



Buskin River Marine Zone (BRiMS) Progress Technical Memorandum #1 Sun'aq Tribe of Kodiak

Per the original agreement between Sun'aq Tribe of Kodiak (STK), the Federal Aviation Administration, and Alaska DOT&PF, Sun'aq will provide two Progress Technical Memorandums to FAA and DOT. The first was to be produced at the end of YR 2 (June 2016) and the second at the end of YR 4 (June 2018). BRiMS fieldwork commenced in October 2015 (instead of June 2015 as initially planned) due to longer-than anticipated negotiations for the contract agreements. As a result of the delayed start, many work tasks were not completed according to the original schedule, and have since been rescheduled (see attached “BRiMS Work Plan”).

“Progress Technical Memorandum #1” is a key milestone for triggering the final payment to STK, enabling funding for the final project years. Once “Progress Technical Memorandum #1” is reviewed and approved by DOT&PF and FAA, the final amount (\$255,000) is to be disbursed to STK.

This first Memorandum (aka, Tech Memo #1) covers YR 1 and YR2. The Work Plan components (biological, chemical, physical, and cultural) are discussed, including: milestones achieved, initial data collection summaries, lessons learned, and next steps.

Contact Persons - UPDATE

Per the original agreement, STK must update DOT&PF of any changes in key personnel. See below for the updated STK contact persons.

<p>Contact Persons For STK</p>
<p>CEO/Tribal Administrator Jeannine Marsh 312 West Marine Way Kodiak, AK 99615 (907) 486-4449 ceo@sunaq.org</p>
<p>Project Manager/Natural Resources Director Thomas Lance 312 West Marine Way Kodiak, AK 99615 (907) 486-4449 talance@sunaq.org</p>

Chemical Component – Update by Leyla Arsan, Birch Leaf Consulting, LLC.

The chemical component was continued from fall of 2015. We are on target to continue monitoring and data collection through 2018. This report summarizes the 2016 milestones, initial results, lessons learned, and next steps for the project.

2016 Milestones Achieved

- We now have one year’s worth of data from the salinity meters (Figure 2). There are some gaps in the data for several of the HOBOS, but a significant amount of data was gathered.
- Anchor reinforcement of monitoring stations was added in 2016 (right photo, setting three 18-21 pound Danforth anchors for each monitoring station).



Initial Data Summary

- Wind is the primary driver of the distribution of the Buskin River freshwater plume.
- Large dips in salinity were observed during strong wind events.
- The plume may extend south from the river mouth around RWE 25 or north along the beach, depending on wind direction.

Lessons Learned

- The study area has strong wave and wind forces that make anchoring of monitoring stations challenging.
- Better placement and anchoring of stations is needed (and was initiated in 2016).

Current Status and Next Steps

- There are now 4 active stations collecting data (Figure 1).
- Data from year 1 have been compiled and are being mapped.
- Map and data will be summarized in Year 1 Report.



