### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: <strong>ARROYO BEACH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td><strong>AARON SMITH  LIZZY STEELE</strong></td>
</tr>
<tr>
<td>Recorder name:</td>
<td><strong>LIZZY STEELE</strong></td>
</tr>
<tr>
<td>Deployment date:</td>
<td><strong>12/1/2017</strong></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>8:00</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>8:05</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: 47.5016</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Apple Maps</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>3 rebar stakes and 1 helical anchor w/eyelet</td>
</tr>
</tbody>
</table>

### HABITAT (visible from mussel cage)

**Sea Conditions:**
- [ ] Flat
- [ ] Calm
- [ ] Wind chop
- [ ] Swells
- [x] Breaking waves

**Beach Exposure:**
- [x] Exposed
- [ ] Moderately exposed
- [ ] Sheltered

**Substrate** — select ONE that describes the majority (50%) of substrate around cage:
- [ ] Bedrock, hardpan
- [ ] Cobble-gravel mix
- [x] Sand-gravel mix
- [ ] Sand
- [ ] Sand-mud mix
- [ ] Mud, silt

**Stream or River present:**
- [x] No
- [ ] Yes

**Other Habitat Comments/Observations:**

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**
- [x] None
- [ ] Hard (bulkhead, riprap, etc.)
- [ ] Creosote Included

**Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)
- [x] No
- [ ] Yes, describe:

**Current Shoreline Use** (check all that apply):
- [ ] Boat ramp/launch
- [ ] Boathouse/shed
- [x] Bridge
- [ ] Breakwater
- [ ] Dock/pier/wharf
- [ ] Floating home
- [ ] Marina
- [ ] Mooring buoy
- [ ] Outfall
- [ ] Piling/dolphin
- [ ] Raft/float
- [ ] Road
- [ ] Shipyard or terminal
- [ ] Utilities
- [x] Other:

**Dock/Pier/Wharf/Piling Material** (if present):
- [ ] Creosote
- [ ] Other treated wood
- [ ] Concrete
- [ ] Steel
- [ ] Other:

**Tires present:**
- [x] No
- [ ] Yes

**Outfall Present** (pipe, culvert, point of flow onto beach):
- [x] No
- [ ] Yes

**Other obvious sources of pollution** (oil slicks, seeps, etc.):

**Additional comments/observations** *(it's a good idea to note landmarks that will help you find the cage later!)*:

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: <strong>BRAKENWOOD</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Deb Rudnick, Hannah Ast, John Christie, Josie Meier, Mary Meier, Taylor Belisle, Brody Ristine</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Mary Meier</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/1/17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>8:00 pm</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>8:10 pm</td>
</tr>
<tr>
<td>Cage GPS location</td>
<td>Latitude: 47.68234</td>
</tr>
<tr>
<td>(decimal degrees)</td>
<td>Longitude: -122.50640W</td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>GARMIN</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td></td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

| Sea Conditions: | ☐ Flat ☐ Calm ☐ Wind chop ☐ Swells ☑ Breaking waves |
| Beach Exposure: | ☐ Exposed ☐ Moderately exposed ☐ Sheltered |
| Substrate – select ONE that describes the majority (50%) of substrate around cage: | ☐ Bedrock, hardpan ☐ Cobble-gravel mix ☐ Sand-gravel mix ☐ Sand ☐ Sand-mud mix ☐ Mud, silt |
| Stream or River present: | ☐ No ☑ Yes |
| Other Habitat Comments/Observations: | DRIFTWOOD LOGS ON BEACH |

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

| Erosion Control/Shoreline Armoring: | ☑ None ☐ Hard (bulkhead, riprap, etc.) ☐ Creosote Included |
| Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.) | ☑ No; ☐ Yes, describe: |
| Current Shoreline Use (check all that apply): | ☐ Boat ramp/launch; ☐ Boathouse/shed; ☐ Bridge; ☑ Breakwater; ☐ Dock/pier/wharf; ☐ Floating home; ☐ Marina; ☐ Mooring buoy; ☐ Outfall; ☐ Piling/dolphin; ☐ Raft/float; ☐ Road; ☐ Shipyard or terminal; ☐ Utilities; ☐ Other: |
| Dock/Pier/Wharf/Piling Material (if present): | ☐ Creosote ☐ Other treated wood; ☐ Concrete; ☐ Steel; ☐ Other: |
| Tires present: | ☑ No ☐ Yes |
| Outfall Present (pipe, culvert, point of flow onto beach): | ☑ No ☑ Yes Tightline off cliff |
| Other obvious sources of pollution (oil slicks, seeps, etc.): | NONE |

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

**TWO LARGE DOUGLAS FIRS ABOVE TREELINE**

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>P5513175 - 00001</th>
<th>Site Name:</th>
<th>Cherry Point North</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Michael Krye, Eli Mackiewicz, Eric Lawrence, April Mackiewicz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recorder name:</td>
<td>April Mackiewicz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/04/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>9:31 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>10:15 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: 48.85842, Longitude: -122.740072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td>26', 10'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>(please set to datum NAD83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>Site rocks - 4, 3 rebar stakes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

- Sea Conditions:  
  - [ ] Flat  
  - [x] Calm  
  - [ ] Wind chop  
  - [ ] Swells  
  - [ ] Breaking waves  

- Beach Exposure:  
  - [x] Exposed  
  - [ ] Moderately exposed  
  - [ ] Sheltered  

- Substrate – select ONE that describes the majority (50%) of substrate around cage:  
  - [ ] Bedrock, hardpan  
  - [x] Cobble-gravel mix  
  - [ ] Sand-gravel mix  
  - [ ] Sand  
  - [ ] Sand-mud mix  
  - [ ] Mud, silt  

- Stream or River present:  
  - [x] No  
  - [ ] Yes  

- Other Habitat Comments/Observations:  

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- Erosion Control/Shoreline Armoring:  
  - [x] None  
  - [ ] Hard (bulkhead, riprap, etc.)  
  - [ ] Creosote Included  

- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):  
  - [x] No  
  - [ ] Yes, describe:  

- Current Shoreline Use (check all that apply):  
  - [x] Boat ramp/launch  
  - [ ] Boathouse/shed  
  - [ ] Bridge  
  - [ ] Breakwater  
  - [ ] Dock/pier/wharf  
  - [ ] Floating home  
  - [ ] Marina  
  - [ ] Mooring buoy  
  - [ ] Outfall  
  - [ ] Piling/dolphin  
  - [ ] Raft/float  
  - [ ] Road  
  - [ ] Shipyards or terminal  
  - [ ] Utilities  
  - [ ] Other: Refinery property (BP Amoco), Pier 1/2 mile north of site  

- Dock/Pier/Wharf/Piling Material (if present):  
  - [ ] Creosote  
  - [ ] Other treated wood  
  - [ ] Concrete  
  - [x] Steel  
  - [ ] Other:  

- Tires present:  
  - [x] No  
  - [ ] Yes  

- Outfall Present (pipe, culvert, point of flow onto beach):  
  - [x] No  
  - [ ] Yes  

- Other obvious sources of pollution (oil slicks, seeps, etc.):  
  - [ ] None  

- Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):  

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: <strong>SAUMON BEACH - TACOMA NAIRNWS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td><strong>KRISTIN WILLIAMSON</strong></td>
</tr>
<tr>
<td>Recorder name:</td>
<td><strong>KRISTIN WILLIAMSON</strong></td>
</tr>
<tr>
<td>Deployment date:</td>
<td><strong>12.05.2017</strong></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td><strong>10:30</strong></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td><strong>10:45</strong></td>
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<tr>
<td>Cage GPS location (decimal degrees)</td>
<td></td>
</tr>
<tr>
<td>Latitude:</td>
<td><strong>47.29466667</strong></td>
</tr>
<tr>
<td>Longitude:</td>
<td><strong>-122.53645947</strong></td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td><strong>± 3 ft.</strong></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Collector App is ArcGIS for iPhone</td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td><strong>HELICAL</strong></td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

**Sea Conditions:**
- [x] Flat
- [ ] Calm
- [ ] Wind chop
- [ ] Swells
- [ ] Breaking waves

**Beach Exposure:**
- [x] Exposed
- [ ] Moderately exposed
- [ ] Sheltered

**Substrate** – select ONE that describes the majority (50%) of substrate around cage:
- [x] Cobble-gravel mix
- [ ] Sand-gravel mix
- [ ] Sand
- [ ] Sand-mud mix
- [ ] Mud, silt

**Stream or River present:**
- [x] No
- [ ] Yes

**Other Habitat Comments/Observations:**

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**
- [ ] None
- [x] Hard (bulkhead, riprap, etc.)
- [x] Creosote Included

**Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)
- [x] No;
- [ ] Yes, describe:

**Current Shoreline Use** (check all that apply):  
- [ ] Boat ramp/launch;  
- [ ] Boathouse/shed;  
- [ ] Bridge;  
- [x] Breakwater;  
- [ ] Dock/pier/wharf;  
- [x] Floating home;  
- [ ] Marina;  
- [ ] Mooring buoy;  
- [ ] Outfall;  
- [ ] Piling/dolphin;  
- [ ] Raft/float;  
- [ ] Road;  
- [ ] Shipyard or terminal;  
- [ ] Utilities;  
- [ ] Other: **Home on pilings extending from NW to ~94 A MLLW tidal datum**

**Dock/Pier/Wharf/Piling Material** (if present):
- [x] Creosote
- [ ] Other treated wood
- [x] Concrete
- [ ] Steel
- [ ] Other:

**Tires present:**
- [x] No
- [ ] Yes

**Outfall Present** (pipe, culvert, point of flow onto beach):
- [x] No
- [ ] Yes

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

*There is an outfall 55m to the North and 240m to the South of the cage.*

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**Site ID:**  6  
**Site Name:** Eagle Harbor  
**Deployers name(s):** Frank Steuerl, Dan Groff, Lara Hansen  
**Recorder name:** Lara Hansen  
**Deployment date:** 12/1/17  
**Estimated time of zero tide:** 8:00 pm/20:00  
**Time cage anchored:** 8:02 pm  
**Cage GPS location (decimal degrees):**  
Latitude: 42° 32' 44" N  
Longitude: 122° 31' 29" W  
**Accuracy (± XX feet):** Apple Compass  
**Anchors Used (type and number):** 2 rebar + 1 helical  

### HABITAT (visible from mussel cage)

- **Sea Conditions:**  
  - [ ] Flat  
  - [x] Calm  
  - [ ] Wind chop  
  - [ ] Swells  
  - [ ] Breaking waves  

- **Beach Exposure:**  
  - [ ] Exposed  
  - [ ] Moderately exposed  
  - [x] Sheltered  

### Substrate – select ONE that describes the majority (50%) of substrate around cage:  
- [x] Mud, silt  
- [ ] Cobble-gravel mix  
- [ ] Sand-gravel mix  
- [ ] Sand  
- [ ] Sand-mud mix  

- **Stream or River present:**  
  - [x] No  
  - [ ] Yes  

- **Small seasonal run-off to west of site**  

- **Other Habitat Comments/Observations:**  
  - Mud substrate covered w/ Ulva and shells (scattered)  
  - (everywhere)  

### ANTHROPOMIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**  
  - [ ] None  
  - [x] Hard (bulkhead, riprap, etc.)  
  - [ ] Creosote Included  

- **Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):**  
  - [x] No;  
  - [ ] Yes, describe:  

- **Current Shoreline Use (check all that apply):**  
  - [ ] Boat ramp/launch  
  - [ ] Boathouse/shed  
  - [ ] Bridge;  
  - [x] Dock/pier/wharf;  
  - [ ] Floating home;  
  - [ ] Marina;  
  - [ ] Mooring buoy;  
  - [ ] Outfall;  
  - [ ] Piling/dolphin;  
  - [ ] Raft/float;  
  - [ ] Road;  
  - [ ] Shipyard or terminal;  
  - [ ] Utilities;  
  - [ ] Other:  

- **Dock/Pier/Wharf/Piling Material (if present):**  
  - [x] Creosote  
  - [ ] Other treated wood;  
  - [ ] Concrete;  
  - [ ] Steel;  
  - [ ] Other:  

