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Bradwood Landing Project Final Environmental Impact Statement

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/g	micrograms per gram
µg/m ³	micrograms per cubic meter
µPa	microPascal
2006 IBE	2006 International Building Code
ABSG	ABSG Consulting, Inc.
ACDP	Air Contaminant Discharge Permit
ACHP	Advisory Council on Historic Preservation
ACRR	Astoria and Columbia River Railroad, now called the Portland Western Railroad
AERMIC	American Meteorological Society / Environmental Protection Agency Regulatory Model Improvement Committee
AERMOD	American Meteorological Society / Environmental Protection Agency Regulatory Model Improvement Committee modeling program
AMEC	AMEC Earth and Environmental, Inc.
ANSI	American National Standards Institute
APE	area of potential effect
API	American Petroleum Institute
AQCR	Air Quality Control Region
AQIA	Air Quality Impact Analysis
ASTM	American Society for Testing and Materials
BA	biological assessment
BACT	Best Available Control Technology
Bcf/d	billion cubic feet per day
BEA	Bureau of Economic Analysis
bgs	below the ground surface
Bhp	brake horsepower
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
BOG	boil-off gas
BPA	Bonneville Power Administration
Btu	British thermal unit
Btu/ft ² -hr	British thermal units per square foot per hour
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
Calpine	Calpine Corporation
CCC	Cowlitz County Code
CCS	carbon capture and storage
CEC	California Energy Commission
CEII	critical energy infrastructure information
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
cfs	cubic feet per second
Chevron	Chevron Corporation
CLC	California State Lands Commission
CMMP	<i>Contaminated Materials Management Plan</i>
CMMS	computerized maintenance management system

ACRONYMS AND ABBREVIATIONS (cont'd)

CO	carbon monoxide
CO ₂	carbon dioxide
Coast Guard	U.S. Department of Homeland Security, Coast Guard
COC	Certificate of Compliance
COE	U.S. Army Corps of Engineers
COI	Certificate of Inspection
Commission	Federal Energy Regulatory Commission
Compensatory Mitigation Plan	Preliminary Engineering Design Draft Mitigation Plan
COTP	Captain of the Port
Council	Oregon Energy Facility Siting Council
CPSAR	Cherry Point State Aquatic Reserve
CRBG	Columbia River Basalt Group
CRD	Columbia River Datum
CREST	Columbia River Estuary Study Taskforce
CRITFC	Columbia River Intertribal Fisheries Commission
CRM	Columbia River Mile
CSCSL	Confirmed and Suspected Contaminated Sites List
CSZ	Cascadian Subduction Zone
CWA	Clean Water Act
CZMA	Coastal Zone Management Act of 1972
dB	decibels
dBA	A-weighted scale
DDT	dichloro-diphenyl-trichloroethane
DE	Design Earthquake
DEGADIS	Dense Gas Dispersion Model
Discovery Plan	Plan and Procedures for the Unanticipated Discovery of Cultural Resources and Human Remains
DMD	Dredged Material Disposal
DMEF	Dredged Material Evaluation Framework
DMMU	Dredge Material Management Units
DPS	distinct population segment
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DOT	U.S. Department of Transportation
Dthd	decaliters per day
DWPA	Drinking Water Protection Area
ECSI	Environmental Cleanup Site Information System
EDNA	environmental designations for noise abatement
EFH	essential fish habitat
EIA	Energy Information Administration
EIS	Environmental Impact Statement
El Paso	El Paso Corporation
EPA	Environmental Protection Agency
EPAct	Energy Policy Act of 2005
ERP	Emergency Response Plan
ESA	Endangered Species Act of 1973
ESD	emergency shutdown

ACRONYMS AND ABBREVIATIONS (cont'd)

ESEE	Energy, social, economic, and environmental
Esperanza	Esperanza Energy LLC
ESUs	evolutionarily significant units
Excelerate	Excelerate Energy
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHO	Flood Hazard Overlay District
FMSC	Federal Maritime Security Coordinator
FS	U.S. Department of Agriculture, Forest Service
FSO	Facility Security Officer
FSRU	floating, storage, and regasification unit
ft/s	feet per second
FWS	U.S. Fish and Wildlife Service
g	gravity
GAO	U.S. General Accounting Office
GBS	gravity-based structure
GHG	greenhouse gas
GHO	Geologic Hazards Overlay District
gpm	gallons per minute
GSI	Groundwater Solutions, Inc.
GSX	Georgia Strait Crossing
GTN	Gas Transmission Northwest Corporation
GW	gigawatt
GWMA	Groundwater Management Area
GWP	global warming potential
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drill
HEL	highly erodible land
HMP	Habitat Mitigation Policy
HRA	Historical Research Associates, Inc.
HUD	U.S. Department of Housing and Urban Development
Hz	hertz
I	Importance Factor
I_p	Importance Factor
ICF	ICF International
IMO	International Maritime Organization
IMPLAN	Impact Analysis for Planning
INGAA	Interstate Natural Gas Association of America
JBHNWR	Julia Butler Hansen National Wildlife Refuge
Jordan Cove	Jordan Cove Energy Project, L.P.
KB pipeline	Kelso Beaver Pipeline
Kitimat LNG	Kitimat LNG Inc.
KO	knockout
kPa	kilopascal
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
L_{eq}	daytime and nighttime equivalent sound level