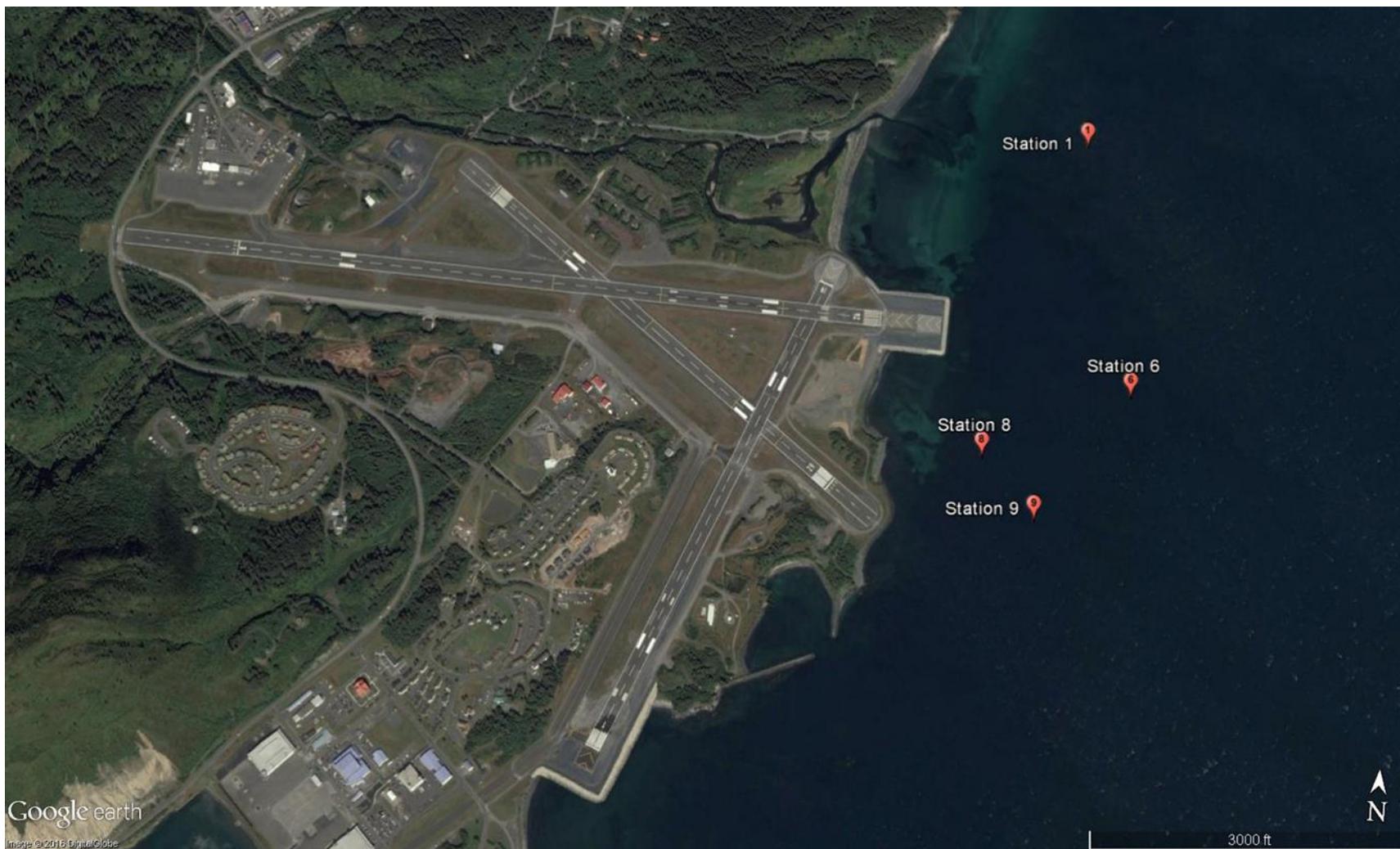


Figure 1. The four chemical monitoring stations: Station 1 (N57° 45.390' W152° 28.233'), Station 6 (N57° 44.980' W152° 28.080'), Station 8 (N57° 44.872' W152° 28.499') and Station 9 (N57° 44.772' W152° 28.326').

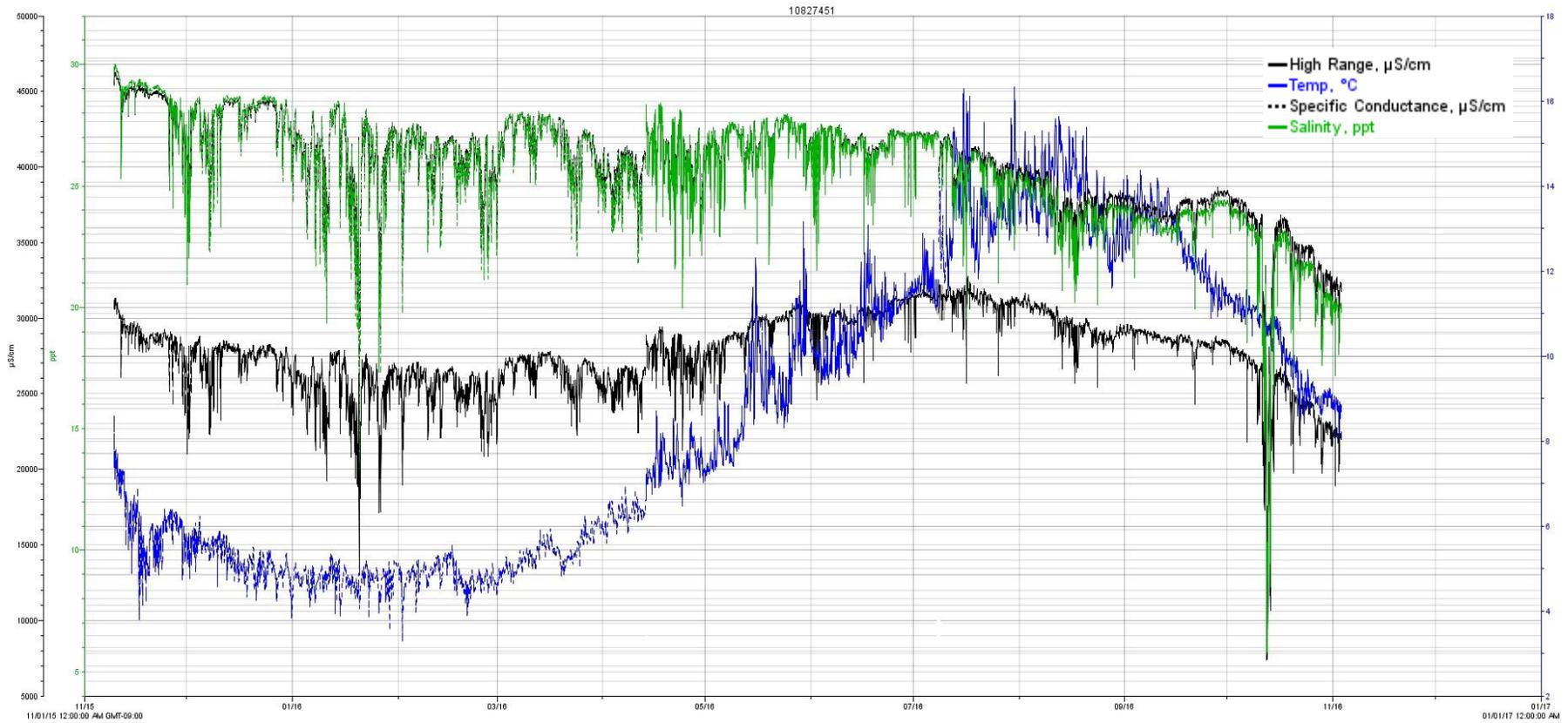


Figure 2. Station 8 data (high range conductivity, temperature, specific conductance, and salinity) from November 2015 - November 2016.