- **Tires present:**  
  - [x] No  
  - [ ] Yes  

- **Outfall Present (pipe, culvert, point of flow onto beach):**  
  - [x] No  
  - [ ] Yes  

- **Other obvious sources of pollution (oil slicks, seeps, etc.):**  
  - Head of Eagle Harbor  

- **Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):**  
  - Slightly seaward of 3rd piling  

**TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!**
**DEPLOYMENT INFORMATION**

- **Site ID:** PSS13175
- **Site Name:** Chimacum Creek
- **Deployers name(s):** Darryl Horenko, James Svanson
- **Recorder name:** D. Horenko
- **Deployment date:** 01 December 2017
- **Estimated time of zero tide:** 1915 (PST)
- **GPS location:** Latitude: 48° 02'.942', Longitude: 125° 46'.340', Accuracy (± XX feet): ±10'
- **GPS make/model or app name:** Garmin eTrex Vista HCx
- **Anchors Used (type and number):** Sea: Helical; Sea: Rebar

**HABITAT** (visible from mussel cage)

- **Sea Conditions:** [ ] Flat, [x] Calm, [ ] Wind chop, [ ] Swells, [ ] Breaking waves
- **Beach Exposure:** [ ] Exposed, [x] Moderately exposed, [ ] Sheltered

- **Substrate** - select ONE that describes the majority (50%) of substrate around cage: [x] Bedrock, hardpan
  - [ ] Cobble-gravel mix, [ ] Sand-gravel mix, [ ] Sand, [x] Sand-mud mix, [ ] Mud, silt
- **Stream or River present:** [ ] No, [x] Yes
  - **Other Habitat Comments/Observations:** CHINACUM CREEK

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:** [x] None, [ ] Hard (bulkhead, riprap, etc.), [ ] Creosote Included
- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.) [x] No, [ ] Yes, describe:

**Current Shoreline Use** (check all that apply): [ ] Boat ramp/launch; [ ] Boathouse/shed; [ ] Bridge;
- [x] Breakwater; [ ] Dock/pier/wharf; [ ] Floating home; [ ] Marina; [ ] Mooring buoy; [ ] Outfall; [ ] Piling/dolphin;
- [ ] Raft/float; [ ] Road; [ ] Shipyard or terminal; [ ] Utilities; [ ] Other:

**Dock/Pier/Wharf/Piling Material** (if present): [ ] Creosote, [ ] Other treated wood; [ ] Concrete; [ ] Steel; [ ] Other:

- **Tires present:** [x] No, [ ] Yes

**Outfall Present** (pipe, culvert, point of flow onto beach): [x] No, [ ] Yes

**Other obvious sources of pollution** (oil slicks, seeps, etc.): N/A

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):

- LARGE TREE → CAGE IS ~ 150' NW of tree

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
Site ID: 10
Site Name: Fox Core

Deployers name(s): Taylor Belisle, Cassidy Johnson, Lydia Mahr, Joseph More
Recorder name: Paradise Plane

Deployment date: Dec 2017
Estimated time of zero tide: 8 pm
Time cage anchored: 9:24 pm

Cage GPS location (decimal degrees):
- Latitude: 47.6447
- Longitude: -122.5759

Accuracy (± XX feet):

GPS make/model or app name:
(please set to datum NAD83)

Anchors Used (type and number):

HABITAT (visible from mussel cage)

- Sea Conditions:
  - ☑ Flat
  - ☑ Calm
  - ☑ Wind chop
  - ☑ Swells
  - ☑ Breaking waves

- Beach Exposure:
  - ☑ Exposed
  - ☑ Moderately exposed
  - ☑ Sheltered

- Substrate – select ONE that describes the majority (50%) of substrate around cage:
  - ☑ Bedrock, hardpan
  - ☑ Cobble-gravel mix
  - ☑ Sand-gravel mix
  - ☑ Sand
  - ☑ Sand-mud mix
  - ☑ Mud, silt

Stream or River present: ☑ No ☑ Yes

Other Habitat Comments/Observations:

ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- Erosion Control/Shoreline Armoring:
  - ☑ None
  - ☑ Hard (bulkhead, riprap, etc.)
  - ☑ Creosote Included

- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):
  - ☑ No;
  - ☑ Yes, describe:

- Current Shoreline Use (check all that apply):
  - ☑ Boat ramp/launch
  - ☑ Boathouse/shed
  - ☑ Bridge
  - ☑ Breakwater
  - ☑ Dock/pier/wharf
  - ☑ Floating home
  - ☑ Marina
  - ☑ Mooring buoy
  - ☑ Outfall
  - ☑ Piling/dolphin
  - ☑ Raft/float
  - ☑ Road
  - ☑ Shipyard or terminal
  - ☑ Utilities
  - ☑ Other: Overwater deck w/ stairs to beach

- Dock/Pier/Wharf/Piling Material (if present):
  - ☑ Creosote
  - ☑ Other treated wood
  - ☑ Concrete
  - ☑ Steel
  - ☑ Other:

- Tires present:
  - ☑ No
  - ☑ Yes

- Outfall Present (pipe, culvert, point of flow onto beach):
  - ☑ No
  - ☑ Yes

Other obvious sources of pollution (oil sticks, seeps, etc.):

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
# Deployment Information

- **Site ID:** PS13175-000011
- **Site Name:** SOUTH BAY TRAIL / Bellingham Bay
- **Deployers Name(s):** RUBY SEAGO, NICK DENK, JARED MILLER, RUTH SOFIELD, WALLIS
- **Recorder Name:** RUBY SEAGO
- **Deployment Date:** DECEMBER 4TH, 2017
- **Estimated Time of Zero Tide:** 9:18 PM
- **Time Cage Anchored:** 9:35 PM
- **Cage GPS Location (Decimal Degrees):**
  - Latitude: 48.72576°
  - Longitude: -122.50624°
- **Accuracy (± xx feet):**
- **GPS Make/Model or App Name:** Latitude Longitude
- **(Please set to datum NAD83)**
- **Anchors Used (Type and Number):** 3: rebar and 1 anchor screw

## Habitat (Visible from Mussel Cage)

- **Sea Conditions:**
  - [ ] Flat
  - [X] Calm
  - [ ] Wind chop
  - [ ] Swells
  - [ ] Breaking waves
- **Beach Exposure:**
  - [ ] Exposed
  - [ ] Moderately exposed
  - [X] Sheltered
  - With respect to wave action
- **Substrate** – Select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan
  - [ ] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [ ] Sand
  - [ ] Sand-mud mix
  - [X] Mud, silt
- **Stream or River Present:**
  - [X] No
  - [ ] Yes
- **Other Habitat Comments/Observations:** ARMORED BEACH

## Anthropogenic Structures at Shoreline (Visible from Mussel Cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [X] Hard (bulkhead, riprap, etc.)
  - [ ] Creosote Included
- **Abandoned/Derelict Structures on Beach (e.g., old pilings, docks, etc.):**
  - [ ] No
  - [X] Yes, describe:
  - Concrete structures formerly held elevated structure
- **Current Shoreline Use** (check all that apply):
  - [ ] Boat ramp/launch
  - [ ] Boathouse/shed
  - [ ] Bridge
  - [ ] Breakwater
  - [ ] Dock/pier/wharf
  - [ ] Floating home
  - [ ] Marina
  - [ ] Mooring buoy
  - [ ] Outfall
  - [ ] Piling/dolphin
  - [ ] Raft/float
  - [ ] Road
  - [ ] Shipyard or terminal
  - [ ] Utilities
  - [X] Other:
  - RAILROAD
- **Dock/Pier/Wharf/Piling Material (If present):**
  - [ ] Creosote
  - [ ] Other treated wood
  - [ ] Concrete
  - [ ] Steel
  - [X] Other
- **Tires Present:**
  - [X] No
  - [ ] Yes
- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [ ] No
  - [X] Yes
- **Other obvious sources of pollution (oil sticks, seeps, etc.):**
  - Small boats within 1/2 mile, anchored in creosote
- **Additional comments/observations:**
  - Elevated wooden + metal boardwalk for pedestrian use
- **Take Photos:**

---

This document contains information about a mussel monitoring deployment, including details about the site, deployment specifics, habitat, and anthropogenic structures at the shoreline. It also provides instructions for taking photos of the deployed cage and surrounding substrate.
# DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>13</th>
<th>Site Name:</th>
<th>Ruston Way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Joel Elliott, Mary Krausen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recorder name:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12-5-17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>22:10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>10:35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latitude:</td>
<td>47.2926</td>
<td>Longitude:</td>
<td>-122.4949</td>
</tr>
<tr>
<td>Accuracy (± xx feet):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>iPhone 6S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>Screw anchor/return</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - Flat
  - Calm
  - Wind chop
  - Swells
  - Breaking waves

- **Beach Exposure:**
  - Exposed
  - Moderately exposed
  - Sheltered

- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:
  - Bedrock, hardpan
  - Cobble-gravel mix
  - Sand-gravel mix
  - Sand
  - Sand-mud mix
  - Mud, silt

- **Stream or River present:**
  - No
  - Yes

- **Other Habitat Comments/Observations:**

# ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - None
  - Hard (bulkhead, riprap, etc.)
  - Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - No
  - Yes, describe:

- **Current Shoreline Use** (check all that apply):
  - Boat ramp/launch
  - Boathouse/shed
  - Bridge
  - Breakwater
  - Dock/pier/wharf
  - Floating home
  - Marina
  - Mooring buoy
  - Outfall
  - Piling/dolphin
  - Raft/float
  - Road
  - Shipyard or terminal
  - Utilities
  - Other:

- **Dock/Pier/Wharf/Piling Material** (if present):
  - Creosote
  - Other treated wood
  - Concrete
  - Steel
  - Other:

- **Tires present:**
  - No
  - Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - No
  - Yes

- **Other obvious sources of pollution** (oil slicks, seeps, etc.):

- **Additional comments/observations** *(it's a good idea to note landmarks that will help you find the cage later!)*:

- **TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: <strong>Point Heron, East</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td><strong>Elizabeth Unsell, Jeff Moore</strong></td>
</tr>
<tr>
<td>Recorder name:</td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td><strong>12-4-17</strong></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td><strong>9:27 PM</strong></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td><strong>9:30 PM</strong></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees)</td>
<td></td>
</tr>
<tr>
<td>Latitude:</td>
<td><strong>47.57011</strong></td>
</tr>
<tr>
<td>Longitude:</td>
<td><strong>122.60695</strong></td>
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<tr>
<td>Accuracy (±XX feet):</td>
<td><strong>±11.8</strong></td>
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<tr>
<td>GPS make/model or app name:</td>
<td><strong>Garmin 72H</strong></td>
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<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td><strong>Helical X 1, rebar X 4</strong></td>
</tr>
</tbody>
</table>

**HABITAT (visible from mussel cage)**

<table>
<thead>
<tr>
<th>Sea Conditions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>#</td>
</tr>
<tr>
<td>Calm</td>
<td>#</td>
</tr>
<tr>
<td>Wind chop</td>
<td>#</td>
</tr>
<tr>
<td>Swells</td>
<td>#</td>
</tr>
<tr>
<td>Breaking waves</td>
<td>#</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beach Exposure:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed</td>
<td>#</td>
</tr>
<tr>
<td>Moderately exposed</td>
<td>#</td>
</tr>
<tr>
<td>Sheltered</td>
<td>#</td>
</tr>
</tbody>
</table>

**Substrate** – select ONE that describes the majority (50%) of substrate around cage:  
- Bedrock, hardpan
- Cobble-gravel mix
- Sand-gravel mix
- Sand
- Sand-mud mix
- Mud, silt

<table>
<thead>
<tr>
<th>Stream or River present:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>#</td>
</tr>
<tr>
<td>Yes</td>
<td>#</td>
</tr>
</tbody>
</table>

Other Habitat Comments/Observations:

