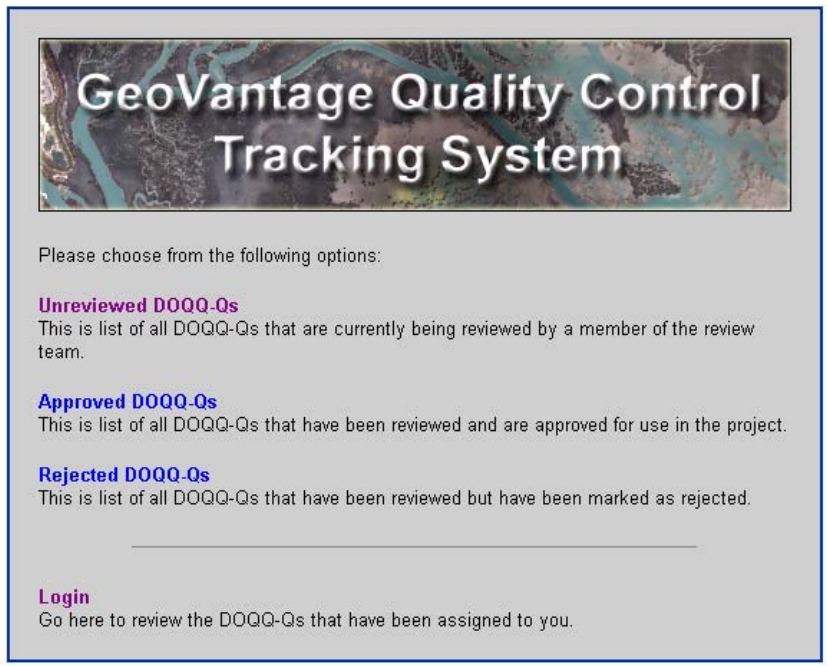
SC Oyster Imagery Validation Guidance Manual

Review process-Review Interface

Receive email announcing new DOQQQs for review. The review period is 2 weeks. If you don't think you'll be able to review the imagery let Jamie Carter know and we'll reassign the quads. There should normally be 2 DOQQs (8 scenes) in any review period.

1. Open review interface at http://shipslog/geovantage/
2. Login and select "View/Edit My DOQQ-Q List"

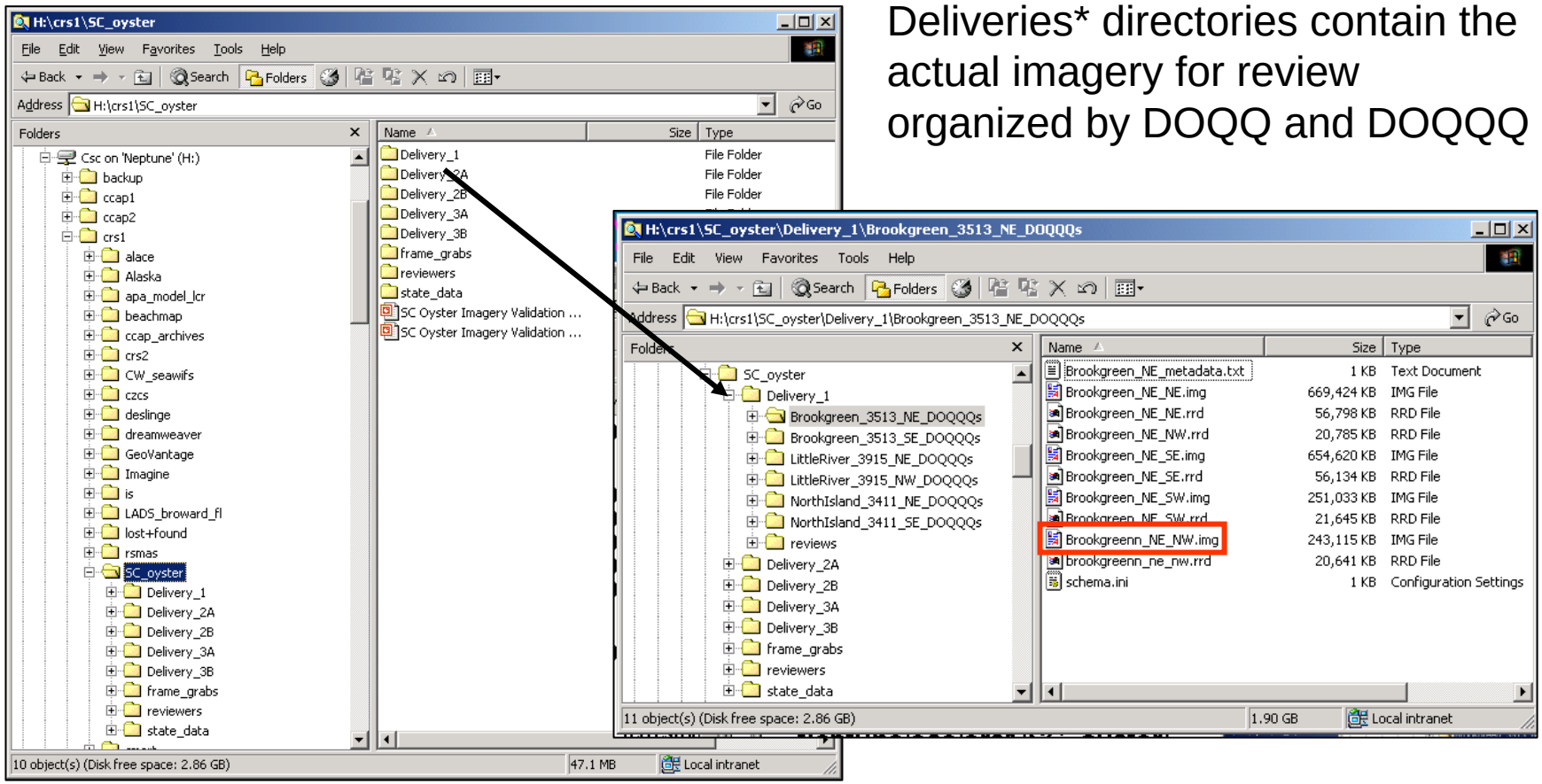
The Tracking System guidance document will explain how to navigate through this interface.



Review process-File organization

After entering the Tracking/Review interface, navigate to the directories where the imagery and your personal ArcGIS .mxd file is located. All these files can be found on:

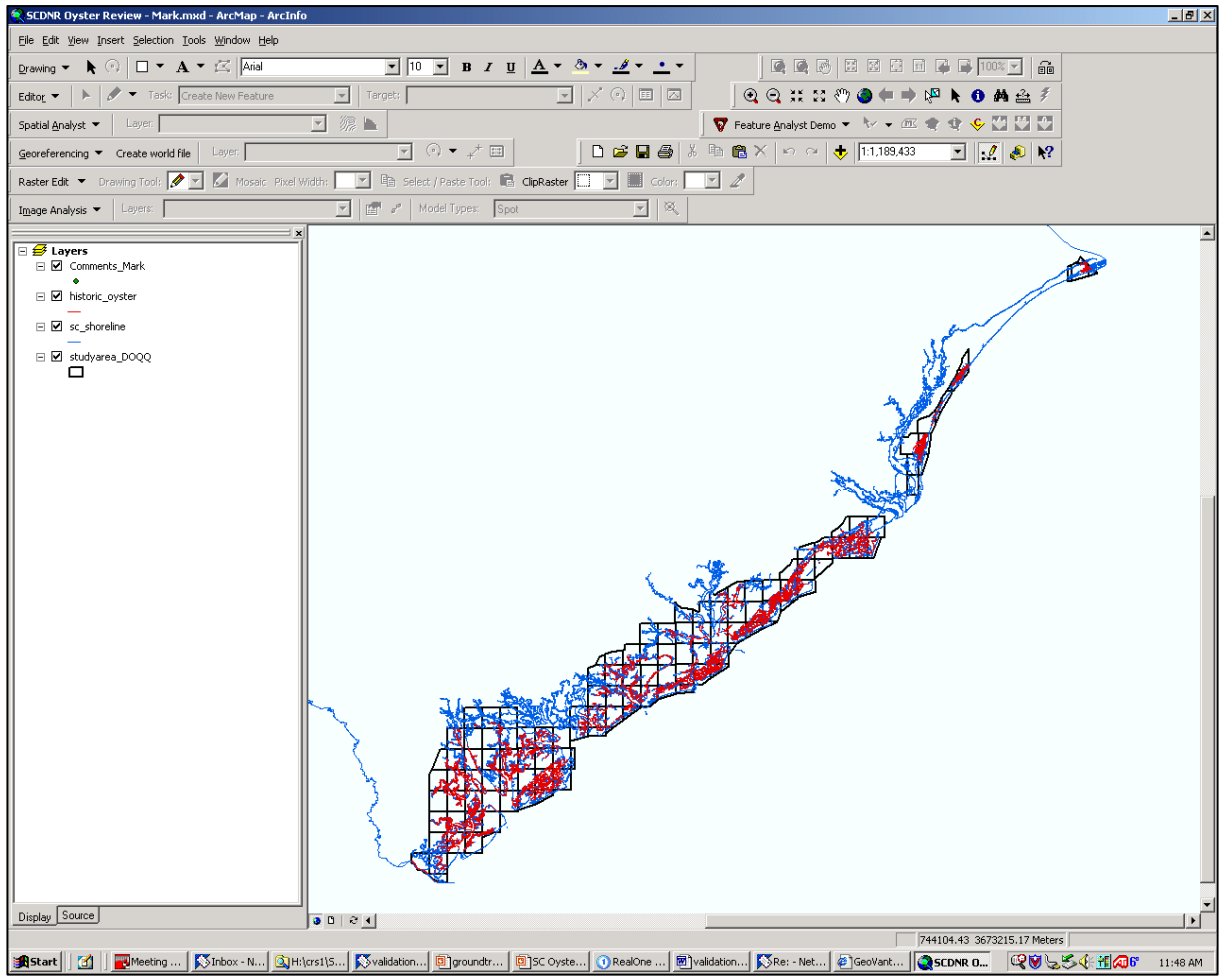
Neptune/csc/crs1/SC_oyster/



Deliveries* directories contain the actual imagery for review organized by DOQQ and DOQQQ

Review process-ArcGIS environment

Once you've located the images for review navigate to the *Reviewers* directory and open your **SCDNR Oyster Review.mxd**. The view should resemble the one below.



Review process-Ancillary data

Within the state_data directory are a number of ancilary files to help you with the review. This files are already included in your personal mxd.

- doqq_q_boundaries.shp

  This is the grid by which the image acquisition is organized. Use it for determining complete quad coverage.

- historic_oyster.shp

  This oyster coverage was developed by DNR using boats. It has **significant offsets** and should be used as a guide for where oyster might be in the area.

- studyarea_DOQQ

  This is a modified SC critical zone file. **Only pay attention to the external perimeter of this file**. There are some offsets between this and doqq_q_boundaries. The doqq_q_boundaries file is correct.

- sc_shoreline.shp

  This is the standard state shoreline file compiled at 1:24,000 scale. It is relatively accurate but should be considered as a guide only, **not to determine water levels**.

Using the comments shapefile in your personal .MXD

Attributes of Comments_Bill

FID	Shape*	Id	Image_qua	Environmen	Comment	image_id
0	Point	0				0
1	Point	0	1		rea of apparent band offsets in the open ocean	0
2	Point	0	1		rea of apparent band offset in a creek - looks constrained to one frame	0
3	Point	0	1		ignificant glint	0
4	Point	0	1		host image - dock does not seem to obstruct any oysters	0
5	Point	0	1	1	ouple of frames are extremely washed out - not sure if it is the processing or haze or wha	0
6	Point	0		1	verlap area N Island_SE_NW & SE_SW shows missed oyster	0

Record: 1 Show: All Selected Records (0 out of 7 Selected.) Options

- Each point you drop should be either an image quality issue or a environmental quality issue (water level). Place a “1” in whichever field is appropriate.

- Write a concise comment that describes the issue. Questions are also OK in the comments section.

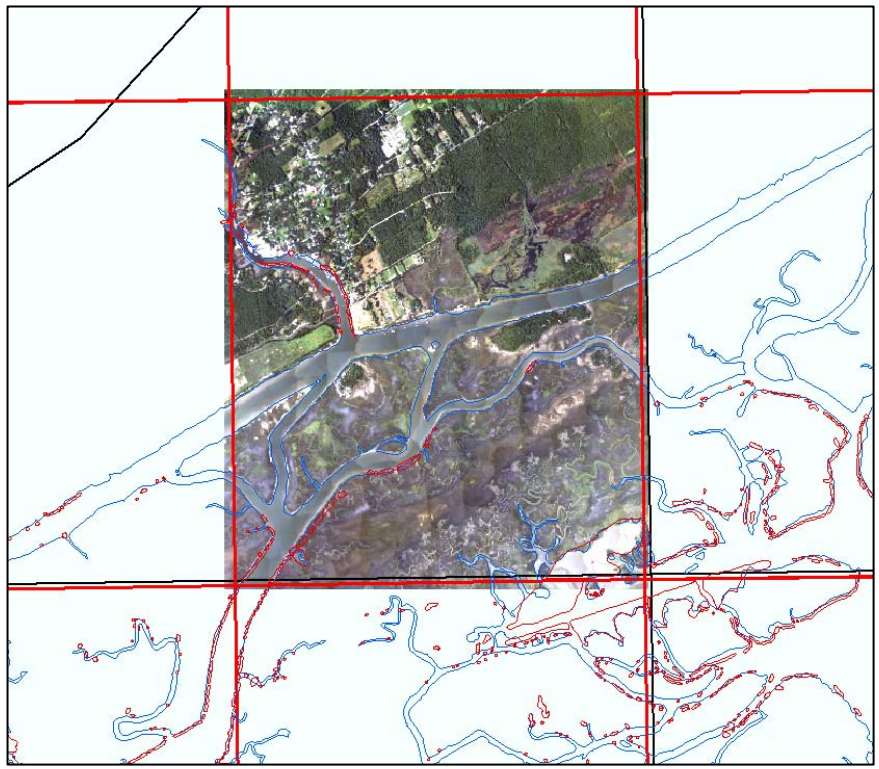
- Record the image **id #** - this can be found at the top of the HTML interface

Review process-Overview evaluation

Once you've added your DOQQQ images to the view zoom out to evaluate whether the image covers the entire quarter/quarter/quarter quad. Use *doqq_q_boundaries.shp* for this test and <u>do not</u> use the internal grid of *studyarea_DOQQ.shp* to make this determination.