Biological Component – Update by Leyla Arsan, Birch Leaf Consulting, LLC.

The biological component of BRIMS kicked off in summer of 2016. This report summarizes the 2016 milestones, initial results, lessons learned, and next steps for the project.

2016 Milestones Achieved

- Study and Reference sites were researched and selected (Figure 3).
- The first season of data collection was completed safely and successfully for both intertidal and subtidal transects (right photo- characterization of intertidal species in reference Site 4).



Initial Data Summary

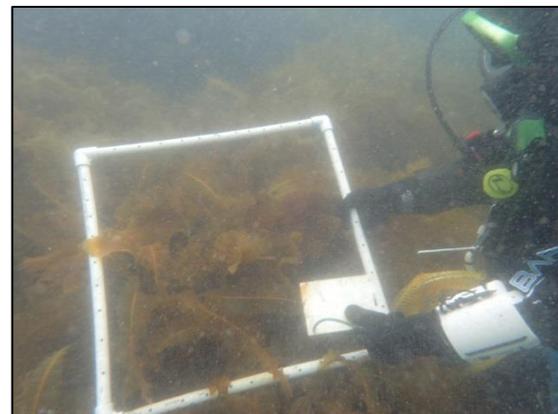
- Study sites showed extensive cover by early colonizing algae and invertebrates in both the intertidal and subtidal areas (Table 1).



- RWE 01 intertidal colonization was dominated by blue mussels (*Mytilus edulis*), whereas RWE 25 (left photo, Site 1) was dominated by barnacles (*Balanus* spp. and *Cathalamus dalli*) and laver algae (*Porphyra* spp.). RWE 25 had more bare rock than RWE 01.

- Subtidal transects at RWE 01 showed relatively dense cover by a variety of algae, demonstrating potential for canopy forming algae to develop (bottom photo, Site 2).

- Several species of fish were observed along the subtidal transects at RWE 01, including juvenile black rockfish (*Sebastes melanops*) and great sculpin (*Myoxocephalus polyacanthocephalus*).
- Subtidal transects at RWE 25 were not sampled since there was little to no subtidal rock present. The majority of the new fill is intertidal.



Reference sites had 2 to 5 times as many algae species as the study sites, further confirming that the study sites are in early stages of succession. Reference sites also had 2 to 3 times as many sessile invertebrate species, and 1.5 to 3 times as many mobile invertebrate species as the study sites.

Lessons Learned

- The large rock fill at the study sites made access and travel challenging due to large steep gaps between rocks and slippery terrain (right photo, Site 1). Some areas were inaccessible due to safety concerns.
- Because the study and reference sites transition to soft substrate quickly in the subtidal, wind and waves substantially affect the practicability and visibility of subtidal work by churning up sand in the water column and creating waves that created concerns with boat work.
- We now have a better idea of how much wind is practicable to work in.



Current Status and Next Steps

- Tabular data from year 1 have been compiled and had one round of QC.
- Photos are organized and filed.
- Data are currently being assessed for Year 1 Report and poster presentation at Alaska Marine Science Symposium in January 2017. Further analysis and comparison of species assemblages will be completed.
- The potential effect of the USCG wastewater outfall on the reference sites versus the study sites will be examined (bottom photo).





Figure 3. The five biological monitoring sites.

Taxon	Common Name	Study Sites	Reference Sites
Algae			
<i>Acrosiphonia arcta</i>	Arctic sea moss	X	X
<i>Alaria marginata</i>	Ribbon kelp	X	X
<i>Analipus japonicus</i>	Bottlebrush seaweed		X
<i>Bangia</i> Sp.	Black sea hair	X	X
<i>Chordaria flagelliformis</i>	Chocolate pencils		X
<i>Cladophora sericea</i>	Graceful green hair		X
Unknown	Encrusting coralline red algae		X
Unknown	Encrusting coralline red algae		X
<i>Corallina frondescens</i>	Enigmatic coral seaweed		X
<i>Corallina vancouveriensis</i>	Graceful coral seaweed		X
<i>Desmerestia viridis</i>	Stringy acid kelp	X	X
Unknown	Encrusting green algae		X
<i>Endocladia muricata</i>	Sea moss		X
Unknown	Felty brown algae		X
Unknown	Felty red-brown brushy algae		X
<i>Fucus distichus</i> subsp. <i>evanescens</i>	Rockweed	X	X
<i>Halosaccion glandiforme</i>	Sea sac	X	X
<i>Saccharina latissima</i>	Sugar kelp	X	X
<i>Laminara setchellii</i>	Southern stiff-stiped kelp	X	
<i>Laminara yezoensis</i>	Suction-cup kelp		X
<i>Mastocarpus papillatus</i>	Turkish washcloth		X
<i>Mazzaella heterocarpa</i>	Mazzaella		X
<i>Microcladia</i> sp. (Possibly <i>M. coulteri</i>)	Sea Lace		X
<i>Neoptilota asplenioides</i>	Sea fern		X
<i>Neorhodomela larix</i>	Black pine		X
<i>Neorhodomela oregona</i>	Oregon pine		X
<i>Odonthalia floccosa</i>	Sea brush		X
<i>Palmaria callophyloides</i>	Frippy red ribbon	X	X
<i>Palmaria hecatensis</i>	Stiff red ribbon	X	X
<i>Palmaria</i> sp.	Ribbon sp.	X	X
<i>Palmeria mollis</i>	Red ribbon	X	X
<i>Petalonia fascia</i>	False kelp		X
<i>Porphyra</i> sp (possibly <i>P. psuedolanceolata</i>)	Porphyra sp.	X	
<i>Porphyra fallax</i>	False laver	X	
<i>Porphyra fucicola</i>	Rockweed laver		X
<i>Porphyra perforata</i>	Purple laver	X	X
<i>Porphyra psuedolanceolata</i>	Olive green winter laver	X	X
<i>Porphyra</i> sp.	Laver sp.		X
<i>Porphyra variegata</i>	Kjellman's laver		X