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

<table>
<thead>
<tr>
<th>Erosion Control/Shoreline Armoring:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>#</td>
</tr>
<tr>
<td>Hard (bulkhead, riprap, etc.)</td>
<td>#</td>
</tr>
<tr>
<td>Creosote Included</td>
<td>#</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>#</td>
</tr>
<tr>
<td>Yes, describe:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Shoreline Use (check all that apply):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boat ramp/launch</td>
<td>#</td>
</tr>
<tr>
<td>Boathouse/shed</td>
<td>#</td>
</tr>
<tr>
<td>Bridge</td>
<td>#</td>
</tr>
<tr>
<td>Breakwater</td>
<td>#</td>
</tr>
<tr>
<td>Dock/pier/wharf</td>
<td>#</td>
</tr>
<tr>
<td>Floating home</td>
<td>#</td>
</tr>
<tr>
<td>Marina</td>
<td>#</td>
</tr>
<tr>
<td>Mooring buoy</td>
<td>#</td>
</tr>
<tr>
<td>Outfall</td>
<td>#</td>
</tr>
<tr>
<td>Piling/dolphin</td>
<td>#</td>
</tr>
<tr>
<td>Raft/float</td>
<td>#</td>
</tr>
<tr>
<td>Road</td>
<td>#</td>
</tr>
<tr>
<td>Shipyard or terminal</td>
<td>#</td>
</tr>
<tr>
<td>Utilities</td>
<td>#</td>
</tr>
<tr>
<td>Other</td>
<td>#</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dock/Pier/Wharf/Piling Material (if present):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Creosote</td>
<td>#</td>
</tr>
<tr>
<td>Other treated wood</td>
<td>#</td>
</tr>
<tr>
<td>Concrete</td>
<td>#</td>
</tr>
<tr>
<td>Steel</td>
<td>#</td>
</tr>
<tr>
<td>Other</td>
<td>#</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tires present:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>#</td>
</tr>
<tr>
<td>Yes</td>
<td>#</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outfall Present (pipe, culvert, point of flow onto beach):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>#</td>
</tr>
<tr>
<td>Yes</td>
<td>#</td>
</tr>
</tbody>
</table>

Other obvious sources of pollution (oil slicks, seeps, etc.):

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
Washington State 2017/18 SAM
Mussel Monitoring Site Datasheet

DEPLOYMENT INFORMATION

Site ID: PSS13175-000016  Site Name: Tugboat Park, Anacortes
Deployers name(s): Timothy Manns + Brenda Cunningham
Recorder name:

Deployment date: December 1, 2017
Estimated time of zero tide: 7:04 p.m.  Time cage anchored: 7:04

Cage GPS location (decimal degrees)  Latitude: 48.48928  Longitude: 122.67608  Accuracy (+/- XX feet):

GPS make/model or app name: Garmin etrex 30x
(please set to datum NAD83)

Anchors Used (type and number): 1 helical and 1 rebar

HABITAT (visible from mussel cage)

Sea Conditions: Flat  Calm  Wind chop  Swells  Breaking waves

Beach Exposure: Exposed  Moderately exposed  Sheltered

Substrate – select ONE that describes the majority (50%) of substrate around cage: Bedrock, hardpan
Cobble-gravel mix  Sand-gravel mix  Sand  Sand-mud mix  Mud, silt

Stream or River present: No  Yes

Other Habitat Comments/Observations:

ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

Erosion Control/Shoreline Armoring: None  Hard (bulkhead, riprap, etc.)  Creosote Included

Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.) No;  Yes, describe:

Current Shoreline Use (check all that apply): Boat ramp/launch;  Boathouse/shed;  Bridge;
Breakwater;  Dock/pier/wharf;  Floating home;  Marina;  Mooring buoy;  Outfall;  Piling/dolphin;
Raft/float;  Road;  Shipyard or terminal;  Utilities;  Other: Local park (homeowners association)

Dock/Pier/Wharf/Piling Material (if present): Creosote  Other treated wood;  Concrete;  Steel;  Other:

Tires present: No  Yes

Outfall Present (pipe, culvert, point of flow onto beach): No  Yes

Other obvious sources of pollution (oil slicks, seeps, etc.):

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
DEPLOYMENT INFORMATION

Site ID: P5513175-00016  Site Name: Meadowdale Beach Park

Recorders name(s): T. Sanderson, M. Elbrecht, Park Ranger Doug Dailer

Recorder name: Traci Sanderson - Snohomish MRC

Deployment date: 4 December 2017

Estimated time of zero tide: 21:00 PST  Time cage anchored: 21:09

Cage GPS location (decimal degrees)

- Latitude: 47°51'20.466" N
- Longitude: 122°20'5.374" W
- Accuracy (+xx feet): 10

GPS make/model or app name: Garmin GPS Map 62st

Anchors Used (type and number):

HABITAT (visible from mussel cage)

- Sea Conditions: [ ] Flat  [ ] Calm  [ ] Wind chop  [ ] Swells  [ ] Breaking waves

- Beach Exposure: [ ] Exposed  [ ] Moderately exposed  [ ] Sheltered

Substrate – select ONE that describes the majority (50%) of substrate around cage:
- [ ] Bedrock, hardpan
- [ ] Cobble-gravel mix  [ ] Sand-gravel mix  [ ] Sand  [ ] Sand-mud mix  [ ] Mud, silt

Stream or River present: [ ] No  [ ] Yes

Other Habitat Comments/Observations: Sewage treatment plant both north and south.

ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- Erosion Control/Shoreline Armoring: [ ] None  [ ] Hard (bulkhead, riprap, etc.)  [ ] Creosote Included

- Abandoned/Derelict Structures on Beach (e.g., old pilings, docks, etc.): [ ] No; [ ] Yes, describe:

- Current Shoreline Use (check all that apply):
  - [ ] Boat ramp/launch;
  - [ ] Boathouse/shed;
  - [ ] Bridge;
  - [ ] Breakwater;
  - [ ] Dock/pier/wharf;
  - [ ] Floating home;
  - [ ] Marina;
  - [ ] Mooring buoy;
  - [ ] Outfall;
  - [ ] Piling/dolphin;
  - [ ] Raft/float;

- Road;
- Shipyard or terminal;
- Utilities;
- Other:

- Dock/Pier/Wharf/Piling Material (if present):
  - [ ] Creosote
  - [ ] Other treated wood;
  - [ ] Concrete;
  - [ ] Steel;
  - [ ] Other:

- Tires present: [ ] No  [ ] Yes

- Outfall Present (pipe, culvert, point of flow onto beach): [ ] No  [ ] Yes

- Other obvious sources of pollution (oil slicks, seeps, etc.):
  - None visible at night

- Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):
  - Gap in trees for house views, we're south of park tunnel, Group of large rocks

- TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
**Washington State 2017/18 SAM Mussel Monitoring Site Datasheet**

### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name:</th>
<th><strong>Bud Inlet</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td><strong>Quasar + October Surprise</strong></td>
<td></td>
</tr>
<tr>
<td>Recorder name:</td>
<td><strong>Quasar Surprise</strong></td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td><strong>12/01/17</strong></td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td><strong>9:00 pm</strong></td>
<td></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td><strong>9:00 pm</strong></td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td><strong>Latitude: 47.071282</strong></td>
<td></td>
</tr>
<tr>
<td>Longitude:</td>
<td><strong>-122.920695</strong></td>
<td></td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td><strong>± 16 ft</strong></td>
<td></td>
</tr>
</tbody>
</table>

**GPS make/model or app name:**

(please set to datum NAD83)

**Anchors Used (type and number):**

---

### HABITAT (visible from mussel cage)

**Sea Conditions:**
- [ ] Flat
- [x] Calm
- [ ] Wind chop
- [ ] Swells
- [ ] Breaking waves

**Beach Exposure:**
- [x] Exposed
- [ ] Moderately exposed
- [ ] Sheltered

**Substrate** — select ONE that describes the majority (50%) of substrate around cage:
- [ ] Bedrock, hardpan
- [x] Cobble-gravel mix
- [x] Sand-gravel mix
- [ ] Sand
- [ ] Sand-mud mix
- [ ] Mud, silt

**Stream or River present:**
- [ ] No
- [x] Yes

**Other Habitat Comments/Observations:**
- 2 nearby residences; loose driftwood nearby

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### ANTHROPÖGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**
- [x] None
- [ ] Hard (bulkhead, riprap, etc.)
- [ ] Creosote Included

**Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)
- [x] No;
- [ ] Yes, describe:

**Current Shoreline Use** (check all that apply):
- [ ] Boat ramp/launch;
- [ ] Boathouse/shed;
- [ ] Bridge;
- [ ] Breakwater;
- [ ] Dock/pier/wharf;
- [ ] Floating home;
- [ ] Marina;
- [ ] Mooring buoy;
- [ ] Outfall;
- [ ] Piling/dolphin;
- [ ] Raft/float;
- [ ] Road;
- [ ] Shipyard or terminal;
- [ ] Utilities;
- [ ] Other:

**Dock/Pier/Wharf/Piling Material** (if present):
- [ ] Creosote
- [ ] Other treated wood
- [ ] Concrete
- [ ] Steel
- [ ] Other:

**Tires present:**
- [ ] No
- [x] Yes

**Outfall Present** (pipe, culvert, point of flow onto beach):
- [x] No
- [ ] Yes

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

---

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):
- Logs floating in water ~200 ft away from shoreline

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

Site ID: PSS13175-000018  
Site Name: Seahurst Beach  
Deployers name(s): Stevie Knapp, stools, Powers, Alyssa Koll, Connor Vocillo  
Recorder name: Stevie Knapp  
Deployment date: December 1, 2017  
Estimated time of zero tide: 8:00 PM  
Time cage anchored: 8:00 - 8:15  
Cage GPS location (decimal degrees): Latitude: 47.47726  
Longitude: -122.36072  
Accuracy (+/-): 20 ft  
GPS make/model or app name: iPhone 6  
(please set to datum NAD83)  
Anchors Used (type and number): [ ]  
Habitat (visible from mussel cage)  
Sea Conditions:  
☐ Flat  
☐ Calm  
☒ Wind chop  
☐ Swells  
☒ Breaking waves  
Beach Exposure:  
☒ Exposed  
☐ Moderately exposed  
☐ Sheltered  
Substrate – select ONE that describes the majority (50%) of substrate around cage:  
☐ Bedrock, hardpan  
☐ Cobble-gravel mix  
☐ Sand-gravel mix  
☒ Sand  
☐ Sand-mud mix  
☐ Mud, silt  
Stream or River present:  
☐ No  
☒ Yes  
Other Habitat Comments/Observations:  
Slightly rocky with many empty clam shells  
ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)  
Erosion Control/Shoreline Armoring:  
☐ None  
☒ Hard (bulkhead, riprap, etc.)  
☐ Creosote Included  
Abandoned/Derelict Structures on Beach (e.g., old pilings, docks, etc.):  
☐ No;  
☒ Yes, describe:  
Current Shoreline Use (check all that apply):  
☒ Boat ramp/launch;  
☐ Boathouse/shed;  
☐ Bridge;  
☐ Breakwater;  
☐ Dock/pier/wharf;  
☐ Floating home;  
☐ Marina;  
☐ Mooring buoy;  
☒ Outfall;  
☐ Piling/dolphin;  
☐ Raft/float;  
☐ Road;  
☐ Shipyard or terminal;  
☐ Utilities;  
☐ Other:  
Homes, outfall is on S side 200 ft.  
Dock/Pier/Wharf/Piling Material (if present):  
☐ Creosote  
☐ Other treated wood;  
☐ Concrete;  
☐ Steel;  
☐ Other:  
Tires present:  
☐ No  
☒ Yes  
Outfall Present (pipe, culvert, point of flow onto beach):  
☐ No  
☒ Yes  
Other obvious sources of pollution (oil slicks, seeps, etc.)  
Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):  
TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
**Site ID:** 19  |  **Site Name:** Skiff Point  
**Deployers name(s):** Frank Hansen, Tony Harnick, Jim Brennan, Joe Mayer  
**Recorder name:** Bob Rosenblatt  
**Deployment date:** 01/December/2017  
**Estimated time of zero tide:** 8 pm  |  **Time cage anchored:** 8:10 pm  
**Cage GPS location (decimal degrees):**  
| Latitude: 47.66142  
| Longitude: -122.49384  
**Accuracy (±XX feet):**  
**GPS make/model or app name:** (please set to datum NAD83)  
**Anchors Used (type and number):** Underwater, 2 helical, 4 rebar  
**HABITAT (visible from mussel cage):**  
**Sea Conditions:**  
| Flat  | Calm  | Wind chop  | Swells  | Breaking waves  
**Beach Exposure:**  
| Exposed  | Moderately exposed  | Sheltered  
**Substrate** – select ONE that describes the majority (50%) of substrate around cage:  
| Bedrock, hardpan  
| Gobble-gravel mix  | Sand-gravel mix  | Sand  | Sand-mud mix  | Mud, silt  
**Stream or River present:**  
| No  | Yes  
**Other Habitat Comments/Observations:** Likely run-off from high bank.  
**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage):  
**Erosion Control/Shoreline Armoring:**  
| None  | Hard (bulkhead, riprap, etc.)  | Creosote Included  
**Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):  
| No  | Yes, describe:  
**Current Shoreline Use** (check all that apply):  
| Boat ramp/launch  | Boathouse/shed  | Bridge  
| Breakwater  | Dock/pier/wharf  | Floating home  | Marina  | Mooring buoy  | Outfall  | Piling/dolphin  
| Raft/float  | Road  | Shipyard or terminal  | Utilities  | Other  
**Dock/Pier/Wharf/Piling Material** (if present):  
| Creosote  | Other treated wood  | Concrete  | Steel  | Other  
**Tires present:**  
| No  | Yes  
**Outfall Present** (pipe, culvert, point of flow onto beach):  
| No  | Yes, from high bank  
**Other obvious sources of pollution (oil slicks, seeps, etc.):**  
**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):  
**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
## DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: Water Front, Fruit民族文化</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>HELE ANDERSEON, THAD SCHUKOWEN</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>HELE ANDERSEON</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/1/17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>19:00</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>19:10</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: (48° 07’ 11.3&quot;) Longitude: (123° 25’ 5.9&quot;)</td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td>2</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>BASED ON LAT long HAD USING GOOGLE EARTH 48° 7’ 11.3” N 123° 25’ 5.9” W</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>BOLTED TO ROCKS, 2 REBAR</td>
</tr>
</tbody>
</table>