A zoomed-out view is also good for checking:

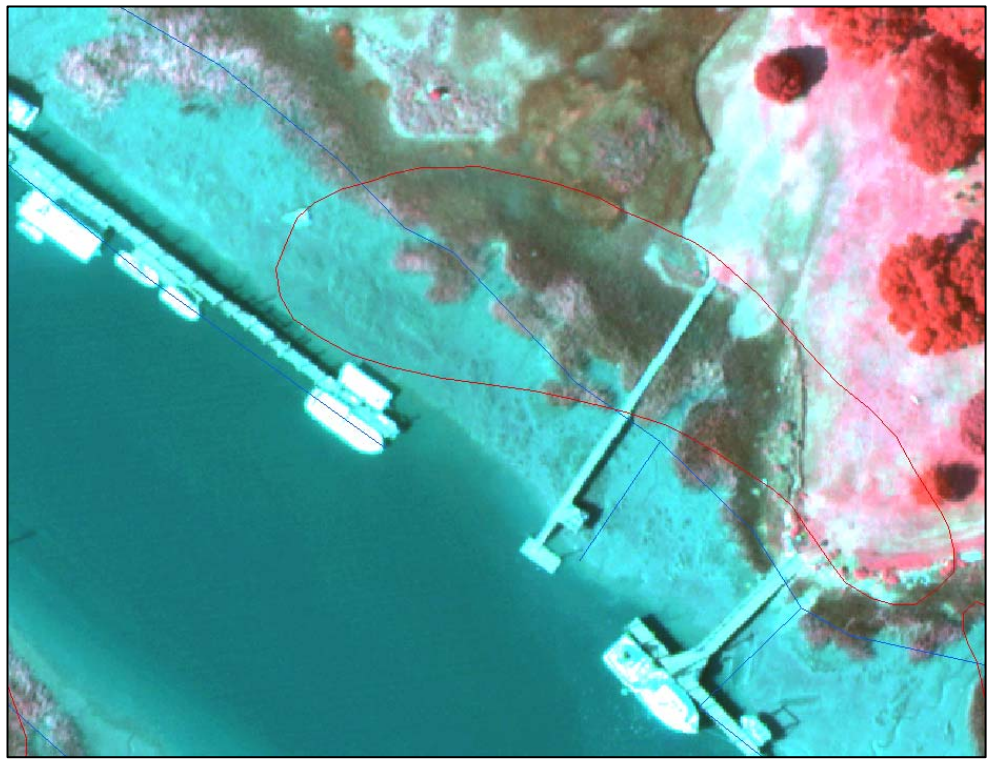
- overall illumination
- , any gaps in coverage
- cloud and shadows
- presence of intertidal area



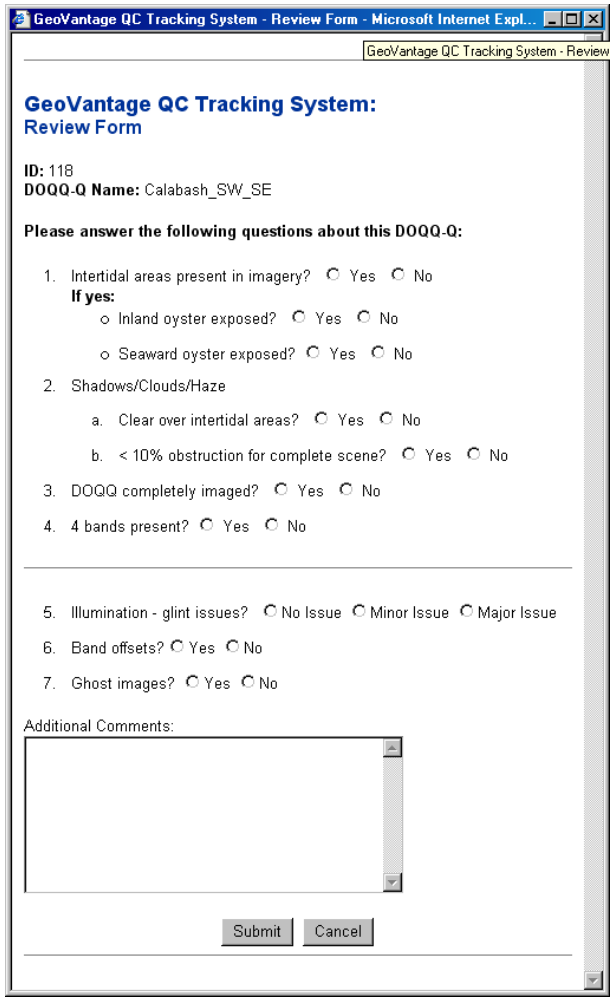
Review process-Detailed evaluation

A zoomed in view is useful for checking for tidal levels. Follow creeks and flats to make this determination. The zoomed-in view is also a good way to evaluate:

- exposure of inland and seaward oysters
- band co-registration issues
- ghost images
- any image anomalies



Using the Review Form



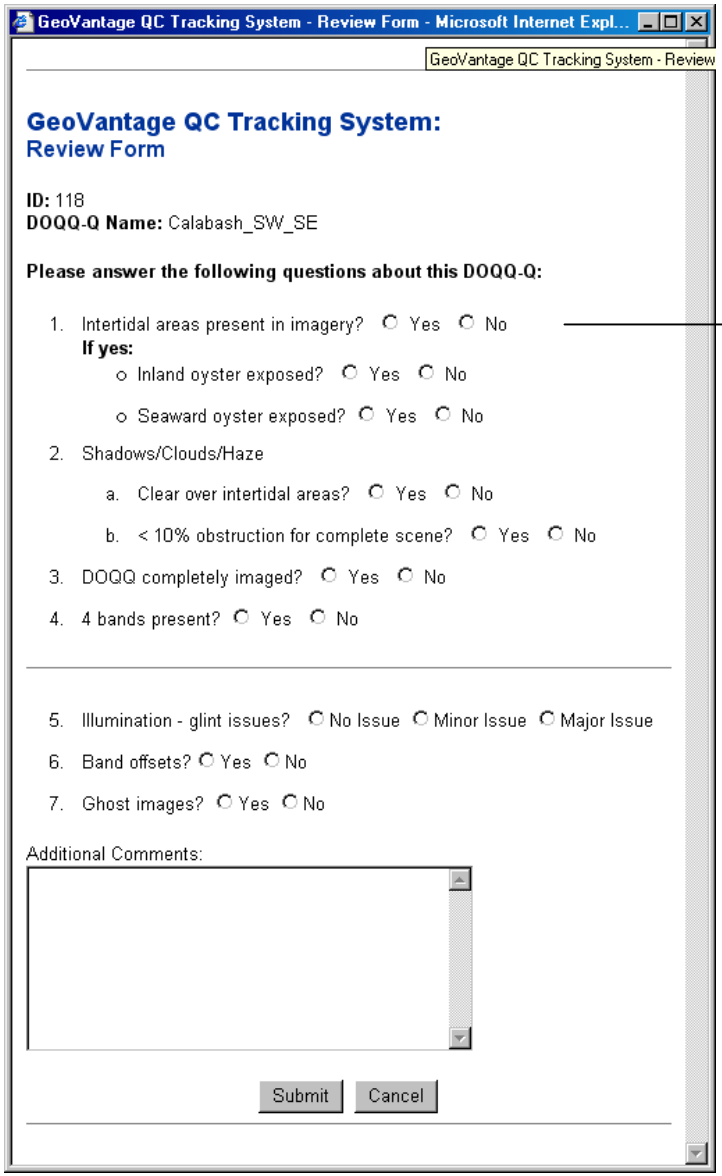
The review form has a logic process behind it that takes the information entered for each parameter and bins the image into one of three bins – accepted, rejected, or not useful for mapping.

To be **accepted**, the reviewer must answer YES to the first four questions and NO to the last three.

To be rejected, the review must answer NO to ANY of one of the first four questions or YES to ANY of the last three questions. Once an image is rejected, it will be reviewed by one of the project principles prior to being re-flown or re-processed.

To be binned as not useful for mapping, the reviewer must answer NO to Question 1 – Intertidal areas present in imagery?

Review Form Question 1

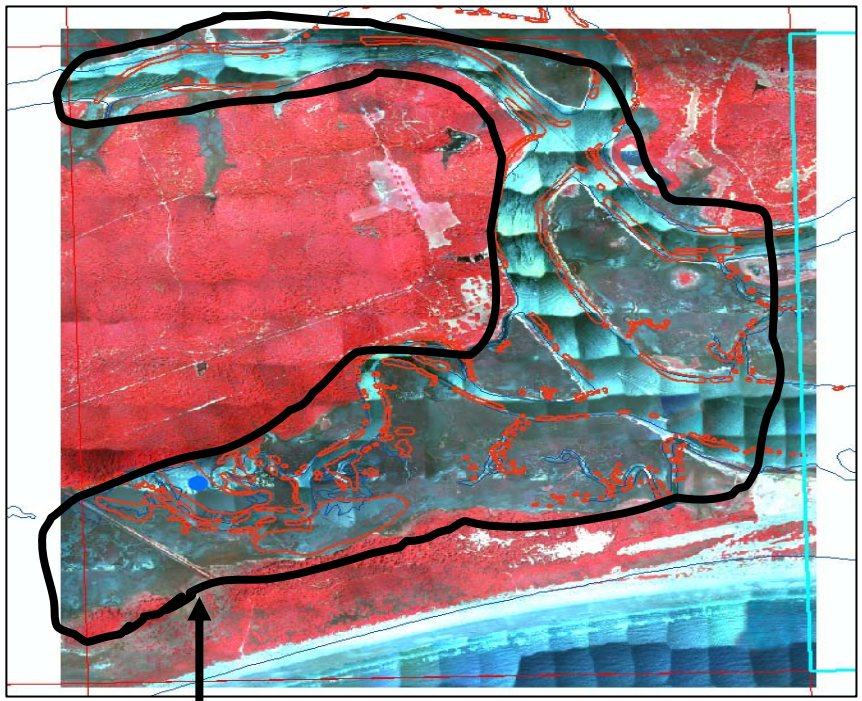


1. Intertidal areas present in image? - Y/N

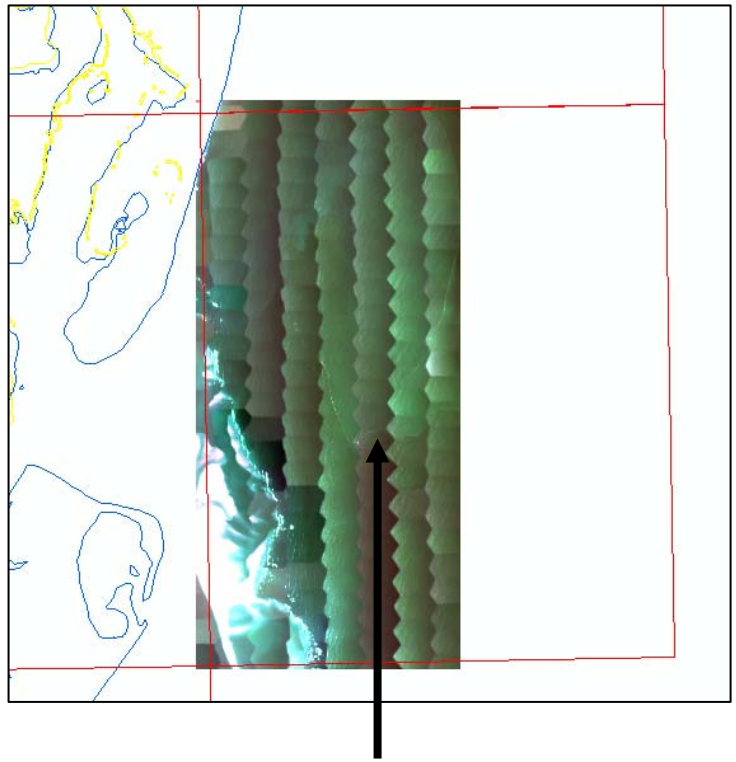
This is a simple screening question which will allow us to separate images which will not be interpreted in the oyster mapping phase of this project.

Be very conservative. If there are any intertidal areas in the image select YES and continue on through the review.

Question 1 – Intertidal area in imagery



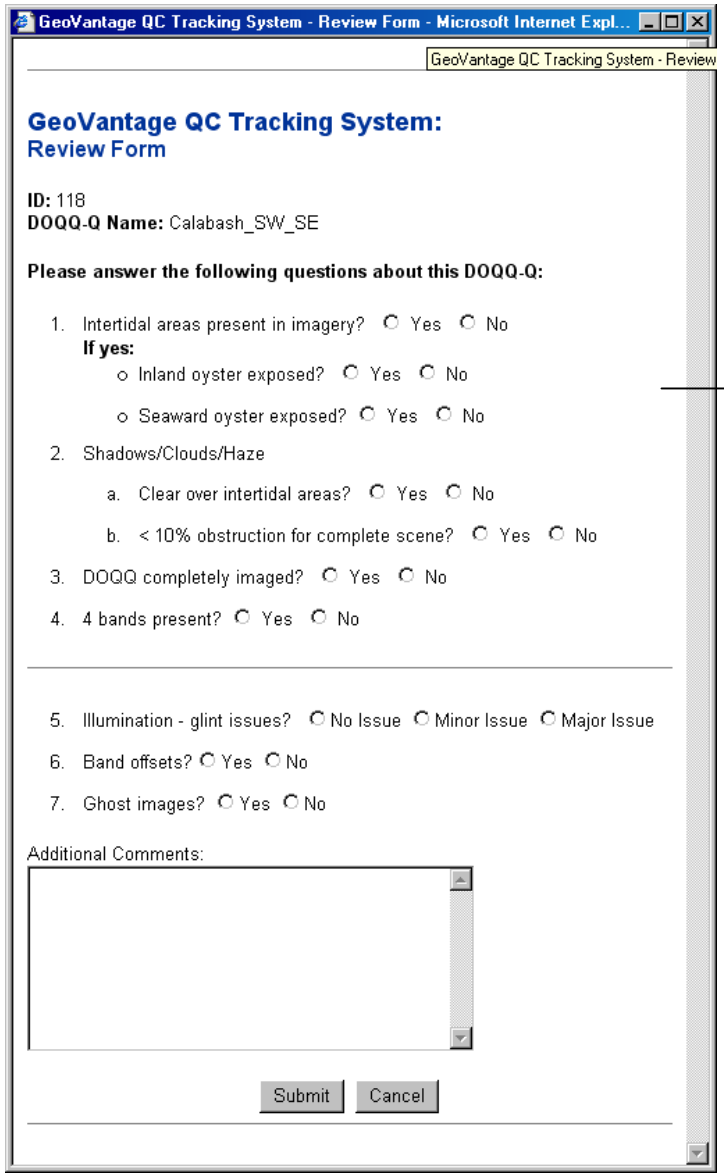
Lots of intertidal area



No intertidal area - all open ocean

This question is designed to separate all ocean or all terrestrial images from the rest. The image on the right will not need to be interpreted for oyster.