<i>Pterosiphonia bipinnata</i>	Black tassel		X
unknown	Red filamentous algae	X	
unknown	Red finely-branched filamentous epiphytic algae		X
<i>Sacharina sessilis</i>	Sea cabbage		X
<i>Scytosiphon lamentaria</i>	Soda straws		X
<i>Ulva latuca</i> (formerly <i>U. fenestrata</i>)	Sea lettuce	X	X
<i>Ulva</i> sp.	<i>Ulva</i> sp.	X	X
Total species of Algae		19	42

Sessile Animals

<i>Aplidium coei</i>	Sea Pork (tunicate)		X
<i>Balanus</i> sp. (Dead)	Acorn barnacle		X
<i>Balanus</i> sp.*	Acorn barnacle	X	X
<i>Chthamalus dalli</i>	Little brown barnacle	X	X
<i>Entodesma saxicola</i>	Northwest ugly clam		X
<i>Eudistylia vancouveri</i>	Northern feather duster worm		X
<i>Halichondria panicea</i>	Crumb of bread sponge (green encrusting sponge)		X
<i>Haliclona permollis</i>	Purple encrusting sponge		X
<i>Lagenicella punctulata</i>	Bryozoan sp.		X
<i>Mytilus edulis</i>	Blue mussel	X	X
<i>Semibalanus balanoids</i>	white barnacle		X
<i>Semibalanus cariosus</i>	Thatched barnacle		X
Unknown sp	Orange sponge	X	X
Unknown sp	Anemone	X	X
Unknown sp	Tiny red Anemone		X
<i>Urticina coriacea</i>	Stubby Rose Anemone		X
<i>Urticina grebelnyi</i>	Christmas anemone, painted anemone		X
Total number of Sessile Species		5	17

Motile Animals

<i>Amthissa columbiana</i>	Wrinkled dove snail		X
<i>Cancer magester</i>	Dungeness crab	X	
<i>Henricia leviuscula</i>	Blood star		X
<i>Katharina tunicata</i>	Black gum boot chiton		X
<i>Lacuna varigata</i>	Variegated lacuna		X
<i>Leptasterias hexactis</i>	Rough six-armed sea star		X
<i>Ligia pallasi</i>	Sea slater	X	X
<i>Littorina plena</i>	Black periwinkle	X	X
<i>Littorina sitkana</i>	Sitka periwinkle	X	X
<i>Lottia digitalis</i>	Fingered limpet	X	X
<i>Lottia pelta</i>	Shield limpet		X

<i>Margarites pupillus</i>	Puppet margarite	X	
<i>Nucella lima</i>	File dogwinkle	X	X
<i>Nucella lamellosa</i>	Dogwinkle	X	X
Numerous species	Hermit crabs	X	X
<i>Paranemertes peregrina</i>	Ribbon worm	X	X
<i>Pentidotea wosnessenskii</i>	Rockweed sowbug		X
<i>Evasterias trochelli</i>	Mottled star	X	
<i>Nereis vexillosa</i>	Pile worm	X	
<i>Searlesia dira</i>	Dire whelk		X
<i>Spinulogammarus carinatus</i>	Isopod, spiny beach flea	X	
<i>Tectura persona</i>	Mask Limpet	X	X
<i>Tectura scuta</i>	Plate limpet	X	X
<i>Telmessus cheiragonus</i>	Helmet crab	X	
<i>Notoplana sp.</i>	Common flatworm		X
<i>Siphonaria theristes</i>	Pacific false limpet		X
Unknown	7 rayed star		X
Total number of mobile Species		16+	21+
Band Transect Animals			
<i>Sebastes melanops</i>	Juvenile black rockfish	X	
Unknown	Greenling		X
<i>Myxocephalus polyacanthocephalus</i>	Great sculpin	X	X
<i>Odocoileus hemionus sitkensis</i>	Sitka black-tailed deer		X
<i>Vulpes vulpes</i>	Red fox		X
<i>Pugettia gracilus</i>	Graceful kelp crab		X
<i>Ligia pallasi</i>	Sea slater		X
Unknown	Jellyfish		X
Total number of mobile band transect species		2	7

**Balanus* mats could include *Semibalanus*

Table 1. Species observed from study sites (Runway Ends 25 and 01) and reference sites (Airport Crash Basin Jetties).

