

## Lotic AIM Gear List - 2022 Field Season

Sampling Items	Need Based on Core/Contingent Indicators	Gear Used for the Following Methods or Purposes	Quantity	Estimated Price	Possible Vender(s)*	Suggested Item Name or Model (Stock/Manufacturer Part Number)
<b>Electronics</b>						
iPad (see specifications) with cellular data plan	Required	All	1	\$300.00	Amazon	<a href="#">See these details on iPad requirements and setup. Also on aim.landscapetoolbox.org</a>
iPad Cellular Data Plan	Required	All	1	VZW 4GB Data= \$30/mo	Verizon or AT&T (check coverage in your project area)	<a href="#">See these details on iPad requirements and setup. Also on aim.landscapetoolbox.org</a>
iPad Compatible USB Drive, 64 gb	Required	All	1	\$39.99	Amazon, San Disk	<a href="#">Research the right model for your iPad (do you need a USB-c or lightning compatible USB?). Example: San Disk iXpand Drive on Amazon</a>
iPad Battery Back-Up	Required	All	1	\$43.00	Amazon, Anker	<a href="#">Anker Portable Charger on Amazon</a>
iPad Screen Protector	Highly recommended	All	1	\$10.00	Amazon	example: Tech Armor High Definition HD-Clear Apple iPad Air / Air 2 Film Screen Protector
Waterproof case for iPad	Highly recommended	All	1	variable	Armor-X	example: Armor-X Heavy Duty Waterproof/Shockproof Case for iPad Air 2020. Research your model to determine the best case
Otterbox iPad strap*	Highly recommended	All	1	\$40.00	Amazon, Otterbox website	example: Otterbox Utility Series Latch II Case for 10-inch or 13-inch (e.g., Pro) tablets. Research your model to determine the best strap.
Car and wall charging devices	Required	All	1	\$10.00	Amazon	Must work with required devices.
Port Extender (M/F)	Highly recommended	All	1	\$10.00	Amazon	Male to Female Lightning port extender is required so that you can connect your flashdrive to the iPad without taking off its waterproof case. Determine if you will need an extender that works with USB-C or lightning.
Camera	Optional	-	1	\$280.00	Amazon	Olympus TG-870 Tough Waterproof Digital Camera
GPS	Required	All	1	\$100.00	Sporting goods store	Garmin eTrex 10 (MPN: 010-00970-00)
Bluetooth GPS Booster	Optional	All	1	\$1,995-\$2,995.00	EOS	<a href="#">EOS Arrow Lite or Arrow 100</a>
Safety correspondence device	Highly recommended	Safety	1	\$150-\$350	SPOT, Forestry Suppliers	SPOT Gen3, Garmin inReach, BLM radio
*NOC recommends modifying these straps by replacing rubber straps with paracord to prevent straps from stretching or breaking						
<b>Water Quality</b>						
YSI (water quality sonde)	Required	pH, Specific Conductance and Temperature (instant)	1	\$1,174.95	<a href="https://www.ysi.com/products">https://www.ysi.com/products</a>	Multi Parameter probe (aka YSI Pro1030 pH, specific conductance, temperature, SKU:6051030) May need to add pH probe as an accessory. Contact NAMC for questions.
Pelican 1520 Case for YSI storage	Optional	pH, Specific Conductance and Temperature (instant)	1	\$114.95	Amazon	Pelican 1520 with foam, Interior Dimensions (inches): 18.06 x 12.89 x 6.72
YSI calibration fluid	Required	pH and Specific Conductance	1 of each	\$80.00	Chemistry supply stores	pH 4, 7, and 10, and Conductivity calibration solution
Bottles: DI water and calibration fluid	Required	pH and Specific Conductance	1 per solution	\$10.00	Amazon/Fruend	DI (500 ml Nalgene), pH solutions (50 ml centrifuge vials), Conductivity (32 oz Cylinder Bottle MN:3560B27NAT)
HOBO temperature probe	If collecting seasonal temperature	Temperature (seasonal)	1 per site	\$129.00	Forestry suppliers	HOBO Water Temp Pro v2 Logger (SN: 89362)
Turbidimeter and calibration solution	If collecting turbidity	Turbidity	1	\$1,035.00	Forestry Suppliers	<a href="#">LaMotte Model 2020i or 2020t Portable Turbidity Meter*</a>
Sample bottles	If collecting nutrients	Total Nitrogen / Phosphorous	1 per site	~\$2.60 each	Chemistry supply stores	<a href="#">125 mL Thermo Scientific™ Nalgene™ Certified Wide-Mouth HDPE Bottle with Polypropylene Screw Closure</a>
Water quality labels	If collecting nutrients	Total Nitrogen / Phosphorous	1 per site	\$0.50	NAMC Specific Labels	<a href="#">Printable PDF of labels can be obtained from the following link. Must be printed on Rite in the Rain paper</a>
Storage bin for samples	If collecting nutrients	Total Nitrogen / Phosphorous	1	\$10.00	Amazon	Sterilite Storage bin with locking handles (6-18 quart)
Concentrated sulfuric acid (H2SO4, ~18M)**	If collecting nutrients	Total Nitrogen / Phosphorous	1	\$24.00	Fisher Scientific	<a href="https://www.fishersci.com/shop/products/sulfuric-acid-conc-18n/S25597">https://www.fishersci.com/shop/products/sulfuric-acid-conc-18n/S25597</a>
Nalgene drop-dispensing bottle**	If collecting nutrients	Total Nitrogen / Phosphorous	2 per crew will last many seasons	\$285 for 4	Fisher Scientific	<a href="https://www.thermofisher.com/order/catalog/product/2414-0030#/2414-0030">https://www.thermofisher.com/order/catalog/product/2414-0030#/2414-0030</a>
wide mouth 1 L plastic jar to store bottle of H2SO4**	If collecting nutrients	Total Nitrogen / Phosphorous	2	\$92.00 for a pack of 6	Fisher Scientific	example: <a href="https://www.fishersci.com/shop/products/nalgene-wide-mouth-straight-sided-ppco-jars-closure/1181510E?keyword=wide+mouth+nalgene+straight+side">https://www.fishersci.com/shop/products/nalgene-wide-mouth-straight-sided-ppco-jars-closure/1181510E?keyword=wide+mouth+nalgene+straight+side</a>

Pure Baking Soda (NaHCO3)**	If collecting nutrients	Total Nitrogen / Phosphorous	enough to fill 500 mL jar	\$ 16.95 for 2 kg	Carolina Biological Supply (this grade is not available in grocery stores - no substitutions)	<a href="https://www.carolina.com/specialty-chemicals-s/sodium-bicarbonate-powder-laboratory-grade-2-kg/888361.pr">https://www.carolina.com/specialty-chemicals-s/sodium-bicarbonate-powder-laboratory-grade-2-kg/888361.pr</a>
Nitrile gloves**	If collecting nutrients	Total Nitrogen / Phosphorous	2 per site; 2 to acid stabilize	\$28.00	Amazon	<a href="https://www.amazon.com/Wostar-Nitrile-Disposable-Working-Industrial/dp/B086981L4P/ref=sr_1_10?dchild=1&amp;keywords=Sterile+Latex+Free+Gloves&amp;qid=1607462752&amp;sr=8-10">https://www.amazon.com/Wostar-Nitrile-Disposable-Working-Industrial/dp/B086981L4P/ref=sr_1_10?dchild=1&amp;keywords=Sterile+Latex+Free+Gloves&amp;qid=1607462752&amp;sr=8-10</a>
protective eyewear	If collecting nutrients	Total Nitrogen / Phosphorous	1	\$9.00	Amazon	Sunglasses are acceptable as protective eyewear. <a href="https://www.amazon.com/Gateway-Safety-6980-Glasses-Protective/dp/B00FA4RB12/ref=sr_1_5?dchild=1&amp;keywords=protective+eyewear&amp;qid=1607528712&amp;sr=8-5">https://www.amazon.com/Gateway-Safety-6980-Glasses-Protective/dp/B00FA4RB12/ref=sr_1_5?dchild=1&amp;keywords=protective+eyewear&amp;qid=1607528712&amp;sr=8-5</a>
*the 2020i (infrared) is recommended for colored or extremely turbid samples						
**Acid must be transferred to small drop-dispensing bottles prior to training under a fume hood. <b>Crews MUST keep a spare set of acid in drop-dispensing bottle, stored within 500 mL wide mouth jar of pure baking soda, and extra nitrile gloves in truck as a back-up.</b>						
<b>Slope</b>						
Auto level	Required	Slope	1	\$200.00	Forestry Suppliers	CST/Berger SAL 24 Automatic Level (SN: 37736, MPN: 55-SAL24ND)
Tripod	Required	Slope	1	\$58.99	Engineer Supply	CST/Berger, 5/8" x11 Thread Tripod Flathead (SN: ES5102, MPN: 60-ALQR120)
Stadia rod (Must Be Metric!)	Required	Slope	1	\$68.99	Engineer Supply	Johnson Level 5-Meter Dual-Scale Metric Aluminum Grade Rod (SN: ESS075, MPN:40-6327)
Hand level	Required	Flood-Prone Width / Slope	1	\$94.95	Forestry Suppliers	CST/Berger 17-630 Hand Level (SN:43948 MPN:17-630) or SitePro 2.5x Hand Level (SN:43412)
Walkie talkies	Optional	Slope	1 pair	\$30.00	Forestry Suppliers, Amazon	Motorola Talkabout Two-Way Radios
<b>Bugs</b>						
Surber sampler (500 µm net)	Required	Macroinvertebrates	1	\$420.00	Aquatic Research Instruments (made to order, <a href="http://www.aquaticresearch.com/">http://www.aquaticresearch.com/</a> )	Must be 31x31 cm (Sampler Base Area = 0.093sq.m), 500 micron mesh, Surber net with a removable 2-piece wide mouth cod end assembly.
Kick net (500 µm net)	Required	Macroinvertebrates	1	\$115.15	<a href="https://www.bioquip.com/search/DisplayProduct.asp?pid=7442D">https://www.bioquip.com/search/DisplayProduct.asp?pid=7442D</a>	Item 7442D Aquatic Net, 12" Diameter Bag, D Shape. Benthic macroinvertebrate D-frame kick net with 1 foot opening and 500 µm mesh net.
Sieve (500 µm mesh)	Required	Macroinvertebrates	1	\$54.75	Forestry Suppliers	Dual Manufacturing Standard Testing Sieve No. 35, 500 µm mesh (SN: 53623, MPN: US8-35FS)
Lobster claw rubber gloves	Required	Macroinvertebrates	1	\$26.95	Northern Sport Co., Fur Harvester Trading Post	Bemac Full Length Insulated Gauntlets
Bug jars	Required	Macroinvertebrates	3 per site	\$0.40 each	Chemistry supply stores	17oz "peanut butter jars", Price ~\$76 for 189 jars. Tops not included (see below). ( <a href="https://www.sks-bottle.com/340c/fin10585.html">https://www.sks-bottle.com/340c/fin10585.html</a> )
Bug jar tops	Required	Macroinvertebrates	3 per site	\$0.20 each	Chemistry supply stores	70mm Polypropylene Ribbed cap. Price~ \$14.40 for 72 tops. ( <a href="https://www.sks-bottle.com/340c/fin126q.html">https://www.sks-bottle.com/340c/fin126q.html</a> )
Ethanol (20 L)	Required	Macroinvertebrates	1 for every 20 sites	\$60.00	Chemistry supply stores	20 L cube 95% Ethanol (190 Proof) ACS/USP Grade, not denatured
Bug sample labels	Required	Macroinvertebrates	6 per site	\$1.00	NAMC Specific Labels	<a href="#">Printable sheet of labels can be obtained from the following link. Must be printed on Rite in the Rain paper</a>
Squeeze bottles (500 ml)	Required	Macroinvertebrates	2	\$10.00	Amazon	500 ml Wash bottle Nalgene
Ethanol bottles (500 ml)	Required	Macroinvertebrates	2	\$10.00	Amazon	500 ml Wash bottle Nalgene narrow mouth
Forceps/Tweezers	Required	Macroinvertebrates	1	\$6.30	Forestry Suppliers	Entomological Tweezers, Broad (SN: 53806 MN: DRENTF02)
Metal spoon	Required	Macroinvertebrates	1	\$3.00	Thrift store	Standard dining spoon
Clear packing tape	Required	Macroinvertebrates	1	\$8.00	Amazon	Clear packing tape
Electrical tape	Required	Macroinvertebrates	2	\$10.00	Amazon	Electrical tape
Dish tub/bin	Required	Macroinvertebrates	1	\$6.00	Amazon	Sterilite 12 quart dishpan
Storage bin	Recommended	Macroinvertebrates	1	\$10.00	Amazon	Sterilite Storage bin with locking handles (6-18 quart)
Quickdry Aquaseal (for fixing the net)	Required	Macroinvertebrates	1	\$7.00	Sporting goods store	Aquaseal (UV cure preferred) by GearAid
Scrub Brush (long handle)	Required	Macroinvertebrates	1 or 2	\$10.00	Amazon	Similar to something for dishwashing or utility cleaning. Must have a hole in one end that can be tied to Surber. Used to disturb substrate and dislodge macros so they can be washed into the Surber. Each Surber should have its own brush tied to it.
<b>Physical Habitat</b>						
50m Tape	Required	Reach Setup, Widths, Pool Lengths, Flood Prone Width	1	\$30.95	Forestry Suppliers	Keson Metric Open Reel Fiberglass Tape 50M OTR-50 (SN: 40110, MPN: OTR50M)

30m Tape	Required	Reach Setup, Widths, Pool Lengths, Flood Prone Width	2	\$44.00	Forestry Suppliers	Keson Metric Open Reel Fiberglass Tape 30M OTR-30 (SN: 40108, MPN: OTR30M)
Large nail/stakes	Optional	Holding Wheel Tape	2	\$5.00	Home Depot, Lowes	12-inch long galvanized steel nail stake
Ruler with millimeters	Required	Streambed Particle Sizes	1	\$4.00	Amazon	Fiskars Flexible Ruler or FlexiRuler work best. Should have hole on one end so that it can be attached to paracord and clipped onto crewmembers waders.
Densimeter	Required	Canopy Cover	1	\$104.50	Forestry Suppliers	<a href="#">Convex Spherical Crown Densimeter Model-A (SN: 43887)</a> . See <a href="#">instructions on how to create a 17-point densimeter from a standard 24-point densimeter</a> .
Compass with clinometer	Required	Pool and Thalweg Depths, Bank Angle	1	\$43.00	Forestry Suppliers	Suunto Navigator MC2 with clinometer (SN: 37182, MPN: SS004242001)
Depth rods	Required	Bankfull and Floodplain Heights, Pool and Thalweg Depths, Bank Angle, Canopy Cover	1 per crew member and 1 extra per crew	\$15.00	Home Depot, Lowes, homemade	<a href="#">1.5 meter wood broom handle with metal male end, marked in 1 cm increments, and coated with polyurethane. Line level attached to the top end parallel with the rod. (Click for details on how to build)</a>
Pool tail fines grid	Only in PIBO sampling areas and collecting Pool Tail Fines	Pool Tail Fines	1		Homemade	<a href="#">14x14 inch grid with 49 equally spaced intersections of string. (Click for details on how to build)</a>
Pool tail fines underwater viewer	Only in PIBO sampling areas and collecting Pool Tail Fines	Pool Tail Fines	1	\$25.00	Homemade	3 inch diameter PVC pipe with sealed, submersible plexiglass end for underwater viewing. Should be ~ 16 inches long. Contact NAMC for advice.
<b>General Sampling Gear</b>						
Pin Flags	Required	Reach Setup	50	\$8.00	Home Depot, Lowes	Marking Flags, Irrigation Flags
Roll of flagging	Required	Reach Setup	1	\$4.00	Home Depot, Lowes	1-inch Flagging Tape
Action Packer	Required	Gear Storage	1	\$50.00	Amazon	Rubbermaid 1172 Action Packer Storage Box, 24 Gallons
Rite in the Rain Paper	Required	Data Sheets	1	\$30.00	Amazon	1 box (200 sheets) Copier Paper
Waders (Breathable)	Required	All	2	\$350.00	Sporting goods store	Varies based on crew members. Proper fitting wader are essential and should be ordered for each individual employees.
Wading boots (No felt bottoms)	Required	All	2	\$190.00	Sporting goods store	Varies based on crew members. Proper fitting wader are essential and should be ordered for each individual employees.
Small Tupperware for small items	Recommended	Small Item Gear Storage	1	\$10.00	Amazon	Sterilite small clip box (11x1.6x2.8 in) store all small items and/or electronics
Extra batteries	Required	YSI / GPS	20	\$15.00	Amazon	AA, AAA, other: For YSI, GPS, Camera, headlamp, etc.
Clipboard	Required	Data Sheets	1	\$3.00	Amazon	Plastic or metal clipboard
Field forms	Required	Data Sheets	10	\$10.00	NAMC printable PDF	<a href="#">Printable PDF field forms for use if iPad is broken. Printable forms can be obtained from the following link. Must be printed on Rite in the Rain paper.</a>
Pencils and Sharpies	Required	Flags / Labels	20	\$5.00	Amazon	Filling out sample labels, taking notes, etc.
Shears or "loppers" for vegetation	Recommended	Stream Navigation	1	\$20.00	Home Depot, Lowes	For removing vegetation blocking sample site
Duct tape	Required	Reach Setup & Repairs	1	\$7.00	Amazon	Roll of duct tape for repairs and creating more durable pinflags. Fluorescent duct tape is recommended so that the pin flags remain highly visible. Large bold transect letters should be written onto duct tape flags.
Parachute cord	Required	All	1	\$7.00	Amazon	Bundle of p-cord for general repairs
<b>Disinfectant Items</b>						
Super HDQ Neutral or approved substitute*	Required	Gear Decontamination	1	\$26.75	Chemistry supply stores	1 gallon
Hydriion strips (Quat Check 1000)	Required	Gear Decontamination	1	\$10.00	Amazon	Range of 0-1000 ppm
Funnel (large)	Required	Gear Decontamination	1	\$5.00	Amazon	Oil funnel or similar
Rubbermaid/Tupperware (~14 gallon)	Required	Gear Decontamination	1	\$20.00	Amazon	Rubbermaid Roughneck Tote Storage Container 14 gallon
Scrub Brush (long handle)	Required	Gear Decontamination	1	\$10.00	Amazon	Similar to something for dishwashing or utility cleaning
Water Jug (label it toxic!)	Required	Gear Decontamination	2	\$10.00	Sporting goods store	5 Gallon heavy duty
Safety Goggles	Required	Gear Decontamination	1	\$5.00	Amazon	Must be qualified to protect eyes from chemical splash

\* For more information on Decontamination, refer to Gear Decontamination Section of TR1735-2. Check with your State to determine approved 409 or bleach solution substitutes.

Alaska crews do not need to follow Decontamination Protocol unless they are working in an area with invasives.

Camp Items	If Camping is Required, Gear Should Be Provided		Quantity	Price Each	Possible Vender	Preferred Model
First aid kit	Required	Camping	1	\$60.00	Sporting goods store	Adventure Medical Kits Weekend Mountain Kit (1-6 people)
Water jugs	Required	Camping	2	\$10.00	Sporting goods store	6 Gallon, heavy duty

Tents	Highly recommended	Camping	1 per crew member	\$150.00	Sporting goods store	2 person
Sleeping pads	Highly recommended	Camping	1 per crew member	\$20.00	Sporting goods store	Ridgerest
Cooler	Highly recommended	Camping	1	\$150.00	Sporting goods store	Size depends on length of time expected to be camping
Camp mess kit for 2-3 people	Highly recommended	Camping	1	\$70.00	Thrift stores offer affordable options	Recommended: 1 large pot, 1 small pot, medium fry pan, cooking utensils, plates, bowls, eating utensils
Stove	Highly recommended	Camping	1	\$50.00	Sporting goods store	Coleman
Action Packer	Highly recommended	Camping	1	\$35.00	Amazon	Rubbermaid 1172 Action Packer Storage Box, 24 Gallons
Shovel	Highly recommended	Camping	1	\$10.00	Home Depot	Camp shovel
Truck repair/safety kit	Highly recommended	Camping	1	\$50.00	Amazon	Recommended: Bailing wire, general repair tools, battery pack charger, jumper cables, fire extinguisher, oil, coolant, tire repair kit.

**Everything with 'Required' in column B is mandatory for Core Methods**

Many items available at forestry-suppliers.com are sometimes available at engineersupply.com

Sporting good store recommendations: Al's sporting goods (als.com), REI, Backcountry.com, Cabela's, Sportsmans warehouse