## HABITAT (visible from mussel cage)

| Sea Conditions: | ☒ Flat, ☐ Calm, ☐ Wind chop, ☐ Swells, ☐ Breaking waves |
| Beach Exposure: | ☐ Exposed, ☒ Moderately exposed, ☐ Sheltered |

### Substrate – select ONE that describes the majority (50%) of substrate around cage:

- ☐ Bedrock, hardpan
- ☒ Cobble-gravel mix
- ☐ Sand-gravel mix
- ☐ Sand
- ☐ Sand-mud mix
- ☐ Mud, silt

### Stream or River present:

- ☐ No, ☒ Yes

### Stream or River Comments:

SANDY MAIN FROM SAND WETLANDS

## ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

### Erosion Control/Shoreline Armoring:

- ☐ None
- ☒ Hard (bulkhead, riprap, etc.)
- ☐ Creosote Included

### Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.)

- ☒ No;
- ☐ Yes, describe:

### Current Shoreline Use (check all that apply):

- ☐ Boat ramp/launch;
- ☐ Boathouse/shed;
- ☒ Bridge;
- ☒ Breakwater;
- ☐ Dock/pier/wharf;
- ☐ Floating home;
- ☐ Marina;
- ☐ Mooring buoy;
- ☐ Outfall;
- ☐ Piling/dolphin;
- ☐ Raft/float;
- ☐ Road;
- ☐ Shipyard or terminal;
- ☐ Utilities;
- ☐ Other:

### Dock/Pier/Wharf/Piling Material (if present):

- ☐ Creosote
- ☐ Other treated wood
- ☐ Concrete
- ☐ Steel
- ☐ Other:

### Tires present:

- ☒ No
- ☐ Yes

### Outfall Present (pipe, culvert, point of flow onto beach):

- ☒ No
- ☐ Yes

### Other obvious sources of pollution (oil slicks, seeps, etc.):

NONE

### Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!):

SEE 1/8 W Tangled Cord

### TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
## DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Name:</td>
<td>Point Defiance Ferry</td>
</tr>
<tr>
<td>Recorders Name(s):</td>
<td>Joel Elliott, Mary Krausser</td>
</tr>
<tr>
<td>Deployment Date:</td>
<td>12-5-17</td>
</tr>
<tr>
<td>Estimated Time of Zero Tide:</td>
<td>22:10</td>
</tr>
<tr>
<td>Cage GPS Location (decimal degrees)</td>
<td>Latitude: 47.3062, Longitude: -122.5146</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>screw anchor/rebar</td>
</tr>
</tbody>
</table>

## HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat
  - [ ] Calm
  - [x] Wind chop
  - [ ] Swells
  - [ ] Breaking waves
- **Beach Exposure:**
  - [ ] Exposed
  - [x] Moderately exposed
  - [ ] Sheltered
- **Substrate** — select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan
  - [x] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [ ] Sand
  - [ ] Sand-mud mix
  - [ ] Mud, silt
- **Stream or River present:**
  - [x] No
  - [ ] Yes
- **Other Habitat Comments/Observations:**

## ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [x] Hard (bulkhead, riprap, etc.)
  - [ ] Creosote Included
- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)
  - [x] No
  - [ ] Yes, describe:
- **Current Shoreline Use** (check all that apply):
  - [ ] Boat ramp/launch
  - [ ] Boathouse/shed
  - [ ] Bridge
  - [ ] Breakwater
  - [ ] Dock/pier/wharf
  - [ ] Floating home
  - [ ] Marina
  - [ ] Mooring buoy
  - [ ] Outfall
  - [ ] Piling/dolphin
  - [ ] Raft/float
  - [ ] Road
  - [ ] Shipyard or terminal
  - [ ] Utilities
  - [ ] Other:

- **Dock/Pier/Wharf/Piling Material** (if present):
  - [x] Creosote
  - [ ] Other treated wood
  - [ ] Concrete
  - [ ] Steel
  - [ ] Other
- **Tires present:**
  - [x] No
  - [ ] Yes
- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [x] No
  - [ ] Yes
- **Other obvious sources of pollution** (oil sticks, seeps, etc.):
- **Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
### DEPLOYMENT INFORMATION

**Site ID:**

**Site Name:** Beach NW

**Deploys name(s):**

Michael Behrens, JoAnn Moore

**Recorder name:**

Michael Behrens

**Deployment date:** 10/4/17

**Estimated time of zero tide:** 9:35 AM

**Time cage anchored:** 9:50 AM

**Cage GPS location (decimal degrees):**

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Accuracy (± XX feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>47.55947</td>
<td>122.59691</td>
<td>±94 ft</td>
</tr>
</tbody>
</table>

**GPS make/model or app name:**

(please set to datum NAD83)

**Anchors Used (type and number):**

helical screw (1) and rebar (4)

### HABITAT (visible from mussel cage)

**Sea Conditions:**

- ☑ Flat
- ☐ Calm
- ☐ Wind chop
- ☐ Swells
- ☐ Breaking waves

**Beach Exposure:**

- ☐ Exposed
- ☑ Moderately exposed
- ☐ Sheltered

**Substrate** — select ONE that describes the majority (50%) of substrate around cage:

- ☐ Bedrock, hardpan
- ☑ Cobble-gravel mix
- ☐ Sand-gravel mix
- ☐ Sand
- ☐ Sand-mud mix
- ☐ Mud, silt

**Stream or River present:**

- ☑ No
- ☐ Yes

**Other Habitat Comments/Observations:**

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**

- ☐ None
- ☑ Hard (bulkhead, riprap, etc.)
- ☑ Creosote Included

**Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.)**

- ☑ No
- ☑ Yes, describe:

- Pilings

**Current Shoreline Use** (check all that apply):

- ☐ Boat ramp/launch;
- ☐ Boathouse/shed;
- ☐ Bridge;
- ☐ Breakwater;
- ☐ Dock/pier/wharf;
- ☐ Floating home;
- ☐ Marina;
- ☐ Mooring buoy;
- ☐ Outfall;
- ☐ Piling/dolphin;
- ☐ Raft/float;
- ☐ Road;
- ☐ Shipyard or terminal;
- ☐ Utilities;
- ☑ Other:

**Private Shellfish culture**

**Dock/Pier/Wharf/Piling Material (if present):**

- ☑ Creosote
- ☐ Other treated wood;
- ☑ Concrete;
- ☐ Steel;
- ☐ Other:

**Tires present:**

- ☑ No
- ☐ Yes

**Outfall Present** (pipe, culvert, point of flow onto beach):

- ☑ No
- ☐ Yes

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

**Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!):**

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
### DEPLOYMENT INFORMATION

**Site ID:** PSS13175 - 24  
**Site Name:** Skunk Island  
**Deplyers name(s):** Lily Evanston, Carolyn Woods, Nate Wold  
**Recorder name:**  
**Deployment date:** 12-1-2017  
**Estimated time of zero tide:** ~7:00 PM  
**Time cage anchored:** 6:15 PM  

**Cage GPS location (decimal degrees):**  
<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Accuracy (±XX feet):</th>
</tr>
</thead>
</table>

**GPS make/model or app name:**  
(please set to datum NAD83)  

**Anchors Used (type and number):** 3 rebar and one spiral anchor

### HABITAT (visible from mussel cage)

**Sea Conditions:**  
- [X] Flat  
- [ ] Calm  
- [ ] Wind chop  
- [ ] Swells  
- [ ] Breaking waves  

**Beach Exposure:**  
- [ ] Exposed  
- [ ] Moderately exposed  
- [X] Sheltered  

**Substrate** – select ONE that describes the majority (50%) of substrate around cage:  
- [ ] Bedrock, hardpan  
- [ ] Cobble-gravel mix  
- [ ] Sand-gravel mix  
- [ ] Sand  
- [X] Sand-mud mix  
- [ ] Mud, silt  

**Stream or River present:**  
- [X] No  
- [ ] Yes  

**Other Habitat Comments/Observations:**  
Lots of clam burrows

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**  
- [X] None  
- [ ] Hard (bulkhead, riprap, etc.)  
- [ ] Creosote Included  

**Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)  
- [X] No;  
- [ ] Yes, describe:  

**Current Shoreline Use** (check all that apply):  
- [ ] Boat ramp/launch;  
- [ ] Boathouse/shed;  
- [ ] Bridge;  
- [ ] Breakwater;  
- [ ] Dock/pier/wharf;  
- [ ] Floating home;  
- [ ] Marina;  
- [ ] Mooring buoy;  
- [ ] Outfall;  
- [ ] Piling/dolphin;  
- [ ] Raft/float;  
- [ ] Road;  
- [ ] Shipyard or terminal;  
- [ ] Utilities;  
- [ ] Other:  

**Dock/Pier/Wharf/Piling Material** (if present):  
- [ ] Creosote  
- [ ] Other treated wood;  
- [ ] Concrete;  
- [ ] Steel;  
- [ ] Other:  

**Tires present:**  
- [X] No  
- [ ] Yes  

**Outfall Present** (pipe, culvert, point of flow onto beach):  
- [X] No  
- [ ] Yes  

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

**Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!):**

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
# DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>CB - NAW</th>
<th>Site Name:</th>
<th>CAM. RAY MILWAUKIEE WATER Way</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Deployers name(s):</th>
<th>JIM CAVIELE</th>
<th>CHRISTOPHER WU</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Recorder name:</th>
<th>JIM CAVIELE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Deployment date:</th>
<th>12/3/17</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Estimated time of zero tide:</th>
<th>8:30 PM</th>
<th>Time cage anchored:</th>
<th>8:40 PM - 8:50 PM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cage GPS location (decimal degrees)</th>
<th>Latitude:</th>
<th>Longitude:</th>
<th>Accuracy (± XX feet):</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>GPS make/model or app name:</th>
<th>GARMIN CTREX VISTA HCX</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Anchors Used (type and number):</th>
<th>1 - SCREW 2 - RIVET</th>
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</thead>
</table>

