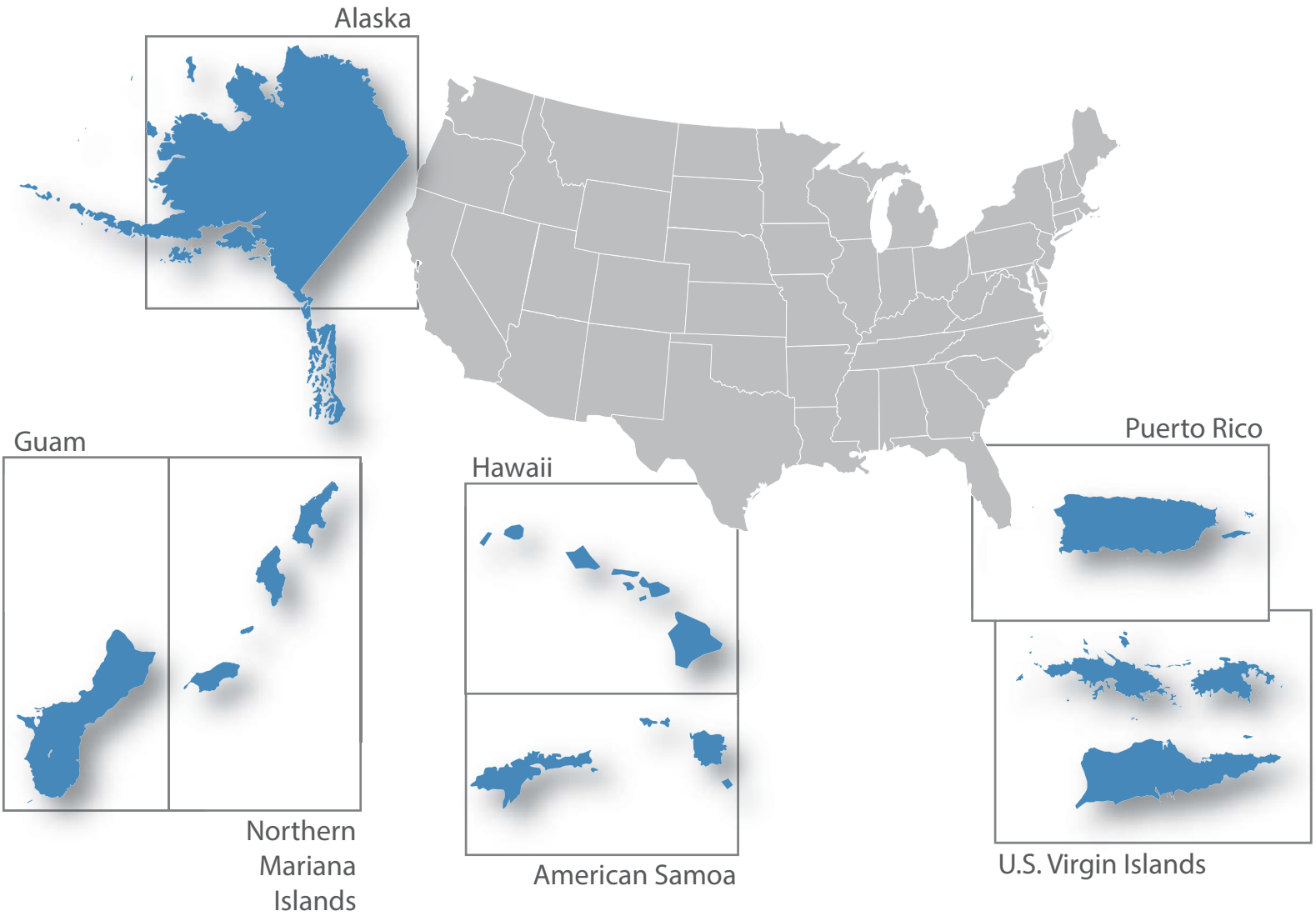
Nationwide Public Safety Broadband Network
Final Programmatic Environmental Impact Statement for the Non-Contiguous United States

FirstNet®

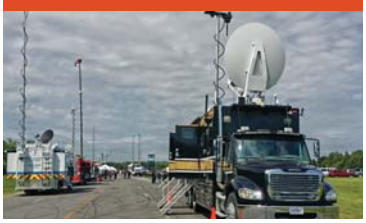
First Responder Network Authority

Volume 8 - Chapters 10-18 & Appendices

Alaska
Hawaii
American Samoa
Guam
Northern Mariana Islands
Puerto Rico
U.S. Virgin Islands



May 2017



-Page Intentionally Left Blank-

First Responder Network Authority

Nationwide Public Safety Broadband Network
Final Programmatic Environmental Impact Statement for the Non-Contiguous United States

Volume 8

Amanda Goebel Pereira, AICP
NEPA Coordinator
First Responder Network Authority
U.S. Department of Commerce
12201 Sunrise Valley Dr. M/S 243
Reston, VA 20192

Cooperating Agencies
Federal Communications Commission
General Services Administration
U.S. Department of Agriculture—Natural Resource Conservation Service
U.S. Department of Agriculture—Rural Utilities Service
U.S. Department of Agriculture—U.S. Forest Service
U.S. Department of Commerce—National Telecommunications and Information Administration
U.S. Department of Defense—Department of the Air Force
U.S. Department of Energy
U.S. Department of Homeland Security

May 2017

Cover Art Sources:

DVM (Digital Vector Maps). 2007. Blank Puerto Rico Outline. Digital Map. Accessed: April 2017. Retrieved from: http://digital-vector-maps.com/state-maps-detail/2194/Blank-Puerto-Rico-Outline-Adobe-Illustrator.htm

Environmental Resources Management, Inc. 2017. Map artwork: contiguous United States and states of Alaska and Hawaii.

Getty Images. Undated. Maps of Guam, U.S. Virgin Islands, and American Samoa. Accessed: April 2017. Retrieved from: http://www.gettyimages.com/

Marine Mammal Commission. Undated. *Polar bear (Ursus maritimus)*. Uncredited Marine Mammal Commission Photograph. Accessed: February 2017. Retrieved from: https://www.mmc.gov/priority-topics/species-of-concern/polar-bear/

Nakano, Hajime. 2006. *Latte Stones in Latte Stone Park, Hagnata, Guam*. Photograph. Wikimedia Commons. Accessed: March 2017. Retrieved from: https://upload.wikimedia.org/wikipedia/commons/a/ad/Latte_stones_in_Hagatna.jpg <https://upload.wikimedia.org/wikipedia/commons/a/ad/Latte_stones_in_Hagatna.jpg>

NPS (National Park Service). 2016. *Fruit Bat [White-necked Flying Fox (Pteropus tonganus)]*. Uncredited NPS Photograph. Accessed: January 2016. Retrieved from: http://www.nps.gov/npsa/learn/education/fruit-bats-are-our-friends.htm

