

R/V Maritime Maid
Chief Scientist: Elizabeth Cottrell
4-23 September 2015

2015 NSF Shared Platform for Aleutians Research Leg 3: Western Aleutians



Smithsonian
National Museum of Natural History



Table of Contents

Table of Contents	i
1. Voyage Overview	1
2. Personnel	7
3. Daily Narrative	8
4. Maps	19
5. List of Stations	29
6. Station/Sample Logs	42
7. References	427
8. Appendices: Field Notebooks	428
9. Appendices: Permits and Documentation	469

1. Voyage Overview

This expedition was the third of three legs of scientific research supported by the *R/V Maritime Maid*, under the umbrella of the NSF GeoPRIMS shared platform for Aleutians research in the summer field season of 2015. This leg was funded as a supplementary request against a funded NSF GeoPRIMS proposal entitled ‘*Collaborative Research: The role of oxygen fugacity in calc-alkaline differentiation and the creation of continental crust at the Aleutian arc*’ (PIs K. Kelley, E. Cottrell, M. Jackson). In the original project, we limited our scope to working with samples in existing collections because the expense of independently going into the field made the budget unreasonable. We stated in the original proposal, however, that we would seek opportunities to collect new samples from end-member volcanoes that are most relevant to our project goals. Those goals are to identify and examine strongly calc-alkaline (i.e., Fe-depleted) magmas and their liquid lines of descent, and to test how magmatic H₂O and *f*O₂ relate to those evolutionary paths. While samples from Fe-enriched to moderately Fe-depleted magmas are available in existing collections, the strongly calc-alkaline magma series from the remote western Aleutians are not well-represented in existing collections and the sample types necessary for melt inclusion work (well-quenched tephra and fine lapilli) are not present in the limited collections that do exist for these places. The goals of this expedition were to visit 8 key volcanoes in the western Aleutians that demonstrate the potential to deliver samples of these end-member compositions (Buldir, Kiska, Segula, Little Sitkin, Semisopochnoi, Gareloi, Tanaga, and

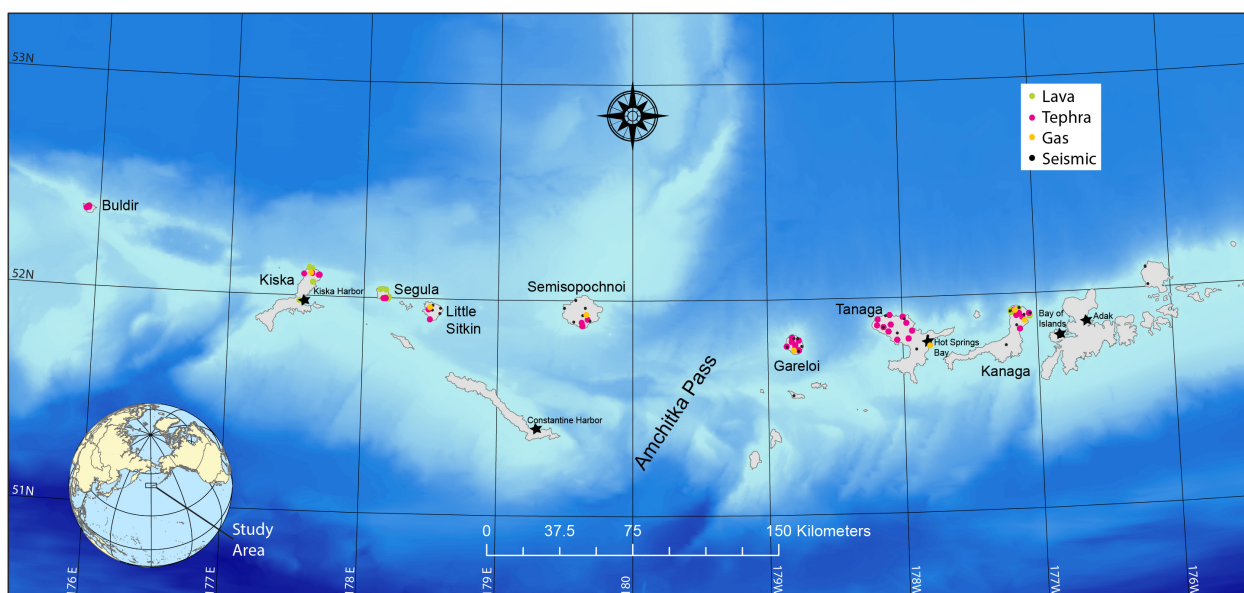


Figure 1. Map of the field area showing sample locations for petrological samples (lava, tephra), and gas samples, as well as seismic stations serviced during the expedition. Black stars show harbors where *R/V Maritime Maid* moored during the expedition.

Kanaga). Our home base was the *R/V Maritime Maid*, which sailed our party to harbors in the western Aleutians, and served as the platform for deployment of field teams to various islands using a Bell 407 helicopter.

Leveraging the rare accessibility to these remote islands provided by the research vessel and helicopter, we partnered with the USGS Alaska Volcano Observatory to extend the cruise time so that they could also service the network of 28 seismic stations on Little Sitkin, Semisopochnoi, Gareloi, Tanaga, and Kanaga. Most of these stations had not been visited since they were installed in 2005. In addition, the Sloan Foundation Deep Carbon Observatory also provided ship and helicopter time for two gas scientists to collect volcanic gas samples from sites of active gas venting on five of these volcanoes. Partnering with these other groups allowed us to extend the total time spent in the field, which provided important contingency in the likely event of delays due to bad weather, and emphasized a collaborative spirit in each individual group's endeavors.

In total, our collective efforts accomplished:

- 385 geological samples collected at 115 stations
- 28 AVO seismic stations serviced and batteries replaced
- Gas samples collected from 5 volcanoes

Here we summarize the primary accomplishments of each team on each island visited by the expedition.

Buldir

To date, only lava had been sampled and reported for Buldir. With no known Holocene eruptions, the consensus before our visit was that we would not find mafic tephra preserved, since Pleistocene glaciation may have erased the older deposits. Yet, our team found abundant tephra in well-exposed sections in the few sites we were able to visit (e.g., Fig. 2).

- 15 geological samples collected at 7 stations
- 11 tephra and airfall deposit samples
- Buldir has clearly erupted explosively in the past
- No fatalities despite a long over-water helicopter flight
- First tweet from Buldir @LizAleutians



Figure 2. Tephra sample locality on Buldir, proximal to Kittiwake Pond. Photo: E. Cottrell

Kiska

Several frustrating days of geological work on Kiska revealed a volcano with abundant effusive volcanism but with little explosive activity preserved in its deposits. Perhaps this behavior is enabled by the ease of gas escape through the thundering fumarole at the volcano summit (Fig. 3). Despite sampling at all azimuths around the main volcanic center, we discovered no evidence for explosive mafic eruptions. With little to no mafic compositions evident, Kiska appears mostly intermediate in magmatic composition.



Figure 3. The summit fumarole of Kiska volcano. A person in red jumpsuit stands above the plume at center, for scale. Photo: T. Lopez

- Successful sampling by DCO gas team
- 37 geological samples collected at 17 stations
- 10 samples of airfall or tephra, most small-volume or spatter from the summit



Figure 4. A series of thick scoria falls on the SW flank of Segula. Photo: K. Sheppard

Segula

Before our arrival, Segula had not been visited by geologists since the 1950's, and only three whole-rock samples had known analyses. Tephra fall on Segula was locally heterogeneous, but sections across the island yielded abundant, thick tephra deposits (e.g., Fig. 4) and a rich history of explosive and effusive volcanism.

- 48 geological samples collected at 17 stations
- 16 lava flows sampled
- Thick pyroclastic sequences on the north shore remain unexplored
- Younger lavas are crystal-poor andesites, one older lava is basalt

Little Sitkin

On Little Sitkin, we worked at two main tephra sections (e.g., Fig. 5), guided by previous AVO field work. Scoria fall deposits are yellowish and oxidized, and much of the output at this volcano is intermediate in composition, but some mafic-looking deposits were identified and sampled.

- 7 geological samples collected at 3 stations
- 4 seismic stations serviced
- Gas team sampled at a hot spring

Semisopchnoi

Our work at Semisopchnoi built on AVO field work here in 2005. We targeted Sugarloaf Peak, the most mafic volcanic center on the south side of the island. We collected proximal and medial falls from several azimuths around the vent. Our team also collected some olivine-bearing scoria from Mount Cerberus, the central vent on the island, which is basaltic andesite.

- 18 geological samples collected at 8 stations
- 6 seismic stations serviced
- Gas team sampled a spring on the flank of Cerberus

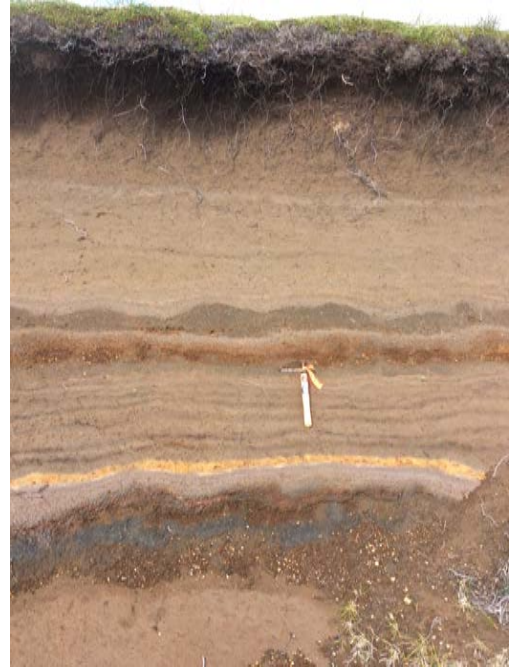


Figure 5. A gully on the SW side of Little Sitkin provided one of the main tephra sections sampled by our team. Photo: E. Cottrell



Figure 6. Tephra section from Sugarloaf Peak, on the south side of Semisopchnoi Island. Photo: E. Cottrell

Gareloi

We were guided in our sampling of Gareloi Island by the 2012 Coombs et al. geologic map and hazard assessment, which included descriptions of previously-sampled tephra sections. We collected abundant mafic scoria at all compass points on the

island, including more distal coarse ashes and proximal coarse lapilli from the saddle between North and South Peaks. Flanks at low elevation contained units >1 m thick characterized by repetitive eruptive cycles oscillating between medium ash and fine lapilli. Cottrell discovered a crater lake and active fumarole at the summit of North Peak (Fig. 7), previously unreported and thought to be absent in 2005.

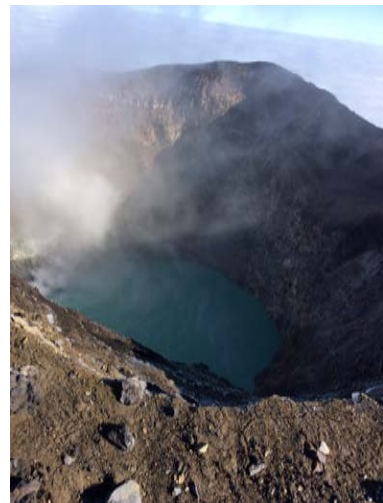


Figure 7. View from the summit of North Peak of Gareloi volcano, showing a new crater lake and active fumarole. Photo: E. Cottrell

- 53 geological samples collected at 15 stations
- 5 seismic stations serviced
- Gas team sampled emissions from the summit fumarole at South Peak

Tanaga

At Tanaga, our field work built on AVO work here in 2003.

We sampled mafic Sajaka scoria proximally and more distally. The island has an excellent tephra record preserved and we logged numerous sections at all azimuths around the Holocene cones. Many of the youngest falls appear to be basaltic (e.g., Fig. 8), likely from Sajaka, but confirmation will await analysis.



Figure 8. A tephra section with the peak of Sajaka Volcano on Tanaga Island in the background. Photo: E. Cottrell

- 133 geological samples were collected at 13 stations
- 6 seismic stations serviced
- Gas team sampled hot springs at Hot Springs Bay
- In combination with prior AVO work in 2003, our sampling provides sufficient coverage to develop a Holocene tephrastratigraphy for the volcanic cluster
- We may have found older tephra from Takawangha that is more mafic than historical output from Tanaga

Kanaga

Our work at Kanaga built on the geologic map of Waythomas et al. (2001), and AVO field work there in 1999-2000. Mafic Holocene deposits were scarce but we sampled several thick intermediate fall deposits. No mafic tephtras that we can definitively attribute to Kanaga were found, although deposits from other islands may be

present. We also sampled basalts from Round Head, a parasitic cone east of Mt. Kanaga, all Pleistocene, but stratigraphy exposed in the eastern sea cliff was inaccessible. We attempted to collect mafic inputs into the young magmatic system by sampling quenched mafic inclusions from young andesite flows. These were described as "abundant" in the Waythomas et al. (2001) geologic map, but we found these rare to absent.



Figure 9. Gas sampling at fumaroles on Kanaga volcano.
Photo: T. Fischer

- 71 geological samples collected at 33 stations
- 5 seismic stations serviced
- Gas sampling at Kanaga was very successful, both by direct sampling (Fig. 9) and airborne DOAS

Overall, our expedition was a resounding success for all parties involved, and the weather permitted operations for the entire duration of the cruise (save for the very beginning, when fog in Adak prevented the helicopter from joining the ship for three days). Geological samples from this expedition have been archived at repositories at the University of Rhode Island Marine Geological Samples Laboratory, the Smithsonian Institution, and the USGS Alaska Volcano Observatory. These samples are available to the scientific community upon request beginning in October 2017.

Chief Scientist Cottrell maintained an active Twitter feed during the expedition (@LizAleutians), and a video overview highlighting E. Cottrell's field experience on this expedition is available at:

<https://youtu.be/Q9ebwokEUJk>

More information about the expedition is available at:

<http://mineralsciences.si.edu/staff/pages/cottrell/aleutians.htm>

http://www.gso.uri.edu/kelley/News_%26_Events/News_%26_Events.html

K. Kelley and E. Cottrell

2. Personnel

Scientific Party • NSF GeoPRISMS

Elizabeth Cottrell • Chief Scientist
Smithsonian Institution
National Museum of Natural History
cottrelle@si.edu

Michelle Coombs • Geologist
US Geological Survey
Alaska Volcano Observatory
mcoombs@usgs.gov

Mattia Pistone • Post-Doctoral Fellow
Smithsonian Institution
National Museum of Natural History
PistoneM@si.edu

Elizabeth Grant • Field Assistant
University of Washington
grante9@uw.edu

Katherine Sheppard • Field Assistant
University of California at Santa Barbara
kdsheppa@asu.edu

Katherine Kelley • Shore-Based Geologist
University of Rhode Island
Graduate School of Oceanography
kelley@uri.edu

Scientific Party • USGS Alaska Volcano Observatory

John Lyons • Geophysicist
US Geological Survey
Alaska Volcano Observatory
jlyons@usgs.gov

Dane Ketner • Geophysicist/Field Technician
US Geological Survey
Alaska Volcano Observatory
dketner@usgs.gov

Adrian Bender • Geologist/Field Technician
US Geological Survey
Alaska Volcano Observatory
abender@usgs.gov

Scientific Party • Deep Carbon Observatory

Tobias Fischer • Volcanologist
University of New Mexico
fischer@unm.edu

Taryn Lopez • Post-Doctoral Fellow
University of Alaska Fairbanks
Alaska Volcano Observatory
tlopez@gi.alaska.edu

R/V Maritime Maid

George Rains • Captain

Mike Despars • Cook

Wesley Jones • Deckhand

Joe Schmitt • Engineer

Maritime Helicopters

Dan Leary • Helicopter Pilot

Mike Cooper • Helicopter Engineer

3. Daily Narrative

04 Sept 2015

Depart Adak 19:00hrs local (20:00hrs ship time – Anchorage). Weather clear. Sunny/blue skies. Fumarole activity at the summit of Kanaga. White plume.

Marine mammal encounters? Yes. Porpoise pod. 5-10 individuals heading east.

05 Sept 2015

Arrive Constantine Harbor @ Amchitka ~15:30hrs (all times reported as ship time = Anchorage, AK). Weather clear but closing. Miscommunication with helo and they are on Great Sitkin. Following refuel in Adak the visibility has dropped too much to land at Amchitka. Fishing. Cards.

Marine mammal encounters? No.

06 Sept 2015

Weather clear. 11:00hrs helo takes off bound for the Maid from Adak but turns back because of fog down to the deck. 13:00hrs helo takes off again. Katherine catches an Irish Lord and a Greenling. Helo turns back again. Socked in Adak to Dutch. We have sun, so we skiff to Amchitka and team FORTE walks the bluff from the pier to the beach for a gear shake down. MC takes a bulk sample of an orange pumaceous unit – 15AKMC005. Clasts were friable and up to 1cm at best. We decide to cache 2 barrels of fuel for Dan and the boat departs at ~20:00hrs for Kiska in the hope we will start work – with or without the helo. Depart after dinner for Kiska.

Unforgettable George Raines stories include the Attack of the Blue Footed Boobies and the Homicidal Puffin.

Marine mammal encounters? No.

07 Sept 2015

Drop anchor in Kiska Harbor at 0600hrs. Weather clear at Kiska but Amchitka to Adak has dense fog. No helo. FORTE skiffs to shore at Kiska Harbor beach and attempts to take a section in a crater (exposed by a bomb). Units look similar to those on Amchitka – massive orange layer poorly sorted with pumice (up to 1 cm), dense fragments, angular up to 50cm. Debris flow? We take a bulk sample = 15KKMC001. Further south, high on bluffs we find Coats' breccia – easily 4m thick. Interesting as composed of highly vesicular clasts poorly cemented to dense andesite clasts. The latter are found to be both crystalline and aphyric. Samples include 15KKMC002 and 15KKKS001 and 002. 224m 51.97776 177.52051. We find a new exposure that makes clear that the debris layer (Coats' "rock flow") is many tens of meters thick and has well developed cross bedding. The material is volcanoclastic with a mix of pumice, fines, and dense rock.

Marine mammal encounters? Yes. AVO team saw seals.

08 Sept 2015

Helo arrives 1400hrs. [Found out a week later that Dan flew IFR to us. I feel bad.] Weather excellent locally with winds from the NW at 20-40 knots and 11' seas. Summit of Kiska is in clouds, so gas work not possible today. Visibility a good 10 miles and ceiling ranges from 800' to blue skies. We deployed MP and EG on the E flank of the summit. (EG has declined over-water flights.) After many hours of walking and working they report nothing but vegetation. MC, KS, and EC deploy to Segula. KG and EC dropped at gully on the SE side of the island, just SW of the parasitic cone. Sites EC001 EC002 EC003. 001 samples a lava flow (same flow that toes out at the ocean from the cone?) and 003 is a very nice tephra section with several mafic (black scoriaceous) units. MC hopped around the island in the heli with Dan, sampling lavas at six sample sites. EC uncertain of how to approach the tephra section so we all begin work on that when MC rejoins EC and KS for a frantic hour before Dan wants to depart prior to 2000 hrs. MC/KS dropped at Maid and EC rides w Dan for balance to pick up MP and EG at the N end of the island. Gorgeous columnar jointing seen on Little Kiska. Ship doesn't return to boat until 2100hrs at which point we need dinner and several hours to organize and log our sampling for the day.

Best quote of the day is perhaps Dan being more tephra savvy than Liz. Liz recounts to Michelle how her mother had suggested that she use "day laborers" to collect the tephra – causing MC to remark "they might have been better than you." Several other jabs at dinner a bit depressing. Doing the best I can I suppose but in hindsight we did not get all we should have from this unit – upper layers unexplored and possibly other minor units left untouched.

Marine mammal encounters? Yes. Pilot saw two orca whales.

09 Sept 2015

Dale's birthday. 10:15 we deploy MP and EG to Sirius Point on Kiska to sample the new flow. Heli must drop them on E side of old flow. They only make 0.3mi in 2 hrs trying to reach new flow. The topography is too challenging and dangerous to reach the flow. The blocky lava flow was impassible. At one point Mattia fell and bumped his head but is ok. They collected three locations on the old (E side) flow at Sirius Point. The summit was not visible so cannot deploy gas team to summit.

Next out is AVO team of DK and JL along with 10+ batteries (each 65lbs) to Little Sitkin to service the four stations there. MC/EC/KS then deploy to the West side of LS to the basalt-andesite flow reaching W cove with a load of batteries. Tina Neal described scoria on top of it. In the end the AVO team is only able to reach 2 of 4 sites due to high winds. The wind is so great and clouds at even moderate elevations prevent sampling beyond the areas near the sea cliffs using the heli. We find pockets of mantled ash/scoria/clay deposits and sample at site 15LSEC001 (574', 51.95160N, 178.48299E). This section is well organized and we interpret it as a fall. One layer contains medium lapilli black in color (15SLEEC001-1). Potentially useful for scoria work. Other layers have partings yellow in color – crystalline or organic unknown. At site 15LSEC002 (742', 51.95412N, 178.48608E) we sample the basalt-andesite flow. We are not far from the gas team which has deployed at the nearby hot springs to sample the fumaroles there. Everything on LS is weathered and altered and all the hydrothermal activity is likely the culprit. Final site is on S end of island right at the coast (98', 51.90642N, 178.49367E) where we find a well-organized tephra section. This was a 30 min touch down by the heli. We quickly documented and sampled the section. Probably no useful material for scoria work.

MC/EC/KS redeploy to Segula and attempt to find tephra on the E, N, and W parts of the island. Thick debris flows and PFs abound with no fall deposits visible from the air. On the E side we see fall deposits draping very coarse blocky debris flows on the cliffs. Sampling looks extremely precarious so we target the larger gully on the S side of the island but turn back due to high winds. Heli can't make that part of the island so we touch down on the E side to get and learn what we can. 15SGEC004 (23ft, 52.02055N, 178.09703E) is a short section that tops the debris flows right up to the vegetation. We must sample on the cliff and find one safe sampling location though it is not the prettiest / thickest section. We collect soils and debris flows (with some highly altered scoria). Nothing useful for MI work. In a small stream gully we sample Holocene lavas plucked from the debris flow – therefore having some context.

2030hrs we are retrieved and are back to the boat by 2100hrs for dinner. Another long day, and tomorrow holds the possibility of Buldir, so we do not organize samples and focus on getting to bed. That said, by the time I am able to take these notes it is past 1230 on the 10th.

Marine mammal encounters? No.

10 Sept 2015

BULDIR.

At first light (0930) the gas team + MP and Adrian departed to hike to the summit of Kiska with plan to rendezvous at the drop off at 2000hrs. MP sent to look for tephra at the vent and en route. Also felt there was safety in numbers and a party of 4 was highly preferable to a party of 2 (TL and TF). They were above the clouds. 3,600' Gas work entirely successful with thunderous fumaroles at the SW. Summit mostly disorganized jumbled blocks. 100' below the E rim of Kiska crater there were spatter deposits – jet black – 4m thick by 50 m long. Very large blocks zoned with vesicular on top and more and more dense to the base. No fine grained material. Andesitic lava blocks or lithics within. One light felsic pumice found among the blocky lavas coated with spatter. On top of the spatter deposit there are very coarse lapilli and MP managed to hand select 1/3 gallon bag of finest material. MP went into the crater and found similar deposits (the same in time?). Thus there are two spatter deposits – one inside and one outside the rim. Many signs of sulfur among the crater debris. Extensive weathering. Crater floor flat with water. Quick sand. Spectacular andesitic flow (~ to exposed at Sirius Pt?) and then a very fresh, very recent, activity. Lava.

At 1020 MC/EC/KS departed with Dan Leary for Buldir. Excellent visibility and favorable winds of <30knots. We landed at Kittywake Pond and took sections on the N and S sides at:

15BLEC001 @ 52.36427N, 175.91885E, 680ft. 1 sample of a scoria deposit 20-25cm thick. Medium lapilli with larger lithic clasts. Many clasts weathered to orange with black interiors. Color brown to black. Ambiguity as to whether this was a fall deposit or not but decided it was a fall for sure based on overall context. MC worked site on N side pond @ 15BLMC001 52.36656, 175.91802. Poorly stratified volcanoclastic debris and discontinuous fall layers. But looks Holocene. From top to bottom: 80cm orange brown colluvium. 15cm medium brown lapilli scoria fall (sample 1). 55cm matrix rich flow (?) brown grey with some pumices. 25cm light grey fine ash matrix but with coarse lapilli scoria blocks (sample -2). Very odd. MC gained the N ridge above the pond and sampled the lava at the top. Relatively fresh medium grey olivine-rich basalt. Datable.

KS and EC attain the ridge to the S of pond. Sample a lava (basaltic andesite? Grey to greyish pink) in place (site 002 at 1190' 52.36168, 175.91847). Walked down the S side of the ridge into the gully/drainage about half way and did a surface grab there (site 003 1024', 52.36133 175.91621) which appeared to be the hornblende basalt (from E Cape). The further we drop into the gully it appears to be just debris and potential water deposition debris. Regained the ridge continuing NW down slope. Find thick tephra sequence (6m!). Coarse ash to coarse lapilli with a mantle of reddish scoria (weathering cover 1" thick 004-2)). Brown to black fall deposit site 004 (52.36288, 175.91250). Stratigraphically above the brown/black scoria (004-1) is a powdery grey ash (fine to medium light grey ash 004-3).

EC and KS hot loaded on the ridge and we relocate to an exposure further South in another gully. [Low clouds prevent flight above about 800'.] Lunch. We sample fall deposit exposed on a steep gully wall (ending in cliffs). Top is brown poorly sorted debris unit of unknown thickness (min 2m). Under that was an amphibole basalt fall layer (this 005-4) 2-3m thick with lots of huge bombs perhaps up to 0.5m in diameter (bomb 005-5) mostly at the base. Of the 3 meters the top meter is more fines rich and is more of a PF texture. The lower 2 meters were a classic, cleaner fall. Greater than 50% of this fall unit are the dense amphibole basalt clasts. High energy explosive activity on Buldir! Beneath is about 15cm layer of fine grey ash. Cake-y (005-3). Beneath is 1cm (possible?) brown soil horizon (005-2). Possible to C14 date. Beneath that is a massive brown volcanoclastic debris unit (4+ meters) with large boulder clasts sticking out of it up to 0.5m in diameter. This is location 15BLEC005 @ 52.35758, 175.89833. A curious sea bird paddles up to us and ultimately attempts to board KS. She had to fight it off. Must be a friend of George's.

Loaded up. Clouds still prevented access to higher elevations such as the fault scarp. We fly this time around the S side of the island into high turbulence (see the sea lions on the beach). Decide not to sample E Cape lavas as G Yogodzinski has many and we captured the fall from that edifice on the NW side of the island. We three and the pilot land safe and sound on the Maid at 1630.

BULDIR SUMMARY Buldir has clearly experienced high energy explosive eruptions capable of carrying 0.3m scoria bombs 1 mile (min) to the NW from the Buldir volcanic vent. 5cm dense clasts have traveled 1.5 miles from East Cape to the West.

Team AVO seismo just landing now at 2145hrs having finished all but one station on LS – which remains in the clouds.

Marine mammal encounters? Yes. Saw approx. 2 doz sea lions on the beach on the S side of Buldir.

11 Sept 2015

AVO deploys first to LS to finish their last station.

MP and KS deploy 2nd to Segula to check out the "big gully" on the S side of the island, just west of our highly successful tephra section (our ONLY successful tephra section).

MC/EC/EG deploy to Kiska volcano in the North to (1) satisfy ourselves that there is no tephra on KISKA-MY-ASS volcano (there isn't) and (2) to make a second attempt to collect the Sirius Point new lava flow.

Team Kiska-my-ass sets down at 52.12917, 177.58789 and 433'. MC samples lava and block and ash flows in the area. EC makes arduous/steep descent to the flow below. The terrain consists of 2' diameter pillars separated by 6' deep crevasses – all heavily vegetated so as to maximize the hazard. Sample 15KKEC001 and 002 are at 190', 52.13083, 177.58803. A very fine example, if I do say so myself, of excellent lava sampling technique that I picked up from MC. Surprisingly the flow is NOT olivine basalt (as is said on the AVO website) but a plag-rich rock where nary could I find an olivine. Very disappointing! The climb back to the surface was a real workout. All 3rd class with my arms full of sample bags. DL heard me huffing and came to give me a hand within 50' of the height of land with the ship.

Will have to get MC's notes later as the boat is underway now to Constantine Harbor and all are sick but me. I was/remain opposed to moving back to Amchitka. Seismic finished on Little Sitkin but the bulk of their work remains (Semi, Gareloi, Tanaga) so they are nervous to be stranded in the west. This is difficult as we are now leaving Kiska many days ahead of schedule and with work remaining on Segula. I am confident that there is nothing for us on Kiska-my-ass. I wish we had spent longer on Buldir but also feel that we were successful there.

We lift off and Kiska-my-ass is further confirmed to be devoid of tephra as we now have tried to sample in earnest on all compass points around the volcano plus the summit! We do fully describe a really good section of soil and fine ash on Vulcan Point (section description in EC's notebook). 15KKEC003 is at 229', 52.10085, 177.54794 and consists of soils, "tephra-soil complexes" (a.k.a. dirt) which is sometimes normally graded with fine ash at the base. The section base is a massive debris flow. We sample 001 – a buff colored very fine ash, 002 – the soil beneath it, 003 – the soil at the very base of the section just overlying the clast-rich debris flow. MC's comment here: "This is very unimpressive."

KISKA SUMMARY In summary Kiska-My-Ass is a volcano characterized by lava flows, very fine ashes, and vegetal mats. There is a tremendous high-energy fumarole at the summit and spatter in the summit crater. Boo Kiska!

We hot drop EG on the deck and MC and EC head to Segula to rendezvous with MP and KS. This gully bears NO resemblance to the gully less than 4000' to the East. This gully has a large alluvial load at the bottom, which could also be described as a river of rainbow scoria. At least five distinct lava flows are visible separated by tephra. This tephra is all very large clasts and bright red. High up there is a black layer that is mixed scoria and dense clasts that may prove useful. Need KS and MP's notes on this (again – all are sick at the time of this report but me). Sample names are all confused and redundant here and I need to go in the lab first thing in Constantine harbor and sort it all out. I sampled the basal flow on the W side of the gully and, interestingly, sampled a pile of scoria on the ground that was clearly weathering out from a coherent unit just above the flow – but inaccessible to sample directly with the time we had.

The ship had to leave Kiska Harbor or wait there another 4 days for a big SW system to move through that would make it dangerous to take the boat back to Amchitka. The prediction for Sunday is 35knots and 11' seas ("average high wave height so many waves 2x that) out of the SW. Bad news says George. So we have to skedaddle. Crossing now in an unpredicted swell from the NW with 10' rollers. Helo is already landed on Amchitka and Dan and Mike will sleep there with the radioactive rats tonight.

12 Sept 2015

We can fly! Beyond no fog, we have excellent visibility! AVO deploys first to Semisopochnoi (SM) with two full teams (DK+AB, JL+TF). They knock out all six sites in one day as the weather holds until dark.

Thinking that we will only have 1-2 hrs, MC and EC deploy w the 3rd load of batteries to SM. Head straight for Sugarloaf and Sugarloaf Head – the latter is a monogenetic ol-basalt cinder cone.

Dan sets us down expertly on a little rim (crater rim?) just W of the cone. The morphology screams that this is a cone but the bedding dips toward the center making interpretation difficult. Is this an older crater that we are on the outside of?

We are surrounded by breadcrust bombs up to 1m across on top of scoriaceous cover of smaller clasts of scoria and dense material. We hike the rim clockwise toward the new ol-lava flows previously mapped by MC. We take a sample of these young flows.

15SMEC001 1010', 51.88542, 179.62697. Ol-bearing basalt flow, faceted olivine with associated chromite (?) + plg.

Hike to the saddle between the cone and a rooted lava plug. Proximal fall of ol-bearing scoria abundant.

15SMEC002 315 meters, 51.88396, 179.62726. Three bags of fine ash to medium lapilli proximal fall, large clasts removed. All are ol + pl basalt, sub-rounded dense to inflated clasts. Matrix ash also has olivine. Suspect Sugarloaf Head cone as the source.

15SMEC003 983', 51.88393, 179.62663 samples lava from the lava plug which MC believes to be younger than the young flows that flow around this semicircle feature.

15SMEC004 samples right at the drop: 1024', 51.88553, 179.62469 on the W side of crater rim. Unsorted scoria and dense clast cover underlain by 20cm of fine, dark grey, normally graded ash bearing olivine (004-1), underlain by 12cm of fine dark grey to brown ash with large (20-30cm) clasts in place (004-2), underlain by a PF consisting of fine ash to very large clasts of scoria.

15SMEC005 and 15SMMC101 samples a tephra section on the NE side of Sugar Loaf – on the W slopes of Ragged Top (E side drainage). 402', 51.91287, 179.66487. Vegetal mat underlain by 10cm debris, underlain by 8cm brown tephra soil, underlain by 8cm black scoria (15SMEC005). Go Pro Video attempted.

We sample this section more extensively with sample numbers 15SMMC101 because MC already described this section in 2005 (slightly different coordinates). Description of this is in MC's notes. This is a classic, textbook section. Spectacular.

15SMEC006 is back on the W side of Sugar Loaf in the easternmost stream gully at 967', 51.89848, 179.62044. Spectacular outcrop of what MC believes to be the CGE Ignimbrite (Liz calls, "Michelle, I've reached an unfamiliar landform."). For perhaps the first time, EC successfully recons an excellent fall deposit of ol-bearing scoria of exactly the right kind: perfect size distribution, top/recent layer, ol-bearing. Jackpot.

25cm of brown sandy soil below the veg mat, underlain by 30cm black reworked ash and lapilli with vague bedding, underlain by 1cm med brown fine ash, underlain by 20-22 cm of normally graded black tephra fall (SMEC006-1). The top 4cm of 006-1 is medium ash and the bottom is fine lapilli. Several gallons sampled. This is underlain by a thin soil we sample (006-2) for C14. Beneath this is perhaps the weathered ignimbrite surface but unclear. It is brown, poorly sorted, pumice (1cm) bearing and lithic (10cm) bearing unit in a fine ash matrix of indeterminate thickness.

Marine mammal encounters? Yes. Pilot and others saw pod of 100 (!) Orcas headed West just S of Semi (SM) in the morning. Later in the day, a smaller pod circles the boat in Constantine Harbor. [I saw neither]. At dusk on the return from SM, we see a lone humpback whale headed W between the harbor and SM.

13 Sept 2015

High winds. 30+ across the deck and higher after take off. Heli ops to Amchitka only. Spent the entire day logging samples, backing up data and electronics (that took hours), and distributing and packing samples. We got completely caught up. Go team! Hope for tomorrow was to fly back to Segula bc of the morning's favorable forecast but now forecast is for low SW winds... fog. Feeling like we should have tried to go to Segula today. Always 20/20 hindsight out here.

14 Sept 2015

Fog. Impenetrable fog. Bad forecast (more of the same + "bad storm" coming). Dan hears Adak is clear and decides to take the window. We pull anchor in the afternoon and steam to Tanaga. I try to work out a way to stay but no one is with me on this. We leave – highest priority must be ship and boat safety.

Marine Mammal Sightings: Yes! Pod of Dahl's Porpoises – maybe 8? At least 6 – playing in bow wave as we cross Amchitka pass. Spectacular.

15 Sept 2015

Clear. Adak socked in. No heli until after 1100hrs. Now Gareloi is invisible and clouds obscure Tanaga. Local ops on Tanaga. This is the first day Dan says being left out is a real possibility. AVO deploys first and borrows MP. Tephra deploys MC/KS/EC. EG created sample cards for GSO. Can't access the sites we want to the S of Tanaga and so take a section in the North, just west of Falls Point (spectacular BTW) and E of the seismic station. HUGE tephra section of >20' now 15TNEC001 right at the coast. This is a revisit of 03TGMC036 (essentially but not exactly co-located). We collect 20 samples – about 5-6 soils and the rest tephra fall ranging from recent black scoria to old brown and orange scoria with black interiors to large scoria bombs (some question here as recollections differ as to whether this was scoria or Hb-rich grey clasts) at the base of the section right above the lava flow. Dan Leary sampled the lava flow for us where it outcropped at the coast and this is 15TNDL001 bound for SI. The flow has massive Hb phenocrysts. We must have sampled at least 10 eruptions; fall units we sampled ranged from a few centimeters to 30 cm thick; many with black scoria; some with suspected olivine. We worked 8 hrs straight in a frenzy to get it done and also managed to log and distribute/box the sample this evening. At pick-up everything is socked in and Mattia and John have to "toe in" to the heli (jump on the skids off a precarious cliff just W of us). Dane and Adrian have to walk to low elevation for retrieval.

A small group went ashore after dinner to scope the hot springs and dig out the sediment.

16 Sept 2015

Rained in and fogged in. AVO deployed 2 to one site before we are grounded.

About 1500-1600hrs the weather clears up high >2500 ft only. MC/MP deploy to BB29 on Tanaga while EC/KS deploy to previously described stations on the S flanks of Tanaga (MC26) 15TGEC002 and Sajaka (MC39) 15TGEC003. The high Tanaga station is a proximal scoria fall station while the Sajaka location is just waist deep scoria with some loose organization. Both locations have black scoria fall but we are too rushed to describe it in depth due to weather conditions. We collect 2-3 gallons of the best layers. Helo has to stay with us as we are just above the deck. We are above the clouds and it is spectacularly beautiful. DL finds a spectacular spindle bomb and EC finds a toothpaste bomb. All three stations successful but the final station at Sajaka is rushed bc fog rolls onto MP/MC and they need a quick pickup. Back at the Maid by 1845hrs happy to have accomplished what we did.

17 Sept 2015

Six sites on Gareloi today (EC/KS) including the summit rim of Gareloi. EC photographs a steaming crater lake that was not present the last time AVO visited the volcano in 2003, samples proximal ash at 15GREC002. When TL sees the photos she believes there are actually fumaroles in the crater (W side?). We collect proximal scoria ("waist deep in ol scoria" at 15GRKS001) in the saddle between the active fumarolic vent and the main crater (15GREC001). We go on to sample the W (15GREC009) and NE flanks (15GREC006, near GRBB29) of the volcano – fantastic samples each time. Too big a day to recount in detail and too late at night – pooped. Certainly one of my favorite days overall for the beauty of the LZ's and the success of finding so much ol-scoria.

18 Sept 2015

First run is EC/KS and TL/TF. The latter to attempt DOAS of the plume of Gareloi and the former to take two more tephra sites. DOAS successful. EC/KS acquire one well-organized short section in the SE part of the island near MC22 with only small samples for tephra-chronology (15GREC007). Once gas finished the ship came to retrieve us and we found a 2+meter thick section of gorgeous fine to coarse black lapilli on the opposite gully bank and we bagged that up (15GREC008). Confusing: why isn't all this scoria found in the section just tens of meters away? This is also the site where we have to "toe in" off the heli and EC walks out on the skids to get our gear from the aft compartment. So well executed that those inside don't even realize the gear is out. I'll pat myself on the back!

Our final section and lunch stop was a gorgeous tephra exposure on the W side of Gareloi. Dan cut some steps in the steep cliff wall and we took many samples of black lapilli and ashes. EC/KS then deploy to Tangent Point on Tanaga (15TGEC004) and manage to find a great section dominated by medium lapilli that we assume is from Sajaka, as it is proximal and olivine phyric. Final stop of the day is S of Bumpy Point (15TGKS001), and E of the main vents, where we collect a section of tephtras and soils for AVO.

Meanwhile... EG/MC/MP deploy to Tanaga and take two major sections – one on the N side of the island with 19 (more?) individual samples including soils. In addition, they find an olivine-phyric layer deep in this section that may originate from Takawanga, as opposed to the Hb-rich units from Tanaga and E. Tanaga.

This could be a major find for FORTE! The second site is out in the flats to the SE of the edifices. MC describes sections here as being the hydrothermally altered guts of Takawanga's phreatic eruptions.

Also during this time the ship returned to Adak to pick up parts for the boat and for the seismic team – which finally deploys at 1800hrs to knock out one more site.

We are very ahead of schedule now and I lament leaving Kiska and Amchitka so early.

19 Sept 2015

Note: These notes made on 9/24/15.

MC/KS/EG deploy to Tanaga and take 3 major tephra sections around the island.

EC/MP deploy to the Shoshonite flow (15GREC012) on Gareloi. The low ceiling prevents a drop at the “flatter” top of this rubbly flow above 3700' and so we ascend from an LZ at 2500'. The flow is rubble: talus and scree. All loose rocks like ball bearings and it is steep to create a shooting gallery. It was an error in judgment to try and ascend this flow in the fog as the chance for an injurious fall was high and rescue would not have been possible by heli and would have required a litter and many people. We sampled as high as 15GREC011 at 3,448' where we did find some scoriaceous agglutinate (15GREC10A) spatter and also what appears to be air fall lapilli – though does not seem ol-bearing in the field. Upon descent with heavy rock-filled packs EC took a major fall that impacted her right shin on a rock. Able to bear weight we determine it is a contusion and abrasions and we walk out to the LZ and then sample a gorgeous tephra section on the N flank of the volcano (15GREC013) just W of MC12. This final section has a sequence of repetitive cycles of eruption pulses (?) 90cm thick!

At the end of the day all scientists and most crew end up at the hot springs at Hot Springs Bay for some much needed relaxation. EC's shin swells to alarming proportions – to bed without processing or narrative.

20 Sept 2015

Note: These notes made on 9/24/15.

Able to bear weight, EC deploys with KS to the SE of Kanaton Ridge on Kanaga (15KGEC001). Nothing mafic but we do sample a long section of tephra and soils for AVO. MC/MP deploy to Kanaga as well.

Gas deploys to the summit of Kanaga. AB deploys to the summit with gas and collects the grey scoriaceous material at the gaping vent (15KGAB001).

The Maid moves from Hot Springs Bay on Tanaga to the Bay of Islands on Kanaga. Heli ops are not easy to accomplish logistically from Adak harbor. The ship stays with the three deployed teams on Kanaga.

EC/KS move to Round Head. The major units of what appears to be grey tephra interbedded between lava flows on the sea cliffs are totally inaccessible (Dan: “One small slip and no more Liz”). We drop at 15KGEC002 on the back side of these cliffs to find a place where the grass has slumped in an arcuate way to expose some tephra falls as well as (reworked?) lithic falls. Some are black scoria. Unknown origin. [We

end up revisiting this site as a team of 4 (MC/MP/EC/KS) on the 21st to discuss this stratigraphy. MC does not think these scoria are from Kanaga but rather are Tanaga falls. While all agree that some layers are clearly tephra falls, some major units are rich in unsorted, fine lapilli-sized dense clasts and scoria and the depositional environment is not at all clear. These units do bear olivine.]

KS/EC land on the island within the caldera lake and are able to sample a pumice fall (from the CFE?) – actually collected by DL, 15KGDL001.

Meanwhile, MC/MP visit additional tephra sections – all with fluffy white felsic pumices. No mafic scoria in site.

KS/EC try a final section more distal and southerly (15KGKS001). This is a fantastic, but felsic, section. We sample it mostly for AVO and the SI collection generally.

After successful sampling at the summit, Gas deploys to the hot springs on Kanaga.

All three deployed teams end up at the hot springs which have neutral pH and the perfect temp of 101F (in the pool – much hotter at the source!). Several hours spent in these muddy waters on mafic-scoria-free-Kanaga.

21 Sept 2015

Note: These notes made on 9/24/15.

Final attempts made to find mafic scoria on Kanaga. We deploy MC/MP/EC/EG to Round Head again – this time to the beach on the SE exposure of the sea cliff. MC/EC ascend the steep sea cliff up a gully and find an AMAZING volcanic breccia full of massive (up to 3cm) and beautifully terminated pyroxenes. We collect these as geo-tourists. We also collect a spectacular ol/pyx/plag lava flow – again with spectacular large pyroxenes and smaller ol in a grey plag-rich matrix (15GREC004). While these finds were very beautiful and interesting we did not find what we were looking for – which was mafic scoria interbedded with these ol-bearing flows. Boo.

So we decide to try and sample the Holocene flows surrounding Kanaga with an eye out for mafic inclusions. EC and MC deploy to the W side of Kanaga while MP and EG deploy to a flow on the E side (? Can't quite remember where/which). EC collects mafic inclusions in these fresh young flows (15KGEC005-007 and 081 as well as DL002 and 003; this final inclusion 081 is vesiculated and glassy, classic). All parties are successful in sampling the flows.

MC/EC/DL end up at the hot springs for an unintentionally marathon four-hour soak. Thoroughly pickled. Arrive back at the boat at 2200hrs.

22 Sept 2015

Note: These notes made on 9/24/15.

Boxed and processed samples until well into the afternoon in preparation for offloading the next day.

Afternoon. Spectacular out! We fly to the summit of Kanaga and get great video footage. Dan does some hot-dogging around (denies it) using his Deadliest Catch tricks to get us some great shots.

Another attempt at mafic inclusions in the flows to try and establish the more mafic LLD for this volcano. Highly unsuccessful in the older mossy/lichen/vegetated flows where you can't tell an inclusion from a nice patch of lichen. EC forgets her geologic map and doesn't realize that a PF is intermingled with a lava here and so "mafic inclusions" 15KGEC008-010 and 013-016 are likely to just be clasts within a PF! Boo! The flow is sampled however (and without mafic inclusions).

DL finds a true inclusion in the lava dome flow (15KGDL004) which KS samples.

MP/MC deployed to flows on the N-NE flank of the volcano and, while successful sampling the flows, were unsuccessful in finding any mafic inclusions despite the descriptions on the geological maps.

We end the day trying to find xenoliths at localities provided by DeLong. A total bust. We find the xenos but they are weathered and impossible to recover. 15KGKS002. The outcrop on the north / west coast of the southern part of Kanaga, all the way to the south where the island becomes slender and E-W trending, is spectacular columnar jointed basalt at least. MC takes one more section interested in possible falls originating from Tanaga.

We fly to Adak. Regrettably this final helo ride turns out to be the one that almost got us. The wind ripped the black iPad Mini out of MC's hands, breaking the back window of the ship but luckily not striking the tail rotor. We are thankful to be safe in Adak. Time to party.

Marine Mammal Sitings: 100+ sea lions on a rock just off the coast of our final xeno locality.

23 Sept 2015

Note: These notes made on 9/24/15.

Demob. Many pallets craned off the boat. First load to the post office. 78 rock boxes shipped to SI + URI. Another 30+ stay on the ship bound for AVO.

The boat leaves port at approx 1500hrs bound for IFM (30 hrs away) and eventually Dutch. Leapfrogging with the ship, which will depart Adak the 24th.

24 Sept 2015

Massive data backups and transfers. Interviews. Post office runs. Cleaning the bunkhouse. More meals at the Bluebird Café (Bay 5 closed on Tues and Weds). Needed to be at airport at 1500hrs for our 1800hrs flight. Cargo plane full of crab. Very busy day.

In the end AVO actually used more helo time than tephra (>30 hrs)! Tephra came in well-under our allotment and I hope NSF gets the money back.

4. Maps

Cruise and InReach Tracks

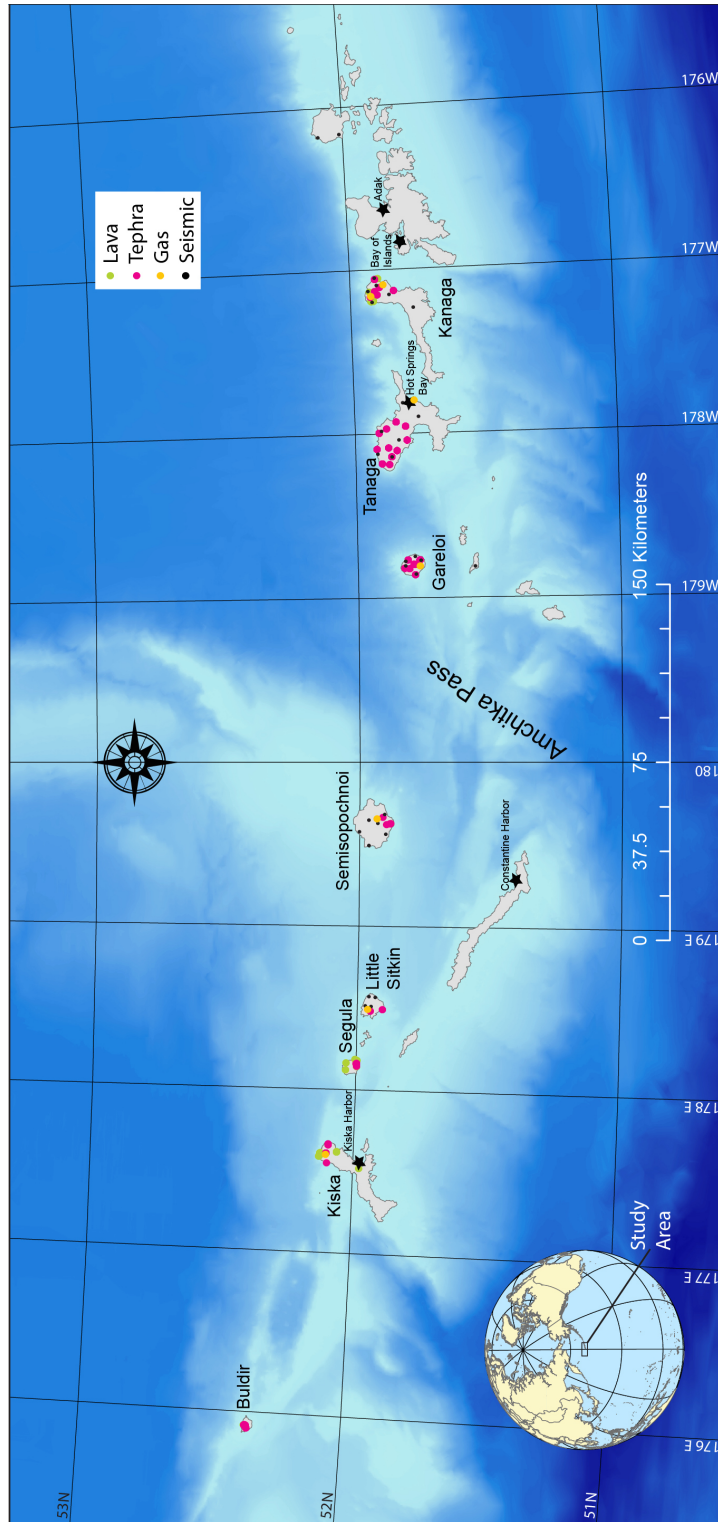


Figure 10. Map of station locations for all science parties on the cruise. Black circles are AVO seismic stations. Green and pink circles are geological samples. Yellow circles are volcanic gas samples. Harbors occupied by the *R/V Maritime Maid* are indicated by black stars.