Review Form Question 1a & 1b



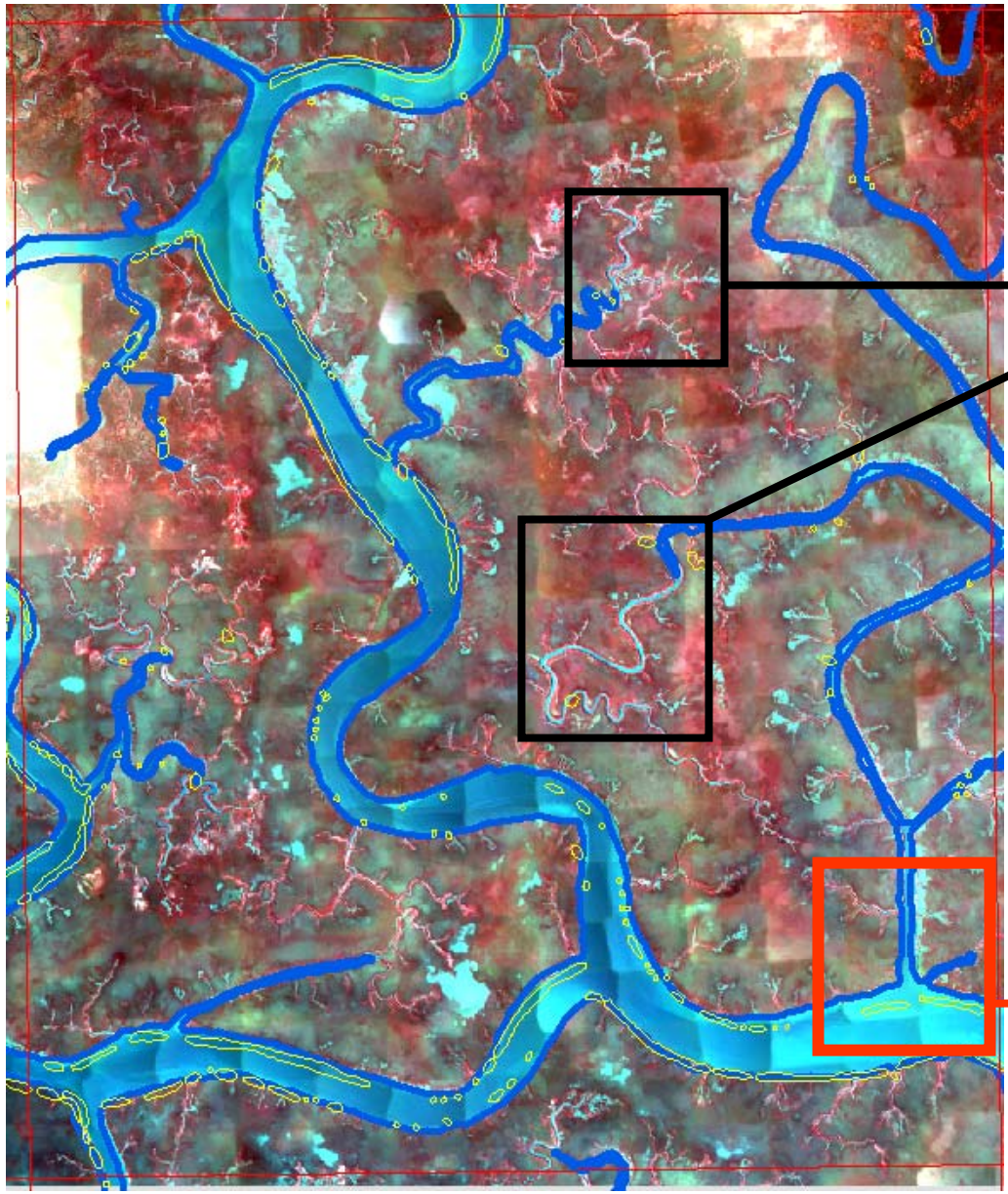
1a. Inland/Seaward Oyster Exposed - Y/N

This is the most critical element in the review as well as the most subjective. Use all the ancillary information provided – is there historic oyster in this area, are the mud aprons exposed under docks, is the water all the way into the grass along creeks, etc…

Inland = head of a creek, middle of a mud flat, upstream. **See next slide.**
Seaward = mouth of a creek, edge of ICW, toward the ocean-downstream. **See next slide.**

Be very conservative. If you have any question answer **NO** and drop a point in a representative area. A **NO** response to either the inland or seaward component of this question will **REJECT** the image.

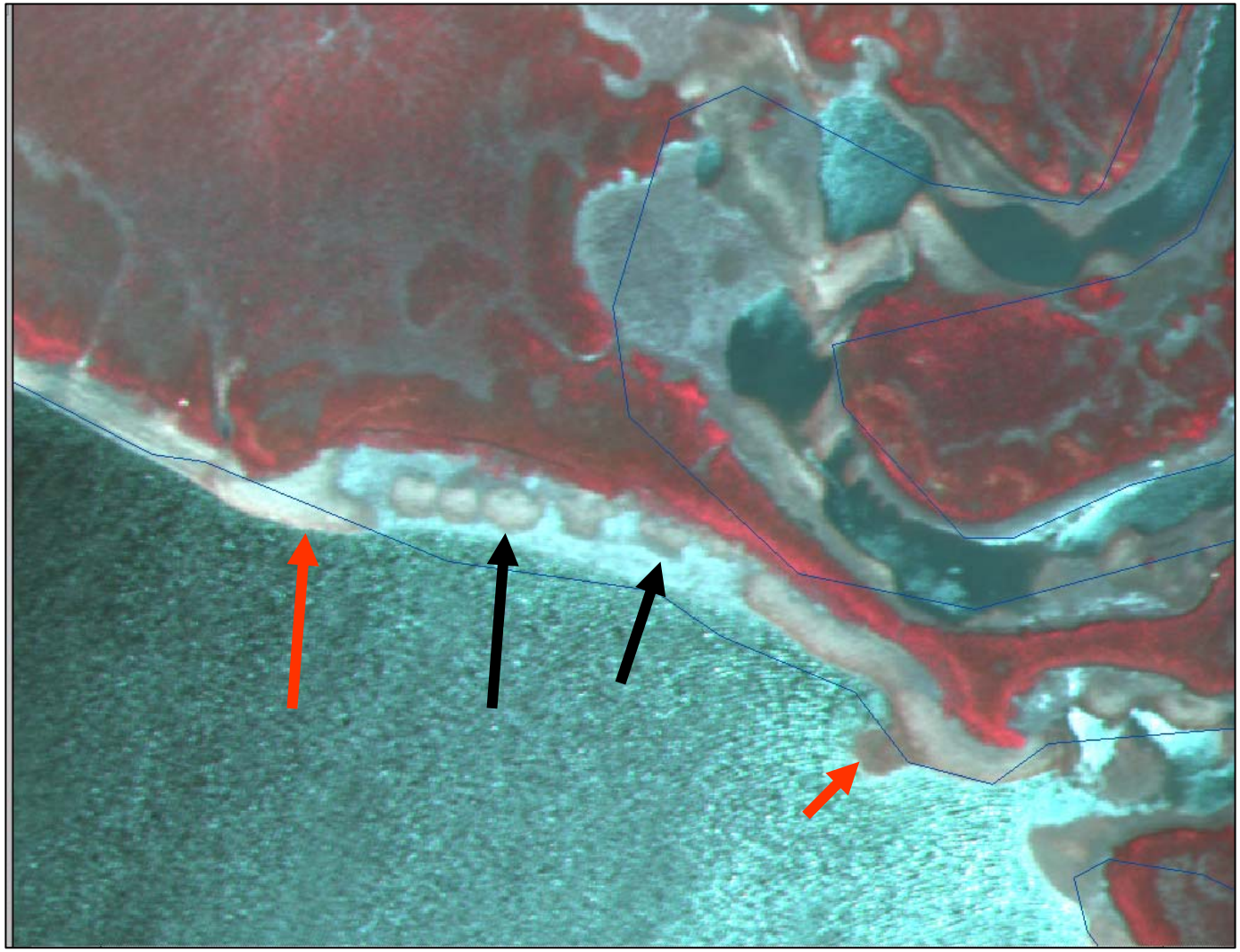
Inland vs. Seaward



These areas at the head of a creek are good examples of “inland”
Remember it is a relative term meant to examine “headwaters/upstream area” of a tidal drainage area.

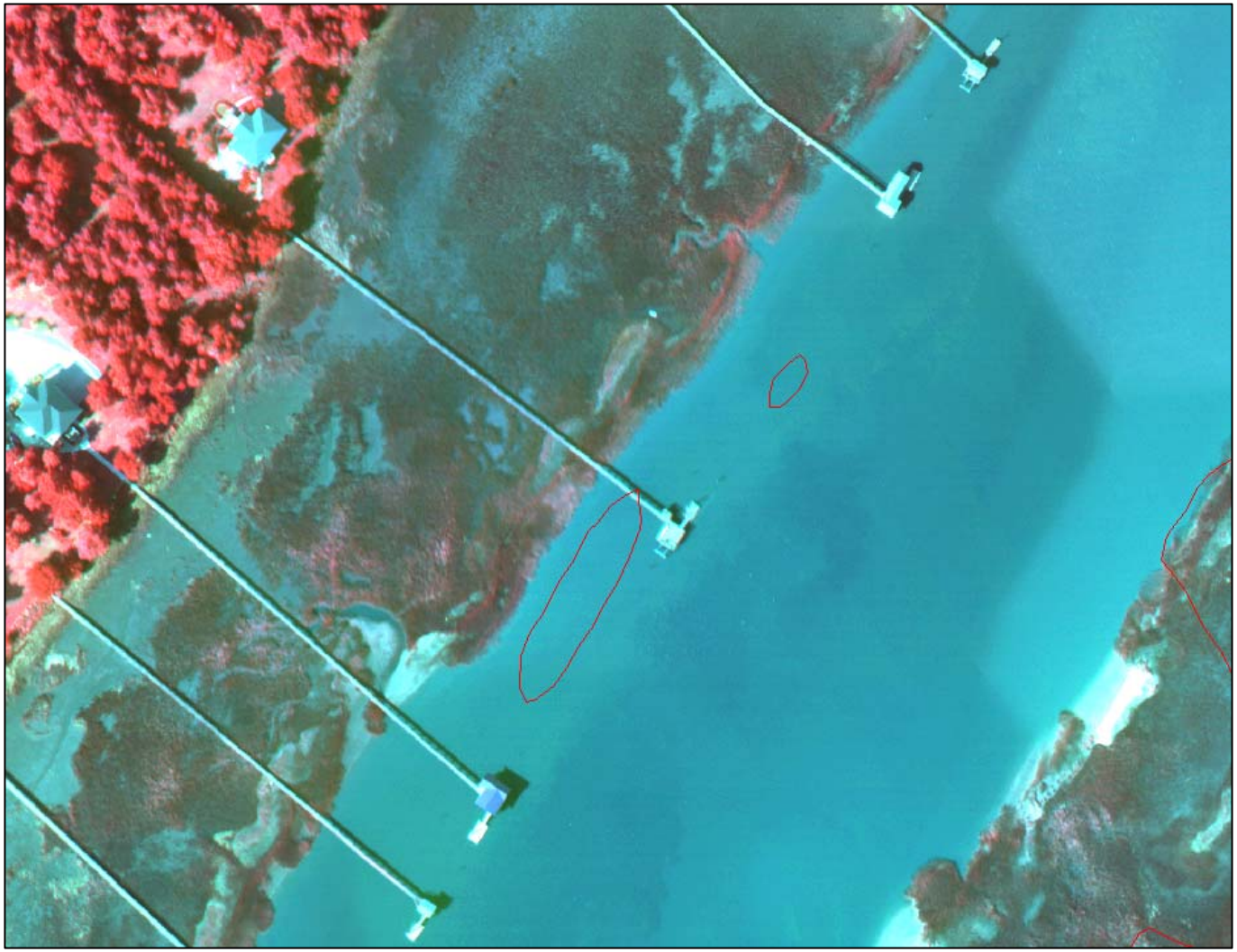
This area along the outer creek banks is a good example of “seaward”
Remember it is a relative term meant to examine the “mouth/downstream area” of a tidal drainage area.

Question 1a/b – Oyster exposed?



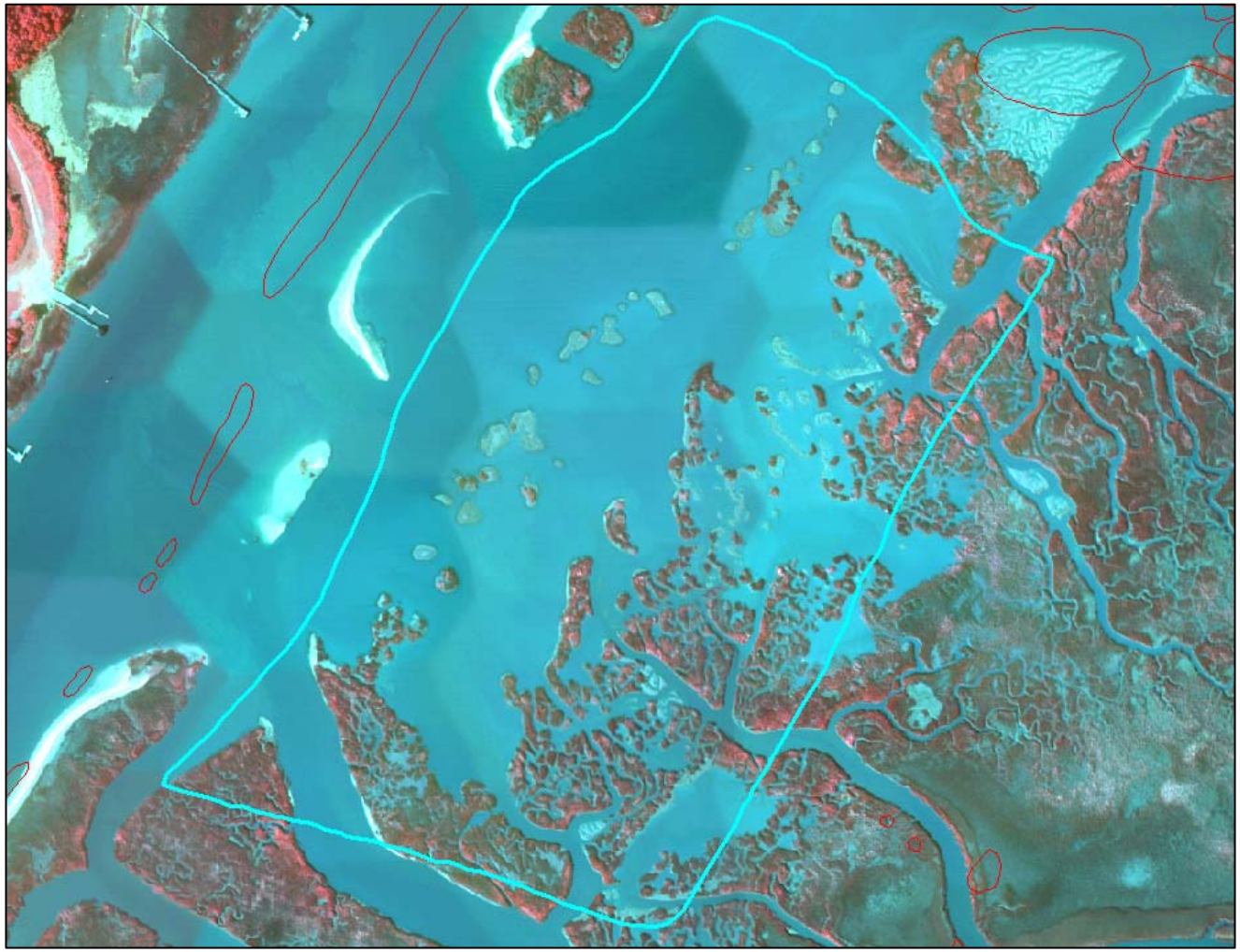
There is water right up to the reefs in this image and potentially obscuring oyster at the red arrows. This image will be rejected.

Question 1a/b – Oyster exposed?