Physical Component – Update by Sun’aq Tribe of Kodiak Natural Resources Department Staff

The physical component was initiated in 2015 with a detailed bathymetry survey of nearshore habitat to document variability over time. The survey was conducted on May 28, 2015 using an Autonomous Underwater Vehicle (AUV) run by Alaska Department of Fish and Game (ADF&G) biologist Heather Finkle.

2016 Milestones Achieved

A detailed bathymetry survey was replicated on June 3, 2016 with several AUV surface missions (right photo) and a manual mission of the nearshore habitat of RWE 25.

Initial Data Summary

The AUV recorded data on the following parameters: latitude, longitude, depth to bottom, total water column, temperature, specific conductivity, pH, dissolved oxygen, turbidity, and chlorophyll. ADF&G compiled and edited the data, and sent it to Sun’aq Tribe of Kodiak staff on June 7, 2016.



Lessons Learned

During the 2016 bathymetry survey, 13 subsistence fishing boats (left photo, 2 subsistence boats visible) were observed within the Buskin River outlet vicinity. This created a difficult environment for bathymetry mapping, and several of the predetermined transects had to be adjusted or aborted early.

Current Status and Next Steps

Bathymetry transect data from 2015 and 2016 has been mapped (Figure 4). Sun’aq Tribe of Kodiak staff will coordinate with ADF&G staff to conduct the 2017 bathymetry survey before the Buskin River salmon return.

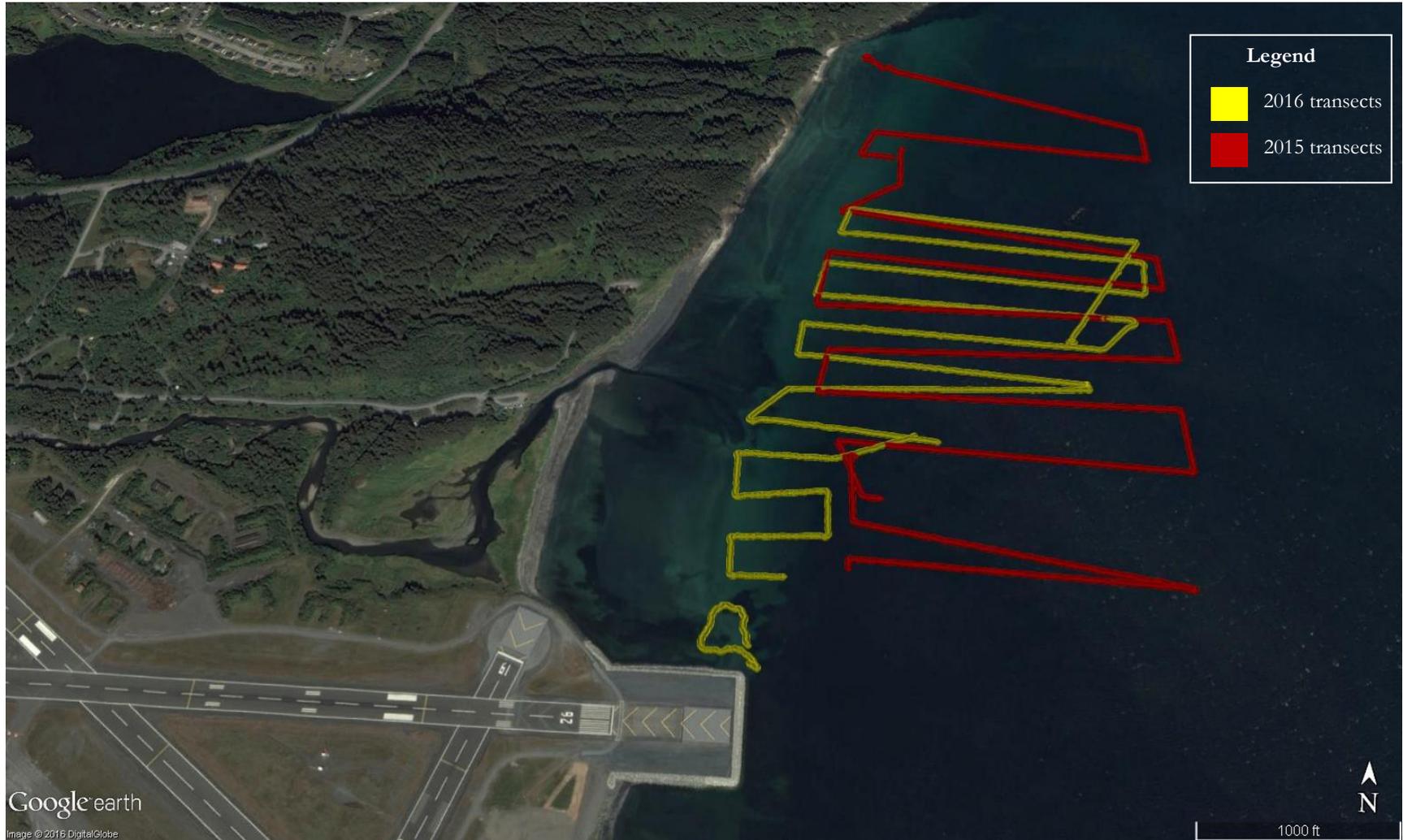


Figure 4. Bathymetry data transects of Buskin nearshore habitat.