Tapilatu, R. 2016. *Leatherback Turtle*. Photograph. National Marine Fisheries Service. Accessed: March 2017. Retrieved from: http://www.nmfs.noaa.gov/pr/species/turtles/images/leatherback_r.tapilatu.jpg

U.S. Census Bureau, Department of Commerce. 2012. TIGER/Line Shapefile, Commonwealth of the Northern Mariana Islands. Metadata updated May 17, 2013. Accessed: April 2017. Retrieved from: https://catalog.data.gov/dataset/tiger-line-shapefile-2012-state-commonwealth-of-the-northern-mariana-islands-current-census-tra

USFWS (U.S. Fish and Wildlife Service). 2013a. *Mariana Fruit Bat Pteropus mariannus / Fanihi*. Uncredited USFWS Photograph. Accessed: January 2016. Retrieved from: http://www.fws.gov/refuge/guam/wildlife_and_habitat/mariana_fruit_bat.html

_____. 2013b. *Nēnē Branta sandvicensis / Hawaiian Goose*. Photograph by Laura Beauregard, USFWS. Accessed: January 2016. Retrieved from: http://www.fws.gov/refuge/Hakalau_Forest/wildlife_and_habitat/nene.html

_____. 2015. *Rota blue damselfly (Ischura luta)*. Photograph by A. Asquith, USFWS. Accessed: January 2016. Retrieved from: https://www.fws.gov/news/ShowNews.cfm?ID=4DA36523-E516-A820-414BB2B0165E7461

_____. 2016. *West Indian Manatee.* Photograph by Keith Ramos, USFWS. Accessed: January 2016. Retrieved from: http://www.fws.gov/southeast/wildlife/mammal/manatee/

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

°F	degree Fahrenheit
°N	degrees north
µg/m^3	microgram(s) per cubic meter
µPa	micro Pascal
%	percent
A	attained
AAC	Alaska Administrative Code
AAFIS	Alaska Public Safety Identification System
AAQS	Ambient Air Quality Standards
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey (U.S. Census Bureau)
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
AGL	above ground level
AIRFA	American Indian Religious Freedom Act
AJRCCM	American Journal of Respiratory and Critical Care Medicine
AKNHP	Alaska National Heritage Program
AKOSH	Alaska Occupational Safety and Health
AKWAS	Alaska Warning System
ALMR	Alaska Land Mobile Radio
ANCSA	Alaska Native Claims Settlement Act
ANFIRS	Alaska Fire Incident Reporting System
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
APSIN	Alaska Public Safety Information Network
AQCR	air quality control region
ARFF	Aircraft Rescue and Firefighting
ARMS	Alaska Records Management System
ARPA	Archaeological Resources Protection Act of 1979
AS	Alaska Statute
ASAC	American Samoa Administrative Code
ASCA	American Samoa Code Annotated
ASCMP	American Samoa Coastal Management Program
ASDHS	American Samoa Department of Homeland Security
ASDMWR	American Samoa Department of Marine and Wildlife Resources
ASEPA	American Samoa Environmental Protection Agency
ASHPO	American Samoa Historic Preservation Office
ASPA	American Samoa Power Authority
ATO	Air Traffic Organization
ATWC	Alaska Tsunami Warning Center
AURORA	Alaska Uniform Response Online Reporting Access
BACT	best available control technology
BCE	before Common Era
BCR	Bird Conservation Regions
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BLS	U.S. Bureau of Labor Statistics
BMP	best management practice
BRFSS	Behavioral Risk Factor Surveillance System
BSAI	Bering Sea/Aleutian Island
BWG	BioInitiative Working Group
CAA	Clean Air Act
CAB	Clean Air Branch
CARB	California Air Resources Board
CBIA	Coastal Barrier Improvement Act of 1990
CBRA	Coastal Barrier Resources Act of 1982
CCP	Comprehensive Conservation Plan
CDC	Center for Disease Control
CDLNR	Commonwealth Department of Lands and Natural Resources
CE	Common Era
CELCP	Coastal and Estuarine Land Conservation Program
CEPD	Caribbean Environmental Protection Division
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFMC	Caribbean Fisheries Management Council
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHC	Commonwealth Health Center
CIA	Central Intelligence Agency
CMIP3	Coupled Model Intercomparison Project phase 3
CNMI	Commonwealth of Northern Mariana Islands
CNMIAC	Commonwealth of Northern Mariana Islands Administrative Code
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
COMAR	Committee on Man and Radiation

CPA	Commonwealth Ports Authority
CRMP	Coastal Resources Management Program
CSP	Central South Pacific
CUC	Commonwealth Utilities Corporation
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DACA	Deployable Airborne Communications Architecture
DAR	Division of Aquatic Resources (Hawaii)
DAWR	Division of Aquatic and Wildlife Resources (Guam)
dB	decibel(s)
dBA	A-weighted decibel(s)
DBCP	1,2-dibromo-3-chloropropane
dBZ	Z-weighted decibel(s)
DCP	1,2-dichloropropane
DEC	Department of Environmental Conservation
DHHL	Department of Hawaiian Homelands
DLNR	Department of Land and Natural Resources (Hawaii)
DMA	Disaster Mitigation Act of 2000
DNER	Department of Natural and Environmental Resources of Puerto Rico
DOA	Department of Agriculture
DOD	Department of Defense
DOE	U.S. Department of Energy
DOH	Department of Health
DOH-CAB	Hawaii Department of Health, Clean Air Branch
DOT	U.S. Department of Transportation
DPNR	Department of Planning and Natural Resources (U.S. Virgin Islands)
DPS	Department of Public Safety
EA	Environmental Assessment
EAS	Emergency Alert System
EBS	Emergency Broadcast System
EDB	ethylene dibromide
EFH	essential fish habitat
EMS	emergency medical services
ENSO	El Niño/Southern Oscillation
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	effective radiated power
ESA	Endangered Species Act
ESI	Environmental Sensitivity Index
FAA	Federal Aviation Administration
FAD	Fish Aggregating Device
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FirstNet	First Responder Network Authority
FMP	Fishery Management Plan
FPPA	Farmland Protection Policy Act of 1981
FR	Federal Register
ft	feet
g/hp-hr	grams per horsepower-hour
g/mi	grams per mile
GAP	Gap Analysis Program
GCA	Guam Code Annotated
GDA	Guam Department of Agriculture
GEPA	Guam Environmental Protection Agency
GHG	greenhouse gas
GIS	geographic information system
GMP	General Management Plan
GOA	Gulf of Alaska
GRHP	Guam Register of Historic Places
GWP	global warming potential
H_2S	hydrogen sulfide
HDOH	Hawaii Department of Health
HEI	Health Effects Institute
HHCA	Hawaiian Homes Commission Act of 1920
HI-EMA	Hawaii Emergency Management Agency
HIANG	Hawaii Air National Guard
HIARNG	Hawaii Army National Guard
HIHWNMS	Hawaiian Islands Humpback Whale National Marine Sanctuary
HIOSH	Hawaii Occupational Safety and Health Division
hp	horsepower
HRD	(Guam) Historic Resources Division
HRHP	Hawaii Register of Historic Places
HRS	Hawaii Administrative Rules, Revised Statute
HTA	Hawai'i Tourism Authority
HUC	hydrologic unit code
I/M	Inspection/Maintenance
IARC	International Agency for Research on Cancer
IBA	Important Bird Area
IEEE	Institute of Electrical and Electronics Engineers
IFC	International Finance Corporation
in	inches
IPCC	Intergovernmental Panel on Climate Change
IR	ionizing radiation
ITCZ	Intertropical Convergence Zone
IUCN	International Union for Conservation of Nature
kg/gal	kilograms per gallon
KIRC	Kaho'olawe Island Reserve Commission

