

SRIPP EIS April 21, 2009
Scoping Meeting Minutes

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SRIPP EIS SCOPING MEETING

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April 21, 2009

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Wallops Island, Virginia

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TAYLOE ASSOCIATES, INC.

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Telephone: (757) 461-1984

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Norfolk, Virginia

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6:30 through 7:30 p.m.

1 Presentations by:

2

3 Keith Koehler, Public Affairs Office

4 Dr. John Campbell, NASA Wallops Flight Facility

5 Director

6 Caroline Massey, Assistant Director of

7 Management Operations for NASA Wallops

8 Paul Bull, Shoreline Restoration Project Manager

9 Josh Bundick, NASA Wallops Environmental Office

10 Dr. David King, U.S. Army Corps of Engineers

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13 Also present:

14 Tracy Hand, RPR, meeting recorder

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7:30 through 8:00 p.m.

1 MR. KOEHLER: For the next 30 minutes, we
2 will open up the meeting for questions. For the sake
3 of time, please only ask one question at a time. If
4 you have more questions, you may ask them once other
5 members of the audience have had an adequate
6 opportunity to speak, and questions and responses will
7 be limited to three minutes or less.

8 So we can begin that. Just raise your
9 hand and I'll call on you. Any questions?

10 SPEAKER: What's the level
11 of protection are you looking for, hundred-year storm
12 or elevation wise?

13 DR. KING: The modeling that I have done
14 can't answer that question precisely. It can come
15 close. The beach fill by itself that I have designed,
16 I have looked at a whole lot of alternatives, and the
17 criteria was that the beach fill alone could withstand
18 the impact of what we looked at from the historical
19 record is the equivalent of a 30-year storm; however,
20 the project itself consists of both the beach fill,
21 the sand itself, and the seawall.

22 If it's bigger than a 30- to 40-year
23 storm, then it's going to expose the seawall. But
24 what the concept of what I have been modeling is that
25 we're changing the seawall from what is currently the

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1 only line of defense that we have on the island to the
2 last line of defense, and this will bring it up to --
3 I suspect if I say a number here, it's going to get
4 quoted everywhere, so I can say maybe (whispering),
5 but, yes, something significantly over 30-year storm.

6 MR. KOEHLER: Okay. Next question.

7 SPEAKER: I don't quite
8 understand the purpose of building a groin that lets
9 the sand through. To me that's like building a leaky
10 boat.

11 I mean, the purpose of a groin is to stop
12 the sand, and the purpose of the boat is to keep the
13 water out. You know, how do you determine how much
14 you're going to allow to go through? And, you know,
15 seems like to me it's going to be awful hard to
16 fine-tune that so that you're not creating a much
17 worse problem south of you with this groin.

18 DR. KING: You can certainly build an
19 impermeable groin. You can put a wall out there that
20 will survive for at least a decade or two that will go
21 out and basically stop the sand coming through.

22 But by primarily building a short groin
23 or building a low groin, you can allow sand to pass
24 through that groin.

25 The idea is that we know what the erosion

1 rate on Assawoman Island is now. We want the model
2 that we come up with that we recommend to pass more
3 sand than is passing the south end of Wallops onto
4 Assawoman Island now so that there are no -- we're not
5 exacerbating the erosion.

6 The idea of the groin is to hold a
7 certain percentage of the sand that we've got so that
8 we don't have massive amounts of sand dumping onto the
9 north end of Assawoman Island because the beach fill
10 is going to be sticking out on Wallops Island. Now,
11 there's going to be a substantial offset in the beach,
12 and the idea is to hold most of that sand.

13 And this is primarily a question of
14 economics. We could build the thing without a groin,
15 but we would have to end up putting a whole lot more
16 sand on Wallops Island because a lot more is going to
17 spill onto Assawoman; it's going to leak out the ends.

18 And to answer your question, for several
19 reasons, designing the groin that does exactly what we
20 want to do, we don't have that technology right now.
21 We can come pretty close, but that's what the
22 monitoring program is. If we're saying, gee, you
23 know, not enough sand is bypassing, that will cause
24 some problems on Assawoman Island.

25 And the monitoring is not just on

1 Wallops. The monitoring is on Wallops and Assawoman,
2 and, frankly, I would like to see additional modeling
3 on the -- excuse me, initial -- additional monitoring
4 on the south end of Assateague Island just to make
5 sure we understand what's happening in all these
6 locations and we can be able to see that, okay, now we
7 have a clear picture of what's going on.

8 When we have a renourishment, it may be
9 that we need to put sand on the north end of Assawoman
10 Island. We don't expect that right now, but that is
11 certainly one of the contingencies that we can deal
12 with if this groin doesn't allow enough sand to pass.

13 That doesn't seem likely from looking at
14 my modeling, but it's one of the contingencies we can
15 deal with.

16 MS. MASSEY: One supplemental comment on
17 the economics situation: When NASA is working with
18 the Corps, we have to pick the most efficient and
19 effective model. I mean, you know, we are spending
20 the taxpayers' dollars.

21 So this is all -- the most important part
22 of this project and the most expensive part of this
23 project is the beach fill. And we're certainly not
24 going to spend all that money to introduce all this
25 sand into the system and let it just erode at the same

1 rate it is eroding today.

2 So you're right, the challenge is in the
3 design and, also, the monitoring to get that sand
4 retention structure, whatever it ultimately is.

5 But NASA would find it almost impossible
6 to do this project without some type of sand retention
7 structure because, otherwise, our renourishment cycle
8 would be every two years, and that's cost prohibitive;
9 we couldn't possibly afford that.

10 MR. KOEHLER: Yes.

11 SPEAKER: Caroline, are you
12 going to then reserve the capability to modify the
13 design of the groin over a period of years; in other
14 words, go back and decide to change it if, in fact, it
15 appears that there's going to be sand required on
16 Assawoman and that you are losing too much off your
17 beach? In that situation, would you go back and
18 reserve the capability of going back and making it
19 less pervious?

20 MS. MASSEY: Well, Dr. King or Paul will
21 have to comment on technically how we would do that,
22 but the discussion we have had is, as part of the
23 long-term monitoring program, there will be several
24 alternatives that we could select based on either the
25 storms. You know, if we had an unusually high period

1 of storms or an unusually low period of storms, it
2 will be the long-term monitoring and the effects that
3 we see that will drive the types of mitigation
4 measures that we will report. I mean, and we will
5 have a variety of them.

6 Technically I can't speak to how the
7 groin could be modified. I mean, it could be taken
8 out I guess would be the worst case.

9 MR. BULL: What I asked Josh to do is put
10 the cross section of our beach again that we typically
11 would do.

12 Dr. King talked a little bit about the
13 groin. The idea behind the project is three different
14 phases. We have a first element is going to be
15 extending the seawall south.

16 Second element is probably just the beach
17 fill, to put in targeted beach fill to replace this
18 volume of sand.

19 The third element would be the final
20 beach fill, which will put in the target fill and the
21 fill that would be left to go up and down the beach as
22 it pleases.

23 The groin will be designed and built
24 during that third phase, when you're putting the sand
25 on the beach so you know economically how much sand

1 you are going to put on the beach so you know how to
2 design a groin that allows -- that basically comes
3 out, right now we're thinking 200 feet. This is in
4 meters, right here.

5 This sand here is the sand that's subject
6 to go north or south. So the idea behind the groin is
7 to retain your target volume at all times the best you
8 can. And the way we are phrasing it, we hope we've
9 left ourselves enough wiggle room to the third phase,
10 which is we are not building the groin until the end
11 after we understand how much funding we have, what the
12 bids are coming back, so we put in the last two
13 elements of the fill and the groin at the same time,
14 so we don't put in too little sand and too much of a
15 groin.

16 So the idea again is to put a groin in
17 that retains the target fill, allows the sand that's
18 basically sacrificed.

19 MR. KOEHLER: Thank you. Yes.

20 SPEAKER: Have you
21 considered putting any vegetation on the beach to help
22 stabilize the sand, keep it from blowing away?

23 MS. MASSEY: We have done that. We also
24 have a seawall there.

25 DR. KING: That's certainly a component

1 of this. It is not high on my list of viable
2 alternatives. Perhaps in places.

3 The problem is that most of this fill you
4 are not going to see. Most of the fill is actually
5 under water, and it's building the -- when most people
6 think of a beach, they think of the dry beach, but the
7 beach really extends out to what is the conceptual
8 depth of closure.

9 And on the right-hand panel there, that
10 horizontal line in the middle is sea level, and you
11 can see how much the fill is above water and below
12 water.

13 And, yes, to help stabilize the dune, you
14 can plant vegetation. It's a good idea. My concern
15 is that this isn't a design that has lots of extra
16 room in it, and like I'm saying, every -- on the order
17 of every 30 years there's going to be major
18 destruction to this whole beach. And so planting
19 vegetation there is not going to protect this.

20 But, yes, over the short-term, if we are
21 lucky and we hit long periods where we don't have lots
22 of storms, then, yes, planting high in the beach makes
23 sense.

24 And it will help hold some of the sand,
25 but most plantings occur up in the dunes and not

1 necessarily on the seaward phase of the -- seaward
2 most dune.

3 And even though we are putting a lot of
4 sand down here, we don't have, you know, several rows
5 of dunes there. If we were putting that much out,
6 yeah, certainly stabilizing that area would be very
7 effective, but we're not putting enough out there --
8 we can't afford it -- to really protect stuff in the
9 real long-term. We expect this dune to get at least
10 portions of it attacked on occasion during big storms.

11 MR. KOEHLER: Thank you. Okay.

12 SPEAKER: Is the beach
13 monitoring program going to be confined solely to
14 Assawoman, or are you going to look at the impacts to
15 the south as well, Metompkin?

16 DR. KING: The monitoring program that
17 I'm recommending will, for at least the first few
18 years, have a wave measuring device associated with
19 it. Those are fairly expensive, and I don't expect
20 that we would need that kind of information for the
21 50-year lifetime of this project. But for the first
22 few years it would include that.

23 It would include beach profiling at some
24 level, probably more than once a year, of just going
25 out and taking cross-sections, if you will, of what

1 the profile is out to depth of closure. And that
2 should be primarily confined to Wallops Island.

3 The third component is to just measure
4 the shoreline. The standard ways to do that now are
5 you just get a four-wheeler with a GPS unit on it,
6 logger on the back, and somebody gets the very
7 enjoyable task of driving right at the edge of the
8 waterline.

9 And I would like to see that on Wallops
10 Island. I would like to see that for the length of
11 Assawoman Island. I would also like to see that on
12 the Fishing Point and in Tom's Cove area of Assateague
13 Island. And that, again, would be once, maybe twice,
14 maybe three times a year.

15 MR. BUNDICK: And, actually, at this
16 point we are very early in the discussion, but, you
17 know, there are certainly opportunities we recognize
18 to work with academia, the Marine Science Consortium,
19 some of the local -- LTER, if that would be the case,
20 to maximize the opportunities for reaching out from
21 our immediate project site.

22 MR. KOEHLER: Yes.

23 SPEAKER: The models that
24 you-all have run to measure this 30-year storm, give
25 or take a little bit, is that based on a continuation

1 of historical data and phenomena, or does it
2 acknowledge the impacts of climate change and, if so,
3 how?

4 DR. KING: What we have based our design
5 on is the historical data set. And, yes, there's lots
6 of discussion in the literature that we are coming
7 into a period that is stormier than there has been in
8 the past. It's hard to address that to say just how
9 much stormier we expect it to be.

10 We have good data going back for
11 nor'easters for about 60 years, back to about 1950.
12 We have good data on what their magnitude is, how --
13 what kind of waves, what kind of water levels they
14 produce.

15 We have good data on hurricanes back for
16 about a hundred and fifty years. Those two types of
17 storms were used to look at these various profiles
18 that I said, okay, you know, what does this suite of
19 historical storms do to this profile? What does it do
20 to this profile?

21 And that's the reason that we rejected
22 some of the smaller fills, saying that this doesn't
23 provide the level of protection that we need.

24 But the renourishment that we are
25 including, we do include a component of renourishment

1 that allows for sea level rise, that we have projected
2 sea level rise in this area. And so the amount of
3 fill that we're putting back on the beach every
4 five years or so, we're adding in incremental amounts
5 to that to say that we don't want to match what the
6 profile should be relative to sea level today but what
7 it's going to be at each interval into the future.

8 But, no, that's a very valid point that
9 our data set that we're modeling against may not be
10 the best one we can use; however, it's very unclear
11 what the best one should be.

12 MR. KOEHLER: Next question. Yes.

13 SPEAKER: Paul, I had a
14 question here on your summary table of proposed action
15 and alternatives.

16 You have done a very nice job of telling
17 us why the alternatives that you did not consider were
18 discarded, but you haven't done anything to explain
19 why you chose the preferred alternative one and what
20 you thought the other alternatives, why they were not
21 sufficient or why they were less desired for you. And
22 I would hope that you would do that at some time
23 during your presentation that you put on your website.

24 MR. BULL: I will about the preferred
25 alternative. The preferred alternative has the right

1 combination of economic, what we can afford, and what
2 it protects, the level of protection it provides.

3 It's just in the engineering field,
4 that's first thing you look for, cost benefit
5 analysis. Unfortunately in engineering as well,
6 everything is not cut and dry engineering. What makes
7 the most sense when you sit down with a calculator and
8 pen and pencil is not what you have to budget for.

9 So Number 1 is combination of what we
10 want to do and the budget we have, which has the best
11 mix of those two features.

12 SPEAKER: Really what you
13 are saying then is that some of the features of the
14 other alternatives may, in fact, provide better
15 protection for you over the long-term.

16 MR. BULL: Not exactly. For instance,
17 some of the bottom alternatives don't fill the beach
18 the entire distance. That doesn't appear to be --
19 while it may cost less, does not appear to be the
20 smartest thing technically to do.

21 DR. KING: It doesn't provide the level
22 of protection that we need.

23 MS. MASSEY: This is not the lowest cost
24 option. It is probably about the mid range, but it is
25 that combination of the factors and the level.

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1 We could spend more, but the level of
2 protection providing us did not go up commensurate
3 with the budget. I mean, we have a table of, gosh,
4 how many options? I think hundreds. And this was the
5 one that any improvement major money more was
6 negligible in the amount of guarantee it would buy us.

7 MR. KOEHLER: Okay. Next question. In
8 the back. Go ahead.

9 SPEAKER: Where are you
10 right now in terms of the federal funding? What's the
11 future in terms of your federal funding?

12 MS. MASSEY: Right now we have secured
13 funding for the -- I mean, obviously, you know, when
14 we say these things, I mean, the President approves
15 the federal budget. In fact, President Obama just
16 approved NASA's budget about a month ago.

17 So when I say we have funding for this,
18 it is all contingent on subsequently what Congress and
19 the President come to agreement on.

20 But the way NASA's process works is you
21 have to go in and advocate, like right now we are
22 getting ready to go get money for 2012 projects, and
23 so we actually -- we had some '09 funding, which,
24 because we wanted to invest the extra time in the
25 environmental planning when we moved to an EIS level

1 plan, we wanted to take the extra time because of the
2 impacts.

3 So we actually are going to have to defer
4 the funding that we were given in '09 to '10. We have
5 a committed level of funding in '10 that will probably
6 cover most of the first phase of the construction.

7 We have a commitment for the first phase
8 of the beach fill, and then, of course, we have to go
9 advocate -- you can see in the time line, the 2012 on
10 his slide, phase two construction, you see that time
11 frame there is 11 and 13.

12 So I can tell you for the Goddard Space
13 Flight Center, which we were part of, this is one of
14 their highest priority projects; it is also one of the
15 highest priority projects of NASA.

16 Every year NASA has about a hundred --
17 NASA as a whole, that includes Johnson, Kennedy,
18 everywhere, has about a hundred and eighty million
19 dollars that they divide up. They divide those
20 projects based on risks. This project rates one of
21 the highest within NASA because of the severe risk
22 that NASA's assets are that are driving us being able
23 to get the funding.

24 So I am very confident that we will get
25 that final phase of funding. It is mostly just a

1 timing issue because of how our congressional budget
2 goes.

3 MR. BULL: The design and construction
4 that we have laid out here follows construction. We
5 don't -- like Dr. King tried to get across in his
6 presentation, they have learned, you can't put a groin
7 out there and don't do beach fill.

8 So we are doing our first phase is
9 extending the seawall, drawing a proverbial line in
10 the sand, which potentially will do nothing else but
11 hold back the sea for so much time.

12 Phase II will be the first part of the
13 beach fill. And, again, Caroline said that funding is
14 already in place.

15 And Phase III, which we have a promise
16 for, but like Caroline says, is always up in the air
17 no matter -- the government is the government -- that
18 happens, again the last set of beach fill and then the
19 groins.

20 We don't do things that make bad sense
21 for the projects we are trying to talk about. We are
22 not trying to hurt the situation. So putting sand in
23 the system is one thing, but like Dr. King says, we
24 learned lessons about the groins and not putting sand
25 out there, so we are trying to phase the project so if

1 funding falls short, we are not left out there
2 hanging.

3 MS. MASSEY: We also are having a
4 discussion on the renourishment because that is a
5 fairly significant slug of money every five to
6 seven years as well.

7 NASA understands the technical reasons we
8 have to do that. We actually are going to be talking
9 to our partners, Navy MARS, because, actually, it is
10 protecting their assets.

11 NASA has made a commitment to fund the
12 first part of the project, and we are talking to them
13 about how we are going to make the commitment for
14 renourishment.

15 MR. KOEHLER: Thank you.

16 DR. KING: The way this is laid out in
17 Phase I and Phase II, that if the worst case scenario
18 comes through and you don't get the funding that we
19 expect every year, we've specifically looked at it,
20 okay, well, are we going to do any harm by leaving the
21 project partially done in this state.

22 And that's the reason that we have
23 developed doing it this way, that the first year
24 there's a fairly small amount of money available, and
25 it's just going to extend the seawall.

1 In the second year we don't expect to
2 have enough money to do the entire beach fill project,
3 so we're going to spend everything we can get the
4 second year on beach fill.

5 And then only when we've secured money
6 for the third year will we finish the beach fill and
7 put in the hard structures.

8 MR. KOEHLER: Thank you. I have one down
9 here. Go ahead.

10 SPEAKER: I would assume you
11 are aware there is an artificial reef out there off of
12 Blackfish Bank?

13 DR. KING: Yes.

14 SPEAKER: I just wanted to
15 make sure you are going to protect that?

16 MR. BUNDICK: Yes.

17 MR. BULL: Yes.

18 SPEAKER: We spent a lot of
19 effort making that, and we would hate to see it
20 destroyed in some way.

21 MR. BUNDICK: Absolutely. And that is,
22 again, part of the several different components of the
23 studies we are doing. We are talking to folks,
24 charter captains, people in Ocean City, Jersey when
25 they come down, figuring out where the primary areas

1 for the fishing. And, obviously, the artificial reefs
2 are number one on the list. We have an offshore -- I
3 like to drift for large flounders out there as well.

4 Again, we are trying to get the issues up
5 front so that when we are working with the Corps when
6 it comes time we can figure out what a dredge plan
7 might look like so we can avoid whatever those areas
8 might be.

9 Same thing would go if we uncover a ship
10 wreck or a pile of rocks we didn't know was out there,
11 the same thing would apply.

12 And, again, being the EIS and, again,
13 both shoals are given equal consideration, equal level
14 of analysis. Despite the economic one, they have an
15 economic benefit versus the other; they are both about
16 the same level of scrutiny.

17 MR. BULL: What we don't have, if you
18 have it, we could use the coordinates of the exact
19 reef.

20 SPEAKER: I have got them.

21 MR. BULL: I don't know that we have got
22 them.

23 MR. BUNDICK: What we have been provided
24 is what the VMRC makes publicly available as to where
25 those have been placed, but we would love to talk to

1 you about that.

2 MR. KOEHLER: Back in the back.

3 SPEAKER: I was wondering,
4 you mentioned that the reason that the groins have a
5 bad reputation is because they desert them, and so I
6 was wondering why the second choice of breakwaters was
7 not decided upon, why you chose the groin over the
8 breakwater specifically as you looked at it.

9 MR. BULL: Again, what we tried to get
10 across in that final presentation is the groins have a
11 reputation because they deserve them in the way they
12 build them, if you build a groin and they never did a
13 beach fill.

14 It is a project. One can't -- you can't
15 make a recipe with one ingredient; you need all three
16 to make the recipe. That's why the groins have a bad
17 reputation, because the people weren't treating it as
18 a project, say would put a groin in, not put sand in,
19 and that's why they have a bad reputation.

20 As far as breakwater versus a groin, they
21 do the same exact thing. They retain sand. They
22 don't pass any more sand or less sand, but you can
23 imagine from an economics standpoint building in the
24 open ocean versus building from land into the ocean.
25 That's a consideration for us from a project

1 standpoint.

2 MS. MASSEY: Significantly more expensive
3 to build breakwaters.

4 MR. BUNDICK: The alternatives, of
5 course, are numbered, and I guess maybe some of it is
6 misleading, alternative Number 1 is the preferred and
7 Number 6 is the worst.

8 Each one was given equal consideration,
9 you know, as far as which is actually selected at the
10 end of the process.

11 And just to kind of put it in perspective
12 in all things being equal, the groin component, as
13 proposed, could possibly cost around a million bucks,
14 whereas the detached breakwater could cost anywhere
15 from 7 to 8 million bucks. So, you know, some
16 economics in there.

17 MR. BULL: Do you want to talk any more
18 about the groin versus the breakwater?

19 MS. MASSEY: No.

20 MR. KOEHLER: We have time for one more
21 question, so go ahead.

22 SPEAKER: Josh, when you do
23 the studies on the Blackfish Bank Shoal, that's close
24 enough inshore to the southern tip of Assateague that
25 I hope you look at that very carefully. I don't know

1 how you are going to be able to evaluate a reduction
2 in wave energy that provides for the southern tip of
3 Assateague, but it is obviously significant because
4 it's there.

5 And I hope you weigh that very, very
6 carefully because reduction of that shoal could have a
7 major impact on Assateague.

8 MR. BUNDICK: Yes, sir, absolutely. And
9 I can sort of do what Paul did and let Dr. King
10 finish, but the project as currently scoped from the
11 environmental impact statement side is Dr. King down
12 in Vicksburg would essentially take the existing shoal
13 as is existing with the wave climates and figure out
14 what the baseline is and then compare it to what the
15 quantities for each alternative would be as removed
16 during the process and would then be able to quantify
17 those impacts into whether it be shoreline transport
18 or whatever effects that might have.

19 And you may want to speak a little more
20 about that.

21 DR. KING: Yeah, I will be specifically
22 addressing that question. I haven't done that model
23 effort yet, but that's pretty much the next thing I'm
24 doing when I head back to Vicksburg later this week.

25 SPEAKER: It would be quite

1 interesting to read that on your website when you do
2 that.

3 DR. KING: Okay. Yeah, basically, Josh
4 laid it out. I will be modeling what the sediment
5 transport is on the south end of Assateague Island now
6 and then going back, changing it to say, okay, we have
7 now taken the sand off of this shoal versus taking it
8 off of that shoal and how does that change how the
9 waves come in and how does that change the sediment
10 transport on the beach. Obviously, we are looking for
11 as minimal an impact that we can.

12 SPEAKER: The important
13 thing I think is after this project is done is to
14 compare what your evaluation of your models are to
15 what actually happens, and I think that's a very
16 important learning process and to have this well
17 documented and your evaluations of this before you go
18 into the project, have those down for the public so
19 that down the road we can look and say, are your
20 models any good or were they faulty.

21 MS. MASSEY: There is one supplemental
22 piece of information to I think the previous question
23 as well.

24 Paul spoke of this recipe, the
25 relationship between the different elements of this

1 project. And they are related, the beach fill, some
2 sand retention structure, and that.

3 What we also are factoring into that is
4 what effect any of those together have on the
5 renourishment cycle.

6 So I think it was the question back here,
7 well, what if you don't put anything in or you do
8 this. Unfortunately, that makes the renourishment
9 cycle to maintain the level of protection we need too
10 frequent for the economic analysis part, so I want to
11 throw that fourth component into the recipe because
12 when we make our final decision, it will be all of
13 those pieces together.

14 8:30 through 9:30 p.m. MR. KOEHLER: Thank you. Thank you for
15 the questions. We hope that the responses from our
16 team members have fostered a better understanding of
17 the proposed project and the EIS.

18 Now, for the next hour we will open up
19 the floor for public comment. These comments will be
20 entered into the EIS administrative record and will be
21 addressed in the EIS.

22 For those speakers that pre-registered,
23 I'll call upon you first in the order that you
24 registered. For those who did not register who would
25 still like to speak after we go through this list --

1 we have nine folks that have signed up -- please raise
2 your hand once they have finished, and we will get to
3 your questions and answers.

4 Again, as before, please limit the
5 questions and answers to three minutes each.

6 MS. SILBERT: For logistics sakes, if you
7 are speaking, we are keeping a time on this. At
8 two minutes you will be given the yellow card. When
9 your time is up, you will be given the red card. I
10 tried that before but it didn't seem to work, so I
11 will try it again.

12 MR. KOEHLER: I'm sorry, we are not
13 providing answers this time; we are just listening to
14 you, just listening to your formal comments. This is
15 where you help us out.

16 So Steve Parker is up first.

17 MR. PARKER: My name is Steve Parker. I
18 am director of The Nature Conservancy's Virginia Coast
19 Reserve. Our mission is to preserve plants, animals,
20 and natural communities that represent the diversity
21 of life on Earth by protecting the lands and waters
22 they need to survive.

23 The Conservancy has over one million
24 members and has protected over 119,000,000 acres
25 around the world. Working with public and private

1 partners for more than four decades here in Virginia's
2 Eastern Shore, we have protected 17 of the 18 islands,
3 14 of which totaling 18,000 acres, the Conservancy
4 owns and manages as preserves. These islands are
5 located south of Wallops.

6 The Conservancy applauds NASA and its
7 public and private partners for its past, present, and
8 future accomplishments here. Your work is important
9 to education, to science, to the nation, and to our
10 local community, where it provides much needed jobs
11 and other important benefits. We appreciate the
12 information provided so far. We are consulting with
13 coastal geologists and other experts as we continue to
14 learn and evaluate information before submitting our
15 written comments in May.

16 Our major concerns and questions relate
17 to the direct impacts of armoring, particularly the
18 proposed groin, and the increased risks these impacts
19 have to the existence of Conservancy and other islands
20 to the south.

21 Blocking the southward movement of sand
22 at Wallops threatens structural integrity of these
23 lands, as well as properties on the mainland. Without
24 the islands, all the wildlife that depends on these
25 beneficial barriers is threatened. Disturbing the

1 sand shoals should also be carefully evaluated.

2 The Conservancy, and I'm sure others,
3 will readily join with NASA to more thoroughly explore
4 the long-term opportunities offered by phase
5 relocation of some facilities to the mainland. The
6 10,000-foot launch safety hazard buffer is required
7 for some, but not all, operations. This buffer
8 encompasses significant mainland properties, where
9 public activities and uses will be restricted.

10 Working with private landowners can lead
11 to more equitable and fruitful solutions for NASA as
12 it adapts to barrier island migration in general and
13 storm events, storm waves and flooding in particular.

14 Given multiple likely impacts of climate
15 change in this region, and specifically on barrier
16 islands, this strategy will significantly reduce
17 infrastructure risks and costs in the future.

18 The Conservancy looks forward to
19 continuing to work with NASA in finding pragmatic,
20 science-based, cost effective solutions to NASA and
21 community needs, while protecting our conversation
22 lands and other valuable public and private properties
23 and resources.

24 MR. KOEHLER: Thank you. Mr. Art
25 Schwarzschild.

1 MR. SCHWARZSCHILD: I am a site director
2 and I work with the University of Virginia and our
3 long-term ecological research program. I am not a
4 coastal geologist, but I have been speaking with some
5 of our coastal geologists.

6 We have several concerns, and I would
7 like to address some of those issues right now if I
8 may. They sort of follow three different main focal
9 points. One would be down drift or downstream
10 transport of sediments in the stakeholders' water
11 downstream, the second would be talking about some
12 sediment supply issues, and, finally, the fact of sea
13 rise, which is real and measurable going on here on
14 our sea line.

15 So with our 20-year plus data records
16 that the LTER program has on the research that we have
17 been doing on the islands, we still don't exactly
18 understand what is going on with island movement and
19 sediment migration and sediment transport, so we are
20 wondering what studies you-all are basing your models
21 on, and we're hoping that you will continue to monitor
22 and reevaluate as you get better data, and, also,
23 perhaps have an outside advisory panel who can provide
24 some additional input and information about each of
25 these proposed plans.

1 I'm also curious myself about whether you
2 have some adaptive management. Seems like you have
3 addressed some of those concerns tonight, but as you
4 go about these programs, you might see that things are
5 not as you expected, and how do you address those
6 issues and do you have a budget to deal with those
7 sorts of contingencies, particularly if you have
8 stakeholder losses and compensation and mitigation
9 expenses. Those things can be very expensive.

10 And we are particularly concerned about
11 impacts to some of the down drift islands. For
12 instance, what happens to the town of Wachapreague if
13 we start to lose significant portions of Cedar Island
14 and then the barrier marshes behind those as a result
15 of changes in sediment transport processes?

16 Moving on to the sediment supply issues,
17 we are interested in the impacts of dredging, future
18 sources of material for your renourishment, and
19 long-term funding and maintenance of these issues.

20 And, finally, I'll talk about sea level
21 rise. Like I say, we know it is real. It is
22 happening; we are measuring it up to 4 millimeters per
23 year in parts of the seaside.

24 And so it seems to me in particular that
25 there's a limited time span for this project, what it

1 can do, and how long you can continue to do it into
2 the future.

3 And so we wonder about the potential for
4 proactive approach, considering relocation of some
5 assets, as Mr. Parker mentioned, thinking about the
6 short-term versus the long-term expenses of those
7 options, considering how much it will cost to
8 continually maintain what you are doing and what's
9 going to happen in the future. So thank you.

10 MR. KOEHLER: Thank you. Next up is
11 Grayson Chesser.

12 MR. CHESSER: My name is Grayson Chesser,
13 and I'm on the Accomack County Board of Supervisors.
14 I represent District 3, but I'm here as a private
15 citizen. My wife and I run a hunt club, and during
16 the winter I guide quite a bit right behind Wallops
17 Island. I'm 62, turned 62 Sunday, and thank you all
18 in advance for my present.

19 So my life pretty much parallels Wallops'
20 existence here on the shore, and I have seen, through
21 everything that has happened here, you know, from when
22 I was a small boy and we used to go on the south end
23 of Wallops, that's where everybody went, on through
24 everything that's been done there.

25 And I have to tell you what I've seen, I

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1 think Wallops has had a very negative impact on the
2 coastal area south of it.

3 Now, that's not to say I'm against what
4 you are doing. Lord knows I'm in favor of what you
5 are doing. My friends work at Wallops; my relatives
6 work at Wallops. We are putting a vast amount of
7 money in the research park with you. We want you to
8 be successful.

9 But I hope you realize that what you are
10 doing is only fighting a holding action. You know,
11 I've spent a big part of my life on the barrier
12 islands. I have read about them, studied them, and
13 lived to see a lot of it. I have lived through like
14 two dune cycles on Assawoman.

15 My personal rule has always been don't
16 put anything out there that you're not afraid to lose.
17 I can understand you operate by a little different
18 rules than I do. But it concerns me what will happen
19 if something bad happens. It concerns me what will
20 happen to the county because I am old enough to
21 remember what happened when the base closed, and all
22 of a sudden about every third or fourth one of my
23 classmates disappeared overnight, and businesses were
24 closing here. And that's why I want you to be
25 successful.

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1 I don't think this groin is the way to
2 go, I really don't. It worries me what will happen if
3 you run out of funding to keep your beach
4 replenishment. And we all know that government
5 funding is a fickle thing.

6 Wallops already sticks out much farther
7 than Assawoman, partly because of your shoreline
8 hardener. That makes you more vulnerable. The sea
9 level, since you-all have been here, since I have been
10 here, has risen about a foot. That means every high
11 tide is a foot higher now than it was when I was born
12 and when you-all came here.

13 I think any assets you have that can be
14 moved to the mainland need to be. I realize some of
15 them can't be. And I want you to protect them the
16 best way you can, and I'm willing for you to do it any
17 way you can, but I really believe you need to rethink
18 the groin. I don't think it's going to work, and I
19 think it can cause damage.

20 You know, our barrier islands here on the
21 Eastern Shore are some of the most unstable on the
22 East Coast, the most unstable, and, you know,
23 everything I've seen through my life agrees with that
24 statement.

25 And, you know, when you look at the slope

1 of your beach, the reason your beach is so steep is
2 because your hardened shoreline. I'm sure if you go
3 down to Assawoman, that beach is low and narrow.
4 Yours is like this.

5 The reasons yours is like this is because
6 it's been hardened. I understand why you hardened it;
7 you had to. But, you know, you have -- there's so
8 little that we know about these things that is scary,
9 but the things that I do know about I think that,
10 basically, you might as well be trying to stop a Tiger
11 tank with an M1. I don't think you are going to be
12 able to do it. All you are doing is fighting holding
13 action, and I pray you will incorporate into your
14 plans things for moving all assets that you can to the
15 mainland, doing everything you can to prepare for what
16 is coming, because it is coming.

17 If I had a choice between somebody giving
18 me a project of putting a man on the moon, stopping
19 the ocean, I would say give me the man on the moon.
20 You-all have done that, but I don't think you can do
21 this.

22 I think the only thing you can do is make
23 the best of the situation. I pray you will do it, not
24 just for your sake, for the entire country's sake, for
25 the county's sake, because we are depending on you to

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1 do the right thing, and to be successful. And, you
2 know, I want to help you any way I can. And I pray to
3 God that you will be successful.

4 MR. KOEHLER: Thank you. Mike Handforth.

5 MR. HANDFORTH: Mike Handforth with the
6 Charter Boat Association on Chincoteague.

7 One of our members came up with a
8 suggestion which I thought was something I should pass
9 along. For several years now we have been trying to
10 get some dredging done on what's called the VIP,
11 Virginia Inside Passage, which runs from the north end
12 of Wallops Island all the way down to Chesapeake Bay,
13 and we have been told at many meetings over the years
14 there's just no money; we are fighting a war and there
15 is no money available.

16 It looks like there is a little bucket of
17 money coming up here and maybe we could get some
18 action here on the VIP, do some dredging in the VIP
19 and not so much out in the ocean. Just like you to
20 consider that.

21 I mean, we have gone through our local
22 representatives, they have been to the state
23 representatives and all the way up the chain, and
24 there just is nothing available to do any VIP
25 dredging.

1 Wanda Thornton, who was one of our local
2 representatives here in Accomack County, and she is
3 very familiar with the dredging efforts that we have
4 been trying to get done, and she would be worth
5 talking to. You know, she could certainly give you
6 more information than I can.

7 MR. KOEHLER: Thank you. Next up is Dave
8 Wilson.

9 MR. WILSON: Thanks. I am Dave Wilson,
10 actually from Maryland. I'm the executive director of
11 the Maryland Coastal Bays Program, which basically
12 protects -- or attempts to protect the watershed of
13 Isle of Wight, Assawoman, and Chincoteague Bay in
14 Worcester County.

15 We're a National Estuary Program. We
16 work very, very closely with Senator Cardin's office
17 to not only get our estuary program funded, but also
18 to do conservation work in the barrier island system.

19 Judging from -- I know you have put a
20 shot of Assateague up there. When the -- in 1933 when
21 the hurricane hit and the seawall was not really a
22 seawall, but what happened with Assateague, the
23 northern end with the jetty, basically took the
24 eight -- the northern eight miles of Assateague and
25 moved it back several thousand feet.