ACRONYMS AND ABBREVIATIONS (cont'd)

$L_{eq(24)}$	the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period
L_{dn}	day-night noise level
LCFRB	Lower Columbia Fish Recovery Board
LCNHT	Lewis and Clark National Historic Trail
LDC	local distribution company
LFL	lower flammability limit
LiDAR	Light Detection and Ranging
Lighting Plan	Lighting Plan for the Bradwood Landing LNG Terminal
LNG	liquefied natural gas
LOI	Letter of Intent
LOR	Letter of Recommendation
LPG	liquid petroleum gas
LWD	Large woody debris
LWDUO	Land and Water Development and Use Ordinance
M	maximum moment magnitudes
m^2	square meter
m^3	cubic meter
m^3/hr	cubic meters per hour
MACT	Maximum Achievable Control Technology
MARAD	U.S. Department of Transportation, Maritime Administration
MARSEC	Maritime Security
MCE	Maximum Considered Earthquake
Mcf	thousand cubic feet
MDth	thousand dekatherms
mgd	million gallons per day
mg/g	milligrams per gram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MHW	mean high water
MHHW	mean higher high water
Mitigation Plan	Mitigation Plan for the Bradwood Landing Project
MLLW	mean lower low water
MLRA	Major Land Resource Area
MLV	mainline block valve
MMBtu	million British thermal units
MMBtu/hr	million British thermal units per hour
MMcfd	million cubic feet per day
MMPA	Marine Mammal Protection Act
MMscf	million standard cubic feet
MP	milepost
MPRSA	Marine Protection, Research, and Sanctuaries Act
MRL	Method Reporting Limit
MSA	Magnuson-Stevens Fishery Conservation and Management Act
msl	mean sea level
MW	megawatt
mya	million years ago
NAAQS	National Ambient Air Quality Standards

ACRONYMS AND ABBREVIATIONS (cont'd)

NAICS	North American Industry Classification System
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NFPA 59A	National Fire Protection Association, <i>Standards for the Production, Storage, and Handling of LNG</i>
NFWF	National Fish and Wildlife Foundation
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NMFS	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
N ₂ O	nitrous oxide
NOA	Notice of Availability
NOI	<i>Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Bradwood Landing LNG Project, Request for Comments on Environmental Issues, and Notice of Joint Public Meeting, and Site Visit</i>
NorthernStar	Bradwood Landing LLC and NorthernStar Energy LLC
Northwest Natural	Northwest Natural Gas Company
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	USDA Natural Resources Conservation Services
NRHP	National Register of Historic Places
NSA	noise-sensitive area
NSPS	New Source Performance Standards
NTU	Nephelometric Turbidity Units
NVIC 05-05	Navigation and Vessel Inspection Circular – Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas (LNG) Marine Traffic
NWGA	Northwest Gas Association
NWI	National Wetlands Inventory
NWS	National Weather Service
OAAQS	Oregon Ambient Air Quality Standards
OAR	Oregon Administrative Rule
OBE	Operating Basis Earthquake
OCMP	Oregon Coastal Management Program
OCRM	Office of Coast and Resource Management
ODA	Oregon Department of Agriculture
ODE	Oregon Department of Energy
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODHS	Oregon Department of Human Services
ODLCD	Oregon Department of Land Conservation and Development
ODSL	Oregon Department of State Lands
ODOT	Oregon Department of Transportation
ODWR	Oregon Department of Water Resources
OEP	Office of Energy Projects
OHWM	ordinary high water mark

ACRONYMS AND ABBREVIATIONS (cont'd)