LAER	lowest achievable emission rate
lb/day	pounds per day
lb/hp-hr	pounds per horsepower-hour
LBJ	Lyndon B. Johnson
Ldn	day-night average sound level
Leq	equivalent noise levels
LNG	liquefied natural gas
LTE	Long Term Evolution
$\mu g/m^3$	microgram(s) per cubic meter
µPa	micro Pascal
m/s	meter per second
MBTA	Migratory Bird Treaty Act
mg/m^3	Milligram(s) per cubic meter
mgd	million gallons per day
MHz	megahertz
MLRA	Major Land Resource Area
mm/s	millimeters per second
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MPA	Marine Protected Area
mph	miles per hour
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MTR	Military Training Route
MUID	Map Unit Identification Data
MW	megawatt
mW/cm^2	milliwatts per centimeter squared
N	north; not attained
N_2O	nitrous oxide
NA	not applicable; not assessed
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NANSR	Nonattainment New Source Review
NAWAS	National Warning System
NCA	National Climate Assessment
NCD	non-communicable disease
NCDC	National Climatic Data Center
NCN	no common name
NCRP	National Council on Radiation Protection and Measurements
ND	no data
NE	northeast
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NFIRS	National Fire Incident Reporting System
NHPA	National Historic Preservation Act
NIR	non-ionizing radiation
NMFS	National Marine Fisheries Service
NMHC	non-methane hydrocarbon compounds
NMOG	non-methane organic compounds
NNE	north-northeast
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NP	National Park
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NPSBN	nationwide public safety broadband network
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NTIA	National Telecommunications and Information Administration
NVSR	National Vital Statistics Report
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
NWWS	National Weather Wire Satellite System
OHA	Office of History and Archaeology
OIA	Office of Insular Affairs (USDI)
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAG	Port Authority of Guam
PAHO	Pan American Health Organization
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PCS	Personal Communications Service
PDO	Pacific Decadal Oscillation
PEIS	Programmatic Environmental Impact Statement
PL	Public Law
PM	particulate matter
PM_{10}	particulate matter up to 10 micrometers in diameter
$PM_{2.5}$	particulate matter up to 2.5 micrometers in diameter
POPs	points of presence
ppm	parts per million
PRDNER	Puerto Rico Department of Natural and Environmental Resources
PREQB	Puerto Rico Environmental Quality Board
PR OSHA	The Puerto Rico Occupational Safety and Health Administration
PRASA	Puerto Rico Aqueduct and Sew Authority
PREPA	Puerto Rico Electric Power Authority
PRSHPO	Puerto Rico State Historic Preservation Office
PSD	Prevention of Significant Deterioration
PUAG	Public Utility Agency of Guam
Pub. L.	Public Law

PV	photovoltaic
RAN	radio access network
RCP	Representative Concentration Pathway
RCRA	Resource Conservation and Recovery Act
RF	radio frequency
RIN	Regulation Identification Number
rms	root mean square
ROW	right-of-way
SAAQS	State Air Quality Standards
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act:A Legacy for Users
SARA	Superfund Amendments and Reauthorization Act of 1986
SE	Standard of Error
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLR	sea level rise
SMA	Special Management Area
SMS	Scenery Management System
SO_2	sulfur dioxide
SOx	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasure
SPCZ	South Pacific Convergence Zone
SPOC	State Single Point of Contact
SRES	Special Report on Emission Scenarios
SSA	sole source aquifer
STATSGO2	State Soil Geographic [Database]
SW	southwest
TAAQS	Territory Ambient Air Quality Standards
TCP	traditional cultural property
TEMCO	Territorial Emergency Management Coordinating Office
TMDL	Total Maximum Daily Load
TOC	total organic compound
tpy	tons per year
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
U.S.	United States
UAMES	University of Alaska Museum Earth Sciences
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Climate Change Research Program
USGS	U.S. Geological Survey
USVIDOH	U.S. Virgin Islands Department of Health
USVIPD	U.S. Virgin Islands Police Department
UVA	University of Virginia
VdB	vibration decibel(s)
VIC	Virgin Islands Code
VIPA	Virgin Islands Port Authority
VISHPO	Virgin Islands State Historic Preservation Office
VOC	volatile organic compound
vog	volcanic smog
VRM	Visual Resource Management
W	watt(s)
W/m^2	watts per meters squared
WAPA	Water and Power Authority
WHO	World Health Organization
WIMARCS	West Indies Marine Animal Research and Conservation Science
WNP	Western North Pacific
WNW	west-northwest
WPC	watts per channel
WPRFMC	Western Pacific Regional Fishery Management Council

-Page Intentionally Left Blank-

18. GLOSSARY

Terms are defined within the context of this Programmatic Environmental Impact Statement.

aeolian: An environment where wind is the major agent of sediment deposition.

agroecosystems or agroforestry: Land use management system in which trees or shrubs are grown around or among crops or pastureland.

alluvial fan: Sediment or debris in a fan shape deposited by streams and rivers.

alluvial valleys: Valleys formed by rivers.

alluvium: Sediment (clay, silt, sand, and/or gravel) deposited by flowing streams in a river valley.

alvar: A biological environment of naturally open areas of thin soil over limestone or marble bedrock, distinguished by a vegetation community that includes a number of rare plants.

ammonia slip: An industry term for ammonia passing through the Selective Catalytic Reduction system un-reacted. This occurs when ammonia is over-injected into a gas stream, temperatures are too low for ammonia to react, or the catalyst has degraded.

anadromous fish: Fish born in freshwater that migrate to the ocean to grow as adults, and then return to freshwater to spawn.[1]

anchialine pools: Enclosed, landlocked waterbodies or ponds with an underground connection to both fresh and salt water.[2]

anthropogenic: Changes caused by humans.

aquatic: Of or related to water.

aquifer: An underground layer of water-bearing permeable rock, rock fractures, or unconsolidated sediments from which groundwater can be extracted using a water well.

arthropod: Arthropods are invertebrate animals that have segmented bodies and jointed appendages, such as insects, spiders, and crustaceans.

attainment area: Any area that meets the national primary or secondary ambient air quality standard for the pollutant.

avifauna: The birds of a particular region, habitat, or geological period.

backhaul capacity: The ability of a network to transfer data from a radio base station or cell site to a larger core network. These connections are typically made via fiber optic cable and microwave technology.

benthic: Anything associated with or occurring on the bottom of a body of water.

