CPS Engineering & Construction

2018 in Review
2019 Projects
Long Range Planning
Energy Assessment



2018 Construction Projects

Dorms 7 & 8, Tent City outhouse



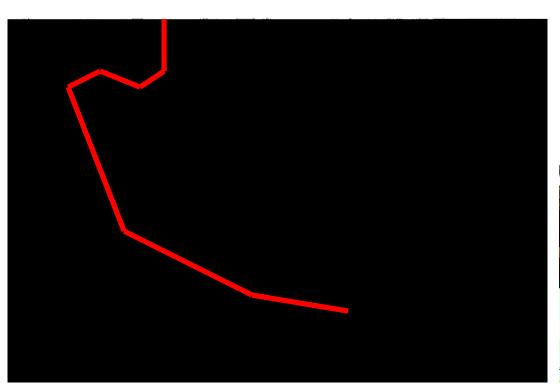






2018 Construction Projects

Fiber Ring Completion









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2018 Construction Projects

2019 Construction Projects

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



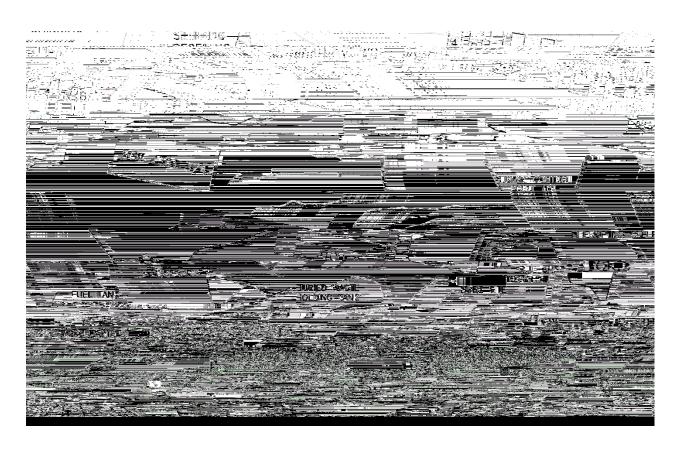
ATCO 1-4 replacement







ATCO 1-4 replacement









2019 Construction Projects, continued

Lab 6 flooring replacement

Dining Facility ADA access ramp

GIStrailer 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

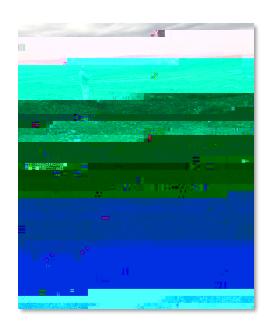
Common-use boardwalk upgrades







2019 Boardwalk and Science Construction







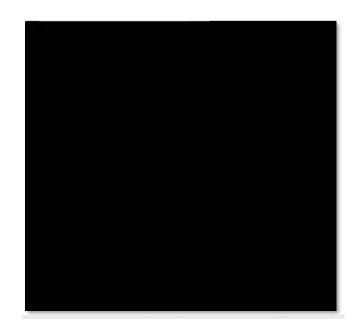




Rocha Boardwalk at Burn Site

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







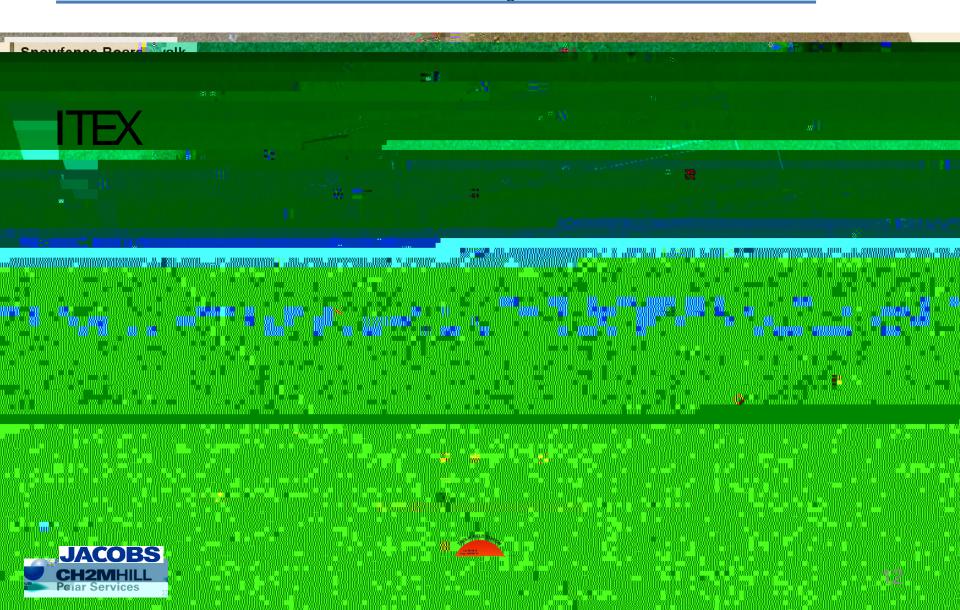


LTER 500 plank, location TBD

200 proposed new feet



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Helicopter Support

Second year of Pollux contract similar to last year

Two R44 aircraft

May 22nd to mid-September

267 estimated flight hours





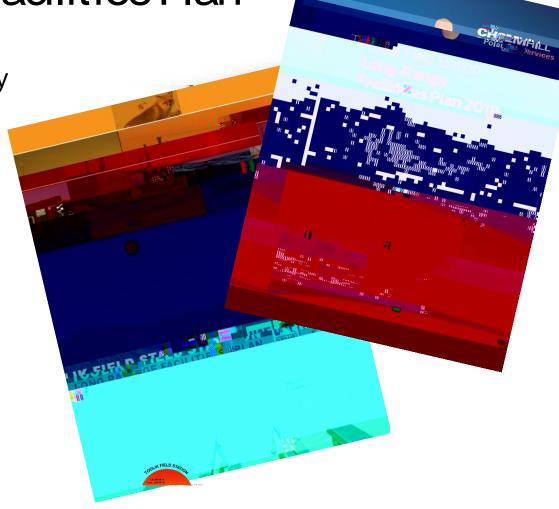


Long Range Facilities Plan

Background

Development history

2018 update







Long Range Facilities Plan









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: ATOOs 1 - 4)

Accuracy in data is a critical component to understanding energy usage (historically and future)





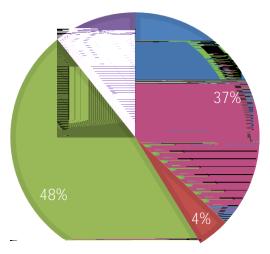


Total Cost Savings

\$51,986

PERCENTAGE OF ENERGY SAVINGS BY TECHNOLOGY











Energy Management (site-