

CPS Engineering & Construction

2018 in Review
2019 Projects
Long Range Planning
Energy Assessment







Dorms 7 & 8, Tent City outhouse

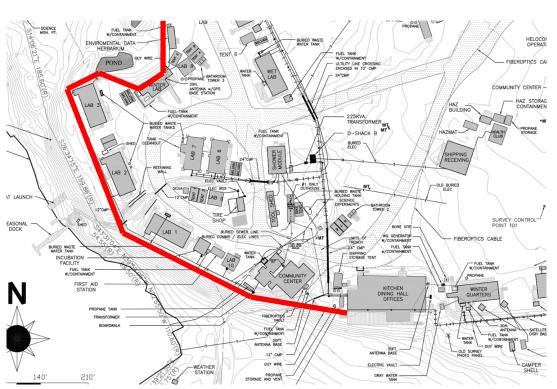








Fiber Ring Completion











- Replacement 5000-gallon unleaded fuel tank
- Tent City electrical code compliance project
- Garage Unit Heater replacement
- Cottongrass Dormitory window replacement
- Safety Audit corrective actions







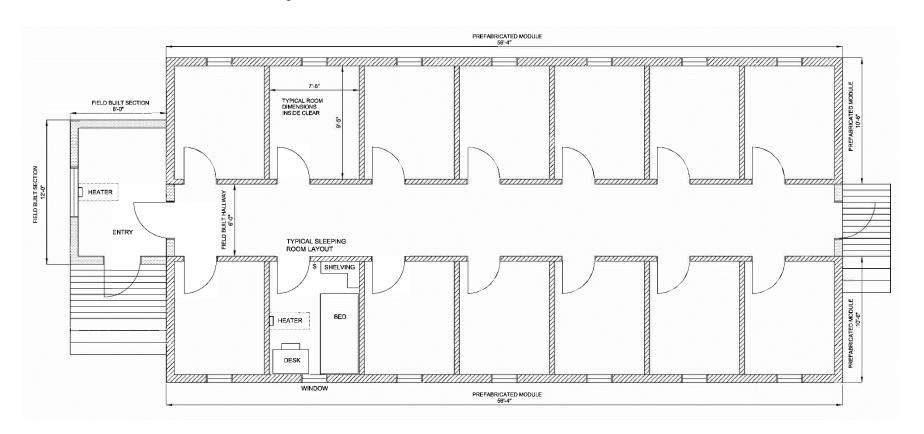
- Replacements for ATCOs 1-4
 - Two 14 bed units 28 total beds
 - Single occupancy rooms
 - Prefabricated modules with field built hallway and entry, similar to Dorm 7/8
 - Designed for 3-season use
 - Cottongrass, Winter Quarters, and Dorm 7/8 are primary winter housing







ATCO 1-4 replacement

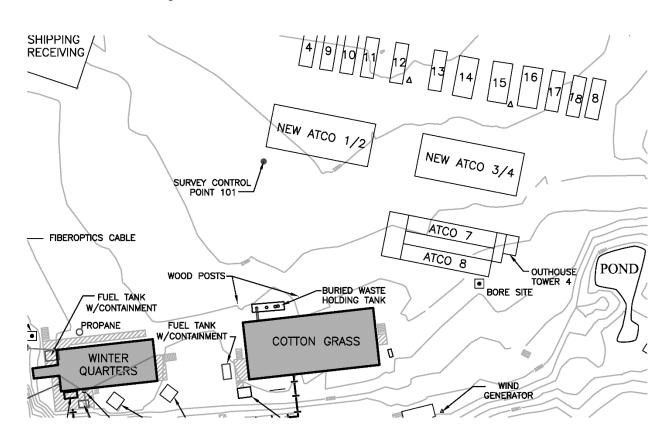








ATCO 1-4 replacement









2019 Construction Projects, continued

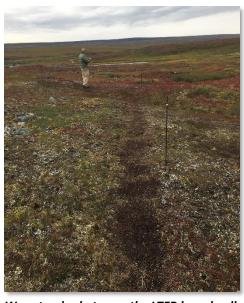
- Lab 6 flooring replacement
- Dining Facility ADA access ramp
- GIS trailer windows and flooring
- Cooling unit for Flux Hut
- UV reactor replacement in the water treatment system
- New fire suppression system for generator module 2
- Exterior paint for Labs 1-4
- Dorm 5 and 6 Hallway electrical upgrades
- Incubation Facility electrical upgrade
- Shipping/Receiving cover replacement
- Old weatherport blanket replacement 4 each
- Single wall fuel tank replacement 2 double wall tanks
- Generator fuel supply pipe replacement
- Waste Heat extension to Dining Facility (for summer hot water production)
- Small electrical projects: Lab 2, Old Pantry, NADP site, hardwire historical campers
- Common-use boardwalk upgrades







2019 Boardwalk and Science Construction



Worn tundra between the LTER boardwalk and Flux Hut



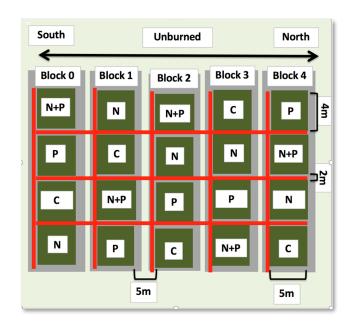






Rocha Boardwalk at Burn Site

- 30 meters of Tommydock-style boardwalk between their three tower sites and associated solar panel boxes
- 490 meters of plank boardwalk in a grid through their vegetation plots



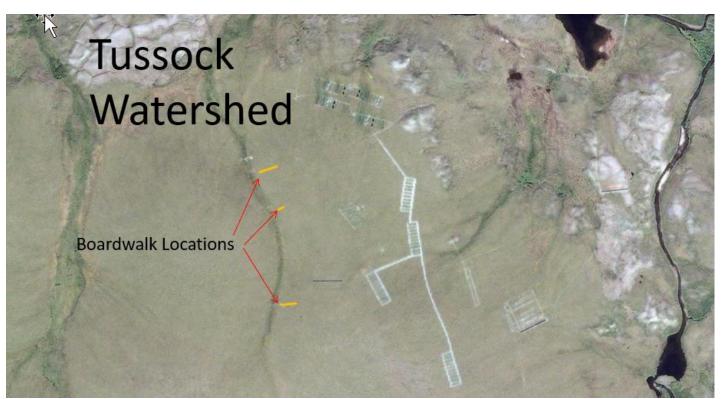






LTER – 500 plank, location TBD

200 proposed new feet

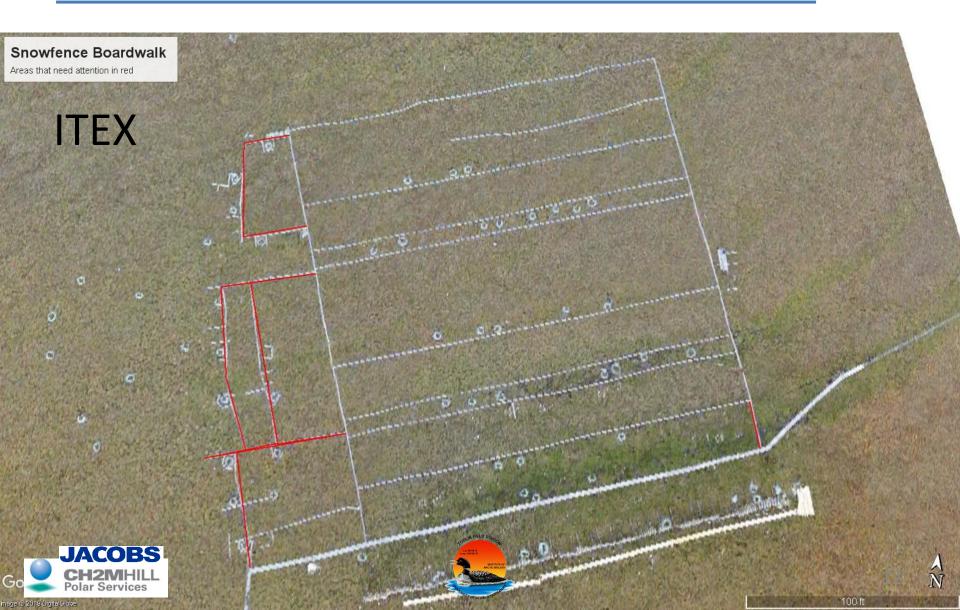








Toolik Field Station – 2019 Annual Meeting





Helicopter Support

- Second year of Pollux contract similar to last year
- Two R44 aircraft
- May 22nd to mid-September
- 267 estimated flight hours





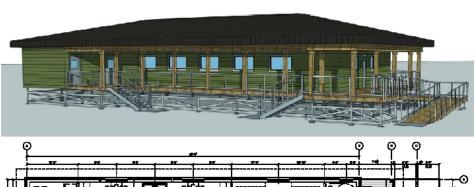
Toolik Field Station - 2019 Annual Meeting

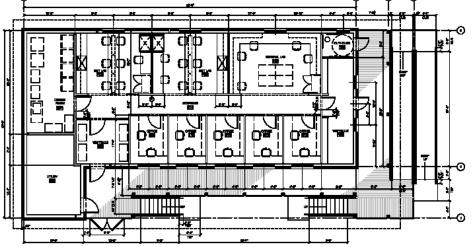


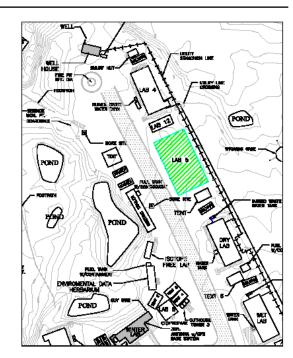




TOOLIK FIELD STATION - Lab #5







- General Purpose + Wet Lab space, offices
- Scheduled for completion in Fall 2020
- ~ \$2M construction cost



Long Range Facilities Plan

Background

Development history

• 2018 update











Long Range Facilities Plan

tivity ID	Activity Name	Start	Finish		2019					2020				2021			
				Q4	Q1	Q2	Q3	1	24	Q1	Q2	Q3	Q4	Q1	02	Q3	3 0
Long Range	e Facilities Plan	01-Od-18	15-Jul-21	7					11	11						V 1	5-Jul-2
Toolik Field Station		01-Oct-18	15-Jul-21	₩	∺	Ħ	Ħ		÷	Ħ		+++	₩	∺	Ħ	7 1	5-Jul 2
Modular Dormitories Phase I		01-Feb-19	01-Jul-19		•	• • •	7 01	Jul-18	9								
20-1160	Modular Dormitories Phase I - Procurement	01-Feb-19"	30-Mar-19		! ⊨	111											
20-1170	Modular Dormitories Phase I - Deliver	01-Apr-19	15-May-19			i i						111			111		
20-1180	Modular Dormitories Phase I - Construct	16-May-19	01-Jul-19	† † † † † † † † † † † † † † † † † † †	1-1-1-		1	ŤŤĬ	77	1.Ť	[] []	††††	777	111	ŤĦ	Ti	177
Expand Waste Heat Utilidor to Dining Facility		01-Oct-18	14-Jun-19	+++	 	++	7 14-J	un-19									
A24100	Expand Waste Heat Utilidor to Dining Facility - Design	01-Oct-18"	30-Jan-19												111		
A24070	Expand Waste Heat Utilidor to Dining Facility - Procurement	31-Jan-19	30-Apr-19		! 📛	= !											
A24090	Expand Waste Heat Utilidor to Dining Facility - Delivery	01-May-19	21-May-19														
A24080	Expand Waste Heat Utilidor to Dining Facility - Construction	22-May-19	14-Jun-19	1777	177			m	77	17	m	TTT	TIT	TTT	ŤΠ	TT	777
Laboratory 5		03-Jun-19	17-Jul-20			,	++	•	++	÷÷	++	7 17	Jul 20				
A24102	Laboratory 5 - Conceptual Design	03-Jun-19"	02-Oct-19			! ! !	: :	:									! ! !
A24105	Laboratory 5 - Design	03-Oct-19	03-Feb-20					🛏	+	⇒ !							
A24110	Laboratory 5 - Procurement	04-Feb-20	01-May-20														
A24130	Laboratory 5 - Delivery	04-May-20	22-May-20	TT T T	1777	ſΤΤ	TT	m	TT	ΤΤ.		TIT	TIT	TTT	TIT	Ti	[]]
A24120	Laboratory 5 - Construction	25-May-20	17-Jul-20								🛊	-					
EMT and Was	heteria Facility	01-Oct-19	15-Jul-21					•	++	††	 	†††	†††	†††	†††	7 1	5-Jul-2
A24180	EMT and Washeteria Facility - Design	01-Oct-19"	30-Jan-20						÷	■ !							
A24150	EMT and Washeteria Facility - Procurement	01-Feb-21"	29-Apr-21											ļ 🚎	;		
A24170	EMT and Washeteria Facility - Delivery	30-Apr-21	20-May-21		111	ſΤŤ	·[]	m	TŤ	17	m	TIT	TIT	TTT	76	TI	
A24160	EMT and Washeteria Facility - Construction	21-May-21	15-Jul-21	1111					11			111	111	111	116	-	

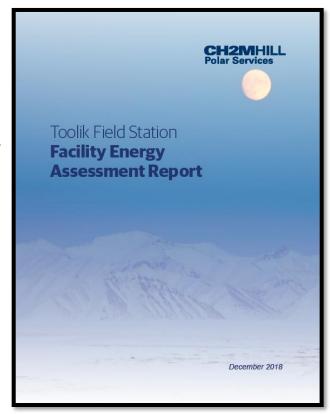






Objective

- Identify energy conservation measures for buildings with utility services
- General data collection for facility systems (lighting, water, HVAC)
- Energy and water profiles using provided meter/usage data to obtain baselines









- Observations
 - LEDs, Occupancy Light Sensors, Programmable
 Thermostats, Waste Heat Recovery, Heat Recovery
 Ventilation, Occupant Awareness and Participation
 - Older facilities typically become more inefficient as aging occurs (ex: ATCOs 1 - 4)
 - Accuracy in data is a critical component to understanding energy usage (historically and future)



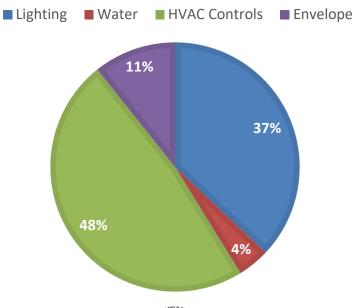




Total Cost Savings

\$51,986

PERCENTAGE OF ENERGY SAVINGS BY TECHNOLOGY









- What's Next?
 - Energy Management (site-wide analysis)
 - Achieve Overall View of "Where We Are"
 - Renewable Technology Analyses and Path Forward Recommendations
 - Waste Heat Expansion Opportunities
 - Fuel Switch Analysis and Potential Recommendations
 - Waste Management Opportunities
 - Others
 - Provide a View of "Where We Can Be" and a Path Forward