[1] NOAA (National Oceanic and Atmospheric Administration). 2006. *Fisheries Glossary*. NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

[2] NOAA (National Oceanic and Atmospheric Administration). 2006. *Fisheries Glossary*. NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

binge drinking: More than five drinks on one occasion for adult men and more than four drinks on one occasion for adult women.[3] See also heavy alcohol consumption.

biology (soils): The presence/absence of vegetation in soils that affects the soil's organic content quantity.

biophysical settings: Settings that represent the areas of vegetation that dominates a landscape without human disturbance.

bioretention: Bioretention is a structural storm water control measure that captures and temporarily stores storm water runoff using soils and vegetation in shallow basins or landscaped areas to provide enhanced removal of dissolved storm water pollutants, including nutrients, pesticides, organics, metals, and biological constituents.

bivalve: An aquatic mollusk with a hinged shell that encloses an invertebrate body.

bog: Wet, spongy ground with soil composed mainly of decayed vegetable matter.

boreal forest: Forest that consists primarily of spruces, pines, and larches.

breeding area: The area used by an organism to reproduce and to rear its offspring.

bycatch: Unintentional capture/injury/entanglement of unwanted species during commercial fishing (e.g., a shark captured in a seine net targeting salmon).

calcareous: Of or containing calcium carbonate, calcium, or limestone, or occurring on limestone.

candidate species: A species officially nominated for listing as threatened or endangered, according to the Endangered Species Act.

carbon sink: Carbon sinks occur when natural processes absorb more carbon dioxide than they release. Examples of natural processes that serve as carbon sinks include forests, soils, oceans, and vegetation.

catadromous: An organism that lives in fresh water and travels to the sea to spawn.

cays: Small, low-elevation, sandy islands on the surface of a coral reef.

cetacean: An order of marine mammals commonly known as whales, dolphins, and porpoises.

Chamorro: Indigenous people of the Mariana Islands, including Guam and the Northern Mariana Islands.

chikungunya: A mosquito-borne disease.

cistern: An artificial reservoir, usually underground used to store water.

Class I Areas: National parks and wilderness areas in attainment or unclassifiable areas that exceed 5,000 acres in size and were in existence on August 7, 1977.

climate (soils): Chemical changes in parent material occur slowly in low temperatures. Hot temperatures evaporate moisture, which facilitates chemical reactions within soils. The highest degree of reaction within soils occurs in temperate, moist climates.

[3] Centers for Disease Control. 2016. *Excessive Alcohol Use: Preventing a Leading Risk for Death, Disease, and Injury*. Accessed: November 11, 2016. Retrieved from: https://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2015/alcohol-aag.pdf

commercial fishery: The whole process of catching and marketing fish and shellfish for sale.

confined aquifers: Layers of groundwater that are generally bound above and below with impermeable layers of rock or sediment. Unconfined aquifers are not bound by such layers.

congregatory: The behavior of gathering in groups.

coral bleaching: The stress response of corals releasing the photosynthetic plankton, known as Zooxanthellae, leading to coral bleaching.[4]

county equivalent: The U.S. Census Bureau terminology for a geographic area that functions as a unit of state government, even if it is not formally known as a county.

covered haul system: A covered haul system involves water "piped into the carrier vehicle, withdrawn by similar mechanism into the user's cistern, and in most cases, piped again from cistern to faucet."[5]

critical habitat: An area essential to the conservation of an endangered or threatened species that is designated by a governmental entity and that may require special management considerations or protection.

crustaceans: A group of freshwater and saltwater invertebrates with jointed legs and a hard shell of chitin (e.g., shrimps, crabs, lobsters, and crayfish).[6]

decapods: Types of crustaceans. Common crustacean examples include crayfish, crabs, and lobsters.

deciduous: Plants that shed certain structures such as leaves seasonally or at a given stage in development.

degradation: A reduced capacity of the environment to meet social or ecological objectives or needs.

demersal: Species that live and/or feed on or near the sea floor.

dengue: A mosquito-borne disease.

depredating bird: A bird that causes resource damage, economic loss, or a threat to health or human safety.

dimension stone: Natural rock material quarried for the purpose of obtaining blocks or slabs that meet specifications as to size and shape.

---

[4] National Oceanic and Atmospheric Administration. 2006. *NOAA Fisheries Glossary.* NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

[5] U.S. Environmental Protection Agency. 1998. *Applicability of the Safe Drinking Water Act to Water Haulers*. Accessed September 17, 2015. Retrieved from: http://nepis.epa.gov/Exe/ZyNET.exe/P100NBCV.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000036%5CP100NBCV.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL (updated January 2016)

[6] National Oceanic and Atmospheric Administration. 2006. *NOAA Fisheries Glossary*. NOAA Technical Memorandum NMFS-F/SPO-69. October 2005. Revised Edition, June 2006.

direct effect: Effects that physically alter a historic property in some way.

ecoregion: An ecological area that is relatively homogeneous in climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

ecosystem: A biological community of interacting organisms together with their physical environment.

endangered species: According to the Endangered Species Act, the term *endangered species* means any species in danger of extinction throughout all or a significant portion of its range. This does not include species of the Class Insecta determined by the Secretary of the Interior to constitute a pest whose protection under the provisions of the Endangered Species Act would present an overwhelming and overriding risk to humans.

endemic: Species that are only found in one area or region. Also, (of a disease or condition) regularly found among particular people or in a certain area.

energetic (climate change): Refers to strength and amplification in oscillations.

ephemeral stream: Ephemeral streams carry water only as a result of precipitation (any time of year).

epiphytic: Plants living on, or attached to, another plant.

ermine: A small carnivorous short-tailed weasel.

erosion control blanket: Biodegradable or synthetic sheet-like materials that are rolled out onto disturbed areas to protect soil from wind and water erosion.

estuarine: See estuary.

estuarine emergent wetlands: Coastal wetlands dominated by herbaceous vegetation where salt water from the sea mixes with rivers and streams.

estuarine intertidal: Coastal areas usually semi-enclosed by land but have open partially obstructed access to open ocean. Water is partially diluted by freshwater runoff.

estuary: Coastal areas where salt water from the sea mixes with rivers and streams, and may also be called bays, harbors, inlets, or lagoons.