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1 Our concern is that, you know, with the
2 proposed groin, we are going to have a little bit of
3 that, not just in Assawoman, but in Virginia as well,
4 so we hope you take that into consideration. We
5 certainly look forward to working with you on a lot of
6 these projects.

7 MR. KOEHLER: Thank you. David Burden.

8 MR. BURDEN: My name is David Burden.
9 I'm here with the Virginia Eastern Shorekeeper. And I
10 want to start by telling you-all I welcome the
11 continued presence and growth of NASA on the Eastern
12 Shore of Virginia. You guys are vital to the economy
13 for the entire Eastern Shore, and we encourage you-all
14 to keep doing the good work that you do here.

15 As a key player on the Shore, you surely
16 recognize that we are a community that is realized --
17 when we talk about economics, we are not just talking
18 about your dollars and cents bottom line.

19 It's irresponsible to talk about the
20 economics of your project in terms of how much you get
21 of what you want for how much money. There are
22 environmental costs and social costs to be considered
23 that are significant.

24 On the Eastern Shore, we are asking
25 residents to make decisions and some significant

1 sacrifices based on their impact on the greater
2 ecosystem and their neighbors.

3 As one of the most significant economic
4 forces in the region, as well as a world leader in the
5 scientific community, I think we should be able to
6 expect NASA to be a leader in this arena rather than a
7 proponent of compromise.

8 As you look at the impacts of this
9 project, you say you don't want to have -- you don't
10 want to negatively impact the erosion patterns of the
11 islands around you, and I'm wondering if you think
12 there's really such a thing as a positive impact on
13 the erosion patterns around you since, left to their
14 natural rate, there is a lot of erosion out here.

15 We tend to think of erosion as being a
16 bad thing, but, really, it's just bad because our
17 stuff is in the way of nature, and I would like to see
18 you minimize your impact in any direction of the
19 erosion patterns of the islands to the south of you.

20 Long-term my concern is how much we plan
21 to spend in order to continually take care of the
22 project that we know will be minimally effective in
23 order to preserve structures that were poorly placed
24 60 years ago. Why is this a better plan, other than
25 the bureaucratic complications mentioned earlier, than

1 over time properly placing your structures behind
2 rather than on the natural barrier?

3 While it's true that we cannot know for
4 certain what the exact implications of this are, we do
5 know there will be impacts. Based on our
6 understanding of our future, on our understanding of
7 the past, it's analogous to taking a look back at that
8 first Model T and planning for 20th century
9 transportation based on the previous hundred years of
10 horse and buggy transportation.

11 MR. KOEHLER: Thank you. Jim Rapp.

12 MR. RAPP: Jim Rapp. I am also from
13 Maryland. Two things I want to say: One, I work for
14 an organization called Delmarva Low Impact Tourism
15 Experiences, so our mission is protecting natural
16 resources so we can derive income from nature-based
17 and heritage-based tourism. So I appreciate what The
18 Nature Conservancy has done, protecting the Islands.

19 The bird nesting goes on, we are bringing
20 in a couple hundred people this weekend for the
21 birding festival. So there are also economics there.

22 So I agree with what a lot of earlier
23 folks said, particularly Mr. Chesser about looking at
24 the mainland, all the other issues we have.

25 But I'm also here as a family member of

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1 landowners. We have a house down there that my
2 grandfather built in 1974, and he moved down here to
3 go flounder fishing behind Cedar Island.

4 And it was mentioned briefly tonight,
5 somebody in the audience talked about the islands
6 further south of Assawoman. We still go down there as
7 a family to go fishing, to appreciate the birds, and
8 I'm just a little concerned about what may happen at
9 the northern end of those islands. It's an amazing
10 place for birds to raise their young, and those
11 flounder fishing areas are just world class.

12 Just keep those things in mind as well,
13 the recreation dollars that come with this that we may
14 lose potentially, and the impact further down the
15 chain. Thanks.

16 MR. KOEHLER: Thank you, Jim. Lou Hinds.

17 MR. HINDS: Thank you. I want to say
18 that official comments will come from my ecological
19 services division over in Gloucester. They asked me
20 to pass along their regrets that they couldn't be here
21 tonight. They said, Lou, you will be there? I said,
22 Yes. They said, Good, pass along our regrets.

23 First I want to say any of the comments I
24 say tonight may be subordinate to the official
25 comments coming from my agency; however, having said

1 that, I want to thank all those people that -- and the
2 Army Corps of Engineers for taking Assawoman into
3 consideration.

4 I'm the official wildlife services
5 manager that manages that island and the islands south
6 of them, Metompkin, and, also, we have land ownerships
7 on Cedar Island.

8 So we're concerned not only just with
9 Assawoman but all the islands south of that, and for
10 our partners, also. We have The Nature Conservancy
11 and the State Fish and Game and VMRC and all those
12 people, so we are concerned about our partners' real
13 estate also.

14 Thank you for being concerned about the
15 impacts on Assateague Island. We are concerned about
16 that, too, and the sand dredging and sand mining that
17 will take place offshore.

18 I think you will find from my agency, our
19 comments are going to be supportive of your work to
20 protect the facilities, but if we can, we speak from
21 the standpoint of wildlife. That's what we are about
22 and that's what we do, endangered species, Neotropical
23 migrants, that whole suite of species that our
24 government has charged my agency to manage for.

25 We are going to be looking at issues of

1 sand mining and those impacts to removing that sand
2 off the coast and how that impacts suites of species
3 like sea ducks, shore birds -- I'm trying to think of
4 that -- the seabirds, there's the word I'm looking
5 for -- that feed heavily in those areas.

6 So we will be looking at that and working
7 with Mineral Management Services and make sure that
8 that mining of sand out there is not going to
9 detrimentally impact those suites of birds. We are
10 going to be looking at those impacts south on
11 Assawoman.

12 And I will tell you, Assawoman is one of
13 our higher densities of the Piping Plover, so we are
14 hoping to work with you on it.

15 My point out of this whole thing is I
16 heard you say there was to be no negative impacts to
17 Assawoman Island. I would like to turn that around a
18 little bit and say let's have positive impacts to
19 Assawoman Island and all of the other islands south of
20 there.

21 Let's look at, whatever work we do,
22 whatever amount of money that the United States
23 government dumps into this, that it supports not only
24 NASA's mission but the mission of the Fish and
25 Wildlife Service. Let's have a positive beneficial

1 impact for wildlife.

2 And I have said this often enough, and
3 this will be my closing little topic: Prior to my
4 coming here, I worked very closely with NASA down at
5 the Merritt Island Space Center, and we had the
6 Merritt Island National Wildlife Refuge that was an
7 overlay of the NASA facility down there.

8 And when I would meet with the center
9 director, we would often talk about the relationship
10 between NASA and Fish and Wildlife Service and our
11 joint management of natural resources.

12 And we were very proud of the fact that
13 we could have such a heavy industrialized site, yet
14 have so many rare and endangered species thriving
15 there. It was because of that working relationship
16 between our two agencies that got us there.

17 So there was no detrimental impact.
18 There was actually a positive impact. And I think we
19 can get there with this project. But it will -- and I
20 think we all know -- it is going to cost more money.

21 So I don't think we should be afraid of
22 that, especially in this economic climate. People
23 throw around dollar figures of trillions of dollars
24 like it is pennies. You know, 3- or \$4 million more,
25 5- or \$10 million more, I think we can go back and we

1 can -- if we can show, prove that it would be a
2 positive impact for wildlife, wildlife that this
3 country has treaties with other countries to protect,
4 I think we can find the dollars. So that's my closing
5 statement.

6 MR. KOEHLER: Thank you. And last in the
7 registered group is C -- excuse me, I'm having trouble
8 reading it -- C. Seybolt?

9 MR. SEYBOLT: That's all right. I can't
10 read my own handwriting, either. Well, everyone calls
11 me Ace.

12 Dr. Campbell and other members of the
13 panel, my name is Calbert Ace Seybolt. I live in
14 Mappsville. I own about one and a half miles of
15 waterfront farms directly behind Assawoman Island.

16 And like everyone else, we appreciate the
17 money you bring into the county because I run a big
18 rental business.

19 But more importantly, my family owned
20 Assawoman Island from the 1920s until we sold it to
21 Fish and Wildlife around 1992, and we had an
22 arrangement with the Chesser family - he hunted it and
23 we paid taxes on it.

24 My brother and I kept residual rights on
25 Assawoman Island, which in legal parlance makes me an

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1 interested party, plus I own 1400 acres behind the
2 island.

3 I went to a hearing in Norfolk around
4 1990 when they were talking about the rip rap seawall,
5 and we were told that was the answer, and they said
6 groins and jetties don't work because they cause sand
7 shadow, I believe is the expression.

8 As a matter of fact, those groins now
9 litter Assawoman Island and drifted up onto our
10 mainland farms. So I've heard -- in the '90s I heard
11 the seawall was the answer. Now you're proposing
12 another answer.

13 During our ownership of 70-something
14 years, Assawoman Island, we have charts going back
15 thousands of feet, and it got progressively narrower.

16 As a matter of fact, it was 400 acres
17 less than even we thought it was when we sold it. If
18 you stand on Assawoman on the beach and you look
19 north, Wallops stands out like a sore thumb. And this
20 is really due to your hardening of the shoreline.
21 Everyone else's has moved back. Wallops has not.

22 You say you don't want to see the
23 Assawoman Island erosion accelerate, but the number
24 you have is an artificial number because it's faster
25 than it should be because of the sand shadow cast by

1 Wallops.

2 I just -- and I'm not a scientist, but as
3 an owner, I don't see how there's any way a 100-foot
4 by 500-foot groin will not affect Assawoman Island.
5 That's common sense 101.

6 And what happens -- I dealt with the
7 government. What happens when the inevitable cost
8 overruns, the budget crunch, and they say we will
9 delay the sand replenishment for a few years, and then
10 it gets lost in the shuffle?

11 You will have the groin out there causing
12 the exact damage that you told me back in 1991 groins
13 did and you were afraid they would cause.

14 I'm afraid your actions would eventually
15 lead to the breaking up of Assawoman Island and
16 exposing the mainland to the direct ocean. Thank you
17 very much.

18 MR. KOEHLER: Thank you. And now we'll
19 open it up to anyone else that would have comments to
20 make. Just raise your hand. Yes.

21 MS. BOETTCHER (phonetic): My name is Ruth
22 Boettcher, and I am with the Virginia Department of Game
23 and Inland Fisheries, but I'm speaking more as a
24 private citizen.

25 I think one thing -- and, you know, I

1 don't want to reiterate what everyone has already
2 said, but I think it's important that some sort of
3 threshold of failure is sort of established, saying,
4 okay, enough is enough, it's not working, it's time to
5 perhaps start moving the infrastructure further
6 inland. And I think that really should be pointed out
7 in the EIS. I think that's really critical.

8 MR. KOEHLER: Anyone else? Yes.

9 MR. MYERS: My name is Robert Myers. I'm
10 a resident down in Northampton County. I'm going with
11 Ms. Boettcher's comment and Mr. Burden's comment about
12 the structure.

13 I would think that with the project, it
14 would make economic sense to start looking at moving
15 those facilities that are not critical to your
16 operation inland. And I just have a Google Earth
17 picture of a UAV runway down in, what, less than a
18 hundred feet from the waterline. I mean, that
19 certainly was not a brilliant piece of engineering.

20 And I would think that you would start
21 thinking about moving some of these facilities. That
22 certainly could be used on the main runway up at the
23 airport.

24 I think you ought to start looking at the
25 facilities that are not absolutely essential to your

1 mission here and start looking at an inland area for
2 those facilities.

3 Those things that are absolutely
4 essential for your mission, fine, you have to keep
5 them here, but you better be prepared with a storm to
6 lose those.

7 So you need to evaluate just how
8 important those facilities are to maintain, because
9 you're not going to beat mother nature in the long
10 run. You're just doing a holding action. And I would
11 like to urge you to look at the cost benefit of that
12 movement of those facilities over a scheduled period
13 of time to an area where they will not be subject to
14 mother nature. Thank you.

15 MR. KOEHLER: Thank you. Anyone else?
16 Okay.

17 Well, this will conclude our public
18 comment portion of the Scoping Meeting. Over the next
19 six to nine months the project team will be preparing
20 the EIS. Announcements regarding the availability of
21 the draft and final EIS will be published in local
22 newspapers as they become available. Also, please
23 check the project EIS website on a regular basis; the
24 website will be continually updated with the most
25 current project information.

1 This concludes the public Scoping Meeting
2 of the Wallops Flight Facility Shoreline Restoration
3 and Infrastructure Protection Program EIS.

4 Again, on behalf of the entire project
5 team, we thank everyone for coming out tonight and
6 their interest in the project. Thank you.

7 (The proceedings concluded at 8:20 p.m.)

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SRIPP EIS April 21, 2009 Scoping Meeting
Sign-In Sheet

Shoreline Restoration and Infrastructure Protection Program Public Meeting

Sign-in Sheet /Tuesday April 21, 2009 6-9 p.m. Wallops Flight Facility Visitor Information Center

No.	Name (Please Print)	Affiliation
1	Steve Parker	The Nature Conservancy
2	ART SCHWARZSCHILD	OVA VCR-LTER
3	Crayson Chesser	Accomac Board of Supervisors district 3
4	Mike Handforth	Chincoteague Charter Boat Ass'n
5	Dave Wilson	MD Coastal Bays Program - National Estuary Program
6	DAVID BURDEN	VA Eastern Shorekeeper
7	Jim Rapp	DLITE
8	Lou Hinds	FWS.
9	C Seybott	Palm City
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Shoreline Restoration and Infrastructure Protection Program Public Meeting

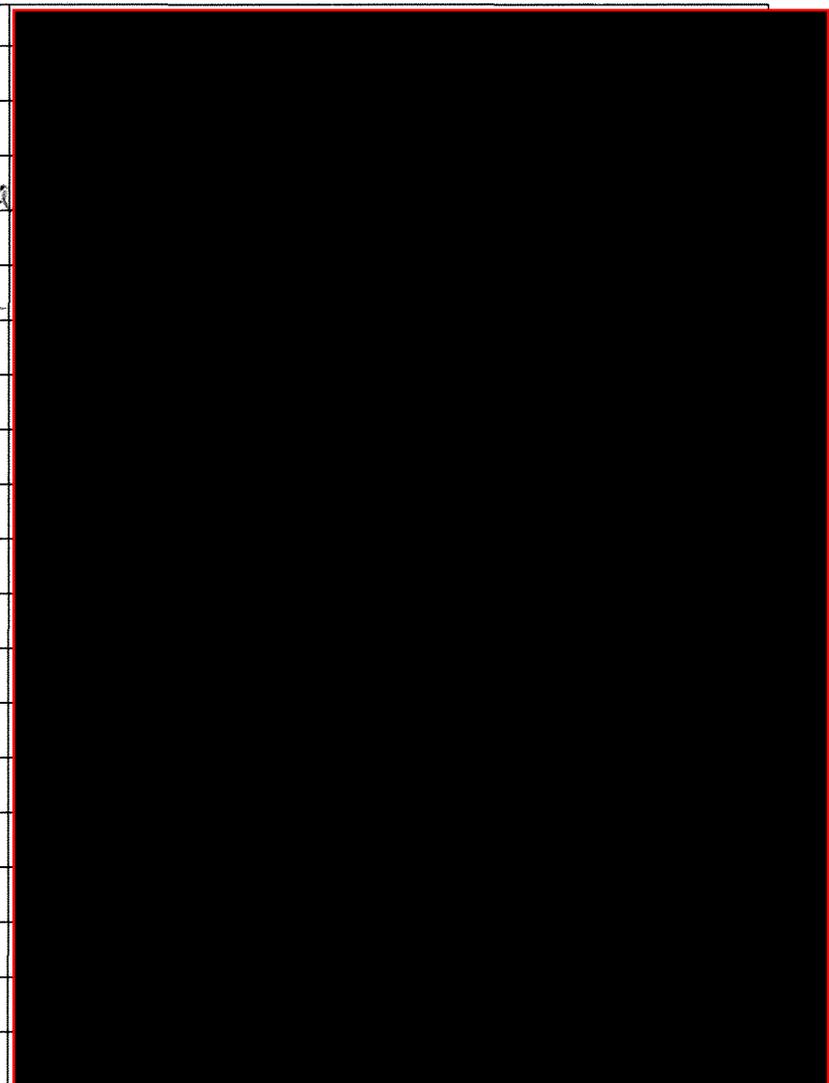
Sign-in Sheet /Tuesday April 21, 2009 6-9 p.m. Wallops Flight Facility Visitor Information Center

No.	Name (Please Print)	Affiliation
1	ART SCHWARZSCHIND	UVA VCR-LTER
2	CINDY KANE	HighCAMERA.COM
3	ROBERT MEYERS	NASAWORDEX @r.
4	Denard Spady	CTSES
5	Dean L. Floding	DCP
6	Grayson Chesser	Accomac Board of Supervisors ^{District 3}
7	Adrianna Ortiz	self
8	RON WALSH	self
9	Mike Handforth	Chimera Chart Boat Ass'n
10	Tonya Sorran	Allegheny College
11	JOHN BRUNDEGE	Allegheny College
12	Stephen Shuhayda	Allegheny College of MD
13	Michael Mohl	AKM
14		
15		
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17		
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19		

Shoreline Restoration and Infrastructure Protection Program Public Meeting

Sign-in Sheet /Tuesday April 21, 2009 6-9 p.m. Wallops Flight Facility Visitor Information Center

No.	Name (Please Print)	Affiliation
39	Joel Mitchell	Self
40	Danhof Vandryke	Self
41	Steve Parker	The Nature Conservancy
42	MARCUS THOMAS	SELF
43	Michael Fenster	Randolph-Macon College
44	Marianne Simko	self
45	Jim Rapp	DLITE
46	Dave Wilson	MDC Coastal Bays Program
47	Harry Whitlock	self
48	Marie Perrin	Allegany College of MD
49	John TASTAZENASHI	"
50	Dick Bittling	SCSC
51	Nancy G. Whittaker	Appraisal & marketing Assoc.
52		
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Shoreline Restoration and Infrastructure Protection Program Public Meeting

Sign-in Sheet /Tuesday April 21, 2009 6-9 p.m. Wallops Flight Facility Visitor Information Center

No.	Name (Please Print)	Affiliation
58	Kathy Phillips	Assateague Coastal Tr
59	Hank Badger	VMRC
60	Lou Hinds	U.S. Fish & Wildlife Service
61	Wesley Trunk	AcM
62	DAVID BURDEN	VA Eastern Shorekeeper
63	Calvin Seybold	personal
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SRIPP EIS Scoping Responses from
Federal Agencies

From: DeGeorgio.Alaina@epamail.epa.gov
To: [Bundick, Joshua A. \(WFF-2500\)](#)
Subject: SRIPP at Wallops Island Comments
Date: Monday, May 11, 2009 4:50:16 PM

Josh,

I was forwarded the information regarding the Shoreline Restoration and Infrastructure Protection Program at the NASA facility on Wallops Island, VA. I took a look at the preliminary documents enclosed in the notice to prepare an EIS.

EPA has the following comments on the proposed project and hopes to see information expanded upon in the complete draft.

1. Provide expanded purpose of project, specifically addressing plans for future facilities to be located on Wallops Island.
2. Describe and expand upon the plan for possible future groin and breakwater locations. Discuss the impacts of groins to surrounding islands and the long shore transportation of sand to these other areas.
3. Expand upon the description of plans for beach sand placement. What are the sand grain sizes from the potential borrow sites as well as the placement site? What is the distribution method for sand and where will it be placed on the beach? What is the sand grain content, with special attention to fine particles? Discuss the impacts to shoreline.
4. Provide detailed information on possible borrow sites. Discuss impacts to borrow sites. Describe the site identification process. How will borrowed materials be transported from the borrow site to on shore? How will materials be removed from the borrow site? What is the replenishment rate between operations at the potential borrow sites?
5. Provide analysis of cumulative impacts of all projects planned to occur on Wallops Island in the near future, including the SRIPP.
6. Provide further detail on possibility of relocating at risk infrastructure on Wallops Island.

Thank you for the opportunity to comment on the proposed action and alternatives.

-Alaina DeGeorgio

Alaina DeGeorgio
EPA Region III
1650 Arch St.
Philadelphia, PA
(215) 814-2741



United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240



Ms. Caroline Massey
National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Dear Ms. Massey:

Thank you for your January 21, 2009, letter requesting that the Minerals Management Service (MMS) become a cooperating agency during the National Environmental Policy Act (NEPA) process for the proposed Wallops Flight Facility Shoreline Restoration and Infrastructure Protection Program. The proposed action may include the implementation of a beach nourishment project along the length of Wallops Island using sand resources obtained from the adjacent Outer Continental Shelf (OCS).

The MMS welcomes the opportunity to participate in the proposed NEPA effort and agrees to serve as a cooperating agency since the MMS has jurisdiction over mineral leasing on the OCS. As a cooperating agency, the MMS expects to: participate and provide input in the NEPA process at the earliest possible time; assume, on the request of NASA, responsibility for developing information and preparing environmental analyses for which MMS has special expertise; make available staff support, at the lead agency's request, to enhance the interdisciplinary capability of NASA; provide comment on the EIS; and use our own funds to accomplish these responsibilities.

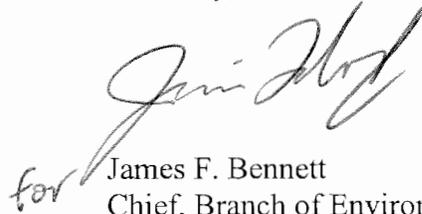
The MMS also recognizes the importance of initiating and participating in the required Endangered Species Act (ESA) Section 7 consultations; the Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat (EFH) consultation (Section 305); the National Historic Preservation Act Section (NHPA) 106 process; and the Coastal Zone Management Act (CZMA) Section 307 consistency process. As the lead federal agency for ESA Section 7 and the EFH consultations, NASA must notify the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) of its lead role and MMS' cooperating role. The MMS would expect NASA, as lead agency, to work with MMS to ensure existing or new biological opinions from FWS and NMFS are applicable to MMS' part of the Federal action and/or expect to jointly submit the ESA Section 7 and EFH assessments to FWS and NMFS. The MMS expects NASA be the lead federal agency for NHPA Section 106 and CZMA Section 307 compliance with the MMS acting in a consulting role.

It is MMS policy to negotiate a new agreement for each use of OCS material; therefore, this agreement only applies to the NEPA and environmental requirements for the initial construction of this project. The final NEPA document, as well as the outcome of other environmental requirements, may be used to establish stipulations of conditions in future negotiated agreements.



The MMS looks forward to working with NASA during this process. If you would like to discuss any of these items further, please contact Dirk Herkhof at 703-787-1735 or by e-mail at Dirk.Herkhof@mms.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Bennett", written over the printed name.

for James F. Bennett
Chief, Branch of Environmental Assessment

cc: Mr. Joshua Bundick
NASA, NEPA Program Manager

Ms. Renee Orr
Minerals Management Service, Leasing Division

Mr. Dirk Herkhof
Minerals Management Service, Environmental Division



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
 Chesapeake Bay Program Office
 410 Severn Ave., Suite 107A
 Annapolis, Maryland 21403

June 18, 2009

MEMORANDUM TO: Joshua A. Bundick
 NEPA Program Manager
 National Aeronautics and Space Administration
 Goddard Space Flight Center, Wallops Flight Facility
 Wallops Island, VA 2337-5099

FROM: John S. Nichols *JSN*

SUBJECT: Shoreline Restoration & Infrastructure Protection Program

National Marine Fisheries Service (NMFS) has reviewed the Description of the Proposed Action and Alternatives, dated March 2009, proceeding release of the Environmental Impacts Statement (EIS; in preparation) for the Shoreline Restoration and Infrastructure Protection Program at the NASA Wallops Island Flight Facility in Virginia.

NMFS provided Essential Fish Habitat (EFH) Conservation Recommendations in a May 14, 2007 memorandum, in response to your EFH Assessment for this proposal, dated April 17, 2007. Subsequent to the earlier consultation, this proposal has changed substantially, with identification of a preferred alternative (Alternative 1), and identification of two offshore sand borrow sites. Furthermore, more than two years have passed since submittal of the earlier EFH Assessment. We are, therefore, recommending that NASA re-initiate EFH Consultation, and provide NMFS with an appended EFH assessment, with revised description of project alternatives, and detailed analyses of potential impacts of each alternative on managed species and their EFH. The supplemental EFH assessment can be incorporated into the forthcoming EIS, provided it is clearly identified in a distinct section of the EIS. NMFS will provide final comments on this project following review of the EIS and supplemental EFH assessment.

We offer the following comments to supplement to our earlier conservation recommendations, and to assist you in preparation of the forthcoming EIS.

CONSERVATION OF OFFSHORE SHOALS

Offshore sand shoals, such as Blackfish Bank and the unnamed shoal proposed as borrow sites for this project, are irreplaceable geologic features of the near shore continental shelf. Shoals are dynamic features, which diversify the sea floor, producing a variety of substrate types and foraging opportunities for finfish and epibenthic fauna. Shoals serve as congregating areas for finfish, and provide guiding features for coastal migratory species. Consequently, the most important issue to NMFS in the review of this proposal is to ensure that proposed borrow actions do not result in direct adverse changes to the geomorphic characters of the shoals from which material will be removed, nor secondary changes to surrounding habitats.

There are two avenues that can be followed for developing measures to conserve geomorphic features of Blackfish Bank and the unnamed shoal; 1) minimizing the total amount of borrow removed from these shoals over the 50-year life of the project; and, 2) controlling the methods used for hopper dredging borrow from these shoals. Various options for conserving the offshore shoals are discussed below, with inclusion of verbal comments NMFS provided during the November 20, 2008 Stakeholder Meeting.



We recommend that your agency consult with the U.S. Army Corps of Engineers, Baltimore District, Planning Division (e.g., Chris Spaur, (410) 962-6134, or Christopher.C.Spaur@usace.army.mil) for information on hopper dredge sand borrow and post-borrow monitoring methods used on Great Gull Bank, an offshore shoal off the Maryland coast, specifically discussed the following document:

U.S. Army Corps of Engineers, Baltimore District. May 2007. Atlantic Coast of Maryland Shoreline Protection Project. Supplemental Environmental Impact Statement, General Reevaluation Study for Borrow Sources for 2010 – 2044.

We also recommend that your agency consult with Minerals Management Service to obtain a copy of the following document, in preparation, regarding physical environment investigations and modeling of the continental shelf off Maryland for dealing with borrow activities.

CSA International, Inc., Applied Coastal Research & Engineering, Inc., Barry A. Vittor & Associates, Inc., C.F. Bean, L.L.C., and Florida Institute of Technology. 2009. Analysis of Potential Biological and Physical Impacts of Dredging on Offshore Ridge and Shoal Features. *Prepared for:* U.S. Department of the Interior, Minerals Management Service, Leasing Division, Marine Minerals Branch, Herndon, VA. OCS Study MMS 2009.

Minimizing Total Borrow From Offshore Shoals

The greater the proportion of material removed from any given offshore shoal, the more likely that the shoal's long-term geomorphic integrity will be threatened. Any approach for removing sand from the subject shoals should be conservative in amount, and apportioned relative to their ability to maintain their existing geomorphic features.

To lessen impacts on the offshore shoals, the amount of material required over the 50-year life of this project can be minimized by constructing sand retention structures along the target shoreline. Alternative 1 would include a terminal groin to partially limit sand movement to the south. However, your agency should also closely investigate Alternative 2, which includes detached offshore breakwaters. Similar to the terminal groin, offshore breakwaters can be designed to permit continued movement of sand to shorelines south of the project area. More importantly, breakwaters assist in retaining material on the beach, and in minimizing seaward movement of beach sand during storms, where it can more easily enter the southerly long shore drift system and be lost to the project shoreline. The sand retention capability of Alternatives 1 & 2 should be modeled and compared to determine which would result in the lowest nourishment requirement of the target shoreline over the life of this project.

NMFS also recommends vegetative planting of nourishment material as a supplemental retention measure. Beach grass (*Ammophila*), and saltmeadow cordgrass (*Spartina patens*) are species frequently used for stabilizing beach nourishment areas. Plantings should be repeated, as necessary, to repair beach damaged by storm action.

Borrow impacts to the offshore shoals can also be lessened by using alternative near shore sand sources for nourishing the target beach. As part of the Long Term Assateague Island Restoration Project near Ocean City, Maryland, near shore shoals are periodically harvested using a small shallow-draft hopper dredge (the "Currituck"), to supplement borrow taken from offshore shoals. Material dredged from maintenance of the Chincoteague Inlet Federal Project, or borrow from near shore shoals such as Fishing Point, should be investigated as supplemental sand sources for this project. Structural and vegetative beach sand retention measures would add stability to finer-grain sand taken from near shore sources to nourish the target shoreline.

Controlling Hopper Dredging Sand Harvest Methods On Offshore Shoals

Borrow impacts to the offshore shoals can also be lessened by using constraints on where, and to what depth material is removed from each shoal. Enclosure 1 (*from: Atlantic Coast of Maryland Shoreline Protection Project SEIS, 2007*) provides two tables showing dredging guidelines and constraints proposed for harvesting individual offshore shoals along the Maryland coast to optimize for long-term geomorphic integrity maintenance; and, estimates on the total permissible proportion of material (5%) that could be safely removed from a given shoal to maintain its integrity.

Offshore shoals are dynamic features of the sea floor, tending to migrate in a southwesterly direction along the mid-Atlantic coast. The dynamics of a given shoal affects the character of adjacent seafloor habitats. A sand harvest protocol for Blackfish Banks and the unnamed shoal should be designed to maintain the existing dynamics of each shoal.

Borrow constraints needed to maintain shoal integrity will require a thorough knowledge of the depths and distribution of suitable materials on each of the target borrow sites, obtained through a repetitive core sampling regime. We also recommend periodic pre- and post-borrow monitoring of shoal geomorphic features, to ascertain that borrow methods are not damaging shoal integrity.

I look forward to continued coordination with your agency on this proposal, and the forthcoming EIS and appended EFH assessment. If you have any questions, please contact me at (410) 267-5675; or, John.Nichols@NOAA.GOV.

Table 5-6: Dredging guidelines and constraints for dredging individual offshore shoals to optimize for long-term geomorphic integrity maintenance.

	Dredging Guideline/Constraint	Reasons (1)
1	Avoid the crest	Maintain shallowest water wave-action processes which are likely important for long-term shoal maintenance (2); Maintain coarse-grained lag deposits in-place since these may serve to ensure crest stability (more wave-erosion resistant) (2);
2	Preferentially dredge sand from downdrift accreting (south*) (2) (3) or updrift eroding side (north**) (2)	Minimizing risk of interrupting sand recycling pattern/process
3	Dredge thin uniform thickness of material from a large area	Least disturbance to existing topography/geometry believed to offer least likelihood of substantial disturbance to physical processes that maintain shoal (3)(4)
4	Dredge no deeper than ambient seafloor depth (i.e., not below shoal)	To confine dredging to active portion of seafloor, and avoid creation of pits which could alter physical process patterns (3)(4)

- (1) Reasons more specific than maintaining geomorphologic integrity which is assumed to be of long-term importance for biota
 (2) Dr. Robert Nairn, Personal communication to Chris Spaur September 2004
 (3) Dr. Randy McBride, Personal communication to Chris Spaur for planning dredging of Great Gull Bank for Short-Term Restoration of Assateague Island, March 2001
 (4) Dr. Mark Byrnes, Personal communication to Chris Spaur April 2004

*Determined to be southerly based on Swift and Field (1981), McBride (personal communication), limited USACE monitoring conducted of nearby Great Gull Bank, and MGS monitoring work of Borrow Areas 2 and 3 conducted for this study.

**Assumed to be north based on MGS monitoring work of Borrow Areas 2 and 3 conducted for this study.

Table 5-5: Maximum volume of material permissible to dredge from individual offshore shoals meeting 5% environmental constraint.

	Weaver	Isle of Wight	A	B
Maximum volume (yd ³)	4,650,000	6,800,000	5,150,000	2,500,000



United States Department of the Interior
National Park Service
Assateague Island National Seashore
7206 National Seashore Lane
Berlin, Maryland 21811



May 8, 2009

Mr. Josh Bundick
250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Project
NASA Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337
wff_shoreline_eis@majordomo.gsfc.nasa.gov

Dear Mr. Bundick:

Assateague Island National Seashore (AINS), a unit of the National Park Service located in Virginia and Maryland, appreciates the opportunity to provide comments during the scoping process for the Shoreline Restoration and Infrastructure Protection Project Environmental Impact Statement. We support NASA's Wallops Flight Facility as an important part of our Eastern Shore community and hope that our comments will help NASA address its needs while minimizing potential adverse impacts to the Eastern Shore's valuable coastal and nearshore habitats and natural resources.

The southern portion of AINS is located 5 to 10 miles west of the two proposed dredging sites and 3 miles north of the proposed shoreline protection project. Congress established AINS to preserve the natural and recreational resources of Assateague Island, including the oceanic and bayside beaches that are maintained by natural coastal processes, portions of the surrounding waters of the Atlantic Ocean and Chincoteague Bay, and the living resources that depend on these aquatic and terrestrial habitats. Those living resources include sea turtles, marine mammals, shorebirds, sea birds that feed on offshore shoals, and fish¹ that utilize both offshore shoals and Chincoteague Bay for different life stages. The coastal processes that shape the island are controlled by regional factors, including sediment supply and sediment transport pathways, offshore and nearshore bathymetry, and wave direction, height, and energy.

Potential Impacts to Assateague Island National Seashore Resources

Recognizing that offshore shoals dissipate incoming wave energy, and thereby help to shelter shorelines from the erosive effects of large waves, AINS is concerned that the proposed dredging will significantly reduce the volume, height, and associated sheltering effect of the targeted shoals and ultimately impact shoreline conditions on Assateague Island.

Although meteorological forcing will impact Assateague Island's shoreline in unknown and variable natural ways, **we request that the EIS include any existing data and model results** that describe the current wave climate and any potential changes to incoming wave energy, particularly waves from the southeast and east, that would be expected to affect Assateague

¹ Vasslides, J.M. and Able, K.W., 2008. Importance of shoreface sand ridges as habitat for fishes off the northeast coast of the United States. *Fishery Bulletin* 106(1), pp. 93-107.

Island as a result of project-related dredging and associated changes to the offshore shoals. If data or models indicate that the Assateague Island shoreline would be affected by dredging the proposed shoals, **we request that the EIS fully describe the proposed dredging methods, and identify ways to minimize the potential adverse effects** on Assateague Island's shoreline.

AINS is also concerned that removal of such a large volume of either shoal, and especially of the closer Blackfish Bank, will impact the regional sediment budget and sediment transport pathways, specifically the sediment transport from the shoal and nearshore areas to Assateague Island, to the detriment of the island's shoreline, topography, natural coastal processes, and ability to keep pace with sea level rise. Several recent mapping and modeling studies^{2,3,4,5} have indicated that cross-shore transport is an important sediment pathway linking offshore shoals, shelf, and shorelines. We believe that a similar linkage may exist between southern Assateague Island and the offshore shoals proposed as dredging targets. Accordingly, **we request that the EIS describe the regional sediment transport pathways and evaluate potential changes to the sediment budget and transport pathways influencing Assateague Island that may result from project-related dredging.**

AINS is concerned that the proposed dredging of shoal habitat will also impact pelagic fish and birds that utilize both shoal areas and the oceanic and estuarine waters within the AINS boundary. Offshore shoals are known to be populated with benthic communities⁶ which in turn support a complex food web for fish,⁷ turtles, marine mammals, and pelagic seabirds. Studies off the Maryland and Virginia coastlines indicate that the majority of the species inhabiting the shoals and reference site habitats are seasonal residents, and suggest that pelagic fish are using habitats differently between day and night,⁸ such as moving between the shoal sides and the surrounding seafloor.