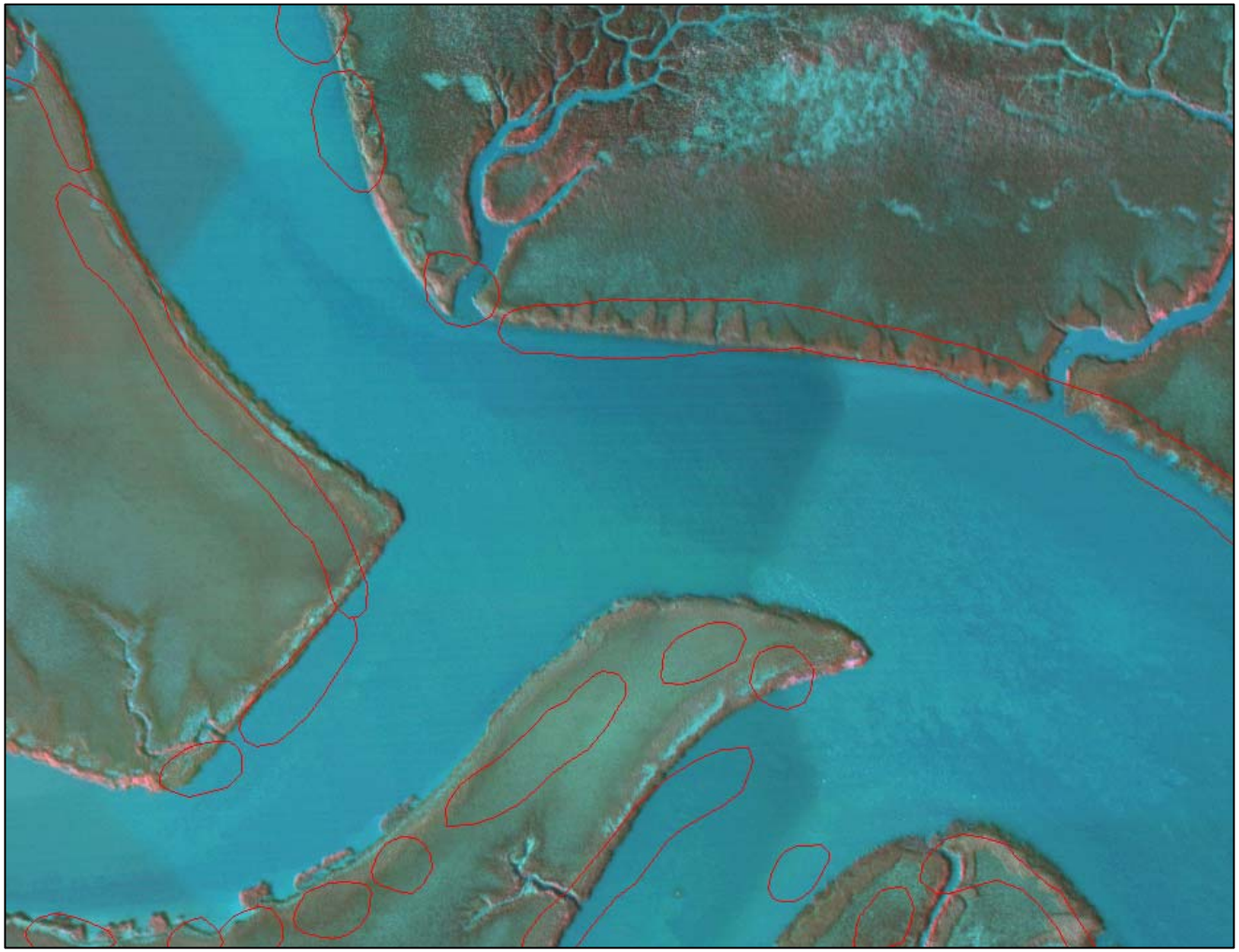
Water level too high as indicated by lots of water landward of dock platform (point of deep water). Also mapped oyster not visually apparent. This image will be rejected.

Question 1a/b – Oyster exposed?



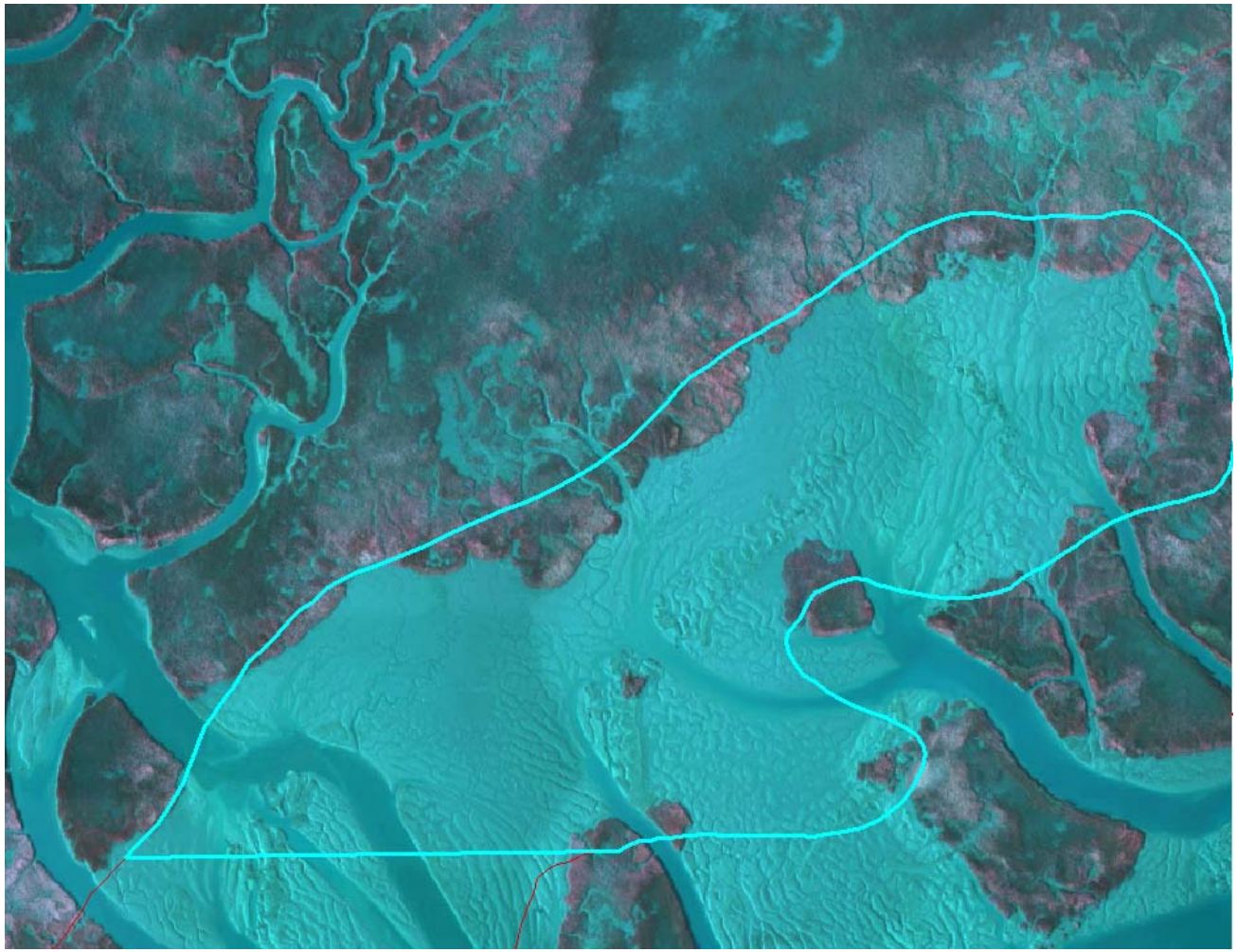
Water levels too high as indicated by large amounts of water on “flats” area. Although some oyster is present, more of the flat should be exposed. This should be rejected.

Question 1a/b – Oyster exposed?



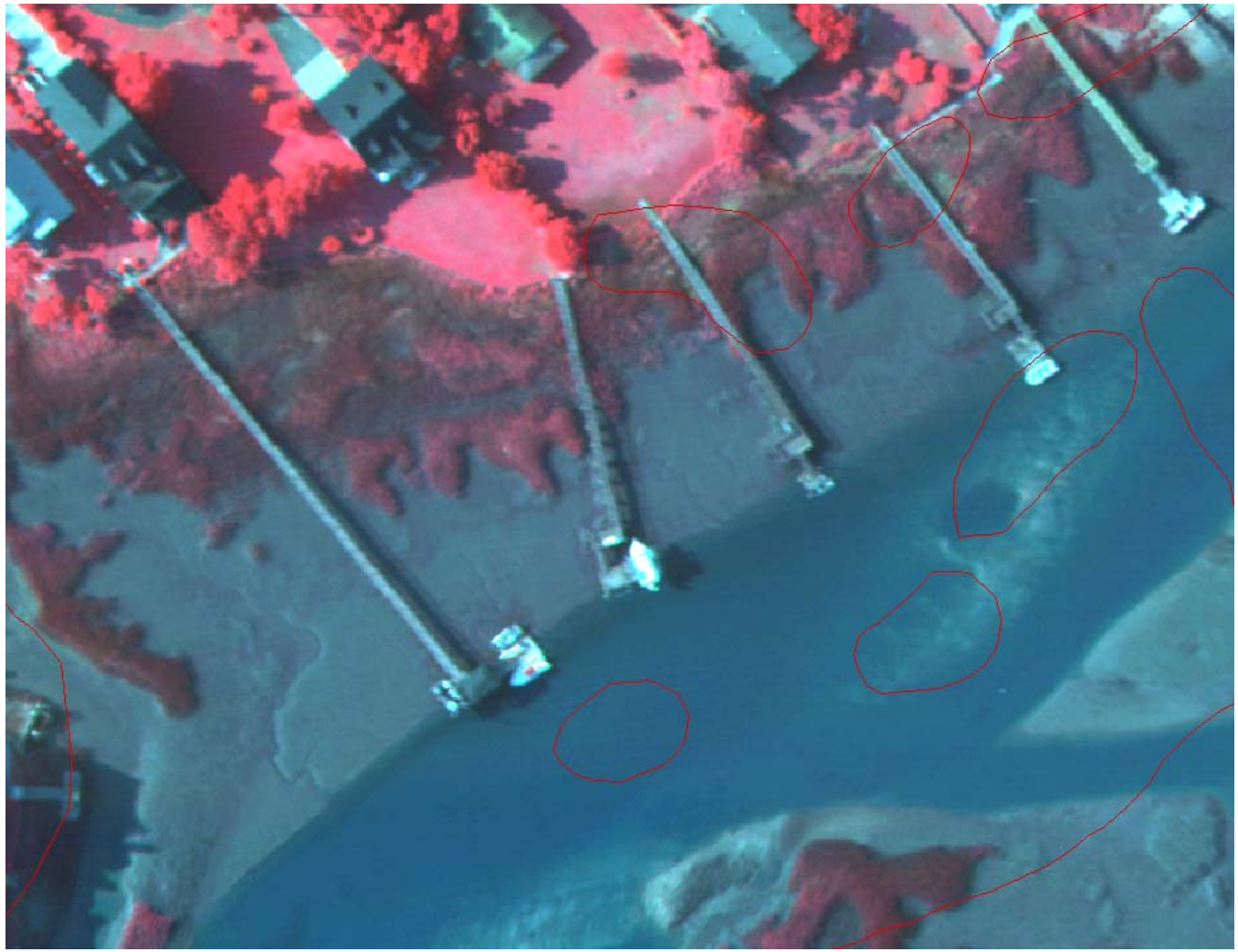
Water levels too high as indicated by large amounts of mapped fringing reef but none exposed at all. Water is up to the spartina marsh grass. This should be rejected.

Question 1a/b – Oyster exposed?



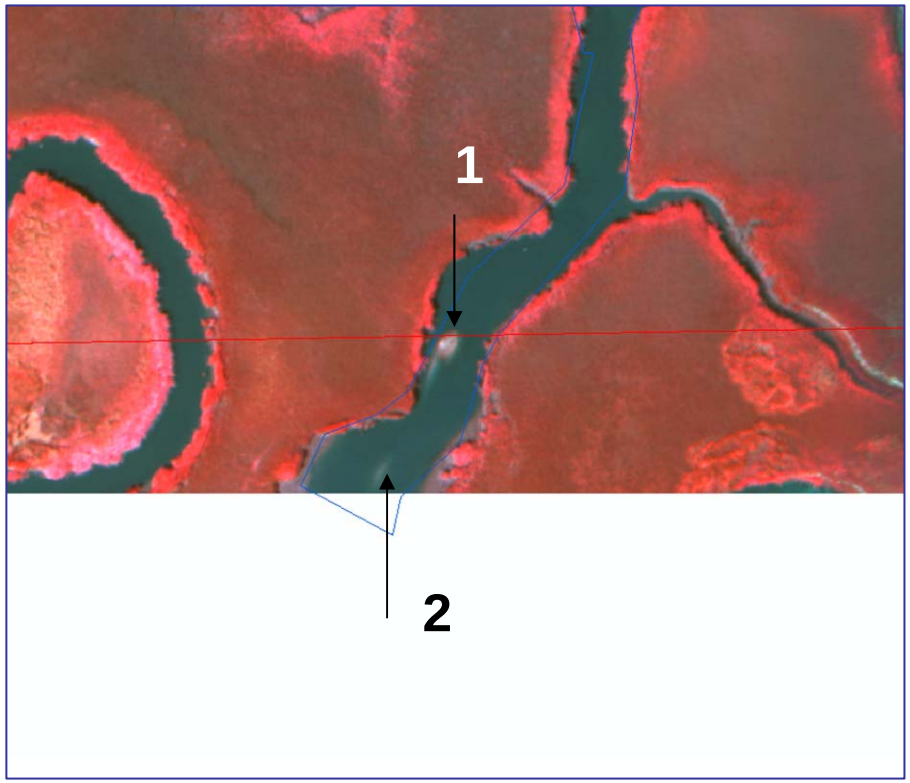
Example of good tidal level. Flat is fully exposed and oyster are clearly visible. This image will be **accepted**.

Question 1 – Oyster exposed?

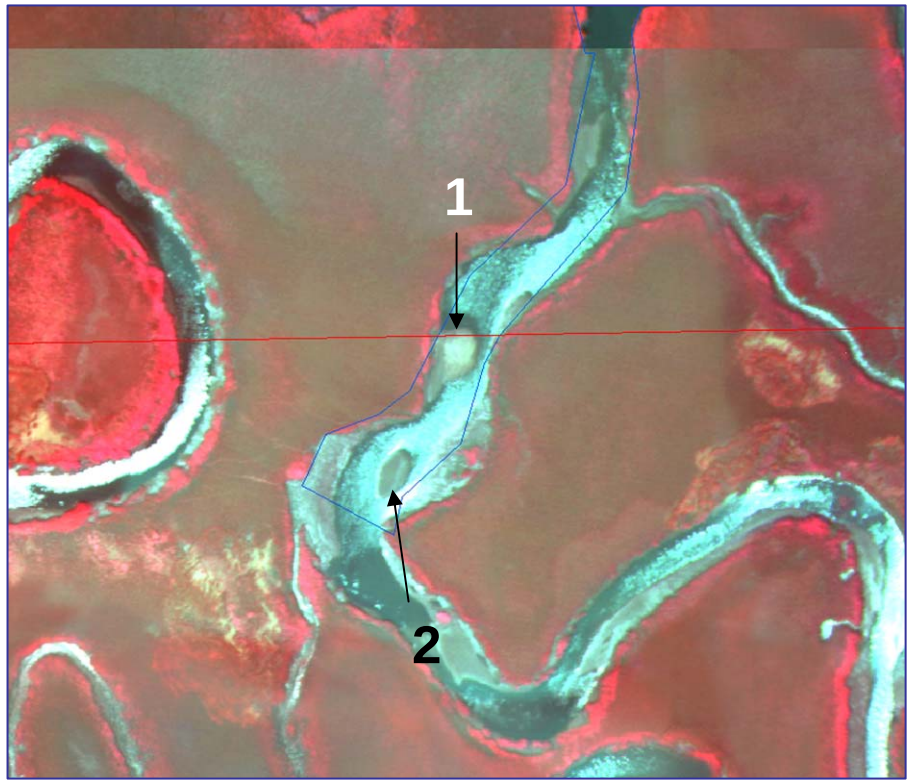


Example of good tidal level. Mud aprons behind docks are exposed. Any oyster in these areas should be visible. This image will be **accepted**.

Why are tide level so important??