ethnographic: The systematic study of people and cultures, generally designed to explore culture from the point of view of the subject of the study.

eutrophication: A process where waterbodies receive excess nutrients that stimulate excessive plant growth.

evapotranspiration: The sum of evaporation and plant transpiration from the Earth's land and ocean surface to the atmosphere

exotic species: A plant or animal species introduced from another geographic area that is not native to the area.

expansive soils: Soils that include clay materials that swell when they absorb water and shrink when dry, leaving voids in the soil.

extant: A species still in existence.

extinction: The state or process of a species' disappearance from part or all of its range.

extirpated: Cease to exist in the geographic area of study.

fern allies: Plants similar to true ferns but have different leaf structures, if they have leaves at all.

forams (Foraminifera): Single-celled organisms with shells.

freshwater-lens systems: Systems where freshwater floats on saltwater separated by a transition zone of brackish water found in areas where groundwater is not held up by impermeable barriers.

frugivorous: Animals that eat primarily fruit.

furbearers: Mammal species traditionally trapped or hunted for their fur, such as marten, lynx, wolverine, and beaver.

geology: An interdisciplinary science with a focus on the following aspects of earth sciences: geologic hazards and disasters, climate variability and change, energy and mineral resources, ecosystem and human health, and groundwater availability.

germanium: A mining byproduct associated with zinc production.

gestation: The period of development from conception to birth.

glacial: Relating to, or resulting from, the presence or effects of glaciers and ice sheets.

Guamanians: The native peoples of Guam.

guts: Narrow coastal water channels usually subject to strong tidal currents flowing back and forth.[7]

habitat: The natural environment where an organism lives, including its biological and physical surroundings.

hard ground conditions: A hard site exists where noise travels away from the source over a generally flat, hard surface such as water, concrete, hard-packed soil, or other ground surfaces having a low porosity. These are examples of reflective ground, where the ground does not provide any attenuation. The standard attenuation rate for hard site conditions is 6 A-weighted decibels (dBA) per doubling of distance for point source noise (e.g., power generators, most construction activities, etc.) and 3 dBA per doubling of distance for line sources (e.g., highway traffic, conveyor belt, etc.).[8]

harvesting: The act or process to take or kill wildlife for food, sport, or population control; to gather crops for consumption or sale.

haulouts: Areas of land or ice where seals and walrus come ashore to rest, molt, or breed.

[7] University of Virgin Islands. 2009. *Waves of Change: A Resource for Environmental Issues in the U.S. Virgin Islands*. University of the Virgin Islands Center for Marine and Environmental Studies, Virgin Islands Marine Advisory Service. Accessed: May 2015. Retrieved from: ftp://ftp.nodc.noaa.gov/pub/data.nodc/coris/library/NOAA/other/waves_change_envir_resource_usvi.pdf

[8] Washington State Department of Transportation. 2015. *Biological Assessment Preparation for Transportation Projects - Advanced Training Manual*. Version 02-2015. February 2015. Accessed: June 2015. Retrieved from: http://www.wsdot.wa.gov/Environment/Biology/BA/BAguidance.htm#manual

haze: A condition caused when sunlight encounters tiny pollution particles in the air. Some light is absorbed by particles; other light is scattered away before it reaches an observer. More pollutants mean more absorption and scattering of light, which reduce the clarity and color of what we see. Some types of particles, such as sulfates, scatter more light, particularly during humid conditions.

heavy alcohol consumption: Drinking five or more drinks on the same occasion on each of five or more days in the past 30 days. See also binge drinking.

heavy drinking: More than two drinks per day for adult men and more than one drink per day for adult women.[9]

herbaceous: Plants that do not have woody stems.

herbivorous: Animals that eat primarily plants.

hibernacula: Habitats within which animals hibernate or otherwise seek refuge for extended periods.

highly migratory: Pelagic, or open-water, species that have a wide geographic distribution, both inside and outside countries' 200-mile zones, and that undertake migrations of significant but variable distances across oceans for feeding or reproduction.

historic property: An historic property is defined as any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places] including artifacts, records, and material remains related to such a property or resource" (*16 USC § 470(w)(5)*).

hookah: A basic form of surface-supplied diving in which the air supply is via a single hose.

hotspot (geology): A location where plumes of hot rock rise from within the Earth toward the surface. Lower pressures toward the surface allow rock to melt, which can result in molten rock, volcanism, and lava flows.

human environment: The natural and the physical (e.g., structures) environment, and the association of people and their activities to those environments.

human health and safety: The existing environment for health and safety is defined by occupational and environmental hazards likely to be encountered during the construction, operation, and maintenance of towers, antennas, cables, utilities, and other equipment and infrastructure at existing and potential FirstNet telecommunication sites.

hydrology: The properties of water movement and distribution via precipitation, runoff, storage, and evaporation, especially in relation to land.

ice floe: A sheet of floating ice where walrus calves are typically born.

[9] Centers for Disease Control. 2016. *Excessive Alcohol Use: Preventing a Leading Risk for Death, Disease, and Injury*. Accessed: November 11, 2016. Retrieved from: https://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2015/alcohol-aag.pdf

Indian tribe: The National Historic Preservation Act of 1966 defines and Indian tribe as "an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (*43 USC § 1602*), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians" (*16 USC § 470(w)*).

indirect effect: Effects that are further removed in time or space and diminish some aspect of the historic property, but may not physically alter it.

inferred properties (soils): Soil properties that are inferred from the combined data of soil science and other disciplines such as meteorology.

infiltration basins: Infiltration basins (also known as recharge basins) are considered a treatment BMP because they can remove pollutants from surface discharges by capturing the storm water runoff volume (typically, larger volumes than an infiltration trench) and infiltrating it directly to the soil rather than discharging it to an aboveground drainage system.

informed siting of Proposed Action features: Refers to the act of locating activities or features in areas that do not support listed species or their known habitats.

infrastructure: Consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure includes a broad array of facilities such as utility systems, streets and highways, railroads, airports, buildings and structures, ports, harbors, and other manmade facilities.

injurious wildlife: Any animal species or subspecies (except game birds or game mammals) known to be harmful to agriculture, aquaculture, indigenous wildlife or plants, or constituting a nuisance or health hazard, as listed in the *List of Species of Injurious Wildlife in Hawaii, Exhibit 5, Chapter 13-124,* State of Hawaii, Division of Forestry and Wildlife.

insectivorous: To feed on insects, worms, and other invertebrates.

intermittent stream: Streams that carry water for part of the year (generally winter and spring).

invasive species: Introduced species that out-compete native species for space and resources.[10]

island arc: A type of archipelago with an arc-shaped alignment. Island arcs are typically of volcanic origin.

jurisdictional wetlands: Jurisdictional wetlands are wetlands that are found to be "waters of the U.S." per definitions presented in the Clean Water Act, and are thus under the jurisdiction of the U.S. Army Corps of Engineers.

juvenile: An organism that has not reached sexual maturity.

karst: Terrain with distinctive landforms and hydrology created from soluble rock dissolution and characterized by springs, caves, sinkholes, and unique hydrogeology.[11]

[10] National Oceanic and Atmospheric Administration. 2006. *NOAA Fisheries Glossary*. NOAA Technical Memorandum NMFS-F/SPO-69. October 2005. Revised Edition, June 2006.