The EIS should assess how dredging will impact the shoal(s) habitat value for benthic and pelagic marine life, and for the communities that use these shoals as feeding grounds (including birds, marine mammals, and sea turtles). To minimize the loss of these important marine habitats, **we suggest that the EIS identify site-specific dredging methods that protect existing habitat values.** This could include seasonal restrictions to avoid disturbance during

² Schwab, W.C., Thieler, E.R., Denny, J.F., Danforth, W.W., 2000. Seafloor Sediment Distribution Off Southern Long Island, New York: U.S. Geological Survey Open-File Report 00-243.

³ Schwab, W.C., Thieler, E.R., Allen, J.R., Foster, D.S., Swift, B.A., and Denny, J.F., 2000. Influence of inner-continental shelf geologic framework on the evolution and behavior of the barrier-island system between Fire Island Inlet and Shinnecock Inlet, Long Island, New York. *Journal of Coastal Research* 16(2) pp. 408-422.

⁴ Thieler, E.R., Brill, A.L., Cleary, W.J., Hobbs III, C.H., Gammisch, R.A., 1995. Geology of the Wrightsville Beach, North Carolina shoreface: Implications for the concept of shoreface profile of equilibrium. *Mar. Geol.* 126, 271-287.

⁵ Hayes, M.O., and Nairn, R.B., 2004. Natural Maintenance of Sand Ridges and Linear Shoals on the U.S. Gulf and Atlantic Continental Shelves and the Potential Impacts of Dredging. *Journal of Coastal Research* 20(1), pp. 138-148.

⁶ Diaz, R.J., G.R. Cutter Jr., and C.H. Hobbs III, 2004. Potential impacts of sand mining offshore of Maryland and Delaware: Part 2—biological considerations. *Journal of Coastal Research*, 20(1), pp. 61–69.

⁷ Vasslides, J.M. and Able, K.W., 2008.

⁸ H. Ward Slacum Jr., Ed Weber, William H. Burton, Roberto Llansó, Jon Vølstad, David Wong, and Jodi Dew, 2006. Comparisons between Marine Communities Residing on Sand Shoals and Uniform-Bottom Substrates in the Mid-Atlantic Bight. Minerals Management Service OCS Study MMS 2005-042, 151 p. Available online: <http://www.mms.gov/SandAndGravel/PDF/MMS2005-042/MMS2005-042FinalReport.pdf>

periods of peak biological activity, and dredging plans that retain critical aspects of shoal morphology, such as crest height.⁹

In light of the preceding and in the absence of additional information, **it is our recommendation that any future dredging avoid Blackfish Bank.** Due to its closer proximity to Assateague Island, Blackfish Bank should be left intact to minimize the potential impacts of dredging on park marine life, wave energy, and sediment transport reaching Assateague Island.

Resource Impacts of Sand Retention Structures: The Assateague Island Experience

Our experience with the adverse impacts of large shore-perpendicular sand retention structures on a downdrift island, and the spatial scope of the structures' effects, may help in visualizing the potential impacts that the proposed groin could have along the regional shoreline. The Ocean City Inlet jetties were built in 1934 at the northern (updrift) end of Assateague Island. According to the U.S. Army Corps of Engineers,¹⁰ this shore-perpendicular structure has "seriously affected" the northern 11 km (6.8 miles) of the island shoreline by preventing "a large portion of sand, which would otherwise have reached Assateague, from reaching the island." The U.S. Army Corps of Engineers estimated that between 1934 and 1998, the structure blocked or diverted 6.6 million m³ of sediment from Assateague Island, not including the volume of sediment lost due to natural erosional processes.

As described by the U.S. Army Corps of Engineers, the jetty-caused sediment disruption "has resulted in adverse physical, biological, and economic impacts to the area. The result is an island that is not being maintained in a natural condition and that lacks the geologic integrity of a healthy barrier island. A substantial portion of Assateague Island, which has always been known for its natural beauty, has also suffered significant aesthetic impacts. The island overwashes frequently, and...erosion has caused a loss of salt marshes, an infilling and reduction in size of Sinepuxent Bay, and a decrease of habitat diversity on the island...and has increased the vulnerability of mainland communities to storm damage. Due to the lack of an adequate sediment supply, it is expected that northern Assateague Island will continue to be degraded, and a breach will most likely occur on Assateague Island, which could cause additional inlets to form."¹¹

These significant impacts, with a near doubling of shoreline erosion rate¹² from 3 m/yr to over 5 m/yr, occurred even with a much higher net southward sediment transport rate (between 115,000 and 214,000 m³/yr)¹³ than exists along the relatively sediment-poor Virginia barrier islands downdrift of the proposed project site, where the erosion rate is already 5.5 m/yr on Assawoman Island.¹⁴

⁹ U.S. Army Corps of Engineers, 1998. "Ocean City, Maryland, and Vicinity Water Resources Study Final Integrated Feasibility Report and Environmental Impact Statement, Appendix D, Restoration of Assateague Island," Baltimore, Maryland.

¹⁰ U.S. Army Corps of Engineers, 1998.

¹¹ U.S. Army Corps of Engineers, 1998.

¹² U.S. Army Corps of Engineers, 1998.

¹³ Underwood, S.G., and Hiland, M.W., 1995. "Historical Development of Ocean City Inlet Ebb Shoal and Its Effect on Northern Assateague Island," U.S. Army Engineer Waterways Experiment Station, Coastal Engineering Research Center, Vicksburg, MS.

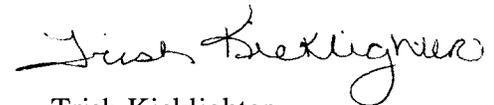
¹⁴ Morang, A., Williams, G.G., and Swann, J.W., 2006. Beach Erosion Mitigation and Sediment Management Alternatives at Wallops Island, VA. ERDC/CHL TR-06-21, Coastal and Hydraulics Laboratory, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 81p.

It should also be noted that efforts to mitigate the impacts of the jetty system on Assateague Island have been costly and difficult. The ongoing mitigation program has involved a 1.4 million cubic yard placement of beachfill to replace a portion of the sand lost over the previous six decades, and now requires twice-yearly sand bypassing for the foreseeable future to replicate the alongshore transport volume that would be expected under natural (non-jetty) conditions. It has also required an extensive monitoring and analysis program involving nearshore bathymetry, shoreline position and erosion rates, island topography, the establishment of threshold conditions for adaptive management, and regular interagency communications and coordination.

Based upon our experience mitigating the impacts of the Ocean City Inlet on Assateague Island, we respectfully suggest that NASA carefully evaluate all available options for Wallops Island infrastructure protection and seek to avoid those alternatives with the greatest potential for unintended consequences, particularly those alternatives involving the construction of large shore-perpendicular structures such as groins.

Thank you for the opportunity to provide comments and share our experiences. We support NASA in its efforts to improve the Eastern Shore community and to protect the valuable ecosystem and habitats that surround it, and we look forward to working with you throughout the planning process.

Sincerely,



Trish Kicklighter
Superintendent

cc: Lou Hinds, U.S. Fish & Wildlife Service - CNWR



DEPARTMENT OF THE ARMY
NORFOLK DISTRICT, CORPS OF ENGINEERS
FORT NORFOLK, 803 FRONT STREET
NORFOLK, VIRGINIA 23510-1096

REPLY TO
ATTENTION OF:

March 12, 2009

Eastern Virginia Regulatory Section

Goddard Space Flight Center
Ms. Caroline R. Massey
Assistant Director of Management Operations
Wallops Flight Facility
Wallop Island, VA 23337-5099

Re: WFF Shoreline Restoration and Infrastructure Protection Program

Dear Ms. Massey,

This is in reference to your letter of January 21, 2009 to Mr. J. Robert Hume, Chief, Regulatory Branch requesting Norfolk District Corps of Engineers participation as a Cooperating Agency in the preparation of an Environmental Impact Statement (EIS) for the WFF Shoreline Restoration and Infrastructure Protection Program project. In accordance with the National Environmental Policy Act (NEPA), the Norfolk District will be a Cooperating Agency in the preparation of documents. Mr. Robert Cole will be the contact for the District. Please forward to him any requests for participation, notices of meetings, requests for information, and written material to review.

He may be contacted at Norfolk District Corps of Engineers, Eastern Shore Field Office, 22545 Center Parkway, Accomac, VA 23301-1330, telephone 757.787.7567, or robert.h.cole@usace.army.mil.

Sincerely,

A handwritten signature in cursive script that reads "Nicholas L. Konchuba".

Nicholas L. Konchuba
Chief, Eastern Virginia
Regulatory Section



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chincoteague National Wildlife Refuge
8231 Beach Road, P.O. Box 62
Chincoteague Island, Virginia 23336

May 8, 2009

Mr. Joshua A. Bundick
Wallops Flight Facility NEPA Program Manager
NASA Goddard Space Flight Center
Wallops Flight Facility
Wallops Island VA 23337

Dear Mr. Bundick:

This letter offers comments related to NASA's public scoping process for the proposed Shoreline Restoration and Infrastructure Protection Program (SRIPP) at Wallops Island, Virginia. The U.S. Fish and Wildlife Service (Service) manages land immediately adjacent to and nearby Wallops Island including the Assawoman and Metompkin Units of the Chincoteague National Wildlife Refuge (NWR) and the Wallops Island NWR.

Assawoman Island is a 1,434 ac island situated within a seaside barrier island system stretching from Maryland to the southern tip of Virginia's Eastern Shore (Daisey 2006, USFWS 2008a). To the untrained eye, Assawoman appears as a 4.3 km stretch of sand, a small collection of sand dunes and shells with a few dozen acres of low-lying salt marsh (USFWS 1993; 2008a). In truth, Assawoman Island and its waters are home to five federally listed, one endangered species candidate, eight state listed, and seventeen USFWS Birds of Conservation Concern during breeding, wintering, and migration phases of life thus making Assawoman Island a vital piece of the barrier island ecosystem, an ecosystem type disappearing rapidly across North America (NMFS and USFWS 1991a, 1991b, 1992; VDGIF 2005; USFWS 2008b). Not only do species of special concern call Assawoman Island home, but the local human population depends on Assawoman to fulfill recreational traditions such as hunting and fishing. Aquatic organisms in Assawoman's back bays and salt marshes form a food chain upon which local fish harvests depend.

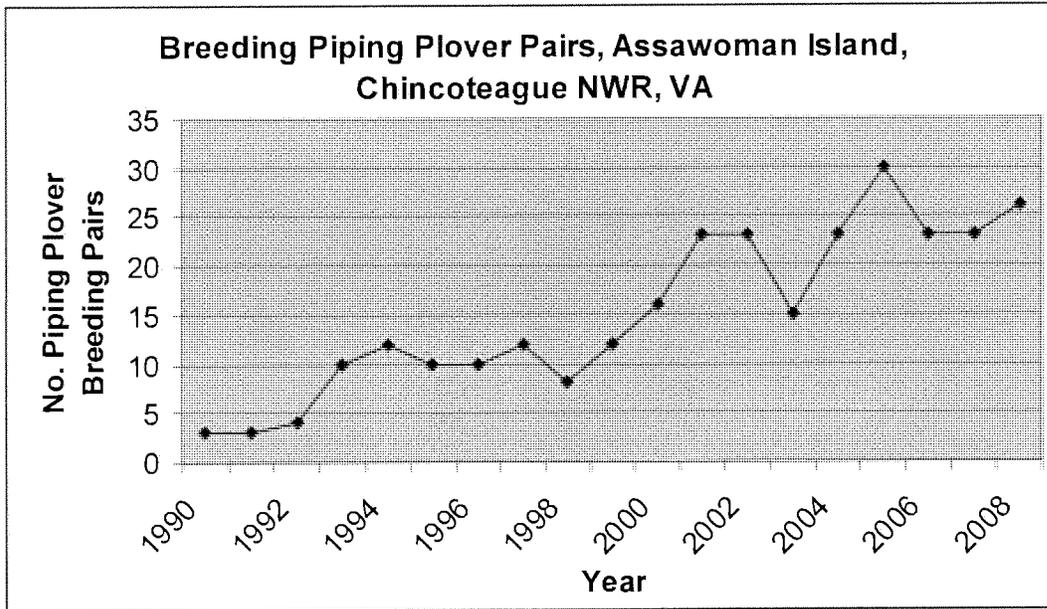
NASA's proposed SRIPP has the potential to impact critically important habitat and local recreation opportunities on Assawoman Island, Chincoteague National Wildlife Refuge, Virginia. We are particularly concerned with the preferred alternative of "Full Beach Fill, Terminal Groin, and Seawall Extension." This alternative relies heavily on using manmade structures in an attempt to halt or slow natural processes. Shoreline retreat has been ongoing for over 150 years on Wallops Island, according to your March 2009 project summary, and current processes of longshore sand transport and sea level rise will continue to erode

shorelines. Past attempts to stabilize Wallops Island shoreline with armoring, seawalls, and groins have not had the desired effect and we are concerned that the proposal to employ similar engineered solutions to prevent erosion will ultimately fail and also have unintended damaging consequences to resources the Service is charged with protecting.

We are also skeptical that the preferred alternative would lead to the most effective protection of NASA resources. We therefore recommend that you fully evaluate the "Relocate At-Risk Infrastructure" Alternative, rather than dismiss it as outlined in the scoping document. We understand the need to provide a safety buffer around certain NASA operations, but think there is a more strategic approach to ensuring public safety and continued operation of rocket launching facilities. For example, some existing and proposed infrastructure on Wallops Island requires the safety buffer and some do not. According to the SRIPP Figure 1 and the information presented at the November 20, 2008 stakeholders meeting, the northern portion of Wallops Island is actually accreting. This alternative should evaluate locating those portions of the NASA and Navy operations that do not require the safety buffer onto the Wallops Mainland or the more stable northern and inland portions of Wallops Island not threatened by shoreline erosion. If only the rocket launchers, or other similar infrastructure requiring safety buffers, were placed on areas where the shoreline is retreating, needs for shoreline stabilization may be significantly decreased or eliminated. For example, individual launching pads may be more easily moved and/or taken down and rebuilt, as the shoreline migrated according to natural processes.

Barrier islands, by definition, protect other features, such as lagoons, salt marshes and mainland shorelines, from direct ocean wave attack. In order to perform this stabilizing function of protecting mainland shorelines and salt marshes from erosion, barrier islands constantly migrate. To maintain themselves during this migration, barrier islands must continually replenish their supply of sand. Southerly longshore sand transport is the main mechanism that maintains Assawoman Island, and we are very concerned that NASA's preferred alternative will starve Assawoman of sand. Sand replenishment is planned to occur only after groin construction, and is dependent on funding. Funding for government agencies is dependent on annual budget appropriations, and therefore it is possible that the SRIPP's earlier phases of armoring and groin construction could take place without the sand replenishment phase ever occurring due to lack of funding.

Without the longshore transport of sand, Assawoman Island would erode, and habitat for beach nesting birds, including species federally listed under the Endangered Species Act, would be lost. Gains that the Service has seen in increasing nesting populations of Piping Plover and American Oystercatcher would be lost. The figure below shows how breeding piping plover numbers have increased on Assawoman, from three to twenty-six nesting pairs since the island was added to the National Wildlife Refuge System in 1990.



Many other beach habitats are subject to human disturbance, development, and increased predation, including Assateague Island to the north (Powell and Collier 2000, DeVault et al. 2005). However, Assawoman Island is unique because human access and recreational use to the island is extremely limited and monitored. Moreover, Assawoman possesses sparsely vegetated, sand-flats, shell-flats, and sand-spits on coastal beaches which piping plovers, terns, American oystercatchers and black skimmers require to breed (Erwin 1977a, Burger 1987, MacIvor et al. 1990, Patterson et al. 1991, USFWS 1996, Powell 2001, Root and Ryan 2004). The island's grasses and marshes provide nesting habitat for Wilson's plover, black-necked stilts, willets, and clapper rails (Boettcher and Smith 2008, USFWS unpubl. data). Beach and marsh habitat prey and cover are becoming critically important for migrating red knots, a candidate species for federal listing, and wintering waterfowl (Morrison et al. 2004).

We are also concerned that sand depletion resulting from the terminal groin could eventually result in large breaches in Assawoman Island. Breaches would allow the forces of the ocean to penetrate into the extensive coastal lagoon and saltwater marsh ecosystem between the island and the mainland, destroying additional wildlife habitat. Important wintering habitat for American black ducks and other wintering waterfowl, nesting wading bird habitat, and forage fish and recreationally/commercially used fisheries could be affected. Erosion and ocean intrusion into bayside lagoons/marshes would impact commercial waterman and recreational users including anglers, boaters, and hunters.

Given our concerns above, we ask that the EIS address the following topics and questions:

- The shoreline retreat rates upon which the project need is based should be fully documented and evaluated. Specifically, differential rates of deposition and erosion specific to portions or sub-areas of Wallops Island beaches should be presented and evaluated in order to avoid placing infrastructure where shoreline is retreating.

- The “safety buffer zone” area required by federal, state or local laws and its relation to existing and projected NASA rocket launch facilities/structures should be delineated and discussed more fully so that the public and stakeholders understand constraints driving the need for siting facilities and designing shoreline protection. Stakeholders, who have an interest in maintaining undeveloped lands, may be able to assist NASA with acquiring and maintaining buffer areas. This is an alternative that should be explored further.
- A monitoring plan to assess the effects of the potential seawall, sand harvest, sand deposition, groin or any facets of the proposed project on adjacent lands including those managed by the Service (Assateague, Assawoman, Metompkin, and Cedar) as well as other barrier islands further south that may be impacted by the project.
- The duration and frequency that monitoring of the seawall, sand deposition, and groin effects will occur on Wallops, Assateague, Assawoman, Metompkin, and Cedar as well as other barrier islands further south that may be impacted by the project. .
- Will the project be reassessed at some point over the next 50 years? If the project has not met the desired goals, will sand deposition be ceased and groins removed?
- Threshold criteria should be identified for lands adjacent to the project area or borrow sites that would signal unacceptable negative impacts and remedial actions that will be taken to alleviate them.
- Actions to compensate stakeholders for loss of habitat and other impacts should be outlined.
- Potential adverse impacts to private homes and other structures along the mainland.
- Circumstances that would trigger part, or all, of the project to be re-evaluated should be identified. For example, if the project fails to meet desired objectives or if a hurricane destroys a percentage of the existing NASA, Navy, or MARS assets on Wallops Island, will NASA resume the project, develop new ideas, or consider moving assets?
- Development of an alternative that creates wildlife habitat and/or includes more wildlife-friendly measures to protect shorelines. The Service is willing to assist with providing ideas to NASA planners.

Many factors have reduced the amount of optimal breeding, wintering, and migrating habitat available and caused disturbances, which contribute to poor reproductive success of state, federal, and regional shorebird species of conservation concern (Morrison et al. 1994, Loegering and Fraser 1995, USFWS 1996; 2008b). Degradation of habitat, human disturbance, and intensified predation pressure continue to limit beach dependent birds’ success on the Atlantic seaboard (Burger 1984, 1987; Flemming et al. 1988; Gaines and Ryan 1988; Patterson et al. 1991; USFWS 1996; Loegering and Fraser 1995; Larsen et al. 2002; Murphy et al. 2003a, 2003b; Root and Ryan 2004, USFWS 2004a). For example, construction of resorts, homes, and coastal engineering such as jetties and seawalls reduced piping plover nesting habitat in Maine by 70% (USFWS 1996). These factors make suitable breeding, migrating, and wintering grounds a limited resource, which negatively impacts shorebird survival (Safina and Burger 1983, Burger 1984, Pierce and Simons 1986, MacIvor et al. 1990, USFWS 1990, Patterson et al. 1991, Mallach and Leberg 1999, Root and Ryan 2004, DeVault et al. 2005). We are concerned that the shoreline stabilization being proposed will exacerbate the situation further and damage rare, relatively pristine wildlife habitat.

Sincerely,

A handwritten signature in cursive script that reads "Louis S. Hinds III". The signature is written in black ink and includes a stylized flourish at the end.

Louis S. Hinds III
Manager, Chincoteague National Wildlife
Refuge

cc: Michael Chezik, U.S. Dept of Interior
Cindy Schulz, USFWS Virginia Field Office; Gloucester, VA
Tony Leger, USFWS Regional Office; Hadley, MA

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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
6669 Short Lane
Gloucester, VA 23061

MAY 11 2009

250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island, Virginia 23337

Re: Notice of Intent to Prepare an EIS,
Wallops Flight Facility Shoreline
Restoration and Infrastructure
Protection Program (SRIPP),
Accomack County, Virginia

Dear NEPA Manager:

We have reviewed your Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) on the referenced project. The following comments are provided under the authorities and provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended; the Fish and Wildlife Coordination Act (16 U.S.C. 661-667, 48 Stat. 401), as amended; the Migratory Bird Treaty Act (16 U.S.C. 703-712, 40 Stat. 755), as amended; and the National Environmental Policy Act (42 U.S.C. 4321-4347, 83 Stat. 852), as amended.

General Project Recommendations and Concerns

We recommend further considering alternatives of relocating, removing, or limiting sensitive infrastructure on Wallops Island to prevent the need for this project. While that alternative also has consequences for natural resources in the region, we think it may be preferable in many aspects because it could provide greater security for facilities and reduce the need for additional measures to protect facilities on Wallops Island.

We recommend developing and including explicit goals for natural resource management and improvements in the proposed project. The numerous significant natural resources in the vicinity of the project provide ample opportunity to provide these compatible and beneficial outcomes.

We recommend developing alternatives that do not include construction of a groin. A groin has the potential to intercept sand and interfere with regional sand movement in a manner that would degrade fish and wildlife habitat on adjacent conservation lands including Chincoteague National Wildlife Refuge and those owned and managed by The Nature Conservancy and other conservation organizations. While information and modeling may indicate relatively limited

impacts, we recommend avoiding the potential for impacts related to regional sand transport altogether. Alternatives that may be preferable include breakwaters or other methods of attenuating wave action, though we would want to carefully consider the merits of any alternative prior to concluding that it would be preferable.

We recommend collecting detailed baseline data on the system prior to any construction to allow evaluation of the effects both during and after construction. In addition to this baseline data, we recommend development of a monitoring protocol which seeks to document the most likely predicted effects and those effects which have potential to be most beneficial and most detrimental to natural resources. This strategy would allow for a thorough evaluation of the project.

There will inherently be significant uncertainty in the outcome of the proposed project as a result of the project's dependence on dynamic forces such as weather, climate change, tides, currents, and government budgets, combined with the long time frame for the proposed project. As a result of this uncertainty, we recommend that the project be planned to include to the extent practical, a process for adaptive management to achieve the project's natural resource objectives so that some favorable outcomes may be achieved even if aspects of the project succumb to unanticipated factors. Similarly, we recommend explicitly seeking to describe and quantify the uncertainty associated with the project to the extent possible, both in terms of the project purpose and need and in terms of potential impacts to natural resources. As described in the NOI and in other project documentation, the project, once completed, will not assure protection of the facilities and infrastructure, but will only reduce the risk of damage and loss. However, implementing the project will likely incur some impacts to some or all of the natural resources in the project vicinity. To provide an accurate framework for evaluating these impacts, it is necessary to provide for evaluation not only of the project's expected impacts against its intended purpose, but of the likelihood of achieving protection of the National Aeronautics and Space Administration's (NASA) infrastructure with the likelihood of various types and amounts of resource impacts. For example, the certain impacts to offshore sand bars should be weighed against the reduction in risk to NASA facilities fully acknowledging that even with implementation of the project damage or loss to NASA facilities may occur.

Endangered Species

There are five species listed as threatened or endangered under the ESA that are associated with beach habitats and are known to occur in the vicinity of Wallops Island. These include the threatened piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and loggerhead sea turtle, and the endangered green sea turtle (*Chelonia mydas*) and leatherback sea turtle (*Dermochelys coriacea*). In addition, the red knot (*Calidris canutus rufa*) was designated as a candidate for protection under the ESA on September 12, 2006. Candidate species are those identified by the Service which are not yet listed but likely warrant protection under the ESA. These species have the potential to be affected by the proposed SRIPP, and formal consultation may be required pursuant to section 7 of the ESA once the project is planned completely such that effects of the project on these species may be identified and evaluated.

We recommend incorporating efforts to avoid and minimize potential adverse impacts to these species throughout the planning and development of the project. In addition to the direct effects of the project on these species, we will evaluate the indirect effects and any interrelated or interdependent actions. Such effects may include things such as any activities undertaken to maintain the beach, seawall, or other features of the project after their initial installation, uses of any newly created habitat (e.g., recreational use of beach habitats created through sand placement), and other similar aspects. We recommend including specific consideration and definition of these aspects of post-construction use in the project design, and we encourage NASA to limit activities to those that would be either beneficial to listed species or that would minimize potential detrimental impacts. We also recommend including explicit protocols for monitoring and managing listed species occurrences, such as searching for sea turtle and plover nests and seabeach amaranth plants, and then protecting these locations from human disturbance, predators, and other potential threats.

In addition to avoiding and minimizing project impacts, there may be opportunities to improve habitat for these species or provide other beneficial effects through the proposed project or extensions of the project. We would like to work with you to the extent possible to incorporate actions that may result in beneficial effects for the listed species. Section 7(a)(1) of the ESA directs that "...Federal agencies shall, in consultation with and with the assistance of the Secretary [of Interior], utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species..." The listed species in the vicinity of the project have established recovery plans that will aid in identifying actions to benefit them, but in most cases, there is additional information and recommendations regarding species-specific conservation actions available outside of recovery plans. We maintain information about listed species in our office and in other Service offices, and we would be happy to work with you to provide this information or identify appropriate activities or projects to benefit listed species. In addition to threatened and endangered species, any actions that can be implemented to improve conditions or eliminate threats for candidate species may help prevent the need for listing and additional regulation under the ESA.

Throughout the process of considering potential impacts to listed species, we are directed to rely on the best scientific and commercial data available. We recommend that NASA invest in efforts to obtain information and monitor listed species in the project vicinity throughout the planning process. We hope to work with NASA and other partners to identify research and monitoring needs that will help to address information gaps such that we have high-quality information upon which to base our analyses.

Migratory Birds

Numerous migratory bird species rely on the areas that will be affected by the proposed project, and several aspects of the project have the potential to affect migratory birds and their habitats. Numerous wading birds and waterbirds may use the beach and shallow water habitats that currently occur on the site and many of these species may continue to use these habitats after the project is built. Sand mining in offshore shoals also has the potential to impact habitat currently used by seabirds. Without additional detail, it is difficult to predict likely effects on migratory

birds and their habitats. We hope to work with NASA and other scientists, agencies, and organizations to consider impacts to migratory birds and identify ways to improve habitat for these species. However, we have some general recommendations related to migratory birds.

Beach and shoreline habitats on the adjacent Chincoteague National Wildlife Refuge currently provide high-quality habitat for migratory birds. We recommend that NASA and its partners work closely with the Refuge on the planning and implementation of this project to ensure that the project does not detrimentally impact migratory bird habitat. In addition, we encourage NASA to seek opportunities for adding value to the network of migratory bird habitat that is provided by the Refuge, The Nature Conservancy, and other public and private properties that contribute to bird conservation efforts.

If sand mining from offshore shoals is considered as part of the project, we recommend that NASA conduct monitoring of seabird use in the affected shoals. Similar to other important migratory bird habitats, the use of shoals is not consistent over time and individual shoals may be significant resources to seabirds even though they may not support large numbers of seabirds throughout the year. Continuous monitoring of seabird use of particular shoals over several years would provide the most robust data on the significance of a particular shoal as seabird habitat, but frequent periodic monitoring in several seasons may also provide useful information. The Service's migratory birds program has conducted seabird surveys, and we can help to provide information on seabird use in the vicinity of the two shoals that have been identified as well as recommendations on monitoring seabird use.

There appears to be a potential to improve beach and shoreline bird habitats through placement of sand, thereby expanding the width of beach and providing a beach profile that provides bird habitat. However, to some degree, any benefits that may be provided could be at the expense of seabirds that rely on the offshore shoals proposed as the source of sand for the project. In these cases, there is potential to provide some benefits to some migratory birds with detrimental results when the costs and benefits to various species groups are totaled. We recommend considering additional alternatives that will help to provide greater benefits and fewer impacts to migratory birds, or that will help reduce potential impacts. For example, finding another source of sand, such as dredged material from waterways maintenance in other areas or regions would help to reduce impacts to seabird habitat on the shoals proposed for mining. If no practicable alternative sand sources are identified, selecting shoals for sand mining that are farther offshore may reduce impacts over mining shoals closer to shore.

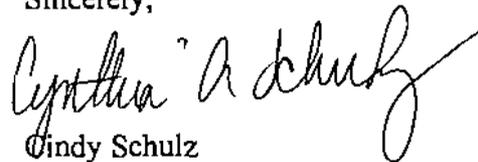
General Fish and Wildlife Comments

The lands in the vicinity of Wallops Island have a long history of providing habitat and protection for fish and wildlife resources. As you know, an extensive network of coastal lands and waters in the vicinity of Wallops Island receive protection as National Wildlife Refuges, Preserves, State Natural Area Preserves, tidal lands, and other designations. These lands provide a diverse suite of habitats on the oceanfront, barrier islands, and bays. These lands provide protected habitat for a tremendous variety of fish, wildlife, and plants and their habitats. These areas are all subject to the natural processes that affect all coastal lands such as erosion and

accretion, tidal circulation, climate patterns, weather, rainfall, and drainage. Changes in all of these habitats and the species they support should be expected over time. We should work to understand and address the impacts of large projects such as the one proposed, and its effects on these habitats and species. Due to the large diversity of species and habitats that may be affected, it is difficult to prioritize concerns and issues. The species and lands that have special status or designations will receive scrutiny due to their status, but we should also work to understand and consider effects to other species and lands as well.

You can find species information and other pertinent information on project reviews within Virginia at our website http://www.fws.gov/northeast/virginiafield/Project_Reviews.html. If you have any questions, please contact Tylan Dean of this office at (804) 693-6694, extension 104.

Sincerely,



Cindy Schulz
Supervisor
Virginia Field Office

cc: Chincoteague National Wildlife Refuge (Lou Hinds)
Department of Interior (Michael Chezik)
VDGIF (Amy Ewing)
VADCR (Rene Hypes)
The Nature Conservancy (Gwynn Crichton)

SRIPP EIS Scoping Responses from
State Agencies

L. Preston Bryant, Jr.
Secretary of Natural Resources



Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

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May 11, 2009

Joshua A. Bundick - NEPA Manager
NASA Goddard Space Flight Center's
Wallops Flight Facility
Wallops Island, Virginia 23337

Re: Notice of Intent to prepare an Environmental Impact Statement for Wallops Flight Facility
Shoreline Restoration and Infrastructure Protection Project

Dear Mr. Bundick:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

DCR has reviewed the document titled "Description of the Proposed Action and Alternatives, Environmental Impact Statement, Shoreline Restoration and Infrastructure Protection Program at NASA Wallops Flight Facility, Wallops Island, Virginia" from March 2009.

All of the proposed alternatives (1 through 6) presented in this Environmental Impact Statement (EIS) on page seven are likely to eliminate or negatively impact the natural heritage resources found on or adjacent to Wallops Island. Please see the attached table for a list of the natural heritage resources documented within the project vicinity. In addition, the Commonwealth of Virginia's Mutton Hunk Fen State Natural Area Preserve under DCR's jurisdiction is approximately five miles south of Wallops Island. Please see the attached map depicting the location of the Mutton Hunk Fen State Natural Area Preserve and adjacent islands.

Please note that without substantial investigation and modeling of each alternative, DCR is unable to predict the severity of potential impacts on the natural heritage resources and the Mutton Hunk Fen Natural Area Preserve. However, from the information provided, there is a high probability that groin construction will interrupt transport of sand to downdrift islands such

as Assawoman Island and Metompkin Island and negatively impact associated natural heritage resources, and may cause damage to the Commonwealth's Natural Area Preserve. According to a Western Carolina University study, "a structure placed at the terminus of a barrier island will interrupt the natural sand bypass system ... and cause negative impacts to adjacent islands" (WCU, 2008).

Therefore, DCR's Natural Heritage Division recommends the following:

- Avoiding the implementation of any alternatives that include the building of a groin.
- Avoiding work during the nesting season of the birds found on southern Wallops Island (Least tern, Wilson's plover, and Piping plover) from April 15th to August 15th.
- Coordination with the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF) to ensure compliance with protected species legislation due to the legal status of many of these natural heritage resources
- Re-evaluating the alternative of "Relocating At-Risk Infrastructure" included on page 15 of the EIS as a long term solution. The proposed alternatives are not long-term solutions that can combat the evidence of pending sea-level rise. Modern rates of sea level rise are now estimated to be 1.5 to 3 times that of the historic rate (VIMS, 2007). "The Virginia Institute for Marine Science estimates that the mid-Atlantic sea-level will rise between four and twelve inches by 2030, threatening coastal islands and low-lying areas" (Executive Order 59, 2007). With rising sea levels, coastal areas will face more frequent flooding and increased beach erosion (Gornitz, 2007). It may be determined in the future that relocation of the infrastructure on Wallops Island is necessary to retreat from rising sea levels.
- For any alternatives that include beach nourishment, DCR recommends including plantings to try to stabilize the beach area. Nourished beaches remain subject to persistent erosion if not combined with other stabilization methods such as vegetating with appropriate plants (VIMS, 1993).
- Developing and implementing a long-term monitoring plan to better understand the effects of the proposed project on the natural environment and adjacent islands.

However, if any of the alternatives are selected as proposed, Alternative 3 (Full Beach Fill Only) appears least likely to have immediate severe impacts to documented natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Kristal McKelvey". The signature is written in a cursive style with a large, looped initial "K".