OPS	Office of Pipeline Safety
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statute
ORV	open rack vaporizer
ORW	Outstanding Resource Water
OSHA	Occupational Safety & Health Administration
OTLC	Oregon Timber and Lumber Company
P&ID	Piping & Instrument Diagrams
PA	Primary Agriculture
PAH	polycyclic aromatic hydrocarbon
Palomar	Palomar Gas Transmission pipeline project
PCB	polychlorinated biphenyls
PCE	Primary Constituent Elements
PCGP	Pacific Connector Gas Pipeline, L.P.
PFMC	Pacific Fishery Management Council
PGA	peak ground acceleration
PG&E	Pacific Gas and Electric
PGE	Portland General Electric Company
pH	hydrogen ion concentration
PHEL	potentially highly erodible land
PHMSA	Pipeline and Hazardous Material Safety Administration
PHS	Priority Habitats and Species
pipeline ESC Plan	Erosion and Sediment Control Plan for Oregon – Bradwood Landing Pipeline <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
Plan	
PM _{2.5}	particle matter less than 2.5 microns in diameter
PM ₁₀	particle matter less than 10 microns in diameter
POP	NMFS National Marine Mammal Laboratory's Platform of Opportunity Program
PWRR	Portland & Western Railroad, Inc.
Portland MSA	Portland-Vancouver-Beaverton, Oregon-Washington, Metropolitan Statistical Area
ppb	parts per billion
ppm	parts per million
ppmw	parts per million by weight
PRM Plan	Paleontological Resources Mitigation Plan
Procedures	<i>Wetland and Waterbody Construction and Mitigation Procedures</i>
PSD	Prevention of Significant Deterioration
PSE	Puget Sound Energy, Inc.
PSEL	plant site emission limit
PHSA	Probabilistic Seismic Hazard Analysis
psi	pounds per square inch
psig	pounds per square inch gauge
Quest	Quest Consultants, Inc.
RCRIS	Resource Conservation and Recovery Information System
RCW	Revised Code of Washington
REC	Recognized Environmental Concerns
REX	Rockies Express Pipeline, LLC
RFPD	Rural Fire Protection District
RHA	Rivers and Harbors Act
Rhea	Rhea Environmental Consulting, LLC

ACRONYMS AND ABBREVIATIONS (cont'd)

RIPD	Resource - Industrial-Planned Development
RMP	Risk Management Plan
RMS	root mean square
RMT	Regional Management Team
RPT	rapid phase transition
RR	Rural Residential
RV	recreational vehicle
SAP	<i>Sampling and Analysis Plan</i>
SCV	submerged combustion vaporizer
Secretary	Secretary of the Commission
SEI	Salmon Enhancement Initiative
SEF	Sediment Evaluation Framework
SEPA	State Environmental Policy Act
SER	significant emission rate
SES	Sound Energy Solutions
SHPO	State Historic Preservation Office
SIL	Significant Impact Levels
SMP	Shoreline Master Program
SO	Shoreland Overlay District
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SoCal	Southern California Gas Company
SOLAS	<i>International Convention for the Safety of Life at Sea</i>
SOPEP	<i>Shipboard Oil Pollution Emergency Plan</i>
Spectra	Spectra Energy Transmission Pipeline System
Squirt	Screening Quick Reference Tables
SSE	Safe Shutdown Earthquake
SSURGO	Soil Survey Geographic Database
STV	shell and tube vaporizer
SWCA	SWCA Environmental Consultants
SWCAA	Southwest Clean Air Agency
SWPPP	Construction Stormwater Pollution Prevention Plan for Washington – Bradwood Landing Pipeline
TACT	Typically Achievable Control Technology
Tcf	trillion cubic feet
TEL	Threshold Effects Level
terminal ESC Plan	Erosion and Sediment Control Plan – Bradwood Landing Terminal
TMDL	Total Maximum Daily Load
TNT	trinitrotoluene
TOC	total organic carbon
tpy	tons per year
TransCanada	TransCanada Corporation
TSP	total suspended particulates
TSS	total suspended solids
UET	Upper Effects Threshold
UGA	Urban Growth Area
UIC	Underground Injection Control
UPS	uninterruptible power supply
URS	URS Corporation

ACRONYMS AND ABBREVIATIONS (cont'd)

USC	United States Code
USDA-SCS	U.S. Department of Agriculture - Soil Conservation Survey
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VOC	volatile organic compound
Vs	shear velocity
VSO	Vessel Security Officer
W	watt
WAAQS	Washington Ambient Air Quality Standards
WAC	Washington Administrative Code
Wauna Mill	Georgia-Pacific's Wauna paper mill
WCSB	Western Canada Sedimentary Basin
WDE	Washington State Department of Ecology
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WDOH	Washington State Department of Health
WDOT	Washington State Department of Transportation
WEG	wind erodibility group
WEST	West Consultants
WestPac	WestPac Terminals, Inc.
Williams	Williams Companies, Inc.
Williams Northwest	Williams Northwest Pipeline
WNHP	Washington DNR Natural Heritage Program
Woodside	Woodside Energy, Inc
WSA	Waterway Suitability Assessment
WSR	Waterway Suitability Report
WST	Waterway Simulation Technology Inc.
WUTC	Washington Utilities and Transportation Commission