[11] U.S. Geological Survey. Undated. *USGS Groundwater Information–What is Karst?* Accessed: August 28, 2015. Retrieved from: http://water.usgs.gov/ogw/karst/pages/whatiskarst

Kona winds: Kona winds are stormy, rain-bearing winds that blow over the Hawaiian Islands from the southwest or south-southwest in the opposite direction of trade winds. Kona winds occur when a low-pressure center is within 500 miles northwest of the islands. Although strong, Kona winds usually do not last for more than a day or so.

lagomorphs: Gnawing mammals that feed on plants and have fully furred feet and two pairs of incisors in the upper jaw.

land subsidence: The downward settling or sudden sinking of the Earth's surface.

land use/land cover: Refers to the use of land, as visible from the air (or satellites).

landslide: Refers to processes that lead to the downhill movement of earth materials due to gravity and other forces.

lane miles: Refers to the length of a roadway multiplied by the number of traffic lanes.[12]

latte: Large limestone or basalt pillars topped with a capstone.

lava tubes: Lava tubes are natural conduits through which lava travels beneath the surface of a lava flow.[13]

leeward: On the side sheltered from the wind (downwind).

life cycle: The continuous sequence of an organism's development.

limestone: A sedimentary rock consisting of calcium carbonate that can be deposited either by direct precipitation out of sea water or by biochemical processes such as coral reefs that secrete calcium carbonate as part of their structure.

limiting distance: Distances beyond which an adverse effect would not occur.

listed wildlife: Any animal listed as threatened or endangered by federal or state agencies.

littoral: Refers to shore or near-shore areas.

maintenance area: An area that was previously in nonattainment, but has met the national primary or secondary ambient air quality standards for the pollutant, and has been designated as in attainment.

mammal: A warm-blooded vertebrate that gives birth to, and nurses, live young; has highly evolved skeletal structures; is covered with hair at some stage of development; and has two pairs of limbs (except some aquatic mammals).

manganese nodules: Nodular concretions of manganese and iron oxides that occur on the ocean floor as a result of direct precipitation of minerals from seawater.

manholes: A small covered opening in a street or other surface that allows a person access, usually to utilities. Manholes may be used for telecommunications activities, especially in cities and urban areas, depending on the location of other utilities; in cities, utility lines are often co-located.

[12] Rulebase Foundation. 2015. *Lane Miles Definition*. Accessed: September 2, 2015. Retrieved: from: https://definedterm.com/lane_miles

[13] U.S. Geological Survey. 2015e. *Volcano Hazards Program. Glossary–Lava Tube*. Accessed August 28, 2015. Retrieved from: http://volcanoes.usgs.gov/vsc/glossary/lava_tube.html

marine: Of, or relating to, the sea.

marine debris: Any manmade object discarded, disposed of, or abandoned that enters the marine environment.

marine intertidal: Areas of open ocean associated with high energy coastline where the substrate is exposed and flooded by tides.[14]

masonry cement: A mix, typically of Portland cement, hydrated lime, and other materials used to improve the water retention and workability of cement in masonry work.

maternity roosts: Locations where bats congregate to birth and rear young. Maternity roosts are often located in trees, under manmade structures (e.g., bridges, rooftops, etc.), or in caves.

mesic soil: A medium-wet soil condition.

metamorphic processes: A process that involves profound physical and or chemical change in rocks due to heat and pressure.

montane: Mountainous areas.

montane bogs: bogs occurring in mountainous regions.

moraine: Unstratified and unsorted sediment deposits formed through direct action of, or contact with, glacier ice. Many different varieties are recognized depending on their position with respect to a glacier.

muskeg: North American swamp or bog consisting of a mixture of water and partly dead vegetation, frequently covered by a layer of sphagnum or other mosses.

Native Hawaiian: The National Historic Preservation Act of 1966 defines Native Hawaiian as "any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii" (*16 USC § 470(w)(17)*).

Native Hawaiian Organization: The National Historic Preservation Act of 1966 defines a Native Hawaiian organization as "any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians. The term includes, but is not limited to, the Office of Hawaiian Affairs of the State of Hawaii and Hui Malama I Na Kupuna O Hawai'i Nei, an organization incorporated under the laws of the State of Hawaii" (*16 USC § 470 (w)(18)*).

noise: A form of sound caused by pressure variations that the ear can detect; often defined as unwanted sound.

nonattainment area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

[14] Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31*. Washington, D.C.

nonpoint source pollution: Any source of water pollution that does not meet the legal definition of "point source", and includes runoff from rain or snowmelt that picks up natural and manmade pollutants, such as fertilizers, oils, salt, bacteria, and others that are eventually deposited into lakes, rivers, streams, wetlands, coastal water, and groundwater (*33 USC § 1251 et seq.*).

noxious plant: As defined in the Federal Noxious Weed Act of 1974, a noxious plant is any living stage (e.g., seeds and reproductive parts) of any parasitic or other plant of a kind, or subdivision of a kind, which is of foreign origin, is new to, or not widely prevalent in, the U.S., and can directly or indirectly injure crops, other useful plants, livestock, poultry, other interests of agriculture including irrigation, navigation, U.S. fish and wildlife resources, or public health.

obligate: Means "by necessity"; restricted to one particularly characteristic life mode.

ocean convergence zone: The relatively horizontal flow of ocean water toward a common destination from different directions. When ocean waters come together at a point or along a line (convergence line), the denser water coming from one direction sinks under the lighter water coming from the other direction. The ocean convergence lines include the polar, subtropical, tropical, and equatorial.

orographic effect: A change in atmospheric conditions caused by a change in elevation, primarily due to mountains.

outwash: The deposit of sand, silt, and gravel formed below a glacier by meltwater streams and rivers. An outwash plain is an extensive, relatively flat area of these glacial deposits.

Pacific plate: A tectonic plate located within portions of the Pacific Ocean.

paleontological resources: Fossils that are the physical remains of plants and animals that have mineralized into or left impressions in solid rock or sediment.

palustrine emergent wetland: All nontidal wetlands dominated by persistent herbaceous plants, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand.

palustrine wetlands: Wetlands that include all nontidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand.

parent material: The original geologic source material from which a soil has formed; parent material influences soil properties, including color, texture, and ability to hold water.

passerines: An order of "perching" birds that have four toes, three facing forward and one backward, which allows the bird to easily cling to both horizontal and nearly vertical perches.

pelagic: Anything that inhabits the water column as opposed to being associated with the sea floor, generally occurring anywhere from the surface to 1,000 meters.[15]

peneaeid shrimp: A family of marine crustacean that includes some of the most commercially valuable species (e.g., tiger prawn).