# HABITAT (visible from mussel cage)

<table>
<thead>
<tr>
<th>Sea Conditions:</th>
<th>Flat</th>
<th>Calm</th>
<th>Wind chop</th>
<th>Swells</th>
<th>Breaking waves</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Beach Exposure:</th>
<th>Exposed</th>
<th>Moderately exposed</th>
<th>Sheltered</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Substrate – select ONE that describes the majority (50%) of substrate around cage:</th>
<th>Bedrock, hardpan</th>
<th>Cobble-gravel mix</th>
<th>Sand-gravel mix</th>
<th>Sand</th>
<th>Sand-mud mix</th>
<th>Mud, silt</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Stream or River present:</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Other Habitat Comments/Observations:</th>
<th></th>
</tr>
</thead>
</table>

# ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

<table>
<thead>
<tr>
<th>Erosion Control/Shoreline Armoring:</th>
<th>None</th>
<th>Hard (bulkhead, riprap, etc.)</th>
<th>Creosote Included</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):</th>
<th>No</th>
<th>Yes, describe:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Current Shoreline Use (check all that apply):</th>
<th>Boat ramp/launch;</th>
<th>Boathouse/shed;</th>
<th>Bridge;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breakwater;</td>
<td>Dock/pier/wharf;</td>
<td>Floating home;</td>
</tr>
<tr>
<td></td>
<td>Marina;</td>
<td>Mooring buoy;</td>
<td>Outfall;</td>
</tr>
<tr>
<td></td>
<td>Piling/dolphin;</td>
<td>Raft/float;</td>
<td>Road;</td>
</tr>
<tr>
<td></td>
<td>Shipyard or terminal;</td>
<td>Utilities;</td>
<td>Other:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dock/Pier/Wharf/Piling Material (if present):</th>
<th>Creosote</th>
<th>Other treated wood;</th>
<th>Concrete;</th>
<th>Steel;</th>
<th>Other:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tires present:</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Outfall Present (pipe, culvert, point of flow onto beach):</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Other obvious sources of pollution (oil slicks, seeps, etc.):</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!):</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!</th>
<th></th>
</tr>
</thead>
</table>
**Site Name:** Illahee

**Deployer Name(s):** Marie Mailet, Scott Stewart

**Recorder Name:** Marie Mailet

**Deployment Date:** 12-1-17

**Estimated Time of Zero Tide:** 8:15 pm

<table>
<thead>
<tr>
<th>Cage GPS Location (decimal degrees)</th>
<th>Latitude: 47°34'8.52&quot;N</th>
<th>Longitude: 122°35'45.89&quot;W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy (±XX feet):</td>
<td>±2 ft</td>
<td></td>
</tr>
</tbody>
</table>

**GPS Make/Model or App Name:** Google Maps

**Anchors Used (type and number):** Helical anchor | rebar (3)

**Habitat (visible from mussel cage):**

- Sea Conditions: □ Flat □ Calm □ Wind chop □ Swells □ Breaking waves
- Beach Exposure: □ Exposed □ Moderately exposed □ Sheltered
- Substrate — select ONE that describes the majority (50%) of substrate around cage: □ Bedrock, hardpan □ Cobble-gravel mix □ Sand-gravel mix □ Sanc □ Sand-mud mix □ Mud, silt
- Stream or River present: □ No □ Yes

**Other Habitat Comments/Observations:** Oyster beds, clams, seaweed beds

**Anthropogenic Structures at Shoreline (visible from mussel cage):**

- Erosion Control/Shoreline Armoring: □ None □ Hard (bulkhead, riprap, etc.) □ Creosote Included
- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.): □ No □ Yes, describe: Holes

**Current Shoreline Use** (check all that apply): □ Boat ramp/launch □ Boathouse/shed □ Bridge □ Breakwater □ Dock/pier/wharf □ Floating home □ Marina □ Mooring buoy □ Outfall □ Piling/dolphins □ Raft/float □ Road □ Shipyard or terminal □ Utilities □ Other: Houses

**Dock/Pier/Wharf/Piling Material (if present):** □ Creosote □ Other treated wood □ Concrete □ Steel □ Other

**Tires present:** □ No □ Yes

**Outfall Present** (pipe, culvert, point of flow onto beach): □ No □ Yes

**Other obvious sources of pollution** (oil slicks, seeps, etc.): Boats

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!): 

**Take photos** of the deployed cage and surrounding substrate, including any interesting observations.
**Deployment Information**

<table>
<thead>
<tr>
<th>Site ID: #28</th>
<th>Site Name: Island Oak Harbor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployer(s): Kes Tautvydas &amp; Rich Yukubovsky</td>
<td></td>
</tr>
<tr>
<td>Recorder: Kes Tautvydas</td>
<td></td>
</tr>
<tr>
<td>Date: 12/04/2017</td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide: 9:00 PM</td>
<td></td>
</tr>
<tr>
<td>Time cage anchored: 9:10</td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees): N 48° 27.119' W 122° 63.876'</td>
<td></td>
</tr>
<tr>
<td>Accuracy (± XX feet): ±0.000</td>
<td></td>
</tr>
<tr>
<td>GPS Make/Model or App Name: Garmin GPS 76</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number): Helical Anchor + 3 Rebar Stakes</td>
<td></td>
</tr>
</tbody>
</table>

**Habitat** (visible from mussel cage)

- Sea Conditions: Flat, Calm
- Beach Exposure: Exposed, Moderately exposed
- Substrate: Select ONE that describes the majority (50%) of substrate around cage:
  - Bedrock, hardpan
  - Cobble-gravel mix
  - Sand-gravel mix
  - Sand
  - Sand-mud mix
  - Mud, silt
- Stream or River present: No
- Other Habitat Comments/Observations:
  - Gently sloping shore, cobble/sand mix, cobble with mussels and barnacles|

**Anthropogenic Structures at Shoreline** (visible from mussel cage)

- Erosion Control/Shoreline Armoring: None, Hard (bulkhead, riprap, etc.), Creosote Included
- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.): No, Yes, describe: Natural, no uses
- Current Shoreline Use (check all that apply):
  - Boat ramp/launch
  - Boathouse/shed
  - Bridge
  - Breakwater
  - Dock/pier/wharf
  - Floating home
  - Marina
  - Mooring buoy
  - Outfall
  - Piling/dolphin
  - Raft/float
  - Road
  - Shipyard or terminal
  - Utilities
  - Other: Shoreline natural, no uses
- Dock/Pier/Wharf/Piling Material (if present):
  - Creosote
  - Other treated wood
  - Concrete
  - Steel
  - Other:
- Tires present: No, Yes
- Outfall Present (pipe, culvert, point of flow onto beach): No, Yes
  - Nothing visible
- Other obvious sources of pollution (oil slicks, seeps, etc.):
  - Shoreline is east side of channel leading to Oak Harbor

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

From parking area, follow left path to 1st bear to green light on channel marker. Go left at 1st curve.

TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
**Site ID:**

**Site Name:** Liberty Bay

**Deployers name(s):** Nik Matsumoto

**Recorder name:** Nik Matsumoto

**Deployment date:** 12/04/2017

**Estimated time of zero tide:** 21:30 (9:30 am)

**Time cage anchored:** 21:30 (9:30 am)

**Cage GPS location (decimal degrees):**
- **Latitude:** 47.73639
- **Longitude:** 122.65122
- **Accuracy (±XX feet):** 15.8 ft

**GPS make/model or app name:** Garmin GPS 72H

** Anchors Used (type and number):** Helical Anchor x1, Rebar x4

---

**Sea Conditions:**
- Flat
- Calm
- Wind chop
- Swells
- Breaking waves

**Beach Exposure:**
- Exposed
- Moderately exposed
- Sheltered

**Substrate** — select ONE that describes the majority (50%) of substrate around cage:
- Bedrock, hardpan
- Cobble-gravel mix
- Sand-gravel mix
- Sand
- Sand-mud mix
- Mud, silt

**Stream or River present:**
- No
- Yes

**Other Habitat Comments/Observations:**
- Oyster beds scattered nearby

---

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

**Erosion Control/Shoreline Armoring:**
- None
- Hard (bulkhead, riprap, etc.)
- Creosote Included

**Abandoned/Derelict Structures on Beach** (e.g., old pilings, docks, etc.)
- No
- Yes, describe:

**Current Shoreline Use** (check all that apply):
- Boat ramp/launch
- Boathouse/shed
- Bridge
- Breakwater
- Dock/pier/wharf
- Floating home
- Marina
- Mooring buoy
- Outfall
- Piling/dolphin
- Raft/float
- Road
- Shipyard or terminal
- Utilities
- Other:

**Dock/Pier/Wharf/Piling Material** (if present):
- Creosote
- Other treated wood
- Concrete
- Steel
- Other:

**Tires present:**
- No
- Yes

**Outfall Present** (pipe, culvert, point of flow onto beach):
- No
- Yes

**Other obvious sources of pollution (oil slicks, seeps, etc.):**
- N/A

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
# Deployment Information

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Name:</td>
<td>Kitsap 5th Boat Launch</td>
</tr>
<tr>
<td>Deployers name(s):</td>
<td>Michael Behrens, John Moore</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Michael Behrens</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/11/17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>9:35 PM</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>9:20</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: 47.54167, Longitude: 122.64034</td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td>± 90</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>Helical screws (1) and rebar (2)</td>
</tr>
</tbody>
</table>

## Habitat (visible from mussel cage)

- **Sea Conditions:**
  - [x] Flat  
  - [ ] Calm  
  - [ ] Wind chop  
  - [ ] Swells  
  - [ ] Breaking waves

- **Beach Exposure:**
  - [ ] Exposed  
  - [ ] Moderately exposed  
  - [x] Sheltered

- **Substrate** — select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan  
  - [ ] Cobble-gravel mix  
  - [ ] Sand-gravel mix  
  - [ ] Sand  
  - [x] Sand-mud mix  
  - [ ] Mud, silt

- **Stream or River present:**
  - [x] No  
  - [ ] Yes

- **Other Habitat Comments/Observations:**

## Anthropogenic Structures at Shoreline (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None  
  - [x] Hard (bulkhead, riprap, etc.)  
  - [x] Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - [ ] No;  
  - [ ] Yes, describe:

- **Current Shoreline Use** (check all that apply):
  - [x] Boat ramp/launch;  
  - [ ] Boathouse/shed;  
  - [ ] Bridge;  
  - [ ] Breakwater;  
  - [ ] Dock/pier/wharf;  
  - [ ] Floating home;  
  - [ ] Marina;  
  - [ ] Mooring buoy;  
  - [ ] Outfall;  
  - [ ] Piling/dolphin;  
  - [ ] Raft/float;  
  - [ ] Road;  
  - [ ] Shipyard or terminal;  
  - [ ] Utilities;  
  - [ ] Other:

- **Dock/Pier/Wharf/Piling Material** (if present):
  - [ ] Creosote  
  - [ ] Other treated wood;  
  - [x] Concrete;  
  - [x] Steel;  
  - [ ] Other:

- **Tires present:**
  - [x] No  
  - [ ] Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [ ] No  
  - [x] Yes

- **Other obvious sources of pollution** (oil slicks, seeps, etc.):  

- **Additional comments/observations** *(it's a good idea to note landmarks that will help you find the cage later!)*:

**Take photos** of the deployed cage and surrounding substrate, including any interesting observations!
### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Deploys name(s):** Ken Carrasco  
**Recorder name:** Ken Carrasco  
**Deployment date:** December 4, 2017

**Estimated time of zero tide:** 2030  
**Time cage anchored:** 2050

**Cage GPS location**  
- Latitude: 48° 41' 33" N  
- Longitude: 122° 54' 35" W  
- Accuracy (± XX feet): unknown

**GPS make/model or app name:** iPhone 6s

**Anchors Used (type and number):**  
- one torsion bar 3 rebars

**HABITAT**  
(Visible from mussel cage)

- **Sea Conditions:**  
  - Flat  
  - Calm  
  - Wind chop  
  - Swells  
  - Breaking waves

- **Beach Exposure:**  
  - Exposed  
  - Moderately exposed  
  - Sheltered

- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:  
  - Bedrock, hardpan  
  - Cobble-gravel mix  
  - Sand-gravel mix  
  - Sand  
  - Sand-mud mix  
  - Mud, silt

- **Stream or River present:**  
  - No  
  - Yes

- **Other Habitat Comments/Observations:**  
  - Surface flow of freshwater had melted in previous days. Location was at north end of East Sound. Much driftwood on beach. Danger?