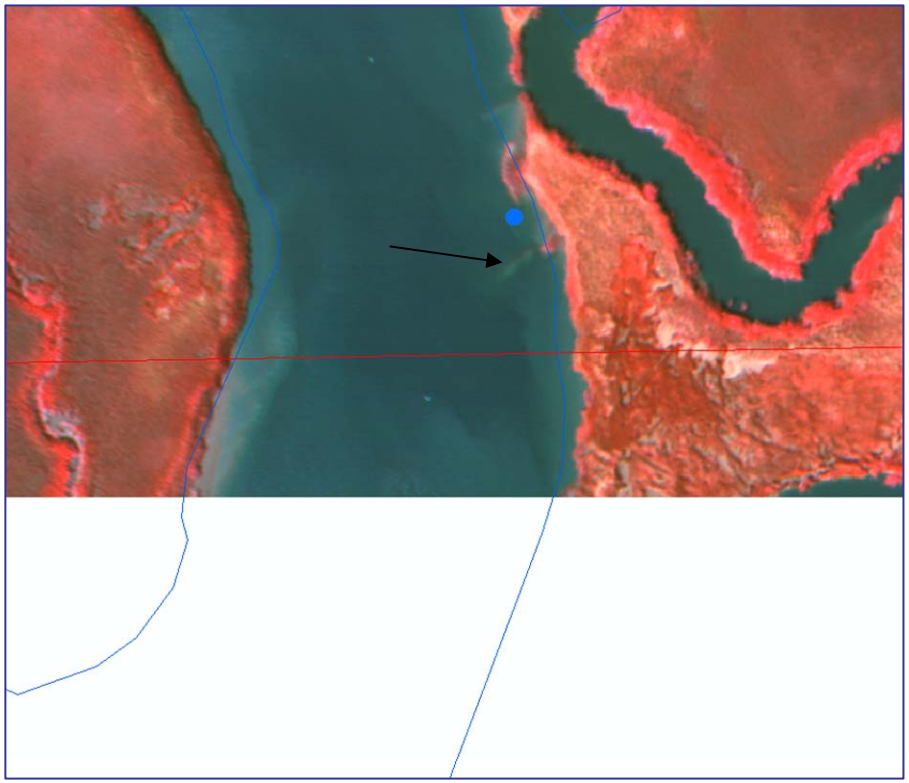
Only tops of oyster reef exposed - Bad tide



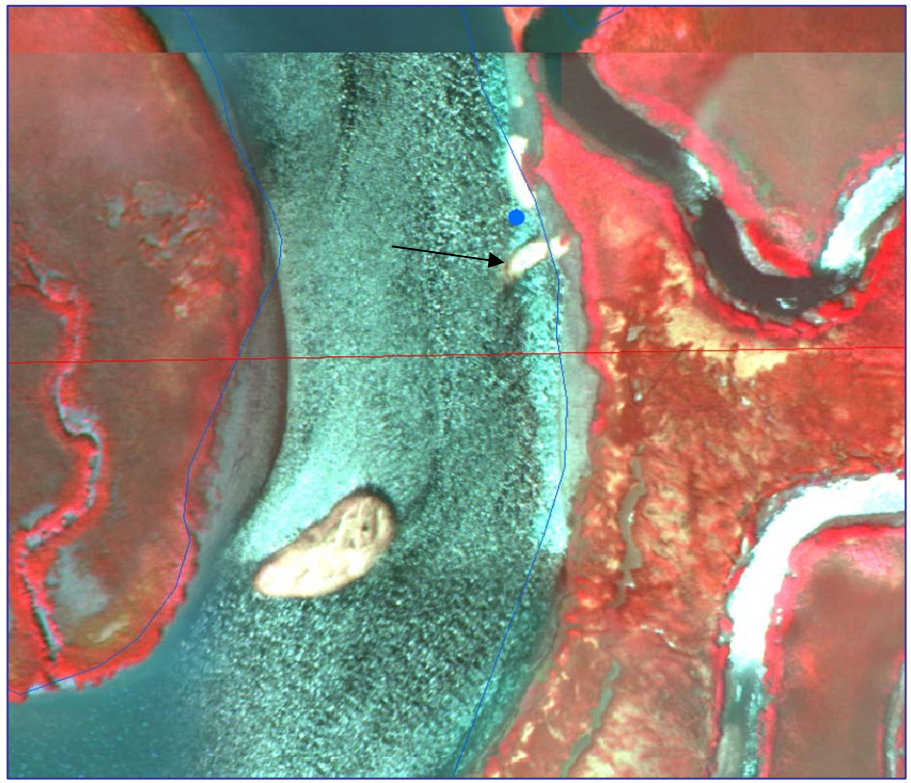
Entire oyster reef exposed - Good tide

** Only partial exposure of oyster beds is sufficient for rejection*

Why are tide level so important??

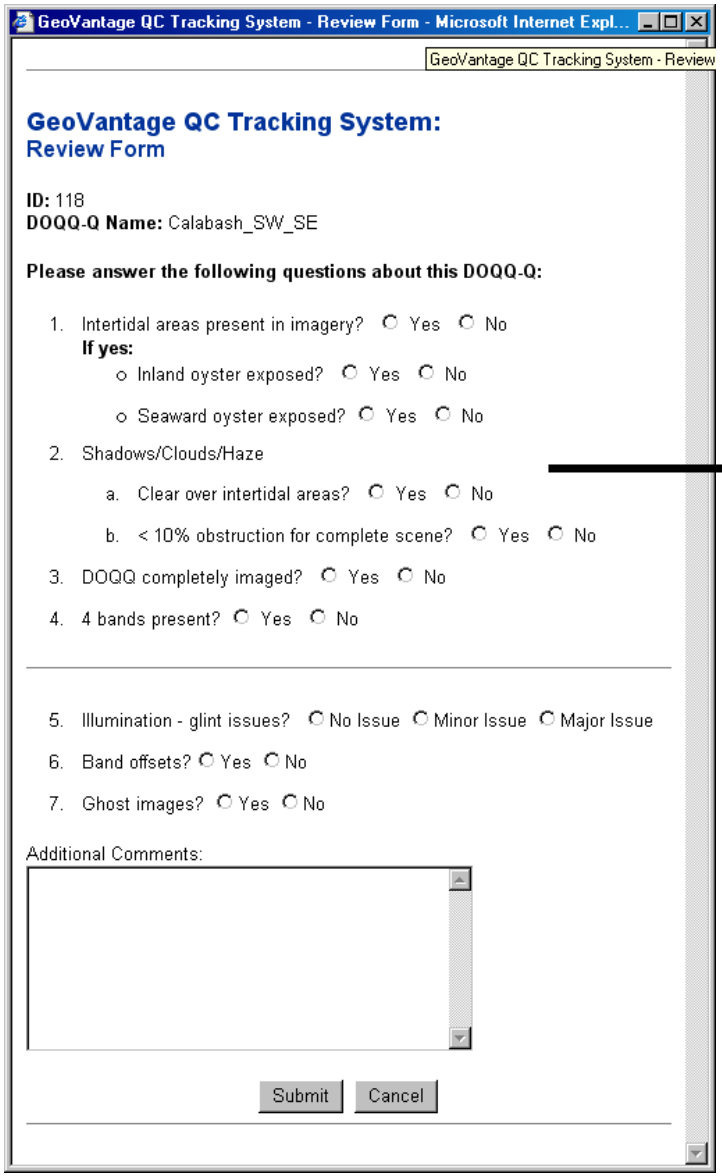


Submerged reef barely visible - Bad tide



Entire oyster reef exposed - Good tide

Review Form Question 2



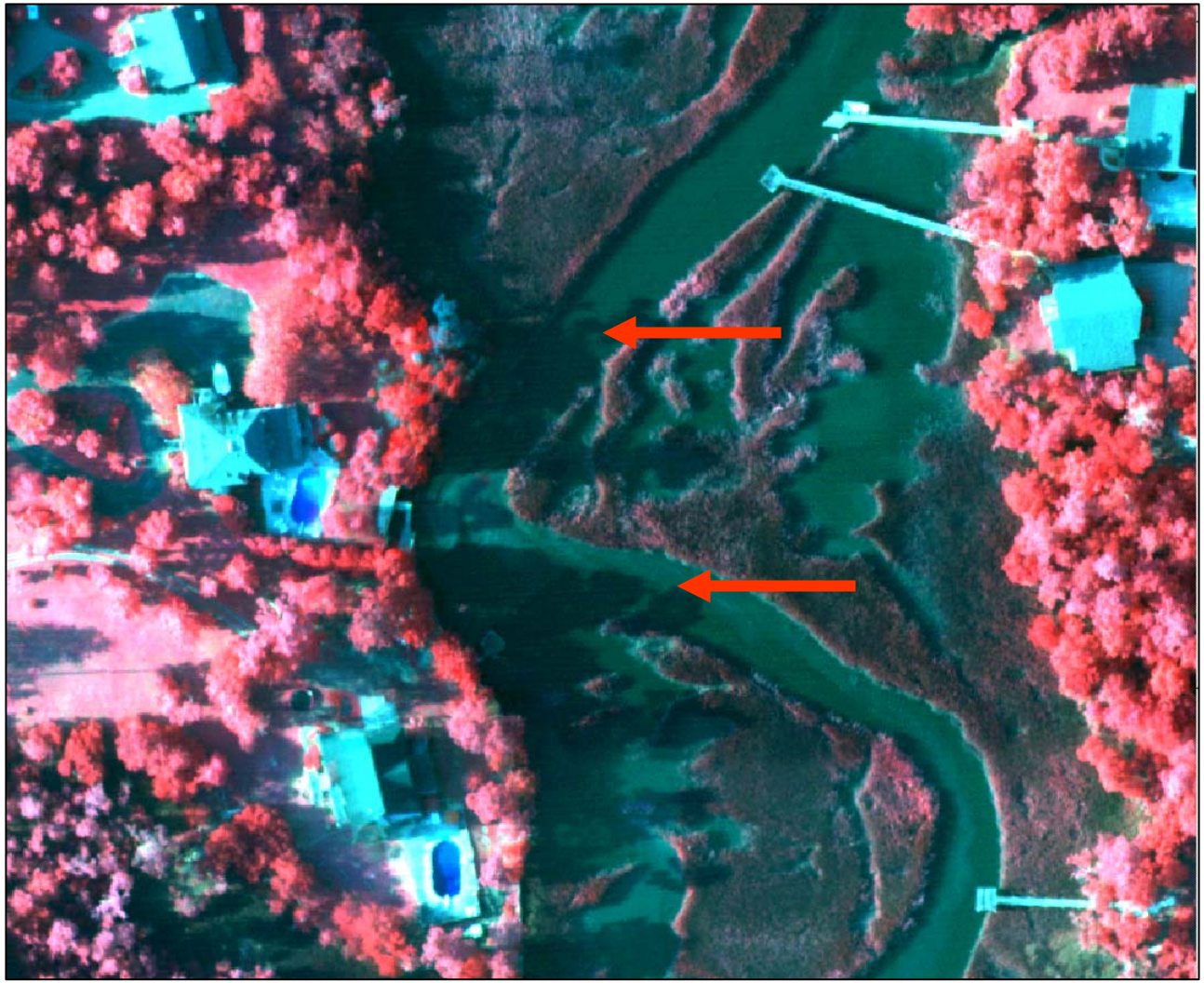
2. Clouds/Shadow/Haze

This is a two part question. First and foremost, all intertidal areas must be clear. Any degradation over the intertidal area will cause the image to be **rejected**.
Secondly, there should be less than 10% of the entire scene degraded due to clouds/shadows, or haze.

A **NO** response to either components of this question will cause the image to be **rejected**.

Question 2 – Clouds/Shadows/Haze

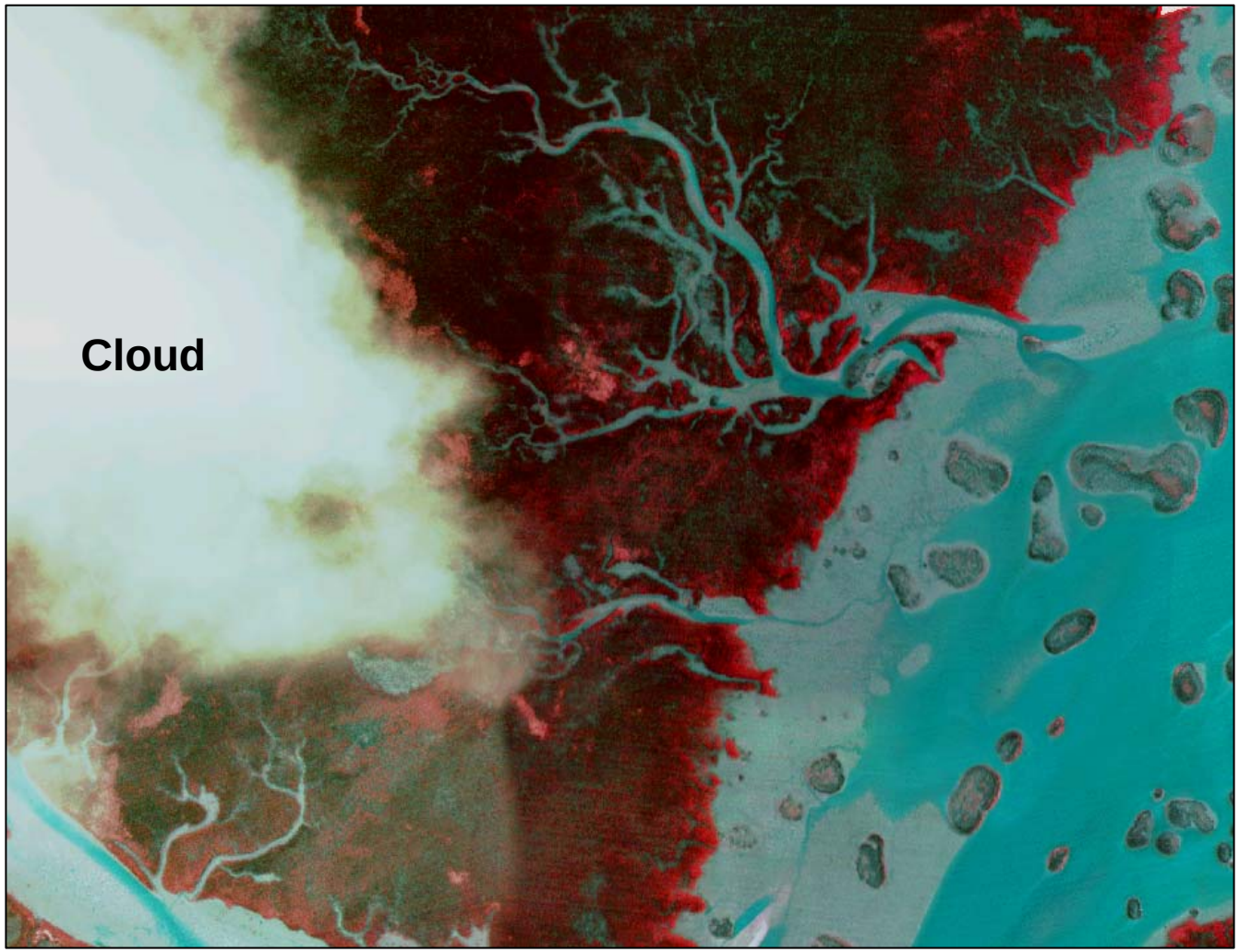
- clear over intertidal areas
- <10 % obstruction for complete scene



Long Shadows obscuring intertidal area – image should be rejected

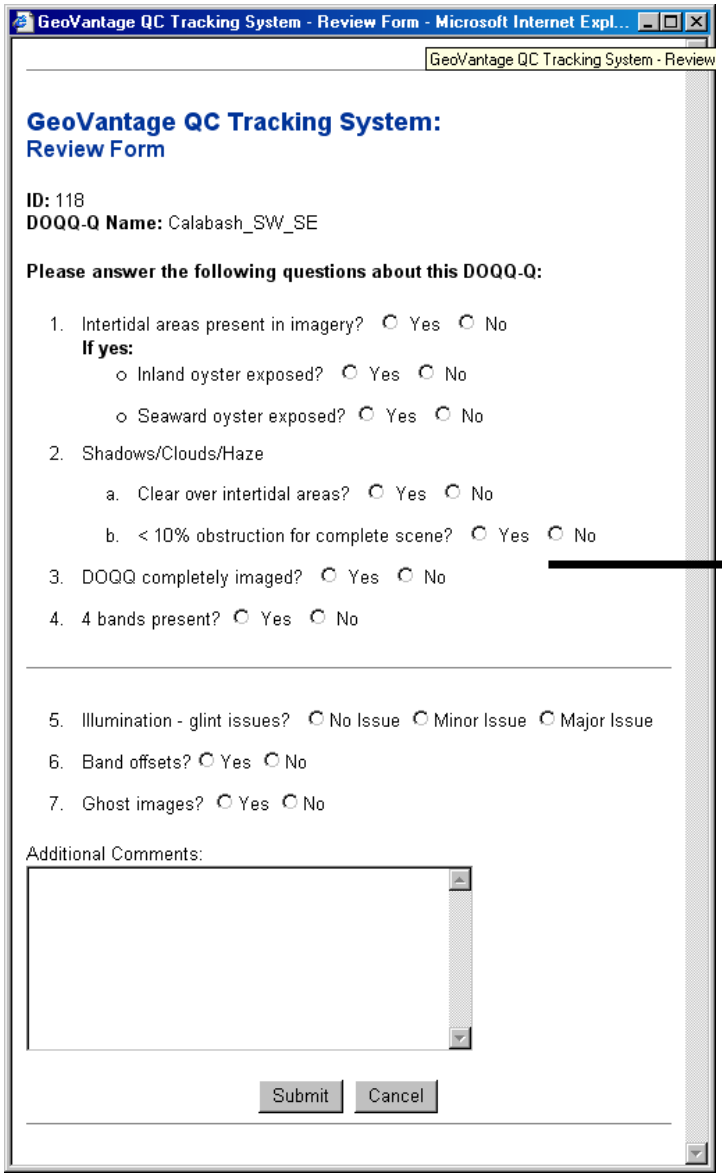
Question 2 – Clouds/Shadows/Haze

- clear over intertidal areas
- <10 % obstruction for complete scene



Cloud between aircraft and intertidal ground. This should only happen on rare occasions, and is cause for rejection.