[15] NOAA (National Oceanic and Atmospheric Administration). 2006. *NOAA Fisheries Glossary.* NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

perched groundwater: An aquifer that occurs above the regional water table, separated by an impermeable or relatively impermeable layer of rock or sediment.

perennial stream: Streams that normally have surface flow year-round in all or part of their course. Non-perennial streams are normally dry during part of the year.

permeability: A property of a material that allows liquids or gases to pass through it.

phenology: The seasonal changes in plant and animal life cycles, such as emergence of insects or migration of birds.

photic zone: Zone within which light penetrates below the ocean surface.

physiography: Refers to the description of the Earth's landforms and surface features.

piggery: Pig farms.

pinniped: Widely distributed and diverse group of fin-footed, semiaquatic marine mammals; commonly known as seals.

plant associations: Plant communities of a specific type (or types) and geography (or geographies).

plateau: A large area of elevated plain, tableland, or flat-topped region.

plutonic rocks: Rocks formed from cooling magma below the Earth's surface.

point source pollution: Section 502 (14) of the Clean Water Act defines point source pollution as pollution that comes from "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged."

points of presence: Connections or access points between two different networks, or different components of one network.

population: Interbreeding organisms occupying a certain space; the number of people or other living creatures in a designated area.

Portland cement: Cement that is made from limestone and clay that turns to a paste and hardens with water.

predation: The relationship between two organisms of different species in which one of them acts as predator that captures and feeds on the other organism that serves as the prey.

predatory open-access journal: Predatory journals are issued by publishers that "are characterized by various levels of deception and lack of transparency in their operations…they may claim a stringent peer-review where none really exists".[16] Open access journals are available online and require no fee or membership; they are accessible to anyone who has access to the internet.

prehistoric sites: The physical evidence of human activity that occurred prior to European contact.

[16] Elliott, Carl. 2012. *On Predatory Publishers: a Q&A with Jeffrey Beall*. Brainstorm Blog--The Chronicle of Higher Education. June 5, 2012. Accessed: June 2016. Retrieved from: http://www.chronicle.com/blogs/brainstorm/on-predatory-publishers-a-qa-with-jeffrey-beall/47667

Prevention of Significant Deterioration increment: The maximum allowable increase in pollutant concentration that is allowed to occur above a baseline concentration for a pollutant.

prime farmland: Land that possesses the required characteristics for producing food, feed, fiber, and oilseed crops.

procellariiform: An order of seabirds that includes albatrosses and petrels.

proposed species: Species that have been proposed for listing as threatened or endangered in the *Federal Register* after the completion of a status review and consideration of other protective conservation measures.

public safety answering points: Call centers responsible for answering calls to an emergency telephone number for police, fire, and emergency medical services.

public safety entity: An entity that provides public safety services (*47 USC § 1401(26)*).

public safety infrastructure: Any infrastructure used by a public safety entity as defined in the Middle Class Tax Relief and Job Creation Act of 2012, including infrastructure associated with police, EMS, and fire services.

pupping grounds: Sites where marine mammals birth and rear their young.

radiant flux: The amount of energy per unit time radiated from a source.

radiative forcing index: Radiative forcing is the difference between the radiation absorbed by Earth and the energy reflected back to space.

radio frequency emissions: Refers to radio frequency radiation emitted by devices.

radio frequency radiation: "Electromagnetic radiation in the frequency ranges 3 kilohertz (kHz) - 300 Megahertz (MHz), and 300 MHz - 300 gigahertz (GHz), respectively."[17]

recovery: A population or community's partial or full return to a previous condition before a stressor was introduced.

recreational fishery: Fishing when the catch is for personal use, pleasure, or competition.

recruitment: The number of new individuals reaching reproductive age in a given population over a given time interval (typically measured over a year).

redundancy: The duplication of equipment or processes to help maintain continuity of operations.

refugia: An area of stable environmental conditions that protects wildlife and organisms from environmental change.

Rhus: A specific genus of vines, shrubs, or small trees native to temperate and warm regions.

riparian zone: Areas near wetlands, rivers, or streams.

rock ripping: The breakup and removal of rock material with heavy equipment such as an excavator.

runup: The height the wave reaches above sea level before washing to shore.

[17] Occupational Health and Safety Administration. Undated. *Radiofrequency and Microwave Radiation*. Retrieved from: https://www.osha.gov/SLTC/radiofrequencyradiation/

rutting (soil): Soil indentations caused by equipment operation in moist conditions or in soils with lower bearing strength. See soil rut.

sedimentary rocks: Rocks formed by the deposition of material at the Earth's surface and within bodies of water.

Selective Catalytic Reduction: Add-on nitrogen dioxides control placed in the exhaust stream following the engine and involves injecting ammonia into the flue gas. The ammonia reacts with the nitrogen dioxides in the presence of a catalyst to form water and nitrogen.

sessile: Unable to move; attached to the substrate.[18]

shield volcano: A volcano that is above the ocean surface, has broad and gentle slopes, and is composed of fluid basalt.

short ton: One short ton is equal to 2,000 pounds.

silt curtain: Floating barrier used in marine construction, dredging, and remediation to control silt and sediment in a body of water.

silt fence: Designed to trap sediment in the area where construction or soil disturbance is taking place to minimize or avoid soil erosion and sedimentation. The fence is typically 2- to 3-feet tall, buried 8 to 12 inches into the soil, and secured with stakes.

Sirenian: An order of fully aquatic, herbivorous mammals that inhabit swamps, rivers, estuaries, marine wetlands, and coastal marine waters.

site fidelity: The tendency of an animal to return to a previously occupied location.

sky glow: The overall diffusion of artificial light into the sky.

smolt: A young fish undergoing its first migration from freshwater to the ocean.

soarer: A bird that flies to a considerable altitude and maintains elevation without moving its wings by using ascending air currents.

soft ground conditions: A soft site exists where noise travels away from the source over porous ground or normal unpacked earth capable of absorbing noise energy such as grass, trees, or other ground surfaces suitable for the growth of vegetation, such as farmland.

soil rut: A sunken track or groove made by vehicle or equipment activity. See rutting.

sole-source aquifer: An aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer.

species diversity: An ecological measure of the variety of organisms present in an ecological community including the richness (number of species) and abundance (number of individuals of each species).

storm water filtration: Use of a filtering media (sand, soil, gravel, peat, or compost) in storm water filtration structures to remove pollutants from storm water runoff.

stratovolcanoes: Also called composite volcanoes, are cone-shaped and consist of alternate layers of lava and other volcanic material such as ash.