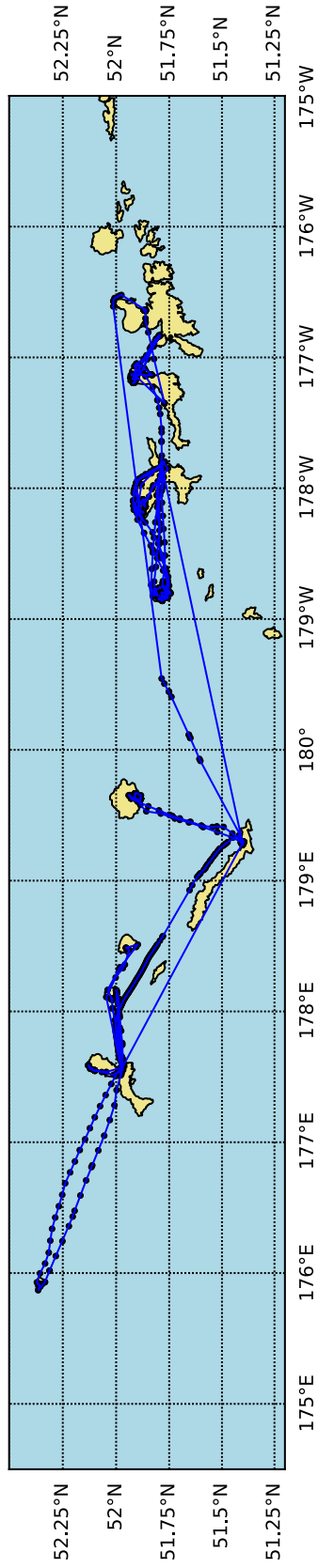


Figure 11. Map of locations broadcast by E. Cottrell's DeLorme InReach satellite communicator/GPS. Locations (black circles) were logged to a web page via satellite every time a text message or tweet was sent by the user, and while in an automated mode that logged location every 1 to 10 minutes. Blue lines connecting the circles show the track followed by the device throughout the duration of the cruise. Map drafted by B. Savage.

Buldir

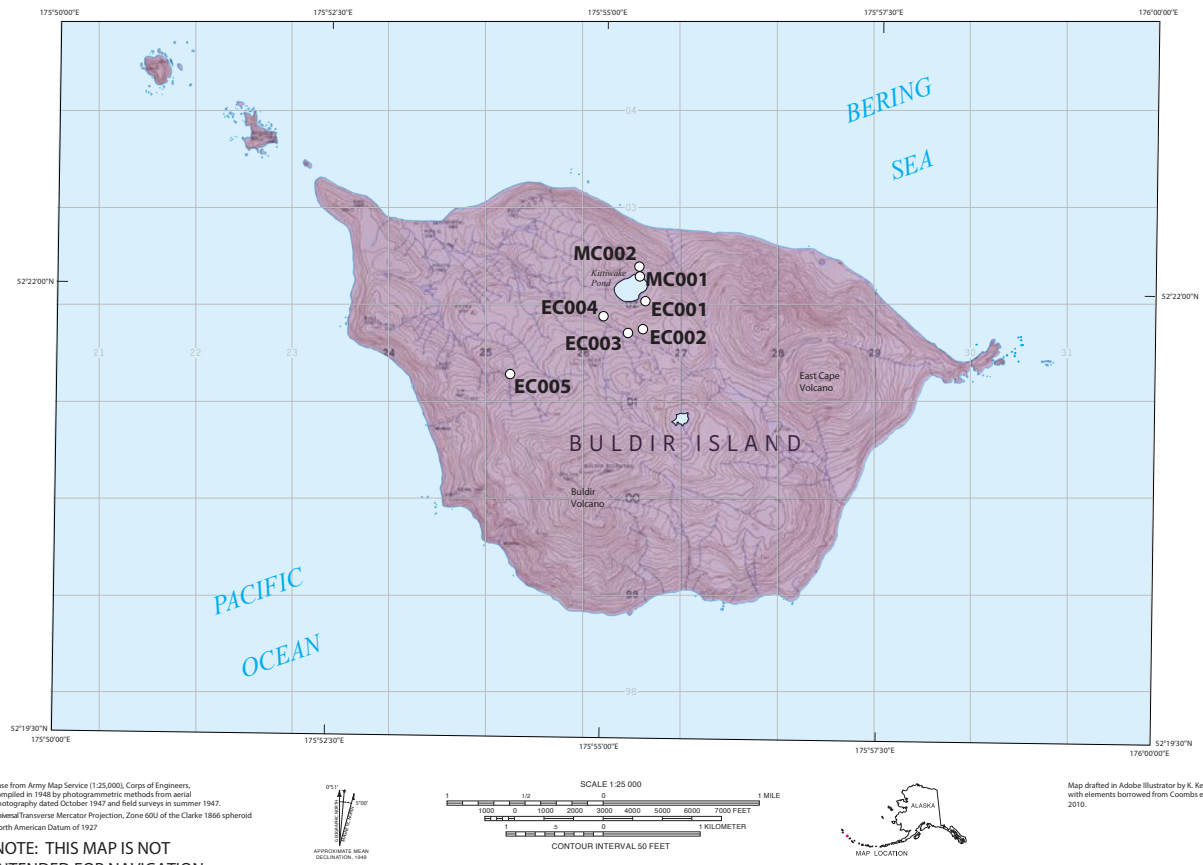


Figure 12. Map of sample stations on Buldir Island. Base map is Army Map Service 1:25000 topographic map of Buldir Island B-1.



Base from Army Map Service (1:25,000), Corps of Engineers, completed in 1963 by photogrammetric methods from US Navy aerial photography dated October 1953. Polyconic Projection, Local Datum.

NOTE: THIS MAP IS NOT INTENDED FOR NAVIGATION



SCALE 1:25,000
1 MILE
1 KILOMETER
CONTOUR INTERVAL 50 FEET



Map drafted in Adobe Illustrator by K. Kelley, with elements borrowed from Coombs et al., 2010.

MC003 ○ KS001
MC002

MC001 is missing lat/long

Figure 13. Map of sample stations on Kiska Island. Note that three stations are outside the map boundaries, but are shown for reference. Base map is Army Map Service 1:25000 topographic map of Kiska D-2.

Segula

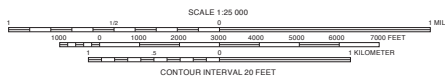


Base from Army Map Service (1:25,000), Corps of Engineers, compiled in 1943 by photogrammetric methods from aerial photography dated 1935 and 1943. Polyconic Projection, Local Datum.

NOTE: THIS MAP IS NOT INTENDED FOR NAVIGATION



APPROXIMATE MEAN DECLINATION 1943



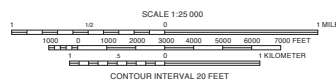
Map drafted in Adobe Illustrator by K. Kelley, with elements borrowed from Coombs et al., 2010.

Figure 14. Map of sample stations on Segula Island. Base map is Army Map Service 1:25000 topographic map of Rat Islands D-6.

Little Sitkin



Base from Army Map Service 1:25,000, Corps of Engineers, compiled by photogrammetric methods from aerial photography dated October 1934 and 1943. Universal Transverse Mercator Projection, Zone 60U of the Clarke 1866 spheroid North American Datum of 1927



Map drafted in Adobe Illustrator by K. Kelley, with elements borrowed from Coombs et al., 2012.

NOTE: THIS MAP IS NOT INTENDED FOR NAVIGATION

Figure 15. Map of sample stations on Little Sitkin Island. Base map is Army Map Service 1:25000 topographic map of Rat Islands C-5.

Semisopchnoi

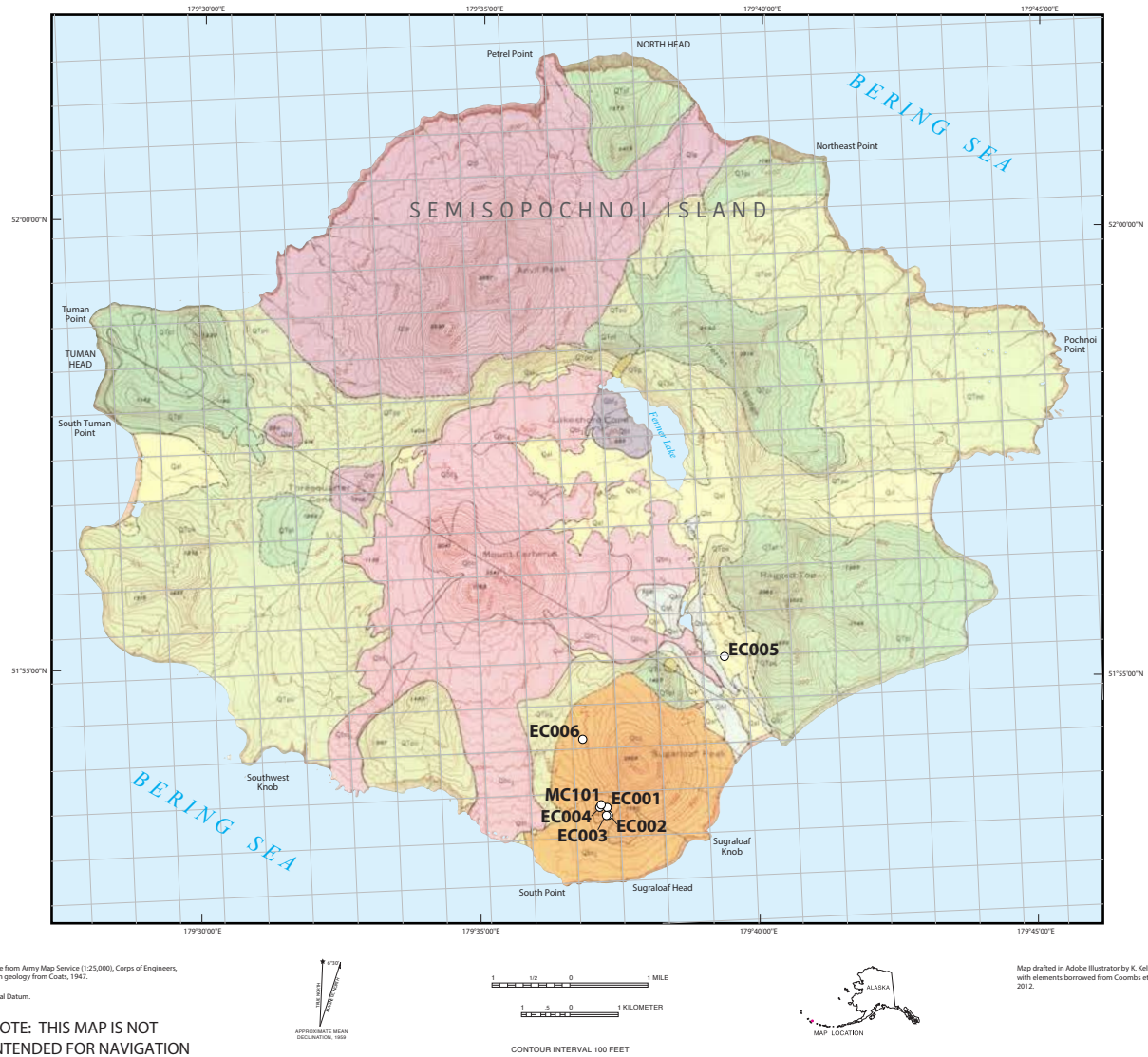


Figure 16. Map of sample stations on Semisopchnoi island. Base map is Army Map Service 1:25000 topographic map of Rat Islands C-1, with geology from Coats (1959).

Gareloi

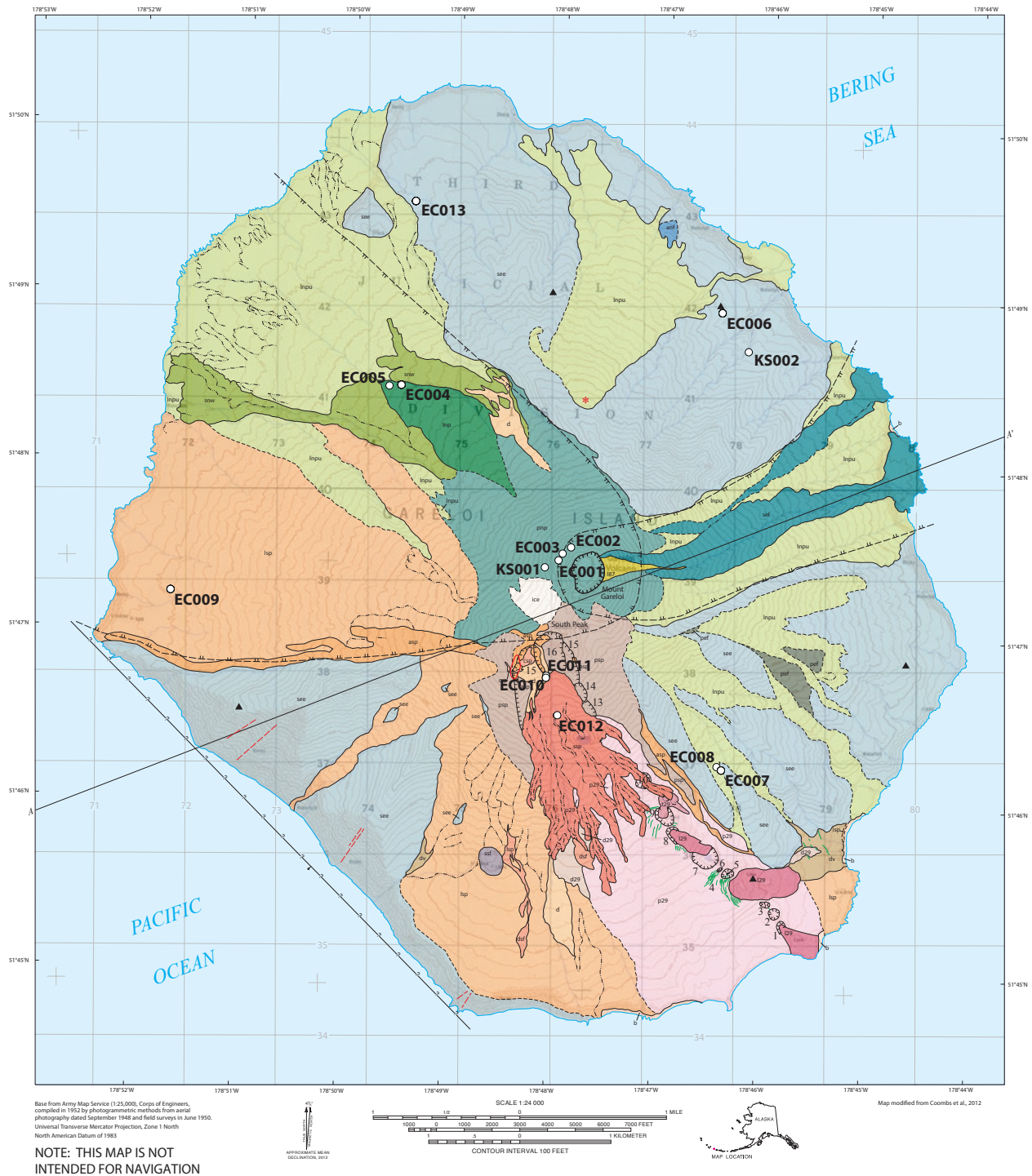


Figure 17. Map of sample stations on island. Base map is Army Map Service 1:24000 topographic map of Gareloi Island C-3, with geology from Coombs et al. (2012).

Tanaga

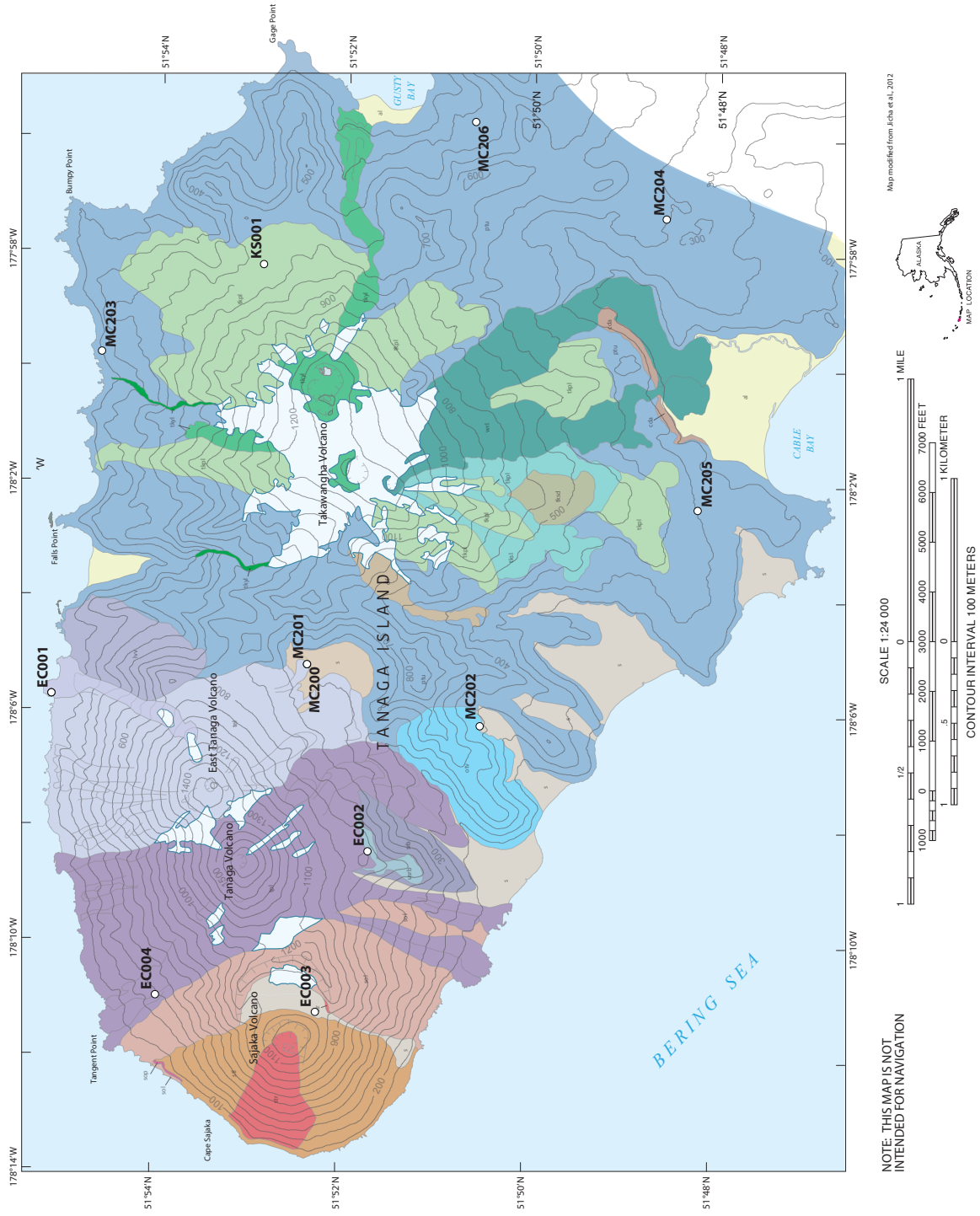
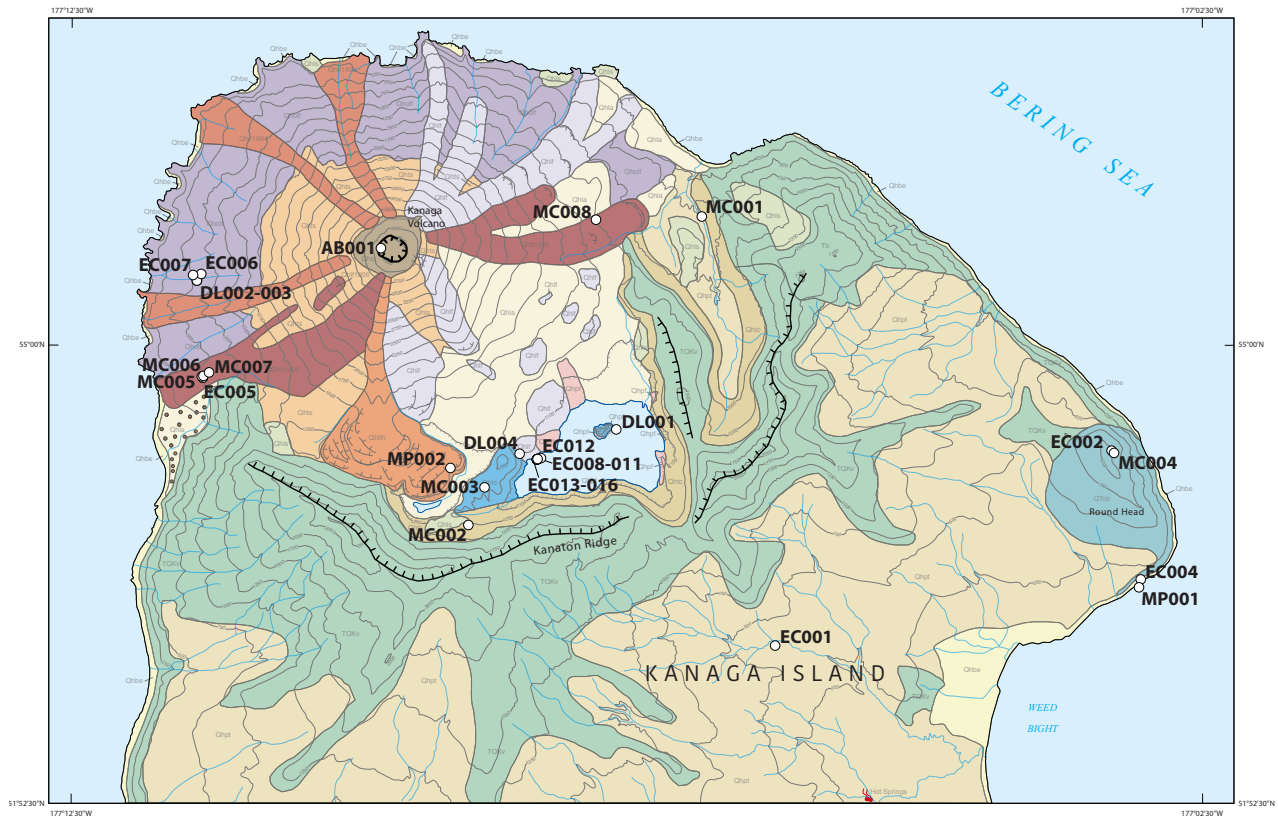


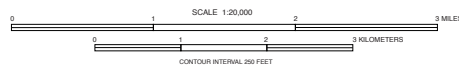
Figure 18. Map of sample stations on Tanaga Island. Base topographic map is modified, with geologic units, from Jicha et al. (2012).

Kanaga



Base from Army Map Service (1:25,000), Corps of Engineers, compiled in 1955. From Adak C-4 NW and Adak C-4 NE

NOTE: THIS MAP IS NOT INTENDED FOR NAVIGATION



Map modified in Adobe Illustrator by K. Kelley, with elements borrowed from Coombes et al., 2012, using base and geologic units from Miller et al. (2003).

MP003-004 are missing lat/long

○ KS001

Figure 19. Map of sample stations on Kanaga Island. Base topographic map is modified, with geologic units, from Miller et al. (2003). Note that station 15KGKS001 falls outside the bounds of the map but is shown for reference.

5. List of Stations

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15AMMC005	51.4046	179.2824		Amchikta	Amchitka near Constantine Harbor	skiffed ashore walking around with team FORTE	9/6/15
15AMMP001	51.4027	179.1690	6	Amchikta	Makarius Bay, southern coast of Amchikta	Terrace with probable storm/tsunami deposits	9/12/15
15BLEC001	52.3643	175.9189	262	Buldir	south shore of Kittiwake pond		9/10/15
15BLEC002	52.3617	175.9185	363	Buldir	ridge west of Kittiwake pond		9/10/15
15BLEC003	52.3613	175.9162	312	Buldir	drainage over ridge on west side of Kittiwake pond		9/10/15
15BLEC004	52.3629	175.9125	293	Buldir	downstream of previous location, is same drainage		9/10/15
15BLEC005	52.3575	175.8984	260	Buldir	Further downstream, high on same side of gully (transported by heli)	the one with the bird	9/10/15
15BLMC001	52.3666	175.9180	264	Buldir	Along north shore of Kittiwake Lake	EC and KS along far shore at same time	9/10/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15BLMC002	52.3675	-175.9179	304	Buldir	Top of sea bluff just north of Kittiwake Lake	walked up from 001. Note that here there is 60 cm soil on colluvium, no tephra.	9/10/15
15GREC001	51.7864	-178.7971	1478	Gareloi	on the SW flank of Gareloi summit	rainbows, fumeroles, ice, tephra, perfect	9/17/15
15GREC002	51.7877	-178.7951	1546	Gareloi	at crater rim	can see crater lake - steaming	9/17/15
15GREC003	51.7870	-178.7964	1522	Gareloi	surface grab - diverse scoria and pumice		9/17/15
15GREC004	51.8040	-178.8227	500	Gareloi	NW flank near MC26	lunch!	9/17/15
15GREC005	51.8040	-178.8246	468	Gareloi	right near to 15GREC004		9/17/15
15GREC006	51.8112	-178.7704	271	Gareloi	NW coast near BB29	gorgeous site with gully base of carved lava flow	9/17/15
15GREC007	51.7652	-178.7707	282	Gareloi	SW corner of island E of GALA and up slope of MC22	toe in on heli!	9/18/15
15GREC008	51.7655	-178.7714	299	Gareloi	SW corner of island E of GALA and up slope of MC22	ton of scoria other side of gully from 007!	9/18/15
15GREC009	51.7835	-178.8603	157	Gareloi	most western point on island	steep gully exposure - Dan shoveled me some steps!	9/18/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15GREC010	51.7745	-178.7992	1041	Gareloi	S Flank of Gareloi on Shoshonite Flow	talus and skree - Liz hurt	9/19/15
15GREC011	51.7747	-178.7991	1051	Gareloi	S Flank of Gareloi on Shoshonite Flow	talus and skree - Liz hurt	9/19/15
15GREC012	51.7708	-178.7973	914	Gareloi	S Flank of Gareloi on Shoshonite Flow	talus and skree - Liz hurt	9/19/15
15GREC013	51.8225	-178.8203	205	Gareloi	N flank near to MC12	Tephra unit near MC12	9/19/15
15GRKS001	51.7857	-178.7993	1409	Gareloi	small gully exposure - waist deep in tephra	finer clast size than EC001	9/17/15
15GRKS002	51.8112	-178.7704	271	Gareloi	NW coast near BB29	base of that gully	9/17/15
15KGAB001	51.9242	-177.1660	1184	Kanaga	Summit of Kanaga	NE quadrant summit rim	9/20/15
15KGDL001	51.9078	-177.1313		Kanaga	caldera lake island	steep cliff into lake, sample collected by reaching over ledge with shovel	9/20/15
15KGDL002	51.9213	-177.1931	188	Kanaga	W flank Kanaga, 1994 flow	looking for mafic inclusions	9/21/15
15KGDL003	51.9213	-177.1931	188	Kanaga	W flank Kanaga, 1994 flow	looking for mafic inclusions	9/21/15
15KGDL004	51.9056	-177.1455	366	Kanaga	W shore of caldera lake on SE flank Kanaga; lava dome	inclusion in host lava	9/22/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KGEC001	51.8881	-177.1079	121	Kanaga	steep stream cut on SE side of island		9/20/15
15KGEC002	51.9058	-177.0584	324	Kanaga	Round Top	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano	9/20/15
15KGEC004	51.8941	-177.0541	70	Kanaga	SE seacliff of Round Head; hike up from beach. Olivine + Pyx lava flow above and below a breccia full of large (<3cm) equant loose pyroxenes	spectacular locality for pyroxene and lava flow	9/21/15
15KGEC005	51.9125	-177.1922	134	Kanaga	W flank Kanaga, 1994 flow	looking for mafic inclusions	9/21/15
15KGEC006	51.9219	-177.1924	202	Kanaga	W flank Kanaga, 1994 flow	looking for mafic inclusions	9/21/15
15KGEC007	51.9218	-177.1936	175	Kanaga	W flank Kanaga, 1994 flow	looking for mafic inclusions	9/21/15
15KGEC008	51.9051	-177.1429	309	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC009	51.9051	-177.1429	309	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KGEC010	51.9051	-177.1429	309	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC011	51.9051	-177.1429	309	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC012	51.9052	-177.1424	314	Kanaga	Possibly the Holocene flow	the PF and the Holo Flow are intermingled it seems	9/22/15
15KGEC013	51.9050	-177.1430	320	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC014	51.9050	-177.1430	320	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC015	51.9050	-177.1430	320	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGEC016	51.9050	-177.1430	320	Kanaga	W shore of caldera lake on SE flank Kanaga	clasts in PF?	9/22/15
15KGKS001	51.8349	-177.1304	73	Kanaga	Eastern sea cliff, south of Round Top		9/20/15
15KGMC001	51.92715	-177.1186	152	Kanaga	3 km east of Kanaga summit	Near 00CW06	9/20/15
15KGMC002	51.8991	-177.1531	392	Kanaga	Base of inner rim of Kanaton Ridge		9/20/15
15KGMC003	51.9025	-177.1507	478	Kanaga	"Dome" inside Kanaton Ridge	collected by Mattia	9/20/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KGMC004	51.9056	-177.0580	331	Kanaga	Round Head top		9/20/15
15KGMC005	51.9126	-177.1923	145	Kanaga	1906(?) lava flow on west side of Kanaga cone	Calm afternoon with fishing boat between me and Bobrof	9/21/15
15KGMC006	51.9126	-177.1921	133	Kanaga	1906(?) lava flow on west side of Kanaga cone	Calm afternoon with fishing boat between me and Bobrof	9/21/15
15KGMC007	51.9130	-177.1913	149	Kanaga	1906(?) lava flow on west side of Kanaga cone	Calm afternoon with fishing boat between me and Bobrof	9/21/15
15KGMC008	51.9268	-177.1343	317	Kanaga	East flank of Kanaga cone	Nap time	9/22/15
15KGMP001	51.8934	-177.0543	6	Kanaga	Round Head, southeast shore	Dinosaur egg beach	9/21/15
15KGMP002	51.9043	-177.1557	414	Kanaga	South lava flow of Kanaga Volcano, within Kanaton Caldera	Lava Front	9/21/15
15KGMP003	Not recorded	Not recorded		Kanaga	Northern side of the eastern lava flow of Kanaga Volcano	Top of right ridge of lava flow	9/22/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KGMP004	Not recorded	Not recorded		Kanaga	Western side of Kanaga volcano summit	In proximity of the fracture-ridge of S-rich fumaroles	9/22/15
15KKEC001	52.1309	177.5880	58	Kiska	Western side of Sirius Point, NW flank of Kiska Volcano	rough terrain with less vegetation than eastern side of Sirius Point	9/11/15
15KKEC002	52.1309	177.5880	58	Kiska	Western side of Sirius Point, NW flank of Kiska Volcano	rough terrain with less vegetation than eastern side of Sirius Point	9/11/15
15KKEC003	52.1009	177.5479	70	Kiska	"unimpressive" tephra section on the sea cliff on the W side of Kiska-my-ass nearby columnar jointed cliffs (Volcan Pt)	this is where we give up on finding tephra on Kiska-my-ass	9/11/15
15KKKS001	51.9778	177.5205	68	Kiska	high ridge on south of Kiska harbor on east side of lagoon		9/7/15
15KKMC001	51.9796	177.5363		Kiska	Above Kiska Harbor, in bomb crater	skiffed ashore with Team FORTE	9/7/15
15KKMC002	51.9778	177.5205	224	Kiska	Above Kiska Harbor, at top of Ridge above road	skiffed ashore with Team FORTE	9/7/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KKMC003	51.9769	177.5167	195	Kiska	Above Kiska Harbor, face of Ridge above lagoon		9/7/15
15KKMC004	52.1286	177.5887	140	Kiska	Just above Sirius Point	flow above new SP lava	9/11/15
15KKMC005	52.1286	177.5887	96	Kiska	Just west of Sirius Point		9/11/15
15KKMP001	52.0977	177.6645	62	Kiska	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947)	steep cliff; one meter thick section	9/8/15
15KKMP002	52.0972	177.6582	86	Kiska	50-60ft up northern slope of eastward running gully	one mile west of previous location; 70cm thick section	9/8/15
15KKMP003	52.1284	177.6074	112	Kiska	top of eastern side of blocky lava field	rough terrain	9/9/15
15KKMP004	52.0647	177.6159	102	Kiska	SSE flank of Kiska Volcano, adjacent to East Kiska Lake	thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)	9/9/15
15KKMP005 (001V-00a)	52.1044	177.6085	1137	Kiska	Eastern flank of Kiska Volcano, ~25ft below crater rim	ridge perpendicular to eastern rim	9/10/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15KKMP006 (002V-01)	52.1046	177.6079	1145	Kiska	Eastern flank of Kiska Volcano, at the crater rim	Crater rim	9/10/15
15KKMP007 (003V-01)	52.1054	177.6038	1077	Kiska	Inside Kiska Volcano crater, western side	Crater	9/10/15
15KKMP008 (004V-01)	52.1052	177.6045	1086	Kiska	Inside Kiska Volcano crater, western side	Crater	9/10/15
15LSEC001	51.9516	178.4830	175	Little Sitkin	tephra section near West Cove Flow		9/9/15
15LSEC002	51.9541	178.4861	226	Little Sitkin	W Cove Lava Flow. East side of island near heli drop and just S of the springs	bluff where KS has supernatural hearing	9/9/15
15LSEC003	51.9063	178.4937	49	Little Sitkin	tephra section on the SW coast just W of Prokhoda Pt.	Gorgeous exposure. Sunny skies.	9/9/15
15SGEC001	52.0014	178.1597	231	Segula	thin gully on south side of island, west bank near parasitic cone	at the point where the lava flow from the parasitic cone meets the gully	9/8/15
15SGEC002	52.0013	178.1608	197	Segula	self-dug trench on top rim of gully		9/8/15
15SGEC003	51.9986	178.1619	109	Segula	gully just SW of parasitic cone		9/8/15
15SGEC004	52.0206	178.0970	7	Segula	sea cliff on east side		9/9/15


Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15SGEC005	51.9980	178.1415	163	Segula	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows	completely different from the adjacent drainage (just a couple of thousand ft to the East)	9/11/15
15SGEC006	51.9978	178.1422	183	Segula	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows	completely different from the adjacent drainage (just a couple of thousand ft to the East)	9/11/15
15SGEC007	51.9978	178.1422	183	Segula	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows	completely different from the adjacent drainage (just a couple of thousand ft to the East)	9/11/15
15SGKS001	51.9984	178.1448	224	Segula	west side of very large, flat-bottomed cut on south side of island	Steep cliff with large amount of volcanic debris	9/11/15
15SGMC001	51.9975	178.1793	29	Segula	Parasitic cone lava flow on SE flank	Lava hopping with pilot Dan	9/8/15
15SGMC002	52.0044	178.1869	32	Segula	Lava flow that makes Iron Point	Lava hopping with pilot Dan	9/8/15
15SGMC003	52.0388	178.1629	20	Segula	NE coast, where young lava meets the sea	Lava hopping with pilot Dan	9/8/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15SGMC004	52.0388	178.1636	15	Segula	NE coast, where young lava meets the sea	Lava hopping with pilot Dan	9/8/15
15SGMC005	52.0393	178.1204	30	Segula	Near head of small north cove on Segula, by picturesque beach	Lava hopping with pilot Dan; last stop, quick	9/8/15
15SGMC006	52.0388	178.1204	45	Segula	Near head of small north cove on Segula, by picturesque beach	Lava hopping with pilot Dan; last stop, quick	9/8/15
15SGMC007	52.0202	178.1004		Segula	Small gully above spectacular sea cliff at NW coast		9/9/15
15SGMC008	52.0200	178.0998	69	Segula	Small gully above spectacular sea cliff at NW coast	Afternoon stop, hot and sunny	9/9/15
15SGMC009	51.9985	178.1434	180	Segula	Large amphitheatre-like gully on south flank	EC and I met up with MP and KS here at end of day	9/11/15
15SMEC001	51.8854	179.6270	308	Semisopochnoi	2000' SW of Sugar Loaf Peak / 1000' NW Sugarloaf Head		9/12/15
15SMEC002	51.8840	179.6273	315	Semisopochnoi	tephra section just on saddle bw SLPk and SLhd		9/12/15
15SMEC003	51.8839	179.6266	300	Semisopochnoi	saddle bw SL Pk and SL Head		9/12/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15SMEC004	51.8855	179.6247	312	Semisopochnoi	tephra section on W side of semicircle crater(?) rim W of S.L.		9/12/15
15SMEC005	51.9129	179.6649	123	Semisopochnoi	tephra section on E side of Sug. Loaf		9/12/15
15SMEC006	51.8985	179.6204	295	Semisopochnoi	tephra section on W side of Sug. Loaf SEstern-most drainage		9/12/15
15SMMC101	51.9129	179.6649	123	Semisopochnoi	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek	Near JL007, similar stratigraphy	9/12/15
15SMMC102	51.8977	179.6195	268	Semisopochnoi	W flank of Sugarloaf		9/12/15
15TGEC001	51.9192	-178.0949	38	Tanaga	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt	just E of seismic "cliff" station	9/15/15
15TGEC002	51.8626	-178.1411	916	Tanaga	seismic hut just to the S of Tanaga @MC26	spectacular - above the clouds - top of the world	9/16/15
15TGEC003	51.8721	-178.1877	1059	Tanaga	saddle just SE of Sajaka @MC39	spectacular - above the clouds - top of the world	9/16/15
15TGEC004	51.9007	-178.1826	249	Tanaga	Tangent Point		9/18/15

Station ID	Latitude (°N)	Longitude (°E)	Elevation (m)	Island	Location Description	Station Comment	Date
15TGKS001	51.8812	-177.9706	537	Tanaga	between Bumpy and Gauge points		9/18/15
15TGMC200	51.8735	-178.0868	511	Tanaga	Basin below Tanaga/East Tanaga, near BB29	Near BB29	9/16/15
15TGMC201	51.8735	-178.0868	0	Tanaga	Basin below Tanaga/East Tanaga, near BB29	Near BB29	9/16/15
15TGMC202	51.8425	-178.1048		Tanaga	Between Tanaga and Takawangha, south side valley	Near MC44	9/17/15
15TGMC203	51.9101	-177.9957	164	Tanaga	North coast, north flank of Takawangha	Near "tephra hole"	9/18/15
15TGMC204	51.8090	-177.9577	292	Tanaga	Flats south of Takawangha	Tephra gully extraordinary	9/18/15
15TGMC205	51.8035	-178.0423	211	Tanaga	Just west of Cable Bay, south of Takawangha	50-m-long gently exposed bluff	9/19/15
15TGMC206	51.8432	-177.9293	248	Tanaga	Above Gusty Bay	5 m deep gully next to babbling brook	9/19/15
15TGDL001	51.9192	-178.0949	38	Tanaga	lava flow toeing out just below 15TGEC001		9/15/15

6. Station/Sample Logs

15AMMC005-1					
Date:	Sep 6, 2015	Name:	Michelle Coombs	Sample Name:	15AMMC005-1
Island:	Amchitka	Volcano/Cone Name:			
Location Description:		Amchitka near Constantine Harbor			
Waypoint/Station:		15AMMC005	IGSN (URI):		
Latitude:	51.40462	°N	Longitude:	179.28238	°E
Sample Type:	Loess	Elevation (m)			
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Bulk sample of 2-m-thick loess(?), on soil, on till. Sits below tephra-soil complex with VF ashes. This unit is of note because it contains pumice up to 4 mm, easily crushed. Sampled to extract and probe pumices if that is what they are.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All?			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15AMMP001-01

Date:	Sep 12, 2015	Name:	Mattia Pistone	Sample Name:	15AMMP001-01
Island:	Amchikta	Volcano/Cone Name:			
Location Description:		Makarius Bay, southern coast of Amchikta, Terrace with probable storm/tsunami deposits			
Waypoint/Station:		15AMMP001	IGSN (URI):		
Latitude:	51.40273 °N	Longitude:		179.16898 °E	
Sample Type:	Tephra Fall	Elevation (m)			6
# of Gallon (large) bags		1/8 gallon	# of Quart (small) bags		
Sample/ Station Photo:	No photo available.				
Description:	Black, fine ash layer (3 cm thick)				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15AMMP001-02

Date:	Sep 12, 2015	Name:	Mattia Pistone	Sample Name:	15AMMP001-02
Island:	Amchikta	Volcano/Cone Name:			
Location Description:		Makarius Bay, southern coast of Amchikta, Terrace with probable storm/tsunami deposits			
Waypoint/Station:		15AMMP001	IGSN (URI):		
Latitude:	51.40273 °N	Longitude:		179.16898	°E
Sample Type:	Tephra Fall, pumice		Elevation (m)		6
# of Gallon (large) bags		1/8 gallon	# of Quart (small) bags		
Sample/ Station Photo:	No photo available.				
Description:	Pumice clasts within fine ash matrix (5 cm thick)				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC001-1

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC001-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:		south shore of Kittiwake pond			
Waypoint/Station:		15BLEC001	IGSN (URI):		
Latitude:	52.36427 °N	Longitude:		175.91885 °E	
Sample Type:	Tephra Fall	Elevation (m)		262	
# of Gallon (large) bags		2.5 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	medium to coarse lapilli, black to brown, mixed with lithics up to 8 cm, sample includes bags of high grade and two bombs (both bombs to Smithsonian)				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


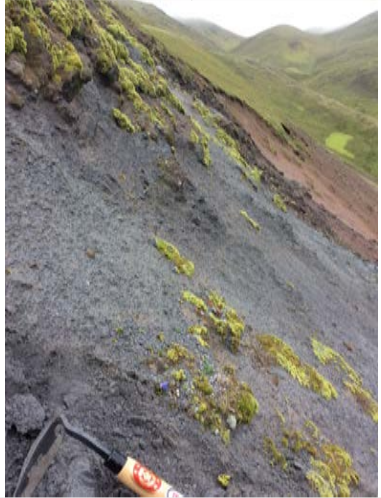
15BLEC002-1

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC002-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:		ridge west of Kittiwake pond			
Waypoint/Station:		15BLEC002	IGSN (URI):		
Latitude:	52.36168 °N	Longitude:		175.91847 °E	
Sample Type:	Lava	Elevation (m)		363	
# of Gallon (large) bags		0.1 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	basaltic andesite, crystal poor, black				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:	0.1 gal			
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


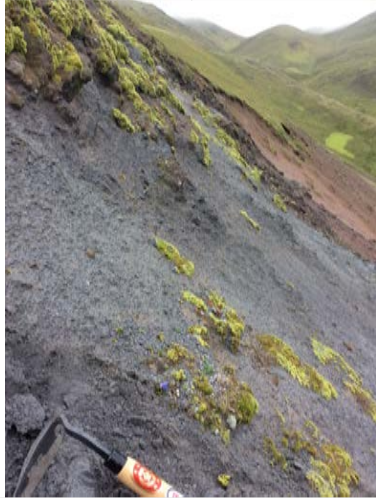
15BLEC003-1

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC003-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:		drainage over ridge on west side of Kittiwake pond			
Waypoint/Station:		15BLEC003	IGSN (URI):		
Latitude:	52.36133 °N	Longitude:		175.91621 °E	
Sample Type:	Tephra Fall	Elevation (m)		312	
# of Gallon (large) bags		0.5 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	surface grab of medium to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.2 gal			
Kelley	Quantity:	0.2 gal			
Coombs	Quantity:	0.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


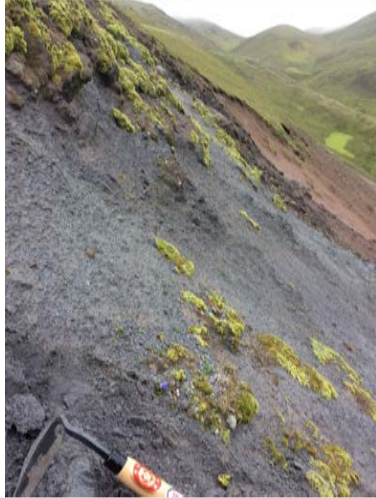
15BLEC004-1

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC004-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:	downstream of previous location, in same drainage				
Waypoint/Station:	15BLEC004	IGSN (URI):			
Latitude:	52.36288 °N	Longitude:	175.9125 °E		
Sample Type:	Tephra Fall	Elevation (m)			293
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	coarse ash to coarse lapilli, unit 6 m thick, poorly sorted black volcanoclastics				
Samples dispensed to:					
Cottrell	Quantity:	.33 gal			
Kelley	Quantity:	.33 gal			
Coombs	Quantity:	.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC004-2

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC004-2
Island:	Buldir	Volcano/Cone Name:			
Location Description:		downstream of previous location, in same drainage			
Waypoint/Station:		15BLEC004	IGSN (URI):		
Latitude:	52.36288 °N	Longitude:		175.9125 °E	
Sample Type:	Tephra Fall	Elevation (m)		293	
# of Gallon (large) bags		.5 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	reddish scoria surficially covering the previously sampled unit, about 1" thick				
Samples dispensed to:					
Cottrell	Quantity:	1 pint			
Kelley	Quantity:	1 pint			
Coombs	Quantity:	1 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC004-3

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC004-3
Island:	Buldir	Volcano/Cone Name:			
Location Description:		downstream of previous location, in same drainage			
Waypoint/Station:		15BLEC004	IGSN (URI):		
Latitude:	52.36288 °N	Longitude:		175.9125 °E	
Sample Type:	Tephra Fall	Elevation (m)		293	
# of Gallon (large) bags		1 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	fine ot medium grey ash overlying previously sampled scoria unit				
Samples dispensed to:					
Cottrell	Quantity:	.33 gal			
Kelley	Quantity:	.33 gal			
Coombs	Quantity:	.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC005-1

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Debris Flow	Elevation (m)		260	
# of Gallon (large) bags		.3 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	brown debris with large clasts up to 1 m				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC005-2

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-2
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Soil	Elevation (m)			260
# of Gallon (large) bags		.2 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	1 cm thick oily soil horizon, very coherent				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	.2 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC005-3

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-3
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Tephra Fall	Elevation (m)		260	
# of Gallon (large) bags		.3 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	15 cm thick fine brown/grey ash				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC005-4

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-4
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Tephra Fall	Elevation (m)		260	
# of Gallon (large) bags		2 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	poorly sorted brown to black scoria, fine lapilli to bombs				
Samples dispensed to:					
Cottrell	Quantity:	.5 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15BLEC005-5

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-5
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Tephra Fall	Elevation (m)		260	
# of Gallon (large) bags		~5 bombs	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	bombs				
Samples dispensed to:					
Cottrell	Quantity:	2 bombs			
Kelley	Quantity:	2 bombs			
Coombs	Quantity:	1 bomb			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLEC005-6

Date:	Sep 10, 2015	Name:	Elizabeth Cottrell	Sample Name:	15BLEC005-6
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Further downstream, high on same side of gully (transported by heli); the one with the bird			
Waypoint/Station:		15BLEC005	IGSN (URI):		
Latitude:	52.35753 °N	Longitude:		175.89835 °E	
Sample Type:	Tephra Fall	Elevation (m)		260	
# of Gallon (large) bags		.3 gal	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	brown, fine to coarse lapilli with lithics				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLMC001-1

Date:	Sep 10, 2015	Name:	Michelle Coombs	Sample Name:	15BLMC001-1
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Along north shore of Kittiwake Lake; Here, poorly stratified volcanoclastic debris and discontinuous fall layers. But, appears Holocene!!			
Waypoint/Station:		15BLMC001	IGSN (URI):		
Latitude:	52.36656 °N	Longitude:		175.91802 °E	
Sample Type:	Tephra Fall	Elevation (m)		264	
# of Gallon (large) bags		# of Quart (small) bags		4 quart bags	
Sample/ Station Photo:					
Description:	15-cm-thick clean brown pumice fall, fine to medium lapilli. Max pum = 3 cm. Pums subrounded. 4 quart bags.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:	3 quarts			
Coombs	Quantity:	small high graded bag			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLMC001-2

Date:	Sep 10, 2015	Name:	Michelle Coombs	Sample Name:	15BLMC001-2
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Along north shore of Kittiwake Lake			
Waypoint/Station:		15BLMC001	IGSN (URI):		
Latitude:	52.36656 °N	Longitude:		175.91802 °E	
Sample Type:	Tephra Fall	Elevation (m)		264	
# of Gallon (large) bags		# of Quart (small) bags		3 quart(?) bags	
Sample/ Station Photo:					
Description:	25-cm-thick fine to coarse lapilli scoria fall, with light gray fine ash coating. Clasts are blue-black scoria, many broken clasts (note this for grain size issues).				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:	2 quarts			
Coombs	Quantity:	1 clast			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15BLMC002

Date:	Sep 10, 2015	Name:	Michelle Coombs	Sample Name:	15BLMC002
Island:	Buldir	Volcano/Cone Name:			
Location Description:		Top of sea bluff just north of Kittiwake Lake; walked up from 001. Note that here there is 60 cm soil on colluvium, no tephras.			
Waypoint/Station:		15BLMC002	IGSN (URI):		
Latitude:	52.36747 °N	Longitude:		175.91794 °E	
Sample Type:	Lava; Flow	Elevation (m)		304	
# of Gallon (large) bags		# of Quart (small) bags		2 quarts	
Sample/ Station Photo:					
Description:	Lava at top of north bluff above Bering Sea. Mostly vegetated but blocky lava poking out is relatively fresh medium gray crystalline olivine-rich basalt. Sample from desne angular block. Datable.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKEC001-01

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KKEC001-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Western side of Sirius Point, NW flank of Kiska Volcano; rough terrain with less vegetation than eastern side of Sirius Point				
Waypoint/Station:	15KKEC001	IGSN (URI):			
Latitude:	52.13085 °N	Longitude:	177.58803 °E		
Sample Type:	Lava; Flow	Elevation (m)	58		
# of Gallon (large) bags	1/2 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Crystal-rich andesite; minerals include plagioclase, hornblende; 30-40% crystallinity				
Samples dispensed to:					
Cottrell	Quantity:	1/4 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/4 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKEC002-01