Kristal McKelvey
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Tylan Dean, USFWS
Dot Field, DCR-DNH

Natural Heritage Resources Documented within the Vicinity of Wallops Island

Scientific Name	Common Name	Global Rank	State Rank	Federal SOC	Federal Status	State Status	Associated Area(s)
Plants							
<i>Carex silicea</i>	Sea-beach Sedge	G5	S1				Assateague Island
<i>Chamaesyce bombensis</i>	Southern Beach Spurge	G4G5	S2				North Wallops and Assateague Islands
<i>Eleocharis halophila</i>	Salt-marsh Spikerush	G4	S1				Assawoman and Metompkin Islands
<i>Erigeron vernus</i>	White-top Fleabane	G5	S2				Assawoman Creek
<i>Eriocaulon decangulare</i>	Ten-angle Pipewort	G5	S2				Assawoman Creek
<i>Heliotropium curassavicum</i>	Seaside Heliotrope	G5	S1				Assateague Island
<i>Juncus megacephalus</i>	Big-head Rush	G4G5	S2				North Wallops and Assateague Islands
<i>Plantago maritima</i> var. <i>juncooides</i>	Seaside Plantain	G5T5	S1				North Wallops and Assateague Islands
<i>Polygonum glaucum</i>	Sea-beach Knotweed	G3	S1S2				Assateague Island
<i>Rhynchospora alba</i>	White Beakrush	G5	S2				Assawoman Creek
<i>Puccinellia fasciculata</i>	Salt Marsh Goosegrass	G3G5	S1				Metompkin Island (historically)
<i>Sclerolepis uniflora</i>	One-flower Sclerolepis	G4	S1				Assawoman Creek
<i>Trillium pusillum</i> var. <i>virginianum</i>	Virginia Least Trillium	G3T2	S2	SOC			Petite Branch
<i>Utricularia juncea</i>	Southern Bladderwort	G5	S2				Assawoman Creek
Animals							
<i>Ammodramus caudacutus</i>	Saltmarsh Sharp-tailed Sparrow	G4	S2B,S3N			SC	Wallops Island - Causeway Marshes
<i>Ardea alba</i>	Great Egret	G5	S2S3B,S3N			SC	Walker Marsh (northwest of Wallops Island)
	Bird Nesting Colony	G5	SNR				Walker Marsh, Assawoman and Metompkin Islands
<i>Caretta caretta</i>	Loggerhead (Sea Turtle)	G3	S1B,S1N		LT	LT	North Assawoman and Wallops Islands (historically)

Natural Heritage Resources Documented within the Vicinity of Wallops Island

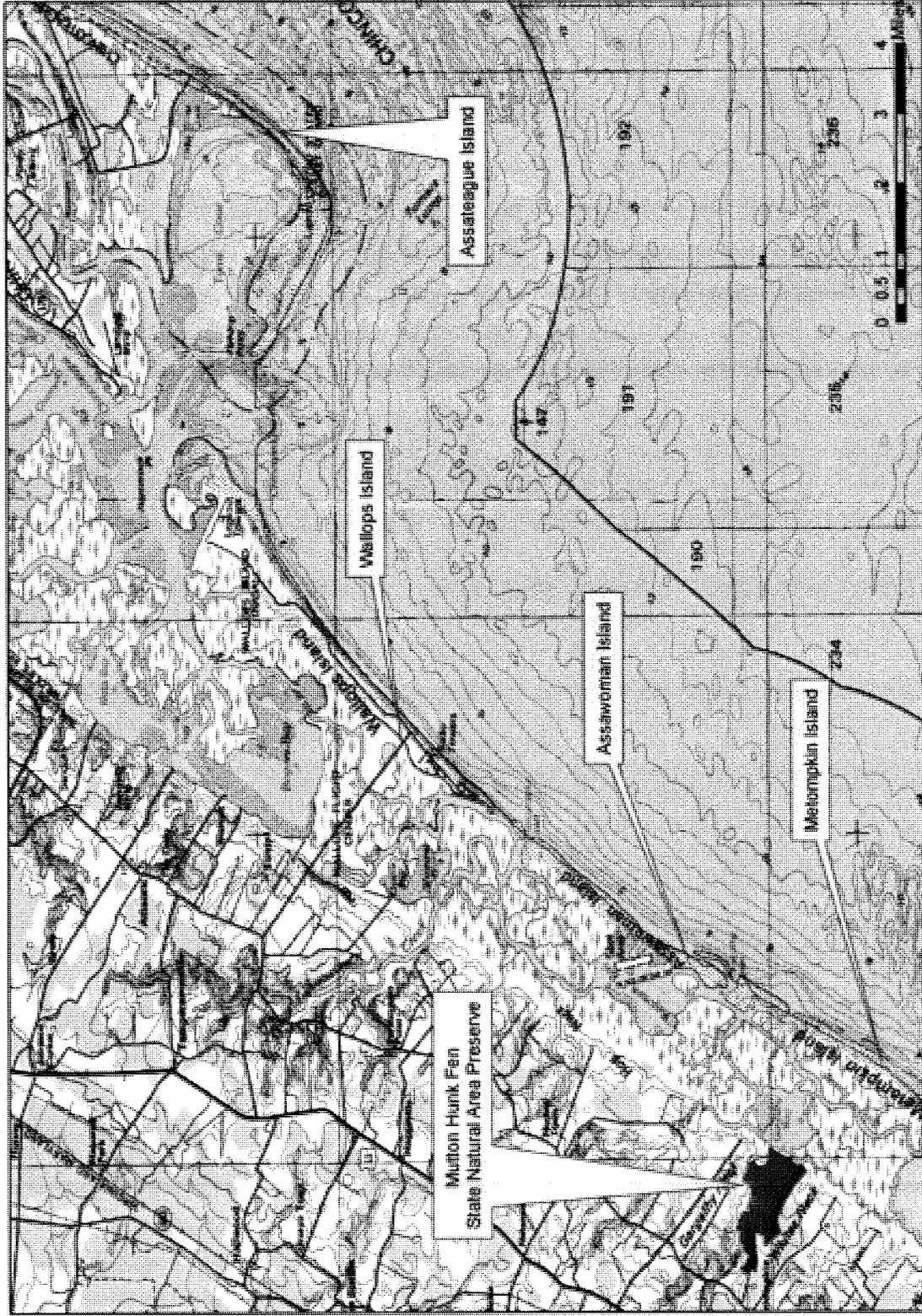
Scientific Name	Common Name	Global Rank	State Rank	Federal SOC	Federal Status	State Status	Associated Area(s)
Animals cont.							
<i>Charadrius melodus</i>	Piping Plover	G3	S2B,S1N		LT	LT	Assawoman, Metompkin and South Wallops Islands
<i>Charadrius wilsonia</i>	Wilson's Plover	G5	S1B			LE	Assawoman, Assateague, Metompkin and South Wallops Islands
<i>Sterna nilotica</i>	Gull-billed Tern	G5	S2B			LT	Metompkin Island
<i>Cicindela lepida</i>	Spectral Tiger Beetle	G3G4	S1				Assateague Island
<i>Circus cyaneus</i>	Northern Harrier	G5	S1S2B,S3N			SC	Wallops Island - Causeway Marshes
<i>Egretta caerulea</i>	Little Blue Heron	G5	S2B,S3N			SC	Walker Marsh (northwest of Wallops Island)
<i>Sciurus niger cinereus</i>	Delmarva Fox Squirrel	G5T3	S1		LE	LE	Assateague Island
<i>Egretta thula</i>	Snowy Egret	G5	S2B,S3N				Metompkin Island
<i>Egretta tricolor</i>	Tricolored Heron	G5	S2B,S3N			SC	Walker Marsh (northwest of Wallops Island)
<i>Falco peregrinus</i>	Peregrine Falcon	G4	S1B,S2N			LT	North Wallops, Assateague and Metompkin Islands
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N			LT	Assateague Island
<i>Plegadis falcinellus</i>	Glossy Ibis	G5	S2B,S1N			SC	Walker Marsh (northwest of Wallops Island)
<i>Rynchops niger</i>	Black Skimmer	G5	S2B,S1N				Metompkin Island
<i>Schinia siren</i>	A Flower Moth	GNR	S1S2				North Assawoman/South Wallops Islands
<i>Pelecanus occidentalis</i>	Brown Pelican	G4	S2B,S3N			SC	Metompkin Island
<i>Sterna antillarum</i>	Least Tern	G4	S2B			SC	Assawoman and South Wallops Islands

Natural Heritage Resources Documented within the Vicinity of Wallops Island

Scientific Name	Common Name	Global Rank	State Rank	Federal SOC	Federal Status	State Status	Associated Area(s)
	Interdune Pond	GNR	SNR				North Wallops and Assateague Islands
	Maritime Dune Grassland	GNR	SNR				North Wallops Island
	Maritime Dune Scrub	GNR	SNR				North Wallops Island
	Maritime Dune Woodland	GNR	SNR				North Wallops and Assateague Islands
	Maritime Wet Grassland	GNR	SNR				Assateague Island
	Salt Flat	GNR	SNR				North Wallops Island
	Sea-Level Fen	GNR	S1				Assawoman Creek
	Tidal Oligohaline Marsh	GNR	SNR				Assateague Island

Species rank information is available at http://www.dcr.virginia.gov/natural_heritage/help.shtml for your reference.

Islands and Natural Area Preserves in Vicinity of Wallops Island



Literature Cited

Executive Order Number 59. 2007. Commonwealth of Virginia – Office of the Governor. The Governor’s Commission on Climate Change.

Gornitz, Vivien. January 2007. NASA Science Briefs – Sea Level Rise, After the Ice Melted and Today. Retrieved from http://www.giss.nasa.gov/research/briefs/gornitz_09/ on May 5, 2009.

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Virginia Institute of Marine Science (VIMS). 1993. Wetlands Management Handbook. Gloucester, VA.

Western Carolina University (WCU). November 2008. White paper from the Program for the Study of Developed Shorelines.



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April 27, 2009

Mr. Joshua A. Bundick
NEPA Program Manager
NASA Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337-5099

RE: Proposed Shoreline Restoration and Infrastructure Protection Program, Request for Scoping Comments for the Preparation of an Environmental Impact Statement

Dear Mr. Bundick:

This is in response to your letter announcing the preparation of an Environmental Impact Statement (EIS) for the proposed Shoreline Restoration and Infrastructure Protection Program (SRIPP), Wallops Flight Facility (WFF), at Wallops Island, Virginia, and soliciting comments on the scope of the document.

PROJECT DESCRIPTION

According to the letter, the purpose of the proposed action is to reduce the potential for damage to, or loss of, existing National Aeronautics and Space Administration (NASA), U.S. Navy, and Mid-Atlantic Regional Spaceport (MARS) assets on Wallops Island due to shoreline erosion. The identified risks to WFF could cause the interruption of missions and/or permanent loss of capabilities supported by the facility. NASA anticipates that the SRIPP would help reduce the risk to infrastructure on Wallops Island by restoring the shoreline, which would provide protection for infrastructure on the island.

NASA is considering the effect of the action for six (6) alternatives. The preferred alternative, Alternative 1, would involve an initial construction phase which would include:

- extending Wallops Island's existing rock seawall a maximum of 4,500 feet south of its southernmost point;

Mr. Joshua A. Bundick

- constructing a rock groin perpendicular to the shoreline in the vicinity of WFF's southernmost property boundary; and
- placing an estimated 3 million cubic yards of sand dredged from either of two shoals located offshore in federal waters.

Each alternative has two options:

1. dredging either Blackfish Bank or an unnamed shoal (for alternatives that include beach fill); and
2. two options for the construction of sand retention structures (for alternatives that do not include beach fill).

ENVIRONMENTAL REVIEW

The roles of the Virginia Department of Environmental Quality (DEQ) in relation to the project under consideration are as follows. First, DEQ's Office of Environmental Impact Review will coordinate Virginia's review of any environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and comment to NASA on behalf of the Commonwealth. A similar review process will pertain to the federal consistency determination that must be provided pursuant to the Coastal Zone Management Act (CZMA). If the federal consistency determination is included as part of the EIS, there can be a single review.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities affecting Virginia's coastal resources or coastal uses must be consistent with the Virginia Coastal Resources Management Program (VCP) (see section 307(c)(1) of the Act and the *Federal Consistency Regulations*, 15 CFR Part 930, sub-part C). NASA must provide a consistency determination which involves an analysis of the activities in light of the enforceable policies of the VCP (first enclosure), and a commitment to comply with the enforceable policies. In addition, we invite your attention to the advisory policies of the VCP (second enclosure). The federal consistency determination may be provided as part of the NEPA documentation or independently, depending on your agency's preference; we recommend, in the interests of efficiency for all concerned, that it be provided together with the NEPA document and that 60 days be allowed for review in keeping with the *Federal Consistency Regulations* (see section 930.41(a)). Section 930.39 of the *Federal Consistency Regulations* and Virginia's *Federal Consistency Information Package* at <http://www.deq.virginia.gov/eir/federal.html> give content requirements for the consistency determination.

PROJECT SCOPING

While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA documents for the proposed project. Therefore, we are sharing your letter with selected state and local Virginia agencies, which are likely to include the following (note: starred (*) agencies administer one or more of the Enforceable Policies of the Virginia Coastal Resources Management Program; see "Federal Consistency....," below):

Mr. Joshua A. Bundick

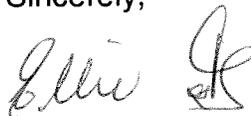
- Department of Environmental Quality:
 - Office of Environmental Impact Review
 - Tidewater Regional Office*
 - Air Division*
 - Waste Division
- Department of Game and Inland Fisheries*
- Department of Conservation and Recreation:
 - Division of Soil and Water Conservation*
 - Division of Planning and Recreation Resources
- Marine Resources Commission*
- Department of Agriculture and Consumer Services
- Department of Health
- Department of Mines, Minerals, and Energy
- Department of Historic Resources
- Virginia Institute of Marine Science
- Accomack-Northampton Planning District Commission
- Accomack County.

In order to ensure an effective coordinated review of the EIS and the consistency determination, we will require 18 copies of the document when it is published. The submission may include 4 hard copies and 14 CDs. The document should include a U.S. Geological Survey topographic map as part of its information. We recommend, as well, that project details unfamiliar to people outside NASA be adequately described.

If you have questions about the environmental review process or the federal consistency review process, please feel free to call me at (804) 698-4325 or John Fisher of this Office at (804) 698-4339.

I hope this information is helpful to you.

Sincerely,



Ellie L. Irons
Program Manager
Office of Environmental Impact Review

cc: Michelle Hollis, DEQ-TRO
Kotur S. Narasimhan, DEQ-Air
Paul Kohler, DEQ-Waste
Amy Ewing, DGIF
Robbie Rhur, DCR
Pam Mason, VIMS
Tony Watkinson, MRC
Barry Matthews, VDH
Matt Heller, DMME

Mr. Joshua A. Bundick

Roger Kirchen, DHR
Keith Tignor, VDACS
Paul Berge, Accomack-Northampton PDC
Steven Miner, Accomack County



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Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

- a. **Fisheries Management** - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code 28.2-200 to 28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code 29.1-100 to 29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code 3.1-249.59 to 3.1-249.62.

- b. **Subaqueous Lands Management** - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code 28.2-1200 to 28.2-1213.
- c. **Wetlands Management** - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.
- (1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code 28.2-1301 through 28.2-1320.
 - (2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

Attachment 1 continued

Page 2

- d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Code 28.2-1400 through 28.2-1420.
- e. Non-point Source Pollution Control – (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code 10.1-560 et seq.

(2) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater (see i) Virginia; Virginia Code §10.1-2100 –10.1-2114 and 9 VAC10-20 et seq.
- f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code 62.1-44.15. Point source pollution control is accomplished through the implementation of:
 - (1) the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.
 - (2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.
- g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code 32.1-164 through 32.1-165).
- h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code 10-1.1300 through §10.1-1320).
- (i) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §10.1-2100 –10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

- a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:
 - a) Wetlands
 - b) Aquatic Spawning, Nursery, and Feeding Grounds
 - c) Coastal Primary Sand Dunes
 - d) Barrier Islands
 - e) Significant Wildlife Habitat Areas
 - f) Public Recreation Areas
 - g) Sand and Gravel Resources
 - h) Underwater Historic Sites.

- b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:
 - i) Highly Erodible Areas
 - ii) Coastal High Hazard Areas, including flood plains.

- c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:
 - i) Commercial Ports
 - ii) Commercial Fishing Piers
 - iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

- i) water access dependent activities;
- ii) activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area.

Advisory Policies for Shorefront Access Planning and Protection

- a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.
- b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.
- c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.
- d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.
- e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.
- f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.



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May 11, 2009*

Mr. Joshua A. Bundick, NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island, Virginia 23337

Re: Comments on the Notice of Intent to prepare an Environmental Impact Statement for Wallops Flight Facility Shoreline Restoration and Infrastructure Protection Program

Dear Mr. Bundick:

In response to the National Aeronautics and Space Administration's (NASA) Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the proposed Wallops Flight Facility (WFF) Shoreline Restoration and Infrastructure Protection Program (SRIPP), the Virginia Coastal Zone Management Program would like to provide background information on a recent major investment by the program called the Seaside Heritage Program. Since 2002 we have invested close to \$3M in funds from the National Oceanic and Atmospheric Administration to restore bird, oyster and eelgrass habitats on the seaside of Virginia's Eastern Shore and also to promote and ensure the sustainability of the local ecotourism and shellfish aquaculture industries. As you know, this barrier island lagoon system is a rare and precious ecosystem unrivalled on the east coast for its biological and economic value.

As NASA considers how to stabilize and protect its facility, we offer the attached report which summarizes the significant accomplishments of the seaside Heritage Program and its multiple state, federal, local and NGO partners. We hope it will be of use as you prepare your EIS and please feel free to contact us if you have any questions. You may also wish to visit our website at <http://www.deq.virginia.gov/coastal/vshp/> for more information on the Seaside Heritage Program.

I appreciate this opportunity to contribute to the EIS scoping process for this substantial project.

Sincerely,

Laura McKay
Manager, Virginia CZM Program

Enclosure: Seaside Heritage Program Accomplishments Report: 2002-2009

*also delivered via email on May 11, 2009



Virginia Seaside Heritage Program

Accomplishments 2002-2009

A 6 year \$2.6 million effort to restore the Atlantic coast resources of Virginia's Eastern Shore, develop management strategies for long-term resource protection and support the ecotourism and aquaculture industries.

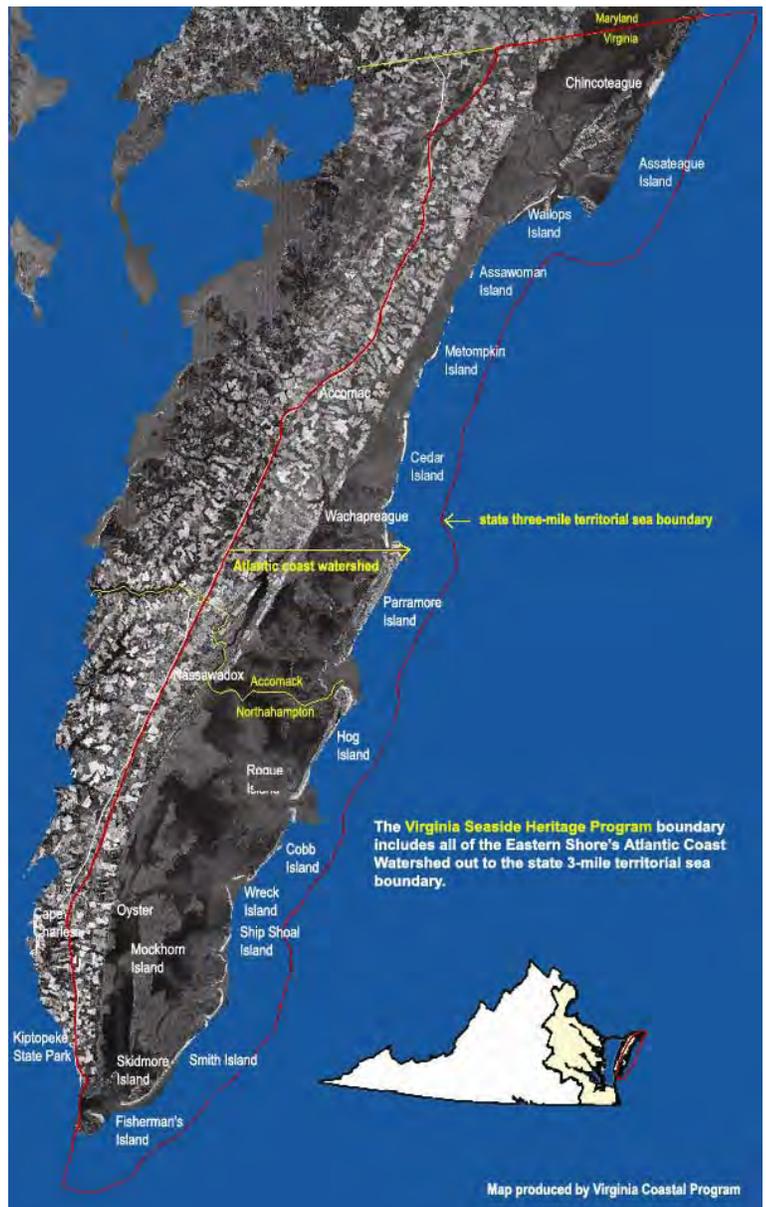


Hope Revived for a Seaside Treasure

The Seaside of Virginia's Eastern Shore - a vast system of barrier islands, bays, and salt marshes - is a global treasure. It has been designated by the United Nations as a Man and the Biosphere Reserve. The intertidal and shallow subtidal areas, undeveloped beaches and marshes support a marvelous array of waterfowl and shorebirds. These habitats also serve as breeding, nursery and foraging sites for finfish and shellfish, which are of tremendous economic value to commercial and recreational fishermen.

Today the Seaside may look like a coastal wilderness. But it hasn't always been that way. British colonists first landed on its welcoming shores in the 1600's. Blackbeard and his pirates prowled these shores. By the 1800's, this barrier island lagoon system was a mecca for hunting, fishing, and recreating for people from Washington, D.C. to New York. Finfish and shellfish harvests provided income to thousands of Virginians. Unimaginable numbers of oysters, scallops, finfish, waterfowl and shorebirds were devoured from its seemingly limitless cornucopia.

But all that changed. Finfish and shorebird concentrations declined dramatically beginning in the late 1800's due to over-harvesting, disease, predation and loss of habitat. Powerful and destructive hurricanes and storms hit Virginia's Seaside in the 1880's, '90's and early 1900's.



Eventually, the cottages, hunt clubs, resorts and small communities were gone. As is so simply stated on the gravestone of Hog Island resident, Maggie Simpson (1844-1914), "How many hopes lie buried here." (from *Seashore Chronicles* by Barry Truitt and Brooks Miles Barnes)

Things have been fairly quiet on the Seaside since the Great Depression. But sadly, we had not seen a great resurgence of underwater grasses, oysters, scallops, finfish and birds. Resource managers, scientists, and the shore's residents wondered why, in the face of valiant conservation efforts over the last few decades, had the resources not rebounded?

Maggie Simpson's hopes may not lie buried much longer. Recent restoration success has brought new hope to the Eastern Shore through a public-private restoration partnership created by the Virginia Coastal Zone Management Program - the **Virginia Seaside Heritage Program** - in the fall of 2002.

The Virginia Seaside Heritage Program (VSHP) focuses on management of the aquatic resources of the barrier islands, bays, and salt marshes along the shore. This area holds tremendous potential to demonstrate appropriate management of economic development and habitat restoration within a rare and fragile ecosystem. The Virginia CZM Program and its partners have completed an ambitious six-year restoration program and are now working toward development of management techniques and policies that will ensure appropriate uses and protect this global treasure through a Special Area Management Plan.

Virginia Seaside Heritage Program Goals and Project Highlights: 2002-2009

Habitat Restoration

Goal: Restore underwater grasses, oyster reefs, marshes and shorebird habitats.

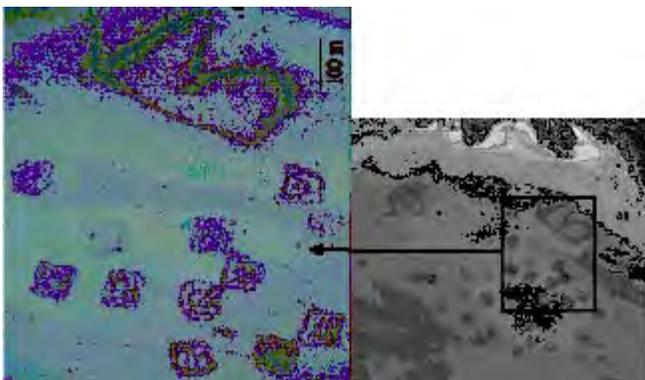


Eelgrass Restoration

Photo at left - Harvested from reproductive shoots, thousands of tiny eelgrass seeds are sowing big results on the Seaside. Not only are the restored beds thriving but a natural spread from the restored areas are dramatic in recent aerals. Dark Area surrounding the "W" in the aerial photo below right are small eelgrass patches from seeds produced by plants.

Eelgrass, *Zostera marina*, was once very abundant in the Seaside bays of Virginia's Eastern Shore. In the 1930s eelgrass suffered a massive decline due to a wasting disease. The decline was pandemic, affecting not only populations in the Seaside bays but populations on both sides of the Atlantic. Then, in August 1933, the region was affected by one of the most destructive hurricanes to influence the area in the twentieth century. The Seaside's eelgrass beds were decimated. Natural recovery of eelgrasses since that time has been limited primarily to Chincoteague, Sinepuxent, Isle of Wight and Assawoman bays, with no recovery south of Chincoteague Bay. Eelgrass seed ecology research by the Virginia Institute of Marine Science (VIMS) pointed to limited propagule (offshoot filled with seeds) supply as the most likely reason for no eelgrass recovery here.

Today, eelgrass restoration in Virginia's Seaside bays is a success story due to the Virginia Seaside Heritage Program and earlier restoration efforts supported by the Virginia CZM Program. Broadcasting seeds by hand instead of transplanting whole plants has proven to be an extremely effective method of restoration. Since 2001, 23 million seeds have been broadcast into 190 acres in South, Spider Crab, Cobb, and Hog Island bays. Eelgrass has spread considerably in South Bay. Aerial photography has shown that seagrass now occupies an area on the seaside of approximately 1400 acres. Water quality monitoring shows the parameters necessary for seagrass survival - light, turbidity, chlorophyll – remain within the habitat requirement established for seagrass.



Vertical aerial photographs (scale 1:24000) taken of the South Bay Restoration Site in December of 2004 show 0.4 ha plots of eelgrass resulting from seeds broadcast into unvegetated areas in 2001 and 2002.

While world-wide concerns about the loss of seagrass remain - due to many factors including sediments and nutrients and major climate events - eelgrass in Virginia's Eastern Shore Seaside bays is increasing. Eelgrass is spreading naturally as a result of the large scale restoration efforts undertaken by the VSHP. In fact, according to Dr. Robert Orth of VIMS who has conducted this work, recent aerial surveys show that this eelgrass appears extremely healthy with more flowering shoots than any place in the lower Chesapeake area.

Virginia CZM Investment to Date: \$654,000 to the Virginia Institute of Marine Science

Oyster Restoration

Oyster restoration in the Eastern Shore's Seaside bays is conducted differently than in the Chesapeake Bay. Historically oysters in the Chesapeake Bay rivers grew in 8-10 foot high reefs. Seaside oysters tend to grow in lower profile beds.



From 1999 – 2002, the Virginia CZM Program invested \$150,000 in seaside oyster restoration. Since 2003, approximately 4.9 acres of oyster reefs have been constructed on public oyster beds in Accomack County, and just under 5 acres of oyster reef have been constructed in Northampton County.

Local watermen/contractors have constructed the oyster reefs with either shucked shells, locally harvested fossil shells, or conch shells. Reefs generally require at least 25,000 bushels per acre, and they are constructed on degraded, intertidal reef footprints.

Spatsets are still relatively large and dependable on Seaside, so all reefs have been colonized and have significant oyster populations.

Oyster diseases still significantly impact the larger oysters. All reefs are marked as “NO HARVEST” areas and with signage identifying the reefs as sanctuaries, but poaching continues to be an issue.

To help guide a continued comprehensive and effective restoration effort, the Virginia CZM Program funded the Virginia Institute of Marine Science (VIMS) Eastern Shore Lab to estimate the current population and distribution of oysters on the Seaside. This 2-year project, conducted using aerial observations and GPS, will be completed in December 2008 and a GIS database was developed with layers detailing the distribution, abundance, size-frequency and biomass of oysters throughout the Seaside. The results showed 3.2 billion oysters on the Seaside compared to an estimate of about 1.8 billion oysters in the entire Virginia portion of the Chesapeake Bay.

Virginia CZM Investment to Date: \$545,000 to the Virginia Marine Resources Commission and \$140,000 to VIMS

Phragmites Mapping and Removal

Photo at right - Phragmites were mapped along the entire Seaside of the Eastern Shore in 2004, including all Virginia's barrier islands (Parramore Island is at left). 1400 occurrences were documented via helicopter. Patches were as small as 1/4 acre and as large as 90 acres.

On a national level, invasive species have been identified as the number two threat to biological diversity, second only to loss of species and habitat from development and urban sprawl. *Phragmites australis*, an invasive wetland grass also known as common reed, is one of the most serious and problematic invasive plant species in Virginia and other coastal States. This fast-spreading plant grows up to 4 meters tall and forms dense monotypic stands, crowding out other native marsh plants. The identification and treatment of *Phragmites* within high priority areas on the Seaside is necessary to slow the rate of spread of this species and protect natural biological diversity. In 2004, all patches of *Phragmites* on the mainland, lagoon system, and barrier islands of the Seaside were located (by helicopter flyovers), measured for area coverage and mapped using GPS by the Department of Conservation and Recreation (DCR) through the Virginia Seaside Heritage Program (VSHP). Approximately 2,024 acres of *Phragmites* existed on the Seaside in 1,404



patches with the largest patch covering 186 acres on Wallops Island. Average patch size was 1.4 acres. An 8-page map atlas plus large county maps were printed displaying locations of *Phragmites*. In order to prioritize *Phragmites* control efforts, these patches were compared with known occurrences of sensitive rare species habitats and communities. *Phragmites* management guidelines were developed for specific Seaside habitat types such as colonial bird nesting sites, mainland forest-marsh interfaces, barrier island swales, and dredge spoil sites.

In 2004, *Phragmites* control efforts were hampered by the damaging effects of high winds and salt spray from Hurricane Isabel. Isabel caused "top kill" of many *Phragmites* strands - although the root system of the plant remained protected underground, the tops of the plants were destroyed, rendering herbicides as an ineffective control method. A fairly new wetland herbicide - "Habitat" can be used earlier in the growing season (before hurricane season) and can eliminate *Phragmites* with one application.

In 2005, emphasis shifted to *Phragmites* control, especially targeting high priority patches such as the high marsh communities of the Parramore Island Natural Area Preserve, where 220 acres were treated by plane using "Habitat". Staff used ground application to treat 7 acres at Mutton Hunk Fen Natural Area Preserve in Accomack County and on 1.5 acres at Wreck Island Natural Area Preserve in Northampton County.

In 2006, *Phragmites* was treated on 92 acres at Wallops Island; 40 acres at Parramore Island; and, 14 acres at Mockhorn WMA. DCR staff also treated two acres of *Phragmites* at Wreck Island Natural Area Preserve. All areas treated through this project are monitored and carefully assessed for treatment effectiveness. A refined GIS model of *Phragmites* spread was developed which, when intersected with rare species habitat and natural community data layers, predicts which natural heritage resource occurrences are most threatened by *Phragmites* invasion. *Phragmites* patches located near high risk resources are considered a high priority target. Aerial control treatments were conducted in several areas in summer 2008.

A *Phragmites* management plan for the Seaside was completed and provides a roadmap for what will be an on-going management challenge. *Phragmites* was remapped along the entire Seaside. The census answered key questions about how rapidly un-controlled *Phragmites* is spreading and how effective control measures have been over the last five years.

Virginia CZM Investment to Date: \$394,231 to the Department of Conservation and Recreation (for *Phragmites* mapping, control and education – see "Management and Education Goal page 9)



Photo above - Royal Terns on barrier island beach.

Improving Avian Habitat

Historically, the Virginia Barrier islands have been among the most important nesting areas for shorebirds and colonial waterbirds on the entire Atlantic coast of North America. However decades of research have shown that beach nesting birds are in serious decline. The Virginia CZM Program has funded a variety of projects through the Virginia Seaside Heritage Program (VSHP) to study avian communities.

In 2002 and 2003, a GIS data layer of shorebird concentrations was produced based on data collected during aerial surveys along the Seaside in the mid 1990s. A separate project developed a digital image library and portfolio of aerial photography resources of the Seaside.

Eight years of aerial photographs were archived into orthorectified digital images, then used these as baseline data for a 2004 assessment of bird distributions and habitat.

Phragmites Impact on Birds

In 2004, VSHP funding determined changes in habitat suitability of the barrier islands for beach nesting birds over time, assessed the overlap in *Phragmites* distribution and high marsh habitat, and proofed a 30-year data set on colonial nesting birds along the barrier island chain. Each of these projects produced GIS data layers and summary information that will be used to forecast avian population response to habitat availability. Results of the projects have shown that *Phragmites* has invaded nearly 50% of high marsh patches and potentially represent a threat to birds and other wildlife that depend on these habitats. The Virginia CZM Program has a digital map and database of 1,921 waterbird colonies composed of 955,635 individuals. A follow-up project in 2005 determined the effect of *Phragmites* on the density and distribution of breeding birds that specialize on high marsh habitats. Finally, in 2006, funding extended the study of the effect of *Phragmites* on high marsh birds during the winter season, and to determined stopover lengths and resource use of migratory Red-Knots on the Seaside.



Shorebird and Clam Aquaculture Interaction

Partners in the Virginia Seaside Heritage Program, the Virginia Institute of Marine Science and the William and Mary Center for Conservation Biology worked together in 2003 on a project to understand how clam aquaculture affects the feeding activity of migratory shorebirds.

In the first part of this study, historical shorebird concentration data from 1994 through 1996 was combined with clam net locational data from the southern portion of the Seaside to produce a GIS map showing the actual overlap between shorebird foraging areas and clam aquaculture sites. Benthic samples were taken at sites with and without clam aquaculture to determine the type and abundance of prey species available to shorebirds and the potential impacts of clam aquaculture on prey availability. Ground-based surveys of shorebirds were used to quantify where shorebird foraging was occurring within clam aquaculture sites.

Concern over the potential impact of predator exclusion nets used in clam aquaculture on foraging habitat and prey availability for migratory shorebirds was addressed by (1) examining the potential areas of overlap of the two uses and (2) the availability of benthic invertebrates that serve as prey for foraging shorebirds at sites with and without clam aquaculture. The results indicate that there is currently only limited overlap between primary shorebird foraging habitats and clam aquaculture sites.

This finding is largely the result of the limited aerial exposure of the clam beds which are generally planted in the shallow subtidal and very low intertidal regions of mudflats. Surveys of benthic invertebrates which serve as prey for shorebirds were conducted in the early summers of 2004 and 2006 at clam aquaculture and control sites. The findings from both years indicate that both species numbers and total prey abundance in the sediments on clam farms (both between the nets and at locations which previously had nets) are comparable to both local and distant control sites. Further, they reveal that the macroalgae (seaweed) on the surfaces of the nets harbor species numbers and prey abundances that are comparable to or even greater than those found in surface sediments on and off clam farms. These prey include a wide array of species generally considered to be infaunal, including many that are known prey items for shorebirds. In short, although the time available for shorebirds to forage at clam aquaculture sites is limited by tidal exposure, data suggest that abundant and diverse prey are available at these sites.

Virginia CZM Investment to Date: \$378,000 to the Center for Conservation Biology and Virginia Institute of Marine Science

Bird Predation Management

Predation by the raccoon and red fox is a major factor in the decline of shorebirds and colonial waterbirds on Virginia's Seaside. The Virginia CZM Program has been working with the Virginia Natural History Museum since 1998 to develop and implement a plan to manage these predators and restore avian nesting habitat on the Virginia Barrier Islands.

To test for the effects of predation management, US Fish and Wildlife Service field staff removed red foxes and raccoons from six Virginia Barrier Islands including Assawoman, Fisherman, Metompkin, Myrtle, North Cedar, and Ship Shoal. Avian nesting was then monitored from June to August 2004 with some very promising early



results. Bird numbers and nest productivity increased in most cases. Colonial waterbird abundance in 2004 was greater than the five year average between 1998 and 2003. Piping plover nest productivity was the highest, since 1980, on Assawoman, Metompkin, and Cedar Island. Oystercatcher nest productivity was the highest ever reported on Metompkin Island.

These results indicate that predator removal can be effective. In reality, however, removals are seldom complete; it is common for 1-3 raccoons to remain on an island (or to re-colonize an island very quickly) even after a productive removal program. A new method was evaluated. Instead of physically removing predators, project staff "convinced" predators not to eat the eggs through conditioned taste aversion using Oral-estrogen as the "aversive agent" for reducing nest and egg predation. It is biodegradable, stable when injected into eggs, and shown to induce a conditioned taste aversion to shorebird, terrapin, and sea turtle eggs. Oral estrogen use was successful in 2006. It influenced the foraging activity of individual raccoons, and it lasted long enough to bridge the period of avian egg-laying and incubation. Predation management is both more feasible and more effective as a conservation strategy on the Virginia barrier islands. Aversive conditioning appears to hold substantial promise for reducing depredation by predators on any island having low numbers of predators, either naturally or following a trapping campaign.

