proactive, commercial dive supplier to ensure that Canada's fleet of ships are inspected and cleaned, to full biofouling requirements, to a Level of Fouling (LOF) of 2 microns or less. All services are to be provided in accordance with the relevant statutory regulations, standards and codes of practice.

Currently, the Government of Canada does not normally perform in-water vessel cleaning and grooming; vessel cleaning and grooming is usually undertaken when the vessel is in dry dock for in-service support.

The Governments' intent is to provide appropriate tools to establish an environmentally responsible national in-water vessel cleaning and grooming solution for The Government of Canada.

Currently, Canada's fleet of vessels regularly deploys around the Canadian coastline to undertake security and patrol exercises. The fleet also visits designated special environmental areas both nationally and internationally and require that biosecurity measures to be undertaken.

To maximize the efficiency of the vessels and preserve the marine environment, the Government of Canada is considering the advantages of in-water vessel cleaning services as a viable solution. Ideally, the biofouling would be completely removed and contained, the anti-fouling paint would remain intact, and there

would be no release of contaminants in the marine environment (biological and chemical). Additionally, Canada is seeking contractor(s) to supply all labour, equipment and materials required to undertake in-water vessel cleaning and grooming services that eliminate fouling loss to the environment and chemical contamination. Hull and niche cleaning services include but are not limited to, bow thruster tunnels, fin stabilizer pockets, docking block areas, keel, bilge keels, rudders, and propellers.

Technical Specifications:

- Photographs and CCTV (post clean with communications to Biofouling expert alongside);
- Sample collection (if required);
- Reporting (confirming LOF);
- Liaising with project managers, engineers, the contracting authority and approved biofouling vessel inspectors;
- Cleaning and grooming of hull and niche areas (using best practices);
- Lloyds registrar engineering survey;
- Dry dock services;
- Fouled water must be captured, cleaned and disposed of in accordance with local municipal, provincial, federal and foreign laws, acts, and standards;
- Assurance that non-indigenous invasive species are contaminating the water;
- Ensure that antifouling paint is not removed during the process;
- Ensure minimal release, or the elimination of chemical and bio-organisms;
- Magnet free equipment - for Department of National Defence requirements ONLY.

Technical Capacity

- The respondent must have a commitment to maintaining high health and safety standards and providing safe diving solutions for increasing safety in the workplace;
- Approval and certification to perform in-water survey and cleaning works;
- Divers that are trained, experienced and qualified in both national and international regulatory requirements affecting vessels deployments;
- Dive supervisors who have the same certifications as the diver; divers carrying out the inspection who are suitable trained and qualified in collecting high quality, intact, biological biofouling samples;
- Capacity to supply diving crews, labour and equipment as required, to provide a timely service;
- Sound knowledge of relevant statutory regulations, standards and codes of practice for biofouling inspections and cleaning services and be able to provide evidence of, or demonstrate, their knowledge.

Definitions

- Grooming means “the frequent and gentle cleaning of a ship hull coating, when it is in port or idle, to prevent the establishment of fouling”.
- Microfouling means a gentle cleaning of a ship hull coating while the ship is in port or idle to prevent the establishment of fouling, mostly a slime layer.
- Macrofouling means the physical removal of biofouling from a ship while in the water where there is a build-up of larger organisms.

Objectives

- Reduction of greenhouse gas emissions
- Increased fuel efficiency
- Increased operational range and capabilities
- Increased speed/reduction of drag
- Control non-indigenous species

Environmental Protection

The Contractor(s) and its sub-contractors engaged in the work on Government equipment must carry out the work in compliance with applicable municipal, provincial and federal environmental laws, regulations, acts and industry standards.

The Contractor must have detailed procedures and processes for identifying, removing tracking, storing, transporting and disposing of all potential pollutants, waste water, and hazardous material encountered, to ensure compliance as required above.

All waste disposal certificates are to be provided to the Quality Assurance representative, with information copies sent to the Contracting Authority. Furthermore, additional evidence of compliance with municipal, provincial, and federal environmental laws, acts and regulations is to be furnished by the Contractor to the contracting authority when so requested.

The Contractor must have environmental emergency response plans and/or procedures in place. Contractor and subcontractor employees must have received the appropriate training in emergency preparedness and response. Contractor personnel engaging in activities which may cause environmental impacts or potential non-compliance situations, must be competent to do so on the basis of appropriate education, training, or experience.

Licensing

The Contractor must obtain and maintain all permits, licenses and certificates of approval required for the work to be performed under any applicable federal, provincial or municipal legislation. The Contractor is responsible for any charges imposed by such legislation or regulations. Upon request, the Contractor must provide a copy of any such permit, license or certificate to Canada.