### ANTHROPOGENIC STRUCTURES AT SHORELINE  
(Visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**  
  - None  
  - Hard (bulkhead, riprap, etc.)  
  - Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)  
  - No;  
  - Yes, describe:

- **Current Shoreline Use** (check all that apply):  
  - Boat ramp/launch;  
  - Boathouse/shed;  
  - Bridge;  
  - Breakwater;  
  - Dock/pier/wharf;  
  - Floating home;  
  - Marina;  
  - Mooring buoy;  
  - Outfall;  
  - Piling/dolphin;  
  - Raft/float;  
  - Road;  
  - Shipyard or terminal;  
  - Utilities;  
  - Other:

- **Dock/Pier/Wharf/Piling Material (if present):**  
  - Creosote  
  - Other treated wood  
  - Concrete  
  - Steel  
  - Other:

- **Tires present:**  
  - No  
  - Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):  
  - No  
  - Yes, stormwater outlet reported in vicinity

- **Other obvious sources of pollution** (oil slicks, seeps, etc.):  
  - Site bounded to west and north by roads

- **Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):  
  - Nearby rocks extended into water under sand/gravel substrate so only found suitable

- **Take photos** of the deployed cage and surrounding substrate, including any interesting observations!

**Notes:**  
- Actual site was about 100 meters from assigned GPS coordinates.
### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>PSS13175-000034</th>
<th>Site Name:</th>
<th>Harbor Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Chris Wilkey, Jon Frodge, Caitlin, Ben, Callie</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Chris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/1/17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>2030(8:39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>47.5876 N 122.3506 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy (+XX feet):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>iPhone, Google Maps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(please set to datum NAD83):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>3 Rebar, 2 Cinderblocks, +many rocks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat
  - [x] Calm
  - [ ] Wind chop
  - [ ] Swells
  - [ ] Breaking waves

- **Beach Exposure:**
  - [ ] Exposed
  - [ ] Moderately exposed
  - [ ] Sheltered

- **Substrate** — select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan
  - [ ] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [ ] Sand
  - [ ] Sand-mud mix
  - [ ] Mud, silt
  - [x] Riprap, Rock

- **Stream or River present:**
  - [ ] No
  - [x] Yes

- **Other Habitat Comments/Observations:**
  - Sea Stars! Pisaster, sponges, harbor seal;

### ANTHROP OGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [x] Hard (bulkhead, riprap, etc.)
  - [x] Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g., old pilings, docks, etc.):
  - [ ] No;
  - [x] Yes, describe:

- **Current Shoreline Use** (check all that apply):
  - [ ] Boat ramp/launch;
  - [ ] Boathouse/shed;
  - [ ] Bridge;
  - [ ] Breakwater;
  - [x] Dock/pier/Wharf;
  - [ ] Floating home;
  - [ ] Marina;
  - [ ] Mooring buoy;
  - [ ] Outfall;
  - [ ] Piling/dolphin;
  - [ ] Raft/float;
  - [ ] Road;
  - [ ] Shipyard or terminal;
  - [ ] Utilities;
  - [ ] Other:

- **Dock/Pier/Wharf/Piling Material** (if present):
  - [x] Creosote
  - [ ] Other treated wood;
  - [x] Concrete;
  - [ ] Steel;
  - [ ] Other:

- **Tires present:**
  - [ ] No
  - [x] Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [ ] No
  - [ ] Yes

- **Other obvious sources of pollution (oil slicks, seeps, etc.):**
  - NW Corner of building
  - Shipyard, oil terminal

- **Additional comments/observations** (it’s a good idea to note landmarks that will help you find the cage later!):

- **TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
# Washington State 2017/18 SAM
## Mussel Monitoring Site Datasheet

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Name:</td>
<td>Williams Olsen Park</td>
</tr>
<tr>
<td>Deployers name(s):</td>
<td>Cassidy Johnson, Marshal Gale, Al Lindstrom</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Cassidy Johnson</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>01 December 2017</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>20:00</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>20:02</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: 47.6658231, Longitude: -122.5669386, Accuracy (±XX feet): ±10 ft</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Google Maps</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>Rebar (2), Helical (1)</td>
</tr>
</tbody>
</table>

### HABITAT (visible from mussel cage)

| Sea Conditions: | ☑ Flat, ☐ Calm, ☐ Wind chop, ☐ Swells, ☐ Breaking waves |
| Beach Exposure: | ☑ Sheltered |

| Substrate – select ONE that describes the majority (50%) of substrate around cage: | ☐ Bedrock, hardpan, ☑ Cobble-gravel mix, ☐ Sand-gravel mix, ☐ Sand, ☑ Sand-mud mix, ☐ Mud, silt |

| Stream or River present: | ☑ No, ☐ Yes |

**Other Habitat Comments/Observations:**

**ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)**

| Erosion Control/Shoreline Armoring: | ☑ None, ☐ Hard (bulkhead, riprap, etc.), ☐ Creosote Included |
| Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.): | ☑ No; ☐ Yes, describe: |

| Current Shoreline Use (check all that apply): | ☑ Boat ramp/launch; ☑ Boathouse/shed; ☐ Bridge, ☐ Breakwater; ☑ Dock/pier/wharf; ☐ Floating home; ☐ Marina; ☐ Mooring buoy; ☐ Outfall; ☐ Piling/dolphin; ☐ Raft/float; ☐ Road; ☐ Shipyard or terminal; ☐ Utilities; ☐ Other: |

| Dock/Pier/Wharf/Piling Material (if present): | ☑ Creosote, ☐ Other treated wood; ☐ Concrete; ☐ Steel; ☐ Other: |
| Tires present: | ☑ No, ☐ Yes |
| Outfall Present (pipe, culvert, point of flow onto beach): | ☐ No, ☑ Yes |

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

**Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later):**

**TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!**
### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: Saltar's Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Trisha Anderson &amp; Kristin Nielsen</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Trisha Anderson</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/2/2017</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>9 pm</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>8:50 pm</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees)</td>
<td>47°16'16.5&quot;N 122°30'46&quot;W</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>(please set to datum NAD83)</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>47°16'16.5&quot;N 122°30'46&quot;W</td>
</tr>
</tbody>
</table>

### HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - Flat
  - Calm
  - Wind chop
  - Swells
  - Breaking waves

- **Beach Exposure:**
  - Exposed
  - Moderately exposed
  - Sheltered

- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:
  - Bedrock, hardpan
  - Cobble-gravel mix
  - Sand-gravel mix
  - Sand
  - Sand-mud mix
  - Mud, silt

- **Stream or River present:**
  - Yes
  - No

- **Other Habitat Comments/Observations:**

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - None
  - Hard (bulkhead, riprap, etc.)
  - Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - No
  - Yes; describe:

- **Current Shoreline Use** (check all that apply):
  - Boat ramp/launch
  - Boathouse/shed
  - Bridge
  - Breakwater
  - Dock/pier/wharf
  - Floating home
  - Marina
  - Mooring buoy
  - Outfall
  - Piling/dolphin
  - Raft/float
  - Road
  - Shipyard or terminal
  - Utilities
  - Other:

- **Dock/Pier/Wharf/Piling Material (if present):**
  - Creosote
  - Other treated wood
  - Concrete
  - Steel
  - Other:

- **Tires present:**
  - No
  - Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - No
  - Yes

- **Other obvious sources of pollution (oil slicks, seeps, etc.):**

- **Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later):

- **TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
# DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: Rocky Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Elizabeth Unsell</td>
</tr>
<tr>
<td>Recorder name:</td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12-4-17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>10:10</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>10:10</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees)</td>
<td>Latitude: 47.60253  Longitude: -122.6618</td>
</tr>
<tr>
<td>Accuracy (±XX feet):</td>
<td>10.2</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Garmin 72H</td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>2 Cinder Blocks</td>
</tr>
</tbody>
</table>

## HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat
  - [ ] Calm
  - [ ] Wind chop
  - [ ] Swells
  - [ ] Breaking waves

- **Beach Exposure:**
  - [x] Exposed
  - [ ] Moderately exposed
  - [ ] Sheltered

- **Substrate** — select ONE that describes the majority (50%) of substrate around cage:
  - [x] Bedrock, hardpan
  - [ ] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [ ] Sand
  - [ ] Sand-mud mix
  - [ ] Mud, silt

- **Stream or River present:**
  - [x] No
  - [ ] Yes

- **Other Habitat Comments/Observations:**
  - Shallow gravel/sand/shell over bedrock

## ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [x] Hard (bulkhead, riprap, etc.)
  - [ ] Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - [x] No
  - [ ] Yes, describe:

- **Current Shoreline Use** (check all that apply):
  - [ ] Boat ramp/launch
  - [ ] Boathouse/shed
  - [ ] Bridge
  - [ ] Breakwater
  - [ ] Dock/pier/wharf
  - [ ] Floating home
  - [ ] Marina
  - [ ] Mooring buoy
  - [ ] Outfall
  - [ ] Piling/dolphin
  - [ ] Raft/float
  - [ ] Road
  - [ ] Shipyard or terminal
  - [ ] Utilities
  - [ ] Other:

- **Dock/Pier/Wharf/Piling Material (if present):**
  - [ ] Creosote
  - [ ] Other treated wood
  - [ ] Concrete
  - [ ] Steel
  - [ ] Other:

- **Tires present:**
  - [x] No
  - [ ] Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [x] No
  - [ ] Yes

- **Other obvious sources of pollution (oil slicks, seeps, etc.):**

- **Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later):**

**TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!**
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID: PSS 13179-000039</th>
<th>Site Name: Smith Cove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Charlie, Andy, Victoria, Michelle, Rachel, Sara, Bob</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Charlie</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>1/7/17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>9:00 pm</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>8:01 pm</td>
</tr>
<tr>
<td>Cage GPS location</td>
<td>Latitude: 47.6324169</td>
</tr>
<tr>
<td></td>
<td>Longitude: -122.37017</td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Google Maps on a Galaxy 6 Phone</td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>1 hali-coll, 3 rebar hooles</td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat
  - [ ] Calm
  - [x] Wind chop
  - [ ] Swells
  - [ ] Breaking waves

- **Beach Exposure:**
  - [ ] Exposed
  - [x] Moderately exposed
  - [ ] Sheltered

- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan
  - [ ] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [x] Sand
  - [ ] Sand-mud mix
  - [ ] Mud, silt

- **Stream or River present:**
  - [x] No
  - [ ] Yes

- **Other Habitat Comments/Observations:**
  - Clam shells seen, little or no wind, hairy cliffs

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [x] Hard (bulkhead, riprap, etc.)
  - [x] Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - [ ] No
  - [x] Yes, describe:
    
- **Current Shoreline Use** (check all that apply):
  - [x] Boat ramp/launch
  - [ ] Boathouse/shed
  - [ ] Bridge
  - [ ] Breakwater
  - [x] Dock/pier/wharf
  - [ ] Floating home
  - [ ] Marina
  - [ ] Mooring buoy
  - [x] Outfall
  - [x] Piling/dolphin
  - [ ] Raft/float
  - [ ] Road
  - [x] Shipyard or terminal
  - [ ] Utilities
  - [ ] Other

- **Dock/Pier/Wharf/Piling Material** (if present):
  - [x] Creosote
  - [ ] Other treated wood
  - [x] Concrete
  - [x] Steel
  - [ ] Other

- **Tires present:**
  - [x] No
  - [ ] Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [ ] No
  - [x] Yes

- **Other obvious sources of pollution** (oil slicks, seeps, etc.):
  - Marine debris, adjacent construction, vessels

- **Additional comments/observations** (it’s a good idea to note landmarks that will help you find the cage later!):
  - Approx. 10 yd N of riprap pile, directly across channel from boats tied on N most dock