Virginia CZM Investment to Date: \$167,100 to the Virginia Museum of Natural History



Sustainable Industries: Ecotourism and Shellfish Farming

***Goal:** Develop sustainable ecotourism opportunities through construction or enhancement of public access sites, creation of a canoe/kayak water trail and map, and an ecotour guide certification course.*

Photo left - Organized canoe and kayak trips led by certified ecotour guides can help protect sensitive coastal resources and stimulate the economies of rural coastal counties.

Ecotour Guide Certification

In order to ensure that ecotourism remains a sustainable industry, the Virginia CZM Program began development of an ecotour guide curriculum and certification concept for the Eastern Shore of Virginia in 1997, and a pilot class was presented by the Virginia Institute of Marine Science (VIMS) in 2001. Through the Virginia Seaside Heritage Program this curriculum was modified and the first Ecotourism Guide Certification Training Course was held in 2003.

The goal of this course was to provide safe, responsible, and environmentally sound guidelines to encourage more responsible kayak and boating tours on the Eastern Shore and other Virginia coastlines. The course curriculum included barrier island rules and regulations and pertinent information about approaching wildlife.

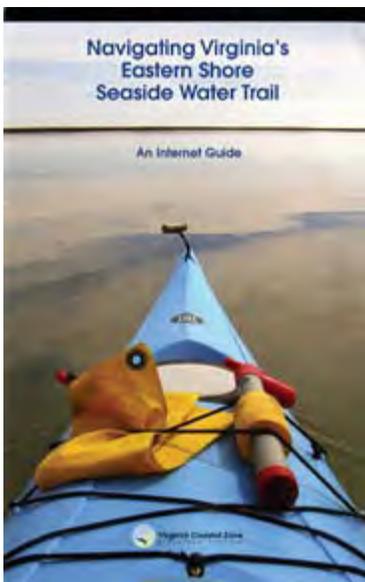
Conducted by VIMS, the course included field and classroom work. Nineteen of the 24 attendees passed the required written final exam and received certificates good for three years, as well as an official Virginia Ecotour Guide logo to denote their new status as certified operators.



In 2005, an Instructor Certification class was offered and 5 of the 7 certified guides became certified instructors. Also taught at the VIMS Wachapreague Laboratory, the course consisted of 16 hours of classroom instructions.

In the fall of 2007, the Virginia CZM Program began working with the Eastern Shore Community College (ESCC) to develop an Ecotour Guide Certification Curriculum at the college. This curriculum was offered in spring 2009 as part of a larger tourism curriculum. The ESCC has met with the Virginia Tourism Commission to discuss ways in which a curriculum might be expanded into tourism regions throughout the Commonwealth.

Virginia CZM Investment to Date: \$44,750 to the Virginia Institute of Marine Science and E. Shore Community College



Virginia Seaside Water Trail

The Virginia Seaside Water Trail was created to help build an ecotourism infrastructure on the Seaside of the Eastern Shore. The trail was mapped out by a Certified Ecotour Guide, Dave Burden (Southeast Expeditions), with input from VSHP partners. The Virginia Seaside Water Trail offers over 100 miles of paddling routes through the Seaside's coastal bays. Over 30 routes have been mapped between the Eastern Shore Wildlife Refuge in Cape Charles to Chincoteague Island. The Virginia Seaside Water Trail website provides launch site and route descriptions and maps; expected paddling time and level of difficulty for each of the paddling routes; emergency and safety information; an overview of barrier island and protected land visitation policies; cultural resources and amenities near those locations; and, information on wildlife and conservation efforts along the trail. A brochure – *Navigating Virginia's Eastern Shore Seaside Water Trail* – was produced and is being distributed in Virginia's Coastal Zone to market the availability of the on-line guide to the trail – www.deq.virginia.gov/coastal/Seasidewatertrail/homepage.html.

Virginia CZM Investment to Date: \$25,000 to the Accomack Northampton Planning District Commission

Floating Docks

To complement the trail, the Virginia CZM Program is working with the Accomack-Northampton Planning District Commission (A-NPDC) to install floating docks designed to make it very easy to get a kayak or canoe into the water. Floating docks are now available at Chincoteague Eastside Landing, Wachapreague Town Marina, Willis Wharf and Quinby Harbor.

Virginia CZM Investment to Date: \$87,500 to the Accomack Northampton Planning District Commission



Willis Wharf Observation Platform

The Virginia Department of Games and Inland Fisheries worked with the Accomack Northampton Planning District Commission and Virginia CZM to construct an observation platform in Willis Wharf, just across from the new floating dock. The platform provides an excellent venue for watching shorebirds feeding on the mudflats and aquatic vegetation around the Willis Wharf marina. It is a stop on the Virginia Birding and Wildlife Trail that consistently provides feeding and resting habitat for a variety of unique shorebirds such as godwits, skimmers, and a variety of sandpipers. In 2008, interpretive signage about mudflats, tidal wetlands, barrier islands and the various wildlife species of the Seaside was mounted on the platform. In 2009 an interpretive sign was added in front of the deck describing the ecological and economic value of the Seaside and the history of Willis Wharf as a working waterfront. Also in spring of 2009 a demonstration planting using all Eastern Shore native plants appropriate to the site was installed.



Virginia CZM Investment to Date: \$30,000 to the Department of Game and Inland Fisheries

Aquaculture Codes of Practice and Best Management Practices

Working closely with the five largest members of the clam aquaculture industry (representing ~80% of total clam production), the Virginia Institute of Marine Science (VIMS) developed a draft set of Environmental Codes of Practice (ECOP) and Best Management Practices through the Virginia Seaside Heritage Program (VSHP). The draft ECOPs were presented at a 2003 annual meeting of clam growers on the Eastern Shore and received general endorsement.

The ECOP provides a set of guiding principals for environmental stewardship by the industry. The Environmental BMP's (i) identify specific environmental and social issues and potential conflicts, (ii) propose best management practices that minimize undesirable environmental consequences and promote social



acceptance of clam aquaculture, and (iii) identify where information gaps exist for the further development of BMP's. The BMP's have recently been updated to include the findings and recommendations from a survey of derelict clam netting conducted as another element in the VSHP and from the shorebird prey study referenced above. The BMP's now incorporate elements related to site selection, site delination, predator protection, biofouling management, waste management, maintenance of water quality, disease management, exotic species, aesthetics and public education.

Virginia CZM Investment to Date: \$39,400 to the Virginia Institute of Marine Science

Management and Education

Goal: Develop management tools, improved enforcement capabilities and public education efforts. Develop a comprehensive Seaside inventory of natural resources and human use patterns that would form the basis for long term restoration and management strategies.

Virginia Eastern Shorekeeper

The Virginia Eastern Shorekeeper (www.shorekeeper.org) provides year-round on the water monitoring of oyster reef sanctuaries, restored eelgrass beds and seasonal nesting bird areas on the barrier islands off the Eastern Shore of Virginia and assesses human impacts on these and other seaside resources and Virginia Seaside Heritage Program (VSHP) restoration sites. The Shorekeeper's boat patrol hours provide valuable observations that assist law enforcement and barrier island resource managers. Aided by Creekwatchers, a Shorekeeper volunteer program, monitoring of cumulative human impacts has expanded significantly. The Shorekeeper helps distribute public education materials, such as the brochure "Life on the Beach isn't Always Easy" and has found these publications to be a valuable tool to engage the public while on patrol.



Of particular note is the Shorekeeper's work with the clam and expanding oyster aquaculture industry to reduce the amount of discarded clam nets. This effort has had very positive results. A 2004 and later 2006 report, both titled - "*Discarded and Abandoned Aquaculture Clam Netting on the Atlantic Barrier Islands on the Eastern Shore of Virginia*" - document inventories conducted by the Shorekeeper of clam aquaculture netting. The Shorekeeper assessed the potential cumulative and secondary impacts of discarded clam netting to the Seaside's fragile ecosystem. Preliminary results indicate that the netting has little short term environmental impact and acts in a very similar fashion to beach wrack. However future study is warranted due to the longevity of the netting and its possible long term cumulative impacts. There continues to be a positive momentum within the clam aquaculture industry to clean up these abandoned clam nets. Peer pressure from larger growers and a willingness by the growers to accept the discarded net as an image problem has reduced the amount of discarded netting. Clam growers worked with the Shorekeeper to create a "Clam Net Hotline" to report discarded net, which are then cleaned up by the growers. Over a three year period, 2004 – 2006, the amount of net on barrier island beaches dropped by 41 percent suggesting that the clam industry was being more responsible and major growers were beginning to actively police their co-op and independent growers. The Shorekeeper is also working with the clam industry to encourage voluntary implementation of aquaculture Best Management Practices developed by VIMS through the VSHP.

The Shorekeeper also interacts with local kayak and nature operators, providing them with up-dated information and educational materials on Seaside resources and VSHP efforts. The Shorekeeper conducted a feasibility study of "on the water" camping platforms along the Virginia Seaside Water Trail through a 2007 Virginia CZM Program grant.

The Shorekeeper's patrol summary reports indicate that public awareness of Seaside resource stewardship has improved. Signage posted by VSHP partners near sensitive resources, such as beach nesting bird and oyster reef sanctuary sites, appears to have had an impact on the public's awareness and stewardship of these resources.

Virginia CZM Investment to Date: \$122,200 to the Virginia Eastern Shorekeeper

Educating Landowners about Phragmites



The Department of Conservation and Recreation (DCR) offered many Phragmites workshops in Accomack and Northampton Counties which focused on the history, ecology, abundance, and control methods for Phragmites as well as strategies private landowners can apply to fight Phragmites invasions. Twenty-eight landowners attended these workshops. In 2006, 5 additional landowner workshops were offered and attendance numbers climbed to 124 people. The second series of workshops emphasized responsible use of approved herbicides, recommended the use of contracted pest control specialists, and recommended combining financial resources with neighboring landowners to bring down costs.

A Web tool, the *Phragmites Mapping Application* was created to assess which Seaside land holdings currently support *Phragmites* invasions and to what extent. The user can zoom, pan, view, and print maps of *Phragmites* occurrences on the Seaside. *Phragmites* occurrences can be superimposed over the county tax parcel layers and polygons can be screen digitized to measure areas covered by *Phragmites*.

In April 2008, DCR published a new technical guidebook for landowners about the reasons and methods for controlling Phragmites titled "*Marsh Invader! How to Identify and Combat One of Virginia's Most Invasive Plants: Phragmites*" This guidebook is downloadable from the VSHP website at www.deq.virginia.gov/coastal/documents/task10-03-07.pdf.

Four landowner workshops were held in summer of 2008. Two workshops were held in Accomack County at the Virginia Institute of Marine Science in Wachapreague and the two others were held in Northampton County.

Virginia CZM Investment to Date: see "*Habitat Restoration*" Goal page *Phragmites mapping, control and education -4*

Beach Nesting Bird Brochure

The Virginia CZM Program and its partners published a brochure in 2006 titled "*Life on the Beach Isn't Always Easy*" to help educate barrier island visitors about the critical role island habitats play in the life-cycle of beach nesting birds. Thousands of birds nest on the beaches of the barrier islands each year from April to September, which coincides with the height of tourism in the region. The survival of beach nesting birds on the islands is already difficult due to predation on eggs and small chicks, and natural forces such as storm waves and high tides which threaten to wash the nests away. People using these beach can also affect the birds' survival by accidentally stepping on nests, bringing dogs to the island, and leaving trash on the islands which attract predators to these areas.

Funding Provided by Virginia CZM Program, US Fish and Wildlife and the Virginia Department of Game and Inland Fisheries



Public Seminar Series

A free monthly public seminar series is being held at the University of Virginia's Anhueser Busch Coastal Research Center (ABCRC) in Oyster, Virginia centered on research and management activities supported through the Virginia CZM Program and the Virginia Seaside Heritage Program. Topics have covered an overview of the VSHP; the history and geomorphology of the VA Barrier Islands; eelgrass ecology and restoration effort; the ecology of Oyster Catchers; the ecology of sea turtles found in Virginia waters; habitat restoration for migratory songbirds; an overview of the Natural Heritage Program on the Eastern Shore; and responses/impacts of local salt marshes to sea level rise. Growing popularity of the seminar series has not only filled the meeting room to capacity, it has resulted in several "in-kind" donations of free advertising, and printing expenses.

Virginia CZM Investment to Date: \$5,000 to the University of Virginia

Seaside Heritage Program Educational Signage

The Virginia CZM Program worked with A-NPDC and VSHP partners to design and install educational signage along the Seaside Water Trail highlighting the ecological and economic value of Seaside resources. In spring 2009, signs are going up in Oyster, Chincoteague, Wachapreague, Willis Wharf and on the Eastern Shore of Virginia Wildlife Refuge.

Virginia CZM Investment to Date: \$14,725 to the Accomack Northampton Planning District Commission

Village of Oyster Vision/Plan

In 2004 the Village of Oyster received a Virginia CZM Program grant to create a village plan for the future of Oyster that serves as the foundation for future community and local government decisions. Development of the plan involved a citizen-based visioning effort, with professional facilitation and support from The Nature Conservancy. The community of Oyster sees itself in the

future as "preserving the Village's traditional character with its historic maritime culture and lifestyle; maintaining and enhancing the quality of the natural resources around the Village; and supporting the needs of the commercial and recreational users of its waterfront without compromising the residential character and rural village way of life."

Virginia CZM Investment to Date: \$4,500 to Citizens for a Better Eastern Shore and The Nature Conservancy

Native Plant Social Marketing Campaign

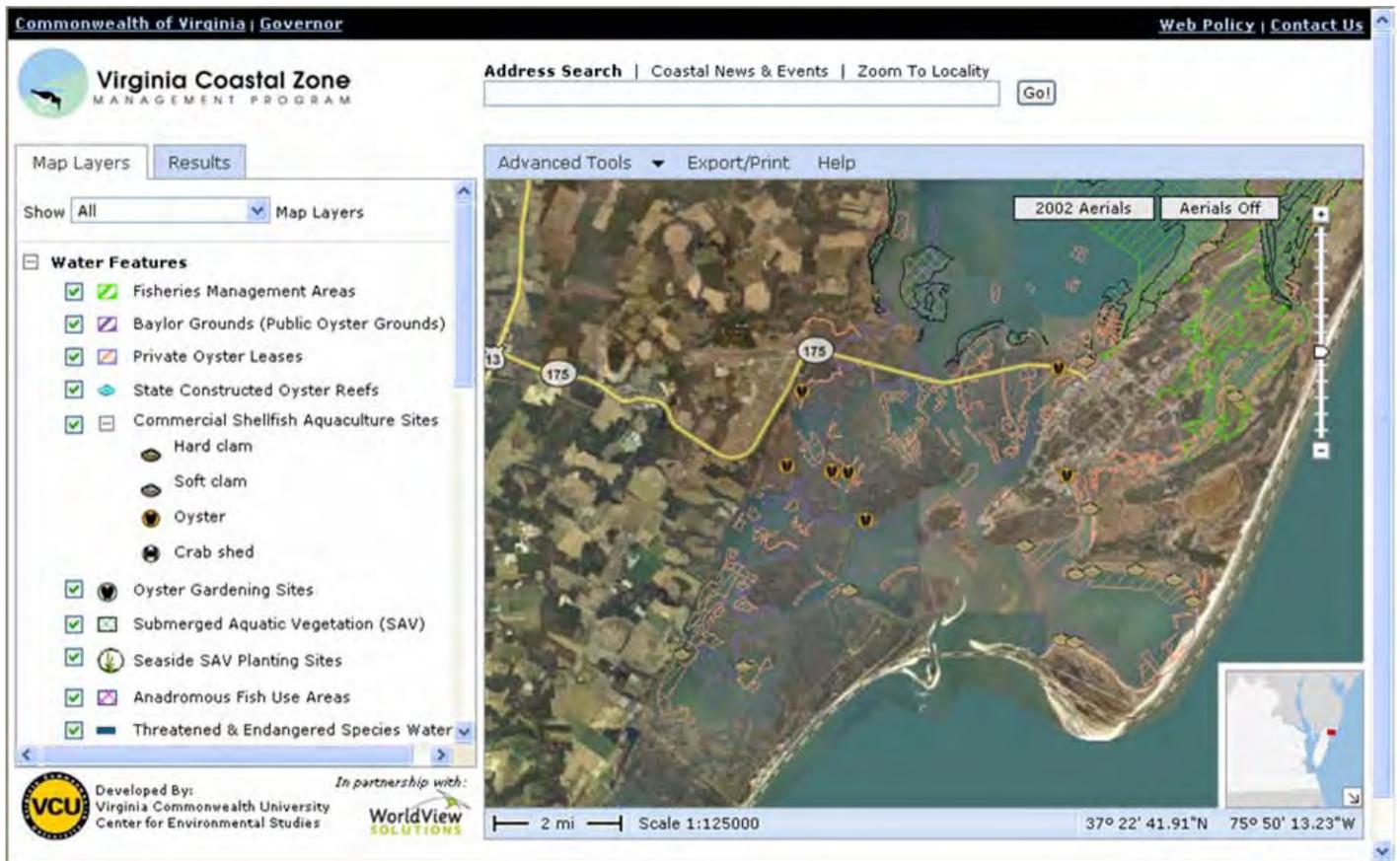
In spring of 2008 the Virginia CZM Program began work on a social marketing campaign to increase the use of native plants on the Eastern Shore in hopes of protecting water quality and habitat for wildlife. Focus group meetings with local residents were conducted to determine what the major barriers are to increasing the number of native plants that people will plant around their homes, schools, parks, rights-of-way, etc. An Eastern Shore Native Plants Guide is being developed and the kick-off event was held at the Willis Wharf Wildlife Observation Deck on April 24, 2009.



Virginia CZM Investment to Date: \$18,084

Seaside Mapped Resources on the Coastal GEMS Internet Mapping Website

Coastal GEMS, developed and maintained by the Virginia CZM Program, serves as the foundation for long term restoration and management strategies for the Seaside of Virginia's Eastern Shore. Coastal GEMS includes data layers for the Virginia Seaside Heritage Program boundary, Seaside Water Trail, Seaside public access locations, Birding and Wildlife Trail, barrier island ownership and access, important bird areas, migratory songbird stopover habitat, oyster restoration sites, seagrass coverage and restoration sites, hard clam and oyster aquaculture permit sites, clam and oyster aquaculture suitability models, and *Phragmites* coverage. (<http://www.deq.virginia.gov/coastal/coastalgems.html>)



The screenshot above from Coastal GEMS shows important water features near Chincoteague, including clam and oyster permitted aquaculture sites, seagrass, public oyster bottom, private oyster leases, and fisheries management areas.

Seaside Management Plan

The Virginia CZM Program worked with the University of Virginia and its Virginia Seaside Heritage Program partners to draft a Seaside Management Plan in the spring of 2008. Drawing on the experience and the research and restoration efforts of the partners, a final plan will be developed that will provide comprehensive management recommendations designed to protect the investment made in improving aquatic resources and those industries that depend upon them. Specific policies will be developed using future funds for a Seaside Special Area Management Plan.

Virginia CZM Investment to Date: \$44,100 to the University of Virginia and \$280,000 to be allocated



COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

May 7, 2009

Mr. Joshua A. Bundick
Wallops Flight Facility NEPA Program Manager
c/o National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

RE: EIS Scoping – NASA Wallops
Flight Facility SRIPP
ESSLog # 23888

Dear Mr. Bundick:

This letter is in response to your notice of scoping for the Environmental Impact Statement (EIS) for the Shoreline Restoration and Infrastructure Protection Program (SRIPP) at NASA Wallops Flight Facility (WFF). The Virginia Department of Game and Inland Fisheries (VDGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises full law enforcement and regulatory jurisdiction over those resources, inclusive of State or Federally *Endangered* or *Threatened* species, but excluding listed insects. We are a consulting agency under the U. S. Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and we provide environmental analysis of projects or permit applications coordinated through the Virginia Department of Environmental Quality, the Virginia Marine Resources Commission, the Virginia Department of Transportation, the U. S. Army Corps of Engineers, and other state or federal agencies. Our role in these procedures is to determine likely impacts upon fish and wildlife resources and habitats, and to recommend appropriate measures to avoid, reduce, or compensate for those impacts.

Virginia's Barrier Islands

Virginia's barrier islands represent a critically important breeding area for a number of beach nesting shorebirds and seabirds that are of high conservation concern, including the federally Threatened piping plover (*Charadrius melodus*), the state Endangered Wilson's plover (*C. wilsonia*), the American oystercatcher (*Haematopus palliatus*), which is ranked nationally as a high conservation priority species in the US Shorebird Conservation Plan (Brown *et al.* 2001), the state Threatened gull-billed tern (*Sterna nilotica*), and the least tern (*S. antillarum*), which is

a state species of special concern. The Commonwealth's northern barrier islands that extend from Assateague Island south to Cedar Island typically support over 75% of Virginia's piping plover breeding population and in some years over 90% of the Commonwealth's breeding pairs have occurred on the northern islands (Boettcher *et al.* 2007). Since 2000, Virginia's Wilson's plover breeding population has been confined to Assawoman, Metompkin and Cedar islands with the exception of 2008 when one pair was discovered nesting on Assateague Island (Wilke *et al.* 2009). The barrier islands support over 50% of Virginia's American oystercatcher breeding population with a significant proportion occurring on Metompkin and Cedar islands (Wilke *et al.* 2005; Wilke *et al.* 2009). Moreover, oystercatcher productivity rates along the barrier island chain are some of the highest reported on the US the Atlantic coast, suggesting that the islands may serve as important population sources for the east coast population (Wilke 2008). The barrier islands also provide critical breeding habitat for least terns; since 1975 35% – 67% of the Commonwealth's population has been documented on the barrier island chain (VDGIF, unpubl. data). Virginia's statewide gull-billed tern breeding population has declined from approximately 2,000 pairs in the mid-1970's (Erwin *et al.* 1998) to fewer than 300 pairs in the last three years with the majority of nesting occurring on Virginia's seaside marshes and barrier islands (VDGIF, unpubl. data). While gull-billed terns are able to exploit barrier island and marsh habitats with equal success in response to rapidly changing conditions (Boettcher and Wilke 2009), the barrier islands remain important habitat for the declining species in Virginia. Other barrier island nesting species of greatest conservation need (as defined in Virginia's Wildlife Action Plan, available at www.bewildva.com) include black skimmer (*Rynchops niger*), common tern (*S. hirundo*), royal tern (*S. maxima*) and sandwich tern (*S. sandvicensis*) (VDGIF 2005).

Collectively, the aforementioned avian species' habitat requirements include broad beaches with low discontinuous dunes and expansive sand-shell flats. In addition, piping plover broods require unimpeded access from beach nest sites to the moist-soil ecotones of backside marshes and mudflats for forage and cover (Boettcher *et al.* 2007). These areas are highly susceptible to storm-generated disturbances, which serve to maintain the open active sand zones favored by these species. Any beach restoration activities that attempt to stop the natural movement of an island, counter storm-generated disturbances, or disrupt the longshore transport of sand may result in widespread loss of suitable nesting habitat for avian beach nesting species.

Over the past 20 years, the red knot (*Calidris canutus rufa*) population has declined by over 80% (Morrison *et al.* 2004) and this species is currently a candidate for federal listing under the Endangered Species Act. A significant portion of the population that migrates north along the US Atlantic coast in the spring uses the barrier islands as stopover sites (Smith *et al.* 2008). This includes Wallops Island where more than 1,000 birds have been recorded during a single survey (Center for Conservation Biology, The Nature Conservancy, and VDGIF, unpubl. data). Typical beach renourishment may impact long-distance migrant shorebirds that forage on sand-dwelling invertebrates, such as red knot, by reducing the availability of prey within reach of the birds' bills for a period of time following sand deposition (Bishop *et al.* 2006). Moreover, beach armouring and the installation of groins may result in significant loss of suitable shorebird foraging habitat in the intertidal zone seaward and south of these structures, respectively. These effects are likely to become even more pronounced in the face of sea level rise (Galbraith *et al.* 2002).

Virginia is the northern extreme of the federally Threatened loggerhead sea turtle (*Caretta caretta*) nesting range. While the majority of the Commonwealth's nesting activity has been confined to southern mainland beaches (Fort Story - NC/VA border), nesting activity on the northern barrier islands, including Wallops Island, has increased slightly in recent years (VDGIF, unpubl. data). Nesting sea turtles typically nest on dynamic ocean beaches that have a wide berm and a relatively intact natural dune system. This species typically avoids or has poor nesting success on armoured beaches, which over time, become devoid of dry beaches and natural primary dune systems. Moreover, there is concern that beach renourishment may affect the quality of turtle nesting habitat (Crain *et al.* 1995). For example, the deposition of sand could change beach sand color thereby affecting sand temperature. Because the sex of sea turtles is determined by the temperature of sand surrounding the nest cavity, beach renourishment could alter sex ratios. Beach renourishment also may influence other physical characteristics of beaches such as sand-grain size and shape, silt-clay content, sand compaction, moisture content, porosity/water retention and gas diffusion rates. The altering of one or more of these physical characteristics may not necessarily impact beach selection by nesting females (Crain *et al.* 1995), but may reduce reproductive success of nests laid in these renourished areas (Ackerman 1996).

Alternatives Analysis

- Alternative 1 (the preferred alternative) proposes to extend the existing seawall an additional 4,500 feet south, enlarge the beach with offshore dredged sand, and construct a rock jetty near the southern WFF property line. The proposed groin would allow some fill to pass through and, according to the description of the SRIPP, the net sand transport to Assawoman Island would be equal to or exceed pre-construction conditions. We are concerned that the proposed jetty may impede existing longshore transport of sand to Assawoman, Metompkin and Cedar islands, especially if funding can not be secured for the anticipated 5 – 7 year renourishment cycle. In addition, we are concerned that the extension of the seawall will further accelerate sand loss seaward of the seawall, particularly during periods of frequent storm events. Lastly, regular beach renourishment is very costly and may negatively affect local wildlife habitats in the short term, especially if non-compatible sand is used. This practice also may threaten the biological integrity of the two shoals from where sand will be obtained and may reduce the overall sand budget in the nearshore system, accelerating erosion of nearby beaches.
- We have similar concerns with Alternative 4 as we do with Alternative 1 because it involves the same actions, only less beach fill will be used. The reduced beach fill will likely require more frequent beach renourishment; therefore Alternative 4 does not appear to offer any cost benefits or reduce barrier island ecosystem impacts over the long term.
- We have concerns with Alternatives 2 and 5, which involve beach fill, detached breakwaters, and seawall extension mainly due to issues surrounding the seawall extension as discussed above. While the breakwaters may attenuate wave action and thereby reduce beach erosion to some degree, the stable seawall, which will inhibit the natural movement of sand and water, will likely negate any benefits the breakwaters may provide.

- We do not consider Alternatives 3 and 6, which are limited to beach fill, to be viable options since both will likely result in the rapid loss of sand placed on the beach.
- We recommend a thorough analysis and discussion of a seventh alternative that involves the installation of detached breakwaters to attenuate wave action, but excludes the seawall extension and beach fill options, and considers limited retreat or removal of infrastructure that does not require a beachfront location.

Recommended items for discussion in the EIS:

- The impacts of sand mining at Blackfish Bank Shoal and unnamed shoal on erosion rates at Assateague Island and islands to the south including results from studies on this topic.
- All potential sand mining impacts on the aforementioned shoals' avifauna and to fishes and other wildlife species that forage on the shoals' benthos.
- Results from a compatibility analysis that examine how well the sand on the two offshore shoals matches the existing sand on the barrier islands (i.e., grain size, color, etc.).
- What level of protection each alternative will realistically offer and a full presentation of the analyses conducted to determine these protection levels. We recommend the analyses take into account sea level rise and the potential for future increases in storm activity and intensity.
- A detailed description of the beach fill design (i.e., targeted beach slope, elevation and width to be maintained over the long term).
- A thorough analysis and discussion of potential impacts each alternative poses on the islands to the south of the project area, with a special focus on Assawoman, Metompkin and Cedar islands.
- A detailed description of a post-construction beach monitoring plan. This plan should present methods for measuring changes to island shorelines over time. We strongly recommend that the monitoring plan not be confined to Assawoman Island, but that it also include, at a minimum, Metompkin and Cedar islands.
- A threshold at which NASA considers the cost of the project to outweigh the benefits to NASA's mission and goals. The cost/benefit analysis should not only examine monetary costs, but should also take into account costs to fish and wildlife resources, the physical integrity of the barrier island chain, and other stakeholder interests.
- The availability of funding for typical renourishment in the long term since, according to the SRIPP scoping document, beach renourishment is key to the project's success.

Mr. Joshua A. Bundick
May 7, 2009
Page 5 of 7

- Consultations with National Marine Fisheries Service regarding potential impacts of hopper dredging on sea turtles.

We appreciate the opportunity to provide comments regarding the development of the EIS for the SRPP at NASA Wallops Flight Facility. Please contact me or Amy Ewing at 804-367-6913 if we can be of further assistance.

Sincerely,

Raymond Fernald, Manager
Nongame and Environmental Programs

Encl: Literature Cited

Cc: David Whitehurst, VDGIF Wildlife Bureau Director

Literature Cited

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Mr. Joshua A. Bundick
May 7, 2009
Page 7 of 7

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COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Steven G. Bowman
Commissioner

April 3, 2009

Mr. Joshua A. Bundick
Wallops Flight Facility NEPA Program Manager
c/o National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Re: Shoreline Restoration Wallops Island

Dear Mr. Bundick:

You have inquired regarding the permitting requirements for Shoreline Restoration on Wallops Island. The Marine Resources Commission requires a permit for any activities that encroach upon or over, or take use of materials from the beds of the bays, ocean, rivers and streams, or creeks, which are the property of the Commonwealth.

In addition, since Accomack County has not yet adopted the model Coastal Primary Sand Dune Zoning Ordinance, the Commission is charged with reviewing the impacts associated with any projects that may fall within the Coastal Primary Sand Dunes/Beaches of Accomack County.

Based upon my review of the reference maps and drawings, it appears that all your proposed actions and alternatives (1-6) will require authorization from the Marine Resources Commission. (The proposed dredged sits appear to be greater than 3 miles offshore, therefore, that portion of the project will not require a permit from our agency.)

Alternative 1. (Your Preferred Alternative) Proposes to extend the existing stone riprap an additional 4,500 feet south, enlarge the beach with offshore dredged sand and construct a rock jetty near your southern property line. The proposed jetty would allow some beach nourishment to pass through. The net sand transport to Assawoman Island would be equal or exceed pre-construction conditions. We have concerns that the proposed jetty may stop the existing longshore transport of sand to Assawoman Island. This would be especially so if funding could not be secured for the anticipated 5 year renourishment cycles.

An Agency of the Natural Resources Secretariat
Web Address: www.mrc.virginia.gov

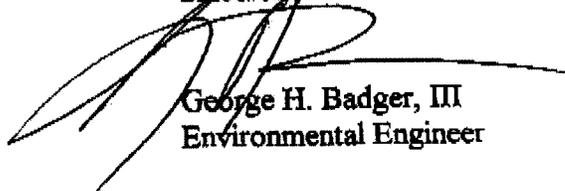
Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

Mr. Joshua A. Bundick
Wallops Flight Facility NEPA Program Manager
Page 2

Alternative 2. Proposes to extend the existing stone riprap an additional 4,500 feet south, enlarge the beach with offshore dredged sand and install a series of offshore breakwaters. This alternative would help alleviate some of our concerns with the anticipated 5 year nourishment cycles long term funding. If funding was not secured the existing longshore transport of sand to Assawoman Island would have less impact than the proposed jetty.

If I may be of further assistance, please do not hesitate to contact me at (757) 414-0710.

Sincerely,



George H. Badger, III
Environmental Engineer

SRIPP EIS Scoping Responses from
Local Government

NASA Wallops Flight Facility
Shoreline Restoration and Infrastructure Protection Prog
Environmental Impact Statement Comment Card

Comments *The proposed groin is a ~~terrible~~
terrible mistake. It will not
help in protecting Wallops in the
long run. The short term effect
will be the devastation of ~~the~~
Nutmeg and Cedar Islands.*

Name *Carayson Chesley*
Street *[Redacted]*

Affiliation *Accomac
Co. Supervisor*
Phone *[Redacted]*

City *[Redacted]* State *[Redacted]* Zip *[Redacted]*

From: "Steve Habeger" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: SRIPP input
Date: Thu, 30 Jul 2009 09:31:55 -0400

At the request of the Mayor of Pocomoke City, I am forwarding this input to you.

TO: WFF
FR: Michael A. McDermott, Mayor of Pocomoke City, MD
DT: 072809
RE: SRIPP

I write in full support of the timely and necessary infrastructure support projects for WFF, all MARS amenities, and all Naval amenities. The impact of these projects and their future expansion will have a significant and substantial influence on the regional economy for the states of Maryland, Virginia, and Delaware. Insuring that this facility is sound and protected physically will also provide financial protection to the multiple economies affected by the vast array of projects underway, or being proposed, for the facilities previously mentioned.

As Mayor of Pocomoke City, Maryland, I have seen the direct positive impact of a prospering WFF. Conversely, our city experienced the negative impact of WFF during the 1960's (contraction) which nearly crushed the local economy. For an area such as ours, which often bears the brunt of unemployment above the national average, jobs are very precious. We have looked to space and the related technology as the hope for a brighter tomorrow for our citizens.

I ask that you allow the project to proceed, unhindered; and, further, that this project would be expedited as a national priority.

Thank you for your consideration,

Michael A. McDermott, Mayor
Pocomoke city, Maryland

SRIPP EIS Scoping Responses from
Other Organizations and Persons



Assateague Coastal Trust
P.O. Box 731
Berlin, Maryland 21811
410-629-1538

May 8, 2009

Mr. Josh Bundick
250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island, Virginia 23337
wff_shoreline_eis@majordomo.gsfc.nasa.gov

Dear Mr. Bundick:

Assateague Coastal Trust (ACT), the oldest non-profit grassroots environmental advocacy organization in the Atlantic coastal bays watershed, works to protect and enhance the natural resources of the watershed through advocacy, conservation, and education. ACT has a long history of environmental advocacy in the Maryland and Virginia coastal bays region, beginning with its landmark efforts in the early 1970s to preserve the unspoiled character of Assateague Island, which is now protected as a National Seashore.

We support NASA's Wallops Flight Facility as part of our community and hope to work both towards the success of the Facility and the protection of our region's coastal ecosystem. We are concerned that the Shoreline Restoration and Infrastructure Protection Project will impact many of the natural resources that our organization works hard to protect, including barrier island habitats, coastal waters, shorebirds, sea birds, fish, and marine mammals.

Potential Impacts of Dredging on Barrier Islands

Barrier island morphology supports a variety of fragile and dynamic habitats, including the intertidal, beach, and dune habitats. Those habitats would potentially be impacted by accelerated shoreline erosion, addition of incompatible non-native sediments, and other changes in natural coastal processes.

Offshore shoals are known to dissipate incoming wave energy, diminishing the wave energy that reaches the shoreline, and thereby sheltering the coastline from wave-driven erosion. ACT is concerned that dredging either of the shoals, particularly Blackfish Bank, will reduce the protection that it provides to Assateague, Wallops, and Assawoman Island, depending on wave direction. The resulting increase in wave energy reaching the shoreline could, in turn, lead to accelerated erosion of beaches and dunes. Therefore, the EIS should consider existing wave climate and shoreline change data for the islands that will potentially be impacted, and should model potential changes to the wave climate and shoreline change resulting from dredging either of the targeted shoals. Any dredging with the potential to increase erosion or wave energy on the barrier islands should follow a detailed dredging plan that is included in the EIS. That plan should identify which shoal is less important in wave sheltering, and should describe dredging methods that minimize impacts on island shorelines, such as maintaining the existing shoal crest height and dredging the more distant Unnamed Shoal.