Cultural Component – Update by Erica McCall Valentine, The Scholar Ship

The Social Component of the BRiMS project commenced in 2015 and continued in 2016. We are on target to continue collecting and analyzing cultural data through 2018. The following summarizes the 2016 milestones, lessons learned, and the next steps for the project:

2016 Milestones Achieved

- Completed 4 participant observation sessions with 4 different respondents while they were conducting activities associated with Buskin River subsistence fishing (right photo). A total of 10 participant observation sessions are completed.
- Develop a comprehensive set of post-participant observation notes detailing the investigator's experiences, observations, and conversations of each experience.
- Review all available ADF&G technical reports to identify historical Buskin River data.
- ADF&G published the results of the 2012-2014 systematic household surveys and ethnographic studies. According to a December 2016 conversation with ADF&G Subsistence Division, the methodologies of the systematic household studies were flawed so little information was derived from this portion of the study. The ethnography portion of this study is useable and correlations between the ADF&G ethnographic data and the BRiMS ethnographic data can be correlated in the analysis phase of this project.
- Identify 2 of the 4 case study families.



Initial Data Summary

- Initial coding matrix includes the following categories of analysis: personal account of events, equipment, equipment ownership and use, choice of fishing location, weather, fishing technique, social interactions, use of harvests, sharing and distribution of harvests.
- Initial coding of identified ADF&G technical reports identify fishery stock, status, and trends and participation and harvest trends.

Lessons Learned

- Participation in the Buskin River fisheries is dependent upon many socio-ecological, –environmental, and –economic factors, i.e. respondents need to be able to take time off work to fish during their work hours, the weather needs to be favorable for fishing near the mouth of the river, and the fish need to be milling near the mouth of the river and/or running up the Buskin River towards their spawning grounds. The variability in the participation in the fisheries can pose some challenges in coordinating participant observation sessions.

Current Status and Next Steps

- During the months of June-August 2017, conduct at least two more participant observation sessions while respondents are actively fishing in the nearshore Buskin River subsistence fishery.
- Once the final 2 participant observation sessions are complete, complete the data synthesis and analysis and correlate participant observation with ADF&G and BRiMS-derived qualitative data.
- Coordinate with ADF&G to elucidate any data available from their systematic household survey data efforts, and support their efforts in securing funding to complete archipelago-wide systematic household surveys.
- Due to the seasonal fluctuations of the fishery and the socio-ecological, -environmental, and -economic factors contributing to a household's participation in the fishery, the case study family subsistence use documentation will commence in Q2'17 when households are preparing for and participating in Buskin River fishing activities, instead of Q1'17. This data collection method will continue for 12 months as planned, but run from Q2'17-Q1'18.

Buskin River Marine Zone Study

Work Plan December 2016

Updated Contact Info – Sun’aq Tribe of Kodiak (907) 486-4449

Tribal Administrator/CEO

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BRiMS Team Info

Team Members

Tom Lance, STK (PM)

Kelly Krueger, STK (Dpty PM)

Leyla Arsan – Aquatic Scientist (Birch Leaf Consulting, LLC (formerly SWCA))

Mark Blakeslee, Biologist (consultant, Aqualife)

Melinna Faw, Fisheries Biologist (KRAA)

Heather Finkle, Alaska Department of Fish & Game

Bruce Short, Biologist

Erica McCall Valentine, Social Scientist (consultant, The Scholar Ship)

Team Role

Project Admin, Study Continuity, Boat Operator

Biologist, GIS support

Biological and Chemical Component, GIS support

Biologist, Diver

Biologist, Diver

AUV ops, Physical Component, Other Advisor

Biologist, Boat Operator, Safety/BU Diver

Cultural

Overview of Included Components and Estimated Cost

Component	Estimated Cost Per Component
Physical	\$ 65,000
Chemical	\$135,000
Biological	\$200,000
Cultural	\$ 50,000
TOTAL COST	\$450,000

Physical Component

To describe basic "underwater topographic" features of the study area, a bathymetric survey will be conducted. Detailed information on near-shore seabed elevation will be recorded, and from it, substrate movement or deposition would be inferred. Results from surveys would be displayed in a 3-D mapping program and Geographic Information System (GIS). The survey work would be conducted once each year from 2015 to 2018, which will capture post-RSA seabed features. These work tasks will require contracted expertise and equipment, but STK will also provide shore side and marine logistical assistance. If additional funding is acquired, enhancement-tasks will be added (See note**).