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

- **Site ID:** P51275-00042  
- **Site Name:** Evergreen Rotary Park
- **Deployers name(s):** Roland Null, Kathy Long, Tom Speer
- **Recorder name:** Roland Null
- **Deployment date:** 12/01/2017
- **Estimated time of zero tide:** 8:16
- **Time cage anchored:** 8:16
- **Cage GPS location (decimal degrees):**
  - **Latitude:** 47.57554  
  - **Longitude:** 122.62798  
  - **Accuracy (± XX feet):**
- **GPS make/model or app name:** Suunto Traverse
- **(please set to datum NAD83)**
- **Anchors Used (type and number):** Rebar-3 Helical-1

**HABITAT** (visible from mussel cage)

- Sea Conditions: □ Flat  □ Calm  □ Wind chop  □ Swells  □ Breaking waves
- Beach Exposure: □ Exposed  □ Moderately exposed  □ Sheltered
- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:
  - □ Bedrock, hardpan
  - □ Cobble-gravel mix  □ Sand-gravel mix  □ Sand  □ Sand-mud mix  □ Mud, silt
- **Stream or River present:** □ No  □ Yes
- **Other Habitat Comments/Observations:**

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:** □ None  □ Hard (bulkhead, riprap, etc.)  □ Creosote Included
- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.) □ No; □ Yes, describe:
- **Current Shoreline Use** (check all that apply):
  - □ Boat ramp/launch; □ Boathouse/shed; □ Bridge;
  - □ Breakwater; □ Dock/pier/wharf; □ Floating home; □ Marina; □ Mooring buoy; □ Outfall; □ Piling/dolphin;
  - □ Raft/float; □ Road; □ Shipyard or terminal; □ Utilities; □ Other: **Park**
- **Dock/Pier/Wharf/Piling Material** (if present): □ Creosote  □ Other treated wood; □ Concrete; □ Steel; □ Other:
- **Tires present:** □ No  □ Yes
- **Outfall Present** (pipe, culvert, point of flow onto beach): □ No  □ Yes 36" concrete pipe 30' up
- **Other obvious sources of pollution (oil slicks, seeps, etc.):**
- **Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):
- **TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**Washington State 2017/18 SAM**

**Mussel Monitoring Site Datasheet**

### DEPLOYMENT INFORMATION

- **Site ID:** 8513175-000043  
  **Site Name:** N Avenue Park, Anacortes
- **Deployers name(s):** Timothy Manns + Brenda Cunningham
- **Recorder name:**
- **Deployment date:** December 1, 2017
- **Estimated time of zero tide:** 7:30 p.m.  
  **Time cage anchored:** 7:30 p.m.
- **Cage GPS location**
  - **Latitude:** 48.52101
  - **Longitude:** 122.41525
  - **Accuracy (± XX feet):** 9 ft
- **GPS make/model or app name:** Garmin etrex 30x
- **Anchors Used**
  - Helical and 3 rubber

### HABITAT (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat  
  - [x] Calm  
  - [ ] Wind chop  
  - [ ] Swells  
  - [ ] Breaking waves
- **Beach Exposure:**
  - [ ] Exposed  
  - [ ] Moderately exposed  
  - [x] Sheltered
- **Substrate**
  - Select ONE that describes the majority (50%) of substrate around cage:
    - [ ] Bedrock, hardpan
    - [x] Cobble-gravel mix
    - [ ] Sand-gravel mix
    - [ ] Sand
    - [ ] Sand-mud mix
    - [ ] Mud, silt
- **Stream or River present:**
  - [x] No  
  - [ ] Yes
- **Other Habitat Comments/Observations:**
  - Concrete bulkhead nearby but not directly above cage site

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [x] None  
  - [ ] Hard (bulkhead, riprap, etc.)
  - [ ] Creosote Included
- **Abandoned/Derelict Structures on Beach**
  - (e.g. old pilings, docks, etc.)
    - [ ] No
    - [x] Yes, describe:
      - Approx. 50 m. from the cage, there are 4 old pilings on the beach.
- **Current Shoreline Use**
  - (check all that apply):
    - [ ] Boat ramp/launch
    - [ ] Boathouse/shed
    - [ ] Bridge
    - [ ] Breakwater
    - [x] Dock/pier/wharf
    - [ ] Floating home
    - [ ] Marina
    - [ ] Mooring buoy
    - [ ] Outfall
    - [ ] Piling/dolphin
    - [ ] Raft/float
    - [ ] Road
    - [x] Shipyard or terminal
    - [ ] Utilities
    - [ ] Other: City park nearby
- **Dock/Pier/Wharf/Piling Material (if present):**
  - [x] Creosote
  - [ ] Other treated wood
  - [ ] Concrete
  - [ ] Steel
  - [ ] Other
- **Tires present:**
  - [x] No  
  - [ ] Yes
- **Outfall Present**
  - (pipe, culvert, point of flow onto beach):
    - [ ] No  
    - [x] Yes
- **Other obvious sources of pollution (oil slicks, seeps, etc.):**
  - [ ] Yes
  - [ ] No

**Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):

- Lyndal pilings + dock structure offshore of the City Park. Also, large commercial dock to the side of the park.
- 18" plastic pipe, not flowing.

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
# DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID: PSS13175-000046</th>
<th>Site Name: Apple Tree Cove - Kingston</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>David Toth, Sarah Rogers</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>David Toth</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/1/2017</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>7:55 PM</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>Time cage anchored: 7:55 PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cage GPS location (decimal degrees)</th>
<th>Latitude: 47° 47.233'N</th>
<th>Longitude: 122° 29.676'W</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS make/model or app name:</td>
<td>GPS Status (Android)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>Helical (1), Rebar (3)</td>
<td></td>
</tr>
</tbody>
</table>

## HABITAT (visible from mussel cage)

<table>
<thead>
<tr>
<th>Sea Conditions:</th>
<th>Flat</th>
<th>Calm</th>
<th>Wind chop</th>
<th>Swells</th>
<th>Breaking waves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beach Exposure:</td>
<td>Exposed</td>
<td>Moderately exposed</td>
<td>Sheltered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substrate – select ONE that describes the majority (50%) of substrate around cage:

- Bedrock, hardpan
- Cobble-gravel mix
- Sand-gravel mix
- Sand
- Sand-mud mix
- Mud, silt

Stream or River present: No [ ] Yes [x] See photo - Small river/crest channels into cove

Other Habitat Comments/Observations:

## ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

Erosion Control/Shoreline Armoring: None [x] Hard (bulkhead, riprap, etc.) [ ] Creosote Included

Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.): No [ ] Yes [x], describe:

Two old boat houses on shore

Current Shoreline Use (check all that apply):

- Boat ramp/launch [x]
- Boathouse/shed [x]
- Bridge [ ]
- Breakwater [x]
- Dock/pier/wharf [x]
- Floating home [x]
- Marina [x]
- Mooring buoy [ ]
- Outfall [ ]
- Piling/dolphin [ ]
- Raft/float [ ]
- Road [x]
- Shipyard or terminal [x]
- Utilities [ ]
- Other: WSDOT Ferry Terminal (Kingston) Across Cove

Dock/Pier/Wharf/Piling Material (if present):

- Creosote [ ]
- Other treated wood [ ]
- Concrete [ ]
- Steel [ ]
- Other [ ]

Tires present: No [x] Yes [ ]

Outfall Present (pipe, culvert, point of flow onto beach): No [ ] Yes [x]

Other obvious sources of pollution (oil slicks, seeps, etc.): No [x] Yes [ ]

Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!):

Shoreline is residential backyards, Residential Greenhouses

TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID: PSS13175-WU G47</th>
<th>Site Name: Bunch Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deposers name(s):</strong></td>
<td>Kim Carlton, Tracy Mulhein</td>
</tr>
<tr>
<td><strong>Recorder name:</strong></td>
<td>Tracy Mulhein</td>
</tr>
<tr>
<td><strong>Deployment date:</strong></td>
<td>12/4/2017</td>
</tr>
<tr>
<td><strong>Estimated time of zero tide:</strong></td>
<td>9:27 pm (21:27)</td>
</tr>
<tr>
<td><strong>Time cage anchored:</strong></td>
<td>10:15 pm (22:15)</td>
</tr>
<tr>
<td><strong>Cage GPS location</strong></td>
<td>Latitude: 48°53'14.3&quot; N</td>
</tr>
<tr>
<td>(decimal degrees)</td>
<td>Longitude: 122°46'59.9&quot; W</td>
</tr>
<tr>
<td><strong>Accuracy (± XX feet):</strong></td>
<td>9.84 ft</td>
</tr>
<tr>
<td><strong>GPS make/model or app name:</strong></td>
<td>GPS ESSENTIALS</td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td><strong>Anchors Used (type and number):</strong></td>
<td>3 REBAR, 1 HELIX ANCHOR BAR</td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

- **Sea Conditions:**
  - [ ] Flat
  - [ ] Calm
  - [ ] Wind chop
  - [ ] Swells
  - [ ] Breaking waves

- **Beach Exposure:**
  - [ ] Exposed
  - [x] Moderately exposed
  - [ ] Sheltered

- **Substrate** — select ONE that describes the majority (50%) of substrate around cage:
  - [ ] Bedrock, hardpan
  - [x] Cobble-gravel mix
  - [ ] Sand-gravel mix
  - [ ] Sand
  - [ ] Sand-mud mix
  - [ ] Mud, silt

- **Stream or River present:**
  - [ ] No
  - [x] Yes

- **Other Habitat Comments/Observations:**
  - ANCHORED NEAR LARGE ROCK W/BRANCHES, SNAILS, LIMPETS, SNAILS, BOWLS, SHELTERED SEA STAR

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - [ ] None
  - [x] Hard (bulkhead, riprap, etc.)
  - [ ] Creosote Included

- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.):
  - [x] No
  - [ ] Yes, describe:
    - RESIDENTIAL BEACH ACCESS

- **Dock/Pier/Wharf/Piling Material** (if present):
  - [ ] Creosote
  - [ ] Other treated wood
  - [ ] Concrete
  - [ ] Steel
  - [ ] Other

- **Tires present:**
  - [x] No
  - [ ] Yes

- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - [ ] No
  - [x] Yes

- **Other obvious sources of pollution (oil slicks, seeps, etc.):**
  - Hillside (Residential) Runoff from Hillside
  - Upgradient from Granite Rock (3'x4')

- **Additional comments/observations** (it’s a good idea to note landmarks that will help you find the cage later!):
  - Location & Cage Proximal from beach out to tidal area from large 3'x4' granite Boulder on beach

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!