Review Form Question 3

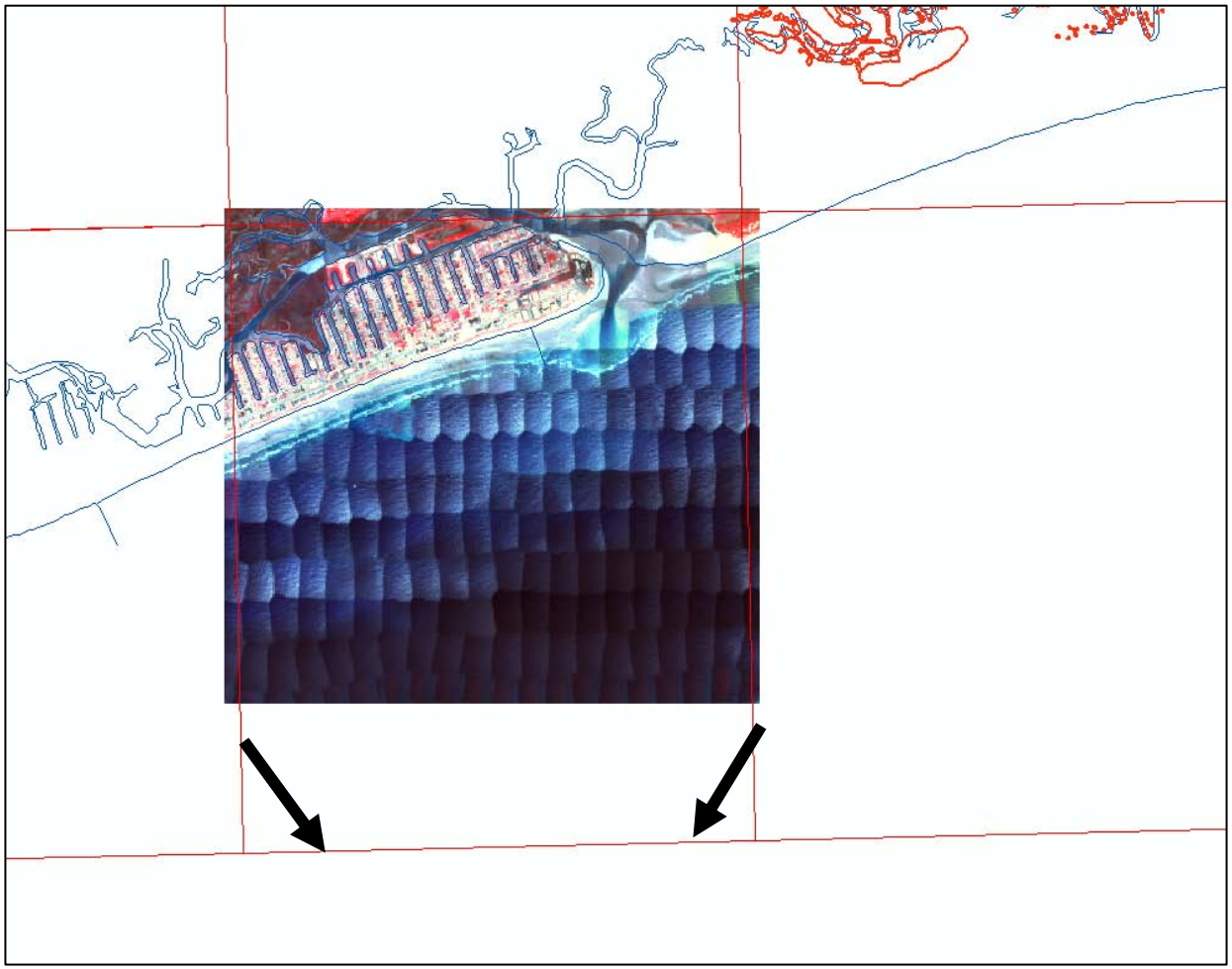


3. DOQQQ complete – Y/N

The image should overlap the DOQQQ boundaries a bit. Open ocean or completely terrestrial areas may not be imaged but this is OK. Use the project boundary file to see where the image should cover.

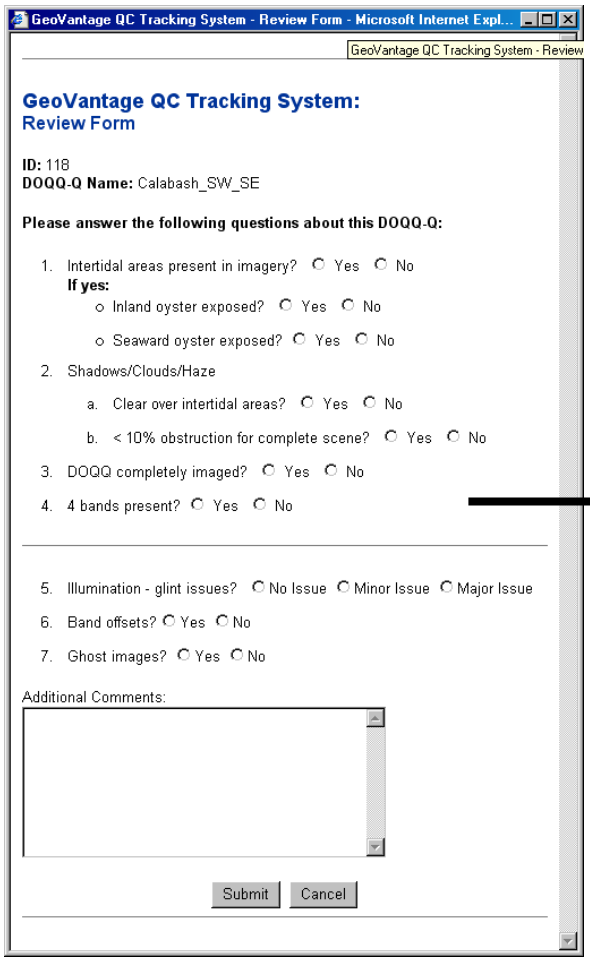
A NO response on this question will cause the image to be rejected.

Question 3 – DOQQQ completely imaged?



This image does not meet the FULL DOQQQ spec – it should extend south To the red line – however, this image passes because that is all open water With no oyster missed.

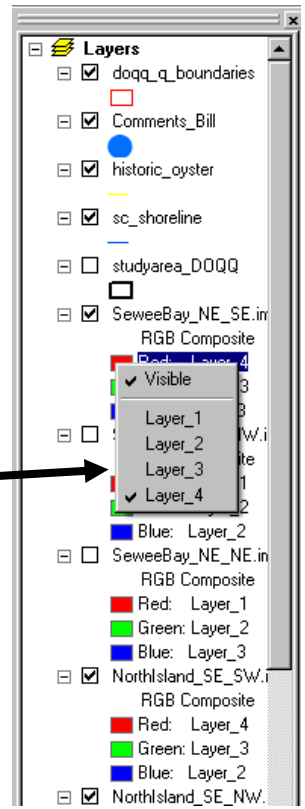
Review Form Question 4



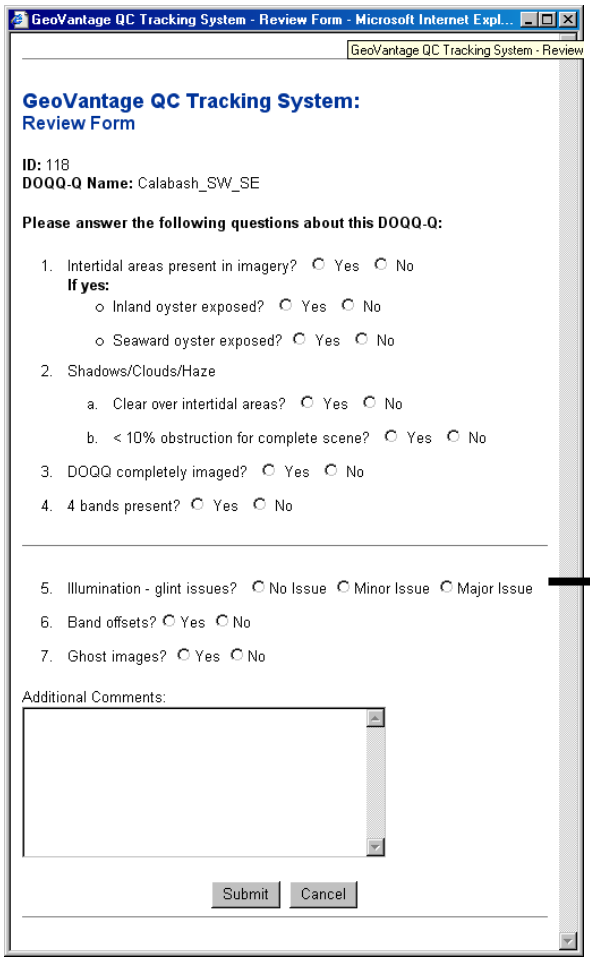
4. 4 bands present Y/N

This is a simple observation to ensure all images contain 4 bands – nir, r, g, b. This is easily accomplished by clicking on one of the bands (small colored R, G, B boxes) as displayed in the view legend. You should see a pick list of all four bands or layers.

A NO will cause the image to be rejected



Review Form Question 5



5. Illumination/glint Issues

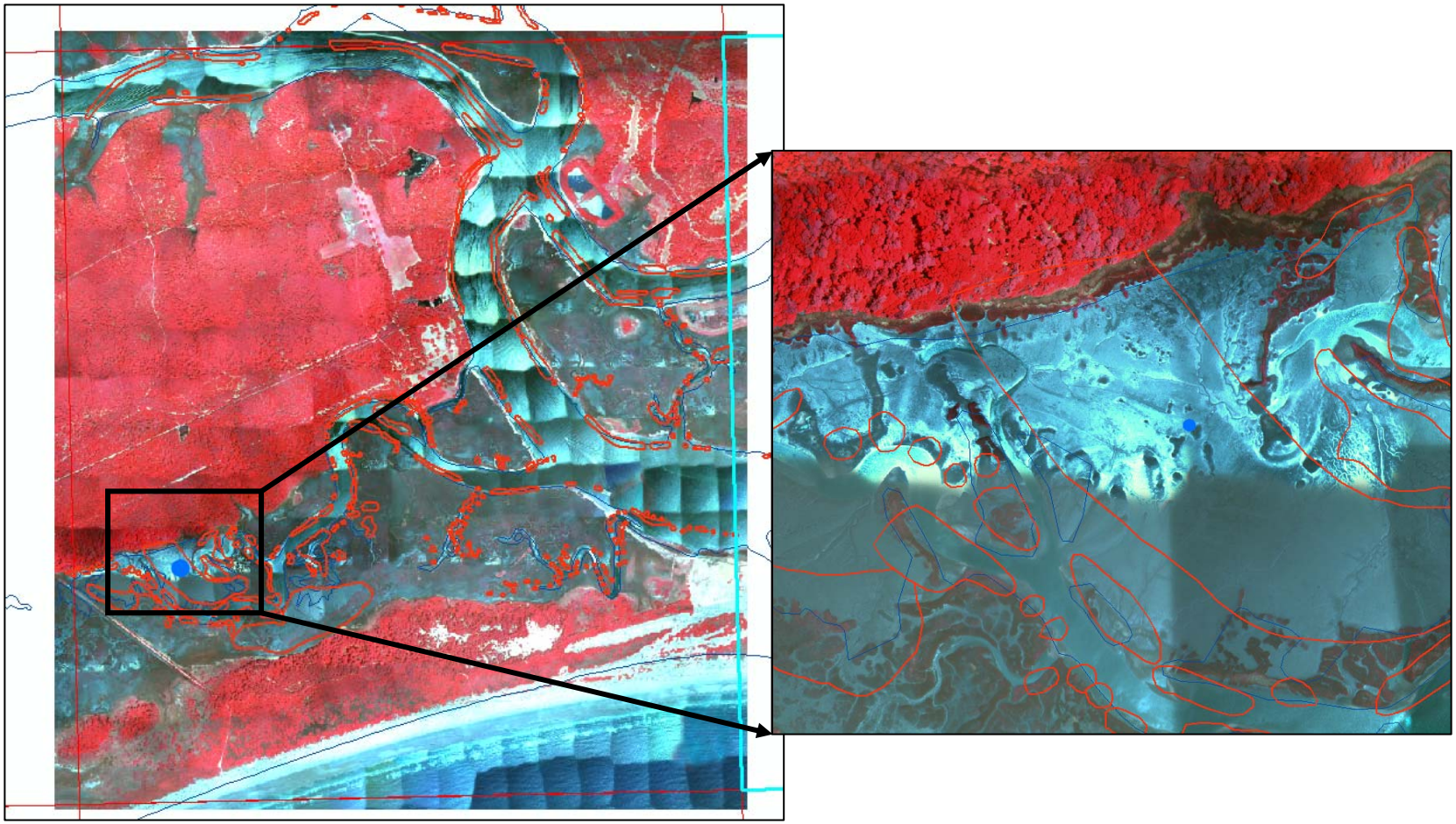
This information will be recorded on a continuum
no issues - accepted
minor issues – accepted
major issues - rejected

This information is designed to allow us to do two things. The first is to reject imagery that is significantly flawed. This would be a score of 3 on the scale above.
The second way in which we will use this information is in the actual oyster mapping. This information will allow us to bin the imagery into classes based on the expect ease of mapping. Images which score a 1 should be rather easy, images that score a 2 will require more manual clean up, and images that score a 3 will need to be reprocessed or reflown.