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KKEC002-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Western side of Sirius Point, NW flank of Kiska Volcano; rough terrain with less vegetation than eastern side of Sirius Point				
Waypoint/Station:	15KKEC002	IGSN (URI):			
Latitude:	52.13085 °N	Longitude:	177.58803 °E		
Sample Type:	Lava; Flow	Elevation (m)	58		
# of Gallon (large) bags	2 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Crystal-rich andesite; minerals include plagioclase, hornblende; 30-40% crystallinity				
Samples dispensed to:					
Cottrell	Quantity:	1 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKEC003-1

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KKEC003-1
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	"unimpressive" tephra section on the sea cliff on the W side of Kiska-my-ass nearby columnar jointed cliffs (Volcan Pt); this is where we give up on finding tephra on Kiska-my-ass				
Waypoint/Station:	15KKEC003	IGSN (URI):			
Latitude:	52.10085 °N	Longitude:	177.54794 °E		
Sample Type:	Tephra Fall	Elevation (m)	70		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	3 cm buff very fine ash directly overlying 003-2				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKEC003-2

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KKEC003-2
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	"unimpressive" tephra section on the sea cliff on the W side of Kiska-my-ass nearby columnar jointed cliffs (Volcan Pt); this is where we give up on finding tephra on Kiska-my-ass				
Waypoint/Station:	15KKEC003	IGSN (URI):			
Latitude:	52.10085 °N	Longitude:	177.54794 °E		
Sample Type:	Soil	Elevation (m)	70		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	very thin soil directly below 003-1 and above 15 cm of dk brown tephra-soil complex				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKEC003-3

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KKEC003-3
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	"unimpressive" tephra section on the sea cliff on the W side of Kiska-my-ass nearby columnar jointed cliffs (Volcan Pt); this is where we give up on finding tephra on Kiska-my-ass				
Waypoint/Station:	15KKEC003	IGSN (URI):			
Latitude:	52.10085 °N	Longitude:	177.54794 °E		
Sample Type:	Soil	Elevation (m)	70		
# of Gallon (large) bags	tablespoons	# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	thin soil overlying a massive cold-emplaced debris flow with large blocks and underlying 48 cm of cakey tephra-soil complex with pumices that squish				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKKS001-1

Date:	Sep 7, 2015	Name:	Katherine Sheppard	Sample Name:	15KKKS001-1
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	high ridge on south of Kiska harbor on east side of lagoon				
Waypoint/Station:	15KKKS001	IGSN (URI):			
Latitude:	51.977776 °N	Longitude:	177.52051 °E		
Sample Type:	Lava	Elevation (m)	68		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense basaltic andesite, crystal poor, sample from middle of otherwise weathered flow				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMC001-1

Date:	Sep 7, 2015	Name:	Michelle Coombs	Sample Name:	15KKMC001-1
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Above Kiska Harbor, in bomb crater; Kiska Harbor Fm				
Waypoint/Station:	15KKMC001	IGSN (URI):			
Latitude:	51.9796 °N	Longitude:	177.5363 °E		
Sample Type:	Debris Flow	Elevation (m)			
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	8-m-thick exposure of debris flow(?), orange-brown, pumice-bearing, somewhat indurated and altered. Max pum 3 cm, cream-yellow and highly squishable. Lithics are subrounded and up to 10 cm. Above is a soil horizon, and above that, ~1 m of brown soil complex with 2-3 fine ash tephra, that appear distal. Later we realize that this DF is the top of a large volcanoclastic sequence that is Pleistocene.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All?			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMC002

Date:	Sep 7, 2015	Name:	Michelle Coombs	Sample Name:	15KKMC002
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Above Kiska Harbor, at top of Ridge above road; Kiska Harbor Fm				
Waypoint/Station:	15KKMC002	IGSN (URI):			
Latitude:	51.97776 °N	Longitude:	177.52051 °E		
Sample Type:	Breccia	Elevation (m)	224		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Single pl-px andesite clast from volcanic breccia ridge capping unit. Well indurated cliff forming unit. Clast is 40 cm, fairly angular, and somewhat fresh on broken surface. Same site as sample 15KKKS001, another clast.				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMC003

Date:	Sep 7, 2015	Name:	Michelle Coombs	Sample Name:	15KKMC003
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Above Kiska Harbor, face of Ridge above lagoon				
Waypoint/Station:	15KKMC003	IGSN (URI):			
Latitude:	51.97691 °N	Longitude:	177.51665 °E		
Sample Type:	None	Elevation (m)	195		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	<p>No sample. Contact between ridge-capping andesite breccia above, and pumiceous debris flow/volcaniclastic sequence below. NOT Holocene. Pumices are both cream and light gray. Sequence has cross beds, pumice trains, fairly rounded. Submarine as interpreted by coats and I agree. This sequences composes the cliffs all around Kiska Harbor.</p>				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMC004

Date:	Sep 11, 2015	Name:	Michelle Coombs	Sample Name:	15KKMC004
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Just above Sirius Point; flow above new SP lava				
Waypoint/Station:	15KKMC004	IGSN (URI):			
Latitude:	52.12857 °N	Longitude:	177.5887 °E		
Sample Type:	Lava; Flow	Elevation (m)	140		
# of Gallon (large) bags			# of Quart (small) bags	2 quarts	
Sample/ Station Photo:					
Description:	Lava just above and west of "new" Sirius Point lava. Grassy, oxidized, but some fresh chunks. Holocene. At least third oldest lava near here, after newest point and the true Sirius Point lava. Medium gray crystal-rich 2 px andesite. No obvious hornblende.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15KKMC005

Date:	Sep 11, 2015	Name:	Michelle Coombs	Sample Name:	15KKMC005
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Just west of Sirius Point				
Waypoint/Station:	15KKMC005	IGSN (URI):			
Latitude:	52.128575 °N	Longitude:	177.5886778 °E		
Sample Type:	Pyroclastic flow; Block and Ash juvenile	Elevation (m)	96		
# of Gallon (large) bags		# of Quart (small) bags	2 quarts		
Sample/ Station Photo:					
Description:	Block-and-ash-flow deposit exposed in steep sea cliff just west of New Sirius Point lava flow. Pinkish gray with rounded to angular crystal-rich dome/lava blocks. Sample is light pinkish gray crystal rich "cinderblock" dacite clast, 40 cm in diameter. Just to west of here, BAF is overlain by soil, then clast poor PF, then another soil. No coarse tephra. All these fragmental deposits sit under various lava flows.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP001-01

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP001-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947); steep cliff; one meter thick section				
Waypoint/Station:	15KKMP001	IGSN (URI):			
Latitude:	52.0977 °N	Longitude:	177.6645 °E		
Sample Type:	Soil	Elevation (m)	62		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP001-02

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP001-02
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947); steep cliff; one meter thick section				
Waypoint/Station:	15KKMP001	IGSN (URI):			
Latitude:	52.0977 °N	Longitude:	177.6645 °E		
Sample Type:	Tephra Fall; pumice	Elevation (m)	62		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	pumice clasts with hornblende, plagioclase, and possibly sphene; lithics from undetermined systems; and andesitic lava breccia				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP001-03

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP001-03
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947); steep cliff; one meter thick section				
Waypoint/Station:	15KKMP001	IGSN (URI):			
Latitude:	52.0977 °N	Longitude:	177.6645 °E		
Sample Type:	Soil	Elevation (m)	62		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP001-04

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP001-04
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947); steep cliff; one meter thick section				
Waypoint/Station:	15KKMP001	IGSN (URI):			
Latitude:	52.0977 °N	Longitude:	177.6645 °E		
Sample Type:	Tephra Fall	Elevation (m)	62		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine gray ash and soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP001-05

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP001-05
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	cliff face close to the coast on the SE flank of Kiska Volcano, near Northeast Rocks (Robert Coats map, 1947); steep cliff; one meter thick section				
Waypoint/Station:	15KKMP001	IGSN (URI):			
Latitude:	52.0977 °N	Longitude:	177.6645 °E		
Sample Type:	Soil	Elevation (m)	62		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP002-01

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP002-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	50-60ft up northern slope of eastward running gully; one mile west of previous location; 70cm thick section				
Waypoint/Station:	15KKMP002	IGSN (URI):			
Latitude:	52.09718333 °N	Longitude:	177.65815 °E		
Sample Type:	Tephra Fall	Elevation (m)	86		
# of Gallon (large) bags	1/16 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	1cm size pumice embedded in fine ash				
Samples dispensed to:					
Cottrell	Quantity:	1/16 gallon			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP002-02

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP002-02
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	50-60ft up northern slope of eastward running gully; one mile west of previous location; 70cm thick section				
Waypoint/Station:	15KKMP002	IGSN (URI):			
Latitude:	52.09718333 °N	Longitude:	177.65815 °E		
Sample Type:	Tephra Fall; pumice		Elevation (m)	86	
# of Gallon (large) bags	1/16 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	1-4cm size pumice and lithics from undetermined systems and lava breccia				
Samples dispensed to:					
Cottrell	Quantity:	1/16 gallon			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP002-03

Date:	Sep 8, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP002-03
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	50-60ft up northern slope of eastward running gully; one mile west of previous location; 70cm thick section				
Waypoint/Station:	15KKMP002	IGSN (URI):			
Latitude:	52.09718333 °N	Longitude:	177.65815 °E		
Sample Type:	Lava; Breccia	Elevation (m)	86		
# of Gallon (large) bags	1/8 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	crystal-rich (<50%) andesitic lava breccia, 10 cm size				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP003-01

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP003-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	top of eastern side of blocky lava field				
Waypoint/Station:	15KKMP003	IGSN (URI):			
Latitude:	52.12841667 °N	Longitude:	177.60735 °E		
Sample Type:	Lava; Flow	Elevation (m)	112		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	crystal-rich andesite (plagioclase, hornblende)				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP003-02

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP003-02
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	middle of blocky lava field				
Waypoint/Station:	15KKMP003	IGSN (URI):			
Latitude:	52.12803333 °N	Longitude:	177.6050333	°E	
Sample Type:	Lava; Flow	Elevation (m)	126		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	crystal-rich andesite (plagioclase, hornblende, rare olivine)				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP003-03

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP003-03
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	base of eastern side of blocky lava field				
Waypoint/Station:	15KKMP003	IGSN (URI):			
Latitude:	52.12825 °N	Longitude:	177.6082667 °E		
Sample Type:	Lava; Flow	Elevation (m)	77		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	crystal-rich andesite (plagioclase, hornblende)				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP003-04

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP003-04
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	loose blocks (not in place) on northern flank of parasitic cone on NE side of Kiska Volcano				
Waypoint/Station:	15KKMP003	IGSN (URI):			
Latitude:	52.12691667 °N	Longitude:	177.6101 °E		
Sample Type:	Lava; Block	Elevation (m)	73		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	oxidized crystal-rich andesite (plagioclase, hornblende), possibly coming from the top of the parasitic cone				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP003-05

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP003-05
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	loose blocks (not in place) on northern flank of parasitic cone on NE side of Kiska Volcano				
Waypoint/Station:	15KKMP003	IGSN (URI):			
Latitude:	52.12691667 °N	Longitude:	177.6101 °E		
Sample Type:	Lava; Block	Elevation (m)	73		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	crystal-rich andesite (plagioclase, hornblende), possibly coming from top of parasitic cone				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP004-01

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP004-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	SSE flank of Kiska Volcano, adjacent to East Kiska Lake; thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)				
Waypoint/Station:	15KKMP004	IGSN (URI):			
Latitude:	52.0647 °N	Longitude:	177.6159333 °E		
Sample Type:	Lava; Flow	Elevation (m)	102		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	weathered crystal-rich andesite lava				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP004-02

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP004-02
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	SSE flank of Kiska Volcano, adjacent to East Kiska Lake; thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)				
Waypoint/Station:	15KKMP004	IGSN (URI):			
Latitude:	52.06446667 °N	Longitude:	177.6167833 °E		
Sample Type:	Lava; Flow	Elevation (m)	100		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	weathered crystal-rich andesite lava				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP004-03

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP004-03
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	SSE flank of Kiska Volcano, adjacent to East Kiska Lake; thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)				
Waypoint/Station:	15KKMP004	IGSN (URI):			
Latitude:	52.06433333 °N	Longitude:	177.6179 °E		
Sample Type:	Lava; Flow	Elevation (m)	99		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	weathered crystal-rich andesite lava				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP004-04

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP004-04
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	SSE flank of Kiska Volcano, adjacent to East Kiska Lake; thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)				
Waypoint/Station:	15KKMP004	IGSN (URI):			
Latitude:	52.0639 °N	Longitude:	177.6191333 °E		
Sample Type:	Lava; Flow	Elevation (m)	90		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	weathered crystal-rich andesite lava				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP004-05

Date:	Sep 9, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP004-05
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	SSE flank of Kiska Volcano, adjacent to East Kiska Lake; thick, homogenous vegetation coverage of blocky lava (less rough terrain than previous location)				
Waypoint/Station:	15KKMP004	IGSN (URI):			
Latitude:	52.06411667 °N	Longitude:	177.6201667 °E		
Sample Type:	Lava; Flow	Elevation (m)	86		
# of Gallon (large) bags	1/4 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	weathered crystal-rich andesite lava				
Samples dispensed to:					
Cottrell	Quantity:	1/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP005-01a

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP005-01a
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, ~25ft below crater rim; ridge perpendicular to eastern rim				
Waypoint/Station:	15KKMP005	IGSN (URI):			
Latitude:	52.10435 °N	Longitude:	177.6084833 °E		
Sample Type:	Fall Deposit	Elevation (m)	1137		
# of Gallon (large) bags	1/2 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, vesicular, black spatter deposit (crystallinity <30%), minerals include plagioclase and rare olivine; patchy presence of scoria-lapilli size rocks				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:	1/2 gallon			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP005-01b

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP005-01b
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, ~25ft below crater rim; ridge perpendicular to eastern rim				
Waypoint/Station:	15KKMP005	IGSN (URI):			
Latitude:	52.10435 °N	Longitude:	177.6084833 °E		
Sample Type:	Bomb	Elevation (m)	1137		
# of Gallon (large) bags	1/2 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, black volcanic bomb				
Samples dispensed to:					
Cottrell	Quantity:	1/2 gallon			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP005-02

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP005-02
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, ~25ft below crater rim; ridge perpendicular to eastern rim				
Waypoint/Station:	15KKMP005	IGSN (URI):			
Latitude:	52.10435 °N	Longitude:	177.6084833 °E		
Sample Type:	Fall deposit	Elevation (m)	1137		
# of Gallon (large) bags	2 gallons	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, vesicular, black spatter deposit (crystallinity <30%), minerals include plagioclase and rare olivine; 1m thick (exposed outcrop)				
Samples dispensed to:					
Cottrell	Quantity:	7/8 gallon			
Kelley	Quantity:	1 gallon			
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP005-03

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP005-03
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, ~25ft below crater rim; ridge perpendicular to eastern rim				
Waypoint/Station:	15KKMP005	IGSN (URI):			
Latitude:	52.10435 °N	Longitude:	177.6084833 °E		
Sample Type:	Fall deposit	Elevation (m)	1137		
# of Gallon (large) bags	2 gallons	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, black spatter deposit (crystallinity <30%), minerals include plagioclase and rare olivine; 1m thick (exposed outcrop)				
Samples dispensed to:					
Cottrell	Quantity:	7/8 gallon			
Kelley	Quantity:	1 gallon			
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP005-04

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP005-04
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, ~25ft below crater rim; ridge perpendicular to eastern rim				
Waypoint/Station:	15KKMP005	IGSN (URI):			
Latitude:	52.10435 °N	Longitude:	177.6084833 °E		
Sample Type:	Fall deposit	Elevation (m)	1137		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, black spatter deposit (crystallinity <30%), minerals include plagioclase and rare olivine; rich in lithics (andesite lava, weathered volcanic rock, pumice) of variable size (cm to m); 2m thick (exposed outcrop)				
Samples dispensed to:					
Cottrell	Quantity:	1/4 gallon			
Kelley	Quantity:	1/2 gallon			
Coombs	Quantity:	1/4 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KKMP006-01

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP006-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Eastern flank of Kiska Volcano, at the crater rim				
Waypoint/Station:	15KKMP006	IGSN (URI):			
Latitude:	52.10461667 °N	Longitude:	177.60785 °E		
Sample Type:	Fall deposit	Elevation (m)	1145		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense, vesicular, black spatter deposit (crystallinity <30%), minerals include plagioclase and rare olivine; 2m thick (exposed outcrop)				
Samples dispensed to:					
Cottrell	Quantity:	1/4 gallon			
Kelley	Quantity:	1/2 gallon			
Coombs	Quantity:	1/4 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15KKMP007-01

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP007-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Inside Kiska Volcano crater, western side				
Waypoint/Station:	15KKMP007	IGSN (URI):			
Latitude:	52.1054 °N	Longitude:	177.6038167 °E		
Sample Type:	Lava; Flow	Elevation (m)	1077		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Extruded youngest black, sheared, weathered by sulphur, basaltic andesite (plagioclase < 30%); youngest vent (?)				
Samples dispensed to:					
Cottrell	Quantity:	1/4 gallon			
Kelley	Quantity:	1/2 gallon			
Coombs	Quantity:	1/4 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15KKMP008-01

Date:	Sep 10, 2015	Name:	Mattia Pistone	Sample Name:	15KKMP008-01
Island:	Kiska	Volcano/Cone Name:	Kiska Volcano		
Location Description:	Inside Kiska Volcano crater, western side				
Waypoint/Station:	15KKMP008	IGSN (URI):			
Latitude:	52.10521667 °N	Longitude:	177.6045 °E		
Sample Type:	Lava; Flow	Elevation (m)	1086		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Extruded gray, massive aspect, andesite (plagioclase < 30%); older vent (?)				
Samples dispensed to:					
Cottrell	Quantity:	7/8 gallon			
Kelley	Quantity:				
Coombs	Quantity:	1/8 gallon			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-1

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Lava	Elevation (m)	231		
# of Gallon (large) bags	.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	basal breccia of overlying lava flow, vesicular and knobby				
Samples dispensed to:					
Cottrell	Quantity:	.2 gal			
Kelley	Quantity:	.2 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-2

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-2
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Lava	Elevation (m)	231		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense mafic layer ~1.5' thick, crystal poor				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All?			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-3

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-3
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Lava	Elevation (m)	231		
# of Gallon (large) bags	0.2 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	basal breccia of overlying lava flow, vesicular and knobby				
Samples dispensed to:					
Cottrell	Quantity:	0.1 gal			
Kelley	Quantity:	0.1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-4

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-4
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Lava	Elevation (m)	231		
# of Gallon (large) bags	.75 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense mafic layer ~1.5' thick, crystal poor				
Samples dispensed to:					
Cottrell	Quantity:	.3 gal			
Kelley	Quantity:	.15 gal			
Coombs	Quantity:	.3 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-5

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-5
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Soil	Elevation (m)	231		
# of Gallon (large) bags	.1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	black soil immediately under lava flow				
Samples dispensed to:					
Cottrell	Quantity:	.05 gal			
Kelley	Quantity:				
Coombs	Quantity:	.05 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC001-6

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-6
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Tephra Fall	Elevation (m)	231		
# of Gallon (large) bags	.3 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	6-8" layer of orange to brown debris, coarse lapili to pebbles				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC001-7

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC001-7
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	thin gully on south side of island, west bank near parasitic cone; at the point where the lava flow from the parasitic cone meets the gully				
Waypoint/Station:	15SGEC001	IGSN (URI):			
Latitude:	52.00143 °N	Longitude:	178.15971 °E		
Sample Type:	Debris Flow	Elevation (m)	231		
# of Gallon (large) bags	.3 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	coarse debris with abundant pumice clasts up to 3 cm				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC002-1

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC002-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	self-dug trench on top rim of gully				
Waypoint/Station:	15SGEC002	IGSN (URI):			
Latitude:	52.00134 °N	Longitude:	178.16083 °E		
Sample Type:	Debris Flow	Elevation (m)	197		
# of Gallon (large) bags	.3 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	mixed scoria, debris, and organics, poorly sorted, brown				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC003-1

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Tephra Fall	Elevation (m)	109		
# of Gallon (large) bags	2.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	scoria, medium to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1.5 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 pint (5 pieces coarse lapilli)			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC003-2

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-2
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Tephra Fall	Elevation (m)	109		
# of Gallon (large) bags	1.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	scoria, medium to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 pint (4 pieces coarse lapilli)			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC003-3

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-3
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Tephra Fall	Elevation (m)	109		
# of Gallon (large) bags		# of Quart (small) bags	0.5 pint		
Sample/ Station Photo:					
Description:	fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:	0.1 pint			
Kelley	Quantity:	0.3 pint			
Coombs	Quantity:	0.1 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC003-4

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-4
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Tephra Fall	Elevation (m)	109		
# of Gallon (large) bags	2 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	scoria, fine to medium lapilli with some coarse clasts				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 pint (~12 medium lapilli)			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC003-5

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-5
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Debris Flow	Elevation (m)	109		
# of Gallon (large) bags	0.75 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	coarse sand to pebble-sized debris mixed with pumice and dense rock				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.5 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC003-6

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-6
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Tephra Fall	Elevation (m)	109		
# of Gallon (large) bags	0.3 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	medium to coarse lapilli, more rounded clasts				
Samples dispensed to:					
Cottrell	Quantity:	1 pint			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:	4 coarsest pieces			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC003-7

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-7
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Debris Flow	Elevation (m)	109		
# of Gallon (large) bags	0.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	coarse sand to pebble-sized debris				
Samples dispensed to:					
Cottrell	Quantity:	1.5 pint			
Kelley	Quantity:	0.4 gal			
Coombs	Quantity:	0.5 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC003-8

Date:	Sep 8, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC003-8
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	gully just SW of parasitic cone				
Waypoint/Station:	15SGEC003	IGSN (URI):			
Latitude:	51.99855 °N	Longitude:	178.16185 °E		
Sample Type:	Debris Flow	Elevation (m)	109		
# of Gallon (large) bags	0.75 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine sand to cobbles, sandy				
Samples dispensed to:					
Cottrell	Quantity:	1.5 pint			
Kelley	Quantity:	0.6 gal			
Coombs	Quantity:	0.5 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC004-1

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC004-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	sea cliff on west side				
Waypoint/Station:	15SGEC004	IGSN (URI):			
Latitude:	52.02055 °N	Longitude:	178.09703 °E		
Sample Type:	Debris Flow	Elevation (m)	7		
# of Gallon (large) bags	.3 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	pyroclastic material with pumice, lava, orange coarse ash, clasts up to 6cm, bulk sample				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:	.1 gal			
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC004-2

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC004-2
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	sea cliff on east side				
Waypoint/Station:	15SGEC004	IGSN (URI):			
Latitude:	52.02055 °N	Longitude:	178.09703 °E		
Sample Type:	Soil	Elevation (m)	7		
# of Gallon (large) bags	.2 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dark brown, clay-rich, unit 7cm thick				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:				
Coombs	Quantity:	.1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC004-3

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC004-3
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	sea cliff on east side				
Waypoint/Station:	15SGEC004	IGSN (URI):			
Latitude:	52.02055 °N	Longitude:	178.09703 °E		
Sample Type:	Debris Flow	Elevation (m)	7		
# of Gallon (large) bags	.2 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	4-5 cm thick orange debris unit with altered pumice up to 4 cm				
Samples dispensed to:					
Cottrell	Quantity:	.2 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC004-4

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC004-4
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	sea cliff on east side				
Waypoint/Station:	15SGEC004	IGSN (URI):			
Latitude:	52.02055 °N	Longitude:	178.09703 °E		
Sample Type:	Soil	Elevation (m)	7		
# of Gallon (large) bags	.1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	very slick, could be fine ash, very fine grained				
Samples dispensed to:					
Cottrell	Quantity:	.1 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGEC004-5

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC004-5
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	sea cliff on east side				
Waypoint/Station:	15SGEC004	IGSN (URI):			
Latitude:	52.02055 °N	Longitude:	178.09703 °E		
Sample Type:	Debris Flow	Elevation (m)	7		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	pumice-rich grading to orange at bottom, black at top				
Samples dispensed to:					
Cottrell	Quantity:	0.1 gal?			
Kelley	Quantity:	0.1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC005

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC005
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows; completely different from the adjacent drainage (just a couple of thousand ft to the East)				
Waypoint/Station:	15SGEC005	IGSN (URI):			
Latitude:	51.99798 °N	Longitude:	178.14154 °E		
Sample Type:	Alluvial clast	Elevation (m)	163		
# of Gallon (large) bags	.75 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	grab sample of scoria in the alluvial wash				
Samples dispensed to:					
Cottrell	Quantity:	0.35 gal			
Kelley	Quantity:	0.35 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC006

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC006
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows; completely different from the adjacent drainage (just a couple of thousand ft to the East)				
Waypoint/Station:	15SGEC006	IGSN (URI):			
Latitude:	51.99777 °N	Longitude:	178.14217 °E		
Sample Type:	Lava	Elevation (m)	183		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	basal flow on W side of gully				
Samples dispensed to:					
Cottrell	Quantity:	0.3 gal			
Kelley	Quantity:	0.3 gal			
Coombs	Quantity:	0.3 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGEC007

Date:	Sep 11, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SGEC007
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	large gully at S of Seg with large alluvial deposit "river of scoria" and many outcropping lava flows; completely different from the adjacent drainage (just a couple of thousand ft to the East)				
Waypoint/Station:	15SGEC007	IGSN (URI):			
Latitude:	51.99777 °N	Longitude:	178.14217 °E		
Sample Type:	Float	Elevation (m)	183		
# of Gallon (large) bags	1 gallon	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	this is suspected to be a scoria fall or scoria deposit between flows (?) - above lava SGEC006) that was inaccessible but weathering down into a pile				
Samples dispensed to:					
Cottrell	Quantity:	.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-1

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Debris Flow	Elevation (m)	224		
# of Gallon (large) bags	2 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	scoriaceous debris, 10m thick, high grade sample of pumice				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.1 gal			
Coombs	Quantity:	1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-2

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-2
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Debris Flow	Elevation (m)	224		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	8m covered unit, unclear composition due to eroded cover from overlying layer. Sampled a surface grab of medium to coarse lapilli.				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-3

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-3
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	207		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	6m thick lava flow (slightly vesicular, with plag and cpx <20%), eroded on top and brecciated on bottom. Sampled from middle. Cleaned in field.				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-4

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-4
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	200		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	2m thick oxidised (red skin, black interior) vesicular lava breccia with dispersed plag (<10%)				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-5

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-5
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	200		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	6m thick lava flow (slightly vesicular, with plag and cpx <20%), eroded on top and brecciated on bottom. Sampled from middle. Cleaned in field.				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-6

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-6
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	200		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	2m thick oxidised (red skin, black interior) vesicular lava breccia with dispersed plag (<10%)				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-7

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-7
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	189		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	6m thick lava flow (slightly vesicular, with plag and cpx <20%), eroded on top and brecciated on bottom. Sampled from middle. Cleaned in field.				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-8

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-8
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	189		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	2m thick oxidised (red skin, black interior) vesicular lava breccia with dispersed plag (<10%)				
Samples dispensed to:					
Cottrell	Quantity:	0.33 gal			
Kelley	Quantity:	0.33 gal			
Coombs	Quantity:	0.33 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-9

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-9
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	148		
# of Gallon (large) bags	1 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	2m thick lava flow (slightly vesicular, with plag and cpx <20%), eroded on top and brecciated on bottom. Sampled from middle. Cleaned in field.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15SGKS001-10

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-10
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Lava	Elevation (m)	148		
# of Gallon (large) bags	0.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	1m thick oxidised (red skin, black interior) vesicular lava breccia with dispersed plag (<10%)				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGKS001-11

Date:	Sep 11, 2015	Name:	Katherine Sheppard	Sample Name:	15SGKS001-11
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	west side of very large, flat-bottomed cut on south side of island; Steep cliff with large amount of volcanic debris				
Waypoint/Station:	15SGKS001	IGSN (URI):			
Latitude:	51.998367 °N	Longitude:	178.144833 °E		
Sample Type:	Tephra Fall	Elevation (m)	148		
# of Gallon (large) bags	0.5 gal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	20cm thick fall-out deposit of lava lithics and juvenile pumice in finer ash matrix				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC001

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC001
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Parasitic cone lava flow on SE flank				
Waypoint/Station:	15SGMC001	IGSN (URI):			
Latitude:	51.99751 °N	Longitude:	178.17933 °E		
Sample Type:	Lava; Flow	Elevation (m)	29		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:	No photo available.				
Description:	Young (historical?) basaltic andesite(?) lava from parasitic cone. Samples from mossy block, flow is quite vegeated. Lava is xtl-rich plag-2 px, slightly vesicular				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGMC002

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC002
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Lava flow that makes Iron Point				
Waypoint/Station:	15SGMC002	IGSN (URI):			
Latitude:	52.00441 °N	Longitude:	178.18688 °E		
Sample Type:	Lava; Flow	Elevation (m)	32		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Nice basaltic andesite or andesite flow, makes Iron Point. Likely Holocene. Plag-px, most crystals to 1 mm, but with scattered plag to 4 mm.				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGMC003

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC003
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	NE coast, where young lava meets the sea				
Waypoint/Station:	15SGMC003	IGSN (URI):			
Latitude:	52.03879 °N	Longitude:	178.16289 °E		
Sample Type:	Lava; Flow	Elevation (m)	20		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Young (late Holocene) flow-banded lava on NE flank. Trachytic, glassy plagioclase to 1-2 mm, crystal poor. This is the flow that is prominently visible in aerial view that covers much of this flank.				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC004

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC004
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	NE coast, where young lava meets the sea				
Waypoint/Station:	15SGMC004	IGSN (URI):			
Latitude:	52.03878 °N	Longitude:	178.16357 °E		
Sample Type:	Lava; Flow	Elevation (m)	15		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Lava flow immediately under 003, exposed at seaside. Holocene. Brecciated, hard to find fresh sample. Sampled near high tide line. Medium gray, somewhat oxidized plag 2-px andesite, plag are distinct on weathered surface. Visibly different lava than 003.				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15SGMC005

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC005
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Near head of small north cove on Segula, by picturesque beach				
Waypoint/Station:	15SGMC005	IGSN (URI):			
Latitude:	52.03931 °N	Longitude:	178.12035 °E		
Sample Type:	Lava; Flow	Elevation (m)	30		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Massive crystal poor dense lava. Stratigraphic context unclear, but likely Pleistocene. Datable.				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC006

Date:	Sep 8, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC006
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Near head of small north cove on Segula, by picturesque beach				
Waypoint/Station:	15SGMC006	IGSN (URI):			
Latitude:	52.03876 °N	Longitude:	178.12035 °E		
Sample Type:	Lava; Flow	Elevation (m)	45		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Lava flow talus block *likely* from lowest flow in stack of three flows at head of north cove. Fresh looking plag-olivine basalt with prominent plagioclase. Datable!				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC007

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC007
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC007	IGSN (URI):			
Latitude:	52.02024 °N	Longitude:	178.10043 °E		
Sample Type:	No sample		Elevation (m)		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:	No photo available.				
Description:	<p>No sample. Dropped along spectacular sea cliffs that consist of debris flows and intercalated falls that are impossible to safely access. I walked up a small recently incised gully that cuts into debris fan. Gully exposes series of m-scale debris flows, thin ash falls, and nice soils. One or more of the DFs contain pumices. This station at top of interesting stratigraphy. Clasts in flows are mostly dense volcanics unaltered, as well as some highly HT altered material. Walked south to big talus blocks from cliffs above; all were oxidized breccia so did not sample. Lost scraper in grass.</p>				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC008-1

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC008-1
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC008	IGSN (URI):			
Latitude:	52.02003 °N	Longitude:	178.09976 °E		
Sample Type:	Soil	Elevation (m)	69		
# of Gallon (large) bags			# of Quart (small) bags	1 quart	
Sample/ Station Photo:					
Description:	Soil that sits on pumice-bearing debris flow in gully.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC008-2

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC008-2
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC008	IGSN (URI):			
Latitude:	52.02003 °N	Longitude:	178.09976 °E		
Sample Type:	Debris Flow	Elevation (m)	69		
# of Gallon (large) bags			# of Quart (small) bags	1 quart	
Sample/ Station Photo:					
Description:	Pumice-bearing debris flow in gully on SW flank. Look for pumices in this bulk sample.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC008-3

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC008-3
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC008	IGSN (URI):			
Latitude:	52.02003 °N	Longitude:	178.09976 °E		
Sample Type:	Debris Flow; Hand-picked dense juvenile material	Elevation (m)	69		
# of Gallon (large) bags			# of Quart (small) bags	2 quarts	
Sample/ Station Photo:					
Description:	Fresh angular dense clast in pumice-bearing debris flow in gully on SW flank. Analyze as example of Holocene lava composition.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SGMC008-4

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC008-4
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC008	IGSN (URI):			
Latitude:	52.02003 °N	Longitude:	178.09976 °E		
Sample Type:	Debris Flow; Hand-picked dense juvenile material		Elevation (m)	69	
# of Gallon (large) bags	2 quarts		# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Fresh angular dense clast in pumice-bearing debris flow in gully on SW flank. Analyze as example of Holocene lava composition.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SGMC008-5

Date:	Sep 9, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC008-5
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Small gully above spectacular sea cliff at NW coast				
Waypoint/Station:	15SGMC008	IGSN (URI):			
Latitude:	52.02003 °N	Longitude:	178.09976 °E		
Sample Type:	Debris Flow; Hand-picked dense juvenile material	Elevation (m)	69		
# of Gallon (large) bags	2 quarts	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Fresh angular dense clast in pumice-bearing debris flow in gully on SW flank. Analyze as example of Holocene lava composition.				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:				
Coombs	Quantity:	1 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15SGMC009

Date:	Sep 11, 2015	Name:	Michelle Coombs	Sample Name:	15SGMC009
Island:	Segula	Volcano/Cone Name:	Segula		
Location Description:	Large amphitheatre-like gully on south flank				
Waypoint/Station:	15SGMC009	IGSN (URI):			
Latitude:	51.9985 °N	Longitude:	178.14341 °E		
Sample Type:	Lava; Flow	Elevation (m)	180		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	<p>Bottommost lava flow on east side of wide gully on south flank. 2-m-thick massive middle of flow has brecciated top and bottom. This one is similar to the one above, and then above that are four more flows that are thicker and wavier. This flow is medium to light gray, <20% crystals, plag + 2 px.</p>				
Samples dispensed to:					
Cottrell	Quantity:	Some			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

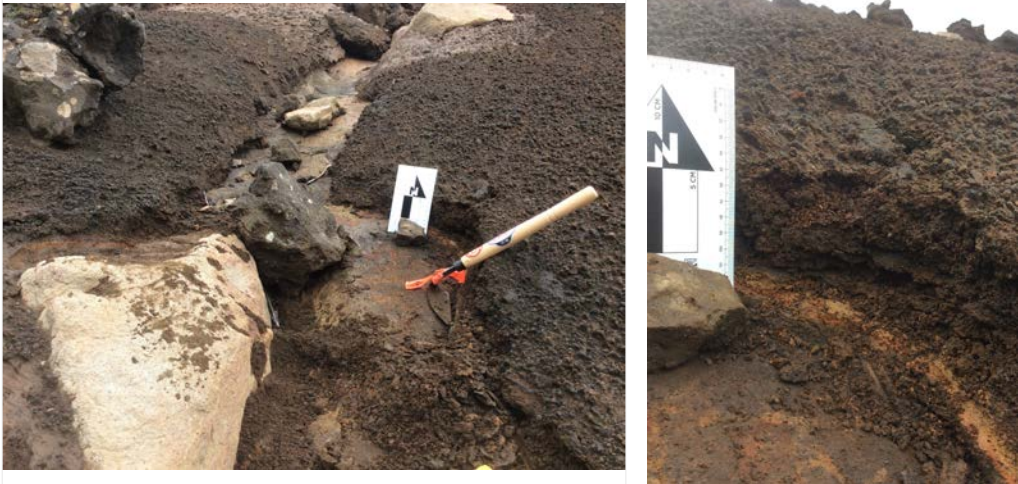
15LSEC001-1

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC001-1
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section near West Cove Flow				
Waypoint/Station:	15LSEC001	IGSN (URI):			
Latitude:	51.9516 °N	Longitude:	178.48299 °E		
Sample Type:	Tephra Fall	Elevation (m)	175		
# of Gallon (large) bags		# of Quart (small) bags	2.1 quarts		
Sample/ Station Photo:					
Description:	6cm thick deposit of oxidized med ash to med lapilli scoria fall, yellow coating locally				
Samples dispensed to:					
Cottrell	Quantity:	1 quart			
Kelley	Quantity:	1 quart			
Coombs	Quantity:	0.1 quarts			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15LSEC001-2

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC001-2
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section near West Cove Flow				
Waypoint/Station:	15LSEC001	IGSN (URI):			
Latitude:	51.9516 °N	Longitude:	178.48299 °E		
Sample Type:	Tephra Fall	Elevation (m)	175		
# of Gallon (large) bags			# of Quart (small) bags	2 quarts	
Sample/ Station Photo:					
Description:	15cm scoria fall sequence above a soil horizon (001-3), med ash horizons, med to coarse lapilli horizons, yellow encrustations parting layers are prominent				
Samples dispensed to:					
Cottrell	Quantity:	1.5 quarts			
Kelley	Quantity:	1 quart			
Coombs	Quantity:	.25 quart			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

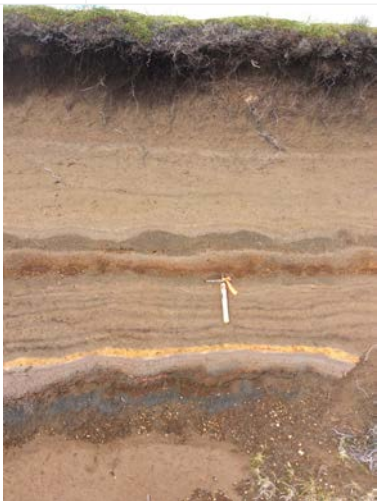
15LSEC001-3

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC001-3
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section near West Cove Flow				
Waypoint/Station:	15LSEC001	IGSN (URI):			
Latitude:	51.9516 °N	Longitude:	178.48299 °E		
Sample Type:	Soil	Elevation (m)	175		
# of Gallon (large) bags		# of Quart (small) bags	0.5 pint		
Sample/ Station Photo:					
Description:	<1mm soil horizon directly below 001-2				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

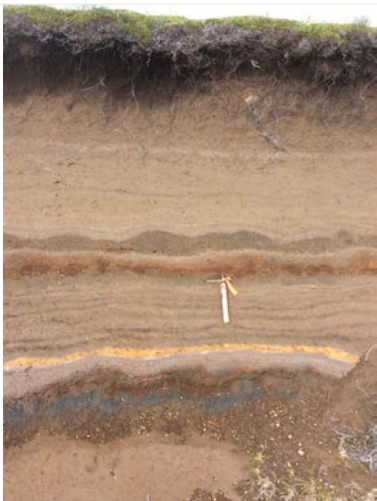
15LSEC002

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC002
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	W Cove Lava Flow. East side of island near heli drop and just S of the springs; bluff where KS has supernatural hearing				
Waypoint/Station:	15LSEC002	IGSN (URI):			
Latitude:	51.95412 °N	Longitude:	178.48608 °E		
Sample Type:	Lava	Elevation (m)	226		
# of Gallon (large) bags		# of Quart (small) bags	3 pints		
Sample/ Station Photo:					
Description:	basaltic andesite				
Samples dispensed to:					
Cottrell	Quantity:	1 pint			
Kelley	Quantity:	1 pint			
Coombs	Quantity:	< 1 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

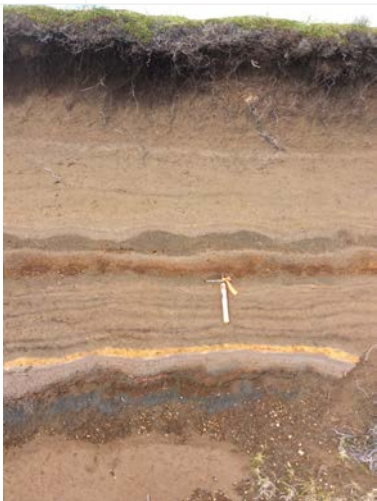
15LSEC003-1

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC003-1
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section on the SW coast just W of Prokhoda Pt. Gorgeous exposure. Sunny skies.				
Waypoint/Station:	15LSEC003	IGSN (URI):			
Latitude:	51.90625 °N	Longitude:	178.49369 °E		
Sample Type:	Tephra Fall	Elevation (m)	49		
# of Gallon (large) bags		# of Quart (small) bags	3 pints		
Sample/ Station Photo:					
Description:	4-8cm scoria fall unit of med to coarse ash fall				
Samples dispensed to:					
Cottrell	Quantity:	1 pint			
Kelley	Quantity:	1 pint			
Coombs	Quantity:	1 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15LSEC003-2

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC003-2
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section on the SW coast just W of Prokhoda Pt. Gorgeous exposure. Sunny skies.				
Waypoint/Station:	15LSEC003	IGSN (URI):			
Latitude:	51.90625 °N	Longitude:	178.49369 °E		
Sample Type:	Tephra Fall	Elevation (m)	49		
# of Gallon (large) bags		# of Quart (small) bags	3 pints		
Sample/ Station Photo:					
Description:	8-10cm scoria fall; med ash to coarse lapilli; fine zone in the middle similar to 001-2				
Samples dispensed to:					
Cottrell	Quantity:	1 pint			
Kelley	Quantity:	1 pint			
Coombs	Quantity:	1 pint			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15LSEC003-3

Date:	Sep 9, 2015	Name:	Elizabeth Cottrell	Sample Name:	15LSEC003-3
Island:	Little Sitkin	Volcano/Cone Name:	Little Sitkin		
Location Description:	tephra section on the SW coast just W of Prokhoda Pt. Gorgeous exposure. Sunny skies.				
Waypoint/Station:	15LSEC003	IGSN (URI):			
Latitude:	51.90625 °N	Longitude:	178.49369 °E		
Sample Type:	Soil	Elevation (m)	49		
# of Gallon (large) bags		# of Quart (small) bags	table spoons		
Sample/ Station Photo:					
Description:	directly under the 6cm scoria fall that may correlate with 001-1				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	table spoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC001

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC001
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	2000' SW of Sugar Loaf Peak / 1000' NW Sugarloaf Head				
Waypoint/Station:	15SMEC001	IGSN (URI):			
Latitude:	51.88542 °N	Longitude:	179.62697 °E		
Sample Type:	Lava	Elevation (m)	308		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	young basalt flow, ol+pl+chrom?				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC002-1

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC002-1
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section just on saddle bw SLPk and SLhd				
Waypoint/Station:	15SMEC002	IGSN (URI):			
Latitude:	51.88396 °N	Longitude:	179.62726 °E		
Sample Type:	Tephra Fall	Elevation (m)	315		
# of Gallon (large) bags	3	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine ash to medium lapilli, proximal fall, dense to inflated. W olivine				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC003

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC003
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	saddle bw SL Pk and SL Head				
Waypoint/Station:	15SMEC003	IGSN (URI):			
Latitude:	51.88393 °N	Longitude:	179.62663 °E		
Sample Type:	Lava	Elevation (m)	300		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	younger(?) plug bw SL Peak and Head (ol bearing)				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC004-1

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC004-1
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of semicircle crater(?) rim W of S.L.				
Waypoint/Station:	15SMEC004	IGSN (URI):			
Latitude:	51.88553 °N	Longitude:	179.62469 °E		
Sample Type:	Tephra Fall	Elevation (m)	312		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	20cm of normally graded fine ol-bearing ash				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC004-2

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC004-2
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of semicircle crater(?) rim W of S.L.				
Waypoint/Station:	15SMEC004	IGSN (URI):			
Latitude:	51.88553 °N	Longitude:	179.62469 °E		
Sample Type:	Tephra Fall	Elevation (m)	312		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	12cm fine ash w 20-30cm clasts				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC004-3

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC004-3
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of semicircle crater(?) rim W of S.L.				
Waypoint/Station:	15SMEC004	IGSN (URI):			
Latitude:	51.88553 °N	Longitude:	179.62469 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	312		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine ash to very large scoria clasts				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SMEC004-4

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC004-4
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of semicircle crater(?) rim W of S.L.				
Waypoint/Station:	15SMEC004	IGSN (URI):			
Latitude:	51.88553 °N	Longitude:	179.62469 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	312		
# of Gallon (large) bags	30x8cm clast	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	very large dense scoria clast from PF layer 004-3				
Samples dispensed to:					
Cottrell	Quantity:	10x8cm			
Kelley	Quantity:				
Coombs	Quantity:	20x8cm			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15SMEC005

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC005
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on E side of Sug. Loaf; Photo location does not match with Liz's description in narrative (W slope of Ragged Top). Reported here is location that matches notes.				
Waypoint/Station:	15SMEC005	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Tephra Fall	Elevation (m)			
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	8cm of ol bearing scoria, fine to medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC006-1

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC006-1
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of Sug. Loaf SEstern-most drainage				
Waypoint/Station:	15SMEC006	IGSN (URI):			
Latitude:	51.89848 °N	Longitude:	179.62042 °E		
Sample Type:	Tephra Fall	Elevation (m)	295		
# of Gallon (large) bags	3.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	20-22cm normally graded fall of fine to medium lapilli grading to med ash with platey tephra				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMEC006-2

Date:	Sep 12, 2015	Name:	Elizabeth Cottrell	Sample Name:	15SMEC006-2
Island:	Semisopochnoi	Volcano/Cone Name:	Sugarloaf		
Location Description:	tephra section on W side of Sug. Loaf SEstern-most drainage				
Waypoint/Station:	15SMEC006	IGSN (URI):			
Latitude:	51.89848 °N	Longitude:	179.62042 °E		
Sample Type:	Soil	Elevation (m)	295		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	soil immediately underlies 15SMEC006-1				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-1

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-1
Island:	Semisopochnoi	Volcano/Cone Name:		Ragged Top	
Location Description:		tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.			
Waypoint/Station:		15SMMC101	IGSN (URI):		
Latitude:	51.91287 °N	Longitude:		179.66489 °E	
Sample Type:	Tephra Fall	Elevation (m)		123	
# of Gallon (large) bags		2	# of Quart (small) bags		
Sample/ Station Photo:					
Description:	4-5 cm m-c scoria ash fall. Same unit as JL007G				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-2

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-2
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Soil	Elevation (m)	123		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil immediately under 101-1				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-3

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-3
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Tephra Fall	Elevation (m)	123		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	15-cm-thick brown-orange angular blocky lapilli fall. Same as JL007H				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	1.5 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-4

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-4
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Soil	Elevation (m)	123		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil immediately under 101-3. Same as JL007I, dated at 2850 14C BP				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-5

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-5
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Tephra Fall	Elevation (m)	123		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	"Hamburger meat" oxidized scoria fall, probably same as JL007J. Near base of our section, above bedded black volcaniclastics				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

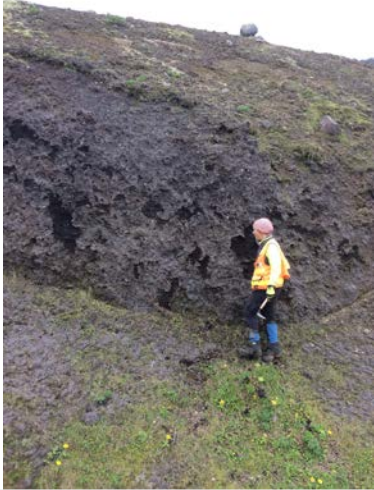

15SMMC101-6

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-6
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Soil	Elevation (m)	123		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	Soil under 101-5				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All?			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC101-7

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC101-7
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	tephra-rich gully on lower flank of Ragged Top, east of Fenner Creek; note MC's lat-long from field notes is inconsistent with location description. Notes say site is the same as EC005, so that is reported here.				
Waypoint/Station:	15SMMC101	IGSN (URI):			
Latitude:	51.91287 °N	Longitude:	179.66489 °E		
Sample Type:	Tephra Fall	Elevation (m)	123		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	4-cm-thick ash-flap scoria fall. Probably same as JL007A, which has an underlying soil that came back modern				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15SMMC102

Date:	Sep 12, 2015	Name:	Michelle Coombs	Sample Name:	15SMMC102
Island:	Semisopochnoi	Volcano/Cone Name:	Ragged Top		
Location Description:	W flank of Sugarloaf				
Waypoint/Station:	15SMMC102	IGSN (URI):			
Latitude:	51.89773 °N	Longitude:	179.61954 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	268		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Hand-picked juvenile scoria; single clast from CFE flow, semi-indurated, see photos				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All?			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC001

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC001
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	on the SW flank of Gareloi summit; rainbows, fumeroles, ice, tephra, perfect				
Waypoint/Station:	15GREC001	IGSN (URI):			
Latitude:	51.78635 °N	Longitude:	-178.79710 °E		
Sample Type:	Tephra Fall	Elevation (m)	1478		
# of Gallon (large) bags	3	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine to coarse lapilli with clasts up to 15cm. Proximal so meters thick				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1.5 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC002

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC002
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	at crater rim; can see crater lake - steaming				
Waypoint/Station:	15GREC002	IGSN (URI):			
Latitude:	51.78765 °N	Longitude:	-178.79506 °E		
Sample Type:	Tephra Fall	Elevation (m)	1546		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC003

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC003
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	surface grab - diverse scoria and pumice				
Waypoint/Station:	15GREC003	IGSN (URI):			
Latitude:	51.78703 °N	Longitude:	-178.79643 °E		
Sample Type:	Tephra Fall	Elevation (m)	1522		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	surface grab of diverse scoria				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:	1 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-1

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-1
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	24cm normally graded, fine to coarse lapilli, black at bottom and grading up to brown, iridescent, ol-pheric, clasts up to 7cm				
Samples dispensed to:					
Cottrell	Quantity:	2 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-2

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-2
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	5cm orange brown fall w orange and black pumice in coarse ash (brown) matrix, pumice up to 2cm, some lithics				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-3

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	4		
Sample/ Station Photo:					
Description:	13 cm black scoria, fine to medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-4

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	2cm very fine to coarse ash, grey to greenish grey				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-5

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags	3.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	same eruptive unit as 004-6. top 24 cm is coarse ash to coarse lapilli; next 15 cm is coarse ash to fine lapilli [bottom 8 cm we sampled as 004-6]				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-6

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	same eruptive unit as 004-5. 8cm of fine mauve ash				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-7