---

**OTHER NOTES:**
- ARRIVED @ PARK 9:05 PM, ANCHORED CASE @ 9:41 PM, COMPLETED ANCHORING @ 10:15 PM
- ARRIVED BACK @ VEHICLES @ 11:00 PM, LEFT SITE 11:10 PM, BACK IN B’HAM IN MIDNIGHT
- TAKEN IN COLD, LAT 48°, 87'48" - 122°, 36'20"
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: Naleta Beach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Jeni Lauderbury, Lincoln Lohrer</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Jeni Lauderbury</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/1/2017</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>8:30 AM</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: 47.927602, Longitude: -122.309602, Accuracy (± XX feet): ±0.68 m</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Phone App i-Form</td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>3 rebar, 1 screw anchor</td>
</tr>
</tbody>
</table>

**HABITAT** (visible from mussel cage)

- Sea Conditions: 
  - □ Flat
  - □ Calm
  - □ Wind chop
  - □ Swells
  - □ Breaking waves

- Beach Exposure: 
  - □ Exposed
  - □ Moderately exposed
  - □ Sheltered

- Substrate – select ONE that describes the majority (50%) of substrate around cage: 
  - □ Bedrock, hardpan
  - □ Cobble-gravel mix
  - □ Sand-gravel mix
  - □ Sand
  - □ Sand-mud mix
  - □ Mud, silt

- Stream or River present: 
  - □ No
  - □ Yes

- Other Habitat Comments/Observations: Open cobble beach

**ANTHROPOGENIC STRUCTURES AT SHORELINE** (visible from mussel cage)

- Erosion Control/Shoreline Armoring: 
  - □ None
  - □ Hard (bulkhead, riprap, etc.)
  - □ Creosote Included

- Abandoned/Derelict Structures on Beach (e.g., old pilings, docks, etc.): 
  - □ No
  - □ Yes, describe:

- Current Shoreline Use (check all that apply): 
  - □ Boat ramp/launch
  - □ Boathouse/shed
  - □ Bridge
  - □ Breakwater
  - □ Dock/pier/wharf
  - □ Floating home
  - □ Marina
  - □ Mooring buoy
  - □ Outfall
  - □ Piling/dolphin
  - □ Raft/float
  - □ Road
  - □ Shipyard or terminal
  - □ Utilities
  - □ Other:

- Dock/Pier/Wharf/Piling Material (if present): 
  - □ Creosote
  - □ Other treated wood
  - □ Concrete
  - □ Steel
  - □ Other

- Tires present: 
  - □ No
  - □ Yes

- Outfall Present (pipe, culvert, point of flow onto beach): 
  - □ No
  - □ Yes

- Other obvious sources of pollution (oil slicks, seeps, etc.): 
  - None

- Additional comments/observations (it’s a good idea to note landmarks that will help you find the cage later!): 
  - Site near RR track sound lights

- TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
# Washington State 2017/18 SAM Mussel Monitoring Site Datasheet

## Deployment Information

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>Site Name: Austin Estuary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployer's name(s):</td>
<td>Stena Troyer &amp; Lucas Drawdy</td>
</tr>
<tr>
<td>Recorder's name:</td>
<td>Stena Troyer</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>December 4, 2017</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>9:42 pm</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>9:42 pm</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees):</td>
<td>Latitude: N 47.33701 Longitude: W 122.59011</td>
</tr>
<tr>
<td>Accuracy (± XX feet):</td>
<td>5m</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>eXtreXure Venture</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>1 mechanical &amp; 3 rebar</td>
</tr>
</tbody>
</table>

## Habitat (Visible from mussel cage)

- Sea Conditions:  
  - ☑ Flat  
  - ☐ Calm  
  - ☐ Wind chop  
  - ☐ Swells  
  - ☐ Breaking waves

- Beach Exposure:  
  - ☑ Exposed  
  - ☐ Moderately exposed  
  - ☐ Sheltered

- Substrate – select ONE that describes the majority (50%) of substrate around cage:  
  - ☐ Bedrock, hardpan  
  - ☐ Cobble-gravel mix  
  - ☐ Sand-gravel mix  
  - ☐ Sand  
  - ☐ Sand-mud mix  
  - ☑ Mud, silt, gravel

- Stream or River present:  
  - ☐ No  
  - ☑ Yes Donkey Creek

- Other Habitat Comments/Observations:

## Anthropogenic Structures at Shoreline (Visible from mussel cage)

- Erosion Control/Shoreline Armoring:  
  - ☐ None  
  - ☑ Hard (bulkhead, riprap, etc.)  
  - ☐ Creosote Included

- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.):  
  - ☑ No;  
  - ☐ Yes, describe:

- Current Shoreline Use (check all that apply):  
  - ☐ Boat ramp/launch  
  - ☐ Boathouse/shed  
  - ☐ Bridge  
  - ☐ Breakwater  
  - ☑ Dock/pier/Wharf  
  - ☐ Floating home  
  - ☐ Marina  
  - ☐ Mooring buoy  
  - ☐ Outfall  
  - ☐ Piling/dolphin  
  - ☐ Raft/float  
  - ☑ Road  
  - ☐ Shipyard or terminal  
  - ☐ Utilities  
  - ☑ Other: parking lot

- Dock/Pier/Wharf/Piling Material (if present):  
  - ☑ Creosote  
  - ☐ Other treated wood  
  - ☐ Concrete  
  - ☑ Steel  
  - ☐ Other:

- Tires present:  
  - ☑ No  
  - ☐ Yes

- Outfall Present (pipe, culvert, point of flow onto beach):  
  - ☑ No  
  - ☐ Yes

- Other obvious sources of pollution (oil slicks, seeps, etc.): Not observed

- Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):  
  - Out from the rain  
  - led near seafloor

- TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!
**DEPLOYMENT INFORMATION**

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name: West Boat Harbor Marina, Port Townsend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Rick John, Jack Marshall</td>
</tr>
<tr>
<td>Recorder name:</td>
<td>Rick John</td>
</tr>
<tr>
<td>Deployment date:</td>
<td>12/17/17</td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>7:00 PM</td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>7:00 PM</td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees)</td>
<td>Latitude:</td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Based on coordinates above</td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>2 Heki Anchors, 2 Cinder Blocks, 4 Dekors</td>
</tr>
</tbody>
</table>

**HABITAT (visible from mussel cage)**

- Sea Conditions: ❌ Flat, ☑ Calm, ☑ Wind chop, ☑ Swells, ☑ Breaking waves
- Beach Exposure: ☑ Exposed, ❌ Moderately exposed, ☑ Sheltered
- Substrate – select ONE that describes the majority (50%) of substrate around cage: ☑ Bedrock, hardpan, ❌ Cobble-gravel mix, ☑ Sand-gravel mix, ☑ Sand, ☑ Sand-mud mix, ☑ Mud, silt

**OTHER HABITAT COMMENTS/OBSERVATIONS:**

**ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)**

- Erosion Control/Shoreline Armoring: ☑ Hard (bulkhead, riprap, etc.), ❌ Creosote Included
- Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.): ❌ No, ☑ Yes, describe: Big conveyer over the water - blue
- Current Shoreline Use (check all that apply): ☑ Boat ramp/launch; ☑ Boathouse/shed; ☑ Bridge; ☑ Breakwater; ☑ Dock/pier/wharf; ☑ Floating home; ☑ Marina; ☑ Mooring buoy; ☑ Outfall; ☑ Piling/dolphin; ☑ Raft/float; ☑ Road; ☑ Shipyard or terminal; ☑ Utilities; ☑ Other:

**Dock/Pier/Wharf/Piling Material (if present):** ☑ Creosote, ❌ Other treated wood, ☑ Concrete, ☑ Steel, ❌ Other

- Tires present: ☑ No, ❌ Yes
- Outfall Present (pipe, culvert, point of flow onto beach): ☑ No, ❌ Yes

**Other obvious sources of pollution (oil slicks, seeps, etc.):**

**ADDITIONAL COMMENTS/OBSERVATIONS (it's a good idea to note landmarks that will help you find the cage later!):**

Site is 50' west of boat ramp and 10' west of 6' long lighter stone at top of rip rap.

**TAKE PHOTOS** of the deployed cage and surrounding substrate, including any interesting observations!
**Deployment Information**

- **Site ID:**
- **Site Name:**
- **Deployers name(s):**
- **Recorder name:**
- **Deployment date:** 12/2/2017
- **Estimated time of zero tide:** 8:30
- **Time cage anchored:** 8:30
- **Cage GPS location**
  - **Latitude:** 47.610333
  - **Longitude:** -122.707806
- **Accuracy (±XX feet):**
- **GPS make/model or app name:**
- **(please set to datum NAD83)**
- **Anchors Used (type and number):**
  - **HABITAT** (visible from mussel cage)
- **Sea Conditions:**
  - Flat
  - Calm
  - Wind chop
  - Swells
  - Breaking waves
- **Beach Exposure:**
  - Exposed
- **Substrate** – select ONE that describes the majority (50%) of substrate around cage:
  - Bedrock, hardpan
  - Cobble-gravel mix
  - Sand-gravel mix
  - Sand
  - Sand-mud mix
  - Mud, silt
  - Mud
- **Stream or River present:**
  - No
  - Yes
  - Water run off from hill
- **Other Habitat Comments/Observations:**

**Anthropogenic Structures at Shoreline** (visible from mussel cage)

- **Erosion Control/Shoreline Armoring:**
  - None
  - Hard (bulkhead, riprap, etc.)
  - Creosote Included
- **Abandoned/Derelict Structures on Beach** (e.g. old pilings, docks, etc.)
  - No
- **Current Shoreline Use** (check all that apply):
  - Boat ramp/launch
  - Boathouse/shed
  - Bridge
  - Breakwater
  - Dock/pier/wharf
  - Floating home
  - Marina
  - Mooring buoy
  - Outfall
  - Piling/dolphin
  - Raft/float
  - Road
  - Shipyard or terminal
  - Utilities
- **Dock/Pier/Wharf/Piling Material** (if present):
  - Creosote
  - Other treated wood
  - Concrete
  - Steel
- **Tires present:**
  - No
  - Yes
- **Outfall Present** (pipe, culvert, point of flow onto beach):
  - No
  - Yes
- **Other obvious sources of pollution** (oil slicks, seeps, etc.):
- **Additional comments/observations** (it's a good idea to note landmarks that will help you find the cage later!):
- **TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!**
### DEPLOYMENT INFORMATION

<table>
<thead>
<tr>
<th>Site ID:</th>
<th>PWS13175-000A056</th>
<th>Site Name:</th>
<th>Snee-Oosh Beach, Swinomish Reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployers name(s):</td>
<td>Timothy Manns and Brenda Cunningham</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recorder name:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deployment date:</td>
<td>December 1, 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated time of zero tide:</td>
<td>8:14 p.m.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time cage anchored:</td>
<td>8:15 p.m.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cage GPS location (decimal degrees)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latitude:</td>
<td>48.39875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitude:</td>
<td>122.54363</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy (±XX feet):</td>
<td>±9 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS make/model or app name:</td>
<td>Garmin etrex 30x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(please set to datum NAD83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anchors Used (type and number):</td>
<td>1 steel and 3 rebar; added 2 cinder blocks on 12/9/17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HABITAT (visible from mussel cage)

<table>
<thead>
<tr>
<th>Sea Conditions:</th>
<th>Flat</th>
<th>Calm</th>
<th>Wind chop</th>
<th>Swells</th>
<th>Breaking waves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beach Exposure:</td>
<td>Exposed</td>
<td>Moderately exposed</td>
<td>Sheltered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substrate – select ONE that describes the majority (50%) of substrate around cage:
- [ ] Bedrock, hardpan
- [ ] Cobble-gravel mix
- [ ] Sand-gravel mix
- [x] Sand
- [ ] Sand-mud mix
- [ ] Mud, silt

Stream or River present: [ ] No [ ] Yes

Other Habitat Comments/Observations: The substrate at this site turned out to be quite soft. We returned on 10/17 and added 2 cinder block anchors. A freshwater run was visible from a nearby wetland along Chilco Road, about 250 ft from the cage.

### ANTHROPOGENIC STRUCTURES AT SHORELINE (visible from mussel cage)

<table>
<thead>
<tr>
<th>Erosion Control/Shoreline Armoring:</th>
<th>None</th>
<th>Hard (bulkhead, riprap, etc.)</th>
<th>Creosote Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abandoned/Derelict Structures on Beach (e.g. old pilings, docks, etc.)</td>
<td>[ ] No;</td>
<td>[ ] Yes, describe:</td>
<td></td>
</tr>
</tbody>
</table>

Current Shoreline Use (check all that apply):
- [ ] Boat ramp/launch
- [ ] Boathouse/shed
- [ ] Bridge
- [ ] Breakwater
- [ ] Dock/pier/wharf
- [ ] Floating home
- [ ] Marina
- [ ] Mooring buoy
- [ ] Outfall
- [ ] Piling/dolphin
- [ ] Raft/float
- [x] Road
- [ ] Shipyard or terminal
- [ ] Utilities
- [ ] Other:

Dock/Pier/Wharf/Piling Material (if present):
- [ ] Creosote
- [ ] Other treated wood
- [ ] Concrete
- [ ] Steel
- [ ] Other:

Tires present: [ ] No [ ] Yes

Outfall Present (pipe, culvert, point of flow onto beach): [ ] No [x] Yes

Other obvious sources of pollution (oil slicks, seeps, etc.):

Additional comments/observations (it's a good idea to note landmarks that will help you find the cage later!):

TAKE PHOTOS of the deployed cage and surrounding substrate, including any interesting observations!