Question 5 – Illumination/Glint Issues

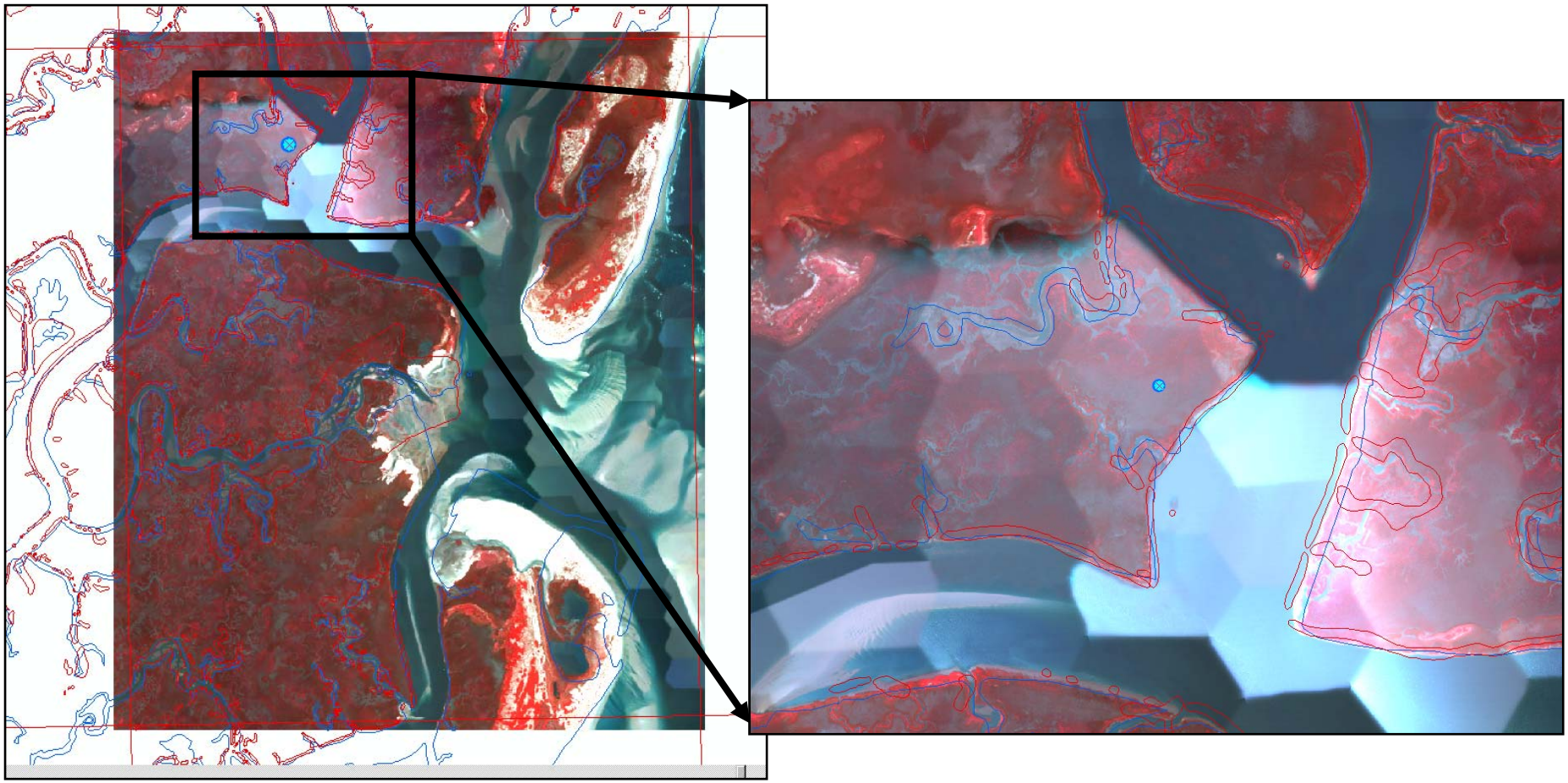
Nice even illumination over intertidal area – a bit of glint off the water
For the glint – rank this as no issues.

Question 5 – Illumination/Glint Issues



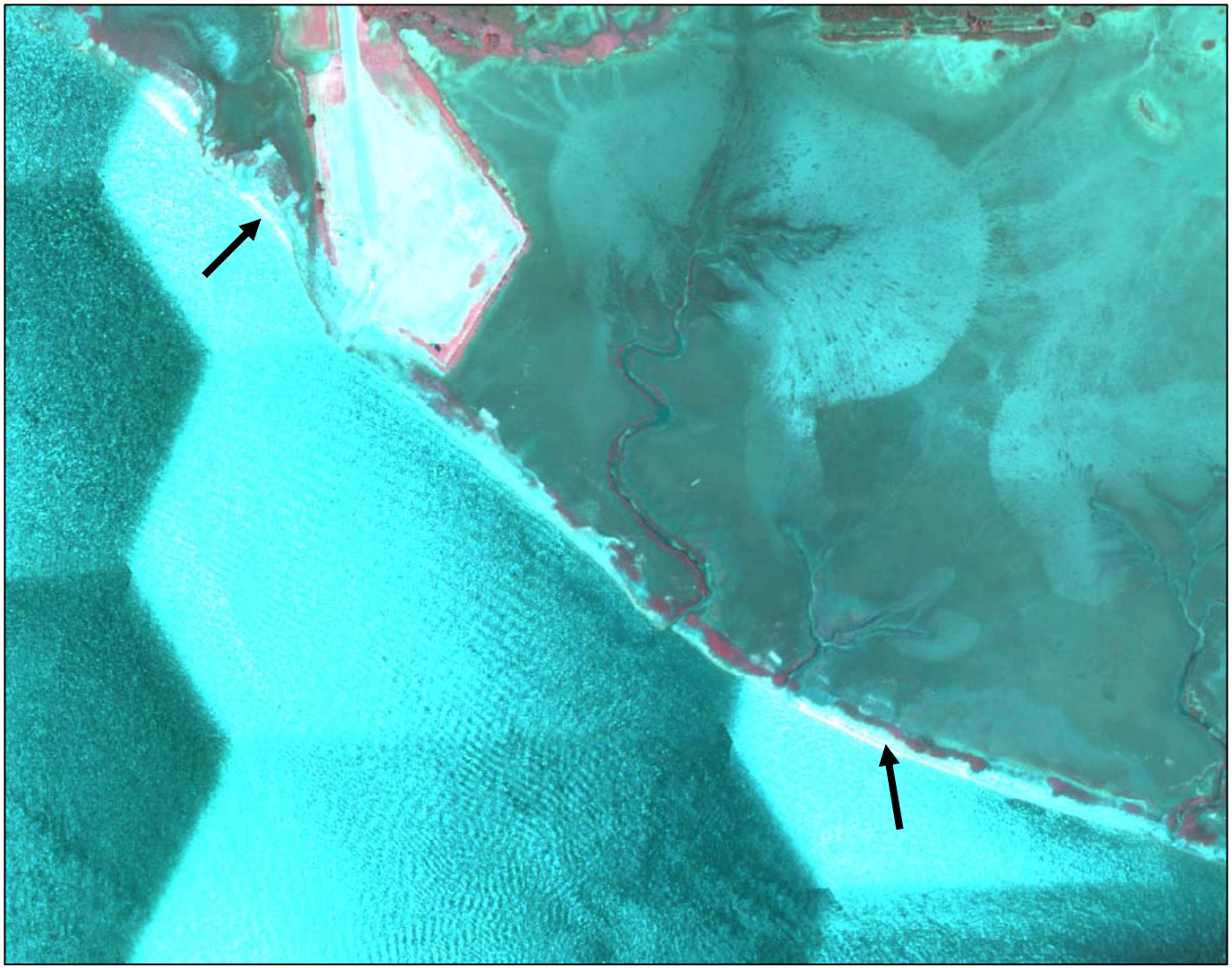
Significant glint issue but small geographic footprint makes this acceptable in the illumination question it scores as a minor issue (2)– this would have been raised to a major issue if it had a larger footprint or obscured the oyster more.

Question 5 – Illumination/Glint Issues



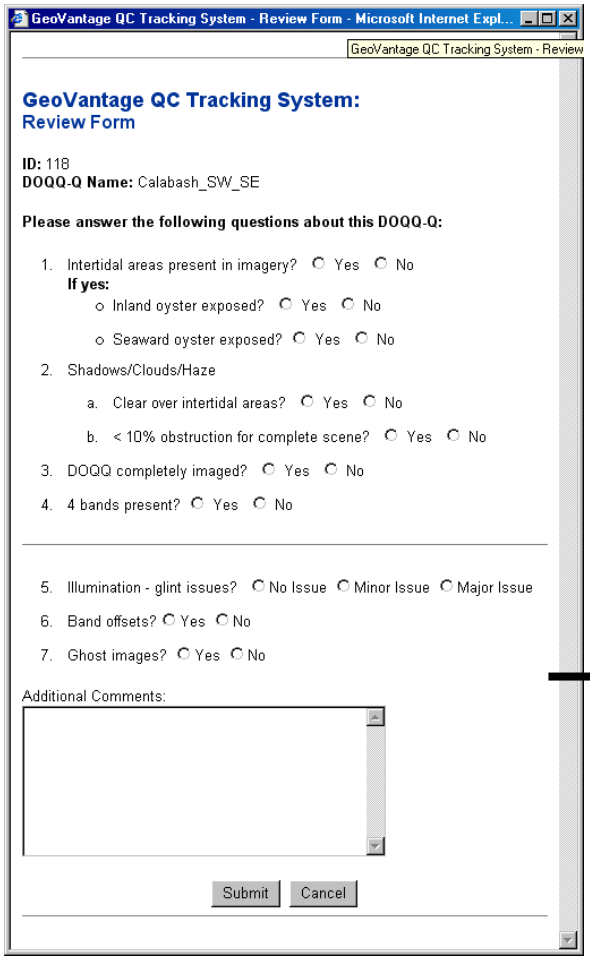
This is an example of illumination/glint issues – this is not enough to reject the imagery due to the rather small geographic footprint. This should be scored as a 2 – minor issues.

Question 5 – illumination/Glint Issues



Excessive glint on the water and in the adjacent fringing reefs.
This image will be rejected – scores a 3 for major issues.

Review Form Question 6

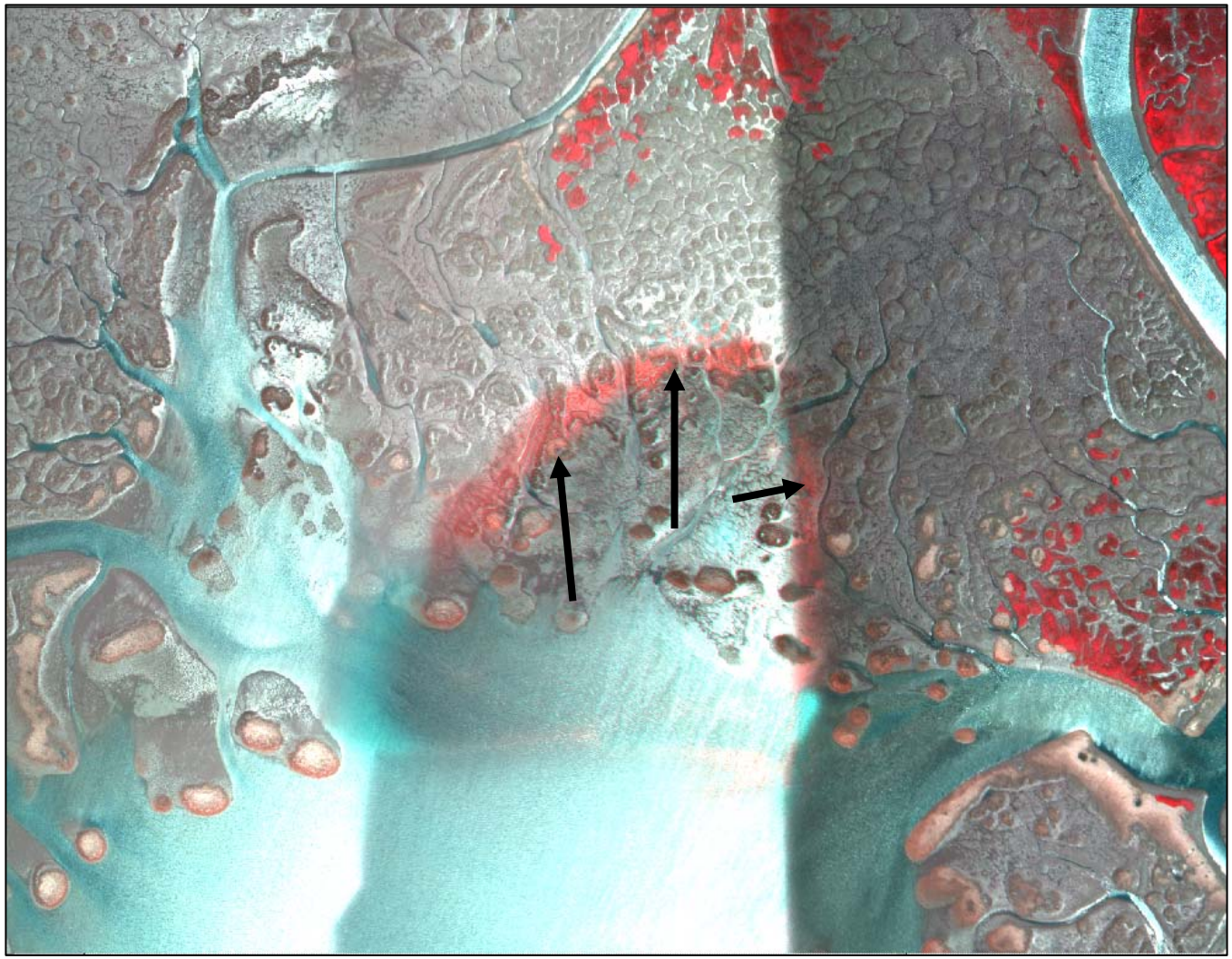


6. Band Offsets Y/N

This issue can be addressed through reprocessing of the imagery. We have noticed a lot of this over the open ocean. This is not a significant issue as there is no oyster present in these areas. However, the following examples show band offsets in the intertidal area which resulted in rejecting these images.

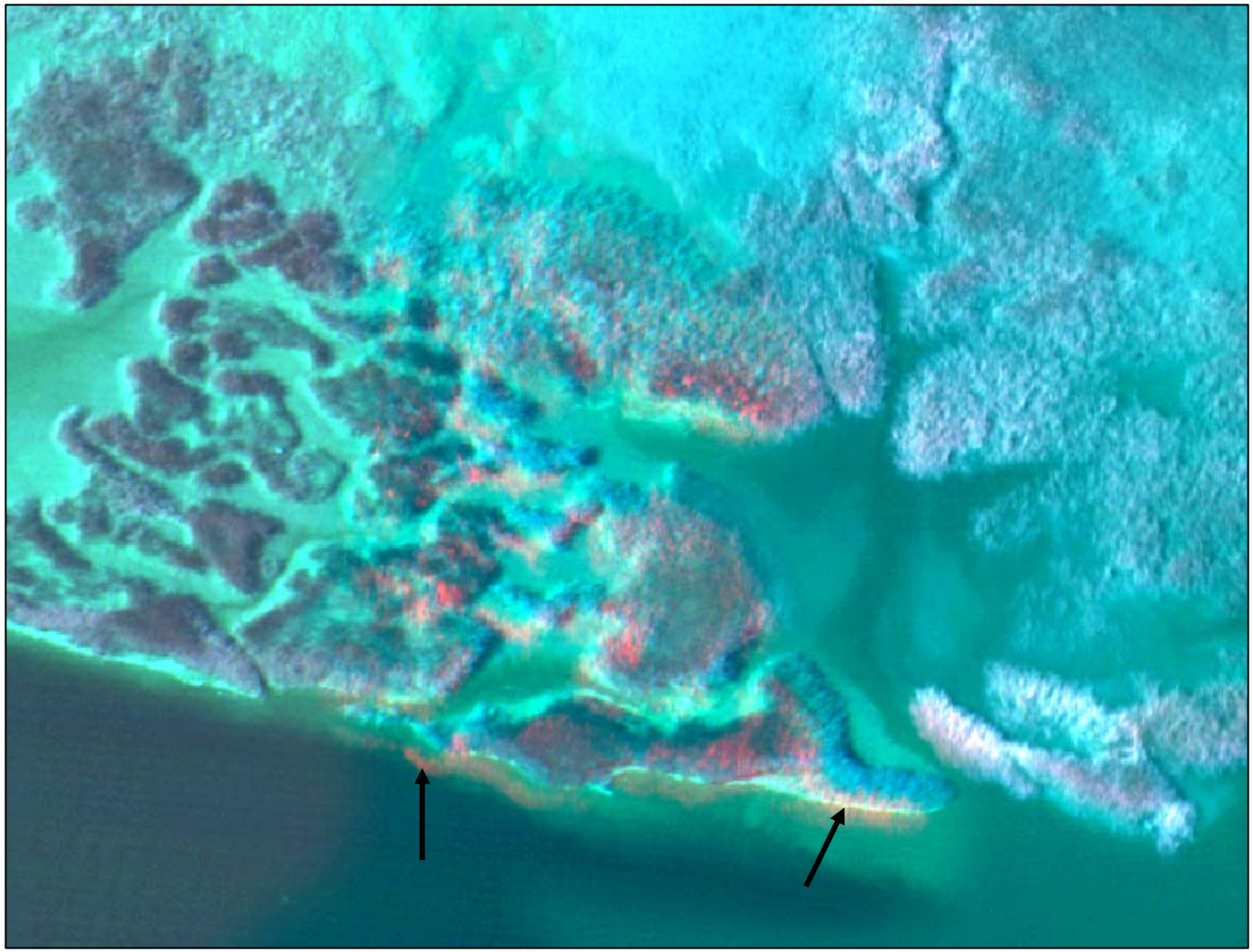
A YES response on this question will send the image to the rejected bin.