ACT is also concerned that removal of a significant volume of either shoal will reduce the volume of sediment currently being transported to the barrier islands, thereby accelerating erosion and impacting the islands' natural coastal processes and resilience to the ongoing effects of climate change including sea level rise and storm intensity. As part of the barrier complex, offshore shoals are also an important component of the regional sediment budget and sediment transport pathways, as shown in multiple mapping and modeling efforts along the mid-Atlantic coast, including Fire Island, New York,^{1,2} Fenwick Shoal, Delaware,³ and Wrightsville Beach, North Carolina.⁴ These studies indicate that sediment is transported in a cross-shore direction and connects the beach with the continental shelf, so a realistic sediment budget must include a large spatial scale that includes sediment input from the inner-continental shelf. Therefore, the EIS should evaluate the regional sediment transport pathways, and the potential changes to the sediment budget and pathways that could result from the proposed dredging. This evaluation should also identify which of the two shoals contributes less sediment to the barrier islands.

Potential Impacts of Hard Structures on Barrier Islands

Groins are well known to cause erosion on their downdrift side.⁵ The severe and lasting impacts of shore-perpendicular sand retention structures in our region are clearly visible at Assateague Island, just north of the proposed project site. The Ocean City Inlet jetty starved the downdrift island of 6.6 million m³ between 1934 and 1998, not including the volume of sediment lost due to natural erosional processes, and the spatial extent of the impacts extended 6.8 miles along the downdrift shoreline.⁶ That sand starvation caused "adverse physical, biological, and economic impacts" including a loss of geologic integrity, salt marshes, habitat diversity, and aesthetic appeal, while increasing overwash frequency, infilling Sinepuxent Bay, increasing the likelihood of a breach, and increasing the vulnerability of mainland communities to storm damage.⁷ Efforts to mitigate jetty impacts have been expensive, long-term, iterative management approaches requiring a great deal of regular attention from several agencies for monitoring, data analysis, interagency meetings, and evaluation of threshold conditions that trigger management actions.

Similar effects likely would be seen on Assawoman Island should the proposed groin be built at Wallops Island. South of Chincoteague Inlet, the sediment transport rate is even lower than at Ocean City, and the erosion rate is already 5.5 m/yr on Assawoman Island.⁸ Accelerated erosion resulting from a groin would be particularly perilous to the geologic integrity of the fragile downdrift barrier islands, because "the

¹ Schwab, W.C., Thieler, E.R., Denny, J.F., Danforth, W.W., 2000. Seafloor Sediment Distribution Off Southern Long Island, New York: U.S. Geological Survey Open-File Report 00-243.

² Schwab, W.C., Thieler, E.R., Allen, J.R., Foster, D.S., Swift, B.A., and Denny, J.F., 2000. Influence of inner-continental shelf geologic framework on the evolution and behavior of the barrier-island system between Fire Island Inlet and Shinnecock Inlet, Long Island, New York. *Journal of Coastal Research* 16(2) pp. 408-422.

³ Hayes, M.O., and Nairn, R.B., 2004. Natural Maintenance of Sand Ridges and Linear Shoals on the U.S. Gulf and Atlantic Continental Shelves and the Potential Impacts of Dredging. *Journal of Coastal Research* 20(1), pp. 138-148.

⁴ Thieler, E.R., Brill, A.L., Cleary, W.J., Hobbs III, C.H., Gammisch, R.A., 1995. Geology of the Wrightsville Beach, North Carolina shoreface: Implications for the concept of shoreface profile of equilibrium. *Mar. Geol.* 126, 271-287.

⁵ U.S. Army Corps of Engineers, 2002. *Coastal Engineering Manual*. Manual No. EM 1110-2-1100.

⁶ U.S. Army Corps of Engineers, 1998. "Ocean City, Maryland, and Vicinity Water Resources Study Final Integrated Feasibility Report and Environmental Impact Statement, Appendix D, Restoration of Assateague Island," Baltimore, Maryland.

⁷ U.S. Army Corps of Engineers, 1998.

⁸ Morang, A., Williams, G.G., and Swean, J.W., 2006. Beach Erosion Mitigation and Sediment Management Alternatives at Wallops Island, VA. ERDC/CHL TR-06-21, Coastal and Hydraulics Laboratory, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 81p.

present surfaces of Assawoman and Metompkin Islands are extremely low, and are essentially an amalgamation of thin overwash fans migrating across the back-barrier marsh...Because of sediment starvation and rapid transgression, at times these barrier islands essentially cease to exist.”⁹

To ensure that similar impacts of sediment starvation do not degrade the coastal habitats of Assawoman and Metompkin Island, the EIS should include action thresholds and methods for bypassing and mitigation of impacts to downdrift islands. Because the planning and implementation process for coastal mitigation efforts is lengthy, this planning should be included now in the EIS as a proactive measure rather than a later reactive document.

Potential Impacts to Terrestrial Wildlife

Assawoman and Metompkin Islands provide important habitat for a variety of shorebirds, migratory birds including the declining Red Knot, and the Federally-listed Piping Plover. The importance of these habitats have been recognized by the Audubon Society, which designated this area as an Important Bird Area, and by the United Nations, which designated the chain of undeveloped Virginia barrier islands as an International Man and the Biosphere Reserve. The habitat value of the birds’ nesting and foraging areas depend on natural barrier island conditions, which are in turn controlled by natural coastal processes including sediment supply and type. ACT is concerned that these valuable habitats will be adversely impacted by sediment starvation and increased erosion caused by the proposed groin and offshore dredging, as described in the preceding section.

ACT is also concerned that dredged sediments will be incompatible with native sediments, which would in turn alter the terrestrial surface texture, the shoreface slope, and the sediment transport processes driven both by wind and by overwash. The north end of Assateague Island provides a local example of the impacts resulting from emplacement of sediment with a high proportion of gravel. The resulting surface exhibits a ‘desert pavement’ effect in which fine sediments are winnowed out by the wind, leaving a visible and incongruous surface of gravel along several miles of the beach. This in turn has affected nesting and feeding behavior of the Federally-listed Piping Plover, has altered overwash and Aeolian sediment transport processes on the island, and has necessitated another mitigation project involving intensive monitoring, data analysis, interagency meetings, establishment of threshold values for piping plover reproductive success and vegetation communities, and further manipulation of beach topography when those threshold values are reached. In consideration of these potential impacts, the EIS should consider the compatibility of shoal sediments with the native sediments of Wallops Island and downdrift nearshore and beach areas.

Potential Impacts to Marine Life

ACT’s mission includes protection of marine and estuarine life and the habitats on which it depends. The marine waters along the Virginia barrier islands hosts a rich diversity of marine life, including benthic communities¹⁰ around the shoals that support pelagic fish,¹¹ which feed on the shoals and live parts of their lives in the estuarine waters behind the barrier islands. The pelagic shoal communities also serve as feeding grounds for sea turtles, marine mammals, and sea birds. Studies along the Maryland and Virginia

⁹ Hobbs, C.H., Krantz, D.E., and Wikel, G.L., 2008. “Coastal Processes and Offshore Geology.” In *The Geology of Virginia*. Ed. Chuck Bailey.

¹⁰ Diaz, R.J., G.R. Cutter Jr., and C.H. Hobbs III, 2004. Potential impacts of sand mining offshore of Maryland and Delaware: Part 2—biological considerations. *Journal of Coastal Research*, 20(1), pp. 61–69.

¹¹ Vasslides, J.M. and Able, K.W., 2008. Importance of shoreface sand ridges as habitat for fishes off the northeast coast of the United States. *Fishery Bulletin* 106(1), pp. 93-107.

coast indicate that the majority of the species inhabiting the shoals are seasonal residents, and that pelagic fish use different parts of the shoal area at different times of the day and night.¹²

ACT is concerned that destruction of shoal habitat will impact the complex food web of these shoals, and the marine communities that depend on it. Therefore, we request that the EIS assess the habitat value of both shoals for benthic and pelagic marine life, that it evaluate the potential impacts of dredging on marine communities, and that it establish and describe dredging methods (including location and season) that minimize impacts to the most valuable shoal habitat areas.

Additional Recommendations for Scope and Considered Alternatives in the EIS

The Description of the Proposed Action and Alternatives left us with many questions about the proposed project's methods, impacts, foundation data, and other aspects that should be more fully explored before a project alternative is chosen. **We request that you fully address the following issues in the EIS.**

1. The EIS should describe and fully consider an alternative involving retreat from the shoreline to an area with more stability in the face of continued shoreline erosion, sea level rise, storm intensity, and climate change. This alternative should compare the relative cost of relocation to the combined costs of a 50-year sand dredging project, damage to shoal and island habitats, mitigation of impacts, and need for another shoreline project and associated EIS at the 50-year endpoint.
2. The EIS should clarify which of the two proposed shoals would be targeted for dredging under each alternative, whether sediment might be taken from both shoals under a single alternative, and what the proportional and total volume of dredged sediment from each shoal would be. Due to its closer proximity to the barrier islands, we would prefer that Blackfish Bank be left intact to minimize the potential impacts of dredging on the marine life, wave energy, and sediment transport reaching Assateague Island.
3. The EIS should establish the fate of the hard structures at the end of the 50-year project.
4. Overall, the EIS would be improved by inclusion of a detailed dredging plan, including a description of engineering and dredging methods and the proposed design of hard structures.

Thank you for considering ACT's concerns about this proposed project. We look forward to working with NASA to evaluate alternatives for protecting both NASA infrastructure and our region's important coastal resources.

Sincerely,

Kathy Phillips
Assateague COASTKEEPER
Executive Director, Assateague Coastal Trust

¹² H. Ward Slacum Jr., Ed Weber, William H. Burton, Roberto Llansó, Jon Vølstad, David Wong, and Jodi Dew, 2006. Comparisons between Marine Communities Residing on Sand Shoals and Uniform-Bottom Substrates in the Mid-Atlantic Bight. Minerals Management Service OCS Study MMS 2005-042, 151 p. Available online: <http://www.mms.gov/SandAndGravel/PDF/MMS2005-042/MMS2005-042FinalReport.pdf>

From: "Mentz, Paul" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: FW: SRIPP NEPA EIS
Date: Wed, 29 Jul 2009 14:45:15 -0400

Gentlemen:

It is recommended that the necessary actions be taken to protect the valuable Wallops Island infrastructure from extensive shoreline retreat in order to preserve the nation's naval, maritime, and aerospace scientific, technical, research, and engineering capabilities on the lower Eastern shore of Maryland and Virginia in support of the national security and commercial economic interests of the United States.

Paul B. Mentz
ES-4 (Ret) US DOT
Senior Advisor Maritime Programs
BMT SYNTEK Technologies, Inc.
[REDACTED]
[REDACTED]

**NASA Wallops Flight Facility
Shoreline Restoration and Infrastructure Protection Prog
Environmental Impact Statement Comment Card**

Comments Concern about damage to Black fish

Silting of Inlet Water Effect on fishin

Name Mike Hardforty

Affiliation Chincoteague Char

Street [REDACTED]

Phone [REDACTED]

City, State, Zip [REDACTED]

Date 4/21/09



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E-mail: dlitedirector@comcast.net

May 11, 2009

Mr. Josh Bundick 250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Island Facility
Wallops Island, VA 23337

Dear Mr. Bundick,

Please accept these comments from Delmarva Low-Impact Tourism Experiences (DLITE) regarding NASA's EIS for the proposed shoreline work at the Wallops Flight Facility.

DLITE represents a union of Delaware, Maryland, and Virginia businesses, conservation organizations, and local, state, and federal partners, which have formed an alliance to strengthen and promote low-impact, nature-based tourism on the Delmarva Peninsula. Low-impact tourism plans, manages and promotes the enjoyment and protection of the environment and local culture to generate income, employment, and the conservation and sustainability of local ecosystems.

Low-impact tourism is a tremendous economic development engine for the Delmarva Peninsula. Thousands of local jobs in our hospitality industry depend upon the opportunities for visitors to explore our seaside and bayside parks, refuges and preserves while engaged in outdoor activities such as cycling, paddling, and wildlife watching.

In a 2006 survey conducted by the National Wildlife Refuge system titled "Banking On Nature," Chincoteague NWR generated the most visits of any NWR in the U.S. (7.5 million) and is responsible for the most jobs (3,766). The total economic impact of Chincoteague NWR is \$315.4 million each year. The majority of visitors to Chincoteague participate in non-consumptive wildlife recreation. This matches national trends in wildlife-associated recreation, as indicated in the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. Nationally, wildlife watching is up 8% since 2000, with 71 million Americans participating in outdoor activities such as birdwatching and wildlife photography.

While Chincoteague NWR and our seven other Delmarva National Wildlife Refuges provide habitat and nesting areas for many of the birds and other wildlife species sought by our millions of annual visitors, these protected lands alone cannot support their needs. The barrier islands south of Chincoteague and Wallops Island – Assawoman, Metompkin, and Cedar Islands – are documented nesting and feeding areas for birds prized by wildlife watchers, including black skimmers, terns, whimbrels, the increasingly rare red knot, and the federally endangered piping plover.

DLITE is concerned about the terminal groin proposed for Wallops Island, and the effect the proposed groin may have on Assawoman, Metompkin, and Cedar Islands. We suggest that you pursue movement of NASA's Wallops Flight Facility inland to protect this nationally important

program, and to protect the islands south of Wallops and the wildlife that support a thriving low-impact tourism economy. We support NASA's Wallops Flight Facility as part of our community, and as an economic engine for the region. We hope to work both towards the success of the Facility and the protection of our region's coastal ecosystem.

Sincerely,

Jim Rapp

Jim Rapp, Executive Director
Delmarva Low-Impact Tourism Experiences

cc: Senator Ben Cardin
Senator Barbara Mikulski



EASTERN SHORE DEFENSE ALLIANCE

P. O. Box 702
Atlantic, VA 23303

250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Project
NASA Goddard Space Flight Center's
Wallops Flight Facility
Wallops Island, Virginia 23337

Sirs,

The SRIPP should be approved and implemented without delay. Our national security would be adversely impacted if the SRIPP were to be delayed.

In 1979, the Navy performed a study searching for the best location to perform engineering and training functions for future ship combat systems. Wallops Island was the only location that met all requirements. Since that study, the Navy has worked to develop a significant capability at Wallops Island. The Congressionally-directed construction of the first AEGIS building in 1983 was the first of many investments at Wallops Island by the Navy.

Since 1983, the Navy has invested heavily in buildings and equipment at Wallops Island and the result is a command which performs unique and vital work for the surface fleet of our Navy. American taxpayer investment in Navy physical resources alone approach \$1B and are still rising.

Today the Navy command, Surface Combat Systems Center (SCSC), performs several vital and unique missions for surface ship combat systems. Some of the most important missions are:

Training: Today, select members of the crew of every major surface warship constructed in this nation come to SCSC for training before taking their new ship to sea. There is no other location where this vital work can be performed.

Computer program test and certification: Today, all revisions to the computer programs that operate in all major surface ship of the US Navy are tested and certified at SCSC. No other facility exists to do this work.

Research & Development: SCSC supports a number of vital research and development programs which will affect future Navy ships – some just being designed. Wallops Island provides a unique combination of land/sea environment and installed systems which are unavailable anywhere else.

In summary, successful implementation of the SRIPP is vital to the long term interests of our national security.

Sincerely,

Steven R. Habeger
Chairman

From: "Billy Moore" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: Seawall Project
Date: Wed, 22 Apr 2009 10:52:13 -0400

To Whom It May Concern:

We are interested in contracting opportunities this project may present. Particularly, the seawall stone and other required materials construction services. Is there a process to become qualified or a procedure to be placed on a list of interested parties?

Billy Moore

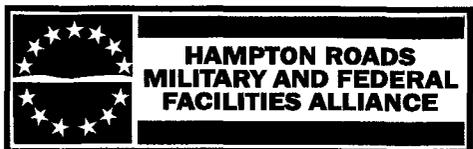
William M. Moore, Jr.

Vice President

Gerald M. Moore & Son, Inc.

[REDACTED]

[REDACTED]



**HAMPTON ROADS
MILITARY AND FEDERAL
FACILITIES ALLIANCE**

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EDUCATE ★ SUSTAIN ★ GROW

FRANK ROBERTS, EXECUTIVE DIRECTOR

July 29, 2009

250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Project
NASA Goddard Space Flight Center's
Wallops Flight Facility
Wallops Island, Virginia 23337

RE: WALLOPS FLIGHT FACILITY (WFF) SHORELINE RESTORATION AND
INFRASTRUCTURE PROTECTION PROJECT

Dear WFF NEPA Manager:

The Hampton Roads Military & Federal Facilities Alliance (HRMFFA) notes that WFF has announced intent to complete an Environmental Impact Statement (EIS) for a shoreline restoration and infrastructure project. HRMFFA supports the stated purpose and need for the project.

HRMFFA is a not-for-profit corporation representing the 1.6 million citizens of the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg, and the counties of Isle of Wight, James City, and York in matters relating to the protection, sustainment, and growth of military and federal activities in Hampton Roads.

WFF is a critical facility to the national security of the U.S. and protection of the shoreline and the infrastructure at WFF is imperative to ensure the continued viability of National Aeronautics and Space Administration (NASA), and Navy, Air Force, and Coast Guard missions at WFF, as well as commercial space flight activity.

All of these missions are growing in their interrelationship to military and federal activities and missions in the Hampton Roads area of southeastern Virginia. We are pleased to offer our support of this important project that will ensure the mission performance of critical capabilities at WFF and to contribute positively to the economic vitality of Virginia's eastern shore for decades to come.

Sincerely,

Frank Roberts
Executive Director

FAR/far





MARYLAND COASTAL BAYS PROGRAM

9919 Stephen Decatur Highway, Suite 4
Ocean City, Maryland 21842
(410) 213-2297 - PHONE
(410) 213-2574 - FAX
www.mdcoastalbays.org

May 7, 2009

Mr. Josh Bundick 250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Island Facility
Wallops Island, VA 23337

RE: Wallops Flight Facility Shoreline Restoration

Dear Mr. Bundick,

Please accept these comments from the Maryland Coastal Bays Program regarding NASA's EIS for the proposed shoreline work at the Wallops Flight Facility.

The Maryland Coastal Bays Program is one of 28 National Estuary Programs charged with protecting the most ecologically and economically significant estuaries in the United States. While our focus area of conservation extends only from the Delaware line south to the Virginia/Maryland border, we have a stake in protecting the unique barrier island system which extends from the Delaware inland bays south to Cape Charles. This internationally recognized coastal ecosystem is a critical foraging and nesting area for some of the world's most threatened shorebirds. Its value as a nursery for fish, crabs and shellfish is unparalleled on the East Coast.

For this reason I am writing to express the program's deep concerns about the proposed terminal groin in the Preferred Alternative and Alternative 4. Having our watershed split in two by an inlet jetty built in 1933, and having undergone extensive literature review on the subject, we are well-aware of the consequences of north-south sand starvation in this region. While the proposed groin is different from the Ocean City Inlet Jetty, its consequences will be similar: significant erosion and loss of integrity of the barrier island south of the groin. The population status of red knots, whimbrels, piping plovers and numerous other wading bird species that use mud flats, sandy shores and marshes suggests the potential loss of the Virginia barrier island habitat south of Wallops Island would have devastating impacts to the worldwide populations of these and other shorebirds. The best scientific knowledge available supports the likelihood of this very negative impact.

One of the greatest international migratory bird areas in the world cannot abide erosion rates like those seen on the northern end of Assateague over the past 75 years. The loss in biodiversity under the groin alternative would be second only to the public relations debacle NASA could suffer under this scenario.

We also suggest more study be undertaken on the proposed dredging from offshore shoals. Pelagic birds, fish, marine mammals and loggerhead sea turtles are heavy users of our nearshore shoals in Maryland and we have no reason to believe this is not also the case in Virginia.

While our program does not oppose sand renourishment, we respectfully submit that land subsidence combined with significant sea level rise over the next century will continually undermine the integrity of the Wallops Island Facility and will cost much more to fend off in the long run, resulting only in the

eventual movement of the facility to a safer location. We suggest that movement inland begin to occur now and are willing to shepherd public and political support for this move. We hope that our long relationship with Senator Mikulski's and Senator Cardin's office can help make this transition viable.

Barrier island systems need to be able to migrate landward with sea level rise. Early attempts at armoring these systems will always eventually succumb to the rise of the ocean.

Sincerely,

Dave Wilson Jr.
Executive Director
Maryland Coastal Bays Program

cc: Senator Ben Cardin
Senator Barbara Mikulski

Subj: SHORELINE RESTORATION AND INFRASTRUCTURE PROTECTION PROGRAM

1. Thank you for the copy of the Shoreline Restoration and Infrastructure Protection Program (SRIPP) proposal for Wallops Island, Virginia. I have reviewed the proposal and would like to address a few issues. First and foremost, the southern portion of the island, which is most important to NASA, is eroding and will continue to erode through the natural process of sediment transport as well as sea level rise (Leatherman, 1991). Although there is an annual loss which occurs each year, there is also a stage of replenishment that resupplies the beach to some extent (Leatherman, 1988). I understand the need to protect valuable assets located on Wallops Island but think that the preferred alternative may cause more adverse unforeseen impacts than explained in the descriptions of the proposed actions. I recommend that the alternatives be more carefully studied including references from past NASA shoreline studies at Wallops Island, Virginia.

2. Once steps to rebuild an eroding beach have begun, the process will be ongoing indefinitely (Leatherman 1988). In the notice published in the Federal Register, NASA states that the first beach fill would occur as part of the initial construction phase. Beach nourishment cycles would occur approximately every 5 years, based on the frequency and severity of the storms, as well as funding availability. In 1987 NASA's estimated annual construction budgets were determined to be inadequate to protect the shoreline. The recommendation at that time was to reduce the area of protection (Moffatt & Nichol, Engineers, 1987). I am concerned that a lack of funding will occur in upcoming years which would either hinder or eliminate the 5-year cycle of beach replenishments. The failure of the wooden groins in the early 1960s and 1970s was attributed to the lack of beach fill (ACE, 1978). If funding is not secured every 5 years, there is good reason to believe that history will repeat itself. According to the Wallops Island shore protection study (1986), costs for construction, damages and repairs reached a value in 1986 dollars of \$18 million. I recommend that beach stabilization and nourishment be concentrated in the southern area where erosion

is the greatest problem. This would reduce the cost, hence increasing the probability of continuing funding support.

3. In the Federal Register a value of \$800 million of Federal and state assets are listed as at risk on Wallops Island. In the Description of Proposed Action and Alternatives, a higher value of 'over \$1 billion' in assets is listed as at risk. Please address the discrepancy in these values in the next stages of the study. Also the Navy facilities on Wallops Island are located further north, where the island is in fact accreting. To better understand the cost-benefit of the total SRIPP, I recommend that the value of Navy buildings not be included in the at risk value given.

4. The potential impact to the offshore shoals from which the sand will be removed needs to be further evaluated. Dredging material often releases stored toxins and re-suspends them in the water column (Alden et al., 1985; Sims and Presley, 2005). These toxins may greatly impact the various fishes found in that particular area. The local charter boats of Chincoteague use this shoal as a high-quality fishing spot. The quality and or health of the fish in this area may be adversely impacted by the re-suspension of the toxins. These effects may be amplified up the food chain and eventually end at human consumption (Sims and Presley, 2005). The physical perturbation of the habitat must also be noted. If the dredging does in fact occur every 5 years, the habitat will have little chance to recover, before being dredged again. This is likely to hurt the local fishing industry, and potentially the tourism of nearby Chincoteague and Assateague, Virginia. I recommend that the impacts to the shoal habitat be better defined.

5. Disturbing and modifying the bathymetry of the offshore waters is likely to alter the wave action as well (Moffatt & Nichol, Engineers, 1986). This could intensify the erosion occurring on Assateague Island at the present time. These effects have the potential to be augmented during storm events and may have long-term damaging consequences. I recommend that the alteration in the impact of storm surges due to the loss of the protective shoals be estimated.

6. Overall it is my recommendation that future NASA projects be more strategically placed based on the current knowledge of the eroding shoreline. Barrier island movement is not only erosion on the seaside, but often includes an accretion on the marsh/lagoon side. By building where the land is accreting, the risk for that structure would be much lower than if it were built on

the seaside. Critical structures and roadways may be elevated in order to enhance their security as had been proposed in the Draft PEA of May 2007. I therefore recommend that careful siting of structures will significantly reduce the costs of the proposed Shoreline Restoration and Infrastructure Protection Program.

Marilyn Ailes, Ph.D.
Ecologist

Literature cited

- Alden, R. W., G.J. Hall, S. S. Jackman. 1985. Bioaccumulation of toxins from dredged materials from the port of Hampton Roads, Virginia. Final report for period ending November 1984. Old Dominion University, Norfolk, Virginia.
- Army Corps of Engineers (ACE) Design Branch Norfolk District. 1978. Concept study for rehabilitation of shore protection facilities at Wallops Station National Aeronautics and Space Administration, Wallops Island, Virginia.
- Leatherman, S. P. 1988. Barrier Island Handbook. Coastal Publication Series Laboratory for Coastal Research, The University of Maryland College Park, Maryland.
- Leatherman, S. P. 1991. Personal communication at Wallops Island, Virginia.
- Moffatt & Nichol, Engineers. 1986. Wallops Island shore protection study. Contract No. NAS5-28974.
- Moffatt & Nichol, Engineers. 1987. Shore protection alternatives Goddard Space Flight Center Wallops Island Phase A report.
- Sims, R. R. Jr., and B. J. Presley. 2005. Heavy metal concentration in organisms from an actively dredged Texas Bay. Bulletin of Environmental Contamination and Toxicology 16(5): 520-527

From: "Steve Habeger" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: Alternative 1 of the SRIPP program should be approved and implemented without delay.
Date: Wed, 29 Jul 2009 11:19:43 -0400

Sirs, Alternative 1 of the SRIPP program should be approved and implemented without delay.

Our national security would be adversely impacted if Alternative 1 of the SRIPP were to be delayed.

Since 1983, the U S Navy has invested heavily in buildings and equipment at Wallops Island and the result is a command which performs unique and vital work for the surface fleet of our Navy. American taxpayer investment in Navy resources alone approach \$1B and are still rising.

In 1979, the Navy performed a study searching for the best location for future ship combat systems to perform engineering and training functions. Wallops Island was the only location that met all requirements. Since that study, the Navy has worked to develop a significance capability at Wallops Island. The Congressionally-directed construction of the first AEGIS building in 1983 was the first of many investments at Wallops Island by the Navy.

Today, the Navy command, Surface Combat Systems Center (SCSC), performs several vital and unique missions for surface ship combat systems. Some of the most important missions are:

Training: Today, select members of the crew every new naval major warship constructed in this nation comes to SCSC for training before taking their new ship to sea. There is no other location where this vital work can be performed.

Computer program test and certification: Today, all revisions to the computer programs that operate in all major surface ship of the Us Navy are tested and certified at SCSC. No other facility exists to do this work.

Research & Development: SCSC supports a number of vital research and development programs which will effect the future Navy ships - some just being designed. Wallops Island provides a unique combination of land/sea environment and installed systems which are unavailable anywhere else.

In summary, successful implementation of the SRIPP is vital to the long term interests of our national security.

Steven R Habeger

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Date: Thu, 16 Apr 2009 20:54:51 -0400
Subject: Public Comment on Proposed Action
From: Jack Kennedy [REDACTED]
To: wff_shoreline_eis@listserv.gsfc.nasa.gov

Dear Review Staff,

Please know that I ***fully support*** the Proposed Action on the the shoreline restoration and protection effort at the NASA Wallops Flight Facility and the Mid-Atlantic Regional Spaceport. The infrastructure needs high priority protection for national security and regional economic development.

NASA and the U.S. Army Corps of Engineers should **APPROVE** the proposed action and act in a timely fashion to ensure shoreline restoration and protection.

Thank you for the opportunity to provide public comment.

--

J. Jack Kennedy, Jr., Esq.
M.A., M.Sc., J.D.
[REDACTED]

Vince Mascitti

[REDACTED]

[REDACTED]

[REDACTED]

met w/ Paul Bull, Carolyn Turner, Joe Mitchell
on Wednesday 9/2/2009 at the WFF
Badge Office / Front Gate.

June, 2002

Memo

To: Kitty Hawk Town Council
From: Vince Mascitti, Kitty Hawk oceanfront
resident
Subject: Low cost beach replenishment
by "Selective Bulldozing"

- Phenomena of natural sand accretion
There is indeed a natural replenishment of sand on the beach. During Spring and Summer, when the prevailing winds are South, Southwest, and West, these winds blow surface water out to sea creating a circulation pattern in the surf which upwells sand, pea gravel, debris, and cold water. This upwelling creates ^{berms} mounds or scallops between the tides which is typically 60 feet perpendicular to the ocean and an average height of 1/2 to 2 feet. If one walks the beach today, one would see that the berm extends the entire Town of Kitty Hawk. This berm was formed in two days, June 27 & 28. To date the berm has not grown higher because of a critical angle ($\sim 15^\circ$) reached that energy in the circulation cannot negotiate. The berm will remain until a North or Northeast wind removes it from the beach and carries it back into the surf. However, if a bulldozer pushes the berm back beyond the trash line, the berm begins to grow again, and in short order (24 hours) no sign of moved

sand exists. This all assumes that the wind remains S, SW, W.

The other natural condition that creates an opportunity for beach enhancement is the Northeast storm in Fall and Winter that corresponds to a Hatteras "Low" and a strong Southwest wind on the back side which can last for days.

- History

This event occurred dramatically during Christmas 1989. A severe Northeastern destroyed two of my neighbors houses, damaged others, and removed all the sand on my property leaving a 6 foot dropoff at the State easement. Luckily the Southwest wind started depositing lost sand on the beach. A D-6 bulldozer was used for four days, four hours per day pushing sand back. At the end of four days the following sand was recovered: 100 ft wide, 6 ft deep, and 60 ft toward the ocean. This was considerably more sand than existed before the storm. Also, no evidence could be seen on the beach that any sand had been taken at all!

In the last five weeks a berm has built up naturally three times. Two were returned to the sea by

North winds. Nature keeps placing her blessings on our door step. How many more opportunities will we ignore?

Proposal

It is recommended that the Town of Kitty Hawk take a leadership role in beach replenishment, by conducting a demonstration experiment (Federal Grant?) with selective bulldozing. In order to eliminate end effects a 300 foot stretch of beach should be considered. A possible candidate is the open stretch between Joe Verthara's beach lot and the Underwood cottage. The cost of four applications based on my 1989 work for 300 feet is \$4,800.

In Comparison, -the cost to have 4000 yd³ of sand dumped by trucks over the side and graded is:

\$ 14,100

The cost to include a 300 foot expanse in the Dare County plan with the Corp. of Engineers would be:

\$ 210,000

Yours truly,

Vince Mascitti

[Redacted signature block]

cc: Carl Miller, Corp. of Engineers

From: Fred McKee [REDACTED]
To: wff_shoreline_eis@listserv.gsfc.nasa.gov
Subject: NASA Wallops Flight Facility Shoreline Restoration and Infrastructure Protection Program
Date: Wed, 2 Sep 2009 23:40:28 -0400

Dear Ladies and Gentlemen:

The following comments are offered concerning the environmental impact statement ("EIS") being prepared for the above subject.

1. The launch facilities at Wallops are currently being upgraded to allow launching of medium-lift launch vehicles (i.e., medium-lift rockets). The components of each launch vehicle are manufactured elsewhere and shipped to Wallops for assembly prior to launch. Major components of medium-lift launch vehicles are of a physical size and weight for which in most cases only delivery by ship or barge is feasible. Those ships and/or barges must pass through from the Atlantic Ocean through Chincoteague Inlet. Chincoteague Inlet is highly susceptible to shoaling with maintenance dredging needed every other year and sometimes more frequently to allow safe passage of commercial ships and barges.

Consequently, it would seem practical for the first and subsequent dredgings of sand fill material to replenish the Wallops shoreline to first occur in and adjoining Chincoteague Inlet prior to moving to the identified offshore dredged material sites of "Blackfish Bank" and "Unnamed Shoal" with the latter located approximately four (4) miles east of the former.

2. To the north and south of the Wallops shoreline currently protected by stone riprap from the Atlantic Ocean are sandy beaches that are frequented by the Atlantic coast piping plover (*Charadrius melodus*). In Virginia, the piping plover is formally recognized as a threatened species protected under the federal Endangered Species Act. The piping plover nests on these existing ocean-facing sandy beaches. The protected critical habitat area for the piping plover breeding season extends approximately from April to September of each year.

The new medium-lift launch facility (Launch Pad 0-A) currently under construction on Wallops is within 600 feet distant from the existing stone riprap shoreline protection and has its flame exhaust trench pointing toward the Atlantic Ocean. It is estimated that depending upon commercial launch activity as many as six (6) medium-lift launches per year may occur from Launch Pad 0-A.

After the dredged sand material is placed in front of the stone riprap on Wallops to create a beach for additional shoreline protection, care must be taken that the piping plover does not nest on the newly formed beach. Perhaps a piping plover management plan is needed to be prepared and implemented to better assure (1) the proposed new beach area to the east of Launch Pad 0-A does not become a critical habitat area for the piping plover and (2) launch activities can occur continuously throughout each year without interruption.

Thank you for the opportunity to present the above for consideration.

Sincerely,
Fred M. McKee

Fred M. McKee
[REDACTED]

Mr. Jim Rapp
[REDACTED]

May 11, 2009

Mr. Josh Bundick 250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Island Facility
Wallops Island, VA 23337

Dear Mr. Bundick,

My family owns property located at [REDACTED] We share in the upkeep of the property and house that was built by my grandparents in the early 1970's.

My grandparents chose to relocate to the area along Folly Creek for access to outstanding recreational fishing, clamming, and access to the beach on Cedar Island. I have spent many days on Cedar Island, and I have many fine memories of fishing and boating with my family in Metompkin Inlet. I continue to visit the house during the summer with friends and family, and take great pleasure and pride in creating new memories with them.

I am extremely concerned about the terminal groin proposed for Wallops Island, and the effect the proposed groin may have on Metompkin and Cedar Islands. I am also concerned about the impact of the proposed groin on the homes and private property along Folly Creek.

Please address the impact of the proposed groin on the islands south of Wallops, and the property located along the creeks and bays behind the islands, when conducting your Environmental Impact Statement for the Shoreline Restoration and Infrastructure Protection Program for Wallops Flight Facility. Thank you for your consideration of my concerns.

Sincerely,

Jim Rapp

Jim Rapp

Calvert H. Seybolt, Trustee



May 8, 2009

250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island VA 23337

Re: NASA's Notice of Intent to prepare an environmental Impact Statement and scoping for Wallops Island Flight Facility Shoreline Restoration and Infrastructure Protection Program that was in the 3/24/09 Federal Register

Dear Sirs:

Interested parties were invited to submit comments on environmental issues concerning the above. These are my comments and concerns.

My name is Calvert Seybolt and I live in Mappsville. I am writing on behalf of two Seybolt Family Trusts, the Ace 1971 and the Gigi 1971 Trust. We own approximately two miles of waterfront behind Assawoman Island. My family owned Assawoman from the 1930's until we sold it to the US Fish and Wildlife Service around 1992. We kept some residual rights on Assawoman. We are a party of interest. Our family has been living and working on the Shore for fourteen generations and we look forward to future generations continuing the tradition. NASA's presence has contributed to the Shore's livelihood and we appreciate that a great deal.

I went to an environmental hearing on Wallops Island back in the early 1990's in Norfolk, Virginia. We were told seawalls were the answer to Wallops Island problems. They also stated at the meeting that groins and jetties did not work as they cause a sand shadow down current. We were told at that time that seawalls were the answer -- the final answer. As a matter of fact the remnants of NASA's last groin model may be found littering Assawoman Island and our mainland farms.

During my families' stewardship of Assawoman it retreated several thousand feet. When you stand on Assawoman and look North, Wallops Island sticks out like a sore thumb. This is due to the hardening of the shoreline. Assawoman has retreated and Wallops has

not. Your scientists stated that they did not want to accelerate Assawoman's retreat. Yet the retreat figures you use are already accelerated due to the hardening of the Wallops shoreline.