5. Questions for Respondents

As the purpose of this RFI is to solicit industry feedback with respect to in-water Vessel Cleaning Services, respondents are invited to provide proposed solutions and to submit answers in response to the questions below. Respondents are encouraged to submit answers to as many questions as possible linking the answers to the sequence noted below; however, the draft Statement of Requirement should be taken into consideration when responding to the following questions:

1. How does your solution meet the Marine and Environmental standards in Canada, abroad?
2. Provide the safety measures employed by your organization to ensure the safety of:
 - A) Staff health and safety
 - B) The vessel
 - C) The Marine Environment
 - D) Anti-fouling coatings on vessels
3. What is the procedure for a catastrophic event or a spill/release of biofouling material from the vessel into the marine environment?
4. How does your technology demonstrate minimal release of bio-organisms, contaminants and waste water takes place during the procedure/afterwards?
5. How does your technology protect the anti-fouling agents used on the vessel?
6. What is the effect of cleaning on anti-fouling agents and coatings versus the effect of cleaning on the performance of the coating?
7. What is the acceptable level of pollutants in water? Chemical? Biological?
8. How do we eliminate the release of chemicals during the in-water cleaning and grooming process?
9. How is waste water treated? How is the waste disposed of?
10. What are the tolerance levels of the plume?
11. What is the release rate for live bio-organisms vs chemicals?
12. What is the method of traction or propulsion onto the vessel?
13. What is the method of cleaning (mechanical / Hydro jet)?
14. What is the method of bio organism capture?
15. What is the method of adhesion technique and force onto the vessel?
16. What is the cleaning system employed by your organization?
17. Is the equipment used tethered robot or not?
18. What is the operation: Autonomous, semi automatic, manual?
19. What is the cost of a system and mean time of failure?
20. At what stage is the system development in? Reach stage or completed and tested?

21. Can the cleaning and grooming operations be performed when the vessel is in motion?
22. Can the system clean the fouling rate as per the table below? Worst conditions or all conditions?
23. How much lead time would be required by the company to set up a shop and services within Canada if they do not already have a presence?
24. What types of hull-forms does the company have experience cleaning?
25. How many years' experience do they have in this business with clean and capture systems?
26. What countries are they using their technology?
27. Has your organization ever cleaned Naval Warships before? If so, which Navy and what Ship Class(es)?
28. Does your organization response hull grooming services as well as in-water clean and capture services?
29. What is the vendors preferred solicitation method?
 - 1) Request for Standing Response (RFI)
 - 2) Request for a Supply Arrangement (RFSA)
 - 3) Request for Proposal (RFP)
30. What is the typical size of vessel cleaned?
31. Are there upper or lower bounds on surface area/dimensions to be cleaned, due to logistics for divers or robots?
32. What is the time needed to clean, or the rate of cleaning?
33. What is your proposed solution to cleaning vessels abroad, specifically in foreign ports outside of Canadian waters?

Fouling rate system

Type	Fouling Rating (FR)	Description
Soft	0	A clean, foul-free surface; red and/or black AF paint or a bare metal surface.
Soft	10	Light shades of red and green (incipient slime). Bare metal and painted surfaces are visible beneath the fouling.
Soft	20	Slime as dark green patches with yellow or brown colored areas (advanced slime). Bare metal and painted surfaces may be obscured by the fouling.
Soft	30	Grass as filaments up to 3 inches (76 mm) in length, projections up to 1/4 inch (6.4 mm) in height; or a flat network of filaments, green, yellow, or brown in color; or soft non calcareous fouling such as sea cucumbers, sea grapes, or sea squirts projecting up to 1/4 inch (6.4 mm) in height. The fouling can not be easily wiped off by hand.
Hard	40	Calcareous fouling in the form of tubeworms less than 1/4 inch in diameter or height.
Hard	50	Calcareous fouling in the form of barnacles less than 1/4 inch in diameter or height.
Hard	60	Combination of tubeworms and barnacles, less than 1/4 inch (6.4 mm) in diameter or height.
Hard	70	Combination of tubeworms and barnacles, greater than 1/4 inch in diameter or height.
Hard	80	Tubeworms closely packed together and growing upright away from surface. Barnacles growing one on top of another, 1/4 inch or less in height. Calcareous shells appear clean or white in color.
Hard	90	Dense growth of tubeworms with barnacles, 1/4 inch or greater in height; Calcareous shells brown in color (oysters and mussels); or with slime or grass overlay.
Composite	100	All forms of fouling present, Soft and Hard, particularly soft sedentary animals without calcareous covering (tunicates) growing over various forms of hard growth.