Question 6 – Band offsets



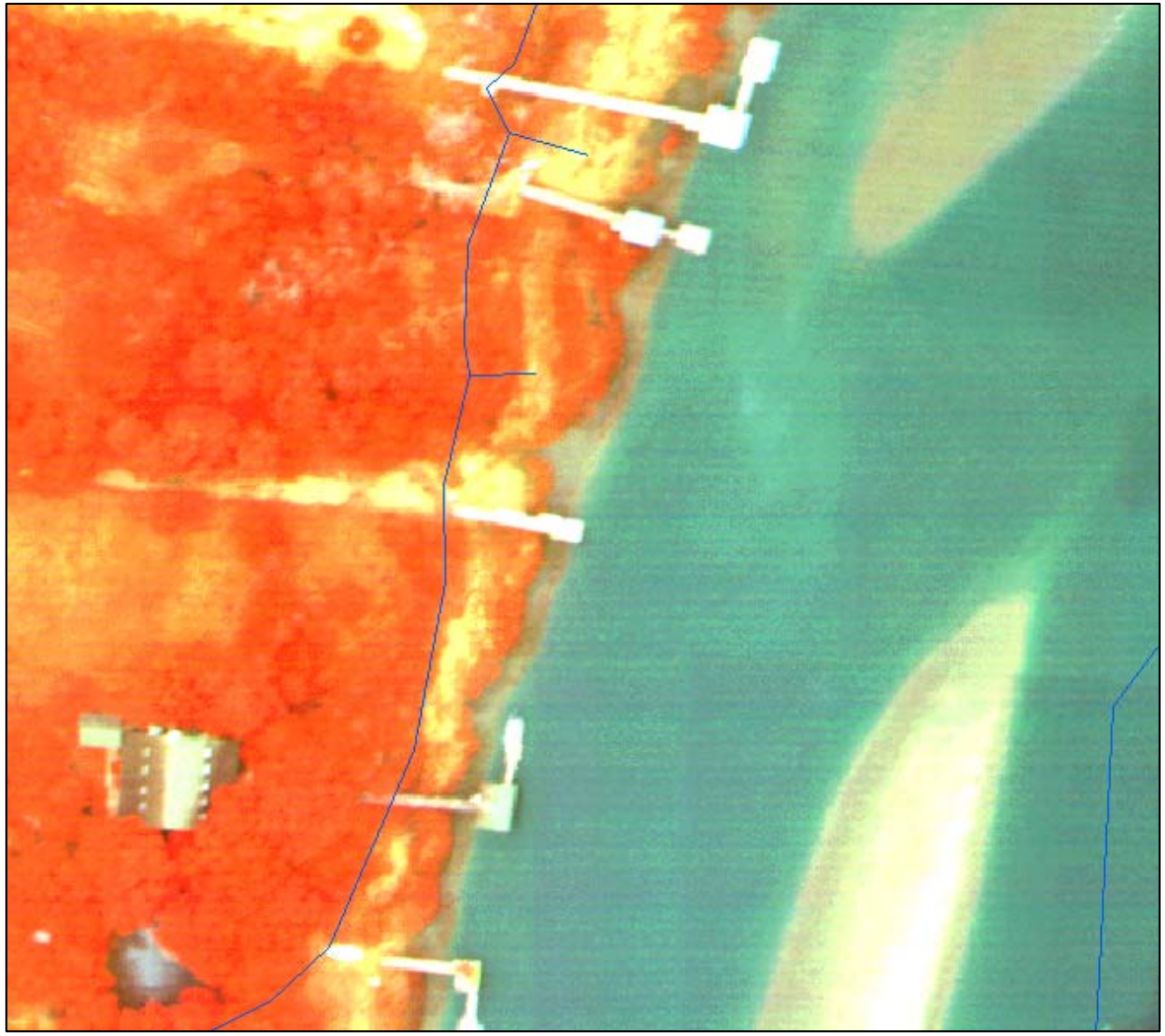
Serious band offset issues in the intertidal area. This would be a cause for rejection

Question 6 – Band offsets



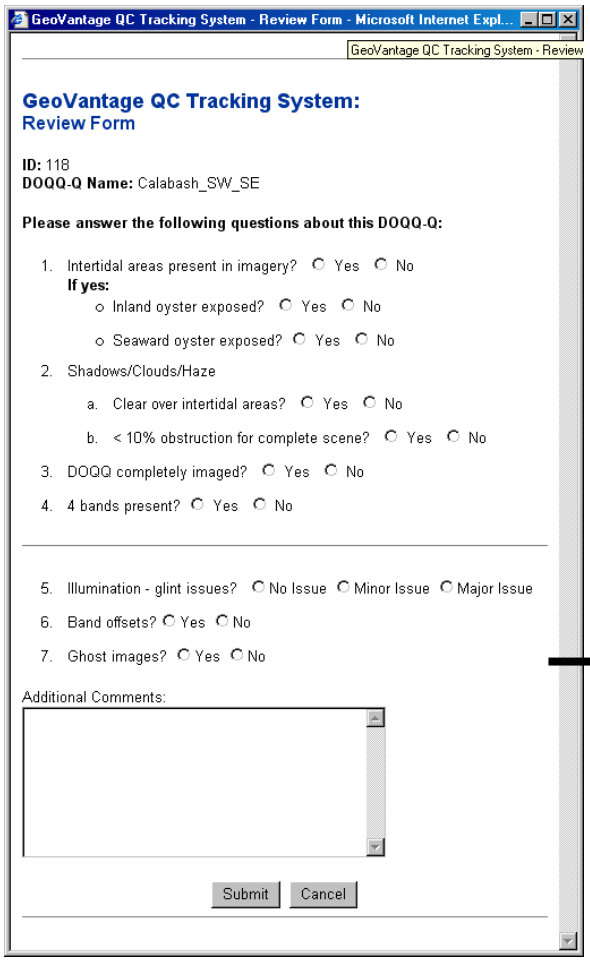
Band offsets in marsh

Question 6 – Band Offsets



Look at the water and distinct stripping is apparent in the image – Although there is no specific category this fits nicely into, issues like this should cause the image to be rejected – score this as major issue (3), drop a point, and explain in the comments section.

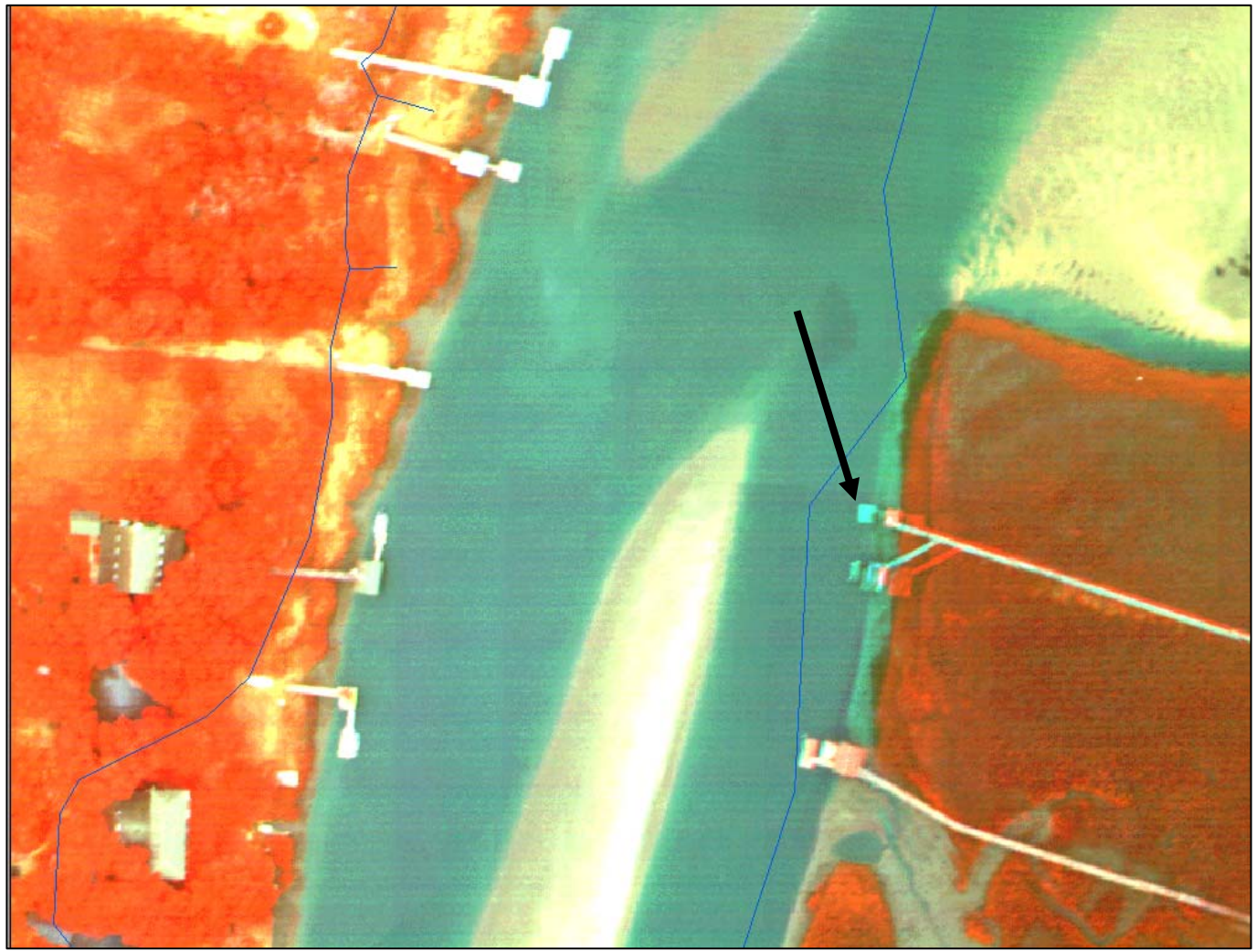
Review Form Question 7



7. Ghost Images – Y/N

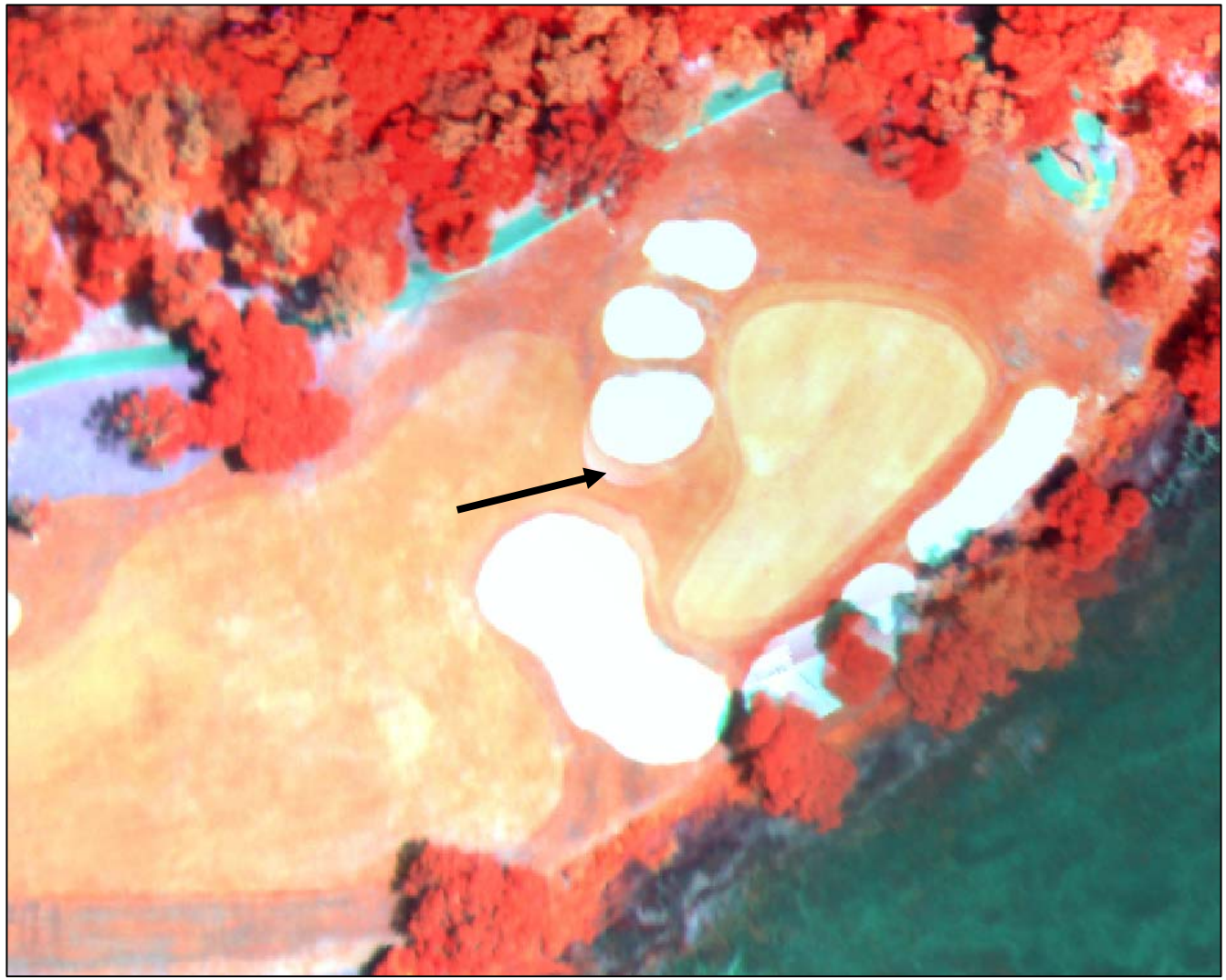
As you review the image take a look at docks and piers and sand traps in golf courses for this anomaly. If you see any occurrences record a YES in this field and drop a point with a descriptor.
This will be reviewed and a judgment will be made as to the significance of the anomaly.

Question 7 – Ghost Images



Black arrow points to “ghost image” – issues like this should be recorded with a point dropped and attributed as image quality issue with a short descriptor.

Question 7 – Ghost Images



Slight doubling of middle sand trap

Conclusions

After completing your review, submit the review form.

Don’t hesitate to contact Mark x1264 or Bill x1299 if you have any questions about what you’re looking at. Also share your observations with your fellow reviewers. In general, be conservative. If something looks slightly suspicious reject the image. This will flag it for a second detailed review and final determination.

Please note and record how long it takes to conduct a review for a DOQQQ and also note any problems in the process. These will be used to improve it for the remaining 2003 deliveries and those expected in 2004.

Thank you again for your help with this effort!