There is no way your actions of placing a 100 foot by 500 foot groin will not accelerate erosion and movement down current. Your own Army Corp guides say groins and jetties do not work. Your model shows sand fill above the proposed groin. When the inevitable budget cuts occur and no sand is replenished you will end up with a groin standing out in the ocean. This will be catastrophic for Assawoman and other down current islands. The groin will be too expensive to remove so NASA will abandon it in place as they have done at other facilities.

My family and other landowners are also concerned about the use of my land and the large danger area NASA needs when it starts to launch the big rockets. This impact will reduce the use and value of my property. NASA should be looking to compensate landowners and paying for the encroachment buffers you are trying to put into place. Having NASA or the County restrict my property through zoning or ordinances is a taking.

Unfortunately, it appears to me that the 50-year time frame for the project may be short-sighted. I am afraid that your actions will cause Assawoman to break up and expose the mainland to the ocean. I hope you understand how important this is to me, my family, and on a larger scale the Shore. Thank you for your time and your consideration in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Calvert H. Seybolt". The signature is written in a cursive, somewhat stylized script.

Calvert H. Seybolt, Trustee

From: "Denard Spady" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: WFF Shoreline Restoration & Infrastructure Protection Program
Date: Mon, 11 May 2009 10:55:25 -0400

TO WHOM IT MAY CONCERN:

Having attended the April 21, 2009 Scoping Meeting, I offer the following comments:

NASA and the Wallops facility are important to our nation and to the Eastern Shore economy. They deserve the best efforts possible to protect NASA's capabilities and to protect our local environment. I hope they can succeed, but planning for the shoreline restoration project seems to be short-sighted. I believe that you should do more to acknowledge long-term problems, including sea-level rise; move some facilities to the mainland; be more progressive in shoreline protection planning; consult VIMS for best shoreline protection techniques; and offer a full public hearing when appropriate.

Thank you for the opportunity to comment.

Denard C. Spady
(Affiliation self only)

[REDACTED]

From: Carole Voss [REDACTED]
Subject: Shoreline protection
To: "wff_shoreline_eis@majordomo.gsfc.nasa.gov"
<wff_shoreline_eis@listserv.gsfc.nasa.gov>
Date: Tue, 28 Jul 2009 17:06:08 -0700 (PDT)

This email is to support the efforts of NASA Wallops Island VA, Environmental group, in their efforts to protect the shoreline. The importance of the projects at NASA Wallops cannot be fathomed as they are so immense. The investment of the government is of primary importance with regard to this issue. I would leave the decision of which option to approve to the experts in the field. Thank you, NASA for the tremendous greatness you have added to our country, both in space and in the many fields of endeavour that have spun off of your inventions. Good luck in your efforts to protect the shoreline.

Carole P. Voss
[REDACTED]
[REDACTED]
[REDACTED]

From: "Watson, Jeffrey A." [REDACTED]

To: "wff_shoreline_eis@majordomo.gsfc.nasa.gov"
<wff_shoreline_eis@listserv.gsfc.nasa.gov>

Date: Wed, 20 May 2009 13:07:59 -0500

Subject: dredging project

Mr. Bundick - Has anyone considered dredging material from the inland surrounding bays ? These bays and waterways drastically need deepening and they are closer than the offshore shoals. I live at Wisharts Point and when the bay was last dredged the spoil was placed in a field across from my house, now there is a development with 10 houses (so far) built on top of that dredged material. The material has substance and will harden over a period of time making it not as apt to be washed back out to sea when mated with the mentioned barriers. Plants, grasses, trees, etc. will also take root in this material making for a more natural way to stop the erosion problem.

It would be a shame to ruin a popular fish haven if this material could be used instead...it would be a win - win. The island get reestablished, the waterways get dredged, and save money too.

Thanks,
Jeff

Jeff Watson
[REDACTED]

NASA Wallops Flight Facility
Shoreline Restoration and Infrastructure Protection Program
Environmental Impact Statement Comment Card

Comments *You may want to review an old study - Maryland DNR w/ aid of CZM did a study (1980's) & enveloped a mini-grain system of protection (interim) at Ocean City Maryland to "hold" partial sand fill from the CDE's Beach replenishment prior to a full replenishment program. The state sought to protect in as much as practical, i.e. trap littoral transport. I was the*

Name *Lawrence J. Whitlock* Affiliation *Chairman of Md. Coastal Resource Advisory Committee at the time*
Street *[Redacted]* Phone *[Redacted]*
City, State, Zip *[Redacted]* Date *4-21-09*

NASA Wallops Flight Facility
Shoreline Restoration and Infrastructure Protection Program
Environmental Impact Statement Comment Card

Comments *From previous experience you have a good start i.e. energy dissipation @ storm shoreline, fill trap sand in order to fill with grain so you get build up. Suggest you look at left shore profile & see how to keep shore profile from steeping over over time. i.e. Red/ sub surface energy dissipation*

Name *L.J. Whitlock* Affiliation *[Redacted]*
Street *[Redacted]* Phone *[Redacted]*

From: "Don & Janice" [REDACTED]
To: <wff_shoreline_eis@listserv.gsfc.nasa.gov>
Subject: Significance of the Navy's Surface Combat Systems Center (SCSC) at WFF
Date: Mon, 10 Aug 2009 15:31:25 -0400

Gentlemen;

I apologize for the late response to your inquiry, but I was unaware of this program until I returned from vacation last week. I served as the head of the Combat Systems Engineering Division at SCSC for nine years, and then head of the Combat Systems Department and sites manager for just over 3 years prior to my retirement in late 2000. SCSC contains the latest cutting edge technology in surface combatant combat systems (Cruisers and Destroyers). All AEGIS computer program revisions and new releases undergo thorough validation/verification there, to assure that they are absolutely error-free prior to deployment aboard our ships. AEGIS is the most technologically advanced and powerful surface combat system ever developed, and is deployed aboard all of our latest Navy Cruisers and Destroyers. In addition, the crews of all new-construction Arleigh Burke class Destroyers spend two weeks at SCSC, where they learn how to operate and fight off attackers with this system. Make-up crew members also go to SCSC to learn the system.

During my tenure, we conducted an estimate of the net worth of the SCSC complex. Nearly all of the equipment there is identical to that on our ships. We concluded that the Cruiser and Destroyer sites represented an investment in excess of \$600 million. Subsequently, a third building (In addition to the Cruiser and Destroyer complexes) was added to support Carrier and Amphib ships, (non-AEGIS) and recently a 4th complex was added to support the next generation of surface combatants. Last summer, a Vice Admiral from Washington described SCSC as the most sophisticated and technically advanced facility of its kind anywhere in the world.

In light of the significant investment in this facility and its importance to our national defense, I strongly recommend that any efforts to mitigate erosion and deterioration at Wallops Island be = pursued.

Sincerely,

Don Williams



The Nature Conservancy in Virginia
530 E. Main St. Suite 800
Richmond VA 23219

tel (804) 644-5800
fax (804) 644-1685
nature.org

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Via email; hardcopy to follow

May 11, 2009

Mr. Joshua A. Bundick, NEPA Manager
WFF Shoreline Restoration and Infrastructure Protection Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island, Virginia 23337

Re: Comments on the Notice of Intent to prepare an Environmental Impact
Statement for Wallops Flight Facility Shoreline Restoration and Infrastructure
Protection Program

Dear Mr. Bundick:

I am writing to submit The Nature Conservancy's response to the National Aeronautics and Space Administration's (NASA) Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the proposed Wallops Flight Facility (WFF) Shoreline Restoration and Infrastructure Protection Program (SRIPP).

We appreciate this opportunity to contribute to the EIS scoping process for this substantial project. Our comments are structured as follows:

- Review of The Nature Conservancy's ownership, investment and interest in the barrier island system south of Wallops Island;
- Conservation and property ownership concerns with the terminal groin;
- Additional conservation concerns and research questions that need to be addressed by the EIS; and
- Recommendation to evaluate an additional alternative in the EIS regarding phased relocation of the WFF infrastructure to the mainland.

The Nature Conservancy's Ownership, Investment and Interest in the Barrier Island System south of Wallops Island

The mission of The Nature Conservancy (The Conservancy) is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. With the support of more than one million members, The Conservancy has protected more than 120 million acres and 5,000 river miles around the world, and currently has more than 150 marine conservation projects in 32 countries and in every coastal state in the U.S.

The Conservancy has been working to protect barrier islands and coastal habitats off the coast of Virginia for nearly four decades. Since our first project on Virginia's Eastern Shore in 1969, the Conservancy's ownership there has grown to encompass all or part of nine barrier islands and five marsh islands in addition to multiple preserves and conservation easements on the mainland collectively known as the Virginia Coast Reserve. Together, investments by The Conservancy along with federal, state, and other non-governmental conservation partners have resulted in the protection of more than 114,000 acres of land and waters, including 40,000 acres in which the Conservancy holds direct legal interest (see attached map). The Conservancy's stake includes legal interest, through ownership or conservation easement, in over 400 miles of coastline along Virginia's Eastern Shore.

The 75-mile long Virginia barrier island chain is considered to be the best example of a naturally functioning barrier island system on the U.S. Atlantic coast and one of the best remaining examples of U.S. Atlantic Coast wilderness. Virginia's Eastern Shore coastal bays and lagoon-barrier island complex has been recognized as a United Nations International Man and the Biosphere Reserve, a U.S. Department of the Interior National Natural Landmark, a National Science Foundation Long-Term Ecological Research Site, and a Western Hemisphere International Shorebird Reserve Network Site. These recognitions result largely from the fact that there is currently little direct human impact on the natural processes that maintain these barrier islands and associated habitats.

The many miles of wild beaches and tidal mud flats associated with the barrier islands and coastal bays attract exceptional numbers of migratory shorebirds and waterbirds each year. Almost 40 waterbird and shorebird species breed in the barrier island and lagoon system, including beach nesting shorebirds such as the Federally Threatened piping plover (*Charadrius melodus*), the state endangered Wilson's plover (*C. wilsonia*), and the American oystercatcher (*Haematopus palliatus*), which is ranked as a species of high conservation concern in the US Shorebird Conservation Plan (Brown et al. 2001). Other breeding waterbird species include the state threatened gull-billed tern (*Sterna nilotica*) and the least tern (*S. antillarum*), a state species of special concern, as well as the black skimmer (*Rynchops niger*), common tern (*S. hirundo*), royal tern (*S. maxima*) and sandwich tern (*S. sandvicensis*), all of which are species of high conservation concern (VDGIF 2005). Over 200 breeding pairs of piping plovers are currently found on island overwash beaches representing roughly 11 percent of the Atlantic coast population. Over 75 percent of these breeding pairs nest on the northern barrier islands closest to Wallops including Assawoman (US Fish and Wildlife Service-owned), Metompkin (Conservancy and US Fish and Wildlife Service-owned), and Cedar (Conservancy, US Fish and Wildlife Service, State and private-owned) (Boettcher et al. 2007). Of the more than 700 breeding pairs of American oystercatchers documented in coastal Virginia in 2008, over 50 percent occurred on Virginia's barrier islands, with 40 percent occurring on Metompkin and Cedar islands alone (Wilke et al. 2009). Moreover, oystercatcher productivity rates along the barrier island chain are some of the highest reported on the US Atlantic coast, suggesting that the islands may serve as important population sources for the East Coast population (Wilke et al. 2008).

Moreover, 24 species of migratory shorebirds use these islands as stopover or wintering habitat in the spring, fall and winter. On peak spring days, over 250,000 shorebirds can be found on the seaside of the barrier islands. An estimated 80 percent of the hemisphere's population of whimbrels (*Numenius phaeopus*) uses the mudflats as their last coastal stopover before heading to the arctic and subarctic regions to nest (Watts and Truitt, unpubl. data). The expansive beaches and peat banks of the barrier islands provide rich invertebrate prey for migrating red knots (*Calidris canutus*), a species which has declined by 85 percent since 1990 and is a candidate for listing under the Endangered Species Act (Niles and Dey 2007). Almost 40% of the hemispheric population of red knots stopped on Virginia's barrier islands in May, 2007, during their migration to feed on shore-dwelling invertebrates (Watts and Truitt, unpubl. data).

The statistics cited above only begin to capture the ecological significance of the barrier islands and associated lagoon system on the seaside of Virginia's Eastern Shore. There are simply very few places in the country where the bulk of habitats, wildlife, and ecological processes function much as they did prior to human settlement. Protecting the ecological integrity of this system and the value of our longstanding investments in the Virginia Coast Reserve is one of The Conservancy's top priorities. We continue to work collaboratively with multiple federal, state and local partners to protect, enhance and restore the unique and productive habitats and wildlife of the Virginia Coast Reserve in addition to the offshore areas of the Mid-Atlantic Continental Shelf.

To guide our efforts, The Conservancy, in 2003, worked with partners to develop a strategic conservation plan for the Virginia Coast Reserve in which we outlined our key conservation targets, threats, and actions to abate threats. Since then, we have expanded our conservation vision to encompass the Mid-Atlantic Continental Shelf, working with state and federal partners to develop a conservation plan for the entire mid-Atlantic coastal and offshore environment. Through both efforts, we have identified a suite of conservation targets that represent the Mid-Atlantic's marine biodiversity, and whose long-term persistence is indicative of the ecological function and resilience of this coastal region. These conservation targets include:

- Barrier island system
- Barrier island/ coastal lagoon breeding birds
- Migratory shorebirds
- Sea ducks and sea birds
- Tidal salt marshes
- Oyster reefs
- Eelgrass meadows
- Coastal bay nursery habitat for estuarine-dependent fishes and sharks like drum, spot, croaker, sea trout, summer flounder, and sandbar shark
- Sea turtles including Atlantic loggerhead and Kemp's Ridley
- Offshore sandy shoals and swales

As part of our planning, we have developed a ranked list of human activities that may threaten the viability of these conservation targets, and we continue to compile and analyze germane spatial and biological data to better inform our understanding of where and how we need to work to protect these complex and dynamic ecosystems. Among the many threats to coastal systems in the Mid-Atlantic, our team of partners and experts ranked shoreline hardening and armoring as a very high threat to many of the conservation targets listed above.

The comments that we provide below are guided by and framed in the context of this strategic conservation plan and reflect The Conservancy's nearly 40 years of research and conservation efforts to protect the Virginia Coast Reserve.

Conservation and Property Ownership Concerns with the Terminal Groin

The Conservancy has serious concerns regarding the proposed terminal groin included as an action under the Preferred Alternative and Alternative 4. Because a groin's effectiveness depends on its ability to impound sediment from the longshore transport system, it is certain that a groin installed in this area would trap sediment on Wallops Island, and prevent sediment from reaching downdrift beaches. This would have adverse effects on the islands themselves, the natural communities on the islands, and the species dependent on island habitats, including rare and threatened beach nesting and migratory shorebirds such as Federally Threatened piping plovers, oystercatchers, and red knots. Moreover, because Wallops Island is a low elevation, sediment starved island, a terminal groin will not ensure long-term stability of the shoreline nor

increased durability of the beach nourishment project. This is corroborated by a large body of scientific literature indicating that nourishment projects are transported offshore during storms (Gayes et al. 2003).

The Coastal Scientists' Position Statement on Groins summarizes the general consensus in the coastal geology community regarding the destructive impacts of groins—and is signed by 43 highly regarded coastal scientists from more than 30 institutions. See

http://www.westerngrad.com/WebFiles/PDFs/Coastal_Scientist_Groin_Statement.pdf.

This statement includes the following conclusions:

- The negative impact of groins on downdrift shorelines is well understood. When they work as intended, sand moving along the beach in the so-called down-drift direction is trapped on the up-drift side, causing a sand deficit and increasing erosion rates on the down-drift side. This well-documented and unquestioned impact is widely cited in the engineering and geologic literature.
- A structure placed at the terminus of a barrier island, near an inlet, will interrupt the natural sand bypass system, deprive the ebb and flood tide deltas of sand and cause negative impacts to adjacent islands.

These points are further supported in a scientific assessment entitled “An Evaluation of the Proposed Shoreline Restoration and Infrastructure Protection Program at Wallops Flight Facility, Wallops Island Virginia” prepared for The Conservancy by expert coastal geologist Dr. Robert S. Young (attached). Dr. Young’s report states:

There is no question that a large, rock groin placed at the south end of Wallops will interrupt sand transport to the islands south of the Project. These islands are already sand poor. Further reduction in sand supply combined with rising sea level will only make their existence more tenuous. Without detailed studies, one cannot predict the precise impact of the structure. However, one cannot assume that a low elevation, sand-starved barrier island will maintain itself forever. The threat that these islands face from rising sea level makes them particularly vulnerable to the additional threat human-induced sediment deprivation. [p. 9]

Moreover, Dr. Young states: “There is no guarantee that the groin will add significantly to the life of the project. One storm could remove all of the nourishment sand in a day or two. In most storms that sand would be transported offshore, not alongshore, so the groin would provide no benefits” [p. 11].

In the Description of Proposed Action and Alternatives (DOPAA) for the SRIPP, NASA states that the proposed groin “would allow some sediment that is entrained in the existing longshore transport system to pass through, over, and around the structure to be available to beaches to the south”, claiming the “net sediment transport to the islands south of Wallops Island would equal or exceed pre-construction conditions” [p. 8]. However, according to Dr. Young’s report, “The principle of conservation of mass indicates that one cannot build a structure that will both trap sand and still allow the constant flow of sand downdrift. Even a permeable groin can impact nearshore circulation by directing flow offshore instead of alongshore, especially during storms” [p. 11].

Therefore, The Conservancy concludes that a terminal groin would have substantial and destructive impacts on the physical habitat, ecological integrity, and natural processes associated with the islands acquired by the Conservancy and other conservation partners with the intent of preserving their natural ecological conditions. Trapping sediment via a groin on Wallops will lead to a physical loss of property owned by The Conservancy as well as the U.S. Fish and Wildlife Service (USFWS), and other private property owners. The islands most at risk for loss of habitat occur directly to the south of Wallops: Assawoman, Metompkin and Cedar. Loss of physical habitat on these islands in particular could be highly detrimental to the breeding

populations of piping plovers, American oystercatchers, and Wilson's plovers—all three species which are largely concentrated and dependent on the protected beach and overwash habitats of these northern barrier islands. Moreover, loss of beach habitat could reduce forage habitat and invertebrate prey abundance for migratory shorebirds such as red knots. Disruption of downdrift sediment will also lead to loss of marsh habitat behind the barrier islands which is important for several species of marsh nesting birds and provides essential breeding, refuge and forage habitats for many fish and invertebrate species in the coastal bays.

Due to the serious threat posed to the downdrift barrier islands the inevitable loss of Conservancy-owned island property and critical habitat, The Nature Conservancy respectfully requests that NASA remove the terminal groin from the actions proposed in the Preferred Alternative or any other alternative in the EIS.

Additional Conservation Concerns and Research Questions for Inclusion in the Conservation Concerns and Research Questions

The Conservancy strongly recommends that the EIS investigate all the physical, biological and ecological impacts due to detached breakwaters and sand mining for beach fill, respectively, on all downdrift barrier islands, sensitive habitats, communities and species in the draft EIS.

Impacts Associated with Breakwaters

Alternatives 2 and 5 include a series of near-shore detached breakwaters which would be constructed parallel along 6.8 km of shoreline on the south end of Wallops Island. Of concern to The Conservancy, the DOPPA states that: "The reduction in wave energy would reduce sediment transport to the south" [p.12]. Dr. Young's report identifies this same issue: "Breakwaters can cause downdrift harm" by creating a tombolo "which will block the alongshore movement of sand in the same fashion a groin would" [p.12]. As a result, we request that NASA conduct a detailed assessment of how a series of detached breakwaters along Wallops would interrupt sand supply to the downdrift barrier islands and evaluate the resulting physical, biological and ecological impacts to the islands, their habitats, beach-nesting and migratory shorebirds, and benthic communities.

Impacts Associated with Beach Fill

All of the alternatives include beach fill as a component for protecting the shoreline. The Conservancy is concerned about the potential direct adverse impacts from recurring sand mining of the offshore shoals to the shoals' biological communities and productivity, including benthic communities, demersal fishes, bottlenose dolphins (*Tursiops truncatus*), Atlantic loggerhead turtles (*Caretta caretta*), and foraging sea birds and sea ducks. USFWS data show that northern gannets (*Morus bassanus*) and black scoters (*Melanitta nigra*) have been found in high densities foraging in the areas known as Blackfish Bank and Unnamed Shoal (USFWS, unpubl. data). Moreover, National Marine Fisheries Service ground fish trawl survey data show these shoals to be significant for summer flounder (*Paralichthys dentatus*) (spring and fall), horseshoe crab (*Limulus polyphemus*) (spring), weakfish (*Cynoscion regalis*) (fall), mackerel (*Scomber scombrus*) (spring), butterfish (*Peprilus triacanthus*) (fall), northern sea robin (*Prionotus carolinus*) (fall), red hake (*Urophycis chuss*) (spring), and windowpane flounder (*Scophthalmus aquosus*) (spring) (National Marine Fisheries Service, Northeast Fisheries Science Center, unpubl. data). The EIS should determine the relative importance of these shoals as foraging areas for sea birds, sea ducks, turtles, and fish. Specifically, The Conservancy requests that the EIS process characterize the spatial (location, depth and surface area) and temporal (seasonal migrations and diurnal cycles) variables that are critical to maintaining the shoals as functional habitat for characteristic benthic invertebrates, demersal and pelagic fishes/sharks, and foraging migratory seabirds and sea ducks. The EIS should also include information on the post-dredging re-colonization rates of shoals.

The DOPAA indicates that sediment sampling analyses have been conducted for the two shoals under consideration and found that they contain adequate sized sediment for beach fill. The Conservancy requests that the EIS include a detailed geotechnical investigation to support the claim that the sediment size in the shoals to be mined is in fact compatible with the existing beach and surrounding habitat of areas offshore of Wallops and within the nearshore zone of the islands to the south. As recommended in Dr. Young's report: "The EIS must ensure that the beach pumped onto Wallops does not contain material that will have a detrimental impact on critical habitat" in surrounding onshore and nearshore habitats [p.13].

Finally, we are concerned that recurring sand mining of the two shoals targeted for this project could have detrimental impacts to coastal geomorphic processes by depriving sediment from reaching downdrift barrier islands, thereby causing more erosion. The EIS should examine how changes to nearshore bathymetry resulting from dredging the shoals will affect local wave climate and tidal inlet-barrier island dynamics.

Recommendation to Evaluate an Additional Alternative in the EIS regarding Phased Relocation of the WFF infrastructure to the Mainland of the Eastern Shore

While the Intergovernmental Panel on Climate Change (IPCC) has projected global sea levels to rise between 18 and 58 cm by 2100, other independent scientific panels have concluded a rise of one meter is far more likely due to rapidly melting ice sheets in Greenland and Antarctica (Young 2009). The worst case scenario purported by NASA's Jim Hansen suggests that coastal communities should anticipate a sea level rise of up to 5 meters by 2100 (Hansen 2007). Even the most conservative rate of predicted rise indicates that at some point this century NASA will need to consider relocation of WFF's infrastructure to the mainland. With these anticipated changes in mind, and given the considerable investment of public funding in WFF, The Conservancy requests that NASA evaluate an additional alternative in the EIS in which some or all of WFF infrastructure is relocated to the mainland of the Eastern Shore over time.

Since the 1940s, many approaches have been taken at Wallops to stabilize the shoreline including wooden groins, rock seawalls, and geo-textile tubes. All these attempts have ultimately failed, and in the view of Dr. Young have resulted in accelerated erosion, loss of beach and sand, and increased storm damage and flooding on Wallops Island and islands immediately to its south, including Assawoman, Metompkin, and Cedar. According to Dr. Young's report, "Wallops Island is an incredibly vulnerable shoreline due to its low elevation, narrow width, and history of shoreline retreat. This vulnerability will only increase into the foreseeable future due to global sea level rise" [pp. 5-6].

The Conservancy is sensitive to the significant investments in infrastructure made by NASA, the U.S. Navy and others on Wallops Island, the critical importance of operations related to national security and science, and the significant public safety concerns associated with WFF activities. We are also sensitive to the important economic impact of WFF on the surrounding community. In our conversations with NASA, we understand that the geographical location of Wallops Island protects the public by meeting federal range regulations which require safety hazard buffers of 10,000 ft for conducting NASA and partner missions, including rocket launches, testing, and research activities. According to the DOPPA, if the launch facilities were to be moved inland, "the public would be exposed to unacceptable safety risks, which would not be in compliance with Federal range regulations" [p. 16]. In balancing safety concerns against the reality of sea level rise and the increasing risk to Wallops Island as a location for critical infrastructure, the Conservancy requests that NASA include an alternative in the EIS that examines the costs and benefits of a shorter term relocation to the mainland of infrastructure that does not require a public safety buffer and a longer term relocation strategy for launch facilities requiring a safety buffer.

In the final report of the Governor's Commission on Climate Change, the commission makes the following recommendation:

Adaptation policies and programs for the built environment should take into consideration impacts on natural systems, particularly in coastal areas, and minimize negative impact on natural areas that are important for mitigating the impact of climate change. Adaptation policies and programs for the built environment should make use of nature-based strategies, such as natural shorelines, and should be coordinated with fish and wildlife adaptation strategies. [p. 36]

The Conservancy sees a real opportunity for NASA-Wallops to answer this challenge and lead by example through modeling climate change adaptation actions that both protect WFF and are compatible with the natural coastal ecosystem and shoreline of which Wallops is part. In summary, The Conservancy strongly urges NASA to focus on alternatives in the SRIPP EIS that will ensure long-term adaptation to rising sea levels and do not impact the unique Atlantic Coast wilderness represented by the pristine barrier island ecosystem to the south. We submit that eliminating the groin from the proposed Project and adding an alternative regarding phased relocation of WFF to the mainland are critical components of such a balanced response.

The Nature Conservancy appreciates the opportunity to provide a response to this NOI. We appreciate the complex challenges faced by NASA in determining how best to protect the costly infrastructure and operations at Wallops while protecting nearby globally significant coastal habitats. Like many in the community, The Conservancy supports NASA's work at the Wallops Flight Facility. We appreciate its critical national security functions, the opportunities for sub-orbital research programs and commercial launches it provides, and the important economic development it brings to the Eastern Shore. We look forward to working with NASA as this EIS process unfolds. Thank you for your consideration of our comments. Please contact Gwynn Crichton at (434) 951-0571, gcrichton@tnc.org, with any questions or requests for additional information.

Sincerely,



Michael Lipford
Vice President and Virginia Director
The Nature Conservancy

cc (via email):

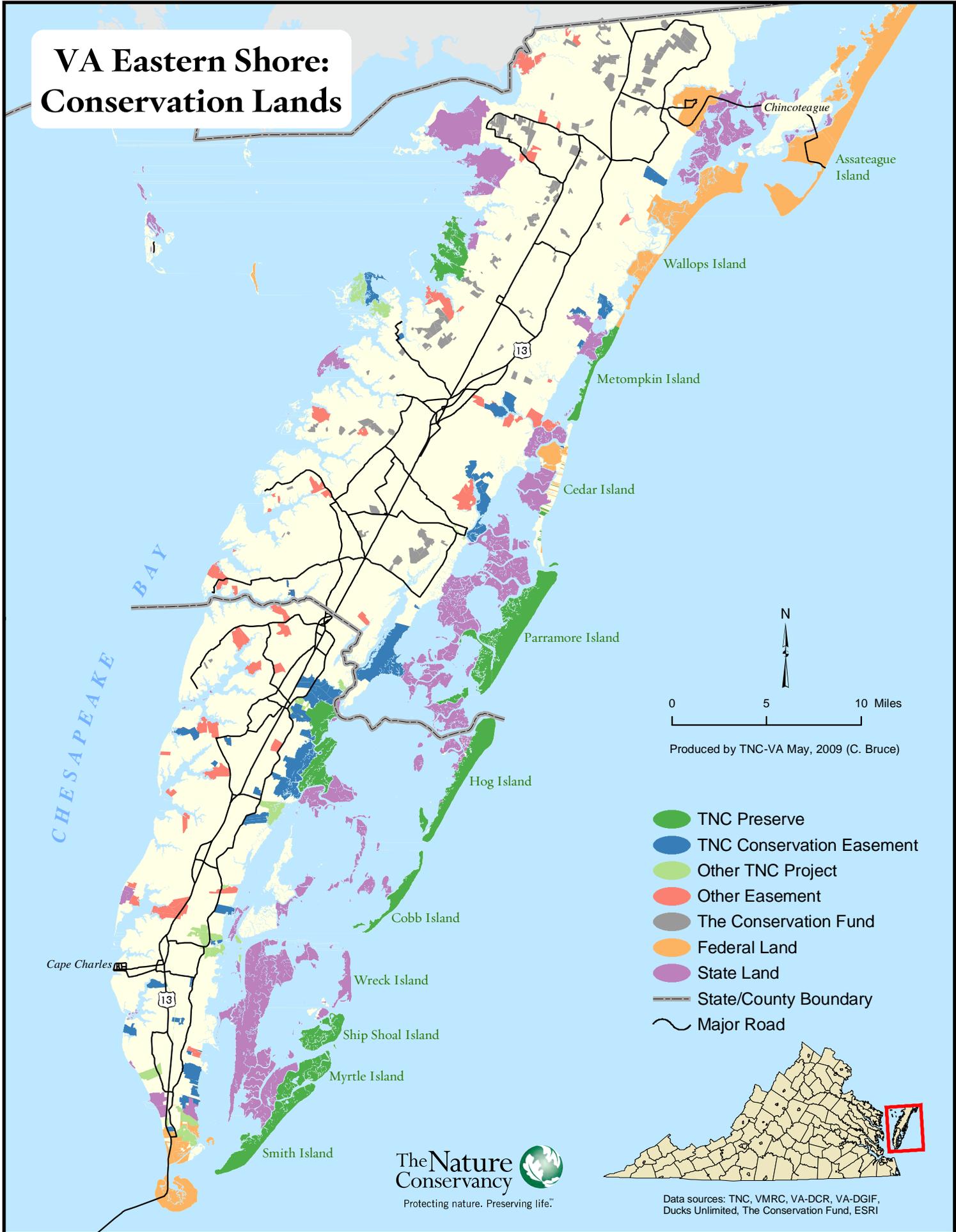
Tylan Dean, Assistant Supervisor, Ecological Services, Virginia Field Office, USFWS
Lou Hinds, Superintendent, Chincoteague National Wildlife Refuge, USFWS
Trish Kicklighter, Superintendent, Assateague Island National Seashore, NPS
Laura McKay, Director, Virginia Coastal Zone Management Program, DEQ
Karen McGlathery, Director, Virginia Coast Reserve Long-Term Ecological Research, UVA
Nicole Rovner, Deputy Secretary of Natural Resources
Tom Smith, Director, Division of Natural Heritage, DCR
Tony Watkinson, Deputy Chief, Habitat Management Division, VMRC
David Whitehurst, Director, Wildlife Diversity Division, DGIF

attachments

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- Young, R. S. 2009. An evaluation of the proposed shoreline restoration and infrastructure protection program at Wallops Flight Facility, Wallops Island, Virginia. A report submitted to The Nature Conservancy April 20, 2009. Cullowhee, NC. 15 pp.

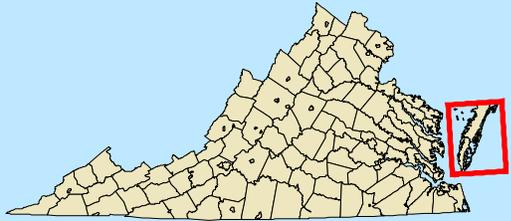
VA Eastern Shore: Conservation Lands



0 5 10 Miles

Produced by TNC-VA May, 2009 (C. Bruce)

- TNC Preserve
- TNC Conservation Easement
- Other TNC Project
- Other Easement
- The Conservation Fund
- Federal Land
- State Land
- State/County Boundary
- ~ Major Road

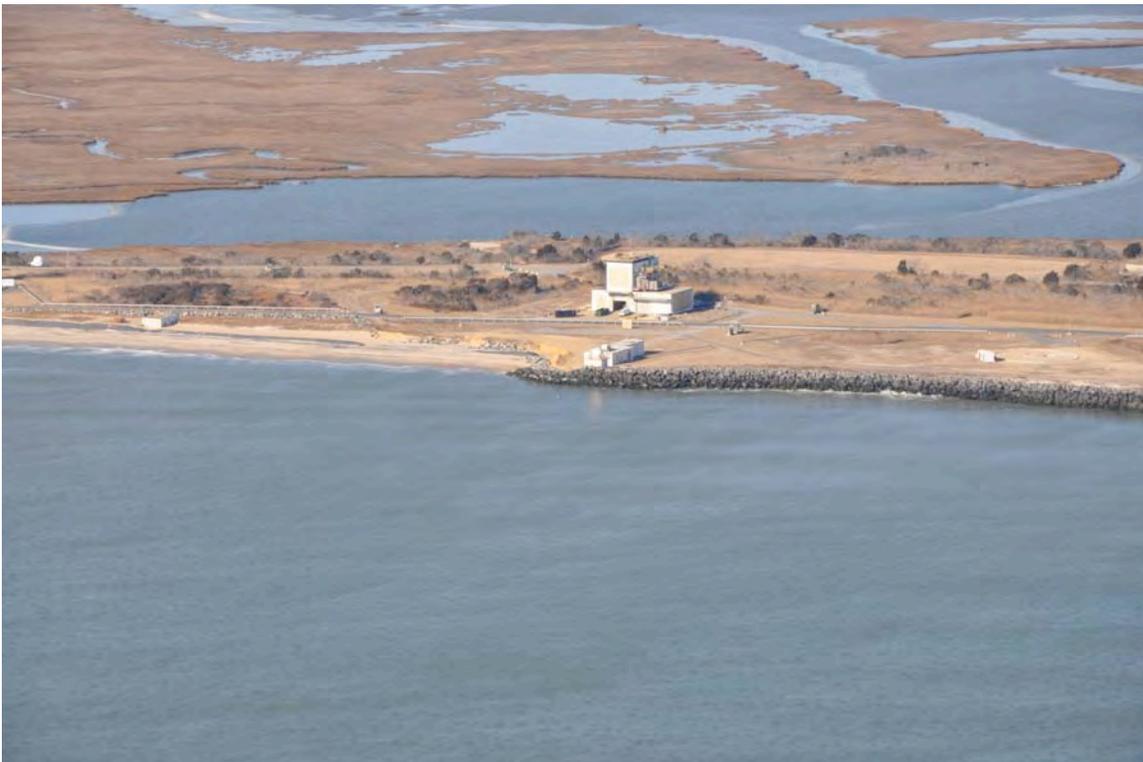


The Nature Conservancy
 Protecting nature. Preserving life.™

Data sources: TNC, VMRC, VA-DCR, VA-DGIF, Ducks Unlimited, The Conservation Fund, ESRI

An evaluation of the proposed Shoreline Restoration and Infrastructure Protection Program at Wallops Flight Facility, Wallops Island, Virginia

Robert S. Young, PhD, PG



Submitted to The Nature Conservancy

April 20, 2009

This report is an evaluation of the March 2009 Description of the Proposed Action and Alternatives (DOPAA) for the proposed Shoreline Restoration and Infrastructure Protection Program (SRIPP) at NASA Wallops Flight Facility (WFF), Wallops Island, Virginia. The purpose of the DOPAA document is to provide notice of proposed actions and alternatives to be considered in an Environmental Impact Statement (EIS) currently being prepared by NASA for the SRIPP. This EIS will be the culmination of proposals developed over the last several years for shoreline protection at WFF and summarized primarily in a previously released Programmatic Environmental Assessment (PEA) for Goddard Space Flight Center's Wallops Flight Facility, Shoreline Restoration and Infrastructure Protection Program (May 2007). Both the PEA and the ongoing EIS rely heavily on an analysis prepared by the United States Army Corps of Engineers Coastal Hydraulics Laboratory (ERDC/CHL TR-06-21) released in September 2006.