Primary Person Responsible: Heather Finkle, ADF&G (Objective 1)

Estimated Cost Per Component: \$65,000

Objective 1 : Conduct a Bathymetric Survey with the use of AUV to document habitat variability over time

Tasks	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Mission preparation, 1 per year from 2015-2018	May 2015 2016 2017 2018	<ul style="list-style-type: none"> - Plot the mission - Calibrate AUV sensors - Other preparation as needed 	NA	None
Bathymetry Mapping Events, 1 per year each April/May	May/June 2015 2016 2017 2018	<ul style="list-style-type: none"> - 2 surface missions not in excess of 4 hours each per mapping event - Missions will extend approximately 1000 m from shore - 2018 mission will include attached video camera 	Data downloaded as an ASCII file and imported into csv file (edited raw data) Surfer generated bathymetric maps Video footage	STK - Research skiff (small) & operator Timing should overlap with other BRiMS sampling

Data management	August 2015 2016 2017 2018	- Compile and edit data	Data include georeferenced depth, temperature, dissolved oxygen, pH, turbidity, conductivity & chlorophyll measurements	None
AUV Servicing	May 2015 2018	- AUV will be serviced two times, once each after first and last years	NA	None
**Create habitat maps of the Buskin River nearshore area to document changes since EIS mapping in 2008.				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
**Use 2018 video captured in Objective 1 to assess substrate and algal cover	Dec 2018	- Code video for dominant substrate type and percent algal cover	NA	Video from Objective 1
**Create map of habitat types in the nearshore area	Spring 2019	- Georeferenced video stills to create a grid of data points. - Using interpolation methods similar to pre-construction mapping, intertidal and sub tidal habitats will be mapped using the following parameters (some of which are capture in Objective 1, or in the chemical aspect of the BRiMS study): depth, salinity, substrate, algal cover.	Final post-construction habitat map GIS data	Bathymetry data from Objective 1 Salinity data from Chemical component.

****This portion of the component will only be completed if additional funding becomes available, and is not included in the estimated cost per component listed above.**

<p>Chemical Component</p> <p>To document the general distribution of the Buskin River freshwater plume after RSA construction, continuous water quality loggers will be placed in the anticipated area of change (east and south of runway end 25, as modeled in the EIS) and monitored. Anchored monitoring stations will be established to collect continuous conductivity and temperature data over a 2-3 year period. Monitoring stations will be calibrated and maintained monthly and data downloaded and backed up. Data will be used to map the concentration of salinity and determine the distribution of the freshwater plume using interpolation and other GIS methods. This study will focus on the edges of modeled plume in order to capture data from areas with the greatest potential for variability and thus determine the edge of the plume.</p>				
<p>Primary Person Responsible: Leyla Arsan, Birch Leaf Consulting, LLC. (Objective 1 & 2)</p>				
<p>Cost Per Component: \$135,000</p>				
<p>Objective 1 : Collect conductivity and temperature data in the area of the modeled Buskin River freshwater plume</p>				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Study plan and field protocols	Complete by June 2015	- Draft a detailed study plan and field protocols that can be used by field techs.	Study Plan	None
Establish monitoring stations	Complete by October 2015	- Establish year round anchored monitoring stations that will allow loggers to move with the tide and remain near the surface of the water	GPS coordinates of stations	Research skiff (lrg) & operator Field tech

Station maintenance	Monthly: October 2015- June 2018	<ul style="list-style-type: none"> - Monthly calibration, maintenance, and data downloads at each monitoring station (ensure mooring line stability/fouling and hardware corrosion) - Ensure stations are not disrupting subsistence fishing, otherwise remove stations during the subsistence fishing season and reinstall after season closure. 	NA	Boat & operator Field tech
Data maintenance	Monthly: October 2015- June 2018	<ul style="list-style-type: none"> - Data will be backed up and checked to ensure stations are functioning as needed, and are accurately placed to capture data from key locations or margins of plume. 	Data downloaded to excel.	STK staff/field tech transfer data to Birch Leaf Consulting, LLC
Reporting	Annually	<ul style="list-style-type: none"> - Provide annual status updates on study progress. - Describe results in final report. 	Alaska Marine Science Symposium Presentation - 2017 2 annual reports 1 final report	None
Objective 2 : <i>Map the post-RSA construction distribution of the Buskin River freshwater plume</i>				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Map Buskin River freshwater plume	Initial map Feb 2016 Final map Dec 2018	<ul style="list-style-type: none"> - Use tabular data to interpolate salinity concentrations and distribution of the freshwater plume 	Map of plume post-construction. GIS data.	Data from Objective 1

Biological Component				
To quantify the colonization and functional succession of newly placed armor rock at the Kodiak Airport over 3 years, substrates in the project area will be sampled annually during years 2, 3 and 4. Species abundance and assemblage parameters (percent cover of algae and invertebrates) at the airport site and at a reference site at a similar depth will be documented. This will provide information regarding recruitment and colonization of encrusting and sessile invertebrates, as well as algae, in the project area and thus provide information regarding the associated rate of increase in ecological function post-construction. It will also provide information regarding nearshore marine disturbance recovery in hard-bottom habitats in southcentral Alaska. Target sampling period will be mid-summer to capitalize on good tides and better sampling conditions (as documented in other colonization studies in Alaska).				
Primary Person Responsible: Leyla Arsan, Birch Leaf Consulting, LLC. (Objective 1 & 2)				
Cost Per Component: \$200,000				
Objective 1: Quantify the colonization, species abundance, and assemblage parameters (percent cover of algae and invertebrates) of newly placed armor rock at the Kodiak Airport over 3 years.				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Study plan and field protocols	Complete by June 2016	- Draft a study plan and field protocols that can be used by field techs.	Study Plan	None
Sample quadrats and transect bands annually at 2 reference sites and 3 sites within the construction footprint of runway ends 25 and 01, during years 2, 3, and 4	Summer 2016 2017 2018	- Document species abundance and assemblage parameters (percent cover of algae and invertebrates) at the airport site and at a reference site at a similar depth.	Raw tabular data GPS coordinates of transects & quadrats Field photos (& video if applicable)	Boat & operator, Field tech

Analyze data	Completed annually. Final completion Fall 2019	<ul style="list-style-type: none"> - Quantify the colonization and recovery of newly placed armor rock at the Kodiak Airport over 3 years. 	NA	None
Write report	Annual updates Spring 2017 and 2018. Final report Fall 2019	<ul style="list-style-type: none"> - Provide annual updates on study progress and status. - Describe results in final report. 	Alaska Marine Science Symposium Presentation - 2017 2 Annual updates. 1 Final Report	None

<i>Cultural Component</i>				
To help identify human use of the near-shore study area, two usage surveys will be conducted over the study's duration, one at the beginning of this project and one at the end. How and where people are using the study area will be documented. The study plan may be adjusted based on coordination with other state and federal cooperators to access the best location for making visual observations of the study area (e.g., the Kodiak Airport Control Tower offers an excellent viewing point of the Buskin River outlet zone). If additional funding is acquired, enhancement-tasks will be added (See note**)				
Primary Person Responsible: Erica McCall Valentine, The Scholar Ship				
Cost Per Component: \$50,000				
Objective 1: <i>Describe the characteristics and trends of the contemporary salmon and non-salmon subsistence fisheries of the Buskin River and near shore fisheries.</i>				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Complete participant observations (PO)	June-August 2015 & June-August 2017	<ul style="list-style-type: none"> - PO will be with individuals and groups in the subsistence and sport fisheries for salmon and non-salmon species in the Buskin River and nearshore fisheries. - Comprehensive set of post-PO notes to synthesize investigator experiences, observations, and conversations that occurred throughout each experience. 	Comprehensive set of detailed case descriptions	6-8 Buskin River sport/subsistence users
Analyze PO data	September 2016 – June 2017	<ul style="list-style-type: none"> - Create a coding schematic to catalogue PO findings for analysis. - Conduct data synthesis and analysis. - Correlate PO data with qualitative data collected by ADF&G in 2014 through systematic household surveys. 	Ethnology of the contemporary in river and near-shore subsistence fisheries	None

Objective 2: Document the subsistence effort, harvest, processing, and distribution of Buskin River- and nearshore-caught fish by four Kodiak-area residents over the course of one year.				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Train participants	06/2016 through 01/2017	<ul style="list-style-type: none"> - Brief and train four case study families on their responsibilities to record their subsistence and sport fishing activities in and around the Buskin River and nearshore fisheries over the course of a calendar year, in 2017. 	Four families committed to the project and trained to participate in the project	4 case study families
Conduct quarterly interviews with participants	2017 calendar year	<ul style="list-style-type: none"> - Conduct four quarterly check-ins with the case study families. - During the check-in investigator will review their journals and use them as prompts for further exploration and clarification. - Extensive notes will be taken during these sessions and summaries will be prepared post-interviews. 	Summaries of interviews and case study family subsistence use journals	None
Objective 3: Identify which factors most impact resident subsistence effort and harvest of salmon and non- salmon in the Buskin River and near-shore fisheries.				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
Write and Submit Draft Final Report for Review	September 2018	<ul style="list-style-type: none"> - Explore the project hypothesis through the Objectives 1-3 and evaluate the hypothesis and findings in project final report. - Write the draft final report that will be submitted to STK. 	Draft Report	None

Complete Final Report	April 2019	- Final version of the project report submitted by April 2019, and all other project documentation will be submitted.	Final Report	Review of Draft received from STK by January 2019
**Consolidate, synthesize, and summarize the qualitative and quantitative data on all area resident subsistence fishing activities of the Buskin River and near shore fisheries, drawing upon existing harvest monitoring and contemporary use survey projects.				
Key Task	Proposed Timeline	Details of Activity	Data Produced (Deliverables)	Additional Resources/Personnel Needed
**Conduct Literature Review	May 2015 – project end	<ul style="list-style-type: none"> - Review past state and federal management reports and glean project-specific information for consolidation and synthesis in the final report. - Review the data produced by the Alaska Department of Fish and Game (ADF&G) systematic household survey project, and other raw compiled data relevant to this project. - Throughout the literature review, continue to build upon the project sources as the final report is written. 	Data Consolidation Briefing	None

****This portion of the component will be completed if additional funding becomes available, and is not included in the estimated cost per component listed above.**