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-7
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Tephra Fall	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	indeterminat thickness of fine ash, yellow at top grading down to brown and black				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC004-8

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC004-8
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW flank near MC26				
Waypoint/Station:	15GREC004	IGSN (URI):			
Latitude:	51.80403 °N	Longitude:	-178.82268 °E		
Sample Type:	Soil	Elevation (m)	500		
# of Gallon (large) bags		# of Quart (small) bags	0.25		
Sample/ Station Photo:					
Description:	No description				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC005

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC005
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	right near to 15GREC004				
Waypoint/Station:	15GREC005	IGSN (URI):			
Latitude:	51.80395 °N	Longitude:	-178.82463 °E		
Sample Type:	Lava	Elevation (m)	468		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	ol phyric flow, cleaned in field				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-1

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-1
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Tephra Fall	Elevation (m)	271		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7cm unsorted black medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-2

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-2
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Soil	Elevation (m)	271		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	3cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-3

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Tephra Fall	Elevation (m)	271		
# of Gallon (large) bags	3.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	4cm brown to black very glassy iridescent lapilli c ash to med lapilli with orange pumices up to 6cm				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-4

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Tephra Fall	Elevation (m)	271		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2-3cm light grey fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-5

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Soil	Elevation (m)	271		
# of Gallon (large) bags		# of Quart (small) bags	0.25		
Sample/ Station Photo:					
Description:	4cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-6

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Tephra Fall	Elevation (m)	271		
# of Gallon (large) bags	0.6	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	2cm coarse ash to fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-7

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-7
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Tephra Fall	Elevation (m)	271		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2cm grey grading up section to yellow coarse ash				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC006-8

Date:	Sep 17, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC006-8
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	NW coast near BB29; gorgeous site with gully base of carved lava flow				
Waypoint/Station:	15GREC006	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Soil	Elevation (m)	271		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	>3m brown to black tephra soil complex but this sample is right at the top 1 cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-1

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-1
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Tephra Fall	Elevation (m)	282		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	2 cm fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-2

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-2
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Tephra Fall	Elevation (m)	282		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	2 cm fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-3

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Soil	Elevation (m)	282		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	2 cm chocolate brown soil directly underlying 007-2				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-4

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Tephra Fall	Elevation (m)	282		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	1 cm black fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-5

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Tephra Fall	Elevation (m)	282		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	3 cm brown coarse ash to fine lapilli with pummies up to 0.5 cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC007-6

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC007-6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC007	IGSN (URI):			
Latitude:	51.76518 °N	Longitude:	-178.77065 °E		
Sample Type:	Soil	Elevation (m)	282		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	soil in a vaguely bedded T-S complex				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC008

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC008
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	SW corner of island E of GALA and up slope of MC22				
Waypoint/Station:	15GREC008	IGSN (URI):			
Latitude:	51.76552 °N	Longitude:	-178.77138 °E		
Sample Type:	Tephra Fall	Elevation (m)	299		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	several meters of coarse ash to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	1.5 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-1

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-1
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Tephra Fall	Elevation (m)	157		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	5cm black coarse ash to fine lapilli righth under the veg mat. Difficult to sample				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-2

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-2
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Tephra Fall	Elevation (m)	157		
# of Gallon (large) bags	2.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	22cm med ash to coarse ash, ol-phyric, vaguely bedded				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:	1.5 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-3

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Soil	Elevation (m)	157		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	1-2 cm directly underlies 009-2				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-4

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Soil	Elevation (m)	157		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	1-2 cm directly overlies 009-5 and underlies more ash that we could not sample - this is within a big tephra-soil complex				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-5

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Tephra Fall	Elevation (m)	157		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	2 cm coarse ash - this is a fall within the large tephra soil complex				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-6

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Tephra Fall	Elevation (m)	157		
# of Gallon (large) bags			# of Quart (small) bags	2	
Sample/ Station Photo:					
Description:	2 cm coarse ash also within a large T-S complex				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC009-7

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC009-7
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	most western point on island				
Waypoint/Station:	15GREC009	IGSN (URI):			
Latitude:	51.78347 °N	Longitude:	-178.86030 °E		
Sample Type:	Soil	Elevation (m)	157		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	2 cm directly underlies 009-6				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC010A

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC010A
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	S Flank of Gareloi on Shoshonite Flow				
Waypoint/Station:	15GREC010	IGSN (URI):			
Latitude:	51.77452 °N	Longitude:	-178.79916 °E		
Sample Type:	Lava, agglutinate	Elevation (m)	1041		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	black scoriaeous agglutinate plastered to the top of the flow, small chips (flat) to 5 cm				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC010B

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC010B
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	S Flank of Gareloi on Shoshonite Flow				
Waypoint/Station:	15GREC010	IGSN (URI):			
Latitude:	51.77452 °N	Longitude:	-178.79916 °E		
Sample Type:	Lava flow	Elevation (m)	1041		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	black scoriaeous vesiculated top of flow				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC011

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC011
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	S Flank of Gareloi on Shoshonite Flow				
Waypoint/Station:	15GREC011	IGSN (URI):			
Latitude:	51.77473 °N	Longitude:	-178.79912 °E		
Sample Type:	Other	Elevation (m)	1051		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	float, coarse ash, and scoria on top of flow				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC012

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC012
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	S Flank of Gareloi on Shoshonite Flow				
Waypoint/Station:	15GREC012	IGSN (URI):			
Latitude:	51.77075 °N	Longitude:	-178.79730 °E		
Sample Type:	Lava flow	Elevation (m)	914		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	dense part of flow				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-1

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-1
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	top 36cm of a 90cm unit of 8 repetitive eruption cycles consisting of alternative brown coarse ashes (~4cm) and black coarse ash and fine lapilli (typically 2 cm) each eruptive pulse ~ 6 cm. 013-1 samples all 8 eruption pulses (?) in bulk. Red lithics of <1cm common.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-1.3

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-1.3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2 cm black fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-1.4

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-1.4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2 cm brown fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-1.5

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-1.5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	4 cm black fine lapilli with rare dense clasts up to 4cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-1.6

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-1.6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2 cm black coarse ash with rare lithic up to 6cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-2

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-2
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags	1.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	bottom 55 cm of a 90cm unit repetitive eruption cycles. Middle of this bottom unit has 12cm coarse brown ash Red lithics of <1cm common.				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:	0.75 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-3

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-3
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags			# of Quart (small) bags	<0.25	
Sample/ Station Photo:					
Description:	bottom 2 cm of a 90cm unit repetitive eruption cycles - coarse ash to flap at the base of this large fall sequence consisting of 013-1 and 013-2				
Samples dispensed to:					
Cottrell	Quantity:	<0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-4

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-4
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Soil	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	break in eruption sequence. This may be ash and not soil but does represent the deposit directly underlying the 90 cm eruption cycle that overlies it and it directly underlies GREC013-3				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-5

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-5
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags	2.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	10-12 cm fall unit black > brn > red > orang fine coarse lapilli up to 3cm with weak reverse grading. This underlies an unsampled 50cm of fine to coarse black and brown ashes and overlies 10-15 cm of coarse brown ash				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-6

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-6
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Tephra Fall	Elevation (m)	205		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	12 cm bizarre coarse lapilli with coarse brown soil balls up to 10cm across. Diverse scoria, lithics, and soil balls				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:	0.75 gat			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-7

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-7
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Soil	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	0.25		
Sample/ Station Photo:					
Description:	brown soil balls (? Very fine ashes that have aggregated?) within 013-6				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15GREC013-8

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-8
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Soil	Elevation (m)	205		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Soil balls or aggregated very fine ashes that have rounded to make greasy soil balls within 013-9				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	0.5 gal	Naming mixup - URI has 0.5 gal labeled 13-9 (will rename)		
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GREC013-9

Date:	Sep 19, 2015	Name:	Elizabeth Cottrell	Sample Name:	15GREC013-9
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	N flank near to MC12				
Waypoint/Station:	15GREC013	IGSN (URI):			
Latitude:	51.82252 °N	Longitude:	-178.82031 °E		
Sample Type:	Other	Elevation (m)	205		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Tephra fall? 60 cm confused brown and black coarse ashes and lapilli. Reworked? Vaguely bedded fall units, brown and black. Soil balls throughout. Could these be very fine ashes?				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:			0.5 gal bag labeled 13-9 at URI, probably 13-8	
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GRKS001

Date:	Sep 17, 2015	Name:	Katherine Sheppard	Sample Name:	15GRKS001
Island:	Gareloi	Volcano/Cone Name:	Gareloi		
Location Description:	small gully exposure - waist deep in tephra				
Waypoint/Station:	15GRKS001	IGSN (URI):			
Latitude:	51.78565 °N	Longitude:	-178.79933 °E		
Sample Type:	Tephra Fall	Elevation (m)	1409		
# of Gallon (large) bags	3.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine to coarse black scoriaceous lapilli but average clast size smaller than EC001				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15GRKS002

Date:	Sep 17, 2015	Name:	Katherine Sheppard	Sample Name:	15GRKS002
Island:		Volcano/Cone Name:			
Location Description:	NW coast near BB29				
Waypoint/Station:	15GRKS002	IGSN (URI):			
Latitude:	51.81122 °N	Longitude:	-178.77037 °E		
Sample Type:	Lava	Elevation (m)			271
# of Gallon (large) bags		# of Quart (small) bags			3
Sample/ Station Photo:					
Description:	dense grey with ol + cpx + pl				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGAB001

Date:	Sep 20, 2015	Name:	Adrian Bender	Sample Name:	15KGAB001
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Summit of Kanaga; NE quadrant summit rim				
Waypoint/Station:	15KGAB001	IGSN (URI):			
Latitude:	51.92424 °N	Longitude:	-177.16595 °E		
Sample Type:	Tephra Fall	Elevation (m)	1184		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	grey scoria, coarse lapili, clasts average 3-6 cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGDL001

Date:	Sep 20, 2015	Name:	Dan Leary	Sample Name:	15KGDL001
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	caldera lake island; steep cliff into lake, sample collected by reaching over ledge with shovel				
Waypoint/Station:	15KGDL001	IGSN (URI):			
Latitude:	51.90776 °N	Longitude:	-177.13130 °E		
Sample Type:	Tephra Fall	Elevation (m)			
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	coarse pumices up to 7 cm, light grey				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:	4 clasts up to 7 cm			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGDL002

Date:	Sep 21, 2015	Name:	Dan Leary	Sample Name:	15KGDL002
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGDL002	IGSN (URI):			
Latitude:	51.92129 °N	Longitude:	-177.19307 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	188		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:					
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGDL003

Date:	Sep 21, 2015	Name:	Dan Leary	Sample Name:	15KGDL003
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGDL003	IGSN (URI):			
Latitude:	51.92129 °N	Longitude:	-177.19307 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	188		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:					
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGDL004

Date:	Sep 22, 2015	Name:	Dan Leary	Sample Name:	15KGDL004
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga; lava dome				
Waypoint/Station:	15KGDL004	IGSN (URI):			
Latitude:	51.90555 °N	Longitude:	-177.14552 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	366		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:	No photo.				
Description:	large >20cm? Inclusion in the host lava of the dome				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-1

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Soil	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	2 cm chocolate brown soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-2

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Tephra Fall	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	Top few cm immediately under 001-1, part of a 60 cm tephra soil complex, normally graded, brown to orange, medium ash to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-3

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-3
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Tephra Fall	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	6 cm dense clast fall, angular clasts up to 2 cm, orange to black, indurated				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-4

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-4
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Soil	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	1 cm lights brown soild, underlying 001-3				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-5

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-5
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Tephra Fall	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	ash, part of 22 cm well bedded very fine to fine ash, interbedded with brown soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC001-6

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC001-6
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	steep stream cut on SE side of island				
Waypoint/Station:	15KGEC001	IGSN (URI):			
Latitude:	51.88810 °N	Longitude:	-177.10789 °E		
Sample Type:	Soil	Elevation (m)	121		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	soil, underlying 001-5, and part of same unit as 001-5				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-1

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-1
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	8 cm brown coarse ash with black fine lapilli, pumice up to 3 cm, mixed with soil				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-2

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-2
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Soil	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	2 cm brown soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-3

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-3
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	1 cm black medium ash				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-4

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-4
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	basal 3 cm of a 24 cm tempra soil complex with normal grading down into black scoria with pumice up to 3 cm, possibly lithic fall reworked by wind, looks like colluvium, depositional environment unknown				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-5

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-5
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	7 cm fine to medium ash, cocoa brown				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-6

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-6
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	1 cm white to grey very fine ash				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-7

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-7
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	6 cm brown tephra and soil, fine to medium ash				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC002-8

Date:	Sep 20, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC002-8
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Just off steep sea cliff, surrounded by basalt, these deposits may not originate from Kanga volcano				
Waypoint/Station:	15KGEC002	IGSN (URI):			
Latitude:	51.90584 °N	Longitude:	-177.05835 °E		
Sample Type:	Tephra Fall	Elevation (m)	324		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	over 20 cm medium ash, multicolored with loose green crystals, lithics up to 4 cm				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC004

Date:	Sep 21, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC004
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	SE seacliff of Round Head; hike up from beach. Olivine + Pyx lava flow above and below a breccia full of large (<3cm) equant loose pyroxenes				
Waypoint/Station:	15KGEC004	IGSN (URI):			
Latitude:	51.89412 °N	Longitude:	-177.05405 °E		
Sample Type:	Lava	Elevation (m)	70		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	large equant olivines and pyroxenes in a grey fine grained plag matrix				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15KGEC005

Date:	Sep 21, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC005
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGEC005	IGSN (URI):			
Latitude:	51.91245 °N	Longitude:	-177.19218 °E		
Sample Type:	Lava	Elevation (m)	134		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	dark grey andesite w pyx; the large hand sample of this lava has a small mafic inclusion				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC006

Date:	Sep 21, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC006
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGEC006	IGSN (URI):			
Latitude:	51.92190 °N	Longitude:	-177.19243 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	202		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	fine grained				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC007

Date:	Sep 21, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC007
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGEC007	IGSN (URI):			
Latitude:	51.92180 °N	Longitude:	-177.19363 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	175		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:					
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC008

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC008
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC008	IGSN (URI):			
Latitude:	51.90507 °N	Longitude:	-177.14288 °E		
Sample Type:	clasts in PF?	Elevation (m)	309		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC008-1

Date:	Sep 21, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC008-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W flank Kanaga, 1994 flow				
Waypoint/Station:	15KGEC0081	IGSN (URI):			
Latitude:	51.92180 °N	Longitude:	-177.19363 °E		
Sample Type:	Lava; Enclave/Inclusion	Elevation (m)	175		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	vesiculated and glass inclusion				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC009

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC009
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC009	IGSN (URI):			
Latitude:	51.90507 °N	Longitude:	-177.14288 °E		
Sample Type:	clasts in PF?	Elevation (m)	309		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGEC010

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC010
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC010	IGSN (URI):			
Latitude:	51.90507 °N	Longitude:	-177.14288 °E		
Sample Type:	clasts in PF?	Elevation (m)	309		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGEC011

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC011
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC011	IGSN (URI):			
Latitude:	51.90507 °N	Longitude:	-177.14288 °E		
Sample Type:	clasts in PF?	Elevation (m)	309		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	possibly PF matrix				
Samples dispensed to:	Missing?				
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGEC012

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC012
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Possibly the Holocene flow				
Waypoint/Station:	15KGEC012	IGSN (URI):			
Latitude:	51.90515 °N	Longitude:	-177.14240 °E		
Sample Type:	Lava	Elevation (m)	314		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	andesite?				
Samples dispensed to:	Missing?				
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGEC013

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC013
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC013	IGSN (URI):			
Latitude:	51.90503 °N	Longitude:	-177.14299 °E		
Sample Type:	clasts in PF?	Elevation (m)	320		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGEC014

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC014
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC014	IGSN (URI):			
Latitude:	51.90503 °N	Longitude:	-177.14299 °E		
Sample Type:	clasts in PF?	Elevation (m)	320		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:	Missing?				
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC015

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC015
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC015	IGSN (URI):			
Latitude:	51.90503 °N	Longitude:	-177.14299 °E		
Sample Type:	clasts in PF?	Elevation (m)	320		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:					
Cottrell	Quantity:	All?			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGEC016

Date:	Sep 22, 2015	Name:	Elizabeth Cottrell	Sample Name:	15KGEC016
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	W shore of caldera lake on SE flank Kanaga				
Waypoint/Station:	15KGEC016	IGSN (URI):			
Latitude:	51.90503 °N	Longitude:	-177.14299 °E		
Sample Type:	clasts in PF?	Elevation (m)	320		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:					
Description:	possibly clasts in PF and not inclusions from a flow				
Samples dispensed to:	Missing?				
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-1

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-1
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.75	
Sample/ Station Photo:					
Description:	10 cm "kitty litter" tephra, grey, coarse ash to fine lapili up to .5 cm, mafic minerals, basal unit of a 24 cm coarse grey ash				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-2

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-2
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	10 cm grey fine ash				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-3

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-3
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Soil	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	<1 cm very greasy black soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-4

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-4
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	~10 cm pumice layer in larger 60 cm unit of black and yellow "dirt"				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-5

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-5
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Soil	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	soil underlying 001-4				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-6

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-6
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	8 cm indurated white medium ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-7

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-7
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Soil	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	9 cm brown soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-8

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-8
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	12 cm pumice fall with squashed clasts, laterally oriented, each pumice 5 cm x .5 cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-9

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-9
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Soil	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.25	
Sample/ Station Photo:					
Description:	2 cm black soil underlying 8				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-10

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-10
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Tephra Fall	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	2	
Sample/ Station Photo:					
Description:	medium to coarse pumices in coarse ash matrix, in larger unit of coarse ash to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGKS001-11

Date:	Sep 20, 2015	Name:	Katherine Sheppard	Sample Name:	15KGKS001-11
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Eastern sea cliff, south of Round Head				
Waypoint/Station:	15KGKS001	IGSN (URI):			
Latitude:	51.83485 °N	Longitude:	-177.13036 °E		
Sample Type:	Soil	Elevation (m)	73		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	16 cm soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC001-1

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC001-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	3 km east of Kanaga summit				
Waypoint/Station:	15KGMC001	IGSN (URI):			
Latitude:	51.92715 °N	Longitude:	-177.11855 °E		
Sample Type:	Tephra Fall	Elevation (m)	152		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	11 cm fine to coarse lapilli pumice fall only 16 cm below modern surface. Cream pumices up to 7 cm contain plag, hornblende, and oxides.				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.75 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC001-2

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC001-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	3 km east of Kanaga summit				
Waypoint/Station:	15KGMC001	IGSN (URI):			
Latitude:	51.92715 °N	Longitude:	-177.11855 °E		
Sample Type:	Tephra Fall	Elevation (m)	152		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	10 cm pumice fall, dirtier than -1, with fine to coarse lapilli as large as 8 cm in an ash coating. Plag + cpx.				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.75 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC001-3

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC001-3
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	3 km east of Kanaga summit				
Waypoint/Station:	15KGMC001	IGSN (URI):			
Latitude:	51.92715 °N	Longitude:	-177.11855 °E		
Sample Type:	Tephra Fall	Elevation (m)	152		
# of Gallon (large) bags	1 + high grade pums	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	35 cm thick brown pumice fall with max pumices 10 cm. 10% lithics. Mattia says the pums contain hornblende and some light to medium gray banding.				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.75 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC001-4

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC001-4
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	3 km east of Kanaga summit				
Waypoint/Station:	15KGMC001	IGSN (URI):			
Latitude:	51.92715 °N	Longitude:	-177.11855 °E		
Sample Type:	soil	Elevation (m)	152		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	Soil under unit sampled by -2.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC002-1

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	Tephra Fall	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	1 cm black fine to medium ash. May be from Tanaga Island?				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC002-2

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	Tephra Fall	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	1 cm black fine to medium ash. May be from Tanaga Island?				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC002-3

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-3
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	soil	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	Soil below unit sampled by -1.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC002-4

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-4
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	pumices from massive several-m-thick pf deposit. Orange, poorly sorted, most clasts are <2 cm rounded pumices. This sample 3 hand-picked pumice clasts				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGMC002-5

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-5
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	Bulk sample of massive several-m-thick pf deposit. Orange, poorly sorted, most clasts are <2 cm rounded pumices.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGMC002-6

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC002-6
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Base of inner rim of Kanaton Ridge				
Waypoint/Station:	15KGMC002	IGSN (URI):			
Latitude:	51.89907 °N	Longitude:	-177.15308 °E		
Sample Type:	lava	Elevation (m)	392		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	lava at base of gully below pf of samples -4 and -5.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC003-1

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC003-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	"Dome" inside Kanaton Ridge				
Waypoint/Station:	15KGMC003	IGSN (URI):			
Latitude:	51.90249 °N	Longitude:	-177.15070 °E		
Sample Type:	Pyroclastic flow	Elevation (m)	478		
# of Gallon (large) bags	4 large clasts	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	large pumices up to 30 cm from pyroclastic-flow deposit, likely banded. South side of "dome". Pumice coated with orange fine ash. Plag, hornblende, and sphene.				
Samples dispensed to:					
Cottrell	Quantity:	2 clasts			
Kelley	Quantity:				
Coombs	Quantity:	2 clasts			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC003-2

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC003-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	"Dome" inside Kanaton Ridge				
Waypoint/Station:	15KGMC003	IGSN (URI):			
Latitude:	51.90432 °N	Longitude:	-177.14774 °E		
Sample Type:	lava	Elevation (m)	612		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	fine grained lava with visible plag and pyroxene, in light gray glassy matrix, from top of "dome"				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC004

Date:	Sep 20, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC004
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Round Head top				
Waypoint/Station:	15KGMC004	IGSN (URI):			
Latitude:	51.90562 °N	Longitude:	-177.05798 °E		
Sample Type:	Lava	Elevation (m)	331		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Clinopyroxene-olivine basaltic andesite lava flow that caps Round Head. Weathered, vesicular outcrop. Cpx megacrysts to 2 cm, plag <2 mm, olivine <1 mm. Scattered white inclusions that appear to be molten.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC005-1

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC005-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC005	IGSN (URI):			
Latitude:	51.91258 °N	Longitude:	-177.19234 °E		
Sample Type:	lava	Elevation (m)	145		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	2 px andesite lava, host to inclusion 5-2. 1906(?) lava flow.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC005-2

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC005-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC005	IGSN (URI):			
Latitude:	51.91258 °N	Longitude:	-177.19234 °E		
Sample Type:	lava; enclave/inclusion	Elevation (m)	145		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	quenched mafic inclusion in lava 5-1 from 1906(?) lava flow. Coarse, diktytaxitic texture, vesicular halo around inclusion.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC006-1

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC006-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC006	IGSN (URI):			
Latitude:	51.91263 °N	Longitude:	-177.19211 °E		
Sample Type:	lava	Elevation (m)	133		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	2 px andesite lava, host to inclusion 6-2				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC006-2

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC006-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC006	IGSN (URI):			
Latitude:	51.91263 °N	Longitude:	-177.19211 °E		
Sample Type:	lava; enclave/inclusion	Elevation (m)	133		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	White crystalline (gabbroic?) inclusion in lava 6-1 from 1906(?) lava flow. Appears to be plag-rich gabbro with few % olivine crystals as well as dark veins that appear to be vesicular glass, olivine, and a honey colored crystal.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15KGMC007-1

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC007-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC007	IGSN (URI):			
Latitude:	51.91295 °N	Longitude:	-177.19128 °E		
Sample Type:	Lava	Elevation (m)	149		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	2 px andesite lava, host to inclusion 7-2				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC007-2

Date:	Sep 21, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC007-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	1906(?) lava flow on west side of Kanaga cone				
Waypoint/Station:	15KGMC007	IGSN (URI):			
Latitude:	51.91295 °N	Longitude:	-177.19128 °E		
Sample Type:	lava; enclave/inclusion	Elevation (m)	149		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	quenched mafic inclusion in lava 7-1 from 1906(?) lava flow. Inclusion is vesicular and crystal poor.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMC008

Date:	Sep 22, 2015	Name:	Michelle Coombs	Sample Name:	15KGMC008
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	East flank of Kanaga cone				
Waypoint/Station:	15KGMC008	IGSN (URI):			
Latitude:	51.92683 °N	Longitude:	-177.13429 °E		
Sample Type:	Lava	Elevation (m)	317		
# of Gallon (large) bags		# of Quart (small) bags			
Sample/ Station Photo:	No Photos.				
Description:	Vegetated Holocene lava flow on Kanaga's east flank. Light-medium gray dense two pyroxene andesite.				
Samples dispensed to:	Missing?				
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:	Some			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP001-1A

Date:	Sep 21, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP001-1A
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Round Head, southeast shore				
Waypoint/Station:	15KGMP001	IGSN (URI):			
Latitude:	51.89340 °N	Longitude:	-177.05431 °E		
Sample Type:	Lava	Elevation (m)	6		
# of Gallon (large) bags		# of Quart (small) bags	2.5		
Sample/ Station Photo:					
Description:	Basaltic Andesite lava bearing cm size euhedral cpx, with plag and sub-mm olivine				
Samples dispensed to:					
Cottrell	Quantity:	1 qt. + 1 lava clast			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP001-1B

Date:	Sep 21, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP001-1B
Island:	Kanaga	Volcano/Cone Name:	Round Head		
Location Description:	Round Head, southeast shore				
Waypoint/Station:	15KGMP001	IGSN (URI):			
Latitude:	51.89340 °N	Longitude:	-177.05431 °E		
Sample Type:	Breccia	Elevation (m)	6		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	Basaltic Andesite vesiculated lava breccia bearing cm size euhedral cpx, with plag and sub-mm olivine				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt + 1 large clast			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP002-1

Date:	Sep 21, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP002-1
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	South lava flow of Kanaga Volcano, within Kanaton Caldera				
Waypoint/Station:	15KGMP002	IGSN (URI):			
Latitude:	51.90425 °N	Longitude:	-177.15573 °E		
Sample Type:	Lava	Elevation (m)	414		
# of Gallon (large) bags	2.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Basaltic Andesite with cpx, plag and olivine				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP002-2

Date:	Sep 21, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP002-2
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	South lava flow of Kanaga Volcano, within Kanaton Caldera				
Waypoint/Station:	15KGMP002	IGSN (URI):			
Latitude:	51.90454 °N	Longitude:	-177.15691 °E		
Sample Type:	Lava	Elevation (m)	417		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Basaltic Andesite with cpx, plag and olivine, containing dispersed mafic inclusions/ enclaves of anorthitic composition				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	0.25 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP002-3

Date:	Sep 21, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP002-3
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	South lava flow of Kanaga Volcano, within Kanaton Caldera				
Waypoint/Station:	15KGMP002	IGSN (URI):			
Latitude:	51.90482 °N	Longitude:	-177.15793 °E		
Sample Type:	Lava	Elevation (m)	425		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Basaltic Andesite with cpx, plag and olivine, containing dispersed mafic inclusions/ enclaves of anorthitic composition				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal + 1 large clast			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP003

Date:	Sep 22, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP003
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Northern side of the eastern lava flow of Kanaga Volcano				
Waypoint/Station:	15KGMP003	IGSN (URI):			
Latitude:	Not recorded	°N	Longitude:	Not recorded	°E
Sample Type:	Lava	Elevation (m)	Not recorded		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Blocky lava flow containing small mafic inclusions, and displaying plag, cpx and rare olivine				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:				
Coombs	Quantity:	1 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15KGMP004

Date:	Sep 22, 2015	Name:	Mattia Pistone	Sample Name:	15KGMP004
Island:	Kanaga	Volcano/Cone Name:	Kanaga		
Location Description:	Western side of Kanaga volcano summit				
Waypoint/Station:	15KGMP004	IGSN (URI):			
Latitude:	Not recorded	°N	Longitude:	Not recorded	°E
Sample Type:	Lava	Elevation (m)	Not recorded		
# of Gallon (large) bags	0.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	Mixed collection of lava rocks from the volcano summit				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-1

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-1
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	2.5		
Sample/ Station Photo:					
Description:	5cm thick scoria fall, med ash to fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-2

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-2
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2cm soil				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-3

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-3
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	2.5		
Sample/ Station Photo:					
Description:	7cm med ash scattered fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-4

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-4
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7-8cm well sorted ungraded coarse ash to medium lapilli olivine pheric				
Samples dispensed to:					
Cottrell	Quantity:	2 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-5

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-5
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	may be cross contaminated. Underlies 001-4				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-6

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-6
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	2.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7cm scoria fall fine to coarse lapilli with max lapilli size 4cm olivine				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-7

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-7
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	underlies 001-6				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-8

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-8
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	2+	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7cm brown grey coarse ash to coarse lapilli w/ lapili up to 4cm				
Samples dispensed to:					
Cottrell	Quantity:	1 gallon			
Kelley	Quantity:		URI bag is missing (supposed to be 1 gal)		
Coombs	Quantity:	2 clasts high grade pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-9

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-9
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	3.25 + 0.25 basal	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	35cm scoria w/ top 2cm fine ash. Lithic content increasing up unit. Normal grading in top half, reverse grading bottom half				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal + 1 qt basal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-10

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-10
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	10cm normally graded pumice fall; top 2cm has a fine ash coating. Fine ash to med lapilli at top. At bottom, coarse lapilli up to 5cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt high grade pumice			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 quart high grade pumices			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-11

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-11
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	20cm lithic-rich w/ whole unit covered in fine grey ash. Phreatic eruption?				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:				
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-12

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-12
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	1cm underlies 001-11				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-13

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-13
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	15cm brown scoria: coarse ash to fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:	2 pt			URI has bag marked AVO
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-14

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-14
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	8cm - ashy. Underlies 001-13				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-15

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-15
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	4cm orange to brown scoria, medium ash to medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-16

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-16
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	28cm scoria. Bottom 10cm orange and the rest is grey. Fine ash top and bottom. Coarse ash to coarse lapilli. Pumices dense and microvesicular. 20% lithic				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt high grade pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-17

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-17
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	underlies 001-16				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-18

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-18
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	22cm orange to brown reverse graded coarse ash to coarse lapilli w max size 4-5cm. Hamburger Tephra				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-19

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-19
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Tephra Fall	Elevation (m)	38		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	15cm black scoria up to 15cm in diameter in a mottled brown to orange with red hues				
Samples dispensed to:					
Cottrell	Quantity:	2 qt			
Kelley	Quantity:	1.25 gal			
Coombs	Quantity:	1 qt high grade clasts			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC001-20

Date:	Sep 15, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC001-20
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	20+ feet of section taken at knob of land NE of Tanaga volcano, by coast, ~1mi W of Falls Pt				
Waypoint/Station:	15TGEC001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Soil	Elevation (m)	38		
# of Gallon (large) bags			# of Quart (small) bags		
Sample/ Station Photo:					
Description:	underneath 001-19 overlies a purple grey ash which is just above basal lava flow				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	All			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-1

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-1
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	16cm fine ash, well sorted, lower 3cm fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-2

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-2
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags	3	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	30cm scoria, fine ash to medium lapilli containing a 1cm layer of very fine ash. Normally graded				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1.75 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-3

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-3
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags		# of Quart (small) bags	table spoons		
Sample/ Station Photo:					
Description:	the very fine ash contained in 002-2, 1 cm thick				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	table spoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-4

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-4
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	4cm very fine ash, wet/cakey				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-5

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-5
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111	°E	
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	15cm fine ash to medium lapilli, mix of dense clasts up to 3cm, normally graded				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-6

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-6
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	15cm very fine ash matrix around large clasts up to 12 cm, clasts are light brown and orange and pink pumices which we high-graded for. The upper and lower parts of the unit is fine but the middle has all the clasts. Layer overall is light brown.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 qt			
Coombs	Quantity:	0.5 qt w/ high grade pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-7

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-7
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111	°E	
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags	3	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	basal black scoria of indeterminate thickness. Fine ash to coarse lapilli, normally graded with black coarse lapilli at base and more mauve colored fine and medium lapilli at the top				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	1.75 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

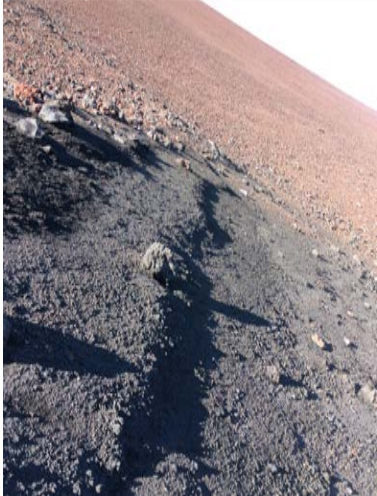
15TGEC002-8

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-8
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	surface scoria grab				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.75 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC002-9

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC002-9
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	seismic hut just to the S of Tanaga @MC26				
Waypoint/Station:	15TGEC002	IGSN (URI):			
Latitude:	51.86263 °N	Longitude:	-178.14111 °E		
Sample Type:	Tephra Fall	Elevation (m)	916		
# of Gallon (large) bags		# of Quart (small) bags	1.5		
Sample/ Station Photo:					
Description:	24 cm dark grey ash that underlies 002-5				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

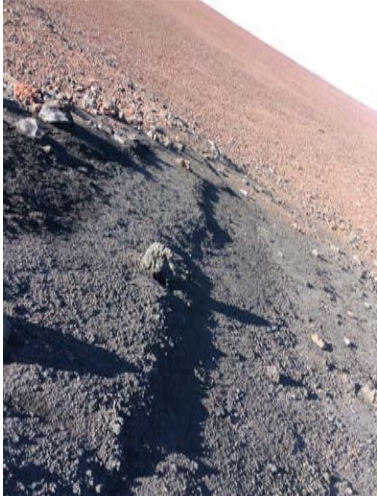
15TGEC003-1

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC003-1
Island:	Tanaga	Volcano/Cone Name:	Sajaka		
Location Description:	saddle just SE of Sajaka @MC39				
Waypoint/Station:	15TGEC003	IGSN (URI):			
Latitude:	51.87205 °N	Longitude:	-178.18774 °E		
Sample Type:	Tephra Fall	Elevation (m)	1059		
# of Gallon (large) bags	3.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	waist deep fine to medium lapilli, black iridescent vesicular				
Samples dispensed to:					
Cottrell	Quantity:	1 gal			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.75 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC003-2

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC003-2
Island:	Tanaga	Volcano/Cone Name:	Sajaka		
Location Description:	saddle just SE of Sajaka @MC39				
Waypoint/Station:	15TGEC003	IGSN (URI):			
Latitude:	51.87205 °N	Longitude:	-178.18774 °E		
Sample Type:	Tephra Fall	Elevation (m)	1059		
# of Gallon (large) bags	2+	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	20cm coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:	0.75 gal			
Kelley	Quantity:	1.25 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC003-3

Date:	Sep 16, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC003-3
Island:	Tanaga	Volcano/Cone Name:	Sajaka		
Location Description:	saddle just SE of Sajaka @MC39				
Waypoint/Station:	15TGEC003	IGSN (URI):			
Latitude:	51.87205 °N	Longitude:	-178.18774 °E		
Sample Type:	Tephra Fall	Elevation (m)	1059		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	unknown thickness fine ash with coarse breadcrust bombs				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	1 quart w very large (but representative of typical) single clast			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGEC004-1


Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-1
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags	2.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	72cm black to brown, coarse ash to coarse lapilli, bottom 15 cm reverse graded, black on bottom of unit and grades up to brown. The top 15 cm is medium lapilli and the top is EC004-2				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	2 gal	URI has two gallon bags (sheet reported 1)		
Coombs	Quantity:	1 gal	mistake bc we later found a large clast high grade bag for AVO; so AVO has extra 0.5 gal of "the good stuff"		
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGEC004-2

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-2
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	top 15 cm of TGEC004-1: brown, coarse ash to coarse lapilli, bottom 15 cm reverse graded, black on bottom of unit and grades up to brown. The top 15 cm is medium lapilli and the top is EC004-3				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	0.75 gal			
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGEC004-3


Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-3
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags		# of Quart (small) bags	1		

Sample/ Station Photo:		
-------------------------------	--	--


Description: 4 cm very fine ash to fine lapilli with large lithics up to 6 cm. Are they angular? Are they rounded? Look at the picture.

Samples dispensed to:			
Cottrell	Quantity:	0.5 qt	
Kelley	Quantity:		
Coombs	Quantity:	0.5 qt	
Pistone	Quantity:		
Grant	Quantity:		
Sheppard	Quantity:		


15TGEC004-4

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-4
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	34 cm reverse graded coarse ash to fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC004-5

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-5
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	24 cm medium ash to medium lapilli, mix of dense clasts and pumice (white to orange)				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGEC004-6

Date:	Sep 18, 2015	Name:	Elizabeth Cottrell	Sample Name:	15TGEC004-6
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	Tangent Point				
Waypoint/Station:	15TGEC004	IGSN (URI):			
Latitude:	51.90068 °N	Longitude:	-178.18259 °E		
Sample Type:	Tephra Fall	Elevation (m)	249		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	preferential sampling of a coarse ash layer within at least 1m of bedded fine and coarse ashes, each of which is 4-6 cm. The fine ashes are very cakey and almost clay-like				
Samples dispensed to:					
Cottrell	Quantity:	0.5 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGKS001-1

Date:	Sep 18, 2015	Name:	Katherine Sheppard	Sample Name:	15TGKS001-1
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	between Bumpy and Gauge points				
Waypoint/Station:	15TGKS001	IGSN (URI):			
Latitude:	51.88115 °N	Longitude:	-177.97058 °E		
Sample Type:	Tephra Fall	Elevation (m)	537		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	3cm medium ash with uniform clast size				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGKS001-2

Date:	Sep 18, 2015	Name:	Katherine Sheppard	Sample Name:	15TGKS001-2
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	between Bumpy and Gauge points				
Waypoint/Station:	15TGKS001	IGSN (URI):			
Latitude:	51.88115 °N	Longitude:	-177.97058 °E		
Sample Type:	Tephra Fall	Elevation (m)	537		
# of Gallon (large) bags		# of Quart (small) bags	3		
Sample/ Station Photo:					
Description:	5-6 cm "hamburger" fine to medium lapili with dense clasts of the same size				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGKS001-3

Date:	Sep 18, 2015	Name:	Katherine Sheppard	Sample Name:	15TGKS001-3
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	between Bumpy and Gauge points				
Waypoint/Station:	15TGKS001	IGSN (URI):			
Latitude:	51.88115 °N	Longitude:	-177.97058 °E		
Sample Type:	Soil	Elevation (m)	537		
# of Gallon (large) bags		# of Quart (small) bags	table spoons		
Sample/ Station Photo:					
Description:	2 cm grey and greasy, directly underneath KS001-2				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	table spoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGKS001-4

Date:	Sep 18, 2015	Name:	Katherine Sheppard	Sample Name:	15TGKS001-4
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	between Bumpy and Gauge points				
Waypoint/Station:	15TGKS001	IGSN (URI):			
Latitude:	51.88115 °N	Longitude:	-177.97058 °E		
Sample Type:	Tephra Fall	Elevation (m)	537		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	20 cm scoria fall with coarse ash to medium lapilli in a fine brown matrix				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:				
Coombs	Quantity:	0.75 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGKS001-5

Date:	Sep 18, 2015	Name:	Katherine Sheppard	Sample Name:	15TGKS001-5
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	between Bumpy and Gauge points				
Waypoint/Station:	15TGKS001	IGSN (URI):			
Latitude:	51.88115 °N	Longitude:	-177.97058 °E		
Sample Type:	Soil	Elevation (m)	537		
# of Gallon (large) bags		# of Quart (small) bags	tablespoons		
Sample/ Station Photo:					
Description:	30+ cm of fine ashes and soils; this one directly underlies KS001-4				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	tablespoons			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC200-1

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-1
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Tephra Fall	Elevation (m)	511		
# of Gallon (large) bags	2.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	18-cm-thick black scoria fall. Coarse ash to coarse lapilli. Reversely graded. Visible olivine				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1.75 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC200-2

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-2
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Tephra Fall	Elevation (m)	511		
# of Gallon (large) bags	1.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	17-cm-thick lithic rich brown pumice fall. Coarse ash to coarse lapilli. Top 3 cm coated in fine ash.				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC200-3

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-3
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Tephra Fall	Elevation (m)	511		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	18-cm-thick brown pumice fall top 10 cm reworked and coated in ash. Sample from cleaner base. Base is coarse ash to coarse lapilli.				
Samples dispensed to:					
Cottrell	Quantity:	1 gal	SI sheet says bag is there		
Kelley	Quantity:	1 gal	URI also has a gallon bag		
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC200-4

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-4
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Tephra Fall	Elevation (m)	511		
# of Gallon (large) bags	2.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7-10-cm-thick black angular scoria fall. Coarse ash to medium or coarse lapilli. Nice dark one.				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC200-5

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-5
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Tephra Fall	Elevation (m)	511		
# of Gallon (large) bags	1.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	16-cm-thick normally graded brown-gray pumice fall. Coarse ash to coarse lapilli, coated in fine ash. Angular blocky pumices. 2 cm fine ash at base.				
Samples dispensed to:					
Cottrell	Quantity:	0.25 gal			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC200-6

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC200-6
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC200	IGSN (URI):			
Latitude:	51.87345 °N	Longitude:	-178.08678 °E		
Sample Type:	Soil	Elevation (m)	511		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	Soil immediately below unit -5.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC201

Date:	Sep 16, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC201
Island:	Tanaga	Volcano/Cone Name:	Tanaga/East Tanaga		
Location Description:	Basin below Tanaga/East Tanaga, near BB29				
Waypoint/Station:	15TGMC201	IGSN (URI):			
Latitude:	51.87346 °N	Longitude:	-178.08675 °E		
Sample Type:	Tephra Fall	Elevation (m)			
# of Gallon (large) bags	4 clasts	# of Quart (small) bags			
Sample/ Station Photo:	No photo.				
Description:	Hand-picked juvenile pumice; Large (10+ cm) brown pumice clasts, hornblende bearing, from proximal fall deposit. Despite being near station MC200, not clear which unit this correlates with from that section.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:	1 clast			
Coombs	Quantity:	3 clasts			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-1

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-1
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	9-cm-thick brown-black reversely graded scoria fall, coarse ash to medium lapilli.				
Samples dispensed to:					
Cottrell	Quantity:	0.75 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-2

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-2
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags		# of Quart (small) bags	2		
Sample/ Station Photo:					
Description:	5-6-cm-thick coarse ash to medium lapilli brown scoria fall				
Samples dispensed to:					
Cottrell	Quantity:	0.7 qt			
Kelley	Quantity:	1 qt			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC202-3

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-3
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	14-cm-thick brown-black coarse ash to coarse lapilli fall, top 7 cm ash coated and stickier. Sample from cleaner base. Scoria texture is ragged and angular.				
Samples dispensed to:					
Cottrell	Quantity:	3 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-4

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-4
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	15-cm-thick blocky, medium brown-gray pumice fall, with lapilli to 10 cm. Bottom few cm has orange ash coating lapilli				
Samples dispensed to:					
Cottrell	Quantity:	2 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	high graded pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-5

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-5
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	10-cm-thick blocky gray pumice fall, poorly sorted, few % lithics, coarse ash to coarse lapilli as large as 10 cm. Above this is a 20-cm-thick soil-ey top that has developed on this unit.				
Samples dispensed to:					
Cottrell	Quantity:	2 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	high graded pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-6

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-6
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	23-cm-thick brown, poorly sorted ash-rich brown pumice fall. Lithic rich. Top 10 cm are soil-ey.				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-7

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-7
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	60-cm-thick brown scoria fall, dark brown-gray pumices on fresh surfaces, with hornblende. Medium ash to coarse lapilli to 5 cm. Reverse grading.				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	1 qt + clast in bag			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-8

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-8
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	8-cm-thick distinctive blue-black medium ash to medium lapilli fall, particles are rounded and dense.				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	2 qt			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-9

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-9
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	25-cm-thick subunit of thicker fall unit. Reversely graded coarse ash to coarse lapilli, lapilli are dense and blocky. Fine ash muddy coating. Large olivine (?) despite medium gray color.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.75 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-10

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-10
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	0.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	12-cm-thick interval in fall sequence with more orangey and possibly more inflated pumices.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.25 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-11

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-11
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags	0.75	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	30-cm-thick interval in fall sequence, at its base. Clean, medium gray blocky fall, coarse ash to medium lapilli.				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.5 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC202-12

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-12
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	10-cm-thick gray blocky lapilli fall.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC202-13

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-13
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil below 60-cm-thick scoria fall (sample -7)				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC202-14

Date:	Sep 17, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC202-14
Island:	Tanaga	Volcano/Cone Name:	Tanaga/Takawangha		
Location Description:	Between Tanaga and Takawangha, south side valley				
Waypoint/Station:	15TGMC202	IGSN (URI):			
Latitude:	51.84253 °N	Longitude:	-178.10481 °E		
Sample Type:	Tephra Fall	Elevation (m)	404		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil below 15-cm-thick blocky brown pumice fall (sample -4)				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-1

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-1
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	5 cm black scoria fall normally graded, fine to coarse ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-2

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-2
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	4.5 cm well sorted medium ash black scoria fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-3

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-3
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	6-11 cm brown-black normally graded scoria fall. Where it's thicker it has reworked top. 1 cm fine ash base				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-4

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-4
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	brown-black scoria fall medium ash to fine lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-5

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-5
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags	1.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	4-5 cm jet black clean scoria fall, reverse graded, c ash to m lapilli				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-6

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-6
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1 + pumice clasts		
Sample/ Station Photo:					
Description:	9-10 cm reverse graded brown pumice fall, pums blocky with snall hornblende. Orange hue				
Samples dispensed to:					
Cottrell	Quantity:	1 qt + pumice			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-7

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-7
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	3 cm orange-brown medium ash to medium lapilli fall, black scoria on fresh surface. Crummy little layer.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-8

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-8
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	6 cm brown-orange scoria lapilli fall, medium ash to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-9

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-9
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1 + pumice clasts		
Sample/ Station Photo:					
Description:	9 cm poorly sorted blocky pumice fall, fine ash to coarse lapilli, hornblende bearing				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt + pumice			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-10

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-10
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	5 cm brown, blocky pumice fall coarse ash to coarse lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-11

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-11
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	5 cm brown-orange coarse ash to coarse lapilli pumices to 2 cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-12

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-12
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	30 cm brown-black hornblende bearing scoria fall, fine ash horizons near top and bottom which are stickier. Coarse ash to medium lapilli.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-13

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-13
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags	1 + high graded pumice	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	40 cm brown-orange-gray scoria fall, ungraded, coarse ash to coarse lapilli, clean. Knobby, crystal-rich dark brown scoria, crystal-rich with cpx and possibly olivine. Could be Takawangha?				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	clasts			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-14

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-14
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Upper part of 30 cm bedded fall unit. Fine ash to medium lapilli, with 1-8 cm scale beds all look like fall. Darker gray at top, light gray pumices near base.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-15

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-15
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Lower part of 30 cm bedded fall unit. Fine ash to medium lapilli, with 1-8 cm scale beds all look like fall. Darker gray at top, light gray pumices near base.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-16

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-16
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	4 cm brown pumice fall coarse ash to medium lapilli; clean				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-17

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-17
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	20 cm brown-black coarse ash to coarse lapilli fall coarsest in middle. Crystal rich, cpx, Takawangha??				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				



15TGMC203-18

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-18
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	7 cm gray-orange normally graded fall. Base coated in fine ash. Pums are gray.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-19

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-19
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Tephra Fall	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	16 cm brown gray pumice fall, normally graded. Coarse ash to medium lapilli. Oxidized base.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-20

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-20
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Soil	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil under unit sampled by 6.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-21


Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-21
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Soil	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		





Description:	Nice soil immediately above unit of sample 10				
---------------------	---	--	--	--	--

Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-22

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-22
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Soil	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Soil immediately above unti fo sample 13				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-23

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-23
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Soil	Elevation (m)	164		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	Nice soil under unit sampled by 17.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC203-24


Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC203-24
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	North coast, north flank of Takawangha				
Waypoint/Station:	15TGMC203	IGSN (URI):			
Latitude:	51.91014 °N	Longitude:	-177.99570 °E		
Sample Type:	Soil	Elevation (m)	164		
Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	1




Description:	Soil near base of section; under unit sampled by 19.				
---------------------	--	--	--	--	--

Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-1

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-1
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	15 cm brown-gray-orange medium ash to medium lapilli, brown pumices. 1 cm brick red base, but may be local alteration				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 gal			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-2

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-2
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	17 cm reversely graded blocky fall, fine ash coating at top. Coarse ash to coarse lapilli. Hornblende bearing.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-3

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-3
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	11 cm reversely graded brown scoria fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-4

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-4
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	7 cm brown-black coarse ash to medium lapilli scoria fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-5

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-5
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	63 cm medium gray fall, alternating beds on 5 cm scale from fine ash (vesicular) to medium lapilli. All one eruptive sequence likely.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-6

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-6
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	12 cm brown gray normally graded scoria fall.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-7

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-7
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	9 cm coarse ash yo medium lapilli fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-8

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-8
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	40 cm orange-tan normally graded fall. Medium ash to medium lapilli. Pums are dark brown				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-9

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-9
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	16 cm coarse ash to fine lapilli fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-10

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-10
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Soil	Elevation (m)	292		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	soil under unit sampled by 9				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-11

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-11
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags	0.5	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	10 cm coarse ash to medium lapilli brown fall, near base of section				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:	0.3 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC204-12

Date:	Sep 18, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC204-12
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	Flats south of Takawangha				
Waypoint/Station:	15TGMC204	IGSN (URI):			
Latitude:	51.80899 °N	Longitude:	-177.95767 °E		
Sample Type:	Tephra Fall	Elevation (m)	292		
# of Gallon (large) bags	2	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	<p>1.5 m thick massive section of well sorted and vaguely bedded black sand(?) coarse ash. Eolian or volcanically deposited, unsure. Crystal-rich. Mostly coarse ash but with fine ash beds. May be reworked material from underlying Pleistocene volcanic bedrock. Full of olivine crystals but their origin is unclear.</p>				
Samples dispensed to:					
Cottrell	Quantity:	0.25 qt			
Kelley	Quantity:	2 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-1

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-1
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	5 cm black medium ash fall, possible soil parting in middle				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-2

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-2
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	6 cm normally graded fall, black at top, dark gray at base, medium to fine ash top, coarse ash base				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-3

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-3
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	7 cm reversely graded black fine to medium ash fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-4

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-4
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	normally graded medium ash to medium lapilli gray-black scoria fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-5

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-5
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	6 cm pale gray-brown fall, normally graded fine ash to fine lapilli. Base has fine ash coating				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-6

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-6
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	7 medium to coarse ash fall, dark gray				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-7

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-7
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	3 cm coarse ash to fine lapilli scoria fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-8

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-8
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags	1	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7 cm normally graded black-dark gray scoria fall, coarse ash to coarse lapilli. Max scoria = 1.5 cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	0.75 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-9

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-9
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	5 cm "upper knee" tephra. Clean coarse ash to medium lapilli. Brown, hornblende bearing pumices to 2 cm. <10% lithics.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-10

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-10
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	6 cm dirty, lithic-rich fall. Lots of fine ash in matrix. To medium (?) lapilli.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-11

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-11
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	6 cm brown pumice fall, corase ash to medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-12

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-12
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	cleaner, 8 cm fall layer, part of same sequence as 11?				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-13

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-13
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	3 cm reversely graded medium ash to fine lapilli dark gray fall, 20% red clasts				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-14

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-14
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags			# of Quart (small) bags	1	
Sample/ Station Photo:					
Description:	10 cm blue-blackish gray medium to coarse ash fall. Fine ash in top 1 cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-15

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-15
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	22 cm normally graded black medium ash to fine lapilli fall. Few % orange scoria				
Samples dispensed to:					
Cottrell	Quantity:	0.75 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-16

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-16
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	30 cm dirty fall, gray brown pumices, brown fine ash coating, cleanest at base.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-17

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-17
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	16 cm reversely graded black-gray fall, orange ash parting halfway up, coarse ash to coarse alpilli, lithic poor.				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-18

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-18
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	23 cm brown scoria fall, clean, lithic poor, coarse ash to coarse lapilli, fine ash parting in middle				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-19

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-19
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	23 cm well sorted medium to coarse dark gray ash				
Samples dispensed to:					
Cottrell	Quantity:	0.75 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.25 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC205-20

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-20
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	22 cm reversely graded medium gray coarse ash to medium lapilli fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

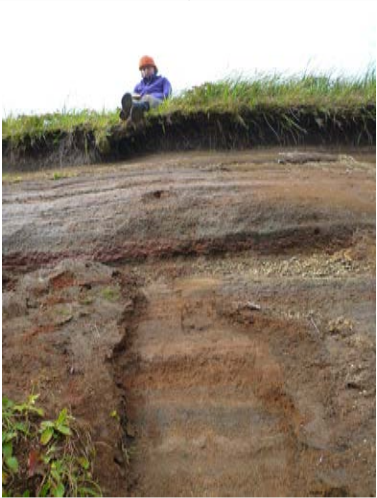

15TGMC205-21

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-21
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Soil	Elevation (m)	211		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	soil under 20				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

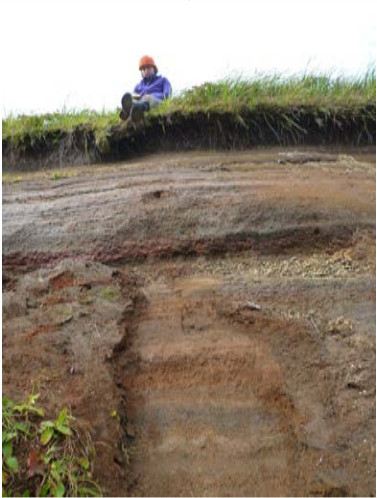

15TGMC205-22

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC205-22
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	50-m-long gently exposed bluff; Just west of Cable Bay, south of Takawangha				
Waypoint/Station:	15TGMC205	IGSN (URI):			
Latitude:	51.80345 °N	Longitude:	-178.04228 °E		
Sample Type:	Tephra Fall	Elevation (m)	211		
# of Gallon (large) bags	1.25	# of Quart (small) bags			
Sample/ Station Photo:					
Description:	7 cm reversely graded black scoria fall to 2 cm				
Samples dispensed to:					
Cottrell	Quantity:	0.5 qt			
Kelley	Quantity:	1 gal			
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

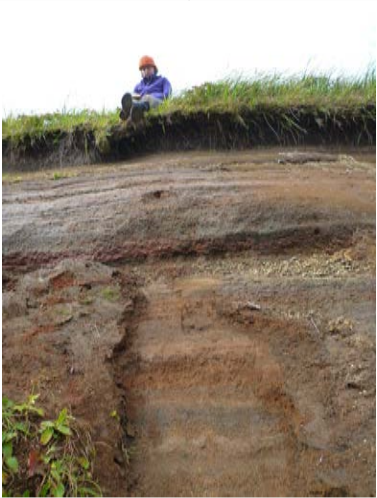

15TGMC206-1

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-1
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	2 cm black coarse ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

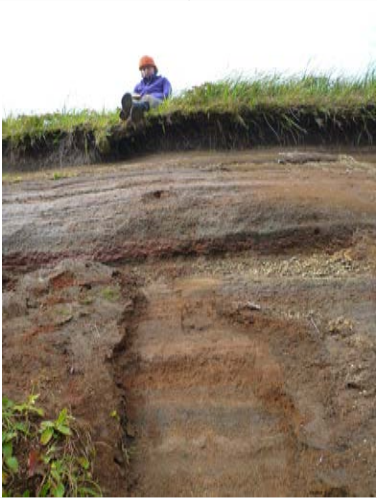

15TGMC206-2

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-2
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	3 cm black coarse ash to fine lapilli fall				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

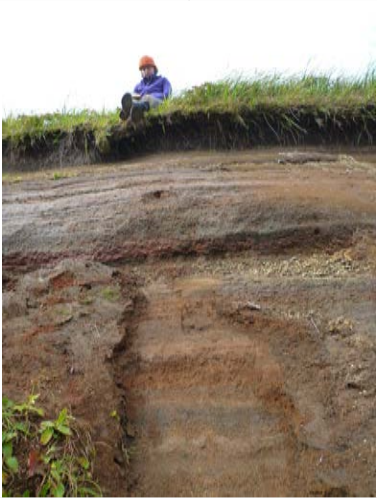

15TGMC206-3

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-3
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	4 cm medium grey, fine to medium ash, top 1 cm dark grey medium ash				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

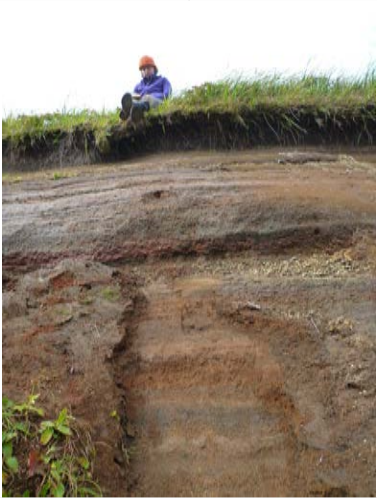

15TGMC206-4

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-4
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags			# of Quart (small) bags	0.5	
Sample/ Station Photo:					
Description:	5 cm brown grey pumice fall with grey block pumices, medium ash to fine lapili, max pumice size 1 cm, with a fine ash coating, "upper knee tephra"				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

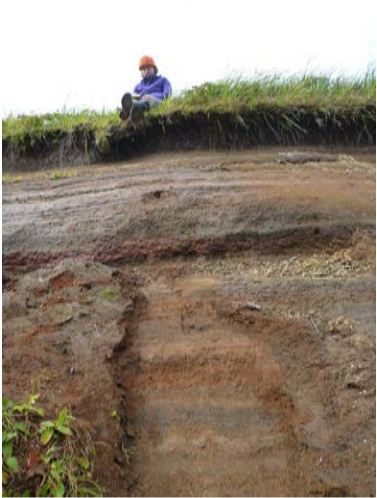

15TGMC206-5

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-5
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	7 cm orange to brown coarse ash to fine lapili with blocky clasts, orange fine ash coating, hamburger tephra				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

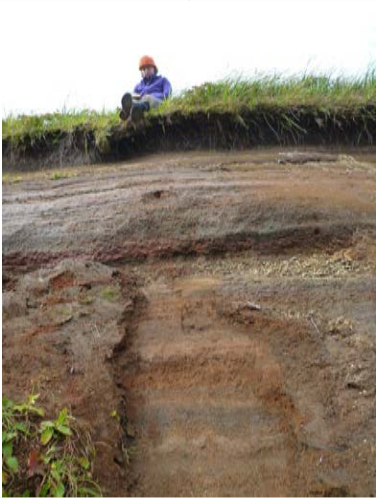

15TGMC206-6

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-6
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	9 cm dark brown scoria, coarse ash to medium lapili, oxidized crust on top and bottom, clasts up to .5 cm				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

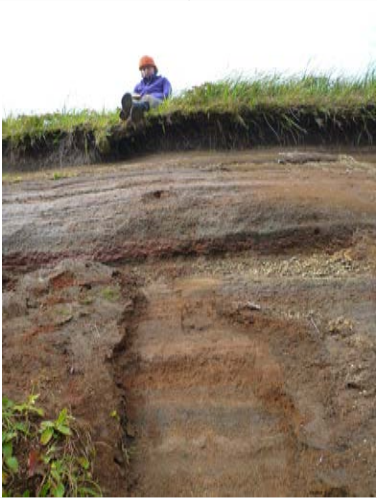

15TGMC206-7

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-7
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	45 cm indurated and bedded pumice and ash layers				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC206-8

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-8
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	10 cm brown pumice fall, reverse graded, coarse ash to medium lapilli				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				


15TGMC206-9

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-9
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Tephra Fall	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	9 cm brown to grey scoria fall, clasts up to 5 cm, coarse ash to coarse lapili				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	1 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGMC206-10

Date:	Sep 19, 2015	Name:	Michelle Coombs	Sample Name:	15TGMC206-10
Island:	Tanaga	Volcano/Cone Name:	Takawangha		
Location Description:	5 m deep gully next to babbling brook; Above Gusty Bay				
Waypoint/Station:	15TGMC206	IGSN (URI):			
Latitude:	51.84315 °N	Longitude:	-177.92934 °E		
Sample Type:	Soil	Elevation (m)	248		
# of Gallon (large) bags		# of Quart (small) bags	0.5		
Sample/ Station Photo:					
Description:	underlies 206-7				
Samples dispensed to:					
Cottrell	Quantity:				
Kelley	Quantity:				
Coombs	Quantity:	0.5 qt			
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

15TGDL001

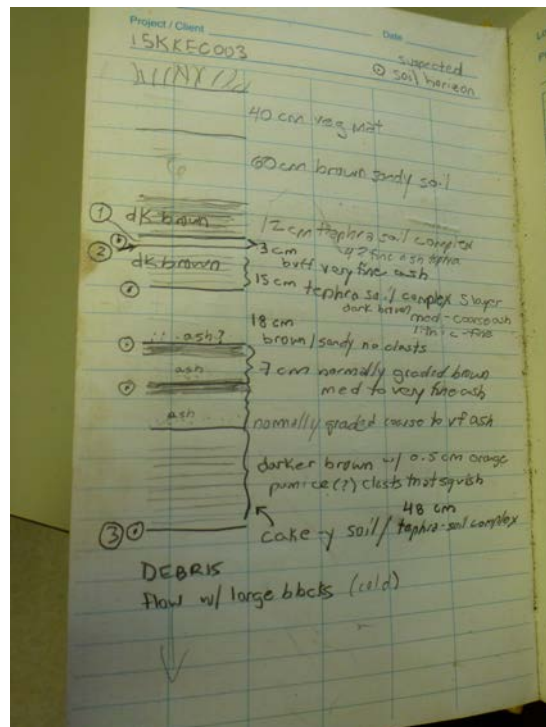
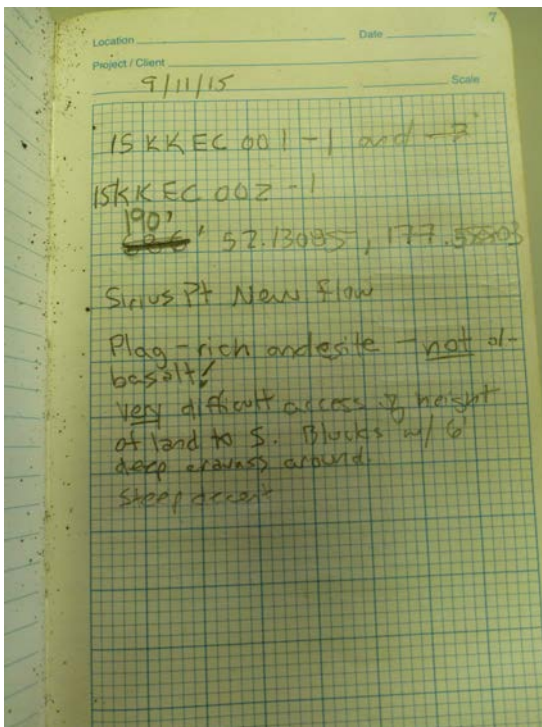
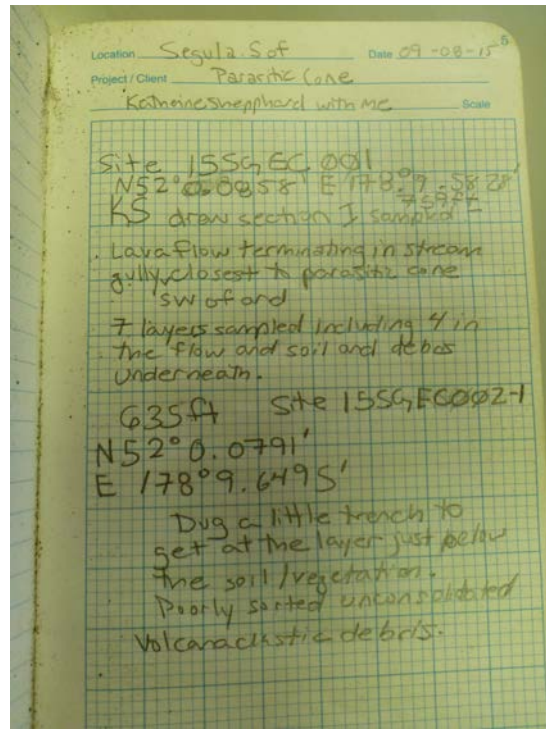
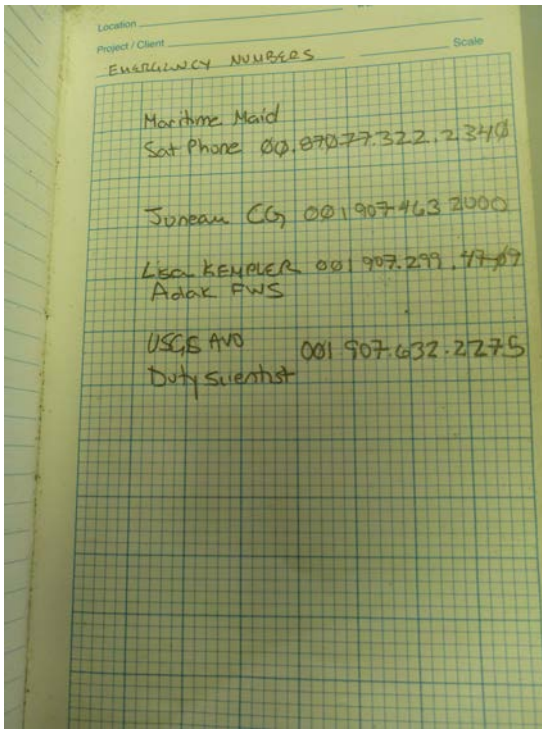
Date:	Sep 15, 2015	Name:	Dan Leary	Sample Name:	15TGDL001
Island:	Tanaga	Volcano/Cone Name:	Tanaga		
Location Description:	lava flow toeing out just below 15TGEC001				
Waypoint/Station:	15TNDL001	IGSN (URI):			
Latitude:	51.91920 °N	Longitude:	-178.09493 °E		
Sample Type:	Lava	Elevation (m)	38		
# of Gallon (large) bags		# of Quart (small) bags	1		
Sample/ Station Photo:					
Description:	slightly vesicular; Hb and plag pheno up to 1cm long!				
Samples dispensed to:					
Cottrell	Quantity:	1 qt			
Kelley	Quantity:				
Coombs	Quantity:				
Pistone	Quantity:				
Grant	Quantity:				
Sheppard	Quantity:				

7. References

- Coats, R. R. (1951), Geology of Buldir Island, Aleutian Islands, Alaska, U.S. Geological Survey Bulletin, B 0989-A, 1-26.
- Coats, R. R. (1956), Geology of Northern Kanaga Island Alaska, Geological Survey Bulletin, 1028-D, 69-81.
- Coats, R. R. (1959), Geologic Reconnaissance of Gareloi Island, Aleutian Islands, Alaska, Geological Survey Bulletin, 1028-J, 249-256.
- Coats, R. R. (1959), Geologic Reconnaissance of Semisopochnoi Island, Western Aleutian Islands, Alaska, Geological Survey Bulletin, 1028-O, 477-519.
- Coats, R. R. (1961), Geologic Reconnaissance of Kiska Island, Aleutian Islands, Alaska, Geological Survey Bulletin, 1028-R, 563-581.
- Coombs, M. L., J. F. Larsen, and C. A. Neal (in prep.), Postglacial Eruptive History and Geochemistry of Semisopochnoi Volcano, western Aleutian Islands, Alaska.
- Coombs, M. L., R. G. McGimsey, and B. L. Browne (2007), Preliminary Volcano-Hazard Assessment for the Tanaga Volcanic Cluster, Tanaga Island, Alaska, Scientific Investigations Report, 2007-5094, 36 p.
- Coombs, M. L., R. G. McGimsey, and B. L. Browne (2008), Preliminary volcano-hazard assessment for Gareloi Volcano, Gareloi Island, Alaska, Scientific Investigations Report, 2008-5159, 26 p.
- Coombs, M. L., R. G. McGimsey, and B. L. Browne (2012), Geologic map of Mount Gareloi, Gareloi Island, Alaska: U.S. Geological Survey Scientific Investigations Map 3145.
- Jicha, B. R., M. L. Coombs, A. T. Calvert, and B. S. Singer (2012), Geology and $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of the medium- to high-K Tanaga volcanic cluster, western Aleutians, Geological Society of America Bulletin, 124(5-6), 842-856, doi: 10.1130/b30472.1.
- Miller, T. P., C. F. Waythomas, and C. J. Nye (2003), Preliminary geologic map of Kanaga Volcano, Alaska, Alaska Volcano Observatory.
- Nelson, W. H. (1959), Geology of Segula, Davidof and Khvostof Islands, Alaska, Geological Survey Bulletin, 1028-K, 257-266.
- Waythomas, C. F., T. P. Miller, and C. J. Nye (2001), Geology and Late Quaternary Eruptive History of Kanaga Volcano, a Calc-Alkaline Stratovolcano in the Western Aleutian Islands, Alaska, U.S. Geological Survey Professional Paper, 1678, 181-197.

8. Appendices: Field Notebooks

Appendix 8-1: Elizabeth Cottrell



Location _____ Date 11 Sept 15
 Project / Client _____
 15KKEC003

"This is so unimpressive" - Me

229' 52,10085, 177,54994

Sec. cliff ~~seems~~ exposure on W side Kiska.

Nearby columnar jointed cliffs.

No tephra!

At this point we have been all over the island. Kiska - MY - ASS does not appear to have large VEI 4+ events.

Location Scula S. Lg Gully Date _____
 Project / Client _____
 KS, MP, MC, EC

51,99798, 178,4454, 534'

Arrive 16:00 hrs to gully versus alluvium to retrieve KS + MP.

Time short

Made a hand grab in the wash of mixed pumice and scoria. Not ultimately useful for size.

15SGEC005

Sampled the basal flow on W side gully 15SGEC006 ~~at 16:00~~

51,99777, 178,44217, 534' 600'

and another grab 007 but this one was falling from right above the flow.

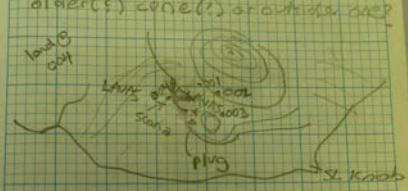
51,99807, 178,44085

Location Semikopachnoi Date _____
 Project / Client _____

15SMEC001 ~~near~~ Sugar Loaf

1,010' 51,88512, 179,62617

in the ~~flow~~ ^{flow} lava flow within or older (?) cone(s) or outside one?



Beds on rim of this feature dip ^{into} rather than away from its center.

Some scoria at rim are red, some black. Tiny or in coarse ash. But larger bombs have no visible olivine.

15SMEC001 is an of-bearing base # flow faceted by volcanic (mineral?) soil

Location _____ Date _____
 Project / Client _____

15SMEC003

Lava from ~~at~~ younger (?) plug on W side ~~of~~ ^{at} head

983' 51,88393, 179,62663

15SMEC004

on W side of ~~the~~ rim looking toward Sugar Loaf head

gagged inserted scoria and dense clast cover

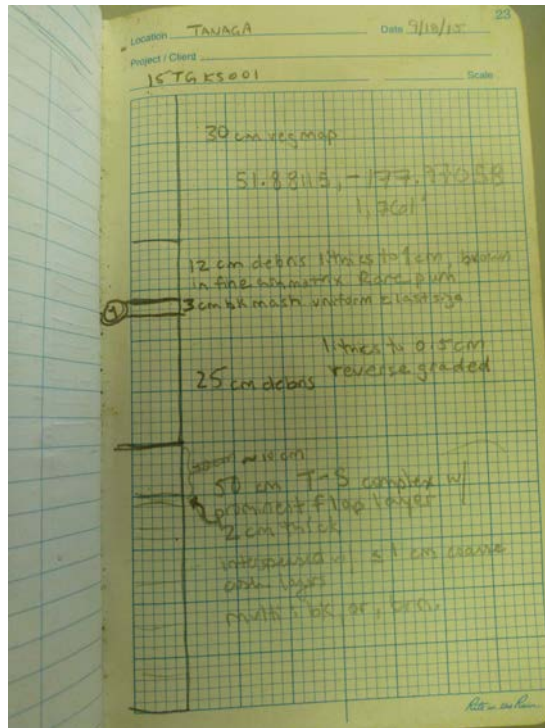
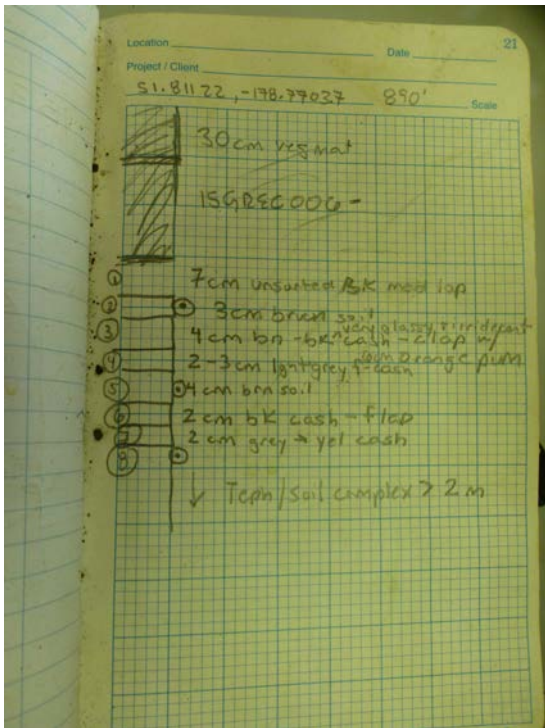
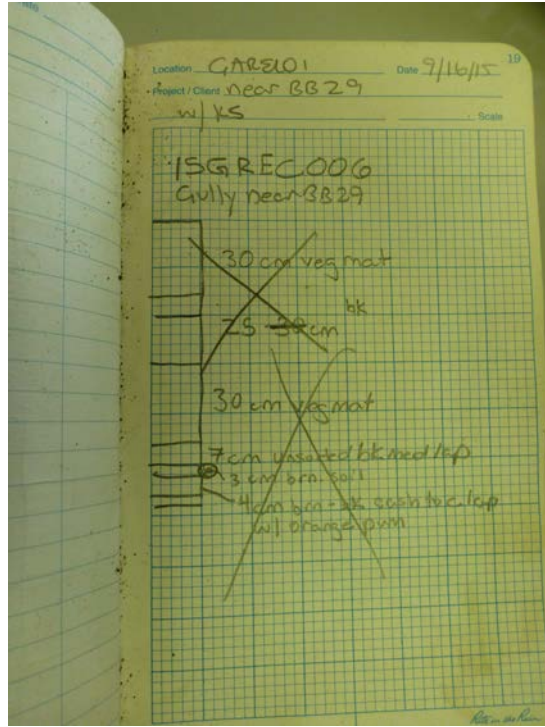
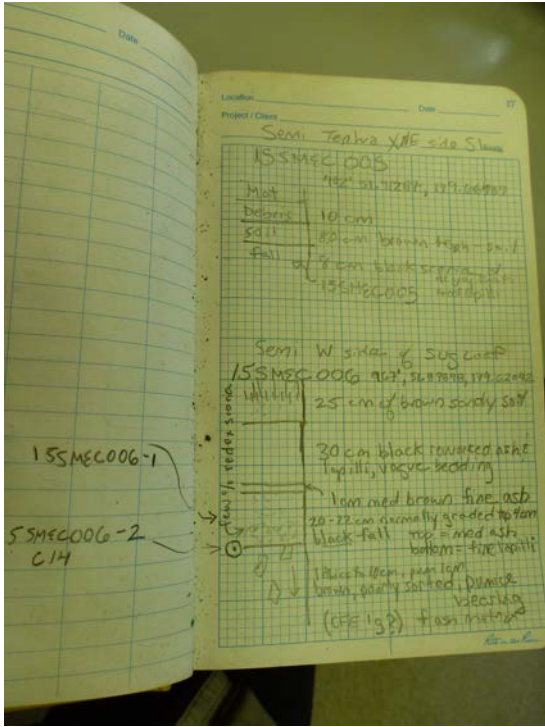
① 20 cm ~~of~~ ^{of} ash - olivine normally

② 12 cm ~~of~~ ^{of} ash ~~is~~ ^{is} graded with large clasts in place

③ PF 20-30 cm

fine ash to very large bombs olivine scoria

1,024' 51,88553, 179,62469

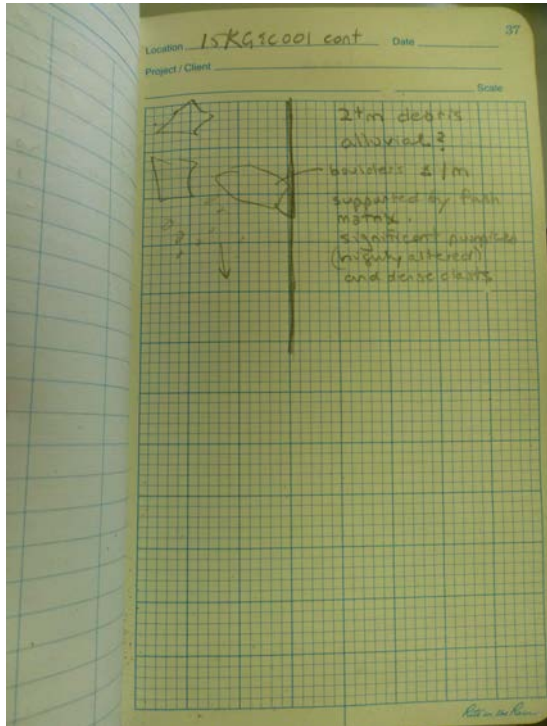
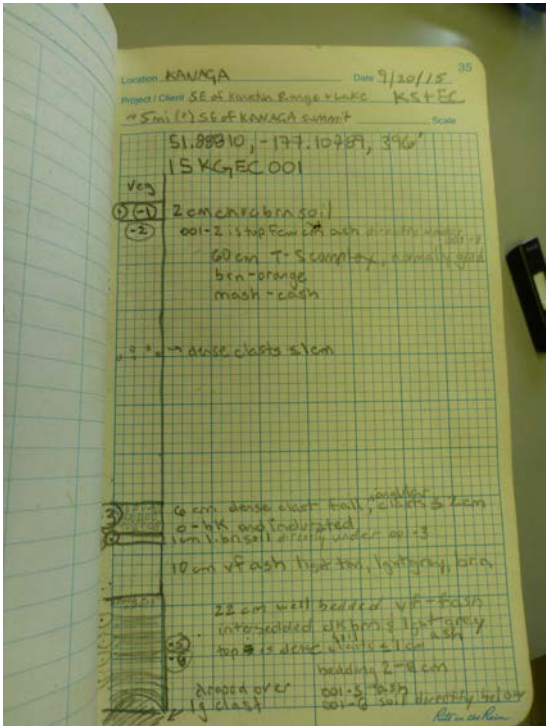
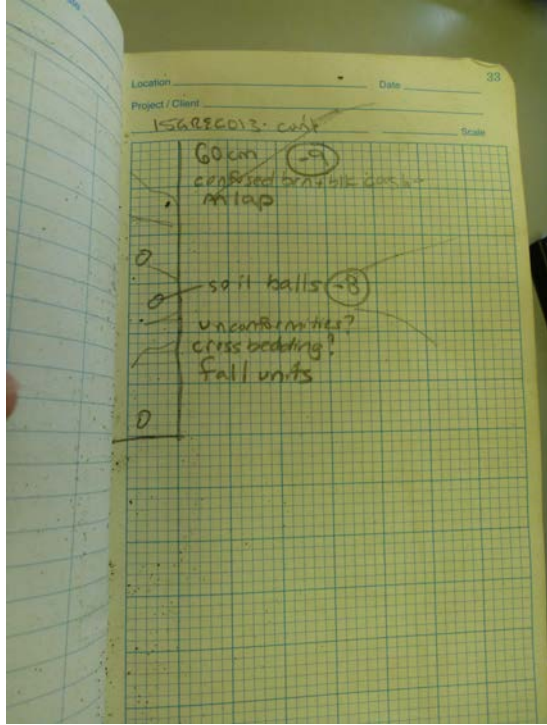
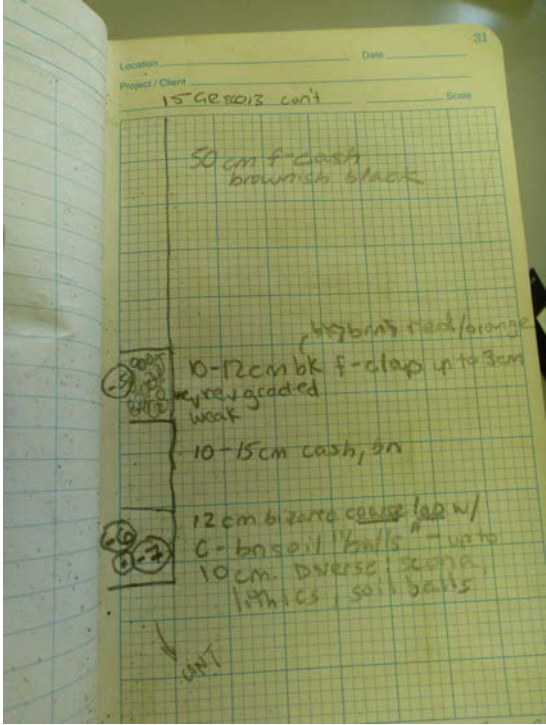


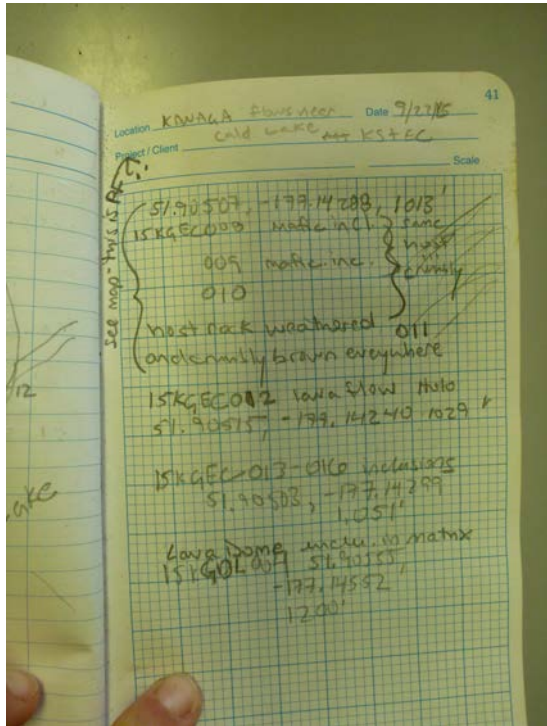
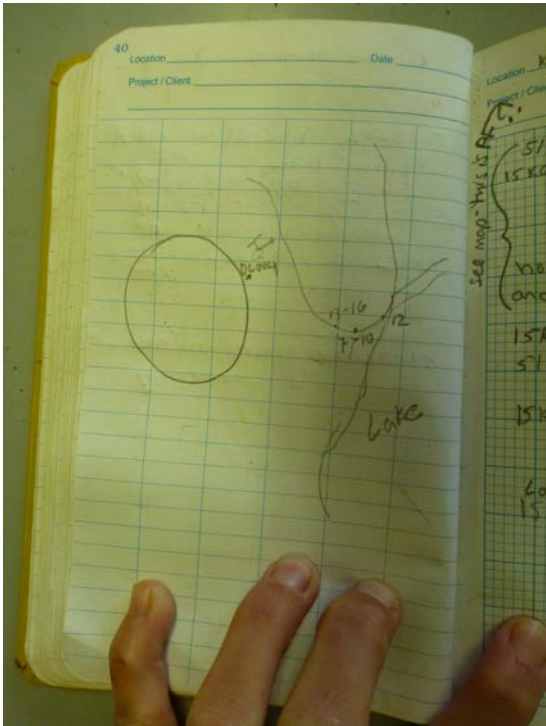
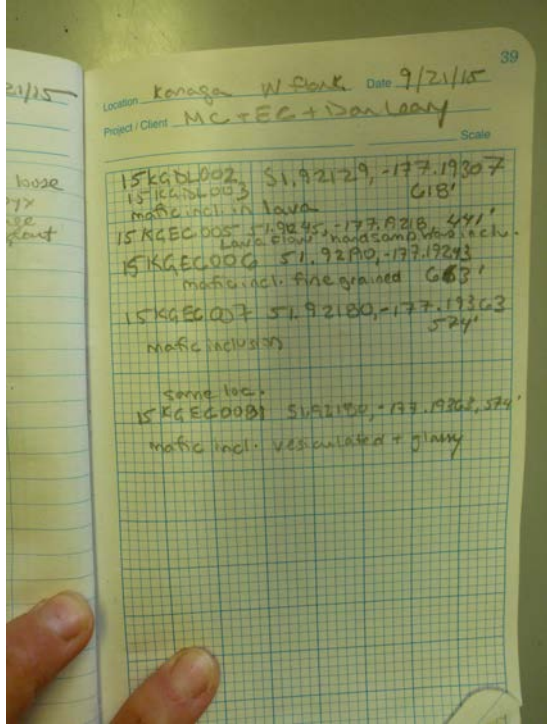
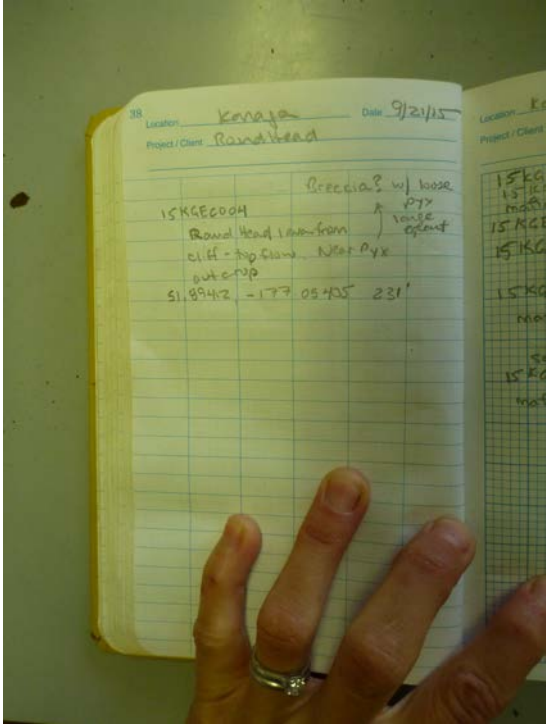
Location _____ Date _____ 25
 Project / Client _____ Scale _____
 157AK5001 cont
 5 (cm) band T-S complex
 w/ 1 cm ash & 1 cm fine blk
 2 cm gray greasy soil
 30 cm orange-brown T-S complex
 dg to 11.5 m brown 20.5 to
 coarse ash 10.5 to 11.5 m
 coarse blk
 redish-orange m lap w/ dense clasts
 4.5 cm T-S complex w/ interspersed
 black vt ash and orange ashes
 No prominent vort: vaguely bedded.
 blk 20 cm silica casts - m lap
 blk in fine blk ash matrix
 30 cm f-ashes & sils
 30 cm
 Thin beds & ls. ash

Location Gaisloi S. Flank Date _____ 27
 Project / Client Sloan Flow MPT EC
 15GREG010 - 012 9/19/15 Scale _____
 15GREG010A
 agglutinate on top of lava flow
 51.77452, -178.79910
 3,416' 15GREG103 vesiculated
 agglutinate larger size
 15GREG011
 float + ash + scoria
 ash + lap bedded
 51.77473, -178.79912
 3,448'
 15GREG012
 Sphalawa same as 10
 GPS error ~ 200'

Location Gaisloi S. Flank Date _____ 27
 Project / Client Sloan Flow MPT EC
 15GREG010 - 012 9/19/15 Scale _____
 15GREG010A
 agglutinate on top of lava flow
 51.77452, -178.79910
 3,416' 15GREG103 vesiculated
 agglutinate larger size
 15GREG011
 float + ash + scoria
 ash + lap bedded
 51.77473, -178.79912
 3,448'
 15GREG012
 Sphalawa same as 10
 GPS error ~ 200'

Location Gaisloi S. Flank Date _____ 27
 Project / Client Sloan Flow MPT EC
 15GREG010 - 012 9/19/15 Scale _____
 15GREG013
 51.82252, -178.82081
 672'
 90 cm repetitive eruption
 13 brown 20m common
 15 11.5 m brown/cash
 11.5 m flag w/ dense clasts (rare)
 4cm
 1.6 2cm black ash to
 cash/6cm blk/c
 12 cm cash, blk
 15GREG013-1 top 200'
 15GREG013-2
 make repeat cycles
 20m cash + lap beds
 15GREG013-1
 15GREG013-2





Appendix 8-2: Michelle Coombs

Location Kiska Harbor Date 1/2/15
 Project / Client St. Ives w/ Bear Topog

15KRM001 (1) Bulk H₂O DF
 (2) Soil just above
 5m in Holocene Strat cut
 by bomb cratering above Harbor,
 along road that rises up hill.
 ~8m of debris flow (R) that is
 orange-br, some rich, somewhat
 indurated / altered. Max pum 3cm
 cream yellow lenticles. Scarcely
 subangular. Lithics are volcanic
 and subrounded up to 10cm.

Above is a 10-15 cm blackish soil
 horizon. Above that ~1m of brown
 soil complex w/ 2-3 wash bl
 lepras distal

~1m upper soil but w/ only 2-3 of ash
 upwards

10cm of black soil

6m DF (?)
 Structureless poorly
 strat.

Location Kiska Harbor Date 1/2/15
 Project / Client FORTE

walked up to top of ridge. ridge
 capping unit is Tkb (Lithic)

is this ridge forming breccia
 above or below pumaceous unit?

15KRM002 224 m WP=456
 Split to SI 51.97776 177.52051

heterolithic bas br w/ ves & dense
 variably altered / ex clasts to 1m.
 Well indurated cliff face. On fresh
 surfaces we see plag-pr and w/
 rhyolite. Surprisingly fresh looking.
 Dk gr. Ltz, Mafic K, + E basalt
 on rx looking for fresh clasts.

collected at same site as 15KRM001
 (Katherine) separate clast

My obs is a single andesite clast
 angular ~40cm. Fairly fresh

Location Kiska Harbor Date 1/2/15
 Project / Client FORTE

15KRM003 195m WP453
 51.97769 / E 177.51665

Contact w/ underlying pumaceous
 debris flow unit and overlying
 andesite breccia. DF is same
 as what we saw at 001 so
 not Holocene! Soil is non-argill
 like

This lower unit is pumice
 rich w/ cream & lt gr clasts

Location Sopinka Date 1/2/15
 Project / Client Liz, Katherine, ME
 Same coord to 6 all have splits to SI

15SGM001 19 m WP453
 51.97751 178.17933

Youngest Bas (and some parasitic cone
 pl-epx, slight ves, dk gr from messy black
 strata on vegetated flow)

15SGM002 32 m
 52.00411
 178.18688

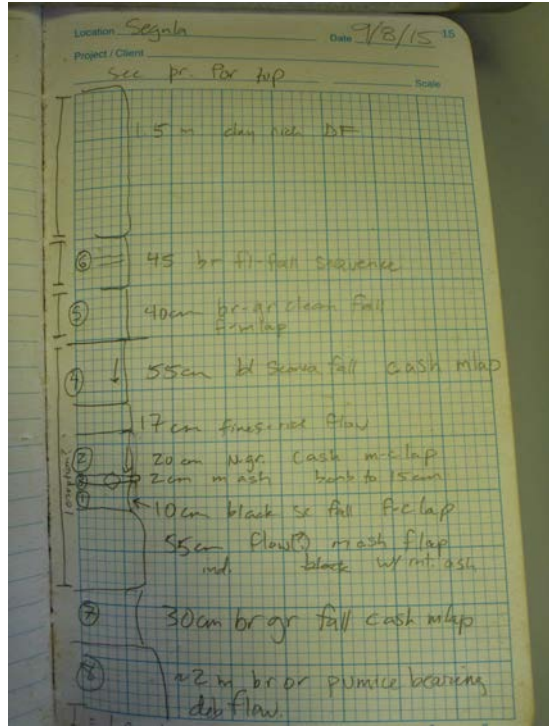
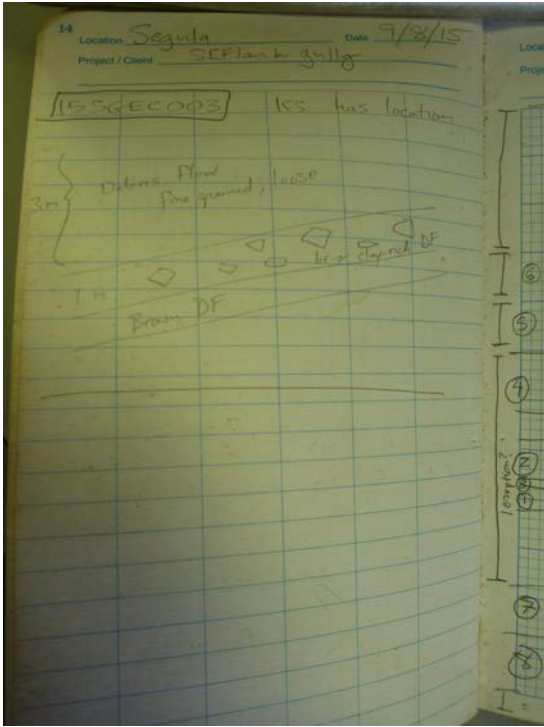
another mic lava, this one
 is flow that makes ^{10cm} 10cm
 pl-pr w/ most xts to 1mm, some to 4mm
 and-bas and mic 460

15SGM003 20 m
 52.03879 178.186289

dk gr / bl
 Young A. lund flow on NE flank
 trachytic, glassy, plag to 12mm xtl pair

15SGM004 15m
 52.03878 178.16357

Flow under 003. Brecciated,
 distinct plag. Near high tide
 med gr ves. Somewhat oxidized pl-2px and



18 Location Little Siltin Date 9/9/15
 Project / Client w/ EC + KS
 in Little Harbour, Beulah, to fly to LS

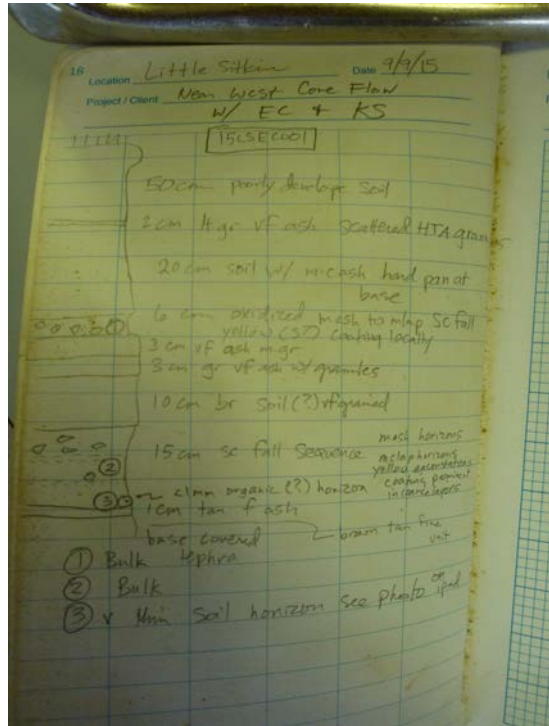
targets on LP:
 CN007 West Cove bank?
 CN005a 10m low Seams
 m0002a Sxn of alt(?) Se
 m0003 like 002, uncollected

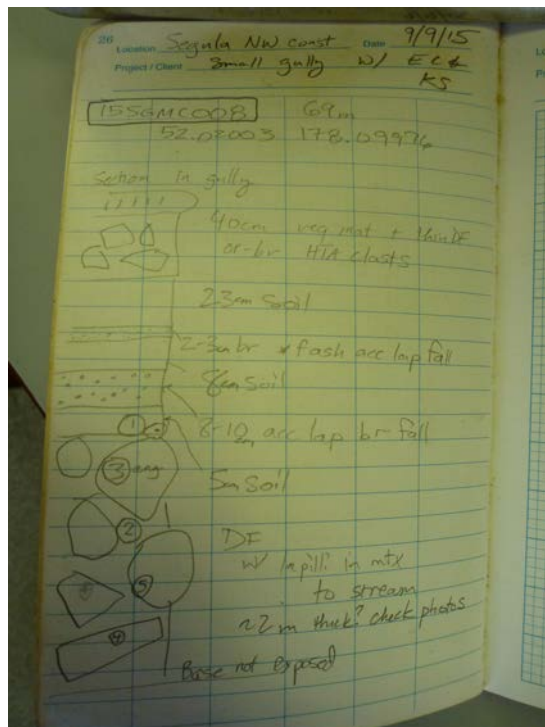
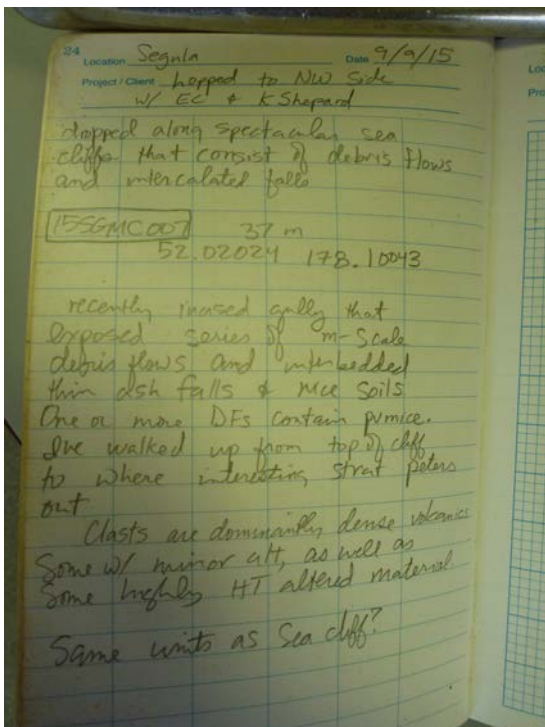
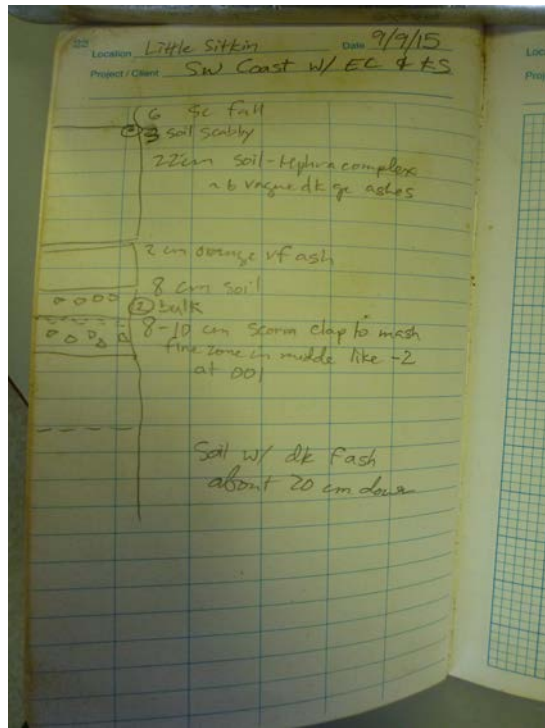
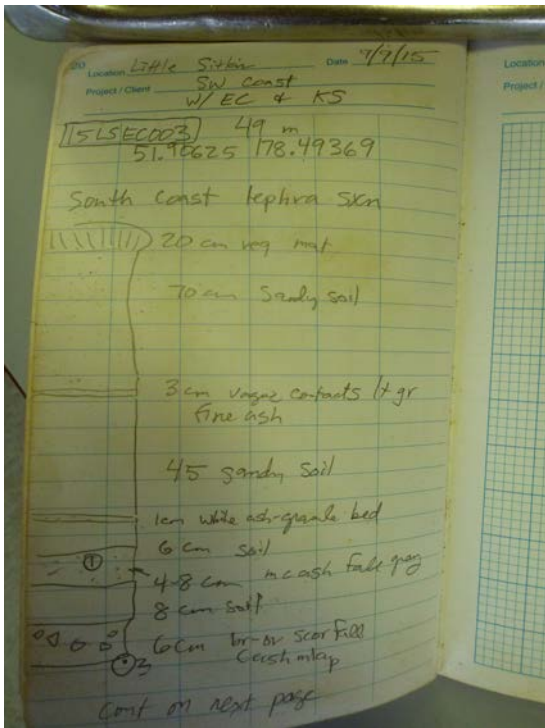
15LSE001 176m 51.95/45 178.48305
 Spot Sxn near West Cove

Flow
 actually recorded as 15LSE001

Flow to LS w/ EC & Katherine did 15SES001, then flew to South and looked up S flank of young cone, looked barren. Then flew to SW coast to view Kephra Sxn above sea diff.

Logged as 15SEC003 see next page.





28 Location Buldir, Near Khatanga Date 9/10/15
 Project / Client flow w/ EC + KS + Pilot Dan

15BLMCOO1 264 m
 52.36656 -175.91802

Along side of Maar Lake on
 Buldir. Poorly stratified v. dep.
 & discontinuous fall layers.
 But - looks Holocene! Loose fall
 appears med gr. HB bearing

① Fall bulk from 20 cm
 layer on 4 m tall exposure.
 4 BAGS

80 cm sc-br debris cl?
 15 cm F-m lap br sc fall
 55 cm mix rich flow(?)
 Some pumice
 br-gr
 25 light gr fash mix
 w/ br cl lap scoria
 blocks
 Base cov.

Location _____ Date _____
 Project / Client _____ Scale _____

① 4 Bags clean br-gr fall
 pumice slightly oxid mp=3cm

② 3 bags scoria fall w/ fash
 coating/mix. max=10cm
 F-G lap clasts black bl sc
 NOTE - many broken fragments

Above out to ① is 3 m br red
 loess ~~sc~~ - no sample
 top contact w/ ~~relax~~ volcanics
 not distinct - doesn't look
 organic

on top of N-facing bluff
 above pond. 60 cm soil on
 top. NO tephras

30 Location Buldir Date 9/10/15
 Project / Client w/ EC + KS

15BLMCOO2 304 m
 52.36747 -175.91794

Lava at top of N rim of
 pond, bluff along Boring. Mostly
 vegetated but black lava
 poking out in rel. fresh med gr
 x-line ol-rich basalt. Datable.
 Sample from ang. black dense

Hopped to steeply top w/ nice sc
15BLMCOO5-1 264 m 52.35758
 175.89883

① 1 m Br. DF scoria bearing
 subround lava clasts to
 30 cm

② 1 m flow/fall f. clap
 fines rich

③ white fall
 75% dusts are 1-5 cm dense
 2 m clean ~~sc~~ fall
 Scoria bombs come near
 base dense mineral chert
 common

④

Location _____ Date _____
 Project / Client _____ Scale _____

2 m fall

① 12-15 cm m ash
 ② possible soil scum w/ ~~sc~~
 ③ 2 bulks
 4+ m brown DF
 50 cm lava blocks
 through
 base covered

① DF mix
 ② Soil
 ③ 1 m ash
 ④ Bulk fall 2 bags ^{slightly high}
 ⑤ Scoria bomb ^{moderately}
 ⑥ upper DF w/ doms

Visit w/ 3, 4, 5 at one eruption?

32 Location Kiska Peak Date 11/1/15
 Project / Client Sirius Pt MC, EC, Elizabeth

15KMC004 140 m
 52.12857 177.58870

Lava above + W of "new" Sirius Pt.
 Grass, oxidized but some fresh
 chunks. At least 3rd oldest lava
 in site after New SPt & the
 one from Summit that forms
 Sir Pt proper. XH-rich 2px and
 No obv HB, Mod gr.

15KMC005 52° 7' 42.87"
 -3441 177° 35' 19.21"

Black & ash flow deposit exposed
 in steep sea cliff just W of New
 Sirius lava flow. Pinkish gr w/ rind
 to angular XH rich dome/lava
 blocks. Sample is light pinkish-gr
 "cinder block" dacite clast about 40cm
 in diameter. Just to west of
 this sample. BAE/DF is mainly
 soil, then of clast poor PF, then soil
 soil.

33 Location _____ Date _____
 Project / Client _____

Liz sampled New Sirius Pt which
 also looks like XH-rich andesite

I also examined good soil
 above MCEOS, which had no
 Scoria or ash falls, recorded on
 camera.

Then, flew to W side and made
 stop at handsome but fine grained
 topia soil.

34 Location Segula Date 9/11/15
 Project / Client Flow in mid afternoon of
 not Mattat Katherine Liz.

15SGM009 180 m
 51.99850 178.14341

Bottom lava flow on E side
 of big gully on S flank. Massive
 flow middle is 2 m thick,
 brecciated top & bottom. Like
 one above, then top 4 are thicker,
 however. Guess they may be
 different comp. Sampled by
 Katherine & Mattat. This one
 is medlt gr < 20% xltls plug +
 2 px?

Across Gully:

36 Location Segula Date 9/11/15
 Project / Client _____

this broad flat area in bottom
 of gully is old! Possible
 explosion crater filled in by
 Alluvium?

38 Location Amchitka → Semi Date 9/12/15
 Project / Client _____

Sitting in Constantine Harbor. Possible deployment to Semi later today to look for mafic tephra. Looking now at candidates:

- * 2 under cones of Sugarloaf
 - Smaller of 2 should be easily accessible w/ descent ceiling
- * Sun J1022 on east shelf Sugarloaf

Also should try to get sufficient lab material, but lower priority.

Flew to Semi w/ EC @ ~1 PM.
 On Sugarloaf Head Cone. Determined that N of 2 satellite cones is older and mantled by clastic bombs (clipping away from lab) which is consistent w/ 'good' samples.

Sampled mic of lava from flow that fills crescent crater (SMC002).

40 Location Semisopachinoi Date 9/12/15
 Project / Client W/ EC

then walked to base of Sugarloaf cone and EC is sampling possibly S1 fall/debris. Loaded w/ olivine ranges from

[SSMEC002] 315 51.98376 179.62726
 three bags of f ash to mlap
 proximal fall - bigger clasts removed. All are ol-pl basalt. Stranded dense to inflated. mte ash also has olivine } same site

[SSMMC101] near J1007? check

MC-1 Black mic ash rev. gy fall 4-5 cm

51° 53' 9.55" 179° 37' 30.67"

Location _____ Date _____
 Project / Client _____ Scale _____

70cm

① 2-3 cm ash fall covering SC fall

② 4-5 cm mic ash fall

③ 15 cm black ash fall

④ 15 cm black ash fall

⑤ 15 cm black ash fall

⑥ 15 cm black ash fall

⑦ 15 cm black ash fall

⑧ 15 cm black ash fall

⑨ 15 cm black ash fall

⑩ 15 cm black ash fall

⑪ 15 cm black ash fall

⑫ 15 cm black ash fall

⑬ 15 cm black ash fall

⑭ 15 cm black ash fall

⑮ 15 cm black ash fall

⑯ 15 cm black ash fall

⑰ 15 cm black ash fall

⑱ 15 cm black ash fall

⑲ 15 cm black ash fall

⑳ 15 cm black ash fall

㉑ 15 cm black ash fall

㉒ 15 cm black ash fall

㉓ 15 cm black ash fall

㉔ 15 cm black ash fall

㉕ 15 cm black ash fall

㉖ 15 cm black ash fall

㉗ 15 cm black ash fall

㉘ 15 cm black ash fall

㉙ 15 cm black ash fall

㉚ 15 cm black ash fall

㉛ 15 cm black ash fall

㉜ 15 cm black ash fall

㉝ 15 cm black ash fall

㉞ 15 cm black ash fall

㉟ 15 cm black ash fall

㊱ 15 cm black ash fall

㊲ 15 cm black ash fall

㊳ 15 cm black ash fall

㊴ 15 cm black ash fall

㊵ 15 cm black ash fall

㊶ 15 cm black ash fall

㊷ 15 cm black ash fall

㊸ 15 cm black ash fall

㊹ 15 cm black ash fall

㊺ 15 cm black ash fall

㊻ 15 cm black ash fall

㊼ 15 cm black ash fall

㊽ 15 cm black ash fall

㊾ 15 cm black ash fall

㊿ 15 cm black ash fall

42 Location Constantine Harbor Date 9/13/15
 Project / Client von Alaud

Rest day. Done + Lyons to USAT Station, Adrian + Mattia to Tsunami deposits on S side Amchitka. Catching up on sample spreadsheets.

If weather permits we will fly to Agaña tomorrow and possibly David's from here. May transit to Tanaga tomorrow night.

[9/14/15]

Foggy. In afternoon, Dan flew to Agaña + we packed to Tanaga. Calm ride! Arrived early AM of 9/15.

44 Location the Spring Bay, Tanaga Date 7/15/15
 Project / Client Trapping for Geolab

Possible Sites on Gavelor

BB16 → upper part of '29 Street has
 58% SO₂ bombs w/ ol-clasts
 1929 3m S flank

BB29 → no WR analyses, but Scoria
 fall in 5m

* MC01a-c → no WR, but Summit
 Scoria seen SE rim of N. Crater
 at least 2 Scoria units

MC12ASD → good fall seen
 at least 2 lapilli falls, no WR

* MC22 → Flap fall, 52.3% SO₂
 SE coast

* MC26a → 40+ cm sc fall; 52.8% SO₂
 Cps have nice MDS

* MC28 → 19cm sc fall; 52.8% SO₂
 NW flank, may be same fall as 26a

48 Location Tanaga N Coast Date 7/15/15
 Project / Client

1576EC01 station in
 Katherine's NB revisiting MC26
 several m-thick tephra seen on
 N Coast of E. Tanaga. Bits on
 lava contains multiple lapilli falls
 both black & orange-brown.
 Logging in Katherine's notebook.

* Tried to fly S. Side volcanoes but
 sorted in

50 Location Tanaga Pass Date 7/12/15
 Project / Client w/ Mattia
Same area as BB29

1576MC200 4:11 PM 1678'
 st. 87345 178.08078

15 cm scoria rich reworked
 surface

18 cm bl sc fall cask to
 clay, fine sc clap

17 cm red-gr. brown fine fall
 cask to clap

7 cm brown fine ash

7 cm br-gr cask to Flap fall
 desing, ang lap

8 cm fast w/ sc lapilli, PF

18 cm fall w/ ash rich top (seen
 reworked base is br-pow cask
 to clap)

17 cm br-bl Sandy Soil (?)
 org-pow

7 cm black fast

15 cont on next page

52 Location Tanaga Date 7/16/15
 Project / Client w/ Mattia
MC200 (cont)

7 cm See p. page

15 cm lt to dk gr fast to rlap
 vaguely bedded, compact

7-10 cm dk gr ang. sc fall. ground
 covered with photos

18 cm poorly std fast to clap
 pink-gr pfp
 clasts are brobl w/ HB

30 cm br-dk gr reworked fast to
 cask. overall normal gr.
 compact, solid

16 cm normal gr. br-gr pum fall
 cask to clap caked in fast

2 cm fast base
 nice soil
 reddish, poorly std.

BASE covered

54 Location Tanaga Date 7/16/15
 Project / Client Mathia in basin below Tanaga near 8229, in + out of Clouds?
15TMC201
 ~200 m SE of last station.
 Another gully. Very diff strat. Missing any dk Scoria layers - all HB-bearing.
 Sample is selection of single clap, 5-15 cm, from coarsest fall layer. Most of this section may be a single Tanaga or East Tan eruption sequence.

55 Location Tanaga Date 7/17/15
 Project / Client But in Hot Springs Bay
 11:30 AM
 Scoria from 1, gas, + GC + KS one at Grotto. Elizabeth and I will display to Tanaga eventually to one of remaining tephra sites.
 with Elizabeth Grant
15TMC202 near MC44 shot at 2:35
 30 cm remarked Scoria lapilli + ash in medium soil
 9 cm br-black tv gr sc fall
 ash to mlap
 top has dense bits to 2cm
 2cm m ash
 6 cm m-c ash bl sc fall
 2 cm f-m pink ash
 4 cm p-c black ash
 1 cm pink f-m ash
 5-6 cm ash to mlap for 20cm
 2-3 cm f-m br-black ash
 14 cm br-bl ash-clap top 7cm
 near strongly ash coated + streaked reddish scoria texture

56 Location Tanaga Date 7/17/15
 Project / Client Section 15TMC303 cont
 14 cm (cont)
 60 cm dk-br-dk or very finely bedded ashly soil (?) dk gr ash comp. mostly in ash
 distinct change in texture black above + or-br below
 15 cm black med br-gr pure fall lapilli to 10 cm orange ash coats base
 20 cm med br soil, scoria clasts but really quite massive
 20 cm remarked silty top fall below
 10 cm lucky gray pure fall pinkish f-m ash to clap lap 20cm
 25 cm br-gr fine ash red soil massive
 23 cm br poorly sorted ash rich br pure fall (?) little red soil
 80 cm next #

57 Location Tanaga Date 7/17/15
 Project / Client Section MC202 cont
 23 cm
 80 cm massive compact tephra soft friable to top sections throughout. possible 1-2 top part but indistinct
 (Ash horizons 12 cm from base)
 60 cm br scoria fall, dk gr-br pure on fresh surface of HB m ash to clap to 5cm
 Soil
 compact br coll or pfp
 m-ash to mlap
 slight nl. gr. at base
 60 cm
 8 cm distinctive blue-black m ash to mlap fall red dense clasts
 20 cm more pinkish gr to top of ash

Location Tanager Date 9/17/15
 Project / Client Section 702 cont

20 cm f ash scabby - 10% ash?

25 cm gr renger blocky pum
 Fall f ash muddy coating
 large w/! c ash to cl lap

12 more orangey pum
 2 f ash parting
 5 ash on lap
 1 f ash
 5 mud coated pum to m lap
 HB free x'tis to 1 cm

30 cm clean med gr blocky
 Fall c-ash to m lap

1.5 m head to pt
 to f ash chippy, gray

10 cm gr blocky top li fall
 2 m ash soil
 D. Ash charcoal like
 any block S

Location _____ Date _____
 Project / Client _____ Scale _____

diff these 3
 8-9-10-11-12 all likely same eruption
 Sequence

Location Tanager Date 9/18/15
 Project / Client NE flank Takawaka
 near tephra hole w/MP + EG

1576AC 203 From MP
 nice Section near "tephra hole"
 Wide eroded bluff above sea cliffs.
 Erosion but nice weather. Cool.

38 cm modern ash soil

1 cm wispy black ash
 4 cm soil

5 cm bl se fall m gr to fine
 brown

1 cm soil

4.5 cm well old mask bl se fall

6-11 tan f ash base
 br-bl scoria fill m gr
 when thicker, rounded top

4 soil

2 Flap fall, indistinct

7 soil

4 br-black se fall m ash flap

11 cm soil

Location Tanager Date 9/18/15
 Project / Client _____

11 cm soil (cont)

4-5 jet black clean fall renger
 m lap

12.5 gr-br dk br bedded f ash
 2-7 layer

5 massive gray m-f ash

6 Coal to f ash m-ash brown

9-10 rev gr brown pure fall blocky
 Small HB in purple orange line
 soil

1-2 soil

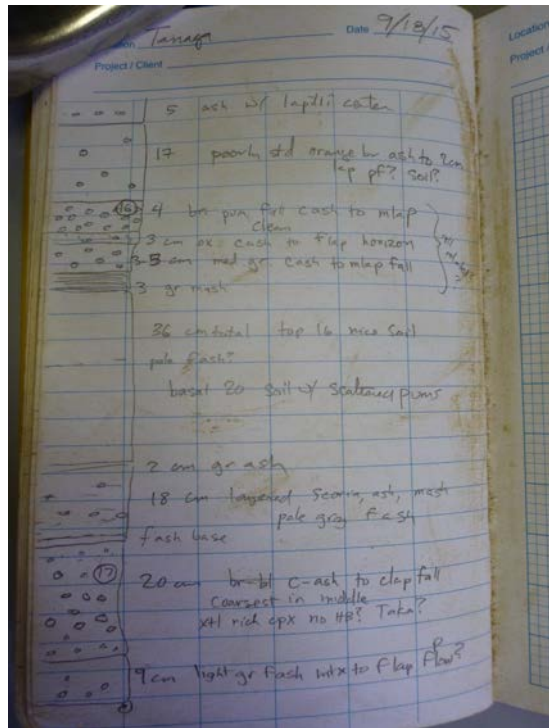
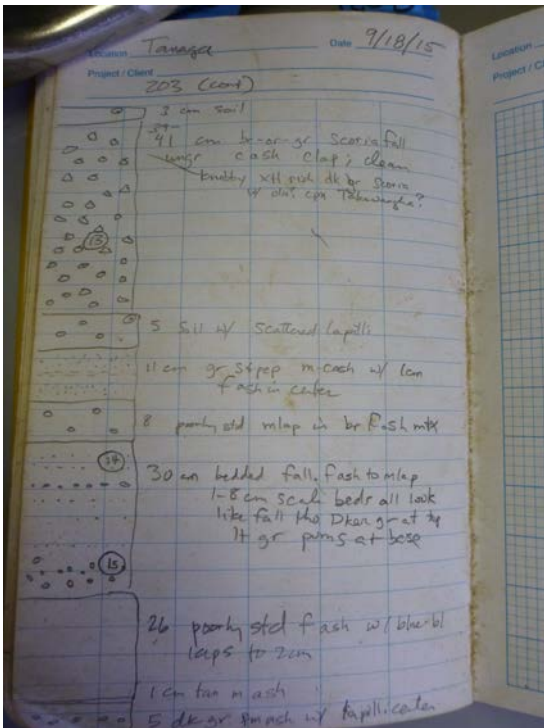
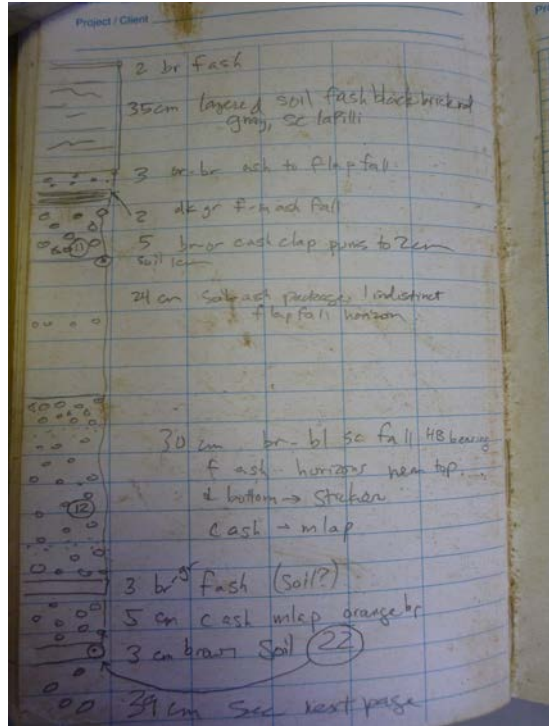
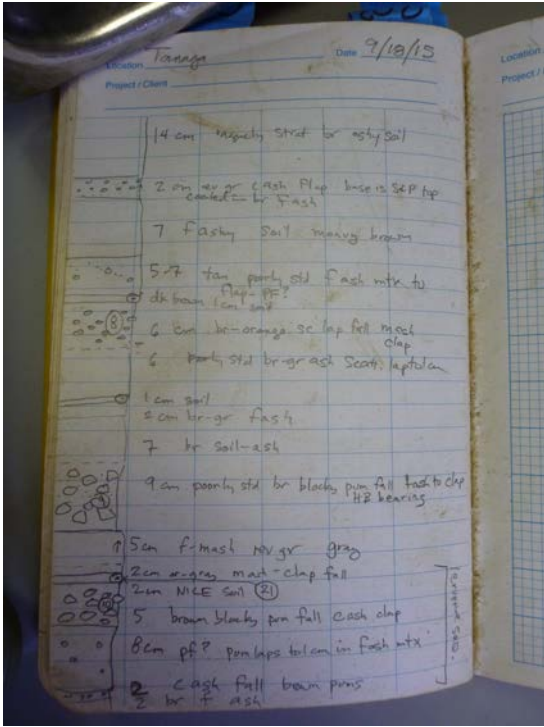
2 cm mud gray ash m-ash / f ash

57 cm tephra Soil Complex + G f-m ash
 + gr or orange indistinct falls in
 brown soil

Grassy

3 cm br-br m ash to m lap fall 14.5 cm
 fresh surface

14 soil 14 m PJ



Location Tanaga Date 9/18/15
 Project / Client 203 cont

9 cm lt. gray pf?
 23 (circled) nice one!

26 tephras soil complex br-gr
 24 falls inc. one flap
 diffuse

24 ash to flap orange alt fall
 20 cm like 26 above

7 cm gray orange hum-gr fall base
 cont'd in flash pumgr

9 stratified flash to ash

16 cm br-gr pumfall normgr
 cash m lap oxidized base

4 cm mcash like above but not ex

2 cm soil (24)
 1 cm tan cash
 2 cm soil

Location Tanaga Date 9/18/15
 Project / Client

1566MC204 292 m
 51.80899 177.95767

South of Takawangha BEAUTIFUL
 wide gully w/ easy + numerous
 tephros in view of Takawangha. Lovely.

Location Tanaga Date 9/18/15
 Project / Client Sen 201 cont

40 cm medium veg + soil

2 cm W m-fash
 8 Soil
 2 mf blank ash
 3 wt-br mcash
 14 Soil

15 cm br-gr-or mash to flap
 brown pumgr

1 cm broken base
 8 ash to flash gray 2 massive at base
 upper part

17 reg-gr blacky fall fash cont'd
 at top cash clap

.5 pale buff vfa
 9 vfa, move to buff @ base
 2 flap orange fall
 21 soil-tephro comp 1 tan mash
 2/3 down

Location _____ Date _____ 81
 Project / Client _____ Scale _____

Vent 1 or 2 in upper base tephros

Location Tanaga Date 7/18/15
 Project / Client Sen 201 cont

21 cont

2 cm ash

1/2 package of 4 cash to mlap falls
 positive soils

soil? ash

42 cm pebbly mat over mineral
 red gr. So fall near top ascm

7 br. orange alt. cash to mlap fall

16 cm sandy soil, scabby, indurated

11 cm lev gr br Sofall

2 cm soil? mtx

7 br. ashly Fall

7 cm br-black cash mlap

Location Tanaga Date 7/18/15
 Project / Client Sen 201 cont

10 br. ashly soil
 to 4gr m ash

10 dk gr. flash

30 broke red oxidized handpan

5 63 cm fall, redish gray, alternating
 beds w/ 5 cm scale flash (vascular)
 to mlap All ore eruption

4 ox cash flap fall

12 brown gr norm gr fall

1 cm Fall

19 cm gr mesh to flap fall

9 cm on buff

Location Tanaga Date 7/18/15
 Project / Client Sen 201 cont

9 cm (cont)

1.5 v flash

4 cm cash to mlap

1.5 buff ash

Soil

25 5-4 textures up to flap

40 orange tan nm gr fall
 mesh mlap
 puns dt Ln

9 cash mlap fall

16 cash - flap fall

3 gr mesh

10 Soil

Location Tanaga Date 7/18/15
 Project / Client Sen 201 cont

10 Soil

orange cash

a 2 m of ash falls
 14+ most < 10cm
 orange gr
 v flash to mlap
 See photo to Cronway
 to log. and
 minimize out of time

Hand Pan

11 10cm cash to mlap br fall

1.5 m ash
 not flint!

12 Well std black
 why not
 previous xtl rich ash
 large bedding cash mostly
 to base

BASE

Location _____ Date _____
 Project / Client _____ Scale _____

See photos of other side of
 Gully for better exposure
 of colorfully layered if ashes
 that are the Changrieh over horizon
 Near top Also seen at Sen
 Zilla near Gustay Bay.

Location Tanaga Date 9/19/15
 Project / Client S. Side Taka
W/ EG + AS

15T&MC205 211 m
 51.85345 178.04228

50-m-long gently exposed bluff
 of tephra just W of Cable Bay Valley.
 top has characteristic dk tephra
 I've come to recognize (Synthetic?)
 w/ Brown "upper knee" tephra
 just beneath. It's only a few cm
 here

35 red mat & mud soil

① 5 black mass fall possible soil Part
 1 cm soil

② 6 cm norm gr fall black at top dk
 at base m-f ash top ash base

25 cm tephra soil complex upto
 5 ashes one cloth-flap

③ 7 mv gr black f-m ash fall

④ 6 norm gr mass m-lap grit fall

Location Tanaga Date 9/19/15
 Project / Client Sen 205

6 norm gr fall (cont)

40 poorly sd brown soil
 scattered clasts to 1cm

⑤ 6 cm pale gr fall norm gr f-m ash flap
 but base has pink coating

28 like 40cm above

⑥ 7 m-ash fall, dk gr
 = soil

4 f-m ash fall black

4 soil dk gr

7 norm gr black sc fall, ash flap max
 sea 15

32 cm soil w/ 2-3 vague ash(?)
 layers

Cont

Location _____ Date _____
 Project / Client _____ Scale _____

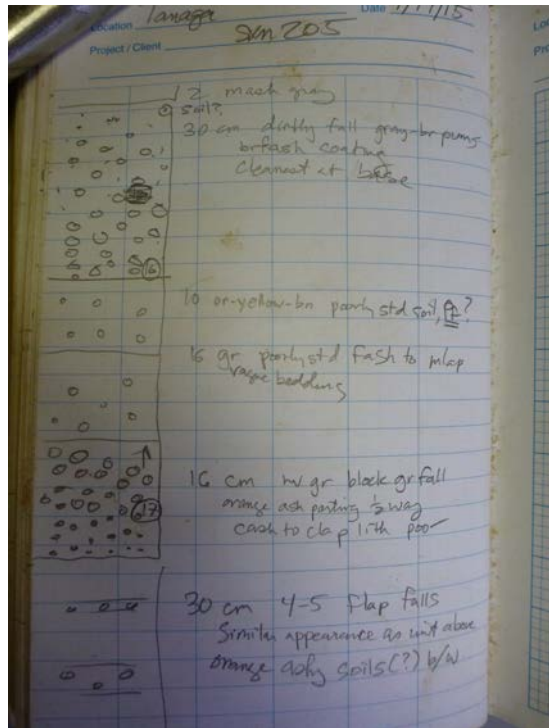
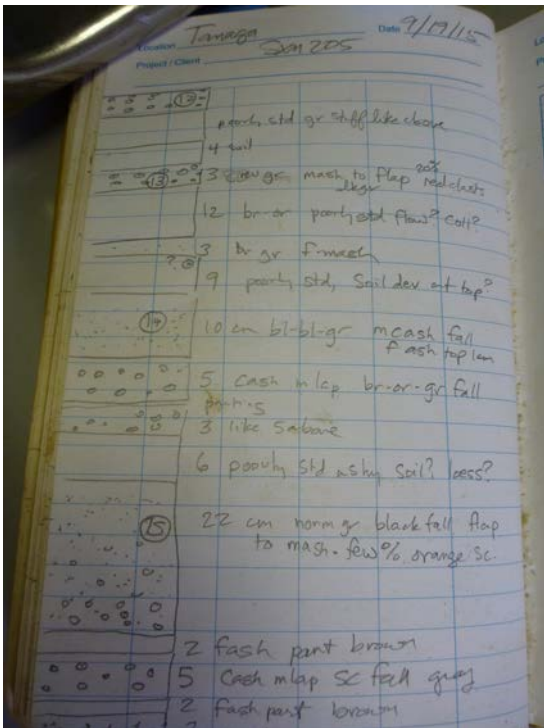
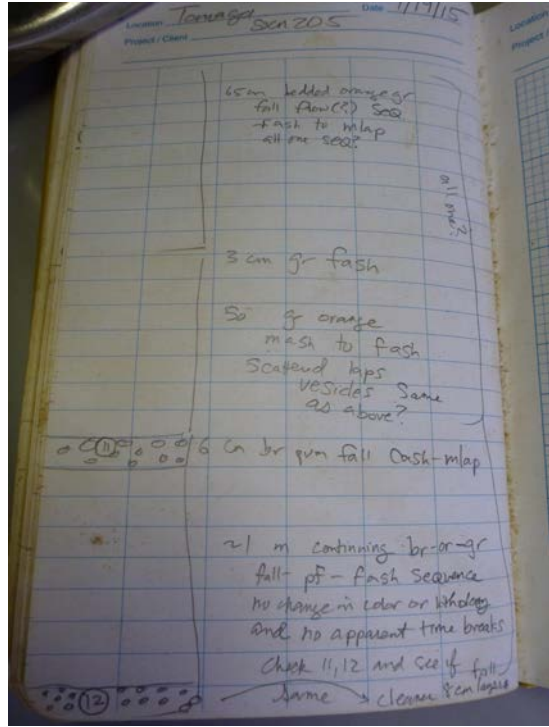
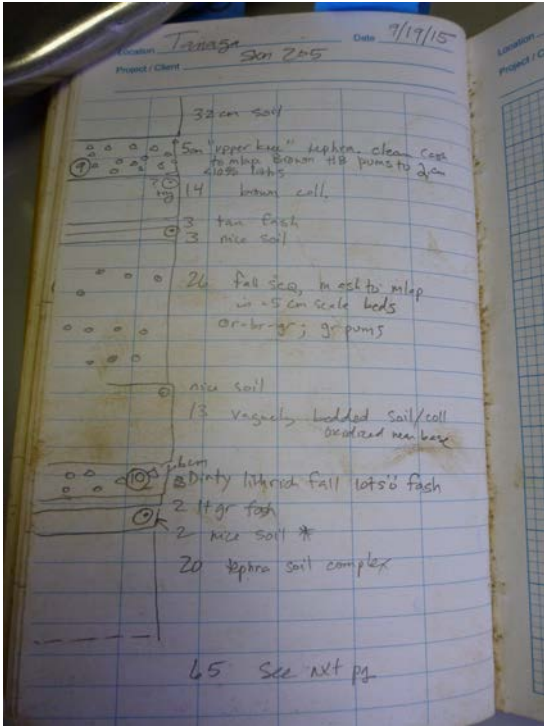
4 cm f-m ash

2 soil

3 ash to flap sc fall

4 soil

7 cm norm grad



Location Tanaga Date 9/19/15
 Project / Client SXM205

30 see prev pg

10 poorly std orange pt?

5 cash-flap br-gr fall

6 cash flap br-gr 1

6 cash flap dk-gr 4

19 vaguely bedded ash-lap

23 br sc fall
 clean w/ poor
 cash flap
 fresh pebbles

(18)

10 layered ves fast lt gr
 marv orange

6 clean dk gr fall to east flap

30 see next page

Location Tanaga Date 9/19/15
 Project / Client SXM205

30 cm bedded or-br
 Scoria falls f-ash to
 m lap

3 cm br fash

(19) 23 well std m-cash dtgr

(20) 22 mid-gr rev-gr cash to
 m lap

(21) Nice soil!

50 cm orange compact
 ash soil w/ some fall
 layer

4 gr fash

5 rev-gr br sc fall to m lap

(22) 7 rev-gr " " " to 2m

Location _____ Date _____
 Project / Client _____ Scale _____

Slope continues but I lost my
 tape measure and it's starting
 too gentle to continue time
 to HOT TUB!

(Found tape measure)

Location Kanaga Date 9/20/15
 Project / Client w/ Mattia

After late night we got up
 and began thinking about Kanaga.
 Fan goes flew over here from HOT
Spring Bay. Katherine & Liz at
 Sen from CW ~~to~~ Set of volcano
 just outside Kanagan Ridge.

Mattia & I at SXM(s) along
 creek due East of Summit. Very
 disappointing! More thin pale ash.
 Some like falls that appear to
 be blocky cinderites. No Scoria. One
 unevenly exposed pumice fall we
 are near CW06. L & K near
 CW21.

We will describe here + maybe
 sample pumices.

Kanaga Date 9/20/15
 Project / Client w/ Matt
 [15KGMCD01] 51.92715 -172.11855
 499'

Creek side Sen 3 km east of
 Summit Maty fine veshas & 14 d flows:

11-11-11
 16 cm mod soil/veg mat
 11 cm Flap-clap pum fall cream pum
 1/2" plast ex lap 7 cm
 18 Soil
 10 cm slightly darker pum fall lap
 4
 22 Soil
 48-70 cm well strat ash
 massive
 55 cont

Project / Client
 55 cm tephra-soil compl
 10-40 cm Pumiceous debris flow pum to 3 cm
 fine soils!
 120 cm T-soil complex
 Some 1-3cm blocky lithic lap falls
 1-3 feet
 35 cm brown pum fall ~10% sand/lithic
 max pum = 10cm
 Matia says HB, pander
 Fish beds w/ blocks
 base covered
 chert #5
 according to Whydown Paper,
 3 might be Intermediate Ash
 Age of 4940 BP

Kanaga Date 9/20/15
 Project / Client
 more to Small ridge W of lake in
 Caldera Ate Incha Beantail
 1282'
 [15KGMCD02] 51.89907 -172.15300
 Ridge topped by brief tephra
 Sen on top of massive orange
 PF w/ small (<1cm) rounded pum
 2 mafic veshas may be Tanager?
 Will Sample.

40+ Loamy soil w/
 scattered pums top
 covered
 1cm fine ash. Black Tanager?
 9 soil thin above, scattered pums
 5 lithic fall to flap coated in gr fac
 bases w/ 1cm fac
 1cm w pumash
 4-6 mesh to flap S+P fall, ex pum
 low gr fac
 20 tephra-soil - 8 ash to flap top
 3 mesh to flap S+P fall cream pum

Project / Client
 3cm S+P
 22 t-soil complex
 1-3cm of ash Co-ig?
 massive several m of
 orange peachy std, small
 pum round
 4- pums
 5 bulk
 6 - lava at base of gully
 that appears to be
 below PF
 Matia walked to top of "dome"
 near lake - really looks like stacked
 Pleistocene lavas. Found pumiceous
 PF on other side

Location Kanaga Date 9/20/15
Project / Client Round Head Summit

15KGM003 From MP

① Pumice from PF
② lava from?

15KGM004 51.90562 -177.0578
1086'

lava from top of Round Head
Weathered, vesicular basalt w/ most
prominent cpx megacrysts small plg
< 2mm, rare 1-2mm olivine. Matrix
Hammering. Strange white inclusions, 2mm
appear shallow? weird can't identify
glass or xline

Location Kanaga Date 9/21/15
Project / Client Lava Flow

15KGM005 51.91258 -177.1723
476'

Lava flow from 1906. 2 px andesite
mossy cover Easy walking, debris?

5-1 Host lava
5-2 QMI see photo
mic, vesicle halo. Coarsely
xline diytaxitic texture.

15KGM006 51.91263 -177.1721
437'

Same flow as 005. Mysterious
white inclusion in and lava block
see photo Inclusion is plg-suit
gabro w/ oliv + veins of either
dk green glass or mafic xts. Bubbles
6-1 host lava
6-2 inclusion

Location Kanaga Date 9/21/15
Project / Client

15KGM007 51.91295 -177.1922
489'

Same 1906 flow. New vesicles
QMI: Not v. xline
7-1 Host lava
7-2 QMI

Another beautiful day!
9/21/15

15KGM008 51.92683 -177.1355
1040 FT

Holocene vegetated lava flow near
young (1906?) flow that Mattie is
sampling. We are looking for "altered"
inclusions and striking out the
1906 flow has hardly any. However
looked closely at this one just to
nothing yet. ITS a H-med gr
dense andesite w/ 2 px + pl.

Location Kanaga Date 9/21/15
Project / Client

Kanaga Thoughts:

① Despite 6 young flows into
honor descriptions that they are
have "abundant" mafic inclusions,
we have had a few hard time finding
them. Two 1906 (?) flows one big
young flow to S, and one I just
sampled. Maybe 6/2 is having
more luck @ "dome"

② Two "1906" flows are comp
different from one another and may
not be from same eruption

③ Crack at Summit from where
jumbales emanate is impressive
and may be site of future edifice
failure

④ Hapthomas paper describes 12 large
walls only 4C but my guess is
that some are the same and that
there are fewer big falls

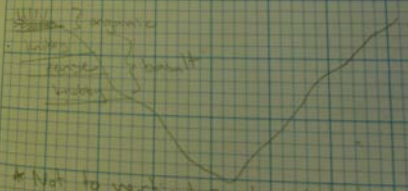
⑤ It seems that at least one of big
falls has HB but young flows don't
big falls from Ad. k? Bobs?

Appendix 8-3: Katherine Sheppard

Location Kiska south (harbor) Date 9/8
 Project / Client _____

2:00 - after lunch
 high ridge above Kiska
 harbor, directly to the south of
 the lagoon
 Sampled capping layer, hard
 mafic ~~rock~~ of variable
 viscosity, play, heratende (?), olivine
 (?). Attempted to collect the hardest
 sections of this with whole rock
 Perhaps could be picked for play?
 Sample 15KKS001
 Way point 51.97776 177.52051
 MC waypoint 456
 elevation 224 ft
 * MC collected similar clast,
 same site
 Sample was "field striped" essentially
 being the weathering rinds of fresh
 material
 Note condensation
 year (S) island (K)
 collector (V)

Location Segula Date _____
 Project / Client _____

Volcanic flow in small gully on
 southern side of Segula Is (see
 topographic map)
 Looking for features under organic
 capping mat. Several promising
 areas layers showing too high on the
 side of the gully to reach safely
 while searching for features. We found
 a basalt (lava flow?) ~~crossing~~
 gully
 Basalt flow 2 layers
 upper: ~~very~~ dense ~~containing~~
 layer, ~1/2 feet thick, overlies
 and underlain by more vesicular
 knobby layers

 * Not to vertical scale. Underlying
 unexposed layer much thicker
 compared to basalt

Location Segula Date 9/8
 Project / Client _____

This basalt crosses the gully only
 appearing for ~ 200 ft along the
 length on the east bank. Not visible
 on the west bank.
 Both dense layer and knobby layer
 sampled in bulk by Liz (hammer)
 Basalt not underlain by ~20 feet
 of various non-lithic, reworked
 materials
 Dense basalt flow layer very dense,
 extremely hard to break up w/
 hammer
 * note: term "basalt" above should probably
 be called andesite
 - upon further inspection, it looks
 4 distinct horizons could be sampled
 15SGEC001-1: lowest exposed layer
 15SGEC001-2: middle, denser more
 coherent layer
 15SGEC001-3: upper incised knobby
 layer
 15SGEC001-4: top, protruding, the top
 (~2ft) layer

Location Segula Date 9/8
 Project / Client _____

Beneath lava flow, 1" contact w/
 black soil (?) 2" thick
 Beneath this is a reddish horizon to
 orange debris layer ~6-8" thick
 Beneath this is coarse debris w/
 some clasts up to 3cm
 All three layers were sampled
 all
 The dense layer is ~~not~~ of coarse
 on hammer equipment
 orange layer is mostly rounded
 clasts
 These are samples
 15SGEC001-5 - ~~unit~~
 15SGEC001-6 - ~~unit~~
 15SGEC001-7 - ~~unit~~
 * the picture taken w/ geophotogrammetry
 had salt issue
 location notes: 100 m south of
 volcanic flow on south side of Segula
 in major main gully east bank of
 gully

8 Location Segula Date 9/8
 Project / Client _____

Traversed downstream along the eastern rim of the gully, about 300 ft. Attempted to trench down a couple (2-3 ft) to the tephra horizon that we can see in the side of the gully, but cannot reach.
 sample: 15SGEC002-1

Traversed down gully another ~300 feet, to tephra section ~10 feet up the gully side. Very obvious black double layer of tephra.
 Met w/ Michelle. Liz collected. I took notes and labeled bags.

9 Location Segula Date 9/8
 Project / Client _____ Scale _____

Western gully side cross-section

gully bottom

15SGEC003-1: bottom tephra layer

bottom layer has larger clasts and some orange clasts
 no layer medium to coarse lapilli, more uniformly black

10 Location Segula Date 9/8
 Project / Client _____

15SGEC003-2 from top layer of gully stratigraphy

15SGEC003-3: From top layer of gully tephra

*NOTE: all layers refer to either top or bottom tephra layer, not the other layer in the complete stratigraphy

15SGEC003-4: fine ash layer between two tephra layers

15SGEC003-5 bottom layer of tephra, a some clasts visible to the eye!

15SGEC003-6 on thick, fine grey medium to coarse lapilli

15SGEC003-7 from top layer but some layer actually covered by ash

11 Location Segula Date 9/8
 Project / Client _____ Scale _____

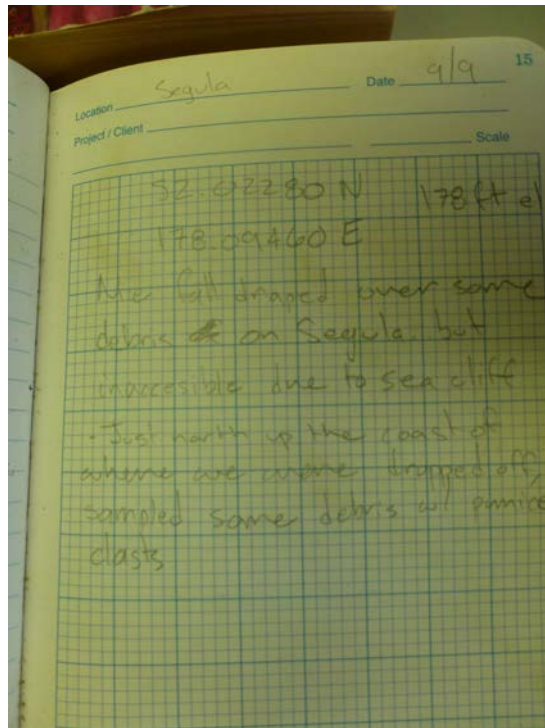
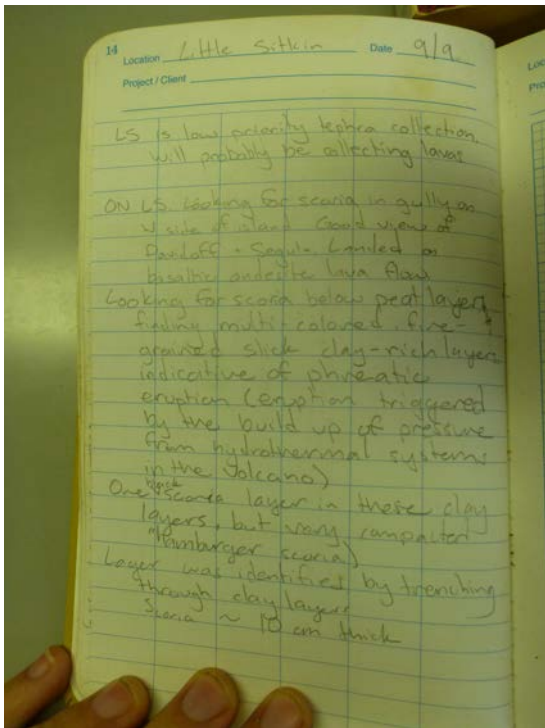
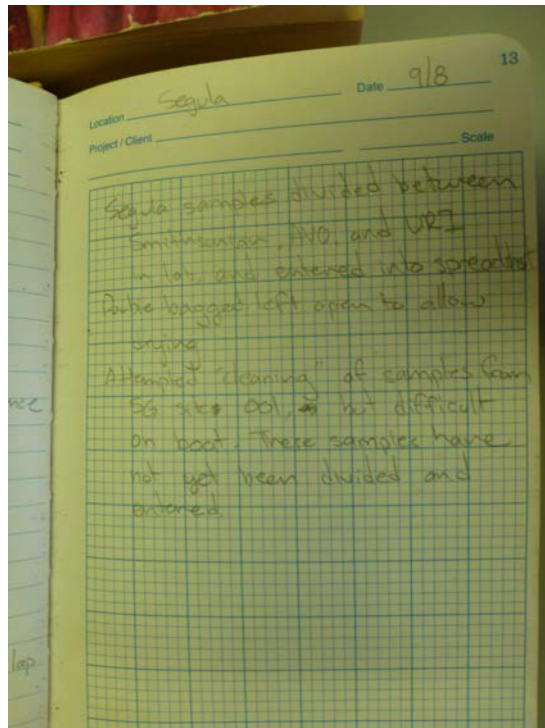
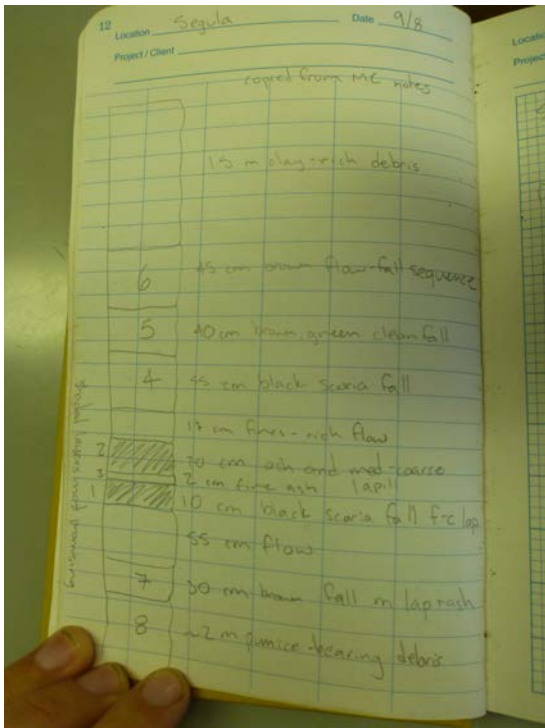
15SGEC003-8: same as 7

* Note: the sample names up until this point and the bag samples have been relabeled with bags from the sides

- Samples were relabeled so the bags from the same unit had the same sample number

- Strat column on next page shows which sample number corresponds to which unit

- Strat column probably shows several different eruption sequences



16 Location Segula Date 9/9
 Project / Client _____

5
 4
 3
 2
 1

5 cm orange-brown siltstone
 2 cm dark brown silt
 5 cm orange-brown siltstone
 2 cm dark brown silt
 2 cm light brown clay
 2 cm clay w/ orange spots where nodules were weathering out
 debris w/ pyroclastic material, dark sample, piece of orange siltstone, ash clasts up to 6 cm

156566004 - etc
 175.91889 178.09703

18 Location Buldar Date 9/10
 Project / Client _____

Kiltiwake pond, south side site 001

Section along the edge of pond includes clasts sitting on top of debris w/ dense layer up to 15 cm. Will probably sample these clasts also.

Slava plate up to 8 cm
 Thin 15BLEC001-1
 Slava layer overall is 20-30 cm thick

Under weather the basin is - 6 ft or so. 1/3 of larger clast due to proximity to come, likely that the larger clasts could have been transported to site from vent.

Three bags collected for bulk are high high graded

19 Location Buldar Date 9/10
 Project / Client _____ Scale _____

5
 4
 3
 2
 1

5 cm fine silt to clay
 2 cm fine silt to clay
 2 cm fine silt to clay
 2 cm fine silt to clay
 2 cm fine silt to clay

mixed debris w/ cobbles & sand slava

175.91889 178.09703

20 Location Buldar Date 9/10
 Project / Client _____

Sample taken on ridge north of pond, where basalts (basaltic andesites?) are in place

15BLEC002-1
 1024 A-1
 5236168
 175.91847

Down in main drainage on southern side of ridge.

Surface grab of medium to coarse silt
 15BLEC003-1
 1024 A-1
 5236133
 175.901621

P_g has about 2 ft, just debris

22 Location Buldir Date 9/10
 Project / Client _____

Steep slope on side of same gully, stripped of greenery ~ 4 m thick unit of poorly sorted black volcaniclastic outcropping for a long distance down the gully

Sampling coarse ash to coarse lapilli.

Unit has covering of reddish scoria material about 1 m thick probably weathering. This layer was scraped off before sampling ISBLEC004-1

ISBLEC004-2 is composed of the covering layer.
 SE 56788
 175 91250

~70 feet down stream is a large ~6m fire-mud grey ash unit
ISBLEC004-3

24 Location Buldir Date 9/10
 Project / Client _____

Lunch

Heli move to westward end of gully. High gully site exposes layer of poorly sorted debris underlain by a proximal scoria fall (?) ~ 3m thick bombs all the way to fine lapilli

9/10 Location Buldir Date 9/10 25
 Project / Client _____ Scale _____

low lying sorted scoria debris

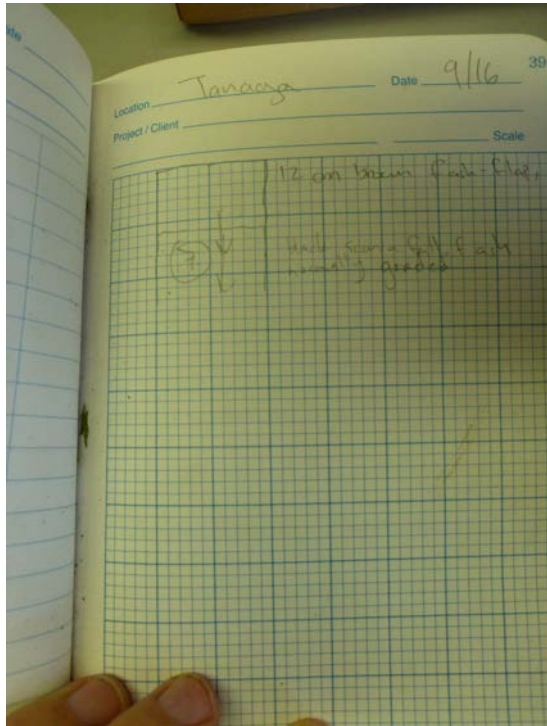
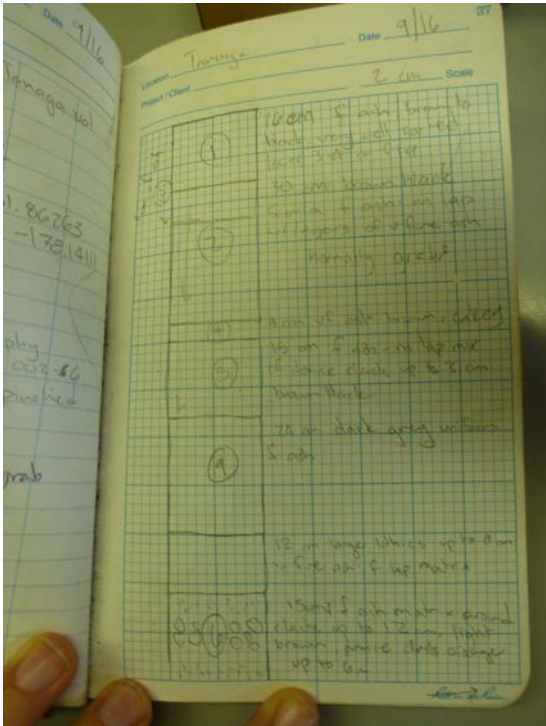
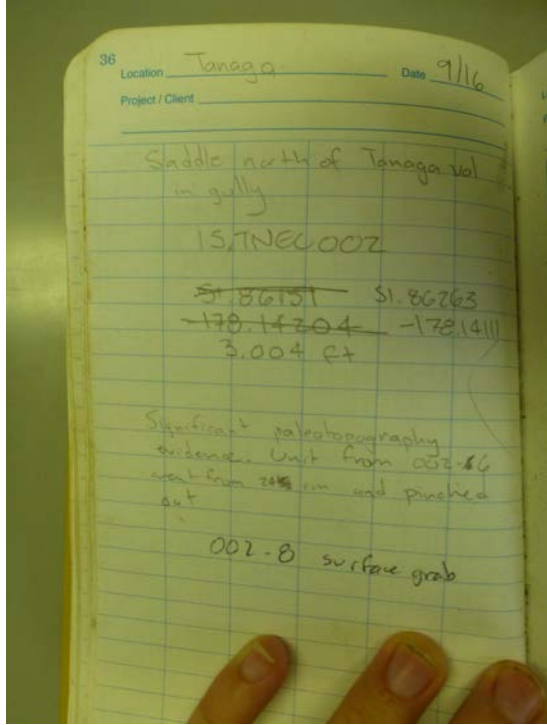
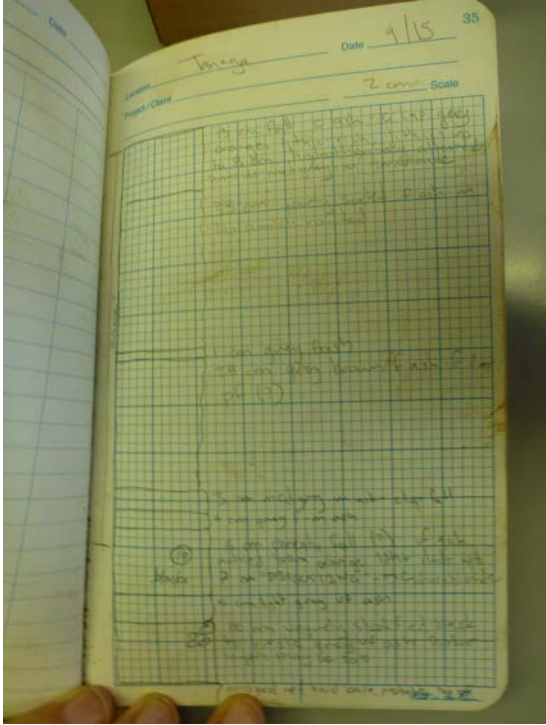
reddish scoria bombs to E lap

fine ash, 15cm zone
 soil horizon (?) 1cm
 debris w/ large clasts
 down

ISBLEC004-4

26 Location Seyla Date 9/11
 Project / Client _____

- ① ~10m scoriaceous zone - ISBLEC001 high grade sample of purple three bags
- ② ~8m debris-covered slope, unrate to dig. Surface grad of m-f lap, 1 bag
- ③ ~6m lava flow, sampled from middle, one bag
- ④ ~4m red scoria, high grade sample b/c unsafe to get to bulk



40 Location Tanaga Date 9/16
 Project / Client _____

Saga Saddle
 15GREC003-

moon-like scoria fields,
 very windy
 scattered bombs up to
 3 m

003-1 fine to med
 proximal fall
 black, iridescent

Also med scoria around, vague
 layered

003-2 med - c lap 20 cm

003-3 ash - lg bombs

51.87205
 -178.18774
 3175A

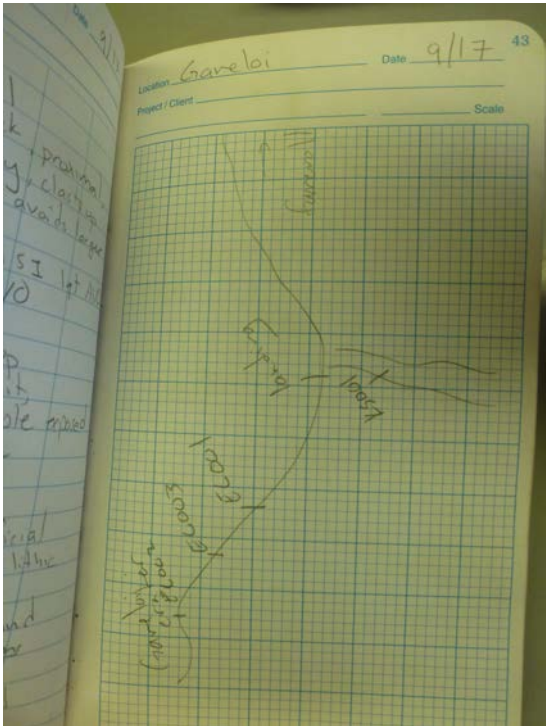
42 Location Gareloi Date 9/17
 Project / Client _____

Summit
 15GREC001-1
 brown to black proximal,
 f-c lap, glassy, clast up
 to 15 cm, sample avoids larger
 clasts

1 gal WEI 1 gal SI 1 gal AVO
 high graded for AVO

EC + VS split up
 EC goes to summit
 VS goes to sample exposed
 gully by landing site

Gully shows brown surficial
 crust w/ ice + large lithic
 clasts 71 ft in place
 under this is brown med
 black scoria. Brown seems
 to be surficial. Identical
 to sample site EC01 but
 no large (15cm) clasts
 15GREC001-1



44 Location Gareloi Date 9/17
 Project / Client _____

15GREC002 is ash
 from top crater. Ash
 away green

15GREC003 is surface
 grab on way down crater

Moved to north side, close
 to MC 26. Found
 tephra section in gully
 15GREC004-
 51.80430
 -178.87268
 1641 ft el

Location Gareloi Date 9/17 45
 Project / Client _____ 2 cm Scale

15GRECO01

2.4 cm scoria fall, mostly
 black. f.c. top black
 ① surface grading up to
 ② medium, medium scoria
 ③ 5 cm orange brown fall of scoria
 ④ 1 cm dark scoria f.c. top
 ⑤ 1 cm orange brown fall of scoria
 ⑥ 1 cm dark scoria f.c. top
 ⑦ 1 cm orange brown fall of scoria

15 cm C. Ash. 6.5g

① → 1 cm with white ash
 ② → 1 cm with white ash on top grading
 down to black

Location Gareloi Date 9/17 46
 Project / Client _____

15CO05 - f.c. of pyric
 lava from near 004
 Cleared in field
 51.80395
 -178.82463
 1535 ft

15CO06 was EC above

15CO02 was a lava

15CO07, a few hundred feet
 down the

Location Gareloi Date 9/18 48
 Project / Client _____

SE of Gareloi island,
 near MC 22. Beautiful day.
 Hard to find scoria at this low
 elevation that isn't alluvial.
 Found a small (~2 m) section
 in gully w/ mostly ash layers

51.76518
 -178.77005 15GRECO07-1 -178.77788
 924 ft

No good scoria. Collected some
 ashes for S.I. and soils for AVO

15GRECO08 ~~was~~ is ~700 ft
 up beam

51.76552
 -178.77138
 982 ft. el

Location Gareloi Date 9/18 49
 Project / Client _____ 2 cm Scale

15GRECO08

1.5 cm black f.c. top
 2.5 cm black f.c. top
 2.5 cm black f.c. top
 2.5 cm black f.c. top
 2.5 cm black f.c. top

2.4 cm tephal soil / ramp ex.
 Rock boulders, 1 size 10 cm,
 other boulders

① 1 cm orange brown fall of scoria
 ② 1 cm orange brown fall of scoria
 ③ 1 cm orange brown fall of scoria
 ④ 1 cm orange brown fall of scoria

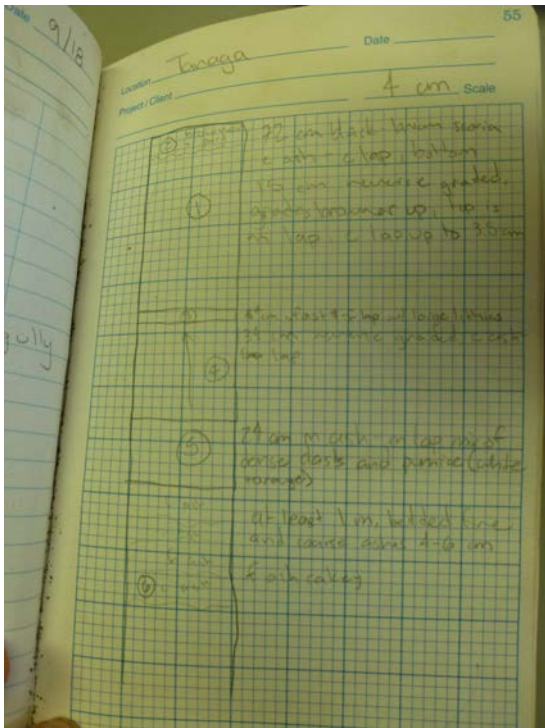
15GRECO08

50 Location Garelo Date 9/18
 Project / Client _____
 West side
 15GRECO09
 51.78347
 -178.86035
 515 ftel

51 Location Garelo Date 9/18
 Project / Client _____ Scale _____
 veg unit
 15 m each dip
 100% fine grained tephra
 soil complex in the field
 20 m
 20 m each - each
 100% of tephra
 soil complex in the field

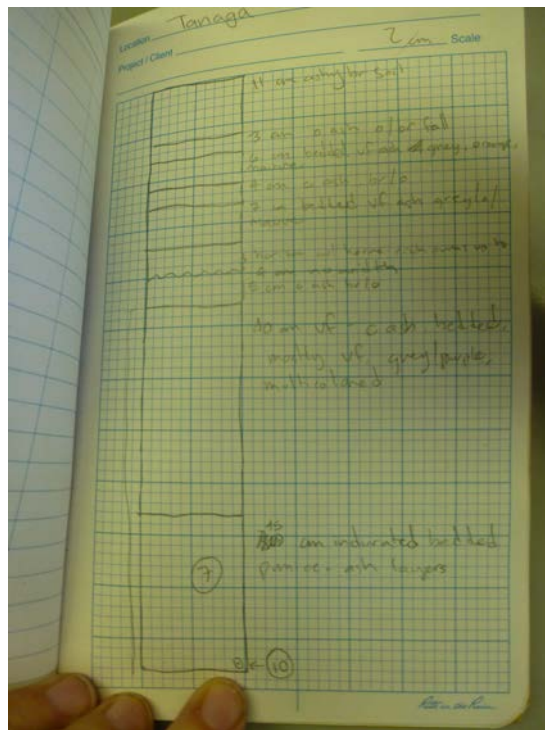
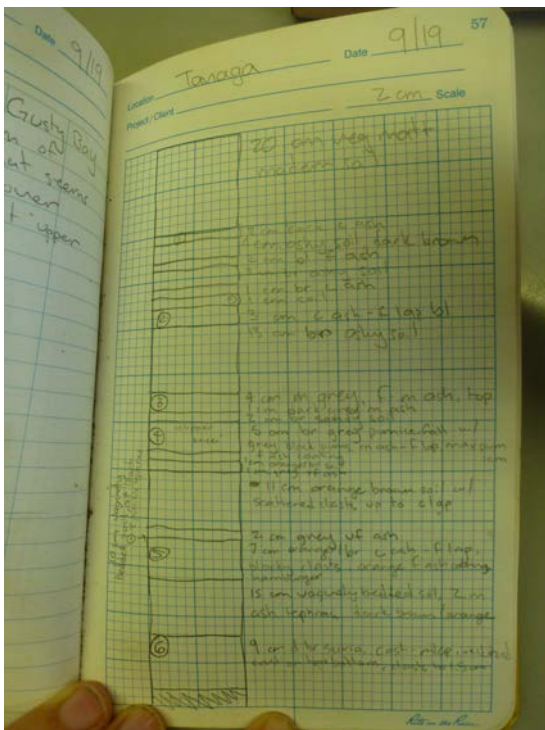
53 Location Garelo Date 9/18
 Project / Client _____ Scale _____
 1.66 m
 tephra soil complex
 100% of tephra
 soil complex in the field
 100% of tephra
 soil complex in the field

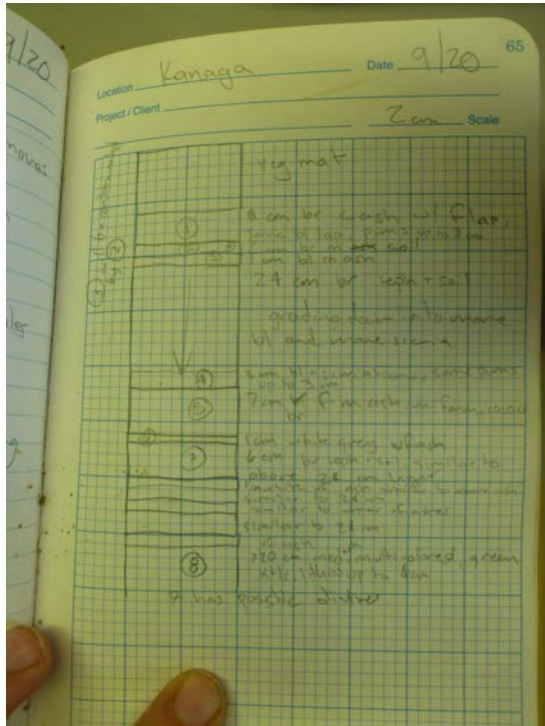
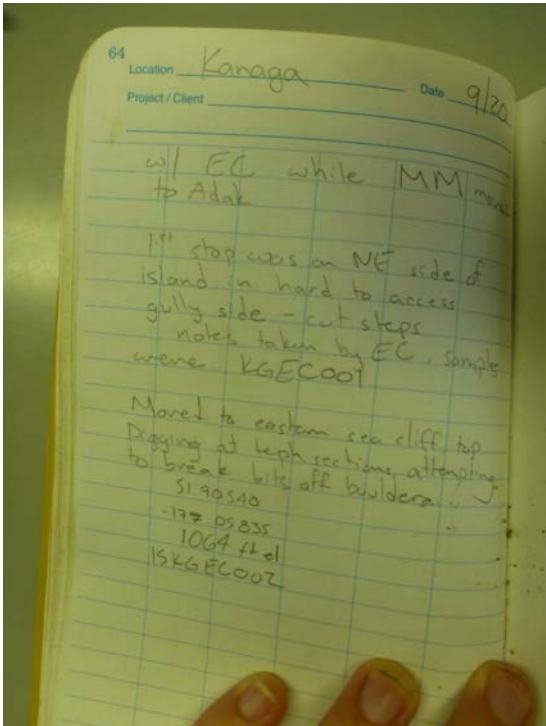
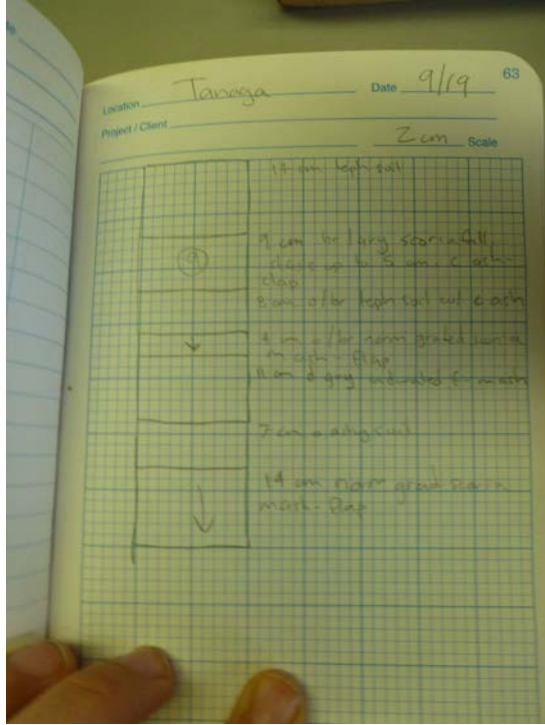
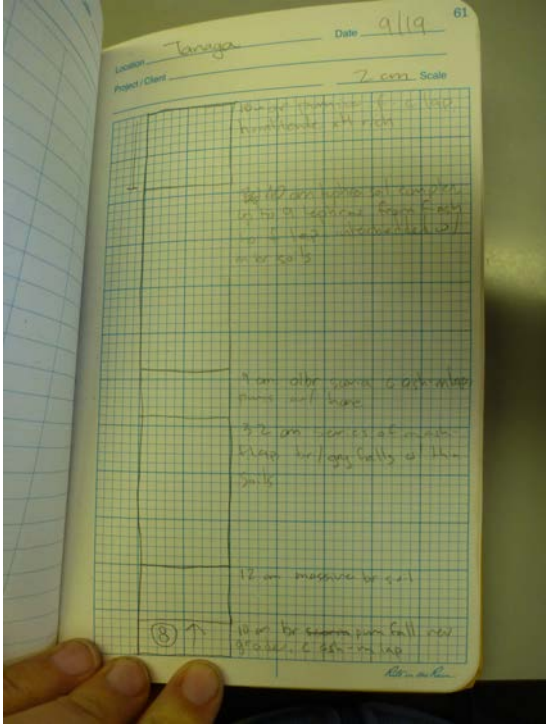
54 Location Tanaga Date 9/18
 Project / Client _____ Scale _____
 51.90068
 -178.18262
 828 ftel
 NW side Tanaga
 15GRECO04
 Black tephra section in gully
 on SW side



56 Location Tanaga Date 9/19
 Project / Client _____

site w/ MC at Gusty Bay
 looking at top 2 m of
 tephra section that seems
 to be consistent over
 island, ending at "upper
 knee tephra"
 babbling brook!





66 Location Kanaga Date 9/20
 Project / Client _____

Stopped on island in caldera
 lake, but could only sample
 a top layer of pumice - 1.4 hrs
 15KGDL001 51.90776 -177.11130
 Moved to spiciff on east
 side of island, easier to
 access. Top section shows
 a scar - ash - soil - mud and
 debris
 15KGKS001
 51.83485
 -177.11036
 239ft el

67 Location Kanaga Kanaga Date 9/20
 Project / Client _____ Scale _____

Caldera
 sample
 in lake
 11/20
 East
 and

1. 10m - 15m
 2. 15m - 20m
 3. 20m - 25m
 4. 25m - 30m
 5. 30m - 35m
 6. 35m - 40m
 7. 40m - 45m
 8. 45m - 50m
 9. 50m - 55m
 10. 55m - 60m
 11. 60m - 65m
 12. 65m - 70m
 13. 70m - 75m
 14. 75m - 80m
 15. 80m - 85m
 16. 85m - 90m
 17. 90m - 95m
 18. 95m - 100m
 19. 100m - 105m
 20. 105m - 110m
 21. 110m - 115m
 22. 115m - 120m
 23. 120m - 125m
 24. 125m - 130m
 25. 130m - 135m
 26. 135m - 140m
 27. 140m - 145m
 28. 145m - 150m
 29. 150m - 155m
 30. 155m - 160m
 31. 160m - 165m
 32. 165m - 170m
 33. 170m - 175m
 34. 175m - 180m
 35. 180m - 185m
 36. 185m - 190m
 37. 190m - 195m
 38. 195m - 200m
 39. 200m - 205m
 40. 205m - 210m
 41. 210m - 215m
 42. 215m - 220m
 43. 220m - 225m
 44. 225m - 230m
 45. 230m - 235m
 46. 235m - 240m
 47. 240m - 245m
 48. 245m - 250m
 49. 250m - 255m
 50. 255m - 260m
 51. 260m - 265m
 52. 265m - 270m
 53. 270m - 275m
 54. 275m - 280m
 55. 280m - 285m
 56. 285m - 290m
 57. 290m - 295m
 58. 295m - 300m
 59. 300m - 305m
 60. 305m - 310m
 61. 310m - 315m
 62. 315m - 320m
 63. 320m - 325m
 64. 325m - 330m
 65. 330m - 335m
 66. 335m - 340m
 67. 340m - 345m
 68. 345m - 350m
 69. 350m - 355m
 70. 355m - 360m
 71. 360m - 365m
 72. 365m - 370m
 73. 370m - 375m
 74. 375m - 380m
 75. 380m - 385m
 76. 385m - 390m
 77. 390m - 395m
 78. 395m - 400m
 79. 400m - 405m
 80. 405m - 410m
 81. 410m - 415m
 82. 415m - 420m
 83. 420m - 425m
 84. 425m - 430m
 85. 430m - 435m
 86. 435m - 440m
 87. 440m - 445m
 88. 445m - 450m
 89. 450m - 455m
 90. 455m - 460m
 91. 460m - 465m
 92. 465m - 470m
 93. 470m - 475m
 94. 475m - 480m
 95. 480m - 485m
 96. 485m - 490m
 97. 490m - 495m
 98. 495m - 500m
 99. 500m - 505m
 100. 505m - 510m
 101. 510m - 515m
 102. 515m - 520m
 103. 520m - 525m
 104. 525m - 530m
 105. 530m - 535m
 106. 535m - 540m
 107. 540m - 545m
 108. 545m - 550m
 109. 550m - 555m
 110. 555m - 560m
 111. 560m - 565m
 112. 565m - 570m
 113. 570m - 575m
 114. 575m - 580m
 115. 580m - 585m
 116. 585m - 590m
 117. 590m - 595m
 118. 595m - 600m
 119. 600m - 605m
 120. 605m - 610m
 121. 610m - 615m
 122. 615m - 620m
 123. 620m - 625m
 124. 625m - 630m
 125. 630m - 635m
 126. 635m - 640m
 127. 640m - 645m
 128. 645m - 650m
 129. 650m - 655m
 130. 655m - 660m
 131. 660m - 665m
 132. 665m - 670m
 133. 670m - 675m
 134. 675m - 680m
 135. 680m - 685m
 136. 685m - 690m
 137. 690m - 695m
 138. 695m - 700m
 139. 700m - 705m
 140. 705m - 710m
 141. 710m - 715m
 142. 715m - 720m
 143. 720m - 725m
 144. 725m - 730m
 145. 730m - 735m
 146. 735m - 740m
 147. 740m - 745m
 148. 745m - 750m
 149. 750m - 755m
 150. 755m - 760m
 151. 760m - 765m
 152. 765m - 770m
 153. 770m - 775m
 154. 775m - 780m
 155. 780m - 785m
 156. 785m - 790m
 157. 790m - 795m
 158. 795m - 800m
 159. 800m - 805m
 160. 805m - 810m
 161. 810m - 815m
 162. 815m - 820m
 163. 820m - 825m
 164. 825m - 830m
 165. 830m - 835m
 166. 835m - 840m
 167. 840m - 845m
 168. 845m - 850m
 169. 850m - 855m
 170. 855m - 860m
 171. 860m - 865m
 172. 865m - 870m
 173. 870m - 875m
 174. 875m - 880m
 175. 880m - 885m
 176. 885m - 890m
 177. 890m - 895m
 178. 895m - 900m
 179. 900m - 905m
 180. 905m - 910m
 181. 910m - 915m
 182. 915m - 920m
 183. 920m - 925m
 184. 925m - 930m
 185. 930m - 935m
 186. 935m - 940m
 187. 940m - 945m
 188. 945m - 950m
 189. 950m - 955m
 190. 955m - 960m
 191. 960m - 965m
 192. 965m - 970m
 193. 970m - 975m
 194. 975m - 980m
 195. 980m - 985m
 196. 985m - 990m
 197. 990m - 995m
 198. 995m - 1000m
 199. 1000m - 1005m
 200. 1005m - 1010m
 201. 1010m - 1015m
 202. 1015m - 1020m
 203. 1020m - 1025m
 204. 1025m - 1030m
 205. 1030m - 1035m
 206. 1035m - 1040m
 207. 1040m - 1045m
 208. 1045m - 1050m
 209. 1050m - 1055m
 210. 1055m - 1060m
 211. 1060m - 1065m
 212. 1065m - 1070m
 213. 1070m - 1075m
 214. 1075m - 1080m
 215. 1080m - 1085m
 216. 1085m - 1090m
 217. 1090m - 1095m
 218. 1095m - 1100m
 219. 1100m - 1105m
 220. 1105m - 1110m
 221. 1110m - 1115m
 222. 1115m - 1120m
 223. 1120m - 1125m
 224. 1125m - 1130m
 225. 1130m - 1135m
 226. 1135m - 1140m
 227. 1140m - 1145m
 228. 1145m - 1150m
 229. 1150m - 1155m
 230. 1155m - 1160m
 231. 1160m - 1165m
 232. 1165m - 1170m
 233. 1170m - 1175m
 234. 1175m - 1180m
 235. 1180m - 1185m
 236. 1185m - 1190m
 237. 1190m - 1195m
 238. 1195m - 1200m
 239. 1200m - 1205m
 240. 1205m - 1210m
 241. 1210m - 1215m
 242. 1215m - 1220m
 243. 1220m - 1225m
 244. 1225m - 1230m
 245. 1230m - 1235m
 246. 1235m - 1240m
 247. 1240m - 1245m
 248. 1245m - 1250m
 249. 1250m - 1255m
 250. 1255m - 1260m
 251. 1260m - 1265m
 252. 1265m - 1270m
 253. 1270m - 1275m
 254. 1275m - 1280m
 255. 1280m - 1285m
 256. 1285m - 1290m
 257. 1290m - 1295m
 258. 1295m - 1300m
 259. 1300m - 1305m
 260. 1305m - 1310m
 261. 1310m - 1315m
 262. 1315m - 1320m
 263. 1320m - 1325m
 264. 1325m - 1330m
 265. 1330m - 1335m
 266. 1335m - 1340m
 267. 1340m - 1345m
 268. 1345m - 1350m
 269. 1350m - 1355m
 270. 1355m - 1360m
 271. 1360m - 1365m
 272. 1365m - 1370m
 273. 1370m - 1375m
 274. 1375m - 1380m
 275. 1380m - 1385m
 276. 1385m - 1390m
 277. 1390m - 1395m
 278. 1395m - 1400m
 279. 1400m - 1405m
 280. 1405m - 1410m
 281. 1410m - 1415m
 282. 1415m - 1420m
 283. 1420m - 1425m
 284. 1425m - 1430m
 285. 1430m - 1435m
 286. 1435m - 1440m
 287. 1440m - 1445m
 288. 1445m - 1450m
 289. 1450m - 1455m
 290. 1455m - 1460m
 291. 1460m - 1465m
 292. 1465m - 1470m
 293. 1470m - 1475m
 294. 1475m - 1480m
 295. 1480m - 1485m
 296. 1485m - 1490m
 297. 1490m - 1495m
 298. 1495m - 1500m
 299. 1500m - 1505m
 300. 1505m - 1510m
 301. 1510m - 1515m
 302. 1515m - 1520m
 303. 1520m - 1525m
 304. 1525m - 1530m
 305. 1530m - 1535m
 306. 1535m - 1540m
 307. 1540m - 1545m
 308. 1545m - 1550m
 309. 1550m - 1555m
 310. 1555m - 1560m
 311. 1560m - 1565m
 312. 1565m - 1570m
 313. 1570m - 1575m
 314. 1575m - 1580m
 315. 1580m - 1585m
 316. 1585m - 1590m
 317. 1590m - 1595m
 318. 1595m - 1600m
 319. 1600m - 1605m
 320. 1605m - 1610m
 321. 1610m - 1615m
 322. 1615m - 1620m
 323. 1620m - 1625m
 324. 1625m - 1630m
 325. 1630m - 1635m
 326. 1635m - 1640m
 327. 1640m - 1645m
 328. 1645m - 1650m
 329. 1650m - 1655m
 330. 1655m - 1660m
 331. 1660m - 1665m
 332. 1665m - 1670m
 333. 1670m - 1675m
 334. 1675m - 1680m
 335. 1680m - 1685m
 336. 1685m - 1690m
 337. 1690m - 1695m
 338. 1695m - 1700m
 339. 1700m - 1705m
 340. 1705m - 1710m
 341. 1710m - 1715m
 342. 1715m - 1720m
 343. 1720m - 1725m
 344. 1725m - 1730m
 345. 1730m - 1735m
 346. 1735m - 1740m
 347. 1740m - 1745m
 348. 1745m - 1750m
 349. 1750m - 1755m
 350. 1755m - 1760m
 351. 1760m - 1765m
 352. 1765m - 1770m
 353. 1770m - 1775m
 354. 1775m - 1780m
 355. 1780m - 1785m
 356. 1785m - 1790m
 357. 1790m - 1795m
 358. 1795m - 1800m
 359. 1800m - 1805m
 360. 1805m - 1810m
 361. 1810m - 1815m
 362. 1815m - 1820m
 363. 1820m - 1825m
 364. 1825m - 1830m
 365. 1830m - 1835m
 366. 1835m - 1840m
 367. 1840m - 1845m
 368. 1845m - 1850m
 369. 1850m - 1855m
 370. 1855m - 1860m
 371. 1860m - 1865m
 372. 1865m - 1870m
 373. 1870m - 1875m
 374. 1875m - 1880m
 375. 1880m - 1885m
 376. 1885m - 1890m
 377. 1890m - 1895m
 378. 1895m - 1900m
 379. 1900m - 1905m
 380. 1905m - 1910m
 381. 1910m - 1915m
 382. 1915m - 1920m
 383. 1920m - 1925m
 384. 1925m - 1930m
 385. 1930m - 1935m
 386. 1935m - 1940m
 387. 1940m - 1945m
 388. 1945m - 1950m
 389. 1950m - 1955m
 390. 1955m - 1960m
 391. 1960m - 1965m
 392. 1965m - 1970m
 393. 1970m - 1975m
 394. 1975m - 1980m
 395. 1980m - 1985m
 396. 1985m - 1990m
 397. 1990m - 1995m
 398. 1995m - 2000m
 399. 2000m - 2005m
 400. 2005m - 2010m
 401. 2010m - 2015m
 402. 2015m - 2020m
 403. 2020m - 2025m
 404. 2025m - 2030m
 405. 2030m - 2035m
 406. 2035m - 2040m
 407. 2040m - 2045m
 408. 2045m - 2050m
 409. 2050m - 2055m
 410. 2055m - 2060m
 411. 2060m - 2065m
 412. 2065m - 2070m
 413. 2070m - 2075m
 414. 2075m - 2080m
 415. 2080m - 2085m
 416. 2085m - 2090m
 417. 2090m - 2095m
 418. 2095m - 2100m
 419. 2100m - 2105m
 420. 2105m - 2110m
 421. 2110m - 2115m
 422. 2115m - 2120m
 423. 2120m - 2125m
 424. 2125m - 2130m
 425. 2130m - 2135m
 426. 2135m - 2140m
 427. 2140m - 2145m
 428. 2145m - 2150m
 429. 2150m - 2155m
 430. 2155m - 2160m
 431. 2160m - 2165m
 432. 2165m - 2170m
 433. 2170m - 2175m
 434. 2175m - 2180m
 435. 2180m - 2185m
 436. 2185m - 2190m
 437. 2190m - 2195m
 438. 2195m - 2200m
 439. 2200m - 2205m
 440. 2205m - 2210m
 441. 2210m - 2215m
 442. 2215m - 2220m
 443. 2220m - 2225m
 444. 2225m - 2230m
 445. 2230m - 2235m
 446. 2235m - 2240m
 447. 2240m - 2245m
 448. 2245m - 2250m
 449. 2250m - 2255m
 450. 2255m - 2260m
 451. 2260m - 2265m
 452. 2265m - 2270m
 453. 2270m - 2275m
 454. 2275m - 2280m
 455. 2280m - 2285m
 456. 2285m - 2290m
 457. 2290m - 2295m
 458. 2295m - 2300m
 459. 2300m - 2305m
 460. 2305m - 2310m
 461. 2310m - 2315m
 462. 2315m - 2320m
 463. 2320m - 2325m
 464. 2325m - 2330m
 465. 2330m - 2335m
 466. 2335m - 2340m
 467. 2340m - 2345m
 468. 2345m - 2350m
 469. 2350m - 2355m
 470. 2355m - 2360m
 471. 2360m - 2365m
 472. 2365m - 2370m
 473. 2370m - 2375m
 474. 2375m - 2380m
 475. 2380m - 2385m
 476. 2385m - 2390m
 477. 2390m - 2395m
 478. 2395m - 2400m
 479. 2400m - 2405m
 480. 2405m - 2410m
 481. 2410m - 2415m
 482. 2415m - 2420m
 483. 2420m - 2425m
 484. 2425m - 2430m
 485. 2430m - 2435m
 486. 2435m - 2440m
 487. 2440m - 2445m
 488. 2445m - 2450m
 489. 2450m - 2455m
 490. 2455m - 2460m
 491. 2460m - 2465m
 492. 2465m - 2470m
 493. 2470m - 2475m
 494. 2475m - 2480m
 495. 2480m - 2485m
 496. 2485m - 2490m
 497. 2490m - 2495m
 498. 2495m - 2500m
 499. 2500m - 2505m
 500. 2505m - 2510m
 501. 2510m - 2515m
 502. 2515m - 2520m
 503. 2520m - 2525m
 504. 2525m - 2530m
 505. 2530m - 2535m
 506. 2535m - 2540m
 507. 2540m - 2545m
 508. 2545m - 2550m
 509. 2550m - 2555m
 510. 2555m - 2560m
 511. 2560m - 2565m
 512. 2565m - 2570m
 513. 2570m - 2575m
 514. 2575m - 2580m
 515. 2580m - 2585m
 516. 2585m - 2590m
 517. 2590m - 2595m
 518. 2595m - 2600m
 519. 2600m - 2605m
 520. 2605m - 2610m
 521. 2610m - 2615m
 522. 2615m - 2620m
 523. 2620m - 2625m
 524. 2625m - 2630m
 525. 2630m - 2635m
 526. 2635m - 2640m
 527. 2640m - 2645m
 528. 2645m - 2650m
 529. 2650m - 2655m
 530. 2655m - 2660m
 531. 2660m - 2665m
 532. 2665m - 2670m
 533. 2670m - 2675m
 534. 2675m - 2680m
 535. 2680m - 2685m
 536. 2685m - 2690m
 537. 2690m - 2695m
 538. 2695m - 2700m
 539. 2700m - 2705m
 540. 2705m - 2710m
 541. 2710m - 2715m
 542. 2715m - 2720m
 543. 2720m - 2725m
 544. 2725m - 2730m
 545. 2730m - 2735m
 546. 2735m - 2740m
 547. 2740m - 2745m
 548. 2745m - 2750m
 549. 2750m - 2755m
 550. 2755m - 2760m
 551. 2760m - 2765m
 552. 2765m - 2770m
 553. 2770m - 2775m
 554. 2775m - 2780m
 555. 2780m - 2785m
 556. 2785m - 2790m
 557. 2790m - 2795m
 558. 2795m - 2800m
 559. 2800m - 2805m
 560. 2805m - 2810m
 561. 2810m - 2815m
 562. 2815m - 2820m
 563. 2820m - 2825m
 564. 2825m - 2830m
 565. 2830m - 2835m
 566. 2835m - 2840m
 567. 2840m - 2845m
 568. 2845m - 2850m
 569. 2850m - 2855m
 570. 2855m - 2860m
 571. 2860m - 2865m
 572. 2865m - 287

Appendix 8-4: Mattia Pistone

WESTERN ALEUTIANS ①

BULDIF, KISKA, SEGULA, LITTLE SITKIN, SEMISOPOCHNOI, GARELOI, TANAGA, KANAGA
 PERIOD = 4th → 24th SEPTEMBER 2015
 NSF-GEOPRISMS-SPONSORED FIELD MISSION → FORTÉ = F0₂ RESEARCH AND TEPHRA EXPEDITION

TEAMS:

1) "TEPHRA" TEAM:
 • ELIZABETH COTTRELL (LEADER) ← SMITHSONIAN
 • MICHELLE COOMBS (CO-LEADER) ← AVO-USGS
 • MATTIA PISTONE (POSTDOC) ← SMITHSONIAN
 • ELIZABETH GRANT (PHD) ← RHODE ISLAND
 • KATHERINE SHEPPARD (PHD) ← SANTA BARBARA

2) "GAS" TEAM:
 • TOBIAS FISHER (UNH) ← MARITIME HAUL CREW
 • TARYN COPEZ (UAF) ← CAPT → GEORGE RAINS
 • JOE SCHWITT ← CHIEF → MIKE DESPARRS
 • WESLEY JONES ← JUNIOR → WESLEY JONES

3) "SEISMIC" TEAM:
 • JOHN LYONS
 • ADRIAN BENDER } AVO-USGS
 • DANE KETNER } ← AIR CREW:
 • DAN LEARY (PILOT)
 • MIKE COOPER (MECHANIC)

GOALS:

- 1) TEPHRA (I.E. CM-SIZED LAPILLI AND ASH COMBINING FRESH OLIVINE WITH MELT INCLUSIONS)
- 2) GAS FROM ACTIVE FUMAROLS
- 3) NEW BATTERIES FOR SEISMIC STATIONS IN GARELOI, KANAGA AND TANAGA.

FIELD MISSION CONDUCTED WITH RESEARCH VESSEL MARITIME HAUL AND HELICOPTER.

② PROPOSAL FOR FORTÉ LOGO: NSF GEOPRISMS

UPSET SEA (20 FEET HIGH SWELLS) MAY 12 (PHRASES/H) ARRIVAL AT ANCHIKTA ISLAND AT 2:30 PM (SHIP TIME = ANCHORAGE TIME). ANCHORAGE IN A SAFE BAY OF THE EASTERN SIDE OF THE ISLAND. 4:30 PM = THICK FOG IN ANCHIKTA AND IN ADAK WHERE HELICOPTER IS. HELICOPTER CANNOT TAKE OFF. WE STAY IN ANCHIKTA BAY AND WAIT FOR HELICOPTER TOMORROW. WEATHER FORECAST BULLETIN = POTENTIAL LARGE SWELL DUE TO HURRICANE AT 600 MILES SOUTH (HAWAII ISLAND) AFFECTING THE ALEUTIAN WATERS IN THE NEXT DAYS.

6th SEPT. IN ANCHIKTA BAY WAITING FOR HELICOPTER. FIRST ATTEMPT TO FLY TO ANCHIKTA FAILED AT 10:30 AM. SORTING OUT MATERIALS IN THE LAB ROOM OF THE VESSEL BRIEFING WITHIN TEPHRA TEAM FOR DISCUSSING SAMPLE COLLECTION/DESCRIPTION STRATEGY. 1:00 PM = HELICOPTER TOOK OFF FROM ADAK 1.5 HOURS TO ANCHIKTA FOR REFUEL ON THE VESSEL.

SECOND HELICOPTER'S ATTEMPT FAILED 2:00 PM
 BACK TO ADAK - 3:00 PM
 SKIFFING TO ANCHIKTA DOCK.

FIRST HAND OBSERVATIONS:
 SUBMARINE BASALTS EXPOSED CLOSE TO THE COASTAL LINE. THE ISLAND SHOWS LOW-ELEVATION HILLS (100 M), WHICH ARE STRONGLY VEGETATED. TEPHRANE'S BREAK-UPS PROVIDE LIMITED SECTIONS OF SOIL AND VOLCANOCLASTIC DEPOSIT ALONG THE TOP OF THE HILLS CLOSE TO THE COASTAL LINE. THE TEPHRA TEAM WALKS FROM THE DOCK IN THE DIRECTION TO SW.

5:00 PM
 SEVERAL BLACK ASH LAYERS CONTAINING VERY FINE ASH AND CLASTS (WITH ELDS; NOT ROUNDISH). SOME CLASTS CONTAIN HORNEBLIENITE CRYSTALS IN PLAGIOCLASE-RICH MATRIX. THESE ASH LAYERS ARE DISTAL DEPOSITS GENERATED DURING LARGE Eruptions IN CLOSE ISLANDS (SEMISOPOCHNOI? LITTLE SITKIN?).

8:00 PM
 COLLECTED SAMPLES = HYALOCLASTITE FROM SUBMARINE BASALTIC BRECCIA; CLAST WITH HORNEBLIENITE CRYSTALS FROM ASH LAYER; DARK SAND FROM BEACH AT A SOUTH POINT WITH RESPECT TO THE DOCK.

FURTHER NEWS:
 HELICOPTER ATTEMPTED TWICE TO LEAVE ADAK, BUT FOG HINDERED THE JOURNEY TO ANCHIKTA. CAPTAIN GEORGE DECIDED TO BE TANK TWO BARRELS OF FUEL AT THE DOCK IN


③ ANCHIKTA FOR THE HELICOPTER. NOW THE MARITIME HAUL STEAMS TO KISKA WITH FLY GOOD WEATHER CONDITIONS (WIND TO 10 KNOTS AT 20 MI/HR WITH 5 FEET SEA SWELL).

7th SEPT. KISKA HARBOR 10:45 AM
 11:45 AM STOP I
 12:45 AM STOP II
 03:05 PM STOP II
 03:50 PM STOP III
 04:30 PM STOP II
 08:00 PM
 08:30 PM

SKIPPING TO THE SOUTH PART OF KISKA HARBOR HIRING TO ABOUT 300 FEET A S.L., AFTER PASSING THROUGH THE "JAPANESE TEPHRAL" EXPOSURE OF ASH LAYER (BLACK UPPER LAYER AND POORLY SORTED LAYER DISPLAYING ANGULAR PUMICES AND CLASTS - NO INTERNAL GRADATION. THIS LATTER LAYER MAY BE RELATED TO PYROCLASTIC FLOW. IN THE SAME THICK LAYER (NO CONFINING THINNESS) MANY LARGE (>5 CM) ANGULAR PUMICES WERE FOUND. THE QUESTION IS IF THIS DEPOSIT WAS GENERATED BY A DEBRIS FLOW. (ALSO VESICULAR) BRECCIAS (HYALOCLASTITE) AND APHYRIC BASALT (FEW LARGE PLAG AND OLIVINE CRYSTALS).

DEBRIS FLOW DEPOSIT (CLAST-SUPPORTED) BELOW THE VOLCANIC BRECCIA. THE CLIFF FACES EAST (TOWARDS THE OCEAN).

HIGH CLIFFS (>300 FEET) DISPLAY DEBRIS FLOW DEPOSIT FORMITES:



HELICOPTER IS STILL IN ADAK, BUT WILL ARRIVE AT ANCHIKTA TOMORROW. DISCUSSION ON WORK PLANS FOR TOMORROW. THE OVERALL PLAN IS THAT THE TEPHRA TEAM WILL BE DIVIDED INTO TWO TEAMS:
 1) MATTIA + ELIZABETH = EASTERN PLANK OF

KISKA VOLCANO
 2) ELIZABETHINE = SE PART OF SEQULA
 3) MICHELLE = SAMPLING IN SEVERAL LAVA FLOWS
 AROUND SEQULA, ASSISTED BY HELICOPTER.

HELICOPTER IS ON VESSEL!

HELICOPTER TAKES OFF WITH MATTIA,
 ELIZABETH AND MICHELLE

AFTER FIRST RECONASSANCE MATTIA
 AND ELIZABETH ARE DEPLOYED.

SURVIVAL BAG AT WAYPOINT 46 (SEE
 GARNIN).

WAYPOINT 47 = CLOSE TO THE COAST
 ON THE SE FLANK OF KISKA VOLCA
 NO. EXPOSED SECTION OF ALTERNATE SOIL
 - TIME ASH - FALL-OUT DEPOSIT OF JUVENILE (P
 MICES WITH HORNBLLENDE) AND LITHICS (ROCKS
 FROM HYDROTHERMAL/SULPHUR-RICH SYSTEMS,
 AMESITE LAVA BRECCIA) IS FOUND. THE
 WHOLE SECTION (1 m THICK) HAS BEEN SAM
 PLED AND DESCRIBED (FURTHER NOTES ARE
 REPORTED IN ELIZABETH'S FIELD BOOK).

WAYPOINT 48 = 1 MILE WEST FROM WAYPOINT
 47. THE EXPOSED SECTION SHOWS SIMILAR FEATU
 RES OBSERVED IN WAYPOINT 47, EXCEPT FOR
 A BASAL LAYER COMPOSED OF AMESITE
 LAVA BRECCIA.

CHECKING THE WITH MARITIME MAIL VIA SAT.
 PHONE.

PICK-UP BY HELICOPTER BACK TO MARITIME
 MAIL.

8th SEPT
 1.30 pm
 VESSEL
 3.00 pm
 3.20 pm
 3.40 pm
 3.50 pm
 STOP I
 5.45 pm
 STOP II
 6.00 pm
 8.30 pm

HELICOPTER DEPLOYS MATTIA AND ELIZABETH
 ON THE EASTERN SIDE OF SIRIUS POINT.
 WAYPOINT 49 = SURVIVAL BAG LOCATION

WAYPOINT 50 = EASTERN SIDE OF THE LAVA
 FLOW NIPPED BY ROBERT COATS (2349). THE
 LAVA IS COMPOSED BY LARGE GREYISH BLACK
 ORGANISED IN FOUR RIDGES (AND FOUR DEEPS).
 THE OVERALL TERRAINE IS GREATLY CHALL
 NGING, THE VEGETATION COVER DOES NOT AL
 W ANY VISION OF THE HOLES AND ENDT
 SPACES BETWEEN THE LAVA BLOCKS.

LAVA ROCKS APPEAR STRONGLY WEATHERED
 (I.E. GREYISH COLOUR). WHEN HATTERED
 THESE ROCKS ARE HARD AND BLACK IN THE
 INTERIORS, RECOGNISED MINERALS ARE P
 HORNBLLENDE AND BAEF OLIVINE (30-40%)

WAYPOINT 51 = SAME LAVA-TYPE ROCK OBSER
 VED IN WAYPOINT 50. FROM THIS LOCATI
 IT IS NOT POSSIBLE TO OBSERVE THE
 NEW LOBE OF SIRIUS POINT (NOT NIPPED
 BY COATS) - THE NORTHERN FLANK OF
 KISKA VOLCANO SHOWS DARKER LAVA
 ROCKS AT POSSIBLE ELEVATIONS OF 8000
 FEET. THESE LAVA ROCKS SHOULD
 BE RELATED TO MOST RECENT ACTIVITY
 OF KISKA.

BACK TO THE SURVIVAL BAG LOCATION.
 THE LAVA FLOW THICKNESS IS ABOUT
 120 FEET.

HELICOPTER COMES TO PICK UP MATTIA AND
 ELIZABETH, WHO WILL BE DEPLOYED IN THE
 SOUTHERN SIDE OF THE VOLCANO OF KISKA.

11.30 am
 STOP I
 2.5.1.
 52.00 pm
 STOP II
 4.45 pm
 2.5.1.
 1.45 pm
 4.00 pm

QUATERNARY AMESITE LAVA (PLAG-RICH)
 ROCKS ARE QUITE WEATHERED. SAMPLING
 CONDUCTED ACROSS THE LAVA BLOCK FIE
 LD (~W TO E DIRECTION) - LARGE COVERAGE
 OF VEGETATION, BUT LESS CHALLENGING
 THAN ON THE EASTERN SIDE OF SIRIUS
 POINT. THE LAVA BODY IS OLDER THAN
 THAT IN SIRIUS POINT, SINCE THE VE
 GETATION IS CONTINUOUS, EVEN BET
 WEEN THE DIFFERENT LAVA BLOCKS
 (I.E. VEGETATION BUILDS UP "BRIDGES"
 BETWEEN LAVA BLOCKS => THE TER
 RAINE IS MORE WALKABLE).

STRONG SHELL OF SULPHUR; POSSIBLY,
 THIS IS SULPHUR COMING FROM THE FUM
 ROLES LOCATED ON THE SOUTH-WEST SI
 DE OF KISKA VOLCANO (~3000 FT ELEV
 TION).

4.30 pm

WAYPOINT 55 = LANDING SPOT WITH HELICOPTER
 AT ABOUT 10.30 am

WAYPOINT 60 = 3732 FT, N⁵² 02' 26" E
 447' 36" S (10.00000)

50 m LONG SPATTER CONE (?) DEPOSIT. THE SPATTER
 IS BLACK AND DENSE/HEAVY WITH CRYSTALS. THE
 LIVITY < 20%. MINERALS ARE PLAG. AND O
 ME. SAMPLE COLLECTION STARTS!

THE SPATTER DEPOSIT IS ABOUT 3-4 m THICK
 (BASED ON WHAT IS EXPOSED).

TWO BAGS OF 15 KKHPP 01 V-01 = OBSERVE
 = VESICULAR BLACK ROCK (2 m THICK) UPPER PART (VOLCANO) FROM T
 DEPOSIT

TWO BAGS OF 15 KKHPP 01 V-02 = OBSERVE
 SOLID/FULL BLACK ROCK (1 m THICK) LOWER SIDE OF
 SECTION

1 BAG OF 15 KKHPP 01 V-03 = FULL FLOW
 BLACK ROCK WITH MANY LITHICS (AMESITE
 TE LAVA, POTTICE, WEATHERED ROCK) OF
 DIFFERENT SIZE (cm to m) - LOWER PART

1 BAG OF 15 KKHPP 01 V-04 = TOP OF
 THE SPATTER DEPOSIT, COMPOSED OF LOOSE
 NG SCORIA - THIS PART OF THE DEPOSIT
 IS PATCHY/NOT CONTINUOUS AND PARTLY
 XED WITH OTHER VOLCANIC LITHICS AND
 JUVENILES.

11.50 am
 KISKA
 VOLCANO
 SOUTH
 AREA
 STOP I

WAYPOINT
 EASTER
 IT IS T
 THE KI
 THE TE
 TION
 OBSERVE
 FROM T
 DEPOSIT
 NTR
 THIS S
 FLOW
 NEAR B
 ONE
 WAYPO
 WE SE
 VAYPO

WAYPOINT 61 = 3756 FT, N 52° 06.273' E 177° 36.421' (0.000000) (0.002731) (0.000000) (0.000000) 3:30 pm STOP II

EASTERN RIM OF THE KISKA CRATER SPATTER CONE DEPOSIT. THIS DEPOSIT IS THE SAME OBSERVED IN STOP I, IT IS THE SAME UNIT.

THE KISKA CRATER IS THE AMPHITHEATER OF THE WIND. FROM MY POSITION (EASTERN CRATER RIM) I CAN OBSERVE BLACK LAVA STICKING OUT FROM THE CRATER GROUND (LAVA FLOW DEPOSIT DIPPING INTO THE CRATER CENTER) AND "FLOWING" TO THE BROKEN SIDE OF THE CRATER (WESTERN SIDE). THIS SHOULD BE THE MOST RECENT LAVA FLOW PRODUCED BY KISKA. NEARBY THE LAVA FLOW, A SPATTER CONE DEPOSIT IS PRESENT.

INSIDE THE KISKA CRATER! 4:00 pm STOP III

WAYPOINT 62 = 3534 FT, N 52° 06.324' E 177° 36.220' (0.000000) (0.003240) (0.000000) (0.002200)

THE "SPATTER CONE" IS ACTUALLY A MORE PACIFIC LAVA FLOW WITH FLAG PHENOCRYSTS (<30%) - BASALTIC ANDESITE?

WAYPOINT 63 = 3563 FT, N 52° 06.313' E 177° 36.200' (0.000000) (0.003130) (0.000000) (0.002000)

ANDESITE LAVA FLOW

12:00 pm STOP I

WAYPOINT 64 = 735 FT, N 51° 59.30' E 178° 08.630' (0.000000) (0.005930) (0.000000) (0.000630)

UPPER PART OF THE EASTERN SCARF OF THE SEGULA SCARF IS CHARACTERIZED BY LARGE SIZE JUVENILES AND LITHICS, ARRANGED IN A VAGUE REVERSE SIZE GRADATION. THIS DEPOSIT IS CONTACT-SUPPORTED, WITH BOMBS/BLOCKS TO LAPILLI SIZE (m TO cm). RATHERING MADE HIGH-GRADE JUVENILES (I.E. PUTICE) SAMPLING (10 cm TO 30 cm).

THIS UNIT IS ABOUT 10 m THICK AND GENERATES HIGH CLIFFS.

SAMPLE NAME = 155GRK5001-1

12:40 pm STOP II

WAYPOINT 65 = 678 FT, N 51° 58.892' E 178° 08.610' (0.000000) (0.005889) (0.000000) (0.000610)

CONTACT BETWEEN LAVA AND RED SCORIA.

155GRK5001-2

THE LAVA APPEARS CRYSTAL-POOR (<20% LAPILLI WITH SMALL PHENOCRYSTS OF PLAG AND CFX, AND VESICULAR.

THE SCORIA HAS OXIDISED SKIN AND BROWN INTERIOR, WITH VISIBLE PLAG CRYSTALS (<20%).

1:45 pm STOP III

WAYPOINT 66 = 677 FT, N 51° 58.930' E 178° 08.610' (0.000000) (0.005893) (0.000000) (0.000610)

ANOTHER SEQUENCE OF LAVA FLOW AND SCORIA DEPOSIT

WAYPOINT 67 = 613 FT, N 51° 59.308' E 178° 08.630' (0.000000) (0.005931) (0.000000) (0.000630) 2:15 pm STOP IIC

SEQUENCE OF LAVA FLOW, RED SCORIA BRECCIA-TYPE UNIT, FINE FALL-OUT WITH DISPERSED JUVENILE AND LITHIC CLASTS, SCORIA WITH MANY LITHICS.

DAY SPENT ON THE BOAT LIP AND MICHELLE FLEW TO SEMIBOPCHNOI FOR TERPAA COLLECTION ON SUGAR LOAF (SOUTHERN PART OF THE ISLAND).

12th SEPT. ARCHIKTA BETWEEN 12:00 pm AND 6:30 pm

MATTIA AND ADRIAN ARE DEPLOYED IN MAKARIYS BAY (SOUTHERN SIDE OF ARCHIKTA) BY HELICOPTER. ADRIAN LOOKS FOR STORM AND TSUNAMI DEPOSITS GENERATED BY TSUNAMI OR SEA STORMS RELATED TO LARGE EARTHQUAKE EVENTS IN THE ALEUTIANS (E.G. 1857, 1955, ...).

13th SEPT. ARCHIKTA BETWEEN 12:00 pm AND 6:30 pm

BETWEEN SOIL HORIZONS AND STORM DEPOSITS, A FINE BLACK ASH LAYER (TOP) AND A LAYER WITH BROWN ASH AND FINE LAPILLI (UP TO 2 cm SIZE) ARE FOUND AT ~30 FT A.S.L.

ADRIAN CONDUCTS SAMPLE CORE DRILLING (2 m DEPTH MAXIMUM) AND FINDS:

14th SEPT. BOAT STEAMS TO TANAGA BEFORE B. STORM AND SEA SWELLS AFFECTS THE WEST POINT OF ARCHIKTA PASS. (EIGHT HOUR JOURNEY TO HOT SPRING BAY (EASTERN SIDE OF TANAGA)).

15th SEPT. MATTIA JOINS JOHN (SEISMIC TEAM) FOR BATTERY, SENSOR, AND SOLAR PANEL REPLACEMENT AT "TANO" SEISMIC STATION, LOCATED AT ~400 FT ELEVATION ON THE NORTH SIDE OF EAST TANAGA VOLCANO.

UNLOADING AND LOADING OPERATIONS WERE EXECUTED WITH HELICOPTER STANDING ON ITS SKID TOES ON THE RIDGE SLOPE WHERE "TANO" STATION WITH IS LOCATED. THIS SEISMIC SITE IS MUSHY AND MATTIA AND JOHN EVACUATE FROM THIS SITE BEFORE THE FOG THICKENS DRAMATICALLY.

8:00 pm RECREATIONAL TIME AT THE HOT SPRING

MATTIA AND MICHELLE ARE DEPLOYED BY HELICOPTER AT ~1600 FT ELEVATION. THE LOCATION IS A LARGE GLACIAL VALLEY WHERE VOLCANIC TEPHRA ARE HEAVILY COLLECTED FROM THE DIFFERENT VOLCANOES ON TANAGA ISLAND (SASAKI TANAGA, EAST TANAGA, AND TAGAWAN (HA). IN THE SAME VALLEY, AT LOWER ELEVATION, LARGE AMOUNT OF VOLCANIC ALLUVIUM IS FOUND.

TEPHRA SAMPLING IS CONDUCTED IN SMALL GULLIES, WHICH OFFER GREAT EXPOSURE OF TEPHRAS (I.E. ASH TO LAPILLI SIZE), COMPOSED BY RELATIVELY DARK LAVAS (WITH OLIVINE IN) AND LIGHT GRAY TO YELLOWISH PUMICES (WITH HORNBLENDE). HORNBLENDE IS THE MOST COMMON MINERAL IN THE VOLCANIC ROCKS FROM TANAGA. IT IS MOSTLY FOUND EUHEBRAL AND LARGE IN SIZE (UP TO CM SIZE).

MATTIA AND MICHELLE RETURN TO HANGAR BY HELICOPTER.

37th SEPT. HATTIA JOINS JOHN (SEISMIC TEAM) SUBSTITUTE BATTERIES AND SEISMIC STATIONS AT THE NORTHERN SEISMIC STATIONS IN GARELOI ISLAND (I.E. "GANE" AND "NO" STATIONS) - AT "GANE" STATION TOWARDS EAST HATTIA SAMPLES VOLCANIC BREAD CRUST BOMBES - THE SEISMIC WORK IS CONDUCTED AT ELEVATIONS BETWEEN 2000 AND 1400 A.S.L.

41st SEPT. ELIZABETH, HATTIA AND MICHELLE ARE DEPLOYED BY HELICOPTER AND DESCRIBE A TEPHRA SECTION (~8 M THICK) - THIS OUTCROP DISPLAYS ALTERNATE LAYERS OF LAPILLI, ASH, LITHIC-RICH FALL DEPOSITS. SEVERAL SOIL HORIZONS ARE FOUND. THE UPPER PORTION OF THIS SECTION IS MADE BY DARK, MAFIC LAPILLI BEARING GREENISH OLIVINE AND WHITISH PLAGIOCLASE. DETAILED DESCRIPTION OF THIS OUTCROP IS REPORTED IN MICHELLE'S FIELDBOOK.

43rd SEPT. ANOTHER TEPHRA SECTION (USM THICK) IS DESCRIBED AND SAMPLED. IT CONTAINS SEVERAL COARSE LAPILLI (3-4 CM SIZE) LAYERS (10-20 CM THICK) - SOME OF THEM DISPLAY "GARRISH" COLOURS (BRIGHT RED, ORANGE, OR YELLOW) DUE TO WEATHERING. SOME OF THESE HORIZONS ARE HEAVILY WEATHERED THAT ARE WATER-BEARING (I.E. DIFFICULT TO DIG WITH A SHOVEL) - THE UPPER AND LOWER PORTIONS OF THE OUTCROP ARE OLIVINE-BEARING AND

21st SEPT. FURTHER DETAILS OF THIS OUTCROP AND RELATIVE STRATIGRAPHIC LOG ARE REPORTED IN MICHELLE'S FIELDBOOK.

22nd SEPT. HOT SPRING RECREATIONAL EVENING.

23rd SEPT. MATTIA AND MICHELLE ARE DEPLOYED BY HELICOPTER. HIKE THROUGH ROUGH AND RISKY TERRAIN IN SHOSHONITIC "AA" LAVA FIELD. MANY LOSING ROCKS DURING HIKE DO NOT ALLOW REACHING THE SUMMIT OF GARELOI, WHICH IS ADDITIONALLY HIDDEN BY CLOUDS. DURING THE HIKE STRONG SULPHUR SMELL COMING FROM THE FUMARoles IS DETECTED. FURTHER HIKE TOWARDS THE FUMARoles FROM LOWER ELEVATION DOES NOT SOUND SMART (I.E. CO₂ PRESENCE?).

SAMPLING OF LAPILLI TO ASH SIZE FALL-OUT DEPOSITS BETWEEN BLOCKS OF SHOSHONITIC LAVAS (WHICH ARE YOUNGER THAN THE BROWNISH TEPHRA LAYERS) -

SAMPLING OF SHOSHONITIC LAVA AT THE TOP OF ONE LAVA RIDGE - OVERALL, THE SHOSHONITIC LAVA DISPLAYS:

- A "Hairy" LAYER OF SPINY, VESICULATED GLASS (TOP)
- A VESICULAR PORTION (~40-50% VESICLES) WITH DISPersed CRYSTALS OF PLAGIOCLASE AND CPX (~2-3%)
- A SOLID PORTION (<10% VESICLES) WITH CPX AND PLAG. PHENOCRYSTS (<10%).

20th SEPT. MICHELLE AND HATTIA ARE DEPLOYED BY HELICOPTER IN THE RIVER VALLEY WHERE TEPHRA SECTION ARE PRESENT. SOME TALL UNITS ARE FOUND. IN PARTICULAR, TWO UNITS ABOVE AND BELOW A DEBRIS FLOOR LAYER CONTAIN LARGE PUMICES (UP TO 10 CM SIZE) AND LAVA LITHICS. MOST PUMICES ARE FELSIC (PLAGIOCLASE, HORNBLENDE AND SPHENE); A FEW ARE BANNED (OLIVINE COLOUR = FELSIC; GREY = MAFIC) - PYROCLASTIC FLOW DEPOSITS, WITH GIANT PUMICES (UP TO 30 CM SIZE) ARE OBSERVED IN ORANGE FINE ASH. HATTIA AND MICHELLE TAKE A LAVA SAMPLE AT THE TOP OF A NEARLY DONE.

WEATHERED AND OLD LAVA DEPOSIT, DISPLAYING LARGE EUBEDRAL CPX (CM SIZE), PLAG, AND OLIVINE (2-3% MAXIMUM).	5:00 PM STOP III TOP OF ROUND HEAD
RECREATIONAL HOT SPRING.	6:00 PM
FRESHER SAMPLES OF LARGE CPX-BEARING LAVA FLOW, INCLUDING RED LAVA BRECCIA. CPX EXCEEDS 30% BY VOLUME IN THE ROCK.	21 st SEPT. KANAGA 3:00 PM ROUND HEAD BEACH STOP I
LAVA FLOW DEPOSIT (CPX, PLAG, AND OLIVINE) CONTAINING MAFIC INCLUSIONS (ANORTHOSITE WITH OLIVINE). SOME INCLUSIONS EXCEEDS 15 CM SIZE, AND A FEW ARE BLACK VEINED BY THE HOST LAVA. NO MAFIC INCLUSIONS ARE FOUND AT THE LAVA FRONT (~100 FT THICK).	5:00 PM STOP II SOUTHERN LAVA FLOW OF KANAGA VOLCANO
MATTIA, MICHELLE, KATHERINE, AND LIEB ARE DEPLOYED IN PROXIMITY OF THE SW CRATER FRACTURE WHERE THE S-RICH FUMARoles ARE LOCATED. GOPRO RECORD OF HELICOPTER FLIGHT AROUND THE CRATER.	22 nd SEPT. KANAGA 3:00 PM KANAGA VOLCANO SUMMIT STOP I
MATTIA AND MICHELLE ARE DEPLOYED ON THE NORTHERN SIDE OF 1306 LAVA FLOW (CPX, PLAG, OLIVINE, AND DISPERSED ~1 CM INCLUSIONS).	3:30 PM STOP II EASTERN LAVA FLOW OF 1306

9. Appendices: Permits and Documentation

Appendix 9-1: FWS Permit Application



OMB Control # 1018-0102 | 1
Expiration Date: 06/30/2017

Research and Monitoring Special Use Permit Application

Refuge Name:
Address:
Attn: (Refuge Official):
E-Mail:
Phone #:

For Official Use Only

Approved Permit #:
Station #:
Permit Term: from to

Note: We do not require all information for each Research project. See instructions at the end of the notice and contact the refuge to determine applicability of a particular item. Attach additional sheets if the text spaces provided are inadequate.

- 1) Identify the type of Permit you are applying for: New Renewal Modification Other

Applicant Information

2) Principal investigator: 3) Is curriculum vitae or resume attached? Yes No
 4a) Affiliation/Sponsoring Organization:
 4b) Relationship to affiliation/sponsoring organization (professor, staff, student, etc.):
 5) Street Address:
 6) City/State/Zip:
 7) Phone #: 8) Fax #: 9) E-mail:

- 10) List known assistants/subcontractors/subpermittees: (Only required if the assistants/subcontractors/subpermittees will be operating on the refuge without the permittee being present.)

Name	Address	Phone #
Elizabeth Cottrell	Department of Mineral Sciences, Smithsonian Institution, PO Box 37012, Washington DC 20012-7012	202-633-1855
Matthew Jackson	Department of Earth Science, 1008 Webb Hall, University of California, Santa Barbara, CA 93106-9630	805-893-5031
Mattia Pstone	Department of Mineral Sciences, Smithsonian Institution, PO Box 37012, Washington DC 20012-7012	202-633-1809
Student	Department of Mineral Sciences, Smithsonian Institution, PO Box 37012, Washington DC 20012-7012	tbd
Katie Kelley	Graduate School of Oceanography University of Rhode Island Narragansett Bay Campus Narragansett, RI 02882	401.874.6838
Taryn Lopez	Geophysical Institute, University of Alaska Fairbanks, 903 Koyukuk Dr, Fairbanks, AK 99775	907.474.7389
Tobias Fisher	Department of Earth and Planetary Sciences, Northrop Hall, University of New Mexico, Albuquerque, NM 87131	(505) 277 0683

Project Information

11) Title of project:
 12a) Is full research proposal required? Yes No 12b) Is full research proposal attached? Yes No

Note: Depending on the research and monitoring project for which you are requesting a permit, we may ask you for the following project information (13 -25) if it is not included in your research proposal, or if you have not provided a full research proposal with this application. Please contact the specific refuge where the activity is being conducted to determine what information is required.

Attach additional sheets to the application if the text spaces provided are inadequate.

FWS Form 3-1383-R
05/14

13) Describe project by specifically identifying timing, frequency, and how the project is expected to proceed:

This project seeks to study volcanic processes and the eruptive history of volcanoes from Buldir to Kanaga through sampling of rock, ash, gas, and water samples. We will collect rock, ash, and soil samples from Buldir, Kiska, Segula, Davidof, Little Sitkin, Gareloi, and Kanaga, and gas and/or water samples from Kiska, Little Sitkin, Semisopochnoi, Gareloi, and Kanaga. These samples will allow us to infer deeper magmatic processes that may be occurring in this portion of the volcanic arc. The results of this project will assist AVO in understanding hazardous eruptive activity at these active volcanoes and in preparing public warnings of future eruptions.

Access to the islands will be by a chartered research vessel and access to the sample locations will be done via chartered helicopter, or by skiff. This project is currently scheduled to take place between September 5 and 23, 2015, subject to availability of logistical resources and weather. In conjunction with our sampling activities, 2-3 geophysicists from AVO will be aboard the boat and performing helicopter-supported maintenance of AVO's seismic monitoring networks on Tanaga, Gareloi, Semisopochnoi, Little Sitkin, and Amchitka Islands. Permitting of the maintenance of these sites is covered under AVO's Right-of-Way permit M-299-AM and the maintenance activities will be described under a separate letter to the refuge.

14) Specifically identify location(s) for the project: (GPS location(s) preferred)

See attached spreadsheet (2015_WA_Sample_Locations.XLS). We note that exact sampling sites will depend on aerial reconnaissance on some islands that have not been previously visited.

15a) Is map of project location(s) required? Yes No N/A 15b) Is map of project location(s) attached? Yes No

16) Specifically identify beginning and ending dates, site occupation timeline, hours, clean-up and other major events:

We currently plan to begin this work leaving Adak on September 5 and returning via boat by September 23.

17) Identify species or habitats being studied:

N/A

18) Purpose/hypothesis:

Please see attached proposal, "Supplement 4-21-15.pdf."

19) Expected benefits of research/monitoring:

This project is designed to improve our understanding of (1) the origin of magmas under the western Aleutian volcanic arc, and (2) the eruptive histories at several understudied but active volcanoes in the region. This information will help to interpret monitoring signals that may take place before eruptions and to understand the styles of possible future eruptions, which can vary volcano by volcano. The results of this project are expected to improve AVO's ability to forecast eruptions and to issue more accurate public warnings of the hazards posed by future eruptions.

20) Briefly describe project history and context of research/monitoring project:

Principal funding was recently approved by the National Science Foundation and supporting funds will come from the USGS - Alaska Volcano Observatory. The gas sampling will be funded by the Deep Carbon Observatory (DCO).

21) Briefly describe project's relationship to other research/monitoring projects either known of or conducted by the applicant:

This project will be concurrent with maintenance of the seismic networks of the USGS - Alaska Volcano Observatory, described in section 13.

22) Identify the types of samples to be taken or data to be collected during the proposed project:

Rock, ash, and soil samples will be collected at Buldir, Kiska, Segula, Little Sitkin, Gareloi, and Kanaga using hand tools (small shovels and rock hammers). The proposed locations of sample sites are included in the attached file: 2015-Geologic_Sample_Locations.XLS. Gas and possibly water sampling will occur, weather permitting, at Kiska, Garloi, Kanaga, Little Sitkin, and Semisopchnoi Islands.

23) List other cooperators and institutions involved in the project:

Smithsonian Institution, University of Rhode Island, University of California Santa Barbara, University of Alaska Fairbanks Geophysical Institute, and University of New Mexico

24) Generally identify the anticipated timeline for analysis, write-up and publication:

First order publications should be complete by 2018.

25) For research involving animals, has an Assurance of Animal Care Form, Institutional Animal Care and Use Committee approval (or equivalent) been completed? Yes No N/A Is form attached? Yes No

License/Insurance/Certifications/Permits

Note: Contact the specific refuge office where the research project is going to be conducted to determine if any type of license, insurance, certification(s), or permit(s) will be required. We may process this Special Use Permit while the applicant obtains them. Attach additional sheets to the application if the text spaces provided are inadequate.

26a) List any licenses you have for equipment operation (i.e., aviation or commercial boats), pesticide applications, transporters, or others if required:

License Type	Number	Expiration Date (if applicable)	Copy Attached? Yes/No

26b) List any insurance you have, such as general liability, flight/grounding, contaminants, medical evacuation, or others if required:

Insurance Type	Carrier	Expiration Date (if applicable)	Copy Attached? Yes/No

26c) List any certifications you have, such as rat free, hull inspections, CPR/First Aid, or others if required:

Certificate Type	Expiration Date (if applicable)	Copy Attached? Yes/No

26d) List any other Federal, State, or Tribal permits if required:

Permit Type	Permit Number	Expiration Date (if applicable)	Copy Attached? Yes/No

Logistics and Transportation Attach additional sheets if the text spaces provided are inadequate.

27a) Does project require personnel to stay overnight on the refuge? Yes No

27b) If yes, how many? And list known personnel involved in overnight stay below:

List Names	List Names	List Names	List Names

28) Specifically describe all major instrumentation/equipment/gear and materials used, if applicable or required:

We will be using hand tools to collect rock samples, and portable sensors and bottles to collect gas and water samples and/or data. No equipment or supplies will be left behind in the refuge.

29a) Provide details and schedule for the installation of instrumentation:

n/a

29b) Provide details and schedule for the removal of instrumentation:

n/a

29c) If instrumentation is permanent, describe need:

NA

29d) If instrumentation requires a maintenance schedule, describe needs and schedule:

NA

29e) Provide a data collection schedule:

September 5-23, 2015.

30) Provide logistical arrangements for offsite transportation of samples:

Geologic samples will be removed from sites via helicopter to boat and returned to home institutions.

31a) Provide detailed information on the logistics for onsite, intersite, and/or ship-to-shore transportation to or on the refuge, if required:

Transportation between geologic collection sites will be by chartered helicopter working from a ship and by foot. Use of helicopter is required to access numerous high points on multiple islands, and to transport geologic samples and gas-sampling equipment from collection point to ship. Aerial observations will also be used to identify appropriate sampling sites. Tail numbers will be supplied to the refuge once known.

31b) Provide descriptions, license plate and/or identification numbers of vehicles used for onsite transportation, if required:

Vehicle Type	Plate/I.D./Registration #	Vehicle Type	Plate/I.D./Registration #

31c) Provide descriptions, license plate and/or identification numbers of vehicles used for intersite transportation, if required:

Vehicle Type	Plate/I.D./Registration #	Vehicle Type	Plate/I.D./Registration #

31d) Provide descriptions, license plate and/or identification numbers of vehicles used for ship-to-shore transportation, if required

Vehicle Type	Plate/I.D./Registration #	Vehicle Type	Plate/I.D./Registration #

32a) Is fuel cache needed? Yes No N/A 32b) Provide specific location(s) of fuel caches: (GPS coordinates preferred)

We will be working jointly with AVO station maintenance crew and a fuel cache is requested on Amchitka and/or Tanaga airstrips through AVO's Right-of-Way permit.

33a) Is Safety Plan required?
 Yes No N/A

33b) Is Safety Plan attached?
 Yes No

Work and Living Accommodations

34) Specifically describe onsite work and/or living accommodations, including spike camps:

All individuals will generally stay aboard chartered research vessel. Camping will only occur in small camps in emergency situations such as poor weather. Personnel will carry overnight survival gear for this purpose.

35) Specifically describe on or offsite hazardous material storage or other on or offsite material storage space: (Including on and offsite fuel caches.)

All helicopter fueling will be done aboard the chartered ship.

Sign, date, and print this form and return it to the refuge for processing.

36) Signature of Applicant: Michelle Coombs Digitally signed by Michelle Coombs
 DN: cn=Michelle Coombs, o=US Geological Survey, ou=Alaska Volcano
 Observatory, email=Michelle.Coomb@usgs.gov, c=US
 Date: 2015.05.18 14:27:41 -0500 Date of Application: May 18, 2015

Notice

In accordance with the Privacy Act (5 U.S.C. 552a) and the Paperwork Reduction Act (44 U.S.C. 3501), please note the following information:

The issuance of a permit and collection of fees on lands of the National Wildlife Refuge System are authorized by the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd-ee) as amended, and the Refuge Recreation Act (16 U.S.C. 460k-460k-4).

The information that you provide is voluntary; however, we require submission of requested information to evaluate the qualifications, determine eligibility, and document permit applicants under the above Acts. It is our policy not to use your name for any other purpose. We maintain the information in accordance with the Privacy Act. We will consider all information you provide in reviewing this application. False, fictitious, or fraudulent statements or representations made in the application may be grounds for revocation of the Special Use Permit and may be punishable by fine or imprisonment (18 U.S.C. 1001). Failure to provide all required information is sufficient cause for the U.S. Fish and Wildlife Service to deny a permit.

No Members of Congress or Resident Commissioner shall participate in any part of this contract or to any benefit that may arise from it, but this provision shall not pertain to this contract if made with a corporation for its general benefit.

The Permittee agrees to be bound by the equal opportunity "nondiscrimination in employment" clause of Executive Order 11246.

We also may make routine use disclosures: (a) to the U.S. Department of Justice when related to litigation or anticipated litigation; (b) of information indicating a violation or potential violation of a statute, rule, order, or license to appropriate Federal, State, local or foreign agencies responsible for investigating or prosecuting the violation or for enforcing or implementing the statute, rule, regulations, order, or license; (c) from the record of the individual in response to an inquiry from a Congressional office made at the request of the individual (42 FR 19083; April 11, 1977); and (d) to provide addresses obtained from the Internal Revenue Service to debt collection agencies for purposes of locating a debtor to collect or compromise a Federal Claim against the debtor, or to consumer reporting agencies to prepare a commercial credit report for use by the Department of Justice (48 FR 54716; December 6, 1983).

An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. OMB has approved this information collection and assigned control number 1018-0102. The public reporting burden for this information collection varies based on the requested specific refuge use. We estimate the relevant public reporting burden for the Research and Monitoring Activity Special Use Permit Application form is to average 5 hours per response, including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Mail comments on this form to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042-PDM, Arlington, Virginia, 22203.

General Conditions and Requirements

- 1) Responsibility of Permittee: We shall consider the permittee, by operating on the premises, to have accepted these premises with all facilities, fixtures, or improvements in their existing condition as of the date of this permit. At the end of the period specified or upon earlier termination, the permittee shall give up the premises in as good order and condition as when received except for reasonable wear, tear, or damage occurring without fault or negligence. The permittee will fully repay the Service for any and all damage directly or indirectly resulting from negligence or failure on his/her part, and/or the part of anyone of his/her associates, to use reasonable care.
- 2) Operating Rules and Laws: The permittee shall keep the premises in a neat and orderly condition at all times, and shall comply with all municipal, county, and State laws applicable to the operations under the permit as well as all Federal laws, rules, and regulations governing national wildlife refuges and the area described in this permit. The permittee shall comply with all instructions applicable to this permit issued by the refuge official in charge. The permittee shall take all reasonable precautions to prevent the escape of fires and to suppress fires and shall render all reasonable assistance in the suppression of refuge fires.
- 3) Use Limitations: The permittee's use of the described premises is limited to the purposes herein specified and does not, unless provided for in this permit, allow him/her to restrict other authorized entry onto his/her area; and allows the U.S. Fish and Wildlife Service to carry on whatever activities are necessary for: (1) protection and maintenance of the premises and adjacent lands administered by the U.S. Fish and Wildlife Service; and (2) the management of wildlife and fish using the premises and other U.S. Fish and Wildlife Service lands.
- 4) Transfer of Privileges: This permit is not transferable, and no privileges herein mentioned may be sublet or made available to any person or interest not mentioned in this permit. No interest hereunder may accrue through lien or be transferred to a third party without the approval of the Regional Director of the U.S. Fish and Wildlife Service and the permit shall not be used for speculative purposes.
- 5) Compliance: The U.S. Fish and Wildlife Service's failure to require strict compliance with any of this permit's terms, conditions, and requirements shall not constitute a waiver or be considered as a giving up of the U.S. Fish and Wildlife Service's right to thereafter enforce any of the permit's terms or conditions.
- 6) Conditions of Permit not Fulfilled: If the permittee fails to fulfill any of the conditions and requirements set forth herein, the U.S. Fish and Wildlife Service shall retain all money paid under this permit to be used to satisfy as much of the permittee's obligation as possible.
- 7) Payments: All payment shall be made on or before the due date to the local representative of the U.S. Fish and Wildlife Service by a postal money order or check made payable to the U.S. Fish and Wildlife Service.
- 8) Termination Policy: At the termination of this permit the permittee shall immediately give up possession to the U.S. Fish and Wildlife Service representative, reserving, however, the rights specified in paragraph 11 below. If he/she fails to do so, he/she will pay the U.S. Fish and Wildlife Service, as liquidated damages, an amount double the rate specified in this permit for the entire time possession is withheld. Upon yielding possession, we will still allow the permittee to reenter as needed to remove his/her property as stated in paragraph 11 below. The acceptance of any

fee for the liquidated damages or any other act of administration relating to the continued tenancy is not to be considered as an affirmation of the permittee's action nor shall it operate as a waiver of the U.S. Fish and Wildlife Service's right to terminate or cancel the permit for the breach of any specified condition or requirement.

9) **Revocation Policy:** The Regional Director of the U.S. Fish and Wildlife Service may revoke this permit without notice for noncompliance with the terms hereof, or for violation of general and/or specific laws or regulations governing national wildlife refuges, or for nonuse. It is at all times subject to discretionary revocation by the Director of the Service. Upon such revocation the U.S. Fish and Wildlife Service, by and through any authorized representative, may take possession of said premises for its own and sole use, and/or may enter and possess the premises as the agent of the permittee and for his/her account.

10) **Damages:** The U.S. Fish and Wildlife Service shall not be responsible for: any loss or damage to property including but not limited to crops, animals, and machinery; injury to the permittee or his/her relatives or to the officers, agents, employees, or any other(s) who are instructed to be on the premises; the sufferance from wildlife or employees or representatives of the U.S. Fish and Wildlife Service carrying out their official responsibilities. The permittee agrees to hold the U.S. Fish and Wildlife Service harmless from any and all claims for damages or losses that may arise to be incident to the flooding of the premises resulting from any associated Government river and harbor, flood control, reclamation, or Tennessee Valley Authority activity.

11) **Removal of Permittee's Property:** Upon the expiration or termination of this permit, if all rental charges and/or damage claims due to the U.S. Fish and Wildlife Service have been paid, the permittee may, within a reasonable period as stated in the permit or as determined by the U.S. Fish and Wildlife Service official in charge, but not to exceed 60 days, remove all structures, machinery, and/or equipment, etc., from the premises for which he/she is responsible. Within this period the permittee also must remove any other of his/her property including his/her acknowledged share of products or crops grown, cut, harvested, stored, or stacked on the premises. Upon failure to remove any of the above items within the aforesaid period, they shall become the property of the U.S. Fish and Wildlife Service.



Instructions for Completing Application

You may complete the application portion verbally, in person, or electronically and submit to the refuge for review. Note: Please read instructions carefully as not all information is required for each activity. Contact the specific refuge where the activity will take place if you have questions regarding the applicability of a particular item. We may add special conditions or permit stipulations to permit prior to approval.

- 1) Identify if application is for a new permit or renewal or modification of an existing permit. Permit renewals may not need all information requested.
- 2-3) Provide principal investigator's or applicant's full name. Attach principal investigator's Curriculum Vitae or Resume, if required. Permit renewals generally do not require a Curriculum Vitae or Resume if the project is a continuation of a previously issued permit being conducted by the same investigator. Contact the specific refuge office to determine applicability of this requirement.
- 4-9) Provide investigator's address, phone, fax, e-mail, affiliation and/or sponsoring organization, and relationship to affiliation or organization (title, professor, student, etc.).
- 10) Provide the names and addresses of assistants, subcontractors, or subpermittees. We may require names and addresses if the assistants, subcontractors or subpermittees will be operating on the refuge without the permittee being present. Volunteers, assistants, subcontractors, or subpermittees accompanied by the permittee need not be identified.
- 11) Provide title of research or monitoring project.
- 12a-12b) Attach a full research or monitoring proposal, if required. Permit renewals generally do not require a project proposal if the project is a continuation of a previously issued permit being conducted by the same investigator. Contact the specific refuge office to determine applicability of this requirement.
- 13) Provide detailed information on the activity, including timing, frequency, how the project is expected to proceed, etc. Permit renewals may not need activity description, if the activity is unchanged from previous permit. Most repetitive research projects do not require an activity description for each visit to the refuge. Contact the specific refuge office to determine applicability of this requirement.
- 14) Identify specific location (GPS coordinates preferred) if not a named facility. Permit renewals may not require a location if the project is essentially unchanged from the previous permit. Contact the specific refuge office to determine applicability of this requirement.
- 15a-15b) Attach a map of location, if required, and if the project is not conducted at a named facility. Permit renewals may not require a map if the project is essentially unchanged from the previous permit. Contact the specific refuge office to determine applicability of this requirement.
- 16) Identify beginning and ending dates, site occupation timeline, hours, clean-up, and other major events. Permit renewals may not need an activity/site occupancy timeline if the activity is unchanged from previous permit. Contact the specific refuge office to determine applicability of this requirement.
- 17) Identify species or habitats being studied.
- 18-19) Specifically identify purpose or hypothesis of the research or monitoring project and describe expected benefits. Permit renewals may not need to identify purpose or hypothesis if the project is a continuation of a previously issued permit being conducted by the same investigator. Contact the specific refuge office to determine applicability of this requirement.
- 20) Briefly describe project history and context. Permit renewals should describe previous research activities as part of a previously issued permit being conducted by the same investigator. Contact the specific refuge office to determine applicability of this requirement.

- 21) Briefly describe project's relationship to other research/monitoring projects either known of or conducted by the applicant, if applicable. Include a brief statement of how the research or monitoring permit being applied for will add to or supplement other ongoing research or monitoring on the same, or related, species or habitats. Contact the specific refuge office to determine applicability of this requirement.
- 22) Identify samples to be taken or types of data to be collected. Permit renewals may not need to identify samples taken if the project is a continuation of a previously issued permit being conducted by the same investigator. Contact the specific refuge office to determine applicability of this requirement.
- 23) List other cooperators and institutions involved in the project, if applicable. Contact the specific refuge office to determine applicability of this requirement.
- 24) Generally, identify the anticipated time line for analysis, write-up, and publication of project results. Include whether the project is a single, or multiple year project. Identification of an actual publication where the results are printed is not necessary. However, applicants should include the anticipated dissemination of project results. Contact the specific refuge office to determine applicability of this requirement.
- 25) Check box acknowledging a completed Assurance of Animal Care Form or an Institutional Animal Care and Use Committee (or equivalent) that has granted approval has been completed, and has been submitted to refuge station, if required. Contact the specific refuge office to determine applicability of this requirement.
- 26a-d) Specifically identify types and numbers of licenses, insurance, certifications, and other State, Federal, or Tribal permits if required. Contact the specific refuge headquarters office where the project is going to be conducted to determine applicability of these requirements, and to coordinate the simultaneous applications of any of these requirements while this Special Use Permit is being processed.
- 27a-27b) Provide the number of and/or name(s) of any personnel required to stay overnight on the refuge, if applicable.
- 28) Identify all equipment and materials that will be used, if required. Permit renewals may not require a list of equipment if the project is essentially unchanged from a previously issued permit. Contact the specific refuge office to determine applicability of this requirement.
- 29a-29e) Identify types and schedule(s) of installation of any instrumentation, data collection, and maintenance schedule of instrumentation, if required. Permit renewals may not require a list of equipment if the project is essentially unchanged from a previously issued permit. However, schedules of installation of any instrumentation, data collection, and maintenance schedule of instrumentation may still be required. Contact the specific refuge headquarters office where the project is going to be conducted to determine applicability of this requirement.
- 30) Identify logistical arrangements for offsite transportation of samples taken, if applicable.
- 31a-31d) Describe and provide vehicle descriptions and license plate or identification numbers of all vehicles, including boats and airplanes, if required. Motor vehicle descriptions are only required for permittee vehicle, and/or if the vehicle will be operated on the refuge without the permittee being present. Motor vehicles that are accompanied by the permittee as part of a group (convoy) activity need not be identified if cleared in advance by refuge supervisor. Specifically describe ship-to-shore, intersite (between islands, camps, or other sites) and onsite transportation mechanisms, and license plate or identification numbers, if required.
- 32a-32b) Identify specific location(s) of fuel cache(s) (GPS coordinates preferred), if required.
- 33a-33b) Attach safety plan, if required. Contact the specific refuge office to determine applicability of this requirement.
- 34) Specifically describe onsite work and/or living accommodations, if required. Include descriptions and locations (GPS coordinates preferred) of spike camps or other remote work and/or living accommodations that are not part of the base of operations. Contact the specific refuge office to determine applicability of this requirement.
- 35) Specifically describe onsite and offsite hazardous material storage, or other onsite material storage space (including on and offsite fuel caches), if required. Contact the specific refuge office to determine if descriptions of hazardous material storage or other onsite material storage are required.
- 36) Sign, date, and print the application. Click on the Print button to print the application (if using the fillable version). The refuge official will review and, if approved, fill out the remaining information, sign, and return a copy to you for signature and acceptance.

**This application form is not valid as a permit
but may be used as a reference document attached to the official permit.
Only official refuge personnel may assign a valid permit number and permit term to this application form
after the permit has been approved.**

Alaska Maritime National Wildlife Refuge Research and Monitoring Special Use Permit

(For Official Use Only)

Permit #: 74500-15-023

Permit Term: From: 9/1/2015 To: 9/30/2015

1) Principal Investigator Name/Affiliation: Michelle Coombs

2) Permit Activity Type: Geochemistry and eruptive history of Western Aleutian Island Volcanoes

3) Permit Status: Approved *If approved, provide special conditions (if any) in the text box below.*
 Denied *If denied, provide justification in the text box below.*

4) Are there additional special conditions attached to the permit? Yes No N/A

5) Are other licenses/permits required, and have they been verified? Yes No N/A

6) Are Insurance and/or Certification(s) required, and have they been verified? Yes No N/A

7) Is an Assurance of Animal Care or Institutional Animal Approval form needed? Yes No N/A

If yes, is the form attached? Yes No

8) Has a Minimum Requirements Decision Assessment been conducted? Yes No N/A

If yes, is assessment attached? Yes No

9) Record of Payments: Full Partial Exempt

10) Is a surety bond or security deposit required? Yes No N/A

This permit is issued by the U.S. Fish and Wildlife Service and accepted by the applicant signed below, subject to the terms, covenant obligations, and reservations, expressed or implied therein, and to the notice, conditions, and requirements included or attached. A copy of this permit should be kept on-hand so that it may be shown at any time to any refuge staff

11) Permit approved/issued by: (Signature and title)

FOR STEVE DeChirico

Date: 7/15/2015

12) Permit accepted by: (Signature of permittee)

M Coombs

Date: 7/15/15

ps://fishnet.fws.doi.net/regions/9/nwrs/visitor/SUP/ layouts/Print.FormServer.aspx 7/15/20

Special Conditions
Special Use Permit 74500-15-011
Page 1 of 5

Regional Standard Special Conditions

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. The permittee may not sublet any part of the authorized use area.
4. Any problems with wildlife and/or animals taken in defense of life or property must be reported immediately to the refuge manager and Alaska Department of Fish and Game, and be salvaged in accordance with State regulations.
5. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit.
6. This permit may be cancelled or revised at any time by the refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
7. The permittee shall notify the refuge manager during refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
8. The permittee shall maintain comprehensive general liability insurance (\$300,000 each occurrence, \$500,000 annual aggregate) throughout the use period specified on the permit, with the Fish and Wildlife Service named as coinsured.
9. Prior to beginning any activities allowed by this permit, the permittee must provide the refuge manager with: 1) list of all aircraft and other vehicles or vessels to be used, with identification information.
10. This permit authorizes use on State selected lands. If any of these lands are conveyed during the term of this permit, the permittee will no longer be authorized to use those

State lands, and must seek authorization from the Alaska Department of Natural Resources.

11. This permit authorizes use only on the Native corporation selected lands specifically identified in the description block of this permit. If any of these lands are conveyed during the term of this permit, the permittee will no longer be authorized to use those private lands, and must seek authorization from the appropriate Native corporation landowner.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the removal or disturbance of archeological or historic artifacts is prohibited. The excavation, disturbance, collection, or purchase of historical or archaeological specimens or artifacts on refuge lands is prohibited.
13. Permittees shall maintain their use areas in a neat and sanitary condition. If the use of emergency camps is necessary, latrines must be located at least 150 feet from springs, lakes, and streams to avoid contamination of water resources. All property (except cabins and/or tent frames) and garbage associated with the permitted activity must be removed from refuge lands.
14. The construction or clearing of landing strips or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.
15. The use of off-highway vehicles is prohibited unless specifically authorized in writing in this permit.
16. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, maintain a minimum altitude of 2,000 feet above ground level (AGL).
17. Aircraft use must be conducted in accordance with the authorized plan of operation, and in compliance with FAA regulations.
18. Construction of cabins or other permanent structures is prohibited.
19. Fuel storage sites must be approved in advance by the Refuge Manager. Preparations to prevent and respond to a fuel spill must be fully adequate at all sites for the amount of fuel stored on site.

Alaska Maritime National Wildlife Refuge Special Conditions

1. Any harassment or interference with non-game wildlife, including land animals, marine mammals, waterfowl, seabirds, and other migratory birds is strictly forbidden. Permittee shall employ best practices in avoiding disturbance to wildlife and damage to sensitive

tundra habitats. Guidelines can be found in Alaska Seas & Coasts publication “Responsible Marine Wildlife Viewing in Alaska” available for viewing at: <http://seagrant.uaf.edu/bookstore/seasandcoasts/issues/ak-seas-and-coasts-0306.pdf> Permittee will follow all specific wildlife avoidance guidance provided by the refuge including:

2. The removal of vegetation is prohibited except as authorized in writing by the Refuge Manager. Firewood gathering is limited to driftwood and beach wood.
3. Saltwater landings and take-offs must be done in a manner that avoids harassing, harming, wounding, or killing sea otters, which are listed as a Threatened species under the Endangered Species Act.
4. Unexploded ordnance (UXO) is present on many of the Aleutian Islands. Ordnance remaining from military activities during World War II may become unstable and extremely dangerous with age. If you should find any of this ordnance, please make a note of the location and report it to the refuge manager. DO NOT, under any circumstances, handle it.
5. The majority of wildlife resources on the islands are found along the coast. Zodiak operators and passengers should pay special attention to avoid disturbance to the many bald eagles that nest along the coast. These nests should be given a wide berth of 200 meters.
6. The use of helicopters is authorized, provided that:
 - a. Landing is prohibited except for the direct support of the activity covered by this permit and emergencies. No recreational use of helicopters is permitted.
 - b. Clearing of vegetation for landing/takeoff is prohibited.
 - c. Helicopter use will be minimized to ensure that impacts to wilderness character are addressed. Whenever possible, access to geological sampling areas will be on foot or from a central location after transport by helicopter.
 - d. Helicopter and foot traffic will avoid locations designated and described by the refuge.
 - e. Most sites that are accessible from the coast will be reached by skiff landings below mean high tide and on foot. Helicopter support landings will be permitted only in areas of steep topography and/or high elevation where skiff/foot access is not practicable because of the possibility of dangerous injury to researchers and support personnel. This stipulation may include some other areas at lower elevations (less than 1500 feet), but only where high probability of injury precludes skiff access (for example, steep and rocky sea cliffs). All efforts will be made to keep helicopter usage to an absolute minimum.

INVASIVE SPECIES

Best management practices shall be taken so that no invasive plants, insects, or rodents are introduced to Refuge islands. Specific requirements with respect to rodent prevention include: (a) Ships and airplanes used for transportation shall be rodent free, and vessels shall initiate rodent prevention measures for the trip. Rodent prevention kits may be requested from the refuge; (b) All gear to be taken ashore shall be packed carefully in rodent proof containers, or sealed such that no rodents can enter without causing visible sign. (For example, tape edges of cardboard boxes so rodents would have to chew through to enter); (c) All supplies shall be inspected before transfer ashore, e.g. items such as nets and tents shall be shaken out and boxes inspected for chew hole entrances from rodents.

Please pay special attention to the State of Alaska legislation below regarding rodents:

5 AAC 92.141. Transport, harboring, or release of live Muridae rodents prohibited

(a) It is unlawful for the owner or operator of a vessel, vehicle, aircraft, structure being translocated, or other means of conveyance to knowingly or unknowingly transports or harbor live Muridae rodents, or to enter this state, including the waters of this state, while knowingly or unknowingly transporting or harboring live Muridae rodents.

(b) It is unlawful for an individual to release to the wild a live Muridae rodent.

(c) It is unlawful for the owner or operator of a facility to knowingly or unknowingly harbor live Muridae rodents. The owner or operator of a harbor, port, airport, or food processing facility in which live Muridae rodents have been found shall develop and implement an ongoing rodent response and eradication or control plan.

History: Eff. 9/13/2007, Register 183

Authority: AS 16.05.255

STELLER SEA LION

Your vessel (and any other skiffs, zodiacs, other boats or aircraft on water) will not be operated within the three mile buffer zone around any Steller sea lion rookery site per Title 50 Code of Federal Regulations 223.202. No person shall approach on land closer than one-half (1/2) mile or within sight of a listed Steller sea lion rookery. Maps of these restricted zones are attached for those islands included in your itinerary. For a complete listing of all sea lion rookery sites, you can find the information on-line at:

<http://www.fakr.noaa.gov/protectedresources/stellers/habitat.htm> or

SEA OTTER

The southwest stock of northern sea otters, which extends from Cook Inlet westward through the Aleutian Islands, is listed as threatened under the Endangered Species Act (ESA). Under the ESA, each individual otter is protected from take. "Take" is defined in the ESA to include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Otters are also protected by the Marine Mammal Protection Act (MMPA) from "any act of pursuit, torment, or annoyance which has the potential to injure or disturb a marine mammal, or marine mammal stock, in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding or sheltering." To avoid illegal "take" of otters under either Act (ESA or MMPA), the permittee must avoid directly approaching otters, as described in the attached "Skiff Operation Guidance to Avoid Disturbing Sea Otters". By following the attached guidance on both State and Federal waters, the risk of taking sea otters is considered discountable under both the ESA and MMPA. Activities conducted in accordance with this guidance would be considered not likely to adversely affect listed species or critical habitat under the ESA, and would not require any additional permits under the MMPA. In the event the permittee sees an injured, dead, or stranded sea otter, please call the Alaska SeaLife Center's stranding hotline number 1-888-774-7325.

I have read and agree to abide by the special conditions listed above.

	7/15/15		FOR S. Delchancey 7/15/15
Permittee	Date	Refuge Manager	Date



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Alaska Maritime National Wildlife Refuge
95 Sterling Highway, Suite 1
Homer, AK 99603-7472

July 13, 2015

Memorandum

To: Geochemistry and eruptive history of Western Aleutian Volcanos, Alaska.

From: Marc Webber, Deputy Refuge Manager Alaska Maritime NWR.

Subject: Minimum Requirements Analysis (MRA) for focused study of the Western Aleutian Volcanos.

I have reviewed the completed MRA for the Geochemistry and eruptive history of Western Aleutian Volcanos, Alaska, Alaska Maritime NWR proposed by Michelle Coombs, and associated with the Alaska Volcano Observatory. The project application includes studying the eruptive history of volcanoes from Buldir to Kanaga by sampling rock, ash, gas and water.

Sites are located on cinder cones on the flanks of large edifices where the topography rises above 1500 feet and access by foot would cause extreme difficulty and pose serious safety concerns including possible evacuation concerns. Project is tied directly to ongoing work covered by a right-of-way permit and related Environmental Assessment which addresses helicopter use in wilderness.

For the reasons stated in the attached Minimum Requirements decision Guide, I have determined that helicopter access and use within wilderness areas will not be denied.

If you have any questions, please contact me at (907) 226-4605.

Marc Webber, Deputy Refuge Manager



ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

"...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."

-- The Wilderness Act of 1964

Project Title: Geochemistry and eruptive history of Western Aleutian volcanoes

MRDG Step 1: Determination

Determine if Administrative Action is Necessary

Description of the Situation

What is the situation that may prompt administrative action?

Helicopter access in Wilderness on Buldir, Kiska, Segula, Davidof, Little Sitkin, Garloi and Kanaga Island has been requested.

Options Outside of Wilderness

Can action be taken outside of wilderness that adequately addresses the situation?

- YES STOP – DO NOT TAKE ACTION IN WILDERNESS
 NO EXPLAIN AND COMPLETE STEP 1 OF THE MRDG

Explain:

Sampling is tied to the specific volcanoes on each of the islands.

Criteria for Determining Necessity

Is action necessary to meet any of the criteria below?

A. Valid Existing Rights or Special Provisions of Wilderness Legislation

Explain Rationale for Selection:

Sampling is specific to the volcanoes listed in the project. Volcanoes are all specific to wilderness areas within the Alaska Maritime NWR. Access cannot be made outside of wilderness because of elevation and topography constraints related to the volcanoes.

Describe Monitoring & Reporting Requirements:

Helicopter landing and use will be minimized when at all possible. Personnel will walk from one sampling site to the next when reasonable (below elevations of 1500 feet and within 2 miles of helicopter landing site).

Approvals

Which of the prohibited uses found in Section 4(c) of the Wilderness Act are approved in the selected alternative and for what quantity?

<u>Prohibited Use</u>	<u>Quantity</u>
<input type="checkbox"/> Mechanical Transport:	helicopter
<input type="checkbox"/> Motorized Equipment:	_____
<input type="checkbox"/> Motor Vehicles:	_____
<input type="checkbox"/> Motorboats:	_____
<input type="checkbox"/> Landing of Aircraft:	helicopter
<input type="checkbox"/> Temporary Roads:	_____
<input type="checkbox"/> Structures:	_____
<input type="checkbox"/> Installations:	_____

Record and report any authorizations of Wilderness Act Section 4(c) prohibited uses according to agency policies or guidance.

Refer to agency policies for the following review and decision authorities:

Prepare	Name	Position	
	Merry Maxwell	Permit Coordinator, Alaska Region	
	Signature	Date	7/13/2015

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that requires action? Cite law and section.

YES NO

Explain:

ANILCA 1310. This section of ANILCA is entitled: *navigation aids and other facilities*. The section provides for reasonable access to and operation and maintenance of, existing air and water navigation aids...

This study will supplement information necessary in order to aid navigation (by air) even though it is not related to a *facility* specifically.

This work would support ongoing geological studies which inform the public about the hazards of all activities related to earthquakes and volcanic activity, including aircraft use in the Aleutian Islands and within the State of Alaska. The work also supports the volcano and earthquake early warning system within the State of Alaska.

This study supports the accomplishment of the *purposes of the refuge*, specifically (iv) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to marine mammals, marine birds and other migratory birds, the marine resources upon which they rely, bears, caribou and other mammals, and (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats, a program of national and international scientific research on marine resources.

The volcanoes being studied are specific to the formation of the marine habitats discussed in the refuge purposes (ii).

This work is also closely tied to a right of way permit held by AVO and created to cover the study of volcanoes described in the ROW, and included in this permit.

B. Requirements of Other Legislation

Is action necessary to meet the requirements of other federal laws? Cite law and section.

YES NO

Recommended	Name	Position
Approved	Name	Position
	Marc Webber	Deputy Refuge Manager
	Signature <i>Marc Webber</i>	Date 7/15/05

Appendix 9-4: Sensitive Wildlife Areas on Buldir