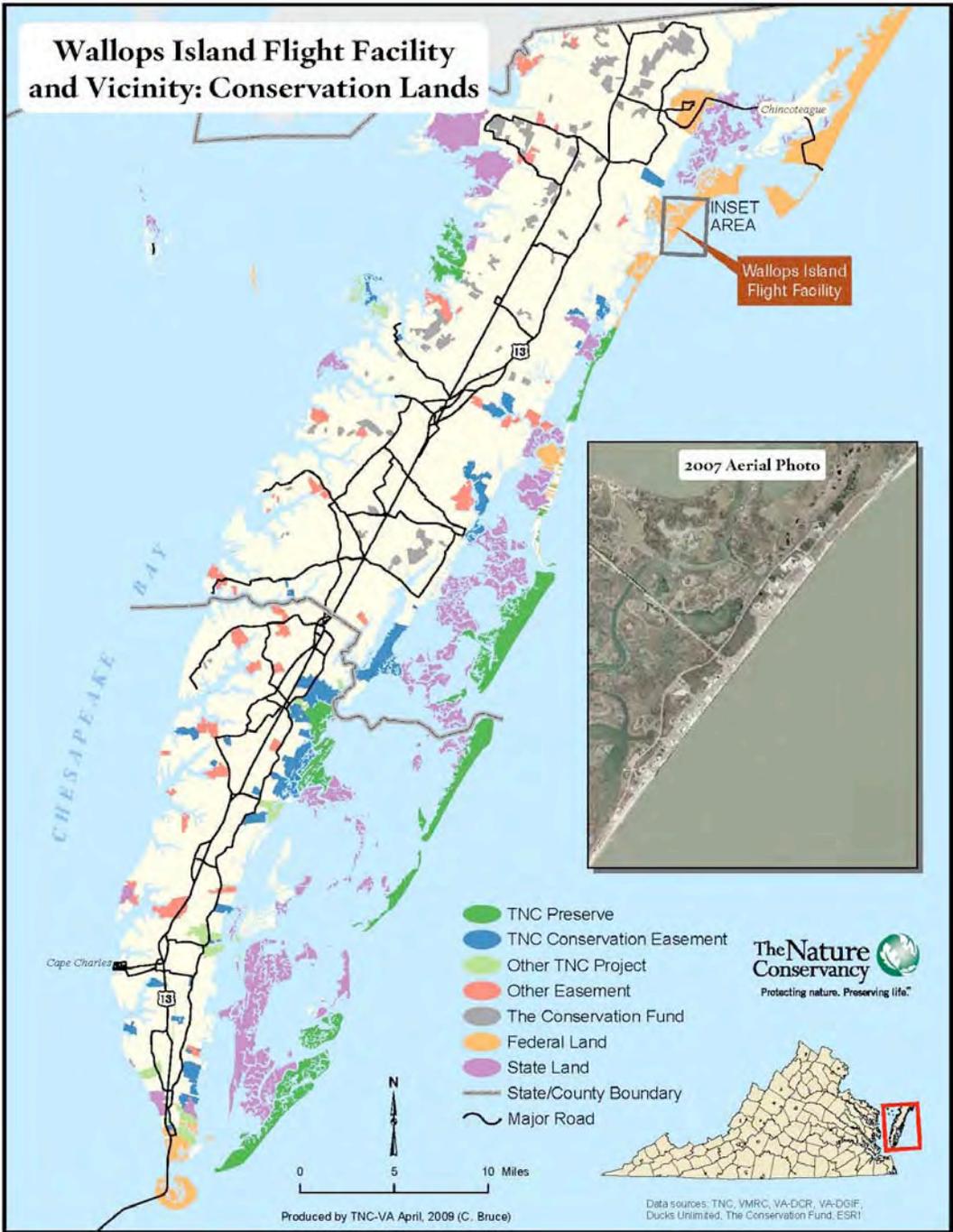
The author of this report was retained by The Nature Conservancy (TNC) to evaluate proposed project alternatives, particularly with respect to any potential impacts on TNC properties. This evaluation includes both a scientific appraisal of the preferred alternative in the DOPAA along with alternative management recommendations. It should be noted that all opinions expressed within are solely those of the report's author, and do not necessarily reflect those of any unit of The Nature Conservancy.

This report is based upon the following:

- 1) An evaluation of the DOPAA, the PEA, and a Shoreline Stakeholder Information Packet (SSIP) distributed by NASA in November 2008.
- 2) A site visit and overflight conducted by the author in January 2009
- 3) A review of the relevant scientific and engineering literature
- 4) A personal assessment of the project impacts by the author based on 20 years of experience evaluating coastal engineering projects and their impacts.

Background

The significant erosion of Wallops Island and the barrier islands immediately to the south (Assawoman, Metompkin, and Cedar) has been well documented. The DOPAA reports a long-term erosion rate on Wallops Island of ~ 3.7 m/yr since 1857.



Assawoman Island has even higher retreat rates reported in the literature. Oertel et al (2008) report that the extremely rapid retreat of these barrier islands is the result of complex underlying geologic control along the southern Delmarva Peninsula. In simple terms, the nature of modern shoreline change along the Virginia eastern shore is guided by the patterns of river valleys and adjacent higher areas (interfluves) that existed during previous ice ages when sea level was significantly lower than it is today. As these older topographic features are flooded by rising sea level they can impact the rate at which the barrier islands retreat, and thus the shape (morphology) of the coast. Oertel et al propose that the area from Wallops roughly to Parramore is underlain by a broad sub-surface low left by an older path of the Susquehanna River. The shoreline indentation left by the rapid retreat of these barrier islands is dubbed “the Chincoteague Bight”. The story is a bit more complex than that, but the important thing to note is that this section of shoreline is rapidly retreating due to natural causes controlled by the nature of the sediments that underlie the barrier islands. Riggs and Ames (2003) report similar rapid barrier island retreat for the North Carolina Outer Banks based on the presence of old river valleys and interfluves.

Future shoreline erosion and barrier island migration rates within the Chincoteague Bight (CB) will be determined by a complex and unpredictable interaction between this underlying geologic control, storm frequency and intensity, and sea level rise. Of course, human activities may also play a role in altering the rate of shoreline change within the Bight. It is one goal of this report to examine how the proposed SRIPP for the WFF may alter the natural rate of retreat for the downdrift barrier islands.

Sea level rise

It is very important to place the proposed project, and the future of the barrier islands within the Chincoteague Bight (CB) into a context of future sea level rise. The rate of sea level rise along the CB has been on the order of 3.1 – 3.5 mm/yr for the last several decades. It will accelerate over the next several decades due to global warming. The Intergovernmental Panel on Climate Change (IPCC) projected a global/eustatic sea level rise of 18 – 58 cm by the end of this century. However, this projection did not include any contribution to sea level from the melting of the large ice sheets of Greenland

or Antarctica. The recent scientific consensus is that including melt water contributions from the ice sheets is critical to an improved prediction of future sea level. Scientific panels examining the impact of sea level rise on coastal management in Florida and Rhode Island have independently concluded that a rise of at least 1 m is far more likely. This corresponds to an average annual rate of 11 mm/yr, significantly higher than the last few decades (Pilkey and Young, In press). NASA's own James Hansen, who heads the Goddard Institute for Space Studies believes that a significantly higher sea level rise is possible by the end of the next century. In a keynote address to the Geological Society of America Annual Meeting in 2008, he advocated planning for a 2 m or higher rise. Clearly, future sea level rise will play a critical role in the future evolution of the CB and in the viability of maintaining the safety of the WFF.

Evaluating the proposed Shoreline Restoration and Infrastructure Protection Program (SRIPP)

There are several major concerns with the SRIPP as proposed. In order to make this report as simple as possible to follow, these concerns will be addressed individually rather than attempting a line-by-line review of all alternatives. This analysis will focus on the Preferred Alternative outlined in the DOPAA. This alternative calls for a massive beach nourishment project in combination with a large terminal groin and an extension of the seawall on Wallops Island.

Relocation of Infrastructure is not listed as an alternative in the DOPAA:

Relocation of infrastructure is listed as "Alternatives considered and dismissed" in the DOPAA. The dismissal is addressed in only four sentences. The DOPAA suggests that relocation is not possible because it would cause a public hazard, it would disrupt activities, and it would be costly. Yet, the DOPAA does indicate that relocation would "reduce the risk of critical infrastructure from storm events". This option should be given more serious consideration and serious scientific, engineering, and fiscal evaluation.

The DOPAA and the PEA have a common short-coming of many engineering reports examining potential responses to coastal erosion. There is a "No Action" option, but there is not a seriously considered "Relocation" option. Wallops Island is an

incredibly vulnerable shoreline due to its low elevation, narrow width, and history of shoreline retreat (Figure 2). This vulnerability will only increase in the foreseeable future due to global sea level rise. The projected rise of 1 m over the next 50-100 years will make the Wallops facility unusable.

So, the harsh reality is that sometime this century, NASA will need to move the critical infrastructure that exists today on Wallops Island. In light of this reality, it seems that any EIS that adequately evaluates all of the options for infrastructure protection should examine the feasibility of moving some of that critical infrastructure inland to a safer location. Ultimately, this will be the only long-term solution that will guarantee the safety of the facility, and America's homeland security. The scientific consensus on future sea level rise suggests that NASA managers will not be able to maintain the status quo at WFF into the next two decades. To do so will ultimately threaten the very infrastructure that NASA would like to protect.

The USACE-CHL report states the following:

This plan is not intended to protect against inundation and other impacts during major hurricanes and exceptional northeasters, when water levels can rise several meters. Protection against hurricane inundation and multi-decade sea level rise will require dikes, island elevation, or other major efforts, to be determined in the future.

In other words, even the preferred alternative will only provide partial protection from storms, and it won't protect the facility from sea level rise. Waiting for the "future" to try and protect the facility from large storms and sea level rise will be a very risky gamble for the safety of WFF.

Relocation of infrastructure away from vulnerable areas is not a radical idea. In fact, the rationale behind this approach is supported by the work of many of NASA's top climate scientists. A recent United States Army Corps of Engineers Report (The Mississippi Coastal Improvements Program EIS) examining the options for protecting the coast of Mississippi from future storm impacts determined that relocation of coastal infrastructure was more cost-effective than beach nourishment for reducing future property damage. At Cape Hatteras National Seashore, the National Park Service and the National Academies determined that moving the Cape Hatteras Lighthouse was the only

way to guarantee its long-term preservation. That lighthouse was moved, and no one has had to worry about it since.



Figure 2: Narrow, low-lying Wallops Island.

NASA is the nation's leading climate change agency and should lead by example. As the agency responsible for educating the public about the threats from global warming, NASA has the potential to demonstrate a forward looking coastal management scheme that can serve as a model for other agencies, communities, or private property owners. In this light, the EIS should fully consider the future impacts of sea level rise on Wallops and evaluate the possibility of relocating infrastructure to a safer location. This is a true long-term solution.

The DOPAA proposes the installation of a terminal groin

While the PEA and the Corps report both indicate the possibility of T-head groins, they do not hint at the scale of the 500 ft long groin that was presented to the Stakeholders in the SSIP. Perhaps, this change of plans triggered the need for an EIS. This structure is not evaluated in the Corps' engineering report. The preferred alternative in the DOPAA indicates that this groin would be located at the south end of the project in order to reduce the rate of loss of nourishment sand.

The PEA reports that "Wallops is bounded by Assawoman Inlet to the south which is currently filled in." This is critical because that means that the Wallops alongshore sediment transport system is directly connected to the barrier islands to the south. Activities on Wallops will have a direct impact to the south. The DOPAA refers to the groin as a "terminal groin." Current engineering usage of the phrase "terminal groin" refers to a groin at an inlet and at the end of a longshore transport cell (ASPBA, 2008). This might be an accurate usage if Assawoman Inlet still existed as a sediment trap and a break in the longshore transport system. However, this is clearly no longer the case. The proposed structure may be "terminal" to the proposed project, but it is not "terminal" to the transport system. Therefore, it will cause a long-term downdrift deficit of sand and increase in the rate of shoreline retreat on the barrier islands to the south.

A recent statement released by more than 40 coastal scientists had this to say about the use of groins in coastal engineering projects:

The negative impact of groins on shorelines is well understood. When a groin works as intended, wave transported sand moving along the beach is trapped on the updrift or upcurrent side of the groin, causing erosion on the downdrift side. This well-documented and unquestioned impact is widely cited in the engineering and geologic literature including in the US Army Corps of Engineers' 2002 Coastal Engineering Manual. There is no debate. Groins cause downdrift erosion.

The PEA acknowledges a significant impact of the jetties north of Assateague on the Wallops shoreline to the south:

Assateague Island's shoreline has retreated approximately 1 kilometer (0.6 mile), depriving Wallops Island of its source of natural sand replenishment from the north.

Groins operate in the same fashion as jetties. There is no question that a large, rock groin placed at the south end of Wallops will interrupt sand transport to the islands south of the project (Figure 3).



Figure 3: Downdrift impacts of groins at Cape May, NJ.

These islands are already sand poor. Further reduction in sand supply combined with rising sea level will only make their existence more tenuous. Without detailed studies, one cannot predict the precise impact of the structure. However, one cannot assume that a low elevation, sand-starved barrier island will maintain itself forever. The threat that these islands face from rising sea level makes them particularly vulnerable to the additional threat human-induced sediment deprivation

The Chandaleur Islands and the Isle Derniere in Louisiana provide one possible example of what can happen when sand-starved islands, facing a high rate of relative sea level rise, experience a storm. Rather than simply overwashing and migrating landward (as the CB islands have done for centuries), they have fallen apart and all but disappeared under the Gulf of Mexico (Figure 4).

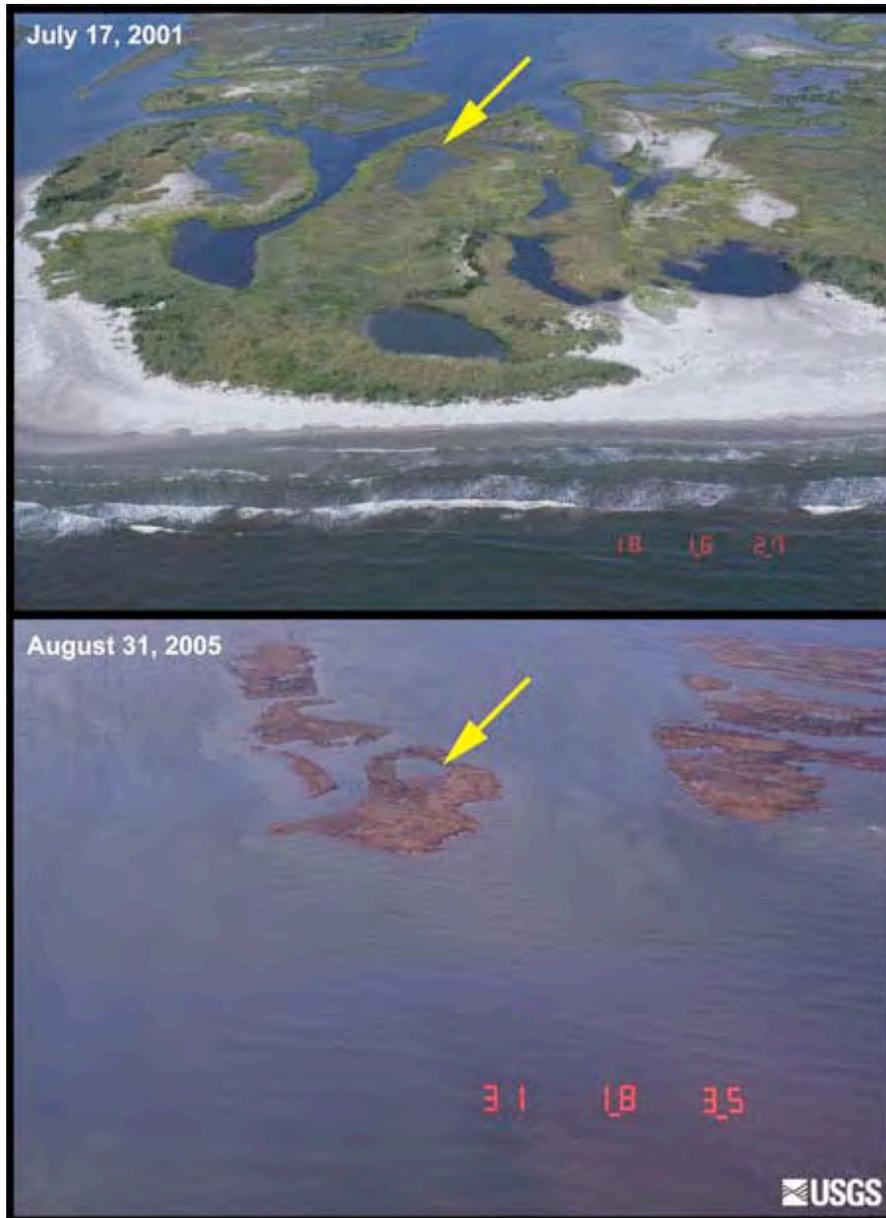


Figure 4: The disappearance of the Chandaleur Island in Louisiana following hurricane Katrina (USGS).

The Corps report acknowledges the threat posed by sediment retention structures in this project:

It is essential that structures do not deprive Assawoman Island of all longshore drift or it is likely to start eroding at greater than the twentieth century rate, thereby jeopardizing nesting habitat, and, eventually, the wetland

The DOPAA attempts to address this concern. It indicates that the structure will be made “leaky” or permeable so that sand will move past it to the south. This is a classic example of “having your cake and eating it too.” The principle of conservation of mass indicates that one cannot build a structure that will both trap sand and still allow the constant flow of sand downdrift. Even a permeable groin can impact nearshore circulation by directing flow offshore instead of alongshore, especially during storms. Groins can be particularly destructive following storms if a significant portion of the nourishment project is transported offshore, leaving the groin uncovered. During this period, the groin will block all longshore transport until the cell is filled in again. In short, if the groin works to hold sand to the north, there will be a long-term deficit to the south.

As noted in the Corps report, this deficit will cause a decrease in the sand volume of the southern barrier islands and reduce the islands’ effectiveness as a barrier. A worst-case scenario, as suggested by the fate of the Chandaleur Islands in Louisiana, could result in:

- 1) The barrier becomes starved of sand
- 2) The barrier experiences a significant storm
- 3) The barrier experiences significant breaching and/or sand loss as with the Chandaleurs
- 4) There is significant loss of barrier island habitat including that for shorebird nesting and foraging
- 5) There is significant loss of wetland in the area behind the compromised barrier and degradation of wetland and benthic habitat.
- 6) Long-term recovery may, or may not, occur

One final concern is that there is private property located on the mainland behind the CB barriers. This project could also increase the vulnerability of that property if the barriers are compromised.

The groin should be removed from the considered alternatives. There is no guarantee that the groin will add significantly to the life of the project. One storm could remove all of the nourishment sand in a day or two. In most storms that sand would be transported offshore, not alongshore, so the groin would provide no benefits.



Figure 5: Assawoman Island immediately south of the proposed project. The island here is already extremely narrow. Note the private property on the mainland currently protected by this barrier.

It should also be noted that breakwaters can cause downdrift harm. Breakwaters are often designed to create a wave shadow that will accumulate sand. Often, this sand will build out until it makes contact with the breakwater forming a feature called a tombolo. The tombolo will block the alongshore movement of sand in the same fashion that a groin would. It is important to remember that any structure that accumulates sand in one place will deprive areas downdrift of sand. Breakwaters should not be seen as a “friendlier” alternative to groins. Beach nourishment without engineering structures, on the other hand, would increase the amount of sand in the nearshore system.

The EIS must include a detailed analysis of the nourishment sand and borrow area impacts

The Corps report incorrectly suggests that the quality of the borrow material placed on Wallops may not matter because it will not be used as a recreational beach. This might be true if all of the sediment were going to stay on Wallops. It certainly will not. Within 1-5 years, most or all of it will be gone. It will move either offshore or alongshore. In doing so it will impact habitat. It will impact the subaerial habitat of the beaches to the south, and it will impact the benthic habitat of areas offshore of Wallops and within the nearshore zone of the islands to the south.

Therefore, detailed geotechnical investigation of the proposed borrow areas needs to be completed including a high density of sediment cores taken within the chosen site. This material should be compared with the native material on the beaches and in the nearshore zone of the other CB barriers. The EIS must ensure that the beach pumped onto Wallops does not contain material that will have a detrimental impact on critical habitat.

The borrow areas are a significant distance offshore. By standard practice, the proposed sites are far enough away from Delmarva coast that the borrow areas should not impact the onshore wave climate. It is beyond the expertise of the author of this report to discuss the potential impact that removal of those shoals will have on marine organisms and birds within the vicinity of the borrow areas, but certainly that needs to be investigated.

The EIS must consider the larger impacts of the project:

A major oversight of the previous PEA was the fact that it did not address the potential environmental impacts of any proposed actions on the areas outside of Wallops Island. In particular, the impacts of an interruption in sediment supply to the south (downdrift) of Wallops was not discussed. Only potential impacts to the already substantially altered resources on Wallops Island were considered. Therefore, a Finding of no significant impact (FONSI) would apply to Wallops only and not the downdrift islands.

The EIS must consider all of the potential impacts of the project. These impacts could be felt for many miles to the south and significant distances offshore of Wallops.

Summary of points for Evaluation in the EIS

- 1) Any plans for a groin should be removed from the SRIPP.
- 2) Breakwaters can also cause downdrift harm. This likelihood needs to be adequately addressed in the EIS.
- 3) The benefits/costs of relocating infrastructure should be scientifically evaluated in the EIS.
- 4) The nature of the borrow material needs to be very carefully evaluated with detailed sedimentological investigation. The habitat impacts of this material on downdrift beaches and nearshore areas must be documented. Offshore impacts to organisms adjacent to the borrow should also be evaluated.
- 5) The EIS must evaluate the potential impacts of the SRIPP on the entire Chincoteague Bight, unlike the PEA which had a very narrow focus.
- 6) How do the current plans for the SRIPP fit into the reality of an acceleration of sea level rise during the coming decades? How far into the future can NASA expect to maintain this facility with beach nourishment? What is the post-project risk to facilities from a large storm?

Recommendations

Many aspects of the Wallops Flight Facility's Shoreline Restoration and Infrastructure Protection Program are problematic. First and foremost, this project will do very little to protect Wallops Island and the WFF from the immediate threat, large storms; and, it will do nothing to protect the facility from the long-term threat, sea level rise. The Corps' engineering report acknowledges as much. Yet, there is real potential harm from this project to downdrift barrier islands, barrier island habitat, back-barrier marshes, and to private property on the mainland sheltered by those barrier islands.

The Nature Conservancy should also be cautious about accepting mitigation as a solution to any potential downdrift harm. The barrier islands in the Chincoteague Bight are currently maintained in a natural state. This makes them globally important for the

habitat they provide and for their use a laboratory showcasing the impacts of rising sea level on a truly natural shoreline. Allowing the dumping of sand on downdrift shorelines as mitigation would forever change these valuable, natural resources.

NASA should seriously consider planning for the relocation of critical infrastructure to the mainland. It need not happen all at once. Nourishment could be used to buy time for planning, land acquisition, and financing. Local partners interested in keeping the facility active into the distant future would certainly be willing to assist. This is the only way to ensure the important missions carried out by WFF continue, the stated goal of the DOPAA. One storm could kill the whole facility even after project placement.

At the very least, the groin should be dropped from consideration. The potential harm is not worth the very small potential gains from extending the life of the nourishment project. The EIS must address all of the environmental concerns outlined in this report.

References

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nature.org

August 18, 2009

Via email; hardcopy to follow

Dr. John Campbell, Facility Director
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island, Virginia 23337

Re: WFF Shoreline Restoration and Infrastructure Protection Program

Dear Dr. Campbell:

The Nature Conservancy thanks you and your staff for your time and for the frank and forthright discussions about NASA's proposed Wallops Flight Facility Shoreline Restoration and Infrastructure Protection Program (SRIPP).

Learning more about NASA's mission, WFF's national role and importance, and the exciting future for NASA-Wallops was very helpful. The update on the direction and timeline of the SRIPP EIS was especially useful. We welcomed the chance to share information with NASA about the global work of The Nature Conservancy and the larger context and significance of the Virginia Coast Reserve. As recognized at the meeting, both of our organizations have longstanding and deep investments along Virginia's unique coastal barrier island chain, investments we are both highly motivated to protect.

We very much appreciate that NASA has chosen to include neither the groin nor an offshore breakwater in the Preferred Alternative in the EIS and instead to evaluate the "beach-fill only" option. We are also pleased that Blackfish Bank was dropped from consideration as a sand source due to potential impacts to fisheries and wave climate. As we said at the meeting, we admire and are grateful for NASA's clear willingness to listen and respond to the strong concerns we and others raised in our scoping comments, as well as your openness to new technical information and the counsel of your Independent Technical Review team.

The Conservancy believes that NASA's decision to pursue a replenishment strategy centered on beach fill as the Preferred Alternative provides increased protection of Wallops' infrastructure without damage to the property or harm to the irreplaceable ecological values of Conservancy and partner-owned barrier islands. This is, of course, pending full review of information in the draft EIS, especially studies on sediment type compatibility, potential effects on coastal geomorphic processes, and impacts to biological communities at both the offshore shoals and Chincoteague Inlet.

We understand that NASA does not feel, at this time, that an evaluation of phased, strategic relocation of WFF infrastructure is warranted as an alternative in the SRIPP-EIS due to mandated public safety requirements, air space regulations, and programmatic needs. While we acknowledge these constraints, it appears that none of the alternatives to be evaluated in the EIS will guarantee the protection of Wallops' infrastructure over the 50 year life of this project. Given that Wallops Island is extremely vulnerable due to its low elevation, narrow width and history of island migration toward the west, magnified by accelerating sea level rise and increasing storm impacts, we are concerned that NASA will remain engaged in a constant battle to protect its infrastructure. This will impact Conservancy interests, as well as those of your other neighbors. For this reason, we strongly encourage NASA to at least begin to develop and lead an inclusive, long-term adaptation strategy which more lastingly copes with the characteristics of this island system.

As we offered at the meeting, The Nature Conservancy would appreciate the opportunity to continue discussions along these lines. We have ideas, expertise and experience in several areas which could be beneficial to NASA on these longer-term issues.

On the communications front, we look forward to hearing more regarding the evolving programs and projects at NASA-Wallops. We appreciate the commitment NASA has made to keep The Nature Conservancy informed regarding environmental review projects and including us on the stakeholder list for NEPA related notifications. Specifically, as we discussed, The Conservancy looks forward to maintaining an active dialogue with NASA regarding the SRIPP EIS as it is drafted and finalized.

I wish to reiterate that The Nature Conservancy strongly supports the mission, national security role and growing economic significance of work being done by NASA at the Wallops Flight Facility. Thank you again for taking the time to meet with us and for demonstrating the willingness to seek solutions that help protect the important infrastructure on Wallops Island while also ensuring the protection of Virginia's valuable barrier island system.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen N. Parker". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Stephen N. Parker, Director
The Nature Conservancy's Virginia Coast Reserve

Cc: P. Bull, J. Bundick, G. Crichton, W. Kittrell, C. Massey, D. Phemister, C. Turner

May 7, 2009

Joshua Bundick
Wallops Flight Facility NEPA Program Manager
Wallops Island, VA 23337-5099

Dear Mr. Bundick:

We are writing to express several concerns about the proposed Shoreline Restoration and Infrastructure Protection Program (SRIPP) at Wallops Island, Virginia. As researchers at the Virginia Coast Reserve Long-Term Ecological Research (VCR-LTER) site on the Eastern Shore of Virginia, we are particularly concerned about the downdrift effects of the proposed project alternatives.

From the information currently available, it appears that any alternatives involving a terminal groin or breakwaters will likely result in decreased sediment supply to the islands south of Wallops. This would accelerate landward migration of these islands potentially leading to the loss of back-barrier marsh and accelerating attachment to the mainland. These geomorphic changes will likely result in loss of wildlife habitat and important ecosystem services that the coastal barrier system provides. The "Description of the Proposed Action and Alternatives (DPAA)" does not address the sediment budget for the longshore transport system on Wallops Island. What volume of sand currently leaves the southern end of Wallops Island? What volume of sand will be allowed to bypass and how will the project be designed to ensure that this happens? What mitigation will occur if sediment bypassing is insufficient?

In addition, there are three other aspects of the problem of coastal erosion and restoration on Wallops Island that were not addressed in the DPAA. First, no plan was outlined for monitoring the planned restoration transport to assess whether the target amount of sediment is bypassing. Second, there is no mention of the impact of sea-level rise, currently about 4 mm/yr on the Eastern Shore, on past or future coastal erosion rates on Wallops Island or on the long-term viability of maintaining infrastructure on Wallops Island. Finally, there is no mention of the potential for sand removal from the shoals to impact the islands by changing the local wave climate.

As down-drift stakeholders, we request that NASA:

1. Include in the Environmental Impact Statement a comprehensive assessment of potential immediate and future down-drift impacts for each project alternative.
2. Guarantee that sediment volumes currently bypassing Wallops Island will be maintained in perpetuity.
3. Develop plans and guarantee funding for monitoring and mitigation of down-drift impacts after the initial project is emplaced, including independent review of the monitoring data.
4. Consider that, owing to sea-level rise, all of the proposed alternatives represent only short-term solutions.

5. Explore and assess additional project alternatives that include relocating some portion of the at-risk infrastructure to the mainland in combination with beach fill to protect the most critical island-based infrastructure.

Sincerely,



Karen J. McGlathery
Professor, Department of
Environmental Sciences
Lead PI, Virginia Coast Reserve LTER

The following LTER researchers share and endorse the opinions stated in this letter:

Patricia Wiberg, Professor, Department of Environmental Sciences, UVA

Art Schwarzkild, Assistant Research Professor, Dept. Environmental Sciences, UVA and Site Director, Anheuser-Busch Coastal Research Center

John Porter, Associate Research Professor, Department of Environmental Sciences, UVA

Linda Blum, Associate Research Professor, Department of Environmental Sciences, UVA

Mark Brinson, Professor, Department of Biology, East Carolina University

Don Young, Professor and Chair, Department of Biology, Virginia Commonwealth University

SRIPP EIS Scoping Responses from
Elected Officials

MARK R. WARNER
VIRGINIA

United States Senate

WASHINGTON, DC 20510-4606

COMMITTEES:
BANKING, HOUSING, AND
URBAN AFFAIRS
COMMERCE, SCIENCE, AND
TRANSPORTATION
BUDGET
RULES AND ADMINISTRATION

June 19, 2009

Ms. Mary D. Kerwin
Deputy Assistant Administrator for Legislative Affairs
National Aeronautics And Space Administration
300 E Street, Sw, Suite 9042
Washington, DC 20546-0001

Dear Ms. Kerwin,

I have recently been contacted by Mr. Calvert H. Seybolt of Mappsville, Virginia. Attached please find a copy of that correspondence. I would appreciate it if you could look into this matter and provide me with an appropriate response. Thank you.

Sincerely,



MARK R. WARNER
United States Senator

MRW/mm

09 MAY 15 PM 2:54

Calvert H. Seybolt, Trustee



May 8, 2009

250/NEPA Manager
WFF Shoreline Restoration and Infrastructure Program
NASA Goddard Space Flight Center's Wallops Flight Facility
Wallops Island VA 23337

Re: NASA's Notice of Intent to prepare an environmental Impact Statement and scoping for Wallops Island Flight Facility Shoreline Restoration and Infrastructure Protection Program that was in the 3/24/09 Federal Register

Dear Sirs:

Interested parties were invited to submit comments on environmental issues concerning the above. These are my comments and concerns.

My name is Calvert Seybolt and I live in Mappsville. I am writing on behalf of two Seybolt Family Trusts, the Ace 1971 and the Gigi 1971 Trust. We own approximately two miles of waterfront behind Assawoman Island. My family owned Assawoman from the 1930's until we sold it to the US Fish and Wildlife Service around 1992. We kept some residual rights on Assawoman. We are a party of interest. Our family has been living and working on the Shore for fourteen generations and we look forward to future generations continuing the tradition. NASA's presence has contributed to the Shore's livelihood and we appreciate that a great deal.

I went to an environmental hearing on Wallops Island back in the early 1990's in Norfolk, Virginia. We were told seawalls were the answer to Wallops Island problems. They also stated at the meeting that groins and jetties did not work as they cause a sand shadow down current. We were told at that time that seawalls were the answer -- the final answer. As a matter of fact the remnants of NASA's last groin model may be found littering Assawoman Island and our mainland farms.

During my families' stewardship of Assawoman it retreated several thousand feet. When you stand on Assawoman and look North, Wallops Island sticks out like a sore thumb. This is due to the hardening of the shoreline. Assawoman has retreated and Wallops has

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not. Your scientists stated that they did not want to accelerate Assawoman's retreat. Yet the retreat figures you use are already accelerated due to the hardening of the Wallops shoreline.

There is no way your actions of placing a 100 foot by 500 foot groin will not accelerate erosion and movement down current. Your own Army Corp guides say groins and jetties do not work. Your model shows sand fill above the proposed groin. When the inevitable budget cuts occur and no sand is replenished you will end up with a groin standing out in the ocean. This will be catastrophic for Assawoman and other down current islands. The groin will be too expensive to remove so NASA will abandon it in place as they have done at other facilities.

My family and other landowners are also concerned about the use of my land and the large danger area NASA needs when it starts to launch the big rockets. This impact will reduce the use and value of my property. NASA should be looking to compensate landowners and paying for the encroachment buffers you are trying to put into place. Having NASA or the County restrict my property through zoning or ordinances is a taking.

Unfortunately, it appears to me that the 50-year time frame for the project may be short-sighted. I am afraid that your actions will cause Assawoman to break up and expose the mainland to the ocean. I hope you understand how important this is to me, my family, and on a larger scale the Shore. Thank you for your time and your consideration in this matter.

Sincerely,

A handwritten signature in cursive script that reads "Calvert H. Seybolt, Trustee". The signature is written in dark ink and is positioned above the printed name.

Calvert H. Seybolt, Trustee



COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

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COMMITTEE ASSIGNMENTS:
FINANCE
COMMERCE AND LABOR
AGRICULTURE, CHESAPEAKE AND
NATURAL RESOURCES
MILITIA, POLICE AND PUBLIC SAFETY

August 7, 2009

Caroline Massey, Asst. Director of Management Operations
C/O NASA Wallops Flight Facility
Building F6, Room 216
Wallops Island, VA 23337

Dear Caroline:

Certainly we are all excited with the great things happening at NASA Wallops Island/Mid Atlantic Regional Space Port and all the great opportunities it will bring to the Eastern Shore. As always, great opportunities also bring challenges. I have heard from land owners and also from the Nature Conservancy regarding significant issues raised for the future in regard to the beach protection plan currently in development. Specifically, as I am sure you know, the groin project has become a point of great concern. You were kind enough to provide a briefing to me several weeks ago and I have just recently met with these parties. While your briefing was excellent, they have obviously raised some significant concerns with the effect of the groin plan on the future of the barrier islands. I know that you have a meeting scheduled for next week with the Conservancy and I certainly hope that you will listen to their concerns. It strikes me that there should be a way to address everyone's needs and concerns while at the same time preserving the launch site and its vital role in this significant engine for economic development. Certainly if I can be of any help as the parties begin what I hope will be a fruitful and positive dialogue, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink, appearing to read "Lynwood W. Lewis, Jr.", written over a large, stylized flourish.

Lynwood W. Lewis, Jr.
100th District