[18] National Oceanic and Atmospheric Administration. 2006. *NOAA Fisheries Glossary*. NOAA Technical Memorandum NMFS-F/SPO-69. October 2005. Revised Edition, June 2006.

stream reach: Any specified length of a stream.

submarine volcano: Volcanoes that occur beneath the ocean surface.

subsistence fishery: Fishing when the catch is shared and consumed directly by the families and kin of the fishermen, rather than being sold.

substrate: Material such as sand and cobble that is associated with or occurs on the bottom of a body of water.[19]

subwatershed: USGS subwatershed refers to the USGS 12-digit hydrologic unit code (HUC12), which averages approximately 40 square miles, depending on the region.

succession: A gradual process of a plant or animal community successively giving way to another until a stable state is reached.

suicide contagion: Direct or indirect exposure to suicide or suicidal behaviors within one's family, peer group, or media reports that can result in an increase in suicide or suicidal behaviors, especially in adolescents and young adults.[20]

symbiont: Two organisms that live in symbiosis (mutually beneficial relationship) with one another. Algae species are symbionts with corals.

take: *Take* is defined differently by various federal and state regulations, but the most commonly accepted definition is that of the U.S. Endangered Species Act that defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct."

taxonomic group: A group of biological organisms that have shared characteristics.

taxonomy: Science of naming and classifying organisms or specimens.

tectonic plate: The solid pieces of rock (or earth) that collide, move apart, or slide past each other over geologic time.

tectonism: Forces affecting the structural deformation, uplift, and movement of the earth's crust.

temperate forest: Forests found in regions with mild climates that receive heavy rainfall.

terrestrial: Of, or related to, the land.

thermokarst: The process by which landforms result from the thawing of ice-rich permafrost or the melting of ice.[21]

threatened species: According to the Endangered Species Act, a *threatened* species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

[19] National Oceanic and Atmospheric Administration. 2006. *NOAA Fisheries Glossary.* NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

[20] U.S. Department of Health and Human Services. 2015. *Mental Health and Substance Abuse: Suicide*. Accessed: August 2015. Retrieved from: http://www.hhs.gov/answers/mental-health-substance-abuse/suicide/suicide-contagion.html

[21] Van Everdingen. 1998 (revised 2005). *Multi-Language Glossary of Permafrost and Related Ground-Ice Terms; In: Chinese, English, French, German, Icelandic, Italian, Norwegian, Polish, Romanian, Russian, Spanish, and Swedish*. The Arctic Institute of North America. The University of Calgary. Accessed: September 12, 2016. Retrieved from: http://globalcryospherewatch.org/reference/glossary_docs/Glossary_of_Permafrost_and_Ground-Ice_IPA_2005.pdf

time (soils): Soil properties are dependent on the period over which other processes act on them.

tonne: One tonne is a unit of measure in the International System of Units that is equivalent to 1 metric ton and equivalent to 1.1023 U.S. tons, which are also known as short tons.

topography: The unique features and shapes of the land (e.g., valleys and mountains).

Total Maximum Daily Load: Maximum pollutant amount a waterbody can receive while still meeting water quality standards.

total radiative forcing: The difference between the visible light absorbed by Earth and the energy reflected back to space.

trachyte: A type of fine-grained volcanic rock.

traditional cultural property: A place "eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community."[22]

translocation: The capture, transport, and release (or introduction) from one location to another.

trophic: The feeding habits or relationships of different organisms in a food chain or food web.[23]

trophic structure: The way organisms utilize food resources leading to energy transfer within an ecosystem.[24]

tsunami: Large ocean waves that form as a result of water displacement.

tundra: A vast, flat, treeless Arctic region of Europe, Asia, and North America in which the subsoil is permanently frozen.

turbidity: A measure of the clarity of a liquid. When many fine particles are suspended in water, the turbidity is high.

U.S. Exclusive Economic Zone: The U.S. Exclusive Economic Zone is a 200-mile ocean boundary around the coastline of U.S. states and territories in which the U.S. asserts exclusive commercial fishing rights.

ultra-high frequency: The UHF band covers frequencies ranging from 300 MHz to 3000 MHz.

unclassified area: Any area that cannot be classified on the basis of available information as meeting the national primary or secondary air quality standard for a pollutant.

understory: The forest layer of smaller trees and shrubs that grows under the taller tree canopy, replacing the older trees as they die.

ungulate: The classification of mammals having hooves.

[22] National Park Service. 1998. *National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties*. Accessed: September 24, 2015. Retrieved from: http://www.nps.gov/nr/publications/bulletins/nrb38/

[23] NOAA (National Oceanic and Atmospheric Administration). 2006. *NOAA Fisheries Glossary.* NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

[24] NOAA (National Oceanic and Atmospheric Administration). 2006. *NOAA Fisheries Glossary.* NOAA Technical Memorandum NMFS-F/Spo-69. U.S. Department of Commerce. Accessed: August 8, 2015. Retrieved from: https://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf

unicameral legislature: A legislature consisting of one chamber (a single house, for example).

unincorporated territory: In U.S. law, an unincorporated territory is an area controlled by the U.S. government "where fundamental rights apply as a matter of law, but other constitutional rights are not available."[25]

urban: Densely developed residential, commercial, and other non-residential areas.

urban electronic noise: An area with a concentration of cell phone towers and users, which by sheer volume and level of use, creates a zone of electromagnetic noise.

vascular plants: Plants that possess conducting tissues to transport nutrients and water throughout the plant.

vector: An organism that carries and transmits an infectious pathogen to another living organism.

vernal pools: Formed in basin depressions and are ponded only during the wetter part of the year; also known as ephemeral pools.[26]

very high frequency: The VHF band covers frequencies ranging from 30 MHz to 300 MHz.

visual landscape: What observers can readily see from a given vantage point.

water resources: Surface waterbodies and groundwater systems, including streams, rivers, lakes, canals, ditches, estuarine waters, floodplains, aquifers, wetlands, and other aquatic habitats.

watershed: USGS watershed refers to the USGS 10-digit hydrologic unit code (HUC10), which averages approximately 230 square miles, depending on the region.

wetland alternation: Any changes where the area remains a wetland and is not lost or converted, but the impacts cause a change in the type of wetland or a decrease in wetland function.

wetland loss or conversion: The actual loss of wetland habitat due to fill or conversion to a non-wetland habitat.

wetlands: Wetlands generally include swamps, marshes, bogs and similar areas. The USEPA defines wetlands as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

[25] U.S. General Accounting Office. 1997. *U.S. Insular Areas, Application of the U.S. Constitution*. November 1997. Accessed: June 22, 2015. Retrieved from: http://www.gao.gov/archive/1998/og98005.pdf

[26] U.S. Environmental Protection Agency. 2015. *Vernal Pools*. Accessed: October 2015. Retrieved from: http://water.epa.gov/type/wetlands/